SECTION I

INSTRUCTIONS TO BIDDERS

Inquiry No: 1059/25

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1. INTRODUCTION

The HELLENIC GAS TRANSMISSION SYSTEM OPERATOR (DESFA) S.A., hereinafter referred to as well as CLIENT or OWNER, invites eligible Bidders to submit a Bid for the **Inquiry No 1059/25**:

Title	:	PROCUREMENT OF A FLOATING PLATFORM SYSTEM FOR THE LOADING/UNLOADING OF SSLNG CARRIERS AT REVITHOUSSA TERMINAL
Budget	:	**€15.000.000,00** plus V.A.T.
Delivery Terms	:	As per SECTION VI -Delivery Schedule & Terms
Time Schedule	:	As per SECTION VI Delivery Schedule & Terms

The Tender shall be carried out via the sourceONE neo platform provided by cosmoONE (www.marketsite.gr) (hereinafter also referred to as "the System").

1.1 Eligible Bidders should be:

- Economic Operators, as per par. 6 of Article 2 of the Directive 2014/25/EU, registered in a European Union (E.U) or a European Economic Area (E.E.A.) country or a country having an Association or Bilateral Agreement with the E.U., allowing the participation in Public Tenders of Contracting Authorities with activities in Natural Gas Sector, who may also be mentioned hereinafter as Companies,

  or

- Associations/Joint Ventures/ Consortium of Companies (hereinafter J/V), as above mentioned.

Economic operators participating in present Tender solely or as a member of an Association/Joint Venture/Consortium are not allowed: (i) to submit more than one Bids, including the submission of a Bid as a member of (other) Association/Joint Venture/Consortium or (ii) to rely on the capacity of other entities participating in present Tender solely or as a member of other Association/Joint Venture /Consortium, or (iii) to be included as a proposed Subcontractor in the Bid of other economic operators participating in present Tender.

1.2 To facilitate bidding and Bid evaluation, the documents enclosed shall reflect the form of the CONTRACT which will be entered into effect by DESFA and the successful Bidder, hereinafter referred to as VENDOR.

1.3 The Bidders shall submit the documents according to all instructions given in this document.

1.4 Alternative Bids cannot be submitted and if submitted shall not be taken into consideration.

1.5 In these Instructions to Bidders, reference to the Inquiry Documents shall mean reference to the documents listed in Article 10 of present document.

1.6 Not applicable.

1.7 All direct and indirect costs of any nature for the preparation of the Bid by the Bidders, including costs associated with attending pre-Bid meeting(s), participating in site visits and

clarification meetings etc. shall be at Bidder's own cost.

1.8 Words in capital letters in the Inquiry Documents have the meaning assigned to them in Article 1 of SECTION: "GENERAL CONDITIONS FOR SUPPLY CONTRACTS".

2. APPLICABLE LEGISLATION

2.1 Present Instructions to Bidders and relevant Inquiry Documents.

- DESFA's Procurement Procedures "Tendering and Agreement Award". The aforementioned procedures are partially available (excluding internal procedures and guidelines for personnel) at the following link: https://www.desfa.gr/en/our-company/tendering-procedures-framework
- European Directive 2014/25/EU.

2.2 Concerning procedure for settlement of disputes during Tender, any Economic operator having an interest in being awarded the specific Tender may, within a five (5) Day limit after becoming aware in any manner of an illegal act or omission, file an objection to DESFA.

2.3 Applicable Greek legislation, i.e. any laws, ministerial decisions and any regulations, interpretive circulars or other in connection or authorised by the above mentioned, even if not stated herewith.

2.4 Any dispute shall be subject to the exclusive jurisdiction of the Courts of Athens.

3. SCOPE OF SUPPLY

3.1 The supply and all obligations and activities, which this Inquiry refers to, is the Procurement of a Floating Platform System for the Loading/Unloading of Small Scale Liquefied Natural Gas Carriers at Revithoussa Terminal, as analytically described in SECTION VII: "OWNER's REQUIREMENTS".

3.2 The Terms & Conditions of the Contract to be entered into with the successful Bidder (hereinafter "CONTRACT") are further provided in Contract Documents as described in paragraph A of the Contract Agreement.

3.3 DESFA reserves the right to increase the Supply up to the amount of five hundred thousand (500.000,00 €) Euro, plus V.A.T., for contingencies that may arise. This OWNER's right shall be effected either by Change Order or through supplementary Contract with VENDOR with the same terms, prices and rates as those of the Contract and the scope of the Change Order/supplementary Contract shall cover additional Supply.

3.4 Said right is expected to be exercised until the Supply Completion Date.

4. COMMUNICATION - APPLICABLE LANGUAGE

4.1 The Bids including all related documentation and all Tender related communication shall be submitted and conducted in Greek or English language.

Documents submitted or originally issued in a language other than Greek or English shall be accompanied by an official translation in Greek or English language issued by a lawyer or a competent authority.

For the Contract and Contract execution, the Greek or English language will be applicable.

4.2 Unless otherwise mentioned in the Inquiry Documents, the Bidders may contact DESFA concerning matters that regard the present Tender exclusively via the sourceONE neo platform (www.marketsite.gr). The time that each Bidder contacts DESFA via the System will be automatically confirmed by the System through electronic time stamping. Any communication carried out by any means other than the above, shall not be taken into consideration.

4.3 The Inquiry Documents may be accessed by any interested Economic Operator through the sourceONE neo platform, by selecting the folder of the in subject Inquiry.

Access to the System shall be provided by granting the relevant credentials (username, company code and password). Credentials shall be granted after the registration in the System (unless the participant has already passwords for the e-tendering application).

Registration in the System is free of charge and carried out by filling in the required information at the URL www.marketsite.gr and accepting the terms of use of the System. After submitting a registration request, the party concerned shall receive the relevant passwords. The user must change the temporary personal password provided by the System with a different password of his choice. If a user loses the password, he shall contact cosmoONE via the registration System for having his password replaced.

5. BID CONTENTS

5.1 The Bid must be submitted electronically, via the sourceONE neo platform provided by cosmoONE (www.marketsite.gr).

5.2 The Bid shall be signed, as per Note (c) herebelow by the person duly authorized to act on behalf of the Bidder.

5.3 The electronic Bid must contain two (2) separate envelopes (A, B) as follows:

I ENVELOPE A - Authorisation Documents and Technical Offer (Contents Unpriced)
This envelope shall include all documents specified in Art. 14 herein.
These documents shall be submitted in a Portable Document Format (PDF) file type.

II ENVELOPE B - Financial Offer (Contents Priced)
This envelope shall include all documents specified in Art. 16 herein.
These documents shall be submitted in a Portable Document Format (PDF) file type.

NOTES:

a. In addition to the above, within three (3) working days from the Bid Due Date, the Bidder shall submit, in printed form, the documents that are specified in Article 14.13 herein, i.e. the Participation Guarantee.
b. DESFA may, at any time during the tender procedure, request from the Bidders to submit within a reasonable deadline in printed form, original or certified copies

of all or some of the documents and data that they have submitted electronically.

c. Wherever in the Inquiry Documents reference is made to documents to be signed, signature is meant to be either scanned handwritten signature or any type of electronic signature (electronic signature in accordance with eIDAS Regulation [910/2014/EU]).

5.4 Each Bidder shall prepare its Bid in strict accordance with the provisions of these INSTRUCTIONS TO BIDDERS, its attachments and the Other Inquiry Documents.

6. BID SUBMISSION

6.1 Bids shall be submitted via the sourceONE neo platform (www.marketsite.gr) not later than **12:00** hrs. of **xx.xx.2025**, which is the final deadline (**Bid Due Date**) for the receipt of Bids. Bids submitted in any other way than via the System will not be taken into consideration.

An electronic bid submission receipt shall be issued via the above electronic platform and sent to the Bidder by e-mail.

Bid submission time shall be automatically confirmed by the System through electronic time stamping.

6.2 Overdue Bids (Bids submitted later than the specified time on the specified date above) shall not be accepted by the System.

7. VALIDITY OF BIDS

7.1 **The Bids shall be valid (and therefore binding on the Bidders) for eight (8) months counting from the Bid Due Date.**

Bids with validity period less than specified in the Inquiry Documents, shall be rejected.

7.2 Said period of validity might be extended following a request by DESFA (prior to the expiration date). In case a Bidder fails to comply with such a request, then said Bidder shall be considered as having waived all its rights in relation to the Inquiry and its Bid.

8. COMMENTS, QUALIFICATIONS, DEVIATIONS, EXCEPTIONS etc. RELATED TO TECHNICAL MATTERS

8.1 Comments, qualifications, deviations, exceptions, etc., (if any) regarding **only technical matters** shall be included in a list, duly signed by the Bidder, submitted as a separate part of the Bid (Envelope A - see Article 14 here below), for consideration by DESFA. However, comments, deviations, exceptions etc., lowering the quality and/or safety level of the Supply in part or in whole, will not be accepted, as per article 17 here below.

8.2 For comments, qualifications, deviations, exceptions, etc. which are included in the above list of Envelope A, the procedure described in Article 17 here below shall apply.

8.3 For the purpose of the Inquiry, all Bidders' comments, qualifications, deviations, exceptions, etc, in relation to any term or condition of the Inquiry Documents related to technical matters, shall be called, hereinafter, Deviations.

8.4 No deviations are allowed in the following SECTIONS of the Inquiry Documents:

Section II: DRAFT CONTRACT AGREEMENT with Attachment
Section III: PARTICULAR CONDITIONS with Appendices
Section IV: GENERAL CONDITIONS FOR SUPPLY CONTRACTS
Section V: PRICE & PAYMENT SCHEDULE
Section VI: DELIVERY SCHEDULE & TERMS

In case Bidder's offer includes any such deviation, **Bidder's offer shall be rejected**.

9. GUARANTEES

9.1 In order to participate in this Tender, each Bidder must deposit at the time of Bid submission, subject to Rejection of the Bid in case of non-submission, a Participation Guarantee Letter to be included in Envelope A, equal to three hundred thousand (€300.000,00) EURO, valid for at least one (1) month more than the minimum validity period of the Bid specified in Article 7 here above, i.e. valid for nine (9) months counting from the Bid Due Date. The Participation Guarantee Letter shall be addressed to the HELLENIC GAS TRANSMISSION SYSTEM OPERATOR (DESFA) S.A. and shall be in accordance with the attached Annex 2 Form. Any deviation or omission might lead to the rejection of the Bid.

9.2 Not applicable.

9.3 The Participation Guarantee Letter of the Bidder, to whom a CONTRACT will be awarded, will be returned after the receipt of a Performance Guarantee and upon signing of the relevant CONTRACT. The return of the Letters of Guarantee to the participants permanently excluded from the tender procedure shall take place either after the lapse of the time limit for submission of objections against their exclusion or after the issuance of a relevant decision of rejection of objection submitted. The Participation Guarantee Letters of the other Bidders shall be returned after the signing of the aforementioned CONTRACT between DESFA and the successful Bidder.

9.4 A Performance Guarantee of ten percent (10%) of the CONTRACT Price, covering the entire Guarantee Period (as this is defined in the CONTRACT), shall be required from the Bidder to whom the CONTRACT will be awarded, prior to the signing of the CONTRACT. The Performance Guarantee shall be addressed to the HELLENIC GAS TRANSMISSION SYSTEM OPERATOR (DESFA) S.A. and shall be in full accordance with the APPENDIX B Form of the attached SECTION: "PARTICULAR CONDITIONS".

9.5 In case the aforementioned (in paragraph 9.3) Bidder does not present itself to sign the CONTRACT and/or fails to sign it without reservation, as stated in Article 18 here below, and/or fails to submit the required Performance Guarantee, then the relevant Participation Guarantee Letter shall be completely forfeited in favour of DESFA as a penalty expressly stipulated hereby, irrespectively of whether DESFA has sustained or not any damages or loss; the same shall apply for any Bidder, in case any such Bidder withdraws and/or modifies (by its own initiative) its Bid, after the Bid due date and prior to the expiration of the period of validity (see Article 7 hereabove) of said Bid.

9.6 In the case DESFA requests the extension of the validity of their Bids as per Article 7 here above, the Bidders must also extend the validity of the Participation Guarantee Letter. If a Bidder refuses or fails to comply with such a request, then said Bidder shall be considered as having waived all its rights in connection with the Inquiry.

9.7 Not applicable.

9.8 All Letters of Guarantee must be issued by credit institutions or other legal entities, lawfully operating in any member-state of the E.U. or the European Economic Area (E.E.A) or in a member state of the Government Procurement Agreement of the World Trade Organization, as ratified by Law N. 2513/1997 (Government Gazette A' 139), which have this right according to the applicable legislation to secure the obligations assumed by the VENDOR under this CONTRACT, including execution of the Supply. The Letters of Guarantee will be issued in Greek or in English language.

10. INQUIRY DOCUMENTS AND ORDER OF PRECEDENCE

10.1 The following documents, hereinafter collectively referred to as Inquiry Documents, shall form an integral part of the Inquiry.

10.2 In the event of any conflict (as far as this Inquiry is concerned), identified in the conditions set forth in the Inquiry Documents, the following order of precedence shall prevail, from the higher to the lower:

Section I:	INSTRUCTIONS TO BIDDERS with Annexes
Section II:	DRAFT CONTRACT AGREEMENT with Attachment
Section III:	PARTICULAR CONDITIONS with Appendices
Section IV:	GENERAL CONDITIONS FOR SUPPLY CONTRACTS
Section V:	PRICE & PAYMENT SCHEDULE
Section VI:	DELIVERY SCHEDULE & TERMS
Section VII:	OWNER's REQUIREMENTS

11. ASSOCIATIONS - JOINT VENTURES - CONSORTIA

Wherever in the Inquiry Documents reference is made to J/V, it means Association or Joint Venture or Consortium.

The legal formation of the Joint Venture is not a prerequisite for taking part in the present Inquiry.

Registration in the System at least by the Leader of the J/V shall be a prerequisite for Bid submission by a J/V.

The Bid must be submitted by the Leader of the J/V and shall comply with the following requirements:

11.1 The Bid shall be signed either a) by all members of the J/V, or b) by the J/V's common Legal Representative.

11.2 A J/V agreement that has been or which is intended to be entered into by the members of a J/V signed by all the J/V members shall accompany the Bid.

The following information shall be included at least in said agreement:

- That the members of the J/V shall be fully, jointly, indivisibly and severally liable for execution of the Supply in accordance with the CONTRACT provisions and that, in the event that any one of the members ceases to be a member of the J/V and/or goes into liquidation, then the remaining member(s) shall have full obligation to carry out and complete the Supply and shall be empowered to use all resources

furnished by any party in the J/V.

- The interest of each of the members of the J/V which shall be unchanged for the whole duration of the CONTRACT.

- The name of the J/V partner, who is nominated to act as leader of the J/V and who, in such capacity, is authorised to receive instructions and act on instructions from DESFA on behalf of the J/V after Contract Award and for representation issues.

- The J/V's common Legal Representative.

11.3 **Subject to rejection of the Bid:**

- the Leader of the J/V should be a Company with a minimum interest of fifty percent (50%) in the J/V.

12. BID OPENING PROCEDURE

12.1 Upon expiry of the Bid submission time limit, DESFA will open the Bids electronically on **12:30 hrs** of the **Bid Due Date,** using unique codes to be provided by the System.

Bids evaluation shall follow the procedure stated here below in two (2) separate and distinct stages:

- Evaluation of the contents of Envelope A
- Evaluation of the contents of Envelope B

12.2 DESFA shall open Envelope A electronically, via the System, and shall record the contents.

DESFA reserves the right to request via the System from the Bidders to clarify the documents submitted or to submit supplementary or supporting documentation in relation to Envelope A. The above clarification/supplementation relates indicatively to ambiguities, minor defects or typical errors, susceptible to correction or supplementation. In any case, such answers shall not constitute a Counter or Alternative Offer, otherwise they shall not be taken into consideration. Bidders shall reply electronically, via the system, not later than seven (7) days from receipt of said request. Any clarification or supplementary document/information not requested by DESFA shall not be taken into consideration.

The content of Envelope A will then be evaluated by DESFA with reference to their compliance with the Inquiry Documents.

12.3 Following the conclusion and announcement of the evaluation of Envelope A, electronically, via the System, DESFA shall open Envelope B only for the Bids which have been so far accepted, using unique codes to be provided by the System.

DESFA reserves the right to request the Bidders, via the System, the submission of any clarification in relation to Envelope B. The above clarification relates indicatively to ambiguities, minor defects or typical errors, susceptible to correction or supplementation. In any case, such answers shall not constitute a Counter or Alternative Offer, otherwise they shall not be taken into consideration. Bidders shall reply electronically via the system, not later than seven (7) days from receipt of said request. Any clarification not requested by DESFA shall not be taken into consideration.

12.4 The System shall not allow opening of unopened electronic Envelopes submitted by Bidders

whose Bids have not been accepted. The Participation Guarantee Letter will be returned against receipt to the Bidders whose Bids have not been accepted. No other documents in paper form, if any, of Bids that have not been accepted shall be returned.

12.5 Following the opening and evaluation of each stage of the Bid evaluation (i.e. Envelope A and Envelope B), the findings are recorded for further approval by DESFA's appropriate body.

13. Not Applicable

14. CONTENTS OF Envelope A

Envelope A shall contain the following documents, in sequential order as follows.

A.1 LEGALIZATION DOCUMENTS

14.1.1 Participation Guarantee Letter
A duly completed Participation Guarantee Letter according to Article 9 here above and as per form of Annex 2 attached herein.

14.1.2 Statement
The Bidder, shall fill, sign and submit a statement, (as per Annex 3, SECTION, "Instructions to Bidders") stating that:

- The Bidder has studied all the terms of the Inquiry and that it fully accepts all terms contained in the Inquiry Documents as well as the terms of use of the System and the electronic procedure of the Tender, with no reservations whatsoever.
- The Bid shall be valid for eight (8) months counting from the Bid Due Date
- All submitted data and information contained in their Bid are true and genuine.

Above Statement including as well information about the Bidder, shall be signed by the Legal Representative(s) of the Bidder, authorised to represent the Bidder until the date of CONTRACT signature and in case of J/V, the Statement shall be **unique** and shall be signed by the Legal Representatives of each member of the J/V (Not the Common Legal Representative).

14.2.1 Company Statutes and Company's decision taking body/person.
The Bidder, or in case of a J/V all members of the J/V, shall submit:

(i) The Company Statutes valid according to the legislation of the country that the Bidder is registered as well as the documents listed here below:

a. For companies operating under Greek Law, certificate of Department of Commerce (GEMI), showing their legal establishment and operation, the constituent to body of the incumbent Board of Directors for SA and the setting of legal representatives. In case the issue of relevant certificate is not possible, public documents of which will result the above, i.e. the relevant Greek Government Gazettes for the SA-Ltd and the published copy of the valid statute with any amendments.

b. For foreign companies Company Statutes should be accompanied by documents for the person(s) having powers of representation and decision in respect of the company.

(ii) A copy of the Minutes of Meeting of the Board of Directors, or other competent decision-taking body or duly authorised person of the Bidder, signed by the legal representative of the Bidder:

A. Regarding their decision to participate in the Bid according to the terms and provisions of this Inquiry

B. Appointing a Legal Representative(s) authorised to represent the Bidder until the date of CONTRACT signature, or in case of J/V, appointing the Common Legal Representative of the J/V, as well as the Legal Representative of each member.

C. In case of J/V declaring the Company's percent participation in the J/V and naming the Leader of the J/V.

14.2.2 A statement signed by the aforementioned Legal Representative(s) of the Bidder, accepting fully said appointment.

Note: In case of J/V, said statement signed by Legal Representative of each member as well as by Common Legal Representative should be submitted.

14.2.3 J/V:
In the case the Bidder is a J/V, electronic submission of additional documents, as per provisions of Article 11 here above.

14.3 Solemn Declaration:
The Bidder, shall fill, sign and submit a Solemn Declaration (as per Annex 5, attached herein) referring to the requirements of par. 14.4.1, 14.4.2, 14.4.3, 14.6, 14.7, 14.8, 14.10 and 14.11 herein below.

This Solemn Declaration of the Bidder is adequate preliminary evidence that the latter fulfils the requirements set out in par. 14.4.1, 14.4.2, 14.4.3, 14.6, 14.7, 14.8, 14.10 and 14.11 herein below.

The Solemn Declaration is submitted in place of the relevant certificates, declarations, documentation that prove the above requirements and which shall be demanded from the successful Bidder, pursuant to art. 18 herein below.

As in the case of any other document, at any time during the present Tender the Bidders may be asked to produce all or any of the documents relating to par. 14.4.1, 14.4.2, 14.4.3, 14.6, 14.7, 14.8, 14.10 and 14.11 and listed in art. 18 and shall have the obligation to do so.

The Solemn Declaration shall be signed by the Legal Representative(s) of the Bidder, authorised to represent the Bidder until the date of CONTRACT signature and in case of J/V, the Solemn Declaration shall be **unique** and shall be signed by the Legal Representatives of each member of the J/V (Not the Common Legal Representative).

In case the Bidder relies on and uses the economic and financial or/and technical or/and professional capacity of Other Entities, as per Directive 2014/25/EC, article 79, the Solemn Declaration shall also be submitted by the Other Entity, as per the

provisions of par. 14.12.1.c and 14.12.1.d herein below.

The Other Entity's Solemn Declaration shall be signed by the Legal Representative(s) of the Other Entity concerned, authorised to represent the entity until the date of CONTRACT signature.

14.4.1 The Bidder is excluded from the present Tender in case itself (in case of J/V, either one (1) of its members) has been the subject of a conviction by final judgment rendered at the most five (5) years ago or in which an exclusion period is set out and continues to be applicable for one of the following reasons listed below:

A. Participation in a criminal organisation, as defined in Article 2 of Council Framework Decision 2008/841/JHA of 24 October 2008 on the fight against organised crime (OJ L 300, 11.11.2008, p. 42);

B. Corruption, as defined in Article 3 of the Convention on the fight against corruption involving officials of the European Communities or officials of Member States of the European Union (OJ C 195, 25.6.1997, p. 1) and Article 2(1) of Council Framework Decision 2003/568/JHA of 22 July 2003 on combating corruption in the private sector (OJ L 192, 31.7.2003, p. 54) as well as corruption as defined in the national law of the contracting authority or the economic operator;

C. Fraud within the meaning of Article 1 of the Convention on the protection of the European Communities' financial interests (OJ C 316, 27.11.1995, p. 48), which was ratified by Law 2803/2000 (A· 48);

D. Terrorist offences or offences linked to terrorist activities, as defined in Articles 1 and 3 of Council Framework Decision 2002/475/JHA of 13 June 2002 on combating terrorism (OJ L 164, 22.6.2002, p. 3) respectively, or inciting or aiding or abetting or attempting to commit an offence, as referred to in Article 4 of that Framework Decision;

E. Money laundering or terrorist financing, as defined in Article 1 of Directive (EU) 2015/849 of the European Parliament and of the Council of 20 May 2015 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing, amending Regulation (EU) No 648/2012 of the European Parliament and of the Council, and repealing Directive 2005/60/EC of the European Parliament and of the Council and Commission Directive 2006/70/EC (OJ L 141/05.06.2015) and the crimes of Articles 2 and 39 of Law 4557/2018 (A' 139);

F. Child labour and other forms of trafficking in human beings as defined in Article 2 of Directive 2011/36/EU of the European Parliament and of the Council of 5 April 2011 on preventing and combating trafficking in human beings and protecting its victims, and replacing Council Framework Decision 2002/629/JHA (OJ L 101, 15.4.2011, p. 1), which was incorporated in the national legislation by Law 4198/2013 (A' 215);

The obligation to exclude the Bidder from the Bidding process shall also apply where the person convicted by final judgement is a member of administrative, management or supervisory body of that economic operator or has the power of representation, decision or control therein and indicatively: (a) in the cases of limited liability companies (Ltd.), capital companies and private enterprise, for the managing persons and (b) in the case of public limited companies (SA) for the Chairman, the Chief Executive Officer and the members of the Board of Directors.

14.4.2 The Bidder is excluded from the present Tender in case itself, or in case of a J/V, any of its members:

Is bankrupt, subject of insolvency or winding-up proceedings, in an arrangement with creditors, under liquidation, obligatory management, suspension of business, or is in any other similar situation resulting from a similar procedure (indicatively the pre-bankruptcy debt reconstruction procedures described in greek law 3588/2007, as applicable, and law 4738/2020, as applicable), as provided by National Legislation.

14.4.3 The Bidder is excluded from the present Tender in case itself, or in case of a J/V, any of its members:

A. Has not fulfilled its obligations, concerning the payments of Social Security contributions according to the Legislation of the country where it is established and according to Greek Legislation in the event that it has previously developed activities in Greece;

B. Has not fulfilled its obligations related to payment of taxes, according to the Legislation of the country where it is established and according to Greek Legislation, in the event that it has previously developed activities in Greece.

14.5 Not applicable.

14.6 The Bidder must have the essential qualifications in order to be capable to execute the CONTRACT and is enrolled in the Registers of Annex XI of the European Directive 2014/24 for E.U. countries or the relevant professional or trade registers kept in the country of establishment, if established in other countries.

14.7 The Bidder must have an average yearly turnover for the last three (3) financial years of at least twelve million five hundred (€12.500.000,00) EURO. In case of a J/V, said requirement can be covered by the members of the J/V cumulatively.

14.8 The Bidder must have a financial status and credit (including both credit capacity and guarantee letters) of a minimum amount of ten million five hundred thousand (€10.500.000,00) EURO. In case of a J/V, said requirement can be covered by the members of the J/V cumulatively.

A.2 TECHNICAL EXPERIENCE DOCUMENTATION

14.9 Bidder's Information

14.9.1 Profile of the Bidder

Documents indicating the profile, structure, organization and infrastructure of the Bidder, or in the case of a J/V each of its members.

14.9.2 List of Contracts executed

List of Bidder's or in case of a J/V of each member's Contracts (as a Vendor), that have been executed successfully in the last five (5) years, stating analytically:

- Project title
- Owner/Client with a contact name
- Type of Contract, Contract number, Contract award date

- Brief description of equipment
- Initial and final Contract Price
- Planned and actual completion period
- The participation interest (%) in the J/V (if applicable)

14.9.3 List of Contracts under execution

List of Bidder's, or in case of a J/V of each of its members', Contracts/ Purchase Orders currently under execution, stating analytically the aforementioned information (as per 14.9.2 above) as well as the un-executed part stating the equipment description to be delivered, with expected delivery dates of each Contract (in terms of progress/cost) at the Bid submission date.

14.10 Bidder's Experience

Minimum Experience Requirements:

Subject to rejection of the Bid, the Bidder must have solely or as a member of a J/V with a minimum participation interest of fifty percent (50%) in such J/V:

a. Executed engineering/design and successfully received:

(i) Basic Design Approval by a Class member of International Association of Classification Societies (IACS) regarding engineering/design for Floating Platform System (jettyless) for loading and/or unloading of LNG carriers, with LNG flow rate of at least 1.000 m3/h,

or

(ii) Approval In Principle (AIP) by a Class member of IACS regarding engineering/design for a Floating Platform System (jettyless) for loading and/or unloading of LNG carriers, with LNG flow rate of at least 1.000 m3/h,

AND

b. Supplied and/or manufactured at least one (1) offshore LNG transfer system with flow rate of at least 1.000 m³/h, for offshore loading and/or unloading i) carriers, or ii) floating storage units, or iii) barges. Said LNG transfer system must have successfully operated and could be part of a broader, successfully operated project/facility,

AND

c. Manufactured of at least one (1) successfully operated flat top deck steel floating platform, with displacement of at least 200 tons.

In the case of a J/V, the above minimum experience requirement, should be satisfied at least by the Leader of the J/V.

The above must be proved by the submission of the relevant documents, as per clause 18.1.9 herein below.

14.11 Quality Assurance Standards:

Subject to rejection of the Bid, the Bidder, or in case of a J/V each of its members, must comply with a Management System Certificate according to ISO 9001 or equivalent Certificate or evidence of equivalent quality assurance standards, as stated in Article 81 of the European Directive 2014/25/EU.The Certificate should be valid at the time of Bid submission, as well as during the period of Supply production and must be issued by an accredited Certification Organization.

A.3 ADDITIONAL DOCUMENTATION IN CASE THAT THE BIDDER RELIES ON PARTICULAR RESOURCES OF OTHER ENTITIES

14.12 In case the Bidder relies on and uses the economic and financial (14.7 and/or 14.8) and/or technical and/or professional capacity (14.10) of Other Entities, as per Directive 2014/25/EC, article 79, these Entities must be registered in a European Union (E.U) or a European Economic Area (E.E.A) country or a country having an Association or Bilateral Agreement with the E.U, allowing the participation in Public Tenders of Contracting Authorities with activities in Natural Gas Sector and the documents mentioned below should be included in Envelope A for each Other Entity, as applicable according to its' legal form:

14.12.1 a. A Statement signed by the Legal Representative of such Other Entity stating that:
- The Other Entity has studied all the terms of the Inquiry and it fully accept all terms contained in the Inquiry Documents with no reservations whatsoever,
- All Other Entity's submitted data and information are true and genuine.

b. Duly certified J/V agreements or articles of Association valid, according to the legislation of the country of registration and the documents mentioned in paragraph 14.2.1.i of present article, where the term "Bidder" is substituted by the term "Other Entity".

c. The Solemn Declaration of par. 14.3, signed by the Legal Representative of such Other Entity, referring to the requirements of par. 14.4.1, 14.4.2, 14.4.3 herein above, where the term "Bidder" is substituted by the term "Other Entity".

d. In addition:

- In case the Bidder relies on and uses the economic and financial capacity of Other Entities, the Solemn Declaration shall refer to the requirements of paragraphs 14.7 and 14.8 of present article,
- In case the Bidder relies on and uses the technical or/and professional capacity of Other Entities, the Solemn Declaration shall refer to the requirements of paragraphs 14.6 and 14.10.a and/or 14.10.b and/or 14.10.c, depending on the capacity the Bidder relies on, and 14.11 of present article,

where the term "Bidder" is substituted by the term "Other Entity".

In case that above mentioned documents are not submitted, the application of use of particular resources of Other Entities shall not be taken into consideration.

14.12.2 A signed copy of the Minutes of Meeting of the Board of Directors, or other competent decision-taking body or duly authorized person of the Other

Entity, regarding the approval of the availability to the Bidder, for the whole duration of the execution of the Contract, of the particular economic and financial or/and technical or/and professional capacity. The relevant decision should be detailed and should specify the particular resources to be available during bidding phase and the execution of the CONTRACT, in a manner that DESFA can proceed with evaluation and judge the importance of those resources during the bidding phase and can control the realization of said commitment during the execution of the CONTRACT.

14.12.3 A signed binding agreement between the Bidder and such Other Entity proving the commitment of such Other Entity for the provision of resources throughout the period of the entire duration of the CONTRACT. In case the Bidder relies on the technical capacity of Other Entity (ies) regarding the requirements of paragraphs 14.10 , such Other Entity will be engaged and that will perform, if awarded, by its own resources, the scope for which its capacities are required and on which the Bidder relies on.

In case that above mentioned documents are not submitted, such application of the Other Entity shall not be taken into consideration by DESFA.

Above mentioned relationship shall be valid for the whole duration of the CONTRACT. In case that during the CONTRACT's performance the relationship between the Bidder and the Other Entity is not valid, DESFA has the right to apply the contractual provision for VENDOR'S forfeiture.

The statements and the documentation both of the Bidder and of the Other Entity related to the use of particular resources shall be part of the Contract Documents.

It is noted that in the case of a J/V, the Leader of the J/V can rely on and use the technical or/and professional capacity of the other members of the J/V or of Other Entities, as detailed in this paragraph.

14.13 **IMPORTANT NOTICE**:

Subject to rejection of the Bid, the Bidder must submit to DESFA, within three (3) working days from the Bid Due Date, the original Participation Guarantee Letter in paper format.

A.4 TECHNICAL OFFER (Contents Unpriced)

14.14 Bidder's Organization

a. Description of proposed Organizational Structure

The Bidder shall submit a detailed technical description of its plans to perform the various functions associated with the Supply divided into the following areas:

- Management and coordination of the Supply
- Procurement, system development, customization and integration, pre-fabrication, manufacturing stating the location for each activity
- Training of DESFA's personnel
- Pre-commissioning and commissioning of the Supply

b. Organization Chart

Organization charts for the execution of the Supply clearly showing levels of authority and responsibility (i.e. Project Management and Control, Engineering, Procurement, Field works, QA/QC, HSE, Commissioning and Operations, etc.), key positions identified by title and brief job description.

Key positions are indicatively:

- Project Manager
- Engineering Manager
- Software Engineers
- Site superintendents/ Supervisors
- Commissioning Manager
- QA/QC Manager
- HSE Manager

14.15 Supply Execution Proposal

a. Time Schedule:
The Bidder shall provide a summary and detailed Time Schedule in the form of a bar chart, showing critical milestones (such as document issuance, material issuance), critical paths, pre-requisites (if any) Bidder considers important and other descriptive information illustrating Bidder's strategy for the timely achievement of the Supply Completion Date.
The time for completion is stated in SECTION: "CONTRACT AGREEMENT".

b. Project Execution Plan:
The Bidder shall provide comprehensive detailed technical description of methods and procedures for the execution of the Supply, allowing a complete technical evaluation of Bidder's proposal by DESFA, including main sub-vendors and sub-contractors list (if any).

14.16 Bidder's Quality System

The Bidder shall submit a specific Quality Manual and Quality Plan. The Quality Plan shall present a detailed breakdown of all activities. For each one of these activities the following fields shall be clearly identified:

- Quality Requirements
- Applicable Quality System Procedures
- Applicable Technical Specifications
- Inspection and Approval Levels
- Deliverable Documents
- Testing and Commissioning Procedures

The Quality Manual shall have the structure dictated by ISO 9001 and shall adequately cover the following issues:

- Quality Policy and Management Responsibility
- Organization Chart
- General Description of the Quality System
- List of applicable Quality System Procedures

14.17 Bidder's Health, Safety & Environment (HSE) System

Bidders shall submit specific HSE Management System Document including:

- Company's signed HSE Policy.
- An overview of all applicable HSE Legal conformity requirements.
- Confirmation that will adhere to OWNER's HSE Policy and will apply an HSE Risk Assessment process to ensure adequate protection of employees, full control of environmental aspects and avoidance of any incidents/accidents/negative environmental impacts.
- HSE Management reporting and monitoring of occupational incidents/accidents during procurement.
- HSE Organisation Chart including roles/responsibilities to be clearly outlined of Key personnel and Management and provision of notification to Local Authorities and OWNER of VENDOR's employee who shall be responsible for the safe supply of SERVICES.
- Details of guidance and HSE training systems to improve Bidder's HSE performance and protect employees and the environment.

14.18 Technical Proposal/ Requisition

Bidder shall submit Technical Description & Technical Requisition of the Supply to allow technical evaluation concerning the Minimum Technical Requirements for the Evaluation of Bid, as listed respectively below:

- Material Requisition of the Jetty less system - DSF-11-019-09-S60001613-GEN-MEC-REQ-001.
- Technical Specification of the Jetty less system - DSF-11-019-09-S60001613-SPC-MEC-101,
- Process Duty specification of the Jetty less system - DSF-11-019-09-S60001613-GEN-PRS-DAT-001,

Lack of supporting information shall be detrimental to the technical evaluation of the Bid.

14.19 Training

The Bidder shall detail its training proposals and programme for the training of the OWNER's personnel, including but not limited to:

- Training at Site
- Senior Staff Training
- Estimated number of OWNER's personnel to be trained in accordance with above.

14.20 Submission of Deviations list as per NOTE 1 here in below.

14.21 Any other information

Bidders can submit any other information they consider necessary for the comprehension of their Offer.

General Notes:

1) Deviations regarding technical matters, if any and to the extent

permitted by Article 8 here above, should be entered into a separate list under a relevant heading. In case there are no such deviations, the word "NONE" must be stated in a relevant document, under the same as above heading.

2) Bidders should not include in ENVELOPE A any data connected to their offered prices (included in ENVELOPE B), otherwise their offer shall be rejected.

15. NOT APPLICABLE

16. CONTENTS OF Envelope B

16.1 Envelope B must contain the following documents:

A. **BID LETTER** (as per Annex 1 attached herewith) **with Price**, filled-in and signed by the Bidder.

B. **PRICE & PAYMENT SCHEDULE** (as per Section V: "PRICE & PAYMENT SCHEDULE"), filled-in and signed by the Bidder.

- Quoted price shall be expressed in EURO.
- Offer Price quoted in the PRICE & PAYMENT SCHEDULE should be in strict accordance with the Inquiry Documents.
- The price quoted in the PRICE & PAYMENT SCHEDULE must be fixed and firm and not subject to adjustment or escalation for any reason whatsoever for the whole duration of the CONTRACT.
- Quoted CONTRACT PRICE shall include any cost for performance of the Supply described in the Inquiry Documents, including VENDOR's profit.
- Any withholding tax, duty or mandatory contributions to public authorities or institutions shall be included in the offered price, with the explicit exception of the Value Added Tax (VAT).

16.2 The Bidder shall sign the contents of Envelope B as provided in the Inquiry Documents.

16.3 In case any deviation from DESFA's requirements is contained in Bidder's ENVELOPE B, which is not mentioned in the relevant list as per Art. 8 and 14 herein above, DESFA reserves the right to reject the Bid.

16.4 Omission by the Legal Representative of the Bidder to place a signature in the contents of Envelope B as provided for in the Inquiry documents, shall be a **reason for rejection of the Bid.**

16.5 The offered Lump Sum (CONTRACT PRICE) shall be VENDOR's full compensation for the execution of the Supply so as to satisfy all requirements of Inquiry Documents.

17. EVALUATION PROCEDURE

Evaluation of the Bids shall be performed as follows:

17.1 Only Bidders which have submitted an Envelope A according to Article 14 here above will be accepted for further evaluation.

17.2 Bids shall be rejected if:

- It appears from Envelope A that the Bidder does not have the know-how or the experience and generally the technical and/or the financial capacity to execute the CONTRACT.
- The Bidder has provided, at any stage of the Inquiry, false information.
- The Bid is not precise enough to the point that it is impossible to establish with certainty what is offered against which price, or the Bid is not responsive or the offer price is unreasonably low.

17.3 For the evaluation of the Bids, all deviations (i.e. comments, qualifications, deviations, exceptions, etc) in the list as per Article 8, contained in Envelope A, will be grouped by DESFA and at its discretion, into two (2) categories as follows:

a) Those which can be accepted without any price impact.
b) Those which cannot be accepted or have an economic impact that affects the economic offer. In such case the relevant Bid will be rejected.

17.4 In case a deviation is contained in the contents of Envelope A and such deviation is not mentioned in the list of deviations as per Articles 8 and 14 herein above, then DESFA reserves the right to consider that this constitutes a case of submission of false information and to reject the Bid.

17.5 TECHNICAL EVALUATION

Based on the data submitted with Technical Offers contained in Envelope A, Bidders' Technical Offers shall be evaluated as follows:

The items set out in the table here below will be used for the Technical Evaluation of the Bids based on submitted information contained in the Technical Offers.

The grading and evaluation procedure set out here below shall be strictly followed.

ITEM No	ITEM	WEIGHTING FACTOR (1)	GRADE (*) (2)	PRODUCT (1)x(2)
1.	Organization (see Article 14.14)			
1.1.	Organizational Structure (see Article 14.14.a)	5%		

1.2.	Organization Chart (see Article 14.14.b)	10%		
2.	Execution Proposal (see Article 14.15)			
2.1.	Time Schedule (see Article 14.15.a)	10%		
2.2.	Execution Plan (see Article 14.15.b)	10%		
3.	Bidder's Quality System Bidder's HSE System (see Articles 14.16 & 14.17)	10%		
4.	Training (see Article 14.19)	5%		
5.	Technical Proposal/Requisition (see Article 14.18)	50%		
Total		**100%**		
BIDDERS' TECHNICAL PROPOSAL TOTAL GRADE:				

(*) Grade shall be given on a 10 point scale (i.e. 100, 90, 80, etc.), where the values represent the following:

100 : Items for which the Technical Offers is fully documented, in full accordance with the Inquiry requirements, or better.
70-90 : Items for which the Technical Offer is complete and satisfactory in major issues of the Inquiry requirements. Minor omissions do not affect the Supply and are upgradeable.
40-60 : Items for which the Technical Offer is incomplete in major issues.
0-30 : Items for which the Technical Offer is not acceptable.

REASON FOR REJECTION OF THE BID:

During the Technical Evaluation phase, the Technical Offers are rejected under the following conditions:

a. If the Bidder's Total Grade is less than '70'.

b. If the Bidder's Grade in any of the items (1, 2, 3, 4) in the Table here above is 30 or less.

c. If the Bidder's Grade in item 5 in the Table here above is less than 70.

17.6 FINANCIAL EVALUATION

For the Bids that have been so far accepted, the opening of Envelope B electronically, via the System will follow.

During this stage DESFA may, at its discretion, ask electronically, via the System any Bidder(s) to justify its (their) offered price(s). DESFA shall require Bidder(s) to explain offered price(s) or cost(s) that appear to be abnormally low. Bidder shall reply electronically, via the System not later than ten (10) days from receipt of said request. DESFA reserves the right to reject any Bidder's offer in case DESFA judge that Bidder's reply does not explain satisfactorily the low level of offered price(s) or cost(s).

The successful Bidder will be the Bidder with the most economically advantageous offer based on price (the acceptable Bidder having the lowest non-rejected Offer).

Note: Tender Budget does not constitute an upper limit for the submitted Bids.

17.7 DESFA reserves the right not to award the CONTRACT as a result of this Inquiry, or to repeat the Inquiry or any phase of it or cancel the Inquiry or proceed otherwise according to applicable law, without any obligation to the Bidders.

17.8 The evaluation of the Bids will be concluded with the (written) approval of its results by DESFA and then, the results shall be announced electronically, via the System.

18. AWARD-CONTRACT SIGNATURE

18.1 The successful Bidder will receive electronically, via the System a Letter of Intent to award the Supply to be rendered to DESFA.

The successful Bidder upon receipt of said Letter of Intent:

- shall notify DESFA electronically, via the System, of its acceptance without any reservation, not later than two (2) working days as from its receipt,
- shall submit electronically, via the System, not later than ten (10) working days as from its receipt, the following documentation:

18.1.1 An extract from the judicial record or, failing that, an equivalent document issued by a competent judicial or administrative authority in the country of origin or the country where that person comes from showing that the Bidder (in case of a J/V each of its member) has not been the subject of a conviction by final judgment rendered at the most five (5) years ago or in which an exclusion period is set out and continues to be applicable for one or more of the reasons listed below:

A. Participation in a criminal organisation, as defined in Article 2 of Council Framework Decision 2008/841/JHA of 24 October 2008 on the fight against organised crime (OJ L 300, 11.11.2008, p. 42);

B. Corruption, as defined in Article 3 of the Convention on the fight against corruption involving officials of the European Communities or officials of Member States of the European Union (OJ C 195, 25.6.1997, p. 1) and Article 2(1) of Council Framework Decision 2003/568/JHA of 22 July 2003 on combating corruption in the private sector (OJ L 192, 31.7.2003, p. 54) as well as corruption as defined in the national law of the contracting authority or the economic operator;

C. Fraud within the meaning of Article 1 of the Convention on the protection of the European Communities' financial interests (OJ C 316, 27.11.1995, p. 48), which was ratified by Law 2803/2000 (Α· 48);

D. Terrorist offences or offences linked to terrorist activities, as defined in Articles 1 and 3 of Council Framework Decision 2002/475/JHA of 13 June 2002 on combating terrorism (OJ L 164, 22.6.2002, p. 3) respectively, or inciting or aiding or abetting or attempting to commit an offence, as referred to in Article 4 of that Framework Decision;

E. Money laundering or terrorist financing, as defined in Article 1 of Directive (EU) 2015/849 of the European Parliament and of the Council of 20 May 2015 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing, amending Regulation (EU) No 648/2012 of the European Parliament and of the Council, and repealing Directive 2005/60/EC of the European Parliament and of the Council and Commission Directive 2006/70/EC (OJ L 141/05.06.2015) and the crimes of Articles 2 and 39 of Law 4557/2018 (A' 139);

F. Child labour and other forms of trafficking in human beings as defined in Article 2 of Directive 2011/36/EU of the European Parliament and of the Council of 5 April 2011 on preventing and combating trafficking in human beings and protecting its victims, and replacing Council Framework Decision 2002/629/JHA (OJ L 101, 15.4.2011, p. 1), which was incorporated in the national legislation by Law 4198/2013 (Α` 215);

It is noted that the extract of the judicial record or, failing that, the equivalent document issued by a competent judicial or administrative authority in the country of origin of the successful Bidder (in case of a J/V each of its members), is submitted for any person who is a member of administrative, management or supervisory body of the successful Bidder or has the power of representation, decision or control therein and indicatively: (a) in the cases of limited liability companies (Ltd.), capital companies and private enterprise, for the managing persons and (b) in the case of public limited companies (SA) for the Chairman, the Chief Executive Officer and the members of the Board of Directors.

18.1.2 Extracts from Judicial records, or failing this, equivalent documents issued by competent judicial or administrative authorities in the country of origin and/or the country where the Bidder (or in case of a J/V each of its members) is registered, proving that:

The Bidder is not bankrupt, subject of insolvency or winding-up proceedings, in an arrangement with creditors, under liquidation, obligatory management, suspension of business, or in any other similar situation resulting from a similar procedure (indicatively the pre-bankruptcy debt reconstruction procedures described in greek law 3588/2007, as applicable, and law 4738/2020, as applicable), as provided by National Legislation.

18.1.3 Certificates issued by competent authorities in the country of registration proving that the Bidder, or in case of J/V, each of its members:

a. Has fulfilled its obligations, concerning the payments of Social Security contributions according to the Legislation of the country where it is established and according to Greek Legislation in the event that it has previously developed activities in Greece;

b. Has fulfilled its obligations related to payment of taxes, according to the Legislation of the country where it is established and according to Greek Legislation, in the event that it has previously developed activities in Greece.

Notes to 18.1.1, 18.1.2 and 18.1.3:
Where the country concerned does not issue such documents or certificates as required above, these may be replaced by a statement (regarding the requirements of par. 18.1.1, 18.1.2, 18.1.3 above) either of them signed by the person having powers of representation and decision in respect of the company (not the appointed legal representative, according to Article 14.2.1(ii) of SECTION: "Instructions to Bidders"), stating also that the country concerned does not issue such documents or certificates, as required.

18.1.4 to 18.1.5 Not applicable.

18.1.6 Registration Certificates in accordance with the Legislation of the country where they are established, proving that the Bidder, or in case of a J/V, each of its members, has the essential qualifications in order to be capable to execute the CONTRACT.

For E.U. countries, the above mentioned Registration Certificates should be issued as provided for, in Annex XI of the European Directive 2014/24.

Note: Where the country concerned does not issue such documents or certificates as required above, these may be replaced by a declaration made by the person concerned, before a judicial or administrative authority, a notary, or a competent professional or trade body, in the country where the Bidder is established, stating also, within the same declaration, that the country concerned does not issue such documents or certificates as required above.

18.1.7 Published or certified copies of statements of accounts for the last three (3) years, showing annual turnover of the Bidder . The average of the above last three (3) financial years' annual turnover must be at least fifteen million (€15.000.000,00) EURO. In case of a J/V, said requirement should be covered by the members of the J/V cumulatively.

18.1.8 References from Banking Institutions concerning the financial status and credit (including both credit capacity and guarantee letters) for a minimum amount of ten million five hundred thousand (€10.500.000,00) EURO. In case of a J/V, said banking references should be covered by the members of the J/V cumulatively.

18.1.9 a. Certificate issued by a Class member of IACS proving that the Bidder, solely or as a member of a J/V with a minimum participation interest of fifty percent (50%) in such J/V, has executed engineering/design and successfully received:

(i) Basic Design Approval by a Class member of International Association of Classification Societies (IACS) regarding engineering/design for Floating Platform System (jettyless) for loading and/or unloading of LNG carriers, with LNG flow rate of at least 1.000 m3/h, or
(ii) Approval In Principle (AIP) by a Class member of IACS regarding engineering/design for a Floating Platform System (jettyless) for loading and/or unloading of LNG carriers, with LNG flow rate of at least 1.000 m3/h,

b. Documents and/or Certificates issued by the owner of at least one (1) offshore LNG transfer system with flow rate of at least 1.000 m³/h, for offshore loading and/or unloading i) carriers, or ii) floating storage units, or iii) barges, proving that said system has been supplied and/or manufactured by the Bidder, solely or as a member of a J/V with a minimum participation interest of fifty percent (50%) in such J/V, and has successfully operated. It is noted that LNG transfer systems, with the above characteristics, that are part of a broader successfully operated project/facility, are acceptable.

c. Documents and/or Certificates issued by the owner, proving that the Bidder has manufactured at least one (1) successfully operated flat top deck steel floating platform, with displacement of at least 200 tons, solely or as a member of a J/V with a minimum participation interest of fifty percent (50%) in such J/V.

In the case of a J/V, the above minimum experience requirements, should be satisfied at least by the Leader of the J/V.

18.1.10 Management System Certificate according to ISO 9001, or equivalent Certificate, or evidence of equivalent quality assurance standards, as stated in Article 81 of the European Directive 2014/25/EU, in the name of the Bidder or, in case of a J/V, of each of its members.

18.1.11 In case the Bidder relies on and uses the economic and financial or/and technical or/and professional capacity of Other Entities, as per Directive 2014/25/EC, article 79, then within the same deadline, the successful Bidder shall submit electronically, via the System, the documentation referred to in par. 18.1.1, 18.1.2, 18.1.3 herein above, where the term "Bidder" is substituted by the term "Other Entity".

In addition:

- In case the Bidder relies on and uses the economic and financial capacity of Other Entities, the documentation referred to in paragraphs 18.1.7 and 18.1.8 of present article, and
- In case the Bidder relies on and uses the technical or/and professional capacity of Other Entities, the documentation referred to in paragraphs 18.1.6, 18.1.9 and 18.1.10 of present article.

All the above documents (par. 18.1) shall be submitted electronically via the System in .pdf file format.

18.2 Following said unreserved acceptance and submission of the above documents, the successful Bidder, will receive electronically, via the System, a Letter of Award issued by DESFA.

18.3 DESFA reserves the right, after the Letter of Award has been sent and its receipt has been confirmed by the successful Bidder, to request electronically, via the System from the latter to improve its Financial Offer without any amendments to its Technical Offer. Such improvement stays within the successful Bidder's discretion.

The successful Bidder may respond electronically, via the System to DESFA within two (2) working days as from the receipt of said request giving in case of such improvement its

details.

In case of such improvement, Performance Guarantee as stated in Article 9 here above (GUARANTEES) and Contract Agreement shall be adjusted accordingly.

In case that, contrary to above provisions, the successful Bidder improves its Financial Offer with simultaneous amendment(s) to its Technical Offer, said improvement shall be considered as not submitted.

In case that the successful Bidder fails to respond electronically, via the System to DESFA within the aforementioned time limit, DESFA 's request for improvement of the Financial Offer shall be considered as rejected.

18.4 The CONTRACT will be signed as soon as said Bidder submits to DESFA the following documents, which documents in any case should be submitted not later than ten (10) working days from the day of receipt of Letter of Award by the successful Bidder:

A. Minutes of the successful Bidder's (or in case of a J/V from each of its members) Board of Directors, or other competent decision making body of successful Bidder, signed, and stating:

(i) Their decision to accept the CONTRACT award.

(ii) The appointment, by a Power of Attorney, of the Legal Representative(s) who must be authorised to sign the CONTRACT and to act on successful Bidder's behalf during the execution of the CONTRACT.

B. Declaration signed by said Legal Representative(s) accepting the aforementioned Power of Attorney without any conditions or reservations.

C. Performance Guarantee as stated in Article 9 here above (GUARANTEES).

D. In case of a Joint Venture, legal documents proving that the Joint Venture has been formed according to Article 11 stipulations and according to the Law.

All the above documents shall be submitted electronically via the System in a PDF file format and must also be submitted in printed form, within three (3) working days from their electronic submission. The Performance Guarantee shall specifically be submitted in original form.

Upon electronic submission of the above documents, the System shall issue a confirmation of submission thereof, and shall send an informative e-mail to the successful Bidder.

18.5 In case the successful Bidder fails to notify DESFA the unreserved acceptance of DESFA's Letter of Intent within the aforementioned two (2) working days time limit or fails to timely submit the aforementioned documents (18.1.1 – 18.1.11) after DESFA's Letter of Intent within the aforementioned time limit or fails to submit the aforementioned documents (18.4 A-D) after DESFA's Letter of Award, DESFA shall have the right to cancel the award of the CONTRACT to said Bidder, to claim for compensation of damages related to the delays due to such failure of said Bidder and to apply the provisions of article 9.5 herein above.

18.6 In case the successful Bidder is a J/V, the award will be in the name of the J/V. Each member of the J/V will be fully, jointly, indivisibly and severally liable to DESFA and will be represented by a common Representative throughout the validity period of the CONTRACT.

19. TAXES – DUTIES – RETENTIONS - EXCEPTIONS

19.1 The CONTRACT PRICE is subject to retention. In particular, the following items are to be borne by VENDOR and must be included in the Lump Sum Price such as the percentage for general expenses, VENDOR's profit, expenses arising from its general obligations, and any other surcharges provided by Greek Law.

Such surcharges include but are not necessarily limited to:

a. Income tax and withholding tax in Greece as these may be finally assessed by the application of an eventual bilateral agreement.
b. VENDOR's Social Security contributions.
c. All import duties, other taxes and retentions.
d. The Value Added Tax (VAT) as well as all other taxes and any other charges as required to be paid by the VENDOR for the Supply execution.
e. All duties or mandatory contributions to public authorities or institutions.

19.2 It is clarified that only the Value Added Tax (VAT) on the VENDOR's invoices in DESFA's name payable to the Greek Tax Authorities will be paid by DESFA and therefore it is excluded from the CONTRACT PRICE.

20. CONFIDENTIALITY– PERSONAL DATA PROTECTION – ANTICORRUPTION POLICY

20.1 Confidentiality

Any technical information and data furnished by DESFA with the Inquiry Documents shall remain the property of DESFA and shall be treated confidentially and they shall not be used, disclosed or released to any Third Party for any other purposes, other than for preparing the Bids.

In case that any Bidder designates information as confidential, reasoning the existence of technical or trade secrecy, in its relative signed statement submitted in .pdf format, should expressly refer all relative provisions of legislation or competent authority's decisions that imposes the confidentiality of said information.
Information concerning offered quantities and prices, financial offer and the contents of technical offer used for the evaluation are not confidential.

The files that the Bidder wishes to designate as confidential as per the above must be submitted separately in Portable Document Format (PDF) or in the form of a distinct compressed file (e.g. a ZIP file) that includes files in .pdf. Each of these files shall be electronically locked with an electronic key held by the Bidder, which the Bidder shall send via the System to DESFA, right after the opening of the respective envelope. Confidential documents are not accessible by other Bidders via the System.

20.2 Personal Data Protection

DESFA shall process personal data exchanged under the terms of the Tender (hereinafter referred to as "Personal Data"), exclusively for the Tender's purpose, in accordance with the provisions of applicable legislation and today those of Regulation 2016/679/EU (hereinafter "General Regulation").

Personal data shall not be transmitted, disclosed or communicated to third parties, nor shall they be subject to any other processing for purposes other than the purpose of the Tender, except in cases of legal obligation or explicit consent of the data subject.

DESFA has implemented the data protection policy, publicly available on DESFA's site.

20.3 Anticorruption Policy

Participant acknowledges DESFA's Code of Ethics (the "Code"), as published on DESFA's site, which shall be fully applicable to Participants and Participant must comply with the relevant provisions, including conflicts of interest. Participant further acknowledges that DESFA's Anticorruption Policy, as published on DESFA's site, shall be applicable to them and that it shall comply with its provisions. Participant will not violate or knowingly permit anyone to violate these prohibitions on bribery or any applicable anti-corruption laws in performing under these Inquiry Documents.

21. RESERVATIONS AND RIGHTS OF DESFA

21.1 Participation to the Bid shall also constitute an acceptance by the Bidder that it has complete knowledge of the terms and provisions of the Inquiry Documents, as well as the electronic procedure, and that it accepts their contents without reservation.

Any omission to submit the Bid according to the Inquiry Documents as well as the omission of a signature on any document does not entitle the Bidder to invoke this fact in its (Bidder's) favour in any way.

The Bidder shall be responsible for and be bound by its Bid as submitted.

21.2 DESFA will have no responsibility or obligation whatsoever to indemnify and/or to compensate the Bidder for any expense or loss incurred for the preparation and submission of the Bid, in particular, in case the terms and provisions of the Inquiry Documents are changed by DESFA or the Bid is not accepted, or the Inquiry is extended or adjourned or annulled or cancelled at any stage and time and for any reason whatsoever, or in case DESFA takes any decision according to the terms and provisions of the present Inquiry Document. Therefore, participants to the Inquiry which submit a Bid, regardless of whether this is finally accepted or not, have no right against DESFA deriving from the Inquiry or for participating to the Bidding.

21.3 DESFA and the provider of the e-tendering System will have no responsibility or obligation whatsoever to indemnify and/or to compensate the Bidder for any expense or loss incurred that may result from failure or omission relevant to the submission of the Bid via the System, especially in case that DESFA terminates provisionally or extends or defers or suspends or cancels the Inquiry at any phase or time, due to a serious technical failure of the e-tendering System.

DESFA and the provider of the e-tendering System will have no responsibility or obligation whatsoever to indemnify and/or to compensate the Bidder for any expense or loss incurred that may result during acquisition of the necessary infrastructure and capability to submit an electronic bid and for the preparation and submission of the Bid.

21.4 The Bid is considered to be a proposal to DESFA and not an acceptance of it by DESFA. Therefore, the CONTRACT AGREEMENT template and the other Inquiry Documents imply that the Bidders submit their Bid in accordance with the terms and provisions of those documents, which are meant to constitute an integral part of their Bid.

22. LOCAL LAWS AND REGULATIONS

The Bidder must be fully aware of local Laws, Regulations, Decrees, practices and other conditions in Greece, which might affect its Bid and the performance of its obligations.

Failure of the Bidder to become familiar with such matters shall not release it from its obligations.

23. NOT APPLICABLE

24. NOT APPLICABLE

25. CLARIFICATION MEETINGS / DESFA's CLARIFICATION OF BID

If requested by DESFA, Bidders must be prepared for a formal presentation of their Bids as well as for providing necessary clarification to any queries of DESFA supported, if requested, by respective documentation. Meetings may take place probably at DESFA's premises and at any reasonable time between Bid submission and CONTRACT award. Bidders shall make their own arrangements for attending said meetings and bear the associated costs.

Should the intent or meaning of the Bid received appear unclear or ambiguous, DESFA has the right to ask the Bidder for clarifications.

26. BIDDER'S CLARIFICATION REQUESTS

Bidders may request electronically, via the System clarifications regarding the Inquiry Documents at any time up to fifteen (15) days prior to the Bid due date.

DESFA will endeavour to reply, electronically, via the System to the requested clarifications not later than ten (10) days before the Bid due date.

Both requests for clarifications and replies shall be submitted electronically, via the System. The electronic file containing requests for clarifications shall be signed.
Requests/Queries that are submitted by any means other than the above, shall not be taken into consideration.

27. DESFA's AMENDMENTS TO THE INQUIRY

DESFA may issue electronically, via the System, clarifications/amendments in the form of a Bid Addendum at any stage during the Bid period and may extend the time for submission of Bids following the provisions of Directive 2014/25/EU, article 66.

The Bidders shall confirm the inclusion in their Bid of all clarifications/amendments issued prior to receipt of the Bid by DESFA (see Annex 1 – Bid Letter).

For clarifications/ amendments issued by DESFA subsequent to receipt of the Bid, but in any way prior to the Bid due Date, the Bidder shall be responsible for thoroughly examining the Bid documents and incorporating the clarifications/amendments in its Bid. Any failure by the Bidder to comply with the aforesaid clarifications or amendments issued by DESFA, may be a reason for the rejection of its Bid.

28. ATTACHED DOCUMENTS

The following Annexes are attached herein and constitute integral part of present Instructions to Bidders:

Annex 1: FORM OF BID LETTER

Annex 2: FORM OF PARTICIPATION GUARANTEE LETTER

Annex 3: FORM OF STATEMENT

Annex 4: FORM OF SOLEMN DECLARATION

SECTION IV

PRICE & PAYMENT SCHEDULE

PART A

CONTRACT PRICE

1. The Lump Sum Contract Price for Supply offered by VENDOR

Contract Price	Total price (in numbers)	Total price (in words)
Lump Sum Contract Price		

NOTES:

a. In case of ambiguities, the offered Lump Sum Contract Price expressed in words prevails the figure expressed in numbers.

b. The Lump Sum Contract Price quoted hereabove is fixed and firm and not subject to any escalation for any reason whatsoever for the duration of the Contract.

c. The aforementioned Lump Sum Contract Price is considered to be in strict accordance with the Contract Documents.

d. All prices are expressed in Euro.

e. Lump Sum Contract Price includes any cost for the Supply in accordance with the Contract.

f. VAT is NOT included in the Unit Prices.

g. Unless otherwise indicated, the quoted price shall include all costs for containers, packing or crating *for* export according to the Specifications for invoicing, shipping, consigning, packing and marking enclosed.

h. Prices include also, except if otherwise specified, VENDOR'S profit, eventual custom clearance expenses, import duties and any other kind whatsoever of fees, levies etc. if any, related with the import of contractually provided material, equipment etc. in the country of OWNER.

i. Prices are for "DDP" delivery at Revithoussa LNG Terminal, in accordance with INCOTERMS (2020), loading/unloading activities are borne by the VENDOR.

j. Insurance shall be arranged and paid for by the VENDOR, and shall include cover from VENDOR'S premises up to Revithoussa LNG Terminal, comprising Offloading, effected by VENDOR. All special taxes, duties, and any other rates in VENDOR'S country are included in the quoted prices (except for VAT as mentioned above).

PART B

SCHEDULE OF INTERIM PAYMENTS

Schedule for Payments

The Contract Price shall be paid in accordance with the below Schedule of Interim Payments:

(1) **thirty percent (30%)** of Contract Price shall be paid at Contract Signing, upon submission by VENDOR of an Interim Payment Guarantee of an equal amount(1).

(2) **thirty percent (30%)** of Contract Price shall be paid upon the VENDOR placing the order for the corresponding cryogenic raw materials and upon submission of an Interim Payment Guarantee of an equal amount(1).

(3) **ten percent (10%)** of Contract Price shall be paid upon readiness for delivery and the issuance of the corresponding Inspection Release Note by the Third-Party Inspector.

(4) **twenty percent (20%)** of Contract Price shall be paid upon the issuance of the Goods Receipt Notice by the OWNER.

(5) **ten percent (10%)** of Contract Price shall be paid upon Supply Completion Date. In the event, OWNER does not provide a ssLNG carrier, for the commissioning and performance tests, within a period of three (3) months from Goods Receipt Notice, VENDOR shall be entitled to request for the five percent (5%) of the Contract Price, upon submission of an Interim Payment Guarantee of an equal amount(2).
In the event, OWNER does not provide the two (2) ssLNG carriers for the execution of Hands-on training, within a period of twelve (12) months from Goods Receipt Notice, VENDOR shall be entitled to the payment of the remaining five percent (5%) of the Contract Price, however the latter will not be exempted of its obligations to perform the Hands-on training.

Notes:

(1) *The Interim Payment Guarantee(s) of milestone payment (1) and (2) shall be valid until the successful Delivery of the Goods at the Designated Delivery Location.*

(2) *The Interim Payment Guarantee of milestone payment (5) shall be valid until the successful commissioning and performance tests.*

PART C

CONDITIONS FOR SPARE PARTS ORDERS

Conditions for Spare Parts Orders

1.0 GENERAL

VENDOR is requested to submit quotation recommending the spare parts to be purchased by OWNER for two (2) years of normal operation, as well as the capital spares.

Delivery time shall be identified per each item.

VENDOR shall recommend spares for equipment parts that are subject to the following:

- Wear, corrosion or erosion during normal operation.
- Failure that would cause shutdown of the equipment.
- Damage or breakage during routine maintenance or inspection and during installation.

VENDOR is expected to submit the above referred quotation as soon as all orders for the Supply have been placed in accordance with the contractual time schedule.

2.0 APPLICATION

VENDOR is requested to submit the Spare Parts Lists together with applicable spare part drawings (draft spare parts list is herein below attached). VENDOR must also attach a list of all sub-VENDORs complete with addresses, persons to contact, telephone, telefax etc.

2.1 General Instructions

2.1.1 Each tabulation shall indicate:

a) Original equipment/material item identification symbols or descriptions for which the spare parts are recommended.

b) Reference purchase order number or numbers and identification or VENDOR for the above original equipment/material.

c) A description for each recommended spare part.

d) The serial number for the part.

e) The reference assembly drawing or complete parts list for each part.

f) The number or times the identical part occurs in each original equipment item.

g) The unit price of each part.

h) The manufacturer's recommended quantity of each part, considering the number or times the part occurs in each original equipment item and the total number of original equipment items using the part.

2.1.2 In special cases, VENDOR may use Interchangeability Lists showing common spare parts for various items of its original supply and including all above requested information.

2.1.3 VENDOR shall include also all special tools required for field maintenance and repairs.

VENDOR shall advise in writing the availability of special tools for loan or rental.

2.1.4 All spare parts quoted shall be identical to the parts furnished on the original equipment.

2.1.5 Prices have to be calculated on the same basis as the original equipment purchased including packing.

2.1.6 An notification shall be submitted to the OWNER for all the equipment that does not require spare parts.

2.1.7 VENDOR shall take care to complete the Spare Parts Lists correctly by filling in all columns and to stamp, date and sign all copies in the space provided.

2.1.8 Delivery of spare parts and special tools will be required so that they are on hand during the period that the equipment is being installed on Site.

2.1.9 A statement as to whether parts are stock items and if so, where they are stocked shall be indicated in the Spare Parts Lists.

2.2 Specific Instructions

In case of an order the attached Conditions of Spare Parts Order are applicable. VENDOR shall submit those conditions duly signed together with the relevant spare parts offer.

Payment shall be effected 100% of the value of the respective items delivered at Site.

OWNER reserves the right to purchase the approved quantities of spare parts only.

VENDOR's offered prices shall be fixed and not subject to any escalation for an order placement before the expiration of the Contract for any reason whatsoever (i.e. time of placing the order, quantity to be ordered, partial or total deliveries etc.).

The prices of the relevant Order(s) placed as above shall be fixed and valid until the delivery of the relevant spare parts at Site.

DRAFT SPARE PARTS LIST

S.P.L. No (1)

APPROVALS

		OWNER

EQUIPMENT			VENDOR			MANUFACTURER				ITEM		
TYPE			OWNER'S P.O. No.			MANUFACTURER'S ORDER No.				PLANT		
SERIAL No.			VENDOR'S REF. ORDER No.			MANUFACTURER'S DWG No.				PROJECT		
CODE No.	UNIT	SPARE PART'S DESCRIPTION	MANUFACTURER'S CODE No. (2)	MATERIAL TYPE	PART No. SECT. DWG (3)	No. OF PARTS				UNIT PRICE	TOTAL PRICE	DEL. TIME DAYS
						IN USE	RECOMMENDED BY VENDOR	RECOMMENDED BY CONSULTANT	TO BE ORDERED			

NOTES :
(1) This space will be filled in by CONSULTANT/OWNER
(2) Quote catalogue's code or identification No. of VENDOR or manufacturer
(3) If drawing or part No. not available, quote material specification

VENDOR'S SIGNATURE	OWNER'S SIGNATURE

CONDITIONS OF SPARE PARTS ORDERS

Material delivered in error or in excess of the quantity called for will be returned at VENDOR's expense.

Material to be despatched will be packed in such form that total freight charges whether based on cubic measurement of by weight, will be a minimum.

The prices stipulated in the order are firm and valid for the whole duration of the execution of this order. In case that additional part is purchased within that period, original prices are valid.

VENDOR warrants that none of the articles supplied under this order, nor any device or progress embodied therein constitutes or involves an infringement of any existing patent, and the VENDOR will indemnify the Purchaser against all costs, charges, expenses, and damages arising from any claim that use or sale of any of the articles so supplied constitutes or involves any such infringement.

VENDOR warrants that supply and all components thereof will be brand new, of the best quality, in strict compliance with the characteristics, requirements, and specifications stated in order, and free from faulty workmanship and hidden defects.

Period of warranty is agreed to be 24 months after installation of the particular spare part however no longer than 27 months after the last delivery of the spare parts.

VENDOR is obliged to replace or renew any part of Supply because of non-compliance with the requirements and specifications stated in the order or because of any defects or failures covered by the Guarantee period of the same duration as the original one shall apply to the part of supply replaced or renewed.

Renewed or replaced parts will be delivered in the same manner as the original parts purchased.

If VENDOR fails to comply with any of the terms and conditions of the order, the OWNER may cancel the order in part or in its entirety without any obligation for indemnification for the non-execution of the order and / or may proceed with remedial works at VENDOR's expenses and risk.

VENDOR declares that he has examined and agreed with all the above clauses.

For Acceptance

(The VENDOR)

PART D

RATES FOR VENDOR's PROFIT & DISCOUNT

RATES FOR VENDOR's PROFIT AND DISCOUNT

1. In case that, at the OWNER's discretion, the Lump Sum Price Breakdown or rates derived therefrom are not reasonably applicable for a Change then the specific Unit Rates stated in part F "Unit rates for Contract Changes" will be used for the evaluation of a Change according to the contract documents.

   In such a case a Single Discount (F) will be applied as follows:

   (F): [1 - $\frac{Lump\ Sum\ Price}{15.000.000}$]*100 (%)

2. The following percentage rates stated herein below are applicable for preparing or evaluating a Change in case that the Lump Sum Breakdown and rates derived therefrom and the Unit Rates for Contract Changes are not, at the OWNER's discretion, applicable for said Change assessment.

   The specific percentage rates stated herein below will be used for the evaluation of a Change based on the approved Greek Public Works Analytical Prices. The rates found as above (i.e. according to the G.P.W.A.R.), shall be first reduced by the single discount (F) and then increased by the percentage of VENDOR's Profit and General Expenses (E):

   VENDOR's Profit & General Expenses

   (E): Eighteen per cent (18%)

   Single Discount to the Greek Public Works Analytical Prices

   (F): [1 - $\frac{Lump\ Sum\ Price}{15.000.000}$]*100 (%)

3. The following percentage rates are applicable for preparing or evaluating a Change in the case that the Lump Sum Price Breakdown and rates deriving therefrom, the Unit Rates for Changes and the Rates from approved Greek Public Works Analytical Prices are not, at the OWNER's discretion, applicable for said Change assessment. The specific percentage rates stated herein below will be used for the evaluation of a Change based on invoices and other direct cost data. These VENDOR's expenses shall be increased by the percentage of VENDOR's Profit and General Expenses (E), which percentage (E) will have firstly been reduced by the single discount (F):

   VENDOR's Profit & General Expenses

   (E): Eighteen per cent (18%)

   Single Discount to VENDOR'S Profit & General Expenses

   (F): [1 - $\frac{Lump\ Sum\ Price}{15.000.000}$]*100 (%)

<u>General Note for all cases:</u>
In case the applicable Single Discount (F) is calculated below zero, the Single Discount (F) will be set to zero.

PART E

UNIT RATES FOR CONTRACT CHANGES

UNIT RATES APPLICABILITY

The Unit Rates that follow are applicable for preparing or evaluating a Change (positive or negative).

UNIT RATES FOR MANPOWER

A/A	DESCRIPTION	UNIT PRICE (€/hr)
MP.1	Project Manager	65,00
MP.2	Other Managers/Senior Engineer	48,00
MP.3	Engineer	42,00
MP.4	Draftsman	26,00
MP.5	Site Manager	50,00
MP.6	Site Supervising Engineer (Civil, Mechanical, Electrical, Surveyor, QA/QC-HSE, Commercial, Planner).	40,00
MP.7	Foreman	40,00
MP.8	Skilled personnel (pipe layer, pipe fitter, welder, mechanic, isolator, electrical or instrument, radiographer, carpenter, steel bender, blaster rigger etc).	34,00
MP.9	Driver (trucks)	25,00
MP.10	Driver (minibus, passenger car, 4x4 wd car)	20,00
MP.11	Equipment Operator (Bulldozer, Dragline, Grader, Loader Excavator, Crane, Side boom, other heavy equipment)	35,00
MP12.	Equipment Operator (Roller, Wagon Drill, Pile driver, Road rollers etc)	26,00
MP.13	Labour	18,00
MP.14	Helper	20,00
MP.15	Training Expert	300,00

The manpower rates shall be VENDOR's full remuneration for all costs associated with provision of the manpower, personal consumables, instruments tools and personal tools (grinding equipment, oxygen, acetylene, welding rods etc.) to fulfill the obligations and liabilities of VENDOR. Only the actual time as certified by Owner's representative would be paid. These rates shall include, indicatively and by no way of limitation, the following:

Direct Labour Costs

- Allowances, bonuses, premiums, fringe benefits and extra payments for working at weekends or during statutory holidays.
- Costs of holidays with pay and, sickness leave with pay, overtime work
- Long term assignment allowance (accommodation, subsistence etc.)
- Local transport allowance.

Payroll Burden

- Costs of taxes and contributions required by law in Greece, trade union contracts or other regulations relating to payroll.
- Costs of all Social Security costs (EFKA etc.).
- Costs of employee benefits such as health and life insurance, retirement funds, profit sharing schemes and share purchase schemes.

Overhead and Profits

- All costs of VENDOR's personnel and its collaborators/ subVENDORs expended in line with VENDOR's responsibilities.
- All costs of VENDOR's personnel related to residence cost, transportation cost to the site, food expenses.
- All costs associated with advertising, recruitment, employment, introductions, interviews and other pre- and post-employment expenses.
- Cost of insurance required from VENDOR under Contract.
- All costs for obtaining work permits, residence permits and other permits.
- Costs of VENDOR's overhead personnel including management back-up.
- VENDOR's other direct and indirect costs including all contributions to overheads and profits.
- Cost for travel in connection with sickness, injury and compassionate leave or removal.
- VENDOR's own tax burden required by law in Greece.
- Cost for the Office facilities and utility supplies in the Home and Site offices.
- All costs of VENDOR's personnel related to residence cost, transportation cost to the site, food expenses.
- Cost for secretarial, typing expenses, etc. in Home and Site offices.
- Telephone, fax, e-mail, etc. charges in the Home and Site offices.
- Cost for stationary and normal copying supplies in the Home and Site offices.
- Cost for normal postal or courier services.
- Cost for the use of computer hardware and required computer programs (software).
- Cost of business travels (tickets, hotel accommodation).

UNIT RATES FOR EQUIPMENT

The equipment rates include all consumables (petrol, diesel, lubricants, spare parts, etc) maintenance cost, capital cost overheads and profit for the VENDOR and any cost to provide the equipment ready for use at Site (including any transportation cost to the location where the Works are executed) excluding the cost of operators and drivers. Only the actual time of use at site as certified by Owner's representative shall be paid.

2	UNIT RATES FOR EQUIPMENT		
A/A	**DESCRIPTION**	**UNIT**	**UNIT PRICE (€/hr)**
E.1	Crane 12 ton	hr	35,00
E.2	Crane 16 ton	hr	45,00
E.3	Crane 25-40 ton	hr	55,00
E.4	40<Crane<100 ton	hr	100,00
E.5	Pipe Vacuum Machine	hr	18,00
E.6	Truck with Crane	hr	35,00
E.7	Pipe Carrier Truck	hr	45,00
E.8	Truck 8 – 10 ton	hr	25,00
E.9	Truck 15 – 18 ton	hr	40,00
E.10	Truck 35 ton	hr	55,00
E.11	Bulldozer D7	hr	65,00
E.12	Bulldozer D8	hr	75,00
E.13	Bulldozer D9	hr	85,00
E.14	Excavator 0.75 CY	hr	40,00
E.15	Excavator 1.50 CY	hr	54,00
E.16	Excavator 2 CY	hr	67,00
E.17	Grader	hr	55,00
E.18	Loader 0.75 CY	hr	25,00
E.19	Loader 1.75 CY	hr	35,00
E.20	Loader 4.00 CY	hr	55,00
E.21	Mobile Crushing Machine	hr	95,00
E.22	Excavator with Hydraulic Hammer	hr	70,00
E.23	Light Roller Compactor	hr	9,00
E.24	Minibus for personnel transportation	hr	25,00
E.25	4x4 wd car with A/C	hr	10,00
E.26	Passenger car with A/C	hr	8,00
E.27	Side Boom (Heavy loads)	hr	78,00
E.28	Side Boom (Medium loads)	hr	66,00
E.29	Pipe facing Machine	hr	15,00

2	UNIT RATES FOR EQUIPMENT		
E.30	Cutting and Bevelling Machine 14''/10''	hr	4,00
E.31	Cutting and Bevelling Machine 20"/30"	hr	6,00
E.32	Bevelling Machine 20"/30"	hr	4,00
E.33	Internal clamp 14''/10''	hr	12,00
E.34	Internal Clamp 30"/20"	hr	16,00
E.35	Welding Unit 4 positions	hr	60,00
E.36	Welding Unit 2 positions	hr	30,00
E.37	Electric Welding Unit 30 Amp.	hr	6,00
E.38	Holiday Detector	hr	4,00
E.39	Site Bending Machine 14"/10"	hr	70,00
E.40	Site Bending Machine 20"/30"	hr	90,00
E.41	Hydraulic Lifter (CLARK)	hr	15,00
E.42	Generator 30 KW	hr	12,00
E.43	Generator 60 KW	hr	18,00
E.44	Generator 100 KW	hr	30,00
E.45	Generator 315 KW	hr	60,00
E.46	Low Loader 40 ton	hr	20,00
E.47	Low Loader 60 ton	hr	30,00
E.48	Low Loader 80 ton	hr	38,00
E.49	Backhoe loader JCB 100 hp	hr	30,00
E.50	Tow Truck	hr	25,00
E.51	Tow Tractor	hr	25,00
E.52	Dragline 1 CY	hr	65,00
E.53	Dragline 1.5 CY	hr	78,00
E.54	Barge Excavator	hr	55,00
E.55	Road roller 2 ton	hr	13,00
E.56	Road roller 6 ton	hr	20,00
E.57	Road roller 12 ton	hr	30,00
E.58	Air compressor 160 CFM	hr	23,00
E.59	Air compressor 250 CFM	hr	32,00
E.60	Air compressor 600 CFM	hr	42,00
E.61	Wagon drill pneumatic	hr	40,00
E.62	Rock Wagon drill	hr	70,00
E.63	Concrete mixer Truck 8 m^3	hr	55,00
E.64	Pile driver, (steel sheet piles)	hr	55,00

2	UNIT RATES FOR EQUIPMENT		
E.65	Hydrotesting Laboratory	hr	42,00
E.66	Water Pressuring Unit 20lt/sec – 200 barg	hr	26,00
E.67	Water Filling unit 300m^3/h – 14 barg	hr	32,00
E.68	Water Squeeze Pump 20 lt/sec – 160 barg	hr	26,00
E.69	Portable Generator 3.2 KW	hr	5,00
E.70	Portable Generator 5 KW	hr	7,00
E.71	Portable Generator 12 KW	hr	9,50
E.72	Induction Heater Unit	hr	44,00

SECTION VI

DELIVERY SCHEDULE & TERMS

INQUIRY No: 1059/25

DELIVERY SCHEDULE

The Delivery Schedule to be kept by the VENDOR, unless otherwise agreed, is:

The **Goods** shall be "Ready for Delivery" within twelve (12) months from the Commencement Date.

The **Goods Receipt Notice** shall not be later than **fourteen (14) months** from the Commencement Date upon successful installation and pre-commissioning of the floating platform system. **(*)**

The **Supply Completion Date** shall be achieved at:

a) successful commissioning and performance test of the floating platform system on a ssLNG carrier available for loading**(*)**, provided by OWNER within a period of three (3) months from Goods Receipt Notice and upon a fifteen (15) days prior notification to the VENDOR. Upon lapse of the three (3) months period, the notification period shall be at least thirty (30) days prior to the execution of commissioning and performance tests, and

b) successful completion of Hands-on training during the two (2) ssLNG carriers available one by one for loading, provided by OWNER within a period of twelve (12) months from Goods Receipt Notice and upon a thirty (30) days prior notification to the VENDOR.

DELIVERY TERMS

The **Goods** shall be delivered "**DDP**" to Revithoussa LNG Terminal in Greece (Designated Delivery Location), in accordance with INCOTERMS (2020), (including all loading/unloading activities), according to OWNER's instructions to be given prior to shipment.

***Notes**:*

- Warranty period shall last 24 months from successful completion of commissioning & performance tests, but shall in all cases expire no later than 27 months from Goods Receipt Notice, except if prolonged due to the responsibility/default of the VENDOR.

- Risk of Loss or Damage shall pass to OWNER, upon issuance of the Goods Receipt Notice.

- Title of Goods shall pass to OWNER, upon Delivery of the Goods at Designated Delivery Location.

(*) *Under penalty milestone.*

04	04-apr-2025	Issue for approval	HAM	HBR	GDM
03	28-mar-2025	Issue for approval	HAM	HBR	GDM
02	18-Mar-2025	Issue for approval	HAM	HBR	GDM
01	28-feb-2025	Issue for approval	HAM	HBR	GDM
00	21/04/2023	Issue for review	MGL	HBE	GDM
Rev.	Date DD / MM / YY	Description of revision	Prepared by	Checked by	Approved by

Client :

HELLENIC GAS TRANSMISSION SYSTEM OPERATOR (DESFA S.A.)

Engineer :

SOFREGAZ SAS
52, quai de Dion Bouton – 92800 Puteaux Cedex – France

Subcontractor :

ROGAN ASSOCIATES
5 Chatzigianni Mexi St. – 11528, Athens – Greece

Project Name :

SUPPLY OF JETTY-LESS SYSTEM DEDICATED TO THE FILLING OF LNG CARRIER

Client's Contract number :	W.B.S. :	Project ID::	Format
S60001613	**Xxxx**	**DSF-11-019-09**	**A4**

Engineer's document identification :

CC2309-C-Z-MR-SGZ-000001

Document Title :

MATERIAL REQUISITION OF THE JETTY LESS SYSTEM

Client's document No. :	Rev.	Page
DSF-11-019-09-S60001613-GEN-MEC-REQ-001	**04**	**1 of 36**

CONTENTS

1 INTRODUCTION

1.1 PURPOSE OF THE PROJECT

DESFA is willing to diversify its offer by providing bunkering services for small LNGC from 1,000 to 30,000 m^3. In order to allow fast development of this Project and taking into consideration all geotechnical constrain, DESFA has decided to implement a Jetty-Less solution to perform these operations.

The Jetty-Less solution is predicted to be located at the North East of the island where the Quay Wall project was predicted.

The purpose of the Project is to prepare Technical RFQ for the supply of the Jetty-Less system.

1.2 PURPOSE OF THE DOCUMENT

The purpose of this document is to define the Supply of the JETTY LESS SYSTEM (JLS)

1.3 PURPOSE OF THE REVISION

- The purpose of the Revision '00' is ''Issued for Review''.
- The purpose of the Revision '01' is ''Issued for Approval''.
- The purpose of the Revision '02' is ''Issued for Approval''.
- The purpose of the Revision '03' is ''Issued for Approval''.
- The purpose of the Revision '04' is ''Issued for Approval''.

2 INPUTS AND REFERENCES

2.1 PROJECT DOCUMENT

• DSF-11-019-09-S60001613-SPC-MEC-101	Technical Specification of the Jetty Less System
• DSF-1500401-E20013905-GEN-PRS-PHL-001	Design Basis
• DSF-11-019-09-S60001613-GEN-PRJ-REP-001	Preliminary Mooring Analysis Report
• DSF-11-019-09-S60001613-GEN-PRJ-REP-002	Preliminary Navigation Simulation Report
• DSF-11-019-09-S60001613-GEN-01-1-001	General Arrangement Drawing of the Marine Infrastructures
• DSF-11-019-09-S60001613-GEN-PRS-DAT-001	Process Duty Specification of Jetty Less System

2.2 OTHER PROJECT DOCUMENT

• DSF-11-019-02-786-GEN-ELE-PHL-001	Electrical design philosophy
• DSF-11-019-02-786-SPC-INS-101	Specification for instrumentation in package unit
• DSF-11-019-02-786-SPC-INS-118	Automatic on/off valve (globe/ball cryogenic) specification
• DSF-11-019-02-786-SPC-INS-124	Instrument Cables Specification
• DSF-11-019-02-786-SPC-INS-201	Instrumentation General Specification
• DSF-11-019-02-786-SPC-PIP-102	Insulation General Specification
• DSF-11-019-02-786-SPC-PIP-103	Painting General Specification
• DSF-11-019-02-786-SPC-PIP-101	Specification-Piping Material Classes

2.3 GENERAL DOCUMENT

• 3.LNG-500/4	Steel pipes

NOTES:

All other document who is listed inside those lists here above are available at last revision on the date of order.

VENDOR has to request missing document in order to prepare his offer.

3 TERMS AND DEFINITION

3.1 DEFINITION OF TERMS

- PROJECT — Supply of jetty-less system (Floating Platform System for the Loading/Unloading of SSLNG Carriers at Revithoussa Terminal)
- COMPANY — Hellenic gas transmission system operator (DESFA S.A.)
- CONTRACTOR — SOFREGAZ
- VENDOR — Any person, firm or business which design, manufacture or supply material, equipment and services.
- SUBCONTRACTOR — Any third party contracted by CONTRACTOR to perform specific parts of the contract.
- JETTY LESS SYSTEM (or JLS)
  By definition, the JETTY LESS SYSTEM intends to replace a formal Jetty or quaywall where LNG Vessels can be physically moored.

3.2 ABBREVIATIONS

- AD — at delivery
- AF — after factory test
- AO — after order
- AS — after site test
- BD — before delivery
- BT — before test

4 MATERIAL REQUISITION OF THE JETTY LESS SYSTEM (FLOATING PLATFORM SYSTEM)

JETTY LESS SYSTEM (or JLS) is the full and complete system to be provided with the purpose of transferring LNG from Tie-In point located on-shore to the visiting LNG Vessel including all equipment, piping, structural, instrumentation, electrical, utilities, accessories required for a safe operation of the transfer.

JETTY LESS SYSTEM is composed of the following main sub-system:

- « Floating Jetty » consist in all elements, floating or semi-submersible that connect the On-Shore Tie-In Points to the visiting LNG Carrier for the purpose of LNG Reloading. Include also on top all equipment for the LNG/NG transfer system rigid pipes, valves, safety means, instruments, electrical, utilities, accessories necessary for a safe operation of the LNG transfer.
- Connection between "Floating Jetty" and LNG Carrier.
  Include LNG/NG Transfer system typically made of flexible hoses, as well as Ship-to-Shore connection for communication.
  It include also accessories such as Saddle, T-Branch, Y-pieces, Reducer… to adjust LNG/NG Connection of the different LNG Vessels.
- Connection between "Floating Jetty" and Tie-In point located On-Shore.
  Include LNG/NG Transfer system, any other connection for communication, electrical power, safety means, utilities necessary for the operation of the JLS.
  It includes also accessories such as Support, Saddle, for the LNG/NG transfer system.

4.1 LIST OF SCOPE OF SUPPY – SERVICES – WORKS

The scope of supply under this order shall include the following, as a minimum:

Line.	ITEM	DESIGNATION	QUANTITY	
			Unit	Set
1	Later	Detailed Design, Procurement, manufacturing, painting, coating, inspection & testing, packing, supply and material certificates of JLS Package as specified in this requisition and as defined in the Technical Specification of the Jetty Less System N°DSF-11-19-09-S60001613-SPC-MEC-101 and any reference documentation listed in section-2. It shall include:	1	
		- a floating jetty		1 set
		- connection between floating jetty and LNG carrier		1 set
		- connection between floating jetty and tie-in point located onshore		1 set
1.1		Engineering and final documentation (refer to section 4.3 of this material requisition and section 5.9 of the technical specification: documents to be submitted by the VENDOR)		1 set
1.2		Inspection and Factory tests as defined in specifications		1 set

		Hydrotest, leak test, run test…		
1.3		Test and material certificate as required in the material requisition of the JLS		1 set
1.4		Classification society (IACS) approval certificate		1 set
1.5		Packing and marking as per contract requirement		1 set
1.6		Special tools for erection and maintenance (if required)		1 set
1.7		Spare parts for erection, commissioning and start-up		1 set
1.8		Site installation, pre-commissioning, site acceptance test (SAT)		1 set
1.9		Commissioning, loading of ssLNGC, performance test, (1st ssLNGC loading).		1 set
2.0		Training (on site and in class of operators to JLS before 1st ssLNG loading, during 1st unloading on site training will be provided), [Appendix 1/ A.19].		1 set
2.1		Hands on training of operators (for the 2nd and 3rd ssLNGC loading), [Appendix 1 /A.19].		1 set

4.2 TECHNICAL REQUIREMENT

JLS package shall be designed, fabricated, inspected, tested, marked and supplied in accordance with the JLS specifications and reference project documents stated in this requisition and referenced documents.

Material Certificates according to EN 10204 or ISO 10474 type 3.1 shall be supplied by the Manufacturer for the main pressure components.

Compliance with requirements of NFPA 59A shall be applied for all the production, storage and handling of LNG.

Cryogenic hoses should be designed based on the standards and regulations EN 1474-2 and EN 1474-3.

Cryogenic hoses should be EN 1474-2&3 certified.

A kick-off meeting shall be held to align with the technical requirements seven (07) days after the PO placement. Weekly and Monthly Progress reports to be submitted as per agreed cut-off date.

The JLS system shall be designed in accordance with recognized rules and standards acceptable to the Classification Society.

The JLS system shall be class-approved by a classification society.

Vendor shall provide the Classification society (IACS) approval certificate.

IACS: International Association Classification Society

4.3 DOCUMENTS TO BE SUBMITTED BY THE VENDOR

4.3.1 Language

All documents shall be in English language.

4.3.2 Media type and quantity

All documents shall be native file and electronic copy PDF file except 3D model which shall be native file. Monthly progress report will be electronic copy PDF file.

4.3.3 Documents to be submitted by the VENDOR

The purpose of this list on next page is to mention the information that COMPANY intent to receive during project execution.

Deliverable document list with delivery time to be supplied by VENDOR after Purchase Order shall be agreed after order.

Note : Column "Payment" Means document that can be subject to a term of payment.

Review by Contractor shall mean that Contractor will retrieve data for its design and will check the document for interface data. Supplier shall not start fabrication until Contractor has acknowledged such review and possible comments have been incorporated. Documents submitted "For Review and comment" will be returned within ten (10) working days.
Any document returned to Supplier for revision shall be re-submitted within seven (07) working days complete with revisions clearly flagged by a triangle showing the latest revisions.

Document confirming VENDORS' readiness and intention readiness and intention to enter into long-term supply and maintenance/service contracts (spare parts supply services, engineering services, installation, maintenance, etc.) (if applicable), shall be provided by VENDOR.

4.3.4 Final documentation

The VENDOR shall compile all the documents in data book.

All prints of Supplier's documents shall indicate:

- That all revisions previously requested by Contractor are included,
- That the documents are certified final and that all dimensions and material specifications are identical to those of the Goods delivered by Supplier,
- That no further changes shall be made without Contractors approval.

4.3.5 Documentation

Discipline and number	Document	with bid	After Order	Final Documentation	payment	Delivery time (weeks)
A1	List of VENDOR's references	X				
A2	List of drawings and documents	X	X	X		2 AO
A3	Completed data sheets	X	X	X	X	6 AO
A4	Characteristic curves	X	X	X	X	6 AO
A5	Calculation notes		X	X		6 AO
A6	General Arrangement drawings (GAD) with envelopes	X	X	X	X	6 AO
A7	Sectional views with index and materials		X	X	X	6 AO
A8	Foundation guide drawing (if necessary)		X	X	X	8 AO
A9	Electrical book		X	X		12 AO
A10	List of instruments, Wiring drawing, loop drawing		X	X		12 AO
A11	Logic flowsheets/interlocking		X	X		12 AO
A12	Availability/SIL calculation note		X	X		
A13	Layout diagram		X	X	X	12 AO
A14	List of Inputs/Outputs/alarms/trip setting point		X	X		12 AO
A15	Functional description (process description, control and protection, process philosophy, operation, safety logics, narrative)	X	X	X		12 AO
A16	List of special assembly and maintenance tools	X	X	X		20 AO
A17	Installation, and operating manual (IOM),		X	X		AD
A18	List & calculation note of utility consumptions	X	X	X	X	12 AO
A19	Training program	X	X	X		1 BD
A20	List of recommended spare parts for commissioning, start up and two years operation, with all necessary references.	X	X	X		12 AO
A21	Name Plates drawing		X	X		6 AO
A22	Piping and Instrument Diagrams (P&ID), Operating principle, with description of main safety interlocks	X	X	X		6 AO
A23	Hook-up drawing for instrument		X	X		12 AO
A24	JLS design drawings and materials (and all the package 3D model native file)	X	X	X	X	6 AO
A25	List of loose items		X	X		6 AO
A26	Cause and effect matrix		X	X		6 AO
A27	Memory map table		X	X		12 AO
A28	IS loop calculation		X	X		12 AO
~~A29~~	~~List and detailed description of any exceptions to this requisition or specification~~	~~X~~	~~X~~	~~X~~		
A30	Manufacture and Delivery Schedule	X	X			2 AO
A31	Progress report (every month)		X			AO
A32	Noise source data sheet		X	X		6 AO
A33	Hydraulic Calculation Note	X	X	X		
A34	Inert, purge and drain Philosophy	X	X	X		
A35	Carrier loading procedure through the Jetty less	X	X	X		
A36	Sub-Vendors List	X	X	X		
A37	Manufacturer certification/ licenses	X	X	X		

Discipline and number	Document		with bid	After Order	Final Documentation	payment	Delivery time (weeks)
A38	N/A						
A39	Preliminary Mooring Design and manoeuvring description		X	X	X		
A40	Mooring design and manoeuvring description			X	X	X	
B1	Inspection and test plan (ITP)		X	X	X		2 AO
B2	Welding data book	Procedures and welders qualification		X	X		4 AO
		Final data book			X		1 AF
B3	Procedures (to submit to controller if needed)			X	X		4 BT
B4	Performance test procedure (FAT & IFAT)			X	X		4 BT
B5	Data book				X		1 AF
B6	Packing lists handling, transport & storage instructions			X	X		1 BD
B7	Local Certifications, Marine Certificate				X		4 BD
B8	Site Acceptance Test report (SAT)				X		1 AS
B9	List of materials			X	X		
B10	Material Certificates (Material test certificates, Manufacturing certificates of conformity, Mil certificates…)			X	X		
B11	Document Package for transportation service			X	X		

4.3.6 Electronic File Requirements

The supplier's obligation shall be fulfilled only upon submittal of one electronic file of the latest revision of each certified and record document as indicated in the vendor drawing & data requirement form.

The filename for each document shall be the document number for each respective document. The electronic handover format for data and documents is as follows:

Document Type	:	Electronic File
CAD Drawings	:	AUTOCAD
Word Processing	:	Microsoft Word
Spread Sheets	:	Microsoft Excel

5 DELIVERY

Supplier shall be responsible for all activities for transportation and safe delivery of materials at the delivery location. Any damage incurred during transport shall be to supplier's account.

6 STORAGE

The manufacturer shall be responsible for the storage of finished goods before dispatch at his work, or parts thereof, for the full period at manufacturer or sub-manufacturer's work.

All items shall be properly preserved and stored to comply with the requirements of Preservation and Storage Procedure

7 PACKING FOR SHIPMENT

The JLS package shall be protected against damage and corrosion during transport and storage.
Packaging and shipping shall be as per provided specification JLS package.

8 GUARANTEES

Vendor shall guarantee the following equipment performance:

- Design Life of 25 years, (*VENDOR shall provide a list of major components that will need to be replaced eventually)*.
- The design LNG loading flowrate of 2,000 m3/h and the allowable friction pressure drop @ 2,000 m3/h between interface points TP-311 and TP-313 of 2.5 bars maximum.
- The design NG Vapor Return of 4,100 Am^3/h @ ship flange, with the following operating conditions: 0.4 barg & -128.8°C. The allowable friction pressure drop @ 4,100 Am^3/h between interface points TP-312 and TP-314 is 0.145 bars maximum.
- The differential of temperature between interface points TP-311 and TP-313, which shall be less than 0.5°C for the whole range of LNG loading flowrate (200 to 2000 m^3/h).
- The turndown LNG loading flowrate of 200 m3/h.
- The weight mentioned at the bid with a tolerance of + 0% / - 10%.
- Pressure drop across the entire JLS System (from Tie-in point to Ship Manifold),
- Utility consumption.

Vendor shall specify the operations during site works at which Vendor's representative presence is required to guarantee the items listed above

It is understood and agreed that if the stated performances are not achieved, the Vendor shall, at his own care and expenses, make the necessary modifications or replacement in the supply to enable the guaranteed performances to be achieved.

9 SPARE PARTS REQUIREMENTS

9.1 SPARE PARTS FOR 2 YEARS OPERATION AND CAPITAL SPARE PARTS

Vendor shall prepare itemized and priced list of the spare parts he recommends keeping in stock to enable the equipment continuous operation for a two year's period. This list shall be submitted for COMPANY's approval, after Purchase Order award for package.

This list shall include both the spare parts necessary to perform the scheduled preventive maintenance tasks and those required to undertake corrective interventions.

APPENDIX 1. DICTIONARY FOR MATERIAL REQUISITION

A : ENGINEERING DOCUMENTS

- A1 : List of SUPPLIER's references
  - List of SUPPLIER's references for similar supplies, date of supply, plant site, similar working conditions.
- A2 : List of drawings and documents
  - List of drawings and documents by item n° and SUPPLIER n° along, with their submission date according to calendar week beginning with the date of entry into effect of the command.
- A3 : Completed data sheets
  - Fill out SOFREGAZ data sheet wherever indicated "to be specified by SUPPLIER" (indicate any divergence with proposed formula) or SUPPLIER's data sheet.
  - System hardware list Indicating MANUFACTURER, origin and description of main characteristics (memory size, disk capacity, processing capacity, etc.).
  - Data sheet for vibration monitoring system.
  - Quality of the fluid (steam, etc).
- A4 : Characteristic curves
  - Equipment's rated characteristic and performance curves (motor, pump, etc).
- A5 : Calculation notes
  - Calculation notes issued prior to manufacture. In particular calculation notes for pressure vessels and mechanical and anchor bolt and pressure relief Safety valves.
  - Characteristics of the calculation software used by the supplier.
  - Special studies: Seismic, Torsional, lateral, Acoustical, Stress Analysis.
  - Flexibility calculation note.
  - Hydraulic calculation note
- A6 : General Arrangement Drawings (GAD)

  It SHALL show, for all subassembly:
  - overall dimensions, dry and operating weights, fixing / mounting sizes,
  - location of lifting lugs, shipping splits and identify items to be removed after shipping,
  - installation / maintenance removal free space envelopes,
  - overall centre of gravity, layout, location of axes of rotation,
  - external hydraulic tubing and fitting locations, piping and location of piping components, valves and instruments,
  - a table of external piping nozzle /flange with number termination points identifying nozzle/flange type, flange size, duty and rating, stating allowable maximum loads and moments in three dimensions along x, y, and z dimensions in each case,
  - location, identification and description of all connection cross-reference to subassembly and detailed drawings,

- drawings of auxiliary supplies linked to main supply (pumps, relief valves, filters, etc.),
- drawing to show physical arrangement of complete as supplied package/equipment and all components,
- terminal box locations,
- location dimensions from a datum point to all external piping flange connections,
- precise details of supply components enabling verification of conformity, approval based on drawings and follow-up of future maintenance operations,
- all tag numbers, instrument numbers and valve numbers SHALL be identified,
- table to identify component part identifier and description,
- package North direction arrow,
- earth connection pad.

- A7 : Sectional views with index and materials

  It SHALL show for all subassembly:

  - sectional views of each equipment item listing all components thereof and indicating the materials according to ASTM standards or to another standard with indicating of ASTM equivalence,
  - drawings are not dimensioned but do indicate the clearances and tolerances,
  - annotation with equipment item numbers that can be cross referenced to the Bill of Materials (equipment, concrete, framework, etc.).

- A8 : Foundation detailed drawings

  Provide:

  - maximum foundation loads (static and dynamic), including vertical, shear and moment at each support point for shutdown, normal operation, transportation and test conditions,
  - or drafting support and foundation study,
  - or equipment drawing defining civil works or support structure interface as well as type of chassis, quantities and sizes of anchoring bolts, levelling means, wedging, alignment marks, for making level and flat,
  - or provide a guiding foundation plan identifying details of holding down bolts and anchor bolt hole locations,
  - or full details of welded support connections.

- A9 : Electrical book

  - Power connections drawings,
  - Terminal blocks drawings for external and internal bonding between various packages,
  - Wiring and connecting diagram for the various circuits (power, instrumentation, earthing…) and cable trays,
  - Heat losses of the various equipment,
  - Diagram indicating power distribution priority levels,
  - Automatic system diagram indicating interconnections,

- Lightning protection system,
- Description of lighting devices with intensity distribution curves,
- Detail each connection within the package to ensure the continuity of earthing and show any internal earthing arrangements (earth bars, etc…),
- List of cable with characteristics (cross-section, length, type, etc.) for electric connections between various packages,
- Cubicle by cubicle list of all equipment used, with, for each, MANUFACTURER's name, catalogue reference, function, and main characteristics if available,
- Overall dimensions, panels, metal work, etc. Detailed dimensional and function drawing of equipment, Showing the circuits and symbols to be show on the panel, signal lamps, push-buttons, etc,
- Automatic system diagram indicating interconnections,
- Detailed dimensional and function drawing of equipment panel,
- Component installation drawing (inside cubicle or panel). Example: installation drawing for the various elements contained in the cubicle (transformer, circuit-breaker, terminals etc.),
- Location of cable entries and size of cable entry threads, locations and size of earth connections.

• A10 : List of instruments

- List of supply-related instruments.

• A11 : Logic flowsheets/interlocking

- Automatic system's diagram, using IEC 60617 / NF C 03 symbols and specifying interactions of interlockings.

• A12 : Availability/SIL calculation note

- Used to determine the overall availability of a system or of each of its subassemblies according to redundancies used and characteristics such as the MTBF and/or MTTR of the various equipment.

• A13 : Layout diagram

- Diagram showing geographic layout of the circuit as well as of components included in a group.
- Show diagrammatic routing and location of piping components, valves and instruments. Piping anchors to be indicated. Termination Point numbers to be identified and/or nozzle/flange numbers. All tag numbers, instrument numbers and valve numbers to be identified.
- Table to be provided per drawing identifying component part identifier, description and materials. Package North direction arrow to be provided.

• A14 : List of Inputs / Outputs / alarms / trip setting point

- List of analogic and serial signals entering/exiting an automatic system.
- List of alarm and trip setting points.

• A15 : Functional analysis

- This text defines the analysis procedure employed, when implementing an application, to break the processing into phases which are linked to modules whose

data, functioning and results are formally described.

- A16 : List of special assembly and maintenance tools
  - List of special tools needed for installation and maintenance of field equipment.
- A17 : Installation and operating manual (IOM)
  - Procedure defining the obligations of the various parties involved during the handling, transport and intermediate storage in order to preserve the integrity and good condition of the various items.
  - Procedure defining the obligations of the final storer to ensure the good preservation of the various materials under the climatic and warehouse conditions prevailing at the storage site.
  - Required worksite equipment (erection cranes, scaffolding and miscellaneous articles for welding, painting etc.).
  - Instructions for system's operation for equipment installation and erection, pre-commissioning, commissioning and start-up.
  - SAT/site Integration test procedure.
  - The Manual SHALL provide for all possible operating conditions, emergency, shutdown, and also include a trouble shooting and fault analysis schedule.
  - Description of maintenance, repair with spare parts identification.
  - Maintenance instructions SHALL include the recommended frequency of maintenance operations.
  - Precautionary measures to be employed by an operator during interventions.
  - If equipment is in hazardous area a special risks analysis shall be included.
  - Supply drawings after assembly of elementary components and of the full set of structures along with component identification (with Alignment diagram, etc.).
  - List of consumable lubricants during operation (oil, grease, sump capacities, change intervals, etc.) with greasing and lubrication operations schedule.
  - Step-by-step computer system programming instructions for an operator who is not the system's designer.
  - List of test and maintenance means (Programming console, portable micro-console etc.).
  - System software list: Indicating SUPPLIER, publisher, origin of delivered version and types of licence rights included or not in the supply with comments (cross-referencing; notes).
- A18: List of utility consumptions
  - Pressure, temperature, etc. required by SUPPLIER.
  - Electrical power, instrument air, liquid and gaseous fuels, water, nitrogen, oil, grease....
  - State utilities needed for all normal, peak and emergency operation, fully describing circumstances of each i.e. continuous, intermittent, etc.
- A19 : Training program
  - The SUPPLIER SHALL provide comprehensive training for the EMPLOYER's operating, maintenance and supervisory and management personnel to enable them

to efficiently operate, inspect and maintain the Facility.

- The training programme SHALL be system based and structured around a training manual, and SUPPLIER documentation which SHALL provide a comprehensive understanding of the design and functionality of the Facility.
- The training programme SHALL include at least on site and in class training of operators to JLS: movable system, connection/disconnection with ssLNGC, equipment, systems/subsystems, remote control, Cause &Effect logic, procedures for safe cooling, loading, drain, holding mode, automation, Emergency Shut Down, emergency release , ship shore link, FGS means, emergency actions, preventive-inspection maintenance procedures, any other issue critical for the operation and maintenance of the JLS.
- Hands on training of operators SHALL include at least on the job training, assistance and evaluation (lesson learned) of all operations/maintenance procedures (at least as referred above). The minimum number of vendor personnel present on-site for hands-on training shall be at least two (2): one (1) qualified operation engineer, one (1) qualified instrumentation, control, and automation engineer.

- A20 : Spare parts list
  - Unpriced list of recommended spare parts for commissioning, start up and two years operation, with all necessary references.
- A21 : Name Plates drawing
  - Detailed equipment name, number, design / operating conditions, tag number, SUPPLIER'S name, Inspection Authority, etc.
  - Where equipment is covered by design codes, the minimum nameplates details of those codes SHALL be included.
- A22 : Piping and Instrument Diagrams (P&ID)
  - Show schematic routing and sizes of all piping, tubing, hydraulic equipment, valves, instruments, etc.
  - State instrument control functions, ranges and set points.
  - Provide in table format for each, summary design information for all main tagged items.
  - Provide item numbers for all main equipment items which can be cross referenced to the Bill of Materials.
- A23 : Hook-up drawing for instrument
  - Show routing of all cable tray/racking & cabling routes complete with cable numbers, locations of instruments/junction boxes/control panels within the package.
  - Pneumatic, hydraulic & process hook-ups listing all relevant tubing & fittings quantities & material for each installation.
- A24 : 3D Model (original)
  - A computer file that defines the equipment with its external dimensions and installation / maintenance removal free space envelopes and its inlets and outlets.
- A25 : List of loose items
  - List of equipment and components as loose items.
- A26 : Cause and effect matrix

- Matrix showing the logic requirement of the process control system (causes of activation of process trips and their effects).

- A27 : Memory map table
  - List of variables for data exchange.
- A28 : IS loop calculation
  - Design calculation for intrinsic safety loop.
- ~~A29 : List of exceptions to specifications~~
  - ~~Exceptions that SUPPLIER SHALL justify with evidence (impossible, out of delay, etc.).~~
- A30 : Production Plan (schedule)
  - Schedule of SUPPLIER's tasks, regarding engineering, procurement, construction and test phases with critical path and milestones. It SHALL be updated, as necessary during the contract.
- A31 : Progress report
  - Document that explains in detail how the SUPPLIER far is gone towards the completion of the production plan. It outlines the activities of the SUPPLIER have been carried out, the tasks that have been completed, and the milestones that have been reached vis-à-vis the production plan.
- A32 : Noise source data sheet
  - Predictive level of noise at different frequency at 1 meter for the equipment.

B : Quality Documents

- B1 : Inspection and test plan (ITP)
  - List of manufacture, check and test operations including intervention sequence including list of procedures applicable and reports to the supply.
- B2 : Welding data book
  - Book containing Welding Procedures Specifications (WPS) and Welding Procedure Qualifications Records (WPQR) applicable to the manufacture of the supply and List of welders assigned to the supply's manufacture with performance qualification records attached there to.
  - Detailed manufacturing drawings highlighting the welds and including the type of preparation employed for welded assemblies (bevel angle, spacing between edges, root face, etc.).
  - Document defining the heat treatment of welded assemblies (equipment, heat cycles etc.).
  - Traceability document including at least, unless otherwise stipulated, the types of inspections performed on the assembly, Records of welded assemblies' heat treatment cycle.
  - Certificates for welding filler products (electrodes, wires, wire/flux couple) used in the supply that includes identification and characteristics of the products used with reference to a standard.
- B3 : Procedures (to submit to controller if needed)

- Defining the means, practice and criteria in:
  - visual inspection of assemblies or of equipment at a given stage of the manufacture (welding, check of surface condition, etc.),
  - radiographic inspection,
  - ultrasonic inspection,
  - dye-penetrant inspection (with product employed and practice),
  - magnetic particle inspection,
  - other (to be specified) inspection,
  - determining the chemical composition of the materials,
  - defining the hydrostatic test,
  - the supply's cleaning and drying,
  - the descaling and passivation,
  - the blanketing,
  - describing insulation work related methods and steps,
- Defining permissible residual rotor unbalances, balancing method (static or dynamic, global or step-by-step...) balancing machines with speeds used, and correction methods showing concentricity / shaft run-out values and dynamic balance achieved for a rotating component or assembly,
- For Blasting, painting, electroplating and coating procedure, defining the type of products used, application and checking conditions as well as associated criteria,
- List of production samples (type, sample taking drawings, periodicity, tests and criteria),
- If special requirements or tests are stipulated, the procedure has to describe the implementation methods,
- Leaking test procedure,
- Bar-Over Test procedure,
- Painting, electroplating and coating inspection procedure,
- Hydraulic flushing test procedure.

• <u>B4 : Performance test procedures (FAT & IFAT)</u>

- Performance /functional test procedure appropriate to equipment and utility system (for example: cooling console, ignition panel, HPU,…) describing: test bench layout, test equipment and instruments employed, listing applicable documents and defining test program, parameters measured, measurement accuracy, guaranteed values and allowable,
- Test procedure tolerances,
- Document to include step-by-step procedural narrative of actions to be undertaken,
- The narrative to reference all tag, valve and instrument numbers in the description,
- All valve start positions to be identified. All acceptance criteria SHALL be identified,
- A blank test sheet will be attached.

• <u>B5 : Data book</u>

- List of the certified NDT inspectors involved in the supply's inspection with their level.
- Records of:
  - non-destructive and destructive test results on production test specimens,
  - visual inspection results. Report to verify all critical dimensions,
  - the dimensions of the equipment,
  - radiographic inspection results,
  - ultrasonic inspection results,
  - dye-penetrant inspection results,
  - magnetic particle inspection results,
  - other inspection results (to be specified),
  - NDT inspectors' certifications,
  - traceability schedule: Sketches or drawings identifying material of each equipment component along with it its material certificate,
  - results of hydrostatic test,
  - results of cleaning and drying operations,
  - results of descaling/passivation,
  - results of blanketing,
  - results of balancing operation, performed according to the previously approved corresponding procedure,
  - mechanical operation tests, performed according to the previously approved corresponding procedure, indicating read values and their acceptability,
  - final inspection of SUPPLIER, according to the corresponding previously approved procedure applied to, protective coating's aspect, colour, thickness, bonding and quality,
  - results according to special test procedure.
- Individual, distinct certificates for material, paint, electroplating and coating, certifying product composition in accordance with the ISO 10474 standard,
- Accredited laboratory certificate (CENELEC, IEC, LCIE, INERIS etc.) attesting that electric/electronic equipment is in compliance with the standards for we in hazardous area,
- Certificate concerning the material used to make the concretes (if applicable),
- Certificate from an authorized entity covering plant made concretes (if applicable),
- Tests performed in an authorized laboratory concerning ingredients of concretes (if applicable),
- Test reports on concrete samples drawn-up by an approved laboratory (if applicable),
- MANUFACTURER's paint warranty including long-lastingness and good anti-corrosion protection,
- Authenticated certificates issued by an independent body for the calibration of the various instruments used by SUPPLIER during a test. These certificates must be attached to the corresponding test reports. Calibration readings SHALL include three

(3) to five (5) points both build-up and -down, along with percentage (%) of error with reference to instrument's tolerances,

- Records differences vis-à-vis specified requirements, identified by SUPPLIER / contractor and then entered, along with opinion, in deviation and non-conformity register;
- Independent inspection certificates for material according to ISO 10204 Type 3.1.;
- Test reports according to ISO 10204 Type 2.2.;
- Noise test report;
- Leaking test report;
- Vibration test report;
- Bar-Over Test report;
- Charpy Impact test report (not applicable to Al & Al alloy, only for SS material);
- Bending test and result,
- Cold-spin test and result,
- Hydraulic flushing test report,
- Certificate for vibration monitoring system,
- Record of performance tests, performed according to the previously approved corresponding procedure, indicating read values, their acceptability, and including plotted curves include Vibration spectrum (FAT & IFAT test report),
- Electric motor type test report,
- Showing full details of motor and type tests performed,
- Performance data,
- Give details of all operating data for major and auxiliary equipment, e.g.:
  - Torque-speed and current speed curves of motors,
  - Thermal withstand curves of motors,
  - Power factor and efficiency curves of motors,
  - Static and dynamic (overload behaviour of generator sets or AC and DC UPS systems),
  - Short circuit make withstand and break capacities of switching devices.
- All the engineering documents in particular as-built drawing.

- B6 : Packing lists
  - Document drafted as per model form attached to and in the language(s) stipulated in the order and carefully typed and providing a precise estimate of the number of packages, their unit weight and volume and their dimensions, the total volume and weight, and indicating the type of packing. Material Take Off.
- B7 : Local Certifications
  - NR 13, INMETRO for Brazil, ATEX, PED Certification in Europe, ITRI for Taiwan, …
- B8 : Site Acceptance Test report (SAT)
  - Include Vibration spectrum and flushing report.

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Client :

HELLENIC GAS TRANSMISSION SYSTEM OPERATOR (DESFA S.A.)

Engineer :

SOFREGAZ SAS
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Subcontractor :

ROGAN ASSOCIATES
5 Chatzigianni Mexi St. – 11528, Athens – Greece

Project Name :

SUPPLY OF JETTY-LESS SYSTEM DEDICATED TO THE FILLING OF LNG CARRIER

Client's Contract number :	W.B.S. :	Project ID::	Format
S60001613	**Xxxx**	**DSF-11-019-09**	**A4**

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Document Title :

TECHNICAL SPECIFICATION OF JETTY LESS SYSTEM

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CONTENTS

1 INTRODUCTION

1.1 PURPOSE OF THE PROJECT

DESFA is willing to diversify its offer by providing bunkering services for small LNGC from 1,000 to 30,000 m^3. In order to allow fast development of this Project and taking into consideration all geotechnical constrain, DESFA has decided to implement a Jetty-Less solution to perform these operations.

The Jetty-Less solution is predicted to be located at the North East of the island where the Quay Wall project was predicted.

The purpose of the Project is to prepare Technical RFQ for the supply of the Jetty-Less system.

1.2 PURPOSE OF THE DOCUMENT

The purpose of this document is to define the minimum requirement of the design, supply, material selection, construction, testing, delivery, pre-commissioning & commissioning, start-up, operation & inspection for the JETTY LESS SYSTEM (JLS) package.

The Supplier has to demonstrate the capabilities of supplying of JLS as per this specification

The Supplier is responsible for satisfying all applicable local and national rules, regulations and standards at point of installation or erection as defined in the requisition.

1.3 PURPOSE OF THE REVISION

- The purpose of the Revision '00' is ''Issued for Review''.
- The purpose of the Revision '01' is ''Issued for Approval''.
- The purpose of the Revision '02' is ''Issued for Approval''.
- The purpose of the Revision '03' is ''Issued for Approval''.

2 INPUTS AND REFERENCES

This Document has been prepared with consideration of the following inputs documents:

2.1 PROJECT INPUTS

- DSF-11-019-09-S60001613-GEN-PRJ-REP-001
  Preliminary Mooring Analysis Report
- DSF-11-019-09-S60001613-GEN-01-1-001
  General Arrangement Drawing of the Marine Infrastructures
- DSF-11-019-09-S60001613-GEN-PRS-DAT-001
  Process Duty Specification of Jetty Less System
- DSF-11-019-09-S60001613-GEN-MEC-REQ-001
  Material Requisition of the Jetty Less System
- DSF-1500401-E20013905-GEN-PRS-PHL-001
  Design Basis

2.2 OTHER PROJECT DOCUMENTS

- DSF-1101902-786-GEN-ELE-PHL-001 Electrical design philosophy
- DSF-1101902-786-SPC-INS-101 Specification for instrumentation in package unit
- DSF-1101902-786-SPC-INS-118 Automatic on/off valve (globe/ball cryogenic) specification
- DSF-11-019-02-786-SPC-INS-124 Cables Specification
- DSF-1101902-786-SPC-INS-201 Instrumentation General Specification
- DSF-1101902-786-SPC-PIP-102 Insulation General Specification
- DSF-1101902-786-SPC-PIP-103 Painting General Specification
- DSF-1101902-786-SPC-PIP-101 Specification-Piping Material Classes

2.3 GENERAL DOCUMENT

- 3.LNG-500/4 Steel pipes

2.4 NORMS AND INTERNATIONAL STANDARDS

All the Jetty Less System (JLS) and the accessories shall be designed, manufactured, inspected and tested in accordance with the following standards and codes:

- API 9A Specification for Wire Rope - 26th Edition
- ASME II Materials
- ASME V Non-destructive examination
- ASME VIII division 1 Rules for construction of pressure vessels
- ASME VIII division 2 (Only for nozzles calculation)
- ASME IX Welding and brazing qualification
- ASME B1.1 Unified Inch Screw Threads (UN and UNR Thread Form)
- ASME B16.5 Pipe flanges and flanged fittings
- ASME B16.9 Factory Made Wrought Steel Buttwelding Fittings
- ASME B16.20 Metallic Gaskets for Pipe Flanges
- ASME B16.25 Buttwelding Ends for Pipes, Valves, Flanges and Fittings
- ASME B16.36 Orifice Flanges
- ASME B16.47 Large diameter steel flanges
- ASME B31.3 Process Piping
- ASME B36.10 Welded and Seamless Wrought Steel Pipe
- ASME B36.19M Stainless steel pipe
- ASTM A36/A36M Standard specification for Carbon Steel Structure
- ASTM A123/A123M Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
- ASTM A153/A153M Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- ASTM A283/A283M Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates
- ASTM A320/A320M-22 Standard Specification for Alloy-Steel and Stainless-Steel Bolting for Low-Temperature Service
- ASTM-A370 Standard Test Methods and Definitions for Mechanical Testing of Steel Products
- ASTM A380/A380M Practice for Cleaning, Descaling and Passivating of Stainless-Steel Parts, Equipment and Systems
- ASTM A-388/A-388M Standard Practice for Ultrasonic Examination of Heavy Steel Forgings
- ASTM A-435/A-435M Standard Specification for Straight-Beam Ultrasonic Examination of Steel Plates
- ASTM A563/A563M Standard Specification for Carbon and Alloy Steel Nuts (Inch and Metric)

• ASTM A-578/578M	Standard Specification for Straight-Beam Ultrasonic Examination of Plain and Clad Steel Plates for Special Applications
• ASTM A673/A673M	Standard specification for sampling procedures for impact testing of structural steel
• ASTM A967/A967M	Standard Specification for Chemical Passivation Treatments for Stainless Steel Parts
• ASTM F436/F436M-19	Standard Specification for Hardened Steel Washers Inch and Metric Dimensions
• ASTM F3125/F3125M	Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength
• AWS D1.1/D1.1M	Structural Welding Code
• ISA (all)	Instrumentation, Systems, and Automation Society
• EN 764	Pressure Equipment
• EN 1092 1&2	Flanges and their joints – Circular flanges for pipes, valves, fittings and accessories PN designated
• EN 1127-1	Explosive atmospheres – Explosion prevention and protection – Part 1: Basic concepts and methodology
• EN 1473	Installation and equipment for liquefied natural gas – Design of onshore installations
• EN 1474-2	Installation and Equipment for Liquefied Natural Gas. Design and Testing of Marine Transfer Systems. Part 2: Design and Testing of Transfer Hoses
• EN 1474-3	Installation and Equipment for Liquefied Natural Gas. Design and Testing of Marine Transfer Systems. Part 3: Design and Testing of Offshore Transfer Systems
• EN 1514 ALL PARTS	Flanges and their joints - Dimensions of gaskets for PN-designated flanges
• EN 1515 ALL PARTS	Flanges and their joints – Bolting
• EN 1759-1	Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, Class designated - Part 1: steel flanges NPS ½ to 24
• EN 5173	Destructive tests on welds in metallic materials
• EN 10025 ALL PARTS	Hot rolled products of structural steels
• EN 10028 ALL PARTS	Flat products made of steels for pressure purposes
• EN 10204	Metallic products - Types of inspection documents
• EN 10675-1	Non-destructive testing of welds - Acceptance levels for radiographic testing – Part 1: Steel, nickel, titanium and their alloys

• EN 12560	Flanges and their joints - Gaskets for Class-designated flanges
• EN 13463-ALL PARTS	Non-electrical equipment for potentially explosive atmospheres.
• EN 13480 (all parts)	Metallic industrial piping
• EN 15001-1	Gas Infrastructure – Gas installation pipework with an operating pressure greater than 0.5 bar for industrial installations and greater than 5 bar for industrial and non-industrial installations – Part 1: Detailed functional requirements for design, materials, construction, inspection and testing
• EN 15607	Specification and approval of welding procedures for metallic materials. General rules for fusion welding
• IEC 60034	Rating and performance of electrics motors.
• IEC 60072-112	Dimensions and output ratings for rotating electrical machines
• IEC 60073	Color of indicator lights, push buttons, annunciators and digital readouts.
• IEC 60079-series:	Electrical apparatus for explosive gas atmosphere. Classification of hazardous areas.
• IEC 60204-all parts	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
• IEC 60529	Degrees of protection provided by enclosures (IP Code).
• IEC 61000-1 all parts	Electromagnetic compatibility (EMC)
• IEC 80079-36	Explosive atmospheres -- Part 36: Non-electrical equipment for explosive atmospheres -- Basic method and requirements
• IECEx	IEC system for certification to standards relating to Equipment for use in Explosive Atmospheres
• IGC Code_2016	International code for the construction and equipment of ships carrying liquefied gas in bulk
• ISO 1461	Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods
• ISO 2408	Steel Wire Ropes for General Purposes – Characteristics
• ISO 3452 ALL PARTS	Non-destructive testing - Penetrant testing.
• ISO 5173	Destructive tests on welds in metallic materials
• ISO 5817	Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections
• ISO 9016	Destructive tests on welds in metallic materials – Impact test - Test specimen location, notch orientation and examination.
• ISO 9606-1	Qualification testing of welders - Fusion welding - Part 1: steels

- ISO 9712 — Non-destructive testing - Qualification and certification of NDT personnel
- ISO 10425 — Steel Wire Ropes for the Petroleum and Natural Gas Industries – Minimum Requirements and Terms of Acceptance
- ISO 10474 — Metallic Products – Types of Inspection Documents
- ISO 10497 — Testing of valves – Fire type-testing requirements
- ISO 10675-1 — Non-destructive testing of welds - Acceptance levels for radiographic testing – Part 1: Steel, nickel, titanium and their alloys
- ISO 12100 — Safety of Machinery – General principles for design – Risk assessment and risk reduction
- ISO 13849-1&2 — Safety of machinery – Safety related parts of control system
- ISO 14122 all parts — Safety of machinery - Permanent means of access to machinery
- ISO 14713 — Zinc coatings - Guidelines and recommendations for the protection against corrosion of iron and steel in structures
- ISO 15607 — Specification and approval of welding procedures for metallic materials - General rules for fusion welding
- ISO 15609-1 — Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 1: Arc welding.
- ISO 15614-1 — Specification and qualification of welding procedures for metallic materials - Welding procedure test - Part 1: arc and gas welding of steels and arc welding of nickel and nickel alloys.
- ISO 15649 — Petroleum and natural gas industries — Piping
- ISO 15761 — Steel gate, globe and check valves for sizes DN 100 and smaller for the petroleum and natural gas industries
- ISO 16903 — Petroleum and natural gas industries - Characteristics of LNG, influencing the design, and material selection
- ISO 17635 — Non-destructive testing of welds - General rules for metallic materials
- ISO 17636-1 — Non-destructive testing of welds – Radiographic testing – Part 1: X- and gamma-ray technique with film
- ISO 17636-2 — Non-destructive testing of welds – Radiographic testing – Part 2: X- and gamma-ray technique with digital detectors
- ISO 17637 — Non-destructive testing of welds – Visual testing of fusion – welded joints
- ISO 17638 — Non-destructive testing of welds - Magnetic particle testing – Acceptance levels
- ISO 17639 — Destructive tests on welds in metallic materials — Macroscopic and microscopic examination of welds

- ISO 17640 — Non-destructive testing of welds - Ultrasonic testing – Techniques, testing levels and assessment
- ISO 18683 — Guidelines for systems and installations for supply of LNG as fuel to ships
- ISO 21012 — Cryogenic Vessels - Hoses
- ISO 23277 — Non-destructive examination of welds. Penetrant testing – Acceptance levels
- ISO 28460 — Petroleum and natural gas industries - Installation and equipment for liquefied natural gas - Ship-to-shore interface and port operations
- NFPA 59 A — Standard for the Production, Storage, and Handling of Liquefied Natural Gas (LNG)
- OCIMF — Recommendation & guideline for the LNG units
- OCIMF — Ship to ship transfer guide for petroleum, chemicals and liquefied gases, for the LNG units
- OCIMF 91 — Oil Companies International Marine Forum – Guide to Purchasing, manufacturing and testing of loading and discharge hoses for offshore moorings – Fourth Edition 1991
- SIGTTO — ESD Arrangements & Linked Ship/Shore Systems for Liquefied Natural Gas
- SIGTTO - 2016 — Liquefied Gas Handling Principles on Ships and in Terminals
- SOLAS_2014 — the international Convention for the Safety of Life at Sea

VENDOR shall provide “EU Declaration of Conformity.”

The appropriate Directives for the onshore part are (non-exhaustive):

- 2014/68/EU — Harmonisation of the laws of the Member States relating to the making available on the market of pressure equipment
- 2004/108/EC — approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC
- 2006/95/EC — harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits
- 2014/34/EU — harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres (recast)
- 2006/42/EC — on machinery, and amending Directive 95/16/EC (recast)

Unless instructed otherwise, the latest edition of the above-mentioned laws, regulations, codes, and standards shall be used.

The above list is considered as a minimum, and can be amended or completed by the Order Technical File.

3 TERMS AND DEFINITION

3.1 DEFINITION OF TERMS

- PROJECT — Supply of jetty-less system (Floating Platform System for the Loading/Unloading of SSLNG Carriers at Revithoussa Terminal)
- COMPANY — Hellenic gas transmission system operator (DESFA S.A.)
- CONTRACTOR — SOFREGAZ
- VENDOR — Any person, firm or business which design, manufacture or supply material, equipment and services.
- SUBCONTRACTOR — Any third party contracted by CONTRACTOR to perform specific parts of the EPC Contract
- THIRD PART — Means an independent certified (or recognized) organization (natural or legal person), not affiliated with the producer nor the user, which can perform inspection (testing, controlling, checking …) of equipment when inspections are required
- NOTIFIED BODY — Means an organization which has received from a notifying authority (generally a ministry) the authorization to carry out this assessment, which is the subject of notification.
- JETTY LESS SYSTEM (or JLS) — By definition, the JETTY LESS SYSTEM intend to replace a formal Jetty or quaywall where LNG Vessels can be physically moored.

3.2 ABBREVIATIONS

- ASME — American Society of Mechanical Engineers
- ASTM — American Society of the International Association for Testing and Materials
- AWS — American Welding Society
- BOG — Boil-Off Gas
- CS — Carbon Steel
- EPC — Engineering, Procurement & Construction
- ESD — Emergency Shut down System
- IACS — International Association Classification Society
- IEC — International Electro-technical Commission
- Incoterms® — International Commercial Terms
- ISO — International Organization for Standardization
- ITP — Inspection and Test Plan
- JLS — Jetty Less System
- LNG — Liquefied Natural Gas

- LNGC — Liquefied Natural Gas carrier
- NDE — Non-Destructive Examination
- NPS — Nominal Pipe Side
- NDT — Non-Destructive Testing
- NG — Natural Gas
- OCIMF — Oil Companies International Marine Forum
- PED — Pressure Equipment Directive
- PMI — Positive material identification
- PQR — Procedure Qualification Record
- PWHT — Post Weld Heat Treatment
- RT — Radiographic Testing
- SI — International System of Units
- SIGTTO — Society of International Gas Tanker and Terminal Operators
- SS — Stainless Steel
- SSLNGC — Small Scale LNG Carrier
- UE — European standard
- UT — Ultrasonic Testing
- VT — Visual Inspection
- WPS — Welding Procedure Specification.

4 GENERAL

4.1 DOCUMENTS ORDER OF PRECEDENCE

In case of conflict among Project specifications, Standards and codes, the order of precedence shall be as follows:

1 - National safety rules / regulations / laws applicable in the country where the units shall be installed (highest priority),

2 - This general specification & relevant attachments,

3 - This material requisition & relevant attachments ,

4 - International standards and codes (lowest priority).

VENDOR shall request clarification from the COMPANY in the event of an apparent contradiction or discrepancy between two documents. Generally, the most restrictive one shall be applied. Neither design nor fabrication may start before all outstanding issues have been resolved.

The supply shall be made in accordance with all statutory requirements, using the codes of practice, guidance notes and other codes and standards listed herein. The latest edition of the relevant regulations, codes, standards, and guidance notes at the start of the project shall be used, unless noted otherwise.

4.2 VENDOR'S RESPONSIBILITY

VENDOR has the entire responsibility of:

- the selection,
- the design,
- the purchase,
- the manufacture,
- the assembly at work shop,
- Marine Certification,
- Other certification that may be required by the local regulation,
- the inspections,
- the documentations,
- the workshop tests,
- the packing and loading,
- transportation (incoterm@)
- site installation, pre-commissioning, site acceptance test (SAT),
- commissioning, loading of ssLNGC and performance test (1st ssLNGC loading),

  on site and in class training of operators to JLS (before 1st ssLNGC, on site during 1st ssLNGC)
- hands on training shall be provided for the 2nd and 3rd ssLNGC loading,
- operation and maintenance manual/procedures,
- Final Documentation Package (FDP)

of Jetty Less system.

VENDOR shall provide the whole Jetty Less system.

If any mal-performance occurs during plant tests or in the field, VENDOR shall make all necessary alterations, repairs, and replacements free of charge for the CONTRACTOR, to obtain the "make good".

VENDOR shall ensure that all SUB-VENDORS comply with every applicable section of this specification and related documents, standards and codes and the selected quality level. Vendor shall provide its Sub-vendor list, subject to Company and/or its Contractor approval.

Compliance with the provisions of this specification does not relieve VENDOR'S responsibility for the supply of equipment and accessories properly designed and mechanically fitted to meet the specified service conditions.

It will be Vendor's responsibility to comply with any other effective local law or code, and inform Contractor if any note of this specification or requisition is in conflict with them for Contractor resolution in writing.

It will be Vendor's responsibility to ask for any document called for in the attached documents, which Contractor may unintentionally have omitted to mention in this document and distribute.

For any part of the supply not covered by this specification or requisition, vendor shall submit his standards for Contractor review.

In case of conflict between JLS specification and Vendor proposal, the JLS specification will prevail.

Contractor shall in no way be entitled to discover exceptions to the JLS specification which Vendor may unintentionally have considered in its proposal.

Any deviation to the requirements of this specification and the project standards shall be addressed to Company/Contractor for review.

4.3 HEALTH, SAFETY AND ENVIRONMENT

VENDOR shall take into account, at each step of the project, the environmental, health and safety aspects.

Procedures shall address safety aspects for the workers for COMPANY's representatives, by listing potential hazards which may be encountered during the involved tasks and the corresponding safety measures to be taken. These procedures shall cover all activities, both in factory tests and at site, such as construction, assembly, tests, handling, transportations, site installation, commissioning and start up.

To avoid surface and subsurface sea pollution, all leakages shall be recovered to oily water circuit.

Asbestos, materials containing asbestos, materials containing PCBs, lead and compounds, mercury and compounds, cadmium and compounds are not permitted

4.4 GENERAL REMARK ABOUT INSTRUMENTATION

The package will be P1A type as it is in the DSF-1101902-786-SPC-INS-101 – Specification for instrumentation in package units.

5 SCOPE AND LIMIT OF SUPPLY

This paragraph shall be read in connection with Material Requisition.

JETTY LESS SYSTEM (or JLS) is the full and complete system to be provided with the purpose of transferring LNG from Tie-In point located on-shore to the visiting LNG Vessel including all equipment, piping, structural, instrumentation, electrical, utilities, accessories required for a safe operation of the transfer.

JETTY LESS SYSTEM is composed of the following main sub-system :

- « Floating Jetty » consist in all elements, floating or semi-submersible that connect the On-Shore Tie-In Points to the visiting LNG Carrier for the purpose of LNG Reloading Include also on top all equipment for the LNG/NG transfer system rigid pipes, valves, safety means, instruments, electrical, utilities, accessories necessary for a safe operation of the LNG transfer (refer to 5.2).
- Connection between "Floating Jetty" and LNG Carrier (refer to 5.3).
  Include LNG/NG Transfer system typically made of flexible hoses as well as Ship-to-Shore connection for communication.
  It include also accessories such as Saddle, T-Branch, Y-pieces, Reducer… to adjust LNG/NG Connection of the different LNG Vessels
- Connection between "Floating Jetty" and Tie-In point located On-Shore (refer to 5.4).
  Include LNG/NG Transfer system, any other connection for communication, electrical power, safety means, utilities necessary for the operation of the JLS.
  It includes also accessories such as Support, Saddle, for the LNG/NG transfer system.

The limits of "scope of supply" are given as a guide to determine correctly the complete supply.

5.1 SCOPE OF SUPPLY

Scope of supply shall include mechanical design, supply of materials, previous works, in workshop, manufacturing and assembly in site, tests, surface preparation, packing for transport and transport, insurance for every part of the JLS successful installation (SAT), pre-commissioning, commissioning, performance test, training– hands on training.

The JLS should be provided fully packaged: equipment and its internals shall be provided as fully fabricated.

The design life for the JLS should be 25 years.

The scope of supply of the JLS package should include, but not limited to the following's materials, activities and services:

5.2 FLOATING JETTY

The terminology "Floating Jetty" consists in all elements, floating or semi-submersible that connect the On-Shore Tie-In Points to the visiting LNG Carrier for the purpose of LNG Reloading.

VENDOR's scope of supply of the JLS package shall include, but not necessary be limited to the following equipment :

- A technical solution proposed by VENDOR, equipped with all cryogenic pipes/hoses and fittings, isolation valves, actuators, automatic on/off valves, supporting structures and guides for LNG and Return Vapor lines,
- By-pass or recirculation lines to allow possibility to maintain the system in cold condition during stand-by mode between 2 LNG Transfer operation,
- System shall allow quick disconnection from LNGC in case of ESD signal arising from LNGC or LNG Terminal,
- Safeguarding (Pressure Indicator Transmitter (PIT), Temperature Indicator Transmitter (TIT), Pressure Safety Valves…),
- Shut-down valves and all the other devices necessary to ensure safety operation of the package;
- Remote Control System necessary to control and manage the floating jetty, placed in safe area (onshore);
- Self-movable system
  System shall be self-movable between its "holding mode position" and its operating position (connected to LNGC).
  Vendor can propose as back up system a "non-self-movable system" like using tug boat (s). In such case, size/capacity of tug boat to be provided in the offer.
- System to avoid or to absorb all impacts between JLS and LNGC (fenders or other system, if required), movements of the vessel should be taken into consideration and the JLS shall have an appropriate envelope for free movements during loading,
- Insulation for cryogenic line,
- In case of submersible system, any required system, ballast system (or other similar system) for draft, trim and heel management, should be provided by the Vendor.

  Mooring system between JLS and SSLNGC,Mooring, berthing system on JLS to park the JLS during "Holding Mode position" on shore side.
  Shore berth facilities, or anchors if needed, will be constructed /supplied by other. Vendor shall provide all the necessary information and requirements for the mooring, berthing system (shore side) to accommodate the floating platform system. Structural element and/or supports which is part of the Floating Platform System placed on shore side shall be provided by Vendor
- Bracket for nameplate and nameplate,
- All structure needed for operation, access to any instrumentation and valves, maintenance;
- Bolts, nuts and gaskets with a minimum coverage of 10% for normal operation and testing;
- Lifting lugs for transport and erection;
- Cables, junction boxes, cable trays, cable glands and all the necessary instrument bulk materials inside package battery limits;
- All electrical equipment and materials inside Battery Limits (i.e. Power distribution system, Lighting, Lightning systems, junction boxes inside Battery Limits), including related supports and accessories;
- Fire protection system,
- Fire, Gas and Spill detection System,
- Firefighting, fire-proofing (if any),

- CCTVs system
- Proper Air instruments system to supply each pneumatic users inside the package, when necessary,
- Proper nitrogen system, when necessary to inert or purge lines when jetty less is in stand-by mode,
- Purge and drain system,
- Access to the floating jetty
- Emergency evacuation for operators as per code,
- Personal protection for operators where required (eg cold-hot service lines protection...),
- Any other item or appurtenance within the battery limits not specifically listed but necessary to make it suitable for a proper and safe smooth operation of the complete system.
- Area to store loose items during stand-by mode (flexible hoses / reducer / spool piece and saddle as defined in §5.3)
- Y pieces supplied by Vendor; other as needed for the normal operation of the floating jetty.)
- Complete set of spare parts for commissioning and start-up,
- Complete set of special tools required for installation, operation and maintenance (if required),
- Surface preparation and painting (for CS surfaces). Final painting of structural steel to be done in factory and paint for touch-up to be provided.

The floating Jetty shall be able to operate in the following mode :

- Holding Mode (or Stand-by mode)
  In this configuration, the JLS is not connected to the visiting vessel.
  VENDOR shall provide a description of this configuration :
  - Layout :
    How the JLS is physically connected to the shore and moored
  - Process :
    Position of main valves ensuring safe operation
- Cooling Mode
  In this configuration, VENDOR shall provide a description of the cooling process : position of main valves and expected duration of the cooling.
- Loading Mode
  In this configuration, LNG is transferred from shore to the visiting vessels using JLS.
  The NG vapour generated during the operation is transferred from the visiting vessel to the shore using the JLS.
- Draining Mode
  At the end of loading operation, the LNG Lines shall be drained.
  VENDOR shall provide description of the drainage operation with position of main valves considering this shall be as short as possible to allow disconnection of the visiting vessel.
  Volume of LNG and flowrate to be collected on Terminal side shall be specified.
- ESD

In case of ESD initiated either from Visiting vessels or from Terminal, VENDOR shall specify the sequence of valves operation (closing/opening), disconnection from vessels, as well as, safe position of the JLS.

5.3 CONNECTION BETWEEN FLOATING JETTY AND LNG CARRIER

- One or more aerial type cryogenic hoses (for LNG and vapor return transfer) establishing connection between JLS manifold and the LNGC manifolds.
  Each flexible connection must be equipped with ERC system
- A single hose saddle, used to support each hose in position on LNGC and to maintain the correct bend radius.
  Supplier to confirm that Saddles will be stored on the floating jetty during stand-by mode and installed on the LNGC during LNG Transfer operation,
- Handling protection to move hoses,
- Blind flange to protect hoses when hoses are not used,
- Y pieces reducer and/or straight pieces reducer on floating jetty side (reducers on vessel side shall be supplied by COMPANY).
  Sufficient area to store these reducers must be defined on the floating jetty,
- Flange connections,
- Ship to shore link.

Note : Installation of Y-Pieces, Saddles and Hoses shall be performed using the lifting devices belonging to the visiting LNG Vessels.

5.4 CONNECTION BETWEEN FLOATING JETTY AND TIE-IN POINT LOCATED ON SHORE

- One or more LNG cryogenic pipe / hose connected from the shore to the jetty less platform manifold,
- Return Vapor cryogenic pipe / hose connected from the shore to the jetty less platform manifold,
- A single hose saddle, in case of cryogenic hose, used to support each hose in position on both onshore and on platform
- Electrical system (cable / umbilical systems from Tie-In Point to Floating Jetty with junction boxes or other as barge with its own electrical system),
- Instruments and control system (with cables / umbilical systems from Tie-In Point to Floating Jetty and junction boxes or other communication system), include ship to shore link system,
- Leak detection system,
- Temperature monitoring system,
- Flange connection with shore tie in point.

5.5 ACTIVITY AND SERVICES

VENDOR's scope of supply SHALL include, but not be limited to, the following activities:

- Purge and drain systems procedure/philosophy (shall be supplied with bid),

- Cool-down system procedure/philosophy (shall be supplied with bid),
- Jetty less movement envelop to define dimensions needed to move, connect and operate with the vessel (shall be supplied with bid),
- Complete detailed engineering, design and calculation of all equipment included in the JLS package,
- Management of sub-vendors and inspection activities;
- Fabrication, manufacturing and shop assembly at the maximum extent as it is possible,
- Inspections, tests in workshop, including complete functional testing of package connected to the Remote Control Panel, with all contractual representative members, (NOTIFIED BODY, THIRD PART...),
- Test and material certificate as required in the material requisition of the JLS,
- Attendance at Engineering meeting and pre-inspection meetings, as required by COMPANY / CONTRACTOR
- Attendance at HAZOP, HAZID, Constructability Review, SIMOPS, 3D model review workshops in order to defend his design. Then, assure the Implementation of recommendations arisen during the above listed safety review meetings;
- Supplier documents for review/approval, incorporating COMPANY/CONTRACTOR comments until final approval
- Preservation and export packing, with packing suitable for storage and sea transportation;
- Shipment as per Incoterms®,
- site installation, pre-commissioning, site acceptance test (SAT)
- commissioning, loading of ssLNGC and performance test (1st ssLNGC loading)
- training, on site and in class training of operators to JLS (before 1st ssLNGC loading),
- hands on training of operators shall be provided for the 2nd and 3rd ssLNGC loading,
- Operations and Maintenance procedures,
- Final Documentation package (FDP).

5.6 LIMITS OF SCOPE OF SUPPLY

VENDOR's scope of supply ends at the flange of the following connections:

- Onshore LNG and BOG piping flanges,
- Required utility flange, such as nitrogen, air piping flange, in case terminal provide the nitrogen, air to the JLS
- Onshore junction box when electrical cables are necessaries (junction boxes supplied by JLS vendor),
- Onshore Instrument junction box (junction boxes supplied by JLS vendor),
- Vessel flanges.

5.7 EXCLUSION FROM SUPPLY

Except if noted otherwise, VENDOR shall exclude the following from his scope of supply:

- All civil and structural works to be performed on-shore (if any),

5.8 VENDOR'S DRAWING AND DOCUMENTATION

5.8.1 General

All documents shall be in English.

VENDOR shall make fully detailed drawings and calculations covering the design and fabrication of the skid mounted package unit. Shop fabrication shall not begin until COMPANY has approved these documents.

5.8.2 Documents to be Supplied with Proposal and After Order

The technical and commercial proposal before the order shall include at least the following information:

- Technical description of the proposed JLS package;
- Complete data sheets duly filled in;
- Hydraulic Calculation note,
- Outline drawings showing all the arrangement;
- Utility consumption;
- P&ID and C&E Matrix with description of main safety interlocks;
- Inert, purge and drain Philosophy,
- Carrier loading procedure through the Jetty less. This procedure shall detail the JLS Hoses connection to the carrier. LNG carriers with capacity from 1.000 m^3 up to 30.000 m^3 and under the environmental loads (winds, waves, currents, etc.) imposed by the specific site conditions, shall be considered. VENDOR shall specify the maximum JLS movement which enables the Jetty less to be safely connected and in order to ensure a good loading operation. In addition, tidal data specified in the DSF-11-019-09-S60001613-GEN-PRJ-REP-001 Preliminary Mooring Analysis Report.

- List of proposed sub-vendors for main material and equipment included in supply;
- Engineering, Procurement and Shop fabrication schedule;
- List of spare parts for erection, pre-commissioning and start up (unpriced);
- List of spare parts for two years operation (unpriced);
- List of capital spare part, if applicable (unpriced);
- Inspection and Test Plan

The VENDOR shall supply all documents listing in the DSF-11-019-09-S600001613-GEN-MEC-REQ-001 - Material Requisition of the Jetty Less System during the project.

6 DESIGN CRITERIA

6.1 GENERAL

The JLS package shall be designed, fabricated and tested strictly in accordance with the notes of this document and shall be suitable for the environmental conditions and the design requirements herein:

6.2 SITE CONDITIONS AND ENVIRONMENTAL DATA

Site conditions including site temperature, marine data, wind, and humidity are specified in the Design Basis n° DSF-1500401-E20013905-GEN -PRS-PRJ-PHL-001.

If the site data presents severe weather conditions, VENDOR shall integrate such parameters into his design to guarantee the proper operation of the transfer hoses even in under the worst specified conditions or inform in his bid about limitation (if any).

VENDOR shall integrate environmental parameters into his design to guarantee the proper operation of the JLS for all operating conditions.

6.3 MARINE, WAVES, TIDES & CURRENTS AND WIND DESIGN

Every equipment shall be designed and constructed to resist to wind and marine effects determined in accordance with procedures given in Project's applicable norms. Marine and wind loads are given in Design basis n° DSF-1500401-E20013905-GEN -PRS- PHL-001 and DSF-11-019-09-S60001613-GEN-PRJ-REP-001 Preliminary Mooring Analysis Report.

Vendor shall comply with the climate data of wave, wind, tides & currents and the studies recommendations indicated in the following documents for the design of the JLS package:

- DSF-11-019-09-S60001613-GEN-PRJ-REP-001 - Preliminary Mooring Analysis Report

Currently, wind limitation for the existing Jetty (quaywall) for conventional LNG carriers are :

- 25 knots for approaching and berthing,
- 30 knots stop operation,
- 35 knots disconnection of the arms,
- 40 knots leave the berth

JLS shall take into consideration these limitations as reference for JLS.

The tidal data to be taken into consideration -stand by mode and operation of the JLS- are :

- HHWL +1,10 m
- MSL +0,60 m
- LLWL +0,00 m

For the design, the followings loads shall be taken into account:

- Proper weight,
- Additional fluid or oil content weight,
- Internal forces due to pumped liquid hydraulic pressure,
- Forces and moments on external nozzles (if needed).

The package and all auxiliaries of the complete unit shall verify the following criteria:

- The equipment shall not become projectile and shall not create projectiles during allmovements; safety system shall be able to work,
- The package shall not fall on critical systems in case of maximal movements.

7 DESIGN OF LNG LOADING/ SHIPS BUNKERING

The small scale LNG carriers' capacities that are examined fall in the range of 1.000 – 30.000 m3.
For that reason, the Consultant has taken into consideration six ships in order to represent the aforementioned range, with the following characteristics.

Table 1 : Characteristics of considered design vessels

Ship Capacity (m^3)	Loa (m)	Lbp (m)	Breadth mld (m)	Depth (m)	Ballast draught (m)	Summer draught (m)
1.000	74,50	69,00	15,60	7,00	4,40	4,90
3.000	102,20	96,60	18,50	11,00	4,80	5,00
7.000	121,76	116,90	18,50	11,00	4,82	5,80
13.000	128,60	120,40	23,00	11,50	8,30	8,70
20.000	161,68	150,80	26,00	12,40	8,90	9,30
30.000	184,60	175,20	27,60	18,50	8,40	8,80

7.1 DISTANCE BETWEEN THE VESSEL AND THE SHORE

As indicated in the General Arrangement Drawing of the Marine Infrastructures reference doc.N° DSF-11-019-09-S60001613-GEN-01-1-001, the minimum distance between the shore and the highest capacity vessel's hull (at its starboard side) is equal to **76.50m**.

7.2 PROCESS DESIGN DATA

The design LNG loading flowrate is 2,000 m3/h. The allowable friction pressure drop @ 2,000 m^3/h between interface points TP-311 and TP-313 is 2.5 bars maximum.

The design NG Vapor Return is estimated as 4,100 Am^3/h @ ship flange, with the following operating conditions: 0.4 barg & -128.8°C. The allowable friction pressure drop @ 4,100 Am^3/h between interface points TP-312 and TP-314 is 0.145 bars maximum.

Based on the above process design data, Vendor shall provide the hydraulic calculation note for CONTRACTOR/COMPANY approval before the order.

Vendor shall provide the pressure drop Vs flowrate chart of the Jetty-Less System (for the 3 LNG compositions).

The JLS package including hoses, pipe and auxiliaries shall be designed for a maximum working pressure up 19 barg.

7.3 AREA CLASSIFICATION

Hazardous area classification shall be at least Zone 2 IIA T3 as per IEC 60079-0.

All equipment shall be certified for the hazardous area classification by a NOTIFIED BODY as regulatory requirement.

7.4 POWER SUPPLY

Voltage levels will be:

- 400V, 3phases+earth, 50Hz.

All other utilities shall be done by this power supply.

8 DESIGN AND CONSTRUCTION

8.1 GENERAL DESIGN PRINCIPLES

A zone shall be defined to store all transition pieces (reduction, Y-branch) which will be supplied by COMPANY.

If the valves are deenergised, it shall be safe-closed by spring.

8.2 FLEXIBLE HOSES

Hose length must take into account the hoses constraints (hose bend radius, ...) and marine movements including spare length of not less than 10%.

Hoses shall have on each side an electric lug or equivalent device to remove stray current.

8.3 LIFTING AND HANDLING EQUIPMENT

Lifting and handling drawings shall be provided with weight and gravity centre details.

Lifting and handling procedure for hoses shall be provided by VENDOR for COMPANY review.

8.4 SUPPLEMENTARY REQUIREMENT FOR CRYOGENIC HOSES

- Cryogenic service refers to liquefied natural gas or natural gas vapours processed at temperatures between -70°C and -164°C. This section refers specifically to flexible hoses which shall be in cryogenic service and normally shall be operating down to -164°C. These notes SHALL be read in conjunction with the rest of this specification.
- Hoses for cryogenic service shall be metal hoses made flexible designed to optimise flexibility and resistance to internal pressure.
- The impact test values of materials in direct contact with cryogenic fluid shall be guaranteed by ASME Sect. VIII Div.1 and ASTM std A370.
- The size and the quantity of flexible hose (for liquid and vapor line) should be defined by the supplier as per the hydraulic calculation note,
- Cryogenic hoses should be designed based on the standards and regulations EN 1474-2 and EN 1474-3,
- Cryogenic hoses should be EN 1474-2&3 certified,
- Cryogenic LNG / NG transfer system should insulated in order to ensure minimum boil-of-gas generation throughout the system,
- Hoses inner diameter should be provided by supplier based on the hydraulic calculation note,
- Supplier should provide the Maximum allowable operating pressure of Cryogenic Hoses (shall be up to 19 barg),
- Cryogenic floating hoses should be foreseen integrated leak monitoring system, a continuous temperature monitoring system, and should be designed for significant wave height.

8.5 CONSTRUCTION

Manufacturing cannot start until COMPANY has approved VENDOR's ITP, drawings, and welding procedure.

8.5.1 Codes and Standards

Manufacturing shall take into account all the requirements set by the project documents and applicable codes and regulations.

VENDOR may propose his own fabrication standards, for COMPANY review, especially if the project documents are not detailed enough.

8.5.2 Welding

Welding procedures shall be qualified in accordance to ASME section IX or equivalent.

Before starting fabrication, a PQR shall be submitted for WPS for COMPANY review. Only qualified procedures shall be used. Procedures SHALL be approved by COMPANY before starting fabrication.

Only qualified welders and procedures shall be used.

All welding shall be continuous

For parts in direct contact with cryogenic fluids and for primary steel structure, the corresponding PQR shall include impact test results verifying their suitability for cryogenic service.

Certificates for filler metals and welder's qualifications shall be submitted as well.

Weld repairs require their own WPS.

All internal and external welding on pressure-retaining parts shall be completed prior to PWHT (if applicable) and hydrotesting.

8.5.3 Stress Relieving

Stress relieving (if applicable) shall be carried out in accordance to the code requirements. Any deviations or additional requirements shall be written and submitted for COMPANY approval.

Metal temperatures shall be recorded during heat treatment and copies of the charts shall be submitted to the COMPANY.

VENDOR shall supply the list of the various heat treatments or other treatments, to which he intends to subject the various parts. He shall describe the purpose of the heat treatments and how they are applied. The absence of heat treatment SHALL be justified.

8.5.4 Cleaning

The equipment shall be carefully cleaned to remove non-adherent particles, scale… and freed from foreign matter.

8.6 NAMEPLATES

All equipment and all instrument shall be provided with a stainless steel (SS) nameplate (316L) located in a prominent location.

The nameplates shall provide at least the following information:

- VENDOR's name,
- VENDOR's Serial number,
- Year / date of manufacture,
- COMPANY's name,
- Equipment name and tag number,
- Service and fluid,
- Construction code,
- Weight Empty/Operating;
- Design conditions (pressure, temperature, flowrate …),
- Hydrotest test conditions, if applicable (pressure, medium …),
- Test condition for ERS (pressure, medium …),
- Purchase Order No.,
- all mandatory markings required by local regulations or codes.

9 MATERIALS

9.1 GENERAL

All raw materials shall be new, first in quality, and of the type and grade specified in the project documents. Materials shall be inspected and tested in accordance with the applicable codes, standards, and specifications.

VENDOR may not substitute the materials of construction without prior written approval from the COMPANY. However, alternatives - equal to or better than the materials specified - may be proposed for COMPANY review and approval. VENDOR shall confirm that the materials (either specified or proposed) are suitable for the specified service and operating/design conditions.

Materials shall be identified with a standard or specification (indicating their grade and tests/controls to be carried out). If no such standard is available (or if the standard needs additional data), VENDOR shall provide a specification indicating the material's physical properties, chemical composition and testing requirements.

Material combinations prone to galvanic corrosion shall be avoided unless proper precautions are taken.

Cast Iron and ductile iron for pressure containing parts is prohibited.

CS Structural parts shall be in grades defined in ASTM A36.

Reinforcing pads and non-pressure parts attached to pressure parts by welding shall be of the same material as the component to which they are attached.

Material inspection and testing shall be carried out in accordance with the applicable standards, specifications, and codes.

Material resilience shall be guaranteed to be suitable for minimum site temperatures, refer to Design Basis n° DSF-xx-xxx-xx-xxxxxx-PRS-PRJ-PHL-001 for site data.

All material shall be suitable for marine environment and protected against corrosion in marine atmosphere.

9.2 MATERIAL CERTIFICATES

For all materials, VENDOR shall supply chemical analysis and mechanical properties (results of tensile test and impact notch test) Certified Material Test Reports EN 10204 or ISO 10474 type 3.1.

VENDOR shall submit to COMPANY the results of the chemical analyses and mechanical tests (rupture strength, yield strength, elongation, Charpy V impact strength at design temperature, longitudinal and transverse bending for plates) performed on the base and welding metals.

Vendor shall provide the EN 1474-2&3 certificate for Cryogenic hoses.

The JLS system shall be designed in accordance with recognized rules and standards acceptable to the Classification Society.

The JLS system shall be class-approved by a classification society.

Vendor shall provide the Classification society (IACS) approval certificate(s).

10 INSPECTION AND TESTING

All equipment include in VENDOR's scope of supply shall be present for the inspection and test before shipping.

All testing SHALL be done using certified test instrumentation whose specification is equal to, but normally better than, the equipment under test, and which has been checked immediately prior to testing.

The method of testing, the test results together with details and serial numbers of the test equipment, shall be issued on VENDOR's standard Certificate of Tests.

Before assembling and testing, each component and piping shall be cleaned to remove particles and dirt.

10.1 ACCESS

CONTRACTOR and its representatives shall have free access to VENDOR and SUB-VENDORS shops for inspection of the fabrication and assemblies at various stages of completion. This also includes the access to procedures and inspection records during fabrication.

10.2 INSPECTION AND TEST PLAN

All equipment include in VENDOR's scope of supply shall be present for the inspection and test before shipping.

All testing SHALL be done using valid certified test instrumentation whose specification is equal to, but normally better than, the equipment under test.

The method of testing, the test results together with details and serial numbers of the test equipment, shall be issued on VENDOR's standard Certificate of Tests.

Before assembling and testing, each component and piping shall be cleaned to remove particles and dirt.

The extent of inspection and testing shall be in accordance with the applicable codes and documentation, including this specification.

VENDOR shall notify the CONTRACTOR for all suborders for design/supply of equipment made to ensure the completion of order.

Appropriate equipment and operator necessary to perform the required inspection and testing shall be provided by VENDOR.

After contract award and before commencement of the manufacturing, VENDOR shall provide an Inspection and Test Plan (ITP), which sets out specific quality practices and activities relevant to his entire scope of supply. It shall include as a minimum inspection and test activities, procedure references, acceptance criteria, documentation and certification to be provided by the VENDOR. The ITP shall be developed by VENDOR, and shall include blank cells for each activity, in which CONTRACTOR and the third party will define the extent of their participation.

The above shall also apply to major SUB-VENDORs.

The CONTRACTOR, VENDOR and third-party inspector shall confirm compliance with the inspection and test plan by initialling and dating against completed activities, before shipment of the package. The plan may be supplemented by other inspection checklists and outstanding work lists.

It is the responsibility of VENDOR to advise the CONTRACTOR and the third-party inspector when the equipment will be ready for stage inspection. VENDOR shall give notice to the CONTRACTOR and the third-party inspector as specified in the requisition.

Acceptance of equipment shall not release VENDOR from his responsibility to supply the equipment ready to use, and to achieve guarantees.

10.3 TESTS

10.3.1 Non-destructive test (NDT)

The NDT techniques employed and defect acceptance levels shall meet the requirements of the relevant codes.

Any defects found during inspection shall be reported to the COMPANY. Where defects are to be repaired, the repair shall be done according to a procedure accepted by the COMPANY. Re-examination shall include any additional radiographs or tests required by the applicable codes.

Non-destructive tests shall be performed after the Post Weld Heat Treatment and prior to the hydrostatic test.

Dye penetrant inspection shall be performed before painting.

10.3.1.1 Dimensional Check

Dimensional checks shall be carried out to check the equipment's compliance to the applicable standards and some VENDOR's drawings.

10.3.1.2 Visual Inspection (VT)

Visual examination shall be performed on all outer surfaces and internal parts.

10.3.1.3 Radiographic Testing (RT)

100% RT is required on all butt-welds for process.

10% RT is required on all butt welds for utility.

10.3.1.4 Ultrasonic Testing (UT)

UT shall be performed:

- On lifting lugs after welding.
- On fillet welds,
- On finished welds (tightness welds) and all pressure-containing welds subject to low temperature in order to check the absence of linear indications in compliance with ASME VIII div. 1,

100% UT is required for process.

10% UT is required for utility.

10.3.1.5 Positive Material Inspection (PMI)

All parts made of stainless steel shall be PMI tested at least to an extent of 10% for plates, pipes, flanges and weld-joints (weld deposited metals) in the final condition. In case of material rejection, the complete transfer system shall undergo PMI testing to an extent of 100%.

VENDOR shall perform PMI on SS for materials at least for chrome, nickel and molybdenum.

10.3.2 Hydrostatic tests

All equipment shall be submitted to a hydrotest in accordance with the applicable codes prior to any painting.

The transfer system where is needed, shall be hydro tested in VENDOR's workshop prior to any painting to at least 1,5 times design pressure for no less than 30 minutes following ISO 16904 requirements.

Fresh water of a suitable quality shall be used for the hydrostatic test. Water temperature shall not be less than + 17°C.

The water to be used for the hydrotest of carbon steel equipment shall contain a corrosion inhibitor. When potable water is used in easily drainable equipment, the addition of corrosion inhibitor is not necessary.

The water to be used for the hydrotest of stainless-steel equipment shall be:

- Potable water with chloride content < 25 ppm if the equipment can be completely drained and water pockets/stagnations can be removed by rags.
- Demineralized water with chloride content < 10 ppm when a complete drain is not possible. Modifications to the above procedure may be defined for particular cases in the Material Requisition.

During hydrotest, stresses in any part of the equipment shall not exceed 90% of the material's yield strength at ambient temperature (to be justified by calculation).

Once hydrotesting is complete, the equipment shall be thoroughly drained, cleaned, and dried.

10.3.3 Electric motor tests

The VENDOR of motor shall perform a type motor test. This test shall comply with the requirements of DSF-1101902-786-GEN-ELE-PHL-001 – Electrical design philosophy.

10.3.4 Certification tests

Local rules and regulations may require certain equipment such as pressure flexible and lifting devices to be certified by a recognized authority.

Vendor shall provide the EN 1474-2&3 certificate for Cryogenic hoses.

10.4 REJECTION REASON

Acceptance of factory tests does not waive field performance tests at working conditions and does not disengage VENDOR responsibility.

Any part of the equipment, found to have injurious or irremediable defects may be rejected.

Equipment may be subject to rejection even after delivery, notwithstanding any previous acceptance or certification of satisfactory examination or tests.

Equipment subject to rejection shall be repaired or replaced at VENDOR's cost.

10.5 SITE TESTS

After installation at site and during the site acceptance test, tests shall be repeated for checking that the JLS will cover the operating envelope defined within the data sheet.

All clearances shall be checked also against the clearance check study.

These tests shall be carried out against procedures provided by VENDOR and to be agreed by the COMPANY.

10.6 CLEANING AND RUST PREVENTION

Immediately after successful testing, all internal surfaces shall be thoroughly dried and cleaned to remove all water, oil, grease and dirt. All flanges shall be protected with bolted on metal closures. Any equipment extending beyond the skid edge shall be removed, tagged and packed separately in wooden boxes

Screwed connections shall be blanked with screwed plugs, which temporary character shall be easy to identify by paint or other mean to be agreed by CONTRACTOR. Temporary stiffeners shall be painted in a particular colour agreed by the CONTRACTOR, and mention "To be removed" shall be specified in the operating manual concerning these parts.

Machined surfaces shall be protected with an easily removable rust preventive.

Equipment shall be provided dry with all the fluid needed for the first filling, shipped loose:

- lube oil,
- special additives…

The equipment shall be protected from rust during transportation and storage by means of means of silica gel.

11 SURFACE PREPARATION, PAINTING AND COATING

Surface preparation, painting, and coating shall be performed according to painting general specification n° DSF-1101902-786-SPC-PIP-103. VENDOR may propose his standard as an alternative, subject to COMPANY's review and approval.

Colors shall be defined during detail engineering.

Cleaning, pickling, and passivation as ASTM A380 are required for stainless steel components (including welds).

All surfaces exposed to the environment (including exposed stainless-steel surfaces) shall be painted except aluminium alloy, cadmium, and zinc treated or machined surfaces.

Machined surfaces (if any) shall be protected with easily removable rust preventive.

Ladders and platforms (including all related hardware) shall be in accordance with ISO 14122 and shall be hot-dip galvanized. The zinc coating's thickness shall be suitable for a design life of 25 years in a saline atmosphere without the need for additional painting. Cold galvanization is prohibited.

Edges on the structures shall be grinded smooth prior to galvanization.

VENDOR shall ship the amount of each coat/paint (in clearly identified containers) needed to repair any blemishes on the equipment's coat/paint on site after shipment/installation.

12 SHIPMENT PREPARATION

12.1 SHIPPING ACCEPTANCE

After control by VENDOR, final acceptance for shipment can be carried out.

During final acceptance, conformity to drawings (PI&D, GA drawing) and packing list shall be checked.

The unit shall not be shipped by VENDOR before an acceptance or a release note is issued by CONTRACTOR's inspector or its representative.

12.2 DATA BOOK

VENDOR shall provide quality records appropriate to all inspection and test activities. The records shall be referenced against appropriate activities within the ITP. All these records shall be collated by VENDOR in a data book. As-built drawings shall be submitted by vendor with indication of some final dimensions and tolerances after their verification.

12.3 SHOP PREFABRICATION, INSTALLATION AND DELIVERY CONDITIONS

Unit shall be supplied on skids completely assembled as far as compatible with normal transportation limits, in order to minimize site assembly.

Skids will be delivered fully assembled, piped and wired up to skid limits.

Piping interfaces, between VENDOR and COMPANY, shall be made by flanges. Connection size shall be as per COMPANY requirements.

VENDOR shall provide a wiring scheme of electrical cabinets to be set in the cabinets. The cabinet's keys number and those of the switches shall be clearly indicated on the scheme here above mentioned.

Unless otherwise specified, in case of loose equipment and machinery, they shall be supplied in completely assembled conditions, together with lifting lugs, lifting beams, support skirts, legs, supporting structures, base plates, blind flanges, nozzles connection flanges, gaskets, bolts, etc.

If size of individual items and/or package units doesn't permit the transport in erected conditions, shipment can be done in parts that have to be prefabricated to the maximum grade possible in order to minimize field works.

The supply shall include the reinforcements necessary to prevent deformations or damages during shipment of the prefabricated parts.

VENDOR to COMPANY shall submit detailed transport drawings, and detailed information for loose shipping material/equipment which will not be installed on the skid at VENDOR's shop.

12.4 ERECTION WORKS

Site installation, is part of Supplier's Scope of supply,

VENDOR shall provide all instructions for installing the JLS and associated equipment andmaking it ready for commissioning.

12.5 GUARANTEE

VENDOR shall guarantee that all the equipment furnished is free of faults in its design, materials of construction, and workmanship for the period stated in the order. Replaced or repaired parts will be guaranteed by the VENDOR for the period stated in the order.

VENDOR shall guarantee a design life of 25 years for the equipment. VENDOR shall provide a list of major components that will need to be replaced eventually.

VENDOR shall guarantee the equipment's performance over its entire operating range, namely:

- Pressure drop across the pipes/hoseas specified within the data sheet,
- Utility consumption.
- VENDOR shall guarantee the weight mentioned at the bid with a tolerance of

  + 0% / - 10%.

Process Performance Guarantee to be confirmed by Vendor are illustrated below:

- The design LNG loading flowrate of 2,000 m3/h and the allowable friction pressure drop @ 2,000 m3/h between interface points TP-311 and TP-313 of 2.5 bars maximum.
- The design NG Vapor Return of 4,100 Am^3/h @ ship flange, with the following operating conditions: 0.4 barg & -128.8°C. The allowable friction pressure drop @ 4,100 Am^3/h between interface points TP-312 and TP-314 is 0.145 bars maximum.

- The differential of temperature between interface points TP-311 and TP-313, which shall be less than 0.5°C for the whole range of LNG loading flowrate.
- The turndown LNG loading flowrate of 200 m3/h.

It is understood and agreed that if the stated performances are not achieved, the Vendor shall, at his own care and expenses, make the necessary modifications or replacement in the supply to enable the guaranteed performances to be achieved.

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Client :

HELLENIC GAS TRANSMISSION SYSTEM OPERATOR (DESFA S.A.)

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Subcontractor :

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Project Name :

SUPPLY OF JETTY-LESS SYSTEM DEDICATED TO THE FILLING OF LNG CARRIER

Client's Contract number :	W.B.S. :	Project ID::	Format
S60001613	**Xxxx**	**DSF-11-019-09**	**A4**

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PROCESS DUTY SPECIFICATION OF THE JETTY LESS SYSTEM

Client's document No. :	Rev.	Page
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1 INTRODUCTION

1.1 PURPOSE OF THE PROJECT

DESFA is willing to diversify its offer by providing bunkering services for small LNGC from 1,000 to 30,000 m^3. In order to allow fast development of this Project and taking into consideration all geotechnical constraints, DESFA has decided to implement a Jetty-Less solution to perform these operations.

The Jetty-Less solution is predicted to be located at the North East of the island where the Quay Wall project was predicted.

The purpose of the Project is to prepare Technical RFQ for the supply of the Jetty-Less system.

1.2 PURPOSE OF THE DOCUMENT

The purpose of this document is to provide the process data required to design the Jetty-Less system (tag number to be confirmed at further stage).

1.3 PURPOSE OF THE REVISION

- The purpose of the Revision '0' is ''Issued for Review''.
- The purpose of the Revision '1' is ''Issued for Approval''. The document has been revised to take into account detailed hydraulic calculations performed in May 2024.
- The purpose of the Revison '2' is ''Issued for Approval''. The document has been revised to take into account COMPANY comments.

2 INPUTS AND REFERENCES

This document has been prepared with consideration of the following inputs documents:

2.1 REFERENCE DOCUMENTS

- DSF-1500401-E20013905-GEN-PRS-PHL-001 Basis of Design
- DSF-11-019-09-S60001613-GEN-PRJ-REP-001 Preliminary Mooring Analysis Report
- DSF-11-019-09-S60001613-GEN-01-1-001 General Arrangement Drawing of the Marine Infrastructures

2.2 NORMS AND INTERNATIONAL STANDARDS

- SIGTTO - ESD Arrangements & Linked Ship Shore Systems for Liquefied Gas Carriers

3 TERMS AND DEFINITION

3.1 DEFINITION OF TERMS

- PROJECT SUPPLY OF JETTY-LESS SYSTEM DEDICATED TO THE FILLING OF LNG CARRIER
- COMPANY DESFA
- CONTRACTOR SOFREGAZ
- VENDOR Any person, firm or business which design, manufacture or supply material, equipment and services.
- SUBCONTRACTOR Any third party contracted by CONTRACTOR to perform specific parts of the EPC Contract

3.2 ABBREVIATIONS

- BOG Boil-Off Gas
- JLS Jetty Less System
- LNG Liquefied Natural Gas
- LNGC LNG Carrier
- NG Natural Gas
- SSLNGC Small Scale LNG Carrier

4 PROCESS DESCRIPTION

The Jetty-Less system will allow loading of Small Scale LNG Carrier having a capacity ranging between 1,000 m^3 and 30,000 m^3. The LNG loading flowrate will vary from 200 m^3/h to 2,000 m^3/h. The design NG vapour return is estimated to 4,100 Am^3/h @ -128.8°C, with 10% overdesign included.

The Jetty-Less system will be composed of the following main process functions:

- Cryogenic transfer systems for connecting the shore to the jetty-less platform (for LNG transfer and for BOG vapour return). The technology for the transfer system shall be proposed by vendor. The line size of each transfer system is to be confirmed by Vendor based on the allowable pressure drop defined in this specification.
- The jetty-less platform, to allow connection and LNG/BOG transfer system with the visiting Small Scale LNG Carrier. The jetty-less platform will be provided with all necessary piping, valving and utilities as required to ensure safe operation of the system.
- Two or more aerial type cryogenic hoses establishing connection between the jetty-less platform's and SSLNGC manifold (size to be confirmed by Vendor).
- An ERS system (similar as those provided for Marine Unloading Arms), to allow safe disconnection with the SSLNGC in case of emergency (emergency shutdown stage 2).
- A Ship Shore Link (as per SIGTTO guidance) to allow an interconnection of the ESD systems (Terminal, Jetty-Less System and SSLNGC).
- Utility transfer systems for supplying utility gases from shore to the jetty-less platform (nitrogen, instrument air and service air). At shore side, a 2 inch connection is available for nitrogen, and 2 x 1 inch connections for instrument air and service air.

Similarly, as for LNGC manifold design, emergency shutdown valves shall be provided on the jetty-less platform to isolate the system (both LNG and NG return lines) in case of emergency (emergency shutdown stage 1).

During holding mode (period when there is no ship loading), the jetty-less system shall be drained and inerted with nitrogen. As a case, the LNG will be drained back to shore using nitrogen from the terminal. It is intended to supply the nitrogen from the terminal to the jetty less platform via a 2inch connection at shore side and to push the LNG from the jetty-less platform back to shore using nitrogen as motive gas. A crossover connection between the BOG line and the LNG line shall be provided on the jetty-less platform to allow possibility of LNG to be vented back to shore through BOG line(s), in case draining procedure cannot be performed. Vendor is required to advise about theseprocedures, based on its own experience and design.

As a backup, Vendor shall include in its proposal a nitrogen system installed on the jetty-less platform, in order to drain and purge the jetty-less connection system with the SSLNGC (aerial type cryogenic hoses), in case nitrogen gas is not available from the terminal.

The draining procedure for the aerial type cryogenic hoses establishing connection between the jetty-less platform's and SSLNGC manifold shall be discussed/confirmed with Vendor, and agreed between Company and Vendor during design.

Vendor shall also propose a Jetty-Less System with the possibility to allow a permanent LNG recirculation during the holding mode. In this case, the LNG draining operation will be limited to the connection with the SSLNGC. Vendor shall confirm the feasibility of this permanent LNG

recirculation through the cryogenic transfer systems (in this case, the draining procedure with nitrogen is still applicable).

5 SITE DATA

For general site data, refer to document DSF-1500401-E20013905-GEN-PRS-PHL-001 Basis of Design (Basis of Design document prepared for the Quay Wall project_initial project, as reference document).

For all other data (metocean data, carrier characteristics, mooring plan, etc.), refer to the relevant project documents listed in section 2.1 (in particular to determine the overall length of the system for verification of the total pressure drop).

6 PROCESS DATA

6.1 INTERFACE POINTS DEFINITION

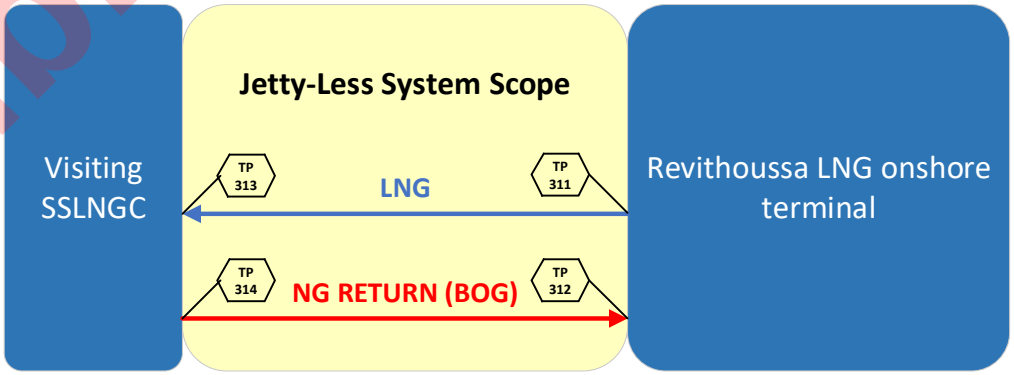
The process interface points at shore battery limit and visiting SSLNGC are defined in the following table:

ID.	Description	Location	Connection size	Material	Interface Rating
TP-311	Ship loading header connection	North-East of Revithoussa Island	16" (note 2)	SS	150#
TP-312	BOG line connection	North-East of Revithoussa Island	12" (note 2)	SS	150#
TP-313	SSLNGC liquid connection	Visiting SSLNGC manifold	16" to 8" (note 3)	SS	150#
TP-314	SSLNGC vapor connection	Visiting SSLNGC manifold	16" to 6" (note 3)	SS	150#

Notes:

1. Deleted.
2. Transition piece between shore and cryogenic transfer system of the JLS will be provided by Vendor.
3. Transition piece between SSLNGC manifold and aerial type cryogenic hose will be provided by Company according to the various SSLNGC manifold size (16", 12", 10", 8" and 6" sizes to be considered, JLS vendor to advise the type of transition piece).

The following block flow diagram shows also these interface points.



6.2 LNG COMPOSITION

The typical and the extreme compositions and properties of the LNG as delivered to Revithoussa Terminal are given in the following table:

Description	Unit	Typical	Max MW	Min MW
Component				
Nitrogen	mol%	0.86	1.24	0.18
Methane	mol%	92.09	85.76	96.61
Ethane	mol%	6.23	8.54	3.21
Propane	mol%	0.71	3.01	0.00
i-Butane	mol%	0.05	0.52	0.00
n-Butane	mol%	0.06	0.70	0.00
Pentanes (C5+)	mol%	0.00	0.23	0.00
Molecular Weight	kg/kmol	17.265	18.876	16.515
LNG Density	kg/m^3	449.8	480.2	432.0

6.3 BOG COMPOSITION

The typical and the extreme compositions of the BOG are given in the following table:

Description	Unit	Typical	Max MW	Min MW
Component				
Nitrogen	mol%	19.87	31.09	4.01
Methane	mol%	80.12	68.90	95.98
Ethane	mol%	0.01	0.01	0.01

6.4 DESIGN FLOWRATE & ALLOWABLE PRESSURE DROP

The design LNG loading flowrate is 2,000 m^3/h. The allowable friction pressure drop @ 2,000 m^3/h between interface points TP-311 and TP-313 is 2.5 bars maximum.

The design NG Vapor Return is estimated as 4,100 Am³/h @ ship flange, with the following operating conditions: 0.4 barg & -128.8°C. The allowable friction pressure drop @ 4,100 Am³/h between interface points TP-312 and TP-314 is 0.145 bars maximum.

6.5 *OPERATING CONDITIONS*

The operating conditions (pressure & temperature) for each process interface point are defined in the following table:

ID.	Description	Operating Pressure (barg)		Operating Temperature (°C)	
		Min.	Max.	Min.	Max.
TP-311	Ship loading header connection	Note 1	Note 1	-161.4	-
TP-312	BOG line connection	Note 1	Note 1	Note 2	-
TP-313	SSLNGC liquid connection	1.5	3	Note 2	-
TP-314	SSLNGC vapor connection	0.4	-	-128.8	-

Notes:

1. To be confirmed by vendor based on actual pressure drop through Jetty Less System.
2. To be confirmed by vendor based on heat ingress through Jetty Less System.

6.6 *DESIGN CONDITIONS*

The design conditions for each process interface point are defined in the following table:

ID.	Description	Design Pressure (barg)		Design Temperature (°C)	
		Min.	Max.	Min.	Max.
TP-311	Ship loading header connection	FV	19	-170	65
TP-312	BOG line connection	-	19	-170	65
TP-313	SSLNGC liquid connection	-	Note 1	-163	80
TP-314	SSLNGC vapor connection	-	Note 1	-163	80

Notes:

1. 150 lbs piping class system to be considered.

7 PROCESS DESIGN REQUIREMENTS

- Vendor to provide pressure drop Vs flowrate chart of the Jetty-Less System (for the 3 LNG compositions). If pressure drop calculated by Vendor is higher than pressure drop allowable, Process department approval is required.
- Temperature measurement along the length of the cryogenic transfer system shall be provided by Vendor.
- Leak detection system for the cryogenic transfer system shall be provided by Vendor.
- High performance insulation shall be provided for cryogenic transfer system, to ensure minimum boil-off gas generation (differential of temperature between interface points TP-311 and TP-313 shall be less than 0.5°C for the whole range of LNG loading flowrate).

8 PROCESS PERFORMANCE GUARANTEES

Vendor shall guarantee the following parameters:

- The design LNG loading flowrate of 2,000 m^3/h and the allowable friction pressure drop @ 2,000 m^3/h between interface points TP-311 and TP-313 of 2.5 bars maximum.
- The design NG Vapor Return of 4,100 Am^3/h @ ship flange, with the following operating conditions: 0.4 barg & -128.8°C. The allowable friction pressure drop @ 4,100 Am^3/h between interface points TP-312 and TP-314 is 0.145 bars maximum.
- The differential of temperature between interface points TP-311 and TP-313, which shall be less than 0.5°C for the whole range of LNG loading flowrate.
- The turndown LNG loading flowrate of 200 m^3/h.

9 PROCESS DATA, ASSISTANCE, STUDIES AND DOCUMENTS REQUIRED FROM VENDOR

9.1 PROCESS DATA, ASSISTANCE AND STUDIES REQUIRED FROM VENDOR

Vendor shall provide at least the following information:

- Curve of pressure drop versus flowrate;
- Overall heat ingress through the system;
- Utility requirements from SSLNGC / shore if any.

9.2 PROCESS DOCUMENTS REQUIRED FROM VENDOR

The documents supplied by Vendor shall include but not be limited to the following:

- Process Flow Diagram;
- Process & control description (including cool-down and LNG draining philosophy);
- Utility balance;
- Process data sheet of equipment;
- Process data sheet of instrumentation;
- Piping & Instrumentation Diagram;
- Cause & Effect matrix;
- Operating Manual (including detailed procedure for cool-down, LNG draining and system inerting when not in operation).

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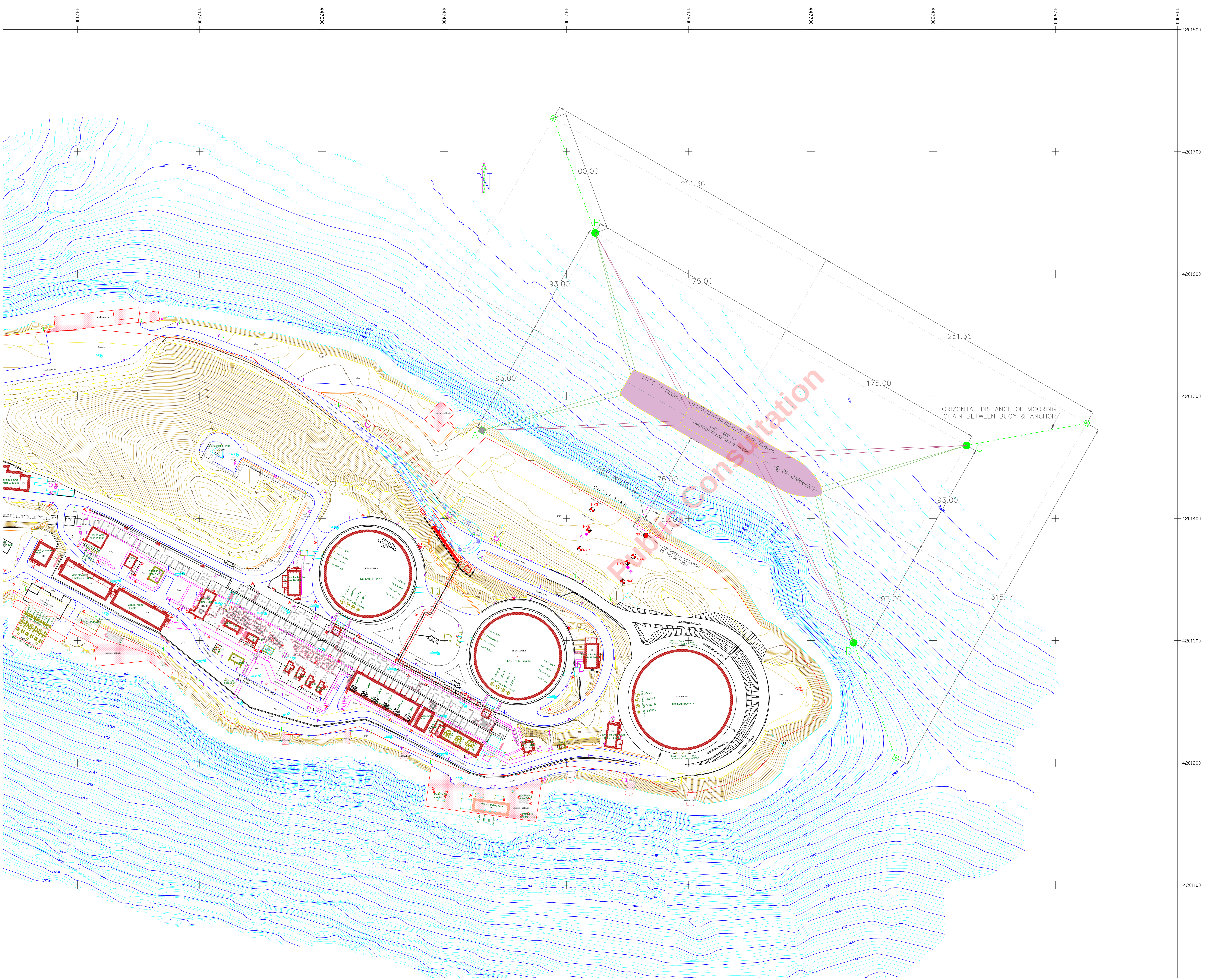

LEGEND

+ 4201600	GEOGRAPHICAL COORDINATES GREEK GEODETIC REFERENCE SYSTEM 87 (GGRS87)
B ●	MOORING BUOYS
A ■	TERRESTRIAL MOORING BASE
———	MOORING LINES OF LNGC WITH 30.000m3 CAPACITY
———	MOORING LINES OF LNGC WITH 1.000m3 CAPACITY
⊠	ANCHOR POINT OF MOORING CHAINS

NOTES :

1. BATHYMETRIC CONTOURS IN METERS BELOW LLWL
2. LLWL: LOWEST LOW WATER LEVEL
3. THE DASHED ORTHOGONAL REPRESENTS THE EDGES OF THE CENTRAL PLATFORM FROM PREVIOUS DESIGN. THE CENTER LINE OF THE LOADING ARMS IS ALSO DEPICTED AND IT'S CROSSING WITH THE SHORE HAS BEEN CONSIDERED AS THE TIE-IN POINT, ACCORDING TO DESFA's INSTRUCTIONS.

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Client : DESFA Hellenic Gas Transmission System Operator S.A. — HELLENIC GAS TRANSMISSION SYSTEM OPERATOR S.A.

Engineer : SOFREGAZ

Consultant :

Project name : SUPPLY OF JETTY-LESS SYSTEM DEDICATED TO THE FILLING OF LNG CARRIER

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