Form – Appendix No 10

PROPOSAL FOR IMPLEMENTATION

(TECHNICAL OFFER)

By **J&P-AVAX S.A.**, *(name of the Participant)*
seat and registered address **16 Amarousiou-Halandriou street, 151 25, Marousi, Athens, Greece,** [BULSTAT/UIC/PIN/number of registration and/ or another identifying information in accordance with the laws of the country where the Participant is established][1]: **GEMI No.913601000 (General Commercial Registry)** - Participant in a restricted procedure for award of a public procurement with a subject matter: **"Design, procurement and construction of the natural gas Interconnector Greece-Bulgaria (IGB Project)"**

represented by **Konstantinos Lysaridis**, *(name surname and family name)*
~~Personal Identity Number……~~, personal ID card No **AN 218198**, issued on **29/05/2017** by the Ministry of Interior **(Police Station of Thermi, Thessaloniki)**[2], in his capacity of **Vice President & Executive Director**[3] of the Participant

DEAR LADIES AND GENTLEMEN,

I. We hereby present our proposal for implementation of the activities within the scope of the Public procurement. We offer to perform the activities, subject to the Public procurement, in accordance with the requirements of the Contracting entity, as follows:

1. Engineering services

- *Organization of the engineering process and of the personnel for the engineering (for each part of the Detailed design) – structure, allocation of tasks and responsibilities, competence;*
- *The overall detailed designing process;*
- *Schedule of the activities which the Participant intends to perform in regard to compensation for crop loss, rights of way, updating permits and other documents necessary for the lawful construction, as well as for obtaining new documents, if necessary;*
- *Measures for health and safety working conditions and environmental protection (HSE), including fire protection and the relevant procedures and organization in accordance with the subject of the Public procurement;*
- *Other, at the discretion of the Participant.*

(Quality Assurance)

CONTRACTOR will carry out the detail design for the pipeline section which is subject of the Contract.

[1] Only the correct text shall remain.
[2] If the representative(s) of the Participant is/are not citizen(s) of the Republic of Bulgaria please indicate individualizing information in accordance with the laws of the country whose citizen is/are the respective person(s).
[3] When the Participant is represented jointly by more than one person the stated data shall be filled for each one of them.

The scope of the detail design and construction Engineering Work includes the pipeline, block valve stations and scraper stations, metering and regulating stations, all required civil structures and building related to the Work, the cathodic protection system, SCADA and FOC installation, the temporary facilities (camps, pipe yards) as well as the access roads.

In general, the detailed engineering includes:

- Process flow and piping and instrumentation diagrams
- MTOs and material requisitions
- Specifications
- Instructions
- Detailed Design drawings and Drawings issued for construction
- Alignment sheets
- Study reports
- Calculations
- Construction permits application packages, etc.

The execution of the above design services will follow the "center line" defined by the COMPANY to the maximum possible extent, will meet the process, operational and other criteria applicable to the Works and Contract, will provide a basis for the procurement of the material and equipment, will comply with Project's requirements, will identify and resolve interfaces, will provide engineering records for the Work.

The extent of the Engineering activities is mentioned and analyzed in full details in the attached Engineering Execution Plan (see Attachment No1).

All the main Engineering activities (i.e. piping, process, civil, pipeline, electrical, instrumentation, cathodic protection, crossings, BVSs, access roads etc.) will be subcontracted in one or more subcontractors, for the Greek part, after the prior consent of the COMPANY and will be elaborated by the personnel declared in the relevant list as submitted during phase A.

The Design Office will be operational in due time after the commencement date, so that the Engineering activities can begin immediately in order to achieve the review of the Company's TD and FEED in time and also to fulfil the demands of a very tight construction time schedule.

The process in which the Contractor intends to review the Company's FEED and elaborate the Detailed Engineering Design is depicted in Attachment 1 (Engineering Execution Plan).

Sufficient and experienced engineering personnel will be used for the elaboration of the Detailed Engineering Design, as well as for the review in time of the Company's TD and FEED.

CONTRACTOR is going to develop an organization according to contract requirements, regarding permit acquisition and social performance.

CONTRACTOR's organization for the Project including organizational interfaces, interrelationship lines of reporting / communication and hierarchical structure is documented on the Project Organization Chart (Attachment 10).

The CONTRACTOR will implement all necessary procedures, documents and measures to ensure compliance with the:

- National Legislation, Regulations, Legal Standards
- The European Union Legislative Framework adopted by the COMPANY for the environmental and social management

- COMPANY's Policies
- CONTRACTOR's Policies
- Necessary Permits for the construction of the Project (e.g. crossing permits, etc)
- Approved Project's Environmental Terms (Minist. Decision 174848/12-9-2014)
- All Contract Documents
-

For the achievement of the above the CONTRACTOR will:

- develop a comprehensive Legal Register and Permits Register for its Project activities and operations. This will be supplied to the COMPANY for information and review. The CONTRACTOR also, will maintain the Registers and report to the COMPANY progress on obtaining permits and complying with conditions
- obtain all necessary permits required for the performance of the Contract, except if otherwise provided by the COMPANY
- respond to requests and provide information required for those permits that the COMPANY is obtaining in a timely fashion
- request any permits that the COMPANY are responsible for obtaining in a timely manner so that schedule delays are not experienced
- adhere to and fulfill all of the conditions and reporting requirements associated with any permit
- abide by all national laws, rules and regulations concerning environmental protection, human rights and social safeguards
- undertake regular environmental, social and cultural heritage monitoring and inspections and reporting directly to the Project owner (the COMPANY)
- demonstrate how requirements will be implemented during Project phases
- construct structural elements or components of the Project in accordance with good international industry practice, considering the potential exposure to natural hazards, especially where the structural elements are accessible to members of the affected community or where failure could result in direct or indirect injury to the community

A Register of Legal Requirements will be kept on every site during the execution of the project. This register will contain all National legislation (laws, by-laws, ordinances, statutes, regulations, technical memoranda of Greek State Agencies, etc.), European Union legislation and International Conventions and Agreements signed/ratified by Greece and Bulgaria relating to the protection of the environment, society and cultural heritage, and concerning this Project.

CONTRACTOR's Register of Legal Requirements will be structured in accordance with the ISO 14001 Standard and the COMPANY's requirements and guidelines.

The Register of Legal Requirements will be a living file. New or upcoming legislation that may be identified will be incorporated in the Register of Legal Requirements. In every worksite there will be always the latest review of this register.

Also, a Permit Register with all the necessary permits for the performance of the Project's Contract will be kept on each site during the execution of the project. It is mentioned that a number of permits must and will be obtained by the CONTRACTOR prior the construction of its installation for the commencement of the Project's works. Also, the CONTRACTOR will include in the Permit Register any permits that the COMPANY is responsible for obtaining, after a timely relative request. In order to be structured the CONTRACTOR's "Permit Register", COMPANY's contractual documents will be considered. The Permit Register will be a living file like the Legal Register.

Details about "Permitting" are provided in the Attachment 6 of the proposal package. Also, detailed description of activities regarding CONTRACTOR's structure and schedule for estimating crops loss compensation and permits for Right of Way entry and exit are provided in Attachment 2.

CONTRACTOR's personnel will be trained on Project's legal requirements and permitting issues prior the commencement of the works. Detailed instructions and training will be provided, throughout the Project, to personnel and subcontractors in specific tasks.

CONTRACTOR's dedication to Health, Safety, Security, Environment and Social is best revealed through the extensive efforts exerted by its HSE department in this regard. HSS is one of CONTRACTOR's highest priorities. CONTRACTOR's Health, Safety, Security, Environment and Social department has developed a comprehensive HSE plan, and a complete set of detailed HSE procedures specifying the safe manner in which every job, on a project, should be performed. CONTRACTOR's HSS and E&S procedures undergo continuous revision and improvement to ascertain that CONTRACTOR attains its ultimate goal of zero Accidents. CONTRACTOR's commitment to safety is manifested through over 77 HSS and E&SE procedures it has developed to safeguard its work force, as well as preserve the environment in which it operates.

HSS leadership priorities' and targets are monitored and action taken to address deficiencies and promote exemplary behavior on all levels of the organization, i.e. on the Corporate level, on the Site Management level, on the Supervision level, on the Workforce level and on Subcontractors level.

CONTRACTOR process in controlling work and ensure safety of its activities and workforce encompasses the following:

1. Method Statements that details the sequence of the job, along with it a Risk Assessment should be available to identify the potential hazards associated with the job and ways to control them to acceptable level
2. Implement the hierarchy of control when dealing with the hazards. Eliminate, Reduce, Isolate and Control the hazard whether through engineering controls or administrative controls and to put in place a set of collective preventive measures that furnish for a safe working place and a safe person who can implement his tasks safely
3. Permit to Work, in order to provide the necessary controls to allow for the safe execution of hazardous jobs
4. HSS Procedures, that details the safe systems of work for every activity and field within Contractor operations
5. Daily Tool Box Talks, and Job Safety Task Instructions that are delivered to the workers to make sure they are aware of their job and its inherent hazards

6. Subcontractors Management that includes Subcontractors Selection & Control + Subcontractors Compliance with Contractor HSS-MS
7. Personnel Assigned to the Job should be Competent, medically fit and with the appropriate certifications if needed
8. Audits:
    - PROJECT HSS&S Audits
    - Corporate HSS&S Audits
    - 3rd Party HSS&S Audits

CONTRACTOR has the following steps in place to ensure that all personnel are empowered and obligated to stop unsafe work:

1. Stop Work is an integral part of Contractor HSS Management system
2. Stop work is authorized by PM to stop unsafe acts and conditions, where each and every employee on the site will hold a card signed by Project Management Team that gives him the right to stop any unsafe activities or that expose risk to his own and the employees safety
3. Cards are issued to employees with the PM signature to support this practice
4. In the event of any Stop Work instance the circumstances around the Stop work will be immediately investigated and the appropriate corrective or mitigation measures put in place such that the Stop Work can be lifted and the work resume.

The core part of CONTRACTOR's HSS Policy states that: "All CONTRACTOR'S employees or our subcontractor's employees are entitled to and have the responsibility to stop work, if they feel that such work is being performed under unsafe or potentially hazardous conditions", by reporting hazardous situations through an escalation scheme that authorize them to involve their superiors, up to our company top management, if their observation is not properly and timely taken into consideration by their immediate supervisor.

In the past, it has occurred in a number of work situations at our PROJECT sites that activities have been suspended due to the need of reassessing the work conditions and prevention measures, following indications from the work crews. In this occasion, CONTRACTOR management, firstly the line management has never failed to support and encourage the philosophy of the stop unsafe work attitude.

Details about "HSE" are provided in the Attachment 5 of the proposal package.

Details for security are provided in the Attachment 4 of the proposal package.

Contractor's Quality System

CONTRACTOR's organization for the Project including organizational interfaces, interrelationship lines of reporting / communication and hierarchical structure is documented in the Construction Execution Plan.

CONTRACTOR's Project Quality System meets the requirements of:

- ISO 9001:2015 and ISO 10005 standard
- Contract Schedules (as applicable)
- COMPANY Specifications (as applicable)
- Local Rules and Statutory Regulations (as applicable)

The Project Quality System is implemented through two sets of governing documents:

- The Contract, specifications, procedures, local rules and regulations, etc.
- CONTRACTOR Quality System documents based on CONTRACTOR's corporate guidelines.

The CONTRACTOR Quality System documents (listed below) provide a system of quality assurance and quality control to a level consistent with the requirements noted above.

Level 1: CONTRACTOR Quality Manual, which defines the corporate objectives and policies, and demonstrates how they are applied to comply with the requirements of ISO 9001:2015.

Level 2: The Project Quality Plan and Corporate Project Quality Management Procedures which specify the management activities, responsibilities, quality standards and provide instructions necessary to meet the specified quality requirements of the Contract.

Level 3: Construction Method Statements, and quality control documentation such as Quality Control Procedures and Inspection & Test Plans which specify activities, responsibilities, specifications/standards and instructions necessary to meet the detailed specified quality requirements of the Contract.

Level 4: Quality Records generated throughout the Project. Revisions to Quality Management Procedures are originated by the Department Manager concerned, reviewed by the QA/QC Manager or his designee and approved by the Project Manager.

The Project quality philosophy and system of CONTRACTOR embraces the activities of its Suppliers / Subcontractors who are required to conform either to their own existing quality system or to defined CONTRACTOR procedures to ensure compliance to Project specifications. Where there is a difference between their own and CONTRACTOR procedure the latter will rule.

The Contractor will apply documented Quality Management Procedures that form part of J&P-AVAX S.A. Corporate Quality Management System. If necessary, new project specific procedures will be developed according to contractual requirements and will be implemented after being approved by the COMPANY.

At least the following procedures will be developed and submitted upon contract award.

CORPORATE QUALITY PROCEDURES
Drafting And Monitoring Contracts Procedure
Project Organization, Performance And Monitoring Procedure
Mechanical Equipment Management Procedure
Subcontractors Management Procedure
Purchasing Procedure
Personnel Training Procedure
Documents Development Procedure
Document and Data Management Procedure
Inspection, Measuring and Test Equipment Control Procedure
Internal Audits Procedure
Management of Non-Conformances, Corrective and Preventive Actions
Management Review Procedure
Communication Procedure
Design Management
Risk Management
Inspection and Testing
Technical Queries
Change Management

PROJECT QUALITY WORK PROCEDURES
XXXX.WI.01 Client Pipe Handling Procedure
XXXX.WI.02 Material Procurement & Handling Procedure
XXXX.WI.03 Right of Way Procedure
XXXX.WI.04 Procedure for Obtaining Permits from Public Organizations or Authorities
XXXX.WI.05 Excavation & Trenching Procedure
XXXX.WI.06 Earthmoving, Backfilling & Compaction
XXXX.WI.07 Reinstatement Procedure
XXXX.WI.08 Concrete Works Procedure
XXXX.WI.09 Transport and Stringing Procedure
XXXX.WI.10 Pipe Bending Procedure
XXXX.WI.11 Welding Procedure
XXXX.WI.12 Coding of Welds Procedure
XXXX.WI.13 AGI's Installation Procedure
XXXX.WI.14 N.D.T. of Welds Procedure
XXXX.WI.15 Insulation of Field Joints Procedure
XXXX.WI.16 Pipe Lowering -in Procedure

XXXX.WI.17 Hydro testing Procedure
XXXX.WI.18 Drying Procedure
XXXX.WI.19 Painting Procedure
XXXX.WI.20 HDPE Pipe Installation Procedure
XXXX.WI.21 Horizontal Directional Drilling Procedure
XXXX.WI.22 CP System Installation Procedure
XXXX.WI.23 Electrical Works Procedure
XXXX.WI.24 Instrumentation Works Procedure

At least the following Quality Control Plans will be developed and submitted upon contract award.

QUALITY CONTROL PLANS
Pipe Welding
Welders And Welding Operators Qualification
Welding Procedure Specifications (WPS)
Civil and structural works
Piping / Mechanical works
Electrical works
Instrument & control works
Coating works
Painting Works of AGIs
Crossings
Reinstatement
Access Road & Paving
Cable Conduit Installation and Testing
Hydro testing

CONTRACTOR will manage all interface activities related to all contractual works and will allow for such meetings, reviews, communication and coordination necessary to ensure that there are no discontinuities at the interfaces with all parties inclusive of COMPANY, Subcontractors and Suppliers.

Interface activities will include, but will not be limited to, the co-ordination, management and control of activities during each phase of the works, to achieve the contractual requirements, including management, resolution of issues, and documentation/information transfer between parties.

Coordination with local and national Authorities will be detailed at mobilization stage in full consultation with COMPANY.

CONTRACTOR will develop an Inspection & Test Plan which will set out in matrix format the sequence of inspection steps, the governing document (specification, standard, etc.), the standard to be achieved, the persons witnessing and the supporting documents to be produced.

Inspection reports will be completed as work proceeds and will not be left until the end of the job. The ITP is to be used as a plan only and acceptance signatures will be obtained on the forms. Sign off and submission to COMPANY (if required) will follow as soon as possible after the work is completed.

The Project Quality System is supported by the following documents:

- The Project Management Commitment - Quality Policy Statement
- The Project QA/QC organisation structure
- The Project Quality Plan
- The Project Procedures
- The Corporate Quality Management and Standard Procedures, which complete the Quality Plan and describe the implemented means to control the Project
- The design documents issued to comply with the procedure 'Design Management'
- The Project execution and control documents with precise requirements, resources, methods, materials and specific controls for a specific task, a part of work or list, the tests to be performed for an equipment or work, especially Work Method Statements (WMS) and Material Approval Requests (MAR)
- The Execution follow-up documents, which constitute the record that inspections and tests have been successfully carried out and prove that expected or required quality is obtained. They comprise, not exhaustively:

- Inspection Checklists
- Material Certificates
- Non-Conformance Reports (NCR)
- Follow-Up Quality Documents
- Minutes of meetings
- Audit reports
- Corrective and Preventive Action Reports (CPA) etc.

Details about Contractor's Quality System are provided in the Attachment 3 of the proposal package.

2. Strategy for procurement of materials and equipment. Logistics

- *The Participant shall demonstrate its strategy for procurement of the necessary materials and equipment, as well as for their transportation, storage and preservation. By the development of the strategy it should be taken into account that the procurement of pipes DN 800 will be subject to a separate contract between the Contracting entity and its Supplier, whereas the Contractor shall be liable for the receipt and storage of the pipes in accordance with the requirements of the Contracting entity and should implement them afterwards in the construction. The Participant shall provide in its Technical offer the quantities of line pipes with individual pipe length of 12 and 18 meters for positions 1, 3 and 5 of "Bill of Quantities - line pipes DN800" - part of Technical specification for supply of pipes DN 800 (32") - that will be attached to the Appendix 1 of the of the Documentation (Technical Specification). The Participant shall define the quantities of line pipes with individual pipe length of 12 and 18 meters for the required positions based on its knowledge, experience and equipment in order to define the best price for the Project implementation. The Participant shall base its total price for implementation of the subject matter of the*

Public procurement (see p. 4 of Appendix No 11 – Price offer) on the proposed quantities of pipes with individual pipe length of 12 and 18 meters as described above. The proposed ratio between 12 and 18 meters individual pipe lengths shall be provided to the Line pipe supplier and shall be set as a requirement in the Line pipe delivery programme.

- *This part of the Technical offer should contain also a description of:*
  - *Procurement of long lead equipment, as well as additional materials for the construction;*
  - *Logistic plans for transportation and storage;*
  - *Temporary storage warehouses;*
  - *Transportation of pipes and equipment to the construction sites;*
  - *Structure and organization of the personnel responsible for the logistics and the implementation of the strategy for procurement of materials and equipment, distribution of the technical resources;*
  - *Inspection and testing procedures regarding the materials and equipment to be supplied;*
  - *Strategy for selection of suppliers;*
  - *Other, at the discretion of the Participant.)*

Procurement activities are a key element in the Project execution being of equal importance as Engineering and Construction.

The main principles of the procurement services to be provided by Contractor are the following:

- Purchasing
- Expediting
- Inspection
- Shipment
- Site Delivery

The Contractor will procure all necessary permanent and temporary material and consumables.

Contractor has carried out during the Proposal phase an inquiry campaign, aiming not only at establishing the quotation, but also to commence technically and commercially the definitive procurement strategy during the Contract execution phase. It is therefore expected that the main items such as valves, pipes for stations, vent closures, fittings and other mechanical equipment as well as instrumentation and electrical materials, will be procured by supplementing and consolidating the quotations already received during the Proposal phase and new quotations received after Contract Award. For such items it is expected that the issue of new Material Requisitions will mainly mean just putting in good order under one self-standing and fully enclosed scope document the information available during the Tender preparation, duly supplemented by the results of the basic design review and by possible developments resulting from Engineering performed by the CONTRACTOR's Design Office.

The Procurement Department will collect from the Project Management Team the Material Requisitions, each one complete with code of account, complete scope and battery limits description, technical specifications, Quality Assurance specifications, referenced drawings, regulating codes/standards, references, etc.

On receipt of the requisitions, the Procurement team will prepare the enquiry documents. Such enquiry documents which constitute the Call for Bids packages that will be issued to the vendors with the "Instructions to Bidders" (due date, contractual, commercial requirements, etc.).

A "procurement status report" will be continuously updated and issued as per contract procedures. This will include for each material I equipment the relevant item and requisition number, vendor's names, date of issue of enquiry and bid's due date.

All quotations will be evaluated by the Procurement team and the Project Management Team. Each time the "procurement status report" will be revised by updating the number of enquiries issued, bids received and possible letters from vendors declining to bid.

The technical and commercial bid tabulations along with the classification of the vendors will be presented by the Procurement Manager to the Project Manager.

Once the Project Manager has approved the tabulation and recommendation for the selected Vendor, the purchase order will be issued with all accompanying documents. Copies of the purchase order will then be distributed to all concerned parties, in accordance with the Document Control procedure. The purchase order is registered in the procurement status report.

Purchase orders are classified according to technical and delivery criticality, in order to determine the appropriate extent of expediting, ranging from a program of periodical visits to Vendor works down to simple desk actions, possibly turned into visits only in case critical situation arise.

An inspection team will be composed of experienced engineers who, depending on their respective discipline, will inspect the material and equipment ordered as per a Project specific Extent of Inspection.

Final inspection will be performed by the CONTRACTOR's Inspectors/Engineers as per the origin of the Material Requisition. Inspectors from Third Party Inspection Organisation may be appointed in special cases.

The Inspectors will work in close co-operation with the Procurement and Engineering team.

The Extent of Inspection is prepared and tailored to the criticality of the order and a Pre-Inspection meeting is held with each Vendor in order to present and clarify all inspection requirements.

The Procurement Co-ordinator operates on site and is responsible for:

- Reporting to Project Manager concerning orders/shipments/deliveries of all materials,
- Handling any other site requirements in relation with materials needs,

The Logistic Co-ordinator operates on site and is responsible for:

- Reporting to Construction Manager concerning receipt of materials
- Supervising material receipt, storage, handling and distribution to site for construction.
- Supervising the operation of the Site Warehouse.

Upon receipt, the material will be inspected, and tagged as necessary, to facilitate traceability. Correspondence with purchase order and MR will be verified upon receipt. Site personnel will also be responsible for insuring all equipment is placed correctly.

Once the check is completed at site, and the compliance to the documents has been verified, the material and equipment will be handed over either to the site temporary warehouse or directly on its proper foundation.

The Procurement and Materials Management including vendor selection, sources of supply of contractor supplied materials will be as per Attachment 7 Procurement Execution Plan.

The Contractor will be responsible for all transportation of pipeline materials from the pipe yards to working strip and will proceed to all the necessary actions for transporting these materials.

In order to do this it is necessary to:

1. Obtain the necessary approval by the traffic police
2. To inform the Transportation authority
3. To inform local communities when the route is going through villages, small roads etc.
4. To ensure that the truck dead load can be withheld and it is under the limit of the weight restrictions on public roads or bridges etc.
5. To obtain permits and inform Motorway Operator for each Section.

Transportation and the handling of the material will fulfill the requirements described in the specifications of the Company.

In addition to the above the contractor will provide Methods of Statement, to cover:

- Inspection and handover
- PYs mobilization, operation, demobilization

Handling and TransportationThe Contractor will provide and maintain all necessary lifting equipment suitable for handling line pipe without damage to the pipe, bevelled ends and coatings.

Line pipe, will not be rolled or dropped, nor allowed to strike any objects which may damage the pipe or coating.

Line pipe will be stacked clear of the ground and be adequately protected against damage to the pipe or coating, and against accidental rolling.

Contractor will receive, transport and warehouse, all components and other materials in a manner to prevent damage and to ensure that only components and material in "as-new" condition are installed in the pipeline.

Contractor will provide, prepare, maintain and restore all facilities necessary for storage and handling of materials.

Contractor will take the necessary precautions to avoid damage to known underground or above ground structures during transportation, loading and unloading.

Estimation of the final quantities of line pipes with individual pipe length of 12 and 18 meters for positions 1, 3 and 5 of "Bill of Quantities - line pipes DN800" - part of Technical specification for supply of pipes DN 800 (32"), is provided in the below table with BoQ for line pipes:

	Line pipe acc. EN ISO 3183, Annex M pipe ordered for European onshore natural gas transmission pipelines										Quantity for delivery to:		
Pos. No	Pipe di-ameter OD, in/mm	Wall thickness t, mm	Wall thickness tolerance Table M.4	Wall thickness min/max mm	Individual pipe length, m	Pipe grade PSL2	Pipe type	Purpose	Exter-nal 3LPE, mm	Int. Epoxy coating	Bulgaria, m	Greece, m	Quantity Total, m
1	327813	11	+0.1t -0.05t	12.1 10.45	12m 18m	L450ME	SAWL or SAWH	line	3,5	Yes	7380 66382	1740 15582	9120 81964
2	327813	11	+0.1t -0.05t	12.1 10.45	12 m	L450ME	SAWL	for cold bend	3,5	Yes	7259 (Note 2)	6086 (Note 3)	13345
3	327813	14.2	+0.1t -0.05t	15.62 13.49	12m 18m	L450ME	SAWL or SAWH	line	3,5	Yes	3828 34429	540 4794	4368 39223
4	327813	14.2	+0.1t -0.05t	15.62 13.49	12 m	L450ME	SAWL	for cold bend	3,5	Yes	6309 (Note 2)	2626 (Note 4)	8935
5	327813	16	+1.5mm -0.05t	17.5 15.2	12m 18m	L450ME	SAWL or SAWH	line	3,5	Yes	2040 18301	12 63	2052 18364
6	327813	16	+1.5mm -0.05t	17.5 15.2	12 m	L450ME	SAWL	for cold bend	3,5	Yes	3593 (Note 2)	0	3593
7	327813	20	+1.5mm -1.0mm	21.5 19	12 m	L450ME	SAWL or SAWH	line	3,5	yes	4726 (Note 2)	545 (Note 5)	5271
8	327813	20	+1.5mm -1.0mm	21.5 19	12 m	L450ME	SAWL	for cold bend	3,5	yes	572 (Note 2)	445 (Note 5)	1017
9	327813	11	+0.1t -0.05t	12.1 10.45	12 m	L450ME	SAWL or SAWH	emergency stock	3,5	yes	156	60	216
10	327813	14.2	+0.1t -0.05t	15.62 13.49	12 m	L450ME	SAWL or SAWH	emergency stock	3,5	yes	84	12	96
11	327813	16	+1.5mm -0.05t	17.5 15.2	12 m	L450ME	SAWL or SAWH	emergency stock	3,5	yes	48	12	60
12	327813	20	+1.5mm -1.0mm	21.5 19	12 m	L450ME	SAWL or SAWH	emergency stock	3,5	yes	12	12	24
												Total	187 648

Details for Logistic and Transport Management are provided in the Attachment 8 of the proposal package.

3. Construction method statement and execution plan

- *The Participant should present its concept for implementation of:*

A) Preparatory work (mobilization)

The description of the process of preparation for the construction and of the mobilization of machinery, key experts and personnel involved in the construction shall contain at least:

- *Erection of camps, stock-piling management of the pipes;*
- *Preparation of the construction strip and sites, temporary roads, etc.;*
- *Organization chart including the personnel involved in the construction;*
- *Key experts – description of tasks and responsibilities, etc.;*
- *Plans for implementation of measures for environment protection and safe working conditions;*
- *Other activities at the discretion of the Participant.*

B) Execution of the construction

- *Description of the types of machinery, aggregates, welding machines, etc., which will be used by the Participant, as well as information on their main technical parameters.*
- *Description of the following activities:*
  - *Excavation;*
  - *Stringing and welding;*
  - *Coating;*
  - *Horizontal Directional Drilling (HDD);*
  - *Laying of pipes and optic cable network;*

- *Backfilling;*
- *Cathodic protection;*
- *Construction works relating to the stations (Launching and receiving pigging stations, Automated Gas Regulating Stations, Gas Metering Stations, Block Valves Stations, Dispatching Center and Operation and Maintenance base), including structures, water and sewerage, electricity supply, etc. (where applicable);*
- *Installation of equipment, including management and control systems;*
- *Restoration of the construction strip;*
- *Re-cultivation;*
- *Other activities at the discretion of the Participant.*

C) Inspection, testing and quality control performed by certified bodies (for the welds, the coatings, cathodic protection system, electrical appliances and equipment up to 1000 V, blasting works, etc.):

- *Welded joints inspection and testing;*
- *Coating inspection and testing;*
- *Hardness and density testing;*
- *Other activities at the discretion of the Participant.*

D) Pre-commissioning and Commissioning:

- *Equipment testing and safety systems checks;*
- *Equipment functionality and safety tests;*
- *72-hour test run (for the Bulgarian part of the pipeline), as well as all other required tests (in the whole system);*
- *Other activities at the discretion of the Participant.*

E) Description of main documents which shall be elaborated and submitted to the Contracting entity during the implementation of the Public procurement, as well as the documents relating to the organization of the construction process, the progress of the construction works, etc.)

A) Preparatory work (mobilization)

Immediately after the CONTRACT signature, CONTRACTOR's Key personnel will be mobilized at CONTRACTOR's Head offices and work as a unified team, to finalize the draft attached to Technical Proposal of Construction Execution Plan (PEP).

This plan will also cover all preparation and pre-construction activities necessary to ensure the timely arrival to Site of personnel, construction equipment, temporary facilities and permanent and temporary materials as required to commence and subsequently maintain the contract detailed schedule (CDS). This work will be expedited by CONTRACTOR's mobilization team reporting through the Project Manager.

CONTRACTOR mobilization will be executed in two phases:

Phase I (Pre-Mobilization) and Phase II (Site Mobilization) which are described below, keeping in mind that the CONTRACTOR already has visited the work sites numerous times and has made adequate arrangements for a smooth and timely in-country mobilization.

Phase I Pre-Mobilization:

The following main activities will be executed in this Phase:

CONTRACTOR Senior Management and Executive Committee will conduct their own internal PROJECT kick-off meeting (KoM) with the PROJECT mobilization team immediately following the CONTRACT Award. This meeting will initiate the start of the PROJECT with clear and defined responsibilities.

During this kick-off meeting (KoM), mobilization plans and activities, together with all relevant PROJECT information will be handed over to the mobilization team leader in accordance with the established mobilization check list, and action for each of the items assigned to the various members of the mobilization team. The agenda of KOM is shown below:

1. Preliminary Activities for early works/mobilization
2. Establishment of PROJECT Team
3. Personnel and Mobilization Plan
4. Planning / Reporting
5. Material Procurement
6. Plant to be mobilized for early works/mobilization
7. Method Statements for early works/mobilization
8. Subcontractors (If required) for early works/mobilizations
9. Submittals and Approvals Requirements (List of deliverables)
10. Health, Safety, Security and Environmental Plan
11. QA/QC Plan

Various departments at CONTRACTOR Head Office (Home Office Support) will participate in the execution of the PROJECT requirements under the direction of the members of the mobilization team, who will also execute the following:

1. Prepare List of Personnel and Mobilization Plan for the mobilization activities (early works) and for the construction and pre-commissioning works;
2. Prepare labour list (direct manpower) by discipline/trades to be employed;
3. Prepare Equipment List and mobilization plan for the mobilization activities (early works) and for the construction and pre-commissioning works;
4. Design and purchase all initial requirements for temporary facilities, site offices, consumables (fencing, utility networks, drainage material, etc.).

Additional Site visits will be conducted promptly to reconfirm the data collected at the bidding stage and to establish any additional information considered necessary to expedite the completion of mobilization in a timely and cost effective manner.
The following items, in particular, will be reassessed and confirmed.

1. Access at Site
2. Requirements for all necessary visas, permits and licenses
3. Local requirements for properly validated licenses and certificates to be held by construction personnel
4. Transport plans/logistics
5. Loss prevention and safety requirements
6. Plans for medical facilities
7. Arrangements for drinking and construction water
8. Arrangements for supply of electricity
9. Arrangements for storage of fuel and lubricants
10. Arrangements of Site sanitary facilities

An initial survey will be conducted to identify all existing ground levels, topographical features, roads, etc. Facilities required to commence early construction activities such as Site clearance will be established.

Phase II Site Mobilization will be executed from CONTRACTOR's Site Organization.

At this stage, all approved mobilization plans are put into action. The mobilization of the following activities will take place during this phase:

- The temporary facilities necessary for the execution of the works will be constructed and ready for operation.
- Necessary resources in respect of staff, labor and construction equipment to start the Works will be mobilized in accordance with the agreed mobilization plans and adjusted as required to maintain the work schedule.

Construction strategy, of which this document is anticipation, is the result of initial internal evaluation, at the appropriate level of competence and authority, in the permanent Staff and in the Project Team Key Members.

Project Team Key Members:
Project Manager
Engineering Manager
Construction Manager
Deputy Construction Manager / Technical Manager for Bulgarian Section
QA/QC Manager
HSE Manager
Permanent Staff
Deputy Project Manager
Contract Manager
Project Control Manager
Procurement Manager
Administration Manager
Superintendents
Coordinators

(Please refer to the Proposed Organization Chart)

The contribution of other Subcontractors will be utilized for the execution of specific tasks.

B) Execution of the construction

The works will be carried out applying the work procedures to be submitted to and approved by the COMPANY.

In order to simplify and improve the construction works sequence and meet the target project completion dates, the Contractor is proposing to take benefit of the site work instructions/procedures already approved for other similar projects performed in the past by J&P-AVAX.

The Contractor will be mobilized at site area with all site facilities, workshops, construction equipment and tools, construction, safety, QA/QC staff and labor and will commence the site works with the target to achieve the schedule requirements established by the COMPANY.

The work will be performed within the approved construction schedule in accordance with the best and latest approved practices in the pipeline industry and as described in the contractual pipeline

construction specifications. In general the Work will be carried out with particular attention to the following points:

- Compliance with national Laws and Regulations
- Compliance with Contract Requirement
- Preservation of Land Owner's rights
- Compliance with Contractor corporate policy for Safety, Quality, Environmental - Protection targets.
- High Level of performance in the execution for a timely completion.
- Utilization of best Economical and Available Resources

The Personnel selection strategy developed for this project foresees the assignment of construction to specialized senior staff and skilled workers selected according to Contract needs.

Managers and staff will be selected having the maximum of experience in the management, logistical support and administration of construction projects in similar environmental situation. Personnel with previous experience in similar projects will preferentially be placed in key project positions.

For the execution of the works, one main site facility and two secondary site facilities are foreseen to be utilized. Facilities for COMPANY representatives will be available in all Contractors' site facilities, as per Contract requirements.

Contractor will be responsible for supplying and maintaining all equipment, tools, consumables and all other necessary materials to execute the work.

Contractor will obtain these items according to the requirements of the Contract schedule.

COMPANY will acquire the land for the ROW well in advance and prior to starting any construction activity, according to time schedule. Any delay to land availability for the ROW preparation will become critical due to the extremely tide schedule of the activities.

Contractor will complete clearing of the portion of the right-of-way that is necessary to complete the work.

Unless otherwise agreed with COMPANY, the ROW width will be in accordance with the Specification for installation of pipelines.

Clearing and construction debris, which may block stream flow, contribute to flood damage or result in stream bed scour and erosion should be removed and properly disposed off.

A safety plan will be submitted to COMPANY for approval at early stage of the contract and will be applied for the Works.

The Contractor will, at all times, protect his staff, labor force and the public from any injury or harm, which might arise during the execution of the works.

For security reasons, Contractor will take all necessary steps to ensure that its personnel will strictly use only the ROW. A relevant procedure will be set and implemented during construction.

Contractor will string pipe on the right-of-way in preparation for bending and welding in a manner that prevents damage to the pipe and coating.

Pipe will be placed directly on to padded skids or other supports to ensure that it is held clear of the ground surface.

Gaps will be left in the strung pipe to permit access. Where feasible the direct transport and stringing of line pipes will be preferred.

The trench will be excavated by means of trenching machines and/or crawler excavators equipped with rock hammers as required permitting the installation of the pipe to the elevations shown on the approved drawings. The bottom of the trench will be firm, smooth and shaped to provide proper support for the pipe. The trench bottom contour will be such as to obtain a smooth profile for the pipeline and to minimize field bending. When trenching is carried out prior to bending, the pipe will be bent to fit the finished trench contour.

The trench will be wide enough to allow proper placement of backfill to the bottom of the trench on both sides of the pipe. The width will be in accordance with approved Contract specification.

Contractor will prepare properly the trench bottom (bedding) in a manner to provide a continuous and even support to the pipeline to be laid. In addition when laid, the pipeline must be free of any stresses in order to avoid any deformation. The trench bottom should also be free of organic or other substances.

Padding will be performed in two sequential phases. During the first phase (middle padding) the trench is backfilled up to the top of pipeline level after the lowering of the pipe into the trench. During the second phase (top padding) the trench is backfilled to a height of 30cm over the top of the pipeline.

Contractor will make all cold (field) bends required for the laying of the pipelines in accordance with requirements for minimum cover, vertical profiles, and horizontal alignment.

Bends will be made such that the pipe, when laid, conforms to the bottom of the ditch without the use of external force to hold it in place. Sag bends will rest on the bottom of the ditch while over bends will clear the high point of the ditch bottom. The required bend dimensions will be clearly marked on the relevant joint of pipe.

Bends will be made by the cold stretch method using bending machine equipped with padded bending shoes. Mitre bends will not be permitted. A bending machine will be used for bending all pipes where is required.

All welding and testing of pipelines will be carried out in accordance with the latest edition of EN 12732 plus additional requirements of the relevant Contract Specifications.

The welding procedures, according to ISO 4063, which will be used, are:

- Fully-mechanized (Automatic) main line procedure 135(GMAW)/136 (FACAW)
- Semi-automatic procedure 135 manual / 136 automatic (Tie-ins, Crossings)
- Manually procedure 111 (SMAW) using low-hydrogen-electrodes (Tie-ins, Crossings, areas with inclination)

Contractor will keep and maintain records in accordance with the requirements of this Section and will make them available for inspection by the COMPANY whenever required. The records will be given to the COMPANY with the as-built information.

Contractor will provide all necessary welding equipment for execution of the works.

Pipeline tie-ins and other welding activities within the stations will be executed manually by qualified welders with proper equipment using approved welding procedures per each case.

Contractor will provide all welding operators with full protective clothing, helmets and shields.

Internal clamps will be provided to ensure alignment of the weld components and for establishing concentricity of the pipe bores without scoring or otherwise damaging the metal surfaces.

Welding electrodes and wires, filler metals and shielding gas combinations will produce weld deposits which have a tensile strength at least equal to, and a chemical composition compatible with, the parent metal.

Only consumables which are specifically identified by type classification, size and manufacturer's reference code number in the qualified Welding Procedure Specifications will be used for production welds.

All field welding will be performed in accordance with an approved and qualified Welding Procedure Specification (WPS) established by the Contractor.

The WPS must be qualified before using it for production welding by producing a weld in accordance with the WPS. Weld test according to EN ISO 15614-1 and project requirements, to demonstrate that the joint has the required mechanical properties and soundness will be performed.

The WPS is intended to give guidance to the welder performing production welding. It will list details of the material to be welded, the filler metal, the joint preparation, welding process and the welding technique to be employed.

The weld produced to qualify a WPS will be produced using the materials, process, technique and conditions within the range specified in the WPS. Qualification weld and PQR will be performed by a Third party Inspection of the COMPANY.

The actual welding conditions, parameters, range of qualification, weld technique etc. will be noted and recorded on a Procedure Qualification Record (PQR) according to EN ISO 15614-1.

Contractor will employ only welders who have an up to date qualification for the specified welding procedure. Each welder will be qualified according to EN ISO 9606. The certificates will identify the welder by name and photograph and will specify the welding procedures for which he is qualified. Copies of records of all test reports and welder qualification records will be kept by the Contractor.

Each welder will be required to pass a welder qualification test to prove his ability to make sound welds in accordance with the approved WPS.

Before starting the qualification tests, the welder will be allowed reasonable time to adjust the welding equipment used in the test. The welder, will use the same welding equipment, technique, and speed as specified in the appropriate WPS.

Each Welding machine operator of automatic welding machines will be qualified according to EN 14732.

Contractor will subcontract to a specialized company the execution of the welding inspection works.

Inspection crew(s) equipped with all necessary inspection equipment radiographic sources, crawlers, films, dark room, etc. will undertake the welding inspection activities. Radiographic films will be kept in proper storage conditions and will be handed over to the COMPANY together with all other job quality records.

All welds shall be 100% visually examined in accordance with EN 12732.
All welds shall be 100% x-rayed or 100% automatically ultrasonic tested in accordance with EN 12732.
All welds completed using Gas Metal Arc Welding Process (automatic, mechanized or manual), or cored wire welding, shall be automatically ultrasonic tested in accordance with EN 12732.
All branches, nozzles and fillet welds shall be 100% inspected using Magnetic Particle Inspection. Where fittings are attached by butt welds, the roots of the weld shall be examined from the bore by MPI where access is possible.
"Golden welds" are welds which are not pressure tested in the field and shall be 100% visually examined, 100% x-radiographed, 100% ultrasonic tested and 100% magnetic particle tested in accordance with EN 12732 and project specifications.

COMPANY shall deliver all line pipes already factory coated with 3 layer of PE coating, while the pipes for trenchless technique laying will be procured by the contractor.

Contractor will inspect and repair all coatings during lowering in the pipeline trench.

Rust, scale and weld spatter will be removed from the girth weld and adjacent bare metal with a wire brush or a rotary power brush, grit blasting or as recommended by the manufacturer's applicable specification. All dirt, dust, moisture and grease will be removed from the girth weld, adjacent bare metal and adjoining coating on which the coating material is to be installed. Shrinkable sleeves will be then applied on girth welds overlapping the factory applied coating for at least 50mm.

As part of the Construction Plan, Contractor will submit a field coating inspection procedure.

This procedure will detail:

(a) Type and make of holiday detector;
(b) Grounding techniques for detector and pipe;
(c) Vendor's specification for its use.

Contractor will inspect the completed coating visually and by use of a holiday detector.

Inspection by holiday detector will be performed prior to lower-in. Holiday detectors will not be used on wet coatings.

The operating voltage for holiday inspection of coating systems will be in accordance with manufacturer's coating recommendations.

Contractor will lower the pipeline into the trench following COMPANY acceptance of welding and coating operations.

All brush, skids, metal of any kind, rocks, sticks, projecting rocks, and other hard objects will be removed from the trench into which the Pipeline is to be lowered so that the protective coating will not be punctured or abraded.

Wherever the bottom of the trench contains projecting rocks or other objects, which might damage the pipe or coating, the bottom of the trench will be bedded.

Contractor will furnish sufficient and proper equipment during the lower-in operation to prevent damage to the pipe or its protective coating.

Slings, belts or cradles will be used in all lower-in operations.

HDPE conduits (Ø40) will be installed for the Fiber Optic Cable, according to TD for Bulgaria and FEED for Greece. More specifically, CONTRACTOR's scope includes installation, inspection and testing of two (2) HDPE pipes within the pipe trench for fibre optic cable (FOC) at the Greek Section and of one (1) HDPE pipe within the pipe trench and two (2) HDPE pipes inside a separated distant trench at the Bulgarian Section.

Upon Completion of the installation, a calibration & pressure test will be performed.

Following bedding, padding (middle and top) and warning tape installation, the trench above the top padding layer is then filled with suitable materials.

These materials will be excavated materials provided that:

1) stones larger than 15cm diameter are separated and driven away, for the backfilling from the top of the padding layer up to a point that will allow a minimum final backfill of 300mm to reach the top of the trench
2) soil boulders are broken prior to backfilling
3) they are free of any debris, bushes, waste etc.

Crossings will be carried out in accordance with the relevant Contract specifications and in a manner which satisfies the COMPANY and local authorities' requirements. Impact on users of the road or environment will be minimized as much as possible.

Contractor will execute, a number of different types of crossings, either with the method of HDD, boring (with or without casing) or open cut.

Due to different types of crossings (asphalt roads, rivers, dikes, earth roads, archaeological walls, streams) the method that will be chosen is open cut, HDD or boring.

The Contractor will perform all the necessary drawings, studies etc. Permits should be secured prior to commencement of any works by the local authorities.

The HDD method will be performed only to Maritsa River and Dam Studen Kladanec. The rest of the crossings will be executed with open cut method or boring.

The area of receiving traps and sectioning valves will be considered as a special point in the construction sequence. It will be executed by a different crew and will start along with the main line, lying as soon as the required material and civil construction drawings are available at site. The reasons of this selection are due to the totally different technique of construction.

Civil Works for Stations

Stations' Civil Works will start from the area where the main Equipment foundation construction will start at the same time as the pipeline start activity. Once having completed substantially the civil works inside the Stations, the main civil crew will move from one area to another following the progress of the work.

The Civil Works will be scheduled to follow the construction of pipeline pig trap stations and sectioning valves and to Electrical and Instrument installation. Assistance to the above crew will be provided by the civil crew and will be responsible for fence installation and final cleaning.

Mechanical Works and Welding of Piping in Stations

Mechanical activities will start in tight conjunction with civil works schedule and will be the laying of underground piping within the stations.

Piping will be welded according to the Contractual Specifications.

The N.D.T. will be performed accordingly to the Construction Quality Inspection plan will be prepared and submitted for approval.

Electrical/Instrument Works

Works relevant to electrical plant activity will first start with the laying of grounding and earthing system cables by a dedicated crew in co-ordination with civil construction. The main activity of electrical crew consists in the erection of C.P. Transformer/Rectifier, and related C.P. connections. The works will be executed under strict supervision of Electrical Supervisors and, where required by Vendor Supervisors.

Cathodic Protection along the pipeline will be executed by a dedicated crew during the laying of the pipeline.

Works for instrument installation will start after piping and equipment erection and consists mainly in the instrument installation, wiring and laying of instrument cables.

Contractor will clean-up the site and any additional areas used in any phase of the work in a manner satisfactory to COMPANY.

The clean-up operation will begin immediately after backfilling and be completed so as to minimize the overall period of disturbance.

C) Inspection, testing and quality control performed by certified bodies (for the welds, the coatings, cathodic protection system, electrical appliances and equipment up to 1000 V, blasting works, etc.)

In-process inspection and testing activities will be carried out in accordance with procedure "Inspection and Testing" included in the Quality System and the applicable approved QCPs, and test results will be evaluated and accepted for compliance with the specified requirements and meet the specified acceptance criteria.

The Contractor will be responsible for conducting all source inspection requirements and coordinating with the Third Party Inspector / third party inspection consultants approved by Contracting Entity in the performance of all source inspection activities.

EPC Contractor will prepare and provide to Contracting Entity / Contracting Entity Representative a coordination procedure, as described in and in accordance with clause 8.1.2.5 of the Contract, for inspection and for coordination with Contracting Entity / Contracting Entity Representative team.

EPC Contractor will submit to Contracting Entity / Contracting Entity Representative, written reports on inspections carried out, in sufficient detail for Contracting Entity / Contracting Entity Representative to monitor the effectiveness of inspection.

Reference is also made to relevant Specifications and other Contract Documents.

Any Non-Conformity during testing and inspection need to be reported to the Contracting Entity. Corrective measures will be planned by the EPC Contractor and will be given to the Contracting Entity for approval before execution.

Inspection and testing of all products and materials will be addressed in the Project ITPs and will be performed by personnel other than those who performed or directly supervised the production.

Inspection and testing personnel will be assigned based on their qualifications and previous experiences for similar Projects.

Pre-activity / Inspection meetings will be held at the work location before the start of all physical work to ensure that all risks and works procedures are understood, and that the risks will be managed and the work procedures will be followed.

The Contractor will provide the Company with a certified report of the results of any test and/or inspection and any other data relating to the test and/or inspection.

Details on Inspection, testing and quality control performed by certified bodies for the welds, the coatings, cathodic protection system and electrical appliances and equipment up to 1000 V are provided in the Attachment 3

D) Pre-commissioning and Commissioning

The main objective of Pre-Commissioning and Commissioning is to ensure that Equipment and systems are safely brought after Mechanical Completion to a safe and reliable operational status. Contractor shall supply personnel, Equipment and technical support in order to perform all activities in compliance with the Pre-commissioning and Commissioning schedule and the project specifications.

The Pre-commissioning includes all activities for checking the functionality and the correct installation of the installed equipment before filling gas. The Commissioning activities will be carried out by EPC's personnel and with the support of operational staff of the Operator of the IGB Project.

All equipment testing and safety system checks shall be according to ITPs of the Contractor and all suppliers and Equipment manuals and according Technical Design for Bulgaria and FEED for Greece.

These checks include, but are not limited to:

- Mechanical check of all installations, e.g. open/close valve, pigging stations, AGIs
- Pressure testing of pipeline and facilities
- Pigging, cleaning, drying
- Instrument, wiring, and signal checks, end switches, Scada signals, metering systems
- communication and software checks
- CCP checks, functionality of the system and insulation quality
- For the Bulgarian Section Registration of Equipment according Ordinance 'Structure and Safe Operation of Transmission and Distribution Gas Pipelines and Facilities, Installations and Equipment for Natural Gas at State Agency for Metrology and Technical Supervision.

The Contractor shall be responsible for planning, performing and documenting all pre-commissioning and commissioning activities and therefore shall:

- Provide a team of suitably experienced and qualified personnel for pre-commissioning and commissioning as per approved plans, schedules and procedures.
- Prepare and submit for Contracting Entity's approval, the field pre-commissioning and commissioning, organization and deployment schedule, together with Job Descriptions.
- Complete a "Mechanical Completion" review with P&ID's and relevant Specifications
- Develop specific Mechanical Completion and Pre-commissioning forms required for the completion of Works.
- Communicate with all suppliers for the purpose of developing the pre-commissioning and commissioning planning activities, identify the need for supplier special equipment/tools and coordinate activities of any suppliers needed to participate in the Works.
- Conduct work-planning meetings as required.
- Provide all necessary consumables and spare parts.
- Inspect and test equipment, valves, piping instruments, etc., for correct design, conformance and proper functionality.
- Prepare pre-commissioning manuals to be submitted for Contracting Entity's approval.
- Check lubrication systems and add any additional lubricants required.
- Make all operation checks for all components like flow control valve, stroke the slam shut valve actuators and balance the CP system.
- Perform the 72-hour test run (for the Bulgarian part of the pipeline).
- Perform final check of the whole system with all components.
- Prepare and maintain a Punch list to identify any defective work both during the design phase and the construction phase to final acceptance of the Works.
- Develop a commissioning plan and align the plan with the commissioning procedure of the Contracting Entity and all needs of the affected gas grids and submit it for Contracting Entity's approval
- Lead the commissioning and start-up activities with key experts at each station and with key experts for each system, e.g. process, Scada, CCP, telecommunication and software.

• Prepare and submit for Contracting Entity's approval, the master schedules for start-up planning activities. These schedules shall reflect all contractual responsibilities related to these activities and will comprise as a minimum, the following documents:

- Activities sequence chart
- Logic block diagram
- Overall Network
- Operational System Fragment Network
- Critical Path Identification
- Supplier Representative Schedule

The EPC Contractor shall provide at his own cost and care:

• The initial filling-up of the lubricants for all relevant Equipment.

• The initial charges of chemicals.

• The initial filling-up of any other type of Equipment.

• All utilities required for pre-commissioning including water for testing and flushing for purging and dry out of Equipment and piping.

• All testing equipment and materials for performing the testing and

• All disposal according the latest environmental standards for all commissioning materials, water, etc.

On substantial completion of construction activities, Contractor will mobilize its commissioning team to initiate pre-commissioning activities in a phased manner.

The pre-commissioning phase includes three main types of field activities:

a) Systematic conformity checks, carried out on each item of equipment or component, such as pressure gauges, cables, etc., to verify visually the condition of the equipment, the quality of the installation, the compliance with project drawings and specifications, manufacturer's instructions, safety rules, codes, standards and good engineering practices.
b) Equipment static/de-energized tests, to ensure the quality of a number of critical components. These "cold" testing concerns all disciplines, e.g. calibration of instruments, machinery alignments, setting of safety valves, pressure testing of piping, cable continuities, etc.
c) Pipes and vessels air or water flushing and cleaning.

As soon as practical, the Pre-commissioning team will acquire a complete set of drawings and data as listed below:

1. Design drawings of the complete facilities.
2. Vendor-supplied equipment design specifications, installation drawings, operation and maintenance manuals.
3. All QC documentation relating to the construction testing Le. hydro test

The following guidelines summarize all activities to be completed during the pre-commissioning phase of the project.

1. Testing and adequate flushing of all piping systems.
2. Removal of all blinds or spool pieces used during hydrostatic testing.
3. Proper positioning of spectacle blinds.
4. Witness or calibrate, and test all instruments in accordance with the Pre-commissioning procedures, and record all calibrations and test data on the checklists provided for each instrument and instrument loop.
5. Verify that lubricants, oils, coolants, etc., required for all equipment are on the job site and in good condition (i.e. not contaminated).
6. Ensure that fire extinguishers are in place.
7. Check all electrical closures.
8. Ensure that all escape routes are clear of obstacles.
9. Ensure that all eyewash stations are operational.
10. Wear personal safety equipment.
11. Clear area from unauthorized personnel.
12. Be aware of the wind direction.
13. Be aware of the designated meeting area location.
14. Ensure that fire detection equipment is operational.

Details for CONTRACTOR's Construction Execution Plan are provided in the Attachment 8 of the proposal package.

Details for the main documents which will be elaborated during implementation of the project are presented in Attachment 9

4. Organization chart and personnel training program

(This part of the Technical offer should contain a description of:

- *Organization chart containing as a minimum a proposal for the structure, number and functions of the personnel trained for the operation of the gas pipeline;*
- *Plan for the training which shall contain at least:*
  - *Methods, resources, schedules and locations for trainings as per the Technical specification;*
  - *Training program, number of hours and training form;*
  - *Number of lecturers and their qualification;*
  - *Practical training before, during and after the commissioning of the construction, as well as participation of the training staff during the initial operation period (6 months after the commissioning);*
  - *Other activities at the discretion of the Participant.)*

CONTRACTOR will assign a Project Manager/Contractor's Representative who reports directly to the Project Coordinator at Home Offices Greece.

The Project Manager is supported by a team of Key Personnel (Engineering Manager, Construction Manager, HSE Manager, QA/QC Manager, Deputy Construction Manager / Technical Manager for Bulgarian Section) and staff (Deputy Project Manager, Contract Manager, Project Control Manger,

Procurement Manager, Administration Manager) who will reside at MAIN Site Office in Bulgaria, and start working as an integrated and multidisciplinary management team.

Immediately after the award the Project Management Team will be located in "Task force" at IN-COUNTRY offices (Athens) and once the Main Site Office is ready, the Project Management Team will mobilize to the new PROJECT offices (Main Site Offices) in Sofia.

The project management will be designed to achieve the following:

- A Health, Safety and Environment management organization reporting directly to the Project Manager & liaising with the Corporate H&S Manager (Home office Support), will establish and maintain the excellent control of all safety, health, environment and social matters.
- The fulfilment of PROJECT quality requirements. A dedicated QA/QC Manager is appointed to oversee all quality activities, reporting directly to the Project Manager and liaising with CONTRACTOR's Corporate Quality Manager. The QA/QC Manager will be responsible also for Final Technical Documentation.
- A dedicated multidisciplinary Engineering Team managed by Project Engineering Manager.
- A dedicated construction organization reporting to the Construction Manager / Deputy Construction Manager.
- A construction management supervision split in areas of responsibility including front end & back end superintendents for each execution spread, Electrical/I&C/CP Superintendent, Crossing Superintendent, LVS Superintendent, GMS, AGRS, Dispatch Centre Superintendent, Lead Hydro-testing Superintendent, Logistic Coordinator, Plant Coordinator, Blasting Specialists, etc., under the authority of the Construction Manager / Deputy Construction Manager.
- The fulfilment of PROJECT construction requirements.
- There will be efficient coordination and liaison of Hydro-testing and Pre-commissioning activities through the Lead Hydrotesting Superintendent to ensure an early completion date of the Sub-Sections for the benefit of COMPANY.
- An efficient construction management of subcontractors, headed by the Subcontractors Coordinator.
- A Permitting and Stakeholder Coordinator to foster positive relationships for the project with the community / land owners / stakeholders and effectively resolved issues for good reputation management.
- A Project Control Manager, reporting directly to the Project Manager, for all matters concerning planning, cost controls, preparation of the Progress Reports/Schedules, Risk Management. The Project Control Manager will also collaborate with the Project Manager to update the PROJECT Contract Master Schedule (CMS) and Contract Detailed Schedule (CDS).
- A Procurement Manager, reporting directly to the Project Manager, for all matters concerning Material control (Materials Take-off), Subcontract Management.
- The financial and administration items will be handled by the Administration Manager, reporting to the Project Manager. The Administration Manager and his team will manage all personnel administration, finance, services, facilities, etc. and all requirements for the management and operation of the Site offices.
- The best coordination of activities with high productivity with "soft skill" for the liaison and coordination between the human resources and disciplines.
- Well-defined responsibilities and authorities and interfaces management.
- Continuity within the project management organization.

Details for CONTRACTOR's Organization Chart are provided in the Attachment 10 of the proposal package, indicating lines of authority and communication. The PROJECT organization chart is preliminary and reflects our approach to the PROJECT and will be finalized in coordination with COMPANY.

CONTRACTOR will provide training of COMPANY personnel to enable smooth and efficient Handover of the Pipeline System and subsequent efficient operation.

CONTRACTOR will appoint a Training Coordinator to be responsible for the plan of the overall program and its related Time Schedule.

CONTRACTOR will provide a dedicated training facility at main Site office for training of both CONTRACTOR and COMPANY personnel which is suitable for classroom training of up to ten (10) personnel at one time. The training facility will be equipped with high quality desks and chairs, audio visual equipment and secure storage for all materials and have a separate lecturer's office complete with secure cupboards, filing cabinets, etc. for administration of the training course.

CONTRACTOR will provide all training materials for use by the lectures and trainees. COMPANY will ultimately take over provision of training from CONTRACTOR and therefore materials will be robust and suitable for repeated use, including:

(i) Lecturer's materials, view graphs, wall charts, slides, videos, etc.

(ii) Master documents suitable for photocopying as handout materials for trainees.

(iii) Models, materials, tools and samples for demonstration purposes.

(iv) Secure, lockable storage cabinets and cupboards specifically designed to hold training materials.

All documentation required for each course will be issued to participants four (4) weeks prior to commencement of the course to allow time for familiarization.

The training courses will be separately structured to meet the individual needs of different groups of personnel and will include classroom instruction, site instruction and "hands on" training. CONTRACTOR will, as a minimum, offer the following courses: main circuit principles and characteristics, familiarization of equipment, control principles, protection system, monitoring systems, performance, maintenance philosophy etc.

Details for CONTRACTOR's Training Plan are provided in the Attachment 11 of the proposal package.

II. We submit as an attachment hereto a linear performance schedule (time schedule).

III. By the preparation of the Tender we have taken into account the specifics of the pipeline route and have fulfilled the obligations concerning tax and social security contributions, environmental protection, employment protection and work conditions.

IV. The validity term of the Tender is six (6) months as of the deadline for submission of Tenders.
(The validity term of the Tender may not be shorter than 6 (six) months as of the deadline for submission of Tenders).

V. We are aware with the content of the draft contract (template – Appendix No 13) regarding public procurement with subject matter: **"Design, procurement and construction of the natural gas Interconnector Greece-Bulgaria (IGB Project)"** and I/we agree to all conditions therein.

VI. The information in (*specific part(s) of the Tender shall be indicated*) shall be deemed confidential[4] since it contains trade secret of the Participant. **NOT APPLICABLE**

We do not want the mentioned information to be disclosed by the Contracting entity except for the cases provided for by law.[5]

[4] The Participants shall not refer to confidentiality regarding the proposals in their Tenders which are subject to assessment.
[5] To be completed at the discretion of the Participant.

Date	**01/ 04/2019**
Name and family name	**Konstantinos Lysaridis**
Capacity of the representative of the Participant[6]	**Vice President & Executive Director**
Signature and stamp[7]	J&P-AVAX S.A. GENERAL CONTRACTORS 16 Amaroussiou - Halandriou Str. 151 25 MAROUSI, ATHENS, GREECE TEL: 30 210 6375000 - FAX: 30 210 6375670

[6] When the Participant is represented jointly by more than one person the Technical offer shall be signed by each of them indicating the names and capacity of the representatives.

[7] A stamp shall be affixed if the Participant has one.