
**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, D.C. 20549

Form 8-K

Current Report Pursuant to Section 13 or 15(d) of
the Securities Act of 1934

Date of Report (Date of earliest event reported): **September 19, 2019**

Ocean Power Technologies, Inc.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction
of incorporation)

001-33417
(Commission
File Number)

22-2535818
(I.R.S. Employer
Identification No.)

28 Engelhard Drive, Suite B Monroe Township, New Jersey
(Address of principal executive offices)

08831
(Zip Code)

(609) 730-0400

(Registrant's telephone number, including area code)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14-2(b))
- Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.133-4(c))

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Item 1.01 Entry into a Material Definitive Agreement.

On September 19, 2019, Ocean Power Technologies, Inc. (the “Company”) signed two new contracts (together, the “EGP Agreements”) with subsidiaries of Enel Green Power S.p.A. (“EGP”), part of the Enel Group, a multinational energy company and global integrated electricity and gas operator. The combined value of the contracts could exceed approximately \$1.9 million (if certain options are exercised by EGP) and includes the sale of an PB3 PowerBuoy® and the development and supply of a turn-key integrated Open Sea Lab (“OSL”) that will be OPT’s first deployment off the coast of Chile. Payments are to be made in installments based on achievement of certain milestones specified in the EGP Agreements.

The first contract with Empresa Electrica Panguipulli S.A., a subsidiary of EGP, provides for the supply of a PB3 PowerBuoy® along with associated mooring system, and will provide turn-key system deployment off the coast of Las Cruces, Chile as an autonomous offshore platform powering a suite of oceanographic sensors and transmitting real-time data back to land. The scope of the agreement is in support of the Marine Energy Research and Innovation Center Project, an initiative that aims to diversify Chile’s energetic matrix and to convert Chile into a world reference in the development of marine renewable energies. The buoy is to be delivered within 28 weeks of the execution of the contract and the Company is subject to penalties if there is a delay.

The second contract with Enel Green Power Chile Limitada S.A., a subsidiary of EGP, calls for the Company to develop and supply a turn-key integrated OSL. The OSL encompasses a sensor suite to be powered by the PB3 PowerBuoy®, as well as an integrated shore-based wave radar system. The sensor suite will comprise of an Acoustic Doppler Current Profiler, a device which is used to measure water current velocities over a depth range, water sensors, and mooring load sensors. The design and buildout of the OSL will be spearheaded by Company’s Innovation and Support Services. Deployment of the OSL is expected in the first half of 2020. Performance under this agreement is supported by a standby letter of credit. The OSL is to be delivered within 28 weeks of the execution of the contract and the Company is subject to penalties if there is a delay.

The EGP Agreements include a number of other standard contract terms and conditions, including without limitation, provisions relating to confidentiality, environment, health and safety, inspection and testing, warranties, indemnities and limit of liabilities, and risk of loss and insurance.

Item 8.01 Other Events.

On September 19, 2019, the Company issued a press release announcing the execution of the EGP Agreements. A copy of the press release is filed herewith as Exhibit 99.1.

Item 9.01 Financial Statements and Exhibits.

Exhibits

[*10.1 Supply and Service Contract between the Company and Empresa Electrica Panguipulli S.A. dated September 19, 2019.++](#)

[*10.2 Supply and Service Contract between the Company and Enel Green Power Chile LTDA dated September 19, 2019.++](#)

[*99.1 Press release dated September 19, 2019 announcing the EGP Agreements.](#)

* Filed herewith.

++ Portions of this exhibit have been redacted in accordance with Item 601(b)(10) of Regulation S-K.

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Ocean Power Technologies, Inc.

Dated: September 23, 2019

/s/ George H. Kirby III

George H. Kirby III
President and Chief Executive Officer

Exhibit Index

- *10.1 [Supply and Service Contract between the Company and Empresa Electrica Panguipulli S.A. dated September 19, 2019.](#)++
- *10.2 [Supply and Service Contract between the Company and Enel Green Power Chile LTDA dated September 19, 2019.](#)++
- *99.1 [Press release dated September 19, 2019 announcing the EGP Agreements.](#)

* Filed herewith.

++ Portions of this exhibit have been redacted in accordance with Item 601(b)(10) of Regulation S-K.



SUPPLY AND SERVICE CONTRACT

11995 MERIC – Open Sea Lab (OSL) Project

Part A - Wave Energy Converter (WEC)

System Supply

SAP No. 84XXXXXXXX

BETWEEN

EMPRESA ELECTRICA PANGUIPULLI S.A.

AND

OCEAN POWER TECHNOLOGIES, INC (OPT)

CHILE

**** Portions of this exhibit have been redacted in accordance with Item 601(b)(10) of Regulation S-K. The information is not material and would cause competitive harm to the registrant if publicly disclosed. “[***]” indicates that information has been redacted.**

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In Santiago, Republic of Chile, on September 16th, 2019 between, on the one hand, Empresa Eléctrica Panguipulli, RUT No. 96.524.140-K, (hereinafter, “Panguipulli”), represented by Mrs. Pamela Llanos Troncoso, Identity card No. 12.262.136-7, all domiciled for these purposes in Avenida Santa Rosa, 76 Floor 9, Santiago and, on the other Ocean Power Technologies, Inc., with a U.S. tax identification number of 22-2535818, represented by Mr. George Kirby, with a U.S. passport identification number that has been presented to Panguipulli (hereinafter, the “Service Provider”) domiciled for these purposes in 28 Engelhard Drive, Suite B, Monroe Township, New Jersey 08831 USA. Hereinafter, Panguipulli and the Service Provider will be referred to jointly as the “Parties” and individually as the “Party”, who come to enter into this service contract (the “Contract”) in the terms indicated to continuation and, not provided for by them, by the relevant legal norms:

1 Statements

The representatives of each of the Parties have the corporate and legal authorizations necessary for the signing of this Contract.

The Service Provider declares that it is regularly engaged in activities related to the provision of the services contracted here and that it has the legal capacity to contract and be bound in the execution of the Service, and that it has the experience, organization and human, technological, administrative, economic, operational and technical elements for its realization.

Declares, in addition, that the nature of the work to be carried out has been fully informed; of the location and other peculiarities of the place of work; of the methodology of the works; of the number of personnel required to fulfill this Contract in a complete, correct manner and within the established term.

Panguipulli, on the other hand, records that these previous declarations of the Service Provider are essential and have been decisive in his decision to enter into this Contract with him.

2 Subject of the Contract

This Contract shall cover the Part A Contract, as set forth in the Scope of Work, which includes the provision of a PB3 PowerBuoy[®] with nominal 50 kiloWatt-hour Energy Storage System, mooring system procurement, PB3 PowerBuoy[®] and mooring equipment shipment to the location indicated in Section 6.1 below, deployment, and commissioning, as set forth in Annexes C and D.

3 Documents of the Contract

For all legal purposes, the documents indicated below that the Service Provider declares to know and accept in all its parts are an integral part of this Contract:

This same text of the Contract and the following annexes:

- Annex A: Scope of Work (SoW)
- Annex B: General Terms and Conditions and Annex II Chile (SEVENTH EDITION).
- Annex C: Technical/economical Proposal Numbers: EGP-001-02A and EGP-001-03B
- Annex D: Feasibility Study
- Annex E: Health, Safety and Environmental Terms, First Edition dated 1/3/19.
- Annex F: Bases Técnicas HSEQ CHILE GRE_CHL_QSE_MN_01_Vers.5 09/11/2018
- Annex G: Standby Letter of Credit template.

In case of contradiction, discrepancies or inconsistencies between the terms of the previously individualized documents and this Contract, the provisions of this Contract shall prevail and in case of persisting discrepancies, the meaning and scope of the Annexes shall be in accordance with the order of priority established in this clause.

It is established that for the purposes of interpreting this Contract and its Annexes, the terms and phrases in the singular include the plural and vice versa.

If the nullity of any of the terms, provisions, conventions or restrictions of the Contract or its Annexes is declared, those provisions shall be modified by the Parties only to the extent necessary for them to be enforced and consistent with the intention of the Parties and, therefore, the rest of the terms, provisions, agreements and restrictions of this Contract and its Annexes will remain in force and will be applicable in accordance with the law.

4 Official Language of Contractual Documentation

The controlling version of all of the contractual documents are in English.

5 Financial Conditions

5.1 Value of the Supply Contract Part A Wave Energy Converter (WEC) System Supply

The Total Amount of this Contract is fixed and equal to **ONE MILLION TWO HUNDRED FIFTY-SIX THOUSAND NINE HUNDRED U.S. DOLLARS** (in letters, US\$1.256.900) which includes:

Sale of one (1) PB3 PowerBuoy[®] and mooring equipment, as indicated on Scope of Work Part A.

Panguipulli will be the Importer of Record and responsible for all import duties, tariffs and taxes, including VAT.

Insurance coverage during shipping and deployment is included for the PB3 PowerBuoy[®] and Part A items. Title of equipment shall transfer to Panguipulli upon completion of deployment and offshore commissioning.

For the purpose of managing the invoicing process, the total amount is composed as described in Table No.1.

Table No.1. Good and Services Prices Part A

Item	Description	Goods (from US) USD	Goods (from Chile) USD	Services (from US) USD	Services (from Chile) USD	Total (USD)
A.1	Site visit at Las Cruces - Feasibility study of WEC deployment	-	-	[***]	-	[***]
A.2	PB3 PowerBuoy® supply	[***]	-	-	-	[***]
A.3.1	Mooring equipment supply (US sourced)	[***]	-	-	-	[***]
A.3.2	Mooring equipment supply (Chilean sourced)	-	[***]	-	-	[***]
A.4	Shipment of A.2 + A.3 from OPT factory NJ to San Antonio port CL, including insurance	[***]	-	-	-	[***]
A.5	Customs operations at San Antonio port (in charge to EGP/Panguipulli SA)	NN	-	-	-	-
A.6	Inland Freight to Local Staging Area	-	-	-	[***]	[***]
A.7.1	Local Staging @ San Antonio port	-	-	-	[***]	[***]
A.7.2	Local Assembling and testing of PB3 and OSL components (part A+B) on shore - Provisional Acceptance	-	-	[***]	-	[***]
A.8	Deployment of mooring system (naval services)	-	-	-	[***]	[***]
A.9	Deployment of PB3 and OSL sytem (naval services & divers)	-	-	-	[***]	[***]
A.10	Site management, commissioning and final acceptance test (part A+B)	-	-	[***]	-	[***]
A.11	Letter of Credit - 10% of Contract Value for 12 Month Warranty Period	-	-	[***]	-	[***]
Total (USD)		[***]	[***]	[***]	[***]	1,256,900

5.2 Cost Splitting for Taxes Part A

- a. Components (goods) supplied and shipped from US or other countries (affected by VAT 19% at customs border)
- b. Services supplied by foreign companies (affected by the 15% service tax)
- c. Components (goods) and services supplied by a Chilean companies to the Service Provider (where VAT 19% will be a real cost, because the Service Provider is foreign). Notwithstanding the above, Panguipulli shall reimburse the next items: “Mooring parts and other components from Chile”, “Movements of the goods PB3 and Mooring Parts from the ship to a staging site”, “Local staging and San Antonio Port”, “Deployment mooring system ready to host PB3” and “Deployment PB3 and OSL offshore” to the Service Provider, for a total amount of USD [***], once (i) Service Provider has paid such Item to the Chilean company in connection with the aforesaid items and (ii) The Service Provider has issued an Invoice to Panguipulli for the amount of USD [***]. For the sake of clarity, all items described before it is a cost for the Service Provider, required for the execution of this Contract, therefore, they are not an income for the Service Provider.

The results of the splitting will be documentable and compliant with such as required by the Chilean fiscal laws.

5.3 Payments

Invoicing shall occur in accordance with the milestones sequence and payments percentage shown below in Section 5.4. Invoice approval shall occur within ten (10) business days of presentation of a properly submitted invoice, including supporting information. Panguipulli's failure to reject, require additional information, or not approve the invoice by the end of the tenth (10th) business day after invoice presentation shall constitute acceptance of the invoice.

Payments will be made within 30 days from the date of the approval of the invoice or from the expiration of the tenth day in case Panguipulli fails to reject an invoice or requests additional information required prior to approval.

5.4 Milestones Sequence and Payments Percentage

The supplies and services here above described shall be paid in front of a fixed agreed global price, as described in Table No.2.

Table No.2. Milestones for Goods and Services Part A

No.	Milestone	%	Goods (from US) USD	Goods (from Chile) USD	Services (from US) USD	Services (from Chile) USD	Total (USD)
1	Contract signature	***	***				***
2	PB3 and other goods (Part A &B) ready to ship at Service Provider's factory NJ, after FAT	***	***				***
3	Arrival of the Part A&B goods at San Antonio port. Customs cleared	***	***		***		***
4	OSL fully deployed, after final acceptance test	***		***		***	***
	Total (USD)	100%	***	***	***	***	\$ 1.256.900

Before the payment of the Milestone 1 will be requested a letter of credit issued by a U.S. bank (LOC) valid 12 months, of amount 10% of the total price.

LOC must be issued by a commercial bank with a rating of at least Baa3 rating by Moody's or BBB- by S&P and shall be confirmed or counter guaranteed by a Chilean Bank. Such LOC shall be issued per the template set forth under Annex G.

Each milestone will be paid in separate invoices depending on the kind of goods or services.

6 Delivery and Receipt Conditions

6.1. Delivery Terms

Delivery terms is DAP (INCOTERMS 2010) to the Point of Delivery, within 28 weeks after signature of the Contract. Service Provider shall be responsible for offloading of PB3 PowerBuoy® and equipment and for its insurance until delivery.

Deliveries to the final destination (Point of Delivery) at the following location, as indicated in Scope of Work: Deployment in Las Cruces, El Tabo, V Región, Chile.

6.2. Acceptance

Acceptance shall be in compliance with written testing and acceptance criteria set forth in Section 6.3 below.

6.3. Compliance Inspection/Testing

Inspections/tests shall be conducted at the expense of the Service Provider in accordance with the technical requirements specified in the Scope of Work

Acceptance Testing Definitions:

- Factory Acceptance Test – completed at Service Provider’s facility prior to shipment
- Provisional Acceptance Test – completed after delivery, prior to deployment
- Final Acceptance Test – completed after deployment and offshore commissioning

Upon receipt of the goods by the recipient Panguipulli unit, there will be a “compliance check” of the ordered materials. Panguipulli may decide to participate in or witness a Factory Acceptance Test in accordance with the Service Provider’s proposal.

Approval or denial of Provisional Acceptance, acceptance of on-site functional testing or acceptance of Factory Acceptance Testing (FAT) shall be completed within five (5) calendar days. Failure of Panguipulli to approve or deny within five (5) calendar days will be deemed as Provisional Acceptance or acceptance of the test results by Panguipulli. The Service Provider need not be present for the signing of the test report or Provisional Acceptance.

In this regard, each delivery shall include a data sheet of the supplied material and the certificate of origin of the manufacturer.

In the event that discrepancies and/or defects are found, Service Provider shall make arrangements to correct discrepancies and/or defects at the Point of Delivery, at the Service Provider’s Monroe Township facility, or at a subcontractor’s facility, as appropriate. If the Service Provider is not able to correct the discrepancies and/or defects at the Point of Delivery in a reasonable period of time, the ordered materials shall be at sole discretion of Panguipulli (i) returned carriage forward with transport costs borne by the Service Provider, in which case the full Value of the Supply Contract shall be reimbursed by Service Provider; or (ii) discounted proportionally. In this last case if Panguipulli and Service Provider do not agree on the discounted price within a reasonable time, Panguipulli shall have the right to opt for the first solution under (i).

6.4. Delivery Address

The supplied components shall be delivered at the place indicated in the previous Section 6.1. Delivery Terms as indicated in the Scope of Work.

Prior to boarding the PB3 PowerBuoy[®], the Service Provider must send the draft of the following documents:

- Commercial import invoice
- Packing list certificate of origin (if applicable)
- Insurance certificate
- Bill of lading;

All of these documents for the approval of Panguipulli. Once approved, the Service Provider must issue the original documents and send them via courier to the following address:

Address: Santa Rosa 76, 12th floor, Santiago, Chile

Attention: Andrea Romero

Mail: andrea.romero@enel.com

It is important that the original documents must be in Chile at least one (01) week before the arrival of the boarding. In case of delay, Service Provider shall borne all cost arising from such delay.

Due to the impossibility to define a physical address in the above off-shore location, all the shipment documents shall be addressed to the delivery terminal at San Antonio port.

6.5. Packing

In case the PB3 PowerBuoy[®] comes with wooden packaging, Service Provider must send the fumigation certificate or the packaging must come certified.

7 Representation and Communications

The following are the addresses to which the Parties shall send communications:

Service Provider (Ocean Power Technologies)

Mr. Keith Silverman
28 Engelhard Drive, Suite B
Monroe Township, NJ 08831 USA
Telephone: 609-730-0400 x244
E-mail: ksilverman@oceanpowertech.com

With a copy to:

Mr. Paul Watson
Ocean Power Technologies Ltd
Telephone: +44 (0)7789907038
Email: pwatson@oceanpowertech.com

Panguipulli

Daniel Manriquez
Panguipulli
Santa Rosa 76, piso 11. Santiago, Chile
Telephone: (+56) 9 93426098
Email: daniel.manriquez@enel.com

If the Service Provider changes its representative during the execution of the activities, it shall inform the unit that manages the Contract of the new name in writing.

8 Insurance

Insurance coverage during shipping and deployment is included for the PB3 PowerBuoy[®] and Part A items. Title of equipment shall transfer to Panguipulli upon Final Acceptance. Panguipulli shall provide a Certificate of Insurance for the PB3 PowerBuoy[®] and equipment within the arrival of them to the Point of the Delivery. The Service Provider shall contract and pay insurance until delivery of the goods and provide the Certificate of Insurance to Panguipulli prior to its shipping.

9 The Service Provider's Guarantees

The Service Provider warrants the PB3 PowerBuoy[®] and mooring against defects in materials and workmanship for a period of one (1) year when the buoy is used for its intended purpose, operated in accordance with its design, and any applicable scheduled maintenance is performed.

The warranty period shall be for one (1) year beginning on the date of Final Acceptance. The warranty shall not include the cost of recovery or redeployment of the PB3 PowerBuoy[®], mooring, or any equipment. Any warranty on the equipment is limited to the warranty term and any other conditions that the Service Provider has received from the equipment manufacturer.

The costs for recovery of the PB3 PowerBuoy[®], shall be initially paid by Service Provider, and then Panguipulli shall reimburse Service Provider within 30 days after Service Provider submits its invoice to Panguipulli for reimbursement.

10 Withdrawal and Dissolution of the Contract

10.1. Ordinary Withdrawal

Sections 16.1, 16.2, and 16.3.1 of the General Terms and Conditions (SEVENTH EDITION) shall be modified to read:

16.1 SUSPENSION

16.1.1 If, for any reason prior to the shipment of the PB3 PowerBuoy[®] from Service Provider's manufacturing facility, Panguipulli deems it necessary or is obliged to temporarily suspend all or part of the activities which form the subject of this Contract, it must notify the Service Provider accordingly in writing, specifying the relative reason and estimating the duration of the suspension. Any temporary suspension shall be limited to no more than 10 business days.

The suspension will have effect from the day established in the communication.

From said date, the Service Provider must suspend the relative activities, arranging to safeguard and maintain the materials, equipment and works at a standstill, without prejudice to the applicability of all the other duties assigned to the same by the applicable law and/or established within the Contract.

The resumption of the activities must be notified by Panguipulli with reasonable advance notice by way of a written communication sent to the Service Provider. The residual time assigned for the completion of the works will be calculated starting from the date of the resumption of the works indicated by Panguipulli. The Service Provider shall be entitled to be reimbursed for labor needed to suspend the work.

A budgetary estimate will be provided to Panguipulli, which shall be promptly approved, such approval shall not be unreasonably withheld.

The Service Provider will be entitled to receive payment for all non-cancellable committed expenses, such as third parties fees due to the suspension, incurred prior to the written notification.

16.2 WITHDRAWAL

16.2.1 Panguipulli can withdraw from the Service Provider at any time prior to the shipment of the PB3 PowerBuoy[®] from Service Provider's manufacturing facility.

The withdrawal must be notified by way of a written communication and will be valid from the date on which the latter is received. Panguipulli will indicate the activities that must be completed and those to be immediately interrupted. The activities regularly performed up until the date of the withdrawal, which have commenced and for which the Service Provider has incurred non-refundable cancellation charges or deposits or incurred Service Provider labor charges, will be compensated in line with the prices established in the Contract except for Service Provider Labor which shall be reimbursed according to the Service Provider's Proposal Appendix C. Similarly, the Service Provider will be entitled to receive payment for all non-cancellable committed expenses, including profit and overheads, which were begun prior to the written notification.

For the interrupted activities and those which are not performed, Panguipulli will reimburse Service Provider for the documented expenses incurred by the same for any commitments already undertaken that cannot be revoked without incurring financial consequences, or the documented amount of the above-mentioned consequences, whichever is greater.

The Service Provider can withdraw from the Contract in the cases envisaged by the law. In this case the Service Provider shall reimburse all the costs incurred by Panguipulli further any actual loss and loss of profit to be calculated by Panguipulli within 30 business day from the withdrawal notification.

16.3 TERMINATION

16.3.1 Prior to the shipment of the PB3 PowerBuoy[®] from Service Provider's manufacturing facility, Panguipulli can terminate the Contract in the cases envisaged by the applicable law and this Contract. Panguipulli shall not have the right to terminate this Contract after the PB3 PowerBuoy[®] has shipped from Service Provider's manufacturing facility, unless by reasons attributable to Service Provider. Terminations shall be subject to the cancellation clauses in the Service Provider's Proposal."

Section 16.3.1 (q) of the General Terms and Conditions (SEVENTH EDITION) is revised to state: "loss of even only one of the requisites necessary for the Qualification (where required), establishment and execution of the Contract with the exception that the Service Provider shall not be responsible or liable for site permitting or the consequences of Panguipulli or third parties being able to obtain or maintain required ocean permitting for the project"

11 Force Majeure

Section 17 of the General Terms and Conditions (SEVENTH EDITION) is supplemented by the following terms: “Without prejudice to the terms established above, at the end of the cause of force majeure, the Parties if economically feasible will agree on the extension of the contractual terms or the measures that can be implemented to fully or partially recover the time lost and so succeed, where possible, in executing the Contract within the original timeframes on a day for day basis extension to any scheduled date(s), except for changes in shipping schedules which will be a day for day basis extension from the next available shipping date.”

12 Labor Law and Occupational Health and Safety Obligations

Comply with the provisions of clause 18 of Annex II Chile

13 Indemnities

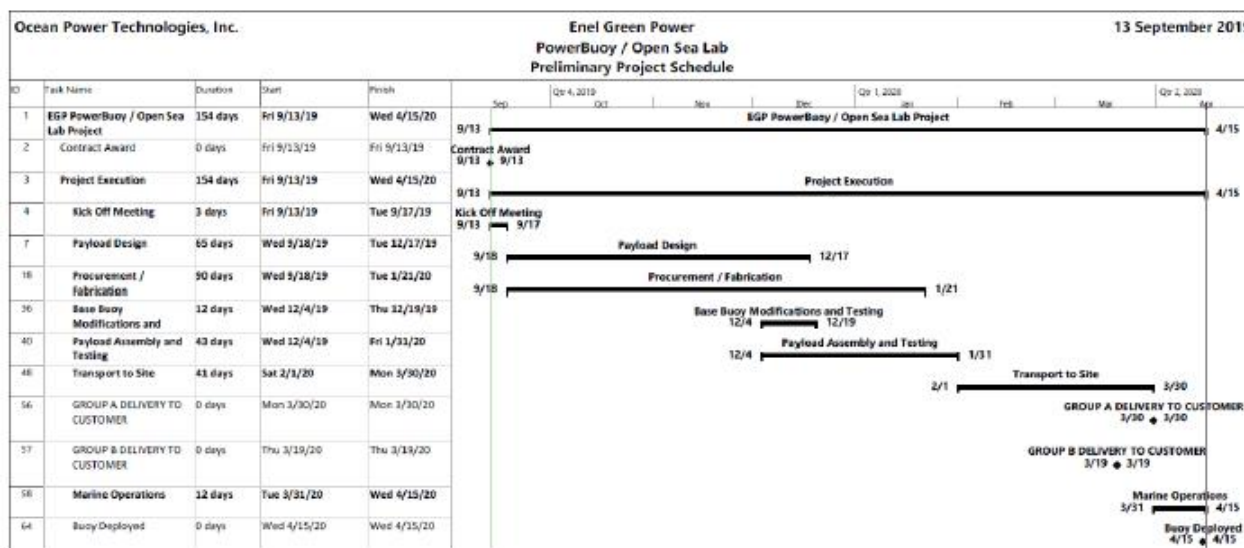
The Service Provider undertakes to indemnify Panguipulli from any liability deriving from claims or legal subpoenas of any kind, directly related to the Contract, both in court and out of court, which are the result of acts or failures to act on the part of the Service Provider or its employees, representatives or subcontractors. Once transfer of ownership and notwithstanding Section 15 below, the above-mentioned indemnity from the Service Provider shall be limited to liability associated with PB3 PowerBuoy® warranty provided herein, and any associated warranty on equipment or materials. All other warranties of any nature or kind are hereby expressly waived.

14 Penalties

The Service Provider acknowledges that if the PB3 PowerBuoy® is not deployed by May 15, 2020, this may cause damages to Panguipulli and therefore in case of delay by the Service Provider in compliance with the Delivery date of May 15, 2020. These will only apply if the Service Provider deploys this Contract later than May 15, 2020 and only if the delay was not caused by reasons attributable to Panguipulli or force majeure events.

Unless otherwise agreed, the penalty for delay shall be of 1% of the total amount of the Contract for each calendar week of delay, during the first four weeks, and of 4% as of the fifth week. The amount of the penalties shall not exceed the 10% of the total amount of the Contract. If such limit is exceeded, Panguipulli shall apply the penalty and may terminate the Contract according to the applicable law and Section 6.3 (i).

Table No.3. Project Schedule Part A



15 Limitation of Liability

Neither party to the Contract shall be liable to the other party for any indirect damages, loss of profits, or loss of production of the other party.

The responsibility of each of the parties for the execution of the Contract shall not exceed 100% of the total amount thereof, including price revisions or extensions. The penalties applied, as they do not have a compensatory nature, will not be taken into account for the calculation of the aforementioned limit.

The exclusions contained in this Section 15 and the limitation of liability set forth above shall not be applicable in cases in which the aforementioned responsibility of the breaching party comes from any of the following:

- (a) breach of criminal matters;
- (b) breach of protection of personal data or confidentiality;
- (c) breach of intellectual or industrial property;
- (d) breach of environmental matters;
- (e) breach of tax, salary, social security or health and safety.
- (f) breach of any third party's rights.

16 Confidentiality

The information provided to Panguipulli related to the performance of the PB3 PowerBuoy[®] and any related sensors and equipment provided hereunder in reports, studies and other deployments developed by the Service Provider under this Contract shall be deemed to be transferred in full to Panguipulli, who shall be fully empowered to complete, expand or modify the results obtained from such documentation, without any additional payment to the Service Provider. The parties expressly state that Panguipulli owns the information and documents that are gathered and prepared for the execution of the Contract.

Regarding the information that either Party provides (the “Disclosing Party”) to the other Party (the “Receiving Party”) on the occasion of execution of this Contract, the following is agreed:

- a) The Receiving Party acknowledges that certain documents and information properly identified as such that it will receive from Disclosing Party shall be confidential and must be kept strictly reserved, whether commercial, financial or technical, such as methodologies, processes, know-how, contracts, maps, designs, drawings, interpretations or geological, geophysical, technical and seismic information any other intellectual creation or contained in database and other archives and, in general, whatever its nature or the means in which it is contained. The aforementioned documents, background and information will be referred to as “Confidential Information”.
- b) The Receiving Party undertakes to maintain strict reserve and confidentiality in relation to the Confidential Information that it receives from Disclosing Party. This reservation and confidentiality obligation will not be applicable if the Confidential Information received has been published or is in the public domain, prior to the date of its disclosure.
- c) The Receiving Party may not disclose any part of the Confidential Information that it receives from Disclosing Party, except to those of its workers, officials, executives or advisors who have participation in the Contract for which the information will be used.
- d) Any breach by any worker, official, executive or advisor of the Receiving Party with respect to the obligation of confidentiality agreed, it will be understood that it is a breach of the latter, who cannot be excused on the grounds that said person had no relationship with her or that he had no control over that person.
- e) The Receiving Party must return to Disclosing Party all or any Confidential Information that it has delivered and / or file created by the Receiving Party, when required by Disclosing Party. The manner and conditions in which the Confidential Information must be returned will be determined by Disclosing Party in due course.
- f) This confidentiality does not create any type of association or grant any type of licenses between the Parties.
- g) This confidentiality will take effect from the date of its signature and its validity will be extended up to a period of 3 years from the date of termination of the services to be performed on the occasion of the Contract. In case of breach of the aforementioned obligations, the Receiving Party will indemnify Disclosing Party of each and every one of the damages that such breach may cause. However, this confidentiality will be fully governed in relation to the information that had already been provided as confidential, or that as of that date it would have been conferred such quality.

Finally, other than legally required disclosure pursuant to Section 16.1 below the Parties agree that without the prior consent of Panguipulli, the Service Provider may not make any publicity, press release, news dispatch or publication of any kind using the Panguipulli’s name, or that its content be related in any way with the Contract or with any technical information related to the Contract.

Violation of this clause may mean for the Receiving Party the termination or termination of the Contract, without prejudice to the legal actions decided by the Disclosing Party.

The processes, inventions, know-how, additional expertise and all other intellectual property developed by the Service Provider for purposes other than this Contract and not previously established, will remain the property of the Service Provider.

16.1 Form 8-k filings

As a condition of accepting this Contract and any work performed hereunder, Panguipulli acknowledges that the Service Provider is required to file and can file a current report as a FORM 8-K with the U.S. Securities and Exchange Commission (SEC) requirements that announces the execution of the contract, the date of such execution, that summarizes the material terms of the contract, and that discloses the entirety of the contract. In addition, Panguipulli agrees that the Service Provider can issue a press release announcing the execution of the contract, generally describing the contract, and revealing Panguipulli as a party to the contract. Such press release shall be previously approved by Panguipulli. The Service Provider may also be required to file a copy of the contract with the SEC and may redact some, none, or all material parts of the contract filed with the SEC. The SEC requires the 8-K and supporting information to be filed within four (4) business days of contract execution.

Panguipulli further acknowledges and agrees that additional 8-K filings for material events are required under SEC requirements and that these filings are anticipated to require the same details as the initial filing.

16.2 Press releases

Panguipulli also authorizes and acknowledges the Service Provider can issue, from time to time, additional press releases and social media posts about the project and progress of work. All press releases and social media posts must be previously approved by Panguipulli. Panguipulli shall cooperate to the fullest extent possible in the review of press releases and provide timely input into the planned release(s), social media, and other marketing and promotional materials as requested by the Service Provider.

16.3 Promotional Materials Including still images and video

Panguipulli may produce still photos, videos, and other project related materials (“Materials”) as a result of the work performed in the Contract. Panguipulli represents and warrants that it owns all right, title, and interest, including copyrights and other intellectual property rights and has all rights and authority necessary to grant a free temporary license to the Service Provider for use of these Materials. Service Provider is not required to provide any attribution when it uses, displays, or publishes the Materials. This license permits Service Provider to simultaneously use, display, and/or publish multiple copies of the Materials. This license also permits Service Providerto edit or modify the Materials, and/or add audio tracks or textual overlays to the Materials.

17 Intellectual Property

Sections 21.1 and 21.2 of the General Terms and Conditions of Contract are revised as stated below:

21.1 The Service Provider guarantees to Panguipulli, at all times and, if requested, will be obliged to prove to the same, by exhibiting documentation, its legitimate use of the brands, of patents for inventions, utility models and industrial designs or the relative licenses for said rights, as well as the mandatory license for the operation of and activity, when the same requires special authorization in order to perform the services/works/supplies that form the subject of the Contract. It must also prove that said brands and licenses fail to breach any third party rights.

In case of licences, these must be registered at the competent Offices, with Panguipulli reserving the rights to request that the Service Provider provide the relative documentation and/or proof of the same, if necessary.

The Parties agree that, with regard to the products of Panguipulli or samples that are delivered by Panguipulli to the Service Provider, and also with regard to the PB3 PowerBuoy[®] that is delivered by the Service Provider to Panguipulli, for the purpose of executing the Contract, the Service Provider and Panguipulli: (i) cannot, in any way, copy, reproduce, process, translate, amend, adapt, develop, decompile, disassemble, use reverse engineering (or, in any case, carry out operations with the purpose of extracting the source code) - fully or partially - of those products or samples of, Panguipulli, or the PB3 PowerBuoy[®], and (ii) guarantee that the prohibitions described above are also respected by the authorised persons involved and by those who, might be involved in the execution of the Contract on the part of the Service Provider or Panguipulli.

21.2 To the degree necessary or required, the Service Provider is responsible for obtaining the licences, permits and authorisations required from the owners of the patents, models and relative factory brands, as well as the required intellectual property rights, and for paying all rights and compensation due to these ends.

In case of supply contracts, should, as the result of a claim by the owners or licence-holders of the rights described in this article, Panguipulli be obliged to fully or partially change the materials to be supplied, the Service Provider will change these as soon as possible entirely under its own responsibility as long as this does not lead to a deterioration in the quality of the supply, the working characteristics and the guarantees. In the case described above, where envisaged by the type of supply and before following it through, a new prototype homologation and approval pathway will be instigated. Service Provider shall be responsible for any additional materials cost and Non-Recurring Engineering (NRE) expenses incurred due to a change in materials. In case homologation is not possible, the Service Provider shall reimburse Panguipulli all sums paid under this Contract.

Sections 21.4, 21.5, and 21.7 of the General Terms and Conditions (SEVENTH EDITION) are deleted in their entirety.

Section 21.6 of the General Terms and Conditions are modified to read: “The Parties acknowledge and accept that the pre-existing intellectual property rights of each Party will remain the sole property of each Party, and that the counterpart will not have any rights to these; The term pre-existing intellectual property rights is defined as all the current and future intellectual and industrial property rights, including, for example, patent applications, patents awaiting approval, rights regarding databases, copyright, commercial brands, rights related to commercial and industrial secrets and any application of these worldwide, software designs and models, know-how), belonging to each Party before the signing of this Contract or acquired subsequently during parallel projects that fall beyond the scope of this Contract.”

The sale or lease of the PB3 PowerBuoy[®], and equipment is subject to Panguipulli’s acceptance of a revocable, non-transferrable, fully paid up, worldwide license to use the PB3 PowerBuoy[®] and equipment for the intended or substantially similar application. Panguipulli agrees to use the PB3 PowerBuoy[®] and equipment in accordance with its design criteria, operate the PB3 PowerBuoy[®] and equipment in accordance with the Service Provider’s operating instructions and technical guidance instructions and memorandum, and perform maintenance as required by the Service Provider. Maintenance of the PB3 PowerBuoy[®] and equipment shall only be performed by the Service Provider and/or its authorized representatives.

Panguipulli further agrees not to modify the PB3 PowerBuoy[®] and/or equipment provided, unless strictly needed for maintenance purposes. The License includes proprietary procedures and specifications to Panguipulli under the proposed work. Panguipulli is also granted a license for use of the Service Provider’s Human-Machine Interface (HMI), remote monitoring software, the Service Provider’s Proprietary Software and Operating Systems, and any project related software necessary for the project. The foregoing information is collectively referred to as “Proprietary Information”. Panguipulli agrees to protect the Proprietary Information with the same level of care as Panguipulli’s own Proprietary Information. Panguipulli further agrees not to reverse engineer the Proprietary Information.

The Service Provider retains all ownership and rights to background Intellectual Property and any Intellectual Property developed under the Proposal.

18 Data and Communications Networks

This project will only generate buoy performance data and environmental data and is not subject to the Processing of Personal Data section of General Conditions or Annex II Chile.

Panguipulli will provide appropriate access for Service Provider’s use of and data transmission across Service Provider’s communications infrastructure. Panguipulli will need to be able to access Service Provider provided Internet site(s) via its own Information Technology (IT) infrastructure. Provisioning of this access and associated expenses are the sole responsibility of Panguipulli.

19 Applicable Legislation and Arbitration

This Contract will be governed and interpreted in accordance with the legislation applicable in the Republic of Chile. The Parties agree that for the purposes of this Agreement, the United Nations Convention of Contracts for the International Sale of Goods shall not apply.

Any difficulty or controversy that occurs between the contracting parties regarding the application, interpretation, duration, validity or execution of this contract or any other reason will be submitted to arbitration, in accordance with the Arbitration Procedural Rules of the Santiago Arbitration and Mediation Center, in force at the time of request.

The Parties confer irrevocable special power to the Chamber of Commerce of Santiago A.G., so that, at the written request of any of them, it designates an arbitrator regarding the procedure and of law regarding the ruling, from among the members of the arbitration body of the Arbitration and Mediation Center of Santiago.

There will be no appeal against the arbitrator's decisions. The arbitrator is specially empowered to resolve any matter related to its jurisdiction and / or jurisdiction.

The place of arbitration will be the city of Santiago de Chile.

The arbitration will be held in Spanish.

The Parties will be obliged to continue with the execution of the Contract for the entire duration of the dispute resolution process in question.

20 Representatives

Each party hereby represents and warrants that the representatives of each of the parties signing this Contract have the corporate and legal authorizations necessary for the signing and delivery of this Contract.

21 Copies

This Contract is signed in three (3) copies of the same tenor and date, with two (2) being held by Panguipulli and one (1) held by the Service Provider.

EMPRESA ELECTRICA PANGUIPULLI S.A

OCEAN POWER TECHNOLOGIES, INC.

By: */s/ Pamela Llanos Troncoso*

By: */s/ George Kirby*

Pamela Llanos Troncoso

George Kirby

12.262.136-7

Ocean Power Technologies, Inc

Representante Legal

Annex A: Scope of Work (SoW)

Scope Of Work

ID:
OSL System Supply

Classification
Restricted use

Date
29/08/19

Page
1 di 16

Marine Innovation

Merix - 2.2 Open Sea Lab (OSL) project

ECIM Las Cruces - Valparaiso CL

Part A - Wave Energy Converter (WEC) System Supply

Part B - OSL Balance of Plant

Roberto Suffredini

Rel. 01 - 27/08/19

RESTRICTED USE

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ABSTRACT

This document is related with the Enel Green Power (EGP) participation at Meric project in Chile, and in particular regard the Validation Test Bench (2.2 VTB) subproject activities that EGP has in charge as EPC contractor inside Meric.

In the frame of VTB, EGP must supply and deploy a wave energy converter (WEC) that will be made available as the main component of the VTB's layout.

The Power Buoy 3 (PB3) WEC produced by Ocean Power Technologies Ltd (OPT) has been preselected as only of the WEC technologies suitable to cover the scientific requirement asked by the VTB project, having compliant size and reliability.

To proceed toward the full definition of the VTB project, now defined "Open Sea Lab - OSL", the OPT PB3 supply, customisation, shipment, mooring and deployment matters have been preliminary assessed with the necessary details in order to define their feasibility, timing and costs at the location of Valdivia (Chile). That have been carried out by mean of a specific feasibility study performed by OPT in Q4 2018.

Afterwards, blocking issues on Valdivia site obliged to move the OSL site to another place close to the PUC ECIM marine laboratory at Las Cruces, near San Antonio port. An integration of the feasibility study already done on Valdivia has been necessary. The relative activity has been done by OPT last June 2019 and will be compensated within this contract.



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1. ACRONYMS & DEFINITION

Hereinafter shall be assumed the following acronyms and terms definitions:

- sow: Contract Scope of Work
- EGP: Enel Green Power Chile Ltd and all the companies owned by
- OPT: Ocean Power Technologies Inc. Hereinafter "Provider"
- PB3: PB3 PowerBuoy[®], WEC developed by OPT
- WEC: Wave Energy Converter, hereinafter intended as the OPT PB3 PowerBuoy[®]
- MERIC: Marine Energy Research & Innovation Center
- EM: Energia Marina SPA, the company managing MERIC project
- ECIM: Estacion Costera de Investigaciones Marinas (ECIM Universidad Cat61lica)
- PUC: Pontificia Universidad Cat61lica de Chile (PUC)
- VTB: MERie's Validation Test Bench project
- OSL: Open Sea Lab (evolution of VTB project)
- CORFO: Corporaci6n de Fomento de la Producci6n (CL)
- DAQ: Data Acquisition System
- DAP: Delivered at Place (Incoterms 2010)
- DDP: Delivery Duty Paid (Incoterms 2010)
- Payloads: The offshore systems connected to the PB3 Power Supply and Communication System
- OSL BoP: Balance of Plant (BoP) are intended all the OSL systems, onshore and offshore, excluded WEC and the related mooring system

1. INTRODUCTION

MERIC is a Chilean research centre on marine renewable energies funded by Chilean Government CORFO agency. EGP is its partner.

The VTB (Validation Test Bench) is a subproject inside the MERIC's activities. The VTB, now hereinafter defined Open Sea Lab (OSL), is an offshore laboratory that has as main goal to verify the behaviour of a WEC prototype deployed in a real ocean condition and its reciprocal influence with the sea environment.

The MERIC research lines related to the OSL operation are focused on the following topics:

- a) Resources modeling and coupling with power generation forecast
- b) WEC's environmental impact
- c) Characterisation of environment biofouling, biocorrosion, abrasion models and solutions
- d) WEC's mooring technology adaption
- e) Marine energy storage and hybridization

Inside the Meric's planned activities EGP has in charge the OSL project with the both roles of EPC contractor for the OSL's Balance of Plant (BoP) Engineering, Procurement and Construction and as the supplier of a WEC deployed at OSL. The availability of a WEC supplied by EGP to the OSL will be in the frame of the EGP in-kind contribution to the Meric project.



The OSL location has been selected close to San Antonio, in the Valparaiso region, central Chile. More in detail the OSL will be deployed at ECIM and in an offshore area front it. The ECIM is a coastal facility owned by the PUC.

The geographical coordinates of the offshore area conceded to EM for the deployment of the OSL are identified by the following table

VERTICES	LATITUD (S)	LONGITUD (W)	MEDIOAS v DESLINDES
1	33° 30' 27,3"	71° 38' 32,4"	A - B 501 M.
2	33° 30' 27,3"	71° 38' 13Y	B - C 506 M.
3	33 30' 43,T"	71 38' 13,8"	C - D 492 M.
4	33° 30' 43,7"	71° 38' 33,1"	0 - A 508 M.

The final layout of OSL installation, inside the above area, shall be defined by OPT in accord with EGP Chile, previously to the deployment and taking into account the best operational condition.

The OSL will be implemented in name of the Chilean company Energia Marina SPA (EM), that is managing the MERIC project. The company EM owns the permit necessary to deploy the OSL offshore.

The present sow defines the subjects of two separated contracts having the objectives:

- A. The supply, deployment, commissioning and test of a WEC of an already defined type, assumed to be the PowerBuoy® PB3 supplied by the OPT company. The contents of this contract is defined as "Part A".
- B. The supply, deployment, commissioning and test of the BoP of the OSL system. The contents of this contract is defined as "Part B".

Due to funds management requirements, the above mentioned contracts A and B will be issued by two different companies of Enel Green Power Chile Group.

2. SAFETY

The Contractor must apply all the possible cautions to avoid any incident to the people involved in the works object of the contracts here defined. The documents shall be the reference for this activity:

- ENEL GROUP - HSE Terms - FIRST EDITION - valid as of 01/03/2019
- BASES TECNICAS HSEQ CHILE GRE__CHL_QSE_MN_OI_Vers.5 09/11/2018

All the offshore operations shall be subjected to the related local Chilean laws. In particular all the divers personnel operating underwater must be professionals, having valid licence for that kind of operations.



3. SCOPE OF WORK (SoW)

The guidelines of the SoW for this contract will be mainly defined by the following considerations:

- a) EGP intend to assign a turn-key solution for the both Part A and Part B, as described in the following scope of supply. Will be defined two separate contract for Part A (WEC) and Part B (OSL BoP).
- b) Starting in 2018 a study of the feasibility of the OSL system has been carried out by the collaboration from OPT, EGP and MERIE's partners. The first option of the OSL was selected in Calfuco, Valdivia, Los Rios CL. Due to permitting issues, a second and definitive one has been identified at Las Cruces, San Antonio CL, based on the ECIM facility onshore, owned by PUC.
- c) The authorisation for the deployment of the WEC and the offshore parts of OSL has been obtained by Energia Marina SPA (EM) on gth August 2019 (Permiso de Escasa Importancia no. 12250/23VRS).
- d) The off shore area within which the contractor must deploy the WEC and the OSL offshore systems are identified by the geographical coordinates indicated in chapt. 1.
- e) Based on the results of some previous shared activities, OPT has made available some technical specifications and costs estimations in order to identify the supplies and services necessary to provide the WEC and the OSL BoP system (Parts A and B). These activities were carried out by the following previous assignments:
 - i. *Contract 8400128406, Release 2018.19.04, "Feasibility Study of deployment of the PB3 for Enel Green Power MERIC VTB Project"* a feasibility study on the VTB/OSL project at the site of Calfuco, Valdivia CL, contracted by EGP NA
 - ii. *OPT Proposal No. 060519KPS - Las Cruces Site Visit and Evaluation, 12th June 2019*, agreed with an e-mail confirmation on 13th June 2019. After the site survey performed from 25th to 28th June 2019, OPT identified the activities considered necessary by them in order to define the operative conditions at the different Chilean site of Las Cruces, and integrate the Feasibility Study (i.) performed in Calfuco on 2018. These activities will be compensated within this contract.
- f) EGP has supplied to OPT the necessaries information about the met-ocean and geomorphological conditions at the Las Cruces site (see Annex 1).
- g) The results of the works performed with the previous activities e) have been a full assessment about feasibility, timing and costs of the OSL deployed at the site of Las Cruces, that will consent to define this final contract to supply the WEC operating at the OSL, and the OSL's Balance of Plant in a frame of minimum uncertainty and risks.
- h) In the SoW and contract related to Part A will be included some operations or services connected to other components or systems that make up the full OSL layout. In particular will be included the operations necessaries to install the Part B (e.g. some sensors and communication systems) into the PB3 itself or to deploy the offshore components of Part B. The complete works necessary to carry out the OSL BoP will be subjected to the contract issued for the Part B.
- i) The shipment of the components related to the Part B and Part A shall be organised in in order to facilitate the customs operations at destination terminal in San Antonio. The customs operation for the Part A will be in charge Empresa Electrica Panguipulli S.A. (OAP Incoterms 2010) and Part B to Enel Green Power Chile S.A. (DDP Incoterms 2010).



- j) The systems object of the contract Part A and Part B will remain in complete responsibility of the Provider until the final acceptance test.
- k) The Provider shall make available electrical and mechanical drawings and manuals of all OSL components as available from the component manufacturers, and general arrangement drawings of the PB3 and OSL system. Moreover, all the information necessary to manage the data from and to the OSL systems. OSL component data shall be provided in native format in accordance with manufacturers' standard communication protocols.

The details of the SOWs will be defined in the text following.

4. **Part A - PowerBuoy® PB3 Solution**

Ocean Power Technologies, Inc. (OPT) shall provide one PB3 PowerBuoy® - with nominally 50 kWh on board battery storage and its deployment at the MERIC OSL site, which is approximately centred at 1.2 km off the coast of ECIM at Las Cruces, Chile in an average water depth of 35 meters. The provision which will be the object of the activities here defined shall consist of the items following.

It is assumed that the PB3 WEC will be fully assembled at the OPT facility in USA to the extent possible, with minimal final assembly required on site. The shipment will be configured to manage that configuration.

The OSL system will be composed by the Part A and Part B, with some parts or operations shared, purchased by two distinct companies with two separate contracts, having differentiated modalities in terms of VAT and taxes management. The aggregation of the different items is functional to different taxes application as well.

Part A - Scope of Work

The Part A provision is intended to be a Turn-Key solution, assumed to be a the supply and deployment, commissioning and test offshore and onshore at Las Cruces as indicated in the present SoW and in: "*Part A Proposal for Enel Green Power in support of the Marine Energy Research and Innovation Centre (MER/CJ Open Sea Lab (OSL); VOLUME 1 - TECHNICAL OFFER*" dated 23rd July 2019 (EGP-001-02A) hereinafter "**TS A**". Will be included:

- A. No. 1 PB3 PowerBuoy® WEC having nominal 50 kWh storage capacity on board, 3G/4G communications, ready to host no. 6 load sensors for mooring system, a long range WiFi connection, a Data Acquisition and temporary storage system and a connection to a payload supply and communication subsea cable, as described in TS-A 2.1 *PowerBuoy®*
- B. Three point mooring system for the PB3 WEC defined in A., as for TS-A 2.2 *Mooring Equipment*.

This Turn-Key solution shall be compensated with a global single fixed price. Included one year of guarantee and remote monitoring.



All the risks on the final price due to uncertainties, mainly in the deployment phase, will be mitigated by the provider itself, assuming insurance covers.

With this contract related to Part A will be compensated also the Las Cruces site survey works already carried out by OPT on June 2019, and some activities related to the Part B contract hereinafter described, highlighted by (#).

Part A - Detailed List and Sequence of Supplies and Operations

Here below is a list of items located and described with the sense of time of execution and the logical process toward the final result. The description of the supplies and services related to the contract for the Part A will be necessarily integrated with some references to the Part B.

1. Site survey

Site survey of Las Cruces ECIM, San Antonio port and to the other possible support facilities in the area in order to assess the needs for WEC system components movement, staging, final assembly and deployment. Performed in Chile from 25th to 28th June 2019 as for the OPT Proposal No. 060519KPS on 12 June 2019.

2. WEC supply

PB3 WEC supply as for OPT technical specification EGP-001-02A 23 July 2019, designed for a three point mooring, with 3G/4G communication system and a nominal 50 kWh storage system on board, ready to connect a subsea cable to supply payloads deployed on the seafloor. Delivered OAP (Incoterms 2010) at Las Cruces, Chile.

3. Three points WEC mooring system - Components from USA

Supply from USA of some mooring parts and other Part A components other than WEC itself. Supplied Delivered OAP (Incoterms 2010) at Las Cruces, Chile.

4. Part A from USA and Part B shipment (Ill

Shipment of components 2. and 3. will be under OAP (Incoterms 2010) condition. In that shipment will be included the Part B goods. The shipment of the Part A and Part B goods must be arranged to facilitate the customs operations, taking into account that the goods will be related to two separate contracts. The shipment document must have indicated two distinct destination companies: Part A must be addressed to Empresa Electrica Panguipulli S.A. (DAP Incoterms 2010) and Part B to Enel Green Power Chile S.A. (DDP Incoterms 2010). Before the shipment is planned to be done the Factory Acceptance Test FAT of the available components at the facility OPT in Monroe NJ USA. The procedures for the FAT shall be defined and agreed between the contracting parts at least within 60 days before the FAT itself.

Note: Part A - Customs Operations

All the customs operations related to the Part A goods shipped by USA (items 2. and 3.) shall be not in charge to the provider OPT and will be excluded from the present Part A SoW. A Custom Agency will be engaged by EGP Chile Group in order to perform the customs operations and the direct payment of the due customs taxes (VAT/duties/) and deliver the goods customs free, ready for the following steps of this SoW. In the Commercial Invoice will be indicated the values of the goods shipped plus the cost of shipping and related insurances (must be indicated DAP value).



Note: Part 8 - Customs Operations

All the customs operations related to the Part 8 goods shipped by USA shall be in charge to the provider OPT who will provide direct payment of VAT and other due taxes. These costs must be estimated before the contract is issued and will be paid in advance by EGP to OPT. The commercial invoice must be indicated DDP value. We recommended to use customs Agency Patricio Sesnich by legal reason.

5. Part A and Part B USA components unload (#).

Unloading of the goods coming from USA and movement them to a temporary staging position at San Antonio port. Included the Part B goods.

6. Residual mooring components supplied from Chile

Supply of the components of the WEC's mooring system and eventual other WEC auxiliary parts that the contractor OPT will buy on Chilean market and that will be deposited at the same place described here in 7. (Note: These components and related services will be invoiced to OPT by the Chilean providers and the final cost for the customer will include VAT).

7. Part A and Part B components staging (#).

Staging of the Part A and Part B goods at a secured area at San Antonio port, within the deployment date.

8. Part A and Part B components assembling

Before the final deployment, the full OSL offshore system, Part A and Part B, will be preassembled, connected and pre-commissioned at the staging site at the San Antonio port.

Here the cost related to Part B activities will be compensated by the specific Part B contract. The procedures for pre-commissioning and test on shore shall be defined and agreed between the contracting parts with in the arrival of the goods in Chile.

9. Part A and Part B offshore components final deployment

The Mooring System, the PB3 WEC and all the part B OSL offshore components will be deployed preferably at the same time, without interruption of continuity.

10. Part A and Part B offshore components test

After the deployment indicated in 9., shall be done a full OSL system commissioning and test. The procedures for final commissioning and test shall be defined and agreed between the parts within the arrival of the goods in Chile.

11. One year guarantee and remote survey

Starting from the final acceptance test indicated in 10. will start a 12 month period of guarantee on the correct behavior and faults of the Part A OSL system. The details are indicated on the document EGP-001-02A released 23 July 2019.

In any case OPT shall make available to EGP the remote read-only HMI application installed on the local shore station that shall consent to EGP or other MERie's partner to monitor by remote the behavior of the PB3.



Part A - Survey and maintenance after guarantee period

Before the issue of the Part A contract, must be negotiated and defined the terms and costs of extraordinary maintenance and remote survey for a sequential period of three year of operation after the expiration of the guarantee. This cost shall be provided as an option, and shall not be considered part of the base scope of the contract. In detail:

- a. The consistency and the cost for extraordinary maintenance after three years operation;
- b. The consistency and the monthly cost for remote survey after the 12 month of guarantee.

Part A - Milestones:

The milestones are the following:

<u>No.</u>	<u>Milestone</u>
1	Contract signature
2	PB3 and other goods (Part A &B) ready to ship at OPT factory NJ, after FAT
3	Arrival of the Part A&B goods at San Antonio port. Customs cleared
4	OSL fully deployed, after final acceptance test



5. Part B - OSL Balance of Plant

With a separate contract, in addition to such indicated in the previous chapter 4. Part A, Ocean Power Technologies, Inc. (OPT) will provide all the necessary systems necessary to complete the layout of the OSL.

The definition of the OSL scheme has been carried out with the works of the *Contract 8400128406, Release 2018.19.04, "Feasibility Study of deployment of the PB3 for Enel Green Power MERIC VTB Project"* a feasibility study on the VTB/OSL project at the site of Calfuco, Valdivia CL, contracted to OPT by EGP NA.

Is necessary to highlight again here that the OSL system will be composed by the Part A and Part B, with some parts or operations shared. Part A and Part B will be purchased by two distinct companies with two separate contracts, having differentiated modalities in terms of VAT and taxes management. The aggregation of the different items is functional to different taxes application as well.

Part B - Scope of Work

The Part B provision is intended to be a Turn-Key solution, assumed to be a the supply and deployment, commissioning and test offshore and onshore at Las Cruces as indicated in the present SOW and in: "*Part B Proposal for Enel Green Power in support of the Marine Energy Research and Innovation Centre (MER/CJ Open Sea Lab {OSL}; VOLUME 1 - TECHNICAL OFFER*" dated 9th August 2019 (EGP-001-02A) hereinafter "**TS-B**". Will be included:

- A. WiFi long range/high capacity communications between WEC and ECIM shore station (*Superpass, Cradlepoint*). Included onshore LAN management server (*DELL*) having temporary storage system minimum ITB SOD RAID capacity and Internet connection capability, as described in TS 2.1 *PowerBuoy® and Shore Based Communications*. The Local Area Network (LAN) shall be standard Ethernet 802 both in the wireless (802.11) than in cabled part. The Lan must be protected by password and shall have a firewall as interface toward the external networks. Preferably all the data storage systems must be solid state SSD. Will be useful to have a 360° short range WiFi 802.11 network around the PB3, to connect the LAN network from vessels during maintenance operations. All civil works preparation for radar basement, cable ducts and main power supply {AC} at ECIM shore station will be excluded from Provider's scope of supply.
- B. Data acquisition system (*National Instrument cRio*) located on board the PB3, type, included offshore ITB {SSD} storage (buffer) system, as for TS 2.2 *Data Acquisition System Components*
- C. Mooring sensors system, composed by six load pins (*Strainsta/1*) installed each one at the mooring lines connection points, as for TS 2.3 *Mooring System Sensor Components*
- D. Two water quality sensors (*NKE SAMBA*n, installed at approximately - 5m and -15 m below min sea level, included seafloor junction box, and suspension guide line with floater. Removable for periodical cleaning and calibration needs, as for TS 2.4 *Water Quality Sensors*.
- E. Acoustic Doppler Current Profiler ADCP (*Nortek AWAC*) deployed on seafloor in the prevalent wave field direction at least 75 m far from the PB3, connected to the PB3 power supply and communication network, as for TS 2.6 *Acoustic Doppler Current Profiler*. The ADCP position shall be defined taking into account the need to avoid any interferences between the measurement space and the WEC, mooring lines and payload cable.



- F. X-band wave radar system to be roof installed at ECIM. Supplied by Nortek and based on the SeaDarQ oil spill detection systems, composed by an outdoor microwave/antenna system (Sperry) and an indoor rack included a 19" server with storage, an HMI monitor, an UPS rack system. As for TS 2.7 *Radar Station*. If the provider intend to subcontract the x-band radar supply and installation then this is to be declared before the contract signature, for the application of the contractual related topics. The company indicated to be the x-band radar system supplier and installer must have not less than 5 certificated references on previous supply and installation of SeaDarQ x-band radar system
- G. Umbilical cabling from PB3 and junction boxes located on seafloor, the junction boxes itself and two seabed layed umbilical connection to water quality system and ADCP, as necessary to provide subsea power supply and communication, as for TS 2.5 *PowerBuoy® Junction Box for Umbilical Cabling*
- H. **(Optional)** Meteorological station composed by:
- Datalogger SIAP DA18K
 - Electrical panel in IP66 polyester (50Lx65Hx25P), photovoltaic panel power supply and 120Ah max battery
 - Photovoltaic panel and pole support for measuring stations with medium energy consumption (Ppk [W]: 50-60)
 - Rechargeable 38Ah 12Vdc battery complete with cable and fuse
 - Transducer Speed and ultrasonic wind direction heated with 12 m cable
 - Barometric transducer range 700 / 1100hPa with very high precision (IVS outputs) with 3 m cable. Specific calibrations on request.
 - Transducer Global thermopile solar radiation first class ISO 9060 with output O + 2Vdc, 4 +20mA, RS485 with 4 m cable
 - Thermohygrometric transducer outdoor, Pt100 (T) and O + Vdc (RH) outputs with 4 m signal cable
 - Rain gauge with 200cm² mouth area relay contact output with 12 m cable Turn-key supplied, installed and tested at ECIM Las Cruces.

This Turn-Key solution shall be compensated with a global single fixed price. Included one year of guarantee for the PB3 and mooring, and manufacturers' warranties for OSL components.

All the risks on the final price due to uncertainties, mainly in the deployment phase, will be mitigated by the provider itself, assuming insurance covers.

Some operations necessities to carried out the Part B of the OSL are intended included and compensated in the part A one. The activities that be interlaced with the Part A are evidenced here with the mark (@).



Part B - Detailed List and Sequence of Supplies and Operations

Here below is a list of items located and described with the sense of time of execution and the logical process toward the final result. The description of the supplies and services related to the contract for the Part B will be necessarily integrated with some references to the Part A.

1. Components acquisition and verification

The components of the Part B provision will be designed, specified, purchased and partially assembled and tested at the OPT factory in NJ USA. The communication protocol between the different systems will be implemented there in order to be confident in the final results at Las Cruces and avoid problems during the pre-acceptance test at San Antonio. The preliminary test of all the offshore and on shore Part B system, excluded the radar system, will be part of the FAT to be planned there for the PB3 as well, before the shipping. After FAT will be packed and prepared for shipping preferably.

The procedures for the FAT shall be defined and agreed between the contracting parts at least within 60 days before the FAT itself.

2. Part B and Part A shipment from USA (@)

The shipment of the Part B components have to be organized in synergy with the Part A ones, taking into account the different operations at the Chilean port.

The radar components, if considered useful, will be shipped in a separate way from the supplier to the destination place at ECIM Las Cruces, Chile.

The shipment will be considered here from DDP (Incoterms 2010) condition at Las Cruces, Chile. In that shipment will be included the Part B goods.

Note: Part A - Customs Operations

All the customs operations related to the Part A goods shipped by USA (items 2. and 3.) shall be not in charge to the provider OPT and will be excluded from the present Part A SoW. A Custom Agency will be engaged by EGP Chile Group in order to perform the customs operations and the direct payment of the due customs taxes (VAT/duties/) and deliver the goods customs free, ready for the following steps of this Sow. In the Commercial Invoice will be indicated the values of the goods shipped plus the cost of shipping and related insurances (must be indicated OAP value).

Note: Part B - Customs Operations

All the customs operations related to the Part B goods shipped by USA shall be in charge to the provider OPT who will provide direct payment of VAT and other due taxes. These costs must be estimated before the contract is issued and will be paid in advance by EGP to OPT. The commercial invoice must be indicated DDP value. We recommended to use customs Agency Patricio Sesnich by legal reason.

3. Part B and Part A USA components unload I (@)

Unloading of the goods coming from USA and movement them to a temporary staging position. Included the Part A goods. This cost will be included and compensated in part A costs.

4. Part B and Part A components staging (@)

Staging of the part A and Part B goods at a secured area at San Antonio port, within the deployment date.



5. Part A and Part B components assembling

Before the final deployment, the full OSL offshore system, Part A and Part B, will be preassembled, connected and pre-commissioned at the staging site at the San Antonio port.

The procedures for pre-commissioning and test on shore shall be defined and agreed between the contracting parts within the arrival of the goods in Chile.

Here the cost related to Part B activities will be compensated by the specific item in Part B contract.

6. Part A and Part B offshore components final deployment (@)

The Mooring System, the PB3 WEC and all the part B offshore components will be deployed preferably at the same time, without interruption of continuity. Part B deployment cost will be compensated inside the Part A one.

7. Part A and Part B offshore components test

After the deployment indicated in 9., shall be done a full OSL system commissioning and test. The procedures for final commissioning and test shall be defined and agreed between the parts within the arrival of the goods in Chile. The cost of this operation will be compensated within the Part B costs.

8. One year guarantee and remote monitoring

All the systems supplied with the Part B contract will be subjected to manufacturers' standard warranties.

Beyond the surveillance of the PB3 itself, already provided in A, OPT will evaluate the feasibility of a remote monitoring system, in a period no longer than 6 month from OSL starts, with the intention to verify eventual anomalies and fault in the OSL BoP system supplied with Part B contract. For clarification, development of the OSL remote monitoring system is not included in base scope of work and shall be estimated as a contract option.

Part B - Survey and maintenance after guarantee period

Not necessary.

Part B - Milestones

The milestones are the following:

<u>No.</u>	<u>Milestone</u>
1	Contract signature (payment included taxes)
2	Part A &B FAT at OPT NJ factory
3	OSL fully deployed, after final acceptance test
4	Expiration of 12 months of guarantee time



6. MEETINGS AND SITE VISITS

Within 30 days from the contracts signatures will be held a kick-off meeting between OPT and the EGP representatives. Video or audio conference. Project status update meetings shall be held on a regular basis via audio conference.

Site visits will be planned for:

- The FAT at OPT Monroe TS NJ
- The acceptance test at San Antonio port before deployment
- The final commissioning and test at Las Cruces

Video and audio conferences will be possible always, after previous agreement.

7. DOCUMENTATION

All the documents here described or necessary to perform the SOW will be exchanged between the party.

In particular after 30 days from the contract signature shall be sent a the final general arrangement drawing of the full OSL systems with data sheets for each OSL component provided.

8. DELIVERABLES

The following documentation, in English language with all the necessary attachments (i.e. database, GIS file, pictures, movies, etc.), will be included in the scope of work:

- Update of the Feasibility Study of deployment of the PB3 for Enel Green Power MERIC VTB Project as agreed on OPT Proposal No. 060519KPS - Las Cruces Site Visit and Evaluation, 12th June 2019.
- Reports will be redacted by OPT and/or consultants contracted by EGP after the FAT, the Acceptance test at San Antonio, and the final test at Las Cruces.

9. TIME SCHEDULE

The deadline for both Part A and Part B final test at Las Cruces will be the 31st March 2020



Annex 1

Met-ocean and geomorphological conditions at Las Cruces site

1. Bathymetry

- PDF map with isobats every 5 m.
- Database in GIS format (ArcInfo) with bathymetric model layer and background type layer in shp and csv format.

2. Type of Seabed

- PDF with background type map, classified as sand or rock.

3. Waves

- Wave data processed. Full report and analysis

4. Currents, Wind and Temperature

- Characterization report of coastal currents measured at 25m deep in Cartagena Bay, in different periods of time.
- Report Characterization of winds measured locally in Cartagena Bay
- Water column thermal structure report
- Daily maximum current data at two depths in csv format
- Daily wind time series data





Annex B: General Terms and Conditions and Annex II Chile (SEVENTH EDITION).

GENERAL PART

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1. SCOPE.

1.1. These Terms and Conditions of Contract (hereafter referred to as “General Conditions” or “General Part”) regulate the contractual relationship between companies belonging to the ENEL Group (hereafter also referred to as “ENEL”) and its Contractors (hereinafter jointly referred to as the “Parties”) regarding the acquisition of materials, equipment, works and services.

1.2. The General Conditions are intended to form one document comprising of the present document and the Country Annexes. Whenever the Contract must be performed in a specific Country, the corresponding Country Annex shall be applied, as it provides the specific clauses applicable in the specific Country.

1.3. These conditions shall also apply, without prejudice to any other agreement to the contrary and taking into account the order of precedence set out in clause “INTERPRETATION AND HIERARCHY”.

1.4. The Agreement (as defined below) refers to the Web page on which these general Conditions may be consulted, and copy in an electronic/hard copy format will be sent to those who do not have access to the Webpage and have requested.

1.5. Any exceptions to these General Conditions proposed by the Contractor shall be valid only if made in writing and accepted by ENEL; and shall only apply to the Contract it is related and will not be applied neither to any pending contract nor to any other contract that will be signed with the same Contractor.

2. DEFINITIONS.

The following definitions, among others, apply to this document:

- Contractor: any individual or legal entity (even grouped) that execute with a contract for works, services and/or supplies.
- Electronic signature: digital signing system which, where applicable and in accordance with the legislation of each Country, allows the verification of the identity of the signatories to the same extent of a certified handwritten signature, and which certifies any communication sent by the given signatory and the source and integrity of a given electronic document or a set of electronic documents.
- Economic guarantee: set of document that the Contractor delivers to ENEL concerning the economic guarantee the former has to provide in favour of the latter for the exact fulfilment of all contractual and other obligations.
- Final Receipt Document: document (e.g. a report) confirming the final receipt and acceptance of purchased materials or equipment, the works or services and the expiration of the Warranty Period.
- Global Procurement Portal (PortalOne): ENEL Portal which Contractors can access in order to operate with ENEL on-line.
- Provisional Receipt Document: document (e.g. a report) which records:
 - 1) the successful outcome of inspection and testing activities in regard to particular equipment or material received from ENEL; this document also records any necessary modifications or corrections of deficiencies that are found during the inspection and testing or
 - 2) the successful outcome of a works progress examination, the exact performance or completed correction of the service, and compliance with technical standards and contractual clauses relating to the various phases of activities under the Contract.
- Subcontract: contract with which the Contractor entrusts the performance of contractual services to third parties.
- Taxes: any taxes, duties, or any other charge in general, as determined and levied by the relevant authority/local laws applicable to an individual Contract in accordance with current regulations.
- Contract: the set of all contractual documents as specified below, that regulate, in writing, the obligations of the Parties and the acquisition of materials or equipment and/or the performance of a given works or the provision of a given service:
 1. Agreement (or “Lettera d’Ordine” in Annex Italia, or “Cuerpo principal del Contrato” in the Brazil, Chile, Colombia, Spain, Peru, Portugal Annexes, or “Acuerdo Comercial” in Mexico, Guatemala, Costa Rica and Panama):the document that includes the name and identifying data of the Parties, specifies the scope and the duration of the Contract that provides the economic, administrative and regulatory terms and that lists and refers to all of contractual documents that form the Contract.
 2. Particular Conditions: a document that provides the specific terms applicable to a given Contract;
 3. Technical-Economic documents:

Technical Specifications: the document that contains the technical requirements related to the Contract;

Consideration or Price List: the document that provides the economic consideration to be paid for the specific services rendered by the Contractor, which may be grouped per category;

Any additional documents: other documents related to a specific Contract (e.g. description of the works and interventions; graphic and

descriptive design print-outs; time schedule, etc.).



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4. HSE Terms: the document that governs the Parties obligations in connection with health, safety and environment matters of the Contract. The HSE Terms is available on the ENEL Global Procurement Web page.
5. General Conditions: this document as supplemented by the relevant Country Annex (containing the specific clauses applicable to the Contract in each Country).

IJ Warranty Period: period of time for the duration of which the Contractor has to ensure the proper functioning of the products/works, or that the products/works are flawless and fit for their use.

3. LANGUAGE.

3.1. The original version of this General Part is in english. The original version of each Country Annex is in the language indicated in the relevant Country Annex . The original version of the remaining contractual documents shall be that indicated in the Agreement or in each of the contractual documents.

3.2. Notwithstanding the foregoing, any amendment or supplement to the Contract shall be made in writing.

4. EXECUTION.

4.1. The Contract is executed through each Parties' signing. by signing the Contract given an electronic signature - the Contractor declares its full and unconditional acceptance of the same.

4.2. The Contract shall not be automatically renew neither tacitly extended. Any additions and/or subsequent additional contractual terms, or deletions of contractual clauses provided in a given Contract, do not have any validity in terms of amendment of General Conditions and are limited to the given Contract.

4.3. In case of agreements executed by ENEL with the Contractor for the benefit of two or more companies belonging to the ENEL Group, the Contract shall be considered as executed by and between the given companies of the ENEL Group that will actually be receiving the service, the works or the supply and the Contractor or its subsidiaries or associated companies or permanent organisations located in the same Country as the ENEL Group company.

5. INTERPRETATION AND HIERARCHY.

5.1. In the case of conflict or incompatibility among the contractual documents of the Contract, the priority and precedence shall be determined according to the following order:

1. Agreement ;
2. Particular Conditions (if present);
3. Technical-Economic documents (Technical Specifications, Consideration List or Price List, *any* additional documents);
4. HSE Terms (the document that governs the Parties obligations in connection with health, safety and environment matters of the Contract).
5. General Conditions. The General Conditions are intended to form a single document comprising of the present General Part and the applicable Country Annex . In the case of conflict between the General Part and the Country Annex, the Country Annex will prevail.

5.2. In any case, should a conflict arise between the contractual documents and mandatory provisions of the applicable law, the mandatory provisions of the applicable law shall prevail.

5.3. Without prejudice to clause "APPLICABLE LAW", should any doubts and/or conflicts arise on the Interpretation of a Contract, it shall be amicably resolved by the Parties, in accordance with the subject matter and purpose of the Contract and in compliance with the same Contract.

5.4. In the event of discrepancies between the original version of the present General Part, drafted in English and its translations into other languages, the original version in English shall prevail. In the event of discrepancies between the original version of a Country Annex and its translations into other languages, the original version in the official language of the given Country shall prevail.

5.5. It shall not be held that a Party has waived any right, power or claim provided in the Contract unless such waiver is explicitly declared in writing to the other Party. The waiver of a right, power or claim shall not imply a waiver of any future right, power and claim even if the letters are of the same nature of the former.

5.6. In the event of any provision of the Contract being held invalid, such invalidity shall not affect the remaining provisions of the Contract, which may be applied without the invalid provision being in forec. The Parties, taking into account the cope of the Contract and by a mutual agreement, shall seek to amend the invalid provision in such a way that it complies with its original purpose as much as possible.



6. COMMUNICATIONS.

6.1. Any communications between the Parties shall be made in writing, at the location or address and in the manner stated in the Contract. The Parties undertake to promptly report each other any change of location and address. In the absence of such report, communications shall be deemed effective if sent in the agreed manner to the addresses referred to in the Contract.

6.2. ENEL reserves the right to use electronic procedures for the exchange of documents relating to the Contract. Unless otherwise agreed in the Contract, electronic means of communication may be used, provided that they allow the tracking of any communication.

6.3. The Contractor shall abide by and promptly give effect to all communications it receives from ENEL, without any further formalities.

7. ECONOMIC CONDITIONS.

7.1. Price.

7.1.1. The price of the Contract is the consideration agreed for the acquisition of materials and/or equipment and/or for the performance of works or services, and it takes into account the total value of the Contract. It includes everything necessary for the full performance of the contractual services, and everything that has to be provided or performed by the Contractor, including all costs or charges saved what is due for services and items that have been explicitly excluded and the taxes imposed by the applicable legislation.

7.1.2. All prices shall be listed in the Contract in the manner provided for therein.

7.2. Modification of Prices.

7.2.1. The prices are fixed and invariable. A price change may occur if provided in the Contract and/or required by the applicable law.

7.3. Invoicing.

7.3.1. Invoices shall be valid and ENEL shall accept them only if they contain all information required by the Contract and by the applicable regulations, and only if the activities referred thereof are have been duly carried out. Invoices not referring to the specific Contract number shall neither be accepted nor considered for purpose related to the date of their receipt. Even if the Contract provides the payment of invoices in different currencies, any single invoice must be issued under a single currency.

7.3.2. ENEL may return to the Contractor invoices that:

1. are not reporting information or data that are required by the Contract and/or the applicable law;
2. compute that have not been authorised by ENEL;
3. are issued in a currency other than that provided in the Contract.

In case of return of an invoice, ENEL shall specify the grounds for returning invoices. The return an invoice excludes the original receipt date of the same. Unless otherwise agreed in the Contract, all invoices and, where applicable, the mandatory attached documentation shall be sent to the address provided in the Contract.

7.3.3. Invoicing may be carried out as follows:

A. Using ENEL'S Electronic system /Procurement Portal):

The Contractor, under the terms and conditions set forth in the Contract, and after having obtained the necessary authorisation to invoice from ENEL (invoices shall report the quantities supplied and/or the services provided in the amount corresponding to the one invoiced) amount indicated therein), shall issue the relevant invoices.

Upon receipt of the authorisation to invoice from ENEL and in accordance with contractual provision, the Contractor shall send the invoices, which have to include all data required by mandatory applicable laws, by using an Electronic systems (e.g. EDI) that ensure the authenticity and integrity of the information provided in the invoices.

In accordance with the law on electronic invoicing, the Contractor may send ENEL invoices issued in an electronic format. This method ensures the integrity of the data thereof and the univocal attribution of the document to the issuer.

B. Without using Electronic systems:

In the event of electronic systems being not available and/or applicable legislation not allowing electronic submission and electronic invoicing, the Contractor, in compliance with the terms and conditions set forth in the Contract, after having obtained the necessary authorisation to invoice from ENEL (invoices shall report the quantities supplied and/or the services provided in the amount corresponding to the one invoiced) shall issue the relevant invoice, and send the original to the invoicing address indicated in the Contract.



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In the case referred to under sub-clause 4.3, in case the works/services/supplies are performed by a subsidiary or the Contractor or by an associated company or by permanent establishment of the same in the given Country the ENEL Group companies are established, the invoicing must be provided directly by its subsidiaries or its subsidiary, its associated company or its permanent establishment in the same Country in which the ENEL Group company is located.

7.4. Payment Conditions.

7.4.1. All payments shall be made by ENEL by bank wire transfer, in the manner and within the time limits set out in the Contract.

7.4.2. To this end, the Contractor undertakes to communicate to ENEL all necessary bank data. The Contractor has the obligation to promptly report to ENEL any changes to its fiscal and general data (such as: VAT number, address, company name, etc.) and any change of ownership/corporate shareholding. Failure to communicate the above information may result in the suspension of payments of invoices that contain data that are not up to date.

7.4.3. Exceptionally, ENEL may accept other legitimate and valid means of payment, in accordance with the law applicable to the relevant Contract.

7.4.4. The payment of the invoiced amount(s) shall not imply that ENEL has acknowledged that the Contract to has been properly performed by the Contractor or that ENEL has waived its rights and claims against the Contractor, as any payment is made without prejudice to any future right or claim.

7.4.3. ENEL may, if allowed by the applicable law and if provided in the Contract, withhold or suspend payments due to the Contractor, even if they are due and payable.

7.4.4. In case of a delayed payment by ENEL, if such a delay is imputable to ENEL, default interest shall be payable to the Contractor in accordance with the provisions of the Contract and with the applicable law.

7.5. Payments defennent.

7.5.1. Without prejudice to clause 7.4 "PAYMENT CONDITIONS", ENEL reserves the right to propose a deferment of the payment to the Contractor. The Contractor has the right to accept or refuse the above-mentioned deferment proposal.

7.5.2. In the event of the Parties agreeing to defer the payment's terms:

Regardless of the provisions in the General Conditions/applicable Country Annex, the new terms and conditions of payment agreed between the Parties and indicated in the Contract shall prevail;

ENEL will pay the Contractor a deferral charge in an amount calculated on the basis of a market reference rate (e.g. US Libor, Euribor) recorded on the day of issue of the relevant. deferred invoice plus a spread for the days between the due date originally stated in the General Conditions/ applicable Country Annex and the agreed deferred due date.

7.5.3. Deferral charges, determined as above, will be paid by ENEL al the same time and in top of the amount due pursuant to the deferred the invoice. This understood that in the event of a delayed payment also in respect of the agreed deferred due date, ENEL shall pay default interests, as stated in the General Conditions/ applicable Country Annex.

8. TAX.

8.1. While paying Contractors for goods/works/services received, ENEL shall apply a withholding in accordance with tax and welfare contributions legislation (with fiscal effect) applicable in the Contractor's Country of residence and/or pursuant to any other law applicable to the Contract.

8.2. The Parties mutually undertake to fulfil all obligations, to deal with all the paperwork and to deliver all documents necessary for the proper payment of taxes, including withholdings and other legal obligations applicable to the Contractor, in compliance with the procedures set forth by the applicable law. Similarly, the Parties undertake to cooperate in order to obtain exemptions or other tax benefits applicable to the Contract. If, due to a lack of diligence or any other cause imputable to the Contractor, ENEL loses an entitlement to a tax benefit, it may discount the amount of the tax benefit it has not been able to take advantage of from the amount due to the Contractor.

8.3. Should treaty between the Contractor's Country of residence and the Country of residence of the relevant ENEL Group company be in force in relation to the avoidance of double taxation, and the Contractor claims the application of the provisions of such a treaty, the Contractor must provide ENEL with its certificate of tax residency (or any other declaration/certificate necessary for the application of provision against double taxation) for the purposes of classification of the nature of the income under the treaty against the double taxation, the Contractor shall take into account the interpretation in force in the Country in which the ENEL Group company is located. This certificate is, generally, valid for one year, unless the legislation of the Country in which the ENEL Group company is located establishes a shorter period. In any case, when upon expiration of the validity of each certificate, the Contractor shall submit another valid certificate.

8.4. If ENEL is required to make deductions from payments due to the Contractor, upon request from the latter, ENEL shall issue a certificate referred the deductions applied and more specifically to the amounts paid and to the amounts withheld.



8.5. If materials or equipment are sent from abroad, the taxes shall be paid as follows:

- a) The Contractor shall pay all taxes and charges applicable to goods in the countries of origination of those goods and those applicable in the countries through which said goods have transited until final delivery, plus all the taxes charged in the Country of destination which are payable as a consequence of to the economic benefits obtained from selling them.
- b) The Contractor shall also pay the expenses and import taxes or equivalent in the Country of destination, as well as other official customs charges on the imported materials and/or equipment, unless otherwise agreed with ENEL.

8.5. Taxes on national materials or equipment shall be paid either by ENEL or by the Contractor, according to the provisions of the applicable law.

9. PERFORMANCE.

9.1. Introduction.

9.1.1. The Contractor, if required by the Contract, shall be obliged to appoint and maintain, throughout the performance of its activities pursuant to the Contract, one or more representatives with full authority to discuss technical and economic matters, with particular reference to safety and occupational health, work-related social obligations and respect for the environment.

9.1.2. ENEL reserves the right, during the performance of the Contract, to object said representative(s) for cause. In such a case, the Contractor shall be obliged to appoint a different the representative(s) within ten (10) working days, unless otherwise provided in the Contract.

9.1.3. ENEL undertakes to provide, upon request of the Contractor, all necessary information for the performance of the activities covered by the Contract. If the data provided by ENEL is insufficient or incomplete, the Contractor undertakes to request missing information in good time.

9.1.4. ENEL has the right to check and verify the performance of the Contractor of all obligations under the Contract and in compliance with all instructions issued by ENEL, the proper and timely performance by the Contractor of all activities necessary for the fulfilment of the Contract in accordance with the terms and conditions set forth in the same Contract.

9.1.5. Without prejudice to its right to terminate the Contract, if ENEL, at the outcome of said checks and inspections, in any manner and at its sole discretion, determines that the Contractor has operated in breach in the exact performance of the Contract - also by making only errors or inaccuracies - the Contractor shall remedy the deficiencies at its own expense; no contractual deadline will be postponed while the Contractor remedies its deficiencies.

9.1.6. Unless otherwise agreed, ENEL personnel and/or third parties designated for that purpose at ENEL discretion, shall be given access to the Contractor's workshops or warehouses and/or those of any Subcontractor, in order to verify the manufacturing, and testing phases and be informed about the processing cycles, as well as to verify the performance of the works or services, and the materials used by the Contractor. It is agreed that any such access, as well as any observations thereof, shall not in any way constitute an interference and/or a limitation of the autonomy of the Contractor in the performance of contractual activities.

9.1.7. ENEL reserves the right to request to the Contractor, at any time, the anticipation of all or part of the performance object of the Contract and the right to evaluate a possible recognition of an economic bonus. ENEL may request the anticipation with a specific written request and the Contractor will communicate, always in writing his agreement, expressly accepting the new deadline requested by ENEL. It is understood that the Enel request to anticipate does not produce an automatic recognition of the economic bonus, even though specifically accepted by Contractor. The recognition of the economic bonus, to the extent indicated in the contract, remain subject to the specific acceptance of Enel and subject to the aforementioned anticipation is carried out by the Contractor in full compliance with all its legal and contractual obligations, especially in the field of work, health and safety. No bonus can be recognized if penalties have been applied to the Contractor during the execution of the contract.

9.2. Inspection, tests and/or verification (testing).

9.2.1. If the Contract provides for the implementation of inspections, testing and/or checks they shall be performed as follows. Without prejudice to ENEL's right to inspections the Contractor is obliged to carry out, at its own cost, all tests and inspections agreed upon that need to be carried out in accordance with the applicable standards and administrative regulations, or those generally applied. The Contractor shall communicate in writing to ENEL the date on which these activities will be carried out with a minimum ten (10) days in advance notice. Similarly, the Contractor shall communicate the results of the tests or checks carried out and recorded in the relevant certificates or protocols to ENEL, even if they were carried out in the presence of ENEL inspectors or representatives.

9.2.2. The Contractor may not begin any manufacturing, construction or assembly phases, or ship materials, before the inspections and the testing have been successfully completed, where preventive inspections and testing are required, nor before having obtained a written authorisation from ENEL, after the completion of the testing, or prior to the elapse of a ten (10) day period from the notification of inspection and testing by the Contractor without ENEL having issued any order to the contrary.

9.2.3. ENEL may carry out tests or inspections in addition to those provided for in the Contract, if it deems it to be necessary. If these tests are successful, any additional costs shall be borne by ENEL; if they are unsuccessful, the additional costs shall be borne by the Contractor.



9.2.4. The successful outcome of any inspections, tests or checks, neither imply that the scope of the Contract has been fully implemented with and approved by ENEL, nor it exonerate the Contractor from any liability.

9.2.5. Failure by ENEL to make any complaint about the performance of the contractual services, even after the inspections and tests above, shall not constitute any limitation to the Contractor's liability if it ultimately fails to fulfil its contractual obligations, even if such a failure is ascertained at a later date.

9.2.6. If the results of inspections or testing or checks that are carried out show any breaches of the provisions of the Contract, ENEL shall require the replacement or restoration of the equipment or works, at the Contractor's expense and at no cost for ENEL. If ENEL requires the replacement of certain materials they will have to be clearly identified and the Contractor shall not be able to use them in the following performance of the contractual activities.

9.2.7. The duration and methods for carrying out inspections, testing and checks shall in no case be invoked by the Contractor as a reason or justification for deferring the delivery date provided in the Contract.

9.3. Conditions for delivery and receipt.

9.3.1. Introduction.

9.3.1.1. Deliveries, including partial deliveries, must be made on the dates or by the deadlines specified in the Contract.

9.3.1.2. If a strict deadline is not indicated in the Contract and only a term for completion, or delivery is established, such a term shall run from the date the Contractor begins the performance of the contractual activities or from the date the Contract was executed.

9.3.1.3. The advance of the completion date or the reduction of the contractual term are admitted only upon explicit consent by ENEL. In such a case, the aforementioned authorisation shall not determine an earlier payment from ENEL of all or part of the given consideration.

9.3.1.4. The completion date or the term for completion may not be postponed nor extended, unless for reasons imputable to ENEL or a consequence of force majeure.

9.3.1.5. The Contractor is obliged, at its own expense, to implement any mean to make up for, as much as possible, for any delay on the contractual deadlines and terms, even when the delay is justified.

9.3.2. Materials and/or equipment.

9.3.2.1. If provided in the Contract, the Contractor shall send ENEL, fairly in advance, a specific communication prior to perfect delivery of the materials/equipment. Similarly, the Contractor agrees to immediately notify ENEL of any circumstances which alter the agreed delivery deadlines.

9.3.2.2. Unless otherwise provided for in the Contract, terms such as ownership, insurance, etc., shall be interpreted in accordance with Incoterms.

9.3.2.3. The delivery of materials and equipment shall be carried out to the location specified in the Contract.

9.3.2.4. All equipment and materials shall be property identified, accompanied by proper information and labelled for their correct and easy acceptance at destination and by a receipt that shall include the information specified in the Contract.

9.3.2.5. Transport to destination and unloading shall take place under the responsibility of the Contractor, also in accordance with clause "INSURANCE". If the type of material requires it the Contractor shall obtain from the competent authorities transit permits, licenses, authorisations or police protection in order to transport the materials and it shall bear all costs related to any work this may entail, such as: transit deviations, bridge buttresses, signs, etc.

9.3.2.6. The Contractor shall insure the transportation of goods with a good standing insurance company.

9.3.2.7. The signing of receipts, shipping documents or evidence of transmission shall not affect the acceptance of the quantities or quality specified for the materials received.

9.3.2.B. ENEL, while considering that the delivery deadlines have been met reserves the right to delay any shipment of materials or equipment. In such a case, the Contractor shall be responsible for all costs of storage and insurance for the period defined in the Contract. Should the delay in shipment be prolonged, the Parties shall, by mutual agreement, establish the amount of compensation for the additional costs of storage and insurance.

9.3.2.9. Once ENEL receives the material or equipment, a Provisional Receipt Document shall be prepared which indicates the positive outcomes of testing or inspections and final acknowledgement, or highlights the rectification or correction methods applied to remedy the defects identified. If no final tests and/or checks are required, delivery of the materials and equipment by the Contractor is formalised by the approval of its receipt by ENEL.

9.3.2.10. The Contractor may not - under any circumstances and, therefore, even in the event of disputes - suspend or slow down the performance of contractual activities.

9.3.2.11. If the above mentioned obligations are breached, ENEL reserves the right to terminate the Contract, without prejudice to its full right to compensation for any damages it has suffered.

9.3.3. Similar Works and/or Services.



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9.3.3.1. The Contractor shall inform ENEL, fairly in advance, of the final date of completion of the works, so that the date and time of the works to be completed can be established. ENEL shall reply as soon as possible, and not later than 30 days from being notified. On the date agreed by the Parties for the formalisation of the works completion Provisional Receipt Document, the status of the works or service shall be examined, in the presence of the Contractor's representative to determine whether they comply with the Contract's requirements.

9.3.3.2. This Provisional Receipt is completed when specific tests have been satisfactorily carried out and the good condition of the works or services required by the Contract have been proven. This document must be signed by both Parties.

9.3.3.3. If the examination of the works or service does not show a satisfactory result or the testing displays negative results, ENEL, as an alternative to Contract termination, may draw up a document (e.g. a report) in which it shall point out the defects and the term for the Contractor to correct them. Once this term has elapsed, additional checks shall be carried out, and if successful, a document certifying the completion of the works shall be drawn up (e.g. a report). In case of negative outcome of the checks, a new document shall be produced (e.g. a report) with an indication of the defects identified, and ENEL may choose to terminate the Contract or to grant the Contractor new deadline to correct the defects.

9.3.3.4. The aforesaid deadlines granted to the Contractor to remedy the defects identified shall not be considered an extension to the terms of the Contract and therefore, the Contractor shall be held liable for penalties and/or compensation for damages.

9.3.3.5. If the Contractor considers it necessary to express its disagreement on certain technical or financial aspects, it must ensure they are included in the document (e.g. a report) drawn up by ENEL, specifying the reasons for these disagreements. Any disagreements shall be settled in the manner specified in the Contract.

9.3.3.6. After the warranty period expires, the Contractor shall notify ENEL of said expiration and request the final acceptance. Following this request, ENEL shall inform the Contractor of the final acceptance date. final acceptance must take place within the period referred to in the Contract.

9.3.3.7. On the date agreed by the Parties for the final acceptance, the status of the works or service shall be verified in the Contractor's presence, and the fulfilment of the required conditions shall be verified by carrying out the necessary tests.

9.3.3.8. ENEL shall show its approval by drafting the specific Final Receipt Document (e.g. final acceptance report), to be signed by both Parties, and which shall certify the full performance by the Contractor of its obligations. The above-mentioned document produced by ENEL shall be valid in any case, as if it was also signed by the Contractor. even when the latter, despite having been informed is not present.

9.3.3.9. If the Contractor considers it necessary to express its disagreement on certain technical or economic issues these must be included in the document drawn up by ENEL, including the reasons for such disagreement.

9.4. Changes to contractual terms.

The activities covered by the Contract shall be carried out in accordance with the terms specified in the Contract. Any postponement of the contractual terms must be agreed in writing by ENEL and the Contractor.

9.5. Transfer of ownership and risk.

9.5.1. Materials and/or Equipment.

9.5.1.1 Unless otherwise provided in the Contract the materials, properly packed in accordance with the Contract, shall be deemed to all intents and purposes to be the property of ENEL upon receipt at the location and under the agreed conditions and/or at ENEL warehouses, offices and/or plants. It is agreed that, unless otherwise provided the unloading shall be carried out under the Contractor's responsibility and at its expense.

9.5.1.1 Notwithstanding the above the Contractor authorises ENEL to take possession of the materials and equipment, in whole or in part, as soon as they become part of works or are in place at an installation owned by ENEL, and to use them in ENEL'S works or installations, unless such authorisation is limited by ENEL for justified reasons. Where such authorisation is given, ENEL may use or include the materials and equipment in its development processes and may make use of the results of these processes. In any case the Contractor, up to the time the risk is transferred to ENEL, must have an insurance in place with adequate coverage for the materials and equipment, even if they are already in the possession of and used by ENEL.

9.5.2. Works.

9.5.2.1. The outcome of the contractual works shall be owned by ENEL upon execution of the Provisional Receipt Document.

9.5.2.2. Without prejudice to the rights of the State or third parties, ENEL reserves the possession and ownership of all discoveries made during excavations and demolitions that take place on its own land, as well as of all usable mineral substances. In such a case, the Contractor shall take all necessary precautions or the precautions that shall be indicated by ENEL. ENEL shall pay the Contractor for any additional activities and/or additional costs that may arise and, if necessary, grant an extension of the period of performance.

9.5.2.3. Without prejudice to the provisions of the preceding sub-clauses, ENEL reserves the right, at any time, to require the Contractor, who shall be obliged to comply, unless there is a justified reason not to, to transfer ownership of the works, installations, materials and equipment existing on the site. In this case, the Contractor may continue to carry out the works and shall continue to be liable for installation risks until the Final Receipt Document is completed.

9.5.2.4. In any case, until the transfer of ownership to ENEL is perfected, the Contractor must be insured, with adequate coverage, even if the materials, as well as any other results of the works the Contract concerns, are already owned and used by ENEL.



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9.5.3 Quality.

In the Contract performance, the Contractor guarantees that the quality of goods, services and works object of the contract, fully satisfy the purpose pursued by the Parties upon the signing of the Contract itself. The Contractor guarantees in the contract performance the compliance with the quality requirements indicated in the technical documents part of the Contract itself and he is responsible for maintaining commercially acceptable quality control standards in the production of a product or in the performance of the service or work, including production standards required by any local government entity and good manufacturing practices.

10. ASSIGNMENT OF THE CONTRACT AND SUBCONTRACTING.

10.1. The Contractor must perform the contractual activities on its own. The assignment to Contract to a third party is allowed only upon ENEL explicit authorization and, in compliance with any applicable law. Provided above, all contractual activities can be subcontracted to the extent allowed by the relevant Country legislation.

10.2. With regard to works, services and supplies, the Contractor can subcontract up to the percentage of 30% of the total amount of the Contract Agreement, except other limit directly indicated in the Contract Agreement.

10.3. A self-employed worker is deemed as a Subcontractor.

10.4. Taking into account national legislation, the subcontracting is regulated as follows:

while bidding for the Contract, the competitors have indicate, also in case of variations, the works/part of works or the services or supplies/part of services or supplies that are object of the subcontracting;

the subcontracting agreement is filed with to ENEL before the effective start of;

upon filing of subcontracting agreement to ENEL, the main Contractor has to transmit to ENEL the certification proving that the Subcontractor meets all the requirements for the perfection of the subcontracted activities along with a declaration that states the compliance with general requirements stipulated by the national legislation;

only one round of subcontracting is permitted; therefore subcontracted activities may not be executed or performed using any further level of subcontracting, unless required by local laws in a specific Country.

10.5. The Contractor pays the safety costs' related to the activities entrusted in subcontracting 2, to the Subcontractor without any reduction. ENEL checks the effective application of these provisions by means of a reference contact appointed for Contractor management and supervision.

10.6. The Contractor must act in compliance with the rules and with regulations on salaries that are established in the "collective work contracts" in force in the specific Country; if applicable in compliance with local regulations, the Contractor is jointly liable with the Subcontractors for the compliance with those rules and regulation and -as indicative and not exhaustive- with all its safety, salary, contributions and insurance obligations provided to the employees involved in the performance of the subcontracted activities.

10.7. In any case, the Contractor remains completely and exclusively liable towards ENEL for the due performance of the Contract. Any recourse to of Subcontractors neither exclude nor limit the obligations undertaken by the Contractor, who shall remain liable regarding ENEL for the performance of the Contract, as well as for the payment of compensation for damages to third parties.

11. ASSIGNMENT OF RIGHTS AND RECEIVABLES.

Unless otherwise agreed in the Contract, the Contractor shall not assign or transfer to third parties, in whole or in part, the rights or claims credit arising out of the Contract, nor can he carry out any other activities which result in any change, for any reason, to all or part of the above-mentioned rights.

12. THE CONTRACTOR'S OBLIGATIONS.

12.1. The Contractor is fully responsible for everything that is necessary to execute the contractual services, and in any case for everything that is indicated as its responsibility in the Contract, and in particular, for the following:

- carrying out inspections, testing and checks required by the Contract and/or regulations applicable to the Contract, as well as all for all costs arising therefrom;
- managing and obtaining visas, authorisations and licenses necessary for the performance of the Contract, except those that are under the responsibility of ENEL by provision of law;
- organising its personnel, employed in various capacities in the performance of contractual activities, provided that at all times the Contractor's responsibility is clearly identified and separated from that of ENEL;
- the appointment of a person in the Contractor's own organisation to act as ENEL'S referring individual during the performance of the Contract;

¹ Cost for the measures adopted to eliminate, or if not possible, to reduce health and safety risks caused by several works activities which interfere with each other.

² Where stipulated by the national legislation.



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- the labour required to perform the Contract with all its associated costs.

12.2. In case of foreign Contractors, and before the start of the works, the Contractor must ensure that “key people” (such as foreman, supervisor, site manager etc) are able to understand and communicate in the official language of the relevant Country or in that established in the Contract (both in writing and orally).

13. THE CONTRACTOR’S RESPONSIBILITIES.

13.1 The Contractor, under its sole responsibility, shall comply with the applicable law and regulations required by the relevant authorities in relation to the Contract.

13.2 The Contractor shall be liable for the proper fulfilment of its legal and fiscal obligations, as well as for its contractual responsibilities towards its contractors and Subcontractors.

13.3 If the Contractor is represented by a group of two or more entities, each of them is jointly and severally obliged to comply with all provisions of the Contract and for the performance of the Contract in accordance with applicable legislation.

13.4 The Contractor is obliged to prevent any situation that could give rise to conflicts of interest and therefore must take all necessary measures for their prevention and identification, and it has to immediately inform ENEL of any conduct that may give rise to a conflict of interest.

13.5 The Contractor agrees to indemnify and hold ENEL harmless from any liability and prejudice arising out any claim or legal proceedings of any kind which are directly related to the Contract, both judicial and extrajudicial, arising from acts or omissions by the Contractor or its employees, representatives or Subcontractors.

13.6 The aforementioned indemnity includes any amount that ENEL would possibly have to pay both for expenses and costs of any kind as a result of claims or judicial summons; in any case, without prejudice to its right to defend itself. Failure by the Contractor to comply with this clause is considered a serious breach and shall entitle ENEL to terminate the Contract for breach of the Contractor.

14. THE CONTRACTOR’S WARRANTIES.

14.1. The Contractor shall warrant:

- a) the suitability, exclusive ownership and/or legitimate availability of all materials and/or equipment and that they are all free and clear from any lien;
- b) that all materials and equipment:
 - comply with the relevant legal requirements, specifications, standards as well as with the contractual provision;
 - are free from visible or hidden defects;
 - are fit for their intended use;
 - are of the required quality level;
 - are not used;
- c) that the works comply with all contractual requirements and are in any case suitable for their intended use.

14.2. The warranty period for the materials and equipment, as well as the works/services and all other warranties provided, shall extend to the whole duration of for in the Contract.

14.3. The warranty shall not cover defects or failures that are caused by misuse or incorrect use by ENEL, except in cases where the misuse or incorrect use derives from the application of the incorrect or confusing content of manuals or instructions provided by the Contractor.

14.4. The warranty applies to defects in design, construction and hidden defects and to anything that is specified in the Contract. Pursuant to the warranty the Contractor is obliged to carry out, as soon as possible and at its own expense, any repairs or replacements that may be necessary , including the removal and transportation of defective parts. In particular, the Contractor undertakes to:

- a) replace, as soon as possible or in any case, within the timeframe set forth in the Contract, all materials and equipment that do not comply with the provisions or requirements thereof , and all those that are inadequate or of poor quality. Such materials and equipment shall remain in storage at ENEL’s facilities until they are replaced, without prejudice to ENEL’s right to use the rejected materials until they are replaced;
- b) fix, repair or replace equipment that has design, materials, labour, manufacturing, functioning or performance defects;
- c) replace all materials and equipment provided in the event of any defects in series, thereby justifying the solution adopted to prevent those defects being produced in the remaining materials or equipment that need to be supplied. A series defect is considered to exist when the percentage of defective materials and equipment covered by the Contract exceeds the percentage established in the Contract, or if it is not specified, when the percentage exceeds 10% of the total;

- d) return the equipment/sites made available by ENEL in the same condition in which they were delivered;
- e) indemnify ENEL from any claim made by third parties.



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14.5. The above-mentioned obligations, and all expenses for various reasons arising from the execution of the warranty, shall be the sole responsibility of the Contractor, without ENEL being liable for any charges or costs.

14.6. ENEL shall always be entitled to take decisions, which shall be duly communicated to the Contractor, regarding the correction and adjustment or repeated performance, construction or assembly of anything found to be defective. ENEL may order, for justified reasons, adjustments, corrections, repairs or temporary replacements and all related costs shall be borne by the Contractor, pending arrival of the new parts or new construction or assembly, as required.

14.7. In any case the remedies referred to in sub-clause 15.6. shall be pursued by the Contractor as soon as possible, so that ENEL is affected as little as possible and in a manner that will not cause delays in the completion of the works or determine any interruption of service of any installation or, if this is not possible, by minimising the delay or the time for which installations are totally or partially unavailable.

14.8. If the Contractor fails to comply with the obligations referred to in this clause, ENEL shall be entitled to adopt any appropriate measure independently, or by recouring to third parties' assistance, at the Contractor's expense. The Contractor shall also be obliged to compensate ENEL for any damages or losses it has suffered, as provided for in the Contract.

14.9. The warranty period is suspended on the date on which ENEL's decision is validly communicated to the Contractor, and it shall accordingly be extended until completion of all repairs, replacements or new assembly activities, or works that must be carried out under the warranty.

14.10. Spare parts are also subject to the above-mentioned warranty.

14.11. When the warranty period has satisfactorily terminated and any anomaly, defect or deficiency found or produced during this period have been remedied, in the event of the Provisional Receipt Document having been previously signed, the Final Receipt Document shall be executed and the economic guarantees provided by the Contractor may be released.

14.12. The expiration of the warranty period or the final acceptance of the materials/works covered by the Contract, does not release the Contractor from liability for defects or for hidden defects or from any other liability pursuant to the applicable by law or under the Contract.

15. PENALTIES.

15.1. Without prejudice to the provisions of sub-clause "TERMINATION", the failures of the Contractor to meet the delivery dates set forth in the Contract, both partial and final, or any other breach of obligations provided for in the Contract, may result in the application of a penalty by ENEL, in accordance with the agreed terms and conditions. The above penalties do not exclude nor limit ENEL's right to compensation for any further damages.

15.2. If the total amount of penalties applied exceeds the threshold specified in the Contract, ENEL reserves the right to terminate the Contract at any time

15.3. Should ENEL be deprived, during the warranty period, of the availability or use of materials or equipment covered by the Contract or the completed works or assembled installations due to a defect, imperfection or damage not attributable to ENEL, or because of deficiencies in the performance of the activities carried out to remedy said defects, ENEL may apply the penalties provided for in the Contract.

15.4. The application of the prescribed penalties shall not exonerate the Contractor from responsibility under the provisions of clause "THE CONTRACTOR'S WARRANTIES" above, or under clause "SUSPENSION, WITHDRAWAL AND TERMINATION".

15.5 The procedure for the collection of any penalties shall be carried out in the manner and within the period prescribed in the Contract or in the applicable law.

15.6 Failure to apply one or more penalties does not imply a waiver by ENEL of the application of similar penalties, or of those that subsequently originate from the same cause.

16 SUSPENSION, WITHDRAWAL AND TERMINATION OF THE CONTRACT.

16.1. Suspension.

16.1.1. If, for any reason, ENEL considers it necessary or is obliged to temporarily suspend all or part of the performance of the Contract, it shall send a written communication to the Contractor, stating the cause and providing an estimate of its duration of said suspension. The suspension shall take effect as of the date stated in the notification. The Contractor must, from that date, cease the activities and store and maintain the materials, equipment and works, without prejudice to all the obligations that derive from the current legislation and / or are established in the Contract.

16.1.2. The resumption of activities will have to be communicated in advance from ENEL by means of a written notice to the Contractor, and it shall take place no later than the day set out therein. The remaining term for the completion of the suspended part of performance of the Contract will begin to run from that date. The Contractor shall have the right to receive payment, as defined in the Contract, for the activities/project already carried out. Payment of activities/projects that are, upon notification, in advanced stages of implementation and not provided for in the Contract, shall be negotiated between the Parties.

16.2. Withdrawal.





16.2.1. ENEL may withdraw from the Contract at any time, no matter what stage of the work, activities and projects is reached. The withdrawal shall be communicated in writing with acknowledgment of receipt and will be effective from the date ENEL will communicate which activities are to be completed and which are to be stopped immediately. The activities duly carried out by the Contractor prior to the cancellation date will be paid by ENEL in accordance with the contractual prices. ENEL shall reimburse the Contractor, upon review of the related satisfactory evidence provided by the Contractor that have been interrupted and for those that have not been performed. To this end ENEL shall reimburse the lower amount between (i) the one equal to the expenses incurred by the Contractor in relation to those activities, for orders that have become irrevocable and (ii) the one equal to the actual economic prejudice suffered by the Contractor.

16.2.2. The Contractor may withdraw from the performance of the Contract in accordance with the provisions of the law applicable to the Contract.

16.3. Termination.

16.3.1. ENEL may terminate the Contract in the cases contemplated by law and *I* or in all cases stipulated in the Contract and *I* or in the following cases, where there is a cause that impedes or significantly affects the correct performance of the Contract:

- a) the death of the Contractor, in the case of a natural person, or, for both Parties, a change in their capacity that prevents, or modifies the performance of the Contract substantially .
- b) the dissolution, transformation, reduction of capital or significant changes in the governing bodies of any of the Parties, in the event that said changes have a negative impact on the performance of the Contract, or in the event that said changes on the part of the Contractor contravene the "ETHICAL CONDUCT RULES" of ENEL.
- c) the reduction of capacity or economic *I* financial solvency or any other type of legal difficulty, or of any other nature that affects the normal fulfillment of the obligations of any of the Parties.
- d) the interruption or unjustified suspension by the Contractor of the performance of the Contract.
- e) the total amount of the penalties eventually applied for delay during the execution of activities reached the maximum specified in the agreement or the delay of contractor is such to not fully satisfy the scope of contract established by ENEL.
- f) the impossibility of the Contractor to obtain certificates on time and the necessary approvals for the correct performance of the Contract in relation to its own products or activities, or any loss thereof while the Contract is in force .
- g) the inability of the Contractor to remedy the breaches of the corresponding technical specifications and *I* or in case of repetition of errors or defects or breaches in relation to the instructions provided by ENEL.
- h) the inability to perform or the breach by the Contractor and *I* or its Subcontractors or a third party appointed by the Contractor of the contractual activities or any of the requirements in accordance with the legislation in force.
- i) failure to comply with the obligations related to intellectual property, confidentiality and the processing of personal data, in accordance with the laws applicable to the Contract.
- j) the verification at any time, after the signing of the Contract, of any omission or lack of veracity of any information or statement offered by the Contractor in relation to compliance with legal, economic, financial, technical or contractual conditions.
- k) the incorrect performance of the Contract for reasons attributable to a Subcontractor or to any person named by the Contractor and *I* or the non-payment of compensation for damages caused to any person.
- l) any other breach by the Contractor that could impede or materially and adversely affect the satisfactory performance of the Contract, or any other reason specified in the Contract as a reason for termination.
- m) the refusal of the Contractor to execute any activities under the Contract.
- n) the refusal of the Contractor to resume the performance of activities under the Contract that ENEL (for any reason) has ordered to suspend, when ENEL itself has indicated its resumption .
- o) the performance by the Contractor of acts that are harmful to the image of ENEL.
- p) the actions, omissions, behaviors or situations related to the Contractor that may pose a risk to the reputation of ENEL and that lead to the deterioration of the trust of ENEL in the honesty and integrity of the Contractor, and in its reliability for the performance of activities in accordance with the provisions of this Contract.
- q) the loss of even one of the requirements established for the homologation (if they were required), in relation to the conclusion and compliance of the Contract. In the event that the Contractor does not inform ENEL of the situations described above and without prejudice to the latter's right to terminate the Contract, ENEL may suspend payments due to the Contractor to comply with the contractual obligations with third parties arising from the correct and complete performance of the Contract by the Contractor.

16.3.2. In the cases described above, ENEL may terminate the Contract from the date on which it sends a communication in writing -also in electronic format, when contemplated in the Contract - to the Contractor or ENEL may nevertheless require the, due performance without prejudice to its right

to claim compensation for any loss or damage suffered.



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16.3.3. In case of termination of the Contract for reasons attributable to the Contractor, ENEL shall have the right to acquire the materials that the Contractor has already manufactured, totally or partially, or delivered, paying the relevant prices, when contemplated in the Contract.

16.3.4. In the event of non-compliance by the Contractor, ENEL may, without prejudice to the right to apply penalties or to take legal action in relation to its right to compensation for damages, carry out the following measures:

- a) to suspend pending payments to the Contractor.
- b) enforce any economic guarantee provided by the Contractor.

17 FORCE MAJEURE.

17.1 The Contract is subject to the concept and definition of force majeure established by the legislation and jurisprudence applicable to the Contract. Neither Party will be responsible for the breach of its obligations if the performance is delayed or can not be carried out due to force majeure.

17.2 The Contractor may not invoke force majeure in the examples listed below:

- a) meteorological conditions or phenomena that a Contractor with experience in facilities can reasonably predict and whose harmful effects could have been consequently avoided in part or totally by the Contractor;
- b) delays or inability to obtain materials or human resources that have occurred despite being reasonably predictable, or that could have been avoided or remedied in advance;
- c) strikes or labor disputes in relation to the Contractor or its Subcontractors, except in the case of a national strike or strikes of the entire sector or industry;
- d) delays or contractual breaches of any Contractor's Subcontractor, unless such delays or contractual breaches are in turn a consequence of a force majeure event;
- e) the status of the site where the contractual activities are carried out, which is known and accepted by the Contractor;
- f) Contractor's or its Subcontractors technical, economic or financial difficulties or its Subcontractors.

17.3 The Party whose performance of the Contract is affected by events that it considers cause of force majeure will notify it in writing to the other Party as soon as possible, and always within a maximum period of five (5) calendar days from the day on which the Party would have knowledge of the aforementioned facts. In said notification:

1. identify the events and the circumstances in which they occurred;
2. detail the estimated duration of the situation;
3. relate the contractual obligations affected and the measures that it will adopt to reduce, if possible, the negative effects of the facts in the performance of the Contract;
4. attach the documents that prove that the causative events should be considered as a cause of force majeure.

17.4 The other Party will respond in writing, accepting the cause or not in a reasoned manner, within a maximum period of ten (10) calendar days after receiving the aforementioned notification. The absence of a response from the notified Party within the aforementioned period shall be understood as acceptance of the cause invoked.

17.5 In case of force majeure, the fulfillment of the affected tasks will be suspended during the cause of force majeure, without claims of compensation of any of the Parties. Contractual obligations not affected by force majeure must continue to be executed according to the terms and contractual terms in force before the occurrence of said cause.

17.6 If due to force majeure, the performance of the Contract is substantially affected and is suspended for more than one hundred eighty (180) calendar days, or it can be shown that it is impossible to perform it, either Party may request the termination of the Contract, with no compensatory consequences between the Parties.

18 LABOUR LAW OBLIGATIONS.

The Contractor is solely responsible for the organization of the personnel it employs - in various purposes - to execute the Contract, so that its responsibilities are well defined and distinguished from those of ENEL.

19. ECONOMIC GUARANTEE.

19.1. The Contractor shall secure the performance of all contractual obligations and the payment of damages caused by the breach of Contract for an amount equal to a percentage of 10% of Contract Price, unless a different percentage is provided in the Agreement.





19.2. Security may be lodged at the Contractor's choice, either in cash or in the form of a guarantee issued by a financial institution approved by Enel and complying with the criteria listed below.

19.3 The economic guarantee must:

have an unconditional and irrevocable character;

be issued for the benefit of Enel;

be payable on first demand by Enel only submitting a written statement to the issuing institution stating that it has the right of repayment of the economic guarantee.

19.4 The financial institution issuing the guarantee shall be a bank, an insurance company or a financial intermediary authorized to operate in surety business by relevant authorities.

19.5. In case the issuer's creditworthiness deteriorates, the Contractor shall provide within 60 days, upon Enel's request, the guarantee replacement issued by a financial institution approved by Enel. In case of failure to provide the guarantee, Enel may, in accordance with applicable law, withhold and suspend payments due to the Contractor.

19.6. The existence of a guarantee does not mean that the Contractor's liability under this Agreement is limited to the amount or period of validity of the guarantee

19.7. If the Contract Price increases during its execution, Enel may request that the Contractor provides a supplementary or a replacement economic guarantee to cover the increased Contract Price.

19.8 In case the Contractor fails to comply with the supplementing or replacement of the guarantees as provided in clauses 19.5. and 19.7, Enel reserves the right to terminate the contract, or, in accordance with applicable law, withhold and suspend payments to the Contractor until the due security amount is reached.

20 INSURANCE.

20.1. The Contractor assumes all responsibility for injury or damages caused to persons or property by carrying out - including through subcontractors or third party agents - the activities specified in the Contract and it undertakes to take out adequate insurance at its own expense, in relation to the risk, and with insurance companies that are financially stable and of recognised good standing, for the entire duration of the Contract, for:

- a) losses or damages that may be caused to materials and equipment covered by the Contract during their processing, loading and transportation, up to the time and place of delivery to ENEL, with the Contractor's full liability for any damage caused to the materials or equipment. This obligation is also assumed by the Contractor with regard to materials and equipment provided by ENEL for the performance of the Contract, from the moment they are made available to the Contractor or its Subcontractors, until they are returned to ENEL.
- b) civil liability for losses and detriment that may be caused by it or by its own personnel or Subcontractors to the personnel or property of ENEL and/or of third parties arising from the performance of activities under Contract. In all circumstances, ENEL shall not be liable for any causes attributable to the Contractor.

20.2. Similarly the Contractor undertakes to take out insurance for civil liability with adequate limits on compensation according to the risk, to cover claims for damage to property, personnel and/or for financial damage that can be caused to ENEL or third parties arising from the defects or malfunction of materials or equipment attributable to the Contractor. In addition, the Contractor shall be liable for environmental damage or the imminent possibility that it may take place, as well as the costs related to prevention, reduction and repair, in accordance with the conditions laid down in applicable legislation.

20.3. If the Contract provides for the storage of materials by the Contractor on ENEL's premises, the latter may request, and the Contractor shall be obliged to stipulate, in addition to the previously mentioned insurance, insurance for theft and other damage that can be caused to the stored materials, for the entire duration of the Contract.

20.4. The above policies must include a provision obliging the insurance company to pay ENEL directly. The limits of the insurance policy must cover damaging events subject to claims received within the period of performance of the Contract and/or after the warranty period.

20.5. The insurance policy shall provide for the total waiver of the insurer against ENEL with no exceptions whatsoever.

20.6. It is agreed that the existence, validity and effectiveness of the insurance policies referred to in this clause is an essential condition for ENEL and, therefore, if the Contractor is not able to prove at all times that it has insurance cover, ENEL may terminate the Contract, without prejudice to the obligation to the payment of compensation for the damages ENEL has suffered.

20.7. If ENEL believes that the Contractor's insurance cover is not sufficient to cover the risk, both for the delivery of materials or equipment and the completion of works or services under the Contract, the Contractor agrees to review and change the insurance cover in accordance with the requirements of the Contract.





20.8. Similarly, the Contractor undertakes to Contract, at its own expense and with financially stable insurance companies of recognised good standing, any other type of compulsory insurance that may be required by applicable law, for the entire duration of the Contract.

21 INTELLECTUAL PROPERTY.

21.1. The Contractor shall guarantee ENEL, at all times and, if requested, that it shall undertake to prove with documentation, the legitimate use of trademarks, patents, utility models, industrial designs or necessary licenses on said rights, such as a compulsory license for carrying out business activities, when it requests special authorization for the performance of the contractual services, and that these trademarks and licenses do not infringe the rights of third parties.

21.2. In the case of licenses, they must be registered with the offices of the competent authorities, and ENEL reserves the right to ask the Contractor to produce the documentation and/or any certificates.

21.3. The Parties agree that, as for ENEL's products, samples or technical specifications that are delivered by ENEL to the Contractor in order to perform the Contract, the Contractor: (i) may not in any way copy, reproduce, process, translate, modify, adapt, develop, decompile, dismantle, subject to reverse engineering operations (or, in any case, subject to operations intended to extract the source codes) - in full or in part - any such ENEL products, samples or technical specifications, and (ii) shall ensure that the aforementioned prohibitions are complied with also by the authorized persons involved and possibly to be involved in the performance of the Contract by the Contractor.

21.4. The Contractor is responsible for obtaining concessions, permits and authorizations required by the holders of patents, models and related trademarks, as well as intellectual property rights. The Contractor shall be responsible for payment of any royalties or fees due on this basis.

21.5. In the case of supply Contracts, if, as a result of a dispute by the owners or concessionaires of the rights referred to in this clause, ENEL is obliged to totally or partially modify the materials to be supplied under the Contract, they must be modified as soon as possible at the Contractor's expense, without this resulting in a deterioration of the quality of the supply, operating characteristics or warranties. If the above occurs, a new process for the approval of prototypes shall be carried out, where this is prescribed for the type of supply in question and before the materials are supplied.

21.6. If legal action is taken against ENEL by a third party for breach by the Contractor of the obligations referred to in the preceding sub-clause, the Contractor shall, at ENEL's request, be required to provide coverage (as indicated in clause "ECONOMIC GUARANTEE") in regard to the value of the claims, within ten (10) calendar days. 21.7. The Contractor shall release ENEL from any liability for infringements of intellectual property rights that may occur and undertakes to do everything necessary to hold ENEL harmless with regard to any claims or lawsuits against it, and also undertakes to compensate ENEL for all losses or damages, whether direct or indirect, arising from claims or by subpoena.

21.7. Any claims, whether judicial or extrajudicial, made against the Contractor by third parties relating to intellectual property rights, shall be immediately reported to ENEL.

21.8. ENEL shall own all of the documents, drawings, plans, computer programs, as well as copies thereof, it provides to the Contractor for the performance of the contractual services, as well as inventions, patents, utility models and other industrial property rights that are or will be necessary for the performance of the contractual services based on documentation provided by ENEL to the Contractor. The Contractor shall use them solely for the purposes of executing the Contract and must return them to ENEL, at all times taking appropriate precautions in relation to the processing, use and transfer of data to ensure security and non-disclosure, pursuant to clause "CONFIDENTIALITY" below.

21.9. The intellectual property rights and technology and methodology resulting from the works or services performed by the Contractor in executing the Contract, and the records that are created belong to ENEL, without giving the Contractor any right to increase the price specified in the Contract for the said works or service.

21.10. The drawings, documents, plans, computer programs as well as copies thereof, and in general any results (and related industrial and intellectual property rights, including but not limited to patent applications, pending patents, database rights, copyrights, trademarks, trade and industrial secrets rights and any applications thereto on a worldwide basis, software designs and models, know-how) generated by the Contractor during the performance of the Contract (the "Foreground IPRs") shall exclusively belong to ENEL, which will also automatically become the owner of any relevant working in progress, from time to time generated during the performance of the Contract. Each Party recognizes and agrees that each Party's Background IPRs shall remain exclusive property of such Party and the other Party shall have no claim in relation to any such right; such Background IPRs mean all present and future industrial and intellectual property rights, including but not limited to patent applications, pending patents, database rights, copyrights, trademarks, trade and industrial secrets rights and any applications thereto on a worldwide basis, software designs and models, know-how, pertaining to each Party before the signature of this Contract or successively acquired in parallel projects outside of the scope of this Contract. Therefore, if the Contractor shall use its Background IPRs for the performance of this Contract, any Foreground IPRs belonging to ENEL shall be limited to the add-ons (the "Add-Ons"), which are the additional parts (generated by the Contractor in performing the Contract on the basis of its Background IPRs) that do not, in any way, include or contain any of its Background IPRs. The Parties shall agree in writing the list of the issues constituting such Add-Ons previously and/or within 30 (thirty) days after the expiry or termination of the Contract.

21.11. The marketing methods and the manner in which technology covered by the Contract is distributed to third parties, as well as any benefits arising thereof, are regulated by the Contract.

21.12. In case of breach by the Contractor of the obligations related to industrial and intellectual property referred to in this article, ENEL has the right to terminate the Contract, without prejudice to its right to every action and compensation for any damages it has suffered.



22 CONFIDENTIALITY.

22.1. All information that any of the Parties makes available (verbally, in writing, in electronic format or in any other way) for the purposes of, and *I* or during the performance of the Contract, as well as any other information of which any of the Parties may have knowledge as a result of other contracts signed between the Parties and *I* or pre-contractual negotiations thereof, as well as all documents, information, and specific knowledge (regardless of how they have been compiled, obtained or developed) can be used only for the purpose of executing the Contract and they are confidential.

22.2. By way of example, the term “confidential” refers, but not limited to all information relating to business strategies, information about products and *I* or production processes (design, study and development), means of production, sales information, development strategies and customer management, etc. It also applies to economic, financial and technical documents, as well as to processes, patents, licenses or any other information that any of the Parties has provided to the other Party in relation to the performance of the Contract.

22.3. Confidential information may not be disclosed without the prior written and express authorization of the Party that owns such information, except in those cases in which the receiving Party is legally required to transmit it or is ordered by a competent authority or when refusing to do it is illegal. Without prior written and express authorization from the Party that owns the confidential information, the other Party may not copy, reproduce, translate, modify, adapt, develop, dismantle, separate, perform reverse engineering operations or any operation intended to extract the source codes - wholly or partially - of the confidential information provided.

22.4. Confidential information includes all information relating to a Party, made available to the other Party, before or during the performance of the Contract, either by the administrators, managers or employees of the Party that owns the information, or by the Subcontractors or subsidiaries of the Party that owns the information and its corresponding administrators, managers, employees or Subcontractors (hereinafter, “Representatives of the Party that owns the information”). Confidential information also includes all information regarding the Representatives of the Party that owns the information, that Party or its own representatives have been able to make available to the other Party before or during the performance of the Contract. To this effects:

- the term “subsidiary” refers to any company controlled by one of the Parties, or by one of the Parties along with other third parties, for as long as there is such control and during the period in which the information is disseminated;
- the term “control” refers to the direct or indirect capacity of control over the operation and strategy of the company, and to all cases in which any company of the group of companies of either Party owns more than fifty percent (50%) of share capital or shares with voting rights, either directly or indirectly.

22.5. It will not be considered confidential:

- the information that the Party that receives it can prove that it already knew it legitimately before the beginning of the performance of the Contract;
- the information that the Party that receives it can prove that it has received it from third parties not subject to the confidentiality agreement.

22.6. Each of the Parties:

- must restrict the disclosure of confidential information exclusively to the representatives that effectively need to have it due to their degree of involvement in the performance of the Contract;
- bind its representatives and ensure that they fully comply with the obligations contained in this clause;
- will be held responsible for any action or omission on the part of its representatives that leads to a breach of the obligation to maintain confidentiality.

22.7. The Party receiving the confidential information is obliged to create and manage logical and physical data, using the best available international techniques and practices, to guarantee the protection of said data from unauthorized destruction, manipulation, access or reproduction and, once that the Contract has expired, return all the data, documents and information provided by the other Party or in its possession, for the purpose of carrying out the contractual activities, in addition to destroying all copies and files that it may have, unless it has received Written permission to the contrary from the Party that provided the confidential information.

22.8. Both Parties guarantee that confidential information will not be disclosed during the performance of the Contract and for a period of five (5) years after it has expired, except when another term is agreed in the Contract or when it is required by law or by a competent Authority. When necessary, the Party that is requested to disclose confidential information shall notify the other Party of such request (when legally possible) immediately, so that it may take the necessary actions to protect its rights. The Parties will only disclose the information required by law and must obtain a statement from who receives the information that said information will remain confidential.

22.9. If the information is classified by ENEL as “highly confidential”, the following rules should apply:

the password needed to access IT systems must be personal or individual, kept secret and changed every sixty (60) days;

the access to information systems must be limited to software/tools provided specifically for the performance of the necessary activities; the use of network services or connections for purposes not related to the activities that must be carried out is prohibited;



any transaction developed through ENEL's IT systems must not violate applicable local laws;

the workstation used (permanent or temporary) can not connect to internet services other than those provided or authorized by ENEL and must have the necessary antivirus installed. All necessary measures must be taken to prevent the spread of viruses, malicious software or any illicit software that may cause interruptions in the service or loss of data;

all email accounts, file storage or communication platforms (including social networks) must be explicitly provided or authorized by ENEL;

sensitive data must be stored, transmitted or canceled by appropriate coding software; it is forbidden to modify the configuration of the system to avoid security checks.

22.10. The Contractor is prohibited from divulging by any means (for example but not limited to press articles, press releases, interviews) of any information deemed confidential according to the article. Both Parties will agree in writing regarding the content, the means of communication, the date of publication of the press articles and the news or communications of any kind in relation to the Contract or any matter or information related thereto.

22.11. If ENEL authorizes the subcontracting or transfer of the Contract in writing, the Contractor must obtain from the Subcontractor or assignee a confidentiality agreement with the same conditions as those contained in this clause.

22.12. Both Parties acknowledge and agree that the compensation of the damages may not represent sufficient compensation for the breach of confidentiality and that the Party that suffers the infraction shall have the right to seek other repairs or to avoid any possible violation or damage of such violation according to the current legislation. In case of breach of the confidentiality requirements, any of the Parties may also decide to terminate the Contract.

22.13 The above remedy will not be considered the only available one, but will be in addition to all other rights and remedies available according to the applicable Law. In case of violation of the confidentiality obligations and without in any way prejudicing the above, and in case of violations referred to in this article, ENEL has the right to terminate the Contract as well as the right to take any action aimed at obtaining compensation for damage.

22.14 ENEL reserves the right to carry out periodic checks, with special attention to the security measures applied in cases where there is information considered and classified by ENEL as confidential.

22.15 At any time, if the Party that provides confidential information so requires, the other Party shall return or destroy or request that its representatives return or destroy all copies of the information confidential written in your possession or that of your representatives. In addition, the Party receiving the information will do everything in its power or will require its representatives to do so, to return or destroy any data stored in electronic format and will confirm the destruction of said data to the Party that provides the confidential information. within a maximum period of fifteen (15) days from the request.

22.16 Each Party acknowledges and agrees that confidential information is and remains the exclusive property of the Party that discloses it and its representatives. Nothing in the Contract shall be understood - unless expressly stated in writing - as granting a license or the like in matters of patents, copyrights, inventions, discoveries or improvements made, conceived or acquired, both before and after the performance of the Contract.

23. PROCESSING OF PERSONAL DATA.

Both ENEL and the Contractor declare to comply with applicable legislation on the protection and processing of personal data. While processing personal data on behalf of Enel, the Contractor shall adopt adequate technical and organizational security measures to avoid personal data breaches, shall comply with the General Data Protection European Regulation 679/2016, when applicable, within or outside of the European Union and shall inform Enel without undue delay of any personal data breach occurred in the performance of the Contract.

24. VENDOR RATING.

24.1 ENEL has set up a vendor rating system in order to assess and constantly monitor the performances of its Contractors.

24.2 The vendor rating may be applied to all the companies that work with ENEL.

24.3 If Enel decides to assess a Contractor, the assessment could be based on indicators that express the level of quality offered, compliance with the lead times, conformity with the environmental and safety laws in force, the upholding of the principles of social responsibility. These indicators are then combined to produce a Vendor Rating Indicator (so-called VRI) .

24.4 ENEL may assess the Contractor from the procurement phase to the performance phase of the Contract, basing its evaluation on information collected through Enel digital tools.





24.5 In case of unsatisfactory performance, ENEL may require to the Contractor to submit recovery plans - with contents and terms to be agreed upon - or take the actions that Enel considers appropriate at its best convenience. In the event of excellent performance, Enel may evaluate incentive actions.

25. GAIN SHARING³.

25.1. This Section will always be considered as a Change Order of the Contract and shall apply only (i) at least the half of the Contract shall be executed and (ii) just once during the performance of the works.

25.2. The Contractor may identify potential new opportunities with respect to the Works/Services/Supplies and/or potential opportunities for improving the quality of performing the Contract (hereinafter referred to as the “Proposal”).

25.3. If the Contractor identifies a Proposal, the Parties shall discuss such Proposal, including the likelihood that such Proposal will result in savings to ENEL and/or improved quality of performing the Works/Services/Supplies and, if approved by ENEL, Contractor shall further research the Proposal and present a written proposal to ENEL within a mutually agreed time frame

25.4. Contractor’s Proposal must include, as applicable:

- a) the recommended changes (a detailed description of the proposed statement of Work, including a project plan, setting forth each Party’s responsibilities if the opportunity is to be realized);
- b) a cost /benefit analysis (both direct and indirect);
- c) estimated current costs that could be incurred by the Contractor and those charged to ENEL (both direct and indirect);
- d) the anticipated savings and/or improvements in the services (financial or otherwise) that will be achieved by ENEL;
- e) any impact on the Contract;

25.5. In any case a mutually agreed value shall be ascribed to such potential savings or improved Works/Services/Supplies and used as the basis for any gain sharing as hereinafter described (the “Gain Share report”).

25.6. ENEL will inform the Contractor, within 15 days of receipt of the Proposal, of the date of the meeting aimed at discussing the Proposal. The Parties will meet to discuss the Proposal and in particular:

- investment (financial or other);
- estimated amount of savings, and/or improvements in the services;
- the Gain Share report;
- the Change Order (Timing of any payments or price adjustments);
- the Gain Sharing formula (if any) that will be applicable in order to compensate the Contractor with respect to the Proposal.

25.7. After the meeting, the Contractor must then submit a revised Proposal to ENEL (hereinafter the “Revised Proposal”). ENEL will evaluate the Revised Proposal and must - in writing within thirty (30) days (or any other time agreed between the Parties and indicated in the Contract) - accept it, reject it or propose recommendations or improvements . If ENEL agrees with Contractor’s Revised Proposal, the Contractor must formulate within fifteen (15) days an implementation plan (so-called “Implementation Plan”) that defines in detail:

- a) a descriptive Project Plan in which the Contractor will implement the Revised Proposal;
- b) Change Order scope (in accordance with the agreed Gain Share report.

25.8. This section shall not apply in circumstances where savings are achieved by Contractor in performing its other obligations set forth in this Agreement. In any case, any Change Order based in a Gain Sharing shall be subject to the provisions agreed between the Parties in the Contract and in order to avoid misunderstanding, all changes and additions to the Contract based in a Gain Sharing should be made in the form of a written agreement to the Contract signed by authorized representatives of the parties.

26. GOVERNANCE.

26.1. Contract Governance structure.

26.1.1. Where provided for in the Contract, the Parties may set up a committee (so-called “Review Group”) to supervise the progress of the performance of the Contract object. The Review Group is made up of an equal number of representatives of the Parties. Each Party may periodically change its representatives in the Review Group in its sole discretion, notifying the other Party of the change.

³ This clause is only applicable to Contracts which are not subject to legislation prohibiting or restricting the use of this mechanism.





26.1.2. Additional representatives of both Parties, with appropriate technical skills, experience and knowledge, or external consultants, may from time to time - by mutual agreement of the Parties - be invited to attend the meetings of the audit team, without prejudice to the obligation for all third parties to sign and comply with confidentiality obligations.

26.1.3. The audit team is chaired by a representative of ENEL. 26.2. Decision process.

All decisions of the review team must be unanimous. If the Review Group fails, after making good faith efforts, to reach an agreement, this matter must be referred to the representatives of ENEL and the Contractor indicated for this purpose in the Contract. These representatives will meet promptly and negotiate in good faith to resolve this issue.

26.3. Responsibility.

26.3.1. The responsibilities of the Review Group include:

- a) to encourage and facilitate ongoing cooperation and communication between the Parties;
- b) supervise and coordinate the transfer of information;
- c) periodically evaluate the performance of the Contract;
- d) to discuss in good faith all potential improvements that can be adopted during the performance phase.

26.3.2. Unless otherwise provided in the Contract, the audit team meets at least once a year at ENEL or other places agreed by the Parties. Alternatively, the review team may meet by teleconference, videoconferencing or other similar communication equipment.

26.3.3. The Chairman of the Review Group is responsible for sending the agenda and reasonably early in advance of all meetings and preparation of the final minutes of each meeting.

26.3.4. Any expenses for attending meetings are at the expense of each Party.

27 KPI (KEY PERFORMANCE INDICATOR).

27.1. The Contractor must perform the Contract satisfying the levels of service, where expressly provided for in the Contract.

27.2. The Parties monitor and verify the achievement of service levels in the manner and within the terms set forth in the previous "GOVERNANCE" clause.

28. GLOBAL COMPACT.

28.1 The Contractor undertakes to take ownership and fully comply with the principles of the Global Compact, ensuring that all activities carried out by its own personnel, or that of Subcontractors, comply with the above-mentioned principles. The following are the principles of the Global Compact:

a) HUMAN RIGHTS.

- One: Any business must support and respect the protection of internationally recognised human rights in conducting their business activities.
- Two: Any business must ensure that they do not take part in human rights violations.

b) WORK.

- Three: Any business must support freedom of affiliation and the effective recognition of the right to collective bargaining.
- Four: Any business must support the elimination of all forms of forced labour carried out under duress.
- Five: Any business must support the elimination of child labour.
- Six: Any business must support the elimination of discriminatory practices in employment and education.

c) ENVIRONMENT.

- Seven: Any business must conduct their affairs in a preventive manner to avoid potential damage to the environment.
- Eight: Any business must support initiatives to promote greater environmental responsibility.
- Nine: Any business must encourage the development and dissemination of technologies that respect the environment.

d) CORRUPTION.

Ten: Any business must work against corruption in all its forms, including extortion and bribery



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28.2. The Contractor undertakes to comply with applicable current legislation, bound by the above-mentioned principles, and undertakes to inform ENEL of any situation which may result in failure to fulfil these principles, as well as the plan to remedy such situations ..

28.3. For the duration of the Contract, the Contractor agrees to allow ENEL to verify the degree of compliance with the requirements of this clause. ENEL may terminate the Contract, for reasons attributable to the Contractor, in cases in which it is justifiably and sufficiently aware that the Contractor or its Subcontractors have violated any of the above-mentioned principles.

29. CODE OF ETHICS.

29.1. General details.

29.1.1. The ENEL Group, when conducting its business and managing its relationships refers to the principles contained in its own Code of Ethics, in the Zero Tolerance plan against corruption and in the Human Rights Policy.

29.1.2. The Contractor, when conducting its own business and managing its relationships with third parties, refers to equivalent principles.

29.1.3. The Contractor states that it acknowledges the pledges made by ENEL in the Code of Ethics and states that it will strive to comply with the legal obligations regarding the prevention of child labour and the protection of women; equal treatment, the prohibition of discrimination, abuse and harassment; freedom to join a union, the freedom of association and representation, forced labour, environmental safety and protection, health and hygiene conditions and the compliance with the terms and conditions of the laws in force regarding remuneration, contributions, insurances, tax, all with reference to all the workers engaged in any capacity in the performance of the Contract. It is fully understood that the ILO Conventions shall be applicable, or the laws in force in the Country where the activities need to be carried out wherever the latter are more restrictive.

29.1.4. In this area, ENEL reserves the right to carry out any control and monitoring activity geared to verifying whether the above mentioned duties have been fulfilled, both on the part of the Contractor and also on that of any of its Subcontractors or other parties in any case appointed by the same for the performance of the Contract, and to terminate the same immediately should proof that the above-mentioned duties have been breached come to light.

29.1.5. ENEL complies with the Global Compact and in compliance with the tenth principle of the same, it pursues its commitment against all forms of corruption. Therefore, ENEL prohibits the use of any kind of promise, offer or request for unlawful payment, in cash or other utility, for the purpose of furthering its relationships with its stakeholders, and this prohibition is extended to all its employees. The Contractor states that it acknowledges the commitments undertaken by ENEL and undertakes not to make any promises, offers or requests for unlawful payment during the performance of this Contract in the interest of ENEL and/or to the benefit of its employees .

29.1.6. In case of breach of one of these duties, ENEL reserves the right to terminate the Contract and to request compensation for damages from the Contractor .

29.2. Conflict of interest.

29.2.1. During the performance of the Contract, the Contractor undertakes to have exclusive regard for the interests of ENEL, ensuring that there are no situations that might lead to the occurrence of any conflict of interest in relation to the activities to be performed.

29.2.2. For the entire duration of the Contract, the Contractor undertakes to behave in a way designed to avoid conflicts of interest from arising. Whenever this might result in a situation which could generate any conflict or interest - subject to the right of ENEL to terminate the relationship - the Contractor undertakes to promptly give written notice to ENEL and to comply with the reasonable instructions of the latter, which will be dictated upon consultation and assessment of the requirements justifiably represented by the Contractor.

29.3. Company health and safety clause.

29.3.1. In ENEL, protecting not only the health and safety but also the psychological and physical integrity of people is not only a legal duty but also a moral responsibility towards its own employees and those of its Contractors.

29.3.2. The objective that ENEL hopes to fulfil is a "Zero Accident" workplace. In ENEL no work can be performed in a way that might compromise safety. This is why, as established in the Stop Work Policy, any risky situation or unsafe behaviours must cause the works to be suspended and safe conditions restored.

29.3.3. ENEL strives constantly and diligently to consolidate the culture of health and safety, by promoting a closer focus on and awareness of the risks and by encouraging those who work for us and with us to behave responsibly.

29.3.4. The Declaration of our commitment to health and safety and the Stop Work policy can be viewed at the following link: <http://globalprocurement.enel.com/il-IT/documents/documentationsafety/>

All Contractors, when performing their working activities must behave in line with these principles.



29.4. Code of Ethics of the Contractor.

Alternatively, should the Contractor have its own Code of Ethics and its own policies against corruption and on the respect for Human Rights, ENEL can acknowledge, at its sole discretion, such documents, as long as according to the Contractor they refer to principles deemed similar to those established in the same documents of ENEL.

30. GOVERNING LAW.

Unless otherwise provided for in the Contract, the latter is regulated by the legislation in force in the Country in which the contractual activities are carried out.

31. JURISDICTION.

Unless they are settled following the procedures in clause "INTERPRETATION AND HIERARCHY", any disputes that may arise between the Parties concerning the interpretation or performance of the Contract shall be subject to the jurisdiction of the court of law defined in the Contract.

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ENEL GROUP GENERAL CONTRACT CONDITIONS
SEVENTH EDITION valid as of 01/03/2019

El presente "ANEXO II CHILE" se aplica a los contratos de compra de suministros, servicios u obras afectados por la legislación de Chile y celebrados entre las sociedades del Grupo ENEL y el Proveedor.

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**CONDICIONES GENERALES DE CONTRATACION GLOBALES GRUPO ENEL
SEPTIMA EDICION, validas desde 01/03/2019**

1. AMBITO DE APLICACION.

Segun regulacion contenida en la Parte General de las presentes Condiciones Generales de Contratacion.

2. DEFINICIONES.

- Acta de reconocimiento de las obras y servicios:** Acta en el que se deja constancia de los defectos encontrados en la obra o servicio finalizado y del plazo en que estos deberan ser rectificadas por el Proveedor.
- Albaran:** Documento mercantil que contiene una lista de bienes suministrados y que acredita la entrega de los mismos.
- Autorización de envío:** Documento que emite ENEL, por el que se faculta al Proveedor para que proceda al envío total o parcial del equipo o material objeto del Contrato.
- Aviso de expedición:** Documento que emite el Proveedor una vez cumplimentados todos los requisitos convenidos, por el que se informa a ENEL de que se ha procedido al envío total o parcial del equipo o material objeto del Contrato.
- Calidad concertada:** Acuerdo establecido entre ENEL y el Proveedor segun el cual, este garantiza unos niveles de calidad previamente convenidos entre ambos.
- Carta de intención u orden de proceder:** Acuerdo no obligatorio que contiene compromisos que pueden llegar a formalizarse o no en un Contrato.
- Inspector:** Persona o entidad designada por ENEL que realiza las funciones de inspeccion en cualquier fase de la ejecucion del Contrato.
- Petición de oferta:** Documento a traves del cual ENEL solicita una oferta. Constara de las Especificaciones Tecnicas y las Especificaciones Comerciales y Juridicas, entre las que se encontraran las presentes Condiciones Generales.
- Plan de control de calidad:** Documento emitido por el Proveedor que especifica los procesos, procedimientos y recursos asociados que se aplicaran para cumplir con los requisitos del Contrato.
- Programa de puntos de inspección:** Documento emitido por el Proveedor y aprobado por ENEL, en el que quedan reflejadas las diferentes inspecciones, pruebas, ensayos o exámenes a realizar.
- Recepción en origen:** Procedimiento en el que las pruebas o ensayos preceptivos para la recepcion del material se efectuan en presencia de los tecnicos de ENEL o la persona o entidad autorizada por ella, y en las instalaciones del Proveedor, de su subcontratista o de cualquier otra entidad acordada entre ambas Partes.
- Recepción por protocolo:** Revision de los protocolos de ensayo preceptivos, realizados previamente por el Proveedor, mediante la que los tecnicos de ENEL o la persona o entidad autorizada por ella, aprueban el envío del material en cuestion o, por el contrario, deciden la comprobacion de resultados de dichos protocolos por la Recepcion en Origen.
- Sistema de aseguramiento de la calidad:** Sistema que establece aquellos requisitos que el Proveedor ha de cumplir para desarrollar con eficacia y correccion el objeto del Contrato.

3. IDIOMA.

La version original del presente Anexo II Chile es la redactada en español (castellano).

4. FORMALIZACION.

Segun regulacion contenida en la Parte General de las presentes Condiciones Generales de Contratacion.

5. INTERPRETACION Y JERARQUIA.

5.1. Todas las materias reguladas en el presente Anexo se regiran en primer lugar por los terminos contenidos en los apartados del mismo, y de forma complementaria por los terminos contenidos en la Parte General de las presentes Condiciones Generales de Contratacion.

5.2. Se excluye de lo expuesto en el parrafo precedente las materias cuya regulacion en el Anexo manifieste expresamente que se regiran directamente segun redaccion contenida en la Parte General de las presentes Condiciones Generales de Contratacion.

6. COMUNICACIONES.

Segun regulacion contenida en la Parte General de las presentes Condiciones Generales de Contratacion.

7. CONDICIONES ECONOMICAS.

7.1. Precios.

7.1.1. En el caso de la realización de una obra o un servicio, el precio del Contrato incluye como mínimo, salvo que expresamente se incluya en otros conceptos, lo siguiente:

- Mano de obra directa e indirecta.
- Maquinaria y el personal asociado.
- Amortización de maquinaria.
- Materiales permanentes y fungibles.
- Transporte hasta/y desde el lugar del trabajo, del personal, material y medicos.
- Instalación y autorización de servicios.
- Gastos de mantenimiento.
- Gastos generales y beneficio industrial.
- Impuestos, tasas y arbitrios que legalmente correspondan.
- Gastos que origine al Proveedor, la programación, reconocimientos y ensayos, control de materiales, control de ejecución, pruebas, recepciones y otros analisis.
- Realización completa de todas las unidades con arreglo a las Especificaciones Tecnicas y restantes documentos contractuales.
- Construcción, demolición y retirada de las instalaciones auxiliares de obra, vigilancia o almacenamiento y de las realizadas en cumplimiento de la Normativa de Prevención de Riesgos Laborales.
- Costos de garantía económica, seguros u otras garantías, en su caso.
- Costos por la dotación de las medidas de seguridad y los sistemas de gestión necesarios, para cumplir con las exigencias de seguridad y salud laboral, así como los costos por la entrega de elementos de protección personal de acuerdo con las exigencias y estándares de ENEL.

7.1.2. Los precios vendran desglosados en precio de los servicios, precio de los materiales e impuestos que correspondan según la legislación aplicable.

7.1.3. El Proveedor asumira cualquier costo adicional por los fletes, portes y otros gastos originados por el incumplimiento de las condiciones de entrega y envío establecidas en el Contrato.

7.1.4. No se pagaran materiales, equipos o trabajos no incluidos en el Contrato si su ejecución no ha sido previamente ofertada por el Proveedor, por escrito y con indicación expresa de su precio, y aceptada, también por escrito, por un representante de ENEL, debidamente facultado.

7.1.5. El Proveedor se encuentra obligado a aceptar las ampliaciones, modificaciones y reducciones del alcance del Contrato, a los precios convenidos, siempre que las mismas no representen, en conjunto, un aumento o disminución de más del 20% del importe del Contrato. El nuevo plazo de entrega, en su caso, se establecera de comun acuerdo entre ambas Partes, a propuesta razonada del Proveedor.

7.1.6. Si las ampliaciones, modificaciones o reducciones que ENEL proponga, motivadas por una razón justificada, representaran en conjunto un aumento o disminución de más del 20% del importe del Contrato, el Proveedor podra aceptarlas o rechazarlas, pero en este ultimo caso, ENEL tendra derecho a resolver el Contrato.

7.1.7." En los casos en que haya de ejecutarse una unidad de obra no prevista en el cuadro de precios del Contrato, el precio correspondiente se determinara entre ENEL y el Proveedor, a propuesta de este debidamente justificada, basandose en la descomposición de costos de otras unidades analogas para las que exista precio unitario.

7.1.8. La negociación del precio contradictorio sera independiente de la realización de la unidad de que se trate, estando obligado el Proveedor a ejecutarla inmediatamente despues de haber recibido la orden de ENEL.

7.1.9. A petición de ENEL, el Proveedor incluire en su oferta baremos de precios unitarios para el caso de que ENEL considere necesario, durante la ejecución del Contrato, la realización por el Proveedor de unidades de obra no previstas inicialmente en el alcance del Contrato (precios por administración). Dichos precios, una vez acordados por las Partes e incorporados al Contrato, incluiran iguales conceptos que los definidos en la clausula 7.1.1.y se aplicaran cuando no sea posible fijar un precio contradictorio o en los casos en que ENEL lo estime necesario.

7.1.10. La realización de trabajos por administración solo podra efectuarse previa orden de ejecución por escrito de ENEL.

7.1.11. En los costos del personal estaran incluidos las herramientas propias de su especialidad, asf como el equipo necesario para su protecci6n, seguridad y la correcta ejecuci6n de los trabajos.



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7.1.12. No se admitiran castes adicionales en concepto de transportes, dietas o manutención del personal del Proveedor.

7.2. Modificación de precios.

Segun regulaci6n contenida en la Parte General de las presentes Condiciones Generales de Contrataci6n.

7.3. Facturaci6n.

Sera necesario separar, dentro de la misma factura, las siguientes conceptos:

- a) Eventuales trabajos contratados par administraci6n coma complemento a lo pactado en el Contrato.
- b) Incrementos ya facturados par aplicaci6n de formulas de reajuste previstas en el Contrato. En este case, sera necesario aportar las justificaciones de las valores de las indices aplicados y el detalle de la correspondiente formula de reajuste.

7.4. Condiciones de pago.

7.4.1. Tades las pages que se efectuen antes de la Recepci6n Provisional de acuerdo con lo estipulado en el Contrato tendran la consideraci6n de pages a cuenta del precio final. En el case de que no se haya presentado garantia de fiel cumplimiento del Contrato, sera imprescindible que, de forma simultanea a cada uno de las posibles pages, el Proveedor entregue a ENEL garantia econ6mica, con las requisitos exigidos en las presentes Condiciones Generales, que garantice dichos pages

7.4.2. Las facturas se abonaran, previa conformidad de ENEL sobre el cumplimiento de las condiciones contractuales, en el plaza en cada case serialado, y a falta de este, en el primer dia de page masivo posterior a las noventa (90) dias corridos siguientes a la fecha de entrada en el Registro General de ENEL, o la fecha de conformidad a la factura si esta fecha de conformidad fuese posterior a la de entrada en el Registro General de ENEL.

7.4.3. Los pages al Proveedor se realizaran una vez al mes, el segundo dia habil de cada mes, incluyendo las documentos que tengan fecha de vencimiento hasta el dia de page de la n6mina.

8. IMPUESTOS.

Segun regulaci6n contenida en la Parte General de las presentes Condiciones Generales de Contrataci6n.

9. EJECUCION.

9.1. Generalidades.

Segun regulaci6n contenida en la Parte General de las presentes Condiciones Generales de Contrataci6n.

9.2. Inspecciones, pruebas y ensayos.

9.2.1. ENEL podra inspeccionar las materiales y equipos objeto del Contrato en cualquier momenta de su fabricaci6n, asi coma la ejecuci6n de las obras o servicios contratados, incluidos las materiales que el Proveedor emplee en su realizaci6n. Dicha inspecci6n la podra realizar mediante su propio personal o mediante las persorias o entidades que para ello designe, tanto en las obras, oficinas, fabricas, talleres o almacenes del Proveedor coma en las de sus subcontratistas, a cuyo fin las inspectores de ENEL tendran libre acceso a las mencionadas instalaciones y debera facilitarseles cuanto sea necesario.

9.2.2. Sin perjuicio de las normas anteriores, en los Contratos en que asi se recoja, las pruebas o ensayos se efectuaran ajustandose en todo al Programa de Puntos de Inspecci6n elaborado par el Proveedor y aprobado par ENEL.

9.3. Control de Calidad.

9.3.1. El control de calidad comprende el conjunto de acciones, actividades y tecnicas necesarias para proveer confianza suficiente de que el material, el equipo, la obra o el servicio objeto del Contrato cumplan satisfactoriamente las condiciones requeridas par ENEL y, en su case, par las normas tecnicas correspondientes.

9.3.2. El Proveedor sera el unico responsable del control de calidad, independientemente de las controles y pruebas que efectue o exija ENEL par sus propios medias o par las de un tercero. Estes ensayos no alteraran la plena responsabilidad que exclusivamente incumbe al Proveedor.

9.3.3. Antes de iniciar el proceso de fabricaci6n, o la realizaci6n de la obra o servicio contratado, el Proveedor presentara, a requerimiento de ENEL, para su aprobaci6n, un Plan de Control de Calidad (segun ISO 10.005 o equivalente) que incluire el Programa de Puntos de Inspecci6n, asi coma la relaci6n de las operaciones y procedimientos aplicables.

9.3.4. Una vez presentado el Plan de Control de Calidad mencionado, ENEL podra formular objeciones al mismo durante un plaza de quince (15) dias habiles, siempre par motivos justificados, y el Proveedor debera obligarse a modificarlo con la debida diligencia, realizando las correcciones necesarias de acuerdo con las objeciones indicadas par ENEL.

9.3.5. Durante la ejecuci6n del Contrato, el Proveedor dara la mas estricta y rigurosa observancia a lo establecido en su Sistema de Aseguramiento de la Calidad y Plan de Control de Calidad aprobados par ENEL, quien se reserva el derecho a efectuar las auditorias necesarias para comprobar su cumplimiento.



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9.3.6. Al concluir la ejecución del Contrato, el Proveedor entregara a ENEL, para su aprobación, un informe final de Control de Calidad, cuyo contenido debera ajustarse a lo establecido en el Contrato y en el Plan de Control de Calidad aprobado.

9.3.7. El cumplimiento de estas condiciones de control de calidad no exime al Proveedor, en ningun caso, de su responsabilidad por la incorrecta ejecución del Contrato.

9.4. Condiciones de entrega y recepción.

9.4.1. Generales.

Si en el Contrato no se señala una fecha de terminación determinada y se establece solamente el plazo de ejecución o entrega, este comenzara a contar a partir de la suscripción del Contrato o de la fecha de emisión de la Carta de Intención u Orden de Proceder.

9.4.2. Materiales y/o equipos.

9.4.2.1. Con cada entrega, el Proveedor debe acompañar toda la documentación técnica final y los protocolos de ensayos establecidos en las Especificaciones, en el Contrato y, en su caso, en las Normas técnicas correspondientes.

9.4.2.2. El Proveedor, además de la documentación anterior, debera certificar, en caso de que le sea requerido por ENEL, que el diseño, las materias primas, materiales y las marcas y tipos de los componentes son idénticos a los que dieron lugar a la homologación, en su caso.

9.4.2.3. Para efectuar la entrega, el Proveedor remitira a ENEL, a la atención de la persona de contacto responsable de recepción que figure en el Contrato, con la debida antelación, el Aviso de Expedición indicando en el mismo los siguientes datos:

- Numero de referencia del Contrato.
- Numero de bultos enviados, con indicación del material que contienen. Si son los últimos de los contratados, indicara expresamente esta circunstancia.
- Datos referentes al medio de transporte utilizado y/o a la empresa que efectua el transporte, con los datos y el telefono de la persona de contacto.
- Fecha y lugar de puesta a disposición del equipo o de los materiales.

9.4.2.4. Asimismo, el Proveedor se compromete a comunicar a ENEL, de forma inmediata, cualquier circunstancia que altere las condiciones de entrega pactadas.

9.4.2.5. En materiales o equipos sujetos a control de calidad, y salvo acuerdo en contrario, el Proveedor no procedera al envío de los mismos hasta tener en su poder la obligatoria Autorización de Envío posterior a la Recepción por Protocolo o de la Recepción en Origen emitida por ENEL. Quedan fuera de este requisito los suministros acogidos a un régimen de Calidad Concertada. Si, no obstante, el Proveedor procediera al envío, todos los gastos generados por el mismo correran por su cuenta.

9.4.2.6. Salvo que se estipule lo contrario en el Contrato, la entrega de materiales y equipos se efectuara en la modalidad DDP (Incoterms CCI 2010) en el punto de destino establecido en el Contrato. Los terminos se interpretaran, en cuanto se refiere a entrega, propiedad, seguros, etc., de acuerdo con el Incoterm, excepto en lo que se oponga a lo establecido en el Contrato.

9.4.2.7. Sin perjuicio de que se considere cumplida la fecha de entrega, ENEL se reserva el derecho de aplazar cualquier envío o expedición de materiales o equipos. El Proveedor corra con los gastos de almacenamiento y seguro durante el mes siguiente a la fecha de entrega convenida. Si el aplazamiento del envío hubiera de prolongarse por mas tiempo, se estableceran de mutuo acuerdo las compensaciones que procedan por los ulteriores gastos de almacenamiento y seguro.

9.4.2.B. Una vez recibido por ENEL el material o equipo, se extendera un Documento de Recepción Provisional, que debera ser firmada por ambas Partes, en el que se hara referencia al resultado satisfactorio de las pruebas o ensayos y reconocimientos finales, o se dejara constancia de las circunstancias en que han de quedar subsanadas o corregidas las deficiencias advertidas en ellos. El Documento de Recepción Provisional debera formalizarse en el plazo máximo de ocho (8) días corridos a partir de la fecha en que losolicite cualquiera de las Partes, cumplidas todas las condiciones o actividades objeto del Contrato.

9.4.2.9. Cuando no sean exigibles pruebas o ensayos y reconocimientos finales, la entrega por el Proveedor de los materiales y equipos se formalizara con la conformidad de ENEL a la recepción de los mismos.

9.4.3. Obras y/o servicios.

9.4.3.1. Transcurrido el Periodo de Garantía, el Proveedor notificara a ENEL el vencimiento de dicho Periodo, solicitando la Recepción Definitiva. A la vista de tal solicitud, ENEL, si precede, comunicara al Proveedor la fecha fijada para la Recepción Definitiva que debera producirse en un plazo superior a treinta (30) días a contar desde la recepción de la notificación por ENEL.

9.4.3.2. En el día fijado de mutuo acuerdo para llevar a cabo la Recepción Definitiva, se procedera, en presencia del Proveedor, a comprobar el estado de la obra o servicio contratado y a verificar si cumple las condiciones exigidas, efectuando las pruebas necesarias.

9.4.3.3. La Dirección de la ejecución de las obras o servicios encargados, correspondera por completo al Proveedor.



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9.5. Transmisión de la propiedad y el riesgo.

9.5.1. Materiales y/o equipos.

El Proveedor será responsable de los vicios ocultos o defectos de fabricación, también durante el Periodo de Garantía y hasta el plazo señalado por la legislación vigente, aparte de las responsabilidades legales o de otra índole que puedan derivarse.

9.5.2. Obras y/o servicios.

El Proveedor será responsable de los vicios ocultos o defectos, también durante el Periodo de Garantía y hasta el plazo señalado en la legislación aplicable, aparte de las responsabilidades legales o de otra índole que pudieran derivarse.

10. CESION DEL CONTRATO Y SUBCONTRATACION.

10.1. En ningún caso podrá deducirse relación contractual alguna entre los subcontratistas o cesionarios y ENEL, siendo siempre responsable el Proveedor de todas las actividades de dichos subcontratistas o cesionarios, y del cumplimiento de las obligaciones contractuales, legales y fiscales derivadas del cumplimiento de sus trabajos; así como de los daños y perjuicios causados a ENEL por cualquiera de sus subcontratistas o cesionarios, de sus agentes, asesores y trabajadores.

10.2. ENEL no será responsable ante ningún subcontratista o cesionario, ni ante el personal de estos, por ninguna reclamación derivada directa o indirectamente del Contrato, por lo que el Proveedor se compromete y se obliga frente a ENEL a llevar a cabo cuanto este a su alcance para evitar la formulación y/o tramitación de dichas reclamaciones. En consecuencia, el Proveedor responderá frente a ENEL y le mantendrá indemne de y frente a cualquier acción, judicial o extrajudicial, o procedimiento dirigidos contra ENEL por cualquier subcontratista o cesionario, o por el personal de estos. La mencionada indemnidad alcanzará tanto al importe que ENEL deba abonar, como a los gastos o costos de cualquier naturaleza en que ENEL incurra como consecuencia de dicha reclamación. El incumplimiento por el Proveedor de cuanto se regula en este apartado se considerará como incumplimiento grave, y facultará a ENEL a poner término de pleno derecho o ipso facto al Contrato, sin que sea necesaria declaración judicial alguna al respecto, por incumplimiento del Proveedor, sin perjuicio de cualquier otra acción legal que pudiera asistir a ENEL.

10.3. En los casos de cesión de Contrato o subcontratación, el Proveedor se compromete y se obliga a obtener del cesionario o subcontratista la aceptación previa de las obligaciones que frente a ENEL se deriven para el de todas las condiciones contractuales, jurídicas, laborales, de confidencialidad y de seguridad, siendo imprescindible la presentación de la documentación acreditativa correspondiente.

10.4. De acuerdo con lo anterior, ENEL podrá en todo momento inspeccionar y vigilar los trabajos o fabricaciones del cesionario o subcontratista, y el cumplimiento de sus obligaciones. El subcontratista o cesionario queda obligado a facilitar a ENEL toda la colaboración que para ello pueda ser necesaria (documentación, informes, libre acceso a sus fábricas, talleres o instalaciones, etc.).

10.5. ENEL se reserva el derecho de rechazar a aquellos subcontratistas o cesionarios que durante la marcha de las obras o de los servicios no juzgara oportuno mantener.

11. CESION DE DERECHOS Y CREDITOS.

ENEL podrá, con el único requisito de notificarlo al Proveedor, ceder sus derechos de cobro u obligaciones de pago, derivados del Contrato, a favor de cualquier otra empresa filial de ENEL.

12. OBLIGACIONES A CARGO DEL PROVEEDOR.

Según regulación contenida en la Parte General de las presentes Condiciones Generales de Contratación.

13. RESPONSABILIDAD DEL PROVEEDOR.

Según regulación contenida en la Parte General de las presentes Condiciones Generales de Contratación.

14. PERIODO DE GARANTIA.

14.1. El Periodo de Garantía de los materiales y equipos así como de las obras o servicios contratados se extiende durante el tiempo que se estipule en el Contrato, y en su defecto, durante un (1) año a partir de la fecha del Documento de Recepción Provisional. Si no se suscribiera el Documento, el año se contará desde la conformidad de ENEL a la entrega del material, o desde la comunicación de la finalización de la obra o del servicio contratado y entrega a ENEL de la documentación por parte del Proveedor para la tramitación de la autorización administrativa para poner en servicio la obra en su caso.

14.2. Si al vencer el Periodo de Garantía no hubieren transcurrido seis (6) meses al menos desde la entrada en servicio de la instalación principal de ENEL a que se destine o de la que forme parte el objeto del Contrato, el Periodo de Garantía quedara automáticamente prorrogado hasta transcurridos dichos seis (6) meses, salvo que los materiales o equipos aportados por el Proveedor hayan sufrido una reparación o sustitución, en cuyo caso, serán garantizados por tiempo igual al Periodo de Garantía inicial. En ningún caso implicara mayores costos para ENEL.

14.3. Vencido el Periodo de Garantía y efectuada la Recepción Definitiva, ENEL podrá proceder, para su exclusivo provecho, directamente por sí o por intermedio de terceros, a modificar o alterar libremente los materiales y equipos objeto del Contrato o las construcciones realizadas o instalaciones montadas, incluso cuando estén amparadas por licencias, patentes u otras formas de propiedad industrial a favor del Proveedor, preservando en todo caso la confidencialidad debida en razón de estas.

15. PENALIZACIONES.

15.1. Sin perjuicio de lo establecido en la Parte General de las presentes Condiciones Generales de Contratación, sobre el término del Contrato por causa imputable al Proveedor, los incumplimientos por parte de este en las fechas de entrega o en los plazos de ejecución tanto parciales como finales, así como cualesquiera otros incumplimientos expresamente previstos en el Contrato o en estas Condiciones Generales, conllevará la aplicación por ENEL de una penalización que en ningún caso tendrá carácter indemnizatorio.

15.2. En el caso de que no se hubiese establecido otra, la penalización por retraso será de un 1.5% del importe total del Contrato por semana corrida de retraso durante las cuatro (4) primeras semanas, y del 4% a partir de la quinta semana.

15.3. Si durante el Periodo de Garantía ENEL se viera privada de la disposición o utilización de los materiales o equipos contratados, o de la obra realizada o instalación montada, por causa de defecto, desperfecto o avería que se haya producido o advertido en ellos, no imputables a ENEL, o por causa de deficiencias en la ejecución o en los servicios que hayan de realizarse para subsanarlas, el Proveedor será sancionado con la penalización que se haya establecido al efecto en el Contrato y si no lo hubiere sido, con la del 0, 1% del importe total del Contrato por cada día de no disposición o utilización.

15.4. La suma de las penalizaciones no podrán exceder del 15% del importe total del Contrato. En caso de superarse dicho límite, ENEL aplicará la penalización y tendrá derecho a resolver el Contrato con arreglo a la legislación aplicable.

15.5. El cobro de las penalizaciones no privará a ENEL de la facultad de cobrar adicionalmente al Proveedor todos los gastos y sobrecostos que se vea obligado a soportar y/o pagar a terceros como consecuencia directa del retraso o incumplimiento producido.

15.6. La aplicación de las penalizaciones previstas no exime al Proveedor del correcto cumplimiento del Contrato en toda su extensión. En consecuencia, el Proveedor se obliga a eliminar las deficiencias técnicas advertidas, a pagar las penalizaciones que correspondan, a recuperar a su costa los plazos perdidos, y a sustituir los materiales y equipos, o rehacer o repetir, según proceda, las obras trabajos o servicios objeto del Contrato, a requerimiento de ENEL.

15.7. El procedimiento para el cobro de cualquier penalización derivada del Contrato se realizará conforme a lo que se describe en este apartado:

- a) ENEL comunicará por escrito razonado al Proveedor la penalización que proceda abonar, detallando el importe de la misma. El Proveedor tendrá un plazo de quince (15) días corrido desde la fecha de la comunicación para manifestar cuanto en su descargo crea oportuno.
- b) Transcurrido dicho plazo, y en el caso de que ENEL no aceptase dichos argumentos, el Proveedor deberá descontar, en su factura, el importe correspondiente a la penalización aplicada. En caso de que no se produzca el referido descuento se procederá a ejecutar por la cuantía correspondiente las garantías que tuviere constituidas, o a intentar el cobro por cualquier otro medio contemplado en el Contrato, en las Leyes o en las presentes Condiciones Generales, y todo ello sin perjuicio de la indemnización por daños y perjuicios que a favor de ENEL pudiera proceder.
- c) Una vez ejecutada la garantía económica, el Proveedor estará obligado a restituirla por el mismo importe que el anterior a la ejecución, conforme a lo establecido en el apartado 19.
- d) En tanto no se produzca dicha restitución ENEL conservará el remanente que hubiera resultado entre el importe total de la garantía y el importe de la penalización.
- e) En el caso de que el importe de la garantía inicial no sea suficiente para cubrir el importe de las penalizaciones, ENEL compensará las pagas pendientes necesarios para cubrir el importe total de las penalizaciones, y todo ello sin perjuicio de la restitución de la garantía conforme a lo indicado anteriormente.

16. SUSPENSIÓN, RESCISIÓN Y RESOLUCIÓN O TÉRMINO.

Según regulación contenida en la Parte General de las presentes Condiciones Generales de Contratación.

17. FUERZA MAYOR.

Según regulación contenida en la Parte General de las presentes Condiciones Generales de Contratación.



18. OBLIGACIONES JURIDICO-LABORALES.

18.1. El Proveedor se compromete a disponer en todo momento del recurso humano necesario en número y cualificación para la ejecución del objeto del Contrato de acuerdo con los máximos estándares de calidad definidos en el mismo.

18.2. El Proveedor declara conocer y se compromete a cumplir todas sus obligaciones en materia jurídico-laboral, de seguridad social y prevención de riesgos laborales así como las normativas internas de ENEL que resulten aplicables en cada momento.

18.3. El Proveedor, en su calidad de único y excluyente empleador de sus trabajadores, tanto de aquellos que ocupe en la ejecución del Contrato como de las que se desempeñan en otras áreas de la empresa del Proveedor, e inclusive en otras empresas, obras, o faenas donde este también preste servicios, es el obligado a dar cumplimiento estricto y oportuno a las disposiciones legales, reglamentarias y administrativas vigentes en materia laboral y previsional respecto de dichos trabajadores.

18.4. En especial, el Proveedor se obliga, respecto a los trabajadores objeto del Contrato, a:

- a) Declarar y pagar mensualmente y en forma oportuna las cotizaciones e imposiciones previsionales de los trabajadores, en las instituciones de previsión y de seguridad social respectivas. En caso de declaración, las referidas cotizaciones deberán pagarse a más tardar el último día hábil del mes en que se hizo la declaración y que corresponde al mes siguiente en que se devengaron las remuneraciones y rentas afectas a aquellas.

Se considerará incumplimiento grave por parte del Proveedor el hecho de declarar y no pagar en la oportunidad que se ha señalado anteriormente, las cotizaciones previsionales respectivas.

- b) Someterse a los procedimientos preventivos de revisión efectuados por ENEL o por terceros en su representación.
- c) Proporcionar a ENEL, cuando esta lo solicite, el certificado de cumplimiento de obligaciones laborales y previsionales junto con el certificado de antecedentes laborales y previsionales originales emitido por la Inspección del Trabajo respectiva. Adicionalmente ENEL podrá solicitar, dentro de los plazos establecidos por esta última, toda la documentación que acredite el cumplimiento de las obligaciones laborales y previsionales y, en especial, las siguientes antecedentes:

Contratos de trabajo.

- Comprobantes de feriado legal.
- Libro auxiliar de remuneraciones.
- Registro de asistencia.
- Comprobantes de pago de remuneración.
- Planillas de pago de cotizaciones previsionales y de seguridad social.

- d) Dar cumplimiento a las observaciones formuladas en materias laborales y previsionales, en los plazos fijados por ENEL.

18.5. Con el objeto de dar cumplimiento a las obligaciones laborales y previsionales y en especial los aspectos relacionados con prevención de riesgos, el Proveedor deberá enviar mensualmente al Área Usuaria de ENEL, las siguientes antecedentes; solamente cuando esta los solicite:

- a) Copia del recibo de las cotizaciones de la Ley ND 16.744 de sus trabajadores, del mes inmediatamente anterior.
- b) Copia del informe mensual de accidentes del trabajo, que se presenta obligatoriamente en la mutual donde se encuentra adherida su empresa, según los artículos 12 y 13 del Decreto ND 40 de 1969, del Ministerio del Trabajo y Previsión Social, publicado en el Diario Oficial de 7 de Marzo de 1969, que Aprueba Reglamento sobre Prevención de Riesgos Profesionales.
- c) Fotocopia de la declaración individual de accidentes del trabajo (DIAT), que se debe presentar a la mutualidad correspondiente por cada accidente ocurrido.
- d) Cumplimiento de un programa de prevención de riesgos en concordancia con la legislación Chilena.

18.6. El Proveedor deberá tener a todo su personal afiliado a una Mutual de Seguridad y cumplir con lo estipulado en la Ley ND 16.744 de Accidentes del Trabajo y Enfermedades Profesionales.

18.7. Las obligaciones descritas en los puntos anteriores, serán también exigibles en el caso de personal subcontratista, cuyo cumplimiento será de exclusiva responsabilidad del Proveedor.

Todos los daños a terceros que se produzcan en los servicios prestados por acciones u omisiones del personal del Proveedor, de este o de sus subcontratistas, serán de cargo suyo.

19. GARANTIA ECONOMICA.



**CONDICIONES GENERALES DE CONTRATACION GLOBALES GRUPO ENEL
SEPTIMA EDICION, validas desde 01/03/2019**

19.1.1. El Proveedor debera entregar, antes de la firma del Contrato, una Garantia, a favor de ENEL, par un manta equivalente a un 10% del manta del suministro, obra o servicio, y en el case de Contratos de servicio dicha garantia correspondera a una (1) facturaci6n mensual, con la glosa: "Para garantizar el fiel, complete y oportuno cumplimiento del Contrato". Dicha Garantfa sera devuelta al Proveedor una vez que el suministro, obra o servicio se encuentre recibido a entera conformidad de ENEL y una vez efectuados par parte de ENEL las descuentos y las comprobaciones que procedan, en un plaza no superior a noventa (90) dfas.

19.1.2. El Proveedor debera entregar, a favor de ENEL, una vez que el suministro, obra o servicio sea recibido, a entera conformidad de ENEL, una garantia par un manta equivalente a un 5% del valor del suministro, obra o servicio, para garantizar la correcta ejecuci6n y funcionamiento del suministro, obra o servicio. Dicha Garantia sera devuelta al proveedor una vez concluido el periodo de garantia del suministro, obra o servicio, y una vez efectuados par parte de ENEL las descuentos y las comprobaciones que procedan, en un plaza no superior a noventa (90) dias.

19.1.3. La vigencia de la Garantia debera exceder en al menos en seis (6) meses el periodo de vigencia del Contrato

19.2. Garantfa del cumplimiento de las obligaciones laborales y previsionales.

19.2.1. En el case de las Contratos de servicios que sean intensives en la ocupaci6n de mane de obra, el Proveedor debera entregar una garantia par cumplimiento de las obligaciones laborales y previsionales, la cual sera calculada de acuerdo al numero de trabajadores del Proveedor que se desempeñen en el Contrato, par el numero de arias correspondientes a la indemnizaci6n, considerando en esta el mes de aviso y la duraci6n del Contrato. La boleta de garantia debera ser renovada aria a aria, considerando las arias de servicios acumulados de las trabajadores asociados al Contrato. La vigencia de la Garantia debera exceder en al menos en seis (6) meses el perfodo anual del Contrato.

19.2.2. La garantia correspondiente al ultimo aria, sera devuelta al'ermine del Contrato, y cuando el Proveedor presente la totalidad de las finiquitos firmados y ratificados ante notario, de todos las trabajadores que se hayan desempeñado en el Contrato suscrito con ENEL.

19.2.3. Para el case de las contratos de servicio, el Proveedor tendra la obligaci6n de presentar solamente una de las garantias anteriormente descritas, siendo esta la de mayor valor resultante de la comparaci6n de ambas.

20. SEGUROS.

20.1. Si el Contrato se realiza en la modalidad de materiales en consignaci6n del Proveedor en las instalaciones de ENEL, el Proveedor estara obligado a contratar, ademas de las seguros citados en el apartado hom6nimo de la Parte General, un seguro de robe y otros darios que pueda sufrir el material depositado, para todo el perfodo de cumplimiento del Contrato.

20.2. Si a criteria de ENEL, las coberturas de seguro presentadas per el Proveedor no fueran suficientes para cubrir la exposici6n al riesgo, tanto de la entrega de materiales o equipos coma de la realizaci6n de la obra o servicio objeto del Contrato, el Proveedor se compromete a revisar y modificar las mismas conforme sea necesario y de acuerdo a las condiciones del mercado asegurador.

21. PROPIEDAD INDUSTRIAL E INTELECTUAL.

Segun regulaci6n contenida en la Parte General de las presentes Condiciones Generales de Contrataci6n.

22. CONFIDENCIALIDAD.

Segun regulaci6n contenida en la Parte General de las presentes Condiciones Generales de Contrataci6n.

23. TRATAMIENTO DE DATOS DE CARACTER PERSONAL.

23.1. En case de que la ejecuci6n del Contrato requiera que el Proveedor acceda a dates de caracter personal de las que sea responsable ENEL, sera de aplicaci6n lo dispuesto en este apartado.

23.2. Los mencionados dates que sean procesados y gestionados par el Proveedor seran y permaneceran bajo responsabilidad de ENEL.

23.3. En particular, el Proveedor declara y garantiza:

- a) Que el tratamiento de las dates se efectuara de conformidad con la legislaci6n vigente, asi coma con las criterios, requisitos y especificaciones establecidos en el Contrato y, en su defecto, con las instrucciones que en todo momenta le de ENEL.
- b) Que las dates personales a las que el Proveedor tenga acceso coma consecuencia de la prestaci6n de las suministros, obras o servicios objeto del Contrato, no seran aplicados ni utilizados para un fin distinto al que figura en el mismo.



- c) Que devolviera directamente a ENEL los datos de carácter personal que hayan sido objeto de tratamiento, en un plazo de quince (15) días corridos contados desde la fecha de terminación del suministro, obra o servicio de conformidad con lo dispuesto en el Contrato.
- d) Que destruyera cualquier documento, soporte o copia de los datos de carácter personal que hayan sido objeto de tratamiento en virtud de lo dispuesto en el Contrato y que no hayan podido ser objeto de devolución, por razones de diversa índole, en los términos expuestos en el apartado anterior. No obstante, no procederá la destrucción de los datos cuando exista una previsión legal que exija su conservación, en cuyo caso el Proveedor conservará, debidamente bloqueados, los mencionados datos.
- e) Que no comunicara, ni cediera a otras personas físicas o jurídicas, los datos personales que le sean suministrados con motivo de la prestación de los suministros, obras o servicios objeto del Contrato.
- t) Que adoptara, en el tratamiento de los datos suministrados por ENEL, las medidas de índole técnica y organizativa necesarias exigidas por la normativa legal que al respecto resulte de aplicación, así como aquellas que ENEL pudiera imponer en el propio Contrato, de forma que se garantice la seguridad de los datos de carácter personal y se evite su alteración, pérdida, tratamiento o acceso no autorizado, habida cuenta del estado de la tecnología, la naturaleza de los datos almacenados y los riesgos a que están expuestos, ya provengan de la acción humana, del medio físico o natural. Las medidas abarcarán, a título enunciativo, hardware, software, procedimientos de recuperación, copias de seguridad y datos extraídos de datos personales en forma de exhibición en pantalla o impresa.
- g) Que en el caso de que para la prestación del suministro, obra o servicio fuera necesaria la realización de alguna transferencia internacional de datos, el Proveedor se obliga a informar a ENEL con carácter previo y con la suficiente antelación para que esta pueda solicitar las correspondientes autorizaciones, sin las cuales, el Proveedor no podrá realizar dichas transferencias.

23.4. Sin perjuicio de lo previsto en la letra (e) anterior, en el supuesto que ENEL autorizase la subcontratación de determinados servicios en favor de terceros, que a su vez implicara que estos terceros tuviesen que acceder a los datos de carácter personal afectados por este apartado, el Proveedor se obliga a que, con carácter previo a dicha subcontratación, sea suscrito conjuntamente por las Partes y los subcontratistas un Contrato por el que estos últimos acepten expresamente asumir la responsabilidad del tratamiento correcto de los datos de carácter personal a las que acceda con las mismas previsiones que las contenidas en el presente apartado, así como el cumplimiento de todas aquellas obligaciones derivadas de la normativa de protección de datos.

23.5. El Proveedor se obliga a mantener indemne a ENEL frente a cualquier reclamación que pudiera ser interpuesta, en la medida en que dicha reclamación se fundamente en el incumplimiento por el Proveedor de lo dispuesto en el presente apartado, y acepta pagar la cantidad a la que en concepto de sanción, multa, indemnización, daños, perjuicios e intereses pueda ser condenada ENEL con motivo del citado incumplimiento.

24. VENDOR RATING.

Según regulación contenida en la Parte General de las presentes Condiciones Generales de Contratación.

25. GLOBAL COMPACT.

Según regulación contenida en la Parte General de las presentes Condiciones Generales de Contratación.

26. NORMATIVA DE CONDUCTA ETICA.

26.1. Generalidades.

El Grupo ENEL, en la gestión de sus actividades empresariales y de las relaciones con terceros se ajusta a lo establecido en las "Principios Generales para la Prevención de Riesgos Penales". El Proveedor, en la gestión de sus negocios y de las relaciones con terceros se compromete a cumplir dichos principios u otros equivalentes.

Estos principios, así como el resto de Normativa de Conducta Etica están disponibles en la siguiente dirección: <https://www.enelchile.cl/es/Inversionistas/a201610-codlgo-et-ico-y-p-lan-tcc.html>

26.2. Conflicto de intereses.

26.2.1. El Proveedor (si es una persona física), con la firma del Contrato, declara:

1. Que no ejerce, dentro de las sociedades del Grupo ENEL, funciones de alta dirección (director, gerente senior con responsabilidades estratégicas), de empleado de la sociedad o de auditor de cuentas del Grupo ENEL;
2. Que no tiene, dentro de las sociedades del Grupo ENEL, familiares o parientes hasta el segundo grado o cónyuge no separado legalmente o conviviente o esposo o hijos de su pareja o que estén vinculadas a él por consanguinidad o afinidad;



3. Que no ha ostentado u ostenta, tanto el Proveedor como sus respectivos familiares (cónyuge no separado o parientes de primer grado), en las últimos veinticuatro (24) meses, cargos en la Administración Pública o en Entidades encargadas de servicios públicos que hayan tenido relación directa con actividades realizadas por cualquiera de las sociedades del Grupo ENEL (otorgamiento de concesiones, actividades de control, etc.).

26.2.2 El Proveedor (si es una persona jurídica “”). con la firma del Contrato, declara:

Que como resultado del conocimiento de su estructura societaria, ninguna persona perteneciente a sus órganos de gobierno, de gestión o de control (incluidas las sociedades fiduciarias) :

- a. Es miembro de la Alta Dirección o de los Organos de Administración o del Comité de Auditoría, ni ejecutivo con responsabilidad clave de las sociedades del Grupo ENEL, ni es familiar hasta el segundo grado, cónyuge, pareja, hijo de un cónyuge o pareja, o persona dependiente (por parentesco o matrimonio) de los citados miembros.
- b. Es trabajador de alguna de las sociedades del Grupo ENEL, ni es familiar hasta el segundo grado, cónyuge, pareja, hijo de un cónyuge o pareja, o persona dependiente (por parentesco o matrimonio) del citado trabajador.
- c. Ha ostentado u ostenta, tanto la propia persona como sus respectivos familiares (cónyuge no separado o parientes de primer grado), en las últimas veinticuatro (24) meses, cargos en la Administración Pública o en Entidades encargadas de servicios públicos que hayan tenido relación directa con actividades realizadas por cualquiera de las sociedades del Grupo ENEL (otorgamiento de concesiones, actividades de control, etc.).

26.2.3. El Proveedor se obliga a comunicar a ENEL cualquier cambio que pudiera producirse posteriormente y mientras tenga la condición activa de Proveedor, respecto a la información declarada antes de la firma del Contrato.

26.3. Clausula de Honorabilidad.

- a) Con la presentación de la oferta y/o la aceptación del Contrato, el Oferente/ Proveedor¹ declara que

toma nota de los compromisos hechos por ENEL S.p.A. y por las Empresas que esta controla directa o indirectamente (en adelante “ENEL”), en el Código Ético, el Plan de Tolerancia Cero a la Corrupción (ZTC), la Política de Derechos Humanos, para respetar los principios equivalentes en la conducta de su negocio y en la gestión de las relaciones con terceros;

131 no tener conocimiento del inicio de procedimientos penales por delitos fiscales, delitos en contra de la administración pública, delitos en contra del patrimonio, delitos en contra de la libertad individual, el orden público, delitos ambientales;

141 no estar sometido/a a investigaciones penales en relación con ningún hecho, cuestión, conducta penal o ilícita que constituyan delitos fiscales, delitos en contra de la administración pública, delitos en contra del patrimonio, delitos en contra de la libertad individual, el orden público, delitos ambientales

que toma nota y autoriza que - para los fines de evaluación de la conducta profesional del declarante y de la Empresa involucrada, de conformidad con los apartados segundo y tercero antes mencionados-ENEL también adquirirá de manera autónoma más información, con el fin de evaluar la veracidad de las declaraciones aportadas, en consideración de la existencia necesaria de obligaciones fiduciarias con la Empresa involucrada

- b) El Oferente/Proveedor se compromete a informar inmediatamente y proporcionar toda documentación pertinente a ENEL:

- 1) En el caso de conocimiento del inicio de procedimientos penales a las que se hace referencia en el segundo apartado de la anterior letra a);
- 2) En el caso del inicio de una investigación penal a la que se hace referencia en el tercer apartado de la anterior letra a).

ENEL se reserva el derecho de analizar según sus exclusivos criterios la información antes mencionada, para evaluar la conducta profesional del Oferente/Proveedor y de la Empresa involucrada.

27. LEY APLICABLE.

El Contrato está regulado por la ley chilena y cualquier disputa o diferencia emanada, relacionada o de cualquier manera conectada con el Contrato, incluyendo su existencia, validez o terminación será sometida a arbitraje conforme al Reglamento Procesal de

¹ Los organismos públicos, las empresas que cotizan en bolsa de valores, las instituciones bancarias y las empresas controladas por ellos no están obligados por esta declaración.

² Que el Representante Legal de la Empresa por propio derecho, en nombre de (a) el titular y el director técnico, en el caso de una empresa individual; (b) los socios y el director técnico, si es una sociedad colectiva; (c) los asociados y el director técnico, si es una sociedad limitada; (d) los gerentes con poder de representación y el director técnico y la persona física de sociedad unipersonal, o el accionista mayoritario en el caso de empresas con menos de cuatro miembros, si es otro tipo de empresa o consorcio, de la Empresa donde desempeñan su cargo y, si corresponde, en nombre de la Empresa Matriz y del (e) titular y el director técnico, en el caso de una empresa individual; (f) los asociados y el director técnico, si es una sociedad colectiva; (g) los asociados y el director técnico, si es una sociedad limitada; (h) los gerentes con poder de representación y el director técnico y la persona física de sociedad unipersonal, o el accionista mayoritario en el caso de empresas con menos de cuatro miembros, si es otro tipo de

empresa o consorcio, de la Empresa Matriz.

³ Para si mismo y para las personas indicadas en el punto 3

⁴ Para si mismo y para las personas indicadas en el punto 3

Arbitraje del Centro de Arbitraje y Mediación de Santiago vigente a la fecha de solicitarlo, y conforme las siguientes reglas: (a) el tribunal arbitral estará compuesto por un árbitro nombrado por las Partes de común acuerdo. Si no fuera posible alcanzar acuerdo, las Partes confieren poder especial irrevocable a la Cámara de Comercio de Santiago AG para que pueda, a requerimiento escrito de cualquiera de las Partes, nombrar al árbitro de entre los miembros del cuerpo de arbitraje del Centro de Arbitraje y Mediación de Santiago. (b) el árbitro actuará como árbitro de derecho con respecto a la decisión de la disputa y como árbitro arbitrador en cuanto al procedimiento. (c) no procederá recurso alguno en contra de las resoluciones del árbitro. El árbitro estará facultado para resolver acerca de su propia competencia y/o jurisdicción. El proceso será llevado en español.



**CONDICIONES GENERALES DE CONTRATACION GLOBALES GRUPO ENEL
SEPTIMA EDICION, validas desde 01/03/2019**

Annex C: Technical/economical Proposal Numbers: EGP-001-02A and EGP-001-03B



OPT

OCEAN POWER TECHNOLOGIES

*Part A Proposal for Enel Green Power
in support of the
Marine Energy Research and Innovation Centre (MERIC)*

Open Sea Lab (OSL)

VOLUME 1 - TECHNICAL OFFER

Proposal dated 23 July 2019

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1 EXECUTIVE SUMMARY

Enel Green Power (EGP) are part of the Marine Energy Research and Innovation Centre (MERIC) project in Chile. MERIC is an 8-year project, partly funded by Chilean government's economic development organization CORFO (Corporación de Fomento de la Producción), to set up an International Centre of Excellence (ICE) that will serve as a hub for innovation in marine energy in Chile and at global level.

During the 8 years of activity, the Centre will gather researchers to support six lines of work related to marine resource assessment, site characterization, bio-fouling, bio-corrosion, environmental and social impact, and technology adaptation to extreme ocean conditions. The experts will also begin developing tools to test and adapt MRE technologies to Chile's unique natural conditions (seismic activity, rugged coastline, a particularly rich and diverse array of marine flora and fauna). MERIC will implement an innovative, integrated approach to R&D in the sector, which includes the installation by EGP of a wave energy converter to serve as a "validation test bench" (VTB) allowing comparison of theoretical results with real world data.

The autonomous OPT PB3 PowerBuoy[®] has the exceptional ability to provide for the VTB by demonstrating the production of reliable, renewable power from waves, as well as to utilize that power to operate the required sensors to measure the parameters required for the Open Sea Lab (OSL). This power also provides ICE with real time data from the sensors. This innovative system simplifies and improves performance, while supporting the aims of MERIC to be innovative and economical by utilizing renewable power.

The delivery of the OSL system is split into two parts:

- Part A - The provision of a PB3 including mooring, delivery and deployment
- Part B -The provision and integration of all the system sensors onto the PB3 and surrounding ocean area

This proposal is for the Part A only. Part B shall be addressed within a separate proposal.

Ocean Power Technologies, Inc. (OPT) is pleased to submit this Proposal to EGP for providing one (1) PowerBuoy[®] (and its deployment) at the MERIC OSL site, which is approximately 4 km off the coast of Las Cruces, Chile in an average water depth of 40 meters (EGP data supplied).

This proposal is based upon the Las Cruces deployment site, and the findings of a recent site evaluation conducted by OPT. The scope of work includes the following, as further detailed within this proposal:

- Sale of one (1) PowerBuoy[®] and mooring equipment
- Shipment and transport of the PowerBuoy[®] and mooring from OPT's Monroe (New Jersey) facility to San Antonio, Chile
- Preparation of the PowerBuoy[®] and moorings for deployment
- Deployment and commissioning of the PowerBuoy[®] and mooring
- Twelve (12) months of buoy monitoring and control
- One (1) year warranty on the PowerBuoy[®] and mooring

Additionally, services for extended remote monitoring for the duration of the OSL project, the required 3-year maintenance, and the final decommissioning of the buoy at the completion of the project are detailed in Section 6.2.

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Scope is based upon the “*Feasibility Study of deployment of the PB3 for Enel Green Power MERIC VTB Project*” (Appendix A) and reflects changes in payloads as discussed in our meeting of November 13 and 14, 2018, and the recent site evaluation of the new project location.

Scheduling is discussed in Volume 2 of this proposal.

For the avoidance of doubt, the appropriate sections of the Feasibility Study (Appendix B) are cross referenced in the following sections.

2 COMPANY PROVIDED EQUIPMENT AND MATERIALS

A rendering of the PB3 PowerBuoy® with a 3-point mooring and umbilical for subsea power supply can be seen in **Figure 1**. The PowerBuoy® offers field proven wave-energy-conversion technology to be used as a power and communications platform supporting the specified Open Sea Lab equipment, eliminating the need for a secondary solar or battery powered buoy, and thereby reducing the cost and complexity of the project. By providing a turn key, integrated solution, OPT also offers the added value of serving as a single point of contact for the entire system.

This section of the proposal addresses supply of the PowerBuoy® and mooring equipment. Services are addressed in Section 3.

A second proposal (Part B) addresses the sensors, payloads, and umbilical cables, as well as the communications and radar shore station.



Figure 1. PB3 PowerBuoy® with 3-Point Mooring and Umbilical

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The following sections address areas of the Scope of Work not otherwise addressed in the Feasibility Study (Appendix B).

2.1 PowerBuoy®

A description of the PowerBuoy® was provided in Section 5.1 of the Feasibility Study. OPT will be providing a base PowerBuoy®, which has an Energy Storage System (ESS) with a nominal capacity of fifty (50) kilowatt-hours (kWh). The ESS has an active, non-emergency capacity of thirty (30) kilowatt-hours. The estimated wave energy and ESS spare capacity are anticipated to provide ride through capability and energy reserve to restart the buoy if required.

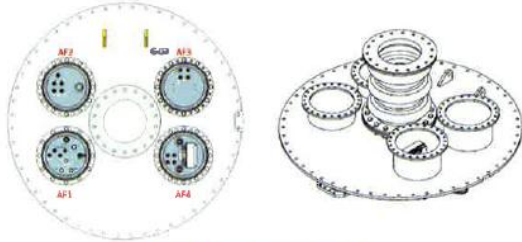


Figure 2. Unpopulated Buoy Lid

Figure 2 below shows a top view of an unpopulated PB3 lid. The PB3 can support upwards of 100 kg of customer payload without the need for additional measures. The design of the PB3 is such that there are power, discrete and networking connections available at various locations on the buoy lid. These mounting locations - called hats are available for the integration of custom payload equipment. The enclosures are watertight containers for the various pay load elements, designed to withstand significant wave slam events and underwater drag pressures. EGP's sensors and payloads are indicated in the second proposal.

An enclosure similar to the one shown in **Figure 3** will be developed to enclose the Wi Fi transceiver and cellular antenna, and any additional components necessary for the data acquisition, storage and transmission. Long range WiFi will be used for primary buoy communications, with cellular available as back-up. Cellular communications will depend upon the availability of local coverage with adequate signal strength at the deployment location. A lower junction box will be added to the buoy to send power down the buoy spar and provide connections for power and communications to the subsea payload via an umbilical cable. The final shape, dimensions and connector placements will be defined during detailed design prior to final assembly and testing.



Figure 3. Typical Topside

Enclosure

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Figure 4 shows the side view of the PowerBuoy®. The approximate dimensions of the PowerBuoy® are shown in

Table 1.

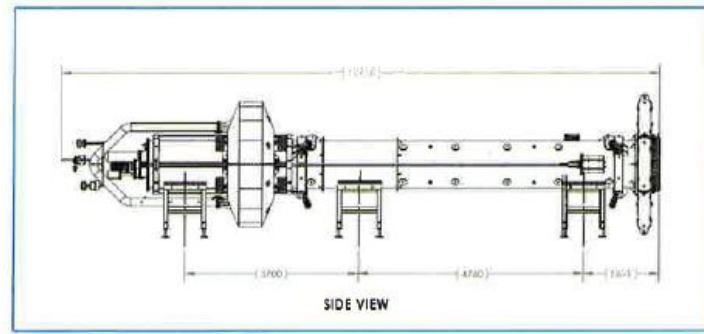


Figure 4. Side View of PowerBuoy®

Table 1. Base Buoy Dimensions

<i>Dimension</i>	<i>Value</i>
<i>Height</i>	12.73 m
<i>Draft</i>	9.28 m
<i>Spar Diameter</i>	1.00 m
<i>Float Diameter</i>	2.65 m
<i>Dry Weight</i>	8,904 kg

2.1.1 Factory Acceptance Testing

A Factory Acceptance Test (FAT) will be conducted prior to the planned shipment date of the PowerBuoy®. OPT’s standard FAT procedure will be used for the buoy, and a Certificate of Compliance will be provided to document successful completion. Acceptance testing for the payload sensors shall be defined in the Part B Proposal.

2.2 Mooring Equipment

OPT shall procure the mooring equipment in Chile to the extent possible. Preliminary inspection and assembly of any mooring equipment purchased in the US will be performed in OPT’s Monroe Township (New Jersey) facility, while preliminary inspection and assembly of the full mooring system will occur at the local staging facility in Chile prior to deployment. All equipment required for a standard OPT three-point mooring, including steel embedment anchors, shall be procured by OPT. The final mooring design has been modified to suit the final deployment location as specified by EGP. The mooring system has been designed in accordance with industry best practices. Third party certification of the design is not included.

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3 COMPANY PROVIDED SERVICES

This section of the proposal discusses the services to be provided in support of the MERIC OSL Project. OPT shall provide the following services:

- Shipping and Logistics for the PowerBuoy[®] and Mooring Equipment
- Local Staging Area & associated logistics
- Deployment Services
- PowerBuoy[®] Commissioning
- Twelve Months of Remote Monitoring

Given the selection of an alternate deployment site, a site evaluation of the Las Cruces area has been performed by OPT to evaluate local staging facilities and discuss deployment plans with local contractors. This site evaluation shall be considered part of the scope of services supplied within this proposal.

3.1 Buoy and Mooring Equipment Shipment and Transport

Once the FAT is complete and approved by EGP, OPT shall ship the PowerBuoy[®] and any US-sourced mooring equipment from its Monroe Township (New Jersey) facility to the designated Point of Delivery at the port of San Antonio, Chile. OPT will provide for all loading, shipping, transport by land, and offloading of the PowerBuoy[®] and mooring equipment from Monroe Township to the local staging facility at the port of San Antonio.

The departure port is planned to be the Port of Baltimore (Maryland) with Manzanilla (Mexico) as the planned transshipment port, and San Antonio (Chile) as the port of import. Scheduling, customs, and taxes are detailed within Volume 2.

3.2 Local Staging Facilities

OPT intends to lease local staging facilities at Puerto Centrale at the port of San Antonio in order to support: 1) deposition of the PowerBuoy[®] and mooring equipment; 2) final assembly of sensors and payloads; 3) system functionality and pre-deployment checks; and 4) Provisional Acceptance by EGP of these system functionality tests. OPT shall provide a minimum of one (1) week advance notice of the pre-deployment test at the local staging facilities. Any delay in acceptance may result in a delay of subsequent milestones. OPT shall make all necessary provisions, including materials, equipment, and labor for the deposit, movement, and placing the PowerBuoy[®] and mooring materials onto deployment vessels or into the water, as appropriate.

3.2.1 OPT Labor to Support Final Assembly and Deployment

OPT shall provide labor to support the final assembly of sensors and payloads, perform the functional testing, desktop deployment planning, PowerBuoy[®] and mooring equipment deployment, and PowerBuoy[®] commissioning.

Successful completion of the pre-deployment functional testing shall represent Provisional Acceptance.

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3.3 Deployment Services

Once the Provisional Acceptance has been approved at the local staging facility at the port of San Antonio, OPT shall commence deployment of the mooring equipment and PowerBuoy®. After a site evaluation, it has been determined that the PowerBuoy® and associated equipment can be staged at Puerto Centrale and deployed from the San Antonio port. The PowerBuoy® will be placed in the water and towed by the deployment vessel to the specified location off the coast of Las Cruces. The anchors and mooring shall be installed by the deployment vessel. The PowerBuoy® will then be deployed and connected to the mooring lines. The subsea payload will then be installed. A second deployment vessel will be used for line management during deployment of the Power Buoy®.

Baseline scope is based upon a four (4) day deployment operation, with a single vessel used for three (3) days for anchor and mooring installation, and two (2) vessels used for one (1) day for PowerBuoy® and payload installation. Two (2) OPT technicians will support deployment on the vessel, and a diving team will be available on stand-by.

Offshore commissioning of the PowerBuoy® and payload systems shall be performed. Final Acceptance of the commissioning will complete the project.

3.3.1 Deployment Location and Permits

The deployment site is approximately four (4) km west of Las Cruces (UTM WGS84: 254.873,51 m E, 6.288.260,65 m N). The deployment site has an average water depth of 40 meters. The proposed deployment site is shown in **Figure 5**.



Figure 5. Notional Deployment Site

All permits and governmental authorizations required for the project are the responsibility of EGP or EGP’s designate, other than any permits required for shipping of the PowerBuoy® from San Antonio to the local staging facilities. Certified English translations of all permits and governmental authorizations shall be provided to OPT so that they can be reviewed and incorporated into the relevant deployment procedures, including any required governmental notification. Governmental notifications regarding the commencement or completion of work shall be the responsibility of OPT.

4 DUTIES, CUSTOMS BROKERS FEES, INSURANCE AND VAT

Duties, customs, insurance, and taxes are discussed in Volume 2 of this proposal.

5 PROJECT SCHEDULE

The project schedule is detailed within Volume 2 of this proposal.

6 PROJECT INVOICING

Pricing and payment schedule are detailed within Volume 2 of this proposal.

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6.1 Project Management

Labor for OPT's Project Management is included in the Non-Recurring Engineering pricing proposal for the sensors, payloads, and umbilical (Part B Proposal).

6.2 Operations and Maintenance

The base scope of this proposal includes Remote Monitoring for a period of twelve (12) months. Remote Monitoring for the balance of the project is offered in Volume 2.

Best practices O&M for wave energy projects include diving and inspection services and Emergency Response capability. OPT will deliver an Emergency Response Plan as part of its deliverables for the project. Services for inspection and/or emergency response are not included in the base scope of this proposal.

Recommended three (3) year maintenance of the buoy and associated equipment, as well as decommissioning of the equipment at the end of the OSL project in 2023 are detailed below. These services are not included in the base scope of this proposal.

6.2.1 Remote Monitoring Scope

OPT will remotely monitor the buoy during the first twelve (12) months of the project. This remote monitoring will be limited to addressing alarms and notifications, performing diagnostics, and periodic tuning of the buoy to optimize performance. Performance reports are not included, but can be provided to EGP at additional cost. Remote monitoring of up to two (2) hours per week for these functions is included in the pricing for the first three (3) months. Periodic tuning and up to ten (10) hours of telephone support will be provided during the initial twelve (12) month remote monitoring period. Telephone support may also include communication by Skype or similar means.

6.2.2 PB3 Maintenance

The PB3 is designed to operate with a three (3) year planned maintenance cycle, and a 10-year major overhaul cycle. At three years the PB3 will be disconnected from its mooring and towed back to the nearest dock for maintenance. Depending on the condition of the buoy when it comes out of the water and the available capabilities, maintenance can be done quayside in Chile. If there are insufficient facilities quayside or if there is need for extensive work, the buoy may have to be shipped back to the OPT facilities. Maintenance includes the following:

IPTO:

- Inspection of entire PCA assembly, i.e. entire system from lower to upper clevis
- Replacement: Linear seal bellow
- Maintenance: Visual inspection of all other components in the IPTO. Replacement may be needed based on condition of the components.

Structure:

- Replacement: Satellite tracker assembly
- Replacement: Marine beacon (most likely batteries only depending on its condition)
- Replacement: All anodes on the structure

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- Maintenance: Cleaning and repainting of the structure as needed. Touchup paint may be adequate, depending on paint condition.
- Replacement: All gaskets (lower hatch, inner hatch, lid, and access flanges on the lid)
- Replacement: All bolts on the structure

Maintenance services are not included in the base scope of this proposal. Optional pricing is offered in Volume 2.

6.3 Technical Documentation

OPT shall provide an electronic copy of the following documents:

- o General Arrangement Drawing of the PowerBuoy® exterior
- o PowerBuoy® Technical Specification
- o PowerBuoy® Warranty Statement
- o OPT Quality Plan
- o PowerBuoy® Certificate of Compliance
- o Emergency Response Plan
- o Commissioning Certification

Any additional project documentation requested shall be subject to a mutually agreeable document submittal schedule.

7 GENERAL PROPOSAL CONDITIONS

Commercial conditions relevant to this proposal are addressed in Volume 2.

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APPENDIX A

FEASIBILITY STUDY

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OPT

OCEAN POWER TECHNOLOGIES

*Part A Proposal for Enel Green Power
in support of the
Marine Energy Research and Innovation Centre (MERIC)
Open Sea lab (OSL)*

VOLUME 2 - COMMERCIAL OFFER

Proposal dated 29 August 2019

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Ocean Power Technologies, Inc., 28 Engelhard Dr., Suite B, Monroe Township, New Jersey 08331, USA



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Appendix A Labor Rate Schedule

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1 EXECUTIVE SUMMARY

Ocean Power Technologies, Inc. (OPT) is pleased to submit this Proposal to EGP for providing one (1) PB3 Power Buoy[®] (and its deployment) at the MERIC OSL site, which is approximately 4 km off the coast of Las Cruces, Chile in an average water depth of 40 meters (EGP data supplied).

The delivery of the OSL system is split into two parts:

- Part A - The provision of a PB3 including mooring, delivery and deployment
- Part B -The provision and integration of all the system sensors onto the PB3 and surrounding ocean area

This proposal is for the Part A only. Part B shall be addressed within a separate proposal.

OPT is pleased to offer a firm fixed price of **\$1,256,900 US**, as further detailed within Volumes 1 and 2 of this proposal. This price is based upon the scope of work described in Volume 1-Technical Offer. This document, Volume 2, includes detailed pricing, scheduling, and other commercial terms of the offer.

Deployment shall be completed no later than 31 March 2020, weather permitting and subject to a 30 August 2019 contract award and the lead times indicated in the proposed schedule in Section 5.

The warranty period is indicated below in Section 7.4. OPT's proposal is valid through 30 August 2019. A fully executed written contract is required for a valid contract between EGP and OPT, collectively Parties. Please note that due to US NASDAQ rules the contract must be announced publicly within 4 days of signature. Accordingly, a mutually agreed upon Press Release must be approved and ready for release prior to signature. OPT will work with EGP to produce this in time.

2 SCOPE OF WORK

The scope of work is detailed within Volume 1 of this proposal. The scope and pricing are based upon the “*Feasibility Study of deployment of the PB3 for Enel Green Power M ERIC VTB Project*” and reflects changes in payloads as discussed in our meeting of November 13 and 14, 2018, and the previously noted change in project location. Further changes in scope or schedule after the date of this proposal may require changes in pricing.

This proposal (referred to as Part A) is one (1) of two (2) proposals for the OSL project that will be submitted separately from each other. The second proposal (referred to as Part B) includes the payload sensors (both on shore and off), umbilicals, and Non-Recurring Engineering to integrate them. Pricing for each part will be shown separately in the contract, however both proposals must be considered together, as there is an interdependence in scope and pricing. Should EGP wish to purchase one of either Part A or Part B, pricing may be subject to adjustment.

3 COMPANY PROVIDED SERVICES

Scope of services included in this proposal is detailed within Volume 1. Pricing for all services is firm through the requested schedule unless otherwise specifically noted herein.

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3.1 Buoy and Mooring Equipment Shipment and Transport

Shipment of the PowerBuoy® and mooring equipment to the designated point of delivery is included as detailed within Volume 1. A preliminary project schedule is included in Section 5 below.

3.1.1 Customs

The schedule assumes that the shipment will be in Customs for up to two (2) weeks prior to pick-up by the local freight carrier.

OPT is providing a turnkey solution and will provide the local staging facilities as the shipping address for the PowerBuoy® and mooring equipment. EGP shall designate the Importer of Record responsible for any import duties or VAT, if applicable. At the time of this proposal, it is understood that the Importer of Record will be Panguipulli, who will be responsible for any import duties or VAT that may apply.

3.1.2 Shipping and Transport Permits

OPT and its shipping and transport contractors shall supply all necessary shipping and transport permits and Customs documents for the transport and shipment of the PowerBuoy® and mooring equipment.

3.1.3 Shipping & Logistics Pricing

Shipping rates quoted in the proposal are firm through the proposed schedule. Sailing time is currently shown to be thirty (30) to forty (40) days (plus customs clearance). The project schedule is dependent upon sailing schedules at the time of shipment.

3.2 Local Staging Facilities

OPT intends to lease local staging facilities at Puerto Centrale at the port of San Antonio in order to support: 1) deposition of the PowerBuoy® and mooring equipment; 2) final assembly of sensors and payloads; 3) system functionality and pre-deployment checks; and 4) Provisional Acceptance by EGP of these system functionality tests. OPT shall provide a minimum of one (1) week advance notice of the pre-deployment test at the local staging facilities. Any delay in acceptance may result in a delay of subsequent milestones. Should such a delay be caused by conditions beyond OPT's control, additional charges for extended storage duration will apply. OPT shall make all necessary provisions, including materials, equipment, and labor for the deposit, movement, and placing the PowerBuoy® and mooring materials onto deployment vessels or into the water, as appropriate.

3.2.1 OPT Labor to Support Final Assembly and Deployment

On-site labor to support final assembly, functional testing, deployment, and commissioning for two (2) continuous weeks is included in the proposal pricing. The two (2) continuous weeks shall occur without interruption, weather permitting. On-shore days will be worked at eight (8) hours per day and off-shore days at twelve (12) hours per day.

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Additional OPT labor hours will be invoiced at the rates indicated in Appendix A if the PowerBuoy® deployment is delayed by others. Labor rates for on-shore and off-shore work will be billed on an eight (8) and twelve (12) hour day basis. Any travel & expenses beyond a single round trip will be billed at cost plus fifteen percent (15%). OPT and EGP may agree to have OPT personnel return to Monroe Township (New Jersey) subject to improvement in weather conditions or other factors.

3.3 Deployment Services

The preliminary deployment plan is detailed within Volume 1 of this proposal. Pricing is firm, and based upon utilizing vessels hired out of the port of San Antonio. Any additional labor and vessel time due to delays caused by EGP shall be reimbursed through a contract amendment in accordance with labor rates noted in Appendix A and cost plus 10% for any 3rd party costs.

4 DUTIES, CUSTOMS BROKERS FEES, INSURANCE AND VAT

It is understood that Panguipulli will be the Importer of Record and responsible for all import duties and VAT. OPT has included costs to cover customer broker fees and insurance on all equipment, as further described below.

4.1 Customs Broker Fees

Customs Broker Fees are included in the Part A pricing proposal. It is assumed that the PowerBuoy® and payload equipment will all be shipped at the same time. Additional costs for separate shipments are not included in this proposal.

4.2 Customs

Other than the previously referenced customs broker fees, all import tariffs, duties, and taxes are excluded from this proposal.

4.3 VAT

VAT of 19% is included in OPT pricing for all local services, including deployment services, local staging facilities, and any mooring equipment procured within Chile. VAT on imported goods is specifically excluded from this proposal.

4.4 Insurance

Insurance coverage during shipping and deployment is included for the PowerBuoy® and Part A items. Title of equipment shall transfer to Panguipulli upon completion of deployment and offshore commissioning.

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5 PROJECT SCHEDULE

The proposed project schedule, which is based on execution of both Parts A and B in parallel, is shown in Figure 1, with estimated start and completion dates noted in **Table 1**. The schedule assumes Contract Award no later than 30 August 2019 in order to achieve a planned deployment in March 2020, weather permitting. Any delay in the Contract Award date will result in a day-for-day delay of subsequent milestones. Long lead times for sensors and payloads are included in the schedule. Procurement and integration of the sensors and pay loads are shown in the schedule due to their impact on the Part A items and PowerBuoy® schedule.

Figure 1. Proposed Project Schedule

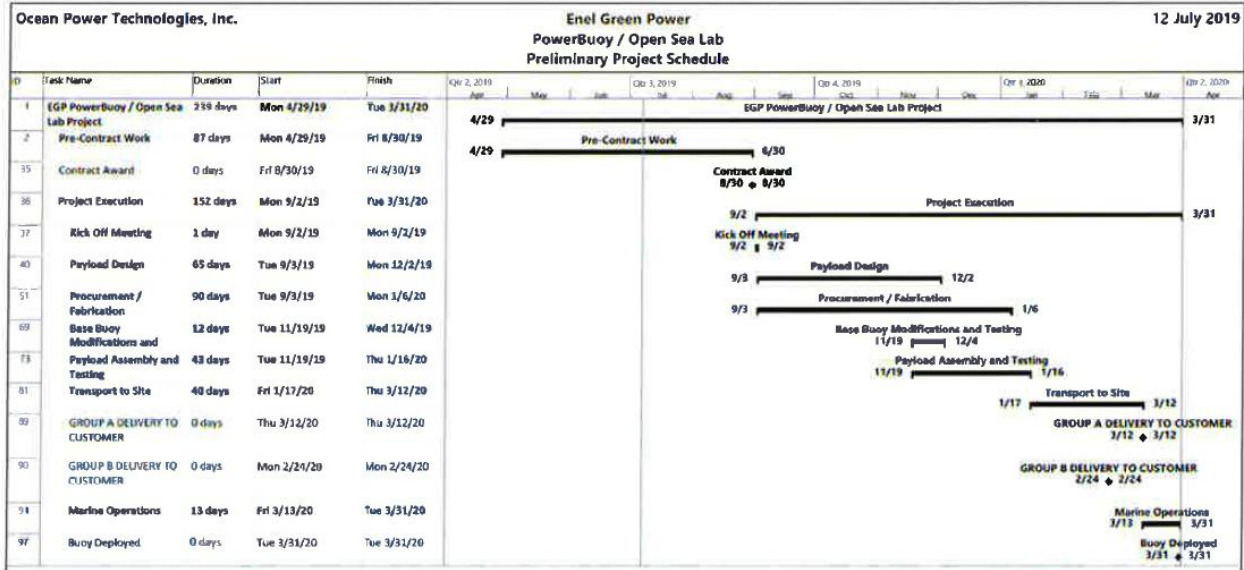


Table 1. Estimated Project Schedule

Task/Milestone	Estimated Completion
Contract Award	no later than 30 August 2019
Base Buoy FAT	4 December 2019
Payload Design and Procurement	6 January 2020
Payload Assembly & Testing	16 January 2020
Delivery to Port of Import (San Antonio, Chile)	26 February 2020*
Delivery to Local Staging Facility	12 March 2020*
Deployment and Offshore Commissioning	no later than 31 March 2020*

* Milestones associated with ocean freight and marine operations are subject to weather conditions.

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6 PROJECT INVOICING

A summary of pricing can be found below in **Table 2**. All prices are firm based upon the baseline scope and schedule as detailed within this proposal.

Table 2. Pricing Schedule (Amounts in US Dollars)

Item	Description	Goods (US)	Goods (Chile)	Services (US)	Services (Chile)	Total
A.1	Site visit at Las Cruces - Feasibility study of WEC deployment	-	-	***	-	***
A.2	PB3 PowerBuoy® supply	***	-	-	-	***
A.3.1	Mooring equipment supply (US sourced)	***	-	-	-	***
A.3.2	Mooring equipment supply (Chilean sourced)	-	***	-	-	***
A.4	Shipment of A.2 + A.3 from OPT factory NJ to San Antonio port CL, including insurance	***	-	-	-	***
A.5	Customs operations at San Antonio port (in charge to EGP/Panguipulli SA)	NN	-	-	-	-
A.6	Inland Freight to Local Staging Area	-	-	-	***	***
A.7.1	Local Staging @ San Antonio port	-	-	-	***	***
A.7.2	Local Assembling and testing of PB3 and OSL components (part A+B) on shore - Provisional Acceptance	-	-	***	-	***
A.8	Deployment of mooring system (naval services)	-	-	-	***	***
A.9	Deployment of PB3 and OSL system (naval services & divers)	-	-	-	***	***
A.10	Site management, commissioning and final acceptance test (part A+B)	-	-	***	-	***
Subtotal (USD)		***	***	***	***	***
Additional Costs:						
A.11	Letter of Credit - 10% of Contract Value for 12 Month Warranty Period	-	-	***	-	***
Total (USD)		***	***	***	***	1,256,900

Pricing Notes:

1. Deployment pricing is based upon the following:
 - a. Use of a single vessel for three (3) days for installation of anchors and mooring, and two (2) vessels for one (1) day for installation of the PowerBuoy® and payload.
 - b. Two (2) OPT technicians offshore to support deployment for a total of four (4) days
 - c. Diver team available on stand-by for four (4) days
 - d. All associated port fees for a four (4) day deployment operation
2. Pricing is firm and inclusive of all services noted above.
3. Impact of changing deployment location from Valdivia to Las Cruces:

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- a. The types of vessels available in Valdivia were larger, supporting the local aquaculture industry. The smaller vessels available in San Antonio result in extended deployment duration as noted above.
 - b. Daily rates for vessels in San Antonio are higher due to it being a more commercialized port.
4. VAT (19%) is included on pricing noted above for local port services, deployment services, and Chilean mooring equipment supply.
 5. Letter of Credit pricing is based upon provision of an LOC in the amount of 10% total contract value from Final Acceptance through expiration of warranty. Mutually agreeable LOC language shall be established prior to issuance of LOC.

The Project will be invoiced according to the invoice scheduling shown in Table 4.

Table 3. Invoice Schedule (Amounts in US Dollars)

Payment Milestone	Estimated Date	Value	% of Contract
Contract Award	30-Aug-19	\$ [***]	[***]
Shipment from OPT Facility (Monroe, NJ)	17-Jan-20	\$ [***]	[***]
Provisional Acceptance at designated San Antonio facility	24-Mar-20	\$ [***]	[***]
Final Acceptance after Offshore Commissioning	31-Mar-20	\$ [***]	[***]
Total		\$ 1,256,900	100%

Invoice terms are net thirty (30) days from date of invoice, payable in U.S. dollars.

The following options offered are not included in base pricing noted above:

- A. Remote monitoring (beyond initial 12 month period) = \$[***] per month x 3 additional years = \$[***]
- B. 3 Year Maintenance and Decommissioning:
 - a. 3 Year Maintenance (as further detailed in Section 7) = \$[***]
 - b. Decommissioning (as further detailed in Section 7) = \$[***]
 - c. 3 Year Maintenance and Decommissioning are based upon best pricing currently available. Pricing is subject to adjustment should pricing increase more than 10% at the time services are required.

6.1 Project Management

Labor for OPT’s Project Management for the overall project is included in the Non-Recurring Engineering pricing proposal for the sensors, payloads, and umbilical (Part B Proposal), and therefore pricing for this Part A Proposal is dependent on the Part B Proposal. Should EGP wish to award a contract for one (1) of either Part A or Part B, pricing may be subject to adjustment.

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6.2 Operations and Maintenance

The Proposal includes Remote Monitoring for a period of twelve (12) months. Remote Monitoring for the balance of the project is offered at an additional cost. EGP has indicated that a third potential contract for Operations and Maintenance (O&M) of the project will be finalized at a later date.

Operation and maintenance of the PowerBuoy[®] and OSL system is not included, other than the previously noted remote monitoring. OPT will deliver an Emergency Response Plan as part of its deliverables for the project. Pricing for diving, inspection, and emergency response services may be offered in accordance with labor rates in Appendix A and at cost + [***]% for any subcontracted services.

Pricing is offered below for the recommended three (3) year maintenance of the buoy and associated equipment, as well as decommissioning of the equipment at the end of the OSL project in 2023. This cost is not included in the firm pricing for the base scope of the Part A proposal.

6.2.1 Remote Monitoring Scope

OPT will remotely monitor the buoy as described in Volume 1. Labor for additional remote monitoring support above the standard remote monitoring shall be invoiced at the prevailing labor rates in Appendix A.

6.2.2 PB3 Maintenance

OPT is pleased to offer budgetary pricing for planned 3 year maintenance and decommissioning services as follows:

- \$[***] US for 3 Year Maintenance, including recovering/redeployment of the buoy, transport to local staging facility, rental of this facility, and all materials, equipment, labor, and supervision to necessary to complete maintenance as detailed in Volume 1
- \$[***] US for decommissioning of the system at the end of the project in 2023, including recovery of the buoy and associated equipment, transport to a local staging facility, rental of such facility, and all labor and equipment to complete the inspection and cleaning of PowerBuoy[®] and associated equipment. Cost of extended storage or shipment of equipment is not included in this estimated cost, as a shipping destination has not yet been specified.

Pricing for both the 3-year planned maintenance and decommissioning are based on best available information at time of bid and is hence budgetary. As such, these prices are subject to adjustment at the time these services are requested.

6.3 Technical Documentation

Provision of all technical documentation specified in Volume 1 is included in the base pricing of this proposal.

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7 GENERAL PROPOSAL CONDITIONS

7.1 Subcontractors

The pricing indicated in this proposal is contingent upon use of OPT's preferred contractors.

Contractors shall be responsible for implementing their Health, Safety & Environmental (HS&E) Plans and procedures in accordance with: 1) the requirements of the regions where work is performed; 2) OPT's HS&E, and 3) best marine practices. Should additional safety requirements be imposed after the date of this proposal, pricing may be subject to adjustment.

7.2 Cancellation Charges

EGP shall incur charges if the contract is cancelled for any reason after the contract is finalized and effective. If the contract is cancelled prior to PowerBuoy[®] shipment, then a cancellation fee of fifty percent (50%) of the base PowerBuoy[®] supply will be imposed. If the contract is cancelled after PowerBuoy[®] shipment, then a cancellation fee of seventy-five percent (75%) of the base PowerBuoy[®] supply will be imposed. OPT shall be also entitled to recover all expenses plus an additional thirty percent (30%) fee on all non-refundable or non-cancellable charges for sensors, additional equipment, mooring equipment, materials, deployment expenses, shipping expenses, return shipping expenses, and other direct project closeout expenses, other than labor. OPT labor for project close out shall be billed at the hourly rate in Appendix A.

7.3 Change Management

Pricing in this proposal is based upon the scope and schedule referenced herein. Should any changes be requested after the date of this proposal, an equitable contract amendment shall be issued to reimburse OPT for any additional costs as a result of such request. All contract amendments shall be managed through OPT's standard change management process unless otherwise agreed in writing by both Parties.

7.4 Warranty

OPT warrants the PowerBuoy[®] and mooring against defects in materials and workmanship for a period of one (1) year when the buoy is used for its intended purpose, operated in accordance with its design, and any applicable scheduled maintenance is performed. The warranty period shall be for one (1) year beginning on the date of Final Acceptance or 31 March 2020, whichever is earlier. The warranty shall not include the cost of recovery or redeployment of the PowerBuoy[®], mooring, or any equipment.

7.4.1 Company Responsibilities For Warranty Repairs

OPT shall supply labor, parts, and a laydown area for the work to be performed. Warranty repair work shall be performed once the PowerBuoy[®] has been placed on the high stands in the designated laydown area by the Customer. Expenses for the laydown area shall be paid by OPT for warranty repairs from the setup of the high stands through the completion of warranty repairs.

For each warranty claim, OPT shall provide one (1) week of on-site support for recovery, one (1) week for redeployment, and single round trip travel expenses for two (2) OPT technicians. Travel expenses for additional trips to support Customer recovery and redeployment shall be invoiced at cost plus [***]. Labor support for offshore work in excess of twelve (12) hours for the recovery support and redeployment shall be billed at standard labor rates (Appendix A).

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7.4.2 Customer Responsibilities For Warranty Repairs

The Customer shall be responsible for recovery and redeployment of the PowerBuoy[®] in the event of a failure of workmanship or materials during the Warranty Period. OPT will support the Customer's recovery and redeployment work as noted in the preceding section. The Customer shall also be responsible for lifting of the buoy out of the water and lifting the buoy onto the high stands for maintenance. Upon completion of warranty repairs, the Customer shall be responsible for lifting the buoy off the high stands and placing the buoy in the water. The Customer shall be responsible for transport of the buoy to and from the laydown area if the buoy must be transported from the dock to the laydown area.

The Customer shall also be responsible for laydown area expenses after completion of warranty repairs, including any on-site Customer acceptance testing prior to redeployment. Laydown area expenses will be invoiced at cost plus [***].

7.4.3 Warranty Repair Term

Any repairs or replacements performed under the applicable warranty shall not extend the warranty period for the covered item beyond the specified warranty period in the original Contract or Contract modification. Repairs and replacements are warranted from the time of repair through the end of the applicable warranty. The only exception is when the repair or replacement of a PowerBuoy[®] exceeds the reference repair time in the Standard Warranty and the Customer does not enjoy the "beneficial use" of the PowerBuoy[®]. In such circumstances and at the Company's sole discretion, the Company may extend the warranty period on a day for day basis.

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APPENDIX A

LABOR RATE SCHEDULE

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Labor Rate Schedule

Labor Classification	Hourly Rate
Engineering Management	\$ [***]
Project Management	\$ [***]
Electrical Engineering	\$ [***]
Mechanical Engineering	\$ [***]
Systems Eng.	\$ [***]
Marine Operations	\$ [***]
Manufacturing	\$ [***]

Notes to Labor Schedule:

- 1) Annual escalation may apply after 31 December 2019
- 2) Hourly rates include all insurance, fringe benefits, payroll taxes, overheads and profit and are billable above NRE.
- 3) OPT’s labor rates may not be shared with any third party other than the intended recipient of this pro posal without prior, written permission. Upon request, OPT can supply a redacted copy of the proposal, excluding the labor rate schedule, to the intended recipient for use in governmental grants.

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APPENDIX B

FEASIBILITY STUDY

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Annex D: Feasibility Study

Document No: DOC-xxxx-xxxx

Title: Feasibility Study of Deployment of the PB3 for Enel Green Power

Revision: 1.0

OPT

OCEAN POWER TECHNOLOGIES

FEASIBILITY STUDY OF DEPLOYMENT OF THE PB3 FOR ENEL GREEN POWER MERIC VTB PROJECT

Rev	By	Description	CN	Date Approved
1.0	D. Goldstein	Initial Release		
0.1	D. Goldstein	Original Draft		

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1 INTRODUCTION

1.1 Scope

This feasibility report provides a review of the ability of the PB3 to provide power and a stable structure for Enel Green Power (EGP) in conjunction with the Universidad Austral de Chile (UACH) Calfuco Coastal Laboratories (UCCL) to monitor sea conditions around an autonomous wave energy converter (WEC) for the MERIC VTB Project. In addition, the study provides an overview and survey of the various deployment contractors in and around the deployment site and their ability to transport and deploy the PB3.

For the purposes of this feasibility study, the deployment site is approximately 7 km North Northwest of the Niebla Dock and approximately 3 km West Southwest of UCCL (UTM WGS84: 635.300,00 m E, 5.596.000,00 m N). The water depth at the deployment site is approximately 33 meters. A notional site is shown in Figure 1 below.



Figure 1 Notional Deployment Site

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1.2 Purpose of Study

This study was conducted to give EGP confidence that Ocean Power Technologies and the PB3 can provide a complete turn key solution to meet their needs. The study answers the following questions:

1. Can the PB3 be safely moored at the proposed site?
2. If so, what type of mooring system would be required?
3. Can the local transport and marine contractors move the PB3 from the ship, overland to the deployment dock and into place at the final deployment site?
4. Can the PB3 support the subsea payload proposed for this study?
5. What is the recommended communications scheme for buoy control and scientific data collection?
6. Preliminary costs and schedule estimates to provide a complete turn key solution for EGP

Additional questions and design goals will be detailed as this effort moves from this study into buoy build and deployment.

The upcoming effort has been broken into multiple parts as listed below. This report will align our proposed solution with these parts.

GROUP A

- A.1 WEC shipment to Chile (see pg. 11)
- A.2 WEC transport by road to destination place (see pg. 14)
- A.3 WEC deposit at temporary destination place (see pg. 15)
- A.4 WEC movement at temporary destination place (see pg. 15)
- A.5 Mooring system components definition (see pg. 16)
- A.6 Mooring system components acquisition (see pg. 19)
- A.7 Mooring system transport to the destination place (see pg.20)
- A.8 Deposit and movement of the mooring system goods at destination place (see pg. 20)
- A.9 Acquisition of the naval services for the mooring system deployment (see pg.20)
- A.10 Mooring system deployment (see pg.21)
- A.11 Acquisition of the naval services support for the WEC deployment (see pg. 21)
- A.12 WEC deployment operation (see pg. 22)
- A.13 WEC O&M (see pg. 22)

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GROUP B

- B.1 PB3 standard supply EXW definition (see pg. 34)
- B.2 Feasibility and cost estimation of the additional long-range Wi-Fi communication system (see pg. 36)
- B.3 Feasibility and cost estimation of the data acquisition system DAQ (see pg. 39)
- B.4 Feasibility and cost estimation of sensors for mooring system (see pg. 39)
- B.5 Feasibility and cost estimation of water quality sensors system (see pg. 42)
- B.6 Feasibility and cost estimation of additional cables for payload and sensors (see pg. 44)
- B.7 Feasibility and cost estimation of an ADCP system (see pg. 46)

Pricing, Associated lead times for the various sensors and other payload elements as well as a preliminary schedule are included with this feasibility study.

1.3 Budgetary Estimate for the Project

The Feasibility Study Budgetary Pricing Schedule (Appendix C) provides budgetary pricing of \$[***] for Group A items including the PB3 (Section 5.2.1 of the Scope of Supply). Pricing is provided one (1) standard PB3 Power-Buoy™ with a fifty (50) kiloWatt-hour (kWh) Energy Storage system, mooring components, transport, temporary storage and movement within the laydown area, deployment, commissioning, and monitoring for a period of three (3) months.

A budgetary price of \$[***] is provided in Appendix C for sensor pricing and Non-Recurring Engineering (NRE) on Items 5.2.2 through 5.2.7. The NRE is priced based on the Scope of Supply statement and our work on the feasibility study. Please note that the NRE may change if the current sensor selection and/or configuration changes. NRE incurred due to sensor changes and or Scope of Supply changes will be billed at Standard OPT rates. A rate sheet will be provided in the contract documentation. Labor for installation of the land-based receiver and other hardware is not included in the pricing.

Shipping rates quoted in the proposal are valid through 1 November 2018 and are subject to change after that time. All pricing excludes taxes, customs, duties, other governmental levies, and port and terminal fees. Steel pricing for the buoy is based on tariffs in effect as of 31 October 2018.

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2 PB3 OVERVIEW

The PB3, an autonomous PowerBuoy™ is designed to generate power for use independent of the power grid in remote offshore locations. It consists of a floating buoy-like device that is loosely moored to the seabed so that it can freely move up and down in response to the rising and falling of waves, as well as a Power Take Off (PTO) device that includes an electrical generator, a power electronics system, our control system, and our Energy Storage System, all of which are sealed within the unit. As ocean waves pass the PowerBuoy™, the mechanical stroke action created by the waves is converted into mechanical energy which in turn drives the electrical generator within the PTO. The power electronics system then conditions the electrical output which is stored within an energy storage system. The operation of the PowerBuoy™ is controlled by our customized, proprietary control system.

The control system uses an onboard computer to continuously monitor and collect data from on-board sensors and the payloads and uses proprietary algorithms to electronically adjust the performance of the PowerBuoy™. This ability to optimize and manage the electric power output of the PowerBuoy™ is a significant advantage of our technology.

In the event of large storm waves, the control system locks the PowerBuoy™ and electricity generation is suspended. However, the payload (either the on-board payload or that in the vicinity of the PowerBuoy™), continues to receive power from the on-board energy storage system. When wave heights return to normal operating conditions, the control system unlocks the PowerBuoy™ and electricity generation and energy storage system replenishment recommence. This safety feature helps to prevent the PowerBuoy™ from being damaged by storm wave impacts.

The PB3 structure and components have undergone a design iteration focusing on improving its reliability and survivability in the anticipated operating ocean environment and will continue to undergo further enhancements through customary product life cycle management. The PB3 has undergone significant in-ocean and accelerated life testing, and we believe that the PB3 has currently achieved a maturity level of TRL 6 on the scale of 7 as defined in API 17N TRL standard.



Figure 2 PB3

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BYO

3 SOLUTION OVERVIEW

An overview of the system is shown in Figure 2 below. The PB3 will be deployed with a 3-Point mooring (the details of which are provided in Section 5). The buoy will have, in addition to its standard payload, a long-range directional Wi-Fi transceiver and antenna mounted above the lid. This will provide a high-speed wireless connection for data capture from the sensor payload as well as buoy data and buoy control. The buoy will be outfitted with a set of sensors specifically designed to measure the various forces on the mooring system. Included in the sensor suite will be a subsea Acoustic Doppler Current Profiler (ADCP) as well as a set of sea condition sensors. These will be connected to the buoy (for both power and data) via an undersea umbilical. All the data from the ADCP, the sensors and the mooring sensors will be sent to an onboard data acquisition system (DAQ). The DAQ will package the data for transfer offboard the buoy to the UACH base station located on shore.

From here UACH will have access to their data locally. OPT will be able to remotely connect to the buoy to retrieve buoy operational data for monitoring purposes and provide buoy control.

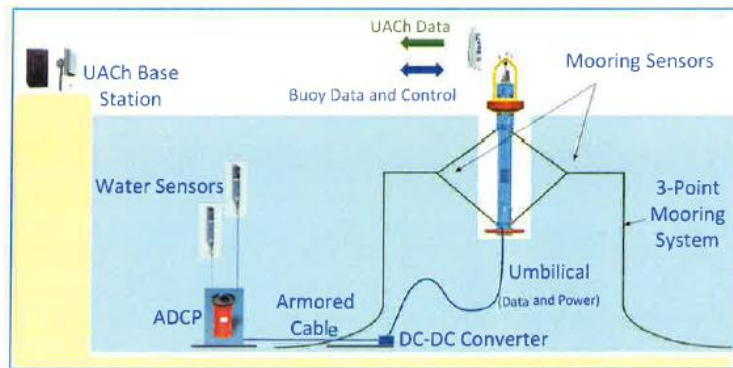


Figure 3 EGP Solution Overview

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4 GROUP A – TRANSPORT AND DEPLOYMENT OF THE PB3

Although it is early in the process an overview of the proposed shipping is as follows:

- Upon completion of build and test the buoy and associated equipment will leave the OPT facilities in New Jersey and be transported by truck to Baltimore, MD.
- From there it will be shipped via ocean freight to San Antonio, Chile. This leg of the trip will be contracted by OPT using our regular freight partners.
- From San Antonio – it is our recommendation that the buoy be picked up by Tractos and transported overland to Valdivia.
- In Valdivia it is OPTs recommendation that the buoy be delivered to the AsaNav docks for final deployment activities prior to being placed in the water
- From the AsaNav Dock it will be handed to one of 3 potential contractors: Salmo Boats, Walbusch or Oxxean.
- The selected contractor will bring the mooring and tow the buoy out to the deployment site and deploy the mooring and the PB3

The specific destination ports, particularly for the initial legs of the trip will be determined based on the availability of shipping and timing.

4.1 SOW 5.1.1 (A.1) WEC shipment to Chile

The base buoy (without any additional customer equipment mounted) meets the following general description:

Table 1 Base Buoy

Dimension	Value
Height	12.73 m
Draft	9.28 m
Spar Diameter	1.00 m
Float Diameter	2.65 m
Dry Weight	8,904 kg

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Assembly of the PB3 as well as integration of the topside and subsea payloads will be done at the OPT facilities in New Jersey. The buoy itself is assembled and tested for operational functionality. All of the base buoy enclosures are pressure tested.

The payload mounting features (brackets, enclosures, wiring rails and tie-down points) are designed by OPT and manufactured by various quality suppliers. OPT will procure the various sensors and all of the topside and subsea payload will come together at our facilities. We will run acceptance bench tests on the payload and then the "to be deployed" buoy will be assembled. Final tests will be run and any custom topside enclosures will be pressurized and pressure tested.

Since the buoy is shipped as break bulk freight, usually on the deck of the ship, some elements are removed from the buoy and packed in a container separately for shipment. In this case we expect the umbilical and potentially the long-range wi-fi antenna along with the mooring sensors will be packed in a container for shipment to the AsaNav temporary assembly point. The container will also include any additional equipment necessary for final assembly and checkout of the buoy in Chile.



Figure 4 Buoy Assembly

PB3 transport from its assembly point at the OPT facilities to its point of departure from the US will be contracted by OPT through one of our transport partners. While in the OPT manufacturing facility, the buoy spar is placed on three shipping stands. The stands elevate the buoy during assembly allowing for the insertion of the Power Conversion Assembly, mounting of the heave plates and float halves, and final fit-out operations.

The stands are designed to be secured to the buoy and to remain that way until it reaches the launch site.

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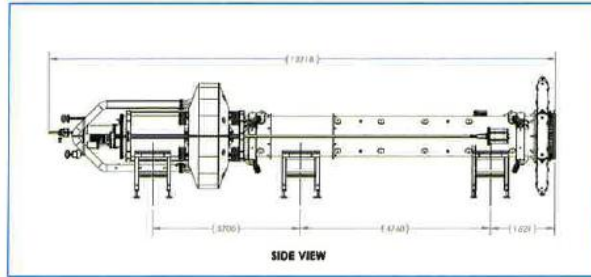


Figure 5 PB3 Shipping Stands

A single drop deck trailer is the preferable trailer type for hauling the PB3. It also offers more route options, whereas higher cargo would eliminate routes with standard bridges and overpasses. Specific dimensional restrictions must be addressed on a case by case basis, depending on the country transportation requirements.

The buoy, along with secured stands, is lifted by crane and lowered onto and fastened to the low deck trailer.



Figure 6 Crane Loading of the Buoy

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Figure 7 Shipping stand details

From the OPT facilities, the buoy will be transported over land to the port of Baltimore. When the truck arrives at the port, the terminal staff coordinates the offload from the truck, and handles loading the buoy for the ocean transit.

The current delivery destination is the port at San Antonio, Chile via a transshipment stop at Manzanillo.

Sailing time is currently shown to be 30 to 40 days (plus customs clearance) depending on the starting point and transshipment. We are currently showing 5 sailings per month from Baltimore to Manzanillo and 2 sailings per month from Manzanillo to San Antonio.

Due to the variabilities in sailings between the US and Chile – particular attention must be paid to schedules and our ability to ensure specific delivery parameters. Pricing is listed in the Feasibility Study Budgetary Pricing Schedule, which is Appendix C of this report.

4.2 SOW 5.1.2 (A.2) WEC Transport by Road to Destination

The primary (and preferred) transport company within Chile is Tractos (www.tractos.cl), a Chilean transport company that has offices throughout the country and one notably in Valdivia. The visit with them determined that they were familiar with the project from past conversations with Professor Gonzalo Tampier at UAHc. They currently have existing contracts with EGP related to other energy products and programs. They see no difficulty in transporting the buoy on Chilean roads and have done similar size moves for other companies. They recommended the port of San Antonio, Chile which is the primary RO/RO port for Chile.

A trip to Puerto Montt allowed the observation that the main highway in Chile (Ruta 5) is very suitable for the transport of the buoy. It is a major artery and runs the length of the country and has very good surface conditions. The local highways (Ruta 206 was observed) are also large enough to carry the buoy and mostly do not

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have low wires across them. Local roads would not be suitable for buoy transport having many tight turns, being narrow, steep, and winding. These roads also have many utility wires strung across them which would pose a major challenge to road transport.

It is OPT's recommendation that only areas serviced by these major highways be considered for destinations to avoid any complications of moving or lifting utility installations.

Tractos informed us that it takes up to 1 month to secure the permits required for a wide load, so we'll have to give them ample notice to secure same.

4.3 SOW 5.1.3 (A.3) WEC Deposit at Temporary Destination Place

To fully evaluate the facilities in the area, a survey was made of a local Ship yard AsaNav as well as a dock lower in the Calle-Calle river that may be suitable. The dock lower in the Calle-Calle river is owned and operated by the Chilean government and is used as a berthing space for a dredge vessel. The vessel operates primarily in the Chilean winter and could be available for us to use but land transport to the site would be practically impossible due to the large number of utility lines that would need to be moved/lifted. Other areas of the lower river were also reviewed but none of them had the water depth needed to launch the buoy.

The Corral and Niebla ports were also surveyed. These ports only consist of concrete ramps used by landing craft ferries or bulk loading areas with no space or facility for crane access. These areas will not be suitable for temporary deposit of the PB3. A visit was made to the Puerto Montt area. This area is also not suitable. There is an area that could be used to launch the buoy but Puerto Montt is over 250km from the deployment site so towing the buoy out for deployment is not a practical option. None of the deployment contractors we spoke with had vessels available (with the necessary lifting capabilities) that would be able to ship launch the buoy.

The Team toured the local shipyard AsaNav, which is located directly across the river from downtown Valdivia. It is a full-service yard that does construction, repair, and storage of large steel vessels of various makes. A site is available which is sufficient for laydown of the buoy and has facilities for steel repair and painting a few yards away. This site would be able to accommodate the buoy and up to two (2) 40 foot containers which would be more than adequate to support the project.

It is OPT's recommendation to contract with AsaNav in Valdivia for a laydown area and associated support.

4.4 SOW 5.1.4 (A.4) WEC Movement at Temporary Destination

The AsaNav site has the correct crane capabilities to move the PB3 as needed. In particular, the crane capabilities are sufficient to move the PB3 and lower it into the water. None of the other sites surveyed had sufficient crane capabilities for this project. The AsaNav site is on the Calle-Calle River and has a deep-water quayside that would be more than adequate for launching the buoy.

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It is OPT's recommendation to contract with AsaNav in Valdivia for a laydown area and associated support including movement of the PB3 and initial placement of the buoy in the water. AsaNav also has small tugs that would be available to tow the buoy away from the dock.

The AsaNav yard is several kilometers up river from the ocean and behind two bridges, only one of which can open to accommodate larger vessels. This is mitigated by using small tugs to tow the buoy past the lower fixed bridge and so transport the buoy to larger ocean-going vessels for deployment. It would be possible to bring the larger vessels directly to AsaNav using the drawbridge if necessary. Though possible this adds several kilometers to the trip. In addition, the bridge itself has unpredictable functionality and can require days of advance notice in order to schedule an opening. For this reason, the use of the small harbor tugs is preferred with hand off to larger vessels past the bridges.

4.5 SOW 5.1.5 (A.5) Mooring System Components Definition

4.5.1 Preliminary Mooring Design and Analysis

4.5.1.1 General

The purpose of this section of the report is to present the analyses that were performed to assess the feasibility of the mooring system for the PB3 PowerBuoy™ at a site near the city of Calfuco, on the Chilean coast.

The site is located near the city of Calfuco, Chile, at a distance of about 3km from the coast in 33m water depth. A climate study [1] was performed for the site at - 73.436°E, 39.786°S, shown in Figure 7 below.

Three (3) separate potential mooring configurations are presented here.



Figure 8 Site location (Google Earth)

The extreme conditions for 100-year return period is shown in Table 1.

Table 2: Site Environment Criteria

Criteria	Reported	Used
Wave Spectrum	NA	JONSWAP
Significant Wave Height, H_s	8.4 m	8.4 m
Zero-crossing Period, T_z	NA	10.0, 10.5, 11.0, 11.5, 12.0 s

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Criteria	Reported	Used
Peakness Factor, γ	NA	3.3
Current Speed, V_c	NA	0.9 m/s
Wind Speed, V_w	NA	0.0 m/s

4.5.1.2 PB3 Mooring System

(a) PB3

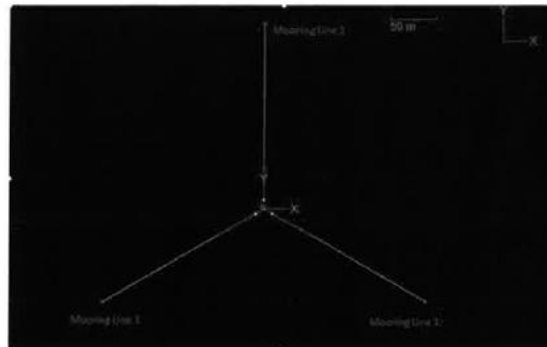
The principal dimensions of the PB3 are shown in Table 2.

Table 3: PB3 Principal Dimensions

Dimension	Value
Height	12.73 m
Draft	9.28 m
Spar Diameter	1.00 m
Float Diameter	2.65 m
Dry Weight	8,904 kg

(b) Mooring Arrangement

The PB3 is to be moored with 3 identical mooring legs 120° apart as shown in Figure 10.



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Figure 9: PB3 mooring spread

(c) Mooring Configuration 1

The main components for mooring configuration 1 are listed in Table 3.

Table 4: Notional Component List for Mooring Configuration 1

Component	Component Type	Size	Max. Load (kN)	Length (m)
Upper Bridle	12-Strand Plasma Rope	28 mm	653.9	10.0
Lower Bridle	12-Strand Plasma Rope	28 mm	653.9	10.0
Tether	12-Strand Plasma Rope	32 mm	745.0	34.2
Mooring Rope	12-Strand Plasma Rope	32 mm	745.0	14.0
Mooring Chain	Studlink	1.5 in	1456.0	153.0
Anchor	Delta Flipper	2 mT	235.0	-
Subsurface Buoy	Net Buoyancy = 0.9 mT	-	-	-

The mooring configuration is shown in Figure 11.

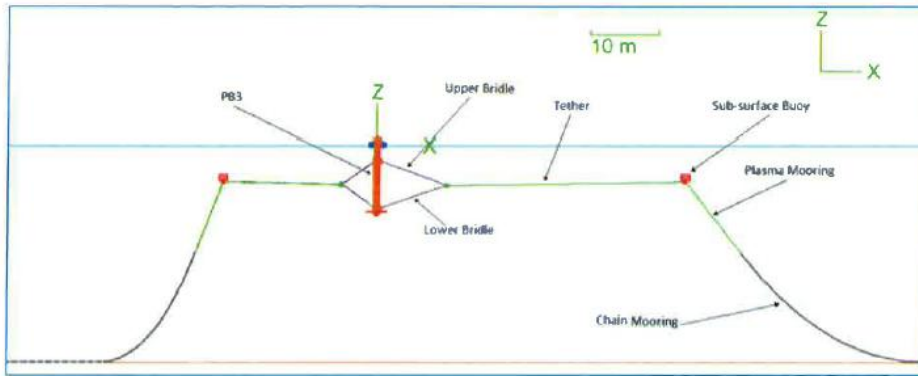


Figure 10: Notional Mooring configuration

(d) Mooring Configuration 2

The main components for mooring configuration 2 are listed in Table 4.

Table 5: Notional Component List for Mooring Configuration 2

Component	Component Type	Size	Max. Load (kN)	Length (m)
Upper Bridle	12-Strand Plasma Rope	28 mm	653.9	10.0
Lower Bridle	12-Strand Plasma Rope	28 mm	653.9	10.0

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Component	Component Type	Size	Max. Load (kN)	Length (m)
Tether	12-Strand Plasma Rope	32 mm	745.0	34.2
Mooring Rope	12-Strand Plasma Rope	32 mm	745.0	14.0
Mooring Chain	Studlink	1.25 in	835.0	253.0
Anchor	Delta Flipper	2 mT	235.0	-
Subsurface Buoy	Net Buoyancy = 0.9 mT	-	-	-

The 1.5" chain component from configuration 1 is replaced with 1.25" chain. The chain length is increased to 253-m.

(e) Mooring Configuration 3

The main components for this mooring configuration are listed in Table 5.

Table 6: Notional Component List for Mooring Configuration 3

Component	Component Type	Size	Max. Load (kN)	Length (m)
Upper Bridle	12-Strand Plasma Rope	28mm	653.9	10.0
Lower Bridle	12-Strand Plasma Rope	28mm	653.9	10.0
Tether	12-Strand Plasma Rope	32mm	745.0	34.2
Mooring Rope	12-Strand Plasma Rope	32mm	745.0	30.0
Mooring Chain	Studlink	1.0in	541.0	135.0
Clump Weights	-	1mT	-	-
Anchor	Delta Flipper	1mT	157.0	-
Sub-Surface Buoy	Net Buoyancy = 0.9 mT	-	-	-

The 1.5" chain component from configuration 1 is replaced with 1" chain. The chain length is reduced to 135-m and three 1 mT clump weights are added to each line.

4.6 SOW 5.1.6 (A.6) Mooring System Components Acquisition

There are many equipment providers in the Puerto Montt area, so the steel components of the mooring should not be difficult to obtain locally. The exception here are the Dyneema lines, which are very difficult to get in Chile compared to the US. These will most likely have to be sourced by OPT from our regular vendors. OPT uses a size that is not typically used in aquaculture. During the next phase of this effort a determination will need to be made regarding the value of procuring these lines in the US and shipping them with the buoy.

One of the potential deployment contractors, Walbusch, also has a chandlery which provides moorings and associated gear to the fish farms. They have their own anchor and shackle designs which should be considered. A detailed review of their designs should be part of the next phase of this program. They also have several anchor designs that they've developed in house for different bottom conditions. If necessary, they have dead weights up to 60 tons and several species of hybrid anchors for use in shallow substrate areas. The typical chain size used in the fish farms is 32mm, in contrast to 38mm which is our typical chain size for shallow water

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moorings. The 32mm chain is readily available and we saw a few piles of it in yards around the harbor. We should be able to adjust our mooring design to accommodate the smaller chain without much difficulty.

Based on what we know at this point, it will be OPT's recommendation that most of the mooring gear be purchased in Chile. OPT will coordinate with the final mooring system contractor to purchase and provide the necessary Dyneema lines if necessary.

4.7 SOW 5.1.7 (A.7) Mooring system transport to the destination place

It is expected that the bulk of the mooring system will be procured by and delivered by the contractor selected for deployment of the PB3. Three potential deployment contractors were evaluated; Salmoboats, Walbusch, and Oxxean. Each of which is capable of procurement and manufacture of the mooring system components except the potential need for Dyneema lines. It is our expectation that the selected contractor will procure and assemble the mooring system within their own facilities in preparation for deployment. Additional equipment necessary (Dyneema lines, mooring sensors, etc.) will be shipped from the OPT Facilities in a container and provided to the mooring contractor by truck.

4.8 SOW 5.1.8 (A.8) Deposit and movement of the mooring system at destination place

As mentioned in *SOW A.7 Mooring system transport to the destination place* above, each of the three contractors we propose (Salmoboats, Walbusch, and Oxxean) are both capable and willing to not only build the proposed mooring system, but also store and move the equipment at their facilities prior to actual deployment.

The selected contractor will need sufficient space to lay out the mooring including a means with OPT Support to attach the finally selected mooring sensors and cables. Once assembled, the mooring will need to be moved to the vessels for final deployment.

Each of the three companies have sufficient yard capabilities and ocean going vessels to support deposit and movement of the mooring system.

4.9 SOW 5.1.9 (A.9) Acquisition of the naval services for the mooring system deployment

All three companies reviewed (Salmoboats, Walbusch, and Oxxean) are major operators in aquaculture support which is a major industry in the Valdivia area. All three demonstrated, in presentations and discussion, an interest and the ability to handle the deployment. Aquaculture installations are a close analogy to PB3 deployment as the size and complexity of the moorings are very similar. Their vessels are well adapted to our needs. At Oxxean the Team was able to view some of the vessels close up and there is no doubt that they can handle the laying of the anchors of the size we require. All of the operators had very similar vessels and the difference in capability between them would be minimal.

The contractors we reviewed also provide other services such as mooring analysis, marine survey and inspection by both divers and ROV, and mooring equipment procurement. None of them operate regularly near Valdivia so

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all vessels would have to originate in Puerto Montt. For that reason, special attention should be paid to stand-by pricing regarding having vessels and crew in the Valdivia area for an extended time if weather delays are encountered.

Since there is no practical difference in the capabilities of the three contractors, it is OPT's intent to obtain pricing for the deployment portion of the SOW and compare the three on price, flexibility, and responsiveness, among other things.

4.10 SOW 5.1.10 (A.10) Mooring system deployment

Salmoboats, Walbusch, and Oxcean are all equally capable of deploying the proposed mooring system for this project. With their previous experience in aquaculture they are experienced in the movement of anchors and other weights of the size we are recommending. In addition, they have experience deploying similar types of moorings.

Deployment would consist of general layout and assembly of the complete mooring system including the potential inclusion of the Straininstall Shackle sensors and associated cabling. This will be done with OPT personnel on site to provide oversight. The mooring system will be placed aboard ship for final movement to the deployment site.

A sample deployment plan is included as an appendix to this report.

4.11 SOW 5.1.11 (A.11) Acquisition of the naval services support for the WEC deployment

It is OPT's recommendation to use a single contractor for mooring acquisition, mooring build and mooring deployment. It is also OPT's recommendation to use the same contractor for PB3 deployment. This will minimize the number of involved personnel and increase the ease of final deployment. Any of the three suggested contractors (Salmoboats, Walbusch, and Oxcean) are capable of deploying the PB3.

The PB3 will be lowered into the water via a crane at the AsaNav docks and towed past the local bridges by a small harbor tug. Once into deeper water, the buoy will be handed off to the final deployment contractor. Deployment of the PB3 and the mooring can be done with a single mission or (which is often the case) the mooring can be brought out to sea and deployed. The deployment vessels can then return to shore to retrieve the PB3 and bring it out for connection to the mooring and final activation.

OPT will work with the final deployment contractor to determine the best plan for deployment. Each of the surveyed contractors has sufficient expertise, equipment and ships to successfully deploy the PB3 and associated equipment.

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4.12 SOW 5.1.12 (A.12) WEC Deployment Operation

Due the capabilities of the various docks, depth of water and access to open ocean – the general plan would be as follows:

- The OPT personnel will perform final assembly and checkout of the PB3 quayside at the AsaNav facility. This will include reassembly of any topside equipment which was removed for shipment as well as assembly of the subsea umbilical.
- After final checkout of the equipment, elements not attached to the PB3 will be moved by truck from the AsaNav site to the deployment contractor's deployment vessels. This will include the ADCP, water sensors and subsea landing plates.
- The PB3 with the topside equipment and the subsea umbilical attached will be lowered into the water by crane.
- OPT personnel will perform initial buoy ballasting using a laptop via a local, short range Wi-Fi connection to the PB3.
- Once in an upright attitude, the PB3 will be towed by a small harbor tug past the nearby low bridges and handed off to the final deployment contractor.
- The deployment contractor will tow the PB3 to the deployment point for final checkout and connection to the mooring.



Figure 11 PB3 Under Tow

Deployment of the PB3 is performed with OPT personnel quayside and on-board ship advising the specific at-sea operations.

A detailed mooring installation plan will be developed specifically for this program. A sample procedure is included as an appendix to this report for information purposes only.

4.13 SOW 5.1.13 (A.13) WEC Operation and Maintenance

4.13.1 Operation

The PB3 requires no regular manual intervention to generate power. Once deployed, the buoy will autonomously capture wave energy and charge its internal batteries. That power is available for use at all times there is sufficient charge. If the remaining charge in the batteries runs to a low power state, a message will be generated by the buoy and provided via the various communications methods detailed below. In addition, a discrete signal will be sent to the payload such that a gentle shut down of the equipment can be commanded.

Low power signals will be provided at 1 hour, 30 minutes and 5 minutes of estimated operation available.

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Manual intervention is only necessary for deployment, recovery and to remove the buoy from Lockup (which only occurs in cases of critical bouy fault). During deployment and recovery, connection to the buoy is done through a low power, local Wi-Fi connection. All other intervention, monitoring and (when necessary) control of the buoy can be done remotely.

4.13.2 Buoy Tracking

The PB3 has an Iridium satellite tracking system included as part of its standard payload. The satellite tracker uses an independent power supply (battery) which can provide buoy location for up to 10 years. The tracker has its own solar recharging capabilities independent of buoy power. The buoy location can be monitored via the RedPort tracking service at <https://tracking.redportglobal.com/>.

The tracking is under password control.

RedPort Tracking provides geo-fencing services with alerts via both email and SMS text message. The site provides a series of reports and history of buoy location.

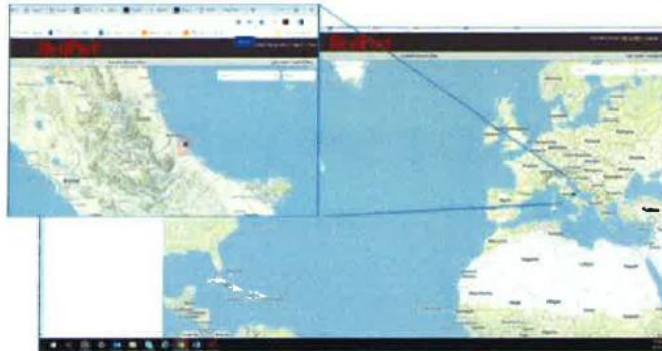


Figure 12 RedPort Tracking

4.13.3 Buoy Monitoring

The buoy provides regular output of information in the form of email and a monitoring application referred to as the OPT PB3 Customer HMI. These are described below.

4.13.3.1 Buoy Status eMail

The buoy sends a dedicated email providing current status. This email is sent to an editable list of recipients on an hourly basis. Included in the email is the following information:

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- Buoy Date/Time/GPS Location (this is independent of the Satellite Tracker described above)
- Current State including Voltage and Power information
- Various Buoy sensor information
- Any alarms which may have been set

A sample Status and Alert email is shown below. In addition to the regular buoy status email, the buoy will also send dedicated messages when specific faults are detected.

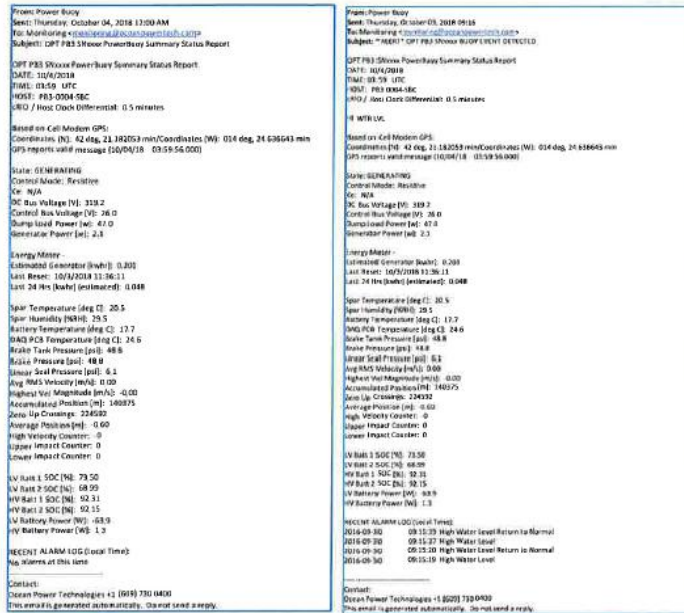


Figure 13 Sample Buoy Status and Alert eMails

4.13.3.2 OPT PB3 Customer HMI

The PB3 HMI is a remote application which provides direct access to the buoy information.

This application displays the instantaneous condition as well as history of the PowerBuoy™ conditions in designated time series. The PowerBuoy™ conditions of interest include General Battery status, GPS location data, and PTO data in three panels.

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(a) Default Screen

Figure 15 below is a screen shot of the default screen which displays Battery Status as well as the duty cycle of internal dump resistors.

There are four main display panels. The left side of the main window is the summary of most important instantaneous status, which is always displayed in the main window. The other three display screens include Battery Status, Data Display and Location.

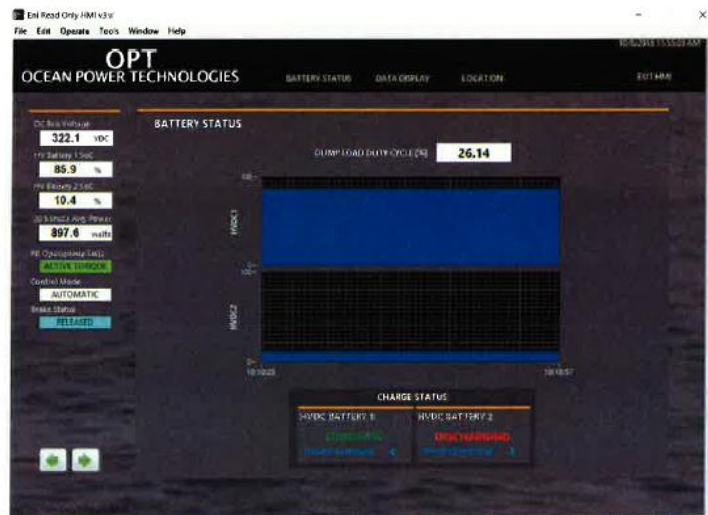


Figure 14 Main HMI Page

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Figure 15 Instantaneous Buoy Status

Important instantaneous status of the PowerBuoy™ is shown on the left the HMI window. Figure 16 is a sample of the displayed panel.

- DC Bus voltage: This is the voltage provided to the high voltage payload, as well as the voltage for charging the high voltage batteries. The nominal voltage is 300 VDC.
- HV Battery 1 SoC (State of Charge): This indicates the percentage of state of charge (SoC) of the high voltage battery #1. 100% is regarded as fully charged.
- HV Battery 2 SoC (State of Charge): This indicates the percentage of state of charge (SoC) of the high voltage battery #2. 10% is regarded as a low state of charge.
- 20 minutes Avg. Power: The value indicates the averaged power generated by the PowerBuoy™ in the most recent 20 minutes.
- PB Operational State: Shows one of the possible operational states of PowerBuoy™: Initialize, Wakeup, Active torque, Lockup, Standby.
- Control Mode: Indicates if the PowerBuoy™ is operating Automatically with entirely default settings, or Manual mode which may indicate one or more manual settings are in use.

- Brake Status: In the event of large storm waves or during transportation and deployment, the control system can lock the PTO. Brake Status shows if the PTO brake is Engaged or Released.

(b) Battery Status

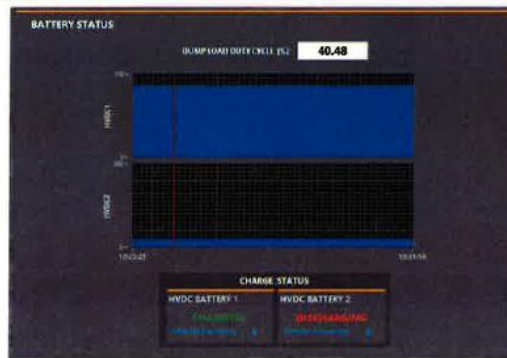


Figure 16 Battery Status

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There are two main high voltage Lithium Ion batteries in the PowerBuoy™, named HVDC 1 and HVDC 2 respectively. Battery Status panel as shown in Figure 17 displays the main status of the two high voltage batteries. Under typical operating conditions, the two HV batteries are connected in parallel, and thus should charge and discharge at close to the same rate and therefore have a similar SOC.

- DUMP LOAD DUTY CYCLE [%]: When the HVDC batteries are fully charged, the HVDC bus will start dumping the generated electricity through the DUMP LOAD to avoid overcharging of the batteries. The DUMP LOAD DUTY CYCLE could vary between 0% and 100%.
- Charge status (at the bottom of the panel) shows if the batteries are in "Charging" or "Discharging" status.
- Minutes Remaining in "CHARGE STATUS" shows the estimated time to be fully charged or fully discharged. 4 minutes remaining at "Charging" status means there are about 4 minutes to be fully charged. -3 minutes remaining at "Discharging" status means that there are about 3 minutes to be fully discharged. The negative sign means the panel is in discharging status. N/A means there is no valid signal which could be due to connection issues.
- The two time series viewgraphs in the middle of the panel are the states of charge of HVDC1 and HVDC2 batteries in percentage.

Right click of the mouse on the viewgraphs will prompt menus for various display options, including the graph items, scale and range options.

(c) Data Display

The data display panel can show various PTO operation data in instantaneous mode (DATA TABLE, as shown in Figure 18) or in time series mode (TIME SERIES, as shown in Figure 19).

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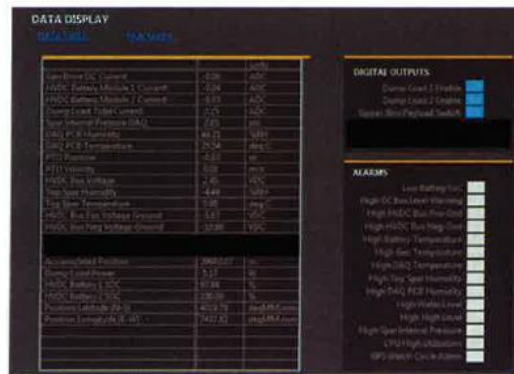


Figure 17 Data Display

The names or descriptions of most PowerBuoy™ data are straight forward and self-explanatory. Below are a few data names may need further explanations.

- Spar Internal Pressure DAQ [psi]: Most of the spar is sealed away from the water. There is a pressure sensor installed in the sealed Spar area. Normal pressure reading should be around 16 psi (absolute). Excessive pressure will trigger the High Spar Internal Pressure alarm will be ON (RED).
- DAQ PCB Humidity and Temperature: The reliable functioning of the main circuit board and certain electronics components require a more stringent environment. Therefore, the main circuit board monitors the Humidity and Temperature around it
- PTO Position and Velocity: The float moves up and down the spar in response to the motion of the waves. The relative motion of the float with respect to the spar drives the PowerBuoy™'s generator. The PTO Position shows the relative travel distance between the float and the spar, with 0 ideally being when the float is centered at the water surface. When there is no relative motion between the float and the spar in clam sea state, the PTO position and velocity will be close to zero.
- Top Spar Humidity and Temperature: The sealed area of the spar has a humidity sensor and a temperature sensor near the top of the spar.
- Accumulated Position: This accumulated position shows how much total vertical travel has occurred between the spar and the float since the last controller power cycle.
- Position Latitude (N-S) and Position Longitude (E-W): The GPS on the PowerBuoy™ constantly gives the exact location of the buoy. The first two digits to the left of the decimal place are always whole Minutes,

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the next digits to the left of the minutes are who degrees. The digits to the right of the decimal place are fractional minutes. For the example shown in Figure 6, with Latitude of 4019.79 longitude of 7427.82, this converts to 40deg 19- and 79/100-minutes Latitude, 74deg, 27- and 82/100-minutes Longitude.

(d) Digital Outputs

Digital outputs will show the status of three (3) important switches. Blue color means the output is enabled. White color means is disabled.

- Dump Load 1 (or 2) Enable: shows if the internal Dump load resistors is dumping power.
- Upper JBox Payload Switch: There is an upper Junction Box where a payload switch is located. RED color in the signal box means the switch is turned on.

(e) Alarms

Various Alarms will be triggered when the obtained data is out of the specified range. Red color means the alarm is triggered. White color means there is no alarm.

- Low Battery SoC: RED box means one of the HVDC batteries has reached low state of charge. Payloads need to be prepared for a temporary shutdown.
- High DC Bus Level Warning: RED box means the generator is generating more power than is being consumed resulting in a higher buss voltage, and a possible PTO lockup and shutdown could be expected.
- High HVDC Bus Pos-Gnd, High HVDC Bus Neg-Gnd: The buoy is designed such that HVDC Bus is centered about chassis ground. A RED box means the voltage of the positive or negative leg of the HVDC bus with respect to chassis ground is higher than expected.
- High DAQ Temperature: The temperature of the main PCB within the PTO.
- High Water Level: There are two water level sensors in the buoy. High Water Level means the water at the bottom of the spar has reached the specified water level due to a leak.
- High High Level: The second water level sensor is installed slightly higher than the first water sensor. High High Level RED additional water has entered the spar, and level is above the first water level sensor.
- CPU High Utilization: RED means the CPU of the on-board computer is running intensively.
- GPS Watch Circle Alarm: RED means the buoy has drifted out of the designated circle, which is 250 m radius from the center.

(f) TIME SERIES in DATA DISPLAY

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There are two viewgraphs which could be used to show any two of the selected data in time series. Figure 19 shows the Time Series display of two selected data.

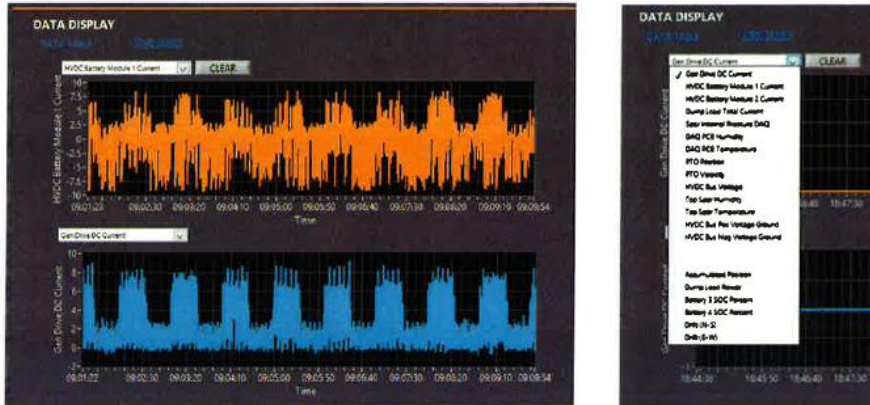


Figure 18 Time Series Data

(g) LOCATION

LOCATION panel shows the details of exact position of the buoy. The origin of this circle is the anchored position of the buoy. The actual buoy position will be shown on the GPS circle which has an outer radius of 250 meters. GPS Messages is shown at the bottom of the graph.

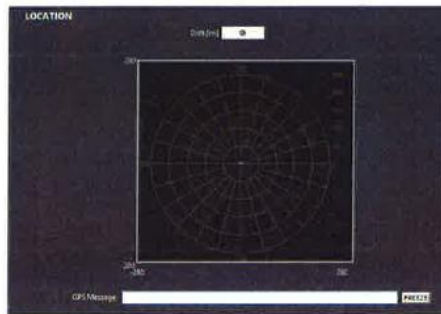


Figure 19 GPS Location

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4.13.4 OPT Buoy Monitoring

The below description is general in nature. A detailed monitoring and response plan will be developed as part of the detailed design for this deployment. The detailed plan will include the specific response scenarios available from OPT based on a set of buoy conditions as well as specific contact information.

OPT will monitor the buoy throughout its life. During the initial days of deployment, OPT provides continuous monitoring of the buoy via a proprietary HMI. The HMI (similar to the customer HMI described above) provides a detailed status of the buoy state and also provides direct access to the control system allowing us to adjust the buoy operation if necessary. This HMI also allows us to reset buoy state in case the system goes into lock up during severe storm conditions or certain faults. The continuous monitoring will be replaced over time with an autonomous monitoring solution which provides our operations and engineering organization with detailed buoy data. Alerts and fault conditions will still trigger alarms (email and HMI based) in real time for our team to respond to. Included with the HMI monitoring, OPT receives the buoy emails described above and can be available to respond to customer queries based on the information received.

Lastly, we have several alarm conditions set within the RedPort Satellite Tracker system which will notify several members of our operations and engineering staff of buoy location and tracker condition. If the buoy exits a geofence or the tracker stops functioning (low battery, failure, etc.), OPT will be alerted by both email and SMS text message.

Again – the specific responses will be written into a detailed operations plan for this deployment.

4.13.5 Maintenance and Repair

4.13.5.1 PB3 Maintenance

The PB3 is designed for a 10-year life with a three (3) year maintenance cycle. At three years the PB3 will be disconnected from its mooring and towed back to the AsaNav dock for maintenance. Depending on the condition of the buoy when it comes out of the water and the available capabilities, maintenance can be done quayside in Chile. If there are insufficient facilities quayside or if there is need for extensive work, the buoy may have to be shipped back to the OPT facilities. Maintenance includes the following:

IPTO:

- Replacement: entire PCA assembly i.e. entire system from lower to upper clevis
- Replacement: Linear seal bellow
- Maintenance: Visual inspection of all other components in the IPTO. Replacement may be needed based on condition of the components.

Structure:

- Replacement: Satellite tracker assembly

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- Replacement: Marine bacon (most likely batteries only depending on its condition)
- Replacement: all the anodes on the structure
- Maintenance: Cleaning and repainting of the structure as needed. Touchup paint may be enough but depends on the conditions of paint on the structures.
- Replacement: All the gaskets (lower hatch, inner hatch, lid, and access flanges on the lid)
- Replacement: All the bolts on the structure

4.13.5.2 Sensor Payload Maintenance

The current design of the subsea payload specifically supports the regular maintenance of the various sensors deployed. It is our intention to provide a landing plate at the end of the umbilical which will connect to an armored cable which will run across the sea floor to the ADCP and moored water quality sensors. The armored cable will be long enough to allow for the raising of the ADCP and sensors from the sea floor to the surface without disconnecting it from the buoy. At the surface, the regular maintenance can be performed. This primarily includes the removal of any sea life and an inspection of the units and various connections. The sensor suite can then be lowered back to the sea bed.

Additionally, any sensor changes can be made depending on the type, connection and power requirements. Some planning along these lines can be done during detailed design of the subsea solution.

4.13.5.3 Repair

In the event that a failure is reported, the OPT team will assess the fault and determine a course of action to restore the buoy to full functionality. Some faults with the buoy electronics and control system can be reset remotely. Some faults with latch and will require physical presence to reset. In addition, mechanical failures of the topside structure or loss of signal will also require physical presence to assess any damage and develop a repair plan. Ideally the buoy would be repaired at sea. If necessary, it will be removed from its mooring and towed back to the AsaNav docks for repair.

4.14 Additional Information

4.14.1 Inspection/ Emergency Response

All of the deployment contractors mentioned in this report have inspection capability, but all operate out of Puerto Montt so would not be available for immediate response if necessary. To that end Professor Gonzalo Tampier and OPT had a conference call with a marine services company (Skyring Marine) that specializes in bathymetric studies. More importantly they have small boats and divers in Valdivia that can be available for emergency response. Their primary vessel would be capable of resetting an anchor if necessary, however it may be deployed when we might need it. They do have a resident boat in Valdivia that can be available on very short notice and doesn't leave the area. This is a small fiberglass launch that has some dive support capability.

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OPT will perform additional work to identify the right solution for Inspection and the development of a detailed Emergency Response plan.

4.14.2 Travel/In country

Valdivia is very much a modern city with all the amenities necessary to support a successful deployment. There are several hardware/construction supply houses and a Sherwin Williams paint supplier nearby. Valdivia is a university town and the streets are safe and well-lit at night.

There is limited mass transit in Chile outside of air travel. There are local buses, but their routes will be difficult to grasp for non-Spanish speakers. Rental cars are readily available, including pickup trucks, and the traffic around Valdivia is no worse than cities in NJ, maybe better. Traffic patterns are easy to understand and travel in general by road will not be a problem.

Air travel is easy and modern. LATAM is the in-country provider and there are several flights daily to Valdivia from Santiago. Rates are on par with flights in the US. There was no problem with checked baggage or carry on and the locals utilized both options in equal measure.

OPT and EGP representatives stayed at the Hotel Diego de Almagro. It is a full-service hotel with rates comparable to similar US hotels. There are a few other options such as hostels and Air B&Bs but for the limited duration of our anticipated stays the area hotels should suffice. Though Valdivia does have a tourist season in the summer it is not expected that there will be an availability problem.

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5 GROUP B - CUSTOMIZED OPTIONAL SOLUTIONS

5.1 SOW 5.2.1 (A.1) PB3 standard supply EXW definition

The PB3 is provided with several elements as part of the standard payload. These items are provided as part of the base buoy and do not affect any additional sensors or elements added for a specific deployment. The layout

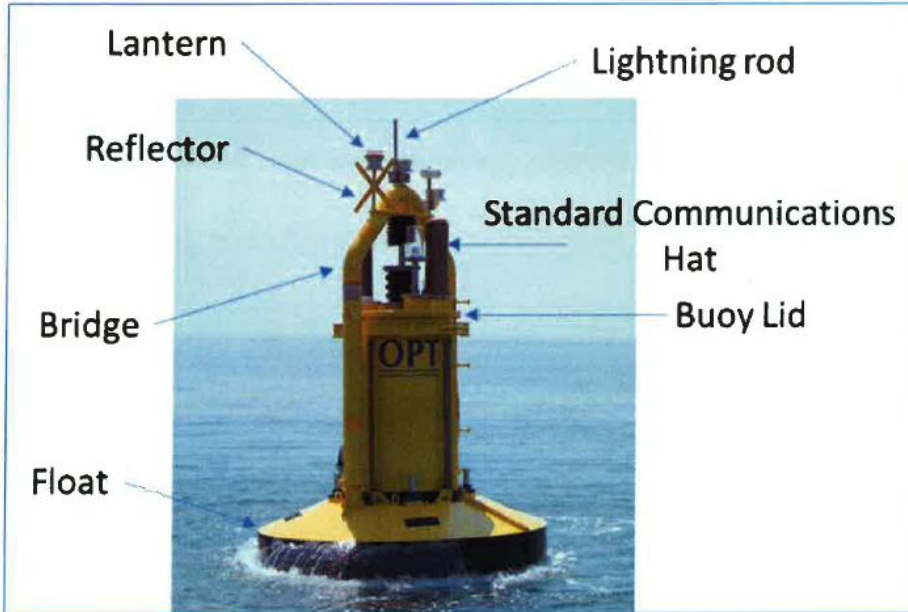


Figure 20 PB3 Standard Topside Elements

of which are shown in the figure above. Included with the PB3 is a Carmanah M650 Solar Marine Lantern which is a self-contained, high performance light source. It's flashing pattern is programmable to support deployment in a multitude of geographical locations. Within the standard communications enclosure (hat) – the PB3 comes standard with a Cradelpoint IBR900 LTE ruggedized router which provides both dual band 802.11 a/b/g/n/ac Wi-Fi and 4G/LTE Cellular for communications and its associated antennas. The base Wi-Fi is a local, short range connection used specifically for buoy deployment and retrieval on site. The cellular connection is a standard buoy component and is available for either primary or backup communications with the buoy. The router provides a VPN endpoint and firewall for secure buoy control. The WAN inputs to the router also allow for the inclusion of

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various additional buoy-to-shore communications paths including specific cellular operators (Tampnet, etc.), satellite and specialized data links. For the EGP deployment a dedicated, long range, directional Wi-Fi solution will be added to the buoy. The Cradlepoint IBR900 also provides GPS location via a dedicated GPS antenna and internal receiver. The GPS information is available from within the buoy network. The PB3 also includes a satellite tracking system which provides continuous location information for the buoy from the moment it leaves the OPT facility, through transport and deployment allowing for response to any deviations from the buoys expected location. The tracker is an independent, battery powered unit thereby ensuring location information during low power events on the buoy.



Figure 22 Cradlepoint IBR900



Figure 21 Carmanah M650 Light

Figure 16 below shows a top view of an unpopulated PB3 lid. The PB3 can support upwards of 100 kg of customer payload without the need for additional buoyancy measures. The design of the PB3 is such that there are power, discrete and networking connections available at various locations on the buoy lid. These mounting locations – called hats are available for the integration of custom payload equipment. The enclosures are water tight containers for the various payload elements, designed to withstand significant wave slam events and underwater drag pressures in 100 year storm conditions. Custom equipment ranges anywhere from customer specific communications means (Long-range Wi-Fi, Satellite, etc.) to weather sensors, radar and various cameras. Some of the customer specific elements are contained within the various hats themselves. Additional mounting means (tripods, enclosures, brackets, etc.) can be mounted on top of the lid structure within the specified weight limits and buoyancy needs of the total structure. The specific topside needs of the EGP deployment include a dedicated, long-range, directional Wi-Fi communications suite and a data acquisition system (DAQ and single board computer).



Figure 23 Unpopulated Buoy Lid

Some of the customer specific elements are contained within the various hats themselves. Additional mounting means (tripods, enclosures, brackets, etc.) can be mounted on top of the lid structure within the specified weight limits and buoyancy needs of the total structure. The specific topside needs of the EGP deployment include a dedicated, long-range, directional Wi-Fi communications suite and a data acquisition system (DAQ and single board computer).

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It is expected that an enclosure similar to the one shown in Figure 15 will be developed to enclose the Wi-Fi transceiver and any additionally necessary components for the data acquisition, storage and transmission. The final shape, dimensions and connector placements will be defined during detailed design prior to buoy build. This enclosure will receive its power and network and data connections through one of the hats depending on what signals are necessary. In addition, subsea data may come into the customer payload enclosure via an external route. The specific cable routing and signal connections will be determined during detailed design.



Figure 24 Typical Customer Enclosure

In addition to the customer enclosure to house the top side customer payload, a structure and custom enclosure will be developed support and protect the Wi-Fi antenna necessary for buoy communications with the shore. Depending on the final requirements of the means of transmission, the Wi-Fi antenna may have to be elevated a significant distance above the lid of the buoy. OPT will design and manufacture the specific solution necessary to minimize risk to the program. Masts and other structures (tripods, etc.) have been designed by OPT which provide upwards of 3 meters of elevation strong enough to survive 100-year storm conditions in the North Sea which includes extreme drag pressures and wave slam events. Above the mast, a water tight enclosure made of radiant energy transparent material (PVC or similar) can be manufactured to protect the selected antenna if necessary.

5.2 SOW 5.2.2 (B.1) Feasibility of Long-Range Wi-Fi Communications System

5.2.1 Baseline Communications

The PB3 and associated payload require a secure connection to shore. Based on the selected deployment point, there are three possible communications means available. Satellite connectivity is possible but due to the limited bandwidth and high cost of both the hardware and the data transfer, this is not considered a viable solution for this deployment. Cellular is expected to be available at the deployment site. The connections are expected to support 3G speeds and reliability of the connection is something which would have to be investigated. It is the intent of the OPT team to use this data path as a backup for buoy control only in case of loss of the primary communication means.

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Figure 26 UACH Caffucco Laboratories

Due to the location of both the deployment site being within a relatively short distance of the shoreline (~4 km) and the location of the UACH laboratories on a cliff overlooking the sea, the use of long-range Wi-Fi is recommended. The distances involved are well within the range of connections used on many previous OPT deployments. The solution will include a long-range directional Wi-Fi antenna mounted atop the buoy lid with an associated base station on shore. At the time of the writing of this report, there was a relatively low bandwidth microwave transmitter between the selected location of the shoreside base station and the UACH main campus. Ideally, due to the relatively low bandwidth available over this microwave connection, the sensor data transmitted to the shore from the PB3

will be captured in long term storage within the shoreside server for manual access by local personnel (via thumb drive or some other removal data storage means). Due to the requirement that OPT have direct access to the buoy (for monitoring and control) – we would recommend that the microwave connection be left free for OPT

use. If a higher bandwidth, more reliable communications path between the shoreside server and the internet exists at the time of deployment (cellular or wired internet connection) better remote access to the data and the buoy will be possible. A notional communications diagram is shown in Figure 10. This solution uses the existing OPT available elements. With the addition of a SuperPass SPDG 12F Wi-Fi antenna on the buoy and an associated transceiver on the shore, a reliable communications path will be available. It would be our intention to then use various secure, cloud solutions for both data access and monitoring as well as buoy control.

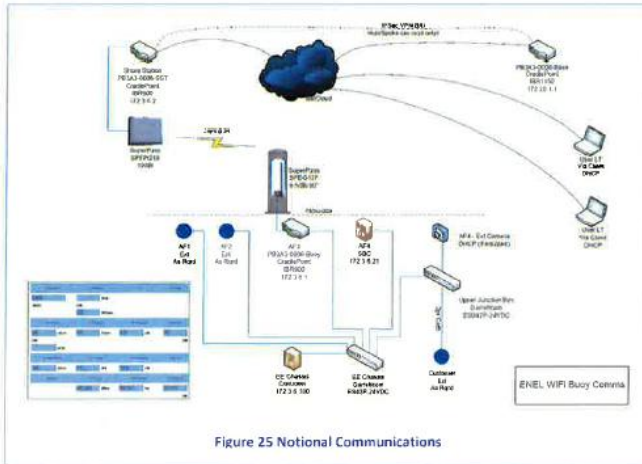


Figure 25 Notional Communications

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The shoreside solution will include a SuperPass SPFG19 Directional antenna and an accompanying Cradlepoint IBR900 modem. Included in the shoreside solution will be sufficient server capabilities (Dell PowerEdge XR2 Rugged Server or similar) and storage to meet the specific needs of this mission.

OPT expects to be able to support upwards of 108 Mbps of data transfer over the basic wireless link. With the inclusion of amplified bullet antennas we can improve that number. We will work during detailed design to find the optimal power for the system which will support the necessary data transfer and buoy access.

These solutions are, at this time notional depending on the specific data payloads and bandwidth requirements. This will be driven by the data the various consumers are going to capture and the timeliness of their required access. Real-time, high fidelity data often carries a significant overhead for transfer and an intelligent data transfer scheme can be developed such that data is compressed and moved offboard in support of the program needs. One method would be the streaming, in near real time of all sensor data to the shore. Another would be to capture data onboard the PB3, compress the data package and transfer it offboard on a regular schedule (once per hour for example). The specifics of the data transfer scheme will need to be defined during detailed design.

5.2.2 Sensor Data

As mentioned, (at the time of the writing of this report) there is limited communication between the shore-side transceiver and the UACH facilities. At the time of the survey done for this proposal – there was a single microwave communications path available. This limited pipe will make it difficult to transfer the high-fidelity sensor data directly to its consumers. It is OPT's recommendation that a mass storage device be included with the immediate shore side station along with a means to access the sensor data (via a terminal or removable storage)

5.2.3 Security

To ensure the security of buoy state data and control, a VPN tunnel is created between the OPT facilities and the buoy in the water. This tunnel provides an encrypted path preventing any malicious actors from accessing the critical buoy systems. A firewall is set up in the OPT Cradlepoint modem adding an additional layer of protection for the buoy control electronics.

OPT recommends that all sensor data captured onboard the PB3 be encrypted as well. Data at rest within the DAQ and other processing systems can be encrypted and transferred via an encrypted link. When stored on the shoreside receiving station, access to the system should be under strong password control and the data itself should be encapsulated in an encrypted package.

5.2.4 Inclusion of Sea-Tech

The inclusion of the specific Sea-Tech solution will be added to this deployment as details are made available.

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5.3 SOW 5.2.3 (B.2) Feasibility of Data Acquisition System (DAQ)

OPT does not integrate customer payloads directly with the PB3 control system. The inclusion of too many additional signals and data handling and processing requirements can impact operation and stability of the PB3. In addition, it can introduce new risk items that would require extensive testing to mitigate. Customer payload connections to the main controller can also expose data and power lines to external noise, faults, or surges that could potentially be damaging.

Customer payloads are integrated with the PB3 using commercial PLC modules, DAQ modules, or even Arduinos packaged into a standalone payload box, with the only interface to the OPT system being the payload power inlet connector and the data ports (Ethernet, discrete signals, RS232, raw sensor data, etc.).

The baseline PB3 is designed with this in mind. Both power and data connection are available within the customer hat enclosures on the PB3 lid. Custom, water tight enclosures are designed to house customer DAQ's, sensors and communications transceivers.

For EGP, OPT recommends we provide a dedicated cRIO controller in a separate chassis mounted on top of one of the empty customer hats. During detailed design we will determine the final data capture and transfer scheme and will size a solid-state mass storage device to support it. Standard off the shelf multi-terabyte drives are readily available.

5.4 SOW 5.2.4 (B.3) Feasibility of Sensors for Mooring System

5.4.1 Strainstall Load Shackles

Three Strainstall Load Shackles can be included in the mooring system to measure the marine loads on the mooring and the buoy. These shackles will reside at the point where the upper and lower bridles are connected to the three tethers (see Mooring Configuration in Figure 9 above).

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Figure 27 Strainstall Subsea Load Shackle

Due to the sea states and the movement of the mooring a custom cabling system will be developed to provide the necessary signal information to the buoy DAQ. A preliminary look at several potential solutions has been undertaken. The current design solution has a separate data umbilical running from each of the shackles directly to the buoy spar. It is felt that wiring running along the bridles (either upper or lower) runs a greater risk of breaking under the various loads seen by the mooring. It is our intention to work with Strainstall in the development of the best method to get the shackle data to the DAQ.

The shackles operate by measuring the relative flexion of the pin via a series of strain gauges inserted into the pin and wired to the end cap connection.

In order to correlate the sensed loads on the shackles with the buoy movement – independent GPS position information obtained from the internal Cradlepoint modem will be provided. This GPS receiver has its own antenna encased in an RF transparent enclosure which sits within the OPT standard Communications Hat.

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5.4.2 Load Pins (alternate)

An alternate method of capturing mooring loads is with a set of load pins inserted into the mooring clevis (see Figure 22 below). Though OPT has worked with Pulse and the IntegriPod in the past, Strainstall also provides a similar Load Pin mooring sensor. The specific details of the Strainstall mooring sensors including their design, connectors, lead times and costs have not yet been determined. If it is deemed a lower risk solution to use a load pin as opposed to a shackle to monitor the forces on the mooring system, these will be investigated further. A description of the Pulse solution is included here for informational purposes only at this time.

A set of six (6) load pins can be used to measure the various loads on the mooring system at the point it attaches to the buoy. The Mooring Line Tension Monitoring System comprises a data acquisition element (Pulse standard INTEGRIpod-NXT or similar) and six single axis load pins. Mooring line tension is measured using load pins fitted into each of the six mooring line shackle clevis'.

This solution is currently being designed into a PB3 deployment. Due to its location against the buoy body itself, the risk of losing the wiring connections to the DAQ is minimized. The load pins are manufactured to be a direct replacement for the existing clevis pins. Each load pin has a subsea electrical connection on one end to enable connection to the data acquisition system. Like the shackles above, the pins operate by measuring the relative flexion of the pin via a series of strain gauges machined into the pin and wired to the end cap connection.

If necessary, the wiring for the six pins will be routed down the length of the buoy to the data acquisition unit mounted externally to the lower part of the buoy spar. The specific data acquisition solution will be determined during detailed design. The specific need for data acquisition and consolidation for the load pins separate from the rest of the sensor suite will determine the final solution and associated wiring. The INTEGRIpod and similar data logging solutions in conjunction with load pins and other external sensors are designed specifically to capture the motions of various marine objects. Depending on the final components chosen, they contain all of

the electronics, batteries and sensors enclosed in a pressure rated and corrosion resistant casing.



Figure 28 Sample Load Pin

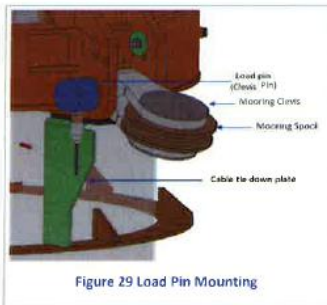


Figure 29 Load Pin Mounting



Figure 30 Data Logger

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5.5 SOW 5.2.5 (B.4) Feasibility of the Water Quality Sensors

5.5.1 Water Sensors

A set of suggested water sensors was reviewed for inclusion in the EGP deployment. Based on the information provided, the following parameters need to be captured for the duration of this deployment:

- Conductivity (C)
- Temperature (T)
- Density (D, measured via pressure)
- pH (DS5X)
- Dissolved Oxygen (D.O. or O2)

Optional:

- Fluorescence
- Chlorophyll
- CO2
- UV radiation
- Water turbidity

OPT evaluated the Hydrolab DS5X CTD, the AML Metrec-X CTD and the NKE Sambat for inclusion in this effort. Our review consisted of evaluating their ability to capture the necessary parameters, their ability to be mounted directly to the buoy (or if a separate deployment means was necessary), the power consumed by each and the means by which data is captured and transferred from the sensor. Our review is summarized in the table below.

A review of the table has led us to suggest that the Hydrolab DS5X CTD will be the best overall sensor to meet the specified needs. The Hydrolab DS5X CTD provides plenty of simultaneous DAQ channels for all 5 out of the mandatory parameters requested by the customer. If mounting of the sensors directly to the PB3 is desired, the sensor unit can be mounted to the spar structure using fixed clamps or straps at either of the desired depths of 5m and 15m.

Data collection is supported using an RS-232 connection. A RS-232 to USB adapter will be used to connect to a dedicated single board computer or Computer Stick running Windows 8 or Linux. This will be used primarily for the data collection and calibration. The dedicated computer can be remotely controlled if the long-distance Wi-Fi connection is operational.

In conclusion, using 2x Hydrolab sensors units will be able to measure all the parameters and be suitable for its application at both the 5m and 15m depths. Though all three of these suggested sensors can be implemented with the PB3 we will work with the EGP and UACH to determine the precise solution during detailed design.

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Sensor	Measurable Parameters	Buoy Mountable	Power Consumption	Data Transfer	Software Required	Usable on the PB3 Buoy
Hydrolab DSSX CTD (Recommended)	<ul style="list-style-type: none"> • Temperature* • Conductivity* • Depth • pH* • Pressure (Integrated) • Oxygen Reduction Potential (ORP) • Dissolved Oxygen (LDO)* • Dissolved Oxygen (Clark Cell) • Turbidity* • Chlorophyll a* • Blue-Green Algae • Rhodamine WT • Ammonium • Nitrate • Chloride • Total Dissolved Gas (TDG) • Ambient Light 	<ul style="list-style-type: none"> • Yes • Minimum depth of 1m • Maximum depth of 225m • The sensor may need additional protection when structure mounted to protect from floating debris 	12VDC Regulated (Unspecified current draw)	<ul style="list-style-type: none"> • SDI-12 • RS-485 • RS-232 • TTY 	Hydras 3 LT for calibration	Yes
AML Metrec-X CTD	<ul style="list-style-type: none"> • Temperature* • Conductivity* • Pressure* • Turbidity • Phycoerythrin (BGA) • Chlorophyll a* • CDOM/FDOM 	Yes Mountable with pipe clamps	10-36V Regulated input (Unspecified current draw)	RS-232 RS-485	Unspecified	Yes, may need to create a custom data logging program

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Sensor	Measurable Parameters	Buoy Mountable	Power Consumption	Data Transfer	Software Required	Usable on the PB3 Buoy
	<ul style="list-style-type: none"> Fluorescein Rhodamine Crude Oil Refined Fuels pH Dissolved Oxygen PAR 	The sensor may need additional protection when structure mounted to protect from floating debris				
NKE Sambat	<ul style="list-style-type: none"> Conductivity for the calculation of salinity Temperature Depth Turbidity Chlorophyll a Phycocyanin Phycocerythrin Dissolved oxygen pH Redox Hydrocarbons detection 	<ul style="list-style-type: none"> Yes Max depth of 30m for Wireless or Serial data transfer Max depth of 50m for Serial data transfer only 	No information about operation voltage or power consumption	<ul style="list-style-type: none"> Wireless Integrated GSM modem (TI) Modbus serial communication. 	Nke Data Pencil Kit	Yes

5.6 SOW 5.2.6 (B.5) Feasibility of Additional Cables for Payload Sensors

In order to provide both power and data connections to the subsea sensor suite – a Kevlar protected umbilical will be attached to the underside of the PB3. A junction box mounted to the lower end of the buoy spar providing a connection to the existing buoy cabling will be developed. This will provide a means for the buoy connections

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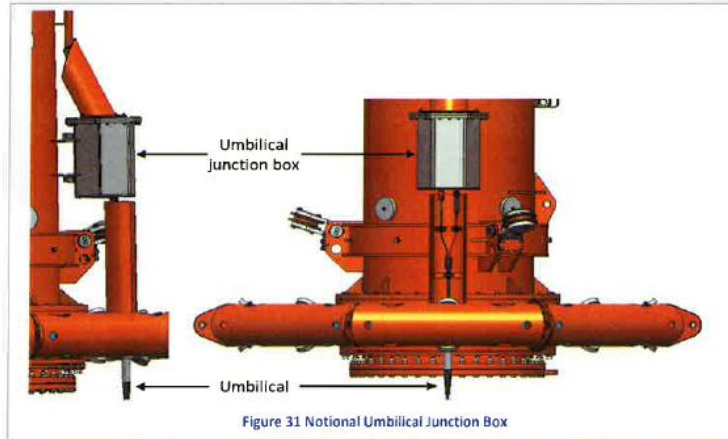
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to pass through the buoy heave plate and connect to the umbilical. OPT has designed similar solutions for previous deployments and will use these as the basis of the design for EGP.



The proposed umbilical will support power and data connections. The umbilical will be a hybrid single mode/multimode optical fiber with Kevlar protection. The umbilical will run from the Junction Box shown above on the base of the PB3 to a landing plate on the sea floor. From the landing plate, an armored cable will be run along the sea floor to the ADCP. The length of the armored cable will be enough to lift the ADCP to the surface for maintenance and the replacement or change of any sensors. A second landing plate will contain the mountings for the ADCP as well as a means to anchor the subsea water sensors. The subsea water sensors will be floated up from the second landing plate to the correct depth. This solution will provide a single umbilical for both power and data from the subsea sensor suite (ADCP and water sensors) to the PB3.

With this solution – a second junction box can be placed on the second landing plate with connectors thereby creating a way to change the various subsea sensors with no impact to any of the existing deployed equipment assuming the connections match those initially implemented.

The specifics of the subsea connections the Plug-and-Play capability of the junction boxes will be considered in greater detail during detailed design.

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5.7 SOW 5.2.7 (B.6) Feasibility of an ADCP System

For the measurement of undersea conditions, an Acoustic Doppler Current Profiler (ADCP) was requested. The Flowquest 600 ADCP was reviewed for inclusion in the EGP solution.

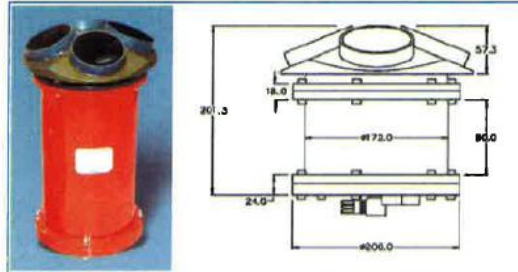


Figure 32 FlowQuest 600 ADCP

The FlowQuest 600 can measure to a maximum range of 100 meters and supports a standard depth of 800 meters. The FlowQuest provides an interface to and can log data from up to 7 third-party instruments including various water quality monitoring instruments through RS 232 serial ports.

The PB3 umbilical will be able to provide sufficient power and data connections to support an ADCP of this type or something similar. Units of this type support various communications means including RS232 and RS422. The specific data collection plan will have to be developed during the detailed design phase of this program. The rate of data capture will determine the amount of data captured which will in turn support the completion of the data storage and data transfer scheme.

Initial review of these sensors was based on the sending of periodic (e.g. hourly statistical data). If higher fidelity data is desired, the ADCP is capable of streaming data but the data rate will be limited by the RS422 connection. Typically, RS422 is able to provide data rates of up to 10 Mbps at distances up to **50 feet (15.24 metres)**. However using reduced data rates, RS422 is able to transmit data over distances of 4000 feet (~1220 metres); the maximum is 100 kbps at this distance.

5.8 Additional Undersea Elements and Needs

As described above, though the buoy itself is designed for a three (3) year maintenance free deployment, the sensors selected often require regular, hands-on support. The ADCP and potentially the other marine sensors may need to be maintained (cleaned of marine life and other debris) on a regular basis. In addition, if there is a

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Revision: 0.1

desire to change the sensor suite to add or change the parameters measured, a way to remove or add sensors is necessary.

The exact design and configuration of these elements will be developed during detailed design.

5.9 Meetings

Ocean Power Technologies will hold regular meetings in support of the final design, build, test, integration, transport and deployment of the PB3 for this effort. We plan to support weekly internal meetings specific to the EGP program along with our regular buoy build meetings. Additionally, we expect to support meetings with the various contractors involved including EGP, UACH and any of the other contractors selected. We expect these meetings to include regular status meetings as well as technical and programmatic meetings as needed.

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6 CONCLUSION

OPT does not see any significant difficulties with deployment of the PB3 to provide power and a stable structure for Enel Green Power (EGP) in conjunction with the Universidad Austral de Chile (UACH) Calbuco Coastal Laboratories (UCCL) to monitor sea conditions around an autonomous wave energy converter (WEC) for the MERIC VTB Project. The various elements identified for this deployment do not present any difficulty for OPT to support. OPT has extensive experience in communications over far greater distances than those required here. We have developed various structures and elements above the lid as well as subsea sensors and umbilicals for deployment in multiple locations. Assuming sufficient wave activity is available for battery charging, we see no hindrance to a successful deployment of the PB3 at the selected site.

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7 APPENDIX A - MOORING ANALYSIS

7.1 Analysis Methodology and Assumptions

The methodology and assumptions for mooring analysis follows the guidelines and industry practices for the offshore mooring systems.

- DNV-OS-E301 [2] and API RP 2SK [3] is used for mooring design criteria.
- The analysis was performed using OrcaFlex.
- The analysis was performed assuming flat seabed.
- Assumptions were made for unavailable environmental criteria.
- Due to the minimal projected area of the PB3 above the water surface, no wind loading is defined in the model.
- A Gumbel distribution is used to calculate the extreme values (maximum tensions and offsets) from all runs to generate the most probable maximum (MPM).

The following methodology and assumptions are used for this feasibility study:

- The analysis was performed using 3-hour simulations with 4 random wave seeds. The verification study of using 4 seeds were performed and showed 1–2% margin of error.
- The wave and current were applied collinearly from same direction.
- Three headings (120°, 150°, and 180°, i.e., in-line and between-lines) were used to determine the maximum line tensions and PB3 offset.

7.2 Mooring Analysis Results

7.2.1 Mooring Configuration 1

The mooring analysis results for configuration 1 is shown in Table 6.

Table 7: Analysis Results for Mooring Configuration 1

Configuration 1 - 1.5" Chain	
Max Line Tension	

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	Upper Bridle (kN)	Lower Bridle (kN)	Tether (kN)	Plasma Mooring (kN)	Chain Mooring (kN)	Anchor (kN)	Max Offset (m)
MBL	653.9	653.9	745.0	745.0	1188.0	235.0	
Max	177.3	73.1	221.0	222.1	222.0	211.8	15.6
SF	3.69	8.95	3.37	3.35	5.35	1.11	

7.2.2 Mooring Configuration 2

The mooring analysis results for configuration 2 is shown in Table 7.

Table 8: Analysis Results for Mooring Configuration 2

Configuration 2 - 1" Chain with 3 1t clump weights							
	Max Line Tension						Max Offset (m)
	Upper Bridle (kN)	Lower Bridle (kN)	Tether (kN)	Plasma Mooring (kN)	Chain Mooring (kN)	Anchor (kN)	
MBL	653.9	653.9	745.0	745.0	835.0	235.0	
Max	169.0	61.3	233.0	232.5	232.5	225.3	11.8
SF	3.87	10.67	3.20	3.20	3.59	1.04	

7.2.3 Mooring Configuration 3

The mooring analysis results for configuration 3 is shown in Table 8.

Table 9: Analysis Results for Mooring Configuration 3

Configuration 3 - 1" Chain with 3 1t clump weights and 1mt Anchor							
	Max Line Tension						Max Offset (m)
	Upper Bridle (kN)	Lower Bridle (kN)	Tether (kN)	Plasma Mooring (kN)	Chain Mooring (kN)	Anchor (kN)	
MBL	653.9	653.9	745.0	745.0	541.0	157.0	

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Max	180.7	82.9	230.8	228.9	228.9	214.7	11.3
SF	3.62	7.89	3.23	3.25	2.37	0.73	

The anchor was changed to 1mt in this configuration in case there were no large work boats available in the region.

As shown, the safety factor for the anchor is 0.73 and does not pass the API RP 2SK criterion.

This configuration could be used with no additional analysis if a large enough anchor could be sourced.

7.3 Conclusion

The analysis results show that configurations 1 and 2 meet the requirements for mooring.

A site visit from OPT to the region showed that the area is well-equipped with work boats due to the development of the fish farm industry. With the alternative anchor, configuration 3 will also be sufficient to provide mooring to the PB3, based on the analysis.

However, a further detailed design and analysis with the comprehensive environment data is required for an acceptable mooring system design.

7.4 References

- [1] G. S. Adriana Carillo, "Analysis of the Resource in Calfuco".
- [2] "Position Mooring DNVGL-OS-E301".
- [3] "Design and Analysis of Floating Stationkeeping Systems for Floating Structures API RP 2SK," June 2015.

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8 APPENDIX B – SAMPLE DEPLOYMENT PLAN

8.1 (Sample) Deployment Overview

On arrival at the deployment location and after the PB3 is in the water, the T1 will position the PB3 between the mooring chain buoys for line 1 and line 2. The sample step-by-step procedure and drawings show Line 1 as the first connection and this is to be preferred if the weather is suitable.

The direction of the PB3 drift should be identified to aid in the deployment. It is also assumed that the connection will take place in daylight with the relatively benign weather criteria.

After lines 1 and 2 are connected to the PB3, line 3 will be connected. Note that if excessive tension is present in this line, the suitable spacer lines should be added to achieve the desired pretension. The sample layout of the mooring system is shown in Figure 5.

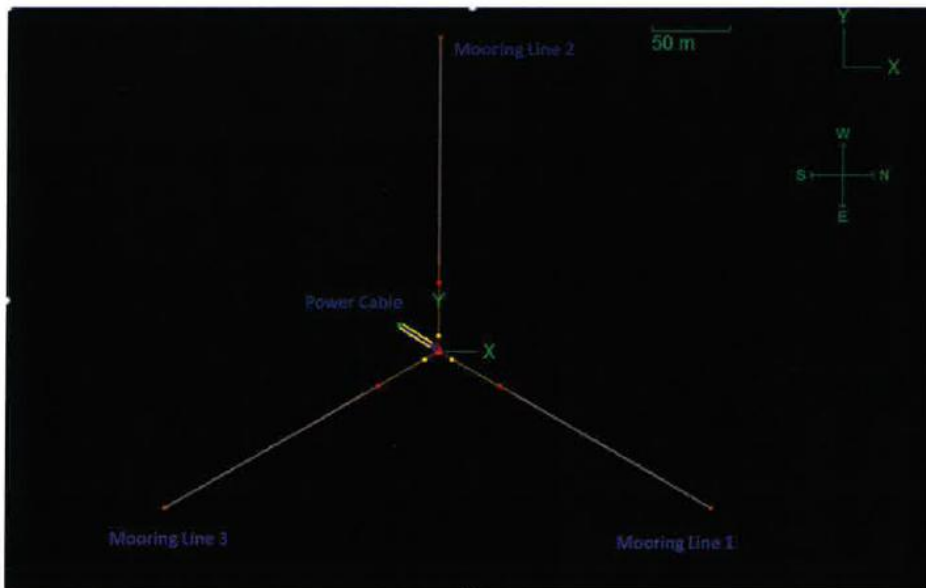


Figure 33: Notional Mooring system layout

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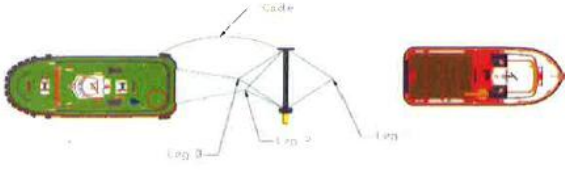
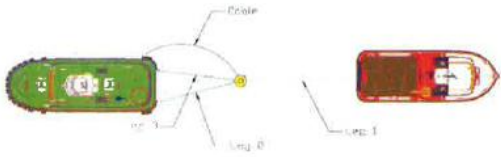
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8.2 (Sample) Connection to Mooring

The connection of mooring lines 1 and 2 are identical. The connection of line 3 will vary as the line length may require adjustment to achieve the desired tension. The steps with diagrams are shown in Table 7.

Table 10: Connection to Mooring

Step	Procedure
1	System check of the PB3 systems is conducted to ensure continuing function
	
2	PB3 is righted via the PB3 autoballast system
	

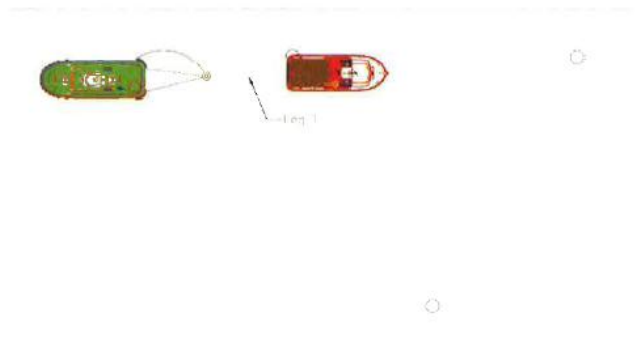
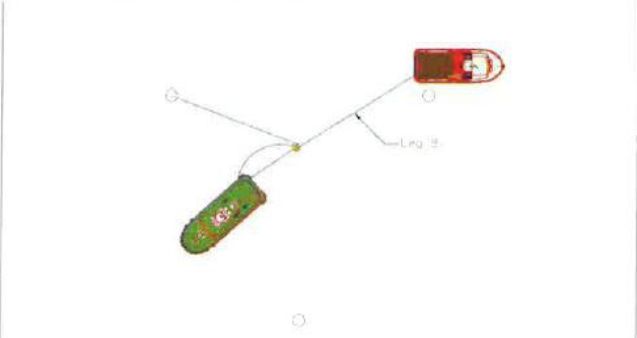
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3	T1 (red) lifts subsurface float from leg 1 onto deck and connects M1 to float 
4	T2 (green) passes end of M2 to T1
5	T1 lifts subsurface float from leg 2 onto deck and connects M2 to float 
6	T2 passes M3 to T1

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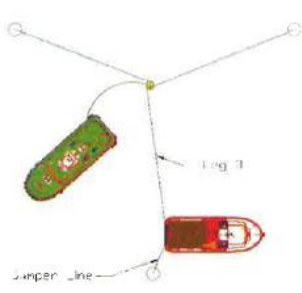

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<p>7</p>	<p>T1 lifts subsurface float from leg 3 onto deck and connects M3 to float. If needed extension pieces will be provided to achieve proper tension.</p> 
<p>8</p>	<p>T2 pulls in any excess subsea cable played out during mooring operations until cable marking closest to PB3 is on deck. (if applicable)</p> 
<p>9</p>	<p>T2 pays out cable while attaching weights or floats as marked on cable. (if applicable)</p>
<p>10</p>	<p>When last float is attached, cable end is attached to payload. (if applicable)</p>
<p>11</p>	<p>Payload/Cable /PB3 system is checked for proper operation. (if applicable)</p>

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12	T2 maneuvers over payload landing site and deploys payload. (if applicable)
----	---

8.3 (Sample) Deployment - Spar Trim/Commissioning

Once on the site, the spar trim can be adjusted and the final commissioning checks can be carried out. The step-by-step spar trim adjustment and the final commissioning checks are listed in Table 8.

Table 11: Notional Spar Trim Adjustment and Commissioning Checks

Step	Procedure
1	Release float and monitor float position using HMI to ascertain needed correction
2	Use HMI and onboard systems to adjust water ballast to achieve operational trim
3	Diver inspection of all components from T3
4	Use HMI to complete commissioning checks
5	All vessels depart

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Annex E: Health, Safety and Environmental Terms, First Edition dated 1/3/19.



HEALTH, SAFETY AND ENVIRONMENTAL TERMS

ENEL GROUP - HSE Terms - FIRST EDITION - valid as of 01/03/2019

page 1 of 30

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1 SCOPE

1.1 These Health, Safety and Environmental Terms (the “HSE Terms”) govern the Parties obligations in connection with health, safety and environment matters of the Contract (as defined below).

1.2 During the Supplier Qualification Process, the supplier accepts the obligations of these HSE Terms. All these obligations will be applied only when specific Contract are signed and the HSE Terms will be included in the contract documents.

2 RECITALS

2.1 This document provides Contractors with essential information on significant health, safety and environmental aspects that the Contractor and Subcontractors shall address during their activity on behalf of ENEL.

2.2 Contractor and Subcontractors shall use this information to develop a suitable and sufficient Health, Safety and Environmental documentation, identifying the Health, Safety and Environmental measures to be implemented during the contractual activities performance and defining the relevant costs, maintaining a safe and neat facility, promoting best practice in Health, Safety and Environmental management. Every requirement included in this document must be implemented when the specific hazard exists.

2.3 The information reported in this document shall be considered as contract conditions and if these conditions are not met by Contractors and/or its Subcontractors, consequences as per Section 19 herein are applied by ENEL to Contractors. For Subcontractors, ENEL request to the Contractors to have the same contractual conditions and the evidence of sanctions application.

2.4 For ENEL, the protection of health, safety, environment, physical and psychological integrity of persons, is not only a legal obligation but a moral responsibility, towards its employees and its contractors.

2.5 In ENEL, no work can be done compromising safety and environment. For this reason, as established in the Stop Work Policy, any risk situation or unsafe behaviour will determine the suspension of work and the restoration of safety and environmental conditions.

2.6 The “Declaration of Commitment to Health and Safety”, “Stop Work Policy” and “Environmental Policy” can be found at the following addresses:

<http://global.procurement.enel.com>, in the section “Useful Documents” and <https://corporate.enel.it/en/company/policy-environmental-enel>

2.7 ENEL is strongly and constantly engaged in promoting and consolidating a culture of health, safety and environment protection, promoting a greater focus and awareness of the risks and encouraging responsible behaviour on the part of those who work with us and for us.

2.8 Moreover, ENEL’s strategy is not confined merely to the evaluation of environmental impacts but also aims to involve people working with ENEL, promoting environmental best practices for its suppliers, contractors and customers, in order not to merely meet legal compliance obligations but actually to exceed them.

3 DEFINITIONS AND ACRONYMS

“Accident”: Incident that has given rise to injury, with absence from work of at least one day ¹, excluding the one of the occurrence.

“Affiliates”: with respect to any legal entity, any legal entity directly or indirectly controlling, controlled by or under common Control with, such other legal entity, but such legal entity shall be deemed to be an Affiliate only so long as such Control exists.

“Asset”: any workplace, construction site or object Enel owns, installs or operates, directly or through contractors and subcontractors.

“Commuting Accident”: Accident that occurs during the direct transfer/journey from the employee’s home to Work Site and vice versa, or when no company canteen is available, during the journey to and from the area where meals are consumed.

¹ In Countries where local regulation requires that the prognosis shall be defined only the day after the accident, the absence from work is counted starting since the day the prognosis was released, excluding the day of the event (e.g. if the event happens on day 1 and prognosis is defined on day 2, with return to work on day 3, the event is classified as medication and not as Accident).

“Complex Work”: a work activity involving (or performed by) more than one party (ENEL/Contractor) - which may or may not work simultaneously at the Work Site - or more than one working group of a single party (ENEL/Contractor), and depending on (but not necessarily in order of importance):

- number of workers at the Work Site,
- number of specific work activities at the Work Site,
- complexity of involved installations and/or construction sites,
- extension of Work Site,
- total duration of the work activity,
- equipment and operational tools used for the work execution,
- proximity for presence of third parties.

“Contract”: the contract entered into between a Contractor and ENEL to which these HSE Terms are attached.

“Contractor” or “Counterparty”: natural or legal person or groups of the latter with whom ENEL signs contracts for works, services and supplies.

“Control”: with respect to any legal entity, means the possession, directly or indirectly, of the power to cause the direction of management and/or policies of such legal entity, whether through the ownership of voting securities by contract or otherwise.

“ENEL”: the particular entity (whether Enel S.p.A. directly or one of its Affiliates) that is a party to the Contract signed with the Contractor.

“Environmental Event”: an event occurring in an asset with the potential to impact or impacting the environment and/or the organization due to environmental issues.

“Environmental Near Miss”: an unexpected environmental event confined or ended before reaching any environmental matrix and producing any potential impact.

“Equipment”: any assembly of items intended to be used by workers with the aim of executing a specific work activity.

“Fatal Accident”: an Accident that has caused the death of a person.²

“First Aid”: an injury-causing event that involves a medical treatment in a medical facility or the use of a first aid kit, with return to work no later than the day after the accident.

“Foreman”: a person who supervises the work and ensures the implementation of instructions issued, ensuring correct job execution by workers in compliance with health, safety and environmental regulations and company rules.

“Frequency Rate”: (number of Accidents/worked hours) x 1.000.000.

“Government Authority”: any national, federal, state, local, municipal or other governmental, regulatory body, administrative, judicial, public or statutory instrumentality, court or governmental tribunal, agency, commission, authority, body or entity, or any political subdivision thereof, other entity exercising executive, legislative, judicial, taxing, regulatory or administrative powers or functions of or pertaining to government (including any supra-national body exercising such powers or functions, such as the European Union) which has legal jurisdiction over the matter, Contract or company in question.

“Hazard”: a source with a potential to cause injury and ill health. Hazards can include sources with the potential to cause harm or hazardous situations, or circumstances with the potential for exposure leading to injury and ill health.

“Hazardous Material”: any and all substances now or at any time subject to regulation, control, remediation or otherwise addressed under applicable Law, including Laws relating to the discharge, emission, spill, release, or threatened release into the environment or relating to the disposal (or arranging for the disposal), distribution, manufacture, processing, storage, treatment, transport, or other use of such substances. Hazardous Materials include, but are not limited to, chemicals, constituents, contaminants, pollutants, materials, wastes, any other carcinogenic, corrosive, ignitable, radioactive, reactive, toxic or otherwise hazardous substances or mixtures - whether solids, liquids, gases excluding, however, common maintenance and cleaning substances.

“High Potential Incident”: an Incident that did not cause a Fatal Accident nor a Severe Accident nor a Significant Accident, but it could have. “HSE”: Health, Safety and Environment.

“HSE Requirements”: ENEL Technical Specifications included in the Contract, legal and other HSE requirements applicable in the Country. “Incident”: an unplanned and undesired event in which an injury or ill health occurred or could have occurred.

“Injury and Ill Health”: an adverse effect on the physical, mental or cognitive condition of a person. These adverse effects include occupational disease, illness and death. The term “injury and ill health” implies the presence of injury or ill health, either on their own or in combination. “Interference” or “Work interference”: a work activity where different subjects (ENEL /contractors) work at the same Work Site:

² It includes Incidents causing the death of the injured person within 180 days (causal link with the incident to be ascertained).

- at the same time, with a direct effect on the surrounding activities,
- at different times, if the effects of activities performed by the subject working before affect the subject working afterwards.

“Law”: all legislation, statutes, ordinances, codes, rules, orders, decrees, judgments, injunctions, permits, licences, authorizations of any legally constituted Governmental Authority, as the same may be amended, modified or repealed.

“Minor Accident”: an Accident that is not Fatal, nor Severe, nor Significant, with absence from work of at least one day³

“OHS”: Occupational Health and Safety.

“OHSE”: Occupational Health, Safety and Environment.

“Parties”: jointly ENEL and Contractor/Subcontractors.

“Personnel”: any individual performing activities related to the Contract that are under the control of the Contractor or of a Sub-Contractors regardless of the particular legal arrangement for such activities (i.e. whether employees, individuals working as independent contractors, agents, representatives etc.).

“Procurement Portal (Open Suppliers Portal)”: Web-site section of Enel Group Portal, dedicated to suppliers.

“Requirement”: a need or expectation that is stated, generally implied or obligatory. “Generally implied” means that it is custom or common practice for the organization and interested parties that the need or expectation under consideration is implied. A specified requirement is one that is stated, for example in documented information.

“Safety Observation”: an identification of an unsafe behaviour or hazardous condition that could lead to an Incident.

“Safety Near Miss”: an Incident that did not result in injury or ill health but had the potential to do so.

“Severe Accident”: an Accident that has caused the permanent or temporary disability with absence from work, falling into one of the following categories:

- first prognosis, reported on the first medical certificate issued, of over 30 (calendar) days,
- guarded prognosis, until the injured employee is removed from the hospital/emergency room danger list,
- unknown prognosis estimated to be over 30 (calendar) days.

“Severity Index”: (number of lost days/worked hours) x 1.000.

“Significant Accident”: an Accident not classified as “Severe” but that has caused the injury/trauma listed below:

- injury to a vertebrae I pelvis fracture,
- cranial trauma,
- any trauma caused from fall from height,
- burns of 2nd and 3rd degree / Any burn caused by electrical event,
- health implications as a result of asphyxiation or poisoning,
- loss of limbs or other mutilation,
- cardiac and respiratory arrest (associated with work activity).

“Stop work”: an event where ENEL “Stop Work” policy, or equivalent policy, have been applied.

“Subcontract”: a contract with which the Contractor entrusts the execution of contractual services to third parties.

“Supplier Qualification Process”: Enel procurement process, relies on qualified suppliers for works, goods and services, able to ensure adequate levels of reliability and quality.

“Supplier Qualification System”: the Enel system for selection and evaluation of suppliers aimed to have contractors able to ensure adequate levels of reliability and quality.

“Work Site”: any site, office, workplace or area where a work, supply of components, equipment or material or service activity is to be, is being, or has been carried out by Contractor on behalf of ENEL.

“Worker”: see Personnel.

³ In Countries where local regulation requires that the prognosis shall be defined only the day after the accident, the absence from work is counted starting since the day the prognosis was released, excluding the day of the event (e.g. if the event happens on day 1 and prognosis is defined on day 2, with return to work on day 3, the event is classified as medication and not as accident).

4 LANGUAGE

4.1 The original version of this HSE Terms is in English, with exception of contracts that apply Russian, Romanian and Brazilian legislation, for which the original version is the one in local language. In the case of conflicts between the original version and the translations into other languages, the original version shall have precedence.

5 GENERAL OBLIGATION ON OCCUPATIONAL LAW, HEALTH, SAFETY AND ENVIRONMENT

5.1 CONTRACTOR HSE WARRANTIES

5.1.1 Contractor warrants that:

- a) the information provided by it to qualify as a vendor to Enel S.p.A. or its Affiliates and to enter into the Contract, including in particular information on its HSE performance and qualifications, was true and correct when given, and that no material change has rendered that information substantially incorrect or misleading,
- b) it has in place, or will timely put in place, adequate management systems, procedures, and practices and adequately qualified Personnel to ensure that it can fulfil its HSE obligations under the Contract.

5.2 GENERAL HSE OBLIGATIONS

5.2.1 Contractor undertakes to perform its obligations under the Contract in such a manner as to ensure a healthy and safe Work Site for its Personnel, ENEL's Personnel and third parties and avoid damage to the environment, and to this end Contractor shall:

- a) comply with applicable Law in matters of social security, health and safety at work, and protection of the environment,
- b) comply with any applicable permits related to the Work,
- c) comply with these HSE Terms and other HSE obligations set out in the Contract,
- d) abide by good industry practice, considering, the principles set out in the Policies adopted by Enel S.p.A. and its Affiliates, namely, the "Declaration of Commitment to Health and Safety", "Stop Work Policy" and "Environmental Policy" applied by Enel S.p.A. and its Affiliates,
- e) cooperate with ENEL and others (other contractors, authorities etc.), seeking continuous improvement, to ensure that health, safety and the environment are protected to the maximum extent practicable during the performance of the Contract (e.g. participating in innovative project on HSE risk prevention and mitigation),
- f) give immediate information to ENEL on any issue regarding HSE that could impact, jeopardize, delay or interfere with the Contract activities.

5.2.2 In the event of a conflict between any of the elements of Section 5.2.1, Contractor shall perform the Contract in the manner that maximizes protection to health, safety and the environment and may consult ENEL in the event such manner is not immediately apparent.

5.2.3 Notwithstanding ENEL's level of involvement in matters of health, safety and the environment, the Contractor remains liable for any health, safety or environmental damage caused by its, its personnel or its subcontractors' fault or breach of Contract.

5.3 SPECIFIC HSE OBLIGATIONS

5.3.1 Contractor shall use Personnel employed in accordance with applicable Law and shall put procedures in place to ensure timely payment of its Personnel's remuneration and all taxes, insurance, pension and social security contributions related to such Personnel, as required for by Law and or by any applicable collective bargaining agreement. For the avoidance of doubt, as stipulated in the Section 3, the term Personnel includes the Personnel of Sub-Contractors, to the effect that, to the extent that Contractor, in accordance with Contract provisions, uses Sub-Contractors in the performance of the Contract, this Section requires that Contractor have procedures in place to ensure that any Sub-Contractors observe the obligations of this Section with respect to the Sub-Contractors' Personnel.

5.3.2 Contractor shall observe all the health, safety and environmental rules for each Work Site, including emergency plans. To this end, Contractor shall ensure that it has:

- (i) for Work Sites under Contractor's control, established and communicated adequate health, safety and environmental rules to all persons present at any time at the Work Site and put in place adequate procedures for monitoring and enforcing compliance with such rules by all such persons, or

- (ii) for Work Sites under ENEL or third-party control, obtained, reviewed and communicated to its Personnel the health, safety and environmental rules applicable to such Work Sites, and put in place adequate procedures for monitoring and enforcing compliance with such rules by its Personnel.

5.3.3 Each Party shall ensure that all its Personnel have appropriate personal identification and Party-supplied badges, with photo and appropriate identification data, identifying that the person is Personnel of the Party for purposes of the Contract. All Contractor Personnel shall be outfitted with external visible indication of the Party of which the person is Personnel (e.g. logos on uniforms, helmets, etc. or externally affixed badges). Even if entry to the Work Site is controlled by ENEL, the Contractor shall perform its own control to identify its Personnel entering the Work Site.

5.3.4 During mobilization to a Work Site, or within or between Work Sites, Contractor's Personnel shall always respect applicable traffic code, use the seat belts (or helmets in case of bicycle or motorcycle) and drive safely. Without prejudice to any higher qualification required as a result of a risk assessment or required by Law, any driver shall have at least one year's experience driving an equivalent vehicle.

5.3.5 At all Work Sites it is forbidden to smoke (except in designated smoking areas) and all Parties shall cooperate to enforce this rule.

5.3.6 At all Work Sites it is forbidden to:

- a) possess or use firearms or ammunition for firearms (except for specifically designated and properly credentialed security personnel),
- b) consume or be under the influence of alcohol, narcotics or illicit psychotropic substances,
- c) engage in disturbances such as fighting, illicit destruction of property etc.

At Work Sites under Contractor's control, the Contractor must immediately and definitively remove from the Work Site any person found to violate items (a), (b), or (c) of this Section 5.3.6, securing appropriate Law enforcement support, as needed.

At Work Sites under ENEL/third parties control, Contractor shall cooperate to remove its Personnel found to violate items (a), (b), or (c) of this Section 5.3.6.

6 HEALTH AND SAFETY PLAN

6.1 REQUIREMENTS

6.1.1 The Contractor shall deliver to ENEL, prior to commencement of Contract activities (and keep updated, for the whole Contract duration), specific Health and Safety risk assessment and management plan ("H&S Plan") on all the activities concerned with Contract performance, identify and implement prevention and protection measures.

6.1.2 The Health and Safety Plan shall be carried out in accordance with local Law, if any, and/or on the basis of the logic outlined in Section 6.2, and/or according to ISO 45001 standard (or equivalent standard, in this case ENEL reserves the right to approve the method), in case of conflicting requirements, the one maximizing protection of Health and Safety applies. In the event the Contractor is unable to follow the above mentioned requirements (e.g. because local Law requires a different standard), it must request a determination from ENEL, which will make a determination as to the standard to apply.

6.2 GUIDELINES FOR HEALTH AND SAFETY PLAN

6.2.1 To carry out the risk assessment Contractor shall take into consideration, including but not limiting the following conditions and risks:

- existing Work Site Health and Safety rules for Work Sites under ENEL or third-party control,
- Work Site conditions (including environment aspects and impact on H&S),
- Work Site boundaries conditions (including environment aspects and impact on H&S),
- works activities normally performed by Contractor, including preparatory activities and commuting/travel,
- cooperation with other contractors appointed by ENEL and possible impact/interference on its Contract performance,
- works related hazards and risks (one or more) of each activity, including but not limiting:
 - falling from same level,
 - falling from heights,
 - electrical,
 - chemical and/or biological agents (including when contained as part of materials or equipment, e.g. equipment containing asbestos),
 - falling objects,
 - impact with objects,

- noises and vibration,
 - fire and explosion,
 - thermal contact,
 - traffic/travelling (i.e. travelling through rural and inaccessible areas, conditions of the path for reaching the Work Site.),
 - lighting,
 - material projection, entrapment,
 - ionizing and non-ionizing radiations, confined spaces,
 - landslide and collapse,
 - barotrauma, decompression sickness, gas poisoning (underwater works), cutting,
 - ergonomic conditions (clumsy movement, strains or overexertion), animal aggressions,
 - thermal-weather hazard,
 - interference risks as in work activities where different subjects work at the same Work Site,
- o conditions of the path for reaching the Work Site,
 - o travelling through rural and inaccessible areas,
 - o night shift,
 - o generic risk: during the execution of any activities, as well as in the preparatory and travelling phases, there are common hazards that could cause incident like impact with objects, cuts, falls, ergonomic (clumsy movement or strains) accidents, as well as animal aggressions, atmospheric (lightning, flooding event.) accidents, heat strokes or other similar incident.

6.2.2 H&S Plans shall also include prevention and protection measures for eliminate or, at least, reducing each or more risks, such as:

- o preventive and/or periodical health surveillance,
- o ensure proper personnel selection/training/qualification for the execution of work activities,
- o definition of the work team composition, organization and planning,
- o definition of works activities procedures and/or instruction and/or methods,
- o emergency plans, included first aid, fire prevention and emergency management,
- o properly manage interference risks,
- o manage and properly dispose of Hazardous Materials that represent a health and safety hazard,
- o strictly regulate the use of communication devices as mobile phones/smartphones/tablets; (e.g. during activities execution, while driving, going up or down stairs, crossing roads and in all the cases that it could create a distraction),
- o report proper signs for highlight eventual temporary risks (e.g. slippery floor),
- o adopt proper dress, shoes, aprons and gloves requirements accordingly to risks consequent the activity executed,
- o delimitation of areas in order to allow the access only to authorized personnel,
- o provide panels and signs for evidencing the type of activity carried out and all relevant information,
- o provide the appropriate handrails for stairs,
- o maintain tidy and clean all working areas,
- o design a correct viability in the Work Sites, avoiding interference between pedestrian and vehicles as well as positioning the needed traffic signs, speed bumps,
- o evaluate atmospheric condition before activities execution,
- o protective measures, such as collective and personal protection equipment.

6.2.3 In addition, H&S Plan, or its attached documentation, shall include, where appropriate, the designation of:

- o safety officers,
- o safety responsible,
- o authorized qualified workers,
- o scaffolding supervisors,
- o operations coordinators for mechanical handling of loads,
- o head of cargo handling operations,
- o supervisors of life-lines,
- o persons in charge of first aid and fire prevention; and
- o any other specific health and safety Personnel nominations required by Law or elsewhere in the Contract.

6.2.4 H&S Plan shall include, where appropriate the authorization/licenses for the use of work equipment (machinery and equipment),

7 ENVIRONMENTAL PLAN

7.1 REQUIREMENTS

7.1.1 The Contractor shall deliver to ENEL the Environmental Plan relevant to the specific Work Site and activity prior to commencement of Contract activities and update or supplement it regularly, as circumstances or the Contract require, or as specifically requested by ENEL, during the performance of the Contract.

7.1.2 The Environmental Plan shall be carried out in accordance with local Law, if any, and/or in accordance with the guidelines set out in Section 7.2, and/or according to ISO 14001 standard (or equivalent standard, in this case ENEL reserves the right to approve the method), in case of conflicting requirements, the one maximizing Environmental protection applies. In the event the Contractor is unable to follow the above mentioned requirements (e.g. because local Law requires a different standard), it must request a determination from ENEL, which will make a determination as to the standard to apply.

7.1.3 In case of Contracts applicable to multiple Work Sites, particular focus of the environmental risk assessment shall be provided to the specific activity to be performed. This Environmental Plan must be delivered to ENEL prior to commencing the performance of activities provided by the Contract. ENEL group Environmental Policies and ENEL's particular instructions for said Work Site (if any) should also be taken into account in case they require higher duty care than applicable Law.

7.2 GUIDELINES FOR ENVIRONMENTAL PLAN

7.2.1 The Environmental Plan shall include, if applicable for the contractual activity, the evaluation of the following:

- identification of relevant environmental aspects/impacts, risks,
- waste management including need of temporary storage,
- waste water management,
- diffuse emissions mitigation plan,
- noise mitigation plan,
- detailed plan explaining how the Contractor and its subcontractors shall comply with all environmental requirements for all the environmental aspects (that will be at least: atmospheric emission, waste, soil management, noise, waste water, dust and particles emissions, biodiversity protection etc.) during all the works,
- environmental emergency management plan,
- plans for remedial action for any contamination caused by any negligent release of chemicals and Hazardous Materials,
- description of the environmental monitoring operations/actions, including planning and frequency,
- description of reporting to be handed over to authorities,
- compliance with existing Work Site environmental rules, for Work Sites under ENEL or third-party control.

8 HSE ORGANIZATION AND RESPONSIBILITY

8.1 For the Contract duration, Contractor shall appoint:

- a) HSE key people: one or more representatives, appointed by the Contractor before commencement of the Contract activities, having a managerial role within the Contractor work organization, with clear HSE roles and responsibilities defined by the Contractor, which will be ENEL's HSE interlocutor during the Contract. In case Contractor's personnel is not present on the Work Site, the Contractor, in agreement with Subcontractor, may appoint the HSE key people among the subcontractor's personnel,
- b) Foreman: one or more representatives, appointed by the Contractor among its personnel, each one of them responsible for supervising specific Work Site activities and ensuring the implementation of directives received, checking the correct execution by workers in compliance with HSE obligations under the Contract; The profiles of "Foreman" (she/he will manage the single activities and control the connected safety issues) shall have the following skills:
 - knowledge of the activity to be carried out and its development within a complex context as well as the hazards this activity can generate towards other activities,
 - ability of leadership and relationship with the other profiles involved,
 - diligence in the management of the activity in compliance with the planning agreed,

- proactivity and attention in signalling to the coordination profiles any deviation from the planning established which can arise during the activity execution.
- c) HSE reporting focal point: Contractor should assure a personnel structure with a focal point to comply with Safety and Environmental reporting to Enel,
- d) Moreover, in case of Complex Works refer to Section 16 and APPENDIX 1 Focus on Complex Works activities.

8.2 ENEL may, at its sole discretion, request certain number of Contractor's or subcontractors resources to be allocated to HSE activities, taking into account the Contractor's and its subcontractors' number of resources, involved in the Contract; the Contractor accepts in advance to be obliged to comply with the aforementioned by the sole ENEL's request.

8.3 ENEL reserves the right to verify the qualification and credentials of Contractor's HSE Personnel and, in case are found to be inadequate, to refuse, at its sole discretion, a specific HSE person. Contractor shall make available to ENEL, curriculum vitae of HSE personnel, reporting their professional expertise, academic background, credentials, work history performance and tracking record.

9 PROVISIONS CONCERNING FIRST AID, FIRE PREVENTION AND EMERGENCY MANAGEMENT.

9.1 The Contractor must comply with provisions of Law and the Contract on the subject of first aid, fire prevention and emergency management.

9.2 The Contractor must make all arrangements necessary to ensure and warrant that each Work Site is supplied with:

- o at least one medication case, pursuant to the provisions of applicable Law in force;
- o a suitable means of communication to ensure a prompt response of first aid/emergency assistance;
- o appropriate equipment, suitable to the specific risks of the activities inherent to the subject matter of the Contract.

9.3 All the actions pertaining to first aid and emergency management shall be carried out by the Responsible appointed persons of the company involved in the emergency.

9.4 For Work Sites under ENEL or third-party control, all Contractor's actions pertaining to first aid, fire prevention and emergency management must be carried out in coordination with the existing Work Site emergency plans.

10 HSE AWARENESS AND COORDINATION

10.1 HSE KICK-OFF MEETING

10.1.1 Before commencement of Contract activities ENEL and the Contractor will held a Safety kick off meeting for coordination of activities and a record of the meeting (minutes of meeting) shall be signed by representatives of both Parties.

10.2 INDUCTION

10.2.1 Contractor shall guarantee that all workers under its responsibility are aware of the risks and restrictions (e.g., concerning areas) existing or that could affect the Work Site, as well as possible emergency plans. Workers must attend an induction talk on HSE, which shall be properly documented. The induction talk shall be updated periodically or when new risks are identified.

10.2.2 If required, workers must attend a high level induction talk on HSE, between ENEL and HSE key people, which shall be properly documented.

10.3 PRE-JOB CHECK

10.3.1 Immediately before the beginning of each specific activity at the Work Site, Contractor, by means of its Foreman or other appointed person (with equivalent competences and responsibilities), must carry out a HSE meeting of pre-job check addressed to its personnel and its subcontractors.

10.3.2 The pre-job check shall be repeated whenever a change occurs in the working conditions or a new worker is assigned to the activities. In this meeting the foreman, or other responsible person, and the staff review all stages of the activity and the related tasks, assess situations with the potential risk to HSE that may occur, describe the equipment and material that they have to use and the behaviours to be adopted in order to prevent incidents.

10.3.3 The pre-job-check shall ensure, also with the support of a specific checklist, that all workers:

- are informed about the activity to be done and operational procedures;
- understand the risks associated with the specific activity to be done;
- consequently adopt all necessary measures to ensure the activity is carried out safely and protecting the environment.

11 VEHICLES, MACHINERY, EQUIPMENT, TOOLS AND MATERIALS

11.1 Contractor shall:

- supply all materials, equipment, and tools required for the appropriate safe execution and high quality of the work or service,
- utilize machines, equipment and devices compliant with applicable Laws in force and best practice standards set forth in applicable regulations,
- in addition to the requirements from Section 17.2, make available (and forward, if required) to ENEL, before the commencement of each activity, all information related to the vehicles, machinery, equipment and devices he is going to use. ENEL reserves the right to validate this information before authorize the activity execution. Additionally ENEL could require a relevant responsible declaration signed by the Contractor,
- abstain from using vehicles, machinery, equipment and devices owned by ENEL without prior written authorization.

11.2 All materials, machinery, equipment, and tools shall be subjected of regular maintenance and care in order to withstand deterioration due to the environmental conditions. This includes protective material covers, insulation, and others. In addition, they must be equipped with all the elements that ensure their safe use (lights, alarms, rear-view mirrors, protective guards, etc.). The use of machinery, equipment, and tools without the protective devices is prohibited.

11.3 Contractor's machinery, vehicles, and equipment shall be only used by authorized personnel. Contractor shall authorize only trained and/or qualified personnel, which shall own certification for the use or driving license/permission when required by the contract or by the local Law.

11.4 Contractor shall preventively authorize Contractor and Subcontractor vehicles and machinery entering Work Site for the execution of Contract activities. All vehicles and machinery used in the Work Site shall have inside an identification number and the Contractor or Subcontractor company Logo,

11.5 ENEL reserves the right to inspect all the elements and relevant documentation described in this subsection, before and during the use of machinery, vehicles, equipment and tools in order to verify their compliance with the applicable Law, standards, and HSE Requirements, as well as the Contract provisions. In the case that during the inspection ENEL verifies they are not compliant, the Contractor shall immediately stop and/or remove them from the Work Site.

12 CHEMICALS AND HAZARDOUS MATERIALS

12.1 The Contractor shall supply and use (if provided in the contract) chemical substances properly packaged and labelled so that the product contained and the risks for the workers and the environment are clearly identified.

12.2 Packaging and labelling shall provide also information for safe unloading, storage and handling. Corresponding safety, handling and storage data sheets shall accompany materials, substances and mixtures. Data sheets, provided in local language, shall include the expected uses, limitation or prescription related to their storage (if any) measures for risk mitigation and disposal instruction, in accordance with current Law.

12.3 Contractor shall maintain an updated file of all material safety data sheets for all chemicals and Hazardous Material used in connection with performance of the Work or at or near the Work Site or at any construction area related to the Work and shall update such file at least monthly and make it available on site in accordance with applicable Laws. Contractor shall maintain an accurate record and current inventory of all chemicals and Hazardous Materials used in performance of its activities on at or near the Work Site or at any construction or storage area related to the Contract and the record shall identify quantities, location of storage, use and final disposition of such chemicals and Hazardous Material.

12.4 Contractor shall minimize the use of Hazardous Materials and shall conduct its activities and causes its Subcontractors to conduct their activities in a manner designated to prevent pollution of the environment or any other release of any Hazardous Materials. The Contractor shall accredit the absence of oils containing PCBs and the absence of CFCs, HCFCs, halons, substances with trade restrictions, in the supplied equipment. Moreover the Contractor must avoid the use of asbestos in the supplied materials/equipment and in any used PPE and tool.

12.5 Unless otherwise provided in the Contract, Contractor shall be responsible for the management of and proper disposal (within the timeframe set forth in the Contract) of all chemicals and Hazardous Materials brought onto or generated at the Work Site by it or its Sub contractors, if any. The Contractor shall cause all such Hazardous Materials brought onto or generated at the Work Site by it or its Sub contractors, if any, (A) to be transported only by carriers maintaining valid permits and operating in compliance with such permits and Laws regarding Hazardous Materials pursuant to manifest and shipping documents identifying only the Contractor as the generator of waste or person who arranged for waste disposal, and (B) to be treated and disposed of only at treatment, storage and disposal facilities maintaining valid permits operating in compliance with such permits and laws regarding Hazardous Materials, from which, to the best of the Contractor's knowledge, there has been and will be no release of Hazardous Materials.

12.6 Contractor shall submit in advance to ENEL a list of all Hazardous Materials to be brought onto or generated at the Work Site. Enel reserves the right to approve or decline such list. The Contractor shall keep ENEL informed as to the status of all Hazardous Materials on the Work Site and their disposal from the Work Site.

12.7 If the Contractor or any of its Sub-contractors releases any Hazardous Materials on, at, or from the Work Site, or becomes aware of any person who has stored, released or disposed of Hazardous Materials on, at, or from the Work Site the Contractor shall immediately notify ENEL in writing. If the Contractor's work involved the area where such release occurred, the Contractor shall immediately stop any Work affecting the area. The Contractor shall, at its sole cost and expense, diligently proceed to take all necessary or desirable remedial action to clean up fully the contamination caused by (A) any negligent release by the Contractor or any of its Sub-contractors of Hazardous Materials, and (B) any Hazardous Materials or Hazardous Substances that was brought onto or generated at the Work Site by the Contractor or any of its Sub-contractors or vendors, whether on or off the Work Site.

12.8 If Contractor discovers any Pre-Existing Hazardous Material that has been stored, released or disposed of at the Project Work Site, Contractor shall immediately notify ENEL in writing. If Contractor's Work involves the area where such a discovery was made, Contractor shall immediately stop any Work affecting the area and ENEL shall determine a reasonable course of action. Contractor will not thereafter resume performance of the Work in the affected area except with the prior written permission of ENEL.

13 PROTECTION OF THE ENVIRONMENT

13.1 MATERIALS AND/OR EQUIPMENT.

13.1.1 The Contractor undertakes to provide, wherever it is possible, equipment or materials with eco-label and those with greater energy efficiencies, with a longer service life involving lower costs and less likelihood of waste being generated due to shelf life expiry and lower final disposal costs. The equipment and materials provided by the Contractor shall protect the indoor environmental quality.

13.1.2 The Contractor shall ensure that the elements used in material and equipment are not chemically unstable.

13.1.3 The Contractor will be responsible to meet any provision regarding transportation, management and storage of products/materials, as well as management, recovery or disposal of waste according to applicable regulations and authorizations, providing under ENEL's request a copy of any documents and authorization.

13.1.4 The Contractor undertakes to reuse materials or recycle waste generated by its activities ensuring the compliance with environmental Law and obtaining all the required authorizations, providing under ENEL's request a copy of any documents and authorization. The reuse of materials shall be intended exclusively as reuse with the same functionality/purposes and, in any case, not applicable to waste.

13.1.5 The Contractor undertakes to manage the supplied empty containers, in accordance with applicable Law. Also, the Contractor will be obligated to the withdrawal of the packaging used for transportation in the conditions and terms established in the Contract and Law, or, if these details are not indicated, the Contractor shall remove the packaging from previous deliveries when making subsequent ones and/or when ENEL so requests. The Contractor shall communicate, before the start of the activities, an estimation of the foreseen quantities of generated waste, as well as the integral management of the same that will develop.

13.1.6 In the event the Contract calls for the supply of Electric and Electronic Equipment ("EEE"), the Supplier shall comply with local Law, also in relation to the end-of-life management, including (if applicable):

- demonstrate to have adhered to an end-of-life recycling collective system recognized and valid for the Country where the EEE will be installed;
- demonstrate to be registered to the National Register of EEE Producers;
- mark the EEE with appropriate symbol (for products imported to European Union, or where applicable, in accordance with the European standard EN 50419).

13.1.7 In case of a Country without specific Law about Electric and Electronic Equipment recovery system, ENEL in agreement with the Supplier manufacturer will evaluate how to proceed case by case.

13.2 WORKS AND/OR SERVICES.

13.2.1 The Contractor must be able to:

- provide, on request, all documentation showing the compliance with applicable HSE Law, including - but not limited to - obtaining permits and respect of the limits therein described, if any;
- prove to have procedures that allows the maintenance of the requested requirements and the continuous compliance with the applicable Law;
- follow the Environmental Plan;
- provide to ENEL the environmental performance data (e.g.: fuel consumption, waste), if required;
- provide relevant information on the activities covered by the Contract, to contribute to ENEL's calculation of the carbon footprint, circular economy index or any other indexes related to the Environmental Management System, if required in consideration of the activities' relevance. Similarly, the information on the carbon footprint of activities could be assessed by the Subcontractor.

13.2.2 The Contractor must inform ENEL within a maximum of 24 hours, about any changes, withdrawal or updates concerning authorizations and/or permits, providing a copy of the new documents issued by authorities.

13.2.3 The Contractor undertakes to verify that its staff knows, understands and executes all requirements and regulations relating to environmental protection, applicable to perform the Contract, as well as ENEL's environmental policy and the applicable internal procedures (the list of applicable procedures will be included in the contractual documentation).

13.2.4 The Contractor guarantees, and demonstrate, that the staff that will perform the Contract, has or receives adequate theoretical and practical training and especially the need to ensure proper environmental performance and reduce the risk of an incident with environmental impact. Training will include the obligations arising from the Environmental Management, where applicable.

13.2.5 Moreover the Contractor shall, as applicable to the Contract subject matter and unless otherwise stipulated in the Contract itself:

- leave clean and free of debris the work area once completed the execution of the Contract, removing all debris, containers, packaging, garbage, junk, and all kinds of waste generated, there remain, being responsibility of the Contractor, the collection, transport and authorized management thereof;
- take appropriate measures to preserve biodiversity on site and prohibit its employees from carrying out hunting and fishing activities;
- cut vegetation at the minimum possible and only when it is absolutely necessary; it is mandatory the Contractor has the corresponding permits (licenses) from the authorities and ENEL's authorization. The Contractor must present the information about cutting to ENEL prior to start said activity. ENEL shall agree with the Contractor the advance period for the delivery of this information;
- store hazardous waste, providing to separate incompatible chemicals and avoiding the mixture between hazardous and not hazardous waste, in accordance to applicable regulation and ENEL's standard;
- dispose all wastes originating from Contractor work activities to authorized sites only, in compliance with the applicable regulations;
- clear signalling areas and waste with significant environmental potential impact;
- comply with specific Country's waste management requirements reported in APPENDIX 2 Waste management;
- prevent emissions of dust or other substances in the transport of materials and any other activity likely to generate dust or other substances;
- prevent emission of noise and vibration during the execution of the works;
- properly segregate each residue/waste separately, by placing, in the place of performance of the Contract, a sufficient number of containers, closed, marked and in good condition, in order to prevent uncontrolled spills, leakages or emissions that could impact the environment.

13.2.6 The Contractor shall be provided, when handling oil-containing equipment (e.g generators, transformers, etc.), with proper containment/absorbent materials in order to immediately mitigate dangerous substances spills.

13.2.7 Concerning greenhouse gases and ozone-depleting substances, all the relevant works (e.g. installation or maintenance of SF6 containing equipment, etc.) must be carried out by suitably trained personnel and, in the Countries where is foreseen, the workers shall be provided with the relevant certification. All practicable precautionary measures must be taken to avoid and minimize leaks and emissions into the atmosphere. Furthermore, any emissions into the atmosphere must be monitored and registered.

14 REPORTING

14.1 SAFETY ACCIDENT/INCIDENT REPORTING AND MANAGEMENT

14.1.1 Contractor shall notify Incidents and Safety Observations related to the performance of the Contract, regardless of the person affected (whether Personnel of the Contractor, ENEL or third-parties), as follows:

- a) report on health and safety matters occurring during the performance of the Contract to Government Authorities in accordance with the applicable Law, such communication (for coordination and mitigation purposes) should be, if at all possible, after communication to ENEL,
- b) immediately communicate to ENEL any Accident or Stop Work (at least by phone),
- c) within 6 (24 in case of Minor Accidents) hours of occurrence: notify ENEL of any Fatal, Severe, Significant or Minor Accidents or High Potential Incident that occurred during the performance of the Contract, by written notice, including a detailed description of the event, all the available preliminary information, available medical prognoses, copies of any report filed with Governmental Authorities,
- d) within 3 calendar days from the occurrence, notify ENEL of any Safety Near Miss, Safety Observation or Stop Work that occurred during the course of work on behalf of ENEL, by written notice reporting also corrective/preventive measures adopted.

14.1.2 Contractor must keep record of both events and statistics about Safety.

14.1.3 In case of Fatal, Severe or Significant Accidents occurred during the performance of the Contract, Contractor shall deeply analyse the event and:

- a) within 3 calendar days from the occurrence, transmit to ENEL, a preliminary Report of the Analysis,
- b) within 7 calendar days from the occurrence, transmit to ENEL the relevant final Report recording the detailed causes of the Accident and the corrective/preventive measures adopted.

14.1.4 In case of High Potential Incident occurred during the performance of the Contract, Contractor shall deeply analyse the event and:

- a) within 3 calendar days from ENEL's notice to the Contractor that an Incident was classified as a High Potential Incident transmit to ENEL, a preliminary Report of the Analysis,
- b) within 7 calendar days from the occurrence, transmit to ENEL the relevant final Report recording the detailed causes of the Incident and the corrective/preventive measures adopted.

14.1.5 In case ENEL nominates a group of analysis to investigate the causes of an Accident, the Contractor must provide maximum cooperation, providing quick and diligent efforts of any information that may be requested.

14.2 ENVIRONMENTAL EVENTS REPORTING AND MANAGEMENT

14.2.1 The Contractor must immediately inform by phone call ENEL's representative supervising the work on any environmental event that occurs during the execution of the Contract. In case of event/material damages that implies the obligation of reporting to the authorities, ENEL shall be informed at the same time as (not later) the communication to the authorities.

14.2.2 Moreover the Contractor is obliged to submit a written report of the event including its causes and the measures taken for the management and resolution of the event, within a maximum of 24 hours.

14.2.3 In case of an Environmental Near Miss, the Contractor shall notify ENEL by written notice within 3 days. Should an environmental event occur, whatever it may be, the Contractor must immediately intervene to apply all possible techniques to mitigate the damages. If ENEL requests the Contractor to follow specific instructions in order to manage the environmental event, the Contractor shall comply with the received instruction by ENEL's technician supervising the activity.

14.2.4 The Contractor must immediately (and no later than 48h) inform ENEL, about any evidence related to checks and inspections carried out by authorities and, in case of infringement, the actions carried out or planned in agreement with the authorities aimed at restoring legal compliance.

14.3 HSE NON-CONFORMITY REPORT

14.3.1 Contractor shall track in an "HSE Non Conformity Report" all Non Conformities detected during inspections (by HSE Contractors Personnel or by ENEL Personnel) and the corrective action taken.

15 SUBCONTRACTORS

15.1 GENERAL HSE OBLIGATIONS FOR SUBCONTRACTING

15.1.1 The subcontractor shall execute the activities in accordance with the H&S Plan and Environmental Plan.

15.1.2 The Contractor shall pay the safety costs⁴ related to the activities entrusted in subcontracting, to subcontractor without any reduction.

15.2 SUBCONTRACTOR SELECTION

15.2.1 Contractor shall guarantee a proper Subcontractor selection checking that Subcontractor meets both applicable Law, as well as the selection requirements imposed by ENEL to its suppliers, including but not limiting to:

15.2.2 Contractor shall verify that subcontractors HSE performance index (frequency rate, severity rate, fatal event, or other performance index specified in the Procurement Portal) are similar (not higher than the fatal index and no more than 20% higher for other performance index) to the ones declared by Contractor to ENEL during the relevant Supplier Qualification Process.

15.2.3 In case the HSE performance indexes of the selected subcontractor are higher than the ones mentioned above, Contractor shall provide to ENEL a detailed HSE performance index improvement plan, agreed and signed by Contractor and Subcontractor, where are addressed the various actions that will be adopted during the works execution in order to guarantee a proper HSE performance.

15.2.4 The selection of a Subcontractor already qualified by ENEL should be a preferred option.

15.2.5 Contractor shall submit to ENEL, for the necessary checks finalized to subcontracting authorization, relevant selection documentation. In particular the Contractor shall provide to ENEL, under his own responsibility, a selection report including both the qualification criteria as well as relevant evidences (certificates, documentation, reports etc.) proving that the Subcontractor meets HSE selection requirements.

15.2.6 Contractor shall provide to ENEL all the documentation relevant to the Subcontractor selection at least 30 calendar days before the contractual agreement between the Contractor and its Subcontractor. Anyway once received the subcontracting documentation, ENEL reserves 30 calendar days for necessary verifications and Subcontractor authorization; in this period the Subcontractor shall not enter Work Sites or execute contractual activities.

15.2.7 As an example, the following documents shall be provided:

- company H&S Policy (if available);
- HSE plan (if required)
- typical HSE risks assessment;
- safety procedures that clearly regulate the activities execution;
- internal H&S organization with H&S representatives appointed with clear roles and responsibilities;
- H&S procedures referring to:
 - H&S training for all personnel;
 - personal protective equipment (PPE);
 - safety inspections execution;
 - accident analysis and implementation of corrective action plans;
- copy of the accidents record (or similar document certified by the national institute for work accidents, if any);
- figures relevant to work accidents occurred in the last 3 years and for every year (i.e. frequency rate, severity index);
- any certification according to the standard ISO 45001 (or equivalent).

15.2.8 Before granting authorization to subcontract, ENEL will have the right to carry out further checks on the Subcontractor requirements compliance, unless explicitly in conflict with national Laws.

15.2.9 Contractor shall apply the same selection requirements also to the eventual further subcontracting level.

15.2.10 The Contractor shall also keep the relative Subcontractor documentation for at least 6 months after the Contract expiration, in order to permit ENEL to carry out checks or send such documentation to ENEL, where required by Law.

⁴ Including cost for the measures adopted to eliminate, or if not possible, to reduce health, safety and environment risks caused by several works activities which interfere with each other.

15.3 SUBCONTRACTOR MANAGEMENT

15.3.1 For the entire Contract duration, the Contractor must provide to ENEL documentation relevant to the activities performed by its Subcontractor and its compliance with the applicable HSE Law, these HSE Terms, the Contract and HSE Requirements.

15.3.2 Subcontractors HSE documents must be kept where the activities object of Contract are performed, or for the purposes of their application, or to be produced on request.

15.3.3 The contract with Subcontractor shall be available to ENEL's Unit in charge of manage the Contract in case ENEL requires it in a complete and signed copy.

15.3.4 Invoices related to HSE activities issued by Subcontractor shall be available to ENEL's Unit in charge of managing the Contract in case ENEL requires them in a complete copy. On monthly basis ENEL shall receive a copy of a confirmation letter issued to Contractor by the Subcontractor that all above invoices have been paid.

16 SPECIAL REQUIREMENTS FOR COMPLEX WORKS

16.1 In case of Complex Works the Contractor shall keep under control the risks coming from the interferences between the activities either carried out at a same Work Site by the Contractor itself, because it subdivided these activities among its own working groups or Subcontractors, and/or carried out at a same Work Site by other contractors.

16.2 During a Complex Work activity, Contractor attention shall be focused not only on the risks of the activity under execution but also on the work planning, organization and coordination as well as the prevention and protection measures to be established so that the interference risks do not affect other activities which are characterized by their own specific risks and carried out at the same Work Site.

16.3 Contractor has to take part to the necessary coordination (or at least cooperation, depending on the Contract provisions), also taking into account the requirements of applicable Law.

16.4 APPENDIX 1 Focus on Complex Works activities reports requirements and indications about the specific issue.

17 DOCUMENTATION ANO INFORMATION TO BE PROVIDED BY THE CONTRACTOR

17.1 LEGAL EMPLOYMENT ANO HSE DOCUMENTATION

17.1.1 Contractor shall provide to ENEL the information and documentation that ENEL deems necessary to verify the correct fulfilment by the Contractor of those legal obligations from which any liability could arise towards ENEL. The list of document requested by ENEL is summarized here below and is intended to be considered as not exhaustive.

17.1.2 ENEL reserves the right to modify, during the performance of the Contract, the list of documents in the case of change in Law or change of ENEL HSE policies. In such case, Contractor shall forward to ENEL the new list within one (1) month after the request.

17.1.3 ENEL, taking into account the type of activity or risk associated with the work or service under Contract may agree that the documentation from the Contractor may be not all detailed in this section or focus on specific aspects.

17.1.4 In case ENEL considers the type of service provided by the Contractor particularly dangerous, or specific legislation apply, ENEL may request the Contractor to provide additional documentation.

17.2 DOCUMENTATION TO BE PROVIDED OR MADE AVAILABLE BY THE CONTRACTOR BEFORE THE START OF CONTRACT ACTIVITIES

17.2.1 At least three weeks before the start of each activity and considering all Personnel (workers from Contractor's company, Subcontractors companies or self-employed), the Contractor shall, for that specific activity:

- a) provide the list of workers that will participate in the execution of contractual activities, indicating for each of them: Names and surname; No. affiliation to Social Security or equivalent; Work Site where they will serve; occupational category or job position; where appropriate, whether the worker is subject to particularly dangerous risks.
This document will be updated and provided to ENEL whenever an incorporation or dismissal assigned to the implementation of the contract works occurs as well as in case of additions of new workers (whether or not newly recruited) occur,
- b) make available the H&S Plan,

- c) provide the Environmental Plan,
- d) provide the documentation related to Complex Works,
- e) make available (or provide a soft copy if required) HSE File, containing at least:
 - evidences of specific theoretical and practical training (individual certifications) according to the activities assigned to the workers,
 - medical aptitude certificates,
 - evidence of delivery and reception that workers have received personal protective equipment (PPE), corresponding as provided in the H&S Plan. Document has to include list of PPE delivered to the worker,
 - Contractor statement assuring that all equipment, tools and personal or collective equipment that will be used in performance of the Contract comply with the H&S Plan and Environmental Plan and that they have the corresponding CE declaration of conformity or equivalent required by applicable Law in other country out of Europe,
- f) provide the list of authorized vehicles and machineries that Contractor will use in the performance of the Contract. Whenever Contractor intends to use a vehicle or machinery not included in the list, Contractor shall update and provide to ENEL the document in advance,
- g) provide, on request, all documentation showing the compliance with:
 - applicable HSE Law on, including - but not limited to - obtaining permits and respect of the limits therein described, if any,
 - H&S Plan and Environmental Plan.

17.2.2 The Contractor is obliged to have archived a file containing all this information, in case of worker documentation a file for each of their workers. The mentioned documentation is subject to review and verification by ENEL before the beginning of the activities activity and at any time. Also, if required to do so, the Contractor has to put this documentation available to ENEL no later than forty-eight (48) hours.

17.2.3 Contractor must keep updated the mentioned documentation during the performance of the Contract and forward to ENEL the relevant updates.

17.3 DOCUMENTATION TO BE PROVIDED BY THE CONTRACTOR DURING THE PERFORMANCE OF THE CONTRACT

17.3.1 The Contractor shall keep an updated daily personnel list of the entire staff employed by the Contractor or its subcontractors at the facilities and of the vehicles that enter in the Work Site (Personnel Log/Vehicles Log). Contractor shall submit these Logs to ENEL on a monthly basis, or earlier in case a change of the personnel involved in the contractual activities occurs.

17.4 INFORMATION ON SAFETY

17.4.1 The Contractor shall provide:

- a) within the first 5 days of the month the number of hours worked by Contractor and its Subcontractors Personnel in the Contracts (total, by Contract, by Work Site and employee) in the previous month,
- b) number of employees of the Contractor and its subcontractors classified by gender (male/female) who perform their activity in Contracts,
- c) days worked by the staff of the Contractor and its Subcontractors (estimated equivalent to full-time working days -FTE-) involved in Contracts to include in its order: 1) construction activities; 2) exploitation; and 3) maintenance; 4) other.

18 INSPECTION AND MONITORING

18.1 ENEL has the right to carry out inspections or audit to check and verify compliance with the Contract - including, in particular, compliance with HSE obligations - and Contractor shall timely cooperate with related actions carried out by ENEL. ENEL's personnel and/or third parties authorized by ENEL can access at any time the Work Sites, Contractor's premises, warehouses or storage areas to carry out the above-mentioned checks and verifications.

18.2 In particular, ENEL shall have the right to check the personal identification of Contractor's Personnel (required by Section 5.3) at any time.

18.3 ENEL reserves the right to monitor or control the proper management of waste and of the other environmental aspects done by the Contractor.

18.4 ENEL reserves the right, if in compliance with local Law, with the purpose to verify the HSE compliance of Contract activities, to require the Contractor to record personnel presence, as well as video recording or photo recording of its workers during the contractual activities. In this case, Contractor will also cooperate with ENEL in order to define technological requirements, workers training and relevant procedures and instruction.

18.5 In case of Contracts for services like restoration, cleaning, recreational room, security services etc. ENEL could promote a service satisfaction survey for collecting the feedback from the service users about HSE aspects. The Contractor, in agreement with ENEL, shall consider these feedbacks and implement improving actions.

18.6 The inspections carried out by ENEL or authorized third parties do not imply approval from ENEL neither a waiver to Contractor, with regard the HSE compliance issues, from obligations and responsibilities connected to the proper execution of its Contract activities. The Contractor, as a preventive action, shall perform its own inspection of the activities in order to detect any non-compliant situation and then implement the necessary corrective actions.

18.7 In case, during the inspections, non-conformity by the Contractor or by his Subcontractor are found, ENEL, will notify the Contractor accordingly. The Contractor shall, within 5 business days, provide the clarification on the causes and/or the reasons which led to these situations and propose the necessary remedy measures (which shall be implemented within 3 weeks from acceptance of ENEL, unless a shorter period is required by ENEL), without being entitled to any deferment of the time limit for the execution of the work activities.

18.8 Whenever possible the detected non-conformity shall be immediately solved by Contractor and reported as solved in the HSE Non Conformity Report. In more complicated cases a time for solution will be agreed with Contractor and duly reported on the same Report.

18.9 In the cases where the failure to meet the requirements of HSE involves, in ENEL's opinion, an imminent danger, which is understood as any situation that creates an evident and manifest damage risk to people physical integrity or the possibility of severe environmental harm, ENEL may request the stop work until the problem is solved. Subsequently ENEL requires to implement a remediation plan with execution timing to be agreed with ENEL.

18.10 For each detected non-conformity the Contractor shall carry out a non-conformity analysis to check its eventual recurrence in order to verify the effectiveness of action taken. In case the analysis highlight the ineffectiveness of the planned corrective action, the Contractor shall organize a different and more effective preventive action. Contactor shall present and agree with ENEL this improved corrective action.

18.11 Any violation/non-conformity detected as a result of controls and verifications are recorded by ENEL, with allocation of sanctions related to the severity of the violations/non-conformities identified, resulting in an eventual downgrade of the Vendor Rating index.

18.12 The downgrade thresholds of Vendor Rating or the ascertainment of a number of HSE failures, may entail the adoption of the Contractor suspension provision from the invitations to tenders for a period that will be defined by ENEL, at its sole discretion.

18.13 In any case ENEL may call the Contractor or its HSE key people for a periodical meeting in order to discuss the status of Non Conformities found (by Contractor itself or following a ENEL's inspection) and the related Corrective Measures.

19 CONSEQUENCES OF BREACHS REGARDING HEALTH, SAFETY AND ENVIRONMENTAL REQUIREMENTS

19.1 REMEDIES FOR VIOLATIONS OF THE RULES REGARDING HEALTH AND SAFETY PROTECTION

19.1.1 In the event Contractor breaches an obligation on Health and Safety protection, the Contractor shall indemnify ENEL for, and hold ENEL harmless for, any loss or expense that ENEL may sustain or incur as a consequence of:

- a) any Accident; and/or
- b) any claim or suit brought by the individuals or entities affected by the Accidents; and/or,
- c) any fine, penalty or sanction imposed by an authority to ENEL by reason of the Incident.

19.1.2 In the event Contractor breaches an obligation on Health and Safety protection, ENEL, at its sole discretion, and to the extent not contrary to the applicable Law, may:

- a) require the Contractor to implement a timely remediation plan to reinforce HS measures (e.g. specific training courses) related to the HSE prevention and protection deficiencies identified at any time, and/or
- b) suspend Contract performance, for a number of days which correspond to the seriousness of the violation - or until the verification of any adjustments or corrective actions taken to address the violation - without this giving the Contractor any right to extend the deadline for completion of the works or payment or compensation of any kind, and/or
- c) in case of a breach or whenever the worker behaviour represents a risk for his/her own integrity or third parties, require his/her immediate removal from Work Site and his/her replacement, and/or

- d) apply the sanctions set out in Section 19.3, and/or
- e) suspend payment of sums due to the Contractor, to the extent of 10% of the amounts accrued at the time of the HS breach, until the Contractor implements the remedy measures, and/or
- f) in the event of Fatal/Severe Accident or High Potential Incident, suspend the Contractor and/or its Subcontractors and/or Contractors Affiliates from Supplier Qualification System, and/or
- g) terminate the Contract according to Section 19.5.

19.2 REMEDIES FOR VIOLATIONS OF THE RULES REGARDING ENVIRONMENTAL PROTECTION

19.2.1 In the event Contractor breaches an obligation on Environmental protection, the Contractor shall indemnify ENEL for, and hold ENEL harmless for, any loss or expense that ENEL may sustain or incur as a consequence of:

- a) any Environmental Event, and/or
- b) any claim or suit brought by the individuals or entities affected by the Environmental Event, and/or,
- c) any fine, penalty or sanction imposed by an authority to ENEL by reason of the Environmental Event.

19.2.2 In the event Contractor breaches an obligation on Environmental protection, ENEL, at its sole discretion, and to the extent not contrary to the applicable Law, may:

- a) suspend, for a number of days which correspond to the seriousness of the violation - or until the verification of any adjustments or corrective actions taken to address the violation - the execution of any contractual works without this giving the Contractor any right to extend the deadline for completion of the works or payment or compensation of any kind, and/or
- b) require the Contractor ensures its employees - who were responsible for the violation - attend up to 16 hours of additional training regarding environment. The workers responsible for these violations shall be readmitted on site only after attending the prescribed specific training courses, and/or
- c) apply the sanctions set out in Section 19.4, and/or
- d) suspend payment of sums due to the Contractor, to the extent of 10% of the amounts accrued at the time of environmental violation, until the Contractor implements the changes to its environment management system as required by ENEL, and/or
- e) suspend the Contractor and/or its Subcontractors and/or Contractors Affiliates from Supplier Qualification System, and/or
- f) terminate the Contract according to Section 19.5.

19.3 SANCTIONS FOR VIOLATIONS OF THE RULES REGARDING HEALTH AND SAFETY PROTECTION

19.3.1 Without prejudice to its right to terminate the Contract, as provided in Section 19.5 of these Terms and without prejudice to its right to claim further damages, ENEL also has the right to apply, by notifying the Contractor by registered letter with proof of receipt (or similar instrument of communication with proof of receipt), the sanctions listed and quantified in APPENDIX 3 Sanctions for HSE violations” relevant the specific Country.

19.3.2 If the breaches cause any Accident or High Potential Incident, that could have caused a fatal/severe personal injury, as is reasonably in whatever way is ascertained by ENEL, that the Contractor or Subcontractor holds clear accountability on Health and Safety breach, ENEL reserves the right to apply - depending on the severity of the violation and/or injury and/or damage to persons - a sanction of up to 2% of the total (or maximum) contract value and in any case not less than the amount defined for “VERY SEVERE (II)” breaches.

19.3.3 In the event that Contractor adopts the Stop Work Policy by itself informing ENEL of the violation, ENEL will decide from time to time whether to apply the relevant sanction or not.

19.3.4 The amounts resulting from the application of sanctions shall be allocated, accordingly to specific ENEL’s Country agreement and local legislation.

LIST OF SEVERE, VERY SEVERE AND EXTREMELY SEVERE SAFETY BREACHES

INDICATIVE (NON-EXHAUSTIVE) LIST OF SEVERE, VERY SEVERE AND EXTREMELY SEVERE BREACHES OF H&S ADMINISTRATIVE OBLIGATIONS

CATEGORY	BREACH	SEVERITY
Accidents reporting	Failure to transmit to ENEL (within 6 hours) any communication concerning Fatal, Severe or Significant Accidents and High Potential Incident at work.	III
	Failure to notify to ENEL (within 24 hours) non-severe Accidents at work ⁵ .	II
General Provisions	Failure to participate at coordination meetings (if mandatory according to Law and/or Contract and/or these HSE Terms and/or HSE Requirements).	I

INDICATIVE (NON-EXHAUSTIVE) LIST OF SEVERE, VERY SEVERE AND EXTREMELY SEVERE BREACHES OF H&S OBLIGATIONS RELATED TO ACTIVITIES

CATEGORY	BREACH	SEVERITY
General Provisions	Execute the activities prior to appoint/identify the foreman.	III
	Poor supervision of the activities to perform (e.g. lack of experience, not sufficient supervision).	II
	Failure to perform "Pre-Job check" (if applicable).	II
	Consumption or possession or distribution of alcohol or drugs in the Work Site.	III
	Employment of personnel not notified to ENEL or not authorized.	III
	Employment of personnel without professional profiles/qualification/training requested to perform the activities in compliance with Law and/or Contract and/or these HSE Terms and/or HSE Requirements (high risk activities such as electrical works, works in confined space, works at height, underwater works and mining works).	III
	Employment of personnel without professional profiles/qualification/training requested to perform the activities in compliance with Law and/or Contract and/or these HSE Terms and/or HSE Requirements (other activities).	I
	Start of activities before ENEL's written authorization.	III
	Use of special vehicles/machineries/equipment not in compliance with National Law and technical standards.	II
	Use of special vehicles/machineries/equipment not previously declared to ENEL (e.g. loads hoisting/lifting equipment, bucket truck).	II
	Unauthorized use of special vehicles/machineries/equipment owned by ENEL	II
	Lack of relevant documentation to certify controls/tests on Contractor's special vehicles/machineries/equipment, used during works on behalf of ENEL, according to applicable Law.	II
	Failure to respect regulations relevant to traffic Code, speed limit and safe driving. In case that behaviour causes a hazardous situation, the severity could be increased to III.	I (III)
	Tampering with scaffolds/temporary structures/protective measures belonging to ENEL or other contractors.	III

⁵ Excluding commuting Accidents

CATEGORY	BREACH	SEVERITY
	Lack in the use and management (missed check, tampering, inappropriate use etc.) of working equipment (platform, ladder, scaffolding, machines, tools etc.).	II
	Unauthorized removal of fences, locking devices, locks, prohibiting and warning posters.	II
	Lack of Contractor's procedures related to safety relevant activities to be executed.	II
	Failure to comply with the provisions reported in the H&S Plan for managing the interferences.	II
	Failure to use of PPE/Use of PPEs not compliant with Law and/or Contract and/or these HSE Terms and/or HSE Requirements (e.g. CE conformity marking relevant to European Community or equivalent standard) or damaged.	II
	Inadequate lighting of work area	I
	Failure to signal Work Site or to adopt adequate barriers to fence the area (whenever necessary).	II
	Missing/incorrect/incomplete adoption of safety signs for temporary road works.	I
	Failure to apply the instructions provided by safety signs.	II
	Failure to comply with smoking ban	I
	Missing/incorrect/incomplete adoption of safety signs.	I
	Inadequate housekeeping/materials storage in Work Sites.	I
	Lack of adequate measures concerning emergency management.	II
	Inadequate distribution of potable water <i>I</i> foods.	II
	Inadequate setup of rest area.	II
	Inadequate number of toilet/exchanging rooms according to activity.	I
	Lack of adequate means of emergency intervention or paramedic personnel (when required).	III
	Failure to comply with requirement on Health and Safety from Law and/or Contract and/or these HSE Terms and/or HSE Requirement not mentioned in the other points of this list.	I
Electrical Risks	In case of live working, failure to apply/incorrect application/incomplete application of relevant H&S procedures.	III
	Failure to apply/incorrect application/incomplete application of 5 golden rules regarding electrical risk.	III
	Failure to use PPE and Collective Protective Equipment (CPE) for electrical risks.	III
	Use of PPE and Collective Protective Equipment (CPE) for electrical risks not compliant with Law and/or Contract and/or these HSE Terms and/or HSE Requirement.	III
	Non-compliance/incomplete compliance with other Law and/or Contract and/or these HSE Terms and/or HSE Requirements regarding prevention of electrical hazards.	II
Work at height	Failure to use PPE and Collective Protective Equipment (CPE) related to the risks of falling from heights.	III
	Use of PPE and Collective Protective Equipment (CPE) related to the risks of falling from heights inconsistent with Law and/or Contract and/or these HSE Terms and/or HSE Requirements.	III
	Non-compliance/incomplete compliance with other Law and/or Contract and/or these HSE Terms and/or HSE Requirements relevant to works at height.	III

CATEGORY	BREACH	SEVERITY
	Use of scaffolding non-compliant with applicable regulation or use of scaffolding of other contractor or third parties without previous authorization.	II
Mechanical load lifting	Incorrect use of load lifting equipment	II
	Adoption of incorrect procedures for load lifting.	II
	Lack of or not compliance with H&S Plan for load lifting operations by mechanical equipment.	II
	Failure to respect load capacity of slabs, platform, grids etc.	III
Works with exposure to chemical risks	CARCINOGENIC - MUTAGENIC - ACUTE TOXIC SUBSTANCES	
	Failure to notify ENEL of the introduction of such chemicals in Work Sites	III
	Missing/incomplete compliance with H&S regulations and ENEL's provisions regarding labelling and safety data sheet while handling, transporting, using and storing chemicals.	II
	OTHER CHEMICALS⁶	
	Failure to notify ENEL of the introduction of such chemicals in Work Sites.	II
	Missing/incomplete compliance with Law and/or Contract and/or these HSE Terms and/or HSE Requirements regarding labelling and safety data sheet while handling, transporting, using and storing chemicals.	I
Works with exposure to physical agents	Emission of physical agents (e.g. noise, vibration, dust) not notified to ENEL, or above authorized threshold limits, or that could cause damage to ENEL or third parties.	II
Works with exposure to risk of fire/ explosion	Missing/incomplete compliance with Law and/or Contract and/or these HSE Terms and/or HSE Requirements on fire prevention measures.	II
	Missing/incomplete compliance with Law and/or Contract and/or these HSE Terms and/or HSE Requirements on protection measures in explosive atmospheres (ATEX) as classified by ENEL.	III
Hot Works (such as welding and cutting)	Works performed not in compliance with Law and/or Contract and/or these HSE Terms and/or HSE Requirements relevant to hot works.	II
Excavations (depth greater than 1.5 m)	Activities not protected against exposure to the H&S risks related to excavations, (e.g. excavation not protected, personnel within the operative radius of the excavation machine).	II
Works in confined spaces	Activities not protected against exposure to the H&S risks relevant to confined spaces as classified by ENEL (e.g. failure in atmosphere check, in number of rescue people).	III
Works above water/with hydraulic risk	Works performed not in compliance with Law and/or Contract and/or these HSE Terms and/or HSE Requirements concerning risks related to works above water.	II
	Works performed not in compliance with Law and/or Contract and/or these HSE Terms and/or HSE Requirements concerning hydraulic risk.	III
Underwater works	Works performed not in compliance with Law and/or Contract and/or these HSE Terms and/or HSE Requirements relevant to underwater works.	III

Key

I Severe Breach

II Very Severe Breach

III Extremely Severe breach which will cause a significant downgrading in the Vendor Rating Index

⁶ e.g. Chemicals which can produce: skin corrosion/irritation, serious eye damage/eye irritation, respiratory/skin sensitization, specific target organ toxicity, respiratory hazard, reproductive toxicity.

19.4 SANCTIONS FOR VIOLATIONS OF THE RULES REGARDING ENVIRONMENTAL PROTECTION

19.4.1 Without prejudice to its right to terminate the Contract, in relation to each violation regarding the environmental protection, and without prejudice to its right to claim further damages, ENEL also has the right - at its sole discretion - to apply, by notifying the Contractor by official communication with proof of receipt, the sanctions listed and quantified in “APPENDIX 3 Sanctions for HSE violations” relevant the specific Country.

19.4.2 In case the Contractor (ore one of its Subcontractors) is responsible of an environmental event impacting the environment and/or the organization of ENEL due to environmental issues, ENEL reserves the right to apply - depending on the relevance of the impact - a sanction of up to 2% of the total (or maximum) contract value and in any case not less than the amount specified in “APPENDIX 3 Sanctions for HSE violations”.

INDICATIVE (NON-EXHAUSTIVE) LIST OF ENVIRONMENTAL SEVERE, VERY SEVERE AND EXTREMELY SEVERE BREACHES

CATEGORY	BREACH	SEVERITY
General provisions	Forgery of legal documents relating to environmental issues	III
	Recurrence of the same very severe environmental violations (listed in this list, as severity II)	III
	Starting activities without all the necessary ENEL’s internal authorizations regarding environmental aspects	II
	Activities carried out in violation of ENEL’s internal Environmental Systems rules or contractual environmental clauses.	II
	Environmental liability insurance to cover environmental responsibilities not issued (where applicable)	II
	Recurrence of the same severe environmental violations (listed in this list, as severity I)	II
	Employment of personnel without professional profiles/qualification/training requested to understands and executes all requirements and regulations relating to environmental protection, that are applicable to perform the Contract.	I
	Failure to submit environmental reports according to the defined deadline	I
	Failure to participate in coordination meetings (if required according to environmental legislation or required by contract)	I
Event reporting	Failure to immediately make adequate mitigation measures in case of environmental evenU damage.	III
	Failure to immediately (and no later than 4Bh) communicate to ENEL any evidence related to checks and inspections carried out by authorities and, in case of infringement, the actions carried out or planned in agreement with the authorities aimed at restoring legal compliance.	III
	Failure to communicate immediately to ENEL (and/or to the authorities when it is required) on any environmental event that occurs during the execution of the Contract and that implies the obligation of reporting to the authorities.	III
	Failure to communicate immediately to ENEL on any environmental event that occurs during the execution of the Contract and that not implies the obligation of reporting to the authorities.	II
	Failure to submit a written report of the environmental event including its causes and the measures taken for the management and resolution of the event, within a maximum of 24 hours.	II



CATEGORY	BREACH	SEVERITY
	Failure to submit a written notice of any Environmental Near Miss, within 3 calendar days.	I
Compliance - Air Emission	Execution of the activities without authorization for air emission or lack of preventive and implemented operative measures necessary to comply with limits stated by the authorization or the applicable regulation.	III
Compliance - Water protection	Execution of the activities without authorization for waste water discharge or lack of preventive and implemented operative measures necessary to comply with limits stated by the authorization or the applicable regulation.	III
	Use <i>I</i> suction of unauthorized water	III
	Reiterated or systematic use <i>I</i> suction of water above the allowed limit capacity	II
Compliance -Soil protection	Lack of preventive measures aimed to prevent soil contamination (eg. Mixer truck washing, containment tanks for diesel tanks)	I
Compliance - Waste	Waste management without authorization or not in compliance with the authorization or applicable regulation.	III
Compliance - Others	Execution of the activities without authorization or lack of preventive and implemented operative measures necessary to comply with applicable Law regarding environmental matrices: air emission (e.g. dust from vehicles), water discharge (e.g. domestic waste water and storm water discharge), waste management, soil usage, non-Hazardous Materials management, noise and vibration emission, biodiversity, protected areas, archeological sites, personnel specific qualification, etc.)	II

Key

I Severe Breach

II Very Severe Breach

III Extremely Severe Breach which will cause a significant downgrading in the Vendor Rating Index

19.5 CONTRACT TERMINATION FOR REASONS ATTRIBUTABLE TO HEALTH, SAFETY AND ENVIRONMENTAL REQUIREMENTS

19.5.1 ENEL - at its sole discretion - may terminate the Contract in case:

- a) Fatal/severe Accident during the performance of the Contract, in which Contractor is, as determined by the accident investigation analysis carried out by the ENEL Group company, primarily responsible for the Fatal\Severe Accident; or
- b) Fatal/Severe Accident during performance of another contract with ENEL or another ENEL Group company by the Contractor or a Contractor Group company, in which Contractor or the relevant Contractor Group company (i) is, as determined by the accident investigation analysis carried out by the ENEL Group company, primarily responsible for the Fatal\Severe Accident and (ii) has a negative outcome in Enel's assessment on HSE organization of Contractor and/or Contractor Group company; or
- c) contractor does not implement actions defined in the remediation plan (proposed by Contractor after a HSE default and validate by ENEL) within the specified time limit, or
- d) the amount of the safety sanctions applied due to violation reach the greatest amount between 5% (five per cent) of the Contract's value and the equivalent amount of 20 severe sanctions, or
- e) the amount of the applied environmental sanctions reach the greatest amount between 5% (five per cent) of the Contract's value or the equivalent amount of 20 severe sanctions, or
- f) violations by the Contractor and/or any Subcontractor of the requirements of law on the protection of the environment, implying at least one of the following consequences:
 - High widespread impact; long term or irreversible environmental-biodiversity damage,
 - Non-compliance with legal or permit requirements that could result in:
 - impact on licenses,
 - civil/criminal lawsuits with restriction of Enel personnel freedom,
 - civil/criminal lawsuits with liability involvement of Enel personnel,
 - Environmental Asset Shutdown,
 - Reputational issues:
 - concerns among national and international stakeholders, expressed in a written communication send to ENEL,
 - Negative media involvement at national and international level for one or more high-impact events,
 - Financial loss (all costs incurred as a result of the environmental event, i.e. fines and penalties, liabilities, immediate corrective actions, remediation plan implementation, loss of revenues, etc.) greater than 1.000.000 €.

19.5.2 In the event that ENEL make use of this contractual right, the Contract shall be immediately terminated after ENEL's written notice without any negotiation, without any compensation and without any other prior formality nor court intervention, arbitration process or any other procedure being

necessary.



APPENDIX 1 FOCUS ON COMPLEX WORKS ACTIVITIES

1. DOCUMENT AIMS AND APPLICATION AREA

1.1 This Appendix specifies the main working roles involved and the documentation required to perform the planning, organization and coordination of the work activities in case of complex work activities on Work Sites. The working roles and documentation outlined in this Appendix are mandatory for the activities execution and they shall be formally identified.

1.2 This Appendix gives the minimal requirements to be adopted and represent the best practice for the execution of complex work activities/construction activities. It shall be applied in compliance with any applicable Laws and country/local regulations which in any case prevail over the provisions contained in this document.

1.3 Contractor shall comply with all the rules specified in this Appendix, for the management of interference risk. To this end, Contractor shall:

- (i) for Complex Works whose HSE coordination is under Contractor's control:
 - 1. appoint and include in its HSE Organization the HSE coordinators with roles and responsibilities as defined in this Appendix, and
 - 2. ensure that planning phase and executing phase are carried out according to the principles here defined, or
- (ii) for Complex Works whose HSE coordination is under ENEL or third-party control:
 - 1. cooperate with appointed HSE coordinators and
 - 2. comply with requirements from Safety Work Planning of activities

The Contract specifies which of the option above shall be adopted by the Contractor

2. DEFINITIONS AND ACRONYMS

In the present Appendix the following definitions apply:

“Environmental Coordinator (E Coordinator)”: one or more representatives, appointed by the Contractor among its personnel and/or from third parties, which are responsible for carrying out environmental coordination activities provided for in the Contract and/or the applicable legislation. If not required in the Contract, the E coordinator can be represented by the same representative for the HS coordinator profile, if he/she is qualified for the role.

“Foreman supervisor”: Person who, while still having all the features of a Foreman, plays a role of general coordination of the activities by controlling the compliance of the general planning established as well as the anticipated development of the activities to be performed in the whole work.

“Handover of a work area”: Action by which a work area is made available for its access and works, by informing the recipient about its conditions, safety conditions included.

“Handover back of a work area”: Action by which a work area previously handed over is made available at the conclusion of certain works.

“HS Coordinator for design and planning”: one person who, in the design and planning phase, is responsible for establishing the Safety Working Planning of the activities (SWP) in order to minimize the possible interference risks.

“HS Coordinator for execution and control”: one person who, starting from the SWP, is responsible for the coordination between the different working groups during the execution phase, in order to minimize the interference risks.

3. PROCESS DESCRIPTION

3.1. Preliminary consideration

3.1.1 In this Appendix the main indications are provided for the management of the control of the work execution and for the management of the actions to be carried out in order to meet the prevention and protection measures needed in case of complex works execution.

3.1.2 For this purpose, it is essential that at any time a physical person shall be clearly identified who is responsible for the works and for the work area (handed over) managing. In complex works this cannot be obvious and then shall be accomplished, because either different subjects are involved at the same time (on the same installation or on different installations having, however, an ambiguous identification) or different subjects succeed and/or alternate with the work responsibilities over the time.

3.2. Working context and complexity

3.2.1 If the involvement, during the design/planning and/or execution and/or control phase, to a different extent, of the work ENEL and/or one or more contractors which are called to the work execution, in conjunction or not with ENEL, is considered, the working contexts where conditions of a complex work activity can be verified are normally the following:

- works carried out by working groups belonging to both ENEL and one or more contractors;
- works carried out by working groups belonging to more than one Contractor;
- works carried out by different working groups belonging to a single Contractor only;
- works carried out by personnel under one Contractor but belonging to different companies;
- works carried out by or on behalf of ENEL which can be affected by works carried out by third parties in the same Work Site or nearby areas.

3.2.2 The complex work activity shall be preventively planned and shall be controlled during its execution. Profiles shall be identified for the role of technical coordination of the planning (HS Coordinator for design and planning) and for the role of technical coordination of the execution and control (HS Coordinator for execution and control) of work activities, also with regard to the safety purposes.

3.2.3 A complex work activity is developed according to the following phases:

1) “Work Planning” (WP)

Planning of the activities and related prevention and protection measures against hazards.

The WP phase normally concerns:

- identification of the Work Site (construction site);
- subdivision into work phases taking place in the same work area, at the same time or subsequently;
- identification of the specific hazards due to the different activities in the work areas or in their proximity, and subsequent management of the possible hazards interfering among different work activities;
- Identification of applicable environmental regulation;
- logistic management of the Work Site (accesses, storage of materials, etc.);
- time scheduling and duration of the different works, with a clear identification of works responsibilities;
- define appropriate handover conditions;
- identification of specific skills required for the works execution;
- identification of the machinery required for the works execution;
- identification of measures for the emergencies management;
- sharing of information with involved parties (ENEL, contractors, subcontractors);
- sharing of information with the parties operating in the same Work Site (if possible);
- in case of access to Work Sites owned by a third part where installations belonging to ENEL are included, identification and agreement with the third part on measures for the interferences reduction at the construction site (e.g., definition of the work logistics, work timing and phases which are suitably agreed, responsibilities clearly defined, etc.).

The WP shall give preference to solutions excluding or reducing to a minimum the interferences between the different work activities (e.g., execution at different times or in work areas where the interference of hazards is minimized).

The WP is normally shared with all the involved working parties, and represents an action of coordination of the work activities to be performed and a moment for the definition of the prevention and protection measures, which all the working parties involved are required to comply to.

2) – work Execution (WE)

Execution, control and coordination of works activities.

Once the WP phase is completed/shared, the phase of WE can be started. During this phase it is necessary to control that works are carried out according to the plan previously established, by implementation of the provided prevention and protection measures.

If during a working phase it is found that a modification is needed of the plan previously established, this plan shall be redefined before the execution of the works concerned, after a sharing with the involved parties. In this phase, interfacing also can be necessary with the third parties working in the nearby areas in order to define additional prevention measures which were not established previously,

Depending on the work complexity, actions of periodical coordination and/or specific coordination, if it is required by the work phases, shall be carried out, e.g., at the work beginning and end and/or in correspondence of specific working phases, whether or not interference hazards are present.

During the works execution, the start of work activities/phases or the handover of responsibilities in their operational and safety management (between each phase or during their execution) shall occur with the Work Site under safety conditions and shall be always documented (e.g., installations handover, work areas handover, etc.) so that it is traceable who is responsible for the works and to which the work area is handed over.

3.3. Profiles involved in the process and relevant skills

3.3.1. Profiles involved in the process

The following profiles are normally identified:

1) During the WP phase:

- the profile of “HS Coordinator for design and planning” who, by consulting the parties involved in the work to be carried out, cooperates with the work planner in the definition of the activities planning and update/establishes the preventive H&S coordination planning of this work in order to reduce the interference hazard.

2) During the WE phase:

- where it is required by the work complexity, a profile of “HSE Coordinator for execution and control” who performs, with regard to the safety purposes, an action of coordination between the different subjects taking part to the work execution, with the aim of controlling the compliance of the prevention and protection measures against the interference hazards which have been previously established.

This profile can play its role periodically or punctually.

- This profile is similar to the profile of “HS Coordinator for design and planning”, it could be covered by the same physical person, and can work to modify the Works planning, when it is required by the activities development.
- the profiles of “E Coordinator” which are responsible for carrying out environmental coordination activities provided for in the Contract and/or the applicable legislation. If not required in the Contract, the E coordinator can be represented by the same representative for the HS coordinator profile, if he/she is qualified for the role.
- If needed, the profile of “Foreman supervisor” who controls the compliance of the general execution planning which has been established preliminarily to the work as well as the anticipated development of the activities to be performed in the whole work, by playing a role of general coordination of the activities;
- one or, if needed, more profiles of “Foreman” who are responsible for the management of the single work activities in which the planning is subdivided, from the handover of the work area until its handover back. Besides the correct execution of the assigned activities, these profiles are responsible for the control of the compliance of the connected safety issues. This profile shall be aware of the planning contents and, if necessary, contribute to its preventive definition; therefore this profile also relates with the possible “Foreman supervisor” as concerns the general coordination of works/construction site, and with the “HS Coordinator for execution and control” as concerns the compliance of the safety measures and the interferences management. A Foreman can take the role of Foreman supervisor when the work activity under its control does not avoid him to cover this role of Foreman supervisor.

3.3.2. Skills of the profiles involved in the process

3.3.2.1 The profile of “HS Coordinator for design and planning” and “HS Coordinator for execution and control” (she/he will cover the roles of coordination and control) shall have the following features:

- experience in the execution of complex work activities and in the related arrangement;
- ability of risk analysis as concerns the activities performed and assessment of the possible interferences;
- knowledge of the prevention and protection measures against the hazards and of the measures for the interferences mitigation;
- knowledge of the safety regulations and standards;
- ability of coordination and mediation between different needs and profiles;
- assumption of responsibility and leadership in dealing with also special situations.

3.3.2.2 The profile of “Foreman supervisor”, besides the skills of the profile of “Foreman”, shall also have the following:

- experience in the execution of complex work activities and in the related arrangement;
- ability of coordination and mediation between different needs and profiles;
- assumption of responsibility and leadership in dealing with also special situations.

3.4. Documentation

3.4.1 The works planning is normally synthesized in a document, the “Safety Works Planning” (SWP), tracing the contents foreseen for this phase, which is shared by the parties concerned and is drawn up preliminarily to the works execution. This document shall be issued and signed by the relevant HS Coordinator.

3.4.2 When it is allowed by the works complexity and by ENEL too, the SWP document also may have simplified forms until to become a note between the parties involved in the work.

3.4.3 The coordination action, carried out by the HS Coordinator for execution and control, shall be traceable, and can be carried out by verbalized in writing meetings or even formal communication between the parties. Each safety handover and handover back of the work areas shall also be traceable by means of suitable signed documentation in order to know at any time who is responsible for the works.

3.4.5 The issued documentation, handovers included, shall be always present at the Work Site, at disposal of all the profiles involved.



APPENDIX 2 WASTE MANAGEMENT

1. ITALY

1.1 All waste originating from the activities inherent to the subject matter of the Contract and entrusted to the Contractor must be managed in compliance with applicable provisions of Law and with all the provisions of the Contract.

1.2 The Contractor, as producer of waste, is responsible for all the activities related to the management of waste and resulting material produced during works execution, including packaging compliance with applicable provisions of Law. In particular, the Contractor is responsible for the legal obligations relating to the appropriate management of any temporary warehouses, and for the filing and storage of environmental documents. Wastes produced by the Contractor, shall be conferred by the Contractor, at its care and cost, to parties authorized to waste recovery or, where this is not possible, to parties authorized to waste disposal.

1.3 The Contractor is strictly forbidden to set up temporary waste storage areas in the sites where activity inherent to the subject matter of the Contract is being performed, unless otherwise specified in the Contract; in this case, waste produced by the Contractor, by activities performed inside Enel Work Sites, shall be stored exclusively in the areas assigned by Enel and managed according to the provisions for temporary storage of waste.

1.4 The Contractor, to carry out the activities related to waste management, shall:

- a) be registered in the National Register of Environmental Managers, pursuant to art. 212 of Legislative Decree No. 152/2006 and, where envisaged, to be registered in the “White List” set up within the Prefectures;
- b) provide to Enel
 - a. a copy of the certificate of enrollment on the Register, together with a copy of the receipts certifying the payment of the annual fees, with the related deadlines;
- c) confer the waste produced to parties authorized for waste recovery and/or disposal;
- d) provide Enel with a copy of its recovery or disposal authorization, where it is the owner of a recovery or disposal plant which it intends to use for the conferment of waste produced during its activity;
- e) provide Enel with a list of the plants to whom the waste, produced during the execution of the activities subject matter of the contract may be assigned, if the recovery or disposal activities are carried out by plants owned by third parties, attaching a copy of the related authorizations;
- f) promptly notify Enel of any update or modification of the deeds of registration to the Register, providing updated documentation, as well as any decision of the competent authorities that entail limitations or revocations relating thereto;
- g) delivery to Enel, before the execution of the activities requested by Enel and the subject matter of the Contract itself, a declaration confirming the validity and effectiveness of the aforementioned authorizations/registrations, in which it must be specified, inter alia, that they have not intervened, nor are any ongoing revocation or suspension measures by the competent Authorities.

1.5 If the Contractor does not carry out the activities of collection, transport and conferment of waste, the same can be subcontracted, in compliance with current regulations and subject to the express consent of Enel.

1.6 For the authorization to subcontract, the Contractor shall also submit to Enel:

- a copy of the registration in the National Register of Environmental Managers (Alba Nazionale dei Gestori Ambientali) of the subcontractor who will carry out the waste collection and transport activity;
- the list of plants where the waste produced during the execution of the contract will be assigned by the subcontractor and a copy of the relevant authorizations;
- a list of the types of waste produced.

1.7 Where envisaged, The Subcontractor shall be registered in the “White List” set up within the Prefectures.

1.8 If the Contractor uses a non-custodial intermediary for waste management, he shall provide Enel, in addition to the above documentation, with a copy of the registration to the Register of Intermediate Environmental Managers (Alba Nazionale dei Gestori Ambientali)

1.9 Where weighing systems are present, the waste must be weighed under Enel supervision.

1.10 The Contractor must deliver to Enel the copy - also by certified e-mail (PEC) - of the Identification Form.

1.11 Monthly or in any case on the occasion of the drafting of the Work Progress States (SAL) - and in any case in compliance with the maximum time limits established by the sector legislation for sending the waste transport documentation -, for waste deriving from the activities carried out in the period and *I* or accounted for in the individual Work Progress States, the Contractor shall provide Enel with a copy - also by certified Electronic Mail (PEC) - of the Waste Identification Forms (FIR - formulario di identificazione dei rifiuti), countersigned by the recipient or copy of the documentation required for cross-border shipments.





1.12 The payments of the individual SAL and in any case of the final SAL are bound to receive copies of the Identification Forms of the waste. Prior to Enel's issue of the final SAL, the Contractor must also declare that he has provided the waste management according to the Law, also indicating the type of waste (CER) managed.

1.13 ENEL may request at any time, and the Contractor cannot refuse, to provide a copy of the loading / unloading register.

1.14 Where envisaged, with regard to the management of excavated earth and rocks qualified as a by-product, the Contractor must provide a copy of the self-certifications made to ARPA, regarding compliance with the criteria for re-use and the complete use of the excavated material.

Enel reserves the right to carry out random checks.

1.15 It's clarified that if the activities that generates waste are carried out by one or more subcontractors, all the obligations included in this *APPENDIX 2 WASTE MANAGEMENT - 1. ITALY*, shall be considered obligations for the subcontractors, being waste producers, without prejudice to the responsibility of the Contractor to verify the compliance with Law and the proper management of the activities.

1.16 With reference to the waste in respect of which Enel is a waste producer, the parties to whom Enel will entrust - as intermediary, transporter, recovery and / or disposal company - the management of its waste, undertake to carry out the activities in compliance with the provisions of the Law in force as well as with all the obligations provided for in the Contract, especially in relation to respect the contractual provisions referred to in this article.

1.17 ENEL reserves the right to terminate the Contract, pursuant to and by effect of art.1456 of the Italian Civil Code, in the instances in which the Contractor and/or any subcontractor breaches any of the obligations set forth in this *APPENDIX 2 WASTE MANAGEMENT - 1. ITALY*, in relation to waste management, without prejudice to Enel's right to suspend the execution of the Contract.

2. OTHER COUNTRIES

N.A.

APPENDIX 3 SANCTIONS FOR HSE VIOLATIONS

The following table reports, for each Country and for each severity level of the violation, the minimal economic amount of the specific sanction.

Country	Courr.	Health & Safety breaches			Environmental breaches		
		Severe (I)	Very Severe (II)	Very Severe (II)	Extremely Severe (III)	Extremely Severe (III)	Severe(I)
Argentina	US \$	650	1.300	1.300	650	1.300	1.300
Australia	us \$	650	1.300	1.300	650	1.300	1.300
Brazil	Reais	1.500	3.000	3.000	1.500	3.000	3.000
Bulgaria	Euro	1.500	3.000	3.000	1.500	3.000	3.000
Chile	CLP	200.000	400.000	400.000	200.000	400.000	400.000
Canada	us \$	650	1.300	1.300	650	1.300	1.300
Colombia	SMMLV ⁷	0,7	1,4	1,4	0,7	1,4	1,4
Costa Rica	us \$	650	1.300	1.300	650	1.300	1.300
Egypt	us \$	650	1.300	1.300	650	1.300	1.300
Ethiopia	US \$	650	1.300	1.300	650	1.300	1.300
Germany	Euro	1.500	3.000	3,000	1.500	3.000	3.000
Great Britain	GBP	1.500	3.000	3.000	1.500	3.000	3.000
Greece	Euro	350	700	700	350	700	700
Guatemala	us \$	650	1.300	1.300	650	1.300	1.300
India	INR	75.000	150.000	150.000	75.000	150.000	150.000
Indonesia	IDR	1.380.000	2.760.000	2.760.000	1.380.000	2.760.000	2.760.000
Italia	Euro	500	1.000	1.000	500	1.000	1.000
Kenya	KES	100.000	200.000	200.000	100.000	200.000	200.000
Mexico	us \$	650	1.300	1.300	650	1.300	1.300
Morocco	US \$	650	1.300	1.300	650	1.300	1.300
New Zealand	us \$	650	1.300	1.300	650	1.300	1.300
Panama	us \$	650	1.300	1.300	650	1.300	1.300
Peru	UIT	1	2	5	1	2	5
Portugal	Euro	500	1.000	1.000	500	1.000	1.000
Romania	Leu	1.500	3.000	3.000	1.500	3.000	3.000
Russia	RUB	20.000	40.000	40.000	20.000	40.000	40.000
South Africa	Euro	180	360	360	180	360	360
Spain	Euro	1.500	3.000	3.000	1.500	3.000	3.000
Turkey	us \$	650	1.300	1.300	650	1.300	1.300
Un. Arab Emirates	AED	2.000	4.000	4.000	2.000	4.000	4.000
Uruguay	US \$	650	1.300	1.300	650	1.300	1.300
U.S.A.	us \$	650	1.300	1.300	650	1.300	1.300
Vietnam	DONG	2.450.000	4.900.000	4.900.000	2.450.000	4.900.000	4.900.000
Zambia	us \$	650	1.300	1.300	650	1.300	1.300

⁷ SMMLV: Salario Minimo Mensuale Legal Vigente



Annex F: Bases Técnicas HSEQ CHILE GRE_CHL_QSE MN 01 Vers.5 09/11/2018



Manual GRE_CHL_QSE_MN_01_Vers.5

Versión no. 05 fecha 09/11/2018

Subject: BASES TECNICAS HSEQ E&C CHILE

Áreas de Aplicación

Perímetro: Chile

Función: Health, Safety, Environment and Quality

Business Line: Renewable Energies

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BASES TECNICAS HSEQ E&C CHILE

05	09/11/2018	Actualización de los requerimientos de para contratistas y cambio de formato	Andres Bravo	Felipe Umaña	Alex Palma
Rev.	Fecha	Descripción	Red.	Contr.	Apro.

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1. GENERALIDADES

1.1 INTRODUCCIÓN

ENEL GREEN POWER CHILE ha confeccionado las siguientes Bases Técnicas de Salud, Seguridad, Medio Ambiente y Calidad para empresas Contratistas y Subcontratistas, teniendo en consideración los siguientes objetivos:

- Diseñar, construir y poner en marcha un Proyecto y desarrollo de los parques en Construcción con Cero Daño, dentro del presupuesto y plazos establecidos, incorporando las mejores tecnologías con costos competitivos y sustentables en el tiempo.
- Instaurar y mantener relaciones industriales laborales armónicas y transparentes entre ENEL GREEN POWER CHILE y las Empresas Contratistas, existiendo un completo conocimiento de los deberes y derechos que corresponden al mínimo cumplimiento, mientras se desempeñen en Proyectos de ENEL GREEN POWER CHILE.
- La responsabilidad de la Salud, Higiene, Seguridad, Calidad, Medio Ambiente Natural y Humano es una función imperativa diaria y permanente de cada Contratista, desde el Supervisor de Primera Línea hasta los niveles superiores a éste. Igualmente, es responsabilidad de cada trabajador velar por su integridad física y la de los demás, acatando y cumpliendo las normas existentes, promoviendo y sugiriendo nuevas ideas a sus supervisores, que vayan en directo beneficio de la Salud, Seguridad, Medio Ambiente y Calidad.
- Oficializar y publicar las normas que complementan y forman parte del Contrato con las Empresas Contratistas y Subcontratistas.

Estos conceptos han sido considerados en la preparación de estas bases, por lo que esperamos que cada Empresa Contratista y sus trabajadores asuman con responsabilidad la ejecución de las tareas encomendadas y podamos decir con orgullo que nuestras instalaciones están libres de incidentes.

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1.2 ALCANCE

Forman parte integrante de estas Bases Técnicas HSEQ, los siguientes documentos:

- Política de Calidad, Seguridad y Medio Ambiente de ENEL GREEN POWER (EGP),
- Política Stop Work de Enel,
- Declaración de compromiso por la Salud y la Seguridad,
- Technical specification Health Safety and Requirements,
- Requerimientos HSEQ LAT E&C EGP,
- Reglamento Especial para Empresas Contratistas y Subcontratistas en Calidad, Seguridad y Medio Ambiente de EGP Chile,
- Reglamento de Multas HSEQ de EGP Chile,
- Manual ingreso plataforma de acreditación,
- Criterios de acreditación,
- Requisitos de acreditación,
- PL 106 Clasificación, comunicación, análisis y reporte de incidentes,
- PL 52 Metodología para analizar accidentes – Árbol de fallas,
- IO 183 Reporte y análisis de accidentes, primeros auxilios, near miss y inc. Ambientales,
- Anexo 2 IO 183 Lección Aprendida,
- Anexo 3 IO 183 Informe Investigación Accidentes (RCA),
- Anexo 4 IO 183 Investigación de accidentes,
- Anexo 5 IO 183 RCA Short Report,
- Procedimientos e Instructivos que son parte de las normas de Calidad, Salud, Seguridad y Medio Ambiente de Enel Green Power Chile;

El alcance de estas Bases Técnicas HSEQ son aplicables en:

- Todas las instalaciones tanto propias o que tengan directa relación con Proyectos de Enel Green Power Chile (desde la construcción hasta el cierre y rehabilitación del terreno).
- Proyectos desde la ingeniería conceptual, básica y detalle, hasta la Construcción y precomisionamiento de los trabajos encomendados por Enel Green Power Chile.
- Incluye todas las actividades realizadas por Contratistas y Subcontratistas en lugares donde Enel Green Power Chile desarrolla sus operaciones.
- Cualquier lugar o sitio o actividad donde Enel Green Power Chile sea mandante o se trabaje para Enel Green Power Chile.

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Acrónimo y Palabra Clave	Descripción
Medio Ambiente	Unidad de medio ambiente dentro de HSEQ
E&C	Ingeniería y Construcción
GRE	Línea de negocio de Energías Renovables Globales
EGP	Enel Green Power Chile
H&S	Unidad de Seguridad y Salud dentro de HSEQ
HSEQ	Salud, Seguridad, Medio Ambiente y Calidad
Manager de E&C de HSEQ	Recurso de HSEQ de Seguridad y Medio Ambiente de todas las actividades de E&C.
Manager regional de HSEQ	Recurso de HSEQ de Seguridad, Medio Ambiente y Calidad a nivel regional.
HSHU	Unidad de Salud y Seguridad de la función de Recursos Humanos y Organización dentro de Enel SpA
Dirección local	La estructura de organización territorial consiste en una o más plantas, orientadas a la producción de productos o servicios, dotadas de autonomía financiera, funcional y técnica.
O&M	Operación y Mantenimiento
Información básica	La Información básica es un conjunto de datos mínimos destinados a describir correctamente un evento de Seguridad o Medioambiental. □ Seguridad: tipo y descripción del incidente; dónde y cuándo ocurrió; personas involucradas; lesiones sufridas; 1er diagnóstico; contratista involucrado; medidas inmediatas adoptadas; fotos □ Medio Ambiente: tipo y descripción del incidente; dónde y cuándo ocurrió; personas involucradas; daño provocado; posibles impactos; contratista involucrado; medidas inmediatas adoptadas; fotos.
Evento crítico	Evento accidental, natural o fraudulento / criminal, real o potencial, que tiene la capacidad de impactar en las operaciones de EGP, el desempeño financiero, las partes interesadas, la reputación, el medio ambiente, la salud pública y la seguridad.

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Accidente in itinere (trayecto)	Accidente que ocurre durante el traslado/trayecto directo desde el domicilio del empleado al centro de trabajo o viceversa, o, si no hay disponible un comedor de empresa, durante el viaje normal de ida y vuelta entre el centro de trabajo y la zona donde se toman las comidas.
Incidente medioambiental	Un acontecimiento inesperado que causa, de forma temporal o a largo plazo, contaminación, inquietud por temas regulatorios o quejas públicas, o una combinación de estas. Cualquier incidente medioambiental podría causar o podría tener diferente magnitud y potencial de causar diferentes impactos en: 1. El medio ambiente (aire, suelo, agua, biodiversidad, hábitat natural, área histórica/cultural y otros aspectos tales como el ruido, la vibración y la radiación); 2. Conformidad legal; 3. Reputación; 4. Pérdidas financieras del país/compañía
Cuasi Accidentes medioambiental	Un evento inesperado que podría haber tenido como resultado un incidente medioambiental, pero que no tuvo efectos en el entorno. Un golpe de suerte en la cadena de eventos o un sistema de gestión adecuado en vigor impidió el incidente.
Evento	Esto puede significar: un accidente en el trabajo, un accidente in itinere, unos primeros auxilios, un Cuasi Accidentes, un incidente medioambiental, un daño medioambiental, una demanda contra GRE o sanciones a GRE.
Caso de primeros auxilios (Accidente con lesión sin pérdida de tiempo)	Un evento que causa lesiones, que se produce debido a una causa violenta y en el trabajo (con el significado de "relacionado con el trabajo"), y que requiere de primeros auxilios en un centro de atención médica o el uso de un kit de primeros auxilios, reanudándose el trabajo inmediatamente o abandonándose sólo durante el resto del día o del turno durante el que tiene lugar.
Evento Potencialidad Alta	Un evento de Potencialidad Alta se define como cualquier evento (accidente, omisión del deber, primeros auxilios, Cuasi Accidentes) que causa inmediata o posteriormente, o podría causar, varias lesiones graves y/o pérdida de vidas humanas.
Observación de HSEQ	La identificación y documentación de un comportamiento potencialmente inadecuado c

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	<p>peligroso o una situación peligrosa que podría conducir a un incidente.</p>
<p>Accidente laboral (<i>Accidente con lesiones y pérdida de tiempo</i>)</p>	<p>Un evento que implica una lesión debido a una causa violenta y en el trabajo (con el significado de "relacionado con el trabajo"), que causa muerte o incapacidad laboral permanente, total o parcial, que es una incapacidad total temporal que implica la ausencia del trabajo durante al menos un día, excluyendo el día que se produce el incidente.</p> <p>En lo que respecta a los accidentes, se pueden distinguir:</p> <ul style="list-style-type: none"> • Accidente fatal: un evento que implica una lesión que causa la muerte de la persona lesionada. • Accidente grave: un evento que causa una lesión con: <ul style="list-style-type: none"> - primer pronóstico, referido en el primer certificado médico emitido, de más de 30 días (naturales); - pronóstico reservado, hasta que el empleado lesionado sale de la lista de peligro del hospital/sala de emergencias; - pronóstico desconocido pero que se estima de más de 30 días (naturales) a partir de una evaluación inicial de la división/compañía implicada. <p>Cuando el empleado lesionado sale de la lista de peligro del hospital/sala de emergencia o se define el pronóstico, el accidente se tiene que considerar grave sólo si el primer diagnóstico es de más de 30 días (naturales). Siempre que el empleado lesionado no salga de la lista de peligro del hospital/sala de emergencia o el pronóstico siga siendo desconocido dentro de los 30 días (naturales) desde la fecha del accidente, el accidente tiene que ser clasificado como grave.</p> <ul style="list-style-type: none"> • Accidente no grave: un evento que causa una lesión con un primer diagnóstico, referido en el primer certificado médico emitido, hasta los 30 días (naturales) • Accidente significativo: Un evento que causa una lesión, no clasificada como "grave", pero que ha provocado la lesión/traumatismo que figura en la siguiente tabla: <p>Criterios para identificar los Accidentes Significativos</p> <p>Lesión de vértebras/fractura de pelvis</p>

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	<p>Traumatismo craneal Cualquier traumatismo causado por una caída de altura Quemaduras de 2º y 3º grado. Implicaciones para la salud como consecuencia de asfixia o envenenamiento. Pérdida de extremidades u otras mutilaciones Parada cardiorrespiratoria (asociada con la actividad laboral)</p>
Incidente material	<p>Un evento no planeado o no controlado que tiene como resultado daños en los equipos, bienes o instalaciones (no en las personas).</p>
Cuasi Accidentes	<p>Un evento no planeado relacionado con el trabajo que no tiene como resultado una lesión o enfermedad pero que tenía potencial para hacerlo. Sólo un golpe de suerte en la cadena de acontecimientos impide el accidente.</p>

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1.3 DEFINICIONES

- **HSEQ:** Se refiere a las normas de Salud, Seguridad, Medio Ambiente y Calidad.
- **EGP:** Enel Green Power Chile
- **Compañía:** Compañía Enel Renovable
- **Contratista:** Persona Natural o Jurídica que, en virtud de un Contrato, contrae la obligación de ejecutar una obra Material, suministrar un producto o de prestar un Servicio a Enel Green Power Chile
- **Representante del Contratista:** En los documentos de Enel Green Power Chile. Se ha utilizado las expresiones "Gerente General" y "Gerente de Construcción" o "Jefe de Obra" términos convencionales de más alto rango dentro de la organización del Contratista.
- **Gerente General:** Persona de más alto rango designado por el Contratista y representante legal, para representar todo lo relacionado con el Contrato. A él le corresponde asumir e implementar todas las acciones que en este documento son indicadas como responsabilidades del Contratista.
- **Gerente de Construcción o Jefe de Obra:** Persona de más alto rango designado por el Gerente General del Contratista para representarlo permanentemente en faena.
- **Safety Officer:** Prevencionista Encargado de la Salud, Seguridad, de los Proyectos en Construcción.
- **Environmental Officer / Encargado Ambiental:** Encargado del área Ambiental de un Proyecto.

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- **Control HSEQ:** Personal administrativo del área HSEQ, y soporte del proceso de acreditación de empresas contratistas.
- **Trabajador:** Toda persona que preste servicios a un Contratista, sea en forma directa o de un subcontratista, a través, de un contrato.
- **Supervisor de Obra:** Personal de Enel Green Power Chile (EGP) o de proyecto en cuestión que ha sido asignado para velar por el cumplimiento de las Especificaciones Técnicas, diseños establecidos en los planos y todo otro documento técnico del Contrato.
- **Proyecto:** Área o superficie en el cual se desarrolla un Proyecto Energético EGP en sus diferentes fases.
- **Planta:** Centro de trabajo independiente de la tecnología (hidroeléctrico, fotovoltaico, eólico, geotérmico, híbrido) en el cual EGP realiza la operación y mantenimiento.
- **Accidente-Incidente:** Suceso relacionado con el trabajo que ha provocado o podría haber provocado una lesión al trabajador. Esta definición incluye los siguientes tipos de sucesos:
 - **Accidente con lesiones y tiempo perdido:** Referente a las lesiones, se distinguen:
 - Accidente mortal: Un incidente que provoca la muerte del trabajador lesionado.
 - Accidente grave: Accidente que provoca lesiones con más de 30 días de baja.
 - Lesiones sin tiempo perdido: Suceso que provoca lesiones que requiere atención de primeros auxilios o el uso de un kit de primeros auxilios, con reanudación inmediata del trabajo o abandono únicamente durante el resto de la jornada laboral, durante la cual ha tenido lugar el incidente
 - Cuasi accidente: Un suceso no previsto relacionado con el trabajo que no ha provocado lesiones o enfermedades, pero que podría haberlas ocasionado.
- **Accidente en el trayecto:** Accidente que tiene lugar durante el traslado directo a la residencia del trabajador, o al lugar de trabajo y viceversa. Puede ser también en el trayecto entre dos empleadores distintos, siendo imputables los días perdidos al empleador al cual se dirigía el trabajador.
- **Acción correctiva:** Acción tomada para eliminar la causa de un accidente o incidente, o de una no conformidad detectada u otra situación indeseable.



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- **Acción preventiva:** Acción tomada para eliminar la causa de una condición subestándar, o de una no conformidad potencial u otra situación potencialmente indeseable.
- **Auditoría:** Metodología mediante la cual se evalúa cómo el Contratista y/o el Subcontratista gestiona los siguientes aspectos de HSEQ: Política, Evaluación de Riesgos, Procedimientos Operativos, Estructura organizativa de la Seguridad y Salud Ocupacional, Gestión de la Formación, Gestión de los Elementos de Protección, Control de la Maquinaria y de los Equipos de Trabajo.
- **Caminata HSEQ o HSEQ Walk:** Inspección de aspectos de salud ocupacional, seguridad y medioambiente realizada por niveles gerenciales, administradores de contratos o de obras o jefes de áreas, entre otros, para promover en primera persona la cultura HSEQ, verificando la aplicación de las normas y la adopción de comportamientos seguros, cuidado del medioambiente, seguimiento de procedimientos de trabajo establecidos, así como el estado de las estructuras y las instalaciones.

El objetivo de la iniciativa es implicar a los distintos niveles de la dirección buscando desarrollar un papel activo para tutelar y promover el cuidado del medioambiente y la seguridad en el trabajo, demostrando a todos los empleados un compromiso personal y concreto.

- **Capacitación:** Actividad de formación que tiene como objetivo entregar habilidades y conocimientos a un trabajador con el fin de hacerlo competente para una o más labores. Esta actividad tendrá una duración mínima de 4 horas.
- **Charla Integrada:** Exposición de personal de EGP o contratista, que ponen en relevancia algún tema que puede traer consigo lecciones de eventos o un tema en donde se requiere reforzar.
- **Charla:** Exposición de un tema específico relacionado con su labor y el entorno, frente a un grupo de trabajadores que no reviste mayor formalidad ni límite de tiempo.
- **Charla operacional:** Actividad mediante la cual un grupo o cuadrilla de trabajadores analizan la secuencia paso a paso de una tarea, identificando los peligros y definiendo las medidas de prevención de riesgos.

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- **Circuito Desconectado:** Circuito eléctrico que está con todos los equipos de límites abiertos.
Circuito Energizado: Circuito eléctrico que ha sido verificado con tensión.
- **Circuito Desenergizado:** Circuito eléctrico que ha sido verificado sin tensión.
- **Circuito Energizado:** Circuito eléctrico que ha sido verificado con tensión.
- **Circuito Libre:** Circuito eléctrico sin ningún tipo de permisos vigentes ni conexiones a tierra, y que, por lo tanto, está en condiciones de ser energizado.
- **Conexión a Tierra:** (Tierra de Operación) Operación de unir eléctricamente a potencial cero cada fase propia de un circuito o equipo eléctrico desenergizado, con el objeto de proteger a las personas que intervienen en él.
- **Desconexión:** Acción de desenergizar un circuito o equipo eléctrico, abriendo los dispositivos de maniobra y/o elementos correspondientes.
- **Elementos de Protección Personal:** Elementos que, al ser utilizados por un trabajador, tienen por objeto brindarle protección frente a las condiciones de trabajo a las que está expuesto, prevenir o mitigar un daño en caso de un accidente o incidente con motivo del desempeño de su labor.
- **Incumplimiento:** Omisión o desacato a una disposición de este de este documento, procedimientos o legislación vigente.
- **Inducción de Hombre Nuevo:** Instrucción destinada a entregar información general acerca de una obra, faena o servicio y los riesgos generales de dichos lugares o instalaciones.
- **Inspector Técnico de Obras (ITO):** Persona responsable de las coordinaciones necesarias para que el contratista realice las obras encomendadas por el Mandante o el Área Administradora de acuerdo a lo establecido en el Contrato.



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- **Matriz de Identificación de Peligros y Evaluación de Riesgos:** Documentos donde están registrados y ordenados los peligros identificados de una obra o faena, y el resultado del proceso de evaluación de los riesgos asociados y las medidas de seguridad aplicables.
- **Permiso de Trabajo:** Autorización que otorga el Mandante al Contratista, donde quedan estipuladas las condiciones bajo las cuales se ejecutará un trabajo.
- **Procedimiento de Trabajo:** Documento que describe la secuencia para materializar una actividad, describiendo los equipos, materiales y herramientas que se utilizarán, estableciendo cómo se organizarán las personas y cuadrillas que ejecutarán el trabajo.
- **HSEQ:** Salud, Seguridad, Medio Ambiente y Calidad
- **Ropa de trabajo:** Vestimenta entregada por la empresa al trabajador y que es utilizada durante la jornada de trabajo.
- **Tensión o voltaje Reducido:** Se consideran parte de este grupo las instalaciones con tensiones menores o iguales a 100 Volts.
- **Tensión Baja (BT):** Se consideran parte de este grupo los sistemas o instalaciones con tensiones superiores a 100 Volts con un máximo de 1.000 Volts.
- **Tensión Media (MT):** Se considera que integran este grupo los sistemas con tensiones superiores a 1 Kv con un máximo de 60 Kv.
- **Tensión Alta (AT):** Se considera que integran este grupo los sistemas con tensiones superiores a 60 Kv con un máximo de 220 Kv.
- **Tensión de Retorno:** Es la tensión a la que queda sometido un circuito, después de haber desconectado su(s) fuente(s) de alimentación normal.
- **Tierra de Trabajo:** Es la conexión física al potencial cero de un equipo o red eléctrica ejecutada por el personal de terreno.



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- **Zona Desconectada:** Es la zona de un circuito que queda desenergizada, mediante la apertura de los equipos de maniobra, debidamente bloqueados.
- **Zona Protegida:** Es la zona de un circuito que queda delimitada por las puestas a tierra.
- **Zona de Seguridad:** Lugar definido y demarcado como el más seguro dentro de un sitio de trabajo. Es el lugar donde todo el personal que se encuentre en el área afectada debe dirigirse en caso de una evacuación por emergencia.
- **Sistema de Bloqueo:** Es un conjunto de dispositivos que permiten bloquear de tal manera un circuito, sistema, equipo o máquina, que impide que este o parte de este se energice en forma voluntaria o involuntaria. No permitiendo la liberación de energía, que entrando en contacto con un trabajador pueda provocar un accidente y lesionar a las personas.
- **Identificación con Tarjeta(s) de Advertencia:** Se refiere al procedimiento de colocación de tarjeta(s) de advertencia de bloqueo para advertir que un equipo, instalación o circuito ha sido bloqueado, prohibiendo el accionamiento de los dispositivos de aislamiento de energía, o medios mecánicos/energía neumática, hidráulica, etc.
- **Dispositivos para Aislar Energía:** Son mecanismos que físicamente evitan la transmisión o descarga de energía, como, por ejemplo: Interruptor desconectador, interruptor manual, válvula, flange ciego, bloques de madera o metálicos para sostener o trabar equipos, entre otros.
- **Espacio Confinado:** Es un lugar que no está diseñado para una ocupación continuada por parte de una o más personas, donde generalmente la entrada y salida es la misma, que posee condiciones desfavorables de ventilación, en el cual pueden concentrarse agentes tóxicos, inflamables, tener una atmósfera con deficiencia de oxígeno, producirse una inundación, derrumbe o atrapamiento repentino, tener una configuración tal que quien entre pueda quedar atrapado o asfixiarse. Además, no está diseñado para un trabajo continuo de 8 hrs, por lo que se tiene que considerar relevos de personal.
- **Asistente Autorizado:** Es la persona que permanece afuera del espacio confinado y mantiene comunicación con los entrantes. Debe monitorear las tareas dentro y fuera del

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espacio, estando atento a los posibles efectos en el comportamiento por la exposición a los peligros.

- **Atmósfera Peligrosa:** Significa una atmósfera que puede exponer a los a riesgos de muerte, de incapacidad, de disminución de la habilidad para el auto-rescate, así como a riesgos de lesiones o enfermedades graves debidas a una o más de las causas siguientes:
 - Atmósfera Deficiente en Oxígeno.
 - Atmósfera Combustible e Inflamable.
 - Atmósfera Tóxica.
 - Atmósfera Irritante.
- **Equipo de respiración autónoma (ERA):** Es un equipo utilizado por los rescatistas en caso de requerir ingresar a un área donde las condiciones de atmósfera son adversas. Este permite respirar en lugares donde la respiración por los medios normales (Nariz o boca) no es posible. Ante esto, Incorporan una fuente suministradora de aire (botellas).
- **CCHEN (Comisión Chilena de Energía Nuclear):** Es el organismo nacional rector de los trabajos que emplean radiaciones ionizantes o iones radioactivos.
- **Fuentes de 1° categoría:** Comprenden los aceleradores de partículas, plantas de irradiación, laboratorios de alta radiotoxicidad, radioterapia, y roentgenoterapia profunda, gammagrafía y radiografía industrial.
- **Gammagrafía Industrial:** Es la técnica de radiografía industrial en la que se utiliza los rayos gamma de una fuente radiactiva sellada.
- **Radiografía Industrial:** Ensayo no destructivo en el que se utilizan las radiaciones ionizantes, tales como los rayos gamma o X, para obtener imágenes radiográficas en objetos, sin destruirlos.
- **Instalaciones Radiactivas:** Recinto o dependencia habilitado especialmente para producir, tratar, manipular, almacenar, utilizar sustancias radiactivas u operar equipos generadores de radiaciones ionizantes.

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2. DISPOSICIONES HSEQ

Estas Bases Técnicas HSEQ que rigen para toda Empresa, natural o jurídica, que celebre un Contrato con EGP o sus filiales para la ejecución de cualquier proyecto, trabajo, obra o servicio de estas.

El Asesor de Prevención de Riesgos de EGP (Safety Officer y/o Encargado HSEQ) podrá, a pesar de existir una autorización previa, suspender o postergar el inicio de la acción si considera que las condiciones HSEQ no son suficientes o no son adecuadas.

2.1 NORMAS GENERALES

- Todo Contratista que celebre contrato con EGP, deberá dar cumplimiento íntegro y poner en práctica las Normas Generales y Procedimientos Específicos de Salud, Seguridad, Medio Ambiente y Calidad que se establezcan, como también aquellas instrucciones escritas y verbales que se impartan durante la ejecución de los servicios contratados.
- Para los efectos de estas Bases Técnicas, los Subcontratistas, Asesores, Consultores, Proveedores y Visitas que presten servicio a algún Contratistas, serán considerados pertenecientes a éste.
- Dar cumplimiento al Reglamento Especial para Empresas Contratistas en materia de Salud y Seguridad en el Trabajo, entregado junto con estas bases técnicas.
- Las Bases Técnicas HSEQ regirán para cualquier instalación, dependencia y accesos desde y hacia las instalaciones de Enel y sus proyectos relacionados.
- Las Bases Técnicas HSEQ podrán ser modificadas unilateralmente por EGP, si las circunstancias operacionales o de riesgos de accidentes así lo exigiesen, y cualquier alteración a éstas sólo podrán hacerla los Responsables HSEQ de Enel Green Power Chile en terreno.

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Toda modificación será comunicada al Contratista, a través, de EGP y sus Responsables HSEQ de terreno.

- Enel Green Power Chile podrá exigir dotación adicional de Responsables HSEQ de empresas contratistas, en el caso de que la evaluación de riesgos lo amerite a costo del contratista. EGP, califica a toda la dotación de Responsable HSEQ de Empresas Contratistas, como Personal Indispensable y clave, a través, de una evaluación. Por lo tanto, la contratación, reemplazo y retiro del proyecto, por parte de las empresas Contratistas, deberá ser autorizada y acreditada previamente por el área de HSEQ de EGP.
- La acreditación y la dedicación del Responsable HSEQ del Contratista en obra será evaluada por el área HSEQ de EGP.
- Toda comunicación, tramitación de permisos, solicitudes, etc. hacia o con Organismos del Estado y/o sus representantes, deberán estar previamente comunicadas y autorizadas por EGP, a través, de su representante en proyecto.
- Todo Contratista que celebre contrato con EGP deberá estar afiliado a un Organismo Administrador según Ley 16.744, a fin que todos los trabajadores queden amparados por el Seguro contra riesgos de Accidentes de Trabajo y Enfermedades Profesionales.
- Toda empresa Contratista debe mantener una actitud respetuosa con los miembros de las comunidades vecinas y entorno del proyecto.
- Todo Contratista deberá tener conocimiento de la legislación vigente y poner en práctica lo establecido legalmente en:
 - **Ley N° 16.744**, Establece el Seguro Social contra Riesgos de Accidentes del Trabajo y Enfermedades Profesionales.
 - **Ley N° 19.300**, Establece ley de bases del Medio Ambiente y sus modificaciones.
 - **Ley N° 20.417**, Servicio de evaluación ambiental y la Superintendencia de Medioambiente.
 - **Ley N° 20.123**, Subcontratación Laboral aplicable a todas las Empresas Colaboradoras.
 - **Ley N° 18.290**, Ley de Tránsito y sus modificaciones.
 - **Ley N° 20.096**, Ley sobre Radiación Ultravioleta.

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- **Ley N° 20.660**, Modifica Ley N°19.419, en Materia de Ambientes libres de humo de Tabaco.
- **Ley N° 18.730**, Modifica Ley de Seguridad Nuclear.
- **Decreto con Fuerza de Ley N°725**, Código Sanitario.
- **Decreto Supremo N°594**, Reglamento sobre Condiciones Sanitarias y Ambientales Básicas en los Lugares de Trabajo.
- **Decreto Supremo N°298**, Reglamenta el Transporte de Cargas Peligrosas por calles y caminos.
- **Decreto Supremo N°206**, Modifica el Reglamento de Comités Paritarios de Higiene y Seguridad, agregando la promoción y capacitación de los trabajadores.
- **Decreto Supremo N°160**, Aprueba Reglamento de Seguridad para las Instalaciones y Operaciones de Producción y Refinación, Transporte, Almacenamiento, Distribución y Abastecimiento de Combustibles Líquidos.
- **Decreto Supremo N°148**, Aprueba el Reglamento Sanitario de Residuos Peligrosos.
- **Decreto Supremo N°133**, Reglamento sobre Autorizaciones para Instalaciones Radiactivas o Equipos Generadores de Radiaciones Ionizantes, personal que se desempeña en ellas, u opere tales equipos y otras actividades afines.
- **Decreto Supremo N°101**, Aprueba el Reglamento para la aplicación de la Ley 16.744.
- **Decreto Supremo N°40**, Reglamento del Sistema de Evaluación de Impacto Ambiental (SEIA) del Ministerio Secretaría General de la Presidencia.
- **Decreto Supremo N°91**, Dicta Normas sobre Instalaciones Eléctricas interiores en Baja Tensión.
- **Decreto Supremo N°90**, Reglamento de Seguridad para el Almacenamiento, Refinación, Transporte y Expendio al público de combustible derivados del Petróleo.
- **Decreto Supremo N°43**, Aprueba Reglamento de Almacenamiento de Sustancias Peligrosas.
- **Decreto Supremo N°76**, Aprueba Reglamento para la aplicación del artículo 66 bis de la Ley N° 16.744, gestión de la seguridad y salud en el trabajo en obras, faenas o servicios que indica.
- **Decreto Supremo N°54**, Reglamento para la Constitución y Funcionamiento de los Comités Paritarios de Higiene y Seguridad.
- **Decreto Supremo N°50**, Modifica el D.S N°40 agregando el Título VI: de la obligación de informar de los riesgos laborales ("Derecho a saber" u "Obligación de Informar").
- **Decreto Supremo N°48**, Aprueba Reglamento de Calderas y Generadores de Vapor.

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- **Decreto Supremo N°46**, Norma de Emisión de Residuos Líquidos a Aguas Subterráneas.
- **Decreto Supremo N°45**, Modifica D.S. 59, Establece la Norma de Calidad primaria para material particulado respirable MP10.
- **Decreto Supremo N°40** Aprueba Reglamento sobre Prevención de Riesgos Profesionales.
- **Decreto Supremo N°38**, Modifica el D.S N°146 que Establece norma de emisión de ruido generado por fuentes que indica.
- **Decreto Supremo N°28**, Modifica el D.S. 594, Hipobaría Intermitente Crónica por Gran Altitud.
- **Decreto Supremo N°18**, Certificación de Calidad de Elementos de Protección Personal Contra Riesgos Ocupacionales.
- **Decreto Supremo N°12**, Reglamento para el Transporte Seguro de Materiales Radiactivos.
- **Decreto Supremo N°3**, Reglamento de Protección Radiológica de Instalaciones Radiactivas.
- **Decreto Supremo N° 77/82**, Aprueba Reglamento complementario de la Ley N°17.798, que establece en control de armas y explosivos.
- **Decreto Supremo N° 884/49**, Ordenanza General de Construcciones y Urbanización.
- **Decreto N°40**, Aprueba Reglamento del Sistema de Evaluación de Impacto Ambiental, del Ministerio de Medio Ambiente.
- **Norma NSEG 4 E.p. 79**, Electricidad, Instalaciones Eléctricas de Corrientes Fuertes.
- **Norma NSEG 6 E.n. 71**, Electricidad, Cruces y Paralelismo.
- **CIRCULAR N° 3335**, "Obligaciones de las Entidades ante Accidentes Fatales y Graves". Deroga y reemplaza las circulares N°s. 2.345 y 2.378, de 2007; 2.607 y 2.611 de 2010, y el N°5 del título ii de la circular N°2.893, de 2012.
- **Protocolo de Exposición Ocupacional a Ruido (PREXOR).**
- **Protocolo de Trastornos Musculo esqueléticos de Extremidades Superiores (TMERT)**
- **Protocolo de Exposición a Sílice (PLANESIS)**
- **Protocolo de Vigilancia de Riesgos Psicosociales en el Trabajo.**
- **Resolución de Calificación Ambiental (RCA)** del Servicio de Evaluación Ambiental (SEA) que Califican Favorablemente el Proyecto en Construcción y Plantas en Operación a desarrollar.
- **Normas Chilenas Oficiales.**
- **Toda normativa relativa a HSEQ** que sea aplicable y/o promulgada durante la ejecución del Proyecto en Construcción.

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2.2 NORMAS "REGLAS CLAVES" DE ENEL GREEN POWER CHILE (EGP)

Los Contratistas y su personal dependiente, Proveedores, Subcontratista y Visitas, cumplirán estrictamente todas y cada una de las Normas de EGP "Reglas Claves", señaladas a continuación, cuya infracción es considerada de la mayor gravedad en el Sistema HSEQ de EGP, y que, por tal razón, constituyen un incumplimiento grave de las obligaciones del contrato.

Frente a una infracción de esta naturaleza, se exige la expulsión del trabajador del proyecto que cometió la falta y el Contratista se obliga a imponer medidas correctivas y preventivas de mejoramiento con la mayor brevedad y a cumplir y a hacer cumplir toda instrucción que EGP Chile le indique, asumiendo directamente los costos que ello implique, sin derecho a reembolso ni compensación de ninguna especie, sin perjuicio de los derechos que EGP puede ejercer frente a este incumplimiento.

Los incumplimientos a las disposiciones de las presentes Bases Técnicas deben ser sancionadas de acuerdo al nivel de gravedad de las faltas observadas, las que se clasificarán de la siguiente manera:

- **Muy graves:** Todas aquellas acciones, omisiones o condiciones que tienen el potencial de provocar la muerte o un accidente grave de uno o más trabajadores.
- **Graves:** Todas aquellas acciones, omisiones o condiciones que tienen el potencial de provocar una lesión o afectar la salud a uno o más trabajadores.
- **Menos graves:** Todo acto u omisión de carácter administrativo que tenga relación con la implementación de los sistemas de gestión o programas de seguridad y salud laboral.

Sin embargo, existirán casos que, debido a su frecuente repetición o características particulares, ameritarán una clasificación conjunta entre el administrador del contrato o director de proyecto y el área de HSEQ de la empresa mandante, de la cual se emitirá una resolución por escrito a la empresa Contratista.



Las multas para cada uno de estos casos estarán definidas en las bases de licitación de los respectivos Contratos entre la empresa del EGP y la empresa Contratista.

2.2.1 Reglas Claves

- I. SIEMPRE Utilizaré los Elementos de Protección Personal adecuados al riesgo.
- II. SIEMPRE Intervendré equipos y/o sistemas sólo cuando estén bloqueadas, aisladas sus energías y con la autorización correspondiente.
- III. NUNCA operaré o intervendré equipos sin autorización y certificación apropiada.
- IV. SIEMPRE respetaré los límites de velocidad indicados y conduciré en condiciones óptimas.
- V. SIEMPRE me ubicaré fuera del alcance de cargas suspendidas, proyección de materiales, caída de objetos, proyección de partículas incandescentes.
- VI. SIEMPRE ejecutaré los trabajos, sólo cuando haya realizado el Análisis de Riesgo.

2.3 RESPONSABILIDADES

Responsables HSEQ de EGP Chile

La Supervisión y los Responsables HSEQ tendrán libre acceso a todas las instalaciones de los Contratistas y Subcontratistas, sean estas oficinas, bodegas, talleres, instalaciones sanitarias, lugares de trabajo, y otros.

Para todas aquellas áreas donde se limite el acceso del personal, se deberá solicitar autorización de ingreso correspondiente tomando conocimiento de los peligros y riesgos asociados al terreno y la actividad.

La Supervisión, los Responsables HSEQ y Representantes en Parque o Proyecto de Enel Green Power están facultados para suspender la ejecución de cualquier trabajo que signifique poner en peligro la integridad física del o de los trabajadores, o la Seguridad de la faena, así como también cualquier actividad o maniobra que signifique dañar el medio ambiente, patrimonio arqueológico, fauna, etc., como también todo trabajo que no cumpla con las Normas Generales y Específicas de Salud, Seguridad, Medio Ambiente y Calidad, las estipuladas en circulares, memos y contratos. Toda suspensión o detención de trabajos se confirmará de inmediato y por escrito.

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La Supervisión, los Responsables HSEQ y Representantes en Parque o Proyecto EGP están facultados para acceder al libro de obra o cualquier otro registro que posea el Contratista y anotar en él las indicaciones que deberán ser cumplidas en el plazo determinado o convenido. Los Supervisores o Representantes HSEQ comunicarán al Project Manager o Site Manager y/o Supervisor EGP o de Construcción de EGP las suspensiones y los antecedentes necesarios, con el fin de que se aplique al Contratista las sanciones que correspondan por contravenir alguna disposición reglamentaria de Seguridad.

Responsabilidad del Contratista

El contratista, para efectos de planificar y dar cumplimiento a sus obligaciones en materia de seguridad y salud en el trabajo, deberá cumplir con todos los requerimientos legales de Chile y requerimientos de EGP incluyendo el proceso de acreditación, esto aplica contratistas directos e indirectos y sus respectivos subcontratos en cualquiera de sus niveles.

Toda empresa Colaboradora (Contratista) estará obligada a establecer y mantener al día un Reglamento Interno de Higiene y Seguridad para la Obra de acuerdo a la Ley vigente, cuya difusión y cumplimiento será obligatorio.

3. ACREDITACIÓN DE CONTRATISTAS

Con 2 semanas de anticipación antes de comenzar cualquier trabajo o actividad se deberá entregar, a través, de plataforma de Acreditación, la documentación de empresa, trabajadores, vehículos y maquinaria, para revisión y validación por parte de EGP. El Manual de Acreditación para Contratistas será entregado por EGP.

3.1 REQUISITOS APLICABLES PARA ACREDITACIÓN DE EMPRESAS (NACIONALES Y EXTRANJERAS):.

- R.U.T y nombre o razón social de la empresa. (Art. 5, D.S. 76).
- Certificado de afiliación a un Organismo Administrador de la Ley 16.744 (o seguro equivalente de mínimo 4.000 UF para empresas extranjeras). (Art. 5, D.S. 76).
- Identificación del representante legal de la empresa. (Art. 5, D.S. 76).
- Designación por escrito del representante denominado Administrador de Contrato.
- Número y lista de trabajadores que prestará servicio en los proyectos, tanto de la empresa como de los subcontratos. (Art. 5, D.S. 76).

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- Carta Gantt de los trabajos o tareas específicas que ejecutará la empresa. (Art. 5, D.S. 76).
- Historial de los accidentes del trabajo y enfermedades profesionales de los últimos 24 meses de la empresa y de los subcontratos que prestarán servicios. (Art. 5, D.S. 76).
- Reglamento Interno de Orden Higiene y Seguridad con Cartas de presentación ante el Servicio de Salud e Inspección del Trabajo. Para menos de 10 trabajadores se requiere un "Reglamento Interno de Higiene y Seguridad ", el que debe estar aprobado (firmado) por sus trabajadores (Art. 153, Cód. Trabajo).
- Procedimientos de Trabajo Seguro, aplicable a las labores que realizará en Proyecto.
- Plan de Emergencia, aplicable al Proyecto donde realizará sus labores.
- Matriz de Identificación de Peligro y Evaluación de Riesgos (Matriz IPER), aplicable a las labores que realizará en Proyecto.
- Programa de Seguridad, Salud Ocupacional y Medio Ambiente.

3.2 REQUISITOS MÍNIMOS LEGALES PARA ACREDITACIÓN DE TRABAJADORES.

- Fotocopia Cédula de identidad o Pasaporte (ambos lados).
- Examen Médico Pre/Ocupacional de Organismo Administrador vigente.
- Examen Médico para Gran Altura Geográfica de organismo administrador vigente, cuando los trabajos se desempeñen sobre los 3.000 metros sobre el nivel del mar.
- Examen Médico de Altura Física de Organismo Administrador vigente, para trabajadores que realicen trabajos sobre los 2 metros de altura (física).
- Examen Médico Espacios Confinados de Organismo Administrador vigente, cuando los trabajadores deban realizar dicha actividad.
- Contrato Individual de Trabajo, de acuerdo al art. 10 del Código del Trabajo.
- Anexos de Contrato (Asignación al Proyecto EGP, faena, turno, cargo).
- Certificado A.F.P. (con no más de 30 días de antigüedad).
- Certificado de afiliación salud (Fonasa y/o Isapre). (con no más de 30 días de antigüedad).
- Último Finiquito, fotocopia legalizada.
- Últimas 12 cotizaciones.
- Certificado de Antecedentes (con no más de 30 días de antigüedad).
- O.D.I. (Obligación de Informar) D.S. N°40 asociado al cargo, actualizado y en original, firmado por el trabajador.
- Registro entrega de Reglamento interno actualizado, firmado por el trabajador.
- Registro entrega de Elementos de Protección Personal, firmado por el trabajador.

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- Registro Toma de conocimiento de procedimientos e instructivos asociados al cargo, firmado por el trabajador.
- Fotografía tamaño carnet con Nombre completo y Rut.
- Todos los documentos de respaldos necesarios para comprobar las características de condicionalidades para un cargo.

a) Si es extranjero, además deberá presentar:

- Contrato de Trabajo o Carta de Constancia, para verificar situación contractual con la empresa.
- Fotocopia simple del Pasaporte.
- Fotocopia simple de Visa de trabajo vigente.
- Fotocopia de Cedula de Identidad para extranjeros o Permiso trabajo especial para turistas otorgado por el Depto. de Extranjería en Chile.

b) Si es a honorarios, además debe presentar:

- Certificado firmado por las partes. Empresa con la cual presta servicios.
- Fotocopia de Póliza de Seguro de Accidentes Personales valida en Chile. La cobertura debe ser mínimo de 4.000 UF.

3.3 REQUISITOS APLICABLES PARA ACREDITACIÓN DE CONDUCTORES DE VEHÍCULOS O MAQUINARIAS:

Además de los requisitos para Acreditación de Trabajadores, debe presentar adicionalmente, lo siguiente:

- Fotocopia de Licencia de Conducir.
- Hoja de Vida Conductor (con no más de 30 días de antigüedad).
- Curso conducción Alta Montaña y/o 4x4 dictado por Organismo Administrador respectivo u OTEC certificada; cuando el Proyecto en Construcción se encuentre a gran altura geográfica y/o los caminos sean de difícil acceso.
- Licencia de conducir internacional, tratado Internacional del Mercosur, y acuerdo bilateral Chile-España, será válida SOLAMENTE para vehículos menores (camionetas).

a) Si es conductor de Maquinaria Pesada:

- Licencia de conducir chilena vigente Clase D.

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3.4 OTRAS CONSIDERACIONES DE ACREDITACIÓN

- El contratista debe mantener la misma información cargada en la plataforma de acreditación, en físico dentro de sus las Instalaciones (Código del Trabajo y Ley 20.123).
- Cargar en la plataforma de acreditación el programa de actividades relacionadas con HSEQ, (Planes y programas para el proyecto) de acuerdo a su programa anual o en función del período específico establecido en el Contrato (capacitación, inspecciones, observaciones, charlas, etc.), controlar su ejecución e informar mensualmente a EGP y/o su representante en terreno.
- Entregar a EGP las estadísticas de accidentes del mes, al responsable de HSEQ del Parque o Proyecto. Esta se debe cerrar el último día de cada mes, y entregar el reporte hasta el día 3 del próximo mes.

- Además, dentro de las estadísticas se debe entregar la siguiente información:
 - Índice de frecuencia y de gravedad de accidentes.
 - Número de accidentes con y sin tiempo perdido.
 - Número de accidentes de materiales y equipos.
 - Número de incidentes ambientales.
 - Números de enfermos ocupacionales diagnosticados en el período.
 - Dotación vigente al día del cierre.
 - Número de horas hombre trabajadas.
 - Número de días perdidos por accidentes y por enfermedades ocupacionales en el mes y acumulado en el año.
 - Actividades HSEQ (inspecciones, auditorias, observaciones u otras que estén dentro de su Programa HSEQ).
 - Cantidad de HH de capacitación HSEQ realizada en el mes.
 - Cantidad de Stop Work realizados en el mes.

- La información solicitada se deberá entregar en formato de EGP "Estadística Mensual de Accidentabilidad".
- Seleccionar y presentar para aprobación a EGP, al Experto en Prevención de Riesgos (certificado y calificado) para la Obra, mínimo con una semana de anticipación.

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- Enviar a las autoridades fiscalizadoras, de acuerdo a las disposiciones legales vigentes (Servicio de Salud, Mutualidad afiliada, etc.), los informes que exigen dichas disposiciones y las de cada Contrato, previa comunicación y autorización de EGP o su representante.

4. INGRESO A PROYECTOS Y RECINTOS DE EGP**4.1 INGRESO DE CONTRATISTAS**

El Contratista debe solicitar a EGP o representante en terreno, en forma oportuna (48 horas antes), el permiso de ingreso para sus trabajadores, vehículos, maquinarias y otros recursos necesarios para la ejecución de la Obra, antes del inicio de la movilización a Faena.

Para ello entregará los siguientes antecedentes o documentos:

- Listado de trabajadores, actualizado incluyendo todos sus antecedentes, sin perjuicio de los certificados indicados en los documentos internos del contrato.
- Listado de vehículos, con sus marcas, capacidad de carga, modelo, año y placa patente.
- Listado de maquinaria, equipos y herramientas de su propiedad y de terceros, que empleará en la ejecución de la Obra.
- El Contratista será responsable de someter a una reinspección periódica de acuerdo al fabricante, independiente de su programa habitual de mantención, a todos sus equipos y vehículos críticos que hayan sido expuestos a uso extremo, para asegurar el buen funcionamiento de sus dispositivos de seguridad, tales como frenos, niveles de fluido y de las condiciones mecánicas y físicas de sus partes.
- El Contratista será responsables de implementar y hacer cumplir a sus subcontratistas, el calendario de mantenimiento de equipos y de cumplir con las recomendaciones del fabricante, debiendo mantener copia de todos los registros respectivos en faena.
- Los permisos para ingresar a los recintos de construcción de EGP serán solicitados y coordinados, a través, del Responsable HSEQ de EGP en terreno.
- En toda solicitud de ingreso debe estar especificado el número de Contrato, su fecha de término y el período por el que se solicita la credencial de la idoneidad de los trabajadores asignados al contrato será responsable el Contratista, quien debe asegurarse que la salud de ellos es compatible con las características del trabajo que desempeñarán.

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Toda persona que ingrese al Proyecto, incluso las visitas, deberán asistir a cursos de inducción HSEQ del Proyecto con carácter de obligatorios, constituyéndose un requisito esencial para su ingreso. Dicha inducción será impartida por las empresas EGP o su representante. Estos cursos pueden ser realizados en la faena.

La empresa Contratista deberá adicionalmente establecer un Programa de inducción específica de acuerdo a los riesgos expuestos y requisitos de legislación aplicable.

El Contratista es el responsable de generar las credenciales internas, las cuales serán válidas una vez que el solicitante cumpla con la entrega de toda la documentación de acreditación del trabajador y haya participado de la inducción correspondiente en materias HSEQ; estas deben ser firmadas y/o timbradas por personal HSEQ de EGP.

El Contratista comunicará inmediatamente al representante de EGP la pérdida de cualquier credencial. Si este aviso no fuera dado por el Contratista, los costos que pueda causar el mal uso de dicho documento, será de su responsabilidad.

Las credenciales deberán ser devueltas al representante de EGP tan pronto como haya caducado el motivo que originó a ello.

4.2 TRABAJOS AL INTERIOR DE PROYECTOS

Al iniciar una obra o trabajo, todo contratista debe interiorizarse de los peligros y riesgos que presenta el área, sector o lugar de trabajo y realizar un análisis de riesgos del trabajo por escrito (ART).

El contratista deberá instalar siempre limitaciones de área, protecciones o defensas en el o los lugares de trabajo, o cuando le sea indicado por los supervisores, inspectores de obras o responsables HSEQ del propio contratista o de EGP.

Todo personal del contratista, bajo ninguna circunstancia, salvo autorización de EGP o su Representante, podrá transitar o ingresar por otra área o zona de trabajo que no sea la que le corresponde.

Todo trabajo que deba realizar el contratista, debe ser coordinado por y con la supervisión de obras y responsable HSEQ de EGP o su representante.

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Todo trabajo que implique obstaculizar o suspender el paso de vehículos y/o personas debe tener una autorización previa que debe ser comunicada a todos los afectados, entendiéndose por autorización como una solicitud escrita del contratista y aprobada por EGP o su representante, 24 horas antes de iniciar tal acción.

4.3 REQUISITOS APLICABLES A LAS VISITAS.

Para las visitas en obra, esta debe ser solicitada, a través, de un correo electrónico con al menos 48 horas de anticipación, enviado a los responsables de EGP Chile. Al Site Manager y Safety Officer a cargo del Proyecto en Construcción indicando el propósito de la visita.

Asimismo, se podrá exigir Exámenes de Salud, según la naturaleza del proyecto (ej.: Altura Geográfica)

Toda visita que llegue en vehículo deberá enviar por el mismo correo electrónico su licencia de conducir y verificar que el vehículo cumpla con las exigencias de EGP Chile para Proyecto en Construcción.

Para extranjeros, se debe considerar el envío de los siguientes documentos:

- Fotocopia de Cédula de Identidad o Pasaporte.
- Si conduce, Licencia de conducir internacional, tratado Internacional del Mercosur, y acuerdo bilateral Chile-España.

5. INSTALACIÓN DE FAENAS Y/O CAMPAMENTO

Toda instalación de faenas deberá contar con servicios sanitarios y toda habilitación necesaria en acuerdo a los aportes que debe realizar el contratista conforme se indica en su contrato.

Todas las instalaciones deberán regirse por las disposiciones contenidas en el Decreto Supremo N°594, "Reglamentos sobre Condiciones Sanitarias y Ambientales Básicas en el Lugar de Trabajo", y por las exigencias del Servicio de Salud respectivo.

Bajo ninguna circunstancia se acepta realizar instalaciones de faenas o campamentos en lugares no habilitados para estos fines.

5.1 AGUA POTABLE

- El Contratista deberá indicar claramente a EGP, si las condiciones del proyecto lo requieren, la fuente de la cual obtendrá sus recursos de agua potable, la que deberá contar con los permisos

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correspondientes de acuerdo, parque o central. Esta indicación deberá hacerla dentro de los treinta días siguientes a la fecha de inicio de la prestación de servicios, obra o trabajo a la fecha en que surja el requerimiento de agua potable, en caso que dicho requerimiento sea posterior a la fecha de inicio de un contrato.

En todo caso, dicha indicación deberá efectuarse antes de que el Contratista obtenga el recurso de agua potable.

- Todos los frentes de trabajo deberán disponer y contar con stock de agua potable certificada para el consumo suficiente para el personal que se encuentra en faena. Esta deberá encontrarse en dispensadores, debidamente señalizada con las palabras "Agua Potable".
- Se debe lograr en todo momento que el agua se encuentre fresca y a una temperatura menor a la temperatura ambiente.
- Su disposición en terreno será dentro de caseta de madera, revestida internamente con material aislante diseñado para proteger de los cambios de temperaturas, vientos y suciedad.
- Los dispensadores para agua potable deberán cumplir con lo siguiente:
 - Deberán tener llave / válvula en su exterior para evitar contaminar el agua.
 - Mantenimiento y limpieza diaria a los dispensadores de agua potable.
 - Deberán ubicarse a una altura tal que permita la extracción de agua y evitar la contaminación de ésta.
- Para que los bidones se mantengan en óptimas condiciones de higiene y de funcionamiento, se designará una persona o cuadrilla que mantendrá los dispensadores siempre limpios, con agua y vasos desechables en cantidades suficientes para los trabajadores. Su reposición deberá ser diaria al igual que el retiro de los vasos utilizados.
- Próximo a los dispensadores de agua debe existir un basurero para contener los vasos desechables.

5.2 BAÑOS Y ARTEFACTOS HIGIÉNICOS

- El Contratista deberá proveer el número necesario de baños y artefactos higiénicos necesarios que estipula la reglamentación específica para estos efectos en el lugar de la obra.

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- La empresa que entregue los servicios de suministro, reposición y limpieza de baños químicos, deberá contar con autorización sanitaria respectiva, mediante Resolución. Los antecedentes de autorización deberán ser entregados a EGP Chile.
- Los baños químicos deberán estar en todo momento en condiciones higiénicas de ser usados. Los baños químicos deberán ser limpios y sanitizados semanalmente o lo que demande el proyecto, utilizando un sistema de extracción forzada y su frecuencia de limpieza podrá aumentar si las condiciones de trabajo en el lugar lo requieran.
- Cada baño químico deberá contar con dispensador de jabón gel de alcohol yodado y dispensador de agua en su interior, utilizado para la limpieza de manos y deberá ser repuesto o rellenado en toda limpieza o mantenimiento del baño químico, al igual que papel higiénico con sistema de tipo JUMBO en cantidades suficientes para el número de trabajadores que utilizan el servicio.
- Se deberá considerar la dinámica de avance de los trabajos y sus interferencias en las áreas y programar periódicamente el traslado y movimiento de los baños químicos, permitiendo el correcto y efectivo uso y limpieza de ellos.
- En caso de existir diferencias de sexos en la obra, deben existir baños exclusivos para hombres y mujeres

5.3 ASEO E HIGIENE

- Se deberá definir, mediante un programa de aseo y orden, el personal, frecuencia y los recursos necesarios para mantener el aseo y orden en los frentes de trabajo e instalaciones en condiciones aceptables.
- Deberá contar con un programa de sanitización, desinsectación, fumigación y desratización de todas sus instalaciones, EGP aprobará la periodicidad del servicio.
- Todo trabajador que labore en plantas de tratamiento de aguas servidas o manipule residuos peligrosos, infecciosos o sustancias peligrosas, no podrá ingresar a los casinos y comedores sin antes haberse cambiado de ropa y lavado en duchas, previniendo de esta manera, la ocurrencia de contaminaciones cruzadas y el potencial de intoxicación masiva.

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- Cuando la naturaleza del trabajo implique contacto con sustancias tóxicas o infecciosas deberán disponerse de duchas para los trabajadores afectados en los frentes de trabajo, para que su uso sea antes del ingreso del trabajador al casino, comedores y campamentos.
- El Contratista deberá indicar claramente el procedimiento que utilizará para la recolección y disposición de aguas servidas. Esta indicación deberá hacerla dentro de los treinta días siguientes a la fecha de inicio de la prestación de servicios y contar con aprobación sanitaria para tal efecto.

5.4 OTRAS CONSIDERACIONES DE INSTALACIONES EN TERRENO.

- El Contratista debe mantener sistemas de iluminación adecuados en los lugares donde se realicen trabajos nocturnos, bajo techo, o en ambientes de escasa visibilidad. Se debe comprobar que los sistemas de iluminación son los adecuados mediante un estudio cuantitativo en terreno.
- El Contratista se obliga a no usar sistemas de refrigeración y/o aire acondicionado, que utilicen compuestos de CFC (freón).
- El contratista se obliga a no usar detectores de humo que emitan radiaciones ionizantes. Sólo podrá utilizar los detectores de humo fotoeléctricos.
- No estará permitido realizar mantenencias mayores a maquinaria en Proyecto. Solo está permitido realizar mantenencias menores en Proyecto protegiendo el suelo de posibles derrames (bandeja metálica y/o HDPE).
- Para el cambio y recambio de lubricantes se deberán utilizar bandejas metálicas para la contención de los mismos. Se deberá contar con material absorbente para fugas y derrames de combustibles y lubricantes en cantidades suficientes y al alcance inmediato para su uso, tales como arena, aserrín, guaipe u otro material de similares características. Se recomienda mantener Kit portátiles para contención de derrames.
- Todas las instalaciones provisionarias y permanentes deberán contar con protecciones a tierra y sistema de protección para tormentas eléctricas.

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- Todas las instalaciones eléctricas deben ser ejecutadas por personal especialista con certificación SEC.

6. ASPECTOS DE MEDIO AMBIENTE

El presente Capítulo contiene una descripción de las obligaciones ambientales de Proyectos en Construcción, cuyo objetivo es enfatizar las buenas prácticas en materia de Medio Ambiente y cumplir con la normativa vigente.

6.1 OBLIGACIONES FRENTE AL MEDIO AMBIENTE

Enel Green Power Chile (EGP) exige a todos los Contratistas cumplir con los compromisos adquiridos de cada Proyecto en Construcción y Plantas en Operación, un comportamiento ambiental idóneo, basado en las mejores prácticas de protección del Medio Ambiente, de tal manera que el Proyecto y su personal sean observados por la Comunidad como una faena limpia, ordenada y respetuosa del medio ambiente.

Se entiende por Medio Ambiente, al conjunto de personas que comparten un territorio en el que interactúan permanentemente, dando origen a un sistema de vida formado por relaciones sociales, económicas y culturales, que eventualmente tienden a generar tradiciones, intereses comunitarios y sentimientos de arraigo.

En este sentido, las comunidades son grupos de personas que reconocen, configuran y mantienen identidad, cohesión, pertenencia y estabilidad respecto de un territorio; y comparten formas de vida, cultura, servicios e instalaciones comunes.

La mirada desde la responsabilidad ambiental se verifica a través de evitar, minimizar y gestionar los impactos negativos durante el desarrollo de sus actividades. Por lo tanto, resulta prioritario que el Contratista desarrolle esfuerzos conceptuales, metodológicos y de procedimientos que permitan lograr una mayor integración de las variables y dimensiones referidas al Medio Ambiente.

6.2 Responsabilidades frente a los compromisos ambientales

El Contratista deberá respetar todas las leyes y las condiciones referidas en los documentos de la(s) EIA/DIA(s) y la licencia ambiental del Proyecto, entregados dentro de los Anexos al Contrato. Realizando las actividades necesarias para cumplir con los compromisos ambientales adquiridos

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en el proceso de evaluación ambiental, y que están listados en la Matriz de Compromisos Ambientales del Proyecto.

Los Representantes de las Partes celebrarán reuniones semanales y mensual para examinar todos los temas relacionados con el avance de las Obras, los calendarios y condiciones técnicas requeridas. El Contratista y el Cliente se informarán de los temas a tratar al menos dos días hábiles antes de la fecha de la reunión mensual y un día hábil antes de la reunión semanal.

En las reuniones, el Contratista dará su presentación semanal o mensual, según proceda y entregará un informe que se referirá a lo siguiente:

- (i) Información respecto del avance de las Obras;
- (ii) La actualización del calendario para la ejecución de las Obras y su contraste con el Programa; y
- (iii) Documentación de respaldo del Plan de Gestión Ambiental, incluyendo fotografías y sus evidencias.
- (iv) Registros ambientales y sus respectivos comprobantes y/o certificados que evidencia la actividad (Se entregará al contratista un total de 27 registros ambientales para su implementación cuando sea aplicable, los que deberán ser entregados al environmental officer completos de forma semanal).

El Contratista coordinará la reunión y preparará las actas de la misma para ser acordadas y firmadas por los representantes de las partes que asistan a la misma. Las actas describirán el contenido de lo tratado en la reunión, se referirán a los temas pendientes y los acuerdos respecto de su cumplimiento y plazo para ello.

Al término del Proyecto el Contratista deberá entregar un informe Plan de Gestión Ambiental en donde se evidenciará el cumplimiento de los compromisos ambientales durante el desarrollo de las actividades del Proyecto, junto con los registros ambientales y su respaldo de evidencia de cada una de las actividades realizadas.

El Contratista deberá respetar y entregar toda información ambiental solicitada por el Environmental Officer del Proyecto.

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Para Proyectos en Construcción y Plantas en Operación, se aplicarán sanciones de acuerdo a lo comunicado en el Kickoff Meeting realizado con los contratistas, de no cumplir con lo estipulado en los compromisos y buenas prácticas ambientales.

6.3 REHABILITACIÓN DE ÁREAS

Rehabilitar un área, significa despejar y limpiar un lugar que ha sido utilizado para instalar faenas y/o campamento, dejándolo en similares o mejores condiciones que las previas a su ocupación.

Para el Rehabilitación de las Áreas, el Contratista se compromete a:

- Presentar a EGP e incluir en sus costos operacionales, un Plan de Gestión Ambiental en el cual deberá considerar, adicionalmente a las evidencias de los compromisos ambientales durante el desarrollo de las actividades del Proyecto, la rehabilitación del lugar que ha ocupado o utilizado con ocasión de la prestación de sus servicios, en condiciones similares al inicio de la operación.
- El documento que contenga el Plan de Gestión Ambiental, deberá comprender un conjunto de fotografías tomadas antes de la realización de las faenas y después del término de las mismas (estas fotografías deberán ser tomadas de los mismos ángulos, cubriendo los mismos lugares y georreferenciadas).
- La presentación del Plan de Gestión Ambiental deberá cumplirse dentro de los treinta días siguientes a la fecha de inicio de la prestación de los servicios.
- El Plan de Gestión Ambiental que proponga el Contratista deberá contar con la aprobación de EGP. Si hubiera objeciones, se podrá convocar a una reunión con el Contratista, cuyo objeto será la suscripción de un documento que definitivamente contenga un plan que satisfaga los requerimientos.

6.4 SUPERVISIÓN EN TERRENO

En todos los trabajos en que EGP lo solicite expresamente y en especial en las faenas de Mantenimiento Mayor, la empresa contratista deberá contar con la asesoría de un especialista ambiental o profesional con conocimientos en medio ambiente y experiencia en las faenas a ejecutar. El especialista deberá estar a tiempo completo y cubrir la totalidad de los turnos de

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ejecución de obras o servicios, o en su defecto designar un responsable con competencias ambientales para la faena.

6.5 DOCUMENTACIÓN INTERNA APLICABLE

- Política del Sistema Integrado de Gestión.
- Procedimiento de Manejo de Residuos del SGI y sus registros
- Procedimiento de Gestión de Sustancias Peligrosas. del SGI
- Procedimiento Preparación y Respuesta ante Emergencias. del SGI

6.6 REQUISITOS GENERALES

Los requerimientos mínimos de protección ambiental que debe cumplir la empresa contratista y sus trabajadores son:

- ✓ Identificar en forma escrita los compromisos ambientales adquiridos durante el proceso de licitación y contrato; así como la forma de cumplimiento de estos compromisos; el cual deberá estar detallado dentro de un Plan Ambiental.
- ✓ Dar estricto cumplimiento de la normativa ambiental aplicable;
- ✓ Mantener aseado, ordenado y libre de residuos el lugar de trabajo asignado. Para ello deberá realizar una inspección y control diario de los sitios de trabajo;
- ✓ Elaborar la matriz de Identificación y evaluación de los Aspectos Ambientales e Impactos Ambientales asociados al trabajo a realizar (en concordancia con la norma ISO 14001), la que será validada por el Especialista Ambiental de la instalación o por el Inspector Jefe de Contrato; y
- ✓ Capacitar a su personal en los temas ambientales aplicables a la faena (legislación, normas, aspectos ambientales, controles operacionales, procedimientos, planes de contingencia, etc.).
- ✓ Dar reporte inmediato al supervisor del contrato en caso de producirse algún incidente ambiental durante el desarrollo de los trabajos, adoptando las medidas de mitigación necesarias para contener o acotar el impacto del incidente.

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6.7 REQUISITOS ESPECÍFICOS**6.7.1 Matriz de Aspectos e Impactos ambientales**

La empresa contratista deberá contar con una matriz de identificación de aspectos e impactos ambientales que identifique claramente todas sus actividades, principalmente aquellas susceptibles de causar impactos ambientales, las que deberán contar con las medidas de mitigación necesarias (ejemplo: derrames de combustible, emisiones de material particulado, contaminación de aguas, etc.).

En caso que la empresa contratista cuente con un Sistema de Gestión Ambiental (SGA) certificado bajo la norma ISO 14001/2015, dicha evaluación puede ser realizada mediante el uso de su propia metodología. En caso de no tener un SGA certificado, usará la metodología del Sistema de Gestión Ambiental de EGP.

En cualquiera de los casos señalados precedentemente, y para trabajos No rutinarios, deberá ser validada por profesional de Medio Ambiente HSEQ previo inicio de los trabajos. Por tal motivo, la solicitud de aprobación de una matriz en particular, deberá ser solicitada como mínimo con cinco días hábiles de antelación al inicio de los trabajos. No está considerada la evaluación y validación "urgente o expresa" de matrices de aspectos ambientales para completar el Procedimiento de Trabajo (PT). Una vez validada la matriz, la empresa contratista deberá:

- a) Capacitar a todo su personal de faenas sobre los impactos ambientales y sus medidas de control operacional; y
- b) Tener en terreno una copia de la matriz validada y con la firma de toma de conocimiento de todos los trabajadores involucrados en la faena, con los aspectos aplicables a la faena.

Los controles operacionales ambientales planificados en la matriz de aspectos e impactos ambientales serán implementados a cabalidad y serán supervisados por EGP. Los materiales utilizados para su implementación, serán de costo de la empresa contratista (ejemplos: equipo (*kit*) anti derrame, bandejas de contención, jaulas para almacenamiento de sustancias, etc.).

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Áreas de AplicaciónPerímetro: *Chile*Función: *Health, Safety, Environment and Quality*Business Line: *Renewable Energies***6.7.2 Protección de elementos de valor cultural y arqueológico.**

El Contratista será responsable de ejecutar la obra o servicio sin provocar daño alguno a aquellos elementos de valor cultural o arqueológico que se encuentren en el lugar donde se ejecutarán los trabajos. En caso de trabajos en Zona donde haya sitios arqueológicos identificados, deberá solicitar autorización para realizar trabajos de excavaciones y movimientos de tierra en su cercanía y demarcar las áreas identificadas, con el objeto de evitar el tránsito, tanto de vehículos como de personas que puedan dañar los sitios.

Por otro lado, en caso de encontrarse con vestigios de tipo arqueológico no identificados con anterioridad, debe detenerse la faena y dar aviso de inmediato al inspector de contrato y especialista ambiental de EGP.

6.7.3 Protección de elementos de Valor Natural

Para la Protección de la Flora y Fauna presente en las instalaciones el Contratista debe considerar lo siguiente:

- ✓ Queda prohibido el despeje, cubrimiento y corte, poda o roce de especies vegetales (arbustos, árboles, etc.) En el caso de que sea necesario realizar despeje de vegetación deberá contar con la autorización del responsable ambiental en planta. Si se trata de especies nativas protegidas, además deberá contar con la Autorización de la Autoridad Competente si corresponde.
- ✓ No deberá tomar muestras de vegetación de ningún tipo a menos que cuente con los permisos necesarios para ello.
- ✓ Está estrictamente prohibido cazar, domesticar, molestar o maltratar a la fauna existente el lugar, así como levantar o perturbar nidos o madrigueras.
- ✓ Todo el personal de faena deberá estar capacitado sobre la protección de fauna, reforzando específicamente este aspecto en caso de existir compromisos en la Resolución de Calificación de los proyectos.
- ✓ Instalar señaléticas en los distintos frentes de trabajo del Parque con la frase "Prohibido cazar, domesticar, molestar o maltratar a la fauna existente".
- ✓ El área de estudio debe quedar tal como fue encontrada, esto implica no dejar restos de materiales ni residuos producto del Estudio. Todos los residuos generados en terreno deberán ser trasladados hasta un lugar de disposición habilitado para ello.
- ✓ Queda estrictamente prohibido hacer fuego para cualquier objetivo.

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6.7.4 Controles operacionales ambientales obligatorios en faenas

Además de los controles definidos mediante la aplicación de la matriz de aspectos e impactos ambientales, la empresa contratista considerará los siguientes controles, los que son de carácter obligatorio:

a) Manejo de Residuos

El manejo de los residuos será realizado conforme lo establecido en la normativa aplicable (D.S N°148/03 del Ministerio de Salud) y en los respectivos procedimientos del Sistema de Gestión Ambiental, SGA. Los puntos de acopio temporal serán definidos previamente con el Especialista Ambiental de EGP.

Las disposiciones específicas, como la gestión de residuos no habituales o el traslado a bodegas, serán acordados con el Inspector de Contrato o Especialista Ambiental, pero en ningún caso quedarán en la instalación a intervenir. Además, la empresa contratista considerará lo siguiente:

- Entregar, previo a la ejecución de las obras, una estimación del tipo o de los tipos de residuos a generar y su peso, con la finalidad de tomar las medidas de gestión pertinentes (definición de puntos de acopio transitorio y retiro de los mismos); En el caso de la disposición transitoria de residuos en la instalación y en puntos críticos de faena, contará a su costo con sistemas de almacenamiento, actuando conforme la normativa aplicable y según lo indica el procedimiento para el manejo de residuos peligrosos del Sistema de Gestión Integrado (SGI). Previo inicio de faena deberá elaborar un plano con su ubicación para posterior planificación del retiro,

Se debe considerar, además:

- Almacenar los residuos peligrosos en la bodega de acopio temporal (BAT) de la instalación, previa autorización del Inspector Jefe y del Especialista Ambiental. Para su ingreso a la BAT los residuos serán correctamente etiquetados indicando: tipo de residuo, peso, origen y fecha de ingreso. Deberán ser almacenados correctamente y registrados en el libro de ingreso de la BAT, indicando toda la información ya individualizada en el registro de Residuos Peligrosos (RESPEL) del Sistema de Gestión Ambiental; y
- Cualquier desecho no peligroso resultante de la obra deberá ser almacenado temporalmente en el lugar que le será indicado por el Inspector Jefe o Especialista Ambiental. **En trabajos No rutinarios y Faenas**, todos los residuos peligrosos y no

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peligrosos de la obra serán retirados una vez finalizadas las obras a costo de la empresa contratista y enviados a un lugar de disposición autorizado, debiéndose acreditar mediante la documentación correspondiente (**guía de recepción y certificado de la instalación de disposición**).

- ✓ No estará permitido realizar mantenencias mayores a maquinaria en terreno. Sólo está permitido realizar mantenencias menores, protegiendo el suelo de posibles derrames (bandeja metálica u otro elemento de contención similar).
- ✓ Para el cambio y recambio de lubricantes se deberán utilizar sistemas de contención de los mismos. Se deberá contar con material absorbente para fugas y derrames de combustibles y lubricantes en cantidades suficientes y al alcance inmediato para su uso.

b) Sustancias químicas peligrosas

Si se requiere el uso de sustancias químicas peligrosas (NCh382/2013), la empresa contratista cumplirá con la normativa ambiental aplicable (DS N°43/15 del Ministerio de Salud) sobre su manipulación y gestión y deberá dar cumplimiento al procedimiento de Almacenamiento y Manejo de Sustancias Peligrosas del Sistema de Gestión Ambiental de EGP.

Antes del inicio de los trabajos, el contratista debe considera como mínimo lo siguiente:

- ✓ Contar con el listado de los productos que se el que deberá entregar al Jefe del contrato o especialista ambiental de la instalación. En el caso de tener que incluir un nuevo material peligroso se deberá informar y enviar la información requerida.
- ✓ En caso de ser una sustancia prohibida por la Legislación Chilena, el Contratista deberá presentar los permisos y aprobación de utilización de la sustancia antes de ingresar a la instalación de EGP.
- ✓ Disponer de las Hojas de Seguridad en el lugar de almacenamiento y de uso en español y considerando los 16 puntos contenidos en la norma (NCh 2245/2015).
- ✓ En el caso de la disposición temporal de las sustancias en uso y en puntos críticos de faena, contará a su costo con jaulas anti derrame con sistema antivuelco y sistemas de contención, actuando conforme la normativa aplicable y según lo indica el procedimiento para el manejo de sustancias peligrosas del Sistema de Gestión Ambiental (SGA).

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En el caso que el volumen de sustancias químicas peligrosas que requieran los trabajos requieran el uso de bodegas de almacenamiento, deberá contar con Bodega de Almacenamiento Temporal para uso en la faena (Bodega móvil), la que deberá cumplir con la normativa aplicable y contar con la debida autorización sanitaria. Podrá almacenar sustancias en Bodegas de EGP solo con expresa Autorización del Mandante.

Para el almacenamiento de sustancias químicas se prohíbe la utilización de cualquier envase no apto para almacenamiento temporal de sustancias Ejemplo: envases de bebidas gaseosas.

- ✓ El sistema de contención de derrames debe ser capaz de contener el 100% del líquido que contenga el equipo.
- ✓ Capacitar al personal de faenas sobre la peligrosidad y las medidas de control implementadas.
- ✓ En el caso de sustancias en estado líquido, se tomarán todas las medidas necesarias para evitar derrames, tanto en su transporte como en la manipulación (Ejemplo: Habilitación de Bandejas y superficies impermeabilizadas).
- ✓ Todos los envases de sustancias químicas peligrosas que se utilicen deberán estar debidamente identificadas según la normativa (NCh382/2013 o sus actualizaciones).
- ✓ El contratista que reciba, transporte y almacene cilindros de gas, deberá cumplir con las Normas emanadas de la Superintendencia de Servicios Eléctricos, de Gas y Telecomunicaciones, División de Gas, Normas SEGTEL y DS N°43. Los cilindros se deben almacenar separados, verticales, con su protector, señalizados, con hojas de seguridad. Podrán almacenarse en Bodegas de Enel solo con expresa Autorización del Mandante.

c) Combustible y Lubricantes

Para el Manejo de combustibles se deberá considerar lo establecido en el Decreto N°160 "Reglamento de Seguridad para las Instalaciones y Operaciones de Producción, Refinación, Transporte, Almacenamiento, Distribución y Abastecimiento de Combustibles Líquidos".

No se encuentra autorizado el almacenamiento de combustible en las instalaciones de Enel en cantidades superiores a 227 litros, salvo que cuente con autorización SEC.

Se permitirá el transporte de combustibles en vehículos menores sin contar con autorización SEC, si empre y cuando se cuente con envases certificados y en las siguientes cantidades.

- Clase I un máximo de 2 envases de 20 lt (si el envase cuenta con certificado)
- Clase II (diesel) 1 envase de 227 litros.

El almacenamiento de Lubricantes deberá contar con Sistemas de mitigación y contención de derrames y estar alejado de sustancias combustibles.

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Si el contratista cuenta con un grupo electrógeno, compresor y/o generador de energía, éste deberá estar asentado sobre una Base para la contención de posibles derrames. Los Grupos generadores y equipos eléctricos deben cumplir con la normativa SEC y otras normativas aplicables.

d) Control de Polvo en faenas

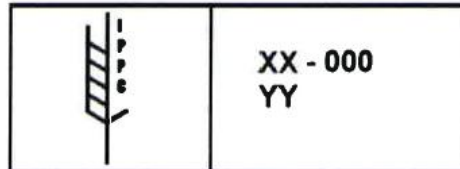
Las medidas de control aplican para el control de polvo fugitivo. Esto es, todo material particulado que se encuentra en suspensión en el aire como consecuencia del desarrollo de faenas y que puede ser dañino para la salud, al encontrarse en niveles elevados en el ambiente.

- En espacios abiertos (exterior de las instalaciones) el contratista deberá mitigar el polvo fugitivo proveniente de su actividad, mediante la humectación periódica de los caminos y áreas de trabajo. Esto es aplicable principalmente para las faenas que requieran movimiento de tierra y flujo de camiones u otro material que pueda generar polvo en suspensión
- En sectores donde exista acumulación de material deberá ser cubierto para evitar su dispersión. De igual forma se deberá cubrir totalmente la tolva de los camiones que realizarán el traslado de material para evitar el polvo en suspensión.
- Si aplica, se deberá considerar e implementar para este punto lo indicado en la Resolución de Calificación Ambiental de cada planta en relación a este ítem.

6.7.5 Verificación de Embalajes de Repuestos y Otros:

El contratista deberá verificar que los embalajes cumplan con la normativa vigente (Resolución Exenta 133/05 S.A.G. y sus modificaciones contenidas en Resolución Exenta 2859/2007 y Resolución Exenta 7008/2013 y otras si corresponde).

Como mínimo deberá verificar que la madera también presente la siguiente marca, la cual certifica los tratamientos fitosanitarios a los cuales ha sido sometida:



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- ✓ El Símbolo XX; indica el código de dos letras del país de origen de la mercancía, según la norma ISO.
- ✓ 000; Indica un número especial que la Organización Nacional de Protección Fitosanitaria (ONFP) le asigna al productor del embalaje de madera.
- ✓ YY; Representa la abreviatura que identifica la medida de tratamiento fitosanitaria que se ha utilizado (ej. HT "tratamiento térmico" o BM "fumigación con bromuro de metilo"). Podrá complementarse esta simbología con los acrónimos KD para maderas con tratamiento de secado al horno y DB para maderas descortezadas.

En caso de que durante la inspección del embalaje se percate de la presencia de insectos, hongos, cortezas u otro tipo de plaga, se debe dar aviso inmediato al Inspector de Enel y especialista ambiental para que sean tomadas las medidas pertinentes.

6.8 INCIDENTES AMBIENTALES

La empresa contratista deberá evitar incidentes ambientales durante las faenas, adoptando las medidas de prevención en forma oportuna para evitar la contaminación de suelos, agua, aire, vegetación y fauna del entorno. Para cumplir con lo anterior deberá contar *in situ* con los materiales necesarios para actuar frente a incidentes de su responsabilidad.

En el caso de ocurrir un incidente ambiental por causa de actividades de la empresa contratista, debe proceder de acuerdo al procedimiento de respuesta ante una emergencia establecido en el Sistema de Gestión Ambiental y dar aviso de inmediato al inspector del contrato y al encargado ambiental de la instalación al que se le facilitará y entregará en menos de 24 Horas a lo menos la siguiente información:

- Fecha y Hora del incidente
- Planta
- Lugar de ocurrencia
- Descripción del incidente
- Medidas inmediatas implementadas
- Causa probable
- Área afectada y cantidad (litros derramados, área, ó individuos afectados según corresponda)

La empresa contratista responderá ante cualquier incidente ambiental causado, reservándose Enel el derecho a exigirle acciones y gastos que se originen por incumplimiento de sus obligaciones en materia ambiental. Asimismo, la empresa contratista restaurará, a su exclusivo costo, el daño que haya producido como consecuencia del incumplimiento de cualquier requisito



que le sea de aplicación o especificado en los procedimientos del Sistema de Gestión Integrado (SGI) de EGP. Los gastos por esta causa podrán ser descontados de los Estados de Pago.

6.9 INFORME SEMANAL DE MEDIO AMBIENTE

En faenas Mayores y trabajos de más de una semana, la empresa contratista incluirá en el "Informe semanal de Seguridad y Salud Laboral" (Bitácora) un acápite con el reporte semanal, de las actividades de medio ambiente realizadas durante el período. Una copia de este documento deberá ser remitida al Especialista Ambiental de la instalación y Jefe del Contrato.

Al final de la faena el Contratista entregará un informe de cierre, no más allá de 10 días de finalizada la obra, en la que deberá dar cuenta del estado de cumplimiento de las actividades comprometidas en materia de Medio Ambiente y en relación al Sistema de Gestión Ambiental.

6.10 INCUMPLIMIENTOS

El contratista declara estar en conocimiento que será sometido a inspecciones periódicas, con el objeto de verificar si está cumpliendo con las especificaciones técnicas ambientales que le aplican.

En caso de no cumplimiento de los requisitos ambientales internos o incumplimiento de la normativa aplicable, Enel se reserva el derecho a detener la faena y a exigir a la empresa contratista la normalización del no cumplimiento. El tiempo de detención de la faena por esta causa será responsabilidad del contratista y a su costo, y con cargo a la duración total del trabajo previamente establecido.

7. ASPECTOS DE SEGURIDAD

El presente Capítulo contiene una descripción de las obligaciones que debe cumplir el Contratista en temas de Seguridad de Proyectos en Construcción.

7.1 ANALISIS DE RIESGO DEL TRABAJO

El análisis de riesgos del trabajo es la evaluación objetiva del potencial de daño que pueden causar los peligros de una determinada actividad estableciendo medidas que permitan controlar y/o minimizar los riesgos. En este sentido se trabaja en dos dimensiones, la primera es la evaluación mediante matrices o inventarios de riesgos de todas las actividades a desarrollar asignando un valor que permitirá determinar si la actividad es crítica o no. Para esto la empresa contratista debe hacer esta evaluación antes de iniciar un trabajo.

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El formato de la matriz a usar para evaluar los riesgos es aportado por EGP.

La segunda dimensión y como complemento al inventario de riesgos se realizará el proceso de Análisis de Riesgos del trabajo.

Esta es la evaluación que se realiza diariamente antes de iniciar una tarea o el trabajo, para eso se precisa contar con un formato de Análisis de Riesgos del Trabajo (ART), este se realiza en terreno y se define como el proceso de trabajar en equipo para:

- Desglosar el trabajo en cinco a seis pasos importantes.
- Identificar y analizar los riesgos asociados a cada paso.
- Indicar medidas de control de los riesgos.
- Informar de los riesgos y controles a todos los trabajadores directamente involucrados en el trabajo.
- Verificación de que los riesgos son controlados efectivamente al momento de ejecutar el trabajo.
- Efectuar análisis de riesgo cada vez que se modifique el trabajo (generalmente donde se produce el cambio).
- Si el trabajo debe continuar en la noche o a medida que cambian las condiciones, este cambio debe anotarse como un paso o etapa, especificando los riesgos asociados a trabajar de noche y, se deben implementar los controles respectivos o en su defecto se debe confeccionar un nuevo ART por el cambio de las condiciones.
- El ART puede enmendarse durante la jornada, adjuntando un anexo al ART original e identificando los cambios. Siempre y cuando estén todos los trabajadores informados de los riesgos y firmados en los registros correspondientes. Una ART no puede enmendarse (cambiar contexto).
- En el desarrollo del ART, se debe involucrar a todos los empleados que participarán en el trabajo y será liderada por el responsable de la tarea.
- Mediante el proceso de participación de los involucrados, el Análisis de Riesgos del Trabajo entregará:
 - Una actitud mejorada por parte de los trabajadores cuando se les pida que sean parte de la ejecución.
 - Los detalles del trabajo diario se analizan y discuten.
 - Coordinación de actividades de trabajos adyacentes.
 - Capacitación en seguridad del trabajo para empleados nuevos.

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- Observación de la tarea.
- Instrucciones de seguridad previa al trabajo.

- El supervisor del contratista, al igual que los trabajadores involucrados en el trabajo, completan el análisis de riesgo del trabajo y lo firman.
- El contratista es responsable de completar los formularios de ART usando el proceso para identificar los pasos, los riesgos, las evaluaciones y el control para obtener la aprobación de EGP previo al comienzo del trabajo.

7.2 PERMISOS DE TRABAJO

El Permiso de Trabajo es un documento mediante el cual un dueño de área, instalación o equipo autoriza a otra persona a realizar una actividad determinada, que signifique la intervención de su área instalación o equipo, además representa un sistema destinado a proteger a las personas, medio ambiente y propiedad.

EGP dispone de formatos para los permisos de trabajo, lo cuales pueden ser utilizados por el contratista.

Las siguientes actividades, deben generar permiso de trabajo:

- Maniobras de izaje (que excedan las 10 toneladas e izamientos en tandem);
- Ingreso a espacios confinados;
- Trabajos en caliente;
- Energización y desenergización de equipos eléctricos (Aislamiento y bloqueo);
- Trabajos en Altura;
- Trabajos cruzados;
- Operación de equipos radioactivos, trabajo con radiografías, gammagrafía y material explosivo;
- Actividades específicas definidas por el Equipo HSEQ del Proyecto.

7.2.1 Pasos de acuerdo con los Procedimientos

Especificar el trabajo a realizar, los empleados que se requieren y los equipos a usar.

Los permisos de trabajo deben ser firmados por el supervisor contratista responsable de la tarea, por el supervisor del área de EGP. Las precauciones a tomar se especifican mediante el llenado del formulario del permiso correspondiente. EGP otorga el permiso para comenzar el trabajo mediante

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la firma del formulario de permiso que se debe retener en el lugar de trabajo. Solo se permite que los empleados nombrados en el permiso ejecuten el trabajo.

- Preparar el trabajo en consideración de las precauciones de seguridad especificadas en el permiso de trabajo, instruir a los empleados, entregar las herramientas y EPP necesarias. Finalmente chequear todas las precauciones y realizar el trabajo.
- Luego de la finalización del trabajo o diariamente al término de cada turno el permiso de trabajo debe devolverse al emisor.

Un permiso no debe considerarse como una garantía incondicional de ejecución segura de un trabajo. Si las condiciones, bajo las cuales se emitió un permiso de trabajo cambian, se deberá detener el trabajo e informar de las condiciones cambiadas al supervisor a cargo del área o jefe de la empresa contratista.

8. REQUERIMIENTOS HSEQ DE EGP

El presente Capítulo contiene la descripción de las obligaciones en temas de Calidad, Medio Ambiente y Salud y Seguridad en las labores de Proyectos en Construcción, cuyo objetivo es evitar y prevenir incidentes y enfatizar las buenas prácticas en materia de trabajo.

8.1 DISEÑO, CONSTRUCCION Y PRECOMISIONAMIENTO

El Contratista es responsable de la administración de los riesgos durante el desarrollo de su Contrato, incluyendo las etapas de diseño, aprobación, adquisiciones, construcción y precomisionamiento.

Por lo anterior, el Contratista en todas las etapas de su Contrato, desde la ingeniería, adquisiciones, movilización, construcción, precomisionamiento y desmovilización, deberá desarrollar, implementar y demostrar evidencia de que:

- La Calidad de la identificación y evaluación de riesgos en Salud, Seguridad y Medio Ambiente es evaluada, a través, de procesos de revisión y aprobación.
- El proyecto a ser desarrollado, cuenta con sistemas de gestión documentados y debidamente comunicados, que permiten el cumplimiento de las especificaciones para las distintas etapas.

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- Los equipos, sistemas, procedimientos y actividades críticas son identificadas y registradas. Esta información es utilizada para el diseño, construcción y precomisionamiento.
- Para la mejor gestión y control en terreno sobre las cuadrillas de trabajo, un capataz deberá supervisar una cantidad de trabajadores adecuada la cual permita una visión eficiente y controlada de los trabajos y riesgos.
- En sectores remotos no se permitirán trabajos en donde se encuentren personal solo, sin supervisión ni comunicación.
- Las instalaciones y equipamientos nuevos o modificados son sometidos a revisiones documentadas antes y después del precomisionamiento, para verificar la aplicación de los estándares y requerimientos de diseño.

Cuando lo estime conveniente EGP podrá revisar el desarrollo e implementación de los puntos anteriormente solicitados, así como la documentación referente a registro de evaluación de riesgos; registro de incidentes; registro de cuasi accidentes; registro de normas, registro de elementos críticos, procedimientos; registro de revisiones de planos, órdenes de compra y especificaciones; informes de seguimiento y registro de revisión de lecciones aprendidas en proyectos anteriores.

8.2 ALCOHOL Y DROGAS

Está estrictamente prohibido presentarse en los recintos de EGP, bajo la influencia de alcohol o de drogas, considerando lo siguiente:

- Esto podrá ser pesquisado por personal competente, mediante un test aleatorio. La negativa del afectado al cumplimiento de esta disposición dará motivo a su expulsión inmediata del recinto de trabajo, pudiendo requerirse, si fuera necesario, el auxilio de la fuerza pública para hacerla cumplir, en conformidad con los procedimientos previstos en la legislación vigente.
- Prohibase la introducción, distribución y consumo de bebidas alcohólicas, drogas y estupefacientes en los recintos de EGP y todo juego de azar con apuestas de dinero o bienes de cualquier especie.
- El Contratista retirará inmediatamente y en forma permanente a cualquier persona que no cumpla con lo establecido en este punto.
- El Contratista retirará a cualquier persona sobre la cual se sospeche el consumo de Alcohol y Drogas o cuando ocurra un incidente o accidente en que éstas sean un factor influyente.

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- Queda estrictamente prohibido la conducción bajo la influencia del alcohol, en estado de ebriedad, bajo consumo de drogas y estupefacientes que puedan generar somnolencia.

NOTA: Se debe Considerar el consentimiento del trabajador para toma de examen de alcohol y drogas.

8.3 ELEMENTOS DE PROTECCIÓN PERSONAL (EPP)

Es obligación del Contratista y su Supervisión proporcionar y controlar el uso del equipo y/o elementos de protección personal (EPP) y el correspondiente cumplimiento de los estándares de seguridad del Proyecto en Construcción o Parques en Operación y de las Normas Chilenas Oficiales de Salud y Seguridad para los equipos y/o elementos de protección oficial.

La empresa hará entrega de los EPP a los trabajadores de Contratistas, sin costos para el trabajador y deberá quedar registrada y firmada por cada trabajador en señal de recepción y conformidad.

No obstante, lo anterior, EGP o su representante podrán exigir un tipo específico de equipo de protección personal para aquellos trabajos que estime conveniente.

El Contratista deberá proporcionar a su personal, al menos, los siguientes elementos de protección personal como mínimo:

- Casco de Seguridad, con cubre nuca, con el nombre y logotipo de la Empresa, en el interior debe mantener adherido un listado con los números telefónicos de emergencia del Proyecto, y cumplir con los estándares establecidos en la NCh 772 o ANSI Z 89.1.
- Botines de Seguridad caña alta (estándar), con puntera de acero para trabajos generales y sin acero (composite) para los eléctricos y botas de agua con punta de seguridad. No está permitido el uso de zapatos caña baja. Los zapatos de seguridad deben cumplir con el estándar establecido en la NCh 1.301 o ANSI Z 41.1
- Lentes de Seguridad con protección UV, e impacto (oscuro para el día y claro de noche o para interior de recintos). Los lentes de seguridad deben cumplir con el estándar establecido en la NCh 461 o ANSI Z 87.
- Chaleco reflectante o tipo geólogo de preferencia color naranja, rojo o amarillo en las áreas de trabajo e instalaciones.
- Chalecos de alta visibilidad con reflectantes para personal en trabajos especiales tales como; señaleros, guardias, riggers, bandereros, coleros, en labores subterráneas etc.

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- Protector solar para trabajadores expuestos a la acción de los rayos UVA y UVB.
- Ropa de trabajo apta para las condiciones de trabajo y clima (manga larga, con logotipo de su Empresa en un lugar visible). En la medida de lo posible se recomienda utilizar ropa con filtro UV.
- Protección auditiva de acuerdo al riesgo expuesto.
- Guantes de Seguridad (de acuerdo a la actividad que desempeña).
- Respiradores con filtro de acuerdo al contaminante existente en el lugar de trabajo (si corresponde).
- Elementos de Bloqueos del tipo LOTO para contratistas (tarjetas, candados, estaciones de bloqueo, etc.)

El equipo de protección personal, ropa de abrigo, u otros elementos de protección personal, debe tener una Certificación de Calidad, con sus respectivas certificaciones según D.S. 18.

Podrá existir un tipo de Contrato en el cual no se requiera el uso de algunos o todos los elementos de protección personal antes mencionados. En tal caso, la excepción de su uso deberá ser autorizada por EGP por escrito.

El Contratista deberá:

- Controlar el uso correcto, calidad y mantención oportuna del EPP.
- La empresa contratista deberá capacitar a sus trabajadores sobre el uso específico de cada elemento de protección personal, del cuidado y la mantención de los mismos.
- Los elementos de protección personal deben siempre mantenerse en buen estado de uso, como también su calidad deberá ser similar a la de EGP y podrá ser controlada en cualquier momento por la Supervisión de EGP.
- El contratista deberá indicar y llevar a cabo registros de entrega, recambio e inspección de los EPPs.
- La falta o mal estado del EPP puede ser causal inmediata de la suspensión temporal de trabajos hasta que sea subsanada esta condición.
- La empresa contratista deberá elaborar una matriz v/s, cargo, verificando que el EPP seleccionado sea el correcto para los trabajos que va a ejecutar.
- Los EPP contaminados con elementos dañinos para el medio ambiente se dispondrán conforme a la legislación vigente referente a disposición de residuos de tales características.

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- A modo de identificar los cargos de las personas que trabajan en terreno, se deben definir colores de cascos distintos para los siguientes cargos:
 - Supervisor, administrador o jefe de terreno.
 - Capataz.
 - Trabajadores en general.
- Todos los prevencionistas de riesgos de una obra, faena o central de generación utilizarán chaleco con cintas reflectantes, o del tipo geólogo color rojo u otro color indicado por EGP.
- Todos los Rigger de la obra utilizarán chaleco con cintas reflectantes, o del tipo geólogo color verde u otro color indicado por EGP.
- Los demás elementos de protección personal no identificados en el listado anterior, deben estar definidos por cargo y se determinarán según el resultado de las evaluaciones de riesgos.
- Los elementos de protección personal deben poseer la certificación de calidad entregado por un organismo nacional debidamente autorizado para este fin en conformidad con lo dispuesto en el DS N° 594 y el DS N° 18.
- Es responsabilidad de cada empresa que sus visitas, proveedores, clientes, etc., al ingresar a faena o a un área de trabajo, lo hagan con los Elementos de Protección Personal básicos indicados en el presente estándar y todos los necesarios para proteger de los riesgos a los que se expongan.
- Los Elementos de Protección Personal deben ser entregados sin costo a cada trabajador y su reposición se efectuará dependiendo de:
 - Desgaste natural: Se entiende cuando el elemento presenta un desgaste que le ha hecho perder su condición para proteger eficazmente. Algunas características que exigen recambio son: Deformación, orificios, separación de sus partes constituyentes (Deshilvanado, rasgado, etc.), su uso se torna incómodo o se encuentran rayados en el caso de los lentes de seguridad.
 - Deterioro prematuro por uso o uso indebido: El elemento ha sufrido un deterioro que le hace perder su condición original no siendo recomendable su uso.
- Todos los trabajadores deben estar capacitados en el correcto uso de los Elementos de Protección Personal.
- Se debe verificar en terreno a través de observaciones de conducta el correcto uso de los Elementos de Protección Personal por parte de los trabajadores.

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- La obligatoriedad de usar Elemento de Protección Personal debe estar debidamente señalizada en cada frente de trabajo.
- Cada empresa debe inspeccionar los EPP a intervalos preestablecidos, utilizando para ello una lista de chequeo por EPP que permita revisar todos sus componentes.
- Los Elementos de Protección Personal dieléctricos tales como: Guantes y manguillas de MT y AT deben ser sometidos cada 6 meses a pruebas de certificación en laboratorio de un organismo competente a fin de garantizar su aislamiento. Debe estar siempre disponible en terreno la evidencia de la certificación de cada guante y manguilla.
- Las personas expuestas a trabajos que involucren riesgos de arco eléctrico, debe hacer uso con ropa de trabajo ignífuga, Guantes dieléctricos, alfombra dieléctrica, careta facial (MT-AT) Calzados dieléctricos y casco. Los criterios para implementación de ropa ignífuga están definidos en la siguiente tabla:

TIPO DE PROTECCIÓN	EQUIPAMIENTO MÍNIMO	PROCESOS
Tipo 0 Sin protección ignífuga.	Ropa de algodón + EPP	Toda actividad que se realice sin ingresar al sector delimitado como zona de trabajo con riesgo de calor, fuego y salpicaduras de material fundido, sin proximidad a punto energizado, y siempre que se transite por sectores habilitados.
Tipo 1 Requiere protección 10 cal/cm2 (*)	Buzo ignífugo 10 cal/cm2 o Pantalón + Camisa 8 - 10 cal/cm2 (adicional temporada chaqueta ignífuga 20 cal/cm2)	Todo actividad que implique ingresar al sector delimitado como zona de trabajo con riesgo de calor, fuego y salpicaduras de material fundido, estando en proximidad a punto energizado, pero sin intervención directa sobre algún componente eléctrico.
Tipo 2 Requiere protección de 30-40 cal/cm2	Buzo ignífugo 3040 cal/cm2 o Pantalón + Camisa 8 - 10 cal/cm2 y chaquetón ignífugo 40 cal/cm2	Todo trabajo que este en proximidad a algún punto energizado e intervenga algún componente eléctrico en una subestación, y por tanto se ingresa obligatoriamente al sector delimitado como zona de trabajo con riesgo de calor, fuego y salpicaduras de material fundido. Toda actividad que implique ingresar al sector delimitado como zona de trabajo con riesgo de calor, fuego y salpicaduras de material fundido.

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		estando en proximidad a punto energizado, e interviniendo directamente sobre algún componente eléctrico.
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8.4 VEHÍCULOS Y MAQUINARIA PESADA

Este estándar es aplicable a todos los vehículos y a la maquinaria pesada utilizados durante el desarrollo de una obra, faena o servicio donde el mandante principal corresponda a una empresa ENEL.

8.4.1 Vehículos Livianos

Se consideran como vehículos livianos, los que pesen hasta 3.500 Kg. Camionetas, mini buses, van, y minibús hasta 12 asientos incluyendo al conductor.

Camionetas deberán cumplir como mínimo el siguiente estándar:

- Ninguna camioneta podrá transportar más de cuatro pasajeros y estos deben contar con cinturones de seguridad de tres puntas para todos los ocupantes.
- Tracción 4x4.
- Antigüedad máxima 5 años o 150.000 km. (Salvo que se requiera una antigüedad distinta debido a compromisos o características específicas del proyecto)
- Aire acondicionado y calefacción en buen estado.
- Alarma de retroceso operativa.
- Airbag delantero conductor y copiloto.
- EBD (Reperto electrónico de frenado) y BAS (Sistema de Asistencia de frenado)
- Barras anti vuelcos internas y externas certificadas.
- Doble neumático de repuesto.
- Malla de protección luneta trasera.
- Cuñas de estacionamiento.
- Chaleco reflectante color amarillo.
- Gata de levante y llave para cambio de rueda.
- Botiquín.
- Extintor de incendios operativo.
- Documentación correspondiente al vehículo al día, según ley de tránsito (padrón, revisión técnica, permiso de circulación y seguro obligatorio).

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- Contar con check list diario.
- Registro de mantenencias al día.
- En caso de Parques situados donde exista condiciones climáticas con nieve, se solicitará cadenas, una frazada o manta térmica, una pala y un juego de herramientas (alicate y destornilladores cruz y paleta).
- **EGP Chile podrá solicitar a las empresas contratista la incorporación de cualquier accesorio según la evaluación de riesgos en el sitio.**

8.4.2 Vehículos de Carga

Camiones deberán cumplir como mínimo con el siguiente estándar:

- Antigüedad de 6 años máximos y/o 200.000 km recorrido máximo.
- Cinturón de seguridad de tres puntas y en buen estado.
- Alarma de retroceso operativa.
- Neumáticos en buen estado (no se permitirá el recauchado).
- Aire acondicionado y calefacción en buen estado.
- Gata de levante y llave para cambio de rueda.
- Neumático de repuesto en buen estado.
- Botiquín.
- Extintor de incendios operativo.
- Cuñas.
- Contar con check list diario que incluya accesorios de levante (izaje), según aplique.

En el caso de vehículos pesados los requisitos en relación a antigüedad, km u hora de uso, se definen en las bases administrativas del contrato. Sin perjuicio de esto, no se autorizan vehículos pesados con más de 6 años de antigüedad o 200.000 Km.

8.4.3 Maquinaria Pesada (equipos de trabajo)

Vehículo o maquinaria pesada: Se considera como vehículo pesado todo aquel cuyo peso bruto vehicular es superior a 3.500 kg.

Todo conductor de vehículo u operador de maquinaria pesada perteneciente al contratista, deberá tener licencia municipal vigente y credencial autorizada por EGP para conducir u operar dentro de las instalaciones.

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Para la obtención de la autorización de EGP, el operador o conductor del contratista deberá someterse a los procedimientos de rigor y calificación que EGP Chile estime conveniente para el efecto.

El conductor deberá ceñirse a lo dispuesto en la Ley de Tránsito N°18.290; y los límites de velocidad establecidos en cada Proyecto en Construcción y Parques en Operación y a las presentes normas.

El operador de maquinaria pasada debe cumplir a lo menos con los siguientes requerimientos:

- Autorización Interna del Proyecto o Parque en que realizará labores.
- Usar cinturón de seguridad, mientras el equipo está en operación.
- Conocer sus procedimientos de trabajo.
- Utilizar sus Elementos de Protección Personal que corresponda, como casco, chaleco reflectante, lentes, u otros que considere profesional de HSEQ.
- No podrá poner en marcha el motor a menos que esté sentado en el asiento del conductor con cinturón de seguridad abrochado.
- No debe permitir que otras personas suban al equipo a menos que éste haya sido diseñado para tener más de un ocupante.
- No podrá salir del equipo cuando se encuentra en movimiento o con carga suspendida o abandonar el vehículo en lugares donde estén operando otros equipos o personas trabajando.
- Fumar o hablar por teléfono celular mientras está operando los controles.

Los vehículos deben poseer una hoja de vida donde se anoten todas sus mantenciones y revisiones preventivas.

El vehículo, en general, (Carrocería y chasis) más todos sus componentes deben permanecer en buen estado y correcto funcionamiento. Entre sus componentes están:

- Aire acondicionado y calefacción.
- Airbags delanteros conductor y copiloto.
- Malla de protección en luneta trasera.
- Luces.

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- Alza vidrios.
- Limpiavidrios.
- Asientos.
- Alarma y luces de retroceso.
- Tablero y sus indicadores.
- Bocina operativa y efectiva.
- Cinturón de seguridad de tres puntas.
- Neumáticos, incluidos el o los 2 de repuesto.

EGP podrá solicitar a las empresas contratistas la incorporación de cualquier accesorio según sea la evaluación de riesgos en el sitio.

En los vehículos debe respetar el diseño de fábrica, prohibiéndose realizar adaptaciones interiores, especialmente instalar asientos adicionales.

En el caso de vehículos pesados los requisitos en relación a antigüedad, km u hora de uso, se definen en las bases administrativas del contrato. Sin perjuicio de esto, no se autorizan vehículos pesados con más de 6 años de antigüedad o 200.000 km.

8.4.4 Transporte de Materiales

Toda carga o material transportado que sobrepase a lo largo 1 mt. ó 0,50 mts. de ancho de la carrocería del vehículo, deberá llevar banderas rojas y luces indicando las zonas de riesgo. Adicionalmente el contratista deberá escoltar al vehículo cargado, dependiendo de la carga por adelante y por detrás.

- Todo transporte de tuberías debe contar con soportes de contención lateral, frontal y trasera. Al cargar tuberías, estas nunca deben sobrepasar las contenciones establecidas.
- Todo vehículo del contratista que transporte escombros, tierra, ripios, arenas, chatarras, desperdicios, etc., deberá tener barandas y lonas para cubrir la carga para prevenir la caída de material.
- El encarpado del vehículo deberá ser de un sistema que impida que el trabajador deba exponerse al trabajo en altura sin un sistema de protección ante caídas.

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- El vehículo que transporta cilindros de gases como oxígeno, acetileno, hidrógeno, gas propano o cualquier cilindro que contenga algún tipo de gas comprimido, deberá transportarlos de manera vertical, contar con barandas y un dispositivo de amarra o sujeción (cadenas, estrobo, etc.) lo suficientemente seguro para evitar la caída de los cilindros. No se aceptará el uso de alambres o cordeles inapropiados como medio de sujeción.
- Toda carga que sea transportada deberá estar estibada y asegurada para el traslado correspondiente; en caso de una sobredimensión o sobre carga, esta deberá contar con los permisos correspondientes de la dirección de Vialidad.

8.4.5 Transporte de Pasajeros

El transporte del personal se deberá hacer únicamente en buses, minibuses, o furgones, dependiendo del número de personas a transportar, y en vehículos de acuerdo a los estándares permitidos en terreno.

Para el caso de vehículos livianos, el tránsito por caminos rurales sin pavimentar, caminos con nieve o hielo se usarán vehículos de doble tracción (4x4). Para vehículos como van, mini buses y utilitarios se debe evaluar la factibilidad técnica

de conseguir este tipo de tracción. Asimismo, deben estar provistas por una barra exterior e interior (barra antivuelco), las cuales deben estar certificadas por un organismo nacional autorizado.

Los conductores o chóferes de vehículos destinados exclusivamente al transporte de personas deben practicarse el examen psicosenométrico para comprobar su idoneidad para la función. Esto no excluye al proceso de selección destinado a verificar las competencias.

Los vehículos para transporte de personal y sus conductores deben estar debidamente autorizados por el Ministerio de Transporte según legislación vigente.

Queda estrictamente prohibido el transporte del personal sobre la carga, en pick-up de camionetas o en vehículos motorizados que no estén diseñados para este fin.

Los buses, minibuses y las VAN no deben exceder los 5 años de antigüedad ni los 150.000 km de recorrido, sin embargo, posterior a los 150.000 Km el contratista debe entregar un informe de mantenimiento del representante de la marca y/o taller autorizado por la misma, que garantice el buen estado del vehículo.

Deberán cumplir como mínimo con el siguiente estándar:

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- Todos los asientos con cinturón de seguridad en buen estado y funcionales.
- Queda prohibido el uso de neumáticos recauchados o con malformaciones visibles.
- Alarma de retroceso operativa.
- Accesorios: Gata, llave de rueda, neumático de repuesto en buen estado, pala, linterna, botiquín, cuñas, y extintor de incendios en buen estado.
- Sistema calefacción y aire acondicionado en buen estado.
- Carrocerías y Asiento del chofer original otorgado por el fabricante del vehículo.
- **EGP Chile podrá solicitar a las empresas contratista la incorporación de cualquier accesorio según la evaluación de riesgos en sitio de trabajo de Proyecto/Planta.**

Los buses no pueden dejar a los pasajeros en las áreas de trabajo, solo deben llegar a los estacionamientos habilitados. En ningún caso se podrán utilizar como estacionamiento lugares que no están expresamente habilitados para este fin.

En caso de parques con grandes extensiones, se debe analizar la situación específica con profesional HSEQ.

8.4.6 Otras Consideraciones para Transporte

8.4.6.1 Mantenimiento de vehículos y equipos

El Contratista debe mantener actualizado registro de mantenimiento de sus vehículos y equipos.

El equipo debe ser inspeccionado en forma diaria y recibir la mantenimiento que sea necesaria para asegurar su buen funcionamiento.

El informe diario (check list) debe ser firmado por el operador del equipo, jefe de área y por el jefe de mantenimiento.

Ejemplos: Inspección de frenos, luces de señalización, pasadores giratorios, cilindros hidráulicos, mangueras, anillos de retención, pernos de amarra principal, etc.

No se debe lubricar ni hacer ajustes mecánicos a la unidad mientras ésta se encuentre con su motor encendido.

No reparar ni apretar las mangueras hidráulicas o fittings cuando:

- El sistema está con presión.
- El motor esté funcionando.
- Los cilindros hidráulicos del equipo están cargados.

8.4.6.2 Recarga de combustible

El abastecedor de combustible deberá estar certificado por la Superintendencia de Electricidad y Combustibles (SEC) y autorizado por el departamento de HSEQ de EGP Chile o Proyecto.

El vehículo deberá detener el motor antes de cargar combustible, prohibiéndose el uso de teléfonos móviles al momento de la carga de combustible.

8.4.6.3 Consideraciones generales

Los vehículos deben poseer toda su documentación vigente (Revisión técnica, permiso de circulación y seguro).

Los vehículos deben poseer una hoja de vida donde se anoten todas sus mantenciones y revisiones preventivas.

El vehículo, en general, (Carrocería y chasis) más todos sus componentes deben permanecer en buen estado y correcto funcionamiento. Entre sus componentes están:

- Aire acondicionado.
- Luces.
- Alza vidrios.
- Limpiavidrios.
- Asientos.
- Alarma y luces de retroceso.
- Tablero y sus indicadores.
- Bocina operativa y efectiva.
- Cinturón de seguridad.
- Neumáticos, incluidos el o los de repuesto.

El uso de remolques o carros de arrastre están prohibidos

En los vehículos debe respetarse el diseño de fábrica, prohibiéndose realizar adaptaciones interiores, especialmente instalar asientos adicionales.

Los vehículos deben poseer cinturones de seguridad en todos sus asientos.

Todo equipo automotor debe tener una señal audible hasta una distancia de a lo menos a 10 metros alrededor del equipo, para avisar la maniobra de retroceso.

Los vehículos livianos y pesados, deben llevar instalado aire acondicionado. Para el caso



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de los vehículos pesados, deben poseer una cabina hermética, que permita alcanzar y mantener un ambiente de confort.

Los vidrios deben permitir una perfecta visibilidad desde y hacia el interior de los vehículos.

Los vehículos deben estar equipados con neumáticos en perfecto estado. No podrán circular con neumáticos que tengan sus bandas de rodadura desgastadas o hayan perdido sus condiciones de adherencia al pavimento, ni con reparaciones que afecten la seguridad.

Los neumáticos deben tener una banda de rodamiento cuyo dibujo tenga a lo menos 2,5 mm de profundidad. No se permite el uso de neumáticos recauchados y/o redibujados.

No se permite el transporte de personas que excedan el máximo permitido para los vehículos.

Sin perjuicio de esto, el número de pasajeros está sujeto a la cantidad de cinturones de seguridad de los vehículos. Debe estar totalmente separado el compartimiento de carga de los pasajeros.

Queda estrictamente prohibido el transporte de carga, tales como: Equipos y materiales, en los vehículos destinados al transporte de personal.

Los vehículos, livianos y pesados y la maquinaria deben poseer el equipamiento de seguridad exigido por ley:

- Extintor.
- Botiquín (Sin medicamentos).
- Triángulo.

• Cuando el servicio, obra o faena se ejecute bajo condiciones climáticas adversas tales como: nieve, hielo, lluvias, altas temperaturas o en lugares rurales apartados de las ciudades que dificulten el acceso a asistencia de cualquier tipo que se requiera, los vehículos deben estar equipados con: Pala, frazadas, dos neumáticos de repuesto, piola de arrastre de acero con gancho, cuñas para ruedas, cadenas para la nieve, agua para beber, linterna y una caja para el almacenamiento de este equipamiento.

Los vehículos a utilizar bajo condiciones de nieve, debe ser de color rojo.

Debe existir un procedimiento para el uso de vehículos cuando:

- El área geográfica donde se desarrolla el servicio, obra o faena implica conducir por caminos rurales de tierra o sin pavimento.

- La conducción debe realizarse bajo condiciones climáticas adversas, como nieve, neblina o lluvia.

Debe existir un programa de inspecciones, que considere el chequeo de los componentes y equipamiento de seguridad de un vehículo. Para el caso de vehículos pesados, la inspección será diaria.

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Debe existir un proceso de identificación de peligros y evaluación de riesgos para el uso de vehículos.

Ninguna persona puede conducir un vehículo motorizado, sin poseer una licencia expedida por la autoridad competente.

El tipo de vehículo que conduzca una persona, debe ceñirse al tipo de licencia que posea. Los trabajadores de otros países, que permanezcan con VISA de trabajo en Chile, podrán conducir un vehículo liviano durante el plazo de la respectiva autorización de trabajo, portando la licencia vigente de conductor, otorgada según las leyes de su país, que sea equivalente a la Licencia que corresponda.

Los conductores de vehículos deben ser capacitados permanentemente en temas relacionados con la conducción. Para ello, deben establecerse programas formales de capacitación.

Todos los vehículos livianos y pesados, estarán ingresados a un programa de mantenimiento, del cual debe existir un registro que evidencie dicho plan y pueda trazar mantenimientos o intervenciones pasadas.

Requisitos para conductores de transporte de personal:

- Portar licencia profesional tipo A.
- Experiencia mínima de 5 años como conductor.
- Examen preventivo de salud.
- Curso manejo a la defensiva.
- Examen psicotécnico.

Además de cumplir con todo lo establecido en este estándar, todos los vehículos livianos deben cumplir como básico la Ley N°18.290.

8.5 USO DE MATERIALES PELIGROSOS

Previo al inicio de las actividades de Construcción de los proyectos, el Contratista deberá hacer llegar al Área de HSEQ la nómina de materiales peligrosos que mantendrá en terreno, en el formato oficial que estime el Proyecto, adjuntando la hoja de seguridad de cada sustancia escrita en español, de acuerdo con la NCh 2.245, las cuales deben validadas por HSEQ de EGP.

En el caso de tener que incluir un nuevo material peligroso se deberá informar a EGP y enviar la información requerida.



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En caso de ser una sustancia prohibida por la Legislación Chilena, el Contratista deberá presentar los permisos y aprobación de utilización de la sustancia antes de ingresar al Parque.

Cualquier trabajo a realizar por el contratista en zonas o áreas de gases o ambientes tóxicos y/o en estanques de almacenamiento, ductos, equipo de bombeo o instalaciones conteniendo petróleo, reactivos, etc., deberá tener la autorización de EGP y dar cumplimiento a procedimientos de bloqueo y espacios confinados y/o permiso de trabajo aprobado y establecido en el proyecto.

Todo material y/o sustancia peligrosa que emplee el contratista deberá ser almacenado en una bodega construida especialmente para ello, con material incombustible, cierre perimetral tipo malla ACMA o similar, acceso restringido, con ventilación, buzón con las hojas de seguridad, piso impermeable (radier de hormigón o lámina de HDPE) y con extintores de incendios. Deberá ser techada y aislada de las otras instalaciones y contará con la señalización correspondiente, que indique los peligros que encierra. Las dimensiones serán en función del stock crítico a almacenar durante todas las etapas del proyecto.

En todo estanque y recipientes o depósitos para el almacenamiento de materiales o sustancias químicas peligrosas, inflamables, combustibles o explosivos, en donde se pueda generar o acumular electricidad estática, se deberán instalar dispositivos a tierra, electrificación antiexplosiva, extintores de acuerdo a la carga calórica, señalizada, buzón de hojas de seguridad y piso impermeable.

Las sustancias químicas peligrosas que se reciban en las bodegas de almacenamiento, deberán guardarse en envases originales de fábrica, cumpliendo en forma estricta las recomendaciones del fabricante para el manejo, almacenamiento y conservación de cada producto (DS N°43 y DS N°148).

Todo material y/o sustancia peligrosa que utilice durante la jornada de trabajo a la intemperie, incluso el sobrante, deberá ser ubicado, ordenado y debidamente rotulado de tal manera que no produzca peligro ni riesgos de accidentes y no obstaculice el tráfico de personas, vehículos, accesos a instalaciones, maquinarias y/o grifos contra incendio, lugares de trabajos, etc.

El contratista que reciba, transporte y almacene cilindro de gas, deberá cumplir con las Normas emanadas de la Superintendencia de Servicios Eléctricos, de Gas y Telecomunicaciones, División



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de Gas, Normas SEGTEL 7-G. N74. Los cilindros se deben almacenar separados, verticales, con su protector, señalizados, en bodegas de cierre de malla, buzón con hojas de seguridad. El transporte al interior de la faena debe ser en vehículos acondicionados, y amarrados, y su manipulación manual es en carros, codificados. Se deberán inspeccionar estos equipos mensualmente por su código y efectuar un registro de pre uso.

Todo contratista que transporte, manipule, almacene, instale o emplee equipos, fuentes o elementos radioactivos, deberá cumplir con la Normas establecidas por la Comisión Chilena de Energía Nuclear y del Servicio de Salud respectivo y lo que establece el "Decreto Supremo N°3, Reglamento de Protección Radiológica de Instalaciones Radioactivas", además de la autorización del representante de EGP

Todo trabajo en las áreas de influencia del Parque o proyecto, que involucre equipos, fuentes o elementos radiactivos, deberá ser coordinado, informado y autorizado con al menos 24 horas de anticipación por EGP o su Representante.

Se deberá realizar curso de capacitación en Protección Radiológica al personal que manipulará equipos radiactivos y/o supervisará dichos trabajos, por un organismo certificador, debidamente autorizado por el Servicio de Salud respectivo. Será requisito esencial presentar a EGP o su representante las autorizaciones o certificados respectivos antes de realizar cualquier maniobra o manipulación de equipos radioactivos.

Toda persona ocupacionalmente expuesta deberá estar instruida respecto de los procedimientos del proyecto en estas materias, portar Dosímetro durante su jornada de trabajo, contar con Medidor/Detector de Radiaciones Ionizantes debidamente calibrado, Certificado de Historial Dosimétrico y Licencia de Operador al día con Resolución Sanitaria correspondiente.

El Contratista que deba emplear explosivos, debe solicitar autorización previa a EGP y cumplir con toda la Reglamentación Chilena vigente al respecto y las Normas estipuladas en, Decreto Supremo N°132 y aquellas normas emanadas por la Comandancia de Guarnición del EjEGPito de Chile.

El Responsable HSEQ de EGP podrá, a pesar de existir una autorización previa, suspender o postergar el inicio de la acción si considera que las condiciones de seguridad no son suficientes o no son adecuadas.

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8.5.1 Manejo de Sustancias Peligrosas

En construcción se utilizan muchos productos químicos que bajo ciertas circunstancias pueden presentar riesgos para la Salud o el Medio Ambiente Natural y Humano. El personal debe comprender y evaluar los peligros asociados con estos productos antes de usarlos o exponerse a ellos.

El hecho que sea riesgoso no significa que no puedan usarse. Lo importante es que los riesgos deben ser reconocidos, evaluados y controlados al menos de la siguiente manera:

- Limitando el tiempo de exposición.
- Utilizando elementos de protección personal (EPP).
- Controlando el riesgo en su fuente, por ejemplo, sistema de captación.

8.5.2 Transporte de Sustancia Peligrosas

En el traslado de sustancias peligrosas desde las bodegas del proveedor hasta las instalaciones del proyecto, el transportista deberá cumplir con las disposiciones del Decreto Supremo N° 298/95 del Ministerio de Transportes y Telecomunicaciones que reglamenta el transporte de cargas peligrosas por calles y caminos.

Cualquier persona que desee ingresar sustancias peligrosas, deberá transportar las Hojas de Seguridad correspondientes y declararlas en la garita de acceso al proyecto.

Toda carga de sustancias peligrosas que sea destinada al proyecto, deberá llevar las respectivas hojas de seguridad desde su origen.

8.5.3 Almacenamiento de Sustancias Peligrosas

- Toda sustancia peligrosa debe estar almacenada y debidamente rotulada de acuerdo a D.S. 43 y NCh 2.190.
- El almacenamiento deberá considerar la distribución y separación adecuada de acuerdo a la información proporcionada en la Hoja de Seguridad de Sustancias Químicas.
- Las sustancias químicas peligrosas que se reciban en las bodegas de almacenamiento, deberán guardarse en los envases originales de fábrica, cumpliendo en forma estricta las recomendaciones del fabricante para cada producto.
- En los lugares de trabajo donde existan áreas en las que se encuentran almacenadas sustancias inflamables, combustibles o explosivos, como por ejemplo paños, se deberá

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colocar letreros y/o señales de avisos de advertencia de seguridad y de instrucciones de seguridad que indiquen la prohibición de fumar, introducir fósforos, dispositivos de llamas abiertas, objetos incandescentes y cualquier otra sustancia susceptible de causar incendio o explosión, de acuerdo con las normas respectivas.

- En todo equipo, sistema eléctrico, estructuras, estanques y recipientes o depósitos para el almacenamiento de materiales o sustancias químicas peligrosas, inflamables, combustibles o explosivos, en donde se pueda generar o acumular electricidad estática, se deberán instalar dispositivos a tierra.

8.5.4 Hoja de datos de Seguridad de productos químicos (HDS)

Conocida también como MSDS (Material Safety Data Sheet), proporciona información relativa a distintos aspectos que corresponden a seguridad, salud y protección del medio ambiente, durante el transporte, manipulación, almacenamiento y ante emergencias, desde el productor o proveedor de un producto químico al receptor y usuario, en esencia, proporciona conocimiento básico del producto y entrega recomendaciones sobre medidas de protección y acciones en el tratamiento de emergencias.

- Las bodegas, paños y policlínico (si existe) deberán mantener un catastro actualizado y ordenado alfanuméricamente de las Sustancias Peligrosas del Proyecto, con sus respectivas HDS.
- Toda empresa Contratista y/o Subcontratista debe comunicar a los proveedores en solicitudes de cotización de las sustancias peligrosas, que el envío de éstas debe venir acompañado de las respectivas Hojas de Seguridad de productos químicos.
- La empresa contratista debe asegurar que el proveedor complete y presente la Hoja de Datos de Seguridad respectiva en el formato de la NCh 2.245 antes de la compra. Estas deben ser enviadas a EGP para su aprobación previa a la compra.
- Toda HDS deberá estar siempre en idioma español, junto a otros idiomas, de ser necesario, por personal de contratistas.

8.6 USO EQUIPOS Y HERRAMIENTAS

- Debe existir un sistema de control o de registro para entrega y uso de una herramienta o equipo de uso manual a un trabajador a fin de permitir una adecuada gestión sobre su estado.

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- Los equipos y herramientas deben operar y estar de acuerdo a las condiciones que especifica el fabricante y lo definido en el manual de operación del equipo o herramienta.
- Se debe asegurar que todo el equipamiento, las herramientas y cualquier elemento utilizados para el desarrollo de los trabajos, que han sido adquiridos, arrendados u obtenidos de otra forma, estén en una condición segura, satisfactoria y que sean capaces de llevar a cabo las funciones para las cuales están destinadas.
- Si alguna herramienta u otro ítem de equipamiento, es calificado como inseguro o inadecuado para realizar los servicios a los que está destinado, debe ser reemplazada o reparada según los estándares, certificaciones y autorizaciones que correspondan.
- No está permitido utilizar herramientas hechizas o artesanales.
- Las herramientas, equipos y materiales deben ser inspeccionados a lo menos una vez por mes. La evidencia de esta inspección debe ser una cinta de un color adosada al equipo o herramienta. Dicho sistema de coloración mensual, se determina en el sitio donde se ejecute el servicio, la obra o faena.

Sin perjuicio de lo anterior, al inicio de una obra, faena o servicio, los equipos y herramientas deben ser inspeccionados, debiendo quedar un registro de dicha inspección.

- El Contratista deberá asegurar que todas las partes rotatorias o móviles de todas las herramientas y equipos estén adecuadamente resguardadas para prevenir el contacto accidental del personal. Todas las máquinas accionadas por electricidad deben ser suministradas en forma adecuada, inmediatamente accesible e identificable por el operador, su rápida detención y prevención para ser accionada nuevamente.
- Toda herramienta manual (eléctrica o no eléctrica) debe tener inspección periódica mediante código de colores, las cajas de herramientas se deben codificar y someter a revisión mensual de su contenido, no se aceptan machinas o herramientas hechizas, en cada caja debe existir un listado de las herramientas contenidas en ésta. Se debe indicar colores para que se mas fácil de supervisar en terreno.
- Toda herramienta o equipo eléctrico manual deteriorado o con cables eléctricos dañados se debe retirar inmediatamente del frente de trabajo.

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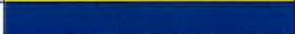

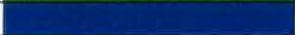
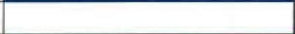



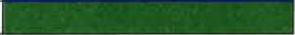
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- En el caso de herramientas eléctricas manuales, estas deberán tener un dispositivo de seguridad para emergencias y además estar conectadas a tableros alimentados por cables aéreos o subterráneos, aunque sean instalaciones provisorias, no se acepta cables o extensiones tiradas por el piso. (Monitores con protecciones térmicas y diferenciales).
- Queda estrictamente prohibido el uso de cuchillos cartoneros para el pelado de cualquier tipo de cables.
- Todo corte que se realice, deberá ser hacia el exterior del cuerpo y en lo posible sobre una superficie sólida que permita al trabajador evitar riesgos asociados.
- Todo tablero eléctrico debe tener cable a tierra y protección diferencial de 30 MA.
- Todo tablero debe contar con registro visible de revisión.
- Las herramientas y equipos auxiliares deben ser inspeccionados mensualmente por una persona calificada, designada por el Contratista, la cual debe tener calificaciones y conocimientos de las herramientas y de sus sistemas de control.
- La evidencia documentada de la inspección mensual de las herramientas, será mediante el uso de cinta adhesiva de un color para cada mes conforme a la tabla siguiente:

CÓDIGO DE COLORES MENSUAL		
ENERO	AZUL	
FEBRERO	BLANCO	
MARZO	VERDE	
ABRIL	AMARILLO	
MAYO	AZUL	
JUNIO	VERDE	
JULIO	AZUL	
AGOSTO	BLANCO	
SEPTIEMBRE	VERDE	
OCTUBRE	AMARILLO	
NOVIEMBRE	AZUL	
DICIEMBRE	VERDE	

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- Queda estrictamente prohibido el uso de herramientas hechizas o artesanales.
- Toda herramienta eléctrica deberá contar con un sistema de aislación de energías cuando no se encuentre en funcionamiento "Sistema de Paro Hombre Muerto".
- El contratista deberá mantener un registro de las herramientas y equipos asociados al proyecto y su condición de acuerdo a los registros previamente mencionados.

8.7 TRABAJO EN ALTURA

En el caso que se requiera la realización de trabajo en altura física, se deberá implementar un procedimiento de trabajo en altura y normas complementarias el cual tendrá como finalidad:

- Eliminar o minimizar el riesgo de fatalidad, lesiones e incidentes que resultan de los trabajos en altura.
- Fijar y normalizar el correcto uso de todos aquellos elementos y accesorios que obligatoriamente deben usarse para efectuar cualquier actividad de trabajo en altura, sin excepción alguna.
- Lograr que los diversos trabajos en altura se realicen con la máxima seguridad, evitando con ello la ocurrencia de accidentes por el no uso e incumplimiento de las disposiciones, reglamentos, normativas e instructivos que se dicten al respecto o se establezcan durante la ejecución de los trabajos.

Afecta a todo trabajo o actividad donde exista el potencial de una caída de más de 1,5 m de altura, sin descartar trabajos de menor altura, que, por su riesgo, se ocupe también este procedimiento.

Bajo esa altura se deberá considerar plataformas seguras de trabajo las que estarán diseñadas, calculadas, aprobadas e inspeccionadas de acuerdo a normativa vigente.

Este procedimiento interno se complementa con lo establecido en la Ley N° 16.744 sobre accidentes del trabajo y enfermedades profesionales y cualquier otra materia que tenga relación y sea de carácter oficial.

8.7.1 Responsabilidades ante Trabajos en Altura

El Contratista debe instruir en este procedimiento a los trabajadores que se desempeñen en actividades que requieren del uso de elementos de trabajo en altura (debe informar los riesgos al trabajador) Además será de su responsabilidad cumplir que el Procedimiento de trabajo en Altura definido para el Proyecto o Parque y que se cumpla en su totalidad.

El contratista debe contar con personal capacitado para actuar en caso de emergencia capacitada y acreditada para realizar trabajos de rescates en altura, esto especialmente para trabajos en la construcción y montaje de las Líneas de alta tensión y trabajos evaluados que ameriten estos controles.

8.7.2 Disposiciones para el uso de elementos y accesorios de Seguridad**8.7.2.1 Líneas de vida**

- Todos los equipos y sistemas de protección personal para riesgos de caídas en trabajos en altura deben estar certificados por un organismo autorizado, según se establece en la legislación vigente.
- Es obligación el uso de un(os) sistema(s) o equipo(s) de protección personal contra riesgos de caída para toda persona que deba realizar trabajos en altura.
- Deben existir cuerdas de vida horizontal y/o vertical o barreras de protección para permitir el adecuado aseguramiento de personas que se desplazan en altura de un punto a otro.
- Los puntos de anclaje y las líneas de vida tendrán una resistencia mínima de 2.226 kg o 22 kN.
- La materialidad de las líneas de vida se determinará en su momento, por el inspector técnico y el área de HSEQ de EGP, lo cual dependerá de si son permanentes, portátiles y de las condiciones climáticas, entre otras.
- Todas las escalas verticales deben tener implementada una línea de vida vertical, a fin de que cuando se realicen trabajos por sobre 1,5 metros sea usada con un sistema anticaída compuesto por arnés de seguridad tipo paracaidista con cola de vida y un carro de ascenso.
- Las cuerdas de vida, deben estar protegidas de los cantos vivos que puedan provocar su desgaste o rotura.
- La cuerda de vida debe ser tensada con un elemento de tensado de línea de a lo menos de 200 kg de torque.

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- La distancia máxima de una cuerda de vida debe ser de 15 metros entre extremos.
- El extremo libre de las cuerdas de vida se debe someter a una terminación que evite el deshilachado.
- Cualquier sistema de cuerda de vida y/o dispositivos de protección que estén dañados o presenten señales de deterioro, deben ser retirados del servicio y ser restituidos.
- Las cuerdas de vida horizontales deben ser usadas como máximo por dos personas entre soportes, a la vez.
- El supervisor a cargo de los trabajos debe instalar una tarjeta de validación en la línea de vida, la cual asegure la revisión diaria de esta. Dicha tarjeta debe ser color "VERDE", la tarjeta de color "ROJO" prohíbe la utilización de la línea de vida.

8.7.2.2 Andamios, plataformas de trabajo y canastillo

- Se debe delimitar la zona de trabajo que se encuentre bajo el área donde se realizan trabajos en altura para evitar golpes por posibles caídas de objetos, materiales o herramientas. La delimitación debe ser mediante barrera dura y señalización. Se instalarán letreros de advertencia de "Peligro Trabajo En Altura". De no poder cubrir toda la zona con barrera dura, se debe disponer una persona que vigile el área (loros vivos).
- Todas las formas de plataformas elevadas, portátiles, móviles y canastillos de trabajo deben ser confeccionados de acuerdo a un diseño, con su respectiva memoria de cálculo debidamente aprobado por un Ingeniero Calculista. Las soldaduras deben poseer ensayos que determinen su calidad.
- La capacidad máxima de carga estará señalizada con letreros visibles en la plataforma o canastillo.
- Las plataformas de trabajo deben permanecer limpias y ordenadas, no se acumularán artefactos en desuso, equipos o piezas que no se utilizan.
- Sobre la plataforma o andamio no deben existir elementos que permitan alcanzar una mayor altura, ejemplo, cajones, cajas, pisos, escalas portátiles, etc. La zona de tránsito debe permanecer libres de obstáculos y libres de elementos sueltos que dificulten la circulación.
- No deben existir vanos en la superficie de trabajo.
- El contratista debe contar con un Supervisor capacitado y calificado para dirigir y coordinar la instalación de Andamios, como así mismo una cuadrilla entrenada exclusiva para el arme y desarme de andamios.
- La cuadrilla de armado y desarme de andamios debe estar calificada por una empresa certificadora y sus integrantes deben acreditar cursos de capacitación en dichas materias, con sus respectivas calificaciones.

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- El supervisor a cargo del montaje del andamio, quien debe ser una persona especializada en dicha labor, debe instalar, en un lugar completamente visible, una tarjeta de validación, la cual debe ser aprobada diariamente por este. Corresponderá una tarjeta de color "VERDE" cuando el andamio o plataforma de trabajo se encuentre aprobado(a) para su uso. Corresponderá una tarjeta de color "AMARILLO" cuando el andamio o plataforma esté en armado o desarme". Corresponderá una tarjeta de color "ROJO" cuando el andamio o plataforma no cumpla con todos sus requisitos de armado, por ejemplo, configuración incompleta, falta de arriostramientos o desaplomado, entre otros.
- Para el caso de andamios dentro de un espacio confinado, como, por ejemplo, calderas, túneles, tuberías, turbinas de centrales de generación, cámaras subterráneas, las tarjetas de validación deben ir instaladas, además, al ingreso de este espacio confinado.
- El uso de andamios debe garantizar la suportación del personal que lo utilice.
- Los andamios deben estar en buen estado, multidireccionales, modulares, auto soportantes y con accesos interiores incorporados, asegurándose de tener un elemento sólido y resistente de preferencia tipo Layher o Peri.
- La construcción y utilización de cualquier andamio deberá cumplir con las exigencias que para tal efecto existen acorde a las Normas Chilenas NCh 997-78 y NCh 998-78. Para ello deben estar dotados de todos y cada uno de sus elementos que lo conformen.
- Deben disponer de barandas, barandas intermedias y rodapié.
- Considerando que los andamios permiten crear plataformas de trabajo de carácter transitorio, deben revisarse diariamente para detectar cualquier defecto o falla de materiales.
- La inspección de los andamios y plataformas de trabajo debe ser diaria y documentada, para así evitar trabajar en andamios que potencialmente hayan sido alterados o modificados por personas externas a la cuadrilla autorizada.
- Las escalas de acceso para subir a los andamios, deben estar incorporadas a la estructura como parte integral de este.
- Cada pie derecho debe tener una base firme como soporte y deben estar aplomados. Se deberá verificar que la superficie en donde se monte el andamio sea una superficie plana y sin resaltos.
- Las plataformas de trabajo deben cubrir completamente el ancho y largo del andamio, dejando una apertura abatible para el acceso.
- La fijación del andamio al edificio o estructura debe hacerse mediante el uso de escuadras metálicas, tensores o algún dispositivo metálico que elimine totalmente el riesgo de volcamiento del andamio.
- Mientras se arme o desarme un andamio o alguna de sus partes, se debe señalar claramente (hinchas de peligro) la prohibición del uso del andamio y de la circulación en las zonas adyacentes a la base del mismo.

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- Se debe revisar el espacio en los alrededores del andamio, previo a su cambio de ubicación, verificando que no existan riesgos de contacto con líneas eléctricas.
- Para andamios en volado o voladizos, estos deben ser armados según diseño o configuración del fabricante, sin dejar vanos y debe indicarse la capacidad máxima de peso en kilos para la que fue armado.

Toda superficie de trabajo en altura deberá estar debidamente diseñada, calculada, aprobada, autorizada, señalizada, codificada y delimitada en forma permanente.

Además, se deben tomar las siguientes precauciones:

- La inspección de las superficies de trabajo en altura debe ser diaria (antes, durante y después) y documentada, para así evitar trabajar en plataformas que potencialmente hayan sido alteradas o modificadas por personas externas a la cuadrilla autorizada.
- Toda superficie de trabajo en altura debe tener rodapié, toda herramienta manual a usar en trabajos de altura debe estar amarrada, incluye a cilindros de gases, extintores, tarros de pernos, pasadores cónicos, chalupas, cajas de herramientas diversas, martillo, llaves manuales, entre otras.
- Para señalar una superficie de trabajo, puede utilizarse elementos que adviertan claramente la existencia de ésta, pudiendo ser: cordeles, barandas, barreras definitivas, etc., siempre y cuando no signifique o incorpore un riesgo a la superficie misma, consulte los procedimientos de señalización de EGP o su Representante.

8.7.2.3 Arnés de Seguridad

- El uso de casco específico para trabajos en alturas y barbiquejo de tres puntas debe ser obligatorio.
- Se debe usar arnés de seguridad de 4 argollas como mínimo. Dichas argollas estarán distribuidas de la siguiente forma: 2 laterales a la altura de la pelvis, una a la altura del tórax (de pecho) y otro en la zona posterior a la altura del omoplato (espalda). Las cintas que rodeen las piernas deben ser acolchadas a fin de no impedir por completo la irrigación sanguínea de las extremidades en caso de que el trabajador quede colgado del arnés producto de una caída. Para trabajos igual o superior a 5 mts, se adicionará un amortiguador de impacto entre la eslinga y el arnés. La eslinga a utilizar es del tipo Y.

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- Todos los sistemas de protección o elementos de protección personal para controlar riesgos de caídas en altura deben ser sometidos a inspecciones a intervalos preestablecidos en base a listas de chequeo, debiendo inspeccionarse específicamente cada componente.
- El uso del arnés conectado a un adecuado sistema anticaídas es de uso obligatorio para todos los que trabajarán sobre 1.5 m de altura física. No se aceptará el uso de cinturones de seguridad o únicamente de posicionamiento. Este debe ser inspeccionado periódicamente (código de color de inspección del mes respectivo).
- Arnés debe ser de cuerpo completo certificado como arnés para retener caídas (NCh 1258/ EN361).
- En el sistema anticaídas se dará prioridad a elementos conectores con absorbedor de energía (NCh 1258/ EN354/ EN355) pudiendo complementar (en ningún caso sustituir) con elementos limitadores y/o de posicionamiento (NCh 1258/ EN358).
- En todo momento el usuario del arnés y del absorbedor de caídas, priorizará un factor de caída inferior a 1. Esto quiere decir, que siempre deberá conectar el dispositivo en el punto de anclaje o estructura más alta posible. En aquellos casos en que la estructura no sea más alta que el nivel del piso o su equivalente, se instalarán los anclajes y líneas de seguridad que permitan que el usuario esté correctamente asegurado.
- En los ascensos verticales (sobre 4 m) se instalarán y utilizarán líneas anticaídas flexibles, ya sea por cuerda o cable, y en dicho caso, el usuario deberá utilizar el respectivo dispositivo anticaída deslizable. (NCh 1258/ EN353-2)
- Toda persona que realice trabajos sobre 1.5 m de altura y cuya aproximación a un borde de caída, sea igual o menor a 2 m, estará obligada a utilizar un sistema anticaídas; el que puede ser conformado por un sistema retenedor de caídas, o un dispositivo que impida y limite la aproximación hacia el borde de caída. Esta obligatoriedad incluye a todos los trabajadores, entre ellos los supervisores.
- Dentro del análisis de riesgo del contratista, deben estar reconocidas las posibilidades de efectuar maniobras de rescate en determinadas situaciones y tareas.
- Dentro del manual de procedimiento del contratista, deben estar descritos los equipos, maniobras y personal competente y calificado que procederá eventualmente a realizar el rescate.
- El contratista deberá tener todos los equipos técnicos y humanos para poder realizar rescates en todas las situaciones y tareas que le compete intervenir, dentro de un tiempo adecuado,

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tanto así, que no se exponga al síndrome del arnés o trauma en suspensión al trabajador en situación o condición de víctima.

- Toda persona que vaya a utilizar EPP anticaídas deberá ser competente en su uso, con capacitación formal y registro, y como tal, tendrá que hacer una revisión previa al uso de cada día. Una vez puesto el EPP, deberá preocuparse constantemente de su adecuado estado y utilización, no pudiendo darle un uso al equipo que no esté dentro de las instrucciones del fabricante.
- En aquellos casos en que se detecten defectos o problemas con el equipo, como por ejemplo; daños en su estructura, costuras desgarradas, quemaduras por escoria caliente, daño por productos químicos, etc., no podrá usarlo, debiendo darlo de baja y destruirlo.
- Se prohíbe estrictamente utilizar absorbedores de energía y/o conectores anudados para reducir el largo según fabricante.
- Se prohíbe estrictamente modificar o alterar los EPP de cualquier forma, y con cualquier elemento, sin que sea compatible una acción autorizada y recomendada por el fabricante.
- El no uso del arnés de seguridad, es considerado una falta gravísima y podrá ser causante de que el trabajador sea retirado de proyecto.

8.7.2.4 Rescate en altura

- Cuando se requiera utilizar arnés de seguridad, el peso total del trabajador incluyendo herramientas y equipos no debe superar los 100 kilos (según NCh 1258-1). Para pesos superiores debe existir un elemento fabricado por una empresa especializada, que certifique con pruebas empíricas la resistencia del equipo.
- El (los) plan(es) de respuesta para emergencia en el sitio debe(n) incluir procedimientos de rescate para la recuperación rápida de personal en caso de una caída de altura. (El tiempo de respuesta es crítico si una persona se deja suspendida de un arnés de seguridad).
- Debe existir una batería de equipos destinados para el rescate de personas desde altura, así como también personal entrenado en este tipo de emergencias. La batería de rescate estará compuesta por los siguientes elementos: Tabla espinal larga, camilla de rescate aérea, cuello cervical y manta protectora. Estos elementos deberán ser posicionados en puntos cercanos a zonas de trabajos en altura en una estación de emergencia.
- Al trabajar desde dentro de las barandas de un andamio o plataforma de trabajo, se debe llevar un arnés de seguridad. Si la tarea implica que un trabajador deba inclinarse en las barandas, entonces se debe disponer de cuerdas de vida para que los trabajadores puedan asegurarse a un punto de anclaje seguro independiente del andamio o plataforma.

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- Los trabajos en altura no pueden realizarse si el área de trabajo está expuesta a lluvia, granizos, escarcha y/o vientos fuertes (superior a 30 km/h), que pudieran desestabilizar a un trabajador.
- El trabajador debe estar siempre estroboado a un punto de apoyo con uno de los dos cabos de vida, el otro lo usará para desplazarse alternadamente.
- Todo trabajador debe hacer una inspección visual de su arnés de seguridad, antes de cada uso, junto con los accesorios de protección contra caídas.
- Los trabajadores que manipulan herramientas manuales en altura deben mantenerlas amarradas, usar en todo momento, bolsos o morrales porta herramientas. Asimismo, los trabajos con soldadura para evitar caídas de varillas, piezas, residuos metálicos u otros, se mantendrán en contenedores adecuados.
- Deben existir procedimientos de trabajo seguros cuando se den condiciones o se realicen actividades tales como:
 - Trabajos en altura bajo condiciones climáticas adversas (lluvia, viento, temperatura, etc.).
 - Montaje y desarme de andamios.
 - Montaje de estructuras en altura.
 - Montaje de superficies de trabajo en altura.
 - Ascender o descender trepando por una estructura, se debe llevar a cabo una minuciosa identificación de peligros y evaluación de riesgo antes de iniciar un trabajo.
- Todo trabajador que deba ejecutar trabajos en altura, debe comprobar su idoneidad con un examen de altura física realizado por el respectivo Organismo Administrador de la Ley 16.744.
- Todo trabajador que deba realizar labores en altura, debe recibir una adecuada capacitación por parte de una persona competente y autorizada para realizar dicha capacitación.
- El personal que opera las plataformas elevadoras y canastillos de trabajo debe ser entrenado y calificado para el equipo que están usando.
- Se deben realizar observaciones de conducta a los trabajadores que realicen labores en altura. Estas observaciones deben considerar acciones in situ para reforzar los comportamientos seguros y corregir los comportamientos inseguros.
- Se diseñarán programa(s) de capacitación tomando como base fundamental los resultados de las observaciones de conducta.

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- Cuando se realicen trabajos en altura, deben existir uno o más métodos de trabajo que eviten la caída de herramientas y otros objetos.

8.7.2.5 Otras Consideraciones para Trabajos en Altura Física

- Todo trabajador que deba efectuar un trabajo en altura física debe contar con un examen médico que indique que se encuentra apto para trabajar en altura física emitido por Organismo Administrador.
- Este examen médico debe orientarse a detectar condiciones del trabajador que no impidan el desarrollo de actividades en altura física (epilepsia, vértigos, insuficiencias cardíacas, enfermedades mentales, alcoholismo y/o adicción a drogas o fármacos).
- Todo trabajador que sufra de alguna enfermedad y/o contraindicación médica que le impida trabajar en altura, tiene la obligación de informar a su supervisor de esta situación.
- Para los trabajos sobre 10 mts de altura como trabajos en las líneas de alta tensión LAT, se deberán suspender las actividades cuando la velocidad del viento supere los 30 km/hr o 8.3 m/s. En promedio.
- Se prohíbe el uso de cordeles como elementos de suspensión en trabajos de soldaduras, oxicorte o cualquier trabajo con llama abierta realizado en altura, siendo obligatorio el uso de cables de acero, revestido en plástico en aquellos casos en que los trabajos se desarrollen cercanos a instalaciones eléctricas.
- Todo trabajo en altura deberá ser coordinado de tal forma que no implique que otros trabajadores queden expuestos a caída de materiales desde niveles superiores, para tal efecto se debe señalar el piso inferior en la línea de máxima pendiente.
- En niveles de pisos donde sea necesario instalar pasillos o plataformas de tránsito, los vacíos o espacios que se produzcan deberán ser señalizados, cercados y cubiertos inmediatamente con material que sea resistente al tránsito de personas.
- Solo se autorizarán escalas de ascenso y descenso certificadas (tipo industrial)
- Solo se utilizará el absorbedor de impacto (shock absorber) cuando la altura física supere los 4 mts de altura.
- Se debe instalar una línea de vida para los trabajos de instalación de revestimiento de galpones y estructuras de al menos ½ pulgada de espesor y no superior a 15 m de largo.
- Para los trabajos en LAT se prohibirá realizar labores con condiciones atmosféricas adversas (lluvia, tormenta eléctrica).

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8.8 EXCAVACIONES

8.8.1 Consideraciones en el Sitio de Excavación

- Como básico todas las excavaciones deben ceñirse a lo estipulado en la NCh 349/1999, "Disposiciones de seguridad en excavación".
- Previo al comienzo de una excavación, se deben evaluar los peligros subterráneos potenciales que pudiesen aparecer al excavar, tales como líneas eléctricas, ductos de gas y otras instalaciones subterráneas. De aparecer un peligro subterráneo, debe identificarse el riesgo colocando una señalización.
- Antes de realizar la excavación debe existir un análisis del tipo de suelo. Con este análisis se determinará el tipo de protección a utilizar para sostener las paredes de la excavación, a objeto de evitar el derrumbe o caída de material de una o más paredes.
- Según la clasificación del tipo de suelo y el tipo de excavación, las protecciones podrían ser una combinación o utilización individual de las siguientes medidas:
 - Taludes.
 - Bancos o Gradas.
 - Entibación.
 - Malla metálica con hormigón proyectado.
- Sin perjuicio de lo anterior, en configuraciones o situaciones especiales se pueden considerar opciones equivalentes o mejores.
- Cualquiera sea el o los métodos de protección a utilizar, se debe detallar previo a su instalación su secuencia de construcción y/o instalación.
- La determinación y diseño de los soportes de la excavación debe efectuarse basado en una cuidadosa consideración de los siguientes factores:
 - Profundidad del corte.
 - Cambios debido al efecto de la humedad.
 - Movimientos de tierra causados por la vibración del paso de vehículos o presiones del suelo a su alrededor.
- En caso de una entibación, cuando los costados de una excavación o zanja tengan una inclinación segura de acuerdo a lo señalado en la NCh 349/1999, sobre construcción y disposiciones de seguridad en excavaciones, y esta inclinación no se extiende hasta su fondo, la entibación va a ser necesaria solo para apuntalar los taludes verticales de dicha

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excavación o zanja, no obstante, la entibación debe sobresalir 30 cms. por sobre la arista de inclinación.

- En caso de usar entibación para toda la excavación, esta debe sobresalir 15 cms. por sobre el borde de la excavación y los puntales deben ser trozos enteros, sin añadiduras.
- El perímetro de la superficie deberá estar limpio de restos de materiales antes que al personal se le permita ingresar a la excavación.
- Se debe evitar la presencia de agua en las excavaciones.
- Cuando las paredes de una excavación estén inestables y exista probabilidad de derrumbe se debe considerar entibación del tipo prearmada con el objetivo que ningún trabajador ingrese a la excavación antes de estar completamente entibada.
- El material extraído de la excavación debe dejarse al menos a la mitad de la profundidad de la excavación desde el borde de esta.
- Cuando existan excavaciones que crucen caminos o vías de accesos, se deben usar planchas metálicas o materiales de dureza similar, con el propósito de cubrir las excavaciones, las cuales deben ser capaces de soportar el peso de equipos y personas que transiten en el área. En situaciones en que la magnitud de esta pueda crear un peligro para las personas, vehículos y equipos circundantes, el camino debe bloquearse.
- Cuando el desarrollo de una excavación, exija emplear o almacenar elementos explosivos, se deben adoptar todas las medidas de seguridad establecidas en los estándares correspondientes del manual de estándares.
- Todas las excavaciones deben disponer de barreras rígidas cuando:
 - Su profundidad exceda a un metro.
 - La excavación quede expuesta al paso de personas ajenas a las faenas.
 - Por su profundidad, la excavación presenta un riesgo para las personas o animales que puedan transitar por el lugar.
 - La excavación quede expuesta a las vibraciones y paso de equipos y vehículo
- Todas las excavaciones deben estar bien señalizadas indicando la existencia del peligro por lo menos en dos direcciones.
- Los letreros de advertencia y señalética de seguridad deben ser instalados y confeccionados conforme al estándar de la compañía.

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- Si una excavación está expuesta al paso de vehículos, equipos u otras fuentes de vibración o compresión, se instalarán delimitaciones a lo menos 1,5 veces de distancia de la profundidad de la excavación.
- Especial cuidado se debe tener cuando se efectúen trabajos de compactación al borde o en el fondo de la excavación, para lo cual se deben efectuar los refuerzos necesarios en sus paredes.
- Cuando sea necesario cruzar de lado a lado una excavación o zanja, se instalarán pasarelas de un ancho tal que permitan un cruce seguro.
- Las pasarelas, deben tener una baranda superior, una baranda intermedia y rodapiés. Las barandas laterales deben tener la capacidad de soportar una fuerza en todas las direcciones de al menos 100Kg.
- La baranda superior debe tener al menos 1" (pulgada) de espesor y deben ser construidas de materiales sólidos tales como maderos, cañerías de acero o cables de acero debidamente tensados. No se permite el uso de fierro de construcción ni cordeles como barandas pasamanos en la construcción de la pasarela.
- Cuando la excavación tenga una profundidad superior a 0,5 metros, se debe disponer una escala para acceder a ella. Escalas adicionales o accesos deben colocarse con un espaciamiento de 15 metros en zanjas y excavaciones, cuando la longitud de estas supere esa distancia.
- Cuando el ángulo de inclinación de la excavación sea igual o superior a 45°, debe poseer con escalera con pasamanos.
- Las escalas deben extenderse al menos 1 metro sobre la base superior de la excavación y estarán debidamente aseguradas.
- En los casos de excavaciones de profundidad mayor a 3 metros, las escaleras deben estar provistas de barandas, rodapiés y descansos construidos a distancias no superiores a 3 metros.
- Se debe proporcionar la adecuada iluminación al sector donde se realiza la excavación.
- Cuando una excavación está cEGPana a vías de tránsito de vehículos, la señalización se confeccionará de acuerdo a las normas de vialidad que indique el manual de carreteras, a fin de asegurar una adecuada visualización en la noche.
- Cuando la excavación se realiza mediante excavadora o retroexcavadora, se debe establecer una zona de seguridad alrededor de la máquina superior en 1,5 metros al radio de giro del brazo de esta, en la cual se prohibirá el tránsito de personas.

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- Toda maquinaria pesada que trabaja en faenas de excavación debe poseer un sistema de luces (baliza), bocina, y alarma de retroceso que funcione en forma automática.
- En caso de quedar una acera o pasillo público al borde de una excavación, esta debe protegerse debidamente para evitar la caída de personas producto de socavones.
- Debe existir un procedimiento específico para realizar una excavación cuando:
 - Se realicen excavaciones mayores a 1,5 metros de profundidad.
 - Se realicen excavaciones en espacios reducidos o confinados.
 - Se realicen trabajos de movimientos masivos de tierra.
 - Cuando la excavación se realice con maquinaria pesada (excavadora y/o retroexcavadora).
- Las excavaciones, así como sus áreas adyacentes, deben ser inspeccionadas diariamente por una persona competente, después de cada lluvia, nevazón, o según cambien las condiciones del suelo.
- Se deben tomar las medidas de seguridad necesarias antes de comenzar cualquier trabajo adicional en la sección de una excavación, si existe cualquiera de las siguientes condiciones:
 - Posible derrumbe.
 - Indicación de falla de los sistemas de protección.
 - Atmósfera peligrosa (Presencia de: Gases tóxicos, insuficiencia de oxígeno, atmósfera inflamable y gases que desplacen el oxígeno, entre otros).
- No se debe excavar con maquinarias mientras haya personal al interior de la excavación a una distancia igual o menor a la distancia del brazo completamente extendido en forma horizontal de la maquinaria que está excavando.
- Cuando el talud de una excavación se ha socavado accidentalmente se debe provocar la caída del terreno sobresaliente hasta que quede en condiciones seguras.
- Cuando sea necesario extraer agua de la excavación para continuar con los trabajos, se debe efectuar solo después de considerar la posible alteración de las fuerzas existentes, las posibilidades de erosión de los pies de la excavación y del posible arrastre de finos.

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- En el carguío por pala mecánica o retroexcavadora, todo vehículo de carga debe estacionarse de modo que la pala no pase por sobre la cabina del camión. El camión debe quedar frenado y enganchado, además se utilizarán cuñas.
- Se debe poseer con un guía (Señalero o Rigger) que dirija los desplazamientos de la maquinaria pesada mediante banderas o paletas de colores, el cual debe estar en todo momento visible por el operador de la máquina y así advertir a este y a peatones de cualquier peligro. Si los trabajos son nocturnos, se debe disponer de iluminación apropiadas que cumpla con lo establecido en el D.S 594.
- Después de un período prolongado de paralización, las excavaciones y sus sistemas de protección deben ser revisados antes de reanudar los trabajos.
- Las personas deben ser instruidas previamente en las normas de seguridad y los procedimientos de trabajo de excavaciones.
- Deben existir evaluaciones de riesgos conocidas por los trabajadores.

8.8.2 Consideraciones de Tipos de Suelo e Inclinación

La tabla siguiente describe los tipos de suelo y requerimientos de inclinación (talud) para excavaciones.

Nota: El tipo de suelo debe ser determinado por pruebas visuales y manuales. De otro modo asuma un tipo C de suelo con 1,5:1 de inclinación.

Tipo de Suelo	Descripción	Máxima inclinación	
		Razón	Angulo
Roca Sólida	N/A	Vertical	90°
A	Suelos duros, resistencia de compresión >3000 lb/pie ² , arcilla o suelo arcilloso, suelo compactado, caliche	0,75:1	53°
B	Suelos medianos, resistencia >1000 lb/pie ² . Grava, ripio, tipo de suelo que ha sido removido, sujeto a vibración o tiene fisuras.	1:1	45°
C	Suelos débiles, resistencia <1000 lb/pie ² grava, arena, suelo húmedo.	1,5:1	34°

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8.8.3 Consideraciones para Estacionar y Mover Equipos en Excavaciones

La tabla que se entrega a continuación, describe las acciones del operador para equipos específicos de excavación.

Si Usted está...	Usted debe...
Estacionando el equipo de Excavación	Estacionar la unidad en lo posible en el suelo nivelado y bajar el balde u otro accesorio a posición de descanso
Estacionando la retroexcavadora en un plano inclinado	- Bajar el cucharón de trabajo de tal manera que el borde de corte quede en contacto con el suelo - Aplicar freno de estacionamiento - Asegurar las ruedas con cuñas
Cargando el equipo en un trailer	- Usar la marcha lenta - Fijar correctamente la maquina al trailer
Estacionar en pendiente	- Usar cuñas

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8.9 EQUIPOS DE LEVANTE

Antes de realizar maniobras con equipos de levante, el Contratista y/o subcontratistas deben conocer y realizar lo siguiente:

- El contratista deberá mantener un registro de todos los equipos de levante y tecles.
- La carga de trabajo segura (SWL) y tablas de radios deberán estar disponibles para todos los equipos de levante y deberán estar marcadas en los equipos.
- Se sugiere mantener en terreno el manual de operación del equipo, en español.
- Los equipos de levante sólo podrán ser operados por personal calificado, con certificación legal (licencia).
- El contratista deberá cumplir con todos los requerimientos de EGP Chile cuando se les sea solicitado.

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- Las eslingas, estrobos, cables, cadenas, etc. que se utilicen deben estar certificadas e indicar el factor de seguridad de diseño. Esta documentación debe estar en terreno para revisión.
- Se considerará una antigüedad máxima de 8 años para las grúas hidráulicas o camiones pluma, y 12 años para grúas estructurales o grúas torre.
- Toda maniobra de levante deberá ser dirigida por un riggers, entrenado y certificado por un organismo de capacitación externo, estos deben estar identificados mediante un chaleco reflectante que lo distinga del resto de los trabajadores. Esta documentación debe estar en terreno para revisión y tendrá una vigencia de no más de 2 años.
- El Contratista debe mantener copias de todos los certificados de pruebas y mantenimientos relativos a las grúas, montacargas, plumas, engranajes de levante y ganchos de suspensión, y deberán estar a disposición de EGP Chile si fuesen requeridos.
- Todo accesorio de levante (Eslingas, estrobos, cadenas, etc.) debe tener codificación, inspección de pre-uso e inspección por código de colores.

8.9.1 Maniobras de Izamiento

Las actividades de transporte y maniobras de izamiento requieren de una adecuada capacitación del personal involucrado. Los supervisores deben mantenerse en alerta por fallas en la operación incluyendo aquellas debido a enfermedades.

Los Individuos que realicen operaciones de izamiento deben establecer procedimientos seguros y usar solo equipos certificados en buenas condiciones. Las "personas a cargo de las maniobras" quienes son capaces de especificar una maniobra deberán ser previamente calificadas.

8.9.2 Trabajo de Montaje

- Todas las grúas plumas y equipos de izamiento o similares deberán ser examinados con ensayos no destructivos y certificados en forma periódica. Los contratistas deberán exhibir pruebas de tales ensayos.

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- El operador de grúa deberá hacer una inspección previo a hacer partir la grúa y/o en cada cambio de turno y registrar la información en la bitácora de servicio de inspección y check list correspondientes.
- Previo a comenzar el trabajo, las condiciones y operación de los frenos, limit switch, dispositivos de prevención de volcamiento, cables de acero, ganchos de cable y dispositivos de izamiento deberán chequearse e inspeccionarse. Además, se deberá operar la grúa sin carga como prueba.
- Como chequeo preliminar, el equipo deberá izarse y mantenerse a 10 centímetros del suelo. En esta condición, se deberá chequear e inspeccionar todos los elementos para ver si operan correctamente. Si se detectan condiciones riesgosas, el trabajo de izamiento se deberá suspender de inmediato. Todos los defectos observados durante las inspecciones deberán corregirse de inmediato.
- Deberán estar instaladas en la cabina de la grúa, las cartillas de la bitácora de servicio de inspección, mostrando las capacidades de izamiento máximas y otra información esencial incluyendo una cartilla básica de señales de mano. Las grúas deben estar provistas de alarma de retroceso, un extintor y un indicador de carga.
- La capacidad de la grúa a utilizar en el montaje deberá determinarse luego de una cuidadosa consideración. El operador de grúa deberá verificar los pesos y alturas de las cargas a izar. No se deberán izar cargas que excedan la capacidad nominal expresada por el fabricante.
- Previo al comienzo de la maniobra, se deben chequear los pesos totales de izamiento y el centro de gravedad de los equipos que se van a montar. La carga a izar para cada grúa se deberá controlar dentro del 90% de la carga máxima.
- La carga a izar deberá incluir el peso muerto del gancho del cable, etc. Las grúas o winches deberán ser aseguradas o frenadas cuando no están en operación. El cable de acero de la grúa deberá enrollarse completamente luego de completar el trabajo.

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- El plan y procedimiento de trabajo de montaje (maniobra) deberá ser revisado exhaustivamente por los Ingenieros de Terreno de la empresa contratista y autorizado por EGP o su Representante.
- El operador de grúa y el rigger deberán determinar la seguridad y serán responsables de la maniobra para la que han sido asignados, excepto cuando se trate de una maniobra con cálculo de ingeniería.
- El contratista deberá proporcionar señales de advertencia de "No Entrar", "Maniobras de Izamiento", etc. delimitación del área con barreras físicas y zonas de seguridad para las áreas con maniobras.
- La resistencia del terreno donde se instalará la grúa se deberá examinar. Si es necesario, se deberá instalar refuerzos, como planchas de acero o zapatas de seguridad.
- Sólo se permitirá que personas competentes y autorizadas con licencia de acuerdo a la legislación vigente, operen la grúa o realicen operaciones de eslingado para equipos de izamiento.
- El capataz y señalero (Rigger) competente (quiénes son conocedores de todos los procedimientos de maniobras) deberán ser asignados para cada trabajo de montaje bajo un sistema operativo establecido para el trabajo. Deberán ubicarse donde puedan observar la maniobra y ser claramente visibles para el operador de grúa durante el trabajo de izamiento.
- Se deberá usar un sistema uniforme de señales con las manos, radio-transmisores y pitos para las señales. Los Operadores deberán recibir las señales de una sola persona y no deben mover la máquina hasta haber comprendido totalmente la señal. El Rigger debe vestir un chaleco distinto al resto de la cuadrilla y debe ser el único color que se destaque.
- Al izar cilindros de gas comprimido se deberá usar una jaula autorizada y codificada.
- Las maniobras no deberán realizarse con mal tiempo, como viento fuerte o lluvias intensas. **Se prohíbe hacer levantamiento de cargas en espacios abiertos cuando la velocidad del viento es sobre los 30 Km/hr. u 8.3 m/s y la visibilidad es menor a 50 mt.**

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- Las cargas suspendidas se deben controlar con vientos, usando cuantos vientos sean necesarios (mínimo dos) para controlar efectivamente la carga. Los vientos deben ser del largo suficiente como para no restringir el movimiento de la carga y para no exponerse debajo de la carga.
- Durante el trabajo de izamiento, la operación deberá ser cuidadosamente supervisada para prevenir maniobras apuradas, suspensión prolongada e izamientos más allá del límite.
- Se debe prohibir los izamientos abruptos y detenciones repentinas.
- Se debe prohibir la rotación e izamiento simultáneo o rotación y movimiento de la pluma.
- La pluma se debe rotar lentamente a objeto de evitar las fuerzas centrífugas en equipos o materiales que se estén izando.
- Todas las plumas se deben mantener alejadas al menos 15 metros de líneas de alta tensión y hot rails, excepto si tales líneas se han desenergizado o están protegidas adecuadamente contra el riesgo o contacto accidental.
- Se debe prohibir a las o los trabajadores viajar sobre equipos izados o materiales cuando se esté izando o rotando.
- Un Rigger certificado deberá guiar todos los movimientos de traslado de un punto a otro de las grúas móviles.
- Las barreras plásticas (redes o mallas naranja) son las únicas barricadas adecuadas permitidas para las áreas restringidas. No se permite la cinta plástica.

8.9.3 Uso de Canastillo

- La plataforma para personas (canastillo) es un aparato construido de acero o aluminio, también llamado canastillo, diseñado para ser utilizado con el gancho de la grúa y usado en izamiento para personas de una manera segura.

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- El canastillo debe tener capacidad de trabajo segura y con un factor de seguridad de 5:1.
- Todo canastillo debe ser diseñado, calculado y aprobado por ingeniero mecánico calculista, señalado sus cargas máximas y tipo de uso (**personal o equipos**), además de codificado con un N° y autorizado para su uso por el supervisor del área.
- Los canastillos de **uso para personal** sólo se usarán con un Permiso de Trabajo Seguro.
- Todos los aparatos que sean utilizados en izamientos de personas deben igualar o superar los estándares ANSI, ASME y NCh.
- El canastillo debe estar certificado por el fabricante y calificado de acuerdo a los estándares y pruebas realizadas, codificado y sujeto a inspección mensual.
- El uso de canastillo deberá emplearse cuando todas las otras alternativas para ejecutar trabajos en altura hayan sido encontradas impracticables tales como el use de plataformas móviles de izamiento de personas, descensos en vertical a través de sistema de cuerdas, andamios u otras formas que permitan ejecutar el trabajo de una forma segura y en el cual se requiera utilizar canastillo suspendido con grúa, para transporte de personal.

8.9.4 Izamientos Múltiples

- En general se debe evitar el uso simultáneo de más de una grúa u otro equipo de levante para izar, suspender, soportar o bajar una carga individual.
- Donde tal uso sea inevitable, la operación se debe diseñar y planificar, incluyendo consultas a los fabricantes de dispositivos de maniobras para asegurar que ningún equipo de maniobras se cargue por sobre su carga de trabajo segura ni se vuelva inestable. Tal operación deberá ser **supervisada presencialmente** (100% en terreno mientras dure la maniobra) por una persona competente, nominada por la Contratista.
- Para el caso de maniobras en Tandem (maniobras con más de una grúa), se debe contar con un Rigger Plant, para conocer la ubicación de los equipos y postura de las maniobras.

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8.10 TRABAJO CON LINEAS ENERGIZADAS DE MEDIA TENSION

Los trabajos en líneas energizadas normalmente van en apoyo de actividades de mantenimiento o construcción, por este motivo y previo a la actividad, el supervisor de la cuadrilla de líneas energizadas debe corroborar en terreno la veracidad de los datos entregados en Orden de Trabajo (OT) o Permiso de Trabajo (PT) asociados al evento, dirección, equipos existentes en circuito a intervenir lado fuente y lado carga, u otras incidencias en circuito tales como grupos generadores externos.

- Posterior a la verificación de datos, el supervisor debe efectuar la correspondiente charla operacional, en la cual se dará a conocer al personal los riesgos asociados a la actividad y los correspondientes sistemas de control por cada riesgo detectado.
- Una vez verificados los riesgos y efectuada la charla operacional, el supervisor llamará al centro de operación del sistema y solicitará el permiso respectivo para intervenir en el circuito, acorde a lo estipulado en reglamento de operaciones del sistema eléctrico.
- Toda persona que requiera intervenir en redes de distribución, debe haber aprobado el curso de Reglamento de Operación (RDO) de la Distribuidora, de acuerdo a los procedimientos establecidos para estos efectos.
- Una vez obtenido el permiso por parte del centro de operación del sistema, el supervisor posicionará el camión hidroelevador en la zona de trabajo y señalizará con conos de acuerdo a lo establecido en el reglamento de tránsito.
- El supervisor verificará junto al liniero el correcto estado de los elementos de protección personal y de los equipos a utilizar en la faena, atarrará el camión por medio de la tierra de este a una barra Copperweld y posterior a esto autorizará al liniero para realizar el trabajo solicitado.
- El maestro liniero previo a la realización de los trabajos debe verificar el estado de las redes energizadas y corroborar el estado de los componentes del circuito que va a intervenir.
- El maestro liniero previo a la ejecución del trabajo, debe cubrir todos los puntos energizados del sistema que no deben ser intervenidos y que se encuentran en cEGPanía a la zona de trabajo, para esto utilizará mangas de líneas, cubre aislador, cubre crucetas, mantas o cubre piezas.
- Deber ser del supervisor estar atento en todo momento a las maniobras que ejecute el maestro liniero mientras desarrolla la actividad, con especial énfasis en el ascenso del capacho hacia las líneas de media tensión, en el cruce bajo líneas de media tensión o cuando el brazo articulado se encuentre sobre la calzada o zona de tránsito vehicular.

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- El personal de líneas energizadas no efectuará trabajos en redes con tensión, cuando por fenómenos climáticos la humedad ambiental supere el 60% o en su efecto se encuentre lloviendo.
- El personal que opere en líneas energizadas debe poseer con equipamiento completo de seguridad, el cual debe estar debidamente certificado de acuerdo a Decreto supremo N° 18 y estándares asociados de EGP.

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8.10.1 Equipamiento del Personal

- Casco dieléctrico clase "E" con barbiquejo de tres puntas.
- Calzado de seguridad dieléctrico.
- Ropa Ignífuga.
- Lentes de cristal a prueba de impactos y foto cromáticos.
- Arnés de seguridad dieléctrico y estrobo. (Liniero).
- Guantes dieléctricos clase III. (Liniero).
- Manguillas bicolor dieléctricas clase III. (Liniero).
- Guante cuero protector de guante de goma.

Para el correcto desarrollo de la intervención en líneas energizadas, el camión hidroelevador debe cumplir con los siguientes requisitos:

- Debe poseer con aislación para 69 Kv. Con brazo aislado de alcance mínimo de 10 m. con capacho simple, este debe poseer con 2 controles independientes, uno en el canastillo y otro en la base del brazo.
- La grúa, los brazos y canastillo deben permanecer limpios y aseados, libres de tierra o impregnación de aceite, los que por su sola presencia inciden sobre la capacidad dieléctrica del vehículo, para esto el camión hidroelevador debe ser lavado como mínimo una (1) vez por semana.
- El vehículo debe poseer con prueba dieléctrica de los componentes y elementos aislantes de este, esta prueba se debe realizar con una periodicidad de 12 meses.
- El sistema hidroelevador debe estar en perfecto estado, para esto se debe verificar diariamente los niveles de aceite hidráulicos de la grúa y los brazos articulados.
- El vehículo debe poseer documentación y equipamiento de seguridad al día, según lo exija la ley y/o normativa vigente, poseer convertidor catalítico, con espacio de carga para equipos, herramientas, materiales, separado del espacio de transporte de personas.

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8.10.2 Equipamiento del Vehículo

- Cortacable hidráulicos.
- Cruceta auxiliar corta completa.
- Cubierta de protección para poste.
- Cubre aislador rígido PVC ("tortuga").
- Cubre cruceta rígida PVC apoya líneas.
- Cubre discos.
- Cubre piezas, libros.
- Escobillas limpia líneas.
- Lona cubremanta.
- Coberturas de líneas con extensión (Mangueras cubre líneas) CL. III.
- Coberturas de líneas sin extensión (Mangueras) CL. III.
- Mantas enteras clase III.
- Mantas partidas clase III.
- Pateca gancho carnicero.
- Pértiga soporte línea MT (3° mano).
- Perros plásticos para mantas.
- Protecciones rígidas PVC cubre líneas clase III.
- Puentes (Jumper) aislados flexibles 4 metros, Clase III.
- Soporte auxiliar individual apoya líneas.
- Teclé de cinta y Tensor saca líneas A.T.

8.11 SISTEMAS DE BLOQUEO PARA FUENTES DE ENERGÍA

- Todo equipo, instalación o circuito que deba ser sometido a mantenimiento, reparación, limpieza, y cualquier otro tipo de intervención, debe ser previamente detenido, desenergizado y bloqueado.
- Todos los equipos con energía eléctrica, mecánica, hidráulica o térmica, deben tener un dispositivo que aisle la fuente de energía y permita que el sistema pueda ser paralizado, detenido o desenergizado, con el objetivo que puedan ser intervenidos en forma segura.
- La intervención en equipos, instalaciones o circuitos deben tener un procedimiento obligatorio de bloqueo. El procedimiento debe describir la secuencia que debe cumplirse antes, durante y después de la intervención de los equipos, instalaciones o circuitos.
- En el punto de corte de la energía o desenergizado, se instalará una señalética mediante una tarjeta de advertencia que indique tal condición. Esta tarjeta tendrá el encabezado "PELIGRO", como medio visual de identificación para indicar la prohibición de accionamiento de dispositivos de aislación de energía.

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- Toda intervención en un equipo, instalación o circuito de un proceso, debe estar en conocimiento del supervisor, encargado o jefe del área quién aceptará que esta se efectúe, designando personalmente a un líder de la actividad.
- Todo procedimiento de trabajo respecto al bloqueo de equipos puede contener instrucciones que conduzcan a darle mayor eficacia al trabajo, para lo cual se deben incluir croquis, diagramas y fotos, entre otros, para una mayor claridad y entendimiento.
- Debe ser responsabilidad del líder del área o actividad verificar a través de inspecciones periódicas el cumplimiento de los procedimientos de bloqueo con candado y tarjeta.
- Todos los trabajadores que deban intervenir equipos, instalaciones y sistemas deben ser instruidos y entrenados sobre los procedimientos de bloqueo.

8.11.1 Reglas en circuitos eléctricos y sistemas hidráulicos

Para el caso de intervención de circuitos energizados eléctricamente, se conocen y se cumplen estrictamente las siguientes reglas:

- 1°: Realizar corte efectivo de todas las fuentes de tensión.
- 2°: Bloquear y señalizar los equipos de corte o seccionamiento.
- 3°: Comprobar ausencia de tensión.
- 4°: Poner a tierra la zona desconectada.
- 5°: Delimitar y señalizar la zona de trabajo.

Para el caso de intervención de sistemas hidráulicos, se conocen y se cumplen estrictamente las siguientes reglas:

- 1°: Interrupción o aislamiento.
- 2°: Bloqueo o inmovilización.
- 3°: Abrir válvulas de Vacío.
- 4°: Comprobar ausencia de presión.
- 5°: Señalización y delimitación

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8.11.2 Dispositivos, Sistemas y Componentes de Bloqueo y Señalización Tarjetas de Advertencia de Bloqueo

Las tarjetas de advertencia de bloqueo, son sistemas visuales de identificación y señalización que tienen como propósito advertir el bloqueo o la inmovilización de un equipo, instalación o circuito de procesos.

La tarjeta es a la vez un documento en el cual se identifica la persona que ha intervenido el equipo, el motivo, la fecha de la intervención y la persona que autoriza el bloqueo.

Las tarjetas de advertencia de bloqueo deben ser instaladas siempre en los puntos de accionamiento en lugares visibles y ubicadas de tal forma que adviertan claramente el bloqueo o aislación de fuentes de energía.

Las tarjetas de advertencia de bloqueo deben ser diseñadas con fondo de color blanco y con franjas de color rojo.

La información mínima que debe poseer esta tarjeta es:

- Fotografía de quién bloquea.
- Nombre y logo de la empresa.
- Teléfono, anexo o canal de radio.
- Fecha del bloqueo.
- En el dorso se debe advertir: "Retirar solo por quien la instala"; "Peligro"; "No operar".

8.11.3 Candados de Seguridad para Bloqueo

- Los candados de seguridad son los elementos frecuentemente utilizados para el bloqueo de equipos, instalaciones o circuitos.
- Cuando en el procedimiento de bloqueo de fuentes de energía eléctrica se empleen pinzas de seguridad portacandados, nunca debe colocarse un candado en otro.
- Los candados deben siempre ser instalados en forma apropiada y la llave debe ser retirada y guardada por el trabajador a cargo del candado en una caja de bloqueo o en un lugar definido en el procedimiento de bloqueo.

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- La persona a cargo de un candado, no debe, por ningún motivo, solicitar a otra persona/trabajador la colocación de su candado, a excepción del electricista a cargo de la desenergización que colocará el candado y tarjeta en presencia del trabajador.
- Si una o más personas deben trabajar o intervenir un equipo o circuito a la vez, debe ser necesario instalar pinzas de seguridad portacandados/multiplicador de candados, que permitan la instalación del número de candados y tarjetas equivalentes al número de trabajadores que debe intervenir.

8.11.4 Caja de Candados

- Es un dispositivo o caja metálica capaz de contener todas las llaves de los candados utilizados en los bloqueos. En este caso, se guardan todas las llaves de las personas que deben intervenir un equipo, instalación o circuito y la caja es abierta al finalizar el trabajo por el encargado de la actividad o supervisor.

8.11.5 Dispositivos de Bloqueo de Válvulas

Son dispositivos de bloqueo de válvulas, que encierran las válvulas no permitiendo su manipulación, evitando un manejo accidental o inesperado. Estos dispositivos tienen que ser resistentes a los solventes y a temperaturas extremas.

8.12 TRABAJO EN ESPACIOS CONFINADOS

Previo al inicio de los trabajos la empresa contratista dispondrá en terreno los siguientes documentos:

- Permiso de Trabajo.
 - Procedimiento de trabajo.
 - Identificación de peligros y evaluación de riesgos.
 - Planos, esquemas, croquis, que identifiquen el área, las dimensiones, accesos y vías de escape en caso de emergencia.
 - Respaldo de la capacitación de todo el personal involucrado en la labor, incluido supervisores.
 - Certificado de calibración de los instrumentos de medición.
 - Registro de inspección de los equipos y herramientas que se ocuparán.
 - Registro de personal que se mantiene en el interior, este se debe permanecer siempre fuera de la escotilla o lugar de acceso.
-
- Previo al desarrollo de trabajos, es preciso realizar la evaluación de riesgos de la tarea.

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- El ingreso y salida de un espacio confinado debe ser controlado por un asistente autorizado, quien tendrá la misión de asegurar que exista un registro de cada persona que ingresa y sale de un espacio confinado.
- El área de trabajo o espacio confinado donde se requiera trabajar debe contar con la preparación y planificación necesaria considerando:
 - Los avisos y las barreras de prevención que deben ser instalados para advertir e impedir el paso de personas y maquinaria.
 - La ventilación de la atmósfera previa al ingreso de las personas que ingresarán a verificar las condiciones atmosféricas.
 - Retirar todo el material que sea potencialmente peligroso, y si es necesario limpiar, neutralizar o lavar el área para eliminar residuos peligrosos.
- Se deben realizar periódicamente verificaciones a los siguientes parámetros:
 - Verificar que el contenido de Oxígeno esté entre 19.5% y 23.5%.
 - Verificación de la presencia de gases o componentes potencialmente dañinos para la salud o vida de una persona.
 - Todas las verificaciones señaladas presentemente deben quedar debidamente registradas.
 - Las periodicidades de las verificaciones deben estar definidas en los procedimientos de trabajo.
 - Estrés térmico, cuando el espacio sea clasificado por personal competente ENEL.

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8.12.1 Competencias y aptitud

- Toda persona que desarrolle trabajos en un espacio confinado debe contar con un examen de salud de "espacios confinados" otorgado por una mutualidad.
- Todas las personas que ingresen a un espacio confinado deben poseer capacitación específica en la materia.

8.12.2 Clasificación de los espacios confinados

La clasificación de los espacios confinados se realiza para las condiciones más críticas detectadas durante el ingreso, la realización de los trabajos y la salida del personal. Por ello, la clasificación de peligrosidad de los espacios confinados puede variar en función de la condición puntual descrita o la tarea programada.

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Las principales condiciones para clasificar un espacio confinado y sus clases o tipos son las siguientes:

Parámetro de valoración	Clasificación de los espacios confinados		
	CLASE A	CLASE B	CLASE C
Nivel O2	Menor a 16%, o mayor a 25%	Entre 16%-19.5% o entre 23.5 y 25%	Entre 19.5 % y 23.5%
Toxicidad	Toxicidad IPVS	Mayor CPT y menor que IPVS	Toxicidad inferior a CLASE B
Lel	Lel mayor a 20%	Lel entre 1% y 19.9 %	Lel inferior a 10%

IPVS: Inmediatamente Peligrosa Para la Vida o la Salud. CPT: Capacidad Pulmonar Total.

Según la clasificación del espacio confinado, como norma básica de seguridad, se cumplirá con lo siguiente:

CLASE A	CLASE B	CLASE C
Atmósfera Inmediatamente Peligrosa para la Vida o la Salud (IPVS).	Atmósfera peligrosa, más no IPVS.	Atmósfera potencialmente peligrosa.
Procedimiento de rescate requiere del ingreso de más de un individuo equipado con sistemas de soporte de vida.	Procedimientos de rescate requieren del ingreso de al menos un individuo equipado con sistema de soporte de vida.	Procedimientos de rescate estándar.
Mantener la comunicación directa constante.	Mantener comunicación visual o auditiva.	Procedimientos de comunicación estándar.
Personal de guardia adicional en la entrada del espacio confinado	Al menos una persona de guardia en la entrada del espacio confinado.	Una persona de guardia en la entrada del espacio confinado.

8.12.3 Riesgos especiales

Adicionalmente a los riesgos presentes en los espacios confinados, asociados a su tipo de ingreso, forma geométrica, dimensiones, fluidos almacenados, energías mecánicas y eléctricas en uso, entre otros; pueden adicionarse otros riesgos derivados de las tareas a llevar a cabo dentro de dicho recinto. A continuación, se muestran dos ejemplos:

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- Algunos materiales sintéticos, pinturas, plásticos, polímeros o metales, pueden desprender gases o vapores tóxicos al descomponerse por efecto de su calentamiento a altas temperaturas. En estos casos debe asegurarse la renovación del aire mediante la extracción de aire contaminado e inyección de aire puro.
- Los cilindros de gases comprimidos tales como: Oxígeno, Acetileno, Argón, entre otros, no deben ser dispuestos dentro de un "espacio confinado".
- Nunca ventile un "espacio confinado" con Oxígeno puro.
- Cuando se realice una extracción de aire en forma localizada en la zona de soldadura, todo el personal dentro del espacio confinado debe utilizar una semi máscara con filtro apropiado.
- Cuando no se pueda utilizar extracción de aire local para la soldadura, se debe utilizar ventilación general y adicionalmente proveer al personal con equipos de suministro de aire externo.
- Cuando exista un cese de actividades en un tiempo substancial, tal como el período de almuerzo, los equipos deben ser retirados del espacio o deben desconectarse los electrodos o cerrarse las válvulas de alimentación de la antorcha.

8.13 GAMMAGRAFÍAS

Toda empresa que requiera realizar trabajos de gammagrafía, previo al inicio de los trabajos, debe presentar a la empresa mandante, la siguiente documentación:

- Autorización de dependencias para el almacenamiento de fuentes radiactivas.
- Autorización de operación de la empresa.
- Autorización del personal para el transporte de fuente radiactiva.
- Autorización de operación del personal.
- Control dosimétrico del personal.
- Autorización de operación de las fuentes radiactivas.
- Manual de Protección radiológica visada por CCHEN.
- Certificación de detectores de radiación.
- Procedimiento de operación de trabajos de gammagrafía.
- Autorización del equipo de transporte de la fuente radioactiva.

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**Subject: BASES TECNICAS HSEQ E&C CHILE****Áreas de Aplicación**Perímetro: *Chile*Función: *Health, Safety, Environment and Quality*Business Line: *Renewable Energies*

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- Cualquier trabajo relacionado con el transporte y uso de material radiactivo debe ser realizado cumpliendo con lo establecido en la legislación vigente.
- Los vehículos utilizados para transportar fuentes radiactivas deben mostrar en su carrocería/vehículo el símbolo reconocido internacionalmente para fuentes radiactivas; además, los números telefónicos de contacto de emergencia deben estar junto con el símbolo.
- Todo vehículo debe contar con una caja fija al vehículo para el transporte de fuentes radiactivas.
- La empresa que preste el servicio de gammagrafía debe tener licencias válidas otorgadas por la Comisión Chilena de Energía Nuclear.
- La empresa de servicios de gammagrafía debe enviar la declaración del método de trabajo y evaluación de riesgos antes de solicitar el permiso de trabajo para revisión y comentarios.
- El permiso de trabajo seguro debe adjuntar una copia del plano mostrando la ubicación donde se realiza la radiografía y el área segura. Además, debe enviar el documento de cálculo de distancia segura para el personal.
- Los trabajos de gammagrafía sólo podrán realizarse por personal competente, autorizado, con licencia y entrenado.
- Un trabajo de gammagrafía comienza con la definición del radio de seguridad y con la delimitación y señalización de dicho radio de seguridad, el cual será enviado con layout a HSEQ Enel, con al menos 24 hrs. De anticipación de los trabajos a realizar, para su aprobación.
- Antes de comenzar con las actividades diarias de radiografía, el supervisor o el prevencionista de riesgos de la empresa que presta el servicio, debe inspeccionar la ubicación donde se llevará a cabo el trabajo.
- Cuando el supervisor o prevencionista de riesgos de la empresa de servicios de radiografía, ha verificado que se han tomado todas las precauciones (Por ej.: Barreras, señalizaciones de advertencia de radiación, luces estroboscópicas o balizas) y que no hay otros empleados dentro del radio definido como radio de seguridad, sólo en este momento se autorizará el inicio de los trabajos.
- Se debe realizar un disparo de prueba para verificar (con instrumento) que los cierres perimetrales, no presentan riesgo de exposición para personal ajeno a la actividad.

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- Mientras se desarrolle el trabajo de radiografía se debe utilizar un detector de radiación calibrado para confirmar que el área señalada en el plano como área segura, no se encuentra expuesta a radiación. Si se presentan lecturas fuera de las barreras del área segura que exceden los límites establecidos, se debe detener el trabajo de inmediato y reajustar las barreras.
- Se debe tener un observador quien tendrá la responsabilidad de vigilar la parte externa del radio de seguridad definido para asegurar que ningún empleado u otra persona cruce las delimitaciones o barreras mientras se realizan las actividades de radiografía.
- Se debe contar en el sitio de trabajo con copias de los procedimientos de emergencia para trabajos con radiación. Se debe incluir el número telefónico del personal clave (teléfonos fijo y celular).
- Todos los empleados del contratista de servicios de radiografía, mientras están realizando las radiografías deben portar, en todo momento, sus dosímetros personales. Asimismo, las personas que no pertenezcan al equipo de radiografía no podrán estar dentro del radio de seguridad.
- Los niveles de radiación fuera del contenedor (Caja fija al vehículo) deben medirse antes y después de la exposición a las fuentes gammagráficas.
- El nivel de radiación del área debe ser medido y registrado antes de comenzar los trabajos de gammagrafía.
- Luego de cada exposición radiográfica, el operador debe cerciorarse que la fuente sellada ha regresado a su posición cubierta, debiendo quedar asegurada. Asimismo, debe cerrar la caja y poner el candado.
- Luego del término de las actividades, el operador gammagráfico realizará una prueba de medición de radiación en el área y declara el área como segura; posteriormente debe retirar las barreras, las señales de advertencia o luces estroboscópicas.
- Los dispositivos de exposición radiográficos y los contenedores de almacenamiento deben ser herméticos y asegurados físicamente para prevenir retiro no autorizado, mala utilización o exposición accidental cuando no se está utilizando.
- Sólo luego de haber finalizado el trabajo y hecho las pruebas en el área y se ha retirado las señales y barreras de seguridad, se puede cerrar el permiso de trabajo seguro (PTS).
- Los dosímetros de film o los termos luminiscentes deben ser procesados para evaluación de dosis trimestral.



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- Cada equipo, que realice trabajos de gammagrafía, debe contar con un set de emergencia que contenga a lo menos:
 - Contenedor blindado.
 - Telepinzas.

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8.13.1 En caso de emergencia

- En caso de ocurrir una emergencia el personal de la empresa que realiza los trabajos debe comunicar en el más corto plazo a la empresa mandante del grupo Enersis para la cual realice los trabajos.
- Para responder ante situaciones de emergencias radiactivas de alta emisión, el personal del contratista involucrado en la emergencia y autorizado por la Comisión de Energía Nuclear (CCHEN), debe ejecutar las primeras acciones para el control de esta. La CCHEN es el organismo idóneo para responder a este tipo de emergencias.
- Como primera acción, se debe aislar con cintas y letreros en un radio de 10 metros aproximadamente la fuente siniestrada y además debe efectuar mediciones cercanas a la fuente, para acordonar el área de peligro. El valor máximo de los sectores de circulación de público no debe sobrepasar 0,25 mR/h (2,5uSv/h).
- Se debe evacuar a las personas que se encuentren dentro de la zona aislada hacia las respectivas zonas de seguridad de acuerdo a lo establecido en el plan local de emergencia aprobado por CCHEN. Sólo se permite el acceso al área afectada al personal autorizado para enfrentar la emergencia.
- Post emergencia, el supervisor del contratista de la empresa gammagráfica debe generar un listado del personal expuesto a radiación ionizante durante la emergencia radiológica y enviar esta información a la CCHEN, la cual define los pasos a seguir.
- El operador responsable del trabajo debe coordinar las acciones hasta disponer el material radioactivo en una bóveda de desecho radioactivo de la Comisión Chilena de Energía Nuclear (CCHEN).
- Una vez realizadas estas actividades se procederá a efectuar la investigación de la emergencia. Esta es una actividad clave para descubrir las causas que provocaron la emergencia y verificar con qué medios cuentan para minimizar los efectos producidos por las emergencias. Esta investigación debe ser coordinada por el encargado de protección radiológica designado, en conjunto con el personal de la CCHEN.



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8.14 TRABAJOS EN CALIENTE

Antes de comenzar con los trabajos en caliente de debe asegurar la ausencia de gases explosivos y tomar las medidas de seguridad en caso de trabajos cercanos o almacenamiento de grandes cantidades de combustibles o inflamables de rápida ignición.

Las personas que realicen trabajos en caliente, presten apoyo o se desempeñen en un área donde se realicen estos trabajos, deben utilizar, los elementos de protección personal adecuados para protegerse contra riesgos de:

- Radiación UV.
- Proyección de partículas a todos los órganos y partes del cuerpo.
- Inhalación de gases y humos metálicos.
- Quemaduras o Inflamación de la ropa.
- Eléctricos.

En caso de intervención de cañerías o ductos, estos deben estar limpios, drenados, venteados sin gases tóxicos o explosivos, despresurizadas, sin líquidos inflamables y sin contacto eléctrico, para lo cual debe asegurarse el bloqueo mecánico o eléctrico.

Se deben tomar las medidas necesarias para evitar las fugas de gases en los equipos de oxicorte, siendo necesario inspecciones y mantenencias periódicas.

- Las máquinas soldadoras deben someterse a un programa de mantención que debe ser realizado por personal competente y autorizado.
- Se deben tomar las medidas de seguridad necesarias para que las herramientas y equipos utilizados en trabajos en caliente cumplan con las normas de seguridad del fabricante.
- Cuando se efectúe un trabajo en caliente se debe instalar una pantalla, mampara, carpa o biombo (Todos ignífugos) a fin de evitar riesgos de incendio y la propagación de partículas hacia los alrededores o niveles inferiores.
- Cuando se realicen trabajos en caliente en altura, se deben tomar las medidas necesarias para prohibir el tránsito de personas por debajo del lugar donde se desarrolla la actividad, y se deben instalar protecciones en las áreas de influencia para evitar que una persona sea alcanzada por la caída de algún material o por partículas resultantes de estas actividades, en especial las incandescentes.

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- Se debe disponer de uno o más extintores tipo ABC, según magnitud de la actividad en desarrollo.
- Todos los equipos utilizados para realizar trabajos en caliente, deben ser inspeccionados a intervalos preestablecidos en bases listas de verificación que abarquen todas las piezas o componentes del equipo.
- Todas las máquinas soldadoras deben tener conexión a tierra y todas sus protecciones deben estar ubicadas en su lugar.
- Las máquinas soldadoras portátiles montadas en un remolque u otra plataforma, deben tener sus ruedas bloqueadas para evitar que se muevan durante el uso.
- El material usado para mantener las escorias debe ser resistente al fuego.
- Para el caso de equipo se oxiacetileno:
 - En los equipos de oxicorte, las boquillas de oxígeno y acetileno deben poseer válvulas que prevengan el retroceso de una llama.
 - Los componentes de los equipos de oxicorte no se deben lubricar con ningún elemento derivado del petróleo.
 - Cuando un equipo de oxicorte no esté en uso, las válvulas de los cilindros de gases comprimidos deben estar completamente cerradas, los manómetros retirados y la tapa del cilindro puesta en su lugar.
 - Las válvulas defectuosas no se deben reparar en obra, sino que deben ser reemplazadas por una válvula nueva, o en su defecto deben ser reparadas por el proveedor.
 - Los cilindros deben poseer en todo momento su válvula de apertura o cierre mientras están siendo usados.
 - Los cilindros para trabajos de oxicorte deben ser transportados, manipulados y almacenados de acuerdo al "estándar materiales peligroso"
 - Se debe usar protección respiratoria ante la producción de humos metálicos.

8.15 SEÑALIZACION Y DELIMITACION

- Señalización de Seguridad: Medio visual o sonoro referido a un objeto, actividad o situación determinada, que proporciona una indicación u obligación relativa a la seguridad o salud en el trabajo, en forma de panel, color, señal luminosa o acústica, comunicación verbal o una señal gesticular.

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- Señal de Prohibición: Señal que prohíbe un comportamiento susceptible de provocar un peligro.
• Señal de Advertencia: Señal que advierte un riesgo o un peligro.
• Señal de Obligación: Señal que obliga a un comportamiento determinado.

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El significado y algunos ejemplos de aplicación de los colores de seguridad son los indicados en la tabla N°1.

Las señales de seguridad deben ser confeccionadas de acuerdo a lo establecido en la Nch 1411/2.0f78.

Tabla N°1: Significado y aplicación de los colores de seguridad

Table with 2 columns: SIGNIFICADO and EJEMPLO DE APLICACIÓN. Rows are categorized by color: ROJO, AMARILLO, VERDE, AZUL.

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Handwritten signature or initials

NARANJA	
SIGNIFICADO	EJEMPLO DE APLICACIÓN
<ul style="list-style-type: none"> Partes peligrosas de máquinas. 	Interior de resguardos de engranajes, poleas y cadenas. Aristas de partes expuestas de poleas, rodillos, engranajes, etc.
<ul style="list-style-type: none"> Equipos en zonas nevadas y desiertas. 	Equipos de construcción en zonas nevadas y desiertas.
PÚRPURA	
SIGNIFICADO	EJEMPLO DE APLICACIÓN
<ul style="list-style-type: none"> Riesgos de radiaciones ionizantes. 	Almacenamiento de radioactivos, recipientes con material contaminados, luces que indican que las maquinas productoras de

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Cuando se aplique un color de contraste, se utilizará de acuerdo a la tabla N°2. TABLA N°2, COLORES DE CONTRASTE

COLOR	CONTRASTE
Rojo	Blanco
Amarillo	Negro
Verde	Blanco
Azul	Blanco
Naranja	Negro
Púrpura	Blanco

- Se deben instalar señales gráficas o pictogramas indicando las salidas de emergencia y vías de evacuación.
- Se deben identificar las zonas donde exista riesgo de caída de materiales, proyección de partículas, sustancias inflamables, carga suspendida, corriente eléctrica, radiación, peligro de caída, gases comprimidos y todas aquellas áreas donde existan peligros de accidente.
- El texto o mensaje de las señales gráficas con rótulos, debe ser claro y conciso, lo más breve posible y sin ambigüedades. La legibilidad implica que los caracteres puedan ser vistos y comprendidos rápidamente.
- El tamaño de las letras en las leyendas de un letrero debe mantener un adecuado equilibrio y legibilidad respecto a la composición total de la señal gráfica.

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- No debe permitirse la obstrucción del campo de visión de una persona normal, hacia la señalización.
- Debe evitarse la puntuación, subrayados, comas, puntos, etc. por cuanto las señales deben leerse muy rápidamente.
- Las señales de seguridad instaladas para faenas nocturnas, deben ser reflectantes para asegurar una adecuada visualización.
- Las señales para regular y guiar el tránsito de vehículos al interior de un proyecto, obra o faena, deben estar diseñadas de acuerdo a la legislación vigente.
- Las señales de seguridad deben tener las esquinas redondeadas y estar libres de bordes o cantos filosos o astillas.
- Los extremos o las cabezas de los pernos u otros medios de sujeción de las señales se deben colocar de tal forma que no constituyan riesgos.
- La señal debe afianzarse correctamente, con el fin de evitarse su caída o desplazamiento por efecto del viento, golpe leve u otro agente.
- La señalización no debe considerarse una medida sustitutiva de las medidas de seguridad pertinentes para la protección de los trabajadores. Asimismo, tampoco implica el reemplazo de la información (Derecho a Saber) que los trabajadores deben recibir acEGPa de los riesgos a que se ven expuestos.
- Los avisos y letreros que se encuentren dañados, sucios o quebrados deben ser retirados y reemplazados.
- La destrucción o alteración de afiches de seguridad por parte de los trabajadores debe ser sancionado.
- Las señales de seguridad deben ser inspeccionadas regularmente a intervalos preestablecidos.
- Las señales de seguridad deben ser mantenidas en buen estado de conservación, resguardando sus colores y dimensiones originales, buena visibilidad y estado intacto de sus símbolos y leyendas.

9. INCIDENTES

9.1 CONSIDERACIONES ANTE INCIDENTES

- Todo accidente que sufra un trabajador del Contratista o Subcontratista deberá ser atendido en centro asistencial más cercano y ser informado dentro de las próximas **dos (2) horas como máximo**, al Responsable HSEQ de EGP en Proyecto. El trabajador debe ser acompañado por el Prevencionista de Riesgo y/o Supervisor de la empresa al centro asistencial correspondiente.

El Contratista tendrá la obligación de informar al Organismo Administrador correspondiente al cual se encuentra afiliado.

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- Será obligación del contratista informar la ocurrencia de todo Incidente en un plazo máximo de cuatro (2) horas ocurrido el evento al responsable de HSEQ de EGP del Proyecto en Construcción. La información deberá ser enviada en formatos establecidos por EGP, según tipo de Incidente.

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DEFINICIÓN INCIDENTES SEGÚN OI 183		
	ACTP Fatal o Grave	ACTP NO Grave
	grave: mayor a 30 días perdidos	menor a 30 días perdidos
Documentos	Aviso por SAP	Aviso por SAP
	Informe de Investigación de ACTP (30 días max)	Informe de Investigación de ACTP (10 días max)
	Lección aprendida	Lección aprendida
	Informe Resumen RCA	Informe Resumen RCA
FIRST AID		
	FIRST AID	NEAR MISS
Documentos	Aviso por SAP	Aviso por SAP
	Informe de Investigación Incidentes (10 días max)	Informe de Investigación Incidentes (10 días max)
	Lección aprendida	Lección aprendida

- La información preliminar deberá indicar cada empresa contratista es:
 - Nombre completo del trabajador involucrado en el incidente, su cargo y RUT.
 - Tipo de Incidente (Accidente, First Aid, Near Miss, Trayecto, Incidente ambiental).
 - Fecha, hora y lugar del incidente.
 - Gravedad real y potencial (severo o no severo).
 - Descripción detallada de incidente.
 - Lesiones, si aplica.
 - Probables Causas.
 - Medidas inmediatas tomadas para controlar el evento.
- Una vez controlado el incidente y en un plazo establecidos, el contratista debe realizar la correspondiente Investigación del Incidente, en formatos establecidos por EGP, el cual debe confirmar la información preliminar, junto con incluir:

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- Gravedad real.
- Primera Prognosis
- Lesión confirmada por el centro asistencial, si aplica.
- Causas reales (raíz) de la ocurrencia.
- Acciones de mejora para prevenir que el evento vuelva a ocurrir, con responsables y fechas de ejecución.

- El Contratista debe difundir los incidentes ocurridos a su personal dentro de su empresa.
- **Todo Incidente ocurrido que tenga relación con el Proyecto en Construcción debe ser declarado a EGP sin excepción, el ocultar un Incidente será estrictamente sancionado.**

Accidente Fatal o Grave

Se entenderá por:

- **Accidente del Trabajo Fatal:** Aquel accidente que provoca la muerte del trabajador en forma inmediata o durante su traslado a un centro asistencial.
- **Accidente del Trabajo Grave:** Cualquier accidente del trabajo que:
 - Obligue a realizar maniobras de reanimación, u
 - Obligue a realizar maniobras de rescate, u
 - Ocurra por caída de altura, de más de 1.8 [metros], o
 - Provoque, en forma inmediata, la amputación o pérdida de cualquier parte del cuerpo, o Involucre un número tal de trabajadores que afecte el desarrollo normal de la faena afectada.

La empresa contratista que le ocurriese un accidente del trabajo fatal o grave deberá considerar las siguientes acciones:

- **Suspender y delimitar en forma inmediata** el área o puesto de trabajo donde se produjo el accidente.
- De ser necesario, implementar la evacuación del lugar (si existe peligro para la seguridad y vida de los trabajadores).

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- Informar inmediatamente de lo ocurrido al Responsable HSEQ de EGP y su Representante en terreno.
- Informar a las autoridades competentes en forma inmediata según (Circular N°3335 SUSES0)

10. PLAN DE RESPUESTA ANTE UNA EMERGENCIA

EGP, determinará y entregará a sus contratistas los números de emergencias a los cuales deberán ser informadas las emergencias.

El contratista es responsable de velar para que los recursos necesarios se encuentren en el Proyecto para la actuación de los diversos tipos de emergencia que se puedan presentar de acuerdo a la actividad del trabajo, a las condiciones geográficas y climáticas.

En caso de emergencias declaradas (sismos, incendios, derrames, atentados y similares), las empresas Contratistas, su personal y sus equipos quedarán a disposición de EGP. La declaración y el cese de la emergencia le serán comunicados oficialmente por la misma.

10.1 RESPONSABILIDADES ANTE EMERGENCIAS

- El Contratista es responsable de la adecuada instrucción y capacitación de su personal de acuerdo al Plan de Respuesta ante Emergencias de su área, estar integrado y coordinado con las especificaciones del Plan de Emergencia de EGP del proyecto en construcción.
- El Contratista deberá coordinar con EGP simulacros de emergencia de acuerdo al programa de simulacros, con fines de entrenamiento y evaluaciones del comportamiento del personal y equipamiento ante emergencias.
- El Contratista tiene la responsabilidad final de la correcta actuación ante una emergencia, simulacro o ejercicio, tales como; Detención de todas las actividades de construcción bajo su supervisión, la posterior evacuación a los Puntos de encuentro de emergencias (PEE) y conteo del personal luego de la evacuación y entrega de las anotaciones correspondientes al encargado de la emergencia.

10.1.1 Equipamiento ante Emergencias

- El Contratista debe asegurar que todo el equipamiento de emergencia sea regularmente mantenido, probado y que siempre esté en condiciones de servicio y que su personal esté capacitado y cuando sea requerido, certificado en el uso de estos equipos.

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- En cada área de trabajo el contratista deberá tener y mantener una estación de emergencia, esta estación debe estar codificada, tener un responsable y estar sujeta a inspección mensual.

En toda obra el Contratista deberá contar con Estaciones de Emergencia que constarán de:

- Bocina,
- Botiquín básico,
- Camilla rígida,
- Tabla espinal con correas del tipo araña,
- Inmovilizador de cuello cervical regulable,
- Inmovilizador de brazos y piernas (férulas),
- Frazadas o manta térmica,
- Quitasol.

Kit de Emergencia de derrames ambientales; Paños absorbentes, palas, guantes, bolsas de basura, baldes, cordones absorbentes para contención de hidrocarburos y buzos de papel.

10.1.2 Protección contra incendios

Como mínimo se deben observar los siguientes aspectos de protección contra incendios en el sitio:

- El Contratista debe tomar todas las medidas apropiadas para la protección contra incendios durante todo el proyecto. Debe colocar señalización delante de áreas con riesgos de incendio especiales y proporcionar suficientes equipos de protección contra incendios.
- Todas las dependencias destinadas a alojamiento temporal, salas de almacenamiento, talleres / maestranzas oficinas, etc. deben estar equipadas con extintores de acuerdo con la legislación local. Una cantidad apropiada de empleados deben estar capacitados en el combate de incendio con estos extintores.
- Los trabajos con riesgo de incendio deberán realizarse solo luego de haber tomado las precauciones necesarias (Ej.: extintores, baldes de agua, mantas contra chispas, etc.). Una persona stand-by (observador incendios) puede ser necesaria.



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- Chequear si el sistema de permiso de trabajo se está aplicando en caso de trabajo en caliente.
- Todo amago, incluso el más pequeño deberá ser informado a la brigada contra incendios y a EGP Chile, con una precisa definición de la ubicación. Si es posible sin poner en peligro a las personas se deben usar equipos contra incendios a objeto de extinguir el amago en una etapa temprana.
- Se prohíbe fumar en las áreas restringidas dentro del recinto y dentro de vehículos. Se excluyen las áreas de fumadores designadas.
- La defectuosa aislación de herramientas eléctricas, las cañerías, recipientes o accesorios con filtraciones, deben ser informados a la supervisión inmediata sin demora.

11. CONSIDERACIONES GENERALES DE LOS PROGRAMAS HSEQ EN LA CONSTRUCCIÓN

- El Contratista preparará un Plan o Programa de Gestión de Salud, Seguridad, Medio Ambiente y Calidad (denominado Programa HSEQ), antes de iniciar su instalación en terreno o iniciar los trabajos, este plan debe ser entregado a EGP Chile para su conocimiento y aprobación.
- El Programa HSEQ deberá alcanzar los requerimientos de toda la legislación aplicable y de las que rigen en un Contrato con EGP, a las especificaciones técnicas, bases técnicas y demás documentos del Contrato y sistemáticamente dirigirá todos los aspectos del servicio, obra o trabajo encomendado.
- El Programa HSEQ debe detallar los planes específicos y programas para establecer en un Contrato los requerimientos de Salud, Seguridad, Medio Ambiente y Calidad. Este plan podría ser una colección de documentos y manuales (ejemplo: Plan de Emergencia,
- Manuales de Entrenamiento, Hojas de Datos, etc.) e incluso ser integrado o por separado (Calidad - Salud - Seguridad - Medio Ambiente).

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- El Programa HSEQ deberá demostrar a EGP que la Gestión y el compromiso del Contratista es parte integral de su proceso administrativo y serán establecidos de una manera planificada, sistemática y documentada.
- El Programa de Gestión de Salud, Seguridad y Medio Ambiente y Calidad deberá contar como mínimo con los siguientes requerimientos:
 - Política de Calidad, Seguridad y Medio Ambiente de EGP y de la Empresa Contratista (si aplica).
 - Organigrama general de la Empresa y Organigrama del Área HSEQ del contratista.
 - Inventario de Identificación de Peligros, Evaluación de Riesgos y Control Operacional.
 - Inventario de Aspectos Ambientales, Evaluación de Impactos y Medidas de Mitigación.
 - Exámenes pre-ocupacionales u ocupacionales, según requerimientos del Parque y labores a realizar.
 - Programa de inducción, capacitación y entrenamiento.
 - Identificación y cumplimiento de la normativa legal vigente para el proyecto y para las actividades a realizar.
- Procedimientos Específicos cuya base será sugerida por EGP o su representante, los cuales la empresa contratista deberá analizar y adaptar a su tarea, tales como:
 - Tránsito al interior de Proyecto.
 - Bloqueo de Equipos y Maquinaria.
 - Trabajo en Altura.
 - Trabajos de bloqueo y/o energización de equipos.
 - Trabajos con equipos energizados o en tensión.
 - Maniobras de izaje.
 - Excavaciones y zanjas.
 - Espacios Confinados.
 - Permisos de Trabajo.
 - Plataformas de Trabajo y Andamios.
 - Uso de Elementos de Protección Personal.
 - Procedimientos Precomisionamientos y Comisionamientos.
 - Operación de Equipos Radioactivos.
 - Manejo de Residuos.

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- Almacenamiento y Manejo de Sustancias Peligrosas.
- Manejo de Derrames.
- Hallazgo de Restos Arqueológicos.
- Cierre y Desmovilización Ambiental.
- Suministro y Consumo de Agua Potable.
- Suministro y Mantenimiento de Baños Químicos.
- Análisis de Riesgo del Trabajo.
- Uso de Explosivos (si procede).
- Planes de Emergencia.

- Programa de trabajo del Comité Paritario
- Programa de observaciones planeadas
- Campañas preventivas, por ejemplo: protección de manos, conducción, riesgos eléctricos, etc.

11.1 HIGIENE INDUSTRIAL

Para proteger a los trabajadores, el Decreto Supremo N° 594 le exige a las empresas implementar medidas preventivas, con el fin de evitar daños a la salud vinculadas a la radiación UV solar.

Algunas de estas exigencias son las siguientes:

- Informar a los trabajadores de los posibles riesgos, en este caso exposición a radiación UVA y UVB solar.
- Los contratos de trabajo o reglamentos internos de las empresas, según el caso, deberán especificar el uso de los elementos protectores correspondientes para proteger a los trabajadores del riesgo de exposición a radiación UV.
- Contar con un programa escrito de protección contra exposición laboral a radiación UV.
- Contar con un programa escrito de capacitación de los trabajadores y un registro de las capacitaciones.
- Publicar en carteles visibles el Índice UV diario y las medidas de control necesarias.
- Implementar las medidas de control adecuadas: Ingenieriles, administrativas y de protección personal.

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- Se desarrollarán controles para el control de la higiene, alcohol y drogas, salud y estado físico, protección solar, restricción de fumar, carga máxima corporal según legislación vigente, primeros auxilios y acceso a tratamientos médicos, iluminación, vibraciones, etc.
- Implementación de Protocolo de Exposición Ocupacional al Ruido (PREXOR) y monitoreo a la exposición de los trabajadores al ruido, polvo y otras sustancias potencialmente peligrosas según evaluación.
- Plan de Gestión del Riesgo por Exposición a Sílice.
- Identificación y Evaluación de Factores de Riesgo de Trastornos Musculo esqueléticos relacionados al Trabajo (TMERT)
- Hipobaría Intermitente Crónica por Gran Altitud (HIC).

11.2 REPORTABILIDAD

- El Programa de Salud, Seguridad, Medio Ambiente y Calidad deberá ser presentado a EGP para revisión y aprobación, una vez aceptado por HSEQ EGP, no deberá ser modificado sin previa consulta y aceptación por EGP.
- El contratista deberá informar todo evento ocurrido en sus instalaciones, por medio de los canales de comunicación que mantenga el proyecto o parque y en los tiempos estipulado.
- Las Empresas contratistas deberán presentar un programa de Capacitación de acuerdo al riesgo a los que estarán expuestos sus trabajadores, este programa debe considerar los riesgos específicos, cursos obligatorios de Salud, Seguridad, Medio Ambiente, Calidad, etc.
- Las Empresas contratistas deberán reportar y mantener actualizado a lo menos los siguientes documentos de su gestión en Parque:
 - Mantenimiento de registros de Salud, Seguridad y Medio Ambiente.
 - Reportes de Incidentes.
 - Auditorías internas y externas.
 - No Conformidades, Acciones Correctivas y Preventivas.

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11.3 REVISIONES HSEQ

11.3.1 INSPECCIONES DE SALUD, SEGURIDAD, MEDIO AMBIENTE Y CALIDAD (HSEQ)

Se entiende por inspección HSEQ las revisiones que realice EGP o su Representante, y que tengan por finalidad evaluar en terreno, las medidas que se hayan adoptado o se estén adoptando para no interferir con el Medio Ambiente, Calidad, Seguridad y Salud de los trabajadores.

El Contratista, de acuerdo a los estándares de EGP deberá realizar a lo menos una revisión semanal, en la cual verificará el estado de las faenas e informará de ésta a EGP o su Representante. EGP o su Representante podrán realizar, por sí sola o en conjunto con el Contratista, una inspección a las obras, cuando lo estime conveniente.

Todas las deficiencias y observaciones que sean detectadas durante el desarrollo de estas inspecciones, deberán ser documentadas y corregidas tan pronto como sea posible o dentro del plazo que se indique, el cual se consignará en un acta que se levante para tal efecto con ocasión de la respectiva inspección.

11.3.2 AUDITORIAS HSEQ

Se entiende por auditoría HSEQ a una actividad planificada y documentada que realice EGP para determinar mediante un examen de evidencia objetiva, el cumplimiento oportuno y adecuado de los estándares y requerimientos establecidos y la efectividad de su aplicación o implementación. EGP o su Representante realizarán al menos una auditoría HSEQ al año a sus Colaboradores / Contratista.

Todas las no conformidades que sean detectadas durante el desarrollo de la auditoría, deberán ser documentadas y corregidas tan pronto como sea posible o dentro del plazo que se indique, el cual se consignará en un acta que se levante para tal efecto con ocasión de la respectiva auditoría. La auditoría estará enfocada a determinar el grado de cumplimiento adecuado de los requisitos definidos y establecidos en Proyectos en Construcción, sobre el presente documento o en otras especificaciones sobre la materia.

11.4 REQUISITOS PARA PROFESIONALES DE PREVENCIÓN DE RIESGOS

Según los requerimientos de la faena, obra o servicio, se definen las siguientes categorías para Profesionales de Prevención de Riesgos:

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Profesional Nivel 1: Persona con Título de Ingeniero, con más de 10 años de experiencia en seguridad y salud laboral. Con conocimiento y experiencia en la implementación de un Sistema de Gestión OHSAS 18001. Con conocimiento de otros Sistemas de Gestión en Seguridad y Salud Laboral. Se debe haber desempeñado por más de 5 años en rubros como construcción, montajes industriales, eléctricos o mineros.

Profesional Nivel 2: Persona con Título de Ingeniero con más de 5 años de experiencia en seguridad y salud laboral. Con conocimiento y experiencia en la implementación de un Sistema de Gestión OHSAS 18001. Con conocimiento de otros sistemas de gestión en seguridad y salud laboral, se debe haber desempeñado por más de 3 años en rubros como construcción, montajes industriales, eléctricos o mineros.

Profesional Nivel 3: Persona con Título de Ingeniero o Técnico con más de 3 años de experiencia. Posee conocimientos del Sistema de Gestión OHSAS 18001 y se debe haber desempeñado por más de 1 años en rubros como la construcción, montaje industrial y eléctrico, entre otros.

Profesional Nivel 4: Persona con más de un año de experiencia laboral. Con experiencia en implementación en programas de seguridad y salud laboral.

11.5 SELECCIÓN DEL PROFESIONAL DE PREVENCIÓN DE RIESGOS

Para cualquiera de las categorías, la persona además de demostrar la idoneidad para el cargo, debe probar que posee registro de experto en Prevención de Riesgos que lo acredite para ejEGPer el cargo expedido por el servicio de salud.

La categoría de un Profesional de Prevención de Riesgos que integren la organización del contratista se define según la magnitud de los riesgos, el número de personas expuestas y los plazos de ejecución de la obra, faena o servicio. Dicha definición queda establecida en las bases de licitación, la cual debe ser acordada entre el área técnica y la Subgerencia de SSL.

Para casos de actividades clasificadas como de riesgo 2 (aceptable), se acepta la modalidad de asesoría part-time. Dicha asesoría debe ser presentada para aprobación de la empresa Mandante, adjuntando el cronograma de visita, antecedentes de la experiencia laboral de los profesionales encargados de las visitas y programa de trabajo propuesto.



12. SANSIONES POR INCUMPLIMIENTOS Y OBLIGACIONES

12.1 INFRACCIONES EN HSEQ

- EGP y el Contratista acuerdan que cualquier infracción o violación será considerado materia y contravención sustancial del Contrato.
- El Contratista asegurará que su personal y el personal subcontratista cumplan en forma total con tales requerimientos estatutarios, políticas, guías y estándares. Más aún, el Contratista acuerda que, en el evento que cualquiera de sus trabajadores o del subcontratista viole cualquier requerimiento de este Contrato, debe notificar inmediatamente a EGP; tal violación debe ser corregida prontamente y se deberán tomar los pasos para evitar una nueva ocurrencia. Quien o quienes resulten responsables de la violación deberán ser removidos de sus sitios de Trabajo si así lo solicitare EGP. Si el Contratista falla en tomar los pasos necesarios para reparar la infracción de dicha violación prontamente, o de cumplir con esta cláusula, EGP podrá poner término al Contrato.
- Si EGP observará una acción insegura o se entera de la planificación de acciones inseguras o cualquier otro acto que viole algunas de las cláusulas establecidas en estas bases, éste podrá indicar al Contratista que cese en sus funciones y detenga la tarea. Para continuar con los trabajos, EGP del Proyecto o instalación evaluará los nuevos métodos de trabajo que deberá realizar la empresa Contratista, con costos propios en el menor tiempo posible.
- Para todo lo anterior es aplicable el Reglamento de Multas HSEQ de EGP.

13 INCUMPLIMIENTO DE CONTRATO

Se establece que cualquier atraso en la ejecución de un Contrato derivado de la aplicación de estas Normas y/o de cualquiera de los instructivos de Salud, Seguridad, Medio Ambiente y Calidad, no constituirá una base para justificar administrativamente dicho atraso o para solicitar ampliación del plazo pactado para ejecutar la Obra. EGP estará facultado para imponer sanciones cuando el Contratista cometa infracciones o no cumpla con las normas indicadas en este documento.

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Manual GRE_CHL_QSE_MN_01_Vers.5

Versión no. 05 fecha 09/11/2018

Subject: **BASES TECNICAS HSEQ E&C CHILE**

Áreas de Aplicación

Perímetro: Chile

Función :Health, Safety, Environment and Quality

Business Line: Renewable Energies

El Contratista sustituirá en forma inmediata a cualquiera de sus trabajadores, si a sólo juicio de EGP éste no cumple con los requisitos de idoneidad exigidos; su conducta es perjudicial para el desarrollo de la Obra; atenta contra su propia seguridad o la de otros trabajadores.

Será considerado comportamiento perjudicial el cometer una o más de las infracciones detalladas en las Reglas Claves de EGP.

El incumplimiento total o parcial de cualquiera de las obligaciones señaladas en el presente documento, facultará a EGP para invocar causal adicional de término anticipado de Contrato.

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LOGO BANK

[Name of issuing bank in Chile] USD ***[125.240]***

BANK GURANTEE N° [●]
IN FOREIGN CURRENCY PAYABLE AT A GLANCE
IRREVOCABLE, UNCONDITIONAL AND ONLY REQUIREMENT OF THE BENEFICIARY
NOT ENDORSABLE

SANTIAGO, DATE OF ISSUE

THE BANK [...] (hereinafter, the "Bank") WILL PAY TO Empresa Electrica Panguipulli, domiciled at AV. SANTA ROSA 76, commune and city of Santiago, the amount of USD 125.400.- (ONE HUNDRED TWENTY FIVE THOUSANDS, FOUR HUNDRED U.S. DOLLARS o). This Ballot is issued under the following conditions:

PAYABLE IN SIGHT, IRREVOCABLE, UNCONDITIONAL AND MORE REQUIREMENT OF Empresa Electrica Panguipulli, RUT N ° 96.524.140-K, valid until the Provisional Reception, plus 45 days, of the works object of the contract N ° XXXXXXXX, signed with date [●], between Empresa Electrica Panguipulli and Ocean Power Technologies INC (OPT), Called "MERIC Open Sea Lab (OSL) Project Part A - Wave Energy Converter (WEC) System Supply" (hereinafter, the "Contract ")

This bank guarantee slip was requested and issued by order of Ocean Power Technologies INC (OPT), Identity card No. XXXXXXXXXXXX, domiciled at 28 Engelhard Drive, Suite B, Monroe Township, New Jersey 08831 USA, to ensure the faithful, correct and timely fulfillment of the Contract.

THE GENERAL CONDITIONS PROVIDED ON THE BACK OF THIS DOCUMENT ARE AN INTEGRAL PART OF THIS WARRANTY

FIRMA AUTORIZADA

FIRMA AUTORIZADA





SUPPLY AND SERVICE CONTRACT

11995 MERIC – Open Sea Lab (OSL) Project

Part B – OSL Balance of Plant

SAP No. 84XXXXXXX

BETWEEN

ENEL GREEN POWER CHILE LTDA

AND

OCEAN POWER TECHNOLOGIES, INC (OPT)

CHILE

**** Portions of this exhibit have been redacted in accordance with Item 601(b)(10) of Regulation S-K. This information is not material and would cause competitive harm to the registrant if publicly disclosed. “[***]” indicates that information has been redacted.**

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In Santiago, Republic of Chile, on September 16th, 2019 between, on the one hand, Enel Green Power Ltda., RUT No. 96.920.110-0, (hereinafter, the “EGP”), represented by Mrs. Pamela Llanos Troncoso, Identity card No. 12.262.136-7, all domiciled for these purposes in Avenida Santa Rosa, 76 Floor 9, Santiago and, on the other Ocean Power Technologies, Inc., with a U.S. federal tax identification number of 22-2535818, represented by Mr. George Kirby, with a U.S. passport number that has been presented to EGP (hereinafter, the “Service Provider”) domiciled for these purposes in 28 Engelhard Drive, Suite B, Monroe Township, New Jersey 08831 USA. Hereinafter, EGP and the Service Provider will be referred to jointly as the “Parties” and individually as the “Party”, who come to enter into this service contract (the “Contract”) in the terms indicated to continuation and, not provided for by them, by the relevant legal norms:

1 Statements

The representatives of each of the Parties have the corporate and legal authorizations necessary for the signing of this Contract.

The Service Provider declares that it is regularly engaged in activities related to the provision of the services contracted here and that it has the legal capacity to contract and be bound in the execution of the Service, and that it has the experience, organization and human, technological, administrative, economic, operational and technical elements for its realization.

Declares, in addition, that the nature of the work to be carried out has been fully informed; of the location and other peculiarities of the place of work; of the methodology of the works; of the number of personnel required to fulfill this Contract in a complete, correct manner and within the established term.

EGP, on the other hand, records that these previous declarations of the Service Provider are essential and have been decisive in his decision to enter into this Contract with him.

2 Subject of the Contract

This Contract shall cover the Part B Contract, as set forth in the Scope of Work part B, which includes the providing OSL Balance of Plant in support of the Part A (PowerBuoy[®]) for the Marine Energy Research and Innovation Centre (MERIC) Open Sea Lab (OSL) Project, as set forth in the Scope of Work.

3 Documents of the Contract

For all legal purposes, the documents indicated below that the Service Provider declares to know and accept in all its parts are an integral part of this Contract:

This same text of the Contract and the following annexes:

- Annex A: Scope of Work (SoW)
- Annex B: General Terms and Conditions and Annex II Chile (SEVENTH EDITION).
- Annex C: Technical/economical Proposal Numbers: EGP-002-03A and EGP-002-04B
- Annex D: Feasibility Study
- Annex E: Health, Safety and Environmental Terms, First Edition dated 1/3/19.
- Annex F: BASES TECNICAS HSEQ CHILE GRE_CHL_QSE_MN_01_Vers.5 09/11/2018
- Annex G: Standby Letter of Credit template.

In case of contradiction, discrepancies or inconsistencies between the terms of the previously individualized documents and this Contract, the provisions of this Contract shall prevail and in case of persisting discrepancies, the meaning and scope of the Annexes shall be in accordance with the order of priority established in this clause.

It is established that for the purposes of interpreting this Contract and its Annexes, the terms and phrases in the singular include the plural and vice versa.

If the nullity of any of the terms, provisions, conventions or restrictions of the Contract or its Annexes is declared, those provisions shall be modified by the Parties only to the extent necessary for them to be enforced and consistent with the intention of the Parties and, therefore, the rest of the terms, provisions, agreements and restrictions of this Contract and its Annexes will remain in force and will be applicable in accordance with the law.

4 Official Language of Contractual Documentation

The controlling version of all of the contractual documents are in English.

5 Financial Conditions

5.1 Value of the Supply Contract Part B OSL Balance of Plant

The Total Amount of present contract is fixed and equal to **SIX HUNDRED FORTY-FIVE THOUSAND FOUR HUNDRED SIXTY-SEVEN U.S. DOLLARS** (in letters, US\$ 645.467) which includes the providing OSL Balance of Plant in help to PB3 Power Buoy, as indicated on Scope of Work Part B.

Services include all Project Management, additional manufacturing labor, and Customer Acceptance functionality testing support at Service Provider's Monroe facility.

Insurance for all equipment in Part B is included from the time of shipment through deployment and final acceptance.

For the purpose of managing invoicing process, the total amount is composed as described in Table No.1.

Table No.1. Good and Services Prices Part B

Item	Goods (non-Chilean) USD	Services (non-Chilean) USD	Total (USD)
Wifi Long Range + LAN & Server (onshore)	[***]	-	[***]
Offshore Data Acquisition Systems and Sensors			-
1) PB3-Umbilical cable junction box	-	-	-
2) Umbilical cable (80m)	[***]	-	[***]
3) Acoustic Doppler Current Profiler ADCP	[***]	-	[***]
3) On board Data Acquisition System DAQ	[***]	-	[***]
4) Seafloor junction box (SB computer, DC/DC, wet connectors)	[***]	-	[***]
5) Water quality sensors system	[***]	-	[***]
6) Mooring sensors system	[***]	-	[***]
8) Shipping costs (Included in WEC shipping)	-	-	-
9) Shipping Insurance	[***]	-	[***]
Wave Radar System (onshore)	[***]	[***]	[***]
Non-Recurring Engineers, Proj Mgt	-	[***]	[***]
Subtotal	[***]	[***]	[***]
19% VAT	[***]	-	[***]
6% Ad Valorem	[***]	-	[***]
LOC	-	[***]	[***]
Local Customs Broker and Tax Handling Fees	-	[***]	[***]
Total (USD)	[***]	[***]	645,467

5.2 Cost Splitting for Taxes Part B

- a. Components (goods) supplied and shipped from US or other countries (affected by VAT 19% at customs border)
- b. Services supplied by foreign companies (affected by the 15% service tax). This Tax cost will be paid directly from EGP to the Chilean Tax office.

The results of the splitting will be documentable and compliant with such as required by the Chilean fiscal laws.

Will be necessary to anticipate the taxes amount, including them in the global price. All the tax assessed cost must be included in the 100% fixed cost.

5.3 Payments

Invoicing shall occur in accordance with the milestones sequence and payments percentage shown below in Section 5.4. Invoice approval shall occur within ten (10) business days of presentation of a properly submitted invoice, including supporting information. EGP's failure to reject, require additional information, or not approve the invoice by the end of the tenth (10th) business day after invoice presentation shall constitute acceptance of the invoice.

Payments will be made within 30 days from the date of the approval of the invoice or from the expiration of the tenth day in case EGP fails to reject an invoice or requests additional information required prior to approval.

5.4 Milestones Sequence and Payments Percentage

The supplies and services here above described shall be paid in front of a fixed agreed global price, as described in Table No.2.

Before the payment of the Milestone 1 is performed, will be requested a letter of credit (LOC) valid 12 months, of amount 100% of the total price, and that will be discounted depending each fulfillment of Milestone indicated on Table N°2.

LOC must be issued by a U.S. commercial bank with a rating of at least Baa3 rating by Moody's or BBB- by S&P and shall be confirmed or counter-guaranteed by a Chilean Bank. Such LOC shall be issued per the template set forth under Annex G.

Table No.2. Milestones for Goods and Services Part B

No.	Milestone	Payments Percentage (%)
1	Contract signature (payment included taxes)	100%
2	Part A &B FAT at Service Provider (NJ factory)	Removal of 50% value of letter of credit
3	OSL fully deployed, after final acceptance test	Removal of 40 % value of letter of credit
4	Expiration of 12 months of guarantee time	Removal of 10% letter of credit

6 Delivery and Receipt Conditions

6.1. Delivery Terms

Delivery terms is DDP (INCOTERMS 2010) to the Point of Delivery, within 28 weeks after signature of the Contract. Service Provider shall be responsible for offloading of Part B OSL Balance of Plant and for its insurance until delivery.

Deliveries to the final destination (Point of Delivery) at the following location, as indicated in Scope of Work: Deployment in Las Cruces, El Tabo, V Región, Chile

6.2. Acceptance

Acceptance shall be in compliance with written testing and acceptance criteria set forth in Section 6.3 below.

6.3. Compliance Inspection/Testing

Inspections/tests shall be conducted at the expense of the Service Provider in accordance with the technical requirements specified in the Technical Specifications.

Acceptance Testing Definitions:

- Factory Acceptance Testing – completed at Service Provider’s facility prior to shipment
- Provisional Acceptance Testing – completed after delivery, prior to deployment
- Final Acceptance Testing – completed after deployment and offshore commissioning

Upon receipt of the goods by the recipient EGP unit, there will be a “compliance check” of the ordered materials. EGP may decide to participate in or witness a Factory Acceptance Test in accordance with the Service Provider’s proposal.

Approval or denial of Provisional Acceptance, acceptance of on-site functional testing or acceptance of Factory Acceptance Testing (FAT) shall be completed within five (5) calendar days. Failure of EGP to approve or deny within five (5) calendar days will be deemed as Provisional Acceptance or acceptance of the test results by EGP. The Service Provider need not be present for the signing of the test report or Provisional Acceptance.

In this regard, each delivery shall include a data sheet of the supplied material and the certificate of origin of the manufacturer.

In the event that discrepancies and/or defects are found, Service Provider shall make arrangements to correct discrepancies and/or defects at the Point of Delivery, at the Service Provider’s Monroe Township facility, or at a subcontractor’s facility, as appropriate. If the Service Provider is not able to correct the discrepancies and/or defects at the Point of Delivery in a reasonable period of time, the ordered materials shall be at sole discretion of EGP (i) returned carriage forward with transport costs borne by the Service Provider, in which case the full Value of the Supply Contract shall be reimbursed by Service Provider; or (ii) discounted proportionally. In this last case if EGP and Service Provider do not agree on the discounted price within a reasonable time, EGP shall have the right to the first solution under (i).

6.4. Delivery Address

The supplied components shall be delivered at the place indicated in the previous Section 6.1. Delivery Terms as indicated in the Scope of Work.

Due to the impossibility to define a physical address in the above off-shore location, all the shipment documents shall be addressed to the delivery terminal at San Antonio port.

6.5. Packing

In case of the equipment of Part B OSL Balance of Plant comes with wooden packaging, Service Provider must send the fumigation certificate or the packaging must come certified.

7 Representation and Communications

The following are the addresses to which the Parties shall send communications:

Service Provider (Ocean Power Technologies)

Mr. Keith Silverman
28 Engelhard Drive, Suite B
Monroe Township, NJ 08831 USA
Telephone: 609-730-0400 x244
E-mail: ksilverman@oceanpowertech.com

With a copy to:
Mr. Paul Watson
Ocean Power Technologies Ltd
Telephone: +44 (0)7789907038
Email: pwatson@oceanpowertech.com

EGP

Daniel Manriquez
Enel Green Power
Santa Rosa 76, piso 11. Santiago, Chile
Cel: (+56) 9 93426098
Email: daniel.manriquez@enel.com

If the Service Provider changes its representative during the execution of the activities, it shall inform the unit that manages the Contract of the new name in writing.

8 Insurance

Insurance coverage during shipping and deployment is included for the Part B OSL Balance of Plant items. Title of equipment shall transfer to EGP upon Final Acceptance. EGP shall provide a Certificate of Insurance for the equipment Part B OSL Balance of Plant within the arrival of them to the Point of the Delivery. The Service Provider shall contract and pay insurance until delivery of the goods and provide the Certificate of Insurance to EGP prior to its shipping.

9 The Service Provider 's Guarantees

The Part B OSL Balance of Plant are warranted for a period of one (1) year in accordance with the manufacturer's warranties. Any warranty on the equipment is limited to the warranty term and any other conditions that the Service Provider has received from the equipment manufacturer.

Service Provider will serve as the project's single point of contact for Part B warranty related items. This single point of contact is limited to obtaining replacement items only for defective equipment under the manufacturer's warranty. Service Provider shall only be responsible for coordinating warranty replacement parts and providing technical support. EGP shall be responsible for the recovery of the payload, shipment to and from a Service Provider designated location, and reinstalling the payload.

10 Withdrawal and Dissolution of the Contract

10.1. Ordinary Withdrawal

Sections 16.1, 16.2, and 16.3.1 of the general terms and conditions (seventh edition) shall be modified to read:

16.1 SUSPENSION

16.1.1 If, for any reason prior to the shipment of the Part B from Service Provider's manufacturing facility, EGP deems it necessary or is obliged to temporarily suspend all or part of the activities which form the subject of this Contract, it must notify the Service Provider accordingly in writing, specifying the relative reason and estimating the duration of the suspension. Any temporary suspension shall be limited to no more than 10 business days.

The suspension will have effect from the day established in the communication.

From said date, the Service Provider must suspend the relative activities, arranging to safeguard and maintain the materials, equipment and works at a standstill, without prejudice to the applicability of all the other duties assigned to the same by the applicable law and/or established within the Contract.

The resumption of the activities must be notified by EGP with reasonable advance notice by way of a written communication sent to the Service Provider. The residual time assigned for the completion of the works will be calculated starting from the date of the resumption of the works indicated by EGP. The Service Provider shall be entitled to be reimbursed for labor needed to suspend the work.

A budgetary estimate will be provided to EGP, which shall be promptly approved, such approval shall not be unreasonably withheld.

The Service Provider will be entitled to receive payment for all non-cancellable committed expenses, such as third parties fees due to the suspension, incurred prior to the written notification.

16.2 WITHDRAWAL

16.2.1 EGP can withdraw from the Contract at any time prior to the shipment of the Part B from Service Provider's manufacturing facility.

The withdrawal must be notified by way of a written communication and will be valid from the date on which the latter is received. EGP will indicate the activities that must be completed and those to be immediately interrupted. The activities regularly performed up until the date of the withdrawal, which have commenced and for which the Service Provider has incurred non-refundable cancellation charges or deposits or incurred Service Provider labor charges, will be compensated in line with the prices established in the Contract except for Service Provider Labor which shall be reimbursed according to the Service Provider's Proposal Appendix C. Similarly, the Service Provider will be entitled to receive payment for all non-cancellable committed expenses, including profit and overheads, which were begun prior to the written notification.

For the interrupted activities and those which are not performed, EGP will reimburse Service Provider for the documented expenses incurred by the same for any commitments already undertaken that cannot be revoked without incurring financial consequences, or the documented amount of the above-mentioned consequences, whichever is greater.

The Service Provider can withdraw from the Contract in the cases envisaged by the law. In this case the Service Provider shall reimburse all the costs incurred by EGP further any actual loss and loss of profit to be calculated by EGP within 30 business day from the withdrawal notification.

16.3 TERMINATION

16.3.1 Prior to the shipment of the Part B from Service Provider's manufacturing facility, EGP can terminate the Contract in the cases envisaged by the applicable law and this Contract. EGP shall not have the right to terminate this Contract after the Part B has shipped from Service Provider's manufacturing facility, unless by reasons attributable to Service Provider. Terminations shall be subject to the cancellation clauses in the Service Provider's Proposal."

Section 16.3.1 (q) of the General Terms and Conditions (SEVENTH EDITION) is revised to state: "loss of even only one of the requisites necessary for the Qualification (where required), establishment and execution of the Contract with the exception that the Service Provider shall not be responsible or liable for site permitting or the consequences of EGP or third parties being able to obtain or maintain required ocean permitting for the project"

11 Force Majeure

Section 17 of the General Terms and Conditions (SEVENTH EDITION) is supplemented by the following terms: "Without prejudice to the terms established above, at the end of the cause of force majeure, the Parties if economically feasible will agree on the extension of the contractual terms or the measures that can be implemented to fully or partially recover the time lost and so succeed, where possible, in executing the Contract within the original timeframes on a day for day basis extension to any scheduled date(s), except for changes in shipping schedules which will be a day for day basis extension from the next available shipping date."

12 Labor Law and Occupational Health and Safety Obligations

Comply with the provisions of clause 18 of Annex II Chile

13 Indemnities

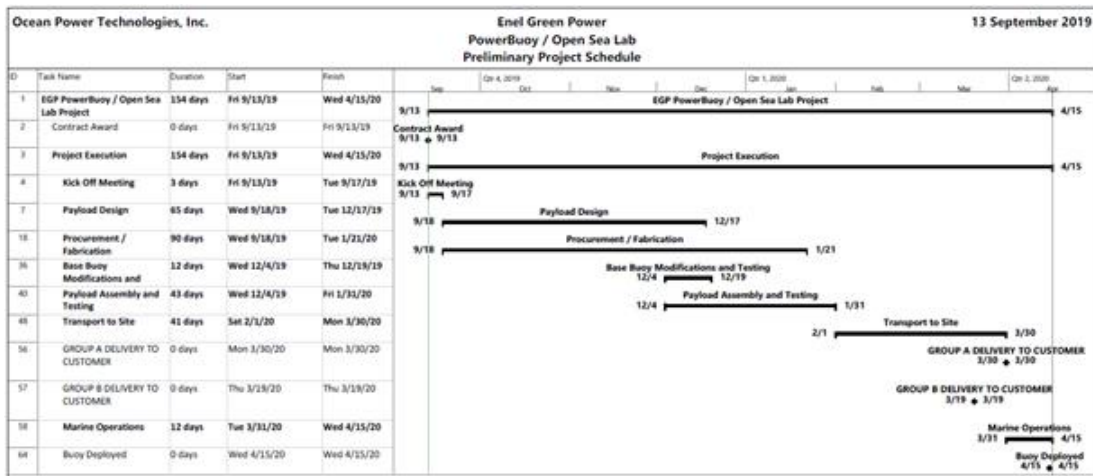
The Service Provider undertakes to indemnify EGP from any liability deriving from claims or legal subpoenas of any kind, directly related to the Contract, both in court and out of court, which are the result of acts or failures to act on the part of the Service Provider or its employees, representatives or subcontractors;. Once transfer of ownership, and notwithstanding Section 15 below, the above-mentioned indemnity from Service Provider shall be limited to liability associated with Part B OSL Balance of Plant warranty provided herein, and any associated warranty on equipment or materials. All other warranties of any nature or kind are hereby expressly waived.

14 Penalties

The Service Provider acknowledges that if the Part B OSL Balance of Plant is not deployed by May 15, 2020, this may cause damages to EGP and therefore in case of delay by the Service Provider in compliance with the Delivery date of May 15, 2020. These will only apply if the Service Provider deploys this Contract later than May 15th 2020 and only if the delay was not caused by reasons attributable to EGP or force majeure events.

Unless otherwise agreed, the penalty for delay shall be of 1% of the total amount of the Contract for each calendar week of delay, during the first four weeks, and of 4% as of the fifth week. The amount of the penalties shall not exceed the 10% of the total amount of the Contract. If such limit is exceeded, EGP shall apply the penalty and may terminate the Contract according to the applicable law and Section 6.3 (i).

Table No.3. Project Schedule Part B



15 Limitation of Liability

Neither party to the Contract shall be liable to the other party for any indirect damages, loss of profits, or loss of production of the other party.

The responsibility of each of the parties for the execution of the Contract shall not exceed 100% of the total amount thereof, including price revisions or extensions. The penalties applied, as they do not have a compensatory nature, will not be taken into account for the calculation of the aforementioned limit.

The exclusions contained in this Section 15 and the limitation of liability set forth above shall not be applicable in cases in which the aforementioned responsibility of the breaching party comes from any of the following:

- (a) breach of criminal matters;
- (b) breach of protection of personal data or confidentiality;
- (c) breach of intellectual or industrial property;
- (d) breach of environmental matters;
- (e) breach of tax, salary, social security or health and safety.
- (f) breach of any third party's rights.

16 Confidentiality

The information provided to EGP related to the performance of the Part B OSL Balance of Plant and any related sensors and equipment provided hereunder in reports, studies and other documentation developed by the Service Provider under this Contract shall be deemed to be transferred in full to the Principal, who shall be fully empowered to complete, expand or modify the results obtained from such documentation, without any additional payment to the Service Provider. The parties expressly state that the Principal owns the information and documents that are gathered and prepared for the execution of the Services contracted.

Regarding the information that either Party provides (the "Disclosing Party") to another Party (the "Receiving Party") on the occasion or occasion of the execution of the Service object of this Contract, the following is agreed:

- a) The Receiving Party acknowledges that certain documents and information properly identified as such that it will receive from the Disclosing Party shall be confidential and must be kept strictly reserved, whether commercial, financial or technical, such as methodologies, processes, know-how, contracts, maps, designs, drawings, interpretations or geological, geophysical, technical and seismic information any other intellectual creation or contained in database and other archives and, in general, whatever its nature or the means in which it is contained. The aforementioned documents, background and information will be referred to as "Confidential Information".
- b) The Receiving Party undertakes to maintain strict reserve and confidentiality in relation to the Confidential Information that it receives from the Disclosing Party. This reservation and confidentiality obligation will not be applicable if the Confidential Information received has been published or is in the public domain, prior to the date of its disclosure.
- c) The Receiving Party may not disclose any part of the Confidential Information that it receives from the Disclosing Party, except to those of its workers, officials, executives or advisors who have participation in the Service for which the information will be used.

d) Any breach by any worker, official, executive or advisor of the Receiving Party with respect to the obligation of confidentiality agreed, it will be understood that it is a breach of the latter, who cannot be excused on the grounds that said person had no relationship with her or that he had no control over that person.

e) The Receiving Party must return to the Disclosing Party all or any Confidential Information that it has delivered and / or file created by the Service Provider, when required by the Disclosing Party. The manner and conditions in which the Confidential Information must be returned will be determined by the Disclosing Party in due course.

f) This confidentiality does not create any type of association or grant any type of licenses between the Parties.

g) This confidentiality will take effect from the date of its signature and its validity will be extended up to a period of 3 years from the date of termination of the services to be performed on the occasion of the Contract. In case of breach of the aforementioned obligations, the Receiving Party will indemnify the Disclosing Party of each and every one of the damages that such breach may cause. However, this confidentiality will be fully governed in relation to the information that had already been provided as confidential, or that as of that date it would have been conferred such quality.

Finally, other than legally required disclosure pursuant to Section 16.1 below the Parties agree that without the prior consent of the Principal, the Service Provider may not make any publicity, press release, news dispatch or publication of any kind using the EGP's name, or that its content be related in any way with the Contract or with any technical information related to the Contract.

Violation of this clause may mean for the Service Provider the termination or termination of the contract, without prejudice to the legal actions decided by the EGP.

The processes, inventions, know-how, additional expertise and all other intellectual property developed by the Service Provider for purposes other than this Contract and not previously established, will remain the property of the Service Provider.

16.1 Form 8-k filings

As a condition of accepting this Contract and any work performed hereunder, EGP acknowledges that the Service Provider is required to file and can file a current report as a FORM 8-K with the U.S. Securities and Exchange Commission (SEC) requirements that announces the execution of the contract, the date of such execution, that summarizes the material terms of the contract, and that discloses the entirety of the contract. In addition, EGP agrees that the Service Provider can issue a press release announcing the execution of the contract, generally describing the contract, and revealing EGP as a party to the contract. The Service Provider may also be required to file a copy of the contract with the SEC and may redact some, none, or all material parts of the contract filed with the SEC. Such press release shall be previously approved by EGP. The SEC requires the 8-K and supporting information to be filed within four (4) business days of contract execution.

EGP further acknowledges and agrees that additional 8-K filings for material events are required under SEC requirements and that these filings are anticipated to require the same details as the initial filing.

16.2 Press releases

EGP also authorizes and acknowledges the Service Provider can issue, from time to time, additional press releases and social media posts about the project and progress of work. All press releases and social media posts must be previously approved by EGP. EGP shall cooperate to the fullest extent possible in the review of press releases and provide timely input into the planned release(s), social media, and other marketing and promotional materials as requested by the Service Provider.

16.3 Promotional Materials Including still images and video

EGP may produce still photos, videos, and other project related materials (“Materials”) as a result of the work performed in the Contract. EGP represents and warrants that it owns all right, title, and interest, including copyrights and other intellectual property rights and has all rights and authority necessary to grant a free temporary license to the Service Provider for use of these photos, videos, and other project related materials. Service Provider is not required to provide any attribution when it uses, displays, or publishes Materials. This license permits Service Provider to simultaneously use, display, and/or publish multiple copies of Materials. This license also permits Service Provider to edit or modify the Materials, and/or add audio tracks or textual overlays to the Work.

17 Intellectual Property

Sections 21.1 and 21.2 of the General Terms and Conditions of Contract are revised as stated below:

21.1 The Service Provider guarantees to EGP, at all times and, if requested, will be obliged to prove to the same, by exhibiting documentation, its legitimate use of the brands, of patents for inventions, utility models and industrial designs or the relative licenses for said rights, as well as the mandatory license for the operation of and activity, when the same requires special authorization in order to perform the services/works/supplies that form the subject of the Contract. It must also prove that said brands and licenses fail to breach any third party rights.

In case of licenses, these must be registered at the competent Offices, with EGP reserving the rights to request that the Service Provider provide the relative documentation and/or proof of the same, if necessary.

The Parties agree that, with regard to the products of EGP or samples that are delivered by EGP to the Service Provider, and also with regard to the goods that is delivered by the Service Provider to EGP, for the purpose of executing the Contract, the Service Provider and EGP: (i) cannot, in any way, copy, reproduce, process, translate, amend, adapt, develop, decompile, disassemble, use reverse engineering (or, in any case, carry out operations with the purpose of extracting the source code) - fully or partially - of those products or samples of, EGP, or the Service Provider, and (ii) guarantee that the prohibitions described above are also respected by the authorised persons involved and by those who, might be involved in the execution of the Contract on the part of the Service Provider or EGP.

21.2 To the degree necessary or required, the Service Provider is responsible for obtaining the licenses, permits and authorisations required from the owners of the patents, models and relative factory brands, as well as the required intellectual property rights, and for paying all rights and compensation due to these ends.

In case of supply contracts, should, as the result of a claim by the owners or license-holders of the rights described in this article, EGP be obliged to fully or partially change the materials to be supplied, the Service Provider will change these as soon as possible entirely under its own responsibility as long as this does not lead to a deterioration in the quality of the supply, the working characteristics and the guarantees. In the case described above, where envisaged by the type of supply and before following it through, a new prototype homologation and approval pathway will be instigated. Service Provider shall be responsible for any additional materials cost and Non-Recurring Engineering (NRE) expenses incurred due to a change in materials. In case homologation is not possible, Service Provider shall reimburse EGP all sums paid under this Contract.

Sections 21.4, 21.5, and 21.7 of the General Terms and Conditions (SEVENTH EDITION) are deleted in their entirety.

Section 21.6 of the General Terms and Conditions are modified to read: "The Parties acknowledge and accept that the pre-existing intellectual property rights of each Party will remain the sole property of each Party, and that the counterpart will not have any rights to these; The term pre-existing intellectual property rights is defined as all the current and future intellectual and industrial property rights, including, for example, patent applications, patents awaiting approval, rights regarding databases, copyright, commercial brands, rights related to commercial and industrial secrets and any application of these worldwide, software designs and models, know-how), belonging to each Party before the signing of this Contract or acquired subsequently during parallel projects that fall beyond the scope of this Contract."

The sale or lease of the equipment is subject to EGP's acceptance of a revocable, non-transferrable, fully paid up, worldwide license to use the equipment for the intended or substantially similar application. EGP agrees to use the equipment in accordance with its design criteria, operate the equipment in accordance with the Service Provider's operating instructions and technical guidance instructions and memorandum, and perform maintenance as required by the Service Provider. Maintenance of the equipment shall only be performed by the Service Provider and/or its authorized representatives.

EGP further agrees not to modify the equipment provided unless strictly needed for maintenance purposes. The License includes proprietary procedures and specifications to the EGP under the proposed work. The EGP is also granted a license for use of the Service Provider's Human-Machine Interface (HMI), remote monitoring software, the Service Provider's Proprietary Software and Operating Systems, and any project related software necessary for the project. The foregoing information is collectively referred to as "Proprietary Information". EGP agrees to protect the Proprietary Information with the same level of care as EGP's own Proprietary Information. EGP further agrees not to reverse engineer the Proprietary Information.

The Service Provider retains all ownership and rights to background Intellectual Property and any Intellectual Property developed under the Proposal.

18 Data and Communications Networks

This project will only generate equipment performance data and environmental data and is not subject to the Processing of Personal Data section of General Conditions or Annex II Chile.

EGP will provide appropriate access for Service Provider's use of and data transmission across Service Provider's communications infrastructure. EGP will need to be able to access Service Provider provided Internet site(s) via its own Information Technology (IT) infrastructure. Provisioning of this access and associated expenses are the sole responsibility of EGP.

19 Applicable Legislation and Arbitration

This Agreement will be governed and interpreted in accordance with the legislation applicable in the Republic of Chile. The Parties agree that for the purposes of this Agreement, the United Nations Convention of Contracts for the International Sale of Goods shall not apply.

Any difficulty or controversy that occurs between the contracting parties regarding the application, interpretation, duration, validity or execution of this contract or any other reason will be submitted to arbitration, in accordance with the Arbitration Procedural Rules of the Santiago Arbitration and Mediation Center, in force at the time of request.

The Parties confer irrevocable special power to the Chamber of Commerce of Santiago AG, so that, at the written request of any of them, it designates an arbitrator regarding the procedure and of law regarding the ruling, from among the members of the arbitration body of the Arbitration and Mediation Center of Santiago.

There will be no appeal against the arbitrator's decisions. The arbitrator is specially empowered to resolve any matter related to its jurisdiction and / or jurisdiction.

The place of arbitration will be the city of Santiago de Chile.

The arbitration will be held in Spanish.

The Parties will be obliged to continue with the execution of the Contract for the entire duration of the dispute resolution process in question.

20 Representatives

Each party hereby represents and warrants that the representatives of each of the parties signing this Contract have the corporate and legal authorizations necessary for the signing and delivery of this Contract.

21 Copies

This Contract is signed in three (3) copies of the same tenor and date, with two (2) being held by the EGP and one (1) held by the Service Provider.

/s/ Pamela Llanos Troncoso

Pamela Llanos Troncoso
12.262.136-7
Representante Legal

/s/ George Kirby

George Kirby
Ocean Power Technologies, Inc

Annex A: Scope of Work (SoW)



Scope of Work

ID:
OSL System Supply

Classification:
Restricted use

Date
29/08/19

Page
1 di 16

Marine Innovation

Meric - 2.2 Open Sea Lab (OSL) project

ECIM Las Cruces - Valparaiso CL

Part A - Wave Energy Converter (WEC) System Supply

Part B - OSL Balance of Plant

Roberto Suffredini

Rel. 01- 27/08/19

RESTRICTED USE

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ABSTRACT

This document is related with the Enel Green Power (EGP) participation at Meric project in Chile, and in particular regard the Validation Test Bench (2.2 VTB) subproject activities that EGP has in charge as EPC contractor inside Meric.

In the frame of VTB, EGP must supply and deploy a wave energy converter (WEC) that will be made available as the main component of the VTB's layout.

The Power Buoy 3 (PB3) WEC produced by Ocean Power Technologies Ltd (OPT) has been preselected as only of the WEC technologies suitable to cover the scientific requirement asked by the VTB project, having compliant size and reliability .

To proceed toward the full definition of the VTB project, now defined "Open Sea Lab - OSL", the OPT PB3 supply, customisation, shipment, mooring and deployment matters have been preliminary assessed with the necessary details in order to define their feasibility, timing and costs at the location of Valdivia (Chile). That have been carried out by mean of a specific feasibility study performed by OPT in Q4 2018.

Afterwards, blocking issues on Valdivia site obliged to move the OSL site to another place close to the PUC ECIM marine laboratory at Las Cruces, near San Antonio port. An integration of the feasibility study already done on Valdivia has been necessary. The relative activity has been done by OPT last June 2019 and will be compensated within this contract.



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0. ACRONYMS & DEFINITION

Hereinafter shall be assumed the following acronyms and terms definitions :

- SoW: Contract Scope of Work
- EGP: Enel Green Power Chile Ltd and all the companies owned by
- OPT: Ocean Power Technologies Inc. Hereinafter "Provider"
- PB3: PB3 PowerBuoy[®], WEC developed by OPT
- WEC: Wave Energy Converter, hereinafter intended as the OPT PB3 PowerBuoy[®]
- MERIC: Marine Energy Research & Innovation Center
- EM: Energia Marina SPA, the company managing MERIC project
- ECIM: Estacion Castera de Investigaciones Marinas (ECIM Universidad Cat61ica)
- PUC: Pontificia Universidad Cat61ica de Chile (PUC)
- VTB: MERie's Validation Test Bench project
- OSL: Open Sea Lab (evolution of VTB project)
- CORFO: Corporaci6n de Fomento de la Producci6n (CL)
- DAQ: Data Acquisition System
- DAP: Delivered at Place (Incoterms 2010)
- DDP: Delivery Duty Paid (Incoterms 2010)
- Payloads: The offshore systems connected to the PB3 Power Supply and Communication System
- OSL BoP: Balance of Plant (BoP) are intended all the OSL systems, onshore and offshore, excluded WEC and the related mooring system

1. INTRODUCTION

MERIC is a Chilean research centre on marine renewable energies funded by Chilean Government CORFO agency. EGP is its partner.

The VTB (Validation Test Bench) is a subproject inside the MERie's activities. The VTB, now hereinafter defined Open Sea Lab (OSL), is an offshore laboratory that has as main goal to verify the behaviour of a WEC prototype deployed in a real ocean condition and its reciprocal influence with the sea environment.

The MERIC research lines related to the OSL operation are focused on the following topics :

- a) Resources modeling and coupling with power generation forecast
- b) WEC's environmental impact
- c) Characterisation of environment biofouling, biocorrosion, abrasion models and solutions
- d) WEC's mooring technology adaption
- e) Marine energy storage and hybridization

Inside the Meric's planned activities EGP has in charge the OSL project with the both roles of EPC contractor for the OSL's Balance of Plant (BoP) Engineering, Procurement and Construction and as the supplier of a WEC deployed at OSL. The availability of a WEC supplied by EGP to the OSL will be in the frame of the EGP in-kind contribution to the Meric project.



The OSL location has been selected close to San Antonio, in the Valparaiso region, central Chile. More in detail the OSL will be deployed at ECIM and in an offshore area front it. The ECIM is a coastal facility owned by the PUC.

The geographical coordinates of the offshore area conceded to EM for the deployment of the OSL are identified by the following table:

VERTICES	LATITUD (S)	LONGITUDO (W)	MEDIDAS V DESLINDES
1	33° 30' 27.3"	71° 38' 32,4"	A - B 501 M.
2	33° 30' 27.3"	71° 38' 13,1"	B - C 506 M.
3	33° 30' 43.7"	71° 38' 13,8"	C - D 492 M.
4	33° 30' 43.7"	71° 38' 33,1"	D - A 508 M.

The final layout of OSL installation, inside the above area, shall be defined by OPT in accord with EGP Chile, previously to the deployment and taking into account the best operational condition .

The OSL will be implemented in name of the Chilean company Energia Marina SPA (EM), that is managing the MERIC project. The company EM owns the permit necessary to deploy the OSL offshore.

The present sow defines the subjects of two separated contracts having the objectives:

- A. The supply, deployment, commissioning and test of a **WEC** of an already defined type, assumed to be the **PowerBuoy® PB3** supplied by the OPT company. The contents of this contract is defined as **"Part A"**.
- B. The supply, deployment, commissioning and test of the **BoP of the OSL system** . The contents of this contract is defined as **"Part B"**.

Due to funds management requirements, the above mentioned contracts A and B will be issued by two different companies of Enel Green Power Chile Group.

2. SAFETY

The Contractor must apply all the possible cautions to avoid any incident to the people involved in the works object of the contracts here defined. The documents shall be the reference for this activity:

- ENEL GROUP - HSE Terms - FIRST EDITION - valid as of 01/03/2019
- BASES TECNICAS HSEQ CHILE GRE_ CHL_QSE_MN_OI_Vers.5 09/11/2018

All the offshore operations shall be subjected to the related local Chilean laws. In particular all the divers personnel operating underwater must be professionals, having valid licence for that kind of operations.



3. SCOPE OF WORK (SoW)

The guidelines of the SoW for this contract will be mainly defined by the following considerations:

- a) EGP intend to assign a turn-key solution for the both Part A and Part B, as described in the following scope of supply. Will be defined two separate contract for Part A (WEC) and Part B (OSL BoP).
- b) Starting in 2018 a study of the feasibility of the OSL system has been carried out by the collaboration from OPT, EGP and MERIE's partners. The first option of the OSL was selected in Calfuco, Valdivia, Los Rios CL. Due to permitting issues, a second and definitive one has been identified at Las Cruces, San Antonio CL, based on the ECIM facility onshore, owned by PUC.
- c) The authorisation for the deployment of the WEC and the offshore parts of OSL has been obtained by Energia Marina SPA (EM) on 5th August 2019 (Permiso de Escasa Importancia no. 12250/23VRS).
- d) The off shore area within which the contractor must deploy the WEC and the OSL offshore systems are identified by the geographical coordinates indicated in chapt. 1.
- e) Based on the results of some previous shared activities, OPT has made available some technical specifications and costs estimations in order to identify the supplies and services necessary to provide the WEC and the OSL BoP system (Parts A and B). These activities were carried out by the following previous assignments:
 - i. *Contract 8400128406, Release 2018.19.04, "Feasibility Study of deployment of the PB3 for Enel Green Power MERIC VTB Project"* a feasibility study on the VTB/OSL project at the site of Calfuco, Valdivia CL, contracted by EGP NA
 - ii. OPT Proposal No. 060519KPS - Las Cruces Site Visit and Evaluation, 121 June 2019, agreed with an e-mail confirmation on 13th June 2019. After the site survey performed from 25th to 28th June 2019, OPT identified the activities considered necessary by them in order to define the operative conditions at the different Chilean site of Las Cruces, and integrate the Feasibility Study (i.) performed in Calfuco 2018. These activities will be compensated within this contract .
- f) EGP has supplied to OPT the necessary information about the met-ocean and geomorphological conditions at the Las Cruces site (see Annex 1).
- g) The results of the works performed with the previous activities e) have been a full assessment about feasibility, timing and costs of the OSL deployed at the site of Las Cruces, that will consent to define this final contract to supply the WEC operating at the OSL, and the OSL's Balance of Plant in a frame of minimum uncertainty and risks.
- h) In the SoW and contract related to Part A will be included some operations or services connected to other components or systems that make up the full OSL layout. In particular will be included the operations necessary to install the Part B (e.g. some sensors and communication systems) into the PB3 itself or to deploy the offshore components of Part B. The complete works necessary to carry out the OSL BoP will be subjected to the contract issued for the Part B.
- i) The shipment of the components related to the Part B and Part A shall be organised in order to facilitate the customs operations at destination terminal in San Antonio. The customs operation for the Part A will be in charge Empresa Electrica Panguipulli S.A. (DAP Incoterms 2010) and Part B to Enel Green Power Chile S.A. (DDP Incoterms 2010).



- j) The systems object of the contract Part A and Part B will remain in complete responsibility of the Provider until the final acceptance test.
- k) The Provider shall make available electrical and mechanical drawings and manuals of all OSL components as available from the component manufacturers, and general arrangement drawings of the PB3 and OSL system . Moreover, all the information necessities to manage the data from and to the OSL systems. OSL component data shall be provided in native format in accordance with manufacturers' standard communication protocols.

The details of the SOWs will be defined in the text following.

4. **Part A - PowerBuoy® PB3 Solution**

Ocean Power Technologies, Inc. (OPT) shall provide one PB3 PowerBuoy®- with nominally 50 kWh on board battery storage and its deployment at the MERIC OSL site, which is approximately centred at 1.2 km off the coast of ECIM at Las Cruces, Chile in an average water depth of 35 meters. The provision which will be the object of the activities here defined shall consist of the items following.

It is assumed that the PB3 WEC will be fully assembled at the OPT facility in USA to the extent possible, with minimal final assembly required on site. The shipment will be configured to manage that configuration.

The OSL system will be composed by the Part A and Part B, with some parts or operations shared, purchased by two distinct companies with two separate contracts, having differentiated modalities in terms of VAT and taxes management. The aggregation of the different items is functional to different taxes application as well.

Part A - Scope of Work

The Part A provision is intended to be a Turn-Key solution, assumed to be a the supply and deployment, commissioning and test offshore and onshore at Las Cruces as indicated in the present Sow and in: "*Part A Proposal for Enel Green Power in support of the Marine Energy Research and Innovation Centre (MERIC) Open Sea Lab (OSL); VOLUME 1 - TECHNICAL OFFER*" dated 23rd July 2019 (EGP-001-02A) hereinafter "TS A" . Will be included:

- A. No. 1 PB3 PowerBuoy® WEC having nominal 50 kWh storage capacity on board, 3G/4G communications, ready to host no. 6 load sensors for mooring system, a long range WiFi connection, a Data Acquisition and temporary storage system and a connection to a payload supply and communication subsea cable, as described in TS-A 2.1 *PowerBuoy®*
- B. Three point mooring system for the PB3 WEC defined in A., as for TS-A 2.2 *Mooring Equipment*.

This Turn-Key solution shall be compensated with a global single fixed price. Included one year of guarantee and remote monitoring.



All the risks on the final price due to uncertainties, mainly in the deployment phase, will be mitigated by the provider itself, assuming insurance covers.

With this contract related to Part A will be compensated also the Las Cruces site survey works already carried out by OPT on June 2019, and some activities related to the Part B contract hereinafter described, highlighted by (#).

Part A - Detailed List and Sequence of Supplies and Operations

Here below is a list of items located and described with the sense of time of execution and the logical process toward the final result. The description of the supplies and services related to the contract for the Part A will be necessarily integrated with some references to the Part B.

1. Site survey

Site survey of Las Cruces ECIM, San Antonio port and to the other possible support facilities in the area in order to assess the needs for WEC system components movement, staging, final assembly and deployment. Performed in Chile from 25th to 28th June 2019 as for the OPT Proposal No. 060519KPS on 12 June 2019.

2. WEC supply

PB3 WEC supply as for OPT technical specification EGP-001-02A 23 July 2019, designed for a three point mooring, with 3G/4G communication system and a nominal 50 kWh storage system on board, ready to connect a subsea cable to supply payloads deployed on the seafloor. Delivered DAP (Incoterms 2010) at Las Cruces, Chile.

3. Three points WEC mooring system - Components from USA

Supply from USA of some mooring parts and other Part A components other than WEC itself. Supplied Delivered DAP (Incoterms 2010) at Las Cruces, Chile.

4. Part A from USA and Part B shipment (#)

Shipment of components 2. and 3. will be under DAP (Incoterms 2010) condition. In that shipment will be included the Part B goods. The shipment of the Part A and Part B goods must be arranged to facilitate the customs operations, taking into account that the goods will be related to two separate contracts. The shipment document must have indicated two distinct destination companies: Part A must be addressed to Empresa Electrica Panguipulli S.A. (DAP Incoterms 2010) and Part B to Enel Green Power Chile S.A. (DDP Incoterms 2010). Before the shipment is planned to be done the Factory Acceptance Test FAT of the available components at the facility OPT in Monroe NJ USA. The procedures for the FAT shall be defined and agreed between the contracting parts at least within 60 days before the FAT itself.

Note: Part A - Customs Operations

All the customs operations related to the Part A goods shipped by USA (items 2. and 3.) shall be not in charge to the provider OPT and will be excluded from the present Part A SoW. A Custom Agency will be engaged by EGP Chile Group in order to perform the customs operations and the direct payment of the due customs taxes {VAT/duties/} and deliver the goods customs free, ready for the following steps of this SoW. In the Commercial Invoice will be indicated the values of the goods shipped plus the cost of shipping and related insurances (must be indicated OAP value).



Note: Part B - Customs Operations

All the customs operations related to the Part B goods shipped by USA shall be in charge to the provider OPT who will provide direct payment of VAT and other due taxes. These costs must be estimated before the contract is issued and will be paid in advance by EGP to OPT. The commercial invoice must be indicated DDP value. We recommended to use customs Agency Patricio Sesnich by legal reason.

5. Part A and Part B USA components unload (#)

Unloading of the goods coming from USA and movement them to a temporary slaging positional San Antonio port. Included the Part B goods.

6. Residual mooring components supplied from Chile

Supply of the components of the WEC's mooring system and eventual other WEC auxiliary parts that the contractor OPT will buy on Chilean market and that will be deposited at the same place described here in 7. (Note: These components and related services will be invoiced to OPT by the Chilean providers and the final cost for the customer will include VAT).

7. Part A and Part B components staging.(#)

Staging of the Part A and Part B goods at a secured area at San Antonio port, within the deployment date.

8. Part A and Part B components assembling

Before the final deployment, the full OSL offshore system, Part A and Part B, will be preassembled, connected and pre-commissioned at the staging site at the San Antonio port.

Here the cost related to Part B activities will be compensated by the specific Part B contract. The procedures for pre-commissioning and test on shore shall be defined and agreed between the contracting parts with in the arrival of the goods in Chile.

9. Part A and Part B offshore components final deployment

The Mooring System, the PB3 WEC and all the part B OSL offshore components will be deployed preferably at the same time, without interruption of continuity.

10. Part A and Part B offshore components test

After the deployment indicated in 9., shall be done a full OSL system commissioning and test. The procedures for final commissioning and test shall be defined and agreed between the parts within the arrival of the goods in Chile.

11. One year guarantee and remote survey

Starting from the final acceptance test indicated in 10. will start a 12 month period of guarantee on the correct behavior and faults of the Part A OSL system. The details are indicated on the document EGP-001-02A released 23 July 2019.

In any case OPT shall make available to EGP the remote read-only HMI application installed on the local shore station that shall consent to EGP or other MERIC's partner to monitor by remote the behavior of the PB3.



Part A - Survey and maintenance after guarantee per iod

Before the issue of the Part A contract, must be negotiated and defined the terms and costs of extraordinary maintenance and remote survey for a sequential period of three year of operation after the expiration of the guarantee. This cost shall be provided as an option, and shall not be considered part of the base scope of the contract. In detail:

- a. The consistency and the cost for extraordinary maintenance after three years operation;
- b. The consistency and the monthly cost for remote survey after the 12 month of guarantee.

Part A - Milestones:

The milestones are the following:

No.	Milestone
1	Contract signature
2	PB3 and other goods (Part A &B) ready to ship at OPT factory NJ, after FAT
3	Arrival of the Part A&B goods at San Antonio port. Customs cleared
4	OSL fully deployed, after final acceptance test



5. Part B - OSL Balance of Plant

With a separate contract, in addition to such indicated in the previous chapter 4. Part A, Ocean Power Technologies, Inc. (OPT) will provide all the necessary systems necessary to complete the layout of the OSL.

The definition of the OSL scheme has been carried out with the works of the *Contract 8400128406, Release 2018.19.04, "Feasibility Study of deployment of the PB3 for Enel Green Power MERIC VTB Project"* a feasibility study on the VTB/OSL project at the site of Calfuco, Valdivia CL, contracted to OPT by EGP NA.

Is necessary to highlight again here that the OSL system will be composed by the Part A and Part B, with some parts or operations shared. Part A and Part B will be purchased by two distinct companies with two separate contracts, having differentiated modalities in terms of VAT and taxes management. The aggregation of the different items is functional to different taxes application as well.

Part B - Scope of Work

The Part B provision is intended to be a Turn-Key solution, assumed to be a the supply and deployment, commissioning and test offshore and onshore at Las Cruces as indicated in the present SOW and in: "*Part B Proposal for Enel Green Power in support of the Marine Energy Research and Innovation Centre (MERIC) Open Sea Lab (OSL); VOLUME 1 - TECHNICAL OFFER*" dated 9th August 201q (EGP-001-02A) hereinafter "**TS-8**". Will be included:

- A. WiFi long range/high capacity communications between WEC and ECIM shore station (*Superpass, Cradlepoint*). Included onshore LAN management server (*DELL*) having temporary storage system minimum 1TB SDD RAID capacity and Internet connection capability, as described in *TS 2.1 PowerBuoy[®] and Shore Based Communications*. The Local Area Network (LAN) shall be standard Ethernet 802 both in the wireless (802.11) than in cabled part. The Lan must be protected by password and shall have a firewall as interface toward the external networks. Preferably all the data storage systems must be solid state SSD. Will be useful to have a 360° short range WiFi 802.11 network around the PB3, to connect the LAN network from vessels during maintenance operations. All civil works preparation for radar basement, cable ducts and main power supply (AC) at ECIM shore station will be excluded from Provider's scope of supply.
- B. Data acquisition system (*National Instrument cRio*) located on board the PB3, type, included offshore 1TB (SSD) storage (buffer) system, as for *TS 2.2 Data Acquisition System Components*
- C. Mooring sensors system, composed by six load pins (*Strainstall*) installed each one at the mooring lines connection points, as for *TS 2.3 Mooring System Sensor Components*
- D. Two water quality sensors (*NKE SAMBAT*), installed at approximately - 8m and -15m below min sea level, included seafloor junction box, and suspension guide line with floater. Removable for periodical cleaning and calibration needs, as for *TS 2.4 Water Quality Sensors*.
- E. Acoustic Doppler Current Profiler ADCP (*Nortek AWAC*) deployed on seafloor in the prevalent wave field direction at least 75 m for from the PB3, connected to the PB3 power supply and communication network, as for *TS 2.6 Acoustic Doppler Current Profiler*. The ADCP position shall be defined taking into account the need to avoid any interferences between the measurement space and the WEC, mooring lines and payload cable.



- F. X-band wave radar system to be roof installed at ECIM. Supplied by Nortek and based on the SeaDarQ oil spill detection systems, composed by an outdoor microwave/antenna system (Sperry) and an indoor rack included a 19" server with storage, an HMI monitor, an UPS rack system. As for TS 2.7 *Radar Station*. If the provider intend to subcontract the x-band radar supply and installation then this is to be declared before the contract signature, for the application of the contractual related topics. The company indicated to be the x-band radar system supplier and installer must have not less than 5 certificated references on previous supply and installation of SeaDarQ x-band radar system
- G. Umbilical cab ling from PB3 and junction boxes located on seafloor, the junction boxes itself and two seabed layed umbilical connection to water quality system and ADCP, as necessary to provide subsea power supply and communication, as for TS 2.5 *PowerBuoy® Junction Box for Umbilical Cabling*
- H. **(Optional)** Meteorological station composed by:
- Datalogger SIAP DA18K
 - Electrical panel in IP66 polyester (SOLx65Hx25P), photovoltaic panel power supply and 120Ah max battery
 - Photovoltaic panel and pole support for measuring stations with medium energy consumption (Ppk [WJ: 50-60)
 - Rechargeable 38Ah 12Vdc battery complete with cable and fuse
 - Transducer Speed and ultrasonic wind direction heated with 12 m cable
 - Barometric transducer range 700 hPa with very high precision (IVS outputs) with 3 m cable. Specific calibrations on request.
 - Transducer Global thermopile solar radiation first class ISO 9060 with output O + 2Vdc, 4 + 20mA, RS485 with 4 m cable
 - Thermohygrometric transducer outdoor, Pt100 (T) and O + Vdc (RH) outputs with 4 m signal cable
 - Rain gauge with 200cm² mouth area relay contact output with 12 m cable Turn-key supplied, installed and tested at ECIM Las Cruces.

This Turn-Key solution shall be compensated with a global single fixed price. Included one year of guarantee for the PB3 and mooring, and manufacturers' warranties for OSL components.

All the risks on the final price due to uncertainties, mainly in the deployment phase, will be mitigated by the provider itself, assuming insurance covers.

Some operations necessities to carried out the Part B of the OSL are intended included and compensated in the part A one. The activities that be interlaced with the Part A are evidenced here with the mark (@).



Part B - Detailed List and Sequence of Supplies and Operations

Here below is a list of items located and described with the sense of time of execution and the logical process toward the final result. The description of the supplies and services related to the contract for the Part B will be necessarily integrated with some references to the Part A .

1. Components acquisition and verification

The components of the Part B provision will be designed, specified, purchased and partially assembled and tested at the OPT factory in NJ USA. The communication protocol between the different systems will be implemented there in order to be confident in the final results at Las Cruces and avoid problems during the pre-acceptance test at San Antonio. The preliminary test of all the offshore and on shore Part B system, excluded the radar system, will be part of the FAT to be planned there for the PB3 as well, before the shipping. After FAT will be packed and prepared for shipping preferably.

The procedures for the FAT shall be defined and agreed between the contracting parts at least within 60 days before the FAT itself.

2. Part B and Part A shipment from USA (@)

The shipment of the Part B components have to be organized in synergy with the Part A ones, taking into account the different operations at the Chilean port.

The radar components, if considered useful, will be shipped in a separate way from the supplier to the destination place at ECIM Las Cruces, Chile.

The shipment will be considered here from DDP (Incoterms 2010) condition at Las Cruces, Chile. In that shipment will be included the Part B goods.

Note: Part A - Customs Operations

All the customs operations related to the Part A goods shipped by USA (items 2. and 3.) shall be not in charge to the provider OPT and will be excluded from the present Part A SoW. A Custom Agency will be engaged by EGP Chile Group in order to perform the customs operations and the direct payment of the due customs taxes {VAT/duties/} and deliver the goods customs free, ready for the following steps of this Sow. In the Commercial Invoice will be indicated the values of the goods shipped plus the cost of shipping and related insurances (must be indicated OAP value).

Note: Part B - Customs Operations

All the customs operations related to the Part B goods shipped by USA shall be in charge to the provider OPT who will provide direct payment of VAT and other due taxes. These costs must be estimated before the contract is issued and will be paid in advance by EGP to OPT. The commercial invoice must be indicated DDP value. We recommended to use customs Agency Patricio Sesnich by legal reason.

3. Part B and Part A USA components unload (@)

Unloading of the goods coming from USA and movement them to a temporary staging position. Included the Part A goods. This cost will be included and compensated in part A costs.

4. Part B and Part A components staging (@)

Staging of the part A and Part B goods at a secured area at San Antonio port, within the deployment date.



5. Part A and Part B components assembling

Before the final deployment, the full OSL offshore system, Part A and Part B, will be preassembled, connected and pre-commissioned at the staging site at the San Antonio port.

The procedures for pre-commissioning and test on shore shall be defined and agreed between the contracting parts within the arrival of the goods in Chile.

Here the cost related to Part B activities will be compensated by the specific item in Part B contract.

6. Part A and Part B offshore components final deployment (@)

The Mooring System, the PB3 WEC and all the part B offshore components will be deployed preferably at the same time, without interruption of continuity. Part B deployment cost will be compensated inside the Part A one.

7. Part A and Part B offshore components test

After the deployment indicated in 9., shall be done a full OSL system commissioning and test. The procedures for final commissioning and test shall be defined and agreed between the parts within the arrival of the goods in Chile. The cost of this operation will be compensated within the Part **B** cost

8. One year guarantee and remote monitoring

All the systems supplied with the Part B contract will be subjected to manufacturers' standard warranties.

Beyond the surveillance of the PB3 itself, already provided in A, OPT will evaluate the feasibility of a remote monitoring system, in a period no longer than 6 month from OSL starts, with the intention to verify eventual anomalies and fault in the OSL BoP system supplied with Part B contract. For clarification, development of the OSL remote monitoring system is not included in base scope of work and shall be estimated as a contract option.

Part B - Survey and maintenance after guarantee period

Not necessary.

Part B - Milestones

The milestones are the following:

<u>No.</u>	<u>Milestone</u>
1	Contract signature (payment included taxes)
2	Part A & B FAT at OPT NJ factory
3	OSL fully deployed, after final acceptance test
4	Expiration of 12 months of guarantee time



6. MEETINGS AND SITE VISITS

Within 30 days from the contracts signatures will be held a kick-off meeting between OPT and the EGP representatives. Video or audio conference. Project status update meetings shall be held on a regular basis via audio conference .

Site visits will be planned for:

- The FAT at OPT Monroe TS NJ
- The acceptance test at San Antonio port before deployment
- The final commissioning and test at Las Cruces

Video and audio conferences will be possible always, after previous agreement.

7. DOCUMENTATION

All the documents here described or necessary to perform the SOW will be exchanged between the party.

In particular after 30 days from the contract signature shall be sent a the final general arrangement drawing of the full OSL systems with data sheets for each OSL c:omponent provided.

8. DELIVERABLES

The following documentation, in English language with all the necessary attachments (i.e. database, GIS file, pictures, movies, etc.), will be included in the scope of work:

- Update of the Feasibility Study of deployment of the PB3 for Enel Green Power MERIC VTB Project as agreed on OPT Proposal No. 060519KPS - Las Cruces Site Visit and Evaluation, 12th June 2019.
- Reports will be redacted by OPT and/or consultants contracted by EGP after the FAT, the Acceptance test at San Antonio, and the final test at Las Cruces.

9. TIME SCHEDULE

The deadline for both Part A and Part B final test at Las Cruces will be the 31st March 2020



Annex 1

Met-ocean and geomorphological conditions at Las Cruces site

1. Bathymetry

- PDF map with isobaths every 5 m.
- Database in GIS format (ArcInfo) with bathymetric model layer and background type layer in shp and csv format.

2. Type of Seabed

- PDF with background type map, classified as sand or rock.

3. Waves

- Wave data processed.
- Full report and analysis

4. Currents, Wind and Temperature

- Characterization report of coastal currents measured at 25m deep in Cartagena Bay, in different periods of time.
- Report Characterization of winds measured locally in Cartagena Bay Water column thermal structure report
- Daily maximum current data at two depths in csv format Daily wind time series data



Annex B: General Terms and Conditions and Annex II Chile (SEVENTH EDITION).





ENEL GROUP
GENERAL CONTRACT CONDITIONS

GENERAL PART

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1. SCOPE.

1.1. These Terms and Conditions of Contract (hereafter referred to as “General Conditions” or “General Part”) regulate the contractual relationship between companies belonging to the ENEL Group (hereafter also referred to as “ENEL”) and its Contractors (hereinafter jointly referred to as the “Parties”) regarding the acquisition of materials, equipment, works and services.

1.2. The General Conditions are intended to form one document comprising of the present document and the Country Annexes. Whenever the Contract must be performed in a specific Country, the corresponding Country Annex shall be applied, as it provides the specific clauses applicable in the specific Country.

1.3. These conditions shall also apply, without prejudice to any other agreement to the contrary and taking into account the order of precedence set out in clause “INTERPRETATION AND HIERARCHY”.

1.4. The Agreement (as defined below) refers to the Web page on which these general Conditions may be consulted, and copy in an electronic/hard copy format will be sent to those who do not have access to the Webpage and have requested.

1.5. Any exceptions to these General Conditions proposed by the Contractor shall be valid only if made in writing and accepted by ENEL; and shall only apply to the Contract it is related and will not be applied neither to any pending contract nor to any other contract that will be signed with the same Contractor.

2. DEFINITIONS.

The following definitions, among others, apply to this document:

- **Contractor:** any individual or legal entity (even grouped) that execute with a contract for works, services and/or supplies.
- **Electronic signature:** digital signing system which, where applicable and in accordance with the legislation of each Country, allows the verification of the identity of the signatories to the same extent of a certified handwritten signature, and which certifies any communication sent by the given signatory and the source and integrity of a given electronic document or a set of electronic documents.
- **Economic guarantee:** set of document that the Contractor delivers to ENEL concerning the economic guarantee the former has to provide in favour of the latter for the exact fulfilment of all contractual and other obligations.
- **Final Receipt Document:** document (e.g. a report) confirming the final receipt and acceptance of purchased materials or equipment, the works or services and the expiration of the Warranty Period.
- **Global Procurement Portal (PortalOne):** ENEL Portal which Contractors can access in order to operate with ENEL on-line.
- **Provisional Receipt Document:** document (e.g. a report) which records:
 - 1) the successful outcome of inspection and testing activities in regard to particular equipment or material received from ENEL; this document also records any necessary modifications or corrections of deficiencies that are found during the inspection and testing or
 - 2) the successful outcome of a works progress examination, the exact performance or completed correction of the service, and compliance with technical standards and contractual clauses relating to the various phases of activities under the Contract.
- **Subcontract:** contract with which the Contractor entrusts the performance of contractual services to third parties.
- **Taxes:** any taxes, duties, or any other charge in general, as determined and levied by the relevant authority/local laws applicable to an individual Contract in accordance with current regulations.
- **Contract:** the set of all contractual documents as specified below, that regulate, in writing, the obligations of the Parties and the acquisition of materials or equipment and/or the performance of a given works or the provision of a given service:
 1. **Agreement (or “Lettera d’Ordine” in Annex Italia, or “Cuerpo principal del Contrato” in the Brazil, Chile, Colombia, Spain, Peru, Portugal Annexes, or “Acuerdo Comercial” in Mexico, Guatemala, Costa Rica and Panama):** the document that includes the name and identifying data of the Parties, specifies the scope and the duration of the Contract that provides the economic, administrative and regulatory terms and that lists and refers to all of contractual documents that form the Contract.
 2. **Particular Conditions:** a document that provides the specific terms applicable to a given Contract;
 3. **Technical-Economic documents:**
 - **Technical Specifications:** the document that contains the technical requirements related to the Contract;
 - **Consideration or Price List:** the document that provides the economic consideration to be paid for the specific services rendered by the Contractor, which may be grouped per category;

- **Any additional documents:** other documents related to a specific Contract (e.g. description of the works and interventions; graphic and descriptive design print-outs; time schedule, etc.).

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4. **HSE Terms:** the document that governs the Parties obligations in connection with health, safety and environment matters of the Contract. The HSE Terms is available on the ENEL Global Procurement Web page.
5. **General Conditions:** this document as supplemented by the relevant Country Annex (containing the specific clauses applicable to the Contract in each Country).

Warranty Period: period of time for the duration of which the Contractor has to ensure the proper functioning of the products/works, or that the products/works are flawless and fit for their use.

3. LANGUAGE.

3.1. The original version of this General Part is in English. The original version of each Country Annex is in the language indicated in the relevant Country Annex. The original version of the remaining contractual documents shall be that indicated in the Agreement or in each of the contractual documents.

3.2. Notwithstanding the foregoing, any amendment or supplement to the Contract shall be made in writing.

4. EXECUTION.

4.1. The Contract is executed through each Parties' signing. By signing the Contract given an electronic signature - the Contractor declares its full and unconditional acceptance of the same.

4.2. The Contract shall not be automatically renewed neither tacitly extended. Any additions and/or subsequent additional contractual terms, or deletions of contractual clauses provided in a given Contract, do not have any validity in terms of amendment of General Conditions and are limited to the given Contract.

4.3. In case of agreements executed by ENEL with the Contractor for the benefit of two or more companies belonging to the ENEL Group, the Contract shall be considered as executed by and between the given companies of the ENEL Group that will actually be receiving the service, the works or the supply and the Contractor or its subsidiaries or associated companies or permanent organisations located in the same Country as the ENEL Group company.

5. INTERPRETATION AND HIERARCHY.

5.1. In the case of conflict or incompatibility among the contractual documents of the Contract, the priority and precedence shall be determined according to the following order:

1. **Agreement;**
2. **Particular Conditions (if present);**
3. **Technical-Economic documents** (Technical Specifications, Consideration List or Price List, any additional documents);
4. **HSE Terms** (the document that governs the Parties obligations in connection with health, safety and environment matters of the Contract).
5. **General Conditions.** The General Conditions are intended to form a single document comprising of the present General Part and the applicable Country Annex. In the case of conflict between the General Part and the Country Annex, the Country Annex will prevail.

5.2. In any case, should a conflict arise between the contractual documents and mandatory provisions of the applicable law, the mandatory provisions of the applicable law shall prevail.

5.3. Without prejudice to clause "APPLICABLE LAW", should any doubts and/or conflicts arise on the Interpretation of a Contract, it shall be amicably resolved by the Parties, in accordance with the subject matter and purpose of the Contract and in compliance with the same Contract.

5.4. In the event of discrepancies between the original version of the present General Part, drafted in English and its translations into other languages, the original version in English shall prevail. In the event of discrepancies between the original version of a Country Annex and its translations into other languages, the original version in the official language of the given Country shall prevail.

5.5. It shall not be held that a Party has waived any right, power or claim provided in the Contract unless such waiver is explicitly declared in writing to the other Party. The waiver of a right, power or claim shall not imply a waiver of any future right, power and claim even if the latter are of the same nature of the former.

5.6. In the event of any provision of the Contract being held invalid, such invalidity shall not affect the remaining provisions of the Contract, which may be applied without the invalid provision being in force. The Parties, taking into account the scope of the Contract and by a mutual agreement, shall seek to amend the invalid provision in such a way that it complies with its original purpose as much as possible.





6. COMMUNICATIONS.

6.1. Any communications between the Parties shall be made in writing, at the location or address and in the manner stated in the Contract. The Parties undertake to promptly report each other any change of location and address. In the absence of such report, communications shall be deemed effective if sent in the agreed manner to the addresses referred to in the Contract.

6.2. ENEL reserves the right to use electronic procedures for the exchange of documents relating to the Contract. Unless otherwise agreed in the Contract, electronic means of communication may be used, provided that they allow the tracking of any communication.

6.3. The Contractor shall abide by and promptly give effect to all communications it receives from ENEL, without any further formalities.

7. ECONOMIC CONDITIONS.

7.1. Price.

7.1.1. The price of the Contract is the consideration agreed for the acquisition of materials and/or equipment and/or for the performance of works or services, and it takes into account the total value of the Contract. It includes everything necessary for the full performance of the contractual services, and everything that has to be provided or performed by the Contractor, including all costs or charges saved what is due for services and items that have been explicitly excluded and the taxes imposed by the applicable legislation.

7.1.2. All prices shall be listed in the Contract in the manner provided for therein.

7.2. Modification of Prices.

7.2.1. The prices are fixed and invariable. A price change may occur if provided in the Contract and/or required by the applicable law.

7.3. Invoicing.

7.3.1. Invoices shall be valid and ENEL shall accept them only if they contain all information required by the Contract and by the applicable regulations, and only if the activities referred thereof are have been duly carried out. Invoices not referring to the specific Contract number shall neither be accepted nor considered for purpose related to the date of their receipt. Even if the Contract provides the payment of invoices in different currencies, any single invoice must be issued under a single currency.

7.3.2. ENEL may return to the Contractor invoices that:

1. are not reporting information or data that are required by the Contract and/or the applicable law;
2. compute that have not been authorised by ENEL;
3. are issued in a currency other than that provided in the Contract.

In case of return of an invoice, ENEL shall specify the grounds for returning invoices. The return an invoice excludes the original receipt date of the same. Unless otherwise agreed in the Contract, all invoices and, where applicable, the mandatory attached documentation shall be sent to the address provided in the Contract.

7.3.3. Invoicing may be carried out as follows:

A. Using ENEL'S Electronic system {Procurement Portal} :

The Contractor, under the terms and conditions set forth in the Contract, and after having obtained the necessary authorisation to invoice from ENEL (invoices shall report the quantities supplied and/or the services provided in the amount corresponding to the one invoiced) amount indicated therein), shall issue the relevant invoices.

Upon receipt of the authorisation to invoice from ENEL and in accordance with contractual provision, the Contractor shall send the invoices, which have to include all data required by mandatory applicable laws, by using an Electronic systems (e.g. EDI) that ensure the authenticity and integrity of the information provided in the invoices.

In accordance with the law on electronic invoicing, the Contractor may send ENEL invoices issued in an electronic format. This method ensures the integrity of the data thereof and the univocal attribution of the document to the issuer.

B. Without using Electronic systems:

In the event of electronic systems being not available and/or applicable legislation not allowing electronic submission and electronic invoicing, the Contractor, in compliance with the terms and conditions set forth in the Contract, after having obtained the necessary authorisation to invoice from ENEL (invoices shall report the quantities supplied and/or the services provided in the amount corresponding to the one invoiced) shall issue the relevant invoice, and send the original to the invoicing address indicated in the Contract.





In the case referred to under sub-clause 4.3, in case the works/services/supplies are performed by a subsidiary of the Contractor or by an associated company or by permanent establishment of the same in the given Country the ENEL Group companies are established, the invoicing must be provided directly by its subsidiaries or its subsidiary, its associated company or its permanent establishment in the same Country in which the ENEL Group company is located.

7.4. Payment Conditions.

7.4.1. All payments shall be made by ENEL by bank wire transfer, in the manner and within the time limits set out in the Contract.

7.4.2. To this end, the Contractor undertakes to communicate to ENEL all necessary bank data. The Contractor has the obligation to promptly report to ENEL any changes to its fiscal and general data (such as: VAT number, address, company name, etc.) and any change of ownership/corporate shareholding. Failure to communicate the above information may result in the suspension of payments of invoices that contain data that are not up to date.

7.4.3. Exceptionally, ENEL may accept other legitimate and valid means of payment, in accordance with the law applicable to the relevant Contract.

7.4.4. The payment of the invoiced amount(s) shall not imply that ENEL has acknowledged that the Contract to has been properly performed by the Contractor or that ENEL has waived its rights and claims against the Contractor, as any payment is made without prejudice to any future right or claim.

7.4.3. ENEL may, if allowed by the applicable law and if provided in the Contract, withhold or suspend payments due to the Contractor, even if they are due and payable.

7.4.4. In case of a delayed payment by ENEL, if such a delay is imputable to ENEL, default interest shall be payable to the Contractor in accordance with the provisions of the Contract and with the applicable law.

7.5. Payments deferment.

7.5.1. Without prejudice to clause 7.4 "PAYMENT CONDITIONS", ENEL reserves the right to propose a deferment of the payment to the Contractor. The Contractor has the right to accept or refuse the above-mentioned deferment proposal.

7.5.2. In the event of the Parties agreeing to defer the payment's terms:

- Regardless of the provisions in the General Conditions/applicable Country Annex, the new terms and conditions of payment agreed between the Parties and indicated in the Contract shall prevail;
- ENEL will pay the Contractor a deferral charge in an amount calculated on the basis of a market reference rate (e.g. US Uber, Euribor) recorded on the day of issue of the relevant, deferred invoice plus a spread for the days between the due date originally stated in the General Conditions/ applicable Country Annex and the agreed deferred due date.

7.5.3. Deferral charges, determined as above, will be paid by ENEL at the same time and in top of the amount due pursuant to the deferred the invoice. It is understood that in the event of a delayed payment also in respect of the agreed deferred due date, ENEL shall pay default interests, as stated in the General Conditions/ applicable Country Annex.

8. TAX.

8.1. While paying Contractors for goods/works/services received, ENEL shall apply a withholding in accordance with tax and welfare contributions legislation (with fiscal effect) applicable in the Contractor's Country of residence and/or pursuant to any other law applicable to the Contract.

8.2. The Parties mutually undertake to fulfil all obligations, to deal with all the paperwork and to deliver all documents necessary for the proper payment of taxes, including withholdings and other legal obligations applicable to the Contractor, in compliance with the procedures set forth by the applicable law. Similarly, the Parties undertake to cooperate in order to obtain exemptions or other tax benefits applicable to the Contract. If, due to a lack of diligence or any other cause imputable to the Contractor, ENEL loses an entitlement to a tax benefit, it may discount the amount of the tax benefit it has not been able to take advantage of from the amount due to the Contractor.

8.3. Should treaty between the Contractor's Country of residence and the Country of residence of the relevant ENEL Group company be in force in relation to the avoidance of double taxation, and the Contractor claims the application of the provisions of such a treaty, the Contractor must provide ENEL with its certificate of tax residency (or any other declaration/certificate necessary for the application of provision against double taxation) for the purposes of classification of the nature of the income under the treaty against the double taxation, the Contractor shall take into account the interpretation in force in the Country in which the ENEL Group company is located. This certificate is, generally, valid for one year, unless the legislation of the Country in which the ENEL Group company is located establishes a shorter period. In any case, when upon expiration of the validity of each certificate, the Contractor shall submit another valid certificate.

8.4. If ENEL is required to make deductions from payments due to the Contractor, upon request from the latter, ENEL shall issue a certificate referred the deductions applied and more specifically to the amounts paid and to the amounts withheld.





8.5. If materials or equipment are sent from abroad, the taxes shall be paid as follows:

- a) The Contractor shall pay all taxes and charges applicable to goods in the countries of origination of those goods and those applicable in the countries through which said goods have transited until final delivery, plus all the taxes charged in the Country of destination which are payable as a consequence of to the economic benefits obtained from selling them.
- b) The Contractor shall also pay the expenses and import taxes or equivalent in the Country of destination, as well as other official customs charges on the imported materials and/or equipment, unless otherwise agreed with ENEL.

8.5. Taxes on national materials or equipment shall be paid either by ENEL or by the Contractor, according to the provisions of the applicable law.

9. PERFORMANCE.

9.1. Introduction.

9.1.1. The Contractor, if required by the Contract, shall be obliged to appoint and maintain, throughout the performance of its activities pursuant to the Contract, one or more representatives with full authority to discuss technical and economic matters, with particular reference to safety and occupational health, work-related social obligations and respect for the environment.

9.1.2. ENEL reserves the right, during the performance of the Contract, to object said representative(s) for cause. In such a case, the Contractor shall be obliged to appoint a different the representative(s) within ten (10) working days, unless otherwise provided in the Contract.

9.1.3. ENEL undertakes to provide, upon request of the Contractor, all necessary information for the performance of the activities covered by the Contract. If the data provided by ENEL is insufficient or incomplete, the Contractor undertakes to request missing information in good time.

9.1.4. ENEL has the right to check and verify the performance of the Contractor of all obligations under the Contract and in compliance with all instructions issued by ENEL, the proper and timely performance by the Contractor of all activities necessary for the fulfilment of the Contract in accordance with the terms and conditions set forth in the same Contract.

9.1.5. Without prejudice to its right to terminate the Contract, if ENEL, at the outcome of said checks and inspections, in any manner and at its sole discretion, determines that the Contractor has operated in breach in the exact performance of the Contract - also by making only errors or inaccuracies - the Contractor shall remedy the deficiencies at its own expense; no contractual deadline will be postponed while the Contractor remedies its deficiencies.

9.1.6. Unless otherwise agreed, ENEL personnel and/or third parties designated for that purpose at ENEL discretion, shall be given access to the Contractor's workshops or warehouses and/or those of any Subcontractor, in order to verify the manufacturing, and testing phases and be informed about the processing cycles, as well as to verify the performance of the works or services, and the materials used by the Contractor. It is agreed that any such access, as well as any observations thereof, shall not in any way constitute an interference and/or a limitation of the autonomy of the Contractor in the performance of contractual activities.

9.1.7. ENEL reserves the right to request to the Contractor, at any time, the anticipation of all or part of the performance object of the Contract and the right to evaluate a possible recognition of an economic bonus. ENEL may request the anticipation with a specific written request and the Contractor will communicate, always in writing his agreement, expressly accepting the new deadline requested by ENEL. It is understood that the Enel request to anticipate does not produce an automatic recognition of the economic bonus, even though specifically accepted by Contractor. The recognition of the economic bonus, to the extent indicated in the contract, remain subject to the specific acceptance of Enel and subject to the aforementioned anticipation is carried out by the Contractor in full compliance with all its legal and contractual obligations, especially in the field of work, health and safety. No bonus can be recognized if penalties have been applied to the Contractor during the execution of the contract.

9.2. Inspection, tests and/or verification (testing).

9.2.1. If the Contract provides for the implementation of inspections, testing and/or checks they shall be performed as follows. Without prejudice to ENEL's right to inspections the Contractor is obliged to carry out, at its own cost, all tests and inspections agreed upon that need to be carried out in accordance with the applicable standards and administrative regulations, or those generally applied. The Contractor shall communicate in writing to ENEL the date on which these activities will be carried out with a minimum ten (10) days in advance notice. Similarly, the Contractor shall communicate the results of the tests or checks carried out and recorded in the relevant certificates or protocols to ENEL, even if they were carried out in the presence of ENEL inspectors or representatives.

9.2.2. The Contractor may not begin any manufacturing, construction or assembly phases, or ship materials, before the inspections and the testing have been successfully completed, where preventive inspections and testing are required, nor before having obtained a written authorisation from ENEL, after the completion of the testing, or prior to the elapse of a ten (10) day period from the notification of inspection and testing by the Contractor without ENEL having issued any order to the contrary.

9.2.3. ENEL may carry out tests or inspections in addition to those provided for in the Contract, if it deems it to be necessary. If these tests are successful, any additional costs shall be borne by ENEL; if they are unsuccessful, the additional costs shall be borne by the Contractor.





9.2.4. The successful outcome of any inspections, tests or checks, neither imply that the scope of the Contract has been fully implemented with and approved by ENEL, nor it exonerate the Contractor from any liability.

9.2.5. Failure by ENEL to make any complaint about the performance of the contractual services, even after the inspections and tests above, shall not constitute any limitation to the Contractor's liability if it ultimately fails to fulfil its contractual obligations, even if such a failure is ascertained at a later date.

9.2.6. If the results of inspections or testing or checks that are carried out show any breaches of the provisions of the Contract, ENEL shall require the replacement or restoration of the equipment or works, at the Contractor's expense and at no cost for ENEL. If ENEL requires the replacement of certain materials they will have to be clearly identified and the Contractor shall not be able to use them in the following performance of the contractual activities.

9.2.7. The duration and methods for carrying out inspections, testing and checks shall in no case be invoked by the Contractor as a reason or justification for deferring the delivery date provided in the Contract.

9.3. Conditions for delivery and receipt.

9.3.1. Introduction.

9.3.1.1. Deliveries, including partial deliveries, must be made on the dates or by the deadlines specified in the Contract.

9.3.1.2. If a strict deadline is not indicated in the Contract and only a term for completion, or delivery is established, such a term shall run from the date the Contractor begins the performance of the contractual activities or from the date the Contract was executed.

9.3.1.3. The advance of the completion date or the reduction of the contractual term are admitted only upon explicit consent by ENEL. In such a case, the aforementioned authorisation shall not determine an earlier payment from ENEL of all or part of the given consideration.

9.3.1.4. The completion date or the term for completion may not be postponed nor extended, unless for reasons imputable to ENEL or a consequence of force majeure.

9.3.1.5. The Contractor is obliged, at its own expense, to implement any means to make up for, as much as possible, for any delay on the contractual deadlines and terms, even when the delay is justified.

9.3.2. Materials and/or equipment.

9.3.2.1. If provided in the Contract, the Contractor shall send ENEL, fairly in advance, a specific communication prior to perfect delivery of the materials/equipment. Similarly, the Contractor agrees to immediately notify ENEL of any circumstances which alter the agreed delivery deadlines.

9.3.2.2. Unless otherwise provided for in the Contract, terms such as ownership, insurance, etc., shall be interpreted in accordance with Incoterms.

9.3.2.3. The delivery of materials and equipment shall be carried out to the location specified in the Contract.

9.3.2.4. All equipment and materials shall be properly identified, accompanied by proper information and labelled for their correct and easy acceptance at destination and by a receipt that shall include the information specified in the Contract.

9.3.2.5. Transport to destination and unloading shall take place under the responsibility of the Contractor, also in accordance with clause "INSURANCE". If the type of material requires it the Contractor shall obtain from the competent authorities transit permits, licenses, authorisations or police protection in order to transport the materials and it shall bear all costs related to any work this may entail, such as: transit deviations, bridge buttresses, signs, etc.

9.3.2.6. The Contractor shall insure the transportation of goods with a good standing insurance company.

9.3.2.7. The signing of receipts, shipping documents or evidence of transmission shall not affect the acceptance of the quantities or quality specified for the materials received.

9.3.2.8. ENEL, while considering that the delivery deadlines have been met reserves the right to delay any shipment of materials or equipment. In such a case, the Contractor shall be responsible for all costs of storage and insurance for the period defined in the Contract. Should the delay in shipment be prolonged, the Parties shall, by mutual agreement, establish the amount of compensation for the additional costs of storage and insurance.

9.3.2.9. Once ENEL receives the material or equipment, a Provisional Receipt Document shall be prepared which indicates the positive outcomes of testing or inspections and final acknowledgement, or highlights the rectification or correction methods applied to remedy the defects identified. If no final tests and/or checks are required, delivery of the materials and equipment by the Contractor is formalised by the approval of its receipt by ENEL.

9.3.2.10. The Contractor may not - under any circumstances and, therefore, even in the event of disputes - suspend or slow down the performance of contractual activities

9.3.2.11 If the above mentioned obligations are breached, ENEL reserves the right to terminate the Contract, without prejudice to its full right to compensation for any damages it has suffered.

9.3.3. Similar Works and/or Services.





9.3.3.1. The Contractor shall inform ENEL, fairly in advance, of the final date of completion of the works, so that the date and time of the works to be completed can be established. ENEL shall reply as soon as possible, and not later than 30 days from being notified. On the date agreed by the Parties for the formalisation of the works completion Provisional Receipt Document, the status of the works or service shall be examined, in the presence of the Contractor's representative to determine whether they comply with the Contract's requirements.

9.3.3.2. This Provisional Receipt is completed when specific tests have been satisfactorily carried out and the good condition of the works or services required by the Contract have been proven. This document must be signed by both Parties.

9.3.3.3. If the examination of the works or service does not show a satisfactory result or the testing displays negative results, ENEL, as an alternative to Contract termination, may draw up a document (e.g. a report) in which it shall point out the defects and the term for the Contractor to correct them. Once this term has elapsed, additional checks shall be carried out, and if successful, a document certifying the completion of the works shall be drawn up (e.g. a report). In case of negative outcome of the checks, a new document shall be produced (e.g. a report) with an indication of the defects identified, and ENEL may choose to terminate the Contract or to grant the Contractor new deadline to correct the defects.

9.3.3.4. The aforesaid deadlines granted to the Contractor to remedy the defects identified shall not be considered an extension to the terms of the Contract and therefore, the Contractor shall be held liable for penalties and/or compensation for damages.

9.3.3.5. If the Contractor considers it necessary to express its disagreement on certain technical or financial aspects, it must ensure they are included in the document (e.g. a report) drawn up by ENEL, specifying the reasons for these disagreements. Any disagreements shall be settled in the manner specified in the Contract.

9.3.3.5. After the warranty period expires, the Contractor shall notify ENEL of said expiration and request the final acceptance. Following this request, ENEL shall inform the Contractor of the final acceptance date_ final acceptance must take place within the period referred to in the Contract.

9.3.3.7. On the date agreed by the Parties for the final acceptance, the status of the works or service shall be verified in the Contractor's presence, and the fulfilment of the required conditions shall be verified by carrying out the necessary tests.

9.3.3.8. ENEL shall show its approval by drafting the specific Final Receipt Document (e.g. final acceptance report), to be signed by both Parties, and which shall certify the full performance by the Contractor of its obligations. The above-mentioned document produced by ENEL shall be valid in any case, as if it was also signed by the Contractor, even when the latter, despite having been informed is not present.

9.3.3.9. If the Contractor considers it necessary to express its disagreement on certain technical or economic issues these must be included in the document drawn up by ENEL, including the reasons for such disagreement.

9.4. Changes to contractual terms.

The activities covered by the Contract shall be carried out in accordance with the terms specified in the Contract. Any postponement of the contractual terms must be agreed in writing by ENEL and the Contractor.

9.5. Transfer of ownership and risk.

9.5.1. Materials and/or Equipment.

9.5.1.1 Unless otherwise provided in the Contract the materials, properly packed in accordance with the Contract, shall be deemed to all intents and purposes to be the property of ENEL upon receipt at the location and under the agreed conditions and/or at ENEL warehouses, offices and/or plants. It is agreed that, unless otherwise provided the unloading shall be carried out under the Contractor's responsibility and at its expense.

9.5.1.1 Notwithstanding the above the Contractor authorises ENEL to take possession of the materials and equipment, in whole or in part, as soon as they become part of works or are in place an installation owned by ENEL, and to use the materials and equipment in its development processes, unless such authorisation is limited by ENEL for justified reasons. Where such authorisation is given, ENEL may use or include the materials and equipment in its development processes and may make use of the results of these processes. In any case the Contractor, up to the time the risk is transferred to ENEL, must have an insurance in place with adequate coverage for the materials and equipment, even if they are already in the possession of and used by ENEL

9.5.2. Works.

9.5.2.1. The outcome of the contractual works shall be owned by ENEL upon execution of the Provisional Receipt Document.

9.5.2.2. Without prejudice to the rights of the State or third parties, ENEL reserves the possession and ownership of all discoveries made during excavations and demolitions that take place on its own land, as well as of all usable mineral substances. In such a case, the Contractor shall take all necessary precautions or the precautions that shall be indicated by ENEL. ENEL shall pay the Contractor for any additional activities and/or additional costs that may arise and, if necessary, grant an extension of the period of performance.

9.5.2.3. Without prejudice to the provisions of the preceding sub-clauses, ENEL reserves the right, at any time, to require the Contractor, who shall be obliged to comply, unless there is a justified reason not to, to transfer ownership of the works, installations, materials and equipment existing on the site. In this case, the Contractor may continue to carry out the works and shall continue to be liable for installation risks until the Final Receipt Document is completed.

9.5.2.4. In any case, until the transfer of ownership to ENEL is perfected, the Contractor must be insured, with adequate coverage, even if the materials, as well as any other results of the works the Contract concerns, are already owned and used by ENEL.

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9.5.3 Quality.

In the Contract performance, the Contractor guarantees that the quality of goods, services and works object of the contract, fully satisfy the purpose pursued by the Parties upon the signing of the Contract itself. The Contractor guarantees in the contract performance the compliance with the quality requirements indicated in the technical documents part of the Contract itself and he is responsible for maintaining commercially acceptable quality control standards in the production of a product or in the performance of the service or work, including production standards required by any local government entity and good manufacturing practices.

10. ASSIGNMENT OF THE CONTRACT AND SUBCONTRACTING.

10.1. The Contractor must perform the contractual activities on its own. The assignment to Contract to a third party is allowed only upon ENEL explicit authorization and, in compliance with any applicable law. Provided above, all contractual activities can be subcontracted to the extent allowed by the relevant Country legislation.

10.2. With regard to works, services and supplies, the Contractor can subcontract up to the percentage of 30% of the total amount of the Contract/agreement, except other limit directly indicated in the contract/Agreement.

10.3. A self-employed worker is deemed as a Subcontractor.

10.4. Taking into account national legislation, the subcontracting is regulated as follows:

- while bidding for the Contract, the competitors have indicate, also in case of variations, the works/part of works or the services or supplies/part of services or supplies that are object of the subcontracting;
- he subcontracting agreement is filed with to ENEL before the effective start of;
- upon filing of subcontracting agreement to ENEL, the main Contractor has to transmit to ENEL the certification proving that the Subcontractor meets all the requirements for the perfection of the subcontracted activities along with a declaration that states the compliance with general requirements stipulated by the national legislation;
- only one round of subcontracting is permitted; therefore subcontracted activities may not be executed or performed using any further level of subcontracting, unless required by local laws in a specific Country.

10.5. The Contractor pays the safety costs' related to the activities entrusted in subcontracting 2, to the Subcontractor without any reduction. ENEL checks the effective application of these provisions by means of a reference contact appointed for Contractor management and supervision.

10.6. The Contractor must act in compliance with the rules and with regulations on salaries that are established in the "collective work contracts" in force in the specific Country; if applicable in compliance with local regulations, the Contractor is jointly liable with the Subcontractors for the compliance with those rules and regulation and -as indicative and not exhaustive- with all its safety, salary, contributions and insurance obligations provided to the employees involved in the performance of the subcontracted activities.

10.7. In any case, the Contractor remains completely and exclusively liable towards ENEL for the due performance of the Contract. Any recourse to of Subcontractors neither exclude nor limit the obligations undertaken by the Contractor, who shall remain liable regarding ENEL for the performance of the Contract, as well as for the payment of compensation for damages to third parties.

11. ASSIGNMENT OF RIGHTS AND RECEIVABLES.

Unless otherwise agreed in the Contract, the Contractor shall not assign or transfer to third parties, in whole or in part, the rights or claims credit arising out of the Contract, nor can he carry out any other activities which result in any change, for any reason, to all or part of the above-mentioned rights.

12. THE CONTRACTOR'S OBLIGATIONS.

12.1. The Contractor is fully responsible for everything that is necessary to execute the contractual services, and in any case for everything that is indicated as its responsibility in the Contract, and in particular, for the following:

- o carrying out inspections, testing and checks required by the Contract and/or regulations applicable to the Contract, as well as all for all costs arising therefrom;
- o managing and obtaining visas, authorisations and licenses necessary for the performance of the Contract, except those that are under the responsibility of ENEL by provision of law;
- o organising its personnel, employed in various capacities in the performance of contractual activities, provided that at all times the Contractor's responsibility is clearly identified and separated from that of ENEL;
- o the appointment of a person in the Contractor's own organisation to act as ENEL'S referring individual during the performance of the Contract;
- o the labour required to perform the Contract with all its associated costs.

¹ Cost for the measures adopted to eliminate, or if not possible, to reduce health and safety risks caused by several works activities which interfere with each other.

² Where stipulated by the national legislation.

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12.2. In case of foreign Contractors, and before the start of the works, the Contractor must ensure that “key people” (such as foreman, supervisor, site manager etc) are able to understand and communicate in the official language of the relevant Country or in that established in the Contract (both in writing and orally).

13. THE CONTRACTOR’S RESPONSIBILITIES.

13.1 The Contractor, under its sole responsibility, shall comply with the applicable law and regulations required by the relevant authorities in relation to the Contract.

13.2 The Contractor shall be liable for the proper fulfilment of its legal and fiscal obligations, as well as for its contractual responsibilities towards its contractors and Subcontractors.

13.3 If the Contractor is represented by a group of two or more entities, each of them is jointly and severally obliged to comply with all provisions of the Contract and for the performance of the Contract in accordance with applicable legislation.

13.4 The Contractor is obliged to prevent any situation that could give rise to conflicts of interest and therefore must take all necessary measures for their prevention and identification, and it has to immediately inform ENEL of any conduct that may give rise to a conflict of interest.

13.5 The Contractor agrees to indemnify and hold ENEL harmless from any liability and prejudice arising out any claim or legal proceedings of any kind which are directly related to the Contract, both judicial and extrajudicial, arising from acts or omissions by the Contractor or its employees, representatives or Subcontractors.

13.6 The aforementioned indemnity includes any amount that ENEL would possibly have to pay both for expenses and costs of any kind as a result of claims or judicial summons; in any case, without prejudice to its right to defend itself. Failure by the Contractor to comply with this clause is considered a serious breach and shall entitle ENEL to terminate the Contract for breach of the Contractor.

14. THE CONTRACTOR’S WARRANTIES.

14.1. The Contractor shall warrant:

- a) the suitability, exclusive ownership and/or legitimate availability of all materials and/or equipment and that they are all free and clear from any lien;
- b) that all materials and equipment:
 - comply with the relevant legal requirements, specifications, standards as well as with the contractual provision ;
 - are free from visible or hidden defects;
 - are fit for their intended use;
 - are of the required quality level;
 - are not used;
- c) that the works comply with all contractual requirements and are in any case suitable for their intended use.

14.2. The warranty period for the materials and equipment, as well as the works/services and all other warranties provided, shall extend to the whole duration of for in the Contract.

14.3. The warranty shall not cover defects or failures that are caused by misuse or incorrect use by ENEL, except in cases where the misuse or incorrect use derives from the application of the incorrect or confusing content of manuals or instructions provided by the Contractor.

14.4. The warranty applies to defects in design, construction and hidden defects and to anything that is specified in the Contract. Pursuant to the warranty the Contractor is obliged to carry out, as soon as possible and at its own expense, any repairs or replacements that may be necessary, including the removal and transportation of defective parts. In particular, the Contractor undertakes to:

- a) replace, as soon as possible or in any case, within the timeframe set forth in the Contract, all materials and equipment that do not comply with the provisions or requirements thereof, and all those that are inadequate or of poor quality, Such materials and equipment shall remain in storage at ENEL’s facilities until they are replaced, without prejudice to ENEL’s right to use the rejected materials until they are replaced;
- b) fix, repair or replace equipment that has design, materials, labour, manufacturing, functioning or performance defects;
- c) replace all materials and equipment provided in the event of any defects in series, thereby justifying the solution adopted to prevent those defects being produced in the remaining materials or equipment that need to be supplied. A series defect is considered to exist when the percentage of defective materials and equipment covered by the Contract exceeds the percentage established in the Contract, or if it is not specified, when the percentage exceeds 10% of the total;

- d) return the equipment sites made available by ENEL in the same condition in which they were delivered;
- e) indemnify ENEL from any claim made by third parties.

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14.5. The above-mentioned obligations, and all expenses for various reasons arising from the execution of the warranty, shall be the sole responsibility of the Contractor, without ENEL being liable for any charges or costs.

14.6. ENEL shall always be entitled to take decisions, which shall be duly communicated to the Contractor, regarding the correction and adjustment or repeated performance, construction or assembly of anything found to be defective. ENEL may order, for justified reasons, adjustments, corrections, repairs or temporary replacements and all related costs shall be borne by the Contractor, pending arrival of the new parts or new construction or assembly, as required.

14.7. In any case the remedies referred to in sub-clause 15.6. shall be pursued by the Contractor as soon as possible, so that ENEL is affected as little as possible and in a manner that will not cause delays in the completion of the works or determine any interruption of service of any installation or, if this is not possible, by minimising the delay or the time for which installations are totally or partially unavailable.

14.8. If the Contractor fails to comply with the obligations referred to in this clause, ENEL shall be entitled to adopt any appropriate measure independently, or by recouring to third parties' assistance, at the Contractor's expense. The Contractor shall also be obliged to compensate ENEL for any damages or losses it has suffered, as provided for in the Contract.

14.9. The warranty period is suspended on the date on which ENEL's decision is validly communicated to the Contractor, and it shall accordingly be extended until completion of all repairs, replacements or new assembly activities, or works that must be carried out under the warranty.

14.10. Spare parts are also subject to the above-mentioned warranty.

14.11. When the warranty period has satisfactorily terminated and any anomaly, defect or deficiency found or produced during this period have been remedied, in the event of the Provisional Receipt Document having been previously signed, the Final Receipt Document shall be executed and the economic guarantees provided by the Contractor may be released.

14.12. The expiration of the warranty period or the final acceptance of the materials/works covered by the Contract, does not release the Contractor from liability for defects or for hidden defects or from any other liability pursuant to the applicable by law or under the Contract.

15. PENALTIES.

15.1. Without prejudice to the provisions of sub-clause "TERMINATION", the failures of the Contractor to meet the delivery dates set forth in the Contract, both partial and final, or any other breach of obligations provided for in the Contract, may result in the application of a penalty by ENEL, in accordance with the agreed terms and conditions. The above penalties do not exclude nor limit ENEL's right to compensation for any further damages.

15.2. If the total amount of penalties applied exceeds the threshold specified in the Contract, ENEL reserves the right to terminate the Contract at any time

15.3. Should ENEL be deprived, during the warranty period, of the availability or use of materials or equipment covered by the Contract or the completed works or assembled installations due to a defect, imperfection or damage not attributable to ENEL, or because of deficiencies in the performance of the activities carried out to remedy said defects, ENEL may apply the penalties provided for in the Contract.

15.4. The application of the prescribed penalties shall not exonerate the Contractor from responsibility under the provisions of clause "THE CONTRACTOR'S WARRANTIES" above, or under clause "SUSPENSION, WITHDRAWAL AND TERMINATION".

15.5 The procedure for the collection of any penalties shall be carried out in the manner and within the period prescribed in the Contract or in the applicable law.

15.6 Failure to apply one or more penalties does not imply a waiver by ENEL of the application of similar penalties, or of those that subsequently originate from the same cause.

16 SUSPENSION, WITHDRAWAL AND TERMINATION OF THE CONTRACT.

16.1. Suspension.

16.1.1. If, for any reason, ENEL considers it necessary or is obliged to temporarily suspend all or part of the performance of the Contract, it shall send a written communication to the Contractor, stating the cause and providing an estimate of its duration of said suspension. The suspension shall take effect as of the date stated in the notification. The Contractor must, from that date, cease the activities and store and maintain the materials, equipment and works, without prejudice to all the obligations that derive from the current legislation and that are established in the Contract.

16.1.2. The resumption of activities will have to be communicated in advance from ENEL by means of a written notice to the Contractor, and it shall take place no later than the day set out therein. The remaining term for the completion of the suspended part of performance of the Contract will begin to run from that date. The Contractor shall have the right to receive payment, as defined in the Contract, for the activities/project already carried out. Payment of activities/projects that are, upon notification, in advanced stages of implementation and not provided for in the Contract. shall be negotiated between the Parties.

16.2. Withdrawal.





16.2.1. ENEL may withdraw from the Contract at any time, no matter what stage of the work, activities and projects is reached. The withdrawal shall be communicated in writing with acknowledgment of receipt and will be effective from the date ENEL will communicate which activities are to be completed and which are to be stopped immediately. The activities duly carried out by the Contractor prior to the cancellation date will be paid by ENEL in accordance with the contractual prices. ENEL shall reimburse the Contractor, upon review of the related satisfactory evidence provided by the Contractor that have been interrupted and for those that have not been performed. To this end ENEL shall reimburse the lower amount between (i) the one equal to the expenses incurred by the Contractor in relation to those activities, for orders that have become irrevocable and (ii) the one equal to the actual economic prejudice suffered by the Contractor.

16.2.2. The Contractor may withdraw from the performance of the Contract in accordance with the provisions of the law applicable to the Contract.

16.3. Termination.

16.3.1, ENEL may terminate the Contract in the cases contemplated by law and *I* or in all cases stipulated in the Contract and *I* or in the following cases, where there is a cause that impedes or significantly affects the correct performance of the Contract:

a) the death of the Contractor, in the case of a natural person, or, for both Parties, a change in their capacity that prevents, or modifies the performance of the Contract substantially.

b) the dissolution, transformation, reduction of capital or significant changes in the governing bodies of any of the Parties, in the event that said changes have a negative impact on the performance of the Contract, or in the event that said changes on the part of the Contractor contravene the "ETHICAL CONDUCT RULES" of ENEL.

c) the reduction of capacity or economic *I* financial solvency or any other type of legal difficulty, or of any other nature that affects the normal fulfillment of the obligations of any of the Parties.

d) the interruption or unjustified suspension by the Contractor of the performance of the Contract.

e) the total amount of the penalties eventually applied for delay during the execution of activities reached the maximum specified in the agreement or the delay of contractor is such to not fully satisfy the scope of contract established by ENEL.

f) the impossibility of the Contractor to obtain certificates on time and the necessary approvals for the correct performance of the Contract in relation to its own products or activities, or any loss thereof while the Contract is in force.

g) the inability of the Contractor to remedy the breaches of the corresponding technical specifications and *I* or in case of repetition of errors or defects or breaches in relation to the instructions provided by ENEL.

h) the inability to perform or the breach by the Contractor and *I* or its Subcontractors or a third party appointed by the Contractor of the contractual activities or any of the requirements in accordance with the legislation in force.

i) failure to comply with the obligations related to intellectual property, confidentiality and the processing of personal data, in accordance with the laws applicable to the Contract.

j) the verification at any time, after the signing of the Contract, of any omission or lack of veracity of any information or statement offered by the Contractor in relation to compliance with legal, economic, financial, technical or contractual conditions.

k) the incorrect performance of the Contract for reasons attributable to a Subcontractor or to any person named by the Contractor and *I* or the non-payment of compensation for damages caused to any person.

l) any other breach by the Contractor that could impede or materially and adversely affect the satisfactory performance of the Contract, or any other reason specified in the Contract as a reason for termination.

m) the refusal of the Contractor to execute any activities under the Contract.

n) the refusal of the Contractor to resume the performance of activities under the Contract that ENEL (for any reason) has ordered to suspend, when ENEL itself has indicated its resumption.

o) the performance by the Contractor of acts that are harmful to the image of ENEL.

p) the actions, omissions, behaviors or situations related to the Contractor that may pose a risk to the reputation of ENEL and that lead to the deterioration of the trust of ENEL in the honesty and integrity of the Contractor, and in its reliability for the performance of activities in accordance with the provisions of this Contract.

q) the loss of *even* one of the requirements established for the homologation (if they were required), in relation to the conclusion and compliance of the Contract. In the event that the Contractor does not inform ENEL of the situations described above and without prejudice to the latter's right to terminate the Contract, ENEL may suspend payments due to the Contractor to comply with the contractual obligations with third parties arising from the correct and complete performance of the Contract by the Contractor.

16.3.2. In the cases described above, ENEL may terminate the Contract from the date on which it sends a communication in writing -also in electronic format, when contemplated in the Contract - to the Contractor or ENEL may nevertheless require the, due performance without prejudice to its right to claim compensation for any loss or damage suffered.

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16.3.3. In case of termination of the Contract for reasons attributable to the Contractor, ENEL shall have the right to acquire the materials that the Contractor has already manufactured, totally or partially, or delivered, paying the relevant prices, when contemplated in the Contract.

16.3.4. In the event of non-compliance by the Contractor, ENEL may, without prejudice to the right to apply penalties or to take legal action in relation to its right to compensation for damages, carry out the following measures:

- a) to suspend pending payments to the Contractor.
- b) enforce any economic guarantee provided by the Contractor.

17 FORCE MAJEURE.

17.1 The Contract is subject to the concept and definition of force majeure established by the legislation and jurisprudence applicable to the Contract. Neither Party will be responsible for the breach of its obligations if the performance is delayed or can not be carried out due to force majeure.

17.2 The Contractor may not invoke force majeure in the examples listed below:

- a) meteorological conditions or phenomena that a Contractor with experience in facilities can reasonably predict and whose harmful effects could have been consequently avoided in part or totally by the Contractor;
- b) delays or inability to obtain materials or human resources that have occurred despite being reasonably predictable, or that could have been avoided or remedied in advance;
- c) strikes or labor disputes in relation to the Contractor or its Subcontractors, except in the case of a national strike or strikes of the entire sector or industry;
- d) delays or contractual breaches of any Contractor's Subcontractor, unless such delays or contractual breaches are in turn a consequence of a force majeure event;
- e) the status of the site where the contractual activities are carried out, which is known and accepted by the Contractor;
- f) Contractor's or its Subcontractors technical, economic or financial difficulties or its Subcontractors.

17.3 The Party whose performance of the Contract is affected by events that it considers cause of force majeure will notify it in writing to the other Party as soon as possible, and always within a maximum period of five (5) calendar days from the day on which the Party would have knowledge of the aforementioned facts. In said notification:

1. identify the events and the circumstances in which they occurred;
2. detail the estimated duration of the situation;
3. relate the contractual obligations affected and the measures that it will adopt to reduce, if possible, the negative effects of the facts in the performance of the Contract;
4. attach the documents that prove that the causative events should be considered as a cause of force majeure.

17.4 The other Party will respond in writing, accepting the cause or not in a reasoned manner, within a maximum period of ten (10) calendar days after receiving the aforementioned notification. The absence of a response from the notified Party within the aforementioned period shall be understood as acceptance of the cause invoked.

17.5 In case of force majeure, the fulfillment of the affected tasks will be suspended during the cause of force majeure, without claims of compensation of any of the Parties. Contractual obligations not affected by force majeure must continue to be executed according to the terms and contractual terms in force before the occurrence of said cause.

17.6 If due to force majeure, the performance of the Contract is substantially affected and is suspended for more than one hundred eighty (180) calendar days, or it can be shown that it is impossible to perform it, either Party may request the termination of the Contract, with no compensatory consequences between the Parties.

18 LABOUR LAW OBLIGATIONS.

The Contractor is solely responsible for the organization of the personnel it employs - in various purposes - to execute the Contract, so that its responsibilities are well defined and distinguished from those of ENEL.

19. ECONOMIC GUARANTEE.

19.1. The Contractor shall secure the performance of all contractual obligations and the payment of damages caused by the breach of Contract for an amount equal to a percentage of 10% of Contract Price, unless a different percentage is provided in the Agreement.





19.2. Security may be lodged at the Contractor's choice, either in cash or in the form of a guarantee issued by a financial institution approved by Enel and complying with the criteria listed below.

19.3 The economic guarantee must:

- have an unconditional and irrevocable character;
- be issued for the benefit of Enel;

be payable on first demand by Enel only submitting a written statement to the issuing institution stating that it has the right of repayment of the economic guarantee.

19.4 The financial institution issuing the guarantee shall be a bank, an insurance company or a financial intermediary authorized to operate in surety business by relevant authorities.

19.5. In case the issuer's creditworthiness deteriorates, the Contractor shall provide within 60 days, upon Enel's request, the guarantee replacement issued by a financial institution approved by Enel. In case of failure to provide the guarantee, Enel may, in accordance with applicable law, withhold and suspend payments due to the Contractor.

19.6. The existence of a guarantee does not mean that the Contractor's liability under this Agreement is limited to the amount or period of validity of the guarantee

19.7. If the Contract Price increases during its execution, Enel may request that the Contractor provides a supplementary or a replacement economic guarantee to cover the increased Contract Price.

19.8 In case the Contractor fails to comply with the supplementing or replacement of the guarantees as provided in clauses 19.5. and 19.7, Enel reserves the right to terminate the contract, or, in accordance with applicable law, withhold and suspend payments to the Contractor until the due security amount is reached.

20 INSURANCE.

20.1. The Contractor assumes all responsibility for injury or damages caused to persons or property by carrying out - including through subcontractors or third party agents - the activities specified in the Contract and it undertakes to take out adequate insurance at its own expense, in relation to the risk, and with insurance companies that are financially stable and of recognised good standing, for the entire duration of the Contract, for:

- a) losses or damages that may be caused to materials and equipment covered by the Contract during their processing, loading and transportation, up to the time and place of delivery to ENEL, with the Contractor's full liability for any damage caused to the materials or equipment. This obligation is also assumed by the Contractor with regard to materials and equipment provided by ENEL for the performance of the Contract, from the moment they are made available to the Contractor or its Subcontractors, until they are returned to ENEL.
- b) civil liability for losses and detriment that may be caused by it or by its own personnel or Subcontractors to the personnel or property of ENEL and/or of third parties arising from the performance of activities under Contract. In all circumstances, ENEL shall not be liable for any causes attributable to the Contractor.

20.2. Similarly the Contractor undertakes to take out insurance for civil liability with adequate limits on compensation according to the risk, to cover claims for damage to property, personnel and/or for financial damage that can be caused to ENEL or third parties arising from the defects or malfunction of materials or equipment attributable to the Contractor. In addition, the Contractor shall be liable for environmental damage or the imminent possibility that it may take place, as well as the costs related to prevention, reduction and repair, in accordance with the conditions laid down in applicable legislation.

20.3. If the Contract provides for the storage of materials by the Contractor on ENEL's premises, the latter may request, and the Contractor shall be obliged to stipulate, in addition to the previously mentioned insurance, insurance for theft and other damage that can be caused to the stored materials, for the entire duration of the Contract.

20.4. The above policies must include a provision obliging the insurance company to pay ENEL directly. The limits of the insurance policy must cover damaging events subject to claims received within the period of performance of the Contract and/or after the warranty period.

20.5. The insurance policy shall provide for the total waiver of the insurer against ENEL with no exceptions whatsoever.

20.6. It is agreed that the existence, validity and effectiveness of the insurance policies referred to in this clause is an essential condition for ENEL and, therefore, if the Contractor is not able to prove at all times that it has insurance cover, ENEL may terminate the Contract, without prejudice to the obligation to the payment of compensation for the damages ENEL has suffered.

20.7. If ENEL believes that the Contractor's insurance cover is not sufficient to cover the risk, both for the delivery of materials or equipment and the completion of works or services under the Contract, the Contractor agrees to review and change the insurance cover in accordance with the requirements of the Contract.





20.8. Similarly, the Contractor undertakes to Contract, at its own expense and with financially stable insurance companies of recognised good standing, any other type of compulsory insurance that may be required by applicable law, for the entire duration of the Contract.

21 INTELLECTUAL PROPERTY.

21.1. The Contractor shall guarantee ENEL, at all times and, if requested, that it shall undertake to prove with documentation, the legitimate use of trademarks, patents, utility models, industrial designs or necessary licenses on said rights, such as a compulsory license for carrying out business activities, when it requests special authorization for the performance of the contractual services, and that these trademarks and licenses do not infringe the rights of third parties.

21.2. In the case of licenses, they must be registered with the offices of the competent authorities, and ENEL reserves the right to ask the Contractor to produce the documentation and/or any certificates.

21.3. The Parties agree that, as for ENEL's products, samples or technical specifications that are delivered by ENEL to the Contractor in order to perform the Contract, the Contractor: (i) may not in any way copy, reproduce, process, translate, modify, adapt, develop, decompile, dismantle, subject to reverse engineering operations (or, in any case, subject to operations intended to extract the source codes) - in full or in part - any such ENEL products, samples or technical specifications, and (ii) shall ensure that the aforementioned prohibitions are complied with also by the authorized persons involved and possibly to be involved in the performance of the Contract by the Contractor.

21.4. The Contractor is responsible for obtaining concessions, permits and authorizations required by the holders of patents, models and related trademarks, as well as intellectual property rights. The Contractor shall be responsible for payment of any royalties or fees due on this basis.

21.5. In the case of supply Contracts, if, as a result of a dispute by the owners or concessionaires of the rights referred to in this clause, ENEL is obliged to totally or partially modify the materials to be supplied under the Contract, they must be modified as soon as possible at the Contractor's expense, without this resulting in a deterioration of the quality of the supply, operating characteristics or warranties. If the above occurs, a new process for the approval of prototypes shall be carried out, where this is prescribed for the type of supply in question and before the materials are supplied.

21.6. If legal action is taken against ENEL by a third party for breach by the Contractor of the obligations referred to in the preceding sub-clause, the Contractor shall, at ENEL's request, be required to provide coverage (as indicated in clause "ECONOMIC GUARANTEE") in regard to the value of the claims, within ten (10) calendar days. 21.7. The Contractor shall release ENEL from any liability for infringements of intellectual property rights that may occur and undertakes to do everything necessary to hold ENEL harmless with regard to any claims or lawsuits against it, and also undertakes to compensate ENEL for all losses or damages, whether direct or indirect, arising from claims or by subpoena.

21.7. Any claims, whether judicial or extrajudicial, made against the Contractor by third parties relating to intellectual property rights, shall be immediately reported to ENEL.

21.8. ENEL shall own all of the documents, drawings, plans, computer programs, as well as copies thereof, it provides to the Contractor for the performance of the contractual services, as well as inventions, patents, utility models and other industrial property rights that are or will be necessary for the performance of the contractual services based on documentation provided by ENEL to the Contractor. The Contractor shall use them solely for the purposes of executing the Contract and must return them to ENEL, at all times taking appropriate precautions in relation to the processing, use and transfer of data to ensure security and non-disclosure, pursuant to clause "CONFIDENTIALITY" below.

21.9. The intellectual property rights and technology and methodology resulting from the works or services performed by the Contractor in executing the Contract, and the records that are created belong to ENEL, without giving the Contractor any right to increase the price specified in the Contract for the said works or service.

21.10. The drawings, documents, plans, computer programs as well as copies thereof, and in general any results (and related industrial and intellectual property rights, including but not limited to patent applications, pending patents, database rights, copyrights, trademarks, trade and industrial secrets rights and any applications thereto on a worldwide basis, software designs and models, know-how) generated by the Contractor during the performance of the Contract (the "Foreground IPRs") shall exclusively belong to ENEL, which will also automatically become the owner of any relevant working in progress, from time to time generated during the performance of the Contract. Each Party recognizes and agrees that each Party's Background IPRs shall remain exclusive property of such Party and the other Party shall have no claim in relation to any such right; such Background IPRs mean all present and future industrial and intellectual property rights, including but not limited to patent applications, pending patents, database rights, copyrights, trademarks, trade and industrial secrets rights and any applications thereto on a worldwide basis, software designs and models, know-how, pertaining to each Party before the signature of this Contract or successively acquired in parallel projects outside of the scope of this Contract. Therefore, if the Contractor shall use its Background IPRs for the performance of this Contract, any Foreground IPRs belonging to ENEL shall be limited to the add-ons (the "Add-Ons"), which are the additional parts (generated by the Contractor in performing the Contract on the basis of its Background IPRs) that do not, in any way, include or contain any of its Background IPRs. The Parties shall agree in writing the list of the issues constituting such Add-Ons previously and/or within 30 (thirty) days after the expiry or termination of the Contract.

21.11. The marketing methods and the manner in which technology covered by the Contract is distributed to third parties, as well as any benefits arising thereof, are regulated by the Contract.

21.12. In case of breach by the Contractor of the obligations related to industrial and intellectual property referred to in this article, ENEL has the right to terminate the Contract, without prejudice to its right to every action and compensation for any damages it has suffered.





22 CONFIDENTIALITY.

22.1. All information that any of the Parties makes available (verbally, in writing, in electronic format or in any other way) for the purposes of, and *I* or during the performance of the Contract, as well as any other information of which any of the Parties may have knowledge as a result of other contracts signed between the Parties and *I* or pre-contractual negotiations thereof, as well as all documents, information, and specific knowledge (regardless of how they have been compiled, obtained or developed) can be used only for the purpose of executing the Contract and they are confidential.

22.2. By way of example, the term “confidential” refers, but not limited to all information relating to business strategies, information about products and *I* or production processes (design, study and development), means of production, sales information, development strategies and customer management, etc. It also applies to economic, financial and technical documents, as well as to processes, patents, licenses or any other information that any of the Parties has provided to the other Party in relation to the performance of the Contract.

22.3. Confidential information may not be disclosed without the prior written and express authorization of the Party that owns such information, except in those cases in which the receiving Party is legally required to transmit it or is ordered by a competent authority or when refusing to do it is illegal. Without prior written and express authorization from the Party that owns the confidential information, the other Party may not copy, reproduce, translate, modify, adapt, develop, dismantle, separate, perform reverse engineering operations or any operation intended to extract the source codes - wholly or partially - of the confidential information provided.

22.4. Confidential information includes all information relating to a Party, made available to the other Party, before or during the performance of the Contract, either by the administrators, managers or employees of the Party that owns the information, or by the Subcontractors or subsidiaries of the Party that owns the information and its corresponding administrators, managers, employees or Subcontractors (hereinafter, “Representatives of the Party that owns the information”). Confidential information also includes all information regarding the Representatives of the Party that owns the information, that Party or its own representatives have been able to make available to the other Party before or during the performance of the Contract. To this effects:

- the term “subsidiary” refers to any company controlled by one of the Parties, or by one of the Parties along with other third parties, for as long as there is such control and during the period in which the information is disseminated;
- the term “control” refers to the direct or indirect capacity of control over the operation and strategy of the company, and to all cases in which any company of the group of companies of either Party owns more than fifty percent (50%) of share capital or shares with voting rights, either directly or indirectly.

22.5. It will not be considered confidential:

- the information that the Party that receives it can prove that it already knew it legitimately before the beginning of the performance of the Contract;
- the information that the Party that receives it can prove that it has received it from third parties not subject to the confidentiality agreement.

22.6. Each of the Parties:

- must restrict the disclosure of confidential information exclusively to the representatives that effectively need to have it due to their degree of involvement in the performance of the Contract;
- bind its representatives and ensure that they fully comply with the obligations contained in this clause;
- will be held responsible for any action or omission on the part of its representatives that leads to a breach of the obligation to maintain confidentiality.

22.7. The Party receiving the confidential information is obliged to create and manage logical and physical data, using the best available international techniques and practices, to guarantee the protection of said data from unauthorized destruction, manipulation, access or reproduction and, once that the Contract has expired, return all the data, documents and information provided by the other Party or in its possession, for the purpose of carrying out the contractual activities, in addition to destroying all copies and files that it may have, unless it has received Written permission to the contrary from the Party that provided the confidential information.

22.8. Both Parties guarantee that confidential information will not be disclosed during the performance of the Contract and for a period of five (5) years after it has expired, except when another term is agreed in the Contract or when it is required by law or by a competent Authority. When necessary, the Party that is requested to disclose confidential information shall notify the other Party of such request (when legally possible) immediately, so that it may take the necessary actions to protect its rights. The Parties will only disclose the information required by law and must obtain a statement from who receives the information that said information will remain confidential.

22.9. If the information is classified by ENEL as “highly confidential”, the following rules should apply:

- the password needed to access IT systems must be personal or individual, kept secret and changed every sixty (60) days;
- the access to information systems must be limited to software *I* tools provided specifically for the performance of the necessary activities; the use of network services or connections for purposes not related to the activities that must be carried out is prohibited;





- any transaction developed through ENEL's IT systems must not violate applicable local laws;
- the workstation used (permanent or temporary) can not connect to internet services other than those provided or authorized by ENEL and must have the necessary antivirus installed. All necessary measures must be taken to prevent the spread of viruses, malicious software or any illicit software that may cause interruptions in the service or loss of data;
- all email accounts, file storage or communication platforms (including social networks) must be explicitly provided or authorized by ENEL;
- sensitive data must be stored, transmitted or canceled by appropriate coding software;
- it is forbidden to modify the configuration of the system to avoid security checks.

22.10. The Contractor is prohibited from divulging by any means (for example but not limited to press articles, press releases, interviews) of any information deemed confidential according to the article. Both Parties will agree in writing regarding the content, the means of communication, the date of publication of the press articles and the news or communications of any kind in relation to the Contract or any matter or information related thereto.

22.11. If ENEL authorizes the subcontracting or transfer of the Contract in writing, the Contractor must obtain from the Subcontractor or assignee a confidentiality agreement with the same conditions as those contained in this clause.

22.12. Both Parties acknowledge and agree that the compensation of the damages may not represent sufficient compensation for the breach of confidentiality and that the Party that suffers the infraction shall have the right to seek other repairs or to avoid any possible violation or damage of such violation according to the current legislation. In case of breach of the confidentiality requirements, any of the Parties may also decide to terminate the Contract.

22.13 The above remedy will not be considered the only available one, but will be in addition to all other rights and remedies available according to the applicable Law. In case of violation of the confidentiality obligations and without in any way prejudicing the above, and in case of violations referred to in this article, ENEL has the right to terminate the Contract as well as the right to take any action aimed at obtaining compensation for damage,

22.14 ENEL reserves the right to carry out periodic checks, with special attention to the security measures applied in cases where there is information considered and classified by ENEL as confidential.

22.15 At any time, if the Party that provides confidential information so requires, the other Party shall return or destroy or request that its representatives return or destroy all copies of the information confidential written in your possession or that of your representatives. In addition, the Party receiving the information will do everything in its power or will require its representatives to do so, to return or destroy any data stored in electronic format and will confirm the destruction of said data to the Party that provides the confidential information. within a maximum period of fifteen (15) days from the request.

22.16 Each Party acknowledges and agrees that confidential information is and remains the exclusive property of the Party that discloses it and its representatives. Nothing in the Contract shall be understood - unless expressly stated in writing - as granting a license or the like in matters of patents, copyrights, inventions, discoveries or improvements made, conceived or acquired, both before and after the performance of the Contract.

23. PROCESSING OF PERSONAL DATA.

Both ENEL and the Contractor declare to comply with applicable legislation on the protection and processing of personal data. While processing personal data on behalf of Enel, the Contractor shall adopt adequate technical and organizational security measures to avoid personal data breaches, shall comply with the General Data Protection European Regulation 679/2016, when applicable, within or outside of the European Union and shall inform Enel without undue delay of any personal data breach occurred in the performance of the Contract.

24. VENDOR RATING.

24.1 ENEL has set up a vendor rating system in order to assess and constantly monitor the performances of its Contractors.

24.2 The vendor rating may be applied to all the companies that work with ENEL.

24.3 If Enel decides to assess a Contractor, the assessment could be based on indicators that express the level of quality offered, compliance with the lead times, conformity with the environmental and safety laws in force, the upholding of the principles of social responsibility. These indicators are then combined to produce a Vendor Rating Indicator (so-called VRI).

24.4 ENEL may assess the Contractor from the procurement phase to the performance phase of the Contract, basing its evaluation on information collected through Enel digital tools.





24.5 In case of unsatisfactory performance, ENEL may require to the Contractor to submit recovery plans - with contents and terms to be agreed upon - or take the actions that Enel considers appropriate at its best convenience. In the event of excellent performance, Enel may evaluate incentive actions.

25. GAIN SHARING³.

25.1. This Section will always be considered as a Change Order of the Contract and shall apply only (i) at least the half of the Contract shall be executed and (ii) just once during the performance of the works.

25.2. The Contractor may identify potential new opportunities with respect to the Works/Services/Supplies and/or potential opportunities for improving the quality of performing the Contract (hereinafter referred to as the "Proposal").

25.3. If the Contractor identifies a Proposal, the Parties shall discuss such Proposal, including the likelihood that such Proposal will result in savings to ENEL and/or improved quality of performing the Works/Services/Supplies and, if approved by ENEL, Contractor shall further research the Proposal and present a written proposal to ENEL within a mutually agreed time frame

25.4. Contractor's Proposal must include, as applicable :

- a) the recommended changes (a detailed description of the proposed statement of Work, including a project plan, setting forth each Party's responsibilities if the opportunity is to be realized);
- b) a cost / benefit analysis (both direct and indirect);
- c) estimated current costs that could be incurred by the Contractor and those charged to ENEL (both direct and indirect);
- d) the anticipated savings and/or improvements in the services (financial or otherwise) that will be achieved by ENEL;
- e) any impact on the Contract;

25.5. In any case a mutually agreed value shall be ascribed to such potential savings or improved Works/Services/Supplies and used as the basis for any gain sharing as hereinafter described (the "Gain Share report").

25.6. ENEL will inform the Contractor, within 15 days of receipt of the Proposal, of the date of the meeting aimed at discussing the Proposal. The Parties will meet to discuss the Proposal and in particular:

- investment (financial or other);
- estimated amount of savings, and/or improvements in the services;
- the Gain Share report;
- the Change Order (Timing of any payments or price adjustments);
- the Gain Sharing formula (if any) that will be applicable in order to compensate the Contractor with respect to the Proposal.

25.7. After the meeting, the Contractor must then submit a revised Proposal to ENEL (hereinafter the "Revised Proposal"). ENEL will evaluate the Revised Proposal and must - in writing within thirty (30) days (or any other time agreed between the Parties and indicated in the Contract) - accept it, reject it or propose recommendations or improvements. If ENEL agrees with Contractor's Revised Proposal, the Contractor must formulate within fifteen (15) days an implementation plan (so-called "Implementation Plan") that defines in detail:

- a) a descriptive Project Plan in which the Contractor will implement the Revised Proposal;
- b) Change Order scope (in accordance with the agreed Gain Share report.

25.B. This section shall not apply in circumstances where savings are achieved by Contractor in performing its other obligations set forth in this Agreement. In any case, any Change Order based in a Gain Sharing shall be subject to the provisions agreed between the Parties in the Contract and in order to avoid misunderstanding, all changes and additions to the Contract based in a Gain Sharing should be made in the form of a written agreement to the Contract signed by authorized representatives of the parties,

26. GOVERNANCE.

26.1. Contract Governance structure.

26.1.1. Where provided for in the Contract, the Parties may set up a committee (so-called "Review Group") to supervise the progress of the performance of the Contract object. The Review Group is made up of an equal number of representatives of the Parties. Each Party may periodically change its representatives in the Review Group in its sole discretion, notifying the other Party of the change.

³ This clause is only applicable to Contracts which are not subject to legislation prohibiting or restricting the use of this mechanism.





26.1.2. Additional representatives of both Parties, with appropriate technical skills, experience and knowledge, or external consultants, may from time to time - by mutual agreement of the Parties - be invited to attend the meetings of the audit team, without prejudice to the obligation for all third parties to sign and comply with confidentiality obligations.

26.1.3. The audit team is chaired by a representative of ENEL.

26.2. Decision process.

All decisions of the review team must be unanimous. If the Review Group fails, after making good faith efforts, to reach an agreement, this matter must be referred to the representatives of ENEL and the Contractor indicated for this purpose in the Contract. These representatives will meet promptly and negotiate in good faith to resolve this issue.

26.3. Responsibility.

26.3.1. The responsibilities of the Review Group include:

- a) to encourage and facilitate ongoing cooperation and communication between the Parties;
- b) supervise and coordinate the transfer of information;
- c) periodically evaluate the performance of the Contract;
- d) to discuss in good faith all potential improvements that can be adopted during the performance phase.

26.3.2. Unless otherwise provided in the Contract, the audit team meets at least once a year at ENEL or other places agreed by the Parties. Alternatively, the review team may meet by teleconference, videoconferencing or other similar communication equipment.

26.3.3. The Chairman of the Review Group is responsible For sending the agenda and reasonably early in advance of all meetings and preparation of the final minutes of each meeting.

26.3.4. Any expenses for attending meetings are at the expense of each Party,

27 KPI (KEY PERFORMANCE INDICATOR).

27.1. The Contractor must perform the Contract satisfying the levels of service, where expressly provided for in the Contract.

27.2. The Parties monitor and verify the achievement of service levels in the manner and within the terms set forth in the previous "GOVERNANCE" clause.

28. GLOBAL COMPACT.

28.1 The Contractor undertakes to take ownership and fully comply with the principles of the Global Compact, ensuring that all activities carried out by its own personnel, or that of Subcontractors, comply with the above-mentioned principles. The following are the principles of the Global Compact:

a) HUMAN RIGHTS.

One: Any business must support and respect the protection of internationally recognised human rights in conducting their business activities.

Two: Any business must ensure that they do not take part in human rights violations.

b) WORK.

Three: Any business must support freedom of affiliation and the effective recognition of the right to collective bargaining.

Four: Any business must support the elimination of all forms of forced labour carried out under duress.

Five: Any business must support the elimination of child labour.

Six: Any business must support the elimination of discriminatory practices in employment and education.

c) ENVIRONMENT.

Seven: Any business must conduct their affairs in a preventive manner to avoid potential damage to the environment.

Eight: Any business must support initiatives to promote greater environmental responsibility.

Nine: Any business must encourage the development and dissemination of technologies that respect the environment.





d) CORRUPTION.

Ten: Any business must work against corruption in all its forms, including extortion and bribery

28.2. The Contractor undertakes to comply with applicable current legislation, bound by the above-mentioned principles, and undertakes to inform ENEL of any situation which may result in failure to fulfil these principles, as well as the plan to remedy such situations.

28.3. For the duration of the Contract, the Contractor agrees to allow ENEL to verify the degree of compliance with the requirements of this clause. ENEL may terminate the Contract, for reasons attributable to the Contractor, in cases in which it is justifiably and sufficiently aware that the Contractor or its Subcontractors have violated any of the above-mentioned principles.

29. CODE OF ETHICS.

29.1. General details.

29.1.1. The ENEL Group, when conducting its business and managing its relationships refers to the principles contained in its own Code of Ethics, in the Zero Tolerance plan against corruption and in the Human Rights Policy.

29.1.2. The Contractor, when conducting its own business and managing its relationships with third parties, refers to equivalent principles.

29.1.3. The Contractor states that it acknowledges the pledges made by ENEL in the Code of Ethics and states that it will strive to comply with the legal obligations regarding the prevention of child labour and the protection of women; equal treatment, the prohibition of discrimination, abuse and harassment; freedom to join a union, the freedom of association and representation, forced labour, environmental safety and protection, health and hygiene conditions and the compliance with the terms and conditions of the laws on force regarding remuneration, contributions, insurances, tax, all with reference to all the workers engaged in any capacity in the performance of the Contract. It is fully understood that the ILO Conventions shall be applicable, or the laws in force in the Country where the activities need to be carried out wherever the latter are more restrictive.

29.1.4. In this area, ENEL reserves the right to carry out any control and monitoring activity geared to verifying whether the above mentioned duties have been fulfilled, both on the part of the Contractor and also on that of any of its Subcontractors or other parties in any case appointed by the same for the performance of the Contract, and to terminate the same immediately should proof that the above-mentioned duties have been breached come to light.

29.1.5. ENEL complies with the Global Compact and in compliance with the tenth principle of the same, it pursues its commitment against all forms of corruption. Therefore, ENEL prohibits the use of any kind of promise, offer or request for unlawful payment, in cash or other utility, for the purpose of furthering its relationships with its stakeholders, and this prohibition is extended to all its employees. The Contractor states that it acknowledges the commitments undertaken by ENEL and undertakes not to make any promises, offers or requests for unlawful payment during the performance of this Contract in the interest of ENEL and/or to the benefit of its employees.

29.1.6. In case of breach of one of these duties, ENEL reserves the right to terminate the Contract and to request compensation for damages from the Contractor.

29.2. Conflict of interest.

29.2.1. During the performance of the Contract, the Contractor undertakes to have exclusive regard for the interests of ENEL, ensuring that there are no situations that might lead to the occurrence of any conflict of interest in relation to the activities to be performed.

29.2.2. For the entire duration of the Contract, the Contractor undertakes to behave in a way designed to avoid conflicts of interest from arising. Whenever this might result in a situation which could generate any conflict of interest - subject to the right of ENEL to terminate the relationship - the Contractor undertakes to promptly give written notice to ENEL and to comply with the reasonable instructions of the latter, which will be dictated upon consultation and assessment of the requirements justifiably represented by the Contractor.

29.3. Company health and safety clause.

29.3.1. In ENEL, protecting not only the health and safety but also the psychological and physical integrity of people is not only a legal duty but also a moral responsibility towards its own employees and those of its Contractors.

29.3.2. The objective that ENEL hopes to fulfil is a “Zero Accident” workplace. In ENEL no work can be performed in a way that might compromise safety. This is why, as established in the Stop Work Policy, any risky situation or unsafe behaviours must cause the works to be suspended and safe conditions restored.

29.3.3. ENEL strives constantly and diligently to consolidate the culture of health and safety, by promoting a closer focus on and awareness of the risks and by encouraging those who work for us and with us to behave responsibly.

29.3.4. The Declaration of our commitment to health and safety and the Stop Work policy can be viewed at the following link: <http://tglobalprocurement.enel.com/it/documenti/documentazione/safety>

All Contractors, when performing their working activities must behave in line with these principles.





29.4. Code of Ethics of the Contractor.

Alternatively, should the Contractor have its own Code of Ethics and its own policies against corruption and on the respect for Human Rights, ENEL can acknowledge, at its sole discretion, such documents, as long as according to the Contractor they refer to principles deemed similar to those established in the same documents of ENEL.

30. GOVERNING LAW.

Unless otherwise provided for in the Contract, the latter is regulated by the legislation in force in the Country in which the contractual activities are carried out.

31. JURISDICTION.

Unless they are settled following the procedures in clause "INTERPRETATION AND HIERARCHY", any disputes that may arise between the Parties concerning the interpretation or performance of the Contract shall be subject to the jurisdiction of the court of law defined in the Contract.





El presente "ANEXO II CHILE" se aplica a los contratos de compra de suministros, servicios u obras afectados por la legislación de Chile y celebrados entre las sociedades del Grupo ENEL y el Proveedor.

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CONDICIONES GENERALES DE CONTRATACION GLOBALES GRUPO ENEL
SEPTIMA EDICION, validas desde 01/03/2019

1. AMBITO DE APLICACION.

Segun regulacion contenida en la Parte General de las presentes Condiciones Generales de Contratacion.

2. DEFINICIONES.

Acta de reconocimiento de las obras y servicios: Acta en el que se deja constancia de los defectos encontrados en la obra o servicio finalizado y del plazo en que estos deberan ser rectificadas por el Proveedor.

Albaran: Documento mercantil que contiene una lista de bienes suministrados y que acredita la entrega de los mismos.

Autorizaci6n de envio: Documento que emite ENEL, por el que se faculta al Proveedor para que proceda al envio total o parcial del equipo o material objeto del Contrato.

Aviso de expedici6n: Documento que emite el Proveedor una vez cumplimentados todos los tramites convenidos, por el que se informa a ENEL de que se ha procedido al envio total o parcial del equipo o material objeto del Contrato.

Calidad concertada: Acuerdo establecido entre ENEL y el Proveedor segun el cual, este garantiza unos niveles de calidad previamente convenidos entre ambos.

Carta de intenci6n u orden de proceder: Acuerdo no obligatorio que contiene compromisos que pueden llegar a formalizarse o no en un Contrato.

Inspector: Persona o entidad designada por ENEL que realiza las funciones de inspeccion en cualquier fase de la ejecucion del Contrato.

Peticion de oferta: Documento a traves del cual ENEL solicita una oferta. Constará de las Especificaciones Tecnicas y las Especificaciones Comerciales y Juridicas, entre las que se encontraran las presentes Condiciones Generales.

Plan de control de calidad: Documento emitido por el Proveedor que especifica los procesos, procedimientos y recursos asociados que se aplicaran para cumplir con los requisitos del Contrato.

Programa de puntos de inspecci6n: Documento emitido por el Proveedor y aprobado por ENEL, en el que quedan reflejadas las diferentes inspecciones, pruebas, ensayos o exámenes a realizar.

Recepci6n en origen: Procedimiento en el que las pruebas o ensayos preceptivos para la recepcion del material se efectuan en presencia de los tecnicos de ENEL o la persona o entidad autorizada por ella, y en las instalaciones del Proveedor, de su subcontratista o de cualquier otra entidad acordada entre ambas Partes.

Recepci6n por protocolo: Revision de los protocolos de ensayo preceptivos, realizados previamente por el Proveedor, mediante la que los tecnicos de ENEL o la persona o entidad autorizada por ella, aprueban el envio del material en cuestion o, por el contrario, deciden la comprobacion de resultados de dichos protocolos por la Recepcion en Origen.

Sistema de aseguramiento de la calidad: Sistema que establece aquellos requisitos que el Proveedor ha de cumplir para desarrollar con eficacia y correccion el objeto del Contrato.

3. IDIOMA.

La version original del presente Anexo II Chile es la redactada en espariol (castellano).

4. FORMALIZACION.

Segun regulacion contenida en la Parte General de las presentes Condiciones Generales de Contratacion .

5. INTERPRETACION Y JERARQUIA.

5.1. Todas las materias reguladas en el presente Anexo se regiran en primer lugar por las !ermine contenidos en las apartados del mismo, y de forma complementaria por los terminos contenidos en la Parte General de las presentes Condiciones Generales de Contratacion.

5.2. Se excluye de lo expuesto en el parrafo precedente las materias cuya regulacion en el Anexo manifieste expresamente que se regiran directamente segun redaccion contenida en la Parte General de las presentes Condiciones Generales de Contrataci6n.

6. COMUNICACIONES.

Segun regulaci6n contenida en la Parte General de las presentes Condiciones Generales de Contrataci6n.

7. CONDICIONES ECONOMICAS.

7.1. Precios.

7.1.1. En el caso de la realización de una obra o un servicio, el precio del Contrato incluye como mínimo, salvo que expresamente se incluya en otros conceptos, lo siguiente:

- Mano de obra directa e indirecta.
- Maquinaria y el personal asociado.
- Amortización de maquinaria.
- Materiales permanentes y fungibles.
- Transporte hasta/y desde el lugar del trabajo, del personal, material y medias.
- Instalación y autorización de servicios.
- Gastos de mantenimiento.
- Gastos generales y beneficio industrial.
- Impuestos, tasas y arbitrios que legalmente correspondan.
- Gastos que origine al Proveedor, la programación, reconocimientos y ensayos, control de materiales, control de ejecución, pruebas, recepciones y otros análisis.
- Realización completa de todas las unidades con arreglo a las Especificaciones Técnicas y restantes documentos contractuales.
- Construcción, demolición y retirada de las instalaciones auxiliares de obra, vigilancia o almacenamiento y de las realizadas en cumplimiento de la Normativa de Prevención de Riesgos Laborales.
- Costos de garantía económica, seguros u otras garantías, en su caso.
- Costos por la dotación de las medidas de seguridad y los sistemas de gestión necesarios, para cumplir con las exigencias de seguridad y salud laboral, así como los costos por la entrega de elementos de protección personal de acuerdo con las exigencias y estándares de ENEL.

7.1.2. Los precios vendrán desglosados en precio de los servicios, precio de los materiales e impuestos que correspondan según la legislación aplicable,

7.1.3. El Proveedor asumirá cualquier costo adicional por los fletes, portes y otros gastos originados por el incumplimiento de las condiciones de entrega y envío establecidas en el Contrato.

7.1.4. No se pagarán materiales, equipos o trabajos no incluidos en el Contrato si su ejecución no ha sido previamente ofertada por el Proveedor, por escrito y con indicación expresa de su precio, y aceptada, también por escrito, por un representante de ENEL, debidamente facultado.

7.1.5. El Proveedor se encuentra obligado a aceptar las ampliaciones, modificaciones y reducciones del alcance del Contrato, a los precios convenidos, siempre que las mismas no representen, en conjunto, un aumento o disminución de más del 20% del importe del Contrato. El nuevo plazo de entrega, en su caso, se establecerá de común acuerdo entre ambas Partes, a propuesta razonada del Proveedor.

7.1.6. Si las ampliaciones, modificaciones o reducciones que ENEL proponga, motivadas por una razón justificada, representaran en conjunto un aumento o disminución de más del 20% del importe del Contrato, el Proveedor podrá aceptarlas o rechazarlas, pero en este último caso, ENEL tendrá derecho a resolver el Contrato.

7.1.7. En los casos en que haya de ejecutarse una unidad de obra no prevista en el cuadro de precios del Contrato, el precio correspondiente se determinará entre ENEL y el Proveedor, a propuesta de este debidamente justificada, basándose en la descomposición de costos de otras unidades análogas para las que exista precio unitario.

7.1.8. La negociación del precio contradictorio será independiente de la realización de la unidad de que se trate, estando obligado el Proveedor a ejecutarla inmediatamente después de haber recibido la orden de ENEL.

7.1.9. A petición de ENEL, el Proveedor incluirá en su oferta baremos de precios unitarios para el caso de que ENEL considere necesario, durante la ejecución del Contrato, la realización por el Proveedor de unidades de obra no previstas inicialmente en el alcance del Contrato (precios por administración). Dichos precios, una vez acordados por las Partes e incorporados al Contrato, incluirán iguales conceptos que los definidos en la cláusula 7.1.1. y se aplicarán cuando no sea posible fijar un precio contradictorio o en los casos en que ENEL lo estime necesario.

7.1.10. La realización de trabajos por administración solo podrá efectuarse previa orden de ejecución por escrito de ENEL.

7.1.11. En los costos del personal estaran incluidos las herramientas propias de su especialidad, asi como el equipo necesario para su protecci6n, seguridad y la correcta ejecuci6n de los trabajos.



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7.1.12. No se admitiran castes adicionales en concepto de transportes, dietas o manutención del personal del Proveedor.

7.2. Modificación de precios.

Segun regulación contenida en la Parte General de las presentes Condiciones Generales de Contratación.

7.3. Facturación.

Sera necesario separar, dentro de la misma factura, las siguientes conceptos:

- a) Eventuales trabajos contratados por administración coma complemento a lo pactado en el Contrato.
- b) Incrementos ya facturados par aplicación de formulas de reajuste previstas en el Contrato. En este case, sera necesario aporlar las justificaciones de las valores de las indices aplicados y el detalle de la correspondiente formula de reajuste.

7.4. Condiciones de pago.

7.4.1. Tades las pages que se efectuen antes de la Recepción Provisional de acuerdo con lo estipulado en el Contrato tendran la consideración de pages a cuenta del precio final. En el case de que no se haya presentado garantia de fiel cumplimiento del Contrato, sera imprescindible que, de forma simultanea a cada uno de las posibles pages, el Proveedor entregue a ENEL garantia económica, con las requisites exigidos en las presentes Condiciones Generales, que garantice dichos pages

7.4.2. Las facturas se abonaran, previa conformidad de ENEL sobre el cumplimiento de las condiciones contractuales, en el plaza en cada case seialado, y a falta de este, en el primer día de page masivo posterior a las noventa (90) dias corridos siguientes a la fecha de entrada en el Registro General de ENEL, o la fecha de conformidad a la factura si esta fecha de conformidad fuese posterior a la de entrada en el Registro General de ENEL.

7.4.3. Los pages al Proveedor se realizaran una vez al mes, el segundo dia habil de cada mes, incluyendo las documentos que tengan fecha de vencimiento hasta el dia de page de la nómina.

8. IMPUESTOS.

Segun regulación contenida en la Parte General de las presentes Condiciones Generales de Contratación .

9. EJECUCION.

9.1. ..Generalidades.

Segun regulación contenida en la Parte General de las presentes Condiciones Generales de Contratación .

9.2. Inspecciones, pruebas y ensayos.

9.2.1. ENEL podra inspeccionar las materiales y equipos objeto del Contrato en cualquier momenta de su fabricación, asi coma la ejecución de las obras o servicios contratados, incluidos las materiales que el Proveedor emplee en su realización . Dicha inspección la podra realizar mediante su propio personal o mediante las personas o entidades que para ello designe, tanto en las obras, oficinas, fabricas, talleres o almacenes del Proveedor coma en las de sus subcontratistas, a cuyo fin las inspectores de ENEL tendran libre acceso a las mencionadas instalaciones y debera facilitaraseles cuanto sea necesario.

9.2.2. Sin perjuicio de las normas anteriores, en las Contratos en que asi se recoja, las pruebas o ensayos se efectuaran ajustandose en todo al Programa de Puntos de Inspección elaborado par el Proveedor y aprobado par ENEL.

9.3. Control de Calidad.

9.3.1. El control de calidad comprende el conjunto de acciones, actividades y tecnicas necesarias para proveer confianza suficiente de que el material, el equipo, la obra o el servicio objeto del Contrato cumpliran satisfactoriamente las condiciones requeridas par ENEL y, en su case, par las normas tecnicas correspondientes.

9.3.2. El Proveedor sera el unico responsable del control de calidad, independientemente de las controles y pruebas que efectue o exija ENEL por sus propios medias o por las de un tercero. Estes ensayos no alteraran la plena responsabilidad que exclusivamente incumbe al Proveedor.

9.3.3. Antes de iniciar el proceso de fabricación, o la realización de la obra o servicio contratado, el Proveedor presentara, a requerimiento de ENEL, para su aprobación, un Plan de Control de Calidad (segun ISO 10.005 o equivalente) que incluire el Programa de Puntos de Inspección, asi coma la relación de las operaciones y procedimientos aplicables.

9.3.4. Una vez presentado el Plan de Control de Calidad mencionado, ENEL podra formular objeciones al mismo durante un plaza de quince (15) dias habiles, siempre par motivos justificados, y el Proveedor debera obligarse a modificarlo con la debida diligencia, realizando las correcciones necesarias de acuerdo con las objeciones indicadas par ENEL.

9.3.5. Durante la ejecución del Contrato, el Proveedor dara la mas estricta y rigurosa observancia a lo establecido en su Sistema de Aseguramiento de la Calidad y Plan de Control de Calidad aprobados par ENEL, quien se reserva el derecho a efectuar las auditorias necesarias para comprobar su

cumplimiento.



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9.3.6. Al concluir la ejecución del Contrato, el Proveedor entregara a ENEL, para su aprobación, un informe final de Control de Calidad, cuyo contenido debera ajustarse a lo establecido en el Contrato y en el Plan de Control de Calidad aprobado .

9.3.7. El cumplimiento de estas condiciones de control de calidad no exime al Proveedor, en ningun caso, de su responsabilidad por la incorrecta ejecución del Contrato.

9.4. Condiciones de entrega y recepción.

9.4.1. Generales.

Si en el Contrato no se seriala una fecha de terminación determinada y se establece solamente el plazo de ejecución o entrega, este comenzara a contar a partir de la suscripción del Contrato o de la fecha de emisión de la Carta de Intención u Orden de Proceder.

9.4.2. Materiales y/o equipos.

9.4.2.1. Con cada entrega, el Proveedor debe acompañar toda la documentación técnica final y los protocolos de ensayos establecidos en las Especificaciones, en el Contrato y, en su caso, en las Normas técnicas correspondientes.

9.4.2.2. El Proveedor, además de la documentación anterior, debera certificar, en caso de que le sea requerido por ENEL, que el diseño, las materias primas, materiales y las marcas y tipos de los componentes son idénticos a los que dieron lugar a la homologación, en su caso.

9.4.2.3. Para efectuar la entrega, el Proveedor remitira a ENEL, a la atención de la persona de contacto responsable de recepción que figure en el Contrato, con la debida antelación, el Aviso de Expedición indicando en el mismo los siguientes datos:

- Numero de referencia del Contrato.
- Numero de bultos enviados, con indicación del material que contienen. Si son los últimos de los contratados, indicara expresamente esta circunstancia.
- Datos referentes al medio de transporte utilizado y/o a la empresa que efectua el transporte, con los datos y el telefono de la persona de contacto.
- Fecha y lugar de puesta a disposición del equipo o de los materiales.

9.4.2.4. Asimismo, el Proveedor se compromete a comunicar a ENEL, de forma inmediata, cualquier circunstancia que altere las condiciones de entrega pactadas.

9.4.2.5. En materiales o equipos sujetos a control de calidad, y salvo acuerdo en contrario, el Proveedor no procedera al envío de los mismos hasta tener en su poder la obligatoria Autorización de Envío posterior a la Recepción por Protocolo o de la Recepción en Origen emitida por ENEL. Quedan fuera de este requisito los suministros acogidos a un régimen de Calidad Concertada. Si, no obstante, el Proveedor procediera al envío, todos los gastos generados por el mismo correran por su cuenta.

9.4.2.6. Salvo que se estipule lo contrario en el Contrato, la entrega de materiales y equipos se efectuara en la modalidad DDP (Incoterms CCI 2010) en el punto de destino establecido en el Contrato. Los terminos se interpretaran, en cuanto se refiere a entrega, propiedad, seguros, etc., de acuerdo con el Incoterm, excepto en lo que se oponga a lo establecido en el Contrato.

9.4.2.7. Sin perjuicio de que se considere cumplida la fecha de entrega, ENEL se reserva el derecho de aplazar cualquier envío o expedición de materiales o equipos. El Proveedor corra con los gastos de almacenamiento y seguro durante el mes siguiente a la fecha de entrega convenida. Si el aplazamiento del envío hubiera de prolongarse por mas tiempo, se estableceran de mutuo acuerdo las compensaciones que procedan por los ulteriores gastos de almacenamiento y seguro.

9.4.2.8. Una vez recibido por ENEL el material o equipo, se extendera un Documento de Recepción Provisional, que debera ser firmada por ambas Partes, en el que se hara referencia al resultado satisfactorio de las pruebas o ensayos y reconocimientos finales, o se dejara constancia de las circunstancias en que han de quedar subsanadas o corregidas las deficiencias advertidas en ellos. El Documento de Recepción Provisional debera formalizarse en el plazo máximo de ocho (8) días corridos a partir de la fecha en que lo solicite cualquiera de las Partes, cumplidas todas las condiciones o actividades objeto del Contrato.

9.4.2.9. Cuando no sean exigibles pruebas o ensayos y reconocimientos finales, la entrega por el Proveedor de los materiales y equipos se formalizara con la conformidad de ENEL a la recepción de los mismos.

9.4.3. Obras y/o servicios.

9.4.3.1. Transcurrido el Periodo de Garantía, el Proveedor notificara a ENEL el vencimiento de dicho Periodo, solicitando la Recepción Definitiva. A la vista de tal solicitud, ENEL, si procede, comunicara al Proveedor la fecha fijada para la Recepción Definitiva que debera producirse en un plazo superior a treinta (30) días a contar desde la recepción de la notificación por ENEL.

9.4.3.2. En el día fijado de mutuo acuerdo para llevar a cabo la Recepción Definitiva, se procedera, en presencia del Proveedor, a comprobar el estado de la obra o servicio contratado y a verificar si cumple las condiciones exigidas, efectuando las pruebas necesarias.

9.4.3.3. La Dirección de la ejecución de las obras o servicios encargados, corresponderá por completo al Proveedor.



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9.5. Transmisión de la propiedad y el riesgo.

9.5.1. Materiales y/o equipos.

El Proveedor será responsable de los vicios ocultos o defectos de fabricación, también durante el Periodo de Garantía y hasta el plazo señalado por la legislación vigente, aparte de las responsabilidades legales o de otra índole que puedan derivarse.

9.5.2. Obras y/o servicios.

El Proveedor será responsable de los vicios ocultos o defectos, también durante el Periodo de Garantía y hasta el plazo señalado en la legislación aplicable, aparte de las responsabilidades legales o de otra índole que pudieran derivarse.

10. CESIÓN DEL CONTRATO Y SUBCONTRATACIÓN.

10.1. En ningún caso podrá deducirse relación contractual alguna entre los subcontratistas o cesionarios y ENEL, siendo siempre responsable el Proveedor de todas las actividades de dichos subcontratistas o cesionarios, y del cumplimiento de las obligaciones contractuales, legales y fiscales derivadas del cumplimiento de sus trabajos; así como de los daños y perjuicios causados a ENEL por cualquiera de sus subcontratistas o cesionarios, de sus agentes, asesores y trabajadores.

10.2. ENEL no será responsable ante ningún subcontratista o cesionario, ni ante el personal de estos, por ninguna reclamación derivada directa o indirectamente del Contrato, por lo que el Proveedor se compromete y se obliga frente a ENEL a llevar a cabo cuanto esté a su alcance para evitar la formulación y/o tramitación de dichas reclamaciones. En consecuencia, el Proveedor responderá frente a ENEL y le mantendrá indemne de y frente a cualquier acción, judicial o extrajudicial, o procedimiento dirigidos contra ENEL por cualquier subcontratista o cesionario, o por el personal de estos. La mencionada indemnidad alcanzará tanto al importe que ENEL deba abonar, como a los gastos o costos de cualquier naturaleza en que ENEL incurra como consecuencia de dicha reclamación. El incumplimiento por el Proveedor de cuanto se regula en este apartado se considerará como incumplimiento grave, y facultará a ENEL a poner término de pleno derecho o ipso facto al Contrato, sin que sea necesaria declaración judicial alguna al respecto, por incumplimiento del Proveedor, sin perjuicio de cualquier otra acción legal que pudiera asistir a ENEL.

10.3. En los casos de cesión de Contrato o subcontratación, el Proveedor se compromete y se obliga a obtener del cesionario o subcontratista la aceptación previa de las obligaciones que frente a ENEL se deriven para el de todas las condiciones contractuales, jurídicas, laborales, de confidencialidad y de seguridad, siendo imprescindible la presentación de la documentación acreditativa correspondiente.

10.4. De acuerdo con lo anterior, ENEL podrá en todo momento inspeccionar y vigilar los trabajos o fabricaciones del cesionario o subcontratista, y el cumplimiento de sus obligaciones. El subcontratista o cesionario quedará obligado a facilitar a ENEL toda la colaboración que para ello pueda ser necesaria (documentación, informes, libre acceso a sus fábricas, talleres o instalaciones, etc.).

10.5. ENEL se reserva el derecho de rechazar a aquellos subcontratistas o cesionarios que durante la marcha de las obras o de los servicios no juzgara oportuno mantener.

11. CESIÓN DE DERECHOS Y CRÉDITOS.

ENEL podrá, con el único requisito de notificarlo al Proveedor, ceder sus derechos de cobro u obligaciones de pago, derivados del Contrato, a favor de cualquier otra empresa filial de ENEL.

12. OBLIGACIONES A CARGO DEL PROVEEDOR.

Según regulación contenida en la Parte General de las presentes Condiciones Generales de Contratación.

13. RESPONSABILIDAD DEL PROVEEDOR.

Según regulación contenida en la Parte General de las presentes Condiciones Generales de Contratación.

14. PERÍODO DE GARANTÍA.

14.1. El Periodo de Garantía de los materiales y equipos así como de las obras o servicios contratados se extiende durante el tiempo que se estipule en el Contrato, y en su defecto, durante un (1) año a partir de la fecha del Documento de Recepción Provisional. Si no se suscribiera el Documento, el año se contará desde la conformidad de ENEL a la entrega del material, o desde la comunicación de la finalización de la obra o del servicio contratado y entrega a ENEL de la documentación por parte del Proveedor para la tramitación de la autorización administrativa para poner en servicio la obra en su caso.



14.2. Si al vencer el Periodo de Garantia no hubieren transcurrido seis (6) meses al menos desde la entrada en servicio de la instalación principal de ENEL a que se destine o de la que forme parte el objeto del Contrato, el Periodo de Garantia quedara automaticamente prorrogado hasta transcurridos dichos seis (6) meses, salvo que los materiales o equipos aportados por el Proveedor hayan sufrido una reparación o sustitución, en cuyo caso, seran garantizados por tiempo igual al Periodo de Garantia inicial. En ningun caso implicara mayores costos para ENEL.

14.3. Vencido el Periodo de Garantia y efectuada la Recepción Definitiva, ENEL podra proceder, para su exclusivo provecho, directamente por si o por intermedio de terceros, a modificar o alterar libremente los materiales y equipos objeto del Contrato o las construcciones realizadas o instalaciones montadas, incluso cuando esten amparadas por licencias, patentes u otras formas de propiedad industrial a favor del Proveedor, preservando en todo caso la confidencialidad debida en razón de estas.

15. PENALIZACIONES.

15.1. Sin perjuicio de lo establecido en la Parte General de las presentes Condiciones Generales de Contratación, sobre el termino del Contrato por causa imputable al Proveedor, los incumplimientos por parte de este en las fechas de entrega o en los plazos de ejecución tanto parciales como finales, asi como cualesquiera otros incumplimientos expresamente previstos en el Contrato o en estas Condiciones Generales, conllevara la aplicación por ENEL de una penalización que en ningun caso tendra caracter indemnizatorio .

15.2. En el caso de que no se hubiese establecido otra, la penalización por retraso sera de un 1.5% del importe total del Contrato por semana corrida de retraso durante las cuatro (4) primeras semanas, y del 4% a partir de la quinta semana.

15.3. Si durante el Periodo de Garantia ENEL se viera privada de la disposición o utilización de los materiales o equipos contratados, o de la obra realizada o instalación montada, por causa de defecto, desperfecto o averia que se haya producido o advertido en ellos, no imputables a ENEL, o por causa de deficiencias en la ejecución o en los servicios que hayan de realizarse para subsanarlas, el Proveedor sera sancionado con la penalización que se haya establecido al efecto en el Contrato y si no lo hubiere sido, con la del 0, 1% del importe total del Contrato por cada día de no disposición o utilización.

15.4. La suma de las penalizaciones no podran exceder del 15% del importe total del Contrato. En caso de superarse dicho límite, ENEL aplicara la penalización y tendra derecho a resolver el Contrato con arreglo a la legislación aplicable.

15.5. El cobro de las penalizaciones no privara a ENEL de la facultad de cobrar adicionalmente al Proveedor todos los gastos y sobrecostos que se vea obligado a soportar y/o pagar a terceros como consecuencia directa del retraso o incumplimiento producido.

15.6. La aplicación de las penalizaciones previstas no exime al Proveedor del correcto cumplimiento del Contrato en toda su extension. En consecuencia, el Proveedor se obliga a eliminar las deficiencias técnicas advertidas, a pagar las penalizaciones que correspondan, a recuperar a su costa los plazos perdidos, y a sustituir los materiales y equipos, o rehacer o repetir, segun proceda, las obras trabajos o servicios objeto del Contrato, a requerimiento de ENEL.

15.7. El procedimiento para el cobro de cualquier penalización derivada del Contrato se realizara conforme a lo que se describe en este apartado:

- a) ENEL comunicara por escrito razonado al Proveedor la penalización que proceda abonar, detallando el importe de la misma. El Proveedor tendra un plazo de quince (15) días corrido desde la fecha de la comunicación para manifestar cuanto en su descargo crea oportuno.
- b) Transcurrido dicho plazo, y en el caso de que ENEL no aceptase dichos argumentos, el Proveedor debera descontar, en su factura, el importe correspondiente a la penalización aplicada. En caso de que no se produzca el referido descuento se procedera a ejecutar por la cuantia correspondiente las garantías que tuviere constituidas, o a intentar el cobro por cualquier otro medio contemplado en el Contrato, en las Leyes o en las presentes Condiciones Generales, y todo ello sin perjuicio de la indemnización por daños y perjuicios que a favor de ENEL pudiera proceder.
- c) Una vez ejecutada la garantía económica, el Proveedor estara obligado a restituirla por el mismo importe que el anterior a la ejecución, conforme a lo establecido en el apartado 19.
- d) En tanto no se produzca dicha restitución ENEL conservara el remanente que hubiera resultado entre el importe total de la garantía y el importe de la penalización.
- e) En el caso de que el importe de la garantía inicial no sea suficiente para cubrir el importe de las penalizaciones, ENEL compensara los pagos pendientes necesarios para cubrir el importe total de las penalizaciones, y todo ello sin perjuicio de la restitución de la garantía conforme a lo indicado anteriormente.

16. SUSPENSION, RESCISION Y RESOLUCION O TERMINO.

Segun regulación contenida en la Parte General de las presentes Condiciones Generales de Contratación.

17. FUERZA MAYOR.

Segun regulación contenida en la Parte General de las presentes Condiciones Generales de Contratación .



18. OBLIGACIONES JURIDICO-LABORALES.

18.1. El Proveedor se compromete a disponer en todo momento del recurso humano necesario en número y cualificación para la ejecución del objeto del Contrato de acuerdo con los máximos estándares de calidad definidos en el mismo.

18.2. El Proveedor declara conocer y se compromete a cumplir todas sus obligaciones en materia jurídico-laboral, de seguridad social y prevención de riesgos laborales así como las normativas internas de ENEL que resulten aplicables en cada momento.

18.3. El Proveedor, en su calidad de único y excluyente empleador de sus trabajadores, tanto de aquellos que ocupe en la ejecución del Contrato como de los que se desempeñan en otras áreas de la empresa del Proveedor, e inclusive en otras empresas, obras, o faenas donde este también preste servicios, es el obligado a dar cumplimiento estricto y oportuno a las disposiciones legales, reglamentarias y administrativas vigentes en materia laboral y previsional respecto de dichos trabajadores.

18.4. En especial, el Proveedor se obliga, respecto a todos los trabajadores objeto del Contrato, a:

- a) Declarar y pagar mensualmente y en forma oportuna las cotizaciones e imposiciones previsionales de todos sus trabajadores, en las instituciones de previsión y de seguridad social respectivas. En caso de declaración, las referidas cotizaciones deberán pagarse a más tardar el último día hábil del mes en que se hizo la declaración y que corresponde al mes siguiente en que se devengaron las remuneraciones y rentas afectas a aquellas.

Se considerará incumplimiento grave por parte del Proveedor el hecho de declarar y no pagar en la oportunidad que se ha señalado anteriormente, las cotizaciones previsionales respectivas.

- b) Someterse a los procedimientos preventivos de revisión efectuados por ENEL o por terceros en su representación.
- c) Proporcionar a ENEL, cuando esta lo solicite, el certificado de cumplimiento de obligaciones laborales y previsionales junto con el certificado de antecedentes laborales y previsionales originales emitido por la Inspección del Trabajo respectiva. Adicionalmente ENEL podrá solicitar, dentro de los plazos establecidos por esta última, toda la documentación que acredite el cumplimiento de las obligaciones laborales y previsionales y, en especial, los siguientes antecedentes:
 - Contratos de trabajo.
 - Comprobantes de feriado legal.
 - Libro auxiliar de remuneraciones.
 - Registro de asistencia.
 - Comprobantes de pago de remuneración.
 - Planillas de pago de cotizaciones previsionales y de seguridad social.
- d) Dar cumplimiento a las observaciones formuladas en materias laborales y previsionales, en los plazos fijados por ENEL.

18.5. Con el objeto de dar cumplimiento a las obligaciones laborales y previsionales y en especial los aspectos relacionados con prevención de riesgos, el Proveedor deberá enviar mensualmente al Área Usuaria de ENEL, los siguientes antecedentes; solamente cuando esta los solicite:

- a) Copia del recibo de las cotizaciones de la Ley ND 16.744 de sus trabajadores, del mes inmediatamente anterior.
- b) Copia del informe mensual de accidentes del trabajo, que se presenta obligatoriamente en la mutual donde se encuentra adherida su empresa, según los artículos 12 y 13 del Decreto ND 40 de 1969, del Ministerio del Trabajo y Previsión Social, publicado en el Diario Oficial de 7 de Marzo de 1969, que Aprueba Reglamento sobre Prevención de Riesgos Profesionales.
- c) Fotocopia de la declaración individual de accidentes del trabajo (DIAT), que se debe presentar a la mutualidad correspondiente por cada accidente ocurrido.
- d) Cumplimiento de un programa de prevención de riesgos en concordancia con la legislación Chilena.

18.6. El Proveedor deberá tener a todo su personal afiliado a una Mutual de Seguridad y cumplir con lo estipulado en la Ley ND 16.744 de Accidentes del Trabajo y Enfermedades Profesionales.

18.7. Las obligaciones descritas en los puntos anteriores, serán también exigibles en el caso de personal subcontratista, cuyo cumplimiento será de exclusiva responsabilidad del Proveedor.

Todos los daños a terceros que se produzcan en los servicios prestados por acciones u omisiones del personal del Proveedor, de este o de sus subcontratistas, serán de cargo suyo.

19. GARANTIA ECONOMICA.

19.1. Garantfa de fiel, complete y oportuno cumplimiento del Contrato.



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19.1.1. El Proveedor debera entregar, antes de la firma del Contrato, una Garantia, a favor de ENEL, par un manta equivalente a un 10% del manta del suministro, obra o servicio, y en el case de Contratos de servicio dicha garantia correspondera a una (1) facturación mensual, con la glosa: "Para garantizar el fiel, complete y oportuno cumplimiento del Contrato". Dicha Garantia sera devuelta al Proveedor una vez que el suministro, obra o servicio se encuentre recibido a entera conformidad de ENEL y una vez efectuados par parte de ENEL las descuentos y las comprobaciones que procedan, en un plaza no superior a noventa (90) dias.

19.1.2. El Proveedor debera entregar, a favor de ENEL, una vez que el suministro, obra o servicio sea recibido, a entera conformidad de ENEL, una garantia par un manta equivalente a un 5% del valor del suministro, obra o servicio, para garantizar la correcta ejecución y funcionamiento del suministro, obra o servicio. Dicha Garantia sera devuelta al proveedor una vez concluido el periodo de garantia del suministro, obra o servicio, y una vez efectuados par parte de ENEL las descuentos y las comprobaciones que procedan, en un plaza no superior a noventa (90) dias.

19.1.3. La vigencia de la Garantia debera exceder en al menos en seis (6) meses el periodo de vigencia del Contrato

19.2. Garantia del cumplimiento de las obligaciones laborales y previsionales.

19.2.1. En el case de las Contratos de servicios que sean intensives en la ocupación de mano de obra, el Proveedor debera entregar una garantia par cumplimiento de las obligaciones laborales y previsionales, la cual sera calculada de acuerdo al numero de trabajadores del Proveedor que se desempeñen en el Contrato, par el numero de arias correspondientes a la indemnización, considerando en esta el mes de aviso y la duración del Contrato. La boleta de garantia debera ser renovada aria a aria, considerando las arias de servicios acumulados de las trabajadores asociados al Contrato. La vigencia de la Garantia debera exceder en al menos en seis (6) meses el periodo anual del Contrato.

19.2.2. La garantia correspondiente al ultimo aria, sera devuelta al termino del Contrato, y cuando el Proveedor presente la totalidad de las finiquitos firmados y ratificados ante notario, de todos las trabajadores que se hayan desempeñado en el Contrato suscrito con ENEL.

19.2.3. Para el case de las contratos de servicio, el Proveedor tendra la obligación de presentar solamente una de las garantias anteriormente descritas, siendo esta la de mayor valor resultante de la comparación de ambas.

20. SEGUROS.

20.1. .. Si el Contrato se realiza en la modalidad de materiales en consignación del Proveedor en las instalaciones de ENEL, el Proveedor estara obligado a contratar, ademas de los seguros citados en el apartado homónimo de la Parte General, un seguro de robe y otros darios que pueda sufrir el material depositado, para todo el periodo de cumplimiento del Contrato.

20.2. Si a criteria de ENEL, las coberturas de seguro presentadas par el Proveedor no fueran suficientes para cubrir la exposición al riesgo, tanto de la entrega de materiales o equipos coma de la realización de la obra o servicio objeto del Contrato, el Proveedor se compromete a revisar y modificar las mismas conforme sea necesario y de acuerdo a las condiciones del mercado asegurador.

21. PROPIEDAD INDUSTRIAL E INTELLECTUAL.

Segun regulación contenida en la Parte General de las presentes Condiciones Generales de Contratación.

22. CONFIDENCIALIDAD.

Segun regulación contenida en la Parte General de las presentes Condiciones Generales de Contratación.

23. TRATAMIENTO DE DATOS DE CARACTER PERSONAL.

23.1. En case de que la ejecución del Contrato requiera que el Proveedor acceda a datos de caracter personal de las que sea responsable ENEL, sera de aplicación lo dispuesto en este apartado.

23.2. Los mencionados datos que sean procesados y gestionados par el Proveedor seran y permaneceran bajo responsabilidad de ENEL.

23.3. En particular, el Proveedor declara y garantiza:

- a) Que el tratamiento de los datos se efectuara de conformidad con la legislación vigente, así como con los criterios, requisitos y especificaciones establecidos en el Contrato y, en su defecto, con las instrucciones que en todo momento le de ENEL.
- b) Que los datos personales a los que el Proveedor tenga acceso como consecuencia de la prestación de los suministros, obras o servicios objeto del Contrato, no seran aplicados ni utilizados para un fin distinto al que figura en el mismo.



- c) Que devolviera directamente a ENEL las datos de caracter personal que hayan sido objeto de tratamiento, en un plazo de quince (15) días corridos contados desde la fecha de terminación del suministro, obra o servicio de conformidad con lo dispuesto en el Contrato.
- d) Que destruyera cualquier documento, soporte o copia de los datos de caracter personal que hayan sido objeto de tratamiento en virtud de lo dispuesto en el Contrato y que no hayan podido ser objeto de devolución, por razones de diversa índole, en los términos expuestos en el apartado anterior. No obstante, no procederá la destrucción de los datos cuando exista una previsión legal que exija su conservación, en cuyo caso el Proveedor conservará, debidamente bloqueados, los mencionados datos.
- e) Que no comunicara, ni cediera a otras personas físicas o jurídicas, los datos personales que le sean suministrados con motivo de la prestación de los suministros, obras o servicios objeto del Contrato.
- f) Que adoptara, en el tratamiento de los datos suministrados por ENEL, las medidas de índole técnica y organizativa necesarias exigidas por la normativa legal que al respecto resulte de aplicación, así como aquellas que ENEL pudiera imponer en el propio Contrato, de forma que se garantice la seguridad de los datos de caracter personal y se evite su alteración, pérdida, tratamiento o acceso no autorizado, habida cuenta del estado de la tecnología, la naturaleza de los datos almacenados y los riesgos a que están expuestos, ya provengan de la acción humana, del medio físico o natural. Las medidas abarcarán, a título enunciativo, hardware, software, procedimientos de recuperación, copias de seguridad y datos extraídos de datos personales en forma de exhibición en pantalla o impresa.
- g) Que en el caso de que para la prestación del suministro, obra o servicio fuera necesaria la realización de alguna transferencia internacional de datos, el Proveedor se obliga a informar a ENEL con carácter previo y con la suficiente antelación para que esta pueda solicitar las correspondientes autorizaciones, sin las cuales, el Proveedor no podrá realizar dichas transferencias.

23.4. Sin perjuicio de lo previsto en la letra (e) anterior, en el supuesto que ENEL autorizase la subcontratación de determinados servicios en favor de terceros, que a su vez implicara que estos terceros tuviesen que acceder a los datos de caracter personal afectados por este apartado, el Proveedor se obliga a que, con carácter previo a dicha subcontratación, sea suscrito conjuntamente por las Partes y los subcontratistas un Contrato por el que estos últimos acepten expresamente asumir la responsabilidad del tratamiento correcto de los datos de caracter personal a las que acceda con las mismas previsiones que las contenidas en el presente apartado, así como el cumplimiento de todas aquellas obligaciones derivadas de la normativa de protección de datos.

23.5. El Proveedor se obliga a mantener indemne a ENEL frente a cualquier reclamación que pudiera ser interpuesta, en la medida en que dicha reclamación se fundamente en el incumplimiento por el Proveedor de lo dispuesto en el presente apartado, y acepta pagar la cantidad a la que en concepto de sanción, multa, indemnización, daños, perjuicios e intereses pueda ser condenada ENEL con motivo del citado incumplimiento.

24. VENDOR RATING.

Según regulación contenida en la Parte General de las presentes Condiciones Generales de Contratación.

25. GLOBAL COMPACT.

Según regulación contenida en la Parte General de las presentes Condiciones Generales de Contratación.

26. NORMATIVA DE CONDUCTA ETICA.

26.1. Generalidades.

El Grupo ENEL, en la gestión de sus actividades empresariales y de las relaciones con terceros se ajusta a lo establecido en las "Principios Generales para la Prevención de Riesgos Penales". El Proveedor, en la gestión de sus negocios y de las relaciones con terceros se compromete a cumplir dichos principios u otros equivalentes.

Estos principios, así como el resto de Normativa de Conducta Etica están disponibles en la siguiente dirección: <https://www.ene.cl/es/inversionistas/a201610-codi-go-etico-y-plan-tcc.html>

26.2. Conflicto de intereses.

26.2.1. .. El Proveedor (si es una persona física), con la firma del Contrato, declara:

- 1. Que no ejerce, dentro de las sociedades del Grupo ENEL, funciones de alta dirección (director, gerente senior con responsabilidades estratégicas), de empleado de la sociedad o de auditor de cuentas del Grupo ENEL;
- 2. Que no tiene, dentro de las sociedades del Grupo ENEL, familiares o parientes hasta el segundo grado o cónyuge no separado legalmente o conviviente o esposo o hijos de su pareja o que estén vinculadas a él por consanguinidad o afinidad;



3. Que no ha ostentado u ostenta, tanto el Proveedor como sus respectivos familiares (c6nyuge no separado o parientes de primer grade), en las ultimas veinticuatro (24) meses, cargos en la Administraci6n Publica o en Entidades encargadas de servicios publicos que hayan tenido relaci6n directa con actividades realizadas par cualquiera de las sociedades del Grupo ENEL (otorgamiento de concesiones, actividades de control, etc.).

26.2.2 El Proveedor (si es una persona juridica 1'1), con la firma del Contrato, declara:

Que coma resultado del conocimiento de su estructura societaria, ninguna persona perteneciente a sus 6rganos de gobierno, de gesti6n o de control (incluidas las sociedades fiduciarias):

- a. Es miembro de la Alta Direcci6n o de las 6rganos de Administraci6n o del Comite de Auditoria, ni ejecutivo con responsabilidad clave de las sociedades del Grupo ENEL, ni es familiar hasta el segundo grade, c6nyuge, pareja, hijo de un c6nyuge o pareja, o persona dependiente (par parentesco o matrimonio) de las citados miembros.
- b. Es trabajador de alguna de las sociedades del Grupo ENEL, ni es familiar hasta el segundo grade, c6nyuge, pareja, hijo de un c6nyuge o pareja, o persona dependiente (par parentesco o matrimonio) del citado trabajador.
- c. Ha ostentado u ostenta, tanto la propia persona coma sus respectivos familiares (c6nyuge no separado o parientes de primer grado), en las ultimas veinticuatro (24) meses, cargos en la Administraci6n Publica o en Entidades encargadas de servicios publicos que hayan tenido relaci6n directa con actividades realizadas par cualquiera de las sociedades del Grupo ENEL (otorgamiento de concesiones, actividades de control, etc.).

26.2.3 .. El Proveedor se obliga a comunicar a ENEL cualquier cambio que pudiera producirse posteriormente y mientras tenga la condici6n activa de Proveedor, respecto a la informaci6n declarada antes de la firma del Contrato.

26.3. Clausula de Honorabilidad.

- a) Con la presentaci6n de la oferta y/o la aceptaci6n del Contrato , el Oferente/ Proveedor¹² declara que

toma nota de las compromises hechos par ENEL S.p.A. y par las Empresas que esta controla directa o indirectamente (en adelante "ENEL"), en el C6digo Etico, el Plan de Tolerancia Cera a la Corrupci6n (ZTC), la Politica de Derechos Humanos, para respetar Jes principios equivalentes en la conducta de su negocio y en la gesti6n de las relaciones con terceros;

¹³ no tener conocimiento del inicio de procedimientos penales par delitos fiscales, delitos en contra de la administraci6n publica, delitos en contra el patrimonio, delitos en contra de la libertad individual, el orden publico, delitos ambientales ;

¹⁴ no estar sometido/a a investigaciones penales en relaci6n con ningun hecho, cuesti6n, conducta penal o ilicita que constituyan delitos fiscales, delitos en contra de la administraci6n publica, delitos en contra el patrimonio, delitos en contra de la libertad individual, el orden publico, delitos ambientales

que toma nota y autoriza que - para las fines de evaluaci6n de la conducta profesional del declarante y de la Empresa involucrada, de conformidad con las apartados segundo y tercero antes mencionados - ENEL tambien adquirira de manera aut6noma mas informaci6n , con el fin de evaluar la veracidad de las declaraciones aportadas , en consideraci6n de la existencia necesaria de obligaciones fiduciarias con la Empresa involucrada

- b) El Oferente/Proveedor se compromete a informar inmediatamente y proporcionar toda documentaci6n pertinente a ENEL:

- 1) En el caso de conocimiento del inicio de procedimientos penales a las que se hace referencia en el segundo apartado de la anterior letra a);

- 2) En el case del inicio de una investigaci6n penal a la que se hace referencia en el tercer apartado de la anterior letra a).

ENEL se reserva el derecho de analizar segun su exclusive criteria la informaci6n antes mencionada, para evaluar la conducta profesional del Oferente/Proveedor y de la Empresa involucrada.

27. LEY APLICABLE.

El Contrato esta regulado par la ley chilena y cualquier disputa o diferencia emanada, relacionada o de cualquier manera conectada con el Contrato, incluyendo su existencia, validez o terminaci6n sera sometida a arbitraje conforme al Reglamento Procesal de Arbitraje del Centro de Arbitraje y Mediaci6n de Santiago vigente a la fecha de solicitarlo, y conforme las siguientes reglas: (a) el tribunal arbitral estara compuesto por un arbitro nombrado por las Partes de comun acuerdo. Si no fuera posible alcanzar acuerdo, las Partes confieren poder especial irrevocable a la Camara de Comercio de Santiago AG para que pueda, a requerimiento escrito de cualquiera de las Partes, nombrar al arbitro de entre los miembros del cuerpo de arbitraje del Centro de Arbitraje y Mediaci6n de Santiago. (b) el arbitro actuara como arbitro de derecho con respecto a la decision de la disputa y como arbitro arbitrador en cuanto al procedimiento. (c) no procedera recurso alguno en contra de las resoluciones del arbitro. El arbitro estara facultado para resolver acerca de su propia competencia y/o jurisdicci6n. El proceso sera llevado en espariol.

¹ Los organismos públicos, las empresas que cotizan en bolsa de valores, las instituciones bancarias y las empresas controladas por ellos no están obligados por esta declaración.

² Que el Representante Legal de la Empresa por propio derecho, en nombre de (a) el titular y el director técnico, en el caso de una empresa individual; (b) los socios y el director técnico, si es una sociedad colectiva; (c) los asociados y el director técnico, si es una sociedad limitada; (d) los gerentes con poder de representación y el director técnico y la persona física de sociedad unipersonal, o el accionista mayoritario en el caso de empresas con menos de cuatro miembros, si es otro tipo de empresa o consorcio, de la Empresa donde desempeñan su cargo y, si corresponde, en nombre de la Empresa Matriz y del (e) titular y el director técnico, en el caso de una empresa individual; (f) los asociados y el director técnico, si es una sociedad colectiva; (g) los asociados y el director técnico, si es una sociedad limitada; (h) los gerentes con poder de representación y el director técnico y la persona física de sociedad unipersonal, o accionista mayoritario en el caso de empresas con menos de cuatro miembros, si es otro tipo de empresa o consorcio, de la Empresa Matriz.

³ Para sí mismo y para las personas indicadas en el punto 3

⁴ Para sí mismo y para las personas indicadas en el punto 3



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SEPTIMA EDICION, validas desde 01/03/2019



Annex C: Technical/economical Proposal Numbers: EGP-002-03A and EGP-002-04B

OPT

OCEAN POWER TECHNOLOGIES

*Part B Proposal for Enel Green Power
in support of the
Marine Energy Research and Innovation Centre (MERIC)
Open Sea lab (OSL)*

VOLUME I - TECHNICAL OFFER

Proposal dated 03 September 2019

Proprietary & Business Confidential Information

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Ocean Power Technologies, Inc., 28 Engelhard Dr., Suite B, Monroe Township, New Jersey 08331, USA



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LIST OF APPENDICES

Appendix A Feasibility Study

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1 EXECUTIVE SUMMARY

Ocean Power Technologies, Inc. (OPT) is pleased to submit this Part B Proposal to Enel Green Power (EGP) for providing additional payload equipment and an umbilical cable in support of the Part A Proposal for the Marine Energy Research and Innovation Centre (MERI) Open Sea Lab (OSL) Project. The Scope of Work for the Part B items under this proposal includes: 1) supply of communications, payload equipment and an umbilical cable, 2) supply of the wave radar station, and 3) all OPT labor necessary for payload design, supply and integration with the PowerBuoy[®], excluding labor to support deployment and installation of the supplied equipment. Deployment labor support is included in the Part A Proposal.

The scope of work is based upon the “*Feasibility Study of deployment of the PB3 for Enel Green Power M ERIC VTB Project*” (Appendix B) and reflects changes in payloads as discussed in our meeting of November 13 and 14, 2018, as well as the addition of the radar station to OPT’s scope as detailed within this proposal. This proposal is based upon the Las Cruces deployment site, and the findings of a recent site evaluation conducted by OPT. The scope of work includes the following, as further detailed within this proposal:

- WiFi communications and shore station
- Data acquisition system
- Mooring sensors
- Water quality sensors
- Acoustic Doppler Current Profiler (ADCP)
- Wave radar system
- Umbilical cabling and junction boxes as necessary to provide subsea power

For the avoidance of doubt, the appropriate sections of the Feasibility Study (Appendix B) are cross referenced in the following sections.

2 COMPANY PROVIDED EQUIPMENT

An overview of the MERIC OSL project equipment is provided below in **Figure 1**. This Section addresses the pay loads, communications, data acquisition system and umbilical cables which will be employed as part of the system. Services are addressed in Section 3.

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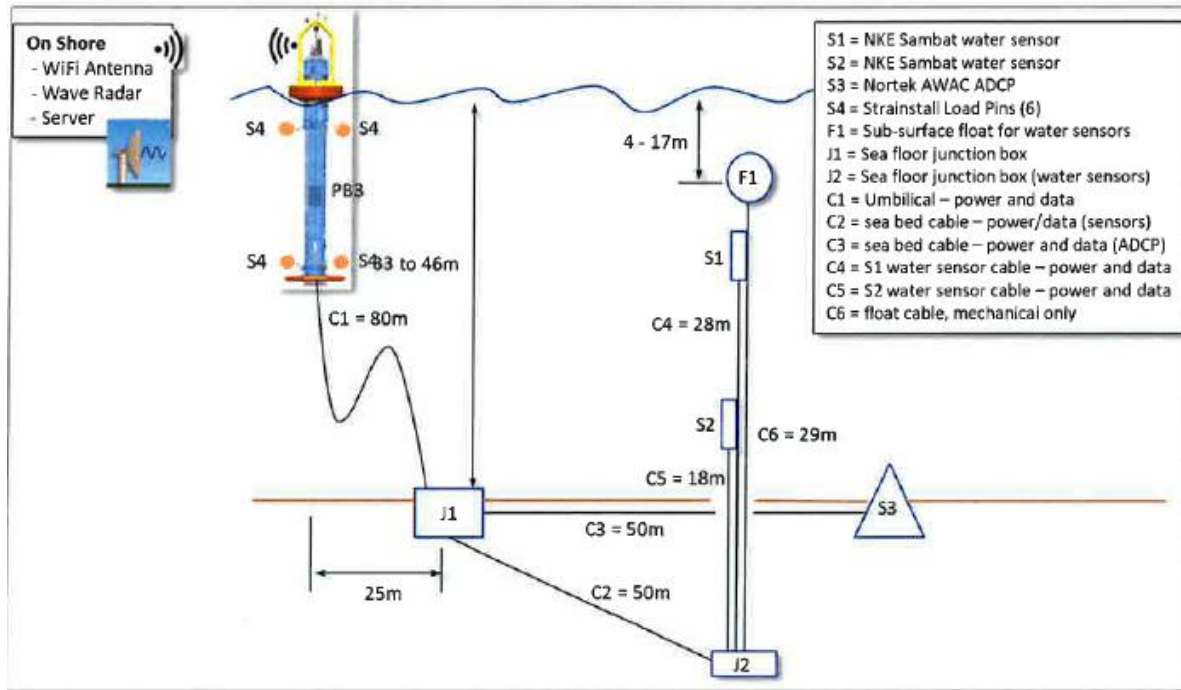


Figure 1. Preliminary OSL System Solution

2.1 Power Buoy® and Shore Based Communications

The notional communications approach is shown in **Figure 2**. For this project a dedicated, long range, directional Wi-Fi solution will be added to the buoy. A Su-perpass SPDG12F antenna and watertight antenna enclosure will be added to the base Power Buoy®.

The shoreside communications will include: 1) Shoreside Antenna (SPFG19); 2) Shoreside Modem (IBR900), and 3) Shoreside Server (Dell rack mounted server). Internal cabling from the antenna to the work station is not included in this proposal.

This pricing addresses the items in Sections 5.2.1 and 5.2.2 of the Feasibility Study.

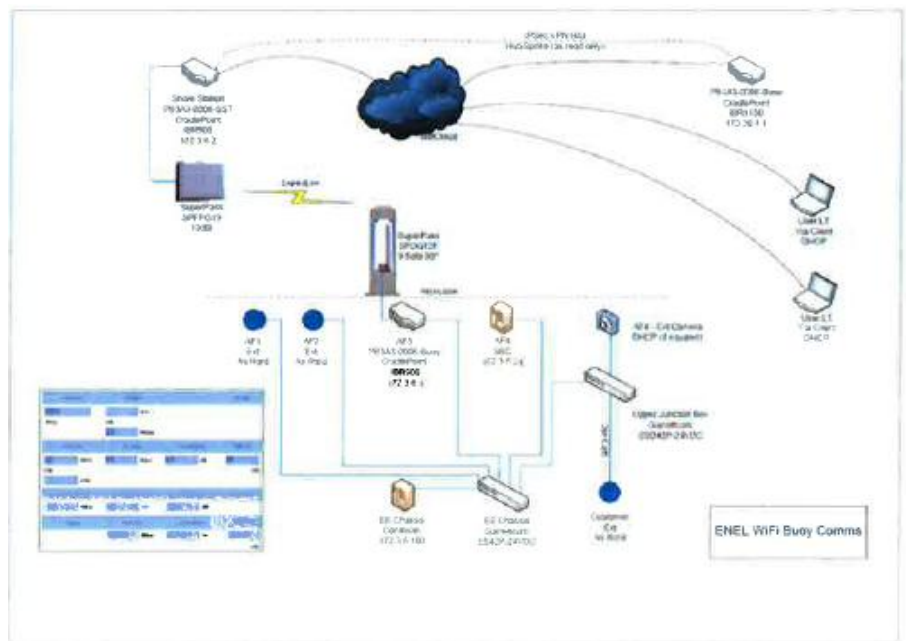


Figure 2. Notional Communications

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2.2 Data Acquisition System Components

The components to support the Data Acquisition System proposed in Section 5.3 of the Feasibility Study are: 1) cRIO supporting 24 wires for load pins and ethernet, 2) one (1) TB solid state mass storage unit, 3) chassis, and 4) Data Acquisition System enclosure.

This section addresses the items in Sections 5.3 of the Feasibility Study.

2.3 Mooring System Sensor Components

Six (6) Strainstall twenty (20) tonne Load Monitoring Pins (Model LMP-51-246-20t) will be provided as the mooring system sensor components. These load pins have a four (4) to twenty (20) milliamp (mA) output and a seven (7) meter signal cable. Each pin will be provided with an anti-rotation mechanism and load pin connectors. These pins are more cost effective than the solution proposed in the Feasibility Study Section 5.4.

2.4 Water Quality Sensors

Two SAMBAT Sea Modbus Basic Version sensors with conductivity, temperature, depth, turbidity, dissolved oxygen, and pH sensing will be provided. "Chlorofill-A" sensors will be provided. A submersible cable (Part No. 60- 07-505 or equivalent) will be provided for each sensor. The sensors will be strapped to a nylon line supported by a sub-surface float to place the sensors at the specified elevation in the water column. Sensors will be nominally placed at 5 and 15 meters deep from the water surface .. Exact sensor depth is subject to actual water depth at deployed location and wave and tidal activity.

Sea floor junction boxes are included to install the water quality sensors as indicated in **Figure 1**. The main sea floor junction box will be equipped with a watertight enclosure housing a single board computer, DC-DC converter, three (3) dry connectors, an umbilical connector and ballasting. A spare dry-mate connector will be provided on the sea floor junction box to allow for the addition of other water sensors in the future.

This section addresses the items in Section 5.5 of the Feasibility Study.

2.5 PowerBuoy[®] Junction Box for Umbilical Cabling

The PB3 PowerBuoy[®] will be equipped with a power cable running down the length of the spar, terminating at a lower junction box just above the heave plate in order to provide power and data connections for the subsea equipment. Watertight penetrators for cable connections will be provided. Approximately eighty (80) meters of 3762/K Hybrid SM/MM cable Kevlar, connectors, and locking sleeves will be provided for powering the water quality sensors and ADCP.

Cables shall be sufficiently sized so that each component may be deployed to the sea floor while the balance of the system remains on the deck of the deployment vessel.

This section addresses the items in Section 5.6 of the Feasibility Study.

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2.6 Acoustic Doppler Current Profiler

A Nortek AWAC 600 kiloHertz (kHz) four beam ADCP, cable, and tripod will be provided, meeting the objective of Section 5.7 of the Feasibility Study. The ADCP will be supplied and installed with Nortek's standard power and data cable, at a length of approximately 50 meters.

2.7 Radar Station

Nortek's SeaDarQ marine radar system will be supplied and installed. The system shall include a roof mounted radar antenna, industrial rack-mounted processing unit, and the SeaDarQ Hydrography software for surface currents and bathymetry. A standard roof mount is included for the antenna. Custom engineering for the roof mount is excluded. The dimensional requirements, interfaces, and loads of the antenna may be provided for the mount to be designed by others. The shore station shall include a standard 19" rack mounted processing unit and 24" monitor. Cabling from the roof-mounted antenna to the work station is not included in this proposal. Installation of the antenna and work station equipment is included, as well as commissioning upon completion.

2.8 Meteorological Station (Optional)

An onshore meteorological station shall be supplied and installed at the ECIM facility. The station shall include a wind speed and direction monitoring, barometric pressure monitoring, temperature monitoring, and rain gauge. The system shall be powered by a 50-60W Ppk photovoltaic panel with a 38Ah rechargeable 12Vdc battery pack. A data logger and electrical panel shall be supplied and installed within the work station at ECIM.

3 PROJECT MANAGEMENT AND NON-RECURRING ENGINEERING SERVICES

Project Management, Non-Recurring Engineering Services, and additional manufacturing labor to support the design, supply, and testing of all equipment within this proposal is included.

Non-Recurring Engineering Services do not include any modifications to OPT's standard Remote Monitoring Human-Machine Interface (HMI). EGP has indicated that additional views for payload data may be requested as an optional service.

3.1 Part B Items Functional Acceptance Testing

A mutually agreeable functional acceptance test of the Part B items will be conducted at the port of San Antonio prior to deployment. The test plan shall be approved at least one (1) month in advance of the test. OPT shall provide a minimum of one (1) week advance notice of the functional test. EGP's approval of the functional test shall not be unreasonably withheld nor shall approval be withheld if OPT has provided sufficient advance notice and EGP personnel were not in attendance. OPT shall make all necessary provisions for performance of the functional testing. Satisfactory completion of this testing shall represent Provisional Acceptance.

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3.2 Part B Items Commissioning Functional Testing

A mutually agreeable functional test of the Group B items will be conducted as part of the project commissioning and shall represent Final Acceptance. OPT shall provide a minimum of one (1) week advance notice of the functional test. EGP's approval of the functional test shall not be unreasonably withheld nor shall approval be withheld if OPT has provided sufficient advance notice and Enel personnel were not in attendance. OPT shall make all necessary provisions for performance of the functional testing.

3.3 Shipping

It is assumed that all the Part B items are shipped with the items in the Part A proposal.

3.4 Customs Broker Fees

Customs Broker Fees are included in the Part A pricing proposal. It is assumed that the PowerBuoy[®] and payload equipment will ship at the same time.

3.5 Customs

OPT shall be responsible for temporary import of payload components to their US facility for integration into the PowerBuoy[®] system. All customs duties, import tariffs and taxes to import the materials into Chile are specifically excluded from this proposal.

3.6 VAT

It is understood that EGP Chile will be designated as Importer of Record and responsible for payment of any applicable VAT. VAT is specifically excluded from pricing offered in this proposal. Should VAT be applicable to any goods or services supplied, the cost will be reimbursed to OPT through an equitable contract amendment.

3.7 Insurance

Insurance for all equipment offered in this proposal is included from the time of shipment through deployment and final acceptance.

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3.8 Deployment Location and Permits

The deployment site is approximately four (4) km west of Las Cruces (UTM WGS84: 254.873, 51 m E, 6.288.260,65 m N). The deployment site has an average water depth of 40 meters. The proposed deployment site is shown in **Figure 3**.

All permits and governmental authorizations required for the project are the responsibility of EGP, other than the permits required for shipping of the PowerBuoy®. Certified English translations of all permits and governmental authorizations shall be provided to OPT so that they can be reviewed and incorporated into the relevant deployment procedures, including any required governmental notification. Governmental notifications regarding the commencement or completion of work shall be the responsibility of OPT.

EGP shall also be responsible for any data sharing agreements, administration, and any additional costs applicable to MERIC partners, governmental agencies, and/or Non-Governmental Organizations. Storage of payload data in the cloud is not included in this proposal.



Figure 3. Proposed Deployment Site

4 PROJECT SCHEDULE

The project schedule is detailed within Volume 2 of this proposal.

5 PROJECT INVOICING

Pricing and payment schedule are detailed within Volume 2 of this proposal.

5.1 Operations and Maintenance

Operation and maintenance of the Part B items included in this proposal is limited to remote troubleshooting of the payload components.

Recommended maintenance of the subsea sensors includes periodic cleaning. This may be achieved by pulling sensors aboard a vessel, or by retrieval with divers.

5.2 Remote Monitoring Scope

OPT will remotely monitor the buoy during the first twelve (12) months of the project, as described in the Part A Proposal. All other payload monitoring and diagnostics is outside the scope of this proposal.

5.3 Technical Documentation

OPT shall provide an electronic copy of:

- General Arrangement Drawing of Open Sea Lab System
- Payload Component Manufacturer's Warranties
- Payload Instruction Manuals
- Applicable Quality Documentation
- Commissioning Certification

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A handwritten signature or set of initials in black ink, enclosed in a circular scribble.

6 GENERAL PROPOSAL CONDITIONS

Commercial conditions relevant to this proposal are addressed in Volume 2.

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APPENDIX A
FEASIBILITY STUDY

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OPT

OCEAN POWER TECHNOLOGIES

Part B Proposal for Enel Green Power

in support of the

Marine Energy Research and Innovation Centre

(MERIC) Open Sea Lab (OSL)

VOLUME 2 - COMMERCIAL OFFER

Proposal dated 10 September 2019

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1 EXECUTIVE SUMMARY

Ocean Power Technologies, Inc. (OPT) is pleased to submit this Proposal to Enel Green Power (EGP) for providing additional payload equipment and an umbilical cable (Part B) in support of the Part A Proposal for the Marine Energy Research and Innovation Centre (MERI) Open Sea Lab (OSL) Project.

The fixed firm price for the Part B items under the proposed turnkey project is \$645,067, including VAT and payable in U.S. dollars. Pricing is based upon the scope of work described in Volume 1 of this proposal. The planned deployment date is no later than 31 March 2020, weather permitting and subject to a 30 August 2019 contract award and the project schedule included in this proposal. Changes in scope or schedule may incur changes in pricing.

This Proposal (referred to as the Part B proposal) is the second of two (2) proposals for the OSL project that are submitted separately from each other. The first proposal (referred to as Part A) includes the PowerBuoy[®], mooring, shipping, and deployment. Both proposals must be considered together, as there is an interdependence in scope and pricing. Should EGP wish to purchase one of either Part A or Part B, pricing may be subject to adjustment.

For the avoidance of doubt, the appropriate sections of the Feasibility Study (Appendix B) are cross referenced in the following sections.

2 COMPANY PROVIDED EQUIPMENT

The scope of work included in this proposal is detailed within Volume 1. Pricing for all services is firm through the requested schedule specifically noted otherwise.

3 PROJECT MANAGEMENT AND NON-RECURRING ENGINEERING SERVICES

All required Project Management, Non-Recurring Engineering Services, and additional manufacturing labor is offered on a fixed, firm price of \$[***]. This pricing is based upon concurrent performance of the work under both Parts A and B proposals, and includes all labor necessary to support the functional acceptance testing and commissioning described in Volume 1.

Any changes to the Parts A and B scope of work or project schedule may incur additional labor charges. Additional labor charges will be invoiced in accordance with the Labor Rate Schedule (Appendix A).

3.1 Shipping

It is assumed that all the Part B items will be shipped with the items in the Part A proposal. Additional shipping costs for separate shipments are not included in this proposal.

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3.2 Customs Broker Fees

Customs Broker Fees are included in the pricing noted within this proposal. It is assumed that the PowerBuoy[®] and payload equipment will ship at the same time. Additional costs for separate shipments are not included in this proposal.

3.3 Customs

OPT shall be responsible for temporary import of payload components to their US facility for integration into the PowerBuoy[®] system. OPT shall then engage the services of a local Chilean customs broker to coordinate the import of all Part B equipment and pay all necessary customs duties. All costs associated with procuring the services of a local customs broker to facilitate import of goods shall be billed at Cost + [***]%.

3.4 VAT & A d Valorem Ta x

OPT has included 19% VAT and 6% Ad Valorem Tax for imported goods supplied by non-Chilean contractors, as detailed in the pricing breakdown presented in Section 5 of this proposal. The 15% Services Tax is not included, and shall be paid directly by EGP. All firm, fixed pricing noted within this proposal is based upon customs and tax law at the time of bid, and is subject to adjustment should customs and/or tax laws change after contract award.

3.5 Insurance

Insurance for all equipment offered in this proposal is included from the time of shipment through deployment and final acceptance.

3.6 Deployment Location and Permits

The deployment location is specified in Volume 1. Local staging facilities for final payload assembly and testing will be procured under the Part A Proposal.

4 PROJECT SCHEDULE

The proposed project schedule, which is based upon award of both Parts A and B, is shown in **Figure 1**, with estimated start and completion dates noted in **Table 1**. The schedule assumes Contract Award no later than 30 August 2019 in order to achieve a planned deployment no later than 31 March 2020, weather permitting. Any delay in Contract Award or change in scope may delay the milestone dates noted below. Contract Award for both Parts A and B must be achieved by this date in order to support the schedule outlined below.

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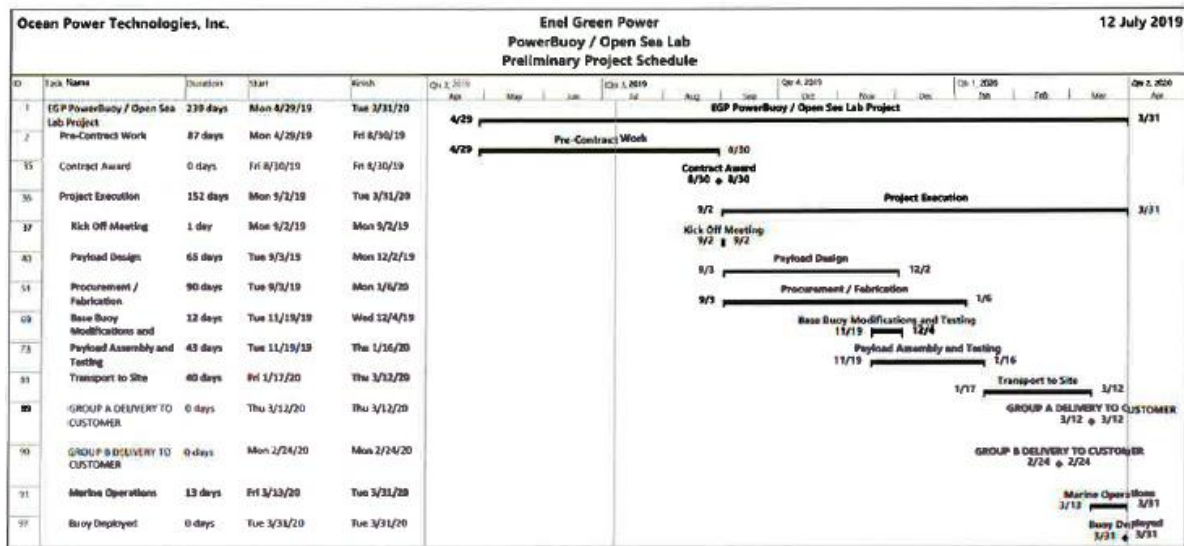


Figure 1. Preliminary Project Schedule

Table 1. Summary of Milestones

Task/Milestone	Estimated Completion
Contract Award	no later than 12 September 2019
Base Buoy FAT	16 December 2019
Payload Design and Procurement	18 January 2020
Payload Assembly & Testing	28 January 2020
Delivery to Port of Import (San Antonio, Chile)	9 March 2020
Delivery to Local Staging Facility	24 March 2020
Deployment and Offshore Commissioning	no later than 12 April 2020

5. PROJECT INVOICING

A summary of pricing can be found below in Table 2. Pricing is broken down by goods and services so that VAT and Service Tax may be estimated.

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Table 2. Pricing Schedule (Amounts in US Dollars)

Item	Goods (non-Chilean)	Services (non-Chilean)	Total
Wifi Long Range + LAN & Server (onshore)	[***]	-	[***]
Offshore Data Acquisition Systems and Sensors			-
1) PB3-Umbilical cable junction box	-	-	-
2) Umbilical cable (80m)	[***]	-	[***]
3) Acoustic Doppler Current Profiler ADCP	[***]	-	[***]
3) On board Data Acquisition System DAQ	[***]	-	[***]
4) Seafloor junction box (SB computer, DC/DC, wet connectors)	[***]	-	[***]
5) Water quality sensors system	[***]	-	[***]
6) Mooring sensors system	[***]	-	[***]
8) Shipping costs (Included in WEC shipping)	-	-	-
9) Shipping Insurance	[***]	-	[***]
Wave Radar System (onshore)	[***]	[***]	[***]
Non-Recurring Engineers, Proj Mgt	-	[***]	[***]
Subtotal	[***]	[***]	[***]
19% VAT	[***]	-	[***]
6% Ad Valorem Tax	[***]	-	[***]
Total	[***]	[***]	[***]
Additional Costs:			
Letter of Credit	-	[***]	[***]
Local Customs Broker and Tax Handling Fees	-	Cost + [***]%	Cost + [***]%
Total	[***]	[***]	645,067
Additional Option:			
Meteorological Station			Cost + [***]%

Pricing Notes:

- As with all other items, Wave Radar System is offered at firm, fixed lumpsum pricing. No additional travel charges shall apply unless due to delays specifically caused by EGP.
- If EGP elects to proceed with optional meteorological station, cost to procure, deliver, install, and commission the meteorological will be billed at Cost + [***]%.
- VAT and Ad Valorem Tax is included in pricing above.
- OPT will engage the services of a mutually agreeable local customs agent to facilitate import of goods and payment of applicable duties and taxes. OPT shall bill for these services at Cost + [***]%.

The Project will be invoiced according to the invoice scheduling show in **Table 3**. Performance bonding, Letter of Credit or performance guarantees are excluded. Should one be required, the cost shall be reimbursed to OPT through an equitable contract amendment, with the required language clearly stated within the contract amendment.

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Table 3. Invoicing Schedule (Payable in US Dollars)

Payment Milestone	Estimated Date	Value	% of Contract
Contract Award	10-Sept-19	\$ 645,067	100%
Total		\$ 645,067	100%

Invoice terms are net thirty (30) days, payable in U.S. dollars.

5.1 Operations and Maintenance

EGP has indicated that a third potential contract for Operations and Maintenance (O&M) of the project will be finalized at a later date. O&M of the Part B items included in the base pricing of this proposal is limited to remote troubleshooting of the payload components.

Pricing for periodic cleaning of the subsea payload items for the 4-year project duration is estimated to be an additional \$[***].

5.2 Remote Monitoring Scope

OPT will remotely monitor the buoy during the first twelve (12) months of the project, as described in the Part A Proposal. All other payload monitoring and diagnostics is outside the scope of this proposal. Should EGP request any additional payload monitoring services or development of a custom HMI for payload data, OPT will provide firm pricing once a scope is defined. In lieu of a lumpsum contract amendment for such services, labor for additional remote monitoring support above the standard remote monitoring shall be invoiced at the prevailing labor rates in Appendix A.

6 GENERAL PROPOSAL CONDITIONS

The following general proposal conditions for cancellation and warranty are applicable to this proposal.

6.1 Cancellation Charges

EGP shall incur charges if the contract is cancelled for any reason after the contract is finalized and effective. Labor for hours worked from effective date of the contract through the date of written contract cancellation in performance of the work under the contract shall be billed at the hourly rates in Appendix A up to the total fixed firm labor price in Section 5. OPT is also entitled to recover all expenses plus an additional thirty percent (30%) for restocking fees or non-refundable or non-cancellable charges for payloads, additional equipment, mooring equipment, materials, deployment expenses, shipping expenses, return shipping expenses, and other direct project closeout expenses, other than labor. OPT labor for project close out shall be billed at the hourly rate in Appendix A.

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6.2 Change Management

Pricing in this proposal is based upon the scope and schedule referenced herein. Should any changes be requested to the scope or schedule after the date of this proposal, an equitable contract amendment shall be issued to reimburse OPT for any additional costs resulted from such request. All contract amendments shall be managed through OPT's standard Change Management process unless otherwise agreed in writing by both Parties.

6.3 Warranty

The Part B payloads are warranted for a period of one (1) year in accordance with the manufacturer's warranties. These warranties from payload suppliers are pass through warranties. OPT will serve as the project's single point of contact for Part B warranty related items. This single point of contact is limited to obtaining replacement items only for defective equipment under the manufacturer's warranty. OPT shall only be responsible for coordinating warranty replacement parts and providing technical support. OPT shall provide a warranty on all custom designed and fabricated parts for a period of one (1) year from Final Acceptance or March 31, 2021, whichever occurs earlier. EGP shall be responsible for the recovery of the payload, shipment to and from an OPT designated location, and reinstalling the payload if necessary.

6.3.1 Warranty Repair Term

Any repairs or replacements performed under the applicable warranty shall not extend the warranty period for the covered item beyond the specified warranty period in the original manufacturer's warranty.

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APPENDIX A

LABOR RATE SCHEDULE

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Labor Rate Schedule

Labor Classification	Hourly Rate	
Engineering Management	\$	[***]
Project Management	\$	[***]
Electrical Engineering	\$	[***]
Mechanical Engineering	\$	[***]
Systems Eng.	\$	[***]
Marine Operations	\$	[***]
Manufacturing	\$	[***]

Notes to Labor Schedule:

- 1) Annual escalation may apply after 31 December 2019
- 2) Hourly rates include all insurance, fringe benefits, payroll taxes, overheads and profit and are billable above NRE.
- 3) OPT's labor rates may not be shared with any third party other than the intended recipient of this proposal without prior, written permission. Upon request, OPT can supply a redacted copy of the proposal, excluding the labor rate schedule, to the intended recipient for use in governmental grants.

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Annex D: Feasibility Study

Document No: DOC-xxxx-xxxx

Title: Feasibility Study of Deployment of the PB3 for Enel Green Power

Revision: 1.0

OPT

OCEAN POWER TECHNOLOGIES

FEASIBILITY STUDY OF DEPLOYMENT OF THE PB3 FOR ENEL GREEN POWER MERIC VTB PROJECT

Rev	By	Description	CN	Date Approved
1.0	D. Goldstein	Initial Release		
0.1	D. Goldstein	Original Draft		

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1 INTRODUCTION

1.1 Scope

This feasibility report provides a review of the ability of the PB3 to provide power and a stable structure for Enel Green Power (EGP) in conjunction with the Universidad Austral de Chile (UACH) Calfuco Coastal Laboratories (UCCL) to monitor sea conditions around an autonomous wave energy converter (WEC) for the MERIC VTB Project. In addition, the study provides an overview and survey of the various deployment contractors in and around the deployment site and their ability to transport and deploy the PB3.

For the purposes of this feasibility study, the deployment site is approximately 7 km North Northwest of the Niebla Dock and approximately 3 km West Southwest of UCCL (UTM WGS84: 635.300,00 m E, 5.596.000,00 m N). The water depth at the deployment site is approximately 33 meters. A notional site is shown in Figure 1 below.



Figure 1 Notional Deployment Site

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1.2 Purpose of Study

This study was conducted to give EGP confidence that Ocean Power Technologies and the PB3 can provide a complete turn key solution to meet their needs. The study answers the following questions:

1. Can the PB3 be safely moored at the proposed site?
2. If so, what type of mooring system would be required?
3. Can the local transport and marine contractors move the PB3 from the ship, overland to the deployment dock and into place at the final deployment site?
4. Can the PB3 support the subsea payload proposed for this study?
5. What is the recommended communications scheme for buoy control and scientific data collection?
6. Preliminary costs and schedule estimates to provide a complete turn key solution for EGP

Additional questions and design goals will be detailed as this effort moves from this study into buoy build and deployment.

The upcoming effort has been broken into multiple parts as listed below. This report will align our proposed solution with these parts.

GROUP A

- A.1 WEC shipment to Chile (see pg. 11)
- A.2 WEC transport by road to destination place (see pg. 14)
- A.3 WEC deposit at temporary destination place (see pg. 15)
- A.4 WEC movement at temporary destination place (see pg. 15)
- A.5 Mooring system components definition (see pg. 16)
- A.6 Mooring system components acquisition (see pg. 19)
- A.7 Mooring system transport to the destination place (see pg.20)
- A.8 Deposit and movement of the mooring system goods at destination place (see pg. 20)
- A.9 Acquisition of the naval services for the mooring system deployment (see pg.20)
- A.10 Mooring system deployment (see pg.21)
- A.11 Acquisition of the naval services support for the WEC deployment (see pg. 21)
- A.12 WEC deployment operation (see pg. 22)
- A.13 WEC O&M (see pg. 22)

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GROUP B

- B.1 PB3 standard supply EXW definition (see pg. 34)
- B.2 Feasibility and cost estimation of the additional long-range Wi-Fi communication system (see pg. 36)
- B.3 Feasibility and cost estimation of the data acquisition system DAQ (see pg. 39)
- B.4 Feasibility and cost estimation of sensors for mooring system (see pg. 39)
- B.5 Feasibility and cost estimation of water quality sensors system (see pg. 42)
- B.6 Feasibility and cost estimation of additional cables for payload and sensors (see pg. 44)
- B.7 Feasibility and cost estimation of an ADCP system (see pg. 46)

Pricing, Associated lead times for the various sensors and other payload elements as well as a preliminary schedule are included with this feasibility study.

1.3 Budgetary Estimate for the Project

The Feasibility Study Budgetary Pricing Schedule (Appendix C) provides budgetary pricing of \$[***] for Group A items including the PB3 (Section 5.2.1 of the Scope of Supply). Pricing is provided one (1) standard PB3 Power-Buoy™ with a fifty (50) kiloWatt-hour (kWh) Energy Storage system, mooring components, transport, temporary storage and movement within the laydown area, deployment, commissioning, and monitoring for a period of three (3) months.

A budgetary price of \$[***] is provided in Appendix C for sensor pricing and Non-Recurring Engineering (NRE) on Items 5.2.2 through 5.2.7. The NRE is priced based on the Scope of Supply statement and our work on the feasibility study. Please note that the NRE may change if the current sensor selection and/or configuration changes. NRE incurred due to sensor changes and or Scope of Supply changes will be billed at Standard OPT rates. A rate sheet will be provided in the contract documentation. Labor for installation of the land-based receiver and other hardware is not included in the pricing.

Shipping rates quoted in the proposal are valid through 1 November 2018 and are subject to change after that time. All pricing excludes taxes, customs, duties, other governmental levies, and port and terminal fees. Steel pricing for the buoy is based on tariffs in effect as of 31 October 2018.

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2 PB3 OVERVIEW

The PB3, an autonomous PowerBuoy™ is designed to generate power for use independent of the power grid in remote offshore locations. It consists of a floating buoy-like device that is loosely moored to the seabed so that it can freely move up and down in response to the rising and falling of waves, as well as a Power Take Off (PTO) device that includes an electrical generator, a power electronics system, our control system, and our Energy Storage System, all of which are sealed within the unit. As ocean waves pass the PowerBuoy™, the mechanical stroke action created by the waves is converted into mechanical energy which in turn drives the electrical generator within the PTO. The power electronics system then conditions the electrical output which is stored within an energy storage system. The operation of the PowerBuoy™ is controlled by our customized, proprietary control system.

The control system uses an onboard computer to continuously monitor and collect data from on-board sensors and the payloads and uses proprietary algorithms to electronically adjust the performance of the PowerBuoy™. This ability to optimize and manage the electric power output of the PowerBuoy™ is a significant advantage of our technology.

In the event of large storm waves, the control system locks the PowerBuoy™ and electricity generation is suspended. However, the payload (either the on-board payload or that in the vicinity of the PowerBuoy™), continues to receive power from the on-board energy storage system. When wave heights return to normal operating conditions, the control system unlocks the PowerBuoy™ and electricity generation and energy storage system replenishment recommence. This safety feature helps to prevent the PowerBuoy™ from being damaged by storm wave impacts.

The PB3 structure and components have undergone a design iteration focusing on improving its reliability and survivability in the anticipated operating ocean environment and will continue to undergo further enhancements through customary product life cycle management. The PB3 has undergone significant in-ocean and accelerated life testing, and we believe that the PB3 has currently achieved a maturity level of TRL 6 on the scale of 7 as defined in API 17N TRL standard.



Figure 2 PB3

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3 SOLUTION OVERVIEW

An overview of the system is shown in Figure 2 below. The PB3 will be deployed with a 3-Point mooring (the details of which are provided in Section 5). The buoy will have, in addition to its standard payload, a long-range directional Wi-Fi transceiver and antenna mounted above the lid. This will provide a high-speed wireless connection for data capture from the sensor payload as well as buoy data and buoy control. The buoy will be outfitted with a set of sensors specifically designed to measure the various forces on the mooring system. Included in the sensor suite will be a subsea Acoustic Doppler Current Profiler (ADCP) as well as a set of sea condition sensors. These will be connected to the buoy (for both power and data) via an undersea umbilical. All the data from the ADCP, the sensors and the mooring sensors will be sent to an onboard data acquisition system (DAQ). The DAQ will package the data for transfer offboard the buoy to the UACH base station located on shore.

From here UACH will have access to their data locally. OPT will be able to remotely connect to the buoy to retrieve buoy operational data for monitoring purposes and provide buoy control.

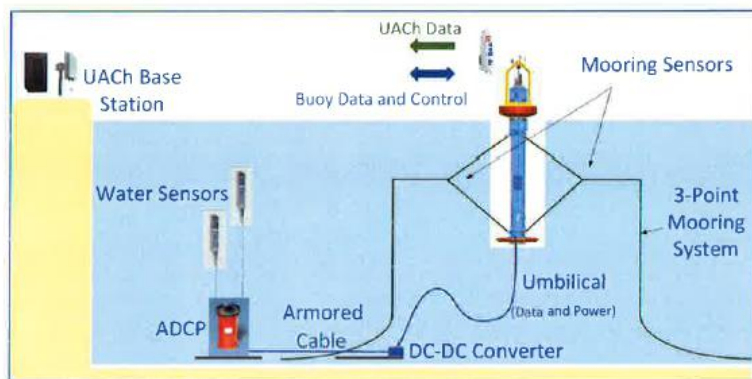


Figure 3 EGP Solution Overview

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4 GROUP A – TRANSPORT AND DEPLOYMENT OF THE PB3

Although it is early in the process an overview of the proposed shipping is as follows:

- Upon completion of build and test the buoy and associated equipment will leave the OPT facilities in New Jersey and be transported by truck to Baltimore, MD.
- From there it will be shipped via ocean freight to San Antonio, Chile. This leg of the trip will be contracted by OPT using our regular freight partners.
- From San Antonio – it is our recommendation that the buoy be picked up by Tractos and transported overland to Valdivia.
- In Valdivia it is OPTs recommendation that the buoy be delivered to the AsaNav docks for final deployment activities prior to being placed in the water
- From the AsaNav Dock it will be handed to one of 3 potential contractors: Salmo Boats, Walbusch or Oxxean.
- The selected contractor will bring the mooring and tow the buoy out to the deployment site and deploy the mooring and the PB3

The specific destination ports, particularly for the initial legs of the trip will be determined based on the availability of shipping and timing.

4.1 SOW 5.1.1 (A.1) WEC shipment to Chile

The base buoy (without any additional customer equipment mounted) meets the following general description:

Table 1 Base Buoy

Dimension	Value
Height	12.73 m
Draft	9.28 m
Spar Diameter	1.00 m
Float Diameter	2.65 m
Dry Weight	8,904 kg

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Assembly of the PB3 as well as integration of the topside and subsea payloads will be done at the OPT facilities in New Jersey. The buoy itself is assembled and tested for operational functionality. All of the base buoy enclosures are pressure tested.

The payload mounting features (brackets, enclosures, wiring rails and tie-down points) are designed by OPT and manufactured by various quality suppliers. OPT will procure the various sensors and all of the topside and subsea payload will come together at our facilities. We will run acceptance bench tests on the payload and then the "to be deployed" buoy will be assembled. Final tests will be run and any custom topside enclosures will be pressurized and pressure tested.

Since the buoy is shipped as break bulk freight, usually on the deck of the ship, some elements are removed from the buoy and packed in a container separately for shipment. In this case we expect the umbilical and potentially the long-range wi-fi antenna along with the mooring sensors will be packed in a container for shipment to the AsaNav temporary assembly point. The container will also include any additional equipment necessary for final assembly and checkout of the buoy in Chile.



Figure 4 Buoy Assembly

PB3 transport from its assembly point at the OPT facilities to its point of departure from the US will be contracted by OPT through one of our transport partners. While in the OPT manufacturing facility, the buoy spar is placed on three shipping stands. The stands elevate the buoy during assembly allowing for the insertion of the Power Conversion Assembly, mounting of the heave plates and float halves, and final fit-out operations.

The stands are designed to be secured to the buoy and to remain that way until it reaches the launch site.

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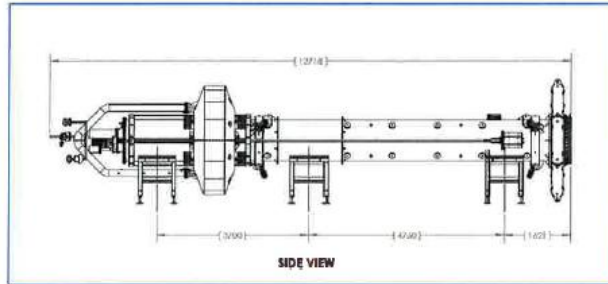


Figure 5 PB3 Shipping Stands

A single drop deck trailer is the preferable trailer type for hauling the PB3. It also offers more route options, whereas higher cargo would eliminate routes with standard bridges and overpasses. Specific dimensional restrictions must be addressed on a case by case basis, depending on the country transportation requirements.

The buoy, along with secured stands, is lifted by crane and lowered onto and fastened to the low deck trailer.



Figure 6 Crane Loading of the Buoy

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Figure 7 Shipping stand details

From the OPT facilities, the buoy will be transported over land to the port of Baltimore. When the truck arrives at the port, the terminal staff coordinates the offload from the truck, and handles loading the buoy for the ocean transit.

The current delivery destination is the port at San Antonio, Chile via a transshipment stop at Manzanillo.

Sailing time is currently shown to be 30 to 40 days (plus customs clearance) depending on the starting point and transshipment. We are currently showing 5 sailings per month from Baltimore to Manzanillo and 2 sailings per month from Manzanillo to San Antonio.

Due to the variabilities in sailings between the US and Chile – particular attention must be paid to schedules and our ability to ensure specific delivery parameters. Pricing is listed in the Feasibility Study Budgetary Pricing Schedule, which is Appendix C of this report.

4.2 SOW 5.1.2 (A.2) WEC Transport by Road to Destination

The primary (and preferred) transport company within Chile is Tractos (www.tractos.cl), a Chilean transport company that has offices throughout the country and one notably in Valdivia. The visit with them determined that they were familiar with the project from past conversations with Professor Gonzalo Tampier at UAHc. They currently have existing contracts with EGP related to other energy products and programs. They see no difficulty in transporting the buoy on Chilean roads and have done similar size moves for other companies. They recommended the port of San Antonio, Chile which is the primary RO/RO port for Chile.

A trip to Puerto Montt allowed the observation that the main highway in Chile (Ruta 5) is very suitable for the transport of the buoy. It is a major artery and runs the length of the country and has very good surface conditions. The local highways (Ruta 206 was observed) are also large enough to carry the buoy and mostly do not

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have low wires across them. Local roads would not be suitable for buoy transport having many tight turns, being narrow, steep, and winding. These roads also have many utility wires strung across them which would pose a major challenge to road transport.

It is OPT's recommendation that only areas serviced by these major highways be considered for destinations to avoid any complications of moving or lifting utility installations.

Tractos informed us that it takes up to 1 month to secure the permits required for a wide load, so we'll have to give them ample notice to secure same.

4.3 SOW 5.1.3 (A.3) WEC Deposit at Temporary Destination Place

To fully evaluate the facilities in the area, a survey was made of a local Ship yard AsaNav as well as a dock lower in the Calle-Calle river that may be suitable. The dock lower in the Calle-Calle river is owned and operated by the Chilean government and is used as a berthing space for a dredge vessel. The vessel operates primarily in the Chilean winter and could be available for us to use but land transport to the site would be practically impossible due to the large number of utility lines that would need to be moved/lifted. Other areas of the lower river were also reviewed but none of them had the water depth needed to launch the buoy.

The Corral and Niebla ports were also surveyed. These ports only consist of concrete ramps used by landing craft ferries or bulk loading areas with no space or facility for crane access. These areas will not be suitable for temporary deposit of the PB3. A visit was made to the Puerto Montt area. This area is also not suitable. There is an area that could be used to launch the buoy but Puerto Montt is over 250km from the deployment site so towing the buoy out for deployment is not a practical option. None of the deployment contractors we spoke with had vessels available (with the necessary lifting capabilities) that would be able to ship launch the buoy.

The Team toured the local shipyard AsaNav, which is located directly across the river from downtown Valdivia. It is a full-service yard that does construction, repair, and storage of large steel vessels of various makes. A site is available which is sufficient for laydown of the buoy and has facilities for steel repair and painting a few yards away. This site would be able to accommodate the buoy and up to two (2) 40 foot containers which would be more than adequate to support the project.

It is OPT's recommendation to contract with AsaNav in Valdivia for a laydown area and associated support.

4.4 SOW 5.1.4 (A.4) WEC Movement at Temporary Destination

The AsaNav site has the correct crane capabilities to move the PB3 as needed. In particular, the crane capabilities are sufficient to move the PB3 and lower it into the water. None of the other sites surveyed had sufficient crane capabilities for this project. The AsaNav site is on the Calle-Calle River and has a deep-water quayside that would be more than adequate for launching the buoy.

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It is OPT's recommendation to contract with AsaNav in Valdivia for a laydown area and associated support including movement of the PB3 and initial placement of the buoy in the water. AsaNav also has small tugs that would be available to tow the buoy away from the dock.

The AsaNav yard is several kilometers up river from the ocean and behind two bridges, only one of which can open to accommodate larger vessels. This is mitigated by using small tugs to tow the buoy past the lower fixed bridge and so transport the buoy to larger ocean-going vessels for deployment. It would be possible to bring the larger vessels directly to AsaNav using the drawbridge if necessary. Though possible this adds several kilometers to the trip. In addition, the bridge itself has unpredictable functionality and can require days of advance notice in order to schedule an opening. For this reason, the use of the small harbor tugs is preferred with hand off to larger vessels past the bridges.

4.5 SOW 5.1.5 (A.5) Mooring System Components Definition

4.5.1 Preliminary Mooring Design and Analysis

4.5.1.1 General

The purpose of this section of the report is to present the analyses that were performed to assess the feasibility of the mooring system for the PB3 PowerBuoy™ at a site near the city of Calfuco, on the Chilean coast.

The site is located near the city of Calfuco, Chile, at a distance of about 3km from the coast in 33m water depth. A climate study [1] was performed for the site at - 73.436°E, 39.786°S, shown in Figure 7 below.

Three (3) separate potential mooring configurations are presented here.

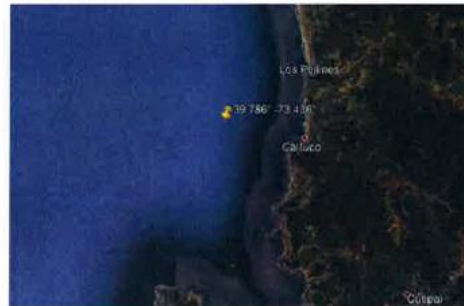


Figure 8 Site location (Google Earth)

The extreme conditions for 100-year return period is shown in Table 1.

Table 2: Site Environment Criteria

Criteria	Reported	Used
Wave Spectrum	NA	JONSWAP
Significant Wave Height, H _s	8.4 m	8.4 m
Zero-crossing Period, T _z	NA	10.0, 10.5, 11.0, 11.5, 12.0 s

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Criteria	Reported	Used
Peakness Factor, γ	NA	3.3
Current Speed, V_c	NA	0.9 m/s
Wind Speed, V_w	NA	0.0 m/s

4.5.1.2 PB3 Mooring System

(a) PB3

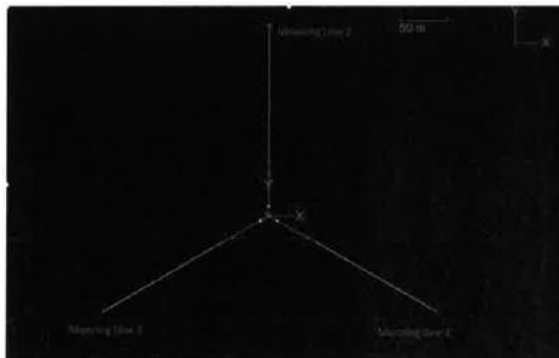
The principal dimensions of the PB3 are shown in Table 2.

Table 3: PB3 Principal Dimensions

Dimension	Value
Height	12.73 m
Draft	9.28 m
Spar Diameter	1.00 m
Float Diameter	2.65 m
Dry Weight	8,904 kg

(b) Mooring Arrangement

The PB3 is to be moored with 3 identical mooring legs 120° apart as shown in Figure 10.



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Figure 9: PB3 mooring spread

(c) Mooring Configuration 1

The main components for mooring configuration 1 are listed in Table 3.

Table 4: Notional Component List for Mooring Configuration 1

Component	Component Type	Size	Max. Load (kN)	Length (m)
Upper Bridle	12-Strand Plasma Rope	28 mm	653.9	10.0
Lower Bridle	12-Strand Plasma Rope	28 mm	653.9	10.0
Tether	12-Strand Plasma Rope	32 mm	745.0	34.2
Mooring Rope	12-Strand Plasma Rope	32 mm	745.0	14.0
Mooring Chain	Studlink	1.5 in	1456.0	153.0
Anchor	Delta Flipper	2 mT	235.0	-
Subsurface Buoy	Net Buoyancy = 0.9 mT	-	-	-

The mooring configuration is shown in Figure 11.

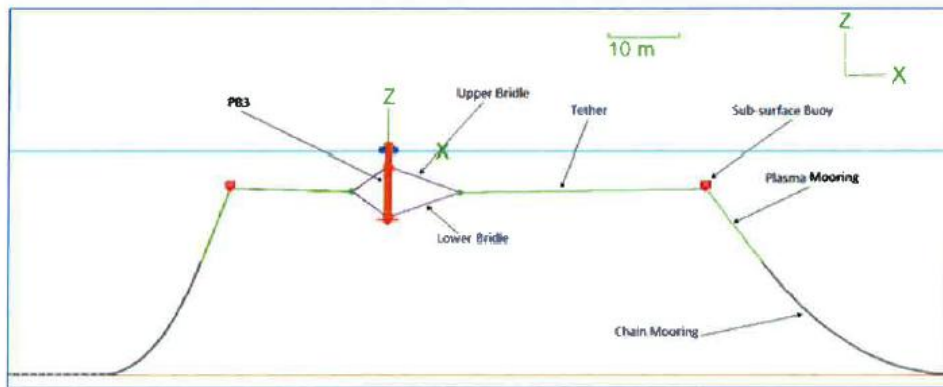


Figure 10: Notional Mooring configuration

(d) Mooring Configuration 2

The main components for mooring configuration 2 are listed in Table 4.

Table 5: Notional Component List for Mooring Configuration 2

Component	Component Type	Size	Max. Load (kN)	Length (m)
Upper Bridle	12-Strand Plasma Rope	28 mm	653.9	10.0
Lower Bridle	12-Strand Plasma Rope	28 mm	653.9	10.0

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Component	Component Type	Size	Max. Load (kN)	Length (m)
Tether	12-Strand Plasma Rope	32 mm	745.0	34.2
Mooring Rope	12-Strand Plasma Rope	32 mm	745.0	14.0
Mooring Chain	Studlink	1.25 in	835.0	253.0
Anchor	Delta Flipper	2 mT	235.0	-
Subsurface Buoy	Net Buoyancy = 0.9 mT	-	-	-

The 1.5" chain component from configuration 1 is replaced with 1.25" chain. The chain length is increased to 253-m.

(e) Mooring Configuration 3

The main components for this mooring configuration are listed in Table 5.

Table 6: Notional Component List for Mooring Configuration 3

Component	Component Type	Size	Max. Load (kN)	Length (m)
Upper Bridle	12-Strand Plasma Rope	28mm	653.9	10.0
Lower Bridle	12-Strand Plasma Rope	28mm	653.9	10.0
Tether	12-Strand Plasma Rope	32mm	745.0	34.2
Mooring Rope	12-Strand Plasma Rope	32mm	745.0	30.0
Mooring Chain	Studlink	1.0in	541.0	135.0
Clump Weights	-	1mT	-	-
Anchor	Delta Flipper	1mT	157.0	-
Sub-Surface Buoy	Net Buoyancy = 0.9 mT	-	-	-

The 1.5" chain component from configuration 1 is replaced with 1" chain. The chain length is reduced to 135-m and three 1 mT clump weights are added to each line.

4.6 SOW 5.1.6 (A.6) Mooring System Components Acquisition

There are many equipment providers in the Puerto Montt area, so the steel components of the mooring should not be difficult to obtain locally. The exception here are the Dyneema lines, which are very difficult to get in Chile compared to the US. These will most likely have to be sourced by OPT from our regular vendors. OPT uses a size that is not typically used in aquaculture. During the next phase of this effort a determination will need to be made regarding the value of procuring these lines in the US and shipping them with the buoy.

One of the potential deployment contractors, Walbusch, also has a chandlery which provides moorings and associated gear to the fish farms. They have their own anchor and shackle designs which should be considered. A detailed review of their designs should be part of the next phase of this program. They also have several anchor designs that they've developed in house for different bottom conditions. If necessary, they have dead weights up to 60 tons and several species of hybrid anchors for use in shallow substrate areas. The typical chain size used in the fish farms is 32mm, in contrast to 38mm which is our typical chain size for shallow water

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moorings. The 32mm chain is readily available and we saw a few piles of it in yards around the harbor. We should be able to adjust our mooring design to accommodate the smaller chain without much difficulty.

Based on what we know at this point, it will be OPT's recommendation that most of the mooring gear be purchased in Chile. OPT will coordinate with the final mooring system contractor to purchase and provide the necessary Dyneema lines if necessary.

4.7 SOW 5.1.7 (A.7) Mooring system transport to the destination place

It is expected that the bulk of the mooring system will be procured by and delivered by the contractor selected for deployment of the PB3. Three potential deployment contractors were evaluated; Salmoboats, Walbusch, and Oxxean. Each of which is capable of procurement and manufacture of the mooring system components except the potential need for Dyneema lines. It is our expectation that the selected contractor will procure and assemble the mooring system within their own facilities in preparation for deployment. Additional equipment necessary (Dyneema lines, mooring sensors, etc.) will be shipped from the OPT Facilities in a container and provided to the mooring contractor by truck.

4.8 SOW 5.1.8 (A.8) Deposit and movement of the mooring system at destination place

As mentioned in SOW A.7 *Mooring system transport to the destination place* above, each of the three contractors we propose (Salmoboats, Walbusch, and Oxxean) are both capable and willing to not only build the proposed mooring system, but also store and move the equipment at their facilities prior to actual deployment.

The selected contractor will need sufficient space to lay out the mooring including a means with OPT Support to attach the finally selected mooring sensors and cables. Once assembled, the mooring will need to be moved to the vessels for final deployment.

Each of the three companies have sufficient yard capabilities and ocean going vessels to support deposit and movement of the mooring system.

4.9 SOW 5.1.9 (A.9) Acquisition of the naval services for the mooring system deployment

All three companies reviewed (Salmoboats, Walbusch, and Oxxean) are major operators in aquaculture support which is a major industry in the Valdivia area. All three demonstrated, in presentations and discussion, an interest and the ability to handle the deployment. Aquaculture installations are a close analogy to PB3 deployment as the size and complexity of the moorings are very similar. Their vessels are well adapted to our needs. At Oxxean the Team was able to view some of the vessels close up and there is no doubt that they can handle the laying of the anchors of the size we require. All of the operators had very similar vessels and the difference in capability between them would be minimal.

The contractors we reviewed also provide other services such as mooring analysis, marine survey and inspection by both divers and ROV, and mooring equipment procurement. None of them operate regularly near Valdivia so

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all vessels would have to originate in Puerto Montt. For that reason, special attention should be paid to stand-by pricing regarding having vessels and crew in the Valdivia area for an extended time if weather delays are encountered.

Since there is no practical difference in the capabilities of the three contractors, it is OPT's intent to obtain pricing for the deployment portion of the SOW and compare the three on price, flexibility, and responsiveness, among other things.

4.10 SOW 5.1.10 (A.10) Mooring system deployment

Salmoboats, Walbusch, and Oxxean are all equally capable of deploying the proposed mooring system for this project. With their previous experience in aquaculture they are experienced in the movement of anchors and other weights of the size we are recommending. In addition, they have experience deploying similar types of moorings.

Deployment would consist of general layout and assembly of the complete mooring system including the potential inclusion of the Straininstall Shackle sensors and associated cabling. This will be done with OPT personnel on site to provide oversight. The mooring system will be placed aboard ship for final movement to the deployment site.

A sample deployment plan is included as an appendix to this report.

4.11 SOW 5.1.11 (A.11) Acquisition of the naval services support for the WEC deployment

It is OPT's recommendation to use a single contractor for mooring acquisition, mooring build and mooring deployment. It is also OPT's recommendation to use the same contractor for PB3 deployment. This will minimize the number of involved personnel and increase the ease of final deployment. Any of the three suggested contractors (Salmoboats, Walbusch, and Oxxean) are capable of deploying the PB3.

The PB3 will be lowered into the water via a crane at the AsaNav docks and towed past the local bridges by a small harbor tug. Once into deeper water, the buoy will be handed off to the final deployment contractor. Deployment of the PB3 and the mooring can be done with a single mission or (which is often the case) the mooring can be brought out to sea and deployed. The deployment vessels can then return to shore to retrieve the PB3 and bring it out for connection to the mooring and final activation.

OPT will work with the final deployment contractor to determine the best plan for deployment. Each of the surveyed contractors has sufficient expertise, equipment and ships to successfully deploy the PB3 and associated equipment.

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4.12 SOW 5.1.12 (A.12) WEC Deployment Operation

Due the capabilities of the various docks, depth of water and access to open ocean – the general plan would be as follows:

- The OPT personnel will perform final assembly and checkout of the PB3 quayside at the AsaNav facility. This will include reassembly of any topside equipment which was removed for shipment as well as assembly of the subsea umbilical.
- After final checkout of the equipment, elements not attached to the PB3 will be moved by truck from the AsaNav site to the deployment contractor's deployment vessels. This will include the ADCP, water sensors and subsea landing plates.
- The PB3 with the topside equipment and the subsea umbilical attached will be lowered into the water by crane.
- OPT personnel will perform initial buoy ballasting using a laptop via a local, short range Wi-Fi connection to the PB3.
- Once in an upright attitude, the PB3 will be towed by a small harbor tug past the nearby low bridges and handed off to the final deployment contractor.
- The deployment contractor will tow the PB3 to the deployment point for final checkout and connection to the mooring.



Figure 11 PB3 Under Tow

Deployment of the PB3 is performed with OPT personnel quayside and on-board ship advising the specific at-sea operations.

A detailed mooring installation plan will be developed specifically for this program. A sample procedure is included as an appendix to this report for information purposes only.

4.13 SOW 5.1.13 (A.13) WEC Operation and Maintenance

4.13.1 Operation

The PB3 requires no regular manual intervention to generate power. Once deployed, the buoy will autonomously capture wave energy and charge its internal batteries. That power is available for use at all times there is sufficient charge. If the remaining charge in the batteries runs to a low power state, a message will be generated by the buoy and provided via the various communications methods detailed below. In addition, a discrete signal will be sent to the payload such that a gentle shut down of the equipment can be commanded.

Low power signals will be provided at 1 hour, 30 minutes and 5 minutes of estimated operation available.

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Manual intervention is only necessary for deployment, recovery and to remove the buoy from Lockup (which only occurs in cases of critical bouy fault). During deployment and recovery, connection to the buoy is done through a low power, local Wi-Fi connection. All other intervention, monitoring and (when necessary) control of the buoy can be done remotely.

4.13.2 Buoy Tracking

The PB3 has an Iridium satellite tracking system included as part of its standard payload. The satellite tracker uses an independent power supply (battery) which can provide buoy location for up to 10 years. The tracker has its own solar recharging capabilities independent of buoy power. The buoy location can be monitored via the RedPort tracking service at <https://tracking.redportglobal.com/>.

The tracking is under password control.

RedPort Tracking provides geo-fencing services with alerts via both email and SMS text message. The site provides a series of reports and history of buoy location.

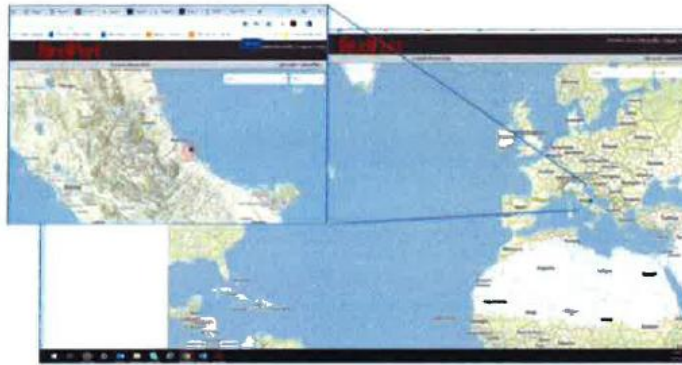


Figure 12 RedPort Tracking

4.13.3 Buoy Monitoring

The buoy provides regular output of information in the form of email and a monitoring application referred to as the OPT PB3 Customer HMI. These are described below.

4.13.3.1 Buoy Status eMail

The buoy sends a dedicated email providing current status. This email is sent to an editable list of recipients on an hourly basis. Included in the email is the following information:

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- Buoy Date/Time/GPS Location (this is independent of the Satellite Tracker described above)
- Current State including Voltage and Power information
- Various Buoy sensor information
- Any alarms which may have been set

A sample Status and Alert email is shown below. In addition to the regular buoy status email, the buoy will also send dedicated messages when specific faults are detected.

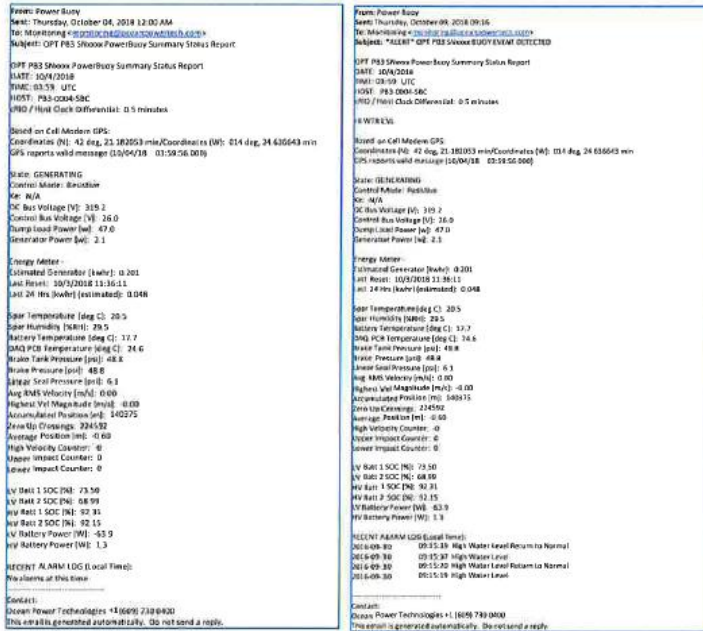


Figure 13 Sample Buoy Status and Alert eMails

4.13.3.2 OPT PB3 Customer HMI

The PB3 HMI is a remote application which provides direct access to the buoy information.

This application displays the instantaneous condition as well as history of the PowerBuoy™ conditions in designated time series. The PowerBuoy™ conditions of interest include General Battery status, GPS location data, and PTO data in three panels.

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(a) Default Screen

Figure 15 below is a screen shot of the default screen which displays Battery Status as well as the duty cycle of internal dump resistors.

There are four main display panels. The left side of the main window is the summary of most important instantaneous status, which is always displayed in the main window. The other three display screens include Battery Status, Data Display and Location.

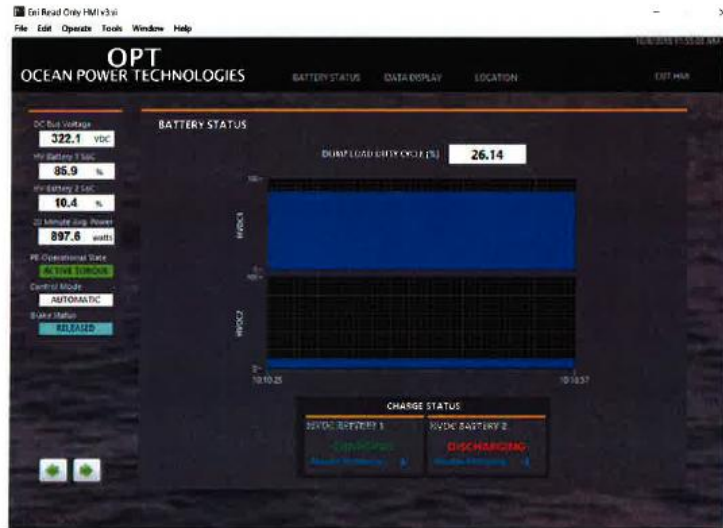


Figure 14 Main HMI Page

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Figure 15 Instantaneous Buoy Status

Important instantaneous status of the PowerBuoy™ is shown on the left the HMI window. Figure 16 is a sample of the displayed panel.

- DC Bus voltage: This is the voltage provided to the high voltage payload, as well as the voltage for charging the high voltage batteries. The nominal voltage is 300 VDC.
- HV Battery 1 SoC (State of Charge): This indicates the percentage of state of charge (SoC) of the high voltage battery #1. 100% is regarded as fully charged.
- HV Battery 2 SoC (State of Charge): This indicates the percentage of state of charge (SoC) of the high voltage battery #2. 10% is regarded as a low state of charge.
- 20 minutes Avg. Power: The value indicates the averaged power generated by the PowerBuoy™ in the most recent 20 minutes.
- PB Operational State: Shows one of the possible operational states of Power-Buoy™: Initialize, Wakeup, Active torque, Lockup, Standby.
- Control Mode: Indicates if the PowerBuoy™ is operating Automatically with entirely default settings, or Manual mode which may indicate one or more manual settings are in use.

- Brake Status: In the event of large storm waves or during transportation and deployment, the control system can lock the PTO. Brake Status shows if the PTO brake is Engaged or Released.

(b) Battery Status

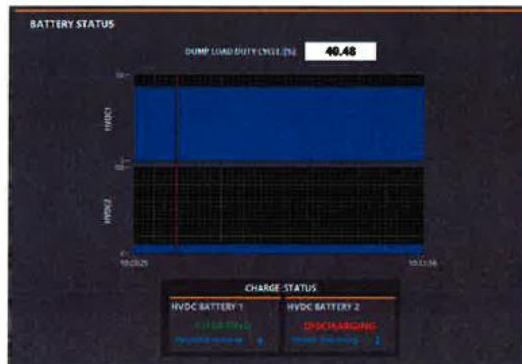


Figure 16 Battery Status

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There are two main high voltage Lithium Ion batteries in the PowerBuoy™, named HVDC 1 and HVDC 2 respectively. Battery Status panel as shown in Figure 17 displays the main status of the two high voltage batteries. Under typical operating conditions, the two HV batteries are connected in parallel, and thus should charge and discharge at close to the same rate and therefore have a similar SOC.

- DUMP LOAD DUTY CYCLE [%]: When the HVDC batteries are fully charged, the HVDC bus will start dumping the generated electricity through the DUMP LOAD to avoid overcharging of the batteries. The DUMP LOAD DUTY CYCLE could vary between 0% and 100%.
- Charge status (at the bottom of the panel) shows if the batteries are in "Charging" or "Discharging" status.
- Minutes Remaining in "CHARGE STATUS" shows the estimated time to be fully charged or fully discharged. 4 minutes remaining at "Charging" status means there are about 4 minutes to be fully charged. -3 minutes remaining at "Discharging" status means that there are about 3 minutes to be fully discharged. The negative sign means the panel is in discharging status. N/A means there is no valid signal which could be due to connection issues.
- The two time series viewgraphs in the middle of the panel are the states of charge of HVDC1 and HVDC2 batteries in percentage.

Right click of the mouse on the viewgraphs will prompt menus for various display options, including the graph items, scale and range options.

(c) Data Display

The data display panel can show various PTO operation data in instantaneous mode (DATA TABLE, as shown in Figure 18) or in time series mode (TIME SERIES, as shown in Figure 19).

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Figure 17 Data Display

The names or descriptions of most PowerBuoy™ data are straight forward and self-explanatory. Below are a few data names may need further explanations.

- **Spar Internal Pressure DAQ [psi]:** Most of the spar is sealed away from the water. There is a pressure sensor installed in the sealed Spar area. Normal pressure reading should be around 16 psi (absolute). Excessive pressure will trigger the High Spar Internal Pressure alarm will be ON (RED).
- **DAQ PCB Humidity and Temperature:** The reliable functioning of the main circuit board and certain electronics components require a more stringent environment. Therefore, the main circuit board monitors the Humidity and Temperature around it
- **PTO Position and Velocity:** The float moves up and down the spar in response to the motion of the waves. The relative motion of the float with respect to the spar drives the PowerBuoy™'s generator. The PTO Position shows the relative travel distance between the float and the spar, with 0 ideally being when the float is centered at the water surface. When there is no relative motion between the float and the spar in clam sea state, the PTO position and velocity will be close to zero.
- **Top Spar Humidity and Temperature:** The sealed area of the spar has a humidity sensor and a temperature sensor near the top of the spar.
- **Accumulated Position:** This accumulated position shows how much total vertical travel has occurred between the spar and the float since the last controller power cycle.
- **Position Latitude (N-S) and Position Longitude (E-W):** The GPS on the PowerBuoy™ constantly gives the exact location of the buoy. The first two digits to the left of the decimal place are always whole Minutes,

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the next digits to the left of the minutes are who degrees. The digits to the right of the decimal place are fractional minutes. For the example shown in Figure 6, with Latitude of 4019.79 longitude of 7427.82, this converts to 40deg 19- and 79/100-minutes Latitude, 74deg, 27- and 82/100-minutes Longitude.

(d) Digital Outputs

Digital outputs will show the status of three (3) important switches. Blue color means the output is enabled. White color means is disabled.

- Dump Load 1 (or 2) Enable: shows if the internal Dump load resistors is dumping power.
- Upper JBox Payload Switch: There is an upper Junction Box where a payload switch is located. RED color in the signal box means the switch is turned on.

(e) Alarms

Various Alarms will be triggered when the obtained data is out of the specified range. Red color means the alarm is triggered. White color means there is no alarm.

- Low Battery SoC: RED box means one of the HVDC batteries has reached low state of charge. Payloads need to be prepared for a temporary shutdown.
- High DC Bus Level Warning: RED box means the generator is generating more power than is being consumed resulting in a higher buss voltage, and a possible PTO lockup and shutdown could be expected.
- High HVDC Bus Pos-Gnd, High HVDC Bus Neg-Gnd: The buoy is designed such that HVDC Bus is centered about chassis ground. A RED box means the voltage of the positive or negative leg of the HVDC bus with respect to chassis ground is higher than expected.
- High DAQ Temperature: The temperature of the main PCB within the PTO.
- High Water Level: There are two water level sensors in the buoy. High Water Level means the water at the bottom of the spar has reached the specified water level due to a leak.
- High High Level: The second water level sensor is installed slightly higher than the first water sensor. High High Level RED additional water has entered the spar, and level is above the first water level sensor.
- CPU High Utilization: RED means the CPU of the on-board computer is running intensively.
- GPS Watch Circle Alarm: RED means the buoy has drifted out of the designated circle, which is 250 m radius from the center.

(f) TIME SERIES in DATA DISPLAY

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There are two viewgraphs which could be used to show any two of the selected data in time series. Figure 19 shows the Time Series display of two selected data.

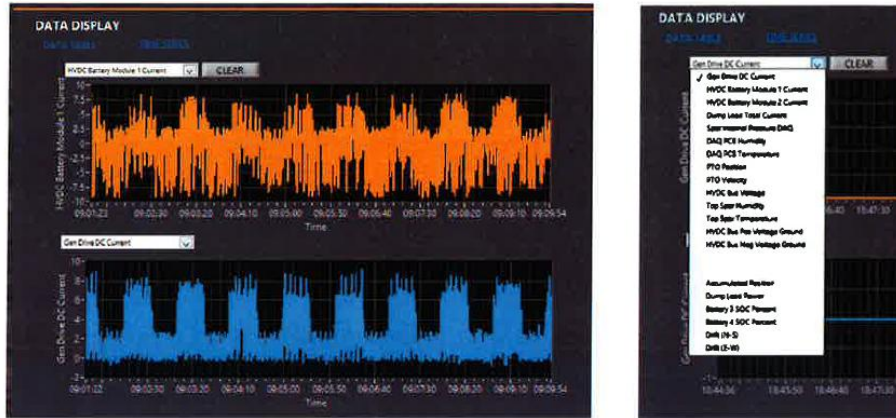


Figure 18 Time Series Data

(g) LOCATION

LOCATION panel shows the details of exact position of the buoy. The origin of this circle is the anchored position of the buoy. The actual buoy position will be shown on the GPS circle which has an outer radius of 250 meters. GPS Messages is shown at the bottom of the graph.

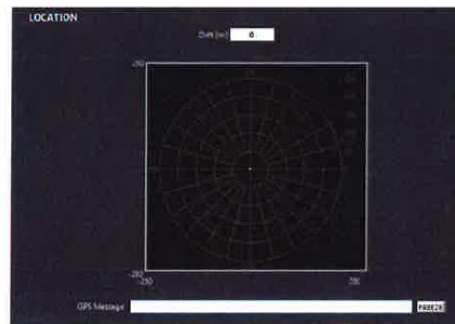


Figure 19 GPS Location

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4.13.4 OPT Buoy Monitoring

The below description is general in nature. A detailed monitoring and response plan will be developed as part of the detailed design for this deployment. The detailed plan will include the specific response scenarios available from OPT based on a set of buoy conditions as well as specific contact information.

OPT will monitor the buoy throughout its life. During the initial days of deployment, OPT provides continuous monitoring of the buoy via a proprietary HMI. The HMI (similar to the customer HMI described above) provides a detailed status of the buoy state and also provides direct access to the control system allowing us to adjust the buoy operation if necessary. This HMI also allows us to reset buoy state in case the system goes into lock up during severe storm conditions or certain faults. The continuous monitoring will be replaced over time with an autonomous monitoring solution which provides our operations and engineering organization with detailed buoy data. Alerts and fault conditions will still trigger alarms (email and HMI based) in real time for our team to respond to. Included with the HMI monitoring, OPT receives the buoy emails described above and can be available to respond to customer queries based on the information received.

Lastly, we have several alarm conditions set within the RedPort Satellite Tracker system which will notify several members of our operations and engineering staff of buoy location and tracker condition. If the buoy exits a geofence or the tracker stops functioning (low battery, failure, etc.), OPT will be alerted by both email and SMS text message.

Again – the specific responses will be written into a detailed operations plan for this deployment.

4.13.5 Maintenance and Repair

4.13.5.1 PB3 Maintenance

The PB3 is designed for a 10-year life with a three (3) year maintenance cycle. At three years the PB3 will be disconnected from its mooring and towed back to the AsaNav dock for maintenance. Depending on the condition of the buoy when it comes out of the water and the available capabilities, maintenance can be done quayside in Chile. If there are insufficient facilities quayside or if there is need for extensive work, the buoy may have to be shipped back to the OPT facilities. Maintenance includes the following:

IPTO:

- Replacement: entire PCA assembly i.e. entire system from lower to upper clevis
- Replacement: Linear seal bellow
- Maintenance: Visual inspection of all other components in the IPTO. Replacement may be needed based on condition of the components.

Structure:

- Replacement: Satellite tracker assembly

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- Replacement: Marine bacon (most likely batteries only depending on its condition)
- Replacement: all the anodes on the structure
- Maintenance: Cleaning and repainting of the structure as needed. Touchup paint may be enough but depends on the conditions of paint on the structures.
- Replacement: All the gaskets (lower hatch, inner hatch, lid, and access flanges on the lid)
- Replacement: All the bolts on the structure

4.13.5.2 Sensor Payload Maintenance

The current design of the subsea payload specifically supports the regular maintenance of the various sensors deployed. It is our intention to provide a landing plate at the end of the umbilical which will connect to an armored cable which will run across the sea floor to the ADCP and moored water quality sensors. The armored cable will be long enough to allow for the raising of the ADCP and sensors from the sea floor to the surface without disconnecting it from the buoy. At the surface, the regular maintenance can be performed. This primarily includes the removal of any sea life and an inspection of the units and various connections. The sensor suite can then be lowered back to the sea bed.

Additionally, any sensor changes can be made depending on the type, connection and power requirements. Some planning along these lines can be done during detailed design of the subsea solution.

4.13.5.3 Repair

In the event that a failure is reported, the OPT team will assess the fault and determine a course of action to restore the buoy to full functionality. Some faults with the buoy electronics and control system can be reset remotely. Some faults with latch and will require physical presence to reset. In addition, mechanical failures of the topside structure or loss of signal will also require physical presence to assess any damage and develop a repair plan. Ideally the buoy would be repaired at sea. If necessary, it will be removed from its mooring and towed back to the AsaNav docks for repair.

4.14 Additional Information

4.14.1 Inspection/ Emergency Response

All of the deployment contractors mentioned in this report have inspection capability, but all operate out of Puerto Montt so would not be available for immediate response if necessary. To that end Professor Gonzalo Tampier and OPT had a conference call with a marine services company (Skyring Marine) that specializes in bathymetric studies. More importantly they have small boats and divers in Valdivia that can be available for emergency response. Their primary vessel would be capable of resetting an anchor if necessary, however it may be deployed when we might need it. They do have a resident boat in Valdivia that can be available on very short notice and doesn't leave the area. This is a small fiberglass launch that has some dive support capability.

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OPT will perform additional work to identify the right solution for Inspection and the development of a detailed Emergency Response plan.

4.14.2 Travel/In country

Valdivia is very much a modern city with all the amenities necessary to support a successful deployment. There are several hardware/construction supply houses and a Sherwin Williams paint supplier nearby. Valdivia is a university town and the streets are safe and well-lit at night.

There is limited mass transit in Chile outside of air travel. There are local buses, but their routes will be difficult to grasp for non-Spanish speakers. Rental cars are readily available, including pickup trucks, and the traffic around Valdivia is no worse than cities in NJ, maybe better. Traffic patterns are easy to understand and travel in general by road will not be a problem.

Air travel is easy and modern. LATAM is the in-country provider and there are several flights daily to Valdivia from Santiago. Rates are on par with flights in the US. There was no problem with checked baggage or carry on and the locals utilized both options in equal measure.

OPT and EGP representatives stayed at the Hotel Diego de Almagro. It is a full-service hotel with rates comparable to similar US hotels. There are a few other options such as hostels and Air B&Bs but for the limited duration of our anticipated stays the area hotels should suffice. Though Valdivia does have a tourist season in the summer it is not expected that there will be an availability problem.

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5 GROUP B - CUSTOMIZED OPTIONAL SOLUTIONS

5.1 SOW 5.2.1 (A.1) PB3 standard supply EXW definition

The PB3 is provided with several elements as part of the standard payload. These items are provided as part of the base buoy and do not affect any additional sensors or elements added for a specific deployment. The layout

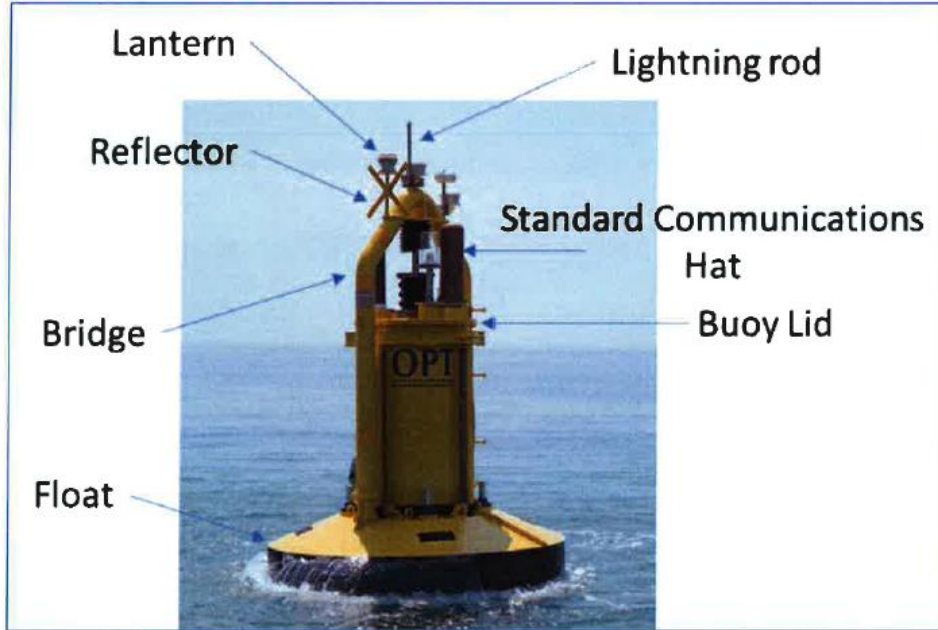


Figure 20 PB3 Standard Topside Elements

of which are shown in the figure above. Included with the PB3 is a Carmanah M650 Solar Marine Lantern which is a self-contained, high performance light source. It's flashing pattern is programmable to support deployment in a multitude of geographical locations. Within the standard communications enclosure (hat) – the PB3 comes standard with a Cradelpoint IBR900 LTE ruggedized router which provides both dual band 802.11 a/b/g/n/ac Wi-Fi and 4G/LTE Cellular for communications and its associated antennas. The base Wi-Fi is a local, short range connection used specifically for buoy deployment and retrieval on site. The cellular connection is a standard buoy component and is available for either primary or backup communications with the buoy. The router provides a VPN endpoint and firewall for secure buoy control. The WAN inputs to the router also allow for the inclusion of

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various additional buoy-to-shore communications paths including specific cellular operators (Tampnet, etc.), satellite and specialized data links. For the EGP deployment a dedicated, long range, directional Wi-Fi solution will be added to the buoy. The Cradlepoint IBR900 also provides GPS location via a dedicated GPS antenna and internal receiver. The GPS information is available from within the buoy network. The PB3 also includes a satellite tracking system which provides continuous location information for the buoy from the moment it leaves the OPT facility, through transport and deployment allowing for response to any deviations from the buoys expected location. The tracker is an independent, battery powered unit thereby ensuring location information during low power events on the buoy.



Figure 22 Cradlepoint IBR900



Figure 21 Carmanah M650 Light

Figure 16 below shows a top view of an unpopulated PB3 lid. The PB3 can support upwards of 100 kg of customer payload without the need for additional buoyancy measures. The design of the PB3 is such that there are power, discrete and networking connections available at various locations on the buoy lid. These mounting locations – called hats are available for the integration of custom payload equipment. The enclosures are water tight containers for the various payload elements, designed to withstand significant wave slam events and underwater drag pressures in 100 year storm conditions. Custom equipment ranges anywhere from customer specific communications means (Long-range Wi-Fi, Satellite, etc.) to weather sensors, radar and various cameras. Some of the customer specific elements are contained within the various hats themselves. Additional mounting means (tripods, enclosures, brackets, etc.) can be mounted on top of the lid structure within the specified weight limits and buoyancy needs of the total structure. The specific topside needs of the EGP deployment include a dedicated, long-range, directional Wi-Fi communications suite and a data acquisition system (DAQ and single board computer).



Figure 23 Unpopulated Buoy Lid

Some of the customer specific elements are contained within the various hats themselves. Additional mounting means (tripods, enclosures, brackets, etc.) can be mounted on top of the lid structure within the specified weight limits and buoyancy needs of the total structure. The specific topside needs of the EGP deployment include a dedicated, long-range, directional Wi-Fi communications suite and a data acquisition system (DAQ and single board computer).

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It is expected that an enclosure similar to the one shown in Figure 15 will be developed to enclose the Wi-Fi transceiver and any additionally necessary components for the data acquisition, storage and transmission. The final shape, dimensions and connector placements will be defined during detailed design prior to buoy build. This enclosure will receive its power and network and data connections through one of the hats depending on what signals are necessary. In addition, subsea data may come into the customer payload enclosure via an external route. The specific cable routing and signal connections will be determined during detailed design.



Figure 24 Typical Customer Enclosure

In addition to the customer enclosure to house the top side customer payload, a structure and custom enclosure will be developed support and protect the Wi-Fi antenna necessary for buoy communications with the shore. Depending on the final requirements of the means of transmission, the Wi-Fi antenna may have to be elevated a significant distance above the lid of the buoy. OPT will design and manufacture the specific solution necessary to minimize risk to the program. Masts and other structures (tripods, etc.) have been designed by OPT which provide upwards of 3 meters of elevation strong enough to survive 100-year storm conditions in the North Sea which includes extreme drag pressures and wave slam events. Above the mast, a water tight enclosure made of radiant energy transparent material (PVC or similar) can be manufactured to protect the selected antenna if necessary.

5.2 SOW 5.2.2 (B.1) Feasibility of Long-Range Wi-Fi Communications System

5.2.1 Baseline Communications

The PB3 and associated payload require a secure connection to shore. Based on the selected deployment point, there are three possible communications means available. Satellite connectivity is possible but due to the limited bandwidth and high cost of both the hardware and the data transfer, this is not considered a viable solution for this deployment. Cellular is expected to be available at the deployment site. The connections are expected to support 3G speeds and reliability of the connection is something which would have to be investigated. It is the intent of the OPT team to use this data path as a backup for buoy control only in case of loss of the primary communication means.

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Figure 26 UACH Calfuco Laboratories

Due to the location of both the deployment site being within a relatively short distance of the shoreline (~4 km) and the location of the UACH laboratories on a cliff overlooking the sea, the use of long-range Wi-Fi is recommended. The distances involved are well within the range of connections used on many previous OPT deployments. The solution will include a long-range directional Wi-Fi antenna mounted atop the buoy lid with an associated base station on shore. At the time of the writing of this report, there was a relatively low bandwidth microwave transmitter between the selected location of the shoreside base station and the UACH main campus. Ideally, due to the relatively low bandwidth available over this microwave connection, the sensor data transmitted to the shore from the PB3

will be captured in long term storage within the shoreside server for manual access by local personnel (via thumb drive or some other removal data storage means). Due to the requirement that OPT have direct access to the buoy (for monitoring and control) – we would recommend that the microwave connection be left free for OPT use. If a higher bandwidth, more reliable communications path between the shoreside server and the internet exists at the time of deployment (cellular or wired internet connection) better remote access to the data and the buoy will be possible. A notional communications diagram is shown in Figure 10. This solution uses the existing OPT available elements.

With the addition of a SuperPass SPDG 12F Wi-Fi antenna on the buoy and an associated transceiver on the shore, a reliable communications path will be available. It would be our intention to then use various secure, cloud solutions for both data access and monitoring as well as buoy control.

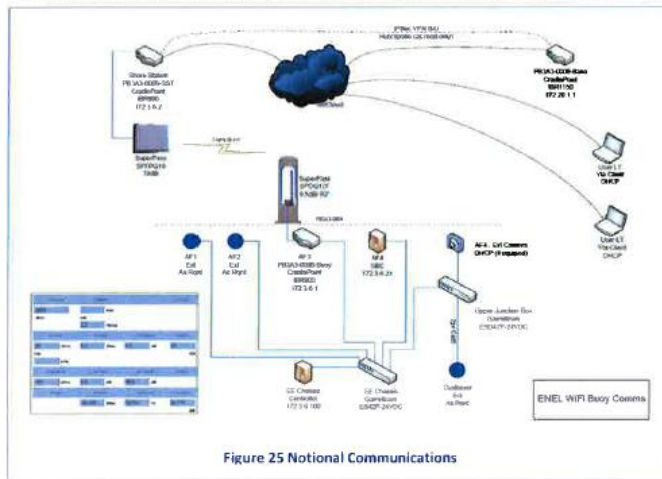


Figure 25 Notional Communications

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The shoreside solution will include a SuperPass SPFG19 Directional antenna and an accompanying Cradlepoint IBR900 modem. Included in the shoreside solution will be sufficient server capabilities (Dell PowerEdge XR2 Rugged Server or similar) and storage to meet the specific needs of this mission.

OPT expects to be able to support upwards of 108 Mbps of data transfer over the basic wireless link. With the inclusion of amplified bullet antennas we can improve that number. We will work during detailed design to find the optimal power for the system which will support the necessary data transfer and buoy access.

These solutions are, at this time notional depending on the specific data payloads and bandwidth requirements. This will be driven by the data the various consumers are going to capture and the timeliness of their required access. Real-time, high fidelity data often carries a significant overhead for transfer and an intelligent data transfer scheme can be developed such that data is compressed and moved offboard in support of the program needs. One method would be the streaming, in near real time of all sensor data to the shore. Another would be to capture data onboard the PB3, compress the data package and transfer it offboard on a regular schedule (once per hour for example). The specifics of the data transfer scheme will need to be defined during detailed design.

5.2.2 Sensor Data

As mentioned, (at the time of the writing of this report) there is limited communication between the shore-side transceiver and the UACH facilities. At the time of the survey done for this proposal – there was a single microwave communications path available. This limited pipe will make it difficult to transfer the high-fidelity sensor data directly to its consumers. It is OPT's recommendation that a mass storage device be included with the immediate shore side station along with a means to access the sensor data (via a terminal or removable storage)

5.2.3 Security

To ensure the security of buoy state data and control, a VPN tunnel is created between the OPT facilities and the buoy in the water. This tunnel provides an encrypted path preventing any malicious actors from accessing the critical buoy systems. A firewall is set up in the OPT Cradlepoint modem adding an additional layer of protection for the buoy control electronics.

OPT recommends that all sensor data captured onboard the PB3 be encrypted as well. Data at rest within the DAQ and other processing systems can be encrypted and transferred via an encrypted link. When stored on the shoreside receiving station, access to the system should be under strong password control and the data itself should be encapsulated in an encrypted package.

5.2.4 Inclusion of Sea-Tech

The inclusion of the specific Sea-Tech solution will be added to this deployment as details are made available.

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5.3 SOW 5.2.3 (B.2) Feasibility of Data Acquisition System (DAQ)

OPT does not integrate customer payloads directly with the PB3 control system. The inclusion of too many additional signals and data handling and processing requirements can impact operation and stability of the PB3. In addition, it can introduce new risk items that would require extensive testing to mitigate. Customer payload connections to the main controller can also expose data and power lines to external noise, faults, or surges that could potentially be damaging.

Customer payloads are integrated with the PB3 using commercial PLC modules, DAQ modules, or even Arduinos packaged into a standalone payload box, with the only interface to the OPT system being the payload power inlet connector and the data ports (Ethernet, discrete signals, RS232, raw sensor data, etc.).

The baseline PB3 is designed with this in mind. Both power and data connection are available within the customer hat enclosures on the PB3 lid. Custom, water tight enclosures are designed to house customer DAQ's, sensors and communications transceivers.

For EGP, OPT recommends we provide a dedicated cRIO controller in a separate chassis mounted on top of one of the empty customer hats. During detailed design we will determine the final data capture and transfer scheme and will size a solid-state mass storage device to support it. Standard off the shelf multi-terabyte drives are readily available.

5.4 SOW 5.2.4 (B.3) Feasibility of Sensors for Mooring System

5.4.1 Straininstall Load Shackles

Three Straininstall Load Shackles can be included in the mooring system to measure the marine loads on the mooring and the buoy. These shackles will reside at the point where the upper and lower bridles are connected to the three tethers (see Mooring Configuration in Figure 9 above).

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Figure 27 Straininstall Subsea Load Shackle

Due to the sea states and the movement of the mooring a custom cabling system will be developed to provide the necessary signal information to the buoy DAQ. A preliminary look at several potential solutions has been undertaken. The current design solution has a separate data umbilical running from each of the shackles directly to the buoy spar. It is felt that wiring running along the bridles (either upper or lower) runs a greater risk of breaking under the various loads seen by the mooring. It is our intention to work with Straininstall in the development of the best method to get the shackle data to the DAQ.

The shackles operate by measuring the relative flexion of the pin via a series of strain gauges inserted into the pin and wired to the end cap connection.

In order to correlate the sensed loads on the shackles with the buoy movement – independent GPS position information obtained from the internal Cradlepoint modem will be provided. This GPS receiver has its own antenna encased in an RF transparent enclosure which sits within the OPT standard Communications Hat.

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5.4.2 Load Pins (alternate)

An alternate method of capturing mooring loads is with a set of load pins inserted into the mooring clevis (see Figure 22 below). Though OPT has worked with Pulse and the IntegriPod in the past, Strainstall also provides a similar Load Pin mooring sensor. The specific details of the Strainstall mooring sensors including their design, connectors, lead times and costs have not yet been determined. If it is deemed a lower risk solution to use a load pin as opposed to a shackle to monitor the forces on the mooring system, these will be investigated further. A description of the Pulse solution is included here for informational purposes only at this time.

A set of six (6) load pins can be used to measure the various loads on the mooring system at the point it attaches to the buoy. The Mooring Line Tension Monitoring System comprises a data acquisition element (Pulse standard INTEGRipod-NXT or similar) and six single axis load pins. Mooring line tension is measured using load pins fitted into each of the six mooring line shackle clevis'.

This solution is currently being designed into a PB3 deployment. Due to its location against the buoy body itself, the risk of losing the wiring connections to the DAQ is minimized. The load pins are manufactured to be a direct replacement for the existing clevis pins. Each load pin has a subsea electrical connection on one end to enable connection to the data acquisition system. Like the shackles above, the pins operate by measuring the relative flexion of the pin via a series of strain gauges machined into the pin and wired to the end cap connection.

If necessary, the wiring for the six pins will be routed down the length of the buoy to the data acquisition unit

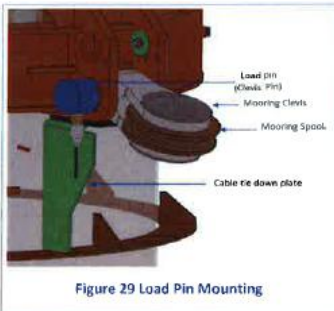


Figure 29 Load Pin Mounting

mounted externally to the lower part of the buoy spar. The specific data acquisition solution will be determined during detailed design. The specific need for data acquisition and consolidation for the load pins separate from the rest of the sensor suite will determine the final solution and associated wiring. The INTEGRipod and similar data logging solutions in conjunction with load pins and other external sensors are designed specifically to capture the motions of various marine objects. Depending on the final components chosen, they contain all of

the electronics, batteries and sensors enclosed in a pressure rated and corrosion resistant casing.



Figure 28 Sample Load Pin



Figure 30 Data Logger

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5.5 SOW 5.2.5 (B.4) Feasibility of the Water Quality Sensors

5.5.1 Water Sensors

A set of suggested water sensors was reviewed for inclusion in the EGP deployment. Based on the information provided, the following parameters need to be captured for the duration of this deployment:

- Conductivity (C)
- Temperature (T)
- Density (D, measured via pressure)
- pH (DS5X)
- Dissolved Oxygen (D.O. or O2)

Optional:

- Fluorescence
- Chlorophyll
- CO2
- UV radiation
- Water turbidity

OPT evaluated the Hydrolab DS5X CTD, the AML Metrec-X CTD and the NKE Sambat for inclusion in this effort. Our review consisted of evaluating their ability to capture the necessary parameters, their ability to be mounted directly to the buoy (or if a separate deployment means was necessary), the power consumed by each and the means by which data is captured and transferred from the sensor. Our review is summarized in the table below.

A review of the table has led us to suggest that the Hydrolab DS5X CTD will be the best overall sensor to meet the specified needs. The Hydrolab DS5X CTD provides plenty of simultaneous DAQ channels for all 5 out of the mandatory parameters requested by the customer. If mounting of the sensors directly to the PB3 is desired, the sensor unit can be mounted to the spar structure using fixed clamps or straps at either of the desired depths of 5m and 15m.

Data collection is supported using an RS-232 connection. A RS-232 to USB adapter will be used to connect to a dedicated single board computer or Computer Stick running Windows 8 or Linux. This will be used primarily for the data collection and calibration. The dedicated computer can be remotely controlled if the long-distance Wi-Fi connection is operational.

In conclusion, using 2x Hydrolab sensors units will be able to measure all the parameters and be suitable for its application at both the 5m and 15m depths. Though all three of these suggested sensors can be implemented with the PB3 we will work with the EGP and UACH to determine the precise solution during detailed design.

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Sensor	Measurable Parameters	Buoy Mountable	Power Consumption	Data Transfer	Software Required	Usable on the PB3 Buoy
Hydrolab DSSX CTD (Recommended)	<ul style="list-style-type: none"> • Temperature* • Conductivity* • Depth • pH* • Pressure (Integrated) • Oxygen Reduction Potential (ORP) • Dissolved Oxygen (LDO)* • Dissolved Oxygen (Clark Cell) • Turbidity* • Chlorophyll a* • Blue-Green Algae • Rhodamine WT • Ammonium • Nitrate • Chloride • Total Dissolved Gas (TDG) • Ambient Light 	<ul style="list-style-type: none"> • Yes • Minimum depth of 1m • Maximum depth of 225m • The sensor may need additional protection when structure mounted to protect from floating debris 	12VDC Regulated (Unspecified current draw)	<ul style="list-style-type: none"> • SDI-12 • RS-485 • RS-232 • TTY 	Hydras 3 LT for calibration	Yes
AML Metrec-X CTD	<ul style="list-style-type: none"> • Temperature* • Conductivity* • Pressure* • Turbidity • Phycoerythrin (BGA) • Chlorophyll a* • CDOM/FDOM 	Yes Mountable with pipe clamps	10-36V Regulated input (Unspecified current draw)	RS-232 RS-485	Unspecified	Yes, may need to create a custom data logging program

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Sensor	Measurable Parameters	Buoy Mountable	Power Consumption	Data Transfer	Software Required	Usable on the PB3 Buoy
	<ul style="list-style-type: none"> Fluorescein Rhodamine Crude Oil Refined Fuels pH Dissolved Oxygen PAR 	The sensor may need additional protection when structure mounted to protect from floating debris				
NKE Sambat	<ul style="list-style-type: none"> Conductivity for the calculation of salinity Temperature Depth Turbidity Chlorophyll a Phycocyanin Phycocerythrin Dissolved oxygen pH Redox Hydrocarbons detection 	<ul style="list-style-type: none"> Yes Max depth of 30m for Wireless or Serial data transfer Max depth of 50m for Serial data transfer only 	No information about operation voltage or power consumption	<ul style="list-style-type: none"> Wireless Integrated GSM modem (TI) Modbus serial communication. 	Nke Data Pencil Kit	Yes

5.6 SOW 5.2.6 (B.5) Feasibility of Additional Cables for Payload Sensors

In order to provide both power and data connections to the subsea sensor suite – a Kevlar protected umbilical will be attached to the underside of the PB3. A junction box mounted to the lower end of the buoy spar providing a connection to the existing buoy cabling will be developed. This will provide a means for the buoy connections

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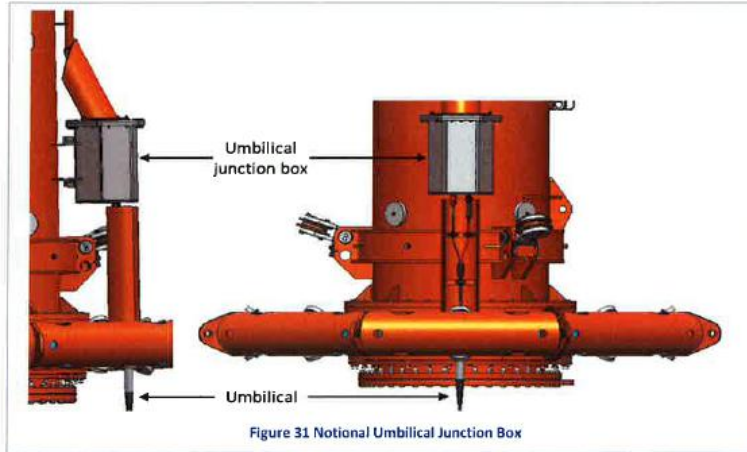
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to pass through the buoy heave plate and connect to the umbilical. OPT has designed similar solutions for previous deployments and will use these as the basis of the design for EGP.



The proposed umbilical will support power and data connections. The umbilical will be a hybrid single mode/multimode optical fiber with Kevlar protection. The umbilical will run from the Junction Box shown above on the base of the PB3 to a landing plate on the sea floor. From the landing plate, an armored cable will be run along the sea floor to the ADCP. The length of the armored cable will be enough to lift the ADCP to the surface for maintenance and the replacement or change of any sensors. A second landing plate will contain the mountings for the ADCP as well as a means to anchor the subsea water sensors. The subsea water sensors will be floated up from the second landing plate to the correct depth. This solution will provide a single umbilical for both power and data from the subsea sensor suite (ADCP and water sensors) to the PB3.

With this solution – a second junction box can be placed on the second landing plate with connectors thereby creating a way to change the various subsea sensors with no impact to any of the existing deployed equipment assuming the connections match those initially implemented.

The specifics of the subsea connections the Plug-and-Play capability of the junction boxes will be considered in greater detail during detailed design.

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5.7 SOW 5.2.7 (B.6) Feasibility of an ADCP System

For the measurement of undersea conditions, an Acoustic Doppler Current Profiler (ADCP) was requested. The Flowquest 600 ADCP was reviewed for inclusion in the EGP solution.

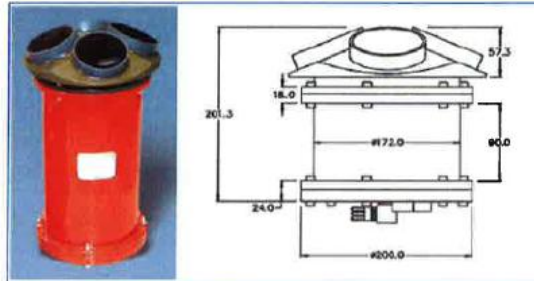


Figure 32 FlowQuest 600 ADCP

The FlowQuest 600 can measure to a maximum range of 100 meters and supports a standard depth of 800 meters. The FlowQuest provides an interface to and can log data from up to 7 third-party instruments including various water quality monitoring instruments through RS 232 serial ports.

The PB3 umbilical will be able to provide sufficient power and data connections to support an ADCP of this type or something similar. Units of this type support various communications means including RS232 and RS422. The specific data collection plan will have to be developed during the detailed design phase of this program. The rate of data capture will determine the amount of data captured which will in turn support the completion of the data storage and data transfer scheme.

Initial review of these sensors was based on the sending of periodic (e.g. hourly statistical data). If higher fidelity data is desired, the ADCP is capable of streaming data but the data rate will be limited by the RS422 connection. Typically, RS422 is able to provide data rates of up to 10 Mbps at distances up to **50 feet (15.24 metres)**. However using reduced data rates, RS422 is able to transmit data over distances of 4000 feet (~1220 metres): the maximum is 100 kbps at this distance.

5.8 Additional Undersea Elements and Needs

As described above, though the buoy itself is designed for a three (3) year maintenance free deployment, the sensors selected often require regular, hands-on support. The ADCP and potentially the other marine sensors may need to be maintained (cleaned of marine life and other debris) on a regular basis. In addition, if there is a

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desire to change the sensor suite to add or change the parameters measured, a way to remove or add sensors is necessary.

The exact design and configuration of these elements will be developed during detailed design.

5.9 Meetings

Ocean Power Technologies will hold regular meetings in support of the final design, build, test, integration, transport and deployment of the PB3 for this effort. We plan to support weekly internal meetings specific to the EGP program along with our regular buoy build meetings. Additionally, we expect to support meetings with the various contractors involved including EGP, UACH and any of the other contractors selected. We expect these meetings to include regular status meetings as well as technical and programmatic meetings as needed.

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6 CONCLUSION

OPT does not see any significant difficulties with deployment of the PB3 to provide power and a stable structure for Enel Green Power (EGP) in conjunction with the Universidad Austral de Chile (UACH) Calfuco Coastal Laboratories (UCCL) to monitor sea conditions around an autonomous wave energy converter (WEC) for the MERIC VTB Project. The various elements identified for this deployment do not present any difficulty for OPT to support. OPT has extensive experience in communications over far greater distances than those required here. We have developed various structures and elements above the lid as well as subsea sensors and umbilical's for deployment in multiple locations. Assuming sufficient wave activity is available for battery charging, we see no hindrance to a successful deployment of the PB3 at the selected site.

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7 APPENDIX A - MOORING ANALYSIS

7.1 Analysis Methodology and Assumptions

The methodology and assumptions for mooring analysis follows the guidelines and industry practices for the offshore mooring systems.

- DNV-OS-E301 [2] and API RP 2SK [3] is used for mooring design criteria.
- The analysis was performed using OrcaFlex.
- The analysis was performed assuming flat seabed.
- Assumptions were made for unavailable environmental criteria.
- Due to the minimal projected area of the PB3 above the water surface, no wind loading is defined in the model.
- A Gumbel distribution is used to calculate the extreme values (maximum tensions and offsets) from all runs to generate the most probable maximum (MPM).

The following methodology and assumptions are used for this feasibility study:

- The analysis was performed using 3-hour simulations with 4 random wave seeds. The verification study of using 4 seeds were performed and showed 1–2% margin of error.
- The wave and current were applied collinearly from same direction.
- Three headings (120°, 150°, and 180°, i.e., in-line and between-lines) were used to determine the maximum line tensions and PB3 offset.

7.2 Mooring Analysis Results

7.2.1 Mooring Configuration 1

The mooring analysis results for configuration 1 is shown in Table 6.

Table 7: Analysis Results for Mooring Configuration 1

Configuration 1 - 1.5" Chain	
	Max Line Tension

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	Upper Bridle (kN)	Lower Bridle (kN)	Tether (kN)	Plasma Mooring (kN)	Chain Mooring (kN)	Anchor (kN)	Max Offset (m)
MBL	653.9	653.9	745.0	745.0	1188.0	235.0	
Max	177.3	73.1	221.0	222.1	222.0	211.8	15.6
SF	3.69	8.95	3.37	3.35	5.35	1.11	

7.2.2 Mooring Configuration 2

The mooring analysis results for configuration 2 is shown in Table 7.

Table 8: Analysis Results for Mooring Configuration 2

Configuration 2 - 1" Chain with 3 1t clump weights							
	Max Line Tension						Max Offset (m)
	Upper Bridle (kN)	Lower Bridle (kN)	Tether (kN)	Plasma Mooring (kN)	Chain Mooring (kN)	Anchor (kN)	
MBL	653.9	653.9	745.0	745.0	835.0	235.0	
Max	169.0	61.3	233.0	232.5	232.5	225.3	11.8
SF	3.87	10.67	3.20	3.20	3.59	1.04	

7.2.3 Mooring Configuration 3

The mooring analysis results for configuration 3 is shown in Table 8.

Table 9: Analysis Results for Mooring Configuration 3

Configuration 3 - 1" Chain with 3 1t clump weights and 1mt Anchor							
	Max Line Tension						Max Offset (m)
	Upper Bridle (kN)	Lower Bridle (kN)	Tether (kN)	Plasma Mooring (kN)	Chain Mooring (kN)	Anchor (kN)	
MBL	653.9	653.9	745.0	745.0	541.0	157.0	

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Title: Feasibility Study of Deployment of the PB3 for Enel Green Power

Revision: 0.1

Max	180.7	82.9	230.8	228.9	228.9	214.7	11.3
SF	3.62	7.89	3.23	3.25	2.37	0.73	

The anchor was changed to 1mt in this configuration in case there were no large work boats available in the region.

As shown, the safety factor for the anchor is 0.73 and does not pass the API RP 2SK criterion.

This configuration could be used with no additional analysis if a large enough anchor could be sourced.

7.3 Conclusion

The analysis results show that configurations 1 and 2 meet the requirements for mooring.

A site visit from OPT to the region showed that the area is well-equipped with work boats due to the development of the fish farm industry. With the alternative anchor, configuration 3 will also be sufficient to provide mooring to the PB3, based on the analysis.

However, a further detailed design and analysis with the comprehensive environment data is required for an acceptable mooring system design.

7.4 References

- [1] G. S. Adriana Carillo, "Analysis of the Resource in Calfuco".
- [2] "Position Mooring DNVGL-OS-E301".
- [3] "Design and Analysis of Floating Stationkeeping Systems for Floating Structures API RP 2SK," June 2015.

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8 APPENDIX B – SAMPLE DEPLOYMENT PLAN

8.1 (Sample) Deployment Overview

On arrival at the deployment location and after the PB3 is in the water, the T1 will position the PB3 between the mooring chain buoys for line 1 and line 2. The sample step-by-step procedure and drawings show Line 1 as the first connection and this is to be preferred if the weather is suitable.

The direction of the PB3 drift should be identified to aid in the deployment. It is also assumed that the connection will take place in daylight with the relatively benign weather criteria.

After lines 1 and 2 are connected to the PB3, line 3 will be connected. Note that if excessive tension is present in this line, the suitable spacer lines should be added to achieve the desired pretension. The sample layout of the mooring system is shown in Figure 5.

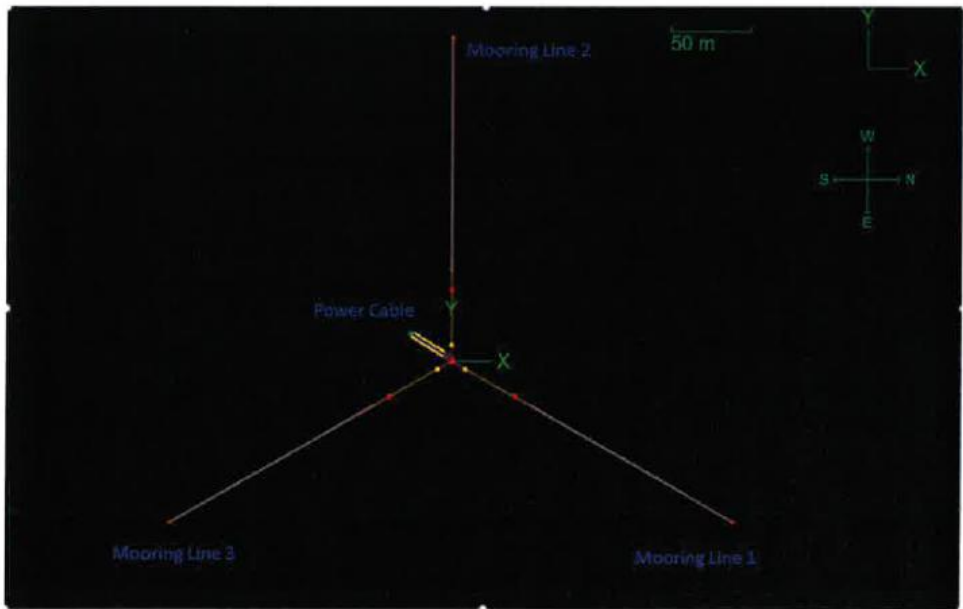


Figure 33: Notional Mooring system layout
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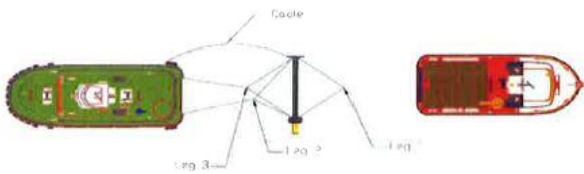
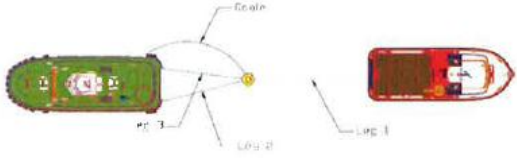
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8.2 (Sample) Connection to Mooring

The connection of mooring lines 1 and 2 are identical. The connection of line 3 will vary as the line length may require adjustment to achieve the desired tension. The steps with diagrams are shown in Table 7.

Table 10: Connection to Mooring

Step	Procedure
1	<p>System check of the PB3 systems is conducted to ensure continuing function</p> 
2	<p>PB3 is righted via the PB3 autoballast system</p> 

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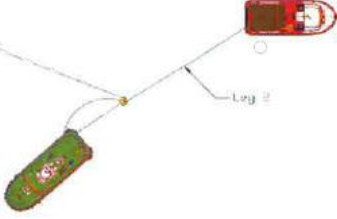
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<p>3</p>	<p>T1 (red) lifts subsurface float from leg 1 onto deck and connects M1 to float</p> 
<p>4</p>	<p>T2 (green) passes end of M2 to T1</p>
<p>5</p>	<p>T1 lifts subsurface float from leg 2 onto deck and connects M2 to float</p> 
<p>6</p>	<p>T2 passes M3 to T1</p>

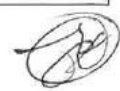
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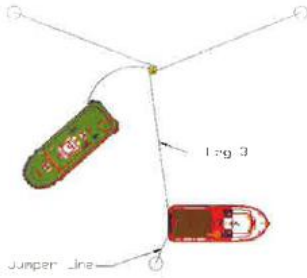

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7	<p>T1 lifts subsurface float from leg 3 onto deck and connects M3 to float. If needed extension pieces will be provided to achieve proper tension.</p> 
8	<p>T2 pulls in any excess subsea cable played out during mooring operations until cable marking closest to PB3 is on deck. (if applicable)</p> 
9	<p>T2 pays out cable while attaching weights or floats as marked on cable. (if applicable)</p>
10	<p>When last float is attached, cable end is attached to payload. (if applicable)</p>
11	<p>Payload/Cable /PB3 system is checked for proper operation. (if applicable)</p>

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12	T2 maneuvers over payload landing site and deploys payload. (if applicable)
----	---

8.3 (Sample) Deployment - Spar Trim/Commissioning

Once on the site, the spar trim can be adjusted and the final commissioning checks can be carried out. The step-by-step spar trim adjustment and the final commissioning checks are listed in Table 8.

Table 11: Notional Spar Trim Adjustment and Commissioning Checks

Step	Procedure
1	Release float and monitor float position using HMI to ascertain needed correction
2	Use HMI and onboard systems to adjust water ballast to achieve operational trim
3	Diver inspection of all components from T3
4	Use HMI to complete commissioning checks
5	All vessels depart

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Annex E: Health, Safety and Environmental Terms, First Edition dated 1/3/19.



HEALTH, SAFETY AND ENVIRONMENTAL TERMS



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1 SCOPE

1.1 These Health, Safety and Environmental Terms (the “HSE Terms”) govern the Parties obligations in connection with health, safety and environment matters of the Contract (as defined below).

1.2 During the Supplier Qualification Process, the supplier accepts the obligations of these HSE Terms. All these obligations will be applied only when specific Contract are signed and the HSE Terms will be included in the contract documents.

2 RECITALS

2.1 This document provides Contractors with essential information on significant health, safety and environmental aspects that the Contractor and Subcontractors shall address during their activity on behalf of ENEL.

2.2 Contractor and Subcontractors shall use this information to develop a suitable and sufficient Health, Safety and Environmental documentation, identifying the Health, Safety and Environmental measures to be implemented during the contractual activities performance and defining the relevant costs, maintaining a safe and neat facility, promoting best practice in Health, Safety and Environmental management. Every requirement included in this document must be implemented when the specific hazard exists.

2.3 The information reported in this document shall be considered as contract conditions and if these conditions are not met by Contractors and/or its Subcontractors, consequences as per Section 19 herein are applied by ENEL to Contractors. For Subcontractors, ENEL request to the Contractors to have the same contractual conditions and the evidence of sanctions application.

2.4 For ENEL, the protection of health, safety, environment, physical and psychological integrity of persons, is not only a legal obligation but a moral responsibility, towards its employees and its contractors.

2.5 In ENEL, no work can be done compromising safety and environment. For this reason, as established in the Stop Work Policy, any risk situation or unsafe behaviour will determine the suspension of work and the restoration of safety and environmental conditions.

2.6 The “Declaration of Commitment to Health and Safety”, “Stop Work Policy” and “Environmental Policy” can be found at the following addresses:

<http://globalprocurement.enel.com>. in the section “Useful Documents” and
<https://corporate.enel.it/en/company/policy-environmental-enel>

2.7 ENEL is strongly and constantly engaged in promoting and consolidating a culture of health, safety and environment protection, promoting a greater focus and awareness of the risks and encouraging responsible behaviour on the part of those who work with us and for us.

2.8 Moreover, ENEL’s strategy is not confined merely to the evaluation of environmental impacts but also aims to involve people working with ENEL, promoting environmental best practices for its suppliers, contractors and customers, in order not to merely meet legal compliance obligations but actually to exceed them.

3 DEFINITIONS AND ACRONYMS

“Accident”: Incident that has given rise to injury, with absence from work of at least one day¹, excluding the one of the occurrence.

“Affiliates”: with respect to any legal entity, any legal entity directly or indirectly controlling, controlled by or under common Control with, such other legal entity, but such legal entity shall be deemed to be an Affiliate only so long as such Control exists.

“Asset”: any workplace, construction site or object Enel owns, installs or operates, directly or through contractors and subcontractors.

“Commuting Accident”: Accident that occurs during the direct transfer/journey from the employee’s home to Work Site and vice versa, or when no company canteen is available, during the journey to and from the area where meals are consumed.

¹ In Countries where local regulation requires that the prognosis shall be defined only the day after the accident, the absence from work is counted starting since the day the prognosis was released, excluding the day of the event (e.g. if the event happens on day 1 and prognosis is defined on day 2, with return to work on day 3, the event is classified as medication and not as Accident).

“Complex Work”: a work activity involving (or performed by) more than one party (ENEL/Contractor) - which may or may not work simultaneously at the Work Site - or more than one working group of a single party (ENEL/Contractor), and depending on (but not necessarily in order of importance):

- number of workers at the Work Site,
- number of specific work activities at the Work Site,
- complexity of involved installations and/or construction sites,
- extension of Work Site,
- total duration of the work activity,
- equipment and operational tools used for the work execution,
- proximity for presence of third parties.

“Contract”: the contract entered into between a Contractor and ENEL to which these HSE Terms are attached.

“Contractor” or “Counterparty”: natural or legal person or groups of the latter with whom ENEL signs contracts for works, services and supplies.

“Control”: with respect to any legal entity, means the possession, directly or indirectly, of the power to cause the direction of management and/or policies of such legal entity, whether through the ownership of voting securities by contract or otherwise.

“ENEL”: the particular entity (whether Enel S.p.A. directly or one of its Affiliates) that is a party to the Contract signed with the Contractor. “Environmental Event”: an event occurring in an asset with the potential to impact or impacting the environment and/or the organization due to environmental issues.

“Environmental Near Miss”: an unexpected environmental event confined or ended before reaching any environmental matrix and producing any potential impact.

“Equipment”: any assembly of items intended to be used by workers with the aim of executing a specific work activity. “Fatal Accident”: an Accident that has caused the death of a person .2

“First Aid”: an injury-causing event that involves a medical treatment in a medical facility or the use of a first aid kit, with return to work no later than the day after the accident.

“Foreman”: a person who supervises the work and ensures the implementation of instructions issued, ensuring correct job execution by workers in compliance with health, safety and environmental regulations and company rules.

“Frequency Rate”: $(\text{number of Accidents/worked hours}) \times 1.000.000$.

“Government Authority”: any national, federal, state, local, municipal or other governmental, regulatory body, administrative, judicial, public or statutory instrumentality, court or governmental tribunal, agency, commission, authority, body or entity, or any political subdivision thereof, other entity exercising executive, legislative, judicial, taxing, regulatory or administrative powers or functions of or pertaining to government (including any supra-national body exercising such powers or functions, such as the European Union) which has legal jurisdiction over the matter, Contract or company in question.

“Hazard”: a source with a potential to cause injury and ill health. Hazards can include sources with the potential to cause harm or hazardous situations, or circumstances with the potential for exposure leading to injury and ill health.

“Hazardous Material”: any and all substances now or at any time subject to regulation, control, remediation or otherwise addressed under applicable Law, including Laws relating to the discharge, emission, spill, release, or threatened release into the environment or relating to the disposal (or arranging for the disposal), distribution, manufacture, processing, storage, treatment, transport, or other use of such substances. Hazardous Materials include, but are not limited to, chemicals, constituents, contaminants, pollutants, materials, wastes, any other carcinogenic, corrosive, ignitable, radioactive, reactive, toxic or otherwise hazardous substances or mixtures - whether solids, liquids, gases excluding, however, common maintenance and cleaning substances.

“High Potential Incident”: an Incident that did not cause a Fatal Accident nor a Severe Accident nor a Significant Accident, but it could have. “HSE”: Health, Safety and Environment.

“HSE Requirements”: ENEL Technical Specifications included in the Contract, legal and other HSE requirements applicable in the Country. “Incident”: an unplanned and undesired event in which an injury or ill health occurred or could have occurred.

“Injury and Ill Health”: an adverse effect on the physical, mental or cognitive condition of a person. These adverse effects include occupational disease, illness and death. The term “injury and ill health” implies the presence of injury or ill health, either on their own or in combination. “Interference” or “Work interference”: a work activity where different subjects (ENEL /contractors) work at the same Work Site:

² It includes Incidents causing the death of the injured person within 180 days (causal link with the incident to be ascertained).

- at the same time, with a direct effect on the surrounding activities,
- at different times, if the effects of activities performed by the subject working before affect the subject working afterwards.

“Law”: all legislation, statutes, ordinances, codes, rules, orders, decrees, judgments, injunctions, permits, licences, authorizations of any legally constituted Governmental Authority, as the same may be amended, modified or repealed.

“Minor Accident”: an Accident that is not Fatal, nor Severe, nor Significant, with absence from work of at least one day³

“OHS”: Occupational Health and Safety.

“OHSE”: Occupational Health, Safety and Environment. “Parties”: jointly ENEL and Contractor/Subcontractors.

“Personnel”: any individual performing activities related to the Contract that are under the control of the Contractor or of a Sub-Contractors regardless of the particular legal arrangement for such activities (i.e. whether employees, individuals working as independent contractors, agents, representatives etc.).

“Procurement Portal (Open Suppliers Portal)”: Web-site section of Enel Group Portal, dedicated to suppliers.

“Requirement”: a need or expectation that is stated, generally implied or obligatory. “Generally implied” means that it is custom or common practice for the organization and interested parties that the need or expectation under consideration is implied. A specified requirement is one that is stated, for example in documented information.

“Safety Observation”: an identification of an unsafe behaviour or hazardous condition that could lead to an Incident. “Safety Near Miss”: an Incident that did not result in injury or ill health but had the potential to do so.

“Severe Accident”: an Accident that has caused the permanent or temporary disability with absence from work, falling into one of the following categories:

- first prognosis, reported on the first medical certificate issued, of over 30 (calendar) days,
- guarded prognosis, until the injured employee is removed from the hospital/emergency room danger list,
- unknown prognosis estimated to be over 30 (calendar) days.

“Severity Index”: (number of lost days/worked hours) x 1.000.

“Significant Accident”: an Accident not classified as “Severe” but that has caused the injury/trauma listed below:

- injury to a vertebrae I pelvis fracture,
- cranial trauma,
- any trauma caused from fall from height,
- burns of 2nd and 3rd degree I Any bum caused by electrical event,
- health implications as a result of asphyxiation or poisoning,
- loss of limbs or other mutilation,
- cardiac and respiratory arrest (associated with work activity).

“Stop work”: an event where ENEL “Stop Work” policy, or equivalent policy, have been applied.

“Subcontract”: a contract with which the Contractor entrusts the execution of contractual services to third parties.

“Supplier Qualification Process”: Enel procurement process, relies on qualified suppliers for works, goods and services, able to ensure adequate levels of reliability and quality.

“Supplier Qualification System”: the Enel system for selection and evaluation of suppliers aimed to have contractors able to ensure adequate levels of reliability and quality.

“Work Site”: any site, office, workplace or area where a work, supply of components, equipment or material or service activity is to be, is being, or has been carried out by Contractor on behalf of ENEL.

“Worker”: see Personnel.

³ In Countries where local regulation requires that the prognosis shall be defined only the day after the accident, the absence from work is counted starting since the day the prognosis was released, excluding the day of the event (e.g. if the event happens on day 1 and prognosis is defined on day 2, with return to work on day 3, the event is classified as medication and not as accident).

4 LANGUAGE

4.1 The original version of this HSE Terms is in English, with exception of contracts that apply Russian, Romanian and Brazilian legislation, for which the original version is the one in local language. In the case of conflicts between the original version and the translations into other languages, the original version shall have precedence.

5 GENERAL OBLIGATION ON OCCUPATIONAL LAW, HEALTH, SAFETY AND ENVIRONMENT

5.1 CONTRACTOR HSE WARRANTIES

5.1.1 Contractor warrants that

- a) the information provided by it to qualify as a vendor to Enel S.p.A. or its Affiliates and to enter into the Contract, including in particular information on its HSE performance and qualifications, was true and correct when given, and that no material change has rendered that information substantially incorrect or misleading,
- b) it has in place, or will timely put in place, adequate management systems, procedures, and practices and adequately qualified Personnel to ensure that it can fulfil its HSE obligations under the Contract.

5.2 GENERAL HSE OBLIGATIONS

5.2.1 Contractor undertakes to perform its obligations under the Contract in such a manner as to ensure a healthy and safe Work Site for its Personnel, ENEL's Personnel and third parties and avoid damage to the environment, and to this end Contractor shall:

- a) comply with applicable Law in matters of social security, health and safety at work, and protection of the environment,
- b) comply with any applicable permits related to the Work,
- c) comply with these HSE Terms and other HSE obligations set out in the Contract,
- d) abide by good industry practice, considering the principles set out in the Policies adopted by Enel S.p.A. and its Affiliates, namely, the "Declaration of Commitment to Health and Safety", "Stop Work Policy" and "Environmental Policy" applied by Enel S.p.A. and its Affiliates,
- e) cooperate with ENEL and others (other contractors, authorities etc.), seeking continuous improvement, to ensure that health, safety and the environment are protected to the maximum extent practicable during the performance of the Contract (e.g. participating in innovative project on HSE risk prevention and mitigation),
- f) give immediate information to ENEL on any issue regarding HSE that could impact, jeopardize, delay or interfere with the Contract activities.

5.2.2 In the event of a conflict between any of the elements of Section 5.2.1, Contractor shall perform the Contract in the manner that maximizes protection to health, safety and the environment and may consult ENEL in the event such manner is not immediately apparent.

5.2.3 Notwithstanding ENEL's level of involvement in matters of health, safety and the environment, the Contractor remains liable for any health, safety or environmental damage caused by its, its personnel or its subcontractors' fault or breach of Contract.

5.3 SPECIFIC HSE OBLIGATIONS

5.3.1 Contractor shall use Personnel employed in accordance with applicable Law and shall put procedures in place to ensure timely payment of its Personnel's remuneration and all taxes, insurance, pension and social security contributions related to such Personnel, as required for by Law and or by any applicable collective bargaining agreement. For the avoidance of doubt, as stipulated in the Section 3, the term Personnel includes the Personnel of Sub-Contractors, to the effect that, to the extent that Contractor, in accordance with Contract provisions, uses Sub-Contractors in the performance of the Contract, this Section requires that Contractor have procedures in place to ensure that any Sub-Contractors observe the obligations of this Section with respect to the Sub-Contractors' Personnel.

5.3.2 Contractor shall observe all the health, safety and environmental rules for each Work Site, including emergency plans. To this end, Contractor shall ensure that it has:

- (i) for Work Sites under Contractor's control, established and communicated adequate health, safety and environmental rules to all persons present at any time at the Work Site and put in place adequate procedures for monitoring and enforcing compliance with such rules by all such persons, or

- (ii) for Work Sites under ENEL or third-party control, obtained, reviewed and communicated to its Personnel the health, safety and environmental rules applicable to such Work Sites, and put in place adequate procedures for monitoring and enforcing compliance with such rules by its Personnel.

5.3.3 Each Party shall ensure that all its Personnel have appropriate personal identification and Party-supplied badges, with photo and appropriate identification data, identifying that the person is Personnel of the Party for purposes of the Contract. All Contractor Personnel shall be outfitted with external visible indication of the Party of which the person is Personnel (e.g. logos on uniforms, helmets, etc. or externally affixed badges). Even if entry to the Work Site is controlled by ENEL, the Contractor shall perform its own control to identify its Personnel entering the Work Site.

5.3.4 During mobilization to a Work Site, or within or between Work Sites, Contractor's Personnel shall always respect applicable traffic code, use the seat belts (or helmets in case of bicycle or motorcycle) and drive safely. Without prejudice to any higher qualification required as a result of a risk assessment or required by Law, any driver shall have at least one year's experience driving an equivalent vehicle.

5.3.5 At all Work Sites it is forbidden to smoke (except in designated smoking areas) and all Parties shall cooperate to enforce this rule.

5.3.6 At all Work Sites it is forbidden to:

- a) possess or use firearms or ammunition for firearms (except for specifically designated and properly credentialed security personnel),
- b) consume or be under the influence of alcohol, narcotics or illicit psychotropic substances,
- c) engage in disturbances such as fighting, illicit destruction of property etc.

At Work Sites under Contractor's control, the Contractor must immediately and definitively remove from the Work Site any person found to violate items (a), (b), or (c) of this Section 5.3.6, securing appropriate Law enforcement support, as needed.

At Work Sites under ENEL/third parties control, Contractor shall cooperate to remove its Personnel found to violate items (a), (b), or (c) of this Section 5.3.6.

6 HEALTH AND SAFETY PLAN

6.1 REQUIREMENTS

6.1.1 The Contractor shall deliver to ENEL, prior to commencement of Contract activities (and keep updated, for the whole Contract duration), specific Health and Safety risk assessment and management plan ("H&S Plan") on all the activities concerned with Contract performance, identify and implement prevention and protection measures.

6.1.2 The Health and Safety Plan shall be carried out in accordance with local Law, if any, and/or on the basis of the logic outlined in Section 6.2, and/or according to ISO 45001 standard (or equivalent standard, in this case ENEL reserves the right to approve the method), in case of conflicting requirements, the one maximizing protection of Health and Safety applies. In the event the Contractor is unable to follow the above mentioned requirements (e.g. because local Law requires a different standard), it must request a determination from ENEL, which will make a determination as to the standard to apply.

6.2 GUIDELINES FOR HEALTH AND SAFETY PLAN

6.2.1 To carry out the risk assessment Contractor shall take into consideration, including but not limiting the following conditions and risks: o existing Work Site Health and Safety rules for Work Sites under ENEL or third-party control,

- o Work Site conditions (including environment aspects and impact on H&S),
- o Work Site boundaries conditions (including environment aspects and impact on H&S),
- o works activities normally performed by Contractor, including preparatory activities and commuting/travel,
- o cooperation with other contractors appointed by ENEL and possible impact/interference on its Contract performance,
- o works related hazards and risks (one or more) of each activity, including but not limiting:
 - falling from same level,
 - falling from heights,
 - electrical,
 - chemical and/or biological agents (including when contained as part of materials or equipment, e.g. equipment containing asbestos),
 - falling objects,
 - impact with objects,



- noises and vibration,
 - fire and explosion,
 - thermal contact,
 - traffic/travelling (i.e. travelling through rural and inaccessible areas, conditions of the path for reaching the Work Site..),
 - lighting,
 - material projection,
 - entrapment,
 - ionizing and non-ionizing radiations,
 - confined spaces,
 - landslide and collapse,
 - barotrauma , decompression sickness, gas poisoning (underwater works),
 - cutting,
 - ergonomic conditions (clumsy movement, strains or overexertion),
 - animal aggressions ,
 - thermal-weather hazard,
 - interference risks as in work activities where different subjects work at the same Work Site,
- conditions of the path for reaching the Work Site,
 - travelling through rural and inaccessible areas,
 - night shift,
 - generic risk: during the execution of any activities, as well as in the preparatory and travelling phases, there are common hazards that could cause incident like impact with objects , cuts, falls, ergonomic (clumsy movement or strains) accidents, as well as animal aggressions, atmospheric (lightning, flooding event...) accidents, heat strokes or other similar incident.

6.2.2 H&S Plans shall also include prevention and protection measures for eliminate or, at least, reducing each or more risks, such as:

- preventive and/or periodical health surveillance,
- ensure proper personnel selection/training/qualification for the execution of work activities,
- definition of the work team composition , organization and planning,
- definition of works activities procedures and/or instruction and/or methods,
- emergency plans, included first aid, fire prevention and emergency management ,
- properly manage interference risks,
- manage and properly dispose of Hazardous Materials that represent a health and safety hazard,
- strictly regulate the use of communication devices as mobile phones/smartphones/tablets ; (e.g. during activities execution, while driving, going up or down stairs, crossing roads and in all the cases that it could create a distraction) ,
- report proper signs for highlight eventual temporary risks (e.g. slippery floor),
- adopt proper dress, shoes, aprons and gloves requirements accordingly to risks consequent the activity executed,
- delimitation of areas in order to allow the access only to authorized personnel,
- provide panels and signs for evidencing the type of activity carried out and all relevant information,
- provide the appropriate handrails for stairs,
- maintain tidy and clean all working areas,
- design a correct viability in the Work Sites, avoiding interference between pedestrian and vehicles as well as positioning the needed traffic signs, speed bumps,
- evaluate atmospheric condition before activities execution,
- protective measures, such as collective and personal protection equipment.

6.2.3 In addition, H&S Plan, or its attached documentation, shall include, where appropriate , the designation of:

- safety officers ,
- safety responsible,
- authorized qualified workers,
- scaffolding supervisors,
- operations coordinators for mechanical handling of loads,
- head of cargo handling operations ,
- supervisors of life-lines,

- persons in charge of first aid and fire prevention; and
- any other specific health and safety Personnel nominations required by Law or elsewhere in the Contract.



6.2.4 H&S Plan shall include, where appropriate the authorization/licenses for the use of work equipment (machinery and equipment),

7 ENVIRONMENTAL PLAN

7.1 REQUIREMENTS

7.1.1 The Contractor shall deliver to ENEL the Environmental Plan relevant to the specific Work Site and activity prior to commencement of Contract activities and update or supplement it regularly, as circumstances or the Contract require, or as specifically requested by ENEL, during the performance of the Contract.

7.1.2 The Environmental Plan shall be carried out in accordance with local Law, if any, and/or in accordance with the guidelines set out in Section 7.2, and/or according to ISO 14001 standard (or equivalent standard, in this case ENEL reserves the right to approve the method), in case of conflicting requirements, the one maximizing Environmental protection applies. In the event the Contractor is unable to follow the above mentioned requirements (e.g. because local Law requires a different standard), it must request a determination from ENEL, which will make a determination as to the standard to apply.

7.1.3 In case of Contracts applicable to multiple Work Sites, particular focus of the environmental risk assessment shall be provided to the specific activity to be performed. This Environmental Plan must be delivered to ENEL prior to commencing the performance of activities provided by the Contract. ENEL group Environmental Policies and ENEL's particular instructions for said Work Site (if any) should also be taken into account in case they require higher duty care than applicable Law.

7.2 GUIDELINES FOR ENVIRONMENTAL PLAN

7.2.1 The Environmental Plan shall include, if applicable for the contractual activity, the evaluation of the following:

- identification of relevant environmental aspects/impacts, risks,
- waste management including need of temporary storage,
- waste water management,
- diffuse emissions mitigation plan,
- noise mitigation plan,
- detailed plan explaining how the Contractor and its subcontractors shall comply with all environmental requirements for all the environmental aspects (that will be at least: atmospheric emission, waste, soil management, noise, waste water, dust and particles emissions, biodiversity protection etc.) during all the works,
- environmental emergency management plan,
- plans for remedial action for any contamination caused by any negligent release of chemicals and Hazardous Materials,
- description of the environmental monitoring operations/actions, including planning and frequency,
- description of reporting to be handed over to authorities,
- compliance with existing Work Site environmental rules, for Work Sites under ENEL or third-party control.

8 HSE ORGANIZATION AND RESPONSIBILITY

8.1 For the Contract duration, Contractor shall appoint:

- a) HSE key people: one or more representatives, appointed by the Contractor before commencement of the Contract activities, having a managerial role within the Contractor work organization, with clear HSE roles and responsibilities defined by the Contractor, which will be ENEL's HSE interlocutor during the Contract. In case Contractor's personnel is not present on the Work Site, the Contractor, in agreement with Subcontractor, may appoint the HSE key people among the subcontractor's personnel,
- b) Foreman: one or more representatives, appointed by the Contractor among its personnel, each one of them responsible for supervising specific Work Site activities and ensuring the implementation of directives received, checking the correct execution by workers in compliance with HSE obligations under the Contract; The profiles of "Foreman" (she/he will manage the single activities and control the connected safety issues) shall have the following skills:
 - knowledge of the activity to be carried out and its development within a complex context as well as the hazards this activity can generate towards other activities,
 - ability of leadership and relationship with the other profiles involved,
 - diligence in the management of the activity in compliance with the planning agreed,
 - proactivity and attention in signalling to the coordination profiles any deviation from the planning established which can arise during the activity execution.

- c) HSE reporting focal point: Contractor should assure a personnel structure with a focal point to comply with Safety and Environmental reporting to Enel,
- d) Moreover, in case of Complex Works refer to Section 16 and APPENDIX 1 Focus on Complex Works activities.

8.2 ENEL may, at its sole discretion, request certain number of Contractor's or subcontractors resources to be allocated to HSE activities, taking into account the Contractor's and its subcontractors' number of resources, involved in the Contract; the Contractor accepts in advance to be obliged to comply with the aforementioned by the sole ENEL's request.

8.3 ENEL reserves the right to verify the qualification and credentials of Contractor's HSE Personnel and, in case are found to be inadequate, to refuse, at its sole discretion, a specific HSE person. Contractor shall make available to ENEL, curriculum vitae of HSE personnel, reporting their professional expertise, academic background, credentials, work history performance and tracking record.

9 PROVISIONS CONCERNING FIRST AID, FIRE PREVENTION AND EMERGENCY MANAGEMENT.

9.1 The Contractor must comply with provisions of Law and the Contract on the subject of first aid, fire prevention and emergency management.

9.2 The Contractor must make all arrangements necessary to ensure and warrant that each Work Site is supplied with:

- at least one medication case, pursuant to the provisions of applicable Law in force;
- a suitable means of communication to ensure a prompt response of first aid/emergency assistance;
- appropriate equipment, suitable to the specific risks of the activities inherent to the subject matter of the Contract.

9.3 All the actions pertaining to first aid and emergency management shall be carried out by the Responsible appointed persons of the company involved in the emergency.

9.4 For Work Sites under ENEL or third-party control, all Contractor's actions pertaining to first aid, fire prevention and emergency management must be carried out in coordination with the existing Work Site emergency plans.

10 HSE AWARENESS AND COORDINATION

10.1 HSE KICK-OFF MEETING

10.1.1 Before commencement of Contract activities ENEL and the Contractor will held a Safety kick off meeting for coordination of activities and a record of the meeting (minutes of meeting) shall be signed by representatives of both Parties.

10.2 INDUCTION

10.2.1 Contractor shall guarantee that all workers under its responsibility are aware of the risks and restrictions (e.g., concerning areas) existing or that could affect the Work Site, as well as possible emergency plans. Workers must attend an induction talk on HSE, which shall be properly documented. The induction talk shall be updated periodically or when new risks are identified.

10.2.2 If required, workers must attend a high level induction talk on HSE, between ENEL and HSE key people, which shall be properly documented.

10.3 PRE-JOB CHECK

10.3.1 Immediately before the beginning of each specific activity at the Work Site, Contractor, by means of its Foreman or other appointed person (with equivalent competences and responsibilities), must carry out a HSE meeting of pre-job check addressed to its personnel and its subcontractors.

10.3.2 The pre-job check shall be repeated whenever a change occurs in the working conditions or a new worker is assigned to the activities .. In this meeting the foreman, or other responsible person, and the staff review all stages of the activity and the related tasks, assess situations with the potential risk to HSE that may occur, describe the equipment and material that they have to use and the behaviours to be adopted in order to prevent incidents.

10.3.3 The pre-job-check shall ensure, also with the support of a specific checklist, that all workers:

- are informed about the activity to be done and operational procedures;
- understand the risks associated with the specific activity to be done;
- consequently adopt all necessary measures to ensure the activity is carried out safely and protecting the environment.

11 VEHICLES, MACHINERY, EQUIPMENT, TOOLS AND MATERIALS

11.1 Contractor shall:

- supply all materials, equipment, and tools required for the appropriate safe execution and high quality of the work or service,
- utilize machines, equipment and devices compliant with applicable Laws in force and best practice standards set forth in applicable regulations,
- in addition to the requirements from Section 17.2, make available (and forward, if required) to ENEL, before the commencement of each activity, all information related to the vehicles, machinery, equipment and devices he is going to use. ENEL reserves the right to validate this information before authorize the activity execution . Additionally ENEL could require a relevant responsible declaration signed by the Contractor,
- abstain from using vehicles, machinery, equipment and devices owned by ENEL without prior written authorization.

11.2 All materials, machinery, equipment, and tools shall be subjected of regular maintenance and care in order to withstand deterioration due to the environmental conditions. This includes protective material covers, insulation, and others. In addition, they must be equipped with all the elements that ensure their safe use (lights, alarms, rear-view mirrors, protective guards, etc.). The use of machinery, equipment, and tools without the protective devices is prohibited.

11.3 Contractor's machinery, vehicles, and equipment shall be only used by authorized personnel. Contractor shall authorize only trained and/or qualified personnel, which shall own certification for the use or driving license/permission when required by the contract or by the local Law.

11.4 Contractor shall preventively authorize Contractor and Subcontractor vehicles and machinery entering Work Site for the execution of Contract activities. All vehicles and machinery used in the Work Site shall have inside an identification number and the Contractor or Subcontractor company Logo.

11.5 ENEL reserves the right to inspect all the elements and relevant documentation described in this subsection, before and during the use of machinery, vehicles, equipment and tools in order to verify their compliance with the applicable Law, standards, and HSE Requirements, as well as the Contract provisions. In the case that during the inspection ENEL verifies they are not compliant, the Contractor shall immediately stop and/or remove them from the Work Site.

12 CHEMICALS AND HAZARDOUS MATERIALS

12.1 The Contractor shall supply and use (if provided in the contract) chemical substances properly packaged and labelled so that the product contained and the risks for the workers and the environment are clearly identified.

12.2 Packaging and labelling shall provide also information for safe unloading, storage and handling. Corresponding safety, handling and storage data sheets shall accompany materials, substances and mixtures. Data sheets, provided in local language, shall include the expected uses, limitation or prescription related to their storage (if any) measures for risk mitigation and disposal instruction, in accordance with current Law.

12.3 Contractor shall maintain an updated file of all material safety data sheets for all chemicals and Hazardous Material used in connection with performance of the Work or at or near the Work Site or at any construction area related to the Work and shall update such file at least monthly and make it available on site in accordance with applicable Laws. Contractor shall maintain an accurate record and current inventory of all chemicals and Hazardous Materials used in performance of its activities on at or near the Work Site or at any construction or storage area related to the Contract and the record shall identify quantities, location of storage, use and final disposition of such chemicals and Hazardous Material.

12.4 Contractor shall minimize the use of Hazardous Materials and shall conduct its activities and causes its Subcontractors to conduct their activities in a manner designated to prevent pollution of the environment or any other release of any Hazardous Materials. The Contractor shall accredit the absence of oils containing PCBs and the absence of CFCs, HCFCs, halons, substances with trade restrictions, in the supplied equipment. Moreover the Contractor must avoid the use of asbestos in the supplied materials/equipment and in any used PPE and tool.

12.5 Unless otherwise provided in the Contract, Contractor shall be responsible for the management of and proper disposal (within the timeframe set forth in the Contract) of all chemicals and Hazardous Materials brought onto or generated at the Work Site by it or its Sub contractors, if any. The Contractor shall cause all such Hazardous Materials brought onto or generated at the Work Site by it or its Sub contractors, if any, (A) to be transported only by carriers maintaining valid permits and operating in compliance with such permits and Laws regarding Hazardous Materials pursuant to manifest and shipping documents identifying only the Contractor as the generator of waste or person who arranged for waste disposal, and (B) to be treated and disposed of only at treatment, storage and disposal facilities maintaining valid permits operating in compliance with such permits and laws regarding Hazardous Materials, from which, to the best of the Contractor's knowledge, there has been and will be no release of Hazardous Materials.

12.6 Contractor shall submit in advance to ENEL a list of all Hazardous Materials to be brought onto or generated at the Work Site. Enel reserves the right to approve or decline such list. The Contractor shall keep ENEL informed as to the status of all Hazardous Materials on the Work Site and their disposal from the Work Site.

12.7 If the Contractor or any of its Sub-contractors releases any Hazardous Materials on, at, or from the Work Site, or becomes aware of any person who has stored, released or disposed of Hazardous Materials on, at, or from the Work Site the Contractor shall immediately notify ENEL in writing. If the Contractor's work involved the area where such release occurred, the Contractor shall immediately stop any Work affecting the area. The Contractor shall, at its sole cost and expense, diligently proceed to take all necessary or desirable remedial action to clean up fully the contamination caused by (A) any negligent release by the Contractor or any of its Sub-contractors of Hazardous Materials, and (B) any Hazardous Materials or Hazardous Substances that was brought onto or generated at the Work Site by the Contractor or any of its Sub-contractors or vendors, whether on or off the Work Site.

12.8 If Contractor discovers any Pre-Existing Hazardous Material that has been stored, released or disposed of at the Project Work Site, Contractor shall immediately notify ENEL in writing. If Contractor's Work involves the area where such a discovery was made, Contractor shall immediately stop any Work affecting the area and ENEL shall determine a reasonable course of action. Contractor will not thereafter resume performance of the Work in the affected area except with the prior written permission of ENEL.

13 PROTECTION OF THE ENVIRONMENT

13.1 MATERIALS AND/OR EQUIPMENT.

13.1.1 The Contractor undertakes to provide, wherever it is possible, equipment or materials with eco-label and those with greater energy efficiencies, with a longer service life involving lower costs and less likelihood of waste being generated due to shelf life expiry and lower final disposal costs. The equipment and materials provided by the Contractor shall protect the indoor environmental quality.

13.1.2 The Contractor shall ensure that the elements used in material and equipment are not chemically unstable.

13.1.3 The Contractor will be responsible to meet any provision regarding transportation, management and storage of products/materials, as well as management, recovery or disposal of waste according to applicable regulations and authorizations, providing under ENEL's request a copy of any documents and authorization.

13.1.4 The Contractor undertakes to reuse materials or recycle waste generated by its activities ensuring the compliance with environmental Law and obtaining all the required authorizations, providing under ENEL's request a copy of any documents and authorization. The reuse of materials shall be intended exclusively as reuse with the same functionality/purposes and, in any case, not applicable to waste.

13.1.5 The Contractor undertakes to manage the supplied empty containers, in accordance with applicable Law. Also, the Contractor will be obligated to the withdrawal of the packaging used for transportation in the conditions and terms established in the Contract and Law, or, if these details are not indicated, the Contractor shall remove the packaging from previous deliveries when making subsequent ones and/or when ENEL so requests. The Contractor shall communicate, before the start of the activities, an estimation of the foreseen quantities of generated waste, as well as the integral management of the same that will develop.

13.1.6 In the event the Contract calls for the supply of Electric and Electronic Equipment ("EEE"), the Supplier shall comply with local Law, also in relation to the end-of-life management, including (if applicable):

- demonstrate to have adhered to an end-of-life recycling collective system recognized and valid for the Country where the EEE will be installed;
- demonstrate to be registered to the National Register of EEE Producers;
- mark the EEE with appropriate symbol (for products imported to European Union, or where applicable, in accordance with the European standard EN 50419).



13.1.7 In case of a Country without specific Law about Electric and Electronic Equipment recovery system, ENEL in agreement with the Supplier manufacturer will evaluate how to proceed case by case.

13.2 WORKS AND/OR SERVICES.

13.2.1 The Contractor must be able to:

- provide, on request, all documentation showing the compliance with applicable HSE Law, including - but not limited to - obtaining permits and respect of the limits therein described, if any;
- prove to have procedures that allows the maintenance of the requested requirements and the continuous compliance with the applicable Law;
- follow the Environmental Plan;
- provide to ENEL the environmental performance data (e.g.: fuel consumption, waste), if required;
- provide relevant information on the activities covered by the Contract, to contribute to ENEL's calculation of the carbon footprint, circular economy index or any other indexes related to the Environmental Management System, if required in consideration of the activities' relevance . Similarly, the information on the carbon footprint of activities could be assessed by the Subcontractor.

13.2.2 The Contractor must inform ENEL within a maximum of 24 hours, about any changes, withdrawal or updates concerning authorizations and/or permits, providing a copy of the new documents issued by authorities.

13.2.3 The Contractor undertakes to verify that its staff knows, understands and executes all requirements and regulations relating to environmental protection, applicable to perform the Contract, as well as ENEL's environmental policy and the applicable internal procedures (the list of applicable procedures will be included in the contractual documentation).

13.2.4 The Contractor guarantees, and demonstrate, that the staff that will perform the Contract, has or receives adequate theoretical and practical training and especially the need to ensure proper environmental performance and reduce the risk of an incident with environmental impact. Training will include the obligations arising from the Environmental Management, where applicable.

13.2.5 Moreover the Contractor shall, as applicable to the Contract subject matter and unless otherwise stipulated in the Contract itself:

- leave clean and free of debris the work area once completed the execution of the Contract, removing all debris, containers, packaging, garbage, junk, and all kinds of waste generated, there remain, being responsibility of the Contractor, the collection, transport and authorized management thereof;
- take appropriate measures to preserve biodiversity on site and prohibit its employees from carrying out hunting and fishing activities;
- cut vegetation at the minimum possible and only when it is absolutely necessary; it is mandatory the Contractor has the corresponding permits (licenses) from the authorities and ENEL's authorization. The Contractor must present the information about cutting to ENEL prior to start said activity . ENEL shall agree with the Contractor the advance period for the delivery of this information;
- store hazardous waste, providing to separate incompatible chemicals and avoiding the mixture between hazardous and not hazardous waste, in accordance to applicable regulation and ENEL's standard;
- dispose all wastes originating from Contractor work activities to authorized sites only, in compliance with the applicable regulations; o clear signalling areas and waste with significant environmental potential impact;
- comply with specific Country's waste management requirements reported in APPENDIX 2 Waste management;
- prevent emissions of dust or other substances in the transport of materials and any other activity likely to generate dust or other substances;
- prevent emission of noise and vibration during the execution of the works;
- properly segregate each residue/waste separately, by placing, in the place of performance of the Contract, a sufficient number of containers, closed, marked and in good condition, in order to prevent uncontrolled spills, leakages or emissions that could impact the environment.

13.2.6 The Contractor shall be provided, when handling oil-containing equipment (e.g generators, transformers, etc.), with proper containmenUabsorbent materials in order to immediately mitigate dangerous substances spills.

13.2.7 Concerning greenhouse gases and ozone-depleting substances, all the relevant works (e.g. installation or maintenance of SF6 containing equipment, etc.) must be carried out by suitably trained personnel and, in the Countries where is foreseen, the workers shall be provided with the relevant certification. All practicable precautionary measures must be taken to avoid and minimize leaks and emissions into the atmosphere . Furthermore, any emissions into the atmosphere must be monitored and registered.

14 REPORTING

14.1 SAFETY ACCIDENT/INCIDENT REPORTING AND MANAGEMENT

14.1.1 Contractor shall notify Incidents and Safety Observations related to the performance of the Contract, regardless of the person affected (whether Personnel of the Contractor, ENEL or third-parties), as follows:

- a) report on health and safety matters occurring during the performance of the Contract to Government Authorities in accordance with the applicable Law, such communication (for coordination and mitigation purposes) should be, if at all possible, after communication to ENEL,
- b) immediately communicate to ENEL any Accident or Stop Work (at least by phone),
- c) within 6 (24 in case of Minor Accidents) hours of occurrence: notify ENEL of any Fatal, Severe, Significant or Minor Accidents or High Potential Incident that occurred during the performance of the Contract, by written notice, including a detailed description of the event, all the available preliminary information, available medical prognoses, copies of any report filed with Governmental Authorities,
- d) within 3 calendar days from the occurrence, notify ENEL of any Safety Near Miss, Safety Observation or Stop Work that occurred during the course of work on behalf of ENEL, by written notice reporting also corrective/preventive measures adopted.

14.1.2 Contractor must keep record of both events and statistics about Safety.

14.1.3 In case of Fatal, Severe or Significant Accidents occurred during the performance of the Contract, Contractor shall deeply analyse the event and:

- a) within 3 calendar days from the occurrence, transmit to ENEL, a preliminary Report of the Analysis,
- b) within 7 calendar days from the occurrence, transmit to ENEL the relevant final Report recording the detailed causes of the Accident and the corrective/preventive measures adopted.

14.1.4 In case of High Potential Incident occurred during the performance of the Contract, Contractor shall deeply analyse the event and:

- a) within 3 calendar days from ENEL's notice to the Contractor that an Incident was classified as a High Potential Incident transmit to ENEL, a preliminary Report of the Analysis,
- b) within 7 calendar days from the occurrence, transmit to ENEL the relevant final Report recording the detailed causes of the Incident and the corrective/preventive measures adopted.

14.1.5 In case ENEL nominates a group of analysis to investigate the causes of an Accident, the Contractor must provide maximum cooperation, providing quick and diligent efforts of any information that may be requested.

14.2 ENVIRONMENTAL EVENTS REPORTING AND MANAGEMENT

14.2.1 The Contractor must immediately inform by phone call ENEL's representative supervising the works on any environmental event that occurs during the execution of the Contract. In case of event/material damages that implies the obligation of reporting to the authorities, ENEL shall be informed at the same time as (not later) the communication to the authorities.

14.2.2 Moreover the Contractor is obliged to submit a written report of the event including its causes and the measures taken for the management and resolution of the event, within a maximum of 24 hours.

14.2.3 In case of an Environmental Near Miss, the Contractor shall notify ENEL by written notice within 3 days. Should an environmental event occur, whatever it may be, the Contractor must immediately intervene to apply all possible techniques to mitigate the damages. If ENEL requests the Contractor to follow specific instructions in order to manage the environmental event, the Contractor shall comply with the received instruction by ENEL's technician supervising the activity.

14.2.4 The Contractor must immediately (and no later than 4Bh) inform ENEL, about any evidence related to checks and inspections carried out by authorities and, in case of infringement, the actions carried out or planned in agreement with the authorities aimed at restoring legal compliance.

14.3 HSE NON-CONFORMITY REPORT

14.3.1 Contractor shall track in an "HSE Non Conformity Report" all Non Conformities detected during inspections (by HSE Contractor's Personnel or by ENEL Personnel) and the corrective action taken.

15 SUBCONTRACTORS

15.1 GENERAL HSE OBLIGATIONS FOR SUBCONTRACTING

15.1.1 The subcontractor shall execute the activities in accordance with the H&S Plan and Environmental Plan.

15.1.2 The Contractor shall pay the safety costs⁴ related to the activities entrusted in subcontracting, to subcontractor without any reduction.

15.2 SUBCONTRACTOR SELECTION

15.2.1 Contractor shall guarantee a proper Subcontractor selection checking that Subcontractor meets both applicable Law, as well as the selection requirements imposed by ENEL to its suppliers, including but not limiting to:

15.2.2 Contractor shall verify that subcontractors HSE performance index (frequency rate, severity rate, fatal event, or other performance index specified in the Procurement Portal) are similar (not higher the fatal index and no more than 20% higher for other performance index) to the ones declared by Contractor to ENEL during the relevant Supplier Qualification Process.

15.2.3 In case the HSE performance indexes of the selected subcontractor are higher than the ones mentioned above, Contractor shall provide to ENEL a detailed HSE performance index improvement plan, agreed and signed by Contractor and Subcontractor, where are addressed the various actions that will be adopted during the works execution in order to guarantee a proper HSE performance.

15.2.4 The selection of a Subcontractor already qualified by ENEL should be a preferred option.

15.2.5 Contractor shall submit to ENEL, for the necessary checks finalized to subcontracting authorization, relevant selection documentation. In particular the Contractor shall provide to ENEL, under his own responsibility, a selection report including both the qualification criteria as well as relevant evidences (certificates, documentation, reports etc.) proving that the Subcontractor meets HSE selection requirements.

15.2.6 Contractor shall provide to ENEL all the documentation relevant the Subcontractor selection at least 30 calendar days before the contractual agreement between the Contractor and its Subcontractor . Anyway once received the subcontracting documentation, ENEL reserves 30 calendars days for necessities verifications and Subcontractor authorization; in this period the Subcontractor shall not enter Wor1< Sites or execute contractual activities.

15.2.7 As an example, the following documents shall be provided: o company H&S Policy (if available);

- o HSE plan (if required)
- o typical HSE risks assessment;
- o safety procedures that clearly regulate the activities execution;
- o internal H&S organization with H&S representatives appointed with clear roles and responsibilities;
- o H&S procedures referring to:
 - o H&S training for all personnel;
 - o personal protective equipment (PPE);
 - o safety inspections execution;
 - o accident analysis and implementation of corrective action plans;
- o copy of the accidents record (or similar document certified by the national institute for wor1< accidents, if any);
- o figures relevant to work accidents occurred in the last 3 years and for every year (i.e. frequency rate, severity index);
- o any certification according to the standard ISO 45001 (or equivalent).

15.2.8 Before granting authorization to subcontract, ENEL will have the right to carry out further checks on the Subcontractor requirements compliance, unless explicitly in conflict with national Laws.

15.2.9 Contractor shall apply the same selection requirements also to the eventual further subcontracting level.

15.2.10 The Contractor shall also keep the relative Subcontractor documentation for at least 6 months after the Contract expiration, in order to permit ENEL to carry out checks or send such documentation to ENEL, where required by Law.

⁴ Including cost for the measures adopted to eliminate, or if not possible, to reduce health, safety and environment risks caused by several works activities which interfere with each other.

15.3 SUBCONTRACTOR MANAGEMENT

15.3.1 For the entire Contract duration, the Contractor must provide to ENEL documentation relevant to the activities performed by its Subcontractor and its compliance with the applicable HSE Law, these HSE Terms, the Contract and HSE Requirements.

15.3.2 Subcontractors HSE documents must be kept where the activities object of Contract are performed, or for the purposes of their application, or to be produced on request.

15.3.3 The contract with Subcontractor shall be available to ENEL's Unit in charge of manage the Contract in case ENEL requires it in a complete and signed copy.

15.3.4 Invoices related to HSE activities issued by Subcontractor shall be available to ENEL's Unit in charge of managing the Contract in case ENEL requires them in a complete copy. On monthly basis ENEL shall receive a copy of a confirmation letter issued to Contractor by the Subcontractor that all above invoices have been paid.

16 SPECIAL REQUIREMENTS FOR COMPLEX WORKS

16.1 In case of Complex Works the Contractor shall keep under control the risks coming from the interferences between the activities either carried out at a same Work Site by the Contractor itself, because it subdivided these activities among its own working groups or Subcontractors, and/or carried out at a same Work Site by other contractors.

16.2 During a Complex Work activity, Contractor attention shall be focused not only on the risks of the activity under execution but also on the work planning, organization and coordination as well as the prevention and protection measures to be established so that the interference risks do not affect other activities which are characterized by their own specific risks and carried out at the same Work Site.

16.3 Contractor has to take part to the necessary coordination (or at least cooperation, depending on the Contract provisions), also taking into account the requirements of applicable Law.

16.4 APPENDIX 1 Focus on Complex Works activities reports requirements and indications about the specific issue.

17 DOCUMENTATION AND INFORMATION TO BE PROVIDED BY THE CONTRACTOR

17.1 LEGAL EMPLOYMENT AND HSE DOCUMENTATION

17.1.1 Contractor shall provide to ENEL the information and documentation that ENEL deems necessary to verify the correct fulfilment by the Contractor of those legal obligations from which any liability could arise towards ENEL. The list of document requested by ENEL is summarized here below and is intended be considered as not exhaustive.

17.1.2 ENEL reserves the right to modify, during the performance of the Contract, the list of documents in the case of change in Law or change of ENEL HSE policies. In such case, Contractor shall forward to ENEL the new list within one (1) month after the request.

17.1.3 ENEL, taking into account the type of activity or risk associated with the work or service under Contract may agree that the documentation from the Contractor may be not all detailed in this section or focus on specific aspects.

17.1.4 In case ENEL considers the type of service provided by the Contractor particularly dangerous, or specific legislation apply, ENEL may request the Contractor to provide additional documentation.

17.2 DOCUMENTATION TO BE PROVIDED OR MADE AVAILABLE BY THE CONTRACTOR BEFORE THE START OF CONTRACT ACTIVITIES

17.2.1 At least three weeks before the start of each activity and considering all Personnel (workers from Contractor's company, Subcontractors companies or self-employed), the Contractor shall, for that specific activity :

- a) provide the list of workers that will participate in the execution of contractual activities, indicating for each of them: Names and surname; No. affiliation to Social Security or equivalent; Work Site where they will serve; occupational category or job position; where appropriate, whether the worker is subject to particularly dangerous risks.
This document will be updated and provided to ENEL whenever an incorporation or dismissal assigned to the implementation of the contract works occurs as well as in case of additions of new workers (whether or not newly recruited) occur,
- b) make available the H&S Plan,

- c) provide the Environmental Plan,
- d) provide the documentation related to Complex Works,
- e) make available (or provide a soft copy if required) HSE File, containing at least:
 - evidences of specific theoretical and practical training (individual certifications) according to the activities assigned to the workers,
 - medical aptitude certificates,
 - evidence of delivery and reception that workers have received personal protective equipment (PPE), corresponding as provided in the H&S Plan. Document has to include list of PPE delivered to the worker,
 - Contractor statement assuring that all equipment, tools and personal or collective equipment that will be used in performance of the Contract comply with the H&S Plan and Environmental Plan and that they have the corresponding CE declaration of conformity or equivalent required by applicable Law in other country out of Europe,
- f) provide the list of authorized vehicles and machineries that Contractor will use in the performance of the Contract. Whenever Contractor intends to use a vehicle or machinery not included in the list, Contractor shall update and provide to ENEL the document in advance,
- g) provide, on request, all documentation showing the compliance with:
 - applicable HSE Law on, including - but not limited to - obtaining permits and respect of the limits therein described, if any,
 - H&S Plan and Environmental Plan.

17.2.2 The Contractor is obliged to have archived a file containing all this information, in case of worker documentation a file for each of their workers. The mentioned documentation is subject to review and verification by ENEL before the beginning of the activities activity and at any time. Also, if required to do so, the Contractor has to put this documentation available to ENEL no later than forty-eight (48) hours.

17.2.3 Contractor must keep updated the mentioned documentation during the performance of the Contract and forward to ENEL the relevant updates.

17.3 DOCUMENTATION TO BE PROVIDED BY THE CONTRACTOR DURING THE PERFORMANCE OF THE CONTRACT

17.3.1 The Contractor shall keep an updated daily personnel list of the entire staff employed by the Contractor or its subcontractors at the facilities and of the vehicles that enter in the Work Site (Personnel Log/Vehicles Log). Contractor shall submit these Logs to ENEL on a monthly basis, or earlier in case a change of the personnel involved in the contractual activities occurs.

17.4 INFORMATION ON SAFETY

17.4.1 The Contractor shall provide:

- a) within the first 5 days of the month the number of hours worked by Contractor and its Subcontractors Personnel in the Contracts (total, by Contract, by Work Site and employee) in the previous month,
- b) number of employees of the Contractor and its subcontractors classified by gender (male/female) who perform their activity in Contracts,
- c) days worked by the staff of the Contractor and its Subcontractors (estimated equivalent to full-time working days -FTE-) involved in Contracts to include in its order: 1) construction activities; 2) exploitation; and 3) maintenance; 4) other.

18 INSPECTION AND MONITORING

18.1 ENEL has the right to carry out inspections or audit to check and verify compliance with the Contract - including, in particular, compliance with HSE obligations - and Contractor shall timely cooperate with related actions carried out by ENEL. ENEL's personnel and/or third parties authorized by ENEL can access at any time the Work Sites, Contractor's premises, warehouses or storage areas to carry out the above-mentioned checks and verifications.

18.2 In particular, ENEL shall have the right to check the personal identification of Contractor's Personnel (required by Section 5.3) at any time.

18.3 ENEL reserves the right to monitor or control the proper management of waste and of the other environmental aspects done by the Contractor.

18.4 ENEL reserves the right, if in compliance with local Law, with the purpose to verify the HSE compliance of Contract activities, to require the Contractor to record personnel presence, as well as video recording or photo recording of its workers during the contractual activities. In this case, Contractor will also cooperate with ENEL in order to define technological requirements, workers training and relevant procedures and instruction.

18.5 In case of Contracts for services like restoration, cleaning, recreational room, security services etc. ENEL could promote a service satisfaction survey for collecting the feedback from the service users about HSE aspects. The Contractor, in agreement with ENEL, shall consider these feedbacks and implement improving actions.

18.6 The inspections carried out by ENEL or authorized third parties do not imply approval from ENEL neither a waiver to Contractor, with regard the HSE compliance issues, from obligations and responsibilities connected to the proper execution of its Contract activities. The Contractor, as a preventive action, shall perform its own inspection of the activities in order to detect any non-compliant situation and then implement the necessary corrective actions.

18.7 In case, during the inspections, non-conformity by the Contractor or by his Subcontractor are found, ENEL, will notify the Contractor accordingly. The Contractor shall, within 5 business days, provide the clarification on the causes and/or the reasons which led to these situations and propose the necessary remedy measures (which shall be implemented within 3 weeks from acceptance of ENEL, unless a shorter period is required by ENEL), without being entitled to any deferment of the time limit for the execution of the work activities.

18.8 Whenever possible the detected non-conformity shall be immediately solved by Contractor and reported as solved in the HSE Non Conformity Report. In more complicated cases a time for solution will be agreed with Contractor and duly reported on the same Report.

18.9 In the cases where the failure to meet the requirements of HSE involves, in ENEL's opinion, an imminent danger, which is understood as any situation that creates an evident and manifest damage risk to people physical integrity or the possibility of severe environmental harm, ENEL may request the stop work until the problem is solved. Subsequently ENEL requires to implement a remediation plan with execution timing to be agreed with ENEL.

18.10 For each detected non-conformity the Contractor shall carry out a non-conformity analysis to check its eventual recurrence in order to verify the effectiveness of action taken. In case the analysis highlight the ineffectiveness of the planned corrective action, the Contractor shall organize a different and more effective preventive action. Contractor shall present and agree with ENEL this improved corrective action.

18.11 Any violation/non-conformity detected as a result of controls and verifications are recorded by ENEL, with allocation of sanctions related to the severity of the violations/non-conformities identified, resulting in an eventual downgrade of the Vendor Rating index.

18.12 The downgrade thresholds of Vendor Rating or the ascertainment of a number of HSE failures, may entail the adoption of the Contractor suspension provision from the invitations to tenders for a period that will be defined by ENEL, at its sole discretion.

18.13 In any case ENEL may call the Contractor or its HSE key people for a periodical meeting in order to discuss the status of Non Conformities found (by Contractor itself or following a ENEL's inspection) and the related Corrective Measures.

19 CONSEQUENCES OF BREACHS REGARDING HEALTH, SAFETY AND ENVIRONMENTAL REQUIREMENTS

19.1 REMEDIES FOR VIOLATIONS OF THE RULES REGARDING HEALTH AND SAFETY PROTECTION

19.1.1 In the event Contractor breaches an obligation on Health and Safety protection, the Contractor shall indemnify ENEL for, and hold ENEL harmless for, any loss or expense that ENEL may sustain or incur as a consequence of:

- a) any Accident; and/or
- b) any claim or suit brought by the individuals or entities affected by the Accidents; and/or,
- c) any fine, penalty or sanction imposed by an authority to ENEL by reason of the Incident.

19.1.2 In the event Contractor breaches an obligation on Health and Safety protection, ENEL, at its sole discretion, and to the extent not contrary to the applicable Law, may:

- a) require the Contractor to implement a timely remediation plan to reinforce HS measures (e.g. specific training courses) related to the HSE prevention and protection deficiencies identified at any time, and/or
- b) suspend Contract performance, for a number of days which correspond to the seriousness of the violation - or until the verification of any adjustments or corrective actions taken to address the violation - without this giving the Contractor any right to extend the deadline for completion of the works or payment or compensation of any kind, and/or
- c) in case of a breach or whenever the worker behaviour represents a risk for his/her own integrity or third parties, require his/her immediate removal from Work Site and his/her replacement, and/or

- d) apply the sanctions set out in Section 19.3, and/or
- e) suspend payment of sums due to the Contractor, to the extent of 10% of the amounts accrued at the time of the HS breach, until the Contractor implements the remedy measures, and/or
- f) in the event of Fatal/Severe Accident or High Potential Incident, suspend the Contractor and/or its Subcontractors and/or Contractor's Affiliates from Supplier Qualification System, and/or
- g) terminate the Contract according to Section 19.5.

19.2 REMEDIES FOR VIOLATIONS OF THE RULES REGARDING ENVIRONMENTAL PROTECTION

19.2.1 In the event Contractor breaches an obligation on Environmental protection, the Contractor shall indemnify ENEL for, and hold ENEL harmless for, any loss or expense that ENEL may sustain or incur as a consequence of:

- a) any Environmental Event, and/or
- b) any claim or suit brought by the individuals or entities affected by the Environmental Event, and/or,
- c) any fine, penalty or sanction imposed by an authority to ENEL by reason of the Environmental Event.

19.2.2 In the event Contractor breaches an obligation on Environmental protection, ENEL, at its sole discretion, and to the extent not contrary to the applicable Law, may:

- a) suspend, for a number of days which correspond to the seriousness of the violation - or until the verification of any adjustments or corrective actions taken to address the violation - the execution of any contractual works without this giving the Contractor any right to extend the deadline for completion of the works or payment or compensation of any kind, and/or
- b) require the Contractor ensures its employees - who were responsible for the violation - attend up to 16 hours of additional training regarding environment. The workers responsible for these violations shall be readmitted on site only after attending the prescribed specific training courses, and/or
- c) apply the sanctions set out in Section 19.4, and/or
- d) suspend payment of sums due to the Contractor, to the extent of 10% of the amounts accrued at the time of environmental violation, until the Contractor implements the changes to its environment management system as required by ENEL, and/or
- e) suspend the Contractor and/or its Subcontractors and/or Contractor's Affiliates from Supplier Qualification System, and/or
- f) terminate the Contract according to Section 19.5.

19.3 SANCTIONS FOR VIOLATIONS OF THE RULES REGARDING HEALTH AND SAFETY PROTECTION

19.3.1 Without prejudice to its right to terminate the Contract, as provided in Section 19.5 of these Terms and without prejudice to its right to claim further damages, ENEL also has the right to apply, by notifying the Contractor by registered letter with proof of receipt (or similar instrument of communication with proof of receipt), the sanctions listed and quantified in APPENDIX 3 Sanctions for HSE violations" relevant the specific Country.

19.3.2 If the breaches cause any Accident or High Potential Incident, that could have caused a fatal/severe personal injury, as is reasonably in whatever way is ascertained by ENEL, that the Contractor or Subcontractor holds clear accountability on Health and Safety breach, ENEL reserves the right to apply - depending on the severity of the violation and/or injury and/or damage to persons - a sanction of up to 2% of the total (or maximum) contract value and in any case not less than the amount defined for "VERY SEVERE (II)" breaches.

19.3.3 In the event that Contractor adopts the Stop Work Policy by itself informing ENEL of the violation, ENEL will decide from time to time whether to apply the relevant sanction or not.

19.3.4 The amounts resulting from the application of sanctions shall be allocated, accordingly to specific ENEL's Country agreement and local legislation.

LIST OF SEVERE, VERY SEVERE AND EXTREMELY SEVERE SAFETY BREACHES

INDICATIVE (NON-EXHAUSTIVE) LIST OF SEVERE, VERY SEVERE AND EXTREMELY SEVERE BREACHES OF H&S ADMINISTRATIVE OBLIGATIONS

CATEGORY	BREACH	SEVERITY
Accidents reporting	Failure to transmit to ENEL (within 6 hours) any communication concerning Fatal, Severe or Significant Accidents and High Potential Incident at work.	III
	Failure to notify to ENEL (within 24 hours) non-severe Accidents at work ⁵	II
General Provisions	Failure to participate at coordination meetings (if mandatory according to Law and/or Contract and/or these HSE Terms and/or HSE Requirements).	I

INDICATIVE (NON-EXHAUSTIVE) LIST OF SEVERE, VERY SEVERE AND EXTREMELY SEVERE BREACHES OF H&S OBLIGATIONS RELATED TO ACTIVITIES

CATEGORY	BREACH	SEVERITY
General Provisions	Execute the activities prior to appoint/identify the foreman.	III
	Poor supervision of the activities to perform (e.g. lack of experience, not sufficient supervision)	II
	Failure to perform “Pre-Job check” (if applicable).	II
	Consumption or possession or distribution of alcohol or drugs in the Work Site.	III
	Employment of personnel not notified to ENEL or not authorized.	III
	Employment of personnel without professional profiles/qualification/training requested to perform the activities in compliance with Law and/or Contract and/or these HSE Terms and/or HSE Requirements (high risk activities such as electrical works, works in confined space, works at height, underwater works and mining works).	III
	Employment of personnel without professional profiles/qualification/training requested to perform the activities in compliance with Law and/or Contract and/or these HSE Terms and/or HSE Requirements (other activities).	I
	Start of activities before ENEL’s written authorization	III
	Use of special vehicles/machineries/equipment not in compliance with National Law and technical standards.	II
	Use of special vehicles/machineries/equipment not previously declared to ENEL (e.g. loads hoisting/lifting equipment, bucket truck).	II
	Unauthorized use of special vehicles/machineries/equipment owned by ENEL	II
	Lack of relevant documentation to certify controls/tests on Contractor’s special vehicles/machineries/equipment, used during works on behalf of ENEL, according to applicable Law.	II
	Failure to respect regulations relevant to traffic Code, speed limit and safe driving. In case that behaviour causes a hazardous situation, the severity could be increased to III .	I (III)
	Tampering with scaffolds/temporary structures/protective measures belonging to ENEL or other contractors.	III

⁵ Excluding commuting Accidents



CATEGORY	BREACH	SEVERITY
	Lack in the use and management (missed check, tampering, inappropriate use etc.) of working equipment (platform, ladder, scaffolding, machines, tools etc.).	II
	Unauthorized removal of fences, locking devices, locks, prohibiting and warning posters.	II
	Lack of Contractor's procedures related to safety relevant activities to be executed.	II
	Failure to comply with the provisions reported in the H&S Plan for managing the interferences.	II
	Failure to use of PPE/Use of PPEs not compliant with Law and/or Contract and/or these HSE Terms and/or HSE Requirements (e.g. CE conformity marking relevant to European Community or equivalent standard) or damaged.	II
	Inadequate lighting of work area	I
	Failure to signal Work Site or to adopt adequate barriers to fence the area (whenever necessary).	II
	Missing/incorrect/incomplete adoption of safety signs for temporary road works.	I
	Failure to apply the instructions provided by safety signs.	II
	Failure to comply with smoking ban	I
	Missing/incorrect/incomplete adoption of safety signs.	I
	Inadequate housekeeping/materials storage in Work Sites.	I
	Lack of adequate measures concerning emergency management.	II
	Inadequate distribution of potable water <i>I</i> foods.	II
	Inadequate setup of rest area.	II
	Inadequate number of toilet/exchanging rooms according to activity.	I
	Lack of adequate means of emergency intervention or paramedic personnel (when required).	III
	Failure to comply with requirement on Health and Safety from Law and/or Contract and/or these HSE Tem,s and/or HSE Requirement not mentioned in the other points of this list.	I
Electrical Risks	In case of live working, failure to apply/incorrect application/incomplete application of relevant H&S procedures.	III
	Failure to apply/incorrect application/incomplete application of 5 golden rules regarding electrical risk.	III
	Failure to use PPE and Collective Protective Equipment (CPE) for electrical risks.	III
	Use of PPE and Collective Protective Equipment (CPE) for electrical risks not compliant with Law and/or Contract and/or these HSE Terms and/or HSE Requirement.	III
	Non-compliance/incomplete compliance with other Law and/or Contract and/or these HSE Terms and/or HSE Requirements regarding prevention of electrical hazards.	II
Work at height	Failure to use PPE and Collective Protective Equipment (CPE) related to the risks of falling from heights.	III
	Use of PPE and Collective Protective Equipment (CPE) related to the risks of falling from heights inconsistent with Law and/or Contract and/or these HSE Terms and/or HSE Requirements.	III
	Non-compliance/incomplete compliance with other Law and/or Contract and/or these HSE Terms and/or HSE Requirements relevant to works at height.	III



CATEGORY	BREACH	SEVERITY
	Use of scaffolding non-compliant with applicable regulation or use of scaffolding of other contractor or third parties without previous authorization.	II
Mechanical load lifting	Incorrect use of load lifting equipment/adoption of incorrect procedures for load lifting.	II
	Lack of or not compliance with H&S Plan for load lifting operations by mechanical equipment.	II
	Failure to respect load capacity of slabs, platform, grids etc.	III
Works with exposure to chemical risks	CARCINOGENIC - MUTAGENIC - ACUTE TOXIC SUBSTANCES	
	Failure to notify ENEL of the introduction of such chemicals in Work Sites	III
	Missing/incomplete compliance with H&S regulations and ENEL's provisions regarding labelling and safety data sheet while handling, transporting, using and storing chemicals.	II
	OTHER CHEMICALS⁶	
	Failure to notify ENEL of the introduction of such chemicals in Work Sites.	II
	Missing/incomplete compliance with Law and/or Contract and/or these HSE Terms and/or HSE Requirements regarding labelling and safety data sheet while handling, transporting, using and storing chemicals.	I
Works with exposure to physical agents	Emission of physical agents (e.g. noise, vibration, dust) not notified to ENEL, or above authorized threshold limits, or that could cause damage to ENEL or third parties.	II
Works with exposure to risk of fire/ explosion	Missing/incomplete compliance with Law and/or Contract and/or these HSE Terms and/or HSE Requirements on fire prevention measures.	II
	Missing/incomplete compliance with Law and/or Contract and/or these HSE Terms and/or HSE Requirements on protection measures in explosive atmospheres (ATEX) as classified by ENEL.	III
Hot Works (such as welding and cutting)	Works performed not in compliance with Law and/or Contract and/or these HSE Terms and/or HSE Requirements relevant to hot works.	II
Excavations (depth greater than 1.5 m)	Activities not protected against exposure to the H&S risks related to excavations, (e.g. excavation not protected, personnel within the operative radius of the excavation machine).	II
Works in confined spaces	Activities not protected against exposure to the H&S risks relevant to confined spaces as classified by ENEL (e.g. failure in atmosphere check, in number of rescue people).	III
Works above water/with hydraulic risk	Works performed not in compliance with Law and/or Contract and/or these HSE Terms and/or HSE Requirements concerning risks related to works above water.	II
	Works performed not in compliance with Law and/or Contract and/or these HSE Terms and/or HSE Requirements concerning hydraulic risk.	III
Underwater works	Works performed not in compliance with Law and/or Contract and/or these HSE Terms and/or HSE Requirements relevant to underwater works.	III

Key

I Severe Breach

II Very Severe Breach

III Extremely Severe breach which will cause a significant downgrading in the Vendor Rating Index

⁶ e.g. Chemicals which can produce: skin corrosion/irritation, serious eye damage/eye irritation, respiratory/skin sensitization, specific target organ toxicity, respiratory hazard, reproductive toxicity.



19.4 SANCTIONS FOR VIOLATIONS OF THE RULES REGARDING ENVIRONMENTAL PROTECTION

19.4.1 Without prejudice to its right to terminate the Contract, in relation to each violation regarding the environmental protection, and without prejudice to its right to claim further damages, ENEL also has the right - at its sole discretion - to apply, by notifying the Contractor by official communication with proof of receipt, the sanctions listed and quantified in “APPENDIX 3 Sanctions for HSE violations” relevant the specific Country.

19.4.2 In case the Contractor (ore one of its Subcontractors) is responsible of an environmental event impacting the environment and/or the organization of ENEL due to environmental issues, ENEL reserves the right to apply - depending on the relevance of the impact - a sanction of up to 2% of the total (or maximum) contract value and in any case not less than the amount specified in “APPENDIX 3 Sanctions for HSE violations”.

INDICATIVE (NON-EXHAUSTIVE) LIST OF ENVIRONMENTAL SEVERE, VERY SEVERE AND EXTREMELY SEVERE BREACHES

CATEGORY	BREACH	SEVERITY
General provisions	Forgery of legal documents relating to environmental issues	III
	Recurrence of the same very severe environmental violations (listed in this list, as severity II)	III
	Starting activities without all the necessary ENEL’s internal authorizations regarding environmental aspects	II
	Activities carried out in violation of ENEL’s internal Environmental Systems rules or contractual environmental clauses.	II
	Environmental liability insurance to cover environmental responsibilities not issued (where applicable)	II
	Recurrence of the same severe environmental violations (listed in this list, as severity I)	II
	Employment of personnel without professional profiles/qualification/training requested to understands and executes all requirements and regulations relating to environmental protection, that are applicable to perform the Contract.	I
	Failure to submit environmental reports according to the defined deadline	I
	Failure to participate in coordination meetings (if required according to environmental legislation or required by contract)	I
Event reporting	Failure to immediately make adequate mitigation measures in case of environmental event/ damage.	III
	Failure to immediately (and no later than 48h) communicate to ENEL any evidence related to checks and inspections carried out by authorities and, in case of infringement, the actions carried out or planned in agreement with the authorities aimed at restoring legal compliance.	III
	Failure to communicate immediately to ENEL (and/or to the authorities when it is required) on any environmental event that occurs during the execution of the Contract and that implies the obligation of reporting to the authorities.	III
	Failure to communicate immediately to ENEL on any environmental event that occurs during the execution of the Contract and that not implies the obligation of reporting to the authorities.	II
	Failure to submit a written report of the environmental event including its causes and the measures taken for the management and resolution of the event, within a maximum of 24 hours.	II

CATEGORY	BREACH	SEVERITY
	Failure to submit a written notice of any Environmental Near Miss, within 3 calendar days.	I
Compliance - Air Emission	Execution of the activities without authorization for air emission or lack of preventive and implemented operative measures necessary to comply with limits stated by the authorization or the applicable regulation.	III
Compliance - Water protection	Execution of the activities without authorization for waste water discharge or lack of preventive and implemented operative measures necessary to comply with limits stated by the authorization or the applicable regulation.	III
	Use <i>I</i> suction of unauthorized water	III
	Reiterated or systematic use <i>I</i> suction of water above the allowed limit capacity	II
Compliance - Soil protection	Lack of preventive measures aimed to prevent soil contamination (eg. Mixer truck washing, containment tanks for diesel tanks)	I
Compliance - Waste	Waste management without authorization or not in compliance with the authorization or applicable regulation.	III
Compliance - Others	Execution of the activities without authorization or lack of preventive and implemented operative measures necessary to comply with applicable Law regarding environmental matrices: air emission (e.g. dust from vehicles), water discharge (e.g. domestic waste water and storm water discharge), waste management, soil usage, non-Hazardous Materials management, noise and vibration emission, biodiversity, protected areas, archeological sites, personnel specific qualification, etc.)	II

Key

- I** Severe Breach
- II** Very Severe Breach
- III** Extremely Severe Breach which will cause a significant downgrading in the Vendor Rating Index

19.5 CONTRACT TERMINATION FOR REASONS ATTRIBUTABLE TO HEALTH, SAFETY AND ENVIRONMENTAL REQUIREMENTS

19.5.1 ENEL - at its sole discretion - may terminate the Contract in case:

- a) Fatal/severe Accident during the performance of the Contract, in which Contractor is, as determined by the accident investigation analysis carried out by the ENEL Group company, primarily responsible for the Fatal\Severe Accident; or
- b) Fatal/Severe Accident during performance of another contract with ENEL or another ENEL Group company by the Contractor or a Contractor Group company, in which Contractor or the relevant Contractor Group company (i) is, as determined by the accident investigation analysis carried out by the ENEL Group company, primarily responsible for the Fatal\Severe Accident and (ii) has a negative outcome in Enel's assessment on HSE organization of Contractor and/or Contractor Group company; or
- c) contractor does not implement actions defined in the remediation plan (proposed by Contractor after a HSE default and validate by ENEL) within the specified time limit, or
- d) the amount of the safety sanctions applied due to violation reach the greatest amount between 5% (five per cent) of the Contract's value and the equivalent amount of 20 severe sanctions, or
- e) the amount of the applied environmental sanctions reach the greatest amount between 5% (five per cent) of the Contract's value or the equivalent amount of 20 severe sanctions, or
- f) violations by the Contractor and/or any Subcontractor of the requirements of law on the protection of the environment, implying at least one of the following consequences:



- High widespread impact; long term or irreversible environmental-biodiversity damage,
- Non-compliance with legal or permit requirements that could result in:
 - impact on licenses,
 - civil/criminal lawsuits with restriction of Enel personnel freedom,
 - civil/criminal lawsuits with liability involvement of Enel personnel,
 - Environmental Asset Shutdown,
- Reputational issues:
 - concerns among national and international stakeholders, expressed in a written communication send to ENEL,
 - Negative media involvement at national and international level for one or more high-impact events,
- Financial loss (all costs incurred as a result of the environmental event, i.e. fines and penalties, liabilities, immediate corrective actions, remediation plan implementation, loss of revenues, etc.) greater than 1.000.000 €.

19.5.2 In the event that ENEL make use of this contractual right, the Contract shall be immediately terminated after ENEL's written notice without any negotiation, without any compensation and without any other prior formality nor court intervention, arbitration process or any other procedure being necessary.



APPENDIX 1 FOCUS ON COMPLEX WORKS ACTIVITIES

1. DOCUMENT AIMS AND APPLICATION AREA

1.1 This Appendix specifies the main working roles involved and the documentation required to perform the planning, organization and coordination of the work activities in case of complex work activities on Work Sites. The working roles and documentation outlined in this Appendix are mandatory for the activities execution and they shall be formally identified.

1.2 This Appendix gives the minimal requirements to be adopted and represent the best practice for the execution of complex work activities/construction activities. It shall be applied in compliance with any applicable Laws and country/local regulations which in any case prevail over the provisions contained in this document.

1.3 Contractor shall comply with all the rules specified in this Appendix, for the management of interference risk. To this end, Contractor shall:

- (i) for Complex Works whose HSE coordination is under Contractor's control:
 - 1. appoint and include in its HSE Organization the HSE coordinators with roles and responsibilities as defined in this Appendix, and
 - 2. ensure that planning phase and executing phase are carried out according to the principles here defined, or
- (ii) for Complex Works whose HSE coordination is under ENEL or third-party control:
 - 1. cooperate with appointed HSE coordinators and
 - 2. comply with requirements from Safety Work Planning of activities

The Contract specifies which of the option above shall be adopted by the Contractor.

2. DEFINITIONS AND ACRONYMS

In the present Appendix the following definitions apply:

“Environmental Coordinator (E Coordinator)”: one or more representatives, appointed by the Contractor among its personnel and/or from third parties, which are responsible for carrying out environmental coordination activities provided for in the Contract and/or the applicable legislation . If not required in the Contract, the E coordinator can be represented by the same representative for the HS coordinator profile, if he/she is qualified for the role.

“Foreman supervisor”: Person who, while still having all the features of a Foreman, plays a role of general coordination of the activities by controlling the compliance of the general planning established as well as the anticipated development of the activities to be performed in the whole work.

“Handover of a work area”: Action by which a work area is made available for its access and works, by informing the recipient about its conditions, safety conditions included.

“Handover back of a work area”: Action by which a work area previously handed over is made available at the conclusion of certain works.

“HS Coordinator for design and planning”: one person who, in the design and planning phase, is responsible for establishing the Safety Working Planning of the activities (SWP) in order to minimize the possible interference risks.

“HS Coordinator for execution and control”: one person who, starting from the SWP, is responsible for the coordination between the different working groups during the execution phase, in order to minimize the interference risks.

3. PROCESS DESCRIPTION

3.1. Preliminary consideration

3.1.1 In this Appendix the main indications are provided for the management of the control of the work execution and for the management of the actions to be carried out in order to meet the prevention and protection measures needed in case of complex work execution.

3.1.2 For this purpose, it is essential that at any time a physical person shall be clearly identified who is responsible for the work and for the work area (handed over) managing. In complex works this cannot be obvious and then shall be accomplished, because either different subjects are involved at the same time (on the same installation or on different installations having, however, an ambiguous identification) or different subjects succeed and/or alternate with the work responsibilities over the time.

3.2. Working context and complexity

3.2.1 If the involvement, during the design/planning and/or execution and/or control phase, to a different extent, of the work ENEL and/or one or more contractors which are called to the work execution, in conjunction or not with ENEL, is considered, the working contexts where conditions of a complex work activity can be verified are normally the following:

- works carried out by working groups belonging to both ENEL and one or more contractors;
- works carried out by working groups belonging to more than one Contractor;
- works carried out by different working groups belonging to a single Contractor only;
- works carried out by personnel under one Contractor but belonging to different companies;
- works carried out by or on behalf of ENEL which can be affected by works carried out by third parties in the same Work Site or nearby areas.

3.2.2 The complex work activity shall be preventively planned and shall be controlled during its execution. Profiles shall be identified for the role of technical coordination of the planning (HS Coordinator for design and planning) and for the role of technical coordination of the execution and control (HS Coordinator for execution and control) of work activities, also with regard to the safety purposes.

3.2.3 A complex work activity is developed according to the following phases:

1 “Work Planning” (WP)

Planning of the activities and related prevention and protection measures against hazards.

The WP phase normally concerns:

- identification of the Work Site (construction site);
- subdivision into work phases taking place in the same work area, at the same time or subsequently;
- identification of the specific hazards due to the different activities in the work areas or in their proximity, and subsequent management of the possible hazards interfering among different work activities;
- Identification of applicable environmental regulation;
- logistic management of the Work Site (accesses, storage of materials, etc.);
- time scheduling and duration of the different works, with a clear identification of works responsibilities;
- define appropriate handover conditions;
- identification of specific skills required for the works execution;
- identification of the machinery required for the works execution ;
- identification of measures for the emergencies management;
- sharing of information with involved parties (ENEL, contractors, subcontractors);
- sharing of information with the parties operating in the same Work Site (if possible);
- in case of access to Work Sites owned by a third part where installations belonging to ENEL are included, identification and agreement with the third part on measures for the interferences reduction at the construction site (e.g., definition of the work logistics, work timing and phases which are suitably agreed, responsibilities clearly defined, etc.).

The WP shall give preference to solutions excluding or reducing to a minimum the interferences between the different work activities (e.g., execution at different times or in work areas where the interference of hazards is minimized).

The WP is normally shared with all the involved working parties, and represents an action of coordination of the work activities to be performed and a moment for the definition of the prevention and protection measures, which all the working parties involved are required to comply to.

2) “Work Execution (WE)”

Execution, control and coordination of works activities.

Once the WP phase is completed/shared, the phase of WE can be started. During this phase it is necessary to control that works are carried out according to the plan previously established, by implementation of the provided prevention and protection measures.

If during a working phase it is found that a modification is needed of the plan previously established, this plan shall be redefined before the execution of the works concerned, after a sharing with the involved parties. In this phase, interfacing also can be necessary with the third parties working in the nearby areas in order to define additional prevention measures which were not established previously.

Depending on the work complexity, actions of periodical coordination and/or specific coordination, if it is required by the work phases, shall be carried out, e.g., at the work beginning and end and/or in correspondence of specific working phases, whether or not interference hazards are present.

During the works execution, the start of work activities/phases or the handover of responsibilities in their operational and safety management (between each phase or during their execution) shall occur with the Work Site under safety conditions and shall be always documented (e.g., installations handover, work areas handover, etc.) so that it is traceable who is responsible for the works and to which the work area is handed over.

3.3. Profiles involved in the process and relevant skills

3.3.1. Profiles involved in the process

The following profiles are normally identified:

1) During the WP phase:

- the profile of “HS Coordinator for design and planning” who, by consulting the parties involved in the work to be carried out, cooperates with the work planner in the definition of the activities planning and update/establishes the preventive H&S coordination planning of this work in order to reduce the interference hazard.

2) During the WE phase:

- where it is required by the work complexity, a profile of “HSE Coordinator for execution and control” who performs, with regard to the safety purposes, an action of coordination between the different subjects taking part to the work execution, with the aim of controlling the compliance of the prevention and protection measures against the interference hazards which have been previously established. This profile can play its role periodically or punctually.
This profile is similar to the profile of “HS Coordinator for design and planning”, it could be covered by the same physical person, and can work to modify the Works planning, when it is required by the activities development.
- the profiles of “E Coordinator” which are responsible for carrying out environmental coordination activities provided for in the Contract and/or the applicable legislation. If not required in the Contract, the E coordinator can be represented by the same representative for the HS coordinator profile, if he/she is qualified for the role.
- If needed, the profile of “Foreman supervisor” who controls the compliance of the general execution planning which has been established preliminarily to the work as well as the anticipated development of the activities to be performed in the whole work, by playing a role of general coordination of the activities;
- one or, if needed, more profiles of “Foreman” who are responsible for the management of the single work activities in which the planning is subdivided, from the handover of the work area until its handover back. Besides the correct execution of the assigned activities, these profiles are responsible for the control of the compliance of the connected safety issues. This profile shall be aware of the planning contents and, if necessary, contribute to its preventive definition; therefore this profile also relates with the possible “Foreman supervisor” as concerns the general coordination of works/construction site, and with the “HS Coordinator for execution and control” as concerns the compliance of the safety measures and the interferences management. A Foreman can take the role of Foreman supervisor when the work activity under its control does not avoid him to cover this role of Foreman supervisor .

3.3.2. Skills of the profiles involved in the process

3.3.2.1 The profile of “HS Coordinator for design and planning” and “HS Coordinator for execution and control” (she/he will cover the roles of coordination and control) shall have the following features:

- experience in the execution of complex work activities and in the related arrangement;
- ability of risk analysis as concerns the activities performed and assessment of the possible interferences;
- knowledge of the prevention and protection measures against the hazards and of the measures for the interferences mitigation;
- knowledge of the safety regulations and standards;
- ability of coordination and mediation between different needs and profiles;
- assumption of responsibility and leadership in dealing with also special situations.

3.3.2.2 The profile of “Foreman supervisor”, besides the skills of the profile of “Foreman”, shall also have the following:

- experience in the execution of complex work activities and in the related arrangement;
- ability of coordination and mediation between different needs and profiles;
- assumption of responsibility and leadership in dealing with also special situations.

3.4. Documentation

3.4.1 The works planning is normally synthesized in a document, the “Safety Works Planning” (SWP), tracing the contents foreseen for this phase, which is shared by the parties concerned and is drawn up preliminarily to the works execution. This document shall be issued and signed by the relevant HS Coordinator.

3.4.2 When it is allowed by the works complexity and by ENEL too, the SWP document also may have simplified forms until to become a note between the parties involved in the work.

3.4.3 The coordination action, carried out by the HS Coordinator for execution and control, shall be traceable, and can be carried out by verbalized in writing meetings or even formal communication between the parties. Each safety handover and handover back of the work areas shall also be traceable by means of suitable signed documentation in order to know at any time who is responsible for the works.

3.4.5 The issued documentation, handovers included, shall be always present at the Work Site, at disposal of all the profiles involved.



APPENDIX 2 WASTE MANAGEMENT

1. ITALY

1.1 All waste originating from the activities inherent to the subject matter of the Contract and entrusted to the Contractor must be managed in compliance with applicable provisions of Law and with all the provisions of the Contract.

1.2 The Contractor, as producer of waste, is responsible for all the activities related to the management of waste and resulting material produced during works execution, including packaging compliance with applicable provisions of Law. In particular, the Contractor is responsible for the legal obligations relating to the appropriate management of any temporary warehouses, and for the filing and storage of environmental documents. Wastes produced by the Contractor, shall be conferred by the Contractor, at its care and cost, to parties authorized to waste recovery or, where this is not possible, to parties authorized to waste disposal.

1.3 The Contractor is strictly forbidden to set up temporary waste storage areas in the sites where activity inherent to the subject matter of the Contract is being performed, unless otherwise specified in the Contract; in this case, waste produced by the Contractor, by activities performed inside Enel Work Sites, shall be stored exclusively in the areas assigned by Enel and managed according to the provisions for temporary storage of waste.

1.4 The Contractor, , to carry out the activities related to waste management, shall:

- a) be registered in the National Register of Environmental Managers, pursuant to art. 212 of Legislative Decree No. 152/2006 and, where envisaged, to be registered in the “White List” set up within the Prefectures;
- b) provide to Enel
 - a. a copy of the certificate of enrollment on the Register, together with a copy of the receipts certifying the payment of the annual fees, with the related deadlines;
- c) confer the waste produced to parties authorized for waste recovery and/or disposal;
- d) provide Enel with a copy of its recovery or disposal authorization, where it is the owner of a recovery or disposal plant which it intends to use for the conferment of waste produced during its activity;
- e) provide Enel with a list of the plants to whom the waste, produced during the execution of the activities subject matter of the contract may be assigned, if the recovery or disposal activities are carried out by plants owned by third parties, attaching a copy of the related authorizations;
- f) promptly notify Enel of any update or modification of the deeds of registration to the Register, providing updated documentation, as well as any decision of the competent authorities that entail limitations or revocations relating thereto;
- g) delivery to Enel, before the execution of the activities requested by Enel and the subject matter of the Contract itself, a declaration confirming the validity and effectiveness of the aforementioned authorizations/registrations, in which it must be specified, inter alia, that they have not intervened, nor are any ongoing revocation or suspension measures by the competent Authorities.

1.5 If the Contractor does not carry out the activities of collection, transport and conferment of waste, the same can be subcontracted, in compliance with current regulations and subject to the express consent of Enel.

1.6 For the authorization to subcontract, the Contractor shall also submit to Enel:

- a copy of the registration in the National Register of Environmental Managers (Alba Nazionale dei Gestori Ambientali) of the subcontractor who will carry out the waste collection and transport activity;
- the list of plants where the waste produced during the execution of the contract will be assigned by the subcontractor and a copy of the relevant authorizations;
- a list of the types of waste produced.

1.7 Where envisaged, The Subcontractor shall be registered in the “White List” set up within the Prefectures.

1.8 If the Contractor uses a non-custodial intermediary for waste management, he shall provide Enel, in addition to the above documentation, with a copy of the registration to the Register of Intermediate Environmental Managers (Alba Nazionale dei Gestori Ambientali)

1.9 Where weighing systems are present, the waste must be weighed under Enel supervision.

1.10 The Contractor must deliver to Enel the copy - also by certified e-mail (PEC) - of the Identification Form.

1.11 Monthly or in any case on the occasion of the drafting of the Work Progress States (SAL) - and in any case in compliance with the maximum time limits established by the sector legislation for sending the waste transport documentation -, for waste deriving from the activities carried out in the period and *I* or accounted for in the individual Work Progress States, the Contractor shall provide Enel with a copy - also by certified Electronic Mail (PEC) - of the Waste Identification Forms (FIR - formulario di identificazione dei rifiuti), countersigned by the recipient or copy of the documentation required for cross-border shipments.



1.12 The payments of the individual SAL and in any case of the final SAL are bound to receive copies of the Identification Forms of the waste. Prior to Enel's issue of the final SAL, the Contractor must also declare that he has provided the waste management according to the Law, also indicating the type of waste (CER) managed.

1.13 ENEL may request at any time, and the Contractor cannot refuse, to provide a copy of the loading / unloading register.

1.14 Where envisaged, with regard to the management of excavated earth and rocks qualified as a by-product, the Contractor must provide a copy of the self-certifications made to ARPA, regarding compliance with the criteria for re-use and the complete use of the excavated material.

Enel reserves the right to carry out random checks.

1.15 It's clarified that if the activities that generates waste are carried out by one or more subcontractors, all the obligations included in this *APPENDIX 2 WASTE MANAGEMENT - 1. ITALY*, shall be considered obligations for the subcontractors, being waste producers, without prejudice to the responsibility of the Contractor to verify the compliance with Law and the proper management of the activities.

1.16 With reference to the waste in respect of which Enel is a waste producer, the parties to whom Enel will entrust - as intermediary, transporter, recovery and / or disposal company - the management of its waste, undertake to carry out the activities in compliance with the provisions of the Law in force as well as with all the obligations provided for in the Contract, especially in relation to respect the contractual provisions referred to in this article.

1.17 ENEL reserves the right to terminate the Contract, pursuant to and by effect of art.1456 of the Italian Civil Code, in the instances in which the Contractor and/or any subcontractor breaches any of the obligations set forth in this *APPENDIX 2 WASTE MANAGEMENT - 1. ITALY*, in relation to waste management, without prejudice to Enel's right to suspend the execution of the Contract.

2. OTHER COUNTRIES

N.A.



APPENDIX 3 SANCTIONS FOR HSE VIOLATIONS

The following table reports, for each Country and for each severity level of the violation, the minimal economic amount of the specific sanction .

Country	Courr.	Health & Safety breaches			Environmental breaches		
		Severe (I)	Very Severe (II)	Extremely Severe (III)	Severe (I)	Very Severe (II)	Extremely Severe (III)
Argentina	US \$	650	1.300	1.300	650	1.300	1.300
Australia	US \$	650	1.300	1.300	650	1.300	1.300
Brazil	Reais	1.500	3.000	3.000	1.500	3.000	3.000
Bulgaria	Euro	1.500	3.000	3.000	1.500	3.000	3.000
Chile	CLP	200.000	400.000	400.000	200.000	400.000	400.000
Canada	US \$	650	1.300	1.300	650	1.300	1.300
Colombia	SMMLV ⁷	0,7	1,4	1,4	0,7	1,4	1,4
Costa Rica	US \$	650	1.300	1.300	650	1.300	1.300
Egypt	US \$	650	1.300	1.300	650	1.300	1.300
Ethiopia	US \$	650	1.300	1.300	650	1.300	1.300
Germany	Euro	1.500	3.000	3.000	1.500	3.000	3.000
Great Britain	GBP	1.500	3.000	3.000	1.500	3.000	3.000
Greece	Euro	350	700	700	350	700	700
Guatemala	US \$	650	1.300	1.300	650	1.300	1.300
India	INR	75.000	150.000	150.000	75.000	150.000	150.000
Indonesia	IDR	1,380,000	2.760.000	2.760.000	1.380.000	2.760.000	2.760.000
Italia	Euro	500	1.000	1.000	500	1.000	1.000
Kenya	KES	100.000	200.000	200.000	100.000	200.000	200.000
Mexico	US \$	650	1.300	1.300	650	1.300	1.300
Morocco	US \$	650	1.300	1.300	650	1.300	1.300
New Zealand	US \$	650	1.300	1.300	650	1.300	1.300
Panama	US \$	650	1.300	1.300	650	1.300	1.300
Peru	UIT	1	2	5	1	2	5
Portugal	Euro	500	1.000	1.000	500	1.000	1.000
Romania	Leu	1.500	3.000	3.000	1.500	3.000	3.000
Russia	RUB	20.000	40.000	40.000	20.000	40.000	40.000
South Africa	Euro	180	360	360	180	360	360
Spain	Euro	1.500	3.000	3.000	1.500	3.000	3.000
Turkey	US \$	650	1.300	1.300	650	1.300	1.300
Un. Arab Emirates	AED	2.000	4.000	4.000	2.000	4.000	4.000
Uruguay	US \$	650	1.300	1.300	650	1.300	1.300
U.S.A.	US \$	650	1.300	1.300	650	1.300	1.300
Vietnam	DONG	2.450.000	4.900.000	4.900.000	2.450.000	4.900.000	4.900.000
Zambia	US \$	650	1.300	1.300	650	1.300	1.300

⁷ SMMLV: Salario Minima Mensuale Legal Vigente





Annex F: Bases Técnicas HSEQ CHILE GRE_CHL_QSE_MN_01_Vers.5_09/11/2018



Manual GRE_CHL_QSE_MN_01_Vers.5

Versión no. 05 fecha 09/11/2018

Subject: BASES TECNICAS HSEQ E&C CHILE

Áreas de Aplicación

Perímetro: Chile

Función : Health, Safety, Environment and Quality

Business Line: Renewable Energies

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BASES TECNICAS HSEQ E&C CHILE

05	09/11/2018	Actualización de los requerimientos de para contratistas y cambio de formato	Andres Bravo	Felipe Umaña	Alex Palma
Rev.	Fecha	Descripción	Red.	Contr.	Apro.

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1. GENERALIDADES

1.1 INTRODUCCIÓN

ENEL GREEN POWER CHILE ha confeccionado las siguientes Bases Técnicas de Salud, Seguridad, Medio Ambiente y Calidad para empresas Contratistas y Subcontratistas, teniendo en consideración los siguientes objetivos:

- Diseñar, construir y poner en marcha un Proyecto y desarrollo de los parques en Construcción con Cero Daño, dentro del presupuesto y plazos establecidos, incorporando las mejores tecnologías con costos competitivos y sustentables en el tiempo.
- Instaurar y mantener relaciones industriales laborales armónicas y transparentes entre ENEL GREEN POWER CHILE y las Empresas Contratistas, existiendo un completo conocimiento de los deberes y derechos que corresponden al mínimo cumplimiento, mientras se desempeñen en Proyectos de ENEL GREEN POWER CHILE.
- La responsabilidad de la Salud, Higiene, Seguridad, Calidad, Medio Ambiente Natural y Humano es una función imperativa diaria y permanente de cada Contratista, desde el Supervisor de Primera Línea hasta los niveles superiores a éste. Igualmente, es responsabilidad de cada trabajador velar por su integridad física y la de los demás, acatando y cumpliendo las normas existentes, promoviendo y sugiriendo nuevas ideas a sus supervisores, que vayan en directo beneficio de la Salud, Seguridad, Medio Ambiente y Calidad.
- Oficializar y publicar las normas que complementan y forman parte del Contrato con las Empresas Contratistas y Subcontratistas.

Estos conceptos han sido considerados en la preparación de estas bases, por lo que esperamos que cada Empresa Contratista y sus trabajadores asuman con responsabilidad la ejecución de las tareas encomendadas y podamos decir con orgullo que nuestras instalaciones están libres de incidentes.

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1.2 ALCANCE

Forman parte integrante de estas Bases Técnicas HSEQ, los siguientes documentos:

- Política de Calidad, Seguridad y Medio Ambiente de ENEL GREEN POWER (EGP),
- Política Stop Work de Enel,
- Declaración de compromiso por la Salud y la Seguridad,
- Technical specification Health Safety and Requirements,
- Requerimientos HSEQ LAT E&C EGP,
- Reglamento Especial para Empresas Contratistas y Subcontratistas en Calidad, Seguridad y Medio Ambiente de EGP Chile,
- Reglamento de Multas HSEQ de EGP Chile,
- Manual ingreso plataforma de acreditación,
- Criterios de acreditación,
- Requisitos de acreditación,
- PL 106 Clasificación, comunicación, análisis y reporte de incidentes,
- PL 52 Metodología para analizar accidentes – Árbol de fallas,
- IO 183 Reporte y análisis de accidentes, primeros auxilios, near miss y inc. Ambientales,
- Anexo 2 IO 183 Lección Aprendida,
- Anexo 3 IO 183 Informe Investigación Accidentes (RCA),
- Anexo 4 IO 183 Investigación de accidentes,
- Anexo 5 IO 183 RCA Short Report,
- Procedimientos e Instructivos que son parte de las normas de Calidad, Salud, Seguridad y Medio Ambiente de Enel Green Power Chile;

El alcance de estas Bases Técnicas HSEQ son aplicables en:

- Todas las instalaciones tanto propias o que tengan directa relación con Proyectos de Enel Green Power Chile (desde la construcción hasta el cierre y rehabilitación del terreno).
- Proyectos desde la ingeniería conceptual, básica y detalle, hasta la Construcción y precomisionamiento de los trabajos encomendados por Enel Green Power Chile.
- Incluye todas las actividades realizadas por Contratistas y Subcontratistas en lugares donde Enel Green Power Chile desarrolla sus operaciones.
- Cualquier lugar o sitio o actividad donde Enel Green Power Chile sea mandante o se trabaje para Enel Green Power Chile.

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Áreas de Aplicación

Perímetro: Chile

Función :Health, Safety, Environment and Quality

Business Line: Renewable Energies

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Acrónimo y Palabra Clave	Descripción
Medio Ambiente	Unidad de medio ambiente dentro de HSEQ
E&C	Ingeniería y Construcción
GRE	Línea de negocio de Energías Renovables Globales
EGP	Enel Green Power Chile
H&S	Unidad de Seguridad y Salud dentro de HSEQ
HSEQ	Salud, Seguridad, Medio Ambiente y Calidad
Manager de E&C de HSEQ	Recurso de HSEQ de Seguridad y Medio Ambiente de todas las actividades de E&C.
Manager regional de HSEQ	Recurso de HSEQ de Seguridad, Medio Ambiente y Calidad a nivel regional.
HSHU	Unidad de Salud y Seguridad de la función de Recursos Humanos y Organización dentro de Enel SpA
Dirección local	La estructura de organización territorial consiste en una o más plantas, orientadas a la producción de productos o servicios, dotadas de autonomía financiera, funcional y técnica.
O&M	Operación y Mantenimiento
Información básica	La Información básica es un conjunto de datos mínimos destinados a describir correctamente un evento de Seguridad o Medioambiental. □ Seguridad: tipo y descripción del incidente; dónde y cuándo ocurrió; personas involucradas; lesiones sufridas; 1erº diagnóstico; contratista involucrado; medidas inmediatas adoptadas; fotos □ Medio Ambiente: tipo y descripción del incidente; dónde y cuándo ocurrió; personas involucradas; daño provocado; posibles impactos; contratista involucrado; medidas inmediatas adoptadas; fotos.
Evento crítico	Evento accidental, natural o fraudulento / criminal, real o potencial, que tiene la capacidad de impactar en las operaciones de EGP, el desempeño financiero, las partes interesadas, la reputación, el medio ambiente, la salud pública y la seguridad.

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Subject: BASES TECNICAS HSEQ E&C CHILE

Áreas de Aplicación

Perímetro: Chile

Función : Health, Safety, Environment and Quality

Business Line: Renewable Energies

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Accidente in itinere (trayecto)	Accidente que ocurre durante el traslado/trayecto directo desde el domicilio del empleado al centro de trabajo o viceversa, o, si no hay disponible un comedor de empresa, durante el viaje normal de ida y vuelta entre el centro de trabajo y la zona donde se toman las comidas.
Incidente medioambiental	Un acontecimiento inesperado que causa, de forma temporal o a largo plazo, contaminación, inquietud por temas regulatorios o quejas públicas, o una combinación de estas. Cualquier incidente medioambiental podría causar o podría tener diferente magnitud y potencial de causar diferentes impactos en: 1. El medio ambiente (aire, suelo, agua, biodiversidad, hábitat natural, área histórica/cultural y otros aspectos tales como el ruido, la vibración y la radiación); 2. Conformidad legal; 3. Reputación; 4. Pérdidas financieras del país/compañía
Cuasi Accidentes medioambiental	Un evento inesperado que podría haber tenido como resultado un incidente medioambiental, pero que no tuvo efectos en el entorno. Un golpe de suerte en la cadena de eventos o un sistema de gestión adecuado en vigor impidió el incidente.
Evento	Esto puede significar: un accidente en el trabajo, un accidente in itinere, unos primeros auxilios, un Cuasi Accidentes, un incidente medioambiental, un daño medioambiental, una demanda contra GRE o sanciones a GRE.
Caso de primeros auxilios (Accidente con lesión sin pérdida de tiempo)	Un evento que causa lesiones, que se produce debido a una causa violenta y en el trabajo (con el significado de "relacionado con el trabajo"), y que requiere de primeros auxilios en un centro de atención médica o el uso de un kit de primeros auxilios, reanudándose el trabajo inmediatamente o abandonándose sólo durante el resto del día o del turno durante el que tiene lugar.
Evento Potencialidad Alta	Un evento de Potencialidad Alta se define como cualquier evento (accidente, omisión del deber, primeros auxilios, Cuasi Accidentes) que causa inmediata o posteriormente, o podría causar, varias lesiones graves y/o pérdida de vidas humanas.
Observación de HSEQ	La identificación y documentación de un comportamiento potencialmente inadecuado c

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Subject: BASES TECNICAS HSEQ E&C CHILE

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Perímetro: Chile

Función :Health, Safety, Environment and Quality

Business Line: Renewable Energies

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	<p>peligroso o una situación peligrosa que podría conducir a un incidente.</p>
<p>Accidente laboral (<i>Accidente con lesiones y pérdida de tiempo</i>)</p>	<p>Un evento que implica una lesión debido a una causa violenta y en el trabajo (con el significado de "relacionado con el trabajo"), que causa muerte o incapacidad laboral permanente, total o parcial, que es una incapacidad total temporal que implica la ausencia del trabajo durante al menos un día, excluyendo el día que se produce el incidente.</p> <p>En lo que respecta a los accidentes, se pueden distinguir:</p> <ul style="list-style-type: none"> • Accidente fatal: un evento que implica una lesión que causa la muerte de la persona lesionada. • Accidente grave: un evento que causa una lesión con: <ul style="list-style-type: none"> - primer pronóstico, referido en el primer certificado médico emitido, de más de 30 días (naturales); - pronóstico reservado, hasta que el empleado lesionado sale de la lista de peligro del hospital/sala de emergencias; - pronóstico desconocido pero que se estima de más de 30 días (naturales) a partir de una evaluación inicial de la división/compañía implicada. <p>Cuando el empleado lesionado sale de la lista de peligro del hospital/sala de emergencia o se define el pronóstico, el accidente se tiene que considerar grave sólo si el primer diagnóstico es de más de 30 días (naturales). Siempre que el empleado lesionado no salga de la lista de peligro del hospital/sala de emergencia o el pronóstico siga siendo desconocido dentro de los 30 días (naturales) desde la fecha del accidente, el accidente tiene que ser clasificado como grave.</p> <ul style="list-style-type: none"> • Accidente no grave: un evento que causa una lesión con un primer diagnóstico, referido en el primer certificado médico emitido, hasta los 30 días (naturales) • Accidente significativo: Un evento que causa una lesión, no clasificada como "grave", pero que ha provocado la lesión/traumatismo que figura en la siguiente tabla: <p>Criterios para identificar los Accidentes Significativos Lesión de vértebras/fractura de pelvis</p>

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	Traumatismo craneal Cualquier traumatismo causado por una caída de altura Quemaduras de 2º y 3º grado. Implicaciones para la salud como consecuencia de asfixia o envenenamiento. Pérdida de extremidades u otras mutilaciones Parada cardiorrespiratoria (asociada con la actividad laboral)
Incidente material	Un evento no planeado o no controlado que tiene como resultado daños en los equipos, bienes o instalaciones (no en las personas).
Cuasi Accidentes	Un evento no planeado relacionado con el trabajo que no tiene como resultado una lesión o enfermedad pero que tenía potencial para hacerlo. Sólo un golpe de suerte en la cadena de acontecimientos impide el accidente.

1.3 DEFINICIONES

- **HSEQ:** Se refiere a las normas de Salud, Seguridad, Medio Ambiente y Calidad.
- **EGP:** Enel Green Power Chile
- **Compañía:** Compañía Enel Renovable
- **Contratista:** Persona Natural o Jurídica que, en virtud de un Contrato, contrae la obligación de ejecutar una obra Material, suministrar un producto o de prestar un Servicio a Enel Green Power Chile
- **Representante del Contratista:** En los documentos de Enel Green Power Chile. Se ha utilizado las expresiones "Gerente General" y "Gerente de Construcción" o "Jefe de Obra" términos convencionales de más alto rango dentro de la organización del Contratista.
- **Gerente General:** Persona de más alto rango designado por el Contratista y representante legal, para representar todo lo relacionado con el Contrato. A él le corresponde asumir e implementar todas las acciones que en este documento son indicadas como responsabilidades del Contratista.
- **Gerente de Construcción o Jefe de Obra:** Persona de más alto rango designado por el Gerente General del Contratista para representarlo permanentemente en faena.
- **Safety Officer:** Prevencionista Encargado de la Salud, Seguridad, de los Proyectos en Construcción.
- **Environmental Officer / Encargado Ambiental:** Encargado del área Ambiental de un Proyecto.

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Áreas de AplicaciónPerímetro: *Chile*Función: *Health, Safety, Environment and Quality*Business Line: *Renewable Energies*

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- **Control HSEQ:** Personal administrativo del área HSEQ, y soporte del proceso de acreditación de empresas contratistas.
- **Trabajador:** Toda persona que preste servicios a un Contratista, sea en forma directa o de un subcontratista, a través, de un contrato.
- **Supervisor de Obra:** Personal de Enel Green Power Chile (EGP) o de proyecto en cuestión que ha sido asignado para velar por el cumplimiento de las Especificaciones Técnicas, diseños establecidos en los planos y todo otro documento técnico del Contrato.
- **Proyecto:** Área o superficie en el cual se desarrolla un Proyecto Energético EGP en sus diferentes fases.
- **Planta:** Centro de trabajo independiente de la tecnología (hidroeléctrico, fotovoltaico, eólico, geotérmico, híbrido) en el cual EGP realiza la operación y mantenimiento.
- **Accidente-Incidente:** Suceso relacionado con el trabajo que ha provocado o podría haber provocado una lesión al trabajador. Esta definición incluye los siguientes tipos de sucesos:
 - **Accidente con lesiones y tiempo perdido:** Referente a las lesiones, se distinguen:
 - Accidente mortal: Un incidente que provoca la muerte del trabajador lesionado.
 - Accidente grave: Accidente que provoca lesiones con más de 30 días de baja.
 - Lesiones sin tiempo perdido: Suceso que provoca lesiones que requiere atención de primeros auxilios o el uso de un kit de primeros auxilios, con reanudación inmediata del trabajo o abandono únicamente durante el resto de la jornada laboral, durante la cual ha tenido lugar el incidente
 - Cuasi accidente: Un suceso no previsto relacionado con el trabajo que no ha provocado lesiones o enfermedades, pero que podría haberlas ocasionado.
- **Accidente en el trayecto:** Accidente que tiene lugar durante el traslado directo a la residencia del trabajador, o al lugar de trabajo y viceversa. Puede ser también en el trayecto entre dos empleadores distintos, siendo imputables los días perdidos al empleador al cual se dirigía el trabajador.
- **Acción correctiva:** Acción tomada para eliminar la causa de un accidente o incidente, o de una no conformidad detectada u otra situación indeseable.



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- **Acción preventiva:** Acción tomada para eliminar la causa de una condición subestándar, o de una no conformidad potencial u otra situación potencialmente indeseable.
- **Auditoría:** Metodología mediante la cual se evalúa cómo el Contratista y/o el Subcontratista gestiona los siguientes aspectos de HSEQ: Política, Evaluación de Riesgos, Procedimientos Operativos, Estructura organizativa de la Seguridad y Salud Ocupacional, Gestión de la Formación, Gestión de los Elementos de Protección, Control de la Maquinaria y de los Equipos de Trabajo.
- **Caminata HSEQ o HSEQ Walk:** Inspección de aspectos de salud ocupacional, seguridad y medioambiente realizada por niveles gerenciales, administradores de contratos o de obras o jefes de áreas, entre otros, para promover en primera persona la cultura HSEQ, verificando la aplicación de las normas y la adopción de comportamientos seguros, cuidado del medioambiente, seguimiento de procedimientos de trabajo establecidos, así como el estado de las estructuras y las instalaciones.

El objetivo de la iniciativa es implicar a los distintos niveles de la dirección buscando desarrollar un papel activo para tutelar y promover el cuidado del medioambiente y la seguridad en el trabajo, demostrando a todos los empleados un compromiso personal y concreto.

- **Capacitación:** Actividad de formación que tiene como objetivo entregar habilidades y conocimientos a un trabajador con el fin de hacerlo competente para una o más labores. Esta actividad tendrá una duración mínima de 4 horas.
- **Charla Integrada:** Exposición de personal de EGP o contratista, que ponen en relevancia algún tema que puede traer consigo lecciones de eventos o un tema en donde se requiere reforzar.
- **Charla:** Exposición de un tema específico relacionado con su labor y el entorno, frente a un grupo de trabajadores que no reviste mayor formalidad ni límite de tiempo.
- **Charla operacional:** Actividad mediante la cual un grupo o cuadrilla de trabajadores analizan la secuencia paso a paso de una tarea, identificando los peligros y definiendo las medidas de prevención de riesgos.



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- **Circuito Desconectado:** Circuito eléctrico que está con todos los equipos de límites abiertos.
Circuito Energizado: Circuito eléctrico que ha sido verificado con tensión.
- **Circuito Desenergizado:** Circuito eléctrico que ha sido verificado sin tensión.
- **Circuito Energizado:** Circuito eléctrico que ha sido verificado con tensión.
- **Circuito Libre:** Circuito eléctrico sin ningún tipo de permisos vigentes ni conexiones a tierra, y que, por lo tanto, está en condiciones de ser energizado.
- **Conexión a Tierra:** (Tierra de Operación) Operación de unir eléctricamente a potencial cero cada fase propia de un circuito o equipo eléctrico desenergizado, con el objeto de proteger a las personas que intervienen en él.
- **Desconexión:** Acción de desenergizar un circuito o equipo eléctrico, abriendo los dispositivos de maniobra y/o elementos correspondientes.
- **Elementos de Protección Personal:** Elementos que, al ser utilizados por un trabajador, tienen por objeto brindarle protección frente a las condiciones de trabajo a las que está expuesto, prevenir o mitigar un daño en caso de un accidente o incidente con motivo del desempeño de su labor.
- **Incumplimiento:** Omisión o desacato a una disposición de este de este documento, procedimientos o legislación vigente.
- **Inducción de Hombre Nuevo:** Instrucción destinada a entregar información general acerca de una obra, faena o servicio y los riesgos generales de dichos lugares o instalaciones.
- **Inspector Técnico de Obras (ITO):** Persona responsable de las coordinaciones necesarias para que el contratista realice las obras encomendadas por el Mandante o el Área Administradora de acuerdo a lo establecido en el Contrato.



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- **Matriz de Identificación de Peligros y Evaluación de Riesgos:** Documentos donde están registrados y ordenados los peligros identificados de una obra o faena, y el resultado del proceso de evaluación de los riesgos asociados y las medidas de seguridad aplicables.
- **Permiso de Trabajo:** Autorización que otorga el Mandante al Contratista, donde quedan estipuladas las condiciones bajo las cuales se ejecutará un trabajo.
- **Procedimiento de Trabajo:** Documento que describe la secuencia para materializar una actividad, describiendo los equipos, materiales y herramientas que se utilizarán, estableciendo cómo se organizarán las personas y cuadrillas que ejecutarán el trabajo.
- **HSEQ:** Salud, Seguridad, Medio Ambiente y Calidad
- **Ropa de trabajo:** Vestimenta entregada por la empresa al trabajador y que es utilizada durante la jornada de trabajo.
- **Tensión o voltaje Reducido:** Se consideran parte de este grupo las instalaciones con tensiones menores o iguales a 100 Volts.
- **Tensión Baja (BT):** Se consideran parte de este grupo los sistemas o instalaciones con tensiones superiores a 100 Volts con un máximo de 1.000 Volts.
- **Tensión Media (MT):** Se considera que integran este grupo los sistemas con tensiones superiores a 1 Kv con un máximo de 60 Kv.
- **Tensión Alta (AT):** Se considera que integran este grupo los sistemas con tensiones superiores a 60 Kv con un máximo de 220 Kv.
- **Tensión de Retorno:** Es la tensión a la que queda sometido un circuito, después de haber desconectado su(s) fuente(s) de alimentación normal.
- **Tierra de Trabajo:** Es la conexión física al potencial cero de un equipo o red eléctrica ejecutada por el personal de terreno.



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- **Zona Desconectada:** Es la zona de un circuito que queda desenergizada, mediante la apertura de los equipos de maniobra, debidamente bloqueados.
- **Zona Protegida:** Es la zona de un circuito que queda delimitada por las puestas a tierra.
- **Zona de Seguridad:** Lugar definido y demarcado como el más seguro dentro de un sitio de trabajo. Es el lugar donde todo el personal que se encuentre en el área afectada debe dirigirse en caso de una evacuación por emergencia.
- **Sistema de Bloqueo:** Es un conjunto de dispositivos que permiten bloquear de tal manera un circuito, sistema, equipo o máquina, que impide que este o parte de este se energice en forma voluntaria o involuntaria. No permitiendo la liberación de energía, que entrando en contacto con un trabajador pueda provocar un accidente y lesionar a las personas.
- **Identificación con Tarjeta(s) de Advertencia:** Se refiere al procedimiento de colocación de tarjeta(s) de advertencia de bloqueo para advertir que un equipo, instalación o circuito ha sido bloqueado, prohibiendo el accionamiento de los dispositivos de aislamiento de energía, o medios mecánicos/energía neumática, hidráulica, etc.
- **Dispositivos para Aislar Energía:** Son mecanismos que físicamente evitan la transmisión o descarga de energía, como, por ejemplo: Interruptor desconectador, interruptor manual, válvula, flange ciego, bloques de madera o metálicos para sostener o trabar equipos, entre otros.
- **Espacio Confinado:** Es un lugar que no está diseñado para una ocupación continuada por parte de una o más personas, donde generalmente la entrada y salida es la misma, que posee condiciones desfavorables de ventilación, en el cual pueden concentrarse agentes tóxicos, inflamables, tener una atmósfera con deficiencia de oxígeno, producirse una inundación, derrumbe o atrapamiento repentino, tener una configuración tal que quien entre pueda quedar atrapado o asfixiarse. Además, no está diseñado para un trabajo continuo de 8 hrs, por lo que se tiene que considerar relevos de personal.
- **Asistente Autorizado:** Es la persona que permanece afuera del espacio confinado y mantiene comunicación con los entrantes. Debe monitorear las tareas dentro y fuera del





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espacio, estando atento a los posibles efectos en el comportamiento por la exposición a los peligros.

- **Atmósfera Peligrosa:** Significa una atmósfera que puede exponer a los a riesgos de muerte, de incapacidad, de disminución de la habilidad para el auto-rescate, así como a riesgos de lesiones o enfermedades graves debidas a una o más de las causas siguientes:
 - Atmósfera Deficiente en Oxígeno.
 - Atmósfera Combustible e Inflamable.
 - Atmósfera Tóxica.
 - Atmósfera Irritante.
- **Equipo de respiración autónoma (ERA):** Es un equipo utilizado por los rescatistas en caso de requerir ingresar a un área donde las condiciones de atmósfera son adversas. Este permite respirar en lugares donde la respiración por los medios normales (Nariz o boca) no es posible. Ante esto, Incorporan una fuente suministradora de aire (botellas).
- **CCHEN (Comisión Chilena de Energía Nuclear):** Es el organismo nacional rector de los trabajos que emplean radiaciones ionizantes o iones radioactivos.
- **Fuentes de 1º categoría:** Comprenden los aceleradores de partículas, plantas de irradiación, laboratorios de alta radiotoxicidad, radioterapia, y roentgenoterapia profunda, gammagrafía y radiografía industrial.
- **Gammagrafía Industrial:** Es la técnica de radiografía industrial en la que se utiliza los rayos gamma de una fuente radiactiva sellada.
- **Radiografía Industrial:** Ensayo no destructivo en el que se utilizan las radiaciones ionizantes, tales como los rayos gamma o X, para obtener imágenes radiográficas en objetos, sin destruirlos.
- **Instalaciones Radiactivas:** Recinto o dependencia habilitado especialmente para producir, tratar, manipular, almacenar, utilizar sustancias radiactivas u operar equipos generadores de radiaciones ionizantes.

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2. DISPOSICIONES HSEQ

Estas Bases Técnicas HSEQ que rigen para toda Empresa, natural o jurídica, que celebre un Contrato con EGP o sus filiales para la ejecución de cualquier proyecto, trabajo, obra o servicio de estas.

El Asesor de Prevención de Riesgos de EGP (Safety Officer y/o Encargado HSEQ) podrá, a pesar de existir una autorización previa, suspender o postergar el inicio de la acción si considera que las condiciones HSEQ no son suficientes o no son adecuadas.

2.1 NORMAS GENERALES

- Todo Contratista que celebre contrato con EGP, deberá dar cumplimiento íntegro y poner en práctica las Normas Generales y Procedimientos Específicos de Salud, Seguridad, Medio Ambiente y Calidad que se establezcan, como también aquellas instrucciones escritas y verbales que se impartan durante la ejecución de los servicios contratados.
- Para los efectos de estas Bases Técnicas, los Subcontratistas, Asesores, Consultores, Proveedores y Visitas que presten servicio a algún Contratistas, serán considerados pertenecientes a éste.
- Dar cumplimiento al Reglamento Especial para Empresas Contratistas en materia de Salud y Seguridad en el Trabajo, entregado junto con estas bases técnicas.
- Las Bases Técnicas HSEQ regirán para cualquier instalación, dependencia y accesos desde y hacia las instalaciones de Enel y sus proyectos relacionados.
- Las Bases Técnicas HSEQ podrán ser modificadas unilateralmente por EGP, si las circunstancias operacionales o de riesgos de accidentes así lo exigiesen, y cualquier alteración a éstas sólo podrán hacerla los Responsables HSEQ de Enel Green Power Chile en terreno.

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Toda modificación será comunicada al Contratista, a través, de EGP y sus Responsables HSEQ de terreno.

- Enel Green Power Chile podrá exigir dotación adicional de Responsables HSEQ de empresas contratistas, en el caso de que la evaluación de riesgos lo amerite a costo del contratista.
EGP, califica a toda la dotación de Responsable HSEQ de Empresas Contratistas, como Personal Indispensable y clave, a través, de una evaluación. Por lo tanto, la contratación, reemplazo y retiro del proyecto, por parte de las empresas Contratistas, deberá ser autorizada y acreditada previamente por el área de HSEQ de EGP.
- La acreditación y la dedicación del Responsable HSEQ del Contratista en obra será evaluada por el área HSEQ de EGP.
- Toda comunicación, tramitación de permisos, solicitudes, etc. hacia o con Organismos del Estado y/o sus representantes, deberán estar previamente comunicadas y autorizadas por EGP, a través, de su representante en proyecto.
- Todo Contratista que celebre contrato con EGP deberá estar afiliado a un Organismo Administrador según Ley 16.744, a fin que todos los trabajadores queden amparados por el Seguro contra riesgos de Accidentes de Trabajo y Enfermedades Profesionales.
- Toda empresa Contratista debe mantener una actitud respetuosa con los miembros de las comunidades vecinas y entorno del proyecto.
- Todo Contratista deberá tener conocimiento de la legislación vigente y poner en práctica lo establecido legalmente en:
 - Ley N° 16.744, Establece el Seguro Social contra Riesgos de Accidentes del Trabajo y Enfermedades Profesionales.
 - Ley N° 19.300, Establece ley de bases del Medio Ambiente y sus modificaciones.
 - Ley N° 20.417, Servicio de evaluación ambiental y la Superintendencia de Medioambiente.
 - Ley N° 20.123, Subcontratación Laboral aplicable a todas las Empresas Colaboradoras.
 - Ley N° 18.290, Ley de Tránsito y sus modificaciones.
 - Ley N° 20.096, Ley sobre Radiación Ultravioleta.

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- **Ley N° 20.660**, Modifica Ley N°19.419, en Materia de Ambientes libres de humo de Tabaco.
- **Ley N° 18.730**, Modifica Ley de Seguridad Nuclear.
- **Decreto con Fuerza de Ley N°725**, Código Sanitario.
- **Decreto Supremo N°594**, Reglamento sobre Condiciones Sanitarias y Ambientales Básicas en los Lugares de Trabajo.
- **Decreto Supremo N°298**, Reglamenta el Transporte de Cargas Peligrosas por calles y caminos.
- **Decreto Supremo N°206**, Modifica el Reglamento de Comités Paritarios de Higiene y Seguridad, agregando la promoción y capacitación de los trabajadores.
- **Decreto Supremo N°160**, Aprueba Reglamento de Seguridad para las Instalaciones y Operaciones de Producción y Refinación, Transporte, Almacenamiento, Distribución y Abastecimiento de Combustibles Líquidos.
- **Decreto Supremo N°148**, Aprueba el Reglamento Sanitario de Residuos Peligrosos.
- **Decreto Supremo N°133**, Reglamento sobre Autorizaciones para Instalaciones Radiactivas o Equipos Generadores de Radiaciones Ionizantes, personal que se desempeña en ellas, u opere tales equipos y otras actividades afines.
- **Decreto Supremo N°101**, Aprueba el Reglamento para la aplicación de la Ley 16.744.
- **Decreto Supremo N°40**, Reglamento del Sistema de Evaluación de Impacto Ambiental (SEIA) del Ministerio Secretaría General de la Presidencia.
- **Decreto Supremo N°91**, Dicta Normas sobre Instalaciones Eléctricas interiores en Baja Tensión.
- **Decreto Supremo N°90**, Reglamento de Seguridad para el Almacenamiento, Refinación, Transporte y Expendio al público de combustible derivados del Petróleo.
- **Decreto Supremo N°43**, Aprueba Reglamento de Almacenamiento de Sustancias Peligrosas.
- **Decreto Supremo N°76**, Aprueba Reglamento para la aplicación del artículo 66 bis de la Ley N° 16.744, gestión de la seguridad y salud en el trabajo en obras, faenas o servicios que indica.
- **Decreto Supremo N°54**, Reglamento para la Constitución y Funcionamiento de los Comités Paritarios de Higiene y Seguridad.
- **Decreto Supremo N°50**, Modifica el D.S N°40 agregando el Título VI: de la obligación de informar de los riesgos laborales ("Derecho a saber" u "Obligación de Informar").
- **Decreto Supremo N°48**, Aprueba Reglamento de Calderas y Generadores de Vapor.

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- **Decreto Supremo N°46**, Norma de Emisión de Residuos Líquidos a Aguas Subterráneas.
- **Decreto Supremo N°45**, Modifica D.S. 59, Establece la Norma de Calidad primaria para material particulado respirable MP10.
- **Decreto Supremo N°40** Aprueba Reglamento sobre Prevención de Riesgos Profesionales.
- **Decreto Supremo N°38**, Modifica el D.S N°146 que Establece norma de emisión de ruido generado por fuentes que indica.
- **Decreto Supremo N°28**, Modifica el D.S. 594, Hipobaria Intermitente Crónica por Gran Altitud.
- **Decreto Supremo N°18**, Certificación de Calidad de Elementos de Protección Personal Contra Riesgos Ocupacionales.
- **Decreto Supremo N°12**, Reglamento para el Transporte Seguro de Materiales Radiactivos.
- **Decreto Supremo N°3**, Reglamento de Protección Radiológica de Instalaciones Radiactivas.
- **Decreto Supremo N° 77/82**, Aprueba Reglamento complementario de la Ley N°17.798, que establece en control de armas y explosivos.
- **Decreto Supremo N° 884/49**, Ordenanza General de Construcciones y Urbanización.
- **Decreto N°40**, Aprueba Reglamento del Sistema de Evaluación de Impacto Ambiental, del Ministerio de Medio Ambiente.
- **Norma NSEG 4 E.p. 79**, Electricidad, Instalaciones Eléctricas de Corrientes Fuertes.
- **Norma NSEG 6 E.n. 71**, Electricidad, Cruces y Paralelismo.
- **CIRCULAR N° 3335**, "Obligaciones de las Entidades ante Accidentes Fatales y Graves". Deroga y reemplaza las circulares N°s. 2.345 y 2.378, de 2007; 2.607 y 2.611 de 2010, y el N°5 del título ii de la circular N°2.893, de 2012.
- **Protocolo de Exposición Ocupacional a Ruido (PREXOR).**
- **Protocolo de Trastornos Musculo esqueléticos de Extremidades Superiores (TMERT)**
- **Protocolo de Exposición a Sílice (PLANESIS)**
- **Protocolo de Vigilancia de Riesgos Psicosociales en el Trabajo.**
- **Resolución de Calificación Ambiental (RCA)** del Servicio de Evaluación Ambiental (SEA) que Califican Favorablemente el Proyecto en Construcción y Plantas en Operación a desarrollar.
- **Normas Chilenas Oficiales.**
- **Toda normativa relativa a HSEQ** que sea aplicable y/o promulgada durante la ejecución del Proyecto en Construcción.

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2.2 NORMAS “REGLAS CLAVES” DE ENEL GREEN POWER CHILE (EGP)

Los Contratistas y su personal dependiente, Proveedores, Subcontratista y Visitas, cumplirán estrictamente todas y cada una de las Normas de EGP “Reglas Claves”, señaladas a continuación, cuya infracción es considerada de la mayor gravedad en el Sistema HSEQ de EGP, y que, por tal razón, constituyen un incumplimiento grave de las obligaciones del contrato.

Frente a una infracción de esta naturaleza, se exige la expulsión del trabajador del proyecto que cometió la falta y el Contratista se obliga a imponer medidas correctivas y preventivas de mejoramiento con la mayor brevedad y a cumplir y a hacer cumplir toda instrucción que EGP Chile le indique, asumiendo directamente los costos que ello implique, sin derecho a reembolso ni compensación de ninguna especie, sin perjuicio de los derechos que EGP puede ejercer frente a este incumplimiento.

Los incumplimientos a las disposiciones de las presentes Bases Técnicas deben ser sancionadas de acuerdo al nivel de gravedad de las faltas observadas, las que se clasificarán de la siguiente manera:

- **Muy graves:** Todas aquellas acciones, omisiones o condiciones que tienen el potencial de provocar la muerte o un accidente grave de uno o más trabajadores.
- **Graves:** Todas aquellas acciones, omisiones o condiciones que tienen el potencial de provocar una lesión o afectar la salud a uno o más trabajadores.
- **Menos graves:** Todo acto u omisión de carácter administrativo que tenga relación con la implementación de los sistemas de gestión o programas de seguridad y salud laboral.

Sin embargo, existirán casos que, debido a su frecuente repetición o características particulares, ameritarán una clasificación conjunta entre el administrador del contrato o director de proyecto y el área de HSEQ de la empresa mandante, de la cual se emitirá una resolución por escrito a la empresa Contratista.





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Las multas para cada uno de estos casos estarán definidas en las bases de licitación de los respectivos Contratos entre la empresa del EGP y la empresa Contratista.

2.2.1 Reglas Claves

- I. SIEMPRE Utilizaré los Elementos de Protección Personal adecuados al riesgo.
- II. SIEMPRE Intervendré equipos y/o sistemas sólo cuando estén bloqueadas, aisladas sus energías y con la autorización correspondiente.
- III. NUNCA operaré o intervendré equipos sin autorización y certificación apropiada.
- IV. SIEMPRE respetaré los límites de velocidad indicados y conduciré en condiciones óptimas.
- V. SIEMPRE me ubicaré fuera del alcance de cargas suspendidas, proyección de materiales, caída de objetos, proyección de partículas incandescentes.
- VI. SIEMPRE ejecutaré los trabajos, sólo cuando haya realizado el Análisis de Riesgo.

2.3 RESPONSABILIDADES

Responsables HSEQ de EGP Chile

La Supervisión y los Responsables HSEQ tendrán libre acceso a todas las instalaciones de los Contratistas y Subcontratistas, sean estas oficinas, bodegas, talleres, instalaciones sanitarias, lugares de trabajo, y otros.

Para todas aquellas áreas donde se limite el acceso del personal, se deberá solicitar autorización de ingreso correspondiente tomando conocimiento de los peligros y riesgos asociados al terreno y la actividad.

La Supervisión, los Responsables HSEQ y Representantes en Parque o Proyecto de Enel Green Power están facultados para suspender la ejecución de cualquier trabajo que signifique poner en peligro la integridad física del o de los trabajadores, o la Seguridad de la faena, así como también cualquier actividad o maniobra que signifique dañar el medio ambiente, patrimonio arqueológico, fauna, etc., como también todo trabajo que no cumpla con las Normas Generales y Específicas de Salud, Seguridad, Medio Ambiente y Calidad, las estipuladas en circulares, memos y contratos. Toda suspensión o detención de trabajos se confirmará de inmediato y por escrito.

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La Supervisión, los Responsables HSEQ y Representantes en Parque o Proyecto EGP están facultados para acceder al libro de obra o cualquier otro registro que posea el Contratista y anotar en él las indicaciones que deberán ser cumplidas en el plazo determinado o convenido. Los Supervisores o Representantes HSEQ comunicarán al Project Manager o Site Manager y/o Supervisor EGP o de Construcción de EGP las suspensiones y los antecedentes necesarios, con el fin de que se aplique al Contratista las sanciones que correspondan por contravenir alguna disposición reglamentaria de Seguridad.

Responsabilidad del Contratista

El contratista, para efectos de planificar y dar cumplimiento a sus obligaciones en materia de seguridad y salud en el trabajo, deberá cumplir con todos los requerimientos legales de Chile y requerimientos de EGP incluyendo el proceso de acreditación, esto aplica contratistas directos e indirectos y sus respectivos subcontratos en cualquiera de sus niveles.

Toda empresa Colaboradora (Contratista) estará obligada a establecer y mantener al día un Reglamento Interno de Higiene y Seguridad para la Obra de acuerdo a la Ley vigente, cuya difusión y cumplimiento será obligatorio.

3. ACREDITACIÓN DE CONTRATISTAS

Con 2 semanas de anticipación antes de comenzar cualquier trabajo o actividad se deberá entregar, a través, de plataforma de Acreditación, la documentación de empresa, trabajadores, vehículos y maquinaria, para revisión y validación por parte de EGP. El Manual de Acreditación para Contratistas será entregado por EGP.

3.1 REQUISITOS APLICABLES PARA ACREDITACIÓN DE EMPRESAS (NACIONALES Y EXTRANJERAS):.

- R.U.T y nombre o razón social de la empresa. (Art. 5, D.S. 76).
- Certificado de afiliación a un Organismo Administrador de la Ley 16.744 (o seguro equivalente de mínimo 4.000 UF para empresas extranjeras). (Art. 5, D.S. 76).
- Identificación del representante legal de la empresa. (Art. 5, D.S. 76).
- Designación por escrito del representante denominado Administrador de Contrato.
- Número y lista de trabajadores que prestará servicio en los proyectos, tanto de la empresa como de los subcontratos. (Art. 5, D.S. 76).

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- Carta Gantt de los trabajos o tareas específicas que ejecutará la empresa. (Art. 5, D.S. 76).
- Historial de los accidentes del trabajo y enfermedades profesionales de los últimos 24 meses de la empresa y de los subcontratos que prestarán servicios. (Art. 5, D.S. 76).
- Reglamento Interno de Orden Higiene y Seguridad con Cartas de presentación ante el Servicio de Salud e Inspección del Trabajo. Para menos de 10 trabajadores se requiere un "Reglamento Interno de Higiene y Seguridad", el que debe estar aprobado (firmado) por sus trabajadores (Art. 153, Cód. Trabajo).
- Procedimientos de Trabajo Seguro, aplicable a las labores que realizará en Proyecto.
- Plan de Emergencia, aplicable al Proyecto donde realizará sus labores.
- Matriz de Identificación de Peligro y Evaluación de Riesgos (Matriz IPER), aplicable a las labores que realizará en Proyecto.
- Programa de Seguridad, Salud Ocupacional y Medio Ambiente.

3.2 REQUISITOS MÍNIMOS LEGALES PARA ACREDITACIÓN DE TRABAJADORES.

- Fotocopia Cédula de identidad o Pasaporte (ambos lados).
- Examen Médico Pre/Ocupacional de Organismo Administrador vigente.
- Examen Médico para Gran Altura Geográfica de organismo administrador vigente, cuando los trabajos se desempeñen sobre los 3.000 metros sobre el nivel del mar.
- Examen Médico de Altura Física de Organismo Administrador vigente, para trabajadores que realicen trabajos sobre los 2 metros de altura (física).
- Examen Médico Espacios Confinados de Organismo Administrador vigente, cuando los trabajadores deban realizar dicha actividad.
- Contrato Individual de Trabajo, de acuerdo al art. 10 del Código del Trabajo.
- Anexos de Contrato (Asignación al Proyecto EGP, faena, turno, cargo).
- Certificado A.F.P. (con no más de 30 días de antigüedad).
- Certificado de afiliación salud (Fonasa y/o Isapre). (con no más de 30 días de antigüedad).
- Último Finiquito, fotocopia legalizada.
- Últimas 12 cotizaciones.
- Certificado de Antecedentes (con no más de 30 días de antigüedad).
- O.D.I. (Obligación de Informar) D.S. N°40 asociado al cargo, actualizado y en original, firmado por el trabajador.
- Registro entrega de Reglamento interno actualizado, firmado por el trabajador.
- Registro entrega de Elementos de Protección Personal, firmado por el trabajador.

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- Registro Toma de conocimiento de procedimientos e instructivos asociados al cargo, firmado por el trabajador.
- Fotografía tamaño carnet con Nombre completo y Rut.
- Todos los documentos de respaldos necesarios para comprobar las características de condicionalidades para un cargo.

a) Si es extranjero, además deberá presentar:

- Contrato de Trabajo o Carta de Constancia, para verificar situación contractual con la empresa.
- Fotocopia simple del Pasaporte.
- Fotocopia simple de Visa de trabajo vigente.
- Fotocopia de Cedula de Identidad para extranjeros o Permiso trabajo especial para turistas otorgado por el Depto. de Extranjería en Chile.

b) Si es a honorarios, además debe presentar:

- Certificado firmado por las partes. Empresa con la cual presta servicios.
- Fotocopia de Póliza de Seguro de Accidentes Personales valida en Chile. La cobertura debe ser mínimo de 4.000 UF.

3.3 REQUISITOS APLICABLES PARA ACREDITACIÓN DE CONDUCTORES DE VEHÍCULOS O MAQUINARIAS:

Además de los requisitos para Acreditación de Trabajadores, debe presentar adicionalmente, lo siguiente:

- Fotocopia de Licencia de Conducir.
- Hoja de Vida Conductor (con no más de 30 días de antigüedad).
- Curso conducción Alta Montaña y/o 4x4 dictado por Organismo Administrador respectivo u OTEC certificada; cuando el Proyecto en Construcción se encuentre a gran altura geográfica y/o los caminos sean de difícil acceso.
- Licencia de conducir internacional, tratado Internacional del Mercosur, y acuerdo bilateral Chile-España, será válida SOLAMENTE para vehículos menores (camionetas).

a) Si es conductor de Maquinaria Pesada:

- Licencia de conducir chilena vigente Clase D.

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3.4 OTRAS CONSIDERACIONES DE ACREDITACIÓN

- El contratista debe mantener la misma información cargada en la plataforma de acreditación, en físico dentro de sus las Instalaciones (Código del Trabajo y Ley 20.123).
- Cargar en la plataforma de acreditación el programa de actividades relacionadas con HSEQ, (Planes y programas para el proyecto) de acuerdo a su programa anual o en función del período específico establecido en el Contrato (capacitación, inspecciones, observaciones, charlas, etc.), controlar su ejecución e informar mensualmente a EGP y/o su representante en terreno.
- Entregar a EGP las estadísticas de accidentes del mes, al responsable de HSEQ del Parque o Proyecto. Esta se debe cerrar el último día de cada mes, y entregar el reporte hasta el día 3 del próximo mes.

- Además, dentro de las estadísticas se debe entregar la siguiente información:
 - Índice de frecuencia y de gravedad de accidentes.
 - Número de accidentes con y sin tiempo perdido.
 - Número de accidentes de materiales y equipos.
 - Número de incidentes ambientales.
 - Números de enfermos ocupacionales diagnosticados en el período.
 - Dotación vigente al día del cierre.
 - Número de horas hombre trabajadas.
 - Número de días perdidos por accidentes y por enfermedades ocupacionales en el mes y acumulado en el año.
 - Actividades HSEQ (inspecciones, auditorías, observaciones u otras que estén dentro de su Programa HSEQ).
 - Cantidad de HH de capacitación HSEQ realizada en el mes.
 - Cantidad de Stop Work realizados en el mes.

- La información solicitada se deberá entregar en formato de EGP "Estadística Mensual de Accidentabilidad".
- Seleccionar y presentar para aprobación a EGP, al Experto en Prevención de Riesgos (certificado y calificado) para la Obra, mínimo con una semana de anticipación.

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- Enviar a las autoridades fiscalizadoras, de acuerdo a las disposiciones legales vigentes (Servicio de Salud, Mutualidad afiliada, etc.), los informes que exigen dichas disposiciones y las de cada Contrato, previa comunicación y autorización de EGP o su representante.

4. INGRESO A PROYECTOS Y RECINTOS DE EGP**4.1 INGRESO DE CONTRATISTAS**

El Contratista debe solicitar a EGP o representante en terreno, en forma oportuna (48 horas antes), el permiso de ingreso para sus trabajadores, vehículos, maquinarias y otros recursos necesarios para la ejecución de la Obra, antes del inicio de la movilización a Faena.

Para ello entregará los siguientes antecedentes o documentos:

- Listado de trabajadores, actualizado incluyendo todos sus antecedentes, sin perjuicio de los certificados indicados en los documentos internos del contrato.
- Listado de vehículos, con sus marcas, capacidad de carga, modelo, año y placa patente.
- Listado de maquinaria, equipos y herramientas de su propiedad y de terceros, que empleará en la ejecución de la Obra.
- El Contratista será responsable de someter a una reinspección periódica de acuerdo al fabricante, independiente de su programa habitual de mantención, a todos sus equipos y vehículos críticos que hayan sido expuestos a uso extremo, para asegurar el buen funcionamiento de sus dispositivos de seguridad, tales como frenos, niveles de fluido y de las condiciones mecánicas y físicas de sus partes.
- El Contratista será responsables de implementar y hacer cumplir a sus subcontratistas, el calendario de mantenimiento de equipos y de cumplir con las recomendaciones del fabricante, debiendo mantener copia de todos los registros respectivos en faena.
- Los permisos para ingresar a los recintos de construcción de EGP serán solicitados y coordinados, a través, del Responsable HSEQ de EGP en terreno.
- En toda solicitud de ingreso debe estar especificado el número de Contrato, su fecha de término y el período por el que se solicita la credencial de la idoneidad de los trabajadores asignados al contrato será responsable el Contratista, quien debe asegurarse que la salud de ellos es compatible con las características del trabajo que desempeñarán.





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Toda persona que ingrese al Proyecto, incluso las visitas, deberán asistir a cursos de inducción HSEQ del Proyecto con carácter de obligatorios, constituyéndose un requisito esencial para su ingreso. Dicha inducción será impartida por las empresas EGP o su representante. Estos cursos pueden ser realizados en la faena.

La empresa Contratista deberá adicionalmente establecer un Programa de inducción específica de acuerdo a los riesgos expuestos y requisitos de legislación aplicable.

El Contratista es el responsable de generar las credenciales internas, las cuales serán válidas una vez que el solicitante cumpla con la entrega de toda la documentación de acreditación del trabajador y haya participado de la inducción correspondiente en materias HSEQ; estas deben ser firmadas y/o timbradas por personal HSEQ de EGP.

El Contratista comunicará inmediatamente al representante de EGP la pérdida de cualquier credencial. Si este aviso no fuera dado por el Contratista, los costos que pueda causar el mal uso de dicho documento, será de su responsabilidad.

Las credenciales deberán ser devueltas al representante de EGP tan pronto como haya caducado el motivo que originó a ello.

4.2 TRABAJOS AL INTERIOR DE PROYECTOS

Al iniciar una obra o trabajo, todo contratista debe interiorizarse de los peligros y riesgos que presenta el área, sector o lugar de trabajo y realizar un análisis de riesgos del trabajo por escrito (ART).

El contratista deberá instalar siempre limitaciones de área, protecciones o defensas en el o los lugares de trabajo, o cuando le sea indicado por los supervisores, inspectores de obras o responsables HSEQ del propio contratista o de EGP.

Todo personal del contratista, bajo ninguna circunstancia, salvo autorización de EGP o su Representante, podrá transitar o ingresar por otra área o zona de trabajo que no sea la que le corresponde.

Todo trabajo que deba realizar el contratista, debe ser coordinado por y con la supervisión de obras y responsable HSEQ de EGP o su representante.





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Todo trabajo que implique obstaculizar o suspender el paso de vehículos y/o personas debe tener una autorización previa que debe ser comunicada a todos los afectados, entiéndase por autorización como una solicitud escrita del contratista y aprobada por EGP o su representante, 24 horas antes de iniciar tal acción.

4.3 REQUISITOS APLICABLES A LAS VISITAS.

Para las visitas en obra, esta debe ser solicitada, a través, de un correo electrónico con al menos 48 horas de anticipación, enviado a los responsables de EGP Chile. Al Site Manager y Safety Officer a cargo del Proyecto en Construcción indicando el propósito de la visita.

Asimismo, se podrá exigir Exámenes de Salud, según la naturaleza del proyecto (ej.: Altura Geográfica)

Toda visita que llegue en vehículo deberá enviar por el mismo correo electrónico su licencia de conducir y verificar que el vehículo cumpla con las exigencias de EGP Chile para Proyecto en Construcción.

Para extranjeros, se debe considerar el envío de los siguientes documentos:

- Fotocopia de Cédula de Identidad o Pasaporte.
- Si conduce, Licencia de conducir internacional, tratado Internacional del Mercosur, y acuerdo bilateral Chile-España.

5. INSTALACIÓN DE FAENAS Y/O CAMPAMENTO

Toda instalación de faenas deberá contar con servicios sanitarios y toda habilitación necesaria en acuerdo a los aportes que debe realizar el contratista conforme se indica en su contrato.

Todas las instalaciones deberán regirse por las disposiciones contenidas en el Decreto Supremo N°594, "Reglamentos sobre Condiciones Sanitarias y Ambientales Básicas en el Lugar de Trabajo", y por las exigencias del Servicio de Salud respectivo.

Bajo ninguna circunstancia se acepta realizar instalaciones de faenas o campamentos en lugares no habilitados para estos fines.

5.1 AGUA POTABLE

- El Contratista deberá indicar claramente a EGP, si las condiciones del proyecto lo requieren, la fuente de la cual obtendrá sus recursos de agua potable, la que deberá contar con los permisos

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correspondientes de acuerdo, parque o central. Esta indicación deberá hacerla dentro de los treinta días siguientes a la fecha de inicio de la prestación de servicios, obra o trabajo a la fecha en que surja el requerimiento de agua potable, en caso que dicho requerimiento sea posterior a la fecha de inicio de un contrato.

En todo caso, dicha indicación deberá efectuarse antes de que el Contratista obtenga el recurso de agua potable.

- Todos los frentes de trabajo deberán disponer y contar con stock de agua potable certificada para el consumo suficiente para el personal que se encuentra en faena. Esta deberá encontrarse en dispensadores, debidamente señalizada con las palabras "Agua Potable".
- Se debe lograr en todo momento que el agua se encuentre fresca y a una temperatura menor a la temperatura ambiente.
- Su disposición en terreno será dentro de caseta de madera, revestida internamente con material aislante diseñado para proteger de los cambios de temperaturas, vientos y suciedad.
- Los dispensadores para agua potable deberán cumplir con lo siguiente:
 - Deberán tener llave / válvula en su exterior para evitar contaminar el agua.
 - Mantenimiento y limpieza diaria a los dispensadores de agua potable.
 - Deberán ubicarse a una altura tal que permita la extracción de agua y evitar la contaminación de ésta.
- Para que los bidones se mantengan en óptimas condiciones de higiene y de funcionamiento, se designará una persona o cuadrilla que mantendrá los dispensadores siempre limpios, con agua y vasos desechables en cantidades suficientes para los trabajadores. Su reposición deberá ser diaria al igual que el retiro de los vasos utilizados.
- Próximo a los dispensadores de agua debe existir un basurero para contener los vasos desechables.

5.2 BAÑOS Y ARTEFACTOS HIGIÉNICOS

- El Contratista deberá proveer el número necesario de baños y artefactos higiénicos necesarios que estipula la reglamentación específica para estos efectos en el lugar de la obra.

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- La empresa que entregue los servicios de suministro, reposición y limpieza de baños químicos, deberá contar con autorización sanitaria respectiva, mediante Resolución. Los antecedentes de autorización deberán ser entregados a EGP Chile.
- Los baños químicos deberán estar en todo momento en condiciones higiénicas de ser usados. Los baños químicos deberán ser limpios y sanitizados semanalmente o lo que demande el proyecto, utilizando un sistema de extracción forzada y su frecuencia de limpieza podrá aumentar si las condiciones de trabajo en el lugar lo requieran.
- Cada baño químico deberá contar con dispensador de jabón gel de alcohol yodado y dispensador de agua en su interior, utilizado para la limpieza de manos y deberá ser repuesto o rellenado en toda limpieza o mantenimiento del baño químico, al igual que papel higiénico con sistema de tipo JUMBO en cantidades suficientes para el número de trabajadores que utilizan el servicio.
- Se deberá considerar la dinámica de avance de los trabajos y sus interferencias en las áreas y programar periódicamente el traslado y movimiento de los baños químicos, permitiendo el correcto y efectivo uso y limpieza de ellos.
- En caso de existir diferencias de sexos en la obra, deben existir baños exclusivos para hombres y mujeres

5.3 ASEO E HIGIENE

- Se deberá definir, mediante un programa de aseo y orden, el personal, frecuencia y los recursos necesarios para mantener el aseo y orden en los frentes de trabajo e instalaciones en condiciones aceptables.
- Deberá contar con un programa de sanitización, desinsectación, fumigación y desratización de todas sus instalaciones, EGP aprobará la periodicidad del servicio.
- Todo trabajador que labore en plantas de tratamiento de aguas servidas o manipule residuos peligrosos, infecciosos o sustancias peligrosas, no podrá ingresar a los casinos y comedores sin antes haberse cambiado de ropa y lavado en duchas, previniendo de esta manera, la ocurrencia de contaminaciones cruzadas y el potencial de intoxicación masiva.

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- Cuando la naturaleza del trabajo implique contacto con sustancias tóxicas o infecciosas deberán disponerse de duchas para los trabajadores afectados en los frentes de trabajo, para que su uso sea antes del ingreso del trabajador al casino, comedores y campamentos.
- El Contratista deberá indicar claramente el procedimiento que utilizará para la recolección y disposición de aguas servidas. Esta indicación deberá hacerla dentro de los treinta días siguientes a la fecha de inicio de la prestación de servicios y contar con aprobación sanitaria para tal efecto.

5.4 OTRAS CONSIDERACIONES DE INSTALACIONES EN TERRENO.

- El Contratista debe mantener sistemas de iluminación adecuados en los lugares donde se realicen trabajos nocturnos, bajo techo, o en ambientes de escasa visibilidad. Se debe comprobar que los sistemas de iluminación son los adecuados mediante un estudio cuantitativo en terreno.
- El Contratista se obliga a no usar sistemas de refrigeración y/o aire acondicionado, que utilicen compuestos de CFC (freón).
- El contratista se obliga a no usar detectores de humo que emitan radiaciones ionizantes. Sólo podrá utilizar los detectores de humo fotoeléctricos.
- No estará permitido realizar mantenciones mayores a maquinaria en Proyecto. Solo está permitido realizar mantenciones menores en Proyecto protegiendo el suelo de posibles derrames (bandeja metálica y/o HDPE).
- Para el cambio y recambio de lubricantes se deberán utilizar bandejas metálicas para la contención de los mismos. Se deberá contar con material absorbente para fugas y derrames de combustibles y lubricantes en cantidades suficientes y al alcance inmediato para su uso, tales como arena, aserrín, guaipe u otro material de similares características. Se recomienda mantener Kit portátiles para contención de derrames.
- Todas las instalaciones provisionarias y permanentes deberán contar con protecciones a tierra y sistema de protección para tormentas eléctricas.

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- Todas las instalaciones eléctricas deben ser ejecutadas por personal especialista con certificación SEC.

6. ASPECTOS DE MEDIO AMBIENTE

El presente Capítulo contiene una descripción de las obligaciones ambientales de Proyectos en Construcción, cuyo objetivo es enfatizar las buenas prácticas en materia de Medio Ambiente y cumplir con la normativa vigente.

6.1 OBLIGACIONES FRENTE AL MEDIO AMBIENTE

Enel Green Power Chile (EGP) exige a todos los Contratistas cumplir con los compromisos adquiridos de cada Proyecto en Construcción y Plantas en Operación, un comportamiento ambiental idóneo, basado en las mejores prácticas de protección del Medio Ambiente, de tal manera que el Proyecto y su personal sean observados por la Comunidad como una faena limpia, ordenada y respetuosa del medio ambiente.

Se entiende por Medio Ambiente, al conjunto de personas que comparten un territorio en el que interactúan permanentemente, dando origen a un sistema de vida formado por relaciones sociales, económicas y culturales, que eventualmente tienden a generar tradiciones, intereses comunitarios y sentimientos de arraigo.

En este sentido, las comunidades son grupos de personas que reconocen, configuran y mantienen identidad, cohesión, pertenencia y estabilidad respecto de un territorio; y comparten formas de vida, cultura, servicios e instalaciones comunes.

La mirada desde la responsabilidad ambiental se verifica a través de evitar, minimizar y gestionar los impactos negativos durante el desarrollo de sus actividades. Por lo tanto, resulta prioritario que el Contratista desarrolle esfuerzos conceptuales, metodológicos y de procedimientos que permitan lograr una mayor integración de las variables y dimensiones referidas al Medio Ambiente.

6.2 Responsabilidades frente a los compromisos ambientales

El Contratista deberá respetar todas las leyes y las condiciones referidas en los documentos de la(s) EIA/DIA(s) y la licencia ambiental del Proyecto, entregados dentro de los Anexos al Contrato. Realizando las actividades necesarias para cumplir con los compromisos ambientales adquiridos



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en el proceso de evaluación ambiental, y que están listados en la Matriz de Compromisos Ambientales del Proyecto.

Los Representantes de las Partes celebrarán reuniones semanales y mensual para examinar todos los temas relacionados con el avance de las Obras, los calendarios y condiciones técnicas requeridas. El Contratista y el Cliente se informarán de los temas a tratar al menos dos días hábiles antes de la fecha de la reunión mensual y un día hábil antes de la reunión semanal.

En las reuniones, el Contratista dará su presentación semanal o mensual, según proceda y entregará un informe que se referirá a lo siguiente:

- (i) Información respecto del avance de las Obras;
- (ii) La actualización del calendario para la ejecución de las Obras y su contraste con el Programa; y
- (iii) Documentación de respaldo del Plan de Gestión Ambiental, incluyendo fotografías y sus evidencias.
- (iv) Registros ambientales y sus respectivos comprobantes y/o certificados que evidencia la actividad (Se entregará al contratista un total de 27 registros ambientales para su implementación cuando sea aplicable, los que deberán ser entregados al environmental officer completos de forma semanal).

El Contratista coordinará la reunión y preparará las actas de la misma para ser acordadas y firmadas por los representantes de las partes que asistan a la misma. Las actas describirán el contenido de lo tratado en la reunión, se referirán a los temas pendientes y los acuerdos respecto de su cumplimiento y plazo para ello.

Al término del Proyecto el Contratista deberá entregar un informe Plan de Gestión Ambiental en donde se evidenciará el cumplimiento de los compromisos ambientales durante el desarrollo de las actividades del Proyecto, junto con los registros ambientales y su respaldo de evidencia de cada una de las actividades realizadas.

El Contratista deberá respetar y entregar toda información ambiental solicitada por el Environmental Officer del Proyecto.





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Para Proyectos en Construcción y Plantas en Operación, se aplicarán sanciones de acuerdo a lo comunicado en el Kickoff Meeting realizado con los contratistas, de no cumplir con lo estipulado en los compromisos y buenas prácticas ambientales.

6.3 REHABILITACIÓN DE ÁREAS

Rehabilitar un área, significa despejar y limpiar un lugar que ha sido utilizado para instalar faenas y/o campamento, dejándolo en similares o mejores condiciones que las previas a su ocupación.

Para el Rehabilitación de las Áreas, el Contratista se compromete a:

- Presentar a EGP e incluir en sus costos operacionales, un Plan de Gestión Ambiental en el cual deberá considerar, adicionalmente a las evidencias de los compromisos ambientales durante el desarrollo de las actividades del Proyecto, la rehabilitación del lugar que ha ocupado o utilizado con ocasión de la prestación de sus servicios, en condiciones similares al inicio de la operación.
- El documento que contenga el Plan de Gestión Ambiental, deberá comprender un conjunto de fotografías tomadas antes de la realización de las faenas y después del término de las mismas (estas fotografías deberán ser tomadas de los mismos ángulos, cubriendo los mismos lugares y georreferenciadas).
- La presentación del Plan de Gestión Ambiental deberá cumplirse dentro de los treinta días siguientes a la fecha de inicio de la prestación de los servicios.
- El Plan de Gestión Ambiental que proponga el Contratista deberá contar con la aprobación de EGP. Si hubiera objeciones, se podrá convocar a una reunión con el Contratista, cuyo objeto será la suscripción de un documento que definitivamente contenga un plan que satisfaga los requerimientos.

6.4 SUPERVISIÓN EN TERRENO

En todos los trabajos en que EGP lo solicite expresamente y en especial en las faenas de Mantenimiento Mayor, la empresa contratista deberá contar con la asesoría de un especialista ambiental o profesional con conocimientos en medio ambiente y experiencia en las faenas a ejecutar. El especialista deberá estar a tiempo completo y cubrir la totalidad de los turnos de





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ejecución de obras o servicios, o en su defecto designar un responsable con competencias ambientales para la faena.

6.5 DOCUMENTACIÓN INTERNA APLICABLE

- Política del Sistema Integrado de Gestión.
- Procedimiento de Manejo de Residuos del SGI y sus registros
- Procedimiento de Gestión de Sustancias Peligrosas. del SGI
- Procedimiento Preparación y Respuesta ante Emergencias. del SGI

6.6 REQUISITOS GENERALES

Los requerimientos mínimos de protección ambiental que debe cumplir la empresa contratista y sus trabajadores son:

- ✓ Identificar en forma escrita los compromisos ambientales adquiridos durante el proceso de licitación y contrato; así como la forma de cumplimiento de estos compromisos; el cual deberá estar detallado dentro de un Plan Ambiental.
- ✓ Dar estricto cumplimiento de la normativa ambiental aplicable;
- ✓ Mantener aseado, ordenado y libre de residuos el lugar de trabajo asignado. Para ello deberá realizar una inspección y control diario de los sitios de trabajo;
- ✓ Elaborar la matriz de Identificación y evaluación de los Aspectos Ambientales e Impactos Ambientales asociados al trabajo a realizar (en concordancia con la norma ISO 14001), la que será validada por el Especialista Ambiental de la instalación o por el Inspector Jefe de Contrato; y
- ✓ Capacitar a su personal en los temas ambientales aplicables a la faena (legislación, normas, aspectos ambientales, controles operacionales, procedimientos, planes de contingencia, etc.).
- ✓ Dar reporte inmediato al supervisor del contrato en caso de producirse algún incidente ambiental durante el desarrollo de los trabajos, adoptando las medidas de mitigación necesarias para contener o acotar el impacto del incidente.

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6.7 REQUISITOS ESPECÍFICOS

6.7.1 Matriz de Aspectos e Impactos ambientales

La empresa contratista deberá contar con una matriz de identificación de aspectos e impactos ambientales que identifique claramente todas sus actividades, principalmente aquellas susceptibles de causar impactos ambientales, las que deberán contar con las medidas de mitigación necesarias (ejemplo: derrames de combustible, emisiones de material particulado, contaminación de aguas, etc.).

En caso que la empresa contratista cuente con un Sistema de Gestión Ambiental (SGA) certificado bajo la norma ISO 14001/2015, dicha evaluación puede ser realizada mediante el uso de su propia metodología. En caso de no tener un SGA certificado, usará la metodología del Sistema de Gestión Ambiental de EGP.

En cualquiera de los casos señalados precedentemente, y para trabajos No rutinarios, deberá ser validada por profesional de Medio Ambiente HSEQ previo inicio de los trabajos. Por tal motivo, la solicitud de aprobación de una matriz en particular, deberá ser solicitada como mínimo con cinco días hábiles de antelación al inicio de los trabajos. No está considerada la evaluación y validación "urgente o expresa" de matrices de aspectos ambientales para completar el Procedimiento de Trabajo (PT). Una vez validada la matriz, la empresa contratista deberá:

- a) Capacitar a todo su personal de faenas sobre los impactos ambientales y sus medidas de control operacional; y
- b) Tener en terreno una copia de la matriz validada y con la firma de toma de conocimiento de todos los trabajadores involucrados en la faena, con los aspectos aplicables a la faena.

Los controles operacionales ambientales planificados en la matriz de aspectos e impactos ambientales serán implementados a cabalidad y serán supervisados por EGP. Los materiales utilizados para su implementación, serán de costo de la empresa contratista (ejemplos: equipo (*kit*) anti derrame, bandejas de contención, jaulas para almacenamiento de sustancias, etc.).



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6.7.2 Protección de elementos de valor cultural y arqueológico.

El Contratista será responsable de ejecutar la obra o servicio sin provocar daño alguno a aquellos elementos de valor cultural o arqueológico que se encuentren en el lugar donde se ejecutarán los trabajos. En caso de trabajos en Zona donde haya sitios arqueológicos identificados, deberá solicitar autorización para realizar trabajos de excavaciones y movimientos de tierra en su cercanía y demarcar las áreas identificadas, con el objeto de evitar el tránsito, tanto de vehículos como de personas que puedan dañar los sitios.

Por otro lado, en caso de encontrarse con vestigios de tipo arqueológico no identificados con anterioridad, debe detenerse la faena y dar aviso de inmediato al inspector de contrato y especialista ambiental de EGP.

6.7.3 Protección de elementos de Valor Natural

Para la Protección de la Flora y Fauna presente en las instalaciones el Contratista debe considerar lo siguiente:

- ✓ Queda prohibido el despeje, cubrimiento y corte, poda o roce de especies vegetales (arbustos, arboles, etc.) En el caso de que sea necesario realizar despeje de vegetación deberá contar con la autorización del responsable ambiental en planta. Si se trata de especies nativas protegidas, además deberá contar con la Autorización de la Autoridad Competente si corresponde.
- ✓ No deberá tomar muestras de vegetación de ningún tipo a menos que cuente con los permisos necesarios para ello.
- ✓ Está estrictamente prohibido cazar, domesticar, molestar o maltratar a la fauna existente el lugar, así como levantar o perturbar nidos o madrigueras.
- ✓ Todo el personal de faena deberá estar capacitado sobre la protección de fauna, reforzando específicamente este aspecto en caso de existir compromisos en la Resolución de Calificación de los proyectos.
- ✓ Instalar señaléticas en los distintos frentes de trabajo del Parque con la frase "Prohibido cazar, domesticar, molestar o maltratar a la fauna existente".
- ✓ El área de estudio debe quedar tal como fue encontrada, esto implica no dejar restos de materiales ni residuos producto del Estudio. Todos los residuos generados en terreno deberán ser trasladados hasta un lugar de disposición habilitado para ello.
- ✓ Queda estrictamente prohibido hacer fuego para cualquier objetivo.

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6.7.4 Controles operacionales ambientales obligatorios en faenas

Además de los controles definidos mediante la aplicación de la matriz de aspectos e impactos ambientales, la empresa contratista considerará los siguientes controles, los que son de carácter obligatorio:

a) Manejo de Residuos

El manejo de los residuos será realizado conforme lo establecido en la normativa aplicable (D.S N°148/03 del Ministerio de Salud) y en los respectivos procedimientos del Sistema de Gestión Ambiental, SGA. Los puntos de acopio temporal serán definidos previamente con el Especialista Ambiental de EGP.

Las disposiciones específicas, como la gestión de residuos no habituales o el traslado a bodegas, serán acordados con el Inspector de Contrato o Especialista Ambiental, pero en ningún caso quedarán en la instalación a intervenir. Además, la empresa contratista considerará lo siguiente:

- Entregar, previo a la ejecución de las obras, una estimación del tipo o de los tipos de residuos a generar y su peso, con la finalidad de tomar las medidas de gestión pertinentes (definición de puntos de acopio transitorio y retiro de los mismos); En el caso de la disposición transitoria de residuos en la instalación y en puntos críticos de faena, contará a su costo con sistemas de almacenamiento, actuando conforme la normativa aplicable y según lo indica el procedimiento para el manejo de residuos peligrosos del Sistema de Gestión Integrado (SGI). Previo inicio de faena deberá elaborar un plano con su ubicación para posterior planificación del retiro,

Se debe considerar, además:

- Almacenar los residuos peligrosos en la bodega de acopio temporal (BAT) de la instalación, previa autorización del Inspector Jefe y del Especialista Ambiental. Para su ingreso a la BAT los residuos serán correctamente etiquetados indicando: tipo de residuo, peso, origen y fecha de ingreso. Deberán ser almacenados correctamente y registrados en el libro de ingreso de la BAT, indicando toda la información ya individualizada en el registro de Residuos Peligrosos (RESPEL) del Sistema de Gestión Ambiental; y
- Cualquier desecho no peligroso resultante de la obra deberá ser almacenado temporalmente en el lugar que le será indicado por el Inspector Jefe o Especialista Ambiental. **En trabajos No rutinarios y Faenas**, todos los residuos peligrosos y no

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peligrosos de la obra serán retirados una vez finalizadas las obras a costo de la empresa contratista y enviados a un lugar de disposición autorizado, debiéndose acreditar mediante la documentación correspondiente (**guía de recepción y certificado de la instalación de disposición**).

- ✓ No estará permitido realizar mantenencias mayores a maquinaria en terreno. Sólo está permitido realizar mantenencias menores, protegiendo el suelo de posibles derrames (bandeja metálica u otro elemento de contención similar).
- ✓ Para el cambio y recambio de lubricantes se deberán utilizar sistemas de contención de los mismos. Se deberá contar con material absorbente para fugas y derrames de combustibles y lubricantes en cantidades suficientes y al alcance inmediato para su uso.

b) Sustancias químicas peligrosas

Si se requiere el uso de sustancias químicas peligrosas (NCh382/2013), la empresa contratista cumplirá con la normativa ambiental aplicable (DS N°43/15 del Ministerio de Salud) sobre su manipulación y gestión y deberá dar cumplimiento al procedimiento de Almacenamiento y Manejo de Sustancias Peligrosas del Sistema de Gestión Ambiental de EGP.

Antes del inicio de los trabajos, el contratista debe considera como mínimo lo siguiente:

- ✓ Contar con el listado de los productos que se el que deberá entregar al Jefe del contrato o especialista ambiental de la instalación. En el caso de tener que incluir un nuevo material peligroso se deberá informar y enviar la información requerida.
- ✓ En caso de ser una sustancia prohibida por la Legislación Chilena, el Contratista deberá presentar los permisos y aprobación de utilización de la sustancia antes de ingresar a la instalación de EGP.
- ✓ Disponer de las Hojas de Seguridad en el lugar de almacenamiento y de uso en español y considerando los 16 puntos contenidos en la norma (NCh 2245/2015).
- ✓ En el caso de la disposición temporal de las sustancias en uso y en puntos críticos de faena, contará a su costo con jaulas anti derrame con sistema antivuelco y sistemas de contención, actuando conforme la normativa aplicable y según lo indica el procedimiento para el manejo de sustancias peligrosas del Sistema de Gestión Ambiental (SGA).

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En el caso que el volumen de sustancias químicas peligrosas que requieran los trabajos requieran el uso de bodegas de almacenamiento, deberá contar con Bodega de Almacenamiento Temporal para uso en la faena (Bodega móvil), la que deberá cumplir con la normativa aplicable y contar con la debida autorización sanitaria. Podrá almacenar sustancias en Bodegas de EGP solo con expresa Autorización del Mandante.

Para el almacenamiento de sustancias químicas se prohíbe la utilización de cualquier envase no apto para almacenamiento temporal de sustancias Ejemplo: envases de bebidas gaseosas.

- ✓ El sistema de contención de derrames debe ser capaz de contener el 100% del líquido que contenga el equipo.
- ✓ Capacitar al personal de faenas sobre la peligrosidad y las medidas de control implementadas.
- ✓ En el caso de sustancias en estado líquido, se tomarán todas las medidas necesarias para evitar derrames, tanto en su transporte como en la manipulación (Ejemplo: Habilitación de Bandejas y superficies impermeabilizadas).
- ✓ Todos los envases de sustancias químicas peligrosas que se utilicen deberán estar debidamente identificadas según la normativa (NCh382/2013 o sus actualizaciones).
- ✓ El contratista que reciba, transporte y almacene cilindros de gas, deberá cumplir con las Normas emanadas de la Superintendencia de Servicios Eléctricos, de Gas y Telecomunicaciones, División de Gas, Normas SEGTEL y DS N°43 . Los cilindros se deben almacenar separados, verticales, con su protector, señalizados, con hojas de seguridad. Podrán almacenarse en Bodegas de Enel solo con expresa Autorización del Mandante.

c) Combustible y Lubricantes

Para el Manejo de combustibles se deberá considerar lo establecido en el Decreto N°160 "Reglamento de Seguridad para las Instalaciones y Operaciones de Producción, Refinación, Transporte, Almacenamiento, Distribución y Abastecimiento de Combustibles Líquidos".

No se encuentra autorizado el almacenamiento de combustible en las instalaciones de Enel en cantidades superiores a 227 litros, salvo que cuente con autorización SEC.

Se permitirá el transporte de combustibles en vehículos menores sin contar con autorización SEC, si empre y cuando se cuente con envases certificados y en las siguientes cantidades.

- Clase I un máximo de 2 envases de 20 lt (si el envase cuenta con certificado)
- Clase II (diesel) 1 envase de 227 litros.

El almacenamiento de Lubricantes deberá contar con Sistemas de mitigación y contención de derrames y estar alejado de sustancias combustibles.

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Si el contratista cuenta con un grupo electrógeno, compresor y/o generador de energía, éste deberá estar asentado sobre una Base para la contención de posibles derrames. Los Grupos generadores y equipos eléctricos deben cumplir con la normativa SEC y otras normativas aplicables.

d) Control de Polvo en faenas

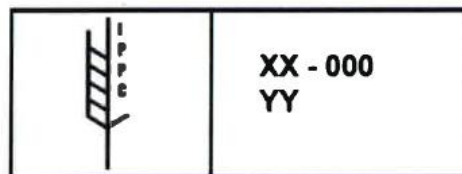
Las medidas de control aplican para el control de polvo fugitivo. Esto es, todo material particulado que se encuentra en suspensión en el aire como consecuencia del desarrollo de faenas y que puede ser dañino para la salud, al encontrarse en niveles elevados en el ambiente.

- En espacios abiertos (exterior de las instalaciones) el contratista deberá mitigar el polvo fugitivo proveniente de su actividad, mediante la humectación periódica de los caminos y áreas de trabajo. Esto es aplicable principalmente para las faenas que requieran movimiento de tierra y flujo de camiones u otro material que pueda generar polvo en suspensión
- En sectores donde exista acumulación de material deberá ser cubierto para evitar su dispersión. De igual forma se deberá cubrir totalmente la tolva de los camiones que realizarán el traslado de material para evitar el polvo en suspensión.
- Si aplica, se deberá considerar e implementar para este punto lo indicado en la Resolución de Calificación Ambiental de cada planta en relación a este ítem.

6.7.5 Verificación de Embalajes de Repuestos y Otros:

El contratista deberá verificar que los embalajes cumplan con la normativa vigente (Resolución Exenta 133/05 S.A.G. y sus modificaciones contenidas en Resolución Exenta 2859/2007 y Resolución Exenta 7008/2013 y otras si corresponde).

Como mínimo deberá verificar que la madera también presente la siguiente marca, la cual certifica los tratamientos fitosanitarios a los cuales ha sido sometida:



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- ✓ El Símbolo XX; indica el código de dos letras del país de origen de la mercancía, según la norma ISO.
- ✓ 000; Indica un número especial que la Organización Nacional de Protección Fitosanitaria (ONFP) le asigna al productor del embalaje de madera.
- ✓ YY; Representa la abreviatura que identifica la medida de tratamiento fitosanitaria que se ha utilizado (ej. HT "tratamiento térmico" o BM "fumigación con bromuro de metilo"). Podrá complementarse esta simbología con los acrónimos KD para maderas con tratamiento de secado al horno y DB para maderas descortezadas.

En caso de que durante la inspección del embalaje se percate de la presencia de insectos, hongos, cortezas u otro tipo de plaga, se debe dar aviso inmediato al Inspector de Enel y especialista ambiental para que sean tomadas las medidas pertinentes.

6.8 INCIDENTES AMBIENTALES

La empresa contratista deberá evitar incidentes ambientales durante las faenas, adoptando las medidas de prevención en forma oportuna para evitar la contaminación de suelos, agua, aire, vegetación y fauna del entorno. Para cumplir con lo anterior deberá contar *in situ* con los materiales necesarios para actuar frente a incidentes de su responsabilidad.

En el caso de ocurrir un incidente ambiental por causa de actividades de la empresa contratista, debe proceder de acuerdo al procedimiento de respuesta ante una emergencia establecido en el Sistema de Gestión Ambiental y dar aviso de inmediato al inspector del contrato y al encargado ambiental de la instalación al que se le facilitará y entregará en menos de 24 Horas a lo menos la siguiente información:

- Fecha y Hora del incidente
- Planta
- Lugar de ocurrencia
- Descripción del incidente
- Medidas inmediatas implementadas
- Causa probable
- Área afectada y cantidad (litros derramados, área, ó individuos afectados según corresponda)

La empresa contratista responderá ante cualquier incidente ambiental causado, reservándose Enel el derecho a exigirle acciones y gastos que se originen por incumplimiento de sus obligaciones en materia ambiental. Asimismo, la empresa contratista restaurará, a su exclusivo costo, el daño que haya producido como consecuencia del incumplimiento de cualquier requisito



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que le sea de aplicación o especificado en los procedimientos del Sistema de Gestión Integrado (SGI) de EGP. Los gastos por esta causa podrán ser descontados de los Estados de Pago.

6.9 INFORME SEMANAL DE MEDIO AMBIENTE

En faenas Mayores y trabajos de más de una semana, la empresa contratista incluirá en el "Informe semanal de Seguridad y Salud Laboral" (Bitácora) un acápite con el reporte semanal, de las actividades de medio ambiente realizadas durante el período. Una copia de este documento deberá ser remitida al Especialista Ambiental de la instalación y Jefe del Contrato.

Al final de la faena el Contratista entregará un informe de cierre, no más allá de 10 días de finalizada la obra, en la que deberá dar cuenta del estado de cumplimiento de las actividades comprometidas en materia de Medio Ambiente y en relación al Sistema de Gestión Ambiental.

6.10 INCUMPLIMIENTOS

El contratista declara estar en conocimiento que será sometido a inspecciones periódicas, con el objeto de verificar si está cumpliendo con las especificaciones técnicas ambientales que le aplican.

En caso de no cumplimiento de los requisitos ambientales internos o incumplimiento de la normativa aplicable, Enel se reserva el derecho a detener la faena y a exigir a la empresa contratista la normalización del no cumplimiento. El tiempo de detención de la faena por esta causa será responsabilidad del contratista y a su costo, y con cargo a la duración total del trabajo previamente establecido.

7. ASPECTOS DE SEGURIDAD

El presente Capítulo contiene una descripción de las obligaciones que debe cumplir el Contratista en temas de Seguridad de Proyectos en Construcción.

7.1 ANALISIS DE RIESGO DEL TRABAJO

El análisis de riesgos del trabajo es la evaluación objetiva del potencial de daño que pueden causar los peligros de una determinada actividad estableciendo medidas que permitan controlar y/o minimizar los riesgos. En este sentido se trabaja en dos dimensiones, la primera es la evaluación mediante matrices o inventarios de riesgos de todas las actividades a desarrollar asignando un valor que permitirá determinar si la actividad es crítica o no. Para esto la empresa contratista debe hacer esta evaluación antes de iniciar un trabajo.

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El formato de la matriz a usar para evaluar los riesgos es aportado por EGP.

La segunda dimensión y como complemento al inventario de riesgos se realizará el proceso de Análisis de Riesgos del trabajo.

Esta es la evaluación que se realiza diariamente antes de iniciar una tarea o el trabajo, para eso se precisa contar con un formato de Análisis de Riesgos del Trabajo (ART), este se realiza en terreno y se define como el proceso de trabajar en equipo para:

- Desglosar el trabajo en cinco a seis pasos importantes.
- Identificar y analizar los riesgos asociados a cada paso.
- Indicar medidas de control de los riesgos.
- Informar de los riesgos y controles a todos los trabajadores directamente involucrados en el trabajo.
- Verificación de que los riesgos son controlados efectivamente al momento de ejecutar el trabajo.
- Efectuar análisis de riesgo cada vez que se modifique el trabajo (generalmente donde se produce el cambio).
- Si el trabajo debe continuar en la noche o a medida que cambian las condiciones, este cambio debe anotarse como un paso o etapa, especificando los riesgos asociados a trabajar de noche y, se deben implementar los controles respectivos o en su defecto se debe confeccionar un nuevo ART por el cambio de las condiciones.
- El ART puede enmendarse durante la jornada, adjuntando un anexo al ART original e identificando los cambios. Siempre y cuando estén todos los trabajadores informados de los riesgos y firmados en los registros correspondientes. Una ART no puede enmendarse (cambiar contexto).
- En el desarrollo del ART, se debe involucrar a todos los empleados que participarán en el trabajo y será liderada por el responsable de la tarea.
- Mediante el proceso de participación de los involucrados, el Análisis de Riesgos del Trabajo entregará:
 - Una actitud mejorada por parte de los trabajadores cuando se les pida que sean parte de la ejecución.
 - Los detalles del trabajo diario se analizan y discuten.
 - Coordinación de actividades de trabajos adyacentes.
 - Capacitación en seguridad del trabajo para empleados nuevos.

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- Observación de la tarea.
- Instrucciones de seguridad previa al trabajo.

- El supervisor del contratista, al igual que los trabajadores involucrados en el trabajo, completan el análisis de riesgo del trabajo y lo firman.
- El contratista es responsable de completar los formularios de ART usando el proceso para identificar los pasos, los riesgos, las evaluaciones y el control para obtener la aprobación de EGP previo al comienzo del trabajo.

7.2 PERMISOS DE TRABAJO

El Permiso de Trabajo es un documento mediante el cual un dueño de área, instalación o equipo autoriza a otra persona a realizar una actividad determinada, que signifique la intervención de su área instalación o equipo, además representa un sistema destinado a proteger a las personas, medio ambiente y propiedad.

EGP dispone de formatos para los permisos de trabajo, lo cuales pueden ser utilizados por el contratista.

Las siguientes actividades, deben generar permiso de trabajo:

- Maniobras de izaje (que excedan las 10 toneladas e izamientos en tandem);
- Ingreso a espacios confinados;
- Trabajos en caliente;
- Energización y desenergización de equipos eléctricos (Aislamiento y bloqueo);
- Trabajos en Altura;
- Trabajos cruzados;
- Operación de equipos radioactivos, trabajo con radiografías, gammagrafía y material explosivo;
- Actividades específicas definidas por el Equipo HSEQ del Proyecto.

7.2.1 Pasos de acuerdo con los Procedimientos

Especificar el trabajo a realizar, los empleados que se requieren y los equipos a usar.

Los permisos de trabajo deben ser firmados por el supervisor contratista responsable de la tarea, por el supervisor del área de EGP. Las precauciones a tomar se especifican mediante el llenado del formulario del permiso correspondiente. EGP otorga el permiso para comenzar el trabajo mediante





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la firma del formulario de permiso que se debe retener en el lugar de trabajo. Solo se permite que los empleados nombrados en el permiso ejecuten el trabajo.

- Preparar el trabajo en consideración de las precauciones de seguridad especificadas en el permiso de trabajo, instruir a los empleados, entregar las herramientas y EPP necesarias. Finalmente chequear todas las precauciones y realizar el trabajo.
- Luego de la finalización del trabajo o diariamente al término de cada turno el permiso de trabajo debe devolverse al emisor.

Un permiso no debe considerarse como una garantía incondicional de ejecución segura de un trabajo. Si las condiciones, bajo las cuales se emitió un permiso de trabajo cambian, se deberá detener el trabajo e informar de las condiciones cambiadas al supervisor a cargo del área o jefe de la empresa contratista.

8. REQUERIMIENTOS HSEQ DE EGP

El presente Capítulo contiene la descripción de las obligaciones en temas de Calidad, Medio Ambiente y Salud y Seguridad en las labores de Proyectos en Construcción, cuyo objetivo es evitar y prevenir incidentes y enfatizar las buenas prácticas en materia de trabajo.

8.1 DISEÑO, CONSTRUCCION Y PRECOMISIONAMIENTO

El Contratista es responsable de la administración de los riesgos durante el desarrollo de su Contrato, incluyendo las etapas de diseño, aprobación, adquisiciones, construcción y precomisionamiento.

Por lo anterior, el Contratista en todas las etapas de su Contrato, desde la ingeniería, adquisiciones, movilización, construcción, precomisionamiento y desmovilización, deberá desarrollar, implementar y demostrar evidencia de que:

- La Calidad de la identificación y evaluación de riesgos en Salud, Seguridad y Medio Ambiente es evaluada, a través, de procesos de revisión y aprobación.
- El proyecto a ser desarrollado, cuenta con sistemas de gestión documentados y debidamente comunicados, que permiten el cumplimiento de las especificaciones para las distintas etapas.



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- Los equipos, sistemas, procedimientos y actividades críticas son identificadas y registradas. Esta información es utilizada para el diseño, construcción y precomisionamiento.
- Para la mejor gestión y control en terreno sobre las cuadrillas de trabajo, un capataz deberá supervisar una cantidad de trabajadores adecuada la cual permita una visión eficiente y controlada de los trabajos y riesgos.
- En sectores remotos no se permitirán trabajos en donde se encuentren personal solo, sin supervisión ni comunicación.
- Las instalaciones y equipamientos nuevos o modificados son sometidos a revisiones documentadas antes y después del precomisionamiento, para verificar la aplicación de los estándares y requerimientos de diseño.

Cuando lo estime conveniente EGP podrá revisar el desarrollo e implementación de los puntos anteriormente solicitados, así como la documentación referente a registro de evaluación de riesgos; registro de incidentes; registro de cuasi accidentes; registro de normas, registro de elementos críticos, procedimientos; registro de revisiones de planos, órdenes de compra y especificaciones; informes de seguimiento y registro de revisión de lecciones aprendidas en proyectos anteriores.

8.2 ALCOHOL Y DROGAS

Está estrictamente prohibido presentarse en los recintos de EGP, bajo la influencia de alcohol o de drogas, considerando lo siguiente:

- Esto podrá ser pesquisado por personal competente, mediante un test aleatorio. La negativa del afectado al cumplimiento de esta disposición dará motivo a su expulsión inmediata del recinto de trabajo, pudiendo requerirse, si fuera necesario, el auxilio de la fuerza pública para hacerla cumplir, en conformidad con los procedimientos previstos en la legislación vigente.
- Prohibase la introducción, distribución y consumo de bebidas alcohólicas, drogas y estupefacientes en los recintos de EGP y todo juego de azar con apuestas de dinero o bienes de cualquier especie.
- El Contratista retirará inmediatamente y en forma permanente a cualquier persona que no cumpla con lo establecido en este punto.
- El Contratista retirará a cualquier persona sobre la cual se sospeche el consumo de Alcohol y Drogas o cuando ocurra un incidente o accidente en que éstas sean un factor influyente.

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- Queda estrictamente prohibido la conducción bajo la influencia del alcohol, en estado de ebriedad, bajo consumo de drogas y estupefacientes que puedan generar somnolencia.

NOTA: Se debe Considerar el consentimiento del trabajador para toma de examen de alcohol y drogas.

8.3 ELEMENTOS DE PROTECCIÓN PERSONAL (EPP)

Es obligación del Contratista y su Supervisión proporcionar y controlar el uso del equipo y/o elementos de protección personal (EPP) y el correspondiente cumplimiento de los estándares de seguridad del Proyecto en Construcción o Parques en Operación y de las Normas Chilenas Oficiales de Salud y Seguridad para los equipos y/o elementos de protección oficial.

La empresa hará entrega de los EPP a los trabajadores de Contratistas, sin costos para el trabajador y deberá quedar registrada y firmada por cada trabajador en señal de recepción y conformidad.

No obstante, lo anterior, EGP o su representante podrán exigir un tipo específico de equipo de protección personal para aquellos trabajos que estime conveniente.

El Contratista deberá proporcionar a su personal, al menos, los siguientes elementos de protección personal como mínimo:

- Casco de Seguridad, con cubre nuca, con el nombre y logotipo de la Empresa, en el interior debe mantener adherido un listado con los números telefónicos de emergencia del Proyecto, y cumplir con los estándares establecidos en la NCh 772 o ANSI Z 89.1.
- Botines de Seguridad caña alta (estándar), con puntera de acero para trabajos generales y sin acero (composite) para los eléctricos y botas de agua con punta de seguridad. No está permitido el uso de zapatos caña baja. Los zapatos de seguridad deben cumplir con el estándar establecido en la NCh 1.301 o ANSI Z 41.1
- Lentes de Seguridad con protección UV, e impacto (oscuro para el día y claro de noche o para interior de recintos). Los lentes de seguridad deben cumplir con el estándar establecido en la NCh 461 o ANSI Z 87.
- Chaleco reflectante o tipo geólogo de preferencia color naranja, rojo o amarillo en las áreas de trabajo e instalaciones.
- Chalecos de alta visibilidad con reflectantes para personal en trabajos especiales tales como; señaleros, guardias, riggers, bandereros, coleros, en labores subterráneas etc.

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- Protector solar para trabajadores expuestos a la acción de los rayos UVA y UVB.
- Ropa de trabajo apta para las condiciones de trabajo y clima (manga larga, con logotipo de su Empresa en un lugar visible). En la medida de lo posible se recomienda utilizar ropa con filtro UV.
- Protección auditiva de acuerdo al riesgo expuesto.
- Guantes de Seguridad (de acuerdo a la actividad que desempeña).
- Respiradores con filtro de acuerdo al contaminante existente en el lugar de trabajo (si corresponde).
- Elementos de Bloqueos del tipo LOTO para contratistas (tarjetas, candados, estaciones de bloqueo, etc.)

El equipo de protección personal, ropa de abrigo, u otros elementos de protección personal, debe tener una Certificación de Calidad, con sus respectivas certificaciones según D.S. 18.

Podrá existir un tipo de Contrato en el cual no se requiera el uso de algunos o todos los elementos de protección personal antes mencionados. En tal caso, la excepción de su uso deberá ser autorizada por EGP por escrito.

El Contratista deberá:

- Controlar el uso correcto, calidad y mantención oportuna del EPP.
- La empresa contratista deberá capacitar a sus trabajadores sobre el uso específico de cada elemento de protección personal, del cuidado y la mantención de los mismos.
- Los elementos de protección personal deben siempre mantenerse en buen estado de uso, como también su calidad deberá ser similar a la de EGP y podrá ser controlada en cualquier momento por la Supervisión de EGP.
- El contratista deberá indicar y llevar a cabo registros de entrega, recambio e inspección de los EPPs.
- La falta o mal estado del EPP puede ser causal inmediata de la suspensión temporal de trabajos hasta que sea subsanada esta condición.
- La empresa contratista deberá elaborar una matriz v/s, cargo, verificando que el EPP seleccionado sea el correcto para los trabajos que va a ejecutar.
- Los EPP contaminados con elementos dañinos para el medio ambiente se dispondrán conforme a la legislación vigente referente a disposición de residuos de tales características.



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- A modo de identificar los cargos de las personas que trabajan en terreno, se deben definir colores de cascos distintos para los siguientes cargos:
 - Supervisor, administrador o jefe de terreno.
 - Capataz.
 - Trabajadores en general.
- Todos los prevencionistas de riesgos de una obra, faena o central de generación utilizarán chaleco con cintas reflectantes, o del tipo geólogo color rojo u otro color indicado por EGP.
- Todos los Rigger de la obra utilizarán chaleco con cintas reflectantes, o del tipo geólogo color verde u otro color indicado por EGP.
- Los demás elementos de protección personal no identificados en el listado anterior, deben estar definidos por cargo y se determinarán según el resultado de las evaluaciones de riesgos.
- Los elementos de protección personal deben poseer la certificación de calidad entregado por un organismo nacional debidamente autorizado para este fin en conformidad con lo dispuesto en el DS N° 594 y el DS N° 18.
- Es responsabilidad de cada empresa que sus visitas, proveedores, clientes, etc., al ingresar a faena o a un área de trabajo, lo hagan con los Elementos de Protección Personal básicos indicados en el presente estándar y todos los necesarios para proteger de los riesgos a los que se expongan.
- Los Elementos de Protección Personal deben ser entregados sin costo a cada trabajador y su reposición se efectuará dependiendo de:
 - Desgaste natural: Se entiende cuando el elemento presenta un desgaste que le ha hecho perder su condición para proteger eficazmente. Algunas características que exigen recambio son: Deformación, orificios, separación de sus partes constituyentes (Deshilvanado, rasgado, etc.), su uso se torna incómodo o se encuentran rayados en el caso de los lentes de seguridad.
 - Deterioro prematuro por uso o uso indebido: El elemento ha sufrido un deterioro que le hace perder su condición original no siendo recomendable su uso.
- Todos los trabajadores deben estar capacitados en el correcto uso de los Elementos de Protección Personal.
- Se debe verificar en terreno a través de observaciones de conducta el correcto uso de los Elementos de Protección Personal por parte de los trabajadores.

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- La obligatoriedad de usar Elemento de Protección Personal debe estar debidamente señalizada en cada frente de trabajo.
- Cada empresa debe inspeccionar los EPP a intervalos preestablecidos, utilizando para ello una lista de chequeo por EPP que permita revisar todos sus componentes.
- Los Elementos de Protección Personal dieléctricos tales como: Guantes y manguillas de MT y AT deben ser sometidos cada 6 meses a pruebas de certificación en laboratorio de un organismo competente a fin de garantizar su aislamiento. Debe estar siempre disponible en terreno la evidencia de la certificación de cada guante y manguilla.
- Las personas expuestas a trabajos que involucren riesgos de arco eléctrico, debe hacer uso con ropa de trabajo ignifuga, Guantes dieléctricos, alfombra dieléctrica, careta facial (MT-AT) Calzados dieléctricos y casco. Los criterios para implementación de ropa ignifuga están definidos en la siguiente tabla:

TIPO DE PROTECCIÓN	EQUIPAMIENTO MÍNIMO	PROCESOS
Tipo 0 Sin protección ignifuga.	Ropa de algodón + EPP	Toda actividad que se realice sin ingresar al sector delimitado como zona de trabajo con riesgo de calor, fuego y salpicaduras de material fundido, sin proximidad a punto energizado, y siempre que se transite por sectores habilitados.
Tipo 1 Requiere protección 10 cal/cm2 (*)	Buzo ignifugo 10 cal/cm2 o Pantalón + Camisa 8 - 10 cal/cm2 (adicional temporada chaqueta ignifuga 20 cal/cm2)	Todo actividad que implique ingresar al sector delimitado como zona de trabajo con riesgo de calor, fuego y salpicaduras de material fundido, estando en proximidad a punto energizado, pero sin intervención directa sobre algún componente eléctrico.
Tipo 2 Requiere protección de 30-40 cal/cm2	Buzo ignifugo 3040 cal/cm2 o Pantalón + Camisa 8 - 10 cal/cm2 y chaquetón ignifugo 40 cal/cm2	Todo trabajo que este en proximidad a algún punto energizado e intervenga algún componente eléctrico en una subestación, y por tanto se ingresa obligatoriamente al sector delimitado como zona de trabajo con riesgo de calor, fuego y salpicaduras de material fundido. Toda actividad que implique ingresar al sector delimitado como zona de trabajo con riesgo de calor, fuego y salpicaduras de material fundido,

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		estando en proximidad a punto energizado, e interviniendo directamente sobre algún componente eléctrico.
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8.4 VEHÍCULOS Y MAQUINARIA PESADA

Este estándar es aplicable a todos los vehículos y a la maquinaria pesada utilizados durante el desarrollo de una obra, faena o servicio donde el mandante principal corresponda a una empresa ENEL.

8.4.1 Vehículos Livianos

Se consideran como vehículos livianos, los que pesen hasta 3.500 Kg. Camionetas, mini buses, van, y minibús hasta 12 asientos incluyendo al conductor.

Camionetas deberán cumplir como mínimo el siguiente estándar:

- Ninguna camioneta podrá transportar más de cuatro pasajeros y estos deben contar con cinturones de seguridad de tres puntas para todos los ocupantes.
- Tracción 4x4.
- Antigüedad máxima 5 años o 150.000 km. (Salvo que se requiera una antigüedad distinta debido a compromisos o características específicas del proyecto)
- Aire acondicionado y calefacción en buen estado.
- Alarma de retroceso operativa.
- Airbag delantero conductor y copiloto.
- EBD (Reperto electrónico de frenado) y BAS (Sistema de Asistencia de frenado)
- Barras anti vuelcos internas y externas certificadas.
- Doble neumático de repuesto.
- Malla de protección luneta trasera.
- Cufias de estacionamiento.
- Chaleco reflectante color amarillo.
- Gata de levante y llave para cambio de rueda.
- Botiquín.
- Extintor de incendios operativo.
- Documentación correspondiente al vehículo al día, según ley de tránsito (padrón, revisión técnica, permiso de circulación y seguro obligatorio).

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- Contar con check list diario.
- Registro de mantenciones al día.
- En caso de Parques situados donde exista condiciones climáticas con nieve, se solicitará cadenas, una frazada o manta térmica, una pala y un juego de herramientas (alicate y destornilladores cruz y paleta).
- **EGP Chile podrá solicitar a las empresas contratista la incorporación de cualquier accesorio según la evaluación de riesgos en el sitio.**

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8.4.2 Vehículos de Carga

Camiones deberán cumplir como mínimo con el siguiente estándar:

- Antigüedad de 6 años máximos y/o 200.000 km recorrido máximo.
- Cinturón de seguridad de tres puntas y en buen estado.
- Alarma de retroceso operativa.
- Neumáticos en buen estado (no se permitirá el recauchado).
- Aire acondicionado y calefacción en buen estado.
- Gata de levante y llave para cambio de rueda.
- Neumático de repuesto en buen estado.
- Botiquín.
- Extintor de incendios operativo.
- Cuñas.
- Contar con check list diario que incluya accesorios de levante (izaje), según aplique.

En el caso de vehículos pesados los requisitos en relación a antigüedad, km u hora de uso, se definen en las bases administrativas del contrato. Sin perjuicio de esto, no se autorizan vehículos pesados con más de 6 años de antigüedad o 200.000 Km.

8.4.3 Maquinaria Pesada (equipos de trabajo)

Vehículo o maquinaria pesada: Se considera como vehículo pesado todo aquel cuyo peso bruto vehicular es superior a 3.500 kg.

Todo conductor de vehículo u operador de maquinaria pesada perteneciente al contratista, deberá tener licencia municipal vigente y credencial autorizada por EGP para conducir u operar dentro de las instalaciones.

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Para la obtención de la autorización de EGP, el operador o conductor del contratista deberá someterse a los procedimientos de rigor y calificación que EGP Chile estime conveniente para el efecto.

El conductor deberá ceñirse a lo dispuesto en la Ley de Tránsito N°18.290; y los límites de velocidad establecidos en cada Proyecto en Construcción y Parques en Operación y a las presentes normas.

El operador de maquinaria pasada debe cumplir a lo menos con los siguientes requerimientos:

- Autorización Interna del Proyecto o Parque en que realizará labores.
- Usar cinturón de seguridad, mientras el equipo está en operación.
- Conocer sus procedimientos de trabajo.
- Utilizar sus Elementos de Protección Personal que corresponda, como casco, chaleco reflectante, lentes, u otros que considere profesional de HSEQ.
- No podrá poner en marcha el motor a menos que esté sentado en el asiento del conductor con cinturón de seguridad abrochado.
- No debe permitir que otras personas suban al equipo a menos que éste haya sido diseñado para tener más de un ocupante.
- No podrá salir del equipo cuando se encuentra en movimiento o con carga suspendida o abandonar el vehículo en lugares donde estén operando otros equipos o personas trabajando.
- Fumar o hablar por teléfono celular mientras está operando los controles.

Los vehículos deben poseer una hoja de vida donde se anoten todas sus mantenciones y revisiones preventivas.

El vehículo, en general, (Carrocería y chasis) más todos sus componentes deben permanecer en buen estado y correcto funcionamiento. Entre sus componentes están:

- Aire acondicionado y calefacción.
- Airbags delanteros conductor y copiloto.
- Malla de protección en luneta trasera.
- Luces.

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- Alza vidrios.
- Limpiavidrios.
- Asientos.
- Alarma y luces de retroceso.
- Tablero y sus indicadores.
- Bocina operativa y efectiva.
- Cinturón de seguridad de tres puntas.
- Neumáticos, incluidos el o los 2 de repuesto.

EGP podrá solicitar a las empresas contratistas la incorporación de cualquier accesorio según sea la evaluación de riesgos en el sitio.

En los vehículos debe respetar el diseño de fábrica, prohibiéndose realizar adaptaciones interiores, especialmente instalar asientos adicionales.

En el caso de vehículos pesados los requisitos en relación a antigüedad, km u hora de uso, se definen en las bases administrativas del contrato. Sin perjuicio de esto, no se autorizan vehículos pesados con más de 6 años de antigüedad o 200.000 km.

8.4.4 Transporte de Materiales

Toda carga o material transportado que sobresalga a lo largo 1 mt. ó 0,50 mts. de ancho de la carrocería del vehículo, deberá llevar banderas rojas y luces indicando las zonas de riesgo. Adicionalmente el contratista deberá escoltar al vehículo cargado, dependiendo de la carga por adelante y por detrás.

- Todo transporte de tuberías debe contar con soportes de contención lateral, frontal y trasera. Al cargar tuberías, estas nunca deben sobrepasar las contenciones establecidas.
- Todo vehículo del contratista que transporte escombros, tierra, ripios, arenas, chatarras, desperdicios, etc., deberá tener barandas y lonas para cubrir la carga para prevenir la caída de material.
- El encarpado del vehículo deberá ser de un sistema que impida que el trabajador deba exponerse al trabajo en altura sin un sistema de protección ante caídas.



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- El vehículo que transporta cilindros de gases como oxígeno, acetileno, hidrógeno, gas propano o cualquier cilindro que contenga algún tipo de gas comprimido, deberá transportarlos de manera vertical, contar con barandas y un dispositivo de amarra o sujeción (cadenas, estobos, etc.) lo suficientemente seguro para evitar la caída de los cilindros. No se aceptará el uso de alambres o cordeles inapropiados como medio de sujeción.
- Toda carga que sea transportada deberá estar estibada y asegurada para el traslado correspondiente; en caso de una sobredimensión o sobre carga, esta deberá contar con los permisos correspondientes de la dirección de Vialidad.

8.4.5 Transporte de Pasajeros

El transporte del personal se deberá hacer únicamente en buses, minibuses, o furgones, dependiendo del número de personas a transportar, y en vehículos de acuerdo a los estándares permitidos en terreno.

Para el caso de vehículos livianos, el tránsito por caminos rurales sin pavimentar, caminos con nieve o hielo se usarán vehículos de doble tracción (4x4). Para vehículos como van, mini buses y utilitarios se debe evaluar la factibilidad técnica

de conseguir este tipo de tracción. Asimismo, deben estar provistas por una barra exterior e interior (barra antivuelco), las cuales deben estar certificadas por un organismo nacional autorizado.

Los conductores o chóferes de vehículos destinados exclusivamente al transporte de personas deben practicarse el examen psicosenométrico para comprobar su idoneidad para la función. Esto no excluye al proceso de selección destinado a verificar las competencias.

Los vehículos para transporte de personal y sus conductores deben estar debidamente autorizados por el Ministerio de Transporte según legislación vigente.

Queda estrictamente prohibido el transporte del personal sobre la carga, en pick-up de camionetas o en vehículos motorizados que no estén diseñados para este fin.

Los buses, minibuses y las VAN no deben exceder los 5 años de antigüedad ni los 150.000 km de recorrido, sin embargo, posterior a los 150.000 Km el contratista debe entregar un informe de mantenimiento del representante de la marca y/o taller autorizado por la misma, que garantice el buen estado del vehículo.

Deberán cumplir como mínimo con el siguiente estándar:

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- Todos los asientos con cinturón de seguridad en buen estado y funcionales.
- Queda prohibido el uso de neumáticos recauchados o con malformaciones visibles.
- Alarma de retroceso operativa.
- Accesorios: Gata, llave de rueda, neumático de repuesto en buen estado, pala, linterna, botiquín, cuñas, y extintor de incendios en buen estado.
- Sistema calefacción y aire acondicionado en buen estado.
- Carrocerías y Asiento del chofer original otorgado por el fabricante del vehículo.
- **EGP Chile podrá solicitar a las empresas contratista la incorporación de cualquier accesorio según la evaluación de riesgos en sitio de trabajo de Proyecto/Planta.**

Los buses no pueden dejar a los pasajeros en las áreas de trabajo, solo deben llegar a los estacionamientos habilitados. En ningún caso se podrán utilizar como estacionamiento lugares que no están expresamente habilitados para este fin.

En caso de parques con grandes extensiones, se debe analizar la situación específica con profesional HSEQ.

8.4.6 Otras Consideraciones para Transporte**8.4.6.1 Mantenimiento de vehículos y equipos**

El Contratista debe mantener actualizado registro de mantenimiento de sus vehículos y equipos.

El equipo debe ser inspeccionado en forma diaria y recibir la mantención que sea necesaria para asegurar su buen funcionamiento.

El informe diario (check list) debe ser firmado por el operador del equipo, jefe de área y por el jefe de mantención.

Ejemplos: Inspección de frenos, luces de señalización, pasadores giratorios, cilindros hidráulicos, mangueras, anillos de retención, pernos de amarra principal, etc.

No se debe lubricar ni hacer ajustes mecánicos a la unidad mientras ésta se encuentre con su motor encendido.

No reparar ni apretar las mangueras hidráulicas o fittings cuando:

- El sistema está con presión.
- El motor esté funcionando.
- Los cilindros hidráulicos del equipo están cargados.

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8.4.6.2 Recarga de combustible

El abastecedor de combustible deberá estar certificado por la Superintendencia de Electricidad y Combustibles (SEC) y autorizado por el departamento de HSEQ de EGP Chile o Proyecto.

El vehículo deberá detener el motor antes de cargar combustible, prohibiéndose el uso de teléfonos móviles al momento de la carga de combustible.

8.4.6.3 Consideraciones generales

Los vehículos deben poseer toda su documentación vigente (Revisión técnica, permiso de circulación y seguro).

Los vehículos deben poseer una hoja de vida donde se anoten todas sus mantenciones y revisiones preventivas.

El vehículo, en general, (Carrocería y chasis) más todos sus componentes deben permanecer en buen estado y correcto funcionamiento. Entre sus componentes están:

- Aire acondicionado.
- Luces.
- Alza vidrios.
- Limpiavidrios.
- Asientos.
- Alarma y luces de retroceso.
- Tablero y sus indicadores.
- Bocina operativa y efectiva.
- Cinturón de seguridad.
- Neumáticos, incluidos el o los de repuesto.

El uso de remolques o carros de arrastre están prohibidos

En los vehículos debe respetarse el diseño de fábrica, prohibiéndose realizar adaptaciones interiores, especialmente instalar asientos adicionales.

Los vehículos deben poseer cinturones de seguridad en todos sus asientos.

Todo equipo automotor debe tener una señal audible hasta una distancia de a lo menos a 10 metros alrededor del equipo, para avisar la maniobra de retroceso.

Los vehículos livianos y pesados, deben llevar instalado aire acondicionado. Para el caso



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de los vehículos pesados, deben poseer una cabina hermética, que permita alcanzar y mantener un ambiente de confort.

Los vidrios deben permitir una perfecta visibilidad desde y hacia el interior de los vehículos.

Los vehículos deben estar equipados con neumáticos en perfecto estado. No podrán circular con neumáticos que tengan sus bandas de rodadura desgastadas o hayan perdido sus condiciones de adherencia al pavimento, ni con reparaciones que afecten la seguridad.

Los neumáticos deben tener una banda de rodamiento cuyo dibujo tenga a lo menos 2,5 mm de profundidad. No se permite el uso de neumáticos recauchados y/o redibujados.

No se permite el transporte de personas que excedan el máximo permitido para los vehículos.

Sin perjuicio de esto, el número de pasajeros está sujeto a la cantidad de cinturones de seguridad de los vehículos. Debe estar totalmente separado el compartimiento de carga de los pasajeros.

Queda estrictamente prohibido el transporte de carga, tales como: Equipos y materiales, en los vehículos destinados al transporte de personal.

Los vehículos, livianos y pesados y la maquinaria deben poseer el equipamiento de seguridad exigido por ley:

- Extintor.
- Botiquín (Sin medicamentos).
- Triángulo.
- Cuando el servicio, obra o faena se ejecute bajo condiciones climáticas adversas tales como: nieve, hielo, lluvias, altas temperaturas o en lugares rurales apartados de las ciudades que dificulten el acceso a asistencia de cualquier tipo que se requiera, los vehículos deben estar equipados con: Pala, frazadas, dos neumáticos de repuesto, piola de arrastre de acero con gancho, cuñas para ruedas, cadenas para la nieve, agua para beber, linterna y una caja para el almacenamiento de este equipamiento.

Los vehículos a utilizar bajo condiciones de nieve, debe ser de color rojo.

Debe existir un procedimiento para el uso de vehículos cuando:

- El área geográfica donde se desarrolla el servicio, obra o faena implica conducir por caminos rurales de tierra o sin pavimento.
- La conducción debe realizarse bajo condiciones climáticas adversas, como nieve, neblina o lluvia.

Debe existir un programa de inspecciones, que considere el chequeo de los componentes y equipamiento de seguridad de un vehículo. Para el caso de vehículos pesados, la inspección será diaria.





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Debe existir un proceso de identificación de peligros y evaluación de riesgos para el uso de vehículos.

Ninguna persona puede conducir un vehículo motorizado, sin poseer una licencia expedida por la autoridad competente.

El tipo de vehículo que conduzca una persona, debe ceñirse al tipo de licencia que posea. Los trabajadores de otros países, que permanezcan con VISA de trabajo en Chile, podrán conducir un vehículo liviano durante el plazo de la respectiva autorización de trabajo, portando la licencia vigente de conductor, otorgada según las leyes de su país, que sea equivalente a la Licencia que corresponda.

Los conductores de vehículos deben ser capacitados permanentemente en temas relacionados con la conducción. Para ello, deben establecerse programas formales de capacitación.

Todos los vehículos livianos y pesados, estarán ingresados a un programa de mantenimiento, del cual debe existir un registro que evidencie dicho plan y pueda trazar mantenimientos o intervenciones pasadas.

Requisitos para conductores de transporte de personal:

- Portar licencia profesional tipo A.
- Experiencia mínima de 5 años como conductor.
- Examen preventivo de salud.
- Curso manejo a la defensiva.
- Examen psicotécnico.

Además de cumplir con todo lo establecido en este estándar, todos los vehículos livianos deben cumplir como básico la Ley N°18.290.

8.5 USO DE MATERIALES PELIGROSOS

Previo al inicio de las actividades de Construcción de los proyectos, el Contratista deberá hacer llegar al Área de HSEQ la nómina de materiales peligrosos que mantendrá en terreno, en el formato oficial que estime el Proyecto, adjuntando la hoja de seguridad de cada sustancia escrita en español, de acuerdo con la NCh 2.245, las cuales deben validadas por HSEQ de EGP.

En el caso de tener que incluir un nuevo material peligroso se deberá informar a EGP y enviar la información requerida.





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En caso de ser una sustancia prohibida por la Legislación Chilena, el Contratista deberá presentar los permisos y aprobación de utilización de la sustancia antes de ingresar al Parque.

Cualquier trabajo a realizar por el contratista en zonas o áreas de gases o ambientes tóxicos y/o en estanques de almacenamiento, ductos, equipo de bombeo o instalaciones conteniendo petróleo, reactivos, etc., deberá tener la autorización de EGP y dar cumplimiento a procedimientos de bloqueo y espacios confinados y/o permiso de trabajo aprobado y establecido en el proyecto.

Todo material y/o sustancia peligrosa que emplee el contratista deberá ser almacenado en una bodega construida especialmente para ello, con material incombustible, cierre perimetral tipo malla ACMA o similar, acceso restringido, con ventilación, buzón con las hojas de seguridad, piso impermeable (radier de hormigón o lámina de HDPE) y con extintores de incendios. Deberá ser techada y aislada de las otras instalaciones y contará con la señalización correspondiente, que indique los peligros que encierra. Las dimensiones serán en función del stock crítico a almacenar durante todas las etapas del proyecto.

En todo estanque y recipientes o depósitos para el almacenamiento de materiales o sustancias químicas peligrosas, inflamables, combustibles o explosivos, en donde se pueda generar o acumular electricidad estática, se deberán instalar dispositivos a tierra, electrificación antiexplosiva, extintores de acuerdo a la carga calórica, señalizada, buzón de hojas de seguridad y piso impermeable.

Las sustancias químicas peligrosas que se reciban en las bodegas de almacenamiento, deberán guardarse en envases originales de fábrica, cumpliendo en forma estricta las recomendaciones del fabricante para el manejo, almacenamiento y conservación de cada producto (DS N°43 y DS N°148).

Todo material y/o sustancia peligrosa que utilice durante la jornada de trabajo a la intemperie, incluso el sobrante, deberá ser ubicado, ordenado y debidamente rotulado de tal manera que no produzca peligro ni riesgos de accidentes y no obstaculice el tráfico de personas, vehículos, accesos a instalaciones, maquinarias y/o grifos contra incendio, lugares de trabajos, etc.

El contratista que reciba, transporte y almacene cilindro de gas, deberá cumplir con las Normas emanadas de la Superintendencia de Servicios Eléctricos, de Gas y Telecomunicaciones, División

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de Gas, Normas SEGTEL 7-G. N74. Los cilindros se deben almacenar separados, verticales, con su protector, señalizados, en bodegas de cierre de malla, buzón con hojas de seguridad. El transporte al interior de la faena debe ser en vehículos acondicionados, y amarrados, y su manipulación manual es en carros, codificados. Se deberán inspeccionar estos equipos mensualmente por su código y efectuar un registro de pre uso.

Todo contratista que transporte, manipule, almacene, instale o emplee equipos, fuentes o elementos radioactivos, deberá cumplir con la Normas establecidas por la Comisión Chilena de Energía Nuclear y del Servicio de Salud respectivo y lo que establece el "Decreto Supremo N°3, Reglamento de Protección Radiológica de Instalaciones Radioactivas", además de la autorización del representante de EGP

Todo trabajo en las áreas de influencia del Parque o proyecto, que involucre equipos, fuentes o elementos radiactivos, deberá ser coordinado, informado y autorizado con al menos 24 horas de anticipación por EGP o su Representante.

Se deberá realizar curso de capacitación en Protección Radiológica al personal que manipulará equipos radiactivos y/o supervisará dichos trabajos, por un organismo certificador, debidamente autorizado por el Servicio de Salud respectivo. Será requisito esencial presentar a EGP o su representante las autorizaciones o certificados respectivos antes de realizar cualquier maniobra o manipulación de equipos radioactivos.

Toda persona ocupacionalmente expuesta deberá estar instruida respecto de los procedimientos del proyecto en estas materias, portar Dosímetro durante su jornada de trabajo, contar con Medidor/Detector de Radiaciones Ionizantes debidamente calibrado, Certificado de Historial Dosimétrico y Licencia de Operador al día con Resolución Sanitaria correspondiente.

El Contratista que deba emplear explosivos, debe solicitar autorización previa a EGP y cumplir con toda la Reglamentación Chilena vigente al respecto y las Normas estipuladas en, Decreto Supremo N°132 y aquellas normas emanadas por la Comandancia de Guarnición del EjEGPito de Chile.

El Responsable HSEQ de EGP podrá, a pesar de existir una autorización previa, suspender o postergar el inicio de la acción si considera que las condiciones de seguridad no son suficientes o no son adecuadas.

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8.5.1 Manejo de Sustancias Peligrosas

En construcción se utilizan muchos productos químicos que bajo ciertas circunstancias pueden presentar riesgos para la Salud o el Medio Ambiente Natural y Humano. El personal debe comprender y evaluar los peligros asociados con estos productos antes de usarlos o exponerse a ellos.

El hecho que sea riesgoso no significa que no puedan usarse. Lo importante es que los riesgos deben ser reconocidos, evaluados y controlados al menos de la siguiente manera:

- Limitando el tiempo de exposición.
- Utilizando elementos de protección personal (EPP).
- Controlando el riesgo en su fuente, por ejemplo, sistema de captación.

8.5.2 Transporte de Sustancia Peligrosas

En el traslado de sustancias peligrosas desde las bodegas del proveedor hasta las instalaciones del proyecto, el transportista deberá cumplir con las disposiciones del Decreto Supremo N° 298/95 del Ministerio de Transportes y Telecomunicaciones que reglamenta el transporte de cargas peligrosas por calles y caminos.

Cualquier persona que desee ingresar sustancias peligrosas, deberá transportar las Hojas de Seguridad correspondientes y declararlas en la garita de acceso al proyecto.

Toda carga de sustancias peligrosas que sea destinada al proyecto, deberá llevar las respectivas hojas de seguridad desde su origen.

8.5.3 Almacenamiento de Sustancias Peligrosas

- Toda sustancia peligrosa debe estar almacenada y debidamente rotulada de acuerdo a D.S. 43 y NCh 2.190.
- El almacenamiento deberá considerar la distribución y separación adecuada de acuerdo a la información proporcionada en la Hoja de Seguridad de Sustancias Químicas.
- Las sustancias químicas peligrosas que se reciban en las bodegas de almacenamiento, deberán guardarse en los envases originales de fábrica, cumpliendo en forma estricta las recomendaciones del fabricante para cada producto.
- En los lugares de trabajo donde existan áreas en las que se encuentran almacenadas sustancias inflamables, combustibles o explosivos, como por ejemplo paños, se deberá



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colocar letreros y/o señales de avisos de advertencia de seguridad y de instrucciones de seguridad que indiquen la prohibición de fumar, introducir fósforos, dispositivos de llamas abiertas, objetos incandescentes y cualquier otra sustancia susceptible de causar incendio o explosión, de acuerdo con las normas respectivas.

- En todo equipo, sistema eléctrico, estructuras, estanques y recipientes o depósitos para el almacenamiento de materiales o sustancias químicas peligrosas, inflamables, combustibles o explosivos, en donde se pueda generar o acumular electricidad estática, se deberán instalar dispositivos a tierra.

8.5.4 Hoja de datos de Seguridad de productos químicos (HDS)

Conocida también como MSDS (Material Safety Data Sheet), proporciona información relativa a distintos aspectos que corresponden a seguridad, salud y protección del medio ambiente, durante el transporte, manipulación, almacenamiento y ante emergencias, desde el productor o proveedor de un producto químico al receptor y usuario, en esencia, proporciona conocimiento básico del producto y entrega recomendaciones sobre medidas de protección y acciones en el tratamiento de emergencias.

- Las bodegas, paños y policlínico (si existe) deberán mantener un catastro actualizado y ordenado alfanuméricamente de las Sustancias Peligrosas del Proyecto, con sus respectivas HDS.
- Toda empresa Contratista y/o Subcontratista debe comunicar a los proveedores en solicitudes de cotización de las sustancias peligrosas, que el envío de éstas debe venir acompañado de las respectivas Hojas de Seguridad de productos químicos.
- La empresa contratista debe asegurar que el proveedor complete y presente la Hoja de Datos de Seguridad respectiva en el formato de la NCh 2.245 antes de la compra. Estas deben ser enviadas a EGP para su aprobación previa a la compra.
- Toda HDS deberá estar siempre en idioma español, junto a otros idiomas, de ser necesario, por personal de contratistas.

8.6 USO EQUIPOS Y HERRAMIENTAS

- Debe existir un sistema de control o de registro para entrega y uso de una herramienta o equipo de uso manual a un trabajador a fin de permitir una adecuada gestión sobre su estado.

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- Los equipos y herramientas deben operar y estar de acuerdo a las condiciones que especifica el fabricante y lo definido en el manual de operación del equipo o herramienta.
- Se debe asegurar que todo el equipamiento, las herramientas y cualquier elemento utilizados para el desarrollo de los trabajos, que han sido adquiridos, arrendados u obtenidos de otra forma, estén en una condición segura, satisfactoria y que sean capaces de llevar a cabo las funciones para las cuales están destinadas.
- Si alguna herramienta u otro ítem de equipamiento, es calificado como inseguro o inadecuado para realizar los servicios a los que está destinado, debe ser reemplazada o reparada según los estándares, certificaciones y autorizaciones que correspondan.
- No está permitido utilizar herramientas hechizas o artesanales.
- Las herramientas, equipos y materiales deben ser inspeccionados a lo menos una vez por mes. La evidencia de esta inspección debe ser una cinta de un color adosada al equipo o herramienta. Dicho sistema de coloración mensual, se determina en el sitio donde se ejecute el servicio, la obra o faena.

Sin perjuicio de lo anterior, al inicio de una obra, faena o servicio, los equipos y herramientas deben ser inspeccionados, debiendo quedar un registro de dicha inspección.

- El Contratista deberá asegurar que todas las partes rotatorias o móviles de todas las herramientas y equipos estén adecuadamente resguardadas para prevenir el contacto accidental del personal. Todas las máquinas accionadas por electricidad deben ser suministradas en forma adecuada, inmediatamente accesible e identificable por el operador, su rápida detención y prevención para ser accionada nuevamente.
- Toda herramienta manual (eléctrica o no eléctrica) debe tener inspección periódica mediante código de colores, las cajas de herramientas se deben codificar y someter a revisión mensual de su contenido, no se aceptan machinas o herramientas hechizas, en cada caja debe existir un listado de las herramientas contenidas en ésta. Se debe indicar colores para que se mas fácil de supervisar en terreno.
- Toda herramienta o equipo eléctrico manual deteriorado o con cables eléctricos dañados se debe retirar inmediatamente del frente de trabajo.

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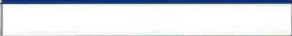




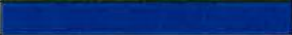





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- En el caso de herramientas eléctricas manuales, estas deberán tener un dispositivo de seguridad para emergencias y además estar conectadas a tableros alimentados por cables aéreos o subterráneos, aunque sean instalaciones provisionarias, no se acepta cables o extensiones tiradas por el piso. (Monitores con protecciones térmicas y diferenciales).
- Queda estrictamente prohibido el uso de cuchillos cartoneros para el pelado de cualquier tipo de cables.
- Todo corte que se realice, deberá ser hacia el exterior del cuerpo y en lo posible sobre una superficie sólida que permita al trabajador evitar riesgos asociados.
- Todo tablero eléctrico debe tener cable a tierra y protección diferencial de 30 MA.
- Todo tablero debe contar con registro visible de revisión.
- Las herramientas y equipos auxiliares deben ser inspeccionados mensualmente por una persona calificada, designada por el Contratista, la cual debe tener calificaciones y conocimientos de las herramientas y de sus sistemas de control.
- La evidencia documentada de la inspección mensual de las herramientas, será mediante el uso de cinta adhesiva de un color para cada mes conforme a la tabla siguiente:

CÓDIGO DE COLORES MENSUAL		
ENERO	AZUL	
FEBRERO	BLANCO	
MARZO	VERDE	
ABRIL	AMARILLO	
MAYO	AZUL	
JUNIO	VERDE	
JULIO	AZUL	
AGOSTO	BLANCO	
SEPTIEMBRE	VERDE	
OCTUBRE	AMARILLO	
NOVIEMBRE	AZUL	
DICIEMBRE	VERDE	

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- Queda estrictamente prohibido el uso de herramientas hechizas o artesanales.
- Toda herramienta eléctrica deberá contar con un sistema de aislación de energías cuando no se encuentre en funcionamiento "Sistema de Paro Hombre Muerto".
- El contratista deberá mantener un registro de las herramientas y equipos asociados al proyecto y su condición de acuerdo a los registros previamente mencionados.

8.7 TRABAJO EN ALTURA

En el caso que se requiera la realización de trabajo en altura física, se deberá implementar un procedimiento de trabajo en altura y normas complementarias el cual tendrá como finalidad:

- Eliminar o minimizar el riesgo de fatalidad, lesiones e incidentes que resultan de los trabajos en altura.
- Fijar y normalizar el correcto uso de todos aquellos elementos y accesorios que obligatoriamente deben usarse para efectuar cualquier actividad de trabajo en altura, sin excepción alguna.
- Lograr que los diversos trabajos en altura se realicen con la máxima seguridad, evitando con ello la ocurrencia de accidentes por el no uso e incumplimiento de las disposiciones, reglamentos, normativas e instructivos que se dicten al respecto o se establezcan durante la ejecución de los trabajos.

Afecta a todo trabajo o actividad donde exista el potencial de una caída de más de 1,5 m de altura, sin descartar trabajos de menor altura, que, por su riesgo, se ocupe también este procedimiento.

Bajo esa altura se deberá considerar plataformas seguras de trabajo las que estarán diseñadas, calculadas, aprobadas e inspeccionadas de acuerdo a normativa vigente.

Este procedimiento interno se complementa con lo establecido en la Ley N° 16.744 sobre accidentes del trabajo y enfermedades profesionales y cualquier otra materia que tenga relación y sea de carácter oficial.



8.7.1 Responsabilidades ante Trabajos en Altura

El Contratista debe instruir en este procedimiento a los trabajadores que se desempeñen en actividades que requieren del uso de elementos de trabajo en altura (debe informar los riesgos al trabajador) Además será de su responsabilidad cumplir que el Procedimiento de trabajo en Altura definido para el Proyecto o Parque y que se cumpla en su totalidad.

El contratista debe contar con personal capacitado para actuar en caso de emergencia capacitada y acreditada para realizar trabajos de rescates en altura, esto especialmente para trabajos en la construcción y montaje de las Líneas de alta tensión y trabajos evaluados que ameriten estos controles.

8.7.2 Disposiciones para el uso de elementos y accesorios de Seguridad

8.7.2.1 Líneas de vida

- Todos los equipos y sistemas de protección personal para riesgos de caídas en trabajos en altura deben estar certificados por un organismo autorizado, según se establece en la legislación vigente.
- Es obligación el uso de un(os) sistema(s) o equipo(s) de protección personal contra riesgos de caída para toda persona que deba realizar trabajos en altura.
- Deben existir cuerdas de vida horizontal y/o vertical o barreras de protección para permitir el adecuado aseguramiento de personas que se desplazan en altura de un punto a otro.
- Los puntos de anclaje y las líneas de vida tendrán una resistencia mínima de 2.226 kg o 22 kN.
- La materialidad de las líneas de vida se determinará en su momento, por el inspector técnico y el área de HSEQ de EGP, lo cual dependerá de si son permanentes, portátiles y de las condiciones climáticas, entre otras.
- Todas las escalas verticales deben tener implementada una línea de vida vertical, a fin de que cuando se realicen trabajos por sobre 1,5 metros sea usada con un sistema anticaída compuesto por arnés de seguridad tipo paracaidista con cola de vida y un carro de ascenso.
- Las cuerdas de vida, deben estar protegidas de los cantos vivos que puedan provocar su desgaste o rotura.
- La cuerda de vida debe ser tensada con un elemento de tensado de línea de a lo menos de 200 kg de torque.

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- La distancia máxima de una cuerda de vida debe ser de 15 metros entre extremos.
- El extremo libre de las cuerdas de vida se debe someter a una terminación que evite el deshilachado.
- Cualquier sistema de cuerda de vida y/o dispositivos de protección que estén dañados o presenten señales de deterioro, deben ser retirados del servicio y ser restituidos.
- Las cuerdas de vida horizontales deben ser usadas como máximo por dos personas entre soportes, a la vez.
- El supervisor a cargo de los trabajos debe instalar una tarjeta de validación en la línea de vida, la cual asegure la revisión diaria de esta. Dicha tarjeta debe ser color "VERDE", la tarjeta de color "ROJO" prohíbe la utilización de la línea de vida.

8.7.2.2 Andamios, plataformas de trabajo y canastillo

- Se debe delimitar la zona de trabajo que se encuentre bajo el área donde se realizan trabajos en altura para evitar golpes por posibles caídas de objetos, materiales o herramientas. La delimitación debe ser mediante barrera dura y señalización. Se instalarán letreros de advertencia de "Peligro Trabajo En Altura". De no poder cubrir toda la zona con barrera dura, se debe disponer una persona que vigile el área (loros vivos).
- Todas las formas de plataformas elevadas, portátiles, móviles y canastillos de trabajo deben ser confeccionados de acuerdo a un diseño, con su respectiva memoria de cálculo debidamente aprobado por un Ingeniero Calculista. Las soldaduras deben poseer ensayos que determinen su calidad.
- La capacidad máxima de carga estará señalizada con letreros visibles en la plataforma o canastillo.
- Las plataformas de trabajo deben permanecer limpias y ordenadas, no se acumularán artefactos en desuso, equipos o piezas que no se utilizan.
- Sobre la plataforma o andamio no deben existir elementos que permitan alcanzar una mayor altura, ejemplo, cajones, cajas, pisos, escalas portátiles, etc. La zona de tránsito debe permanecer libres de obstáculos y libres de elementos sueltos que dificulten la circulación.
- No deben existir vanos en la superficie de trabajo.
- El contratista debe contar con un Supervisor capacitado y calificado para dirigir y coordinar la instalación de Andamios, como así mismo una cuadrilla entrenada exclusiva para el arme y desarme de andamios.
- La cuadrilla de armado y desarme de andamios debe estar calificada por una empresa certificadora y sus integrantes deben acreditar cursos de capacitación en dichas materias, con sus respectivas calificaciones.

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- El supervisor a cargo del montaje del andamio, quien debe ser una persona especializada en dicha labor, debe instalar, en un lugar completamente visible, una tarjeta de validación, la cual debe ser aprobada diariamente por este. Corresponderá una tarjeta de color "VERDE" cuando el andamio o plataforma de trabajo se encuentre aprobado(a) para su uso. Corresponderá una tarjeta de color "AMARILLO" cuando el andamio o plataforma esté en armado o desarme". Corresponderá una tarjeta de color "ROJO" cuando el andamio o plataforma no cumpla con todos sus requisitos de armado, por ejemplo, configuración incompleta, falta de arriostramientos o desplomado, entre otros.
- Para el caso de andamios dentro de un espacio confinado, como, por ejemplo, calderas, túneles, tuberías, turbinas de centrales de generación, cámaras subterráneas, las tarjetas de validación deben ir instaladas, además, al ingreso de este espacio confinado.
- El uso de andamios debe garantizar la suportación del personal que lo utilice.
- Los andamios deben estar en buen estado, multidireccionales, modulares, auto soportantes y con accesos interiores incorporados, asegurándose de tener un elemento sólido y resistente de preferencia tipo Layher o Peri.
- La construcción y utilización de cualquier andamio deberá cumplir con las exigencias que para tal efecto existen acorde a las Normas Chilenas NCh 997-78 y NCh 998-78. Para ello deben estar dotados de todos y cada uno de sus elementos que lo conformen.
- Deben disponer de barandas, barandas intermedias y rodapié.
- Considerando que los andamios permiten crear plataformas de trabajo de carácter transitorio, deben revisarse diariamente para detectar cualquier defecto o falla de materiales.
- La inspección de los andamios y plataformas de trabajo debe ser diaria y documentada, para así evitar trabajar en andamios que potencialmente hayan sido alterados o modificados por personas externas a la cuadrilla autorizada.
- Las escalas de acceso para subir a los andamios, deben estar incorporadas a la estructura como parte integral de este.
- Cada pie derecho debe tener una base firme como soporte y deben estar aplomados. Se deberá verificar que la superficie en donde se monte el andamio sea una superficie plana y sin resaltos.
- Las plataformas de trabajo deben cubrir completamente el ancho y largo del andamio, dejando una apertura abatible para el acceso.
- La fijación del andamio al edificio o estructura debe hacerse mediante el uso de escuadras metálicas, tensores o algún dispositivo metálico que elimine totalmente el riesgo de volcamiento del andamio.
- Mientras se arme o desarme un andamio o alguna de sus partes, se debe señalar claramente (huinchas de peligro) la prohibición del uso del andamio y de la circulación en las zonas adyacentes a la base del mismo.

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- Se debe revisar el espacio en los alrededores del andamio, previo a su cambio de ubicación, verificando que no existan riesgos de contacto con líneas eléctricas.
- Para andamios en volado o voladizos, estos deben ser armados según diseño o configuración del fabricante, sin dejar vanos y debe indicarse la capacidad máxima de peso en kilos para la que fue armado.

Toda superficie de trabajo en altura deberá estar debidamente diseñada, calculada, aprobada, autorizada, señalizada, codificada y delimitada en forma permanente.

Además, se deben tomar las siguientes precauciones:

- La inspección de las superficies de trabajo en altura debe ser diaria (antes, durante y después) y documentada, para así evitar trabajar en plataformas que potencialmente hayan sido alteradas o modificadas por personas externas a la cuadrilla autorizada.
- Toda superficie de trabajo en altura debe tener rodapié, toda herramienta manual a usar en trabajos de altura debe estar amarrada, incluye a cilindros de gases, extintores, tarros de pernos, pasadores cónicos, chalupas, cajas de herramientas diversas, martillo, llaves manuales, entre otras.
- Para señalar una superficie de trabajo, puede utilizarse elementos que adviertan claramente la existencia de ésta, pudiendo ser: cordeles, barandas, barreras definitivas, etc., siempre y cuando no signifique o incorpore un riesgo a la superficie misma, consulte los procedimientos de señalización de EGP o su Representante.

8.7.2.3 Arnés de Seguridad

- El uso de casco específico para trabajos en alturas y barbiquejo de tres puntas debe ser obligatorio.
- Se debe usar arnés de seguridad de 4 argollas como mínimo. Dichas argollas estarán distribuidas de la siguiente forma: 2 laterales a la altura de la pelvis, una a la altura del tórax (de pecho) y otro en la zona posterior a la altura del omoplato (espalda). Las cintas que rodeen las piernas deben ser acolchadas a fin de no impedir por completo la irrigación sanguínea de las extremidades en caso de que el trabajador quede colgado del arnés producto de una caída. Para trabajos igual o superior a 5 mts, se adicionará un amortiguador de impacto entre la eslinga y el arnés. La eslinga a utilizar es del tipo Y.

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- Todos los sistemas de protección o elementos de protección personal para controlar riesgos de caídas en altura deben ser sometidos a inspecciones a intervalos preestablecidos en base a listas de chequeo, debiendo inspeccionarse específicamente cada componente.
- El uso del arnés conectado a un adecuado sistema anticaídas es de uso obligatorio para todos los que trabajarán sobre 1.5 m de altura física. No se aceptará el uso de cinturones de seguridad o únicamente de posicionamiento. Este debe ser inspeccionado periódicamente (código de color de inspección del mes respectivo).
- Arnés debe ser de cuerpo completo certificado como arnés para retener caídas (NCh 1258/ EN361).
- En el sistema anticaídas se dará prioridad a elementos conectores con absorbedor de energía (NCh 1258/ EN354/ EN355) pudiendo complementar (en ningún caso sustituir) con elementos limitadores y/o de posicionamiento (NCh 1258/ EN358).
- En todo momento el usuario del arnés y del absorbedor de caídas, priorizará un factor de caída inferior a 1. Esto quiere decir, que siempre deberá conectar el dispositivo en el punto de anclaje o estructura más alta posible. En aquellos casos en que la estructura no sea más alta que el nivel del piso o su equivalente, se instalarán los anclajes y líneas de seguridad que permitan que el usuario esté correctamente asegurado.
- En los ascensos verticales (sobre 4 m) se instalarán y utilizarán líneas anticaídas flexibles, ya sea por cuerda o cable, y en dicho caso, el usuario deberá utilizar el respectivo dispositivo anticaída deslizable. (NCh 1258/ EN353-2)
- Toda persona que realice trabajos sobre 1.5 m de altura y cuya aproximación a un borde de caída, sea igual o menor a 2 m, estará obligada a utilizar un sistema anticaídas; el que puede ser conformado por un sistema retenedor de caídas, o un dispositivo que impida y limite la aproximación hacia el borde de caída. Esta obligatoriedad incluye a todos los trabajadores, entre ellos los supervisores.
- Dentro del análisis de riesgo del contratista, deben estar reconocidas las posibilidades de efectuar maniobras de rescate en determinadas situaciones y tareas.
- Dentro del manual de procedimiento del contratista, deben estar descritos los equipos, maniobras y personal competente y calificado que procederá eventualmente a realizar el rescate.
- El contratista deberá tener todos los equipos técnicos y humanos para poder realizar rescates en todas las situaciones y tareas que le compete intervenir, dentro de un tiempo adecuado,

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tanto así, que no se exponga al síndrome del arnés o trauma en suspensión al trabajador en situación o condición de víctima.

- Toda persona que vaya a utilizar EPP anticaídas deberá ser competente en su uso, con capacitación formal y registro, y como tal, tendrá que hacer una revisión previa al uso de cada día. Una vez puesto el EPP, deberá preocuparse constantemente de su adecuado estado y utilización, no pudiendo darle un uso al equipo que no esté dentro de las instrucciones del fabricante.
- En aquellos casos en que se detecten defectos o problemas con el equipo, como por ejemplo; daños en su estructura, costuras desgarradas, quemaduras por escoria caliente, daño por productos químicos, etc., no podrá usarlo, debiendo darlo de baja y destruirlo.
- Se prohíbe estrictamente utilizar absorbedores de energía y/o conectores anudados para reducir el largo según fabricante.
- Se prohíbe estrictamente modificar o alterar los EPP de cualquier forma, y con cualquier elemento, sin que sea compatible una acción autorizada y recomendada por el fabricante.
- El no uso del arnés de seguridad, es considerado una falta gravísima y podrá ser causante de que el trabajador sea retirado de proyecto.

8.7.2.4 Rescate en altura

- Cuando se requiera utilizar arnés de seguridad, el peso total del trabajador incluyendo herramientas y equipos no debe superar los 100 kilos (según NCh 1258-1). Para pesos superiores debe existir un elemento fabricado por una empresa especializada, que certifique con pruebas empíricas la resistencia del equipo.
- El (los) plan(es) de respuesta para emergencia en el sitio debe(n) incluir procedimientos de rescate para la recuperación rápida de personal en caso de una caída de altura. (El tiempo de respuesta es crítico si una persona se deja suspendida de un arnés de seguridad).
- Debe existir una batería de equipos destinados para el rescate de personas desde altura, así como también personal entrenado en este tipo de emergencias. La batería de rescate estará compuesta por los siguientes elementos: Tabla espinal larga, camilla de rescate aérea, cuello cervical y manta protectora. Estos elementos deberán ser posicionados en puntos cercanos a zonas de trabajos en altura en una estación de emergencia.
- Al trabajar desde dentro de las barandas de un andamio o plataforma de trabajo, se debe llevar un arnés de seguridad. Si la tarea implica que un trabajador deba inclinarse en las barandas, entonces se debe disponer de cuerdas de vida para que los trabajadores puedan asegurarse a un punto de anclaje seguro independiente del andamio o plataforma.

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- Los trabajos en altura no pueden realizarse si el área de trabajo está expuesta a lluvia, granizos, escarcha y/o vientos fuertes (superior a 30 km/h), que pudieran desestabilizar a un trabajador.
- El trabajador debe estar siempre estroboado a un punto de apoyo con uno de los dos cabos de vida, el otro lo usará para desplazarse alternadamente.
- Todo trabajador debe hacer una inspección visual de su arnés de seguridad, antes de cada uso, junto con los accesorios de protección contra caídas.
- Los trabajadores que manipulan herramientas manuales en altura deben mantenerlas amarradas, usar en todo momento, bolsos o morrales porta herramientas. Asimismo, los trabajos con soldadura para evitar caídas de varillas, piezas, residuos metálicos u otros, se mantendrán en contenedores adecuados.
- Deben existir procedimientos de trabajo seguros cuando se den condiciones o se realicen actividades tales como:
 - Trabajos en altura bajo condiciones climáticas adversas (lluvia, viento, temperatura, etc.).
 - Montaje y desarme de andamios.
 - Montaje de estructuras en altura.
 - Montaje de superficies de trabajo en altura.
 - Ascender o descender trepando por una estructura, se debe llevar a cabo una minuciosa identificación de peligros y evaluación de riesgo antes de iniciar un trabajo.
- Todo trabajador que deba ejecutar trabajos en altura, debe comprobar su idoneidad con un examen de altura física realizado por el respectivo Organismo Administrador de la Ley 16.744.
- Todo trabajador que deba realizar labores en altura, debe recibir una adecuada capacitación por parte de una persona competente y autorizada para realizar dicha capacitación.
- El personal que opera las plataformas elevadoras y canastillos de trabajo debe ser entrenado y calificado para el equipo que están usando.
- Se deben realizar observaciones de conducta a los trabajadores que realicen labores en altura. Estas observaciones deben considerar acciones in situ para reforzar los comportamientos seguros y corregir los comportamientos inseguros.
- Se diseñarán programa(s) de capacitación tomando como base fundamental los resultados de las observaciones de conducta.

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- Cuando se realicen trabajos en altura, deben existir uno o más métodos de trabajo que eviten la caída de herramientas y otros objetos.

8.7.2.5 Otras Consideraciones para Trabajos en Altura Física

- Todo trabajador que deba efectuar un trabajo en altura física debe contar con un examen médico que indique que se encuentra apto para trabajar en altura física emitido por Organismo Administrador.
- Este examen médico debe orientarse a detectar condiciones del trabajador que no impidan el desarrollo de actividades en altura física (epilepsia, vértigos, insuficiencias cardíacas, enfermedades mentales, alcoholismo y/o adicción a drogas o fármacos).
- Todo trabajador que sufra de alguna enfermedad y/o contraindicación médica que le impida trabajar en altura, tiene la obligación de informar a su supervisor de esta situación.
- Para los trabajos sobre 10 mts de altura como trabajos en las líneas de alta tensión LAT, se deberán suspender las actividades cuando la velocidad del viento supere los 30 km/hr o 8.3 m/s. En promedio.
- Se prohíbe el uso de cordeles como elementos de suspensión en trabajos de soldaduras, oxicorte o cualquier trabajo con llama abierta realizado en altura, siendo obligatorio el uso de cables de acero, revestido en plástico en aquellos casos en que los trabajos se desarrollen cercanos a instalaciones eléctricas.
- Todo trabajo en altura deberá ser coordinado de tal forma que no implique que otros trabajadores queden expuestos a caída de materiales desde niveles superiores, para tal efecto se debe señalar el piso inferior en la línea de máxima pendiente.
- En niveles de pisos donde sea necesario instalar pasillos o plataformas de tránsito, los vacíos o espacios que se produzcan deberán ser señalizados, cercados y cubiertos inmediatamente con material que sea resistente al tránsito de personas.
- Solo se autorizarán escalas de ascenso y descenso certificadas (tipo industrial)
- Solo se utilizará el absorbedor de impacto (shock absorber) cuando la altura física supere los 4 mts de altura.
- Se debe instalar una línea de vida para los trabajos de instalación de revestimiento de galpones y estructuras de al menos ½ pulgada de espesor y no superior a 15 m de largo.
- Para los trabajos en LAT se prohibirá realizar labores con condiciones atmosféricas adversas (lluvia, tormenta eléctrica).

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8.8 EXCAVACIONES**8.8.1 Consideraciones en el Sitio de Excavación**

- Como básico todas las excavaciones deben ceñirse a lo estipulado en la NCh 349/1999, "Disposiciones de seguridad en excavación".
- Previo al comienzo de una excavación, se deben evaluar los peligros subterráneos potenciales que pudiesen aparecer al excavar, tales como líneas eléctricas, ductos de gas y otras instalaciones subterráneas. De aparecer un peligro subterráneo, debe identificarse el riesgo colocando una señalización.
- Antes de realizar la excavación debe existir un análisis del tipo de suelo. Con este análisis se determinará el tipo de protección a utilizar para sostener las paredes de la excavación, a objeto de evitar el derrumbe o caída de material de una o más paredes.
- Según la clasificación del tipo de suelo y el tipo de excavación, las protecciones podrían ser una combinación o utilización individual de las siguientes medidas:
 - Taludes.
 - Bancos o Gradas.
 - Entibación.
 - Malla metálica con hormigón proyectado.
- Sin perjuicio de lo anterior, en configuraciones o situaciones especiales se pueden considerar opciones equivalentes o mejores.
- Cualquiera sea el o los métodos de protección a utilizar, se debe detallar previo a su instalación su secuencia de construcción y/o instalación.
- La determinación y diseño de los soportes de la excavación debe efectuarse basado en una cuidadosa consideración de los siguientes factores:
 - Profundidad del corte.
 - Cambios debido al efecto de la humedad.
 - Movimientos de tierra causados por la vibración del paso de vehículos o presiones del suelo a su alrededor.
- En caso de una entibación, cuando los costados de una excavación o zanja tengan una inclinación segura de acuerdo a lo señalado en la NCh 349/1999, sobre construcción y disposiciones de seguridad en excavaciones, y esta inclinación no se extiende hasta su fondo, la entibación va a ser necesaria solo para apuntalar los taludes verticales de dicha

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excavación o zanja, no obstante, la entibación debe sobresalir 30 cms. por sobre la arista de inclinación.

- En caso de usar entibación para toda la excavación, esta debe sobresalir 15 cms. por sobre el borde de la excavación y los puntales deben ser trozos enteros, sin añadiduras.
- El perímetro de la superficie deberá estar limpio de restos de materiales antes que al personal se le permita ingresar a la excavación.
- Se debe evitar la presencia de agua en las excavaciones.
- Cuando las paredes de una excavación estén inestables y exista probabilidad de derrumbe se debe considerar entibación del tipo prearmada con el objetivo que ningún trabajador ingrese a la excavación antes de estar completamente entibada.
- El material extraído de la excavación debe dejarse al menos a la mitad de la profundidad de la excavación desde el borde de esta.
- Cuando existan excavaciones que crucen caminos o vías de accesos, se deben usar planchas metálicas o materiales de dureza similar, con el propósito de cubrir las excavaciones, las cuales deben ser capaces de soportar el peso de equipos y personas que transiten en el área. En situaciones en que la magnitud de esta pueda crear un peligro para las personas, vehículos y equipos circundantes, el camino debe bloquearse.
- Cuando el desarrollo de una excavación, exija emplear o almacenar elementos explosivos, se deben adoptar todas las medidas de seguridad establecidas en los estándares correspondientes del manual de estándares.
- Todas las excavaciones deben disponer de barreras rígidas cuando:
 - Su profundidad exceda a un metro.
 - La excavación quede expuesta al paso de personas ajenas a las faenas.
 - Por su profundidad, la excavación presenta un riesgo para las personas o animales que puedan transitar por el lugar.
 - La excavación quede expuesta a las vibraciones y paso de equipos y vehículo
- Todas las excavaciones deben estar bien señalizadas indicando la existencia del peligro por lo menos en dos direcciones.
- Los letreros de advertencia y señalética de seguridad deben ser instalados y confeccionados conforme al estándar de la compañía.

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- Si una excavación está expuesta al paso de vehículos, equipos u otras fuentes de vibración o compresión, se instalarán delimitaciones a lo menos 1,5 veces de distancia de la profundidad de la excavación.
- Especial cuidado se debe tener cuando se efectúen trabajos de compactación al borde o en el fondo de la excavación, para lo cual se deben efectuar los refuerzos necesarios en sus paredes.
- Cuando sea necesario cruzar de lado a lado una excavación o zanja, se instalarán pasarelas de un ancho tal que permitan un cruce seguro.
- Las pasarelas, deben tener una baranda superior, una baranda intermedia y rodapiés. Las barandas laterales deben tener la capacidad de soportar una fuerza en todas las direcciones de al menos 100Kg.
- La baranda superior debe tener al menos 1" (pulgada) de espesor y deben ser construidas de materiales sólidos tales como maderos, cañerías de acero o cables de acero debidamente tensados. No se permite el uso de fierro de construcción ni cordeles como barandas pasamanos en la construcción de la pasarela.
- Cuando la excavación tenga una profundidad superior a 0,5 metros, se debe disponer una escala para acceder a ella. Escalas adicionales o accesos deben colocarse con un espaciamiento de 15 metros en zanjas y excavaciones, cuando la longitud de estas supere esa distancia.
- Cuando el ángulo de inclinación de la excavación sea igual o superior a 45°, debe poseer con escalera con pasamanos.
- Las escalas deben extenderse al menos 1 metro sobre la base superior de la excavación y estarán debidamente aseguradas.
- En los casos de excavaciones de profundidad mayor a 3 metros, las escaleras deben estar provistas de barandas, rodapiés y descansos construidos a distancias no superiores a 3 metros.
- Se debe proporcionar la adecuada iluminación al sector donde se realiza la excavación.
- Cuando una excavación está cEGPana a vías de tránsito de vehículos, la señalización se confeccionará de acuerdo a las normas de vialidad que indique el manual de carreteras, a fin de asegurar una adecuada visualización en la noche.
- Cuando la excavación se realiza mediante excavadora o retroexcavadora, se debe establecer una zona de seguridad alrededor de la máquina superior en 1,5 metros al radio de giro del brazo de esta, en la cual se prohibirá el tránsito de personas.

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- Toda maquinaria pesada que trabaja en faenas de excavación debe poseer un sistema de luces (baliza), bocina, y alarma de retroceso que funcione en forma automática.
- En caso de quedar una acera o pasillo público al borde de una excavación, esta debe protegerse debidamente para evitar la caída de personas producto de socavones.
- Debe existir un procedimiento específico para realizar una excavación cuando:
 - Se realicen excavaciones mayores a 1,5 metros de profundidad.
 - Se realicen excavaciones en espacios reducidos o confinados.
 - Se realicen trabajos de movimientos masivos de tierra.
 - Cuando la excavación se realice con maquinaria pesada (excavadora y/o retroexcavadora).
- Las excavaciones, así como sus áreas adyacentes, deben ser inspeccionadas diariamente por una persona competente, después de cada lluvia, nevazón, o según cambien las condiciones del suelo.
- Se deben tomar las medidas de seguridad necesarias antes de comenzar cualquier trabajo adicional en la sección de una excavación, si existe cualquiera de las siguientes condiciones:
 - Posible derrumbe.
 - Indicación de falla de los sistemas de protección.
 - Atmósfera peligrosa (Presencia de: Gases tóxicos, insuficiencia de oxígeno, atmósfera inflamable y gases que desplacen el oxígeno, entre otros).
- No se debe excavar con maquinarias mientras haya personal al interior de la excavación a una distancia igual o menor a la distancia del brazo completamente extendido en forma horizontal de la maquinaria que está excavando.
- Cuando el talud de una excavación se ha socavado accidentalmente se debe provocar la caída del terreno sobresaliente hasta que quede en condiciones seguras.
- Cuando sea necesario extraer agua de la excavación para continuar con los trabajos, se debe efectuar solo después de considerar la posible alteración de las fuerzas existentes, las posibilidades de erosión de los pies de la excavación y del posible arrastre de finos.

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- En el carguío por pala mecánica o retroexcavadora, todo vehículo de carga debe estacionarse de modo que la pala no pase por sobre la cabina del camión. El camión debe quedar frenado y enganchado, además se utilizarán cuñas.
- Se debe poseer con un guía (Señalero o Rigger) que dirija los desplazamientos de la maquinaria pesada mediante banderas o paletas de colores, el cual debe estar en todo momento visible por el operador de la máquina y así advertir a este y a peatones de cualquier peligro. Si los trabajos son nocturnos, se debe disponer de iluminación apropiadas que cumpla con lo establecido en el D.S 594.
- Después de un período prolongado de paralización, las excavaciones y sus sistemas de protección deben ser revisados antes de reanudar los trabajos.
- Las personas deben ser instruidas previamente en las normas de seguridad y los procedimientos de trabajo de excavaciones.
- Deben existir evaluaciones de riesgos conocidas por los trabajadores.

8.8.2 Consideraciones de Tipos de Suelo e Inclinación

La tabla siguiente describe los tipos de suelo y requerimientos de inclinación (talud) para excavaciones.

Nota: El tipo de suelo debe ser determinado por pruebas visuales y manuales. De otro modo asuma un tipo C de suelo con 1,5:1 de inclinación.

Tipo de Suelo	Descripción	Máxima inclinación	
		Razón	Angulo
Roca Sólida	N/A	Vertical	90°
A	Suelos duros, resistencia de compresión >3000 lb/pie ² , arcilla o suelo arcilloso, suelo compactado, caliche	0,75:1	53°
B	Suelos medianos, resistencia >1000 lb/pie ² . Grava, ripio, tipo de suelo que ha sido removido, sujeto a vibración o tiene fisuras.	1:1	45°
C	Suelos débiles, resistencia <1000 lb/pie ² grava, arena, suelo húmedo.	1,5:1	34°

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8.8.3 Consideraciones para Estacionar y Mover Equipos en Excavaciones

La tabla que se entrega a continuación, describe las acciones del operador para equipos específicos de excavación.

Si Usted está...	Usted debe...
Estacionando el equipo de Excavación	Estacionar la unidad en lo posible en el suelo nivelado y bajar el balde u otro accesorio a posición de descanso
Estacionando la retroexcavadora en un plano inclinado	- Bajar el cucharón de trabajo de tal manera que el borde de corte quede en contacto con el suelo - Aplicar freno de estacionamiento - Asegurar las ruedas con cuñas
Cargando el equipo en un trailer	- Usar la marcha lenta - Fijar correctamente la maquina al trailer
Estacionar en pendiente	- Usar cuñas

8.9 EQUIPOS DE LEVANTE

Antes de realizar maniobras con equipos de levante, el Contratista y/o subcontratistas deben conocer y realizar lo siguiente:

- El contratista deberá mantener un registro de todos los equipos de levante y tecles.
- La carga de trabajo segura (SWL) y tablas de radios deberán estar disponibles para todos los equipos de levante y deberán estar marcadas en los equipos.
- Se sugiere mantener en terreno el manual de operación del equipo, en español.
- Los equipos de levante sólo podrán ser operados por personal calificado, con certificación legal (licencia).
- El contratista deberá cumplir con todos los requerimientos de EGP Chile cuando se les sea solicitado.

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- Las eslingas, estrobos, cables, cadenas, etc. que se utilicen deben estar certificadas e indicar el factor de seguridad de diseño. Esta documentación debe estar en terreno para revisión.
- Se considerará una antigüedad máxima de 8 años para las grúas hidráulicas o camiones pluma, y 12 años para grúas estructurales o grúas torre.
- Toda maniobra de levante deberá ser dirigida por un riggers, entrenado y certificado por un organismo de capacitación externo, estos deben estar identificados mediante un chaleco reflectante que lo distinga del resto de los trabajadores. Esta documentación debe estar en terreno para revisión y tendrá una vigencia de no más de 2 años.
- El Contratista debe mantener copias de todos los certificados de pruebas y mantenimientos relativos a las grúas, montacargas, plumas, engranajes de levante y ganchos de suspensión, y deberán estar a disposición de EGP Chile si fuesen requeridos.
- Todo accesorio de levante (Eslingas, estrobos, cadenas, etc.) debe tener codificación, inspección de pre-uso e inspección por código de colores.

8.9.1 Maniobras de Izamiento

Las actividades de transporte y maniobras de izamiento requieren de una adecuada capacitación del personal involucrado. Los supervisores deben mantenerse en alerta por fallas en la operación incluyendo aquellas debido a enfermedades.

Los Individuos que realicen operaciones de izamiento deben establecer procedimientos seguros y usar solo equipos certificados en buenas condiciones. Las "personas a cargo de las maniobras" quienes son capaces de especificar una maniobra deberán ser previamente calificadas.

8.9.2 Trabajo de Montaje

- Todas las grúas plumas y equipos de izamiento o similares deberán ser examinados con ensayos no destructivos y certificados en forma periódica. Los contratistas deberán exhibir pruebas de tales ensayos.



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- El operador de grúa deberá hacer una inspección previo a hacer partir la grúa y/o en cada cambio de turno y registrar la información en la bitácora de servicio de inspección y check list correspondientes.
- Previo a comenzar el trabajo, las condiciones y operación de los frenos, limit switch, dispositivos de prevención de volcamiento, cables de acero, ganchos de cable y dispositivos de izamiento deberán chequearse e inspeccionarse. Además, se deberá operar la grúa sin carga como prueba.
- Como chequeo preliminar, el equipo deberá izarse y mantenerse a 10 centímetros del suelo. En esta condición, se deberá chequear e inspeccionar todos los elementos para ver si operan correctamente. Si se detectan condiciones riesgosas, el trabajo de izamiento se deberá suspender de inmediato. Todos los defectos observados durante las inspecciones deberán corregirse de inmediato.
- Deberán estar instaladas en la cabina de la grúa, las cartillas de la bitácora de servicio de inspección, mostrando las capacidades de izamiento máximas y otra información esencial incluyendo una cartilla básica de señales de mano. Las grúas deben estar provistas de alarma de retroceso, un extintor y un indicador de carga.
- La capacidad de la grúa a utilizar en el montaje deberá determinarse luego de una cuidadosa consideración. El operador de grúa deberá verificar los pesos y alturas de las cargas a izar. No se deberán izar cargas que excedan la capacidad nominal expresada por el fabricante.
- Previo al comienzo de la maniobra, se deben chequear los pesos totales de izamiento y el centro de gravedad de los equipos que se van a montar. La carga a izar para cada grúa se deberá controlar dentro del 90% de la carga máxima.
- La carga a izar deberá incluir el peso muerto del gancho del cable, etc. Las grúas o winches deberán ser aseguradas o frenadas cuando no están en operación. El cable de acero de la grúa deberá enrollarse completamente luego de completar el trabajo.



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- El plan y procedimiento de trabajo de montaje (maniobra) deberá ser revisado exhaustivamente por los Ingenieros de Terreno de la empresa contratista y autorizado por EGP o su Representante.
- El operador de grúa y el rigger deberán determinar la seguridad y serán responsables de la maniobra para la que han sido asignados, excepto cuando se trate de una maniobra con cálculo de ingeniería.
- El contratista deberá proporcionar señales de advertencia de "No Entrar", "Maniobras de Izamiento", etc. delimitación del área con barreras físicas y zonas de seguridad para las áreas con maniobras.
- La resistencia del terreno donde se instalará la grúa se deberá examinar. Si es necesario, se deberá instalar refuerzos, como planchas de acero o zapatas de seguridad.
- Sólo se permitirá que personas competentes y autorizadas con licencia de acuerdo a la legislación vigente, operen la grúa o realicen operaciones de eslingado para equipos de izamiento.
- El capataz y señalero (Rigger) competente (quiénes son conocedores de todos los procedimientos de maniobras) deberán ser asignados para cada trabajo de montaje bajo un sistema operativo establecido para el trabajo. Deberán ubicarse donde puedan observar la maniobra y ser claramente visibles para el operador de grúa durante el trabajo de izamiento.
- Se deberá usar un sistema uniforme de señales con las manos, radio-transmisores y pitos para las señales. Los Operadores deberán recibir las señales de una sola persona y no deben mover la máquina hasta haber comprendido totalmente la señal. El Rigger debe vestir un chaleco distinto al resto de la cuadrilla y debe ser el único color que se destaque.
- Al izar cilindros de gas comprimido se deberá usar una jaula autorizada y codificada.
- Las maniobras no deberán realizarse con mal tiempo, como viento fuerte o lluvias intensas. **Se prohíbe hacer levantamiento de cargas en espacios abiertos cuando la velocidad del viento es sobre los 30 Km/hr. u 8.3 m/s y la visibilidad es menor a 50 mt.**

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- Las cargas suspendidas se deben controlar con vientos, usando cuantos vientos sean necesarios (mínimo dos) para controlar efectivamente la carga. Los vientos deben ser del largo suficiente como para no restringir el movimiento de la carga y para no exponerse debajo de la carga.
- Durante el trabajo de izamiento, la operación deberá ser cuidadosamente supervisada para prevenir maniobras apuradas, suspensión prolongada e izamientos más allá del límite.
- Se debe prohibir los izamientos abruptos y detenciones repentinas.
- Se debe prohibir la rotación e izamiento simultáneo o rotación y movimiento de la pluma.
- La pluma se debe rotar lentamente a objeto de evitar las fuerzas centrífugas en equipos o materiales que se estén izando.
- Todas las plumas se deben mantener alejadas al menos 15 metros de líneas de alta tensión y hot rails, excepto si tales líneas se han desenergizado o están protegidas adecuadamente contra el riesgo o contacto accidental.
- Se debe prohibir a las o los trabajadores viajar sobre equipos izados o materiales cuando se esté izando o rotando.
- Un Rigger certificado deberá guiar todos los movimientos de traslado de un punto a otro de las grúas móviles.
- Las barreras plásticas (redes o mallas naranja) son las únicas barricadas adecuadas permitidas para las áreas restringidas. No se permite la cinta plástica.

8.9.3 Uso de Canastillo

- La plataforma para personas (canastillo) es un aparato construido de acero o aluminio, también llamado canastillo, diseñado para ser utilizado con el gancho de la grúa y usado en izamiento para personas de una manera segura.

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- El canastillo debe tener capacidad de trabajo segura y con un factor de seguridad de 5:1.
- Todo canastillo debe ser diseñado, calculado y aprobado por ingeniero mecánico calculista, señalizado sus cargas máximas y tipo de uso (**personal o equipos**), además de codificado con un N° y autorizado para su uso por el supervisor del área.
- Los canastillos de **uso para personal** sólo se usarán con un Permiso de Trabajo Seguro.
- Todos los aparatos que sean utilizados en izamientos de personas deben igualar o superar los estándares ANSI, ASME y NCh.
- El canastillo debe estar certificado por el fabricante y calificado de acuerdo a los estándares y pruebas realizadas, codificado y sujeto a inspección mensual.
- El uso de canastillo deberá emplearse cuando todas las otras alternativas para ejecutar trabajos en altura hayan sido encontradas impracticables tales como el use de plataformas móviles de izamiento de personas, descensos en vertical a través de sistema de cuerdas, andamios u otras formas que permitan ejecutar el trabajo de una forma segura y en el cual se requiera utilizar canastillo suspendido con grúa, para transporte de personal.

8.9.4 Izamientos Múltiples

- En general se debe evitar el uso simultáneo de más de una grúa u otro equipo de levante para izar, suspender, soportar o bajar una carga individual.
- Donde tal uso sea inevitable, la operación se debe diseñar y planificar, incluyendo consultas a los fabricantes de dispositivos de maniobras para asegurar que ningún equipo de maniobras se cargue por sobre su carga de trabajo segura ni se vuelva inestable. Tal operación deberá ser **supervisada presencialmente** (100% en terreno mientras dure la maniobra) por una persona competente, nominada por la Contratista.
- Para el caso de maniobras en Tandem (maniobras con más de una grúa), se debe contar con un Riggin Plant, para conocer la ubicación de los equipos y postura de las maniobras.

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8.10 TRABAJO CON LINEAS ENERGIZADAS DE MEDIA TENSION

Los trabajos en líneas energizadas normalmente van en apoyo de actividades de mantenimiento o construcción, por este motivo y previo a la actividad, el supervisor de la cuadrilla de líneas energizadas debe corroborar en terreno la veracidad de los datos entregados en Orden de Trabajo (OT) o Permiso de Trabajo (PT) asociados al evento, dirección, equipos existentes en circuito a intervenir lado fuente y lado carga, u otras incidencias en circuito tales como grupos generadores externos.

- Posterior a la verificación de datos, el supervisor debe efectuar la correspondiente charla operacional, en la cual se dará a conocer al personal los riesgos asociados a la actividad y los correspondientes sistemas de control por cada riesgo detectado.
- Una vez verificados los riesgos y efectuada la charla operacional, el supervisor llamará al centro de operación del sistema y solicitará el permiso respectivo para intervenir en el circuito, acorde a lo estipulado en reglamento de operaciones del sistema eléctrico.
- Toda persona que requiera intervenir en redes de distribución, debe haber aprobado el curso de Reglamento de Operación (RDO) de la Distribuidora, de acuerdo a los procedimientos establecidos para estos efectos.
- Una vez obtenido el permiso por parte del centro de operación del sistema, el supervisor posicionará el camión hidroelevador en la zona de trabajo y señalizará con conos de acuerdo a lo establecido en el reglamento de tránsito.
- El supervisor verificará junto al liniero el correcto estado de los elementos de protección personal y de los equipos a utilizar en la faena, aterrará el camión por medio de la tierra de este a una barra Copperweld y posterior a esto autorizará al liniero para realizar el trabajo solicitado.
- El maestro liniero previo a la realización de los trabajos debe verificar el estado de las redes energizadas y corroborar el estado de los componentes del circuito que va a intervenir.
- El maestro liniero previo a la ejecución del trabajo, debe cubrir todos los puntos energizados del sistema que no deben ser intervenidos y que se encuentran en cEGPania a la zona de trabajo, para esto utilizará mangas de líneas, cubre aislador, cubre crucetas, mantas o cubre piezas.
- Deber ser del supervisor estar atento en todo momento a las maniobras que ejecute el maestro liniero mientras desarrolla la actividad, con especial énfasis en el ascenso del capacho hacia las líneas de media tensión, en el cruce bajo líneas de media tensión o cuando el brazo articulado se encuentre sobre la calzada o zona de tránsito vehicular.

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- El personal de líneas energizadas no efectuará trabajos en redes con tensión, cuando por fenómenos climáticos la humedad ambiental supere el 60% o en su efecto se encuentre lloviendo.
- El personal que opere en líneas energizadas debe poseer con equipamiento completo de seguridad, el cual debe estar debidamente certificado de acuerdo a Decreto supremo N° 18 y estándares asociados de EGP.

8.10.1 Equipamiento del Personal

- Casco dieléctrico clase "E" con barbiquejo de tres puntas.
- Calzado de seguridad dieléctrico.
- Ropa Ignífuga.
- Lentes de cristal a prueba de impactos y foto cromáticos.
- Arnés de seguridad dieléctrico y estrobo. (Liniero).
- Guantes dieléctricos clase III. (Liniero).
- Manguillas bicolor dieléctricas clase III. (Liniero).
- Guante cuero protector de guante de goma.

Para el correcto desarrollo de la intervención en líneas energizadas, el camión hidroelevador debe cumplir con los siguientes requisitos:

- Debe poseer con aislación para 69 Kv. Con brazo aislado de alcance mínimo de 10 m. con capacho simple, este debe poseer con 2 controles independientes, uno en el canastillo y otro en la base del brazo.
- La grúa, los brazos y canastillo deben permanecer limpios y aseados, libres de tierra o impregnación de aceite, los que por su sola presencia inciden sobre la capacidad dieléctrica del vehículo, para esto el camión hidroelevador debe ser lavado como mínimo una (1) vez por semana.
- El vehículo debe poseer con prueba dieléctrica de los componentes y elementos aislantes de este, esta prueba se debe realizar con una periodicidad de 12 meses.
- El sistema hidroelevador debe estar en perfecto estado, para esto se debe verificar diariamente los niveles de aceite hidráulicos de la grúa y los brazos articulados.
- El vehículo debe poseer documentación y equipamiento de seguridad al día, según lo exija la ley y/o normativa vigente, poseer convertidor catalítico, con espacio de carga para equipos, herramientas, materiales, separado del espacio de transporte de personas.

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8.10.2 Equipamiento del Vehículo

- Cortacable hidráulicos.
- Cruceta auxiliar corta completa.
- Cubierta de protección para poste.
- Cubre aislador rígido PVC ("tortuga").
- Cubre cruceta rígida PVC apoya líneas.
- Cubre discos.
- Cubre piezas, libros.
- Escobillas limpia líneas.
- Lona cubremanta.
- Coberturas de líneas con extensión (Mangueras cubre líneas) CL. III.
- Coberturas de líneas sin extensión (Mangueras) CL. III.
- Mantas enteras clase III.
- Mantas partidas clase III.
- Pateca gancho carnicero.
- Pértiga soporte línea MT (3° mano).
- Perros plásticos para mantas.
- Protecciones rígidas PVC cubre líneas clase III.
- Puentes (Jumper) aislados flexibles 4 metros, Clase III.
- Soporte auxiliar individual apoya líneas.
- Teclé de cinta y Tensor saca líneas A.T.

8.11 SISTEMAS DE BLOQUEO PARA FUENTES DE ENERGÍA

- Todo equipo, instalación o circuito que deba ser sometido a mantenimiento, reparación, limpieza, y cualquier otro tipo de intervención, debe ser previamente detenido, desenergizado y bloqueado.
- Todos los equipos con energía eléctrica, mecánica, hidráulica o térmica, deben tener un dispositivo que aisle la fuente de energía y permita que el sistema pueda ser paralizado, detenido o desenergizado, con el objetivo que puedan ser intervenidos en forma segura.
- La intervención en equipos, instalaciones o circuitos deben tener un procedimiento obligatorio de bloqueo. El procedimiento debe describir la secuencia que debe cumplirse antes, durante y después de la intervención de los equipos, instalaciones o circuitos.
- En el punto de corte de la energía o desenergizado, se instalará una señalética mediante una tarjeta de advertencia que indique tal condición. Esta tarjeta tendrá el encabezado "PELIGRO", como medio visual de identificación para indicar la prohibición de accionamiento de dispositivos de aislación de energía.

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- Toda intervención en un equipo, instalación o circuito de un proceso, debe estar en conocimiento del supervisor, encargado o jefe del área quién aceptará que esta se efectúe, designando personalmente a un líder de la actividad.
- Todo procedimiento de trabajo respecto al bloqueo de equipos puede contener instrucciones que conduzcan a darle mayor eficacia al trabajo, para lo cual se deben incluir croquis, diagramas y fotos, entre otros, para una mayor claridad y entendimiento.
- Debe ser responsabilidad del líder del área o actividad verificar a través de inspecciones periódicas el cumplimiento de los procedimientos de bloqueo con candado y tarjeta.
- Todos los trabajadores que deban intervenir equipos, instalaciones y sistemas deben ser instruidos y entrenados sobre los procedimientos de bloqueo.

8.11.1 Reglas en circuitos eléctricos y sistemas hidráulicos

Para el caso de intervención de circuitos energizados eléctricamente, se conocen y se cumplen estrictamente las siguientes reglas:

- 1º: Realizar corte efectivo de todas las fuentes de tensión.
- 2º: Bloquear y señalizar los equipos de corte o seccionamiento.
- 3º: Comprobar ausencia de tensión.
- 4º: Poner a tierra la zona desconectada.
- 5º: Delimitar y señalizar la zona de trabajo.

Para el caso de intervención de sistemas hidráulicos, se conocen y se cumplen estrictamente las siguientes reglas:

- 1º: Interrupción o aislamiento.
- 2º: Bloqueo o inmovilización.
- 3º: Abrir válvulas de Vacío.
- 4º: Comprobar ausencia de presión.
- 5º: Señalización y delimitación

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8.11.2 Dispositivos, Sistemas y Componentes de Bloqueo y Señalización Tarjetas de Advertencia de Bloqueo

Las tarjetas de advertencia de bloqueo, son sistemas visuales de identificación y señalización que tienen como propósito advertir el bloqueo o la inmovilización de un equipo, instalación o circuito de procesos.

La tarjeta es a la vez un documento en el cual se identifica la persona que ha intervenido el equipo, el motivo, la fecha de la intervención y la persona que autoriza el bloqueo.

Las tarjetas de advertencia de bloqueo deben ser instaladas siempre en los puntos de accionamiento en lugares visibles y ubicadas de tal forma que adviertan claramente el bloqueo o aislación de fuentes de energía.

Las tarjetas de advertencia de bloqueo deben ser diseñadas con fondo de color blanco y con franjas de color rojo.

La información mínima que debe poseer esta tarjeta es:

- Fotografía de quién bloquea.
- Nombre y logo de la empresa.
- Teléfono, anexo o canal de radio.
- Fecha del bloqueo.
- En el dorso se debe advertir: "Retirar solo por quien la instala"; "Peligro"; "No operar".

8.11.3 Candados de Seguridad para Bloqueo

- Los candados de seguridad son los elementos frecuentemente utilizados para el bloqueo de equipos, instalaciones o circuitos.
- Cuando en el procedimiento de bloqueo de fuentes de energía eléctrica se empleen pinzas de seguridad portacandados, nunca debe colocarse un candado en otro.
- Los candados deben siempre ser instalados en forma apropiada y la llave debe ser retirada y guardada por el trabajador a cargo del candado en una caja de bloqueo o en un lugar definido en el procedimiento de bloqueo.

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- La persona a cargo de un candado, no debe, por ningún motivo, solicitar a otra persona/trabajador la colocación de su candado, a excepción del electricista a cargo de la desenergización que colocará el candado y tarjeta en presencia del trabajador.
- Si una o más personas deben trabajar o intervenir un equipo o circuito a la vez, debe ser necesario instalar pinzas de seguridad portacandados/multiplicador de candados, que permitan la instalación del número de candados y tarjetas equivalentes al número de trabajadores que debe intervenir.

8.11.4 Caja de Candados

- Es un dispositivo o caja metálica capaz de contener todas las llaves de los candados utilizados en los bloqueos. En este caso, se guardan todas las llaves de las personas que deben intervenir un equipo, instalación o circuito y la caja es abierta al finalizar el trabajo por el encargado de la actividad o supervisor.

8.11.5 Dispositivos de Bloqueo de Válvulas

Son dispositivos de bloqueo de válvulas, que encierran las válvulas no permitiendo su manipulación, evitando un manejo accidental o inesperado. Estos dispositivos tienen que ser resistentes a los solventes y a temperaturas extremas.

8.12 TRABAJO EN ESPACIOS CONFINADOS

Previo al inicio de los trabajos la empresa contratista dispondrá en terreno los siguientes documentos:

- Permiso de Trabajo.
 - Procedimiento de trabajo.
 - Identificación de peligros y evaluación de riesgos.
 - Planos, esquemas, croquis, que identifiquen el área, las dimensiones, accesos y vías de escape en caso de emergencia.
 - Respaldo de la capacitación de todo el personal involucrado en la labor, incluido supervisores.
 - Certificado de calibración de los instrumentos de medición.
 - Registro de inspección de los equipos y herramientas que se ocuparán.
 - Registro de personal que se mantiene en el interior, este se debe permanecer siempre fuera de la escotilla o lugar de acceso.
-
- Previo al desarrollo de trabajos, es preciso realizar la evaluación de riesgos de la tarea.

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- El ingreso y salida de un espacio confinado debe ser controlado por un asistente autorizado, quien tendrá la misión de asegurar que exista un registro de cada persona que ingresa y sale de un espacio confinado.
- El área de trabajo o espacio confinado donde se requiera trabajar debe contar con la preparación y planificación necesaria considerando:
 - Los avisos y las barreras de prevención que deben ser instalados para advertir e impedir el paso de personas y maquinaria.
 - La ventilación de la atmósfera previa al ingreso de las personas que ingresarán a verificar las condiciones atmosféricas.
 - Retirar todo el material que sea potencialmente peligroso, y si es necesario limpiar, neutralizar o lavar el área para eliminar residuos peligrosos.
- Se deben realizar periódicamente verificaciones a los siguientes parámetros:
 - Verificar que el contenido de Oxígeno esté entre 19.5% y 23.5%.
 - Verificación de la presencia de gases o componentes potencialmente dañinos para la salud o vida de una persona.
 - Todas las verificaciones señaladas presentemente deben quedar debidamente registradas.
 - Las periodicidades de las verificaciones deben estar definidas en los procedimientos de trabajo.
 - Estrés térmico, cuando el espacio sea clasificado por personal competente ENEL.

8.12.1 Competencias y aptitud

- Toda persona que desarrolle trabajos en un espacio confinado debe contar con un examen de salud de "espacios confinados" otorgado por una mutualidad.
- Todas las personas que ingresen a un espacio confinado deben poseer capacitación específica en la materia.

8.12.2 Clasificación de los espacios confinados

La clasificación de los espacios confinados se realiza para las condiciones más críticas detectadas durante el ingreso, la realización de los trabajos y la salida del personal. Por ello, la clasificación de peligrosidad de los espacios confinados puede variar en función de la condición puntual descrita o la tarea programada.

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Las principales condiciones para clasificar un espacio confinado y sus clases o tipos son las siguientes:

Parámetro de valoración	Clasificación de los espacios confinados		
	CLASE A	CLASE B	CLASE C
Nivel O2	Menor a 16%, o mayor a 25%	Entre 16%-19.5% o entre 23.5 y 25%	Entre 19.5 % y 23.5%
Toxicidad	Toxicidad IPVS	Mayor CPT y menor que IPVS	Toxicidad inferior a CLASE B
Lel	Lel mayor a 20%	Lel entre 1% y 19.9 %	Lel inferior a 10%

IPVS: Inmediatamente Peligrosa Para la Vida o la Salud. CPT: Capacidad Pulmonar Total.

Según la clasificación del espacio confinado, como norma básica de seguridad, se cumplirá con lo siguiente:

CLASE A	CLASE B	CLASE C
Atmósfera Inmediatamente Peligrosa para la Vida o la Salud (IPVS).	Atmósfera peligrosa, más no IPVS.	Atmósfera potencialmente peligrosa.
Procedimiento de rescate requiere del ingreso de más de un individuo equipado con sistemas de soporte de vida.	Procedimientos de rescate requieren del ingreso de al menos un individuo equipado con sistema de soporte de vida.	Procedimientos de rescate estándar.
Mantener la comunicación directa constante.	Mantener comunicación visual o auditiva.	Procedimientos de comunicación estándar.
Personal de guardia adicional en la entrada del espacio confinado	Al menos una persona de guardia en la entrada del espacio confinado.	Una persona de guardia en la entrada del espacio confinado.

8.12.3 Riesgos especiales

Adicionalmente a los riesgos presentes en los espacios confinados, asociados a su tipo de ingreso, forma geométrica, dimensiones, fluidos almacenados, energías mecánicas y eléctricas en uso, entre otros; pueden adicionarse otros riesgos derivados de las tareas a llevar a cabo dentro de dicho recinto. A continuación, se muestran dos ejemplos:

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- Algunos materiales sintéticos, pinturas, plásticos, polímeros o metales, pueden desprender gases o vapores tóxicos al descomponerse por efecto de su calentamiento a altas temperaturas. En estos casos debe asegurarse la renovación del aire mediante la extracción de aire contaminado e inyección de aire puro.
- Los cilindros de gases comprimidos tales como: Oxígeno, Acetileno, Argón, entre otros, no deben ser dispuestos dentro de un "espacio confinado".
- Nunca ventile un "espacio confinado" con Oxígeno puro.
- Cuando se realice una extracción de aire en forma localizada en la zona de soldadura, todo el personal dentro del espacio confinado debe utilizar una semi máscara con filtro apropiado.
- Cuando no se pueda utilizar extracción de aire local para la soldadura, se debe utilizar ventilación general y adicionalmente proveer al personal con equipos de suministro de aire externo.
- Cuando exista un cese de actividades en un tiempo substancial, tal como el período de almuerzo, los equipos deben ser retirados del espacio o deben desconectarse los electrodos o cerrarse las válvulas de alimentación de la antorcha.

8.13 Gammagrafías

Toda empresa que requiera realizar trabajos de gammagrafía, previo al inicio de los trabajos, debe presentar a la empresa mandante, la siguiente documentación:

- Autorización de dependencias para el almacenamiento de fuentes radiactivas.
- Autorización de operación de la empresa.
- Autorización del personal para el transporte de fuente radiactiva.
- Autorización de operación del personal.
- Control dosimétrico del personal.
- Autorización de operación de las fuentes radiactivas.
- Manual de Protección radiológica visada por CCHEN.
- Certificación de detectores de radiación.
- Procedimiento de operación de trabajos de gammagrafía.
- Autorización del equipo de transporte de la fuente radioactiva.

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- Cualquier trabajo relacionado con el transporte y uso de material radiactivo debe ser realizado cumpliendo con lo establecido en la legislación vigente.
- Los vehículos utilizados para transportar fuentes radiactivas deben mostrar en su carrocería/vehículo el símbolo reconocido internacionalmente para fuentes radiactivas; además, los números telefónicos de contacto de emergencia deben estar junto con el símbolo.
- Todo vehículo debe contar con una caja fija al vehículo para el transporte de fuentes radiactivas.
- La empresa que preste el servicio de gammagrafía debe tener licencias válidas otorgadas por la Comisión Chilena de Energía Nuclear.
- La empresa de servicios de gammagrafía debe enviar la declaración del método de trabajo y evaluación de riesgos antes de solicitar el permiso de trabajo para revisión y comentarios.
- El permiso de trabajo seguro debe adjuntar una copia del plano mostrando la ubicación donde se realiza la radiografía y el área segura. Además, debe enviar el documento de cálculo de distancia segura para el personal.
- Los trabajos de gammagrafía sólo podrán realizarse por personal competente, autorizado, con licencia y entrenado.
- Un trabajo de gammagrafía comienza con la definición del radio de seguridad y con la delimitación y señalización de dicho radio de seguridad, el cual será enviado con layout a HSEQ Enel, con al menos 24 hrs. De anticipación de los trabajos a realizar, para su aprobación.
- Antes de comenzar con las actividades diarias de radiografía, el supervisor o el prevencionista de riesgos de la empresa que presta el servicio, debe inspeccionar la ubicación donde se llevará a cabo el trabajo.
- Cuando el supervisor o prevencionista de riesgos de la empresa de servicios de radiografía, ha verificado que se han tomado todas las precauciones (Por ej.: Barreras, señalizaciones de advertencia de radiación, luces estroboscópicas o balizas) y que no hay otros empleados dentro del radio definido como radio de seguridad, sólo en este momento se autorizará el inicio de los trabajos.
- Se debe realizar un disparo de prueba para verificar (con instrumento) que los cierres perimetrales, no presentan riesgo de exposición para personal ajeno a la actividad.

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Perímetro: Chile

Función : Health, Safety, Environment and Quality

Business Line: Renewable Energies

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- Mientras se desarrolle el trabajo de radiografía se debe utilizar un detector de radiación calibrado para confirmar que el área señalada en el plano como área segura, no se encuentra expuesta a radiación. Si se presentan lecturas fuera de las barreras del área segura que exceden los límites establecidos, se debe detener el trabajo de inmediato y reajustar las barreras.
- Se debe tener un observador quien tendrá la responsabilidad de vigilar la parte externa del radio de seguridad definido para asegurar que ningún empleado u otra persona cruce las delimitaciones o barreras mientras se realizan las actividades de radiografía.
- Se debe contar en el sitio de trabajo con copias de los procedimientos de emergencia para trabajos con radiación. Se debe incluir el número telefónico del personal clave (teléfonos fijo y celular).
- Todos los empleados del contratista de servicios de radiografía, mientras están realizando las radiografías deben portar, en todo momento, sus dosímetros personales. Asimismo, las personas que no pertenezcan al equipo de radiografía no podrán estar dentro del radio de seguridad.
- Los niveles de radiación fuera del contenedor (Caja fija al vehículo) deben medirse antes y después de la exposición a las fuentes gammagráficas.
- El nivel de radiación del área debe ser medido y registrado antes de comenzar los trabajos de gammagrafía.
- Luego de cada exposición radiográfica, el operador debe cerciorarse que la fuente sellada ha regresado a su posición cubierta, debiendo quedar asegurada. Asimismo, debe cerrar la caja y poner el candado.
- Luego del término de las actividades, el operador gammagráfico realizará una prueba de medición de radiación en el área y declara el área como segura; posteriormente debe retirar las barreras, las señales de advertencia o luces estroboscópicas.
- Los dispositivos de exposición radiográficos y los contenedores de almacenamiento deben ser herméticos y asegurados físicamente para prevenir retiro no autorizado, mala utilización o exposición accidental cuando no se está utilizando.
- Sólo luego de haber finalizado el trabajo y hecho las pruebas en el área y se ha retirado las señales y barreras de seguridad, se puede cerrar el permiso de trabajo seguro (PTS).
- Los dosímetros de film o los termos luminiscentes deben ser procesados para evaluación de dosis trimestral.

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**Áreas de Aplicación**

Perímetro: Chile

Función: Health, Safety, Environment and Quality

Business Line: Renewable Energies

- Cada equipo, que realice trabajos de gammagrafía, debe contar con un set de emergencia que contenga a lo menos:
 - Contenedor blindado.
 - Telepinzas.

8.13.1 En caso de emergencia

- En caso de ocurrir una emergencia el personal de la empresa que realiza los trabajos debe comunicar en el más corto plazo a la empresa mandante del grupo Enersis para la cual realice los trabajos.
- Para responder ante situaciones de emergencias radiactivas de alta emisión, el personal del contratista involucrado en la emergencia y autorizado por la Comisión de Energía Nuclear (CCHEN), debe ejecutar las primeras acciones para el control de esta. La CCHEN es el organismo idóneo para responder a este tipo de emergencias.
- Como primera acción, se debe aislar con cintas y letreros en un radio de 10 metros aproximadamente la fuente siniestrada y además debe efectuar mediciones cercanas a la fuente, para acordonar el área de peligro. El valor máximo de los sectores de circulación de público no debe sobrepasar 0,25 mR/h (2,5uSv/h).
- Se debe evacuar a las personas que se encuentren dentro de la zona aislada hacia las respectivas zonas de seguridad de acuerdo a lo establecido en el plan local de emergencia aprobado por CCHEN. Sólo se permite el acceso al área afectada al personal autorizado para enfrentar la emergencia.
- Post emergencia, el supervisor del contratista de la empresa gammagráfica debe generar un listado del personal expuesto a radiación ionizante durante la emergencia radiológica y enviar esta información a la CCHEN, la cual define los pasos a seguir.
- El operador responsable del trabajo debe coordinar las acciones hasta disponer el material radioactivo en una bóveda de desecho radioactivo de la Comisión Chilena de Energía Nuclear (CCHEN).
- Una vez realizadas estas actividades se procederá a efectuar la investigación de la emergencia. Esta es una actividad clave para descubrir las causas que provocaron la emergencia y verificar con qué medios cuentan para minimizar los efectos producidos por las emergencias. Esta investigación debe ser coordinada por el encargado de protección radiológica designado, en conjunto con el personal de la CCHEN.

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8.14 TRABAJOS EN CALIENTE

Antes de comenzar con los trabajos en caliente de debe asegurar la ausencia de gases explosivos y tomar las medidas de seguridad en caso de trabajos cercanos o almacenamiento de grandes cantidades de combustibles o inflamables de rápida ignición.

Las personas que realicen trabajos en caliente, presten apoyo o se desempeñen en un área donde se realicen estos trabajos, deben utilizar, los elementos de protección personal adecuados para protegerse contra riesgos de:

- Radiación UV.
- Proyección de partículas a todos los órganos y partes del cuerpo.
- Inhalación de gases y humos metálicos.
- Quemaduras o Inflamación de la ropa.
- Eléctricos.

En caso de intervención de cañerías o ductos, estos deben estar limpios, drenados, venteados sin gases tóxicos o explosivos, despresurizadas, sin líquidos inflamables y sin contacto eléctrico, para lo cual debe asegurarse el bloqueo mecánico o eléctrico.

Se deben tomar las medidas necesarias para evitar las fugas de gases en los equipos de oxicorte, siendo necesario inspecciones y mantenciones periódicas.

- Las máquinas soldadoras deben someterse a un programa de mantención que debe ser realizado por personal competente y autorizado.
- Se deben tomar las medidas de seguridad necesarias para que las herramientas y equipos utilizados en trabajos en caliente cumplan con las normas de seguridad del fabricante.
- Cuando se efectúe un trabajo en caliente se debe instalar una pantalla, mampara, carpa o biombo (Todos ignífugos) a fin de evitar riesgos de incendio y la propagación de partículas hacia los alrededores o niveles inferiores.
- Cuando se realicen trabajos en caliente en altura, se deben tomar las medidas necesarias para prohibir el tránsito de personas por debajo del lugar donde se desarrolla la actividad, y se deben instalar protecciones en las áreas de influencia para evitar que una persona sea alcanzada por la caída de algún material o por partículas resultantes de estas actividades, en especial las incandescentes.

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Business Line: Renewable Energies

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- Se debe disponer de uno o más extintores tipo ABC, según magnitud de la actividad en desarrollo.
- Todos los equipos utilizados para realizar trabajos en caliente, deben ser inspeccionados a intervalos preestablecidos en bases listas de verificación que abarquen todas las piezas o componentes del equipo.
- Todas las máquinas soldadoras deben tener conexión a tierra y todas sus protecciones deben estar ubicadas en su lugar.
- Las máquinas soldadoras portátiles montadas en un remolque u otra plataforma, deben tener sus ruedas bloqueadas para evitar que se muevan durante el uso.
- El material usado para mantener las escorias debe ser resistente al fuego.
- Para el caso de equipo de oxiacetileno:
 - En los equipos de oxicorte, las boquillas de oxígeno y acetileno deben poseer válvulas que prevengan el retroceso de una llama.
 - Los componentes de los equipos de oxicorte no se deben lubricar con ningún elemento derivado del petróleo.
 - Cuando un equipo de oxicorte no esté en uso, las válvulas de los cilindros de gases comprimidos deben estar completamente cerradas, los manómetros retirados y la tapa del cilindro puesta en su lugar.
 - Las válvulas defectuosas no se deben reparar en obra, sino que deben ser reemplazadas por una válvula nueva, o en su defecto deben ser reparadas por el proveedor.
 - Los cilindros deben poseer en todo momento su válvula de apertura o cierre mientras están siendo usados.
 - Los cilindros para trabajos de oxicorte deben ser transportados, manipulados y almacenados de acuerdo al "estándar materiales peligroso"
 - Se debe usar protección respiratoria ante la producción de humos metálicos.

8.15 SEÑALIZACION Y DELIMITACION

- Señalización de Seguridad: Medio visual o sonoro referido a un objeto, actividad o situación determinada, que proporciona una indicación u obligación relativa a la seguridad o salud en el trabajo, en forma de panel, color, señal luminosa o acústica, comunicación verbal o una señal gesticular.

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- Señal de Prohibición: Señal que prohíbe un comportamiento susceptible de provocar un peligro.
- Señal de Advertencia: Señal que advierte un riesgo o un peligro.
- Señal de Obligación: Señal que obliga a un comportamiento determinado.

El significado y algunos ejemplos de aplicación de los colores de seguridad son los indicados en la tabla N°1.

Las señales de seguridad deben ser confeccionadas de acuerdo a lo establecido en la Nch 1411/2.Of78.

Tabla N°1: Significado y aplicación de los colores de seguridad

ROJO	
SIGNIFICADO	EJEMPLO DE APLICACIÓN
• Pare.	Alto y dispositivos de desconexión para emergencias.
• Prohibición.	Señales para prohibir acciones específicas.
• Material, equipo y sistemas para combate de incendios.	Identificación y localización de extintores, gabinetes con elementos contra incendios, sirenas, etc.
• Advertencia de peligro.	Atención, precaución, verificación. Identificación de fluidos
AMARILLO	
SIGNIFICADO	EJEMPLO DE APLICACIÓN
• Delimitación de áreas.	Límites de áreas restringidas o de usos específicos.
• Advertencia de peligro por radiaciones ionizantes.	Señales para indicar la presencia de material radiactivo.
VERDE	
SIGNIFICADO	EJEMPLO DE APLICACIÓN
• Condición segura.	Identificación de tuberías que conducen fluidos de bajo riesgo, salidas de emergencia, rutas de evacuación, zonas de seguridad, etc.
• Equipo de primeros auxilios.	Primeros auxilios, lavajos, duchas de emergencia, camillas, botiquín, etc.
AZUL	
SIGNIFICADO	EJEMPLO DE APLICACIÓN
• Señales y símbolos de seguridad.	Uso de equipo de protección personal.
• Obligación.	Señales para realizar acciones específicas.

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NARANJA	
SIGNIFICADO	EJEMPLO DE APLICACIÓN
<ul style="list-style-type: none"> Partes peligrosas de máquinas. 	Interior de resguardos de engranajes, poleas y cadenas. Aristas de partes expuestas de poleas, rodillos, engranajes, etc.
<ul style="list-style-type: none"> Equipos en zonas nevadas y desiertas. 	Equipos de construcción en zonas nevadas y desiertas.
PÚRPURA	
SIGNIFICADO	EJEMPLO DE APLICACIÓN
<ul style="list-style-type: none"> Riesgos de radiaciones ionizantes. 	Almacenamiento de radioactivos, recipientes con material contaminados, luces que indican que las maquinas productoras de

Cuando se aplique un color de contraste, se utilizará de acuerdo a la tabla N°2. TABLA N°2, COLORES DE CONTRASTE

COLOR	CONTRASTE
Rojo	Blanco
Amarillo	Negro
Verde	Blanco
Azul	Blanco
Naranja	Negro
Púrpura	Blanco

- Se deben instalar señales gráficas o pictogramas indicando las salidas de emergencia y vías de evacuación.
- Se deben identificar las zonas donde exista riesgo de caída de materiales, proyección de partículas, sustancias inflamables, carga suspendida, corriente eléctrica, radiación, peligro de caída, gases comprimidos y todas aquellas áreas donde existan peligros de accidente.
- El texto o mensaje de las señales gráficas con rótulos, debe ser claro y conciso, lo más breve posible y sin ambigüedades. La legibilidad implica que los caracteres puedan ser vistos y comprendidos rápidamente.
- El tamaño de las letras en las leyendas de un letrero debe mantener un adecuado equilibrio y legibilidad respecto a la composición total de la señal gráfica.

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- No debe permitirse la obstrucción del campo de visión de una persona normal, hacia la señalización.
- Debe evitarse la puntuación, subrayados, comas, puntos, etc. por cuanto las señales deben leerse muy rápidamente.
- Las señales de seguridad instaladas para faenas nocturnas, deben ser reflectantes para asegurar una adecuada visualización.
- Las señales para regular y guiar el tránsito de vehículos al interior de un proyecto, obra o faena, deben estar diseñadas de acuerdo a la legislación vigente.
- Las señales de seguridad deben tener las esquinas redondeadas y estar libres de bordes o cantos filosos o astillas.
- Los extremos o las cabezas de los pernos u otros medios de sujeción de las señales se deben colocar de tal forma que no constituyan riesgos.
- La señal debe afianzarse correctamente, con el fin de evitarse su caída o desplazamiento por efecto del viento, golpe leve u otro agente.
- La señalización no debe considerarse una medida sustitutiva de las medidas de seguridad pertinentes para la protección de los trabajadores. Asimismo, tampoco implica el reemplazo de la información (Derecho a Saber) que los trabajadores deben recibir acEGPa de los riesgos a que se ven expuestos.
- Los avisos y letreros que se encuentren dañados, sucios o quebrados deben ser retirados y reemplazados.
- La destrucción o alteración de afiches de seguridad por parte de los trabajadores debe ser sancionado.
- Las señales de seguridad deben ser inspeccionadas regularmente a intervalos preestablecidos.
- Las señales de seguridad deben ser mantenidas en buen estado de conservación, resguardando sus colores y dimensiones originales, buena visibilidad y estado intacto de sus símbolos y leyendas.

9. INCIDENTES

9.1 CONSIDERACIONES ANTE INCIDENTES

- Todo accidente que sufra un trabajador del Contratista o Subcontratista deberá ser atendido en centro asistencial más cercano y ser informado dentro de las próximas **dos (2) horas como máximo**, al Responsable HSEQ de EGP en Proyecto. El trabajador debe ser acompañado por el Prevencionista de Riesgo y/o Supervisor de la empresa al centro asistencial correspondiente.
El Contratista tendrá la obligación de informar al Organismo Administrador correspondiente al cual se encuentra afiliado.

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- Será obligación del contratista informar la ocurrencia de todo Incidente en un plazo máximo de cuatro (2) horas ocurrido el evento al responsable de HSEQ de EGP del Proyecto en Construcción. La información deberá ser enviada en formatos establecidos por EGP, según tipo de Incidente.

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DEFINICIÓN INCIDENTES SEGÚN OI 183		
	ACTP Fatal o Grave	ACTP NO Grave
	grave: mayor a 30 días perdidos	menor a 30 días perdidos
Documentos	Aviso por SAP	Aviso por SAP
	Informe de Investigación de ACTP (30 días max)	Informe de Investigación de ACTP (10 días max)
	Lección aprendida	Lección aprendida
	Informe Resumen RCA	Informe Resumen RCA

	FIRST AID	NEAR MISS
Documentos	Aviso por SAP	Aviso por SAP
	Informe de Investigación Incidentes (10 días max)	Informe de Investigación Incidentes (10 días max)
	Lección aprendida	Lección aprendida

- La información preliminar deberá indicar cada empresa contratista es:
 - Nombre completo del trabajador involucrado en el incidente, su cargo y RUT.
 - Tipo de Incidente (Accidente, First Aid, Near Miss, Trayecto, Incidente ambiental).
 - Fecha, hora y lugar del incidente.
 - Gravedad real y potencial (severo o no severo).
 - Descripción detallada de incidente.
 - Lesiones, si aplica.
 - Probables Causas.
 - Medidas inmediatas tomadas para controlar el evento.
- Una vez controlado el incidente y en un plazo establecidos, el contratista debe realizar la correspondiente Investigación del Incidente, en formatos establecidos por EGP, el cual debe confirmar la información preliminar, junto con incluir:

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- Gravedad real.
- Primera Prognosis
- Lesión confirmada por el centro asistencial, si aplica.
- Causas reales (raíz) de la ocurrencia.
- Acciones de mejora para prevenir que el evento vuelva a ocurrir, con responsables y fechas de ejecución.

- El Contratista debe difundir los incidentes ocurridos a su personal dentro de su empresa.
- **Todo Incidente ocurrido que tenga relación con el Proyecto en Construcción debe ser declarado a EGP sin excepción, el ocultar un Incidente será estrictamente sancionado.**

Accidente Fatal o Grave

Se entenderá por:

- **Accidente del Trabajo Fatal:** Aquel accidente que provoca la muerte del trabajador en forma inmediata o durante su traslado a un centro asistencial.
- **Accidente del Trabajo Grave:** Cualquier accidente del trabajo que:
 - Obligue a realizar maniobras de reanimación, u
 - Obligue a realizar maniobras de rescate, u
 - Ocurra por caída de altura, de más de 1.8 [metros], o
 - Provoque, en forma inmediata, la amputación o pérdida de cualquier parte del cuerpo, o involucre un número tal de trabajadores que afecte el desarrollo normal de la faena afectada.

La empresa contratista que le ocurriese un accidente del trabajo fatal o grave deberá considerar las siguientes acciones:

- **Suspender y delimitar en forma inmediata** el área o puesto de trabajo donde se produjo el accidente.
- De ser necesario, implementar la evacuación del lugar (si existe peligro para la seguridad y vida de los trabajadores).

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- Informar inmediatamente de lo ocurrido al Responsable HSEQ de EGP y su Representante en terreno.
- Informar a las autoridades competentes en forma inmediata según (Circular N°3335 SUSESO)

10. PLAN DE RESPUESTA ANTE UNA EMERGENCIA

EGP, determinará y entregará a sus contratistas los números de emergencias a los cuales deberán ser informadas las emergencias.

El contratista es responsable de velar para que los recursos necesarios se encuentren en el Proyecto para la actuación de los diversos tipos de emergencia que se puedan presentar de acuerdo a la actividad del trabajo, a las condiciones geográficas y climáticas.

En caso de emergencias declaradas (sismos, incendios, derrames, atentados y similares), las empresas Contratistas, su personal y sus equipos quedarán a disposición de EGP. La declaración y el cese de la emergencia le serán comunicados oficialmente por la misma.

10.1 RESPONSABILIDADES ANTE EMERGENCIAS

- El Contratista es responsable de la adecuada instrucción y capacitación de su personal de acuerdo al Plan de Respuesta ante Emergencias de su área, estar integrado y coordinado con las especificaciones del Plan de Emergencia de EGP del proyecto en construcción.
- El Contratista deberá coordinar con EGP simulacros de emergencia de acuerdo al programa de simulacros, con fines de entrenamiento y evaluaciones del comportamiento del personal y equipamiento ante emergencias.
- El Contratista tiene la responsabilidad final de la correcta actuación ante una emergencia, simulacro o ejercicio, tales como; Detención de todas las actividades de construcción bajo su supervisión, la posterior evacuación a los Puntos de encuentro de emergencias (PEE) y conteo del personal luego de la evacuación y entrega de las anotaciones correspondientes al encargado de la emergencia.

10.1.1 Equipamiento ante Emergencias

- El Contratista debe asegurar que todo el equipamiento de emergencia sea regularmente mantenido, probado y que siempre esté en condiciones de servicio y que su personal esté capacitado y cuando sea requerido, certificado en el uso de estos equipos.

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Áreas de AplicaciónPerímetro: *Chile*Función: *Health, Safety, Environment and Quality*Business Line: *Renewable Energies*

- En cada área de trabajo el contratista deberá tener y mantener una estación de emergencia, esta estación debe estar codificada, tener un responsable y estar sujeta a inspección mensual.

En toda obra el Contratista deberá contar con Estaciones de Emergencia que constarán de:

- Bocina,
- Botiquín básico,
- Camilla rígida,
- Tabla espinal con correas del tipo araña,
- Inmovilizador de cuello cervical regulable,
- Inmovilizador de brazos y piernas (férulas),
- Frazadas o manta térmica,
- Quitasol.

Kit de Emergencia de derrames ambientales; Paños absorbentes, palas, guantes, bolsas de basura, baldes, cordones absorbentes para contención de hidrocarburos y buzos de papel.

10.1.2 Protección contra Incendios

Como mínimo se deben observar los siguientes aspectos de protección contra incendios en el sitio:

- El Contratista debe tomar todas las medidas apropiadas para la protección contra incendios durante todo el proyecto. Debe colocar señalización delante de áreas con riesgos de incendio especiales y proporcionar suficientes equipos de protección contra incendios.
- Todas las dependencias destinadas a alojamiento temporal, salas de almacenamiento, talleres / maestranzas oficinas, etc. deben estar equipadas con extintores de acuerdo con la legislación local. Una cantidad apropiada de empleados deben estar capacitados en el combate de incendio con estos extintores.
- Los trabajos con riesgo de incendio deberán realizarse solo luego de haber tomado las precauciones necesarias (Ej.: extintores, baldes de agua, mantas contra chispas, etc.). Una persona stand-by (observador incendios) puede ser necesaria.



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- Chequear si el sistema de permiso de trabajo se está aplicando en caso de trabajo en caliente.
- Todo amago, incluso el más pequeño deberá ser informado a la brigada contra incendios y a EGP Chile, con una precisa definición de la ubicación. Si es posible sin poner en peligro a las personas se deben usar equipos contra incendios a objeto de extinguir el amago en una etapa temprana.
- Se prohíbe fumar en las áreas restringidas dentro del recinto y dentro de vehículos. Se excluyen las áreas de fumadores designadas.
- La defectuosa aislación de herramientas eléctricas, las cañerías, recipientes o accesorios con filtraciones, deben ser informados a la supervisión inmediata sin demora.

11. CONSIDERACIONES GENERALES DE LOS PROGRAMAS HSEQ EN LA CONSTRUCCIÓN

- El Contratista preparará un Plan o Programa de Gestión de Salud, Seguridad, Medio Ambiente y Calidad (denominado Programa HSEQ), antes de iniciar su instalación en terreno o iniciar los trabajos, este plan debe ser entregado a EGP Chile para su conocimiento y aprobación.
- El Programa HSEQ deberá alcanzar los requerimientos de toda la legislación aplicable y de las que rigen en un Contrato con EGP, a las especificaciones técnicas, bases técnicas y demás documentos del Contrato y sistemáticamente dirigirá todos los aspectos del servicio, obra o trabajo encomendado.
- El Programa HSEQ debe detallar los planes específicos y programas para establecer en un Contrato los requerimientos de Salud, Seguridad, Medio Ambiente y Calidad. Este plan podría ser una colección de documentos y manuales (ejemplo: Plan de Emergencia,
- Manuales de Entrenamiento, Hojas de Datos, etc.) e incluso ser integrado o por separado (Calidad - Salud - Seguridad - Medio Ambiente).

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- El Programa HSEQ deberá demostrar a EGP que la Gestión y el compromiso del Contratista es parte integral de su proceso administrativo y serán establecidos de una manera planificada, sistemática y documentada.
- El Programa de Gestión de Salud, Seguridad y Medio Ambiente y Calidad deberá contar como mínimo con los siguientes requerimientos:
 - Política de Calidad, Seguridad y Medio Ambiente de EGP y de la Empresa Contratista (si aplica).
 - Organigrama general de la Empresa y Organigrama del Área HSEQ del contratista.
 - Inventario de Identificación de Peligros, Evaluación de Riesgos y Control Operacional.
 - Inventario de Aspectos Ambientales, Evaluación de Impactos y Medidas de Mitigación.
 - Exámenes pre-ocupacionales u ocupacionales, según requerimientos del Parque y labores a realizar.
 - Programa de inducción, capacitación y entrenamiento.
 - Identificación y cumplimiento de la normativa legal vigente para el proyecto y para las actividades a realizar.
- Procedimientos Específicos cuya base será sugerida por EGP o su representante, los cuales la empresa contratista deberá analizar y adaptar a su tarea, tales como:
 - Tránsito al interior de Proyecto.
 - Bloqueo de Equipos y Maquinaria.
 - Trabajo en Altura.
 - Trabajos de bloqueo y/o energización de equipos.
 - Trabajos con equipos energizados o en tensión.
 - Maniobras de izaje.
 - Excavaciones y zanjas.
 - Espacios Confinados.
 - Permisos de Trabajo.
 - Plataformas de Trabajo y Andamios.
 - Uso de Elementos de Protección Personal.
 - Procedimientos Precomisionamientos y Comisionamientos.
 - Operación de Equipos Radioactivos.
 - Manejo de Residuos.

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- Almacenamiento y Manejo de Sustancias Peligrosas.
 - Manejo de Derrames.
 - Hallazgo de Restos Arqueológicos.
 - Cierre y Desmovilización Ambiental.
 - Suministro y Consumo de Agua Potable.
 - Suministro y Mantenimiento de Baños Químicos.
 - Análisis de Riesgo del Trabajo.
 - Uso de Explosivos (si procede).
 - Planes de Emergencia.
- Programa de trabajo del Comité Paritario
 - Programa de observaciones planeadas
 - Campañas preventivas, por ejemplo: protección de manos, conducción, riesgos eléctricos, etc.

11.1 HIGIENE INDUSTRIAL

Para proteger a los trabajadores, el Decreto Supremo N° 594 le exige a las empresas implementar medidas preventivas, con el fin de evitar daños a la salud vinculadas a la radiación UV solar.

Algunas de estas exigencias son las siguientes:

- Informar a los trabajadores de los posibles riesgos, en este caso exposición a radiación UVA y UVB solar.
- Los contratos de trabajo o reglamentos internos de las empresas, según el caso, deberán especificar el uso de los elementos protectores correspondientes para proteger a los trabajadores del riesgo de exposición a radiación UV.
- Contar con un programa escrito de protección contra exposición laboral a radiación UV.
- Contar con un programa escrito de capacitación de los trabajadores y un registro de las capacitaciones.
- Publicar en carteles visibles el Índice UV diario y las medidas de control necesarias.
- Implementar las medidas de control adecuadas: Ingenieriles, administrativas y de protección personal.

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- Se desarrollarán controles para el control de la higiene, alcohol y drogas, salud y estado físico, protección solar, restricción de fumar, carga máxima corporal según legislación vigente, primeros auxilios y acceso a tratamientos médicos, iluminación, vibraciones, etc.
- Implementación de Protocolo de Exposición Ocupacional al Ruido (PREXOR) y monitoreo a la exposición de los trabajadores al ruido, polvo y otras sustancias potencialmente peligrosas según evaluación.
- Plan de Gestión del Riesgo por Exposición a Sílice.
- Identificación y Evaluación de Factores de Riesgo de Trastornos Musculo esqueléticos relacionados al Trabajo (TMERT)
- Hipobaría Intermitente Crónica por Gran Altitud (HIC).

11.2 REPORTABILIDAD

- El Programa de Salud, Seguridad, Medio Ambiente y Calidad deberá ser presentado a EGP para revisión y aprobación, una vez aceptado por HSEQ EGP, no deberá ser modificado sin previa consulta y aceptación por EGP.
- El contratista deberá informar todo evento ocurrido en sus instalaciones, por medio de los canales de comunicación que mantenga el proyecto o parque y en los tiempos estipulado.
- Las Empresas contratistas deberán presentar un programa de Capacitación de acuerdo al riesgo a los que estarán expuestos sus trabajadores, este programa debe considerar los riesgos específicos, cursos obligatorios de Salud, Seguridad, Medio Ambiente, Calidad, etc.
- Las Empresas contratistas deberán reportar y mantener actualizado a lo menos los siguientes documentos de su gestión en Parque:
 - Mantenión de registros de Salud, Seguridad y Medio Ambiente.
 - Reportes de Incidentes.
 - Auditorías internas y externas.
 - No Conformidades, Acciones Correctivas y Preventivas.

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Áreas de AplicaciónPerímetro: *Chile*Función: *Health, Safety, Environment and Quality*Business Line: *Renewable Energies***11.3 REVISIONES HSEQ****11.3.1 INSPECCIONES DE SALUD, SEGURIDAD, MEDIO AMBIENTE Y CALIDAD (HSEQ)**

Se entiende por inspección HSEQ las revisiones que realice EGP o su Representante, y que tengan por finalidad evaluar en terreno, las medidas que se hayan adoptado o se estén adoptando para no interferir con el Medio Ambiente, Calidad, Seguridad y Salud de los trabajadores.

El Contratista, de acuerdo a los estándares de EGP deberá realizar a lo menos una revisión semanal, en la cual verificará el estado de las faenas e informará de ésta a EGP o su Representante. EGP o su Representante podrán realizar, por sí sola o en conjunto con el Contratista, una inspección a las obras, cuando lo estime conveniente.

Todas las deficiencias y observaciones que sean detectadas durante el desarrollo de estas inspecciones, deberán ser documentadas y corregidas tan pronto como sea posible o dentro del plazo que se indique, el cual se consignará en un acta que se levante para tal efecto con ocasión de la respectiva inspección.

11.3.2 AUDITORIAS HSEQ

Se entiende por auditoría HSEQ a una actividad planificada y documentada que realice EGP para determinar mediante un examen de evidencia objetiva, el cumplimiento oportuno y adecuado de los estándares y requerimientos establecidos y la efectividad de su aplicación o implementación. EGP o su Representante realizarán al menos una auditoría HSEQ al año a sus Colaboradores / Contratista.

Todas las no conformidades que sean detectadas durante el desarrollo de la auditoría, deberán ser documentadas y corregidas tan pronto como sea posible o dentro del plazo que se indique, el cual se consignará en un acta que se levante para tal efecto con ocasión de la respectiva auditoría. La auditoría estará enfocada a determinar el grado de cumplimiento adecuado de los requisitos definidos y establecidos en Proyectos en Construcción, sobre el presente documento o en otras especificaciones sobre la materia.

11.4 REQUISITOS PARA PROFESIONALES DE PREVENCIÓN DE RIESGOS

Según los requerimientos de la faena, obra o servicio, se definen las siguientes categorías para Profesionales de Prevención de Riesgos:

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Profesional Nivel 1: Persona con Título de Ingeniero, con más de 10 años de experiencia en seguridad y salud laboral. Con conocimiento y experiencia en la implementación de un Sistema de Gestión OHSAS 18001. Con conocimiento de otros Sistemas de Gestión en Seguridad y Salud Laboral. Se debe haber desempeñado por más de 5 años en rubros como construcción, montajes industriales, eléctricos o mineros.

Profesional Nivel 2: Persona con Título de Ingeniero con más de 5 años de experiencia en seguridad y salud laboral. Con conocimiento y experiencia en la implementación de un Sistema de Gestión OHSAS 18001. Con conocimiento de otros sistemas de gestión en seguridad y salud laboral, se debe haber desempeñado por más de 3 años en rubros como construcción, montajes industriales, eléctricos o mineros.

Profesional Nivel 3: Persona con Título de Ingeniero o Técnico con más de 3 años de experiencia. Posee conocimientos del Sistema de Gestión OHSAS 18001 y se debe haber desempeñado por más de 1 años en rubros como la construcción, montaje industrial y eléctrico, entre otros.

Profesional Nivel 4: Persona con más de un año de experiencia laboral. Con experiencia en implementación en programas de seguridad y salud laboral.

11.5 SELECCIÓN DEL PROFESIONAL DE PREVENCIÓN DE RIESGOS

Para cualquiera de las categorías, la persona además de demostrar la idoneidad para el cargo, debe probar que posee registro de experto en Prevención de Riesgos que lo acredite para ejEGPer el cargo expedido por el servicio de salud.

La categoría de un Profesional de Prevención de Riesgos que integren la organización del contratista se define según la magnitud de los riesgos, el número de personas expuestas y los plazos de ejecución de la obra, faena o servicio. Dicha definición queda establecida en las bases de licitación, la cual debe ser acordada entre el área técnica y la Subgerencia de SSL.

Para casos de actividades clasificadas como de riesgo 2 (aceptable), se acepta la modalidad de asesoría part-time. Dicha asesoría debe ser presentada para aprobación de la empresa Mandante, adjuntando el cronograma de visita, antecedentes de la experiencia laboral de los profesionales encargados de las visitas y programa de trabajo propuesto.



12. SANSIONES POR INCUMPLIMIENTOS Y OBLIGACIONES

12.1 INFRACCIONES EN HSEQ

- EGP y el Contratista acuerdan que cualquier infracción o violación será considerado materia y contravención sustancial del Contrato.
- El Contratista asegurará que su personal y el personal subcontratista cumplan en forma total con tales requerimientos estatutarios, políticas, guías y estándares. Más aún, el Contratista acuerda que, en el evento que cualquiera de sus trabajadores o del subcontratista viole cualquier requerimiento de este Contrato, debe notificar inmediatamente a EGP; tal violación debe ser corregida prontamente y se deberán tomar los pasos para evitar una nueva ocurrencia. Quien o quienes resulten responsables de la violación deberán ser removidos de sus sitios de Trabajo si así lo solicitare EGP. Si el Contratista falla en tomar los pasos necesarios para reparar la infracción de dicha violación prontamente, o de cumplir con esta cláusula, EGP podrá poner término al Contrato.
- Si EGP observará una acción insegura o se entera de la planificación de acciones inseguras o cualquier otro acto que viole algunas de las cláusulas establecidas en estas bases, éste podrá indicar al Contratista que cese en sus funciones y detenga la tarea. Para continuar con los trabajos, EGP del Proyecto o instalación evaluará los nuevos métodos de trabajo que deberá realizar la empresa Contratista, con costos propios en el menor tiempo posible.
- Para todo lo anterior es aplicable el Reglamento de Multas HSEQ de EGP.

13 INCUMPLIMIENTO DE CONTRATO

Se establece que cualquier atraso en la ejecución de un Contrato derivado de la aplicación de estas Normas y/o de cualquiera de los instructivos de Salud, Seguridad, Medio Ambiente y Calidad, no constituirá una base para justificar administrativamente dicho atraso o para solicitar ampliación del plazo pactado para ejecutar la Obra. EGP estará facultado para imponer sanciones cuando el Contratista cometa infracciones o no cumpla con las normas indicadas en este documento.

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Subject: BASES TECNICAS HSEQ E&C CHILE

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El Contratista sustituirá en forma inmediata a cualquiera de sus trabajadores, si a sólo juicio de EGP éste no cumple con los requisitos de idoneidad exigidos; su conducta es perjudicial para el desarrollo de la Obra; atenta contra su propia seguridad o la de otros trabajadores.

Será considerado comportamiento perjudicial el cometer una o más de las infracciones detalladas en las Reglas Claves de EGP.

El incumplimiento total o parcial de cualquiera de las obligaciones señaladas en el presente documento, facultará a EGP para invocar causal adicional de término anticipado de Contrato.

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Annex G: Standby Letter of Credit Template

LOGO BANK

[Name of issuing bank in Chile] USD ***[125.240]****

BANK GUARANTEE N° [•]
IN FOREIGN CURRENCY PAYABLE AT A GLANCE
IRREVOCABLE, UNCONDITIONAL AND ONLY REQUIREMENT OF THE BENEFICIARY
NOT ENDORSABLE

SANTIAGO, DATE OF ISSUE

THE BANK [...] (hereinafter, the "Bank") WILL PAY TO Empresa Electrica Panguipulli, domiciled at AV. SANTA ROSA 76, commune and city of Santiago, the amount of USD 125.400.- (ONE HUNDRED TWENTY FIVE THOUSANDS, FOUR HUNDRED U.S. DOLLARS o). This Ballot is issued under the following conditions:

PAYABLE IN SIGHT, IRREVOCABLE, UNCONDITIONAL AND MORE REQUIREMENT OF Empresa Electrica Panguipulli, RUT N ° 96.524.140-K, valid until the Provisional Reception, plus 45 days, of the works object of the contract N ° XXXXXXXX, signed with date [•], between Empresa Electrica Panguipulli and Ocean Power Technologies INC (OPT), Called "MERIC Open Sea Lab (OSL) Project Part A - Wave Energy Converter (WEC) System Supply" (hereinafter, the "Contract")

This bank guarantee slip was requested and issued by order of Ocean Power Technologies INC (OPT), Identity card No.XXXXXXXXXXX, domiciled at 28 Engelhard Drive, Suite B, Monroe Township, New Jersey 08831 USA, to ensure the faithful, correct and timely fulfillment of the Contract.

THE GENERAL CONDITIONS PROVIDED ON THE BACK OF THIS DOCUMENT ARE AN INTEGRAL PART OF THIS WARRANTY

FIRMA AUTORIZADA

FIRMA AUTORIZADA





**Ocean Power Technologies Announces PB3 PowerBuoy® Sale
and Pioneering Turn-Key Ocean Sea Lab Development**

*Two Contracts with Enel Green Power
Play Central Role in Chilean Marine Energy Research*

Monroe Township, N.J., September 19, 2019 (GLOBE NEWSWIRE) — Ocean Power Technologies, Inc. (NASDAQ: OPTT) a leader in innovative ocean energy solutions, today announced the signing of two new contracts with Enel Green Power Chile (EGP), a subsidiary of Enel Chile, part of the Enel Group, a multinational energy company and a leading global integrated electricity and gas operator. The combined value of the contracts exceeds US\$1.9 million and includes the sale of an PB3 PowerBuoy® and the development and supply of a state-of-the-art, turn-key integrated Open Sea Lab that will be OPT's first deployment off the coast of Chile.

- The first contract with Enel Green Power Chile Limitada S.A., a subsidiary of Enel Chile, provides for the supply of a PB3 PowerBuoy® along with associated mooring system, and will provide turn-key system deployment off the coast of Las Cruces, Chile as an autonomous offshore platform powering a suite of oceanographic sensors and transmitting real-time data back to land. The scope of the agreement is in support of the Marine Energy Research and Innovation Center (MERIC) Project, an initiative that aims to diversify Chile's energetic matrix and to convert Chile into a world reference in the development of marine renewable energies.
 - The second contract with Enel Green Power Chile Limitada S.A., a subsidiary of Enel Chile, calls for OPT to develop and supply a state-of-the-art, turn-key integrated Open Sea Lab (OSL). The OSL encompasses a sensor suite to be powered by the PB3 PowerBuoy®, as well as an integrated shore-based wave radar system. The sensor suite will comprise an Acoustic Doppler Current Profiler (ADCP), a device which is used to measure water current velocities over a depth range, water sensors, and mooring load sensors. The design and buildout of the OSL will be spearheaded by OPT's Innovation and Support Services vertical. Deployment of the OSL is expected within the first half of 2020.
-

“Enel Green Power is working to explore and develop the marine energy technology segment in Chile, and the purchase of the PB3 PowerBuoy® is a significant milestone towards this aim. With this new device, and our continued involvement with MERIC, we remain committed to expanding our knowhow and advancing this frontier in renewable generation,” said Valter Moro, General Manager of Enel Green Power Chile.

“These agreements highlight OPT’s ability to deliver turn-key solutions for our customers, including design and integration of custom payloads and providing offshore deployment services,” said George Kirby, OPT President and Chief Executive Officer. “Today’s announcement of our first PB3 PowerBuoy® sale is a strong validation of the years of research and development it has taken to bring this cutting-edge technology to market.”

The PB3 PowerBuoy® integrates patented technologies in hydrodynamics, electronics, energy conversion, and computer control systems to extract the natural energy in ocean waves. The result is a leading edge, ocean-tested, proprietary autonomous system that turns wave power into reliable, clean, and environmentally beneficial electricity for offshore applications. The PB3 PowerBuoy® can be customized to fit customer needs, including monitoring, surveillance, subsea charging and connectivity for the offshore oil and gas industry, science and research, and telecommunications markets.

“EGP is a world leader in delivering renewable energy the opportunity to deepen our working relationship with a pair of contracts for such a high-profile and important endeavor validates the tremendous work from our expert team at OPT,” added Mr. Kirby. “As our first deployment in Chile and South America, this project creates another opportunity to display our leadership in remote autonomous marine energy.”

OPT’s contracts with EGP follow closely on the heels of the company’s successful PB3 PowerBuoy® deployment in the Central North Sea for Premier Oil in August of this year.

About Enel Green Power

Enel Green Power is the Enel Group global business line dedicated to the development and operation of renewables across the world, with a presence in Europe, the Americas, Asia, Africa and Oceania. Enel Green Power is a global leader in the green energy sector with a managed capacity of over 43 GW across a generation mix that includes wind, solar, geothermal and hydropower, and is at the forefront of integrating innovative technologies into renewable power plants. For more information: www.enelgreenpower.com.

About Ocean Power Technologies

Headquartered in Monroe Township, New Jersey, Ocean Power Technologies aspires to transform the world through durable, innovative and cost-effective ocean energy solutions. Its PB3 PowerBuoy® and the near-term availability of its hybrid PowerBuoy® and Subsea Battery Solution, along with its Innovation and Support Services provide clean and reliable electric power and real-time data communications for remote offshore and subsea applications in markets such as oil and gas, defense and security, science and research, and communications. To learn more, visit www.oceanpowertechnologies.com.

Forward-Looking Statements

This release may contain “forward-looking statements” that are within the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are identified by certain words or phrases such as “may”, “will”, “aim”, “will likely result”, “believe”, “expect”, “will continue”, “anticipate”, “estimate”, “intend”, “plan”, “contemplate”, “seek to”, “future”, “objective”, “goal”, “project”, “should”, “will pursue” and similar expressions or variations of such expressions. These forward-looking statements reflect the Company’s current expectations about its future plans and performance. These forward-looking statements rely on a number of assumptions and estimates which could be inaccurate, and which are subject to risks and uncertainties. Actual results could vary materially from those anticipated or expressed in any forward-looking statement made by the Company. Please refer to the Company’s most recent Forms 10-Q and 10-K and subsequent filings with the SEC for a further discussion of these risks and uncertainties. The Company disclaims any obligation or intent to update the forward-looking statements in order to reflect events or circumstances after the date of this release.

Investor Relations Contact:

Matthew Abenante, IRC
Porter, LeVay & Rose
Email: ocean@plrinvest.com
Phone: 212-564-4700



Ocean Power Technologies, Inc.
