



CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

TP. Hồ Chí Minh, ngày 17 tháng 11 năm 2025

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V/v: Điều chỉnh HSMT (lần 1) –
Gói thầu số DVN-VT-3582/25-XL-DA-TTH-LANLT.TM

Kính gửi: Quý Nhà thầu

Xí nghiệp Xây lắp, Khảo sát và Sửa chữa các công trình khai thác dầu khí (XNXLKS&SC) thuộc Liên doanh Việt – Nga Vietsovpetro xin thông báo sửa đổi một số nội dung của HSMT gói thầu số *DVN-VT-3582/25-XL-DA-TTH-LANLT.TM_Group 2_Top up for Flooding Valve, Piping, Fitting, Support for Grouting System BK-TNHA Jacket*” theo như tài liệu đính kèm.

Đề nghị Quý nhà thầu chuẩn bị Hồ sơ dự thầu theo Danh mục MTO đính kèm Thông báo này và các nội dung khác của HSMT được giữ nguyên, không thay đổi. Đồng thời, XNXLKS&SC cũng thông báo thời điểm đóng thầu của gói thầu cũng được gia hạn đến 10 giờ 00 ngày 21/11/2025.

Trân trọng.

GIÁM ĐỐC XNXLKS&SC



Nơi nhận:

- Như trên;
- Lưu theo HST



THÔNG TIN THAY ĐỔI HỒ SƠ MỜI THẦU SỐ 1

Gói thầu: Group 2_Top up for Flooding Valve, Piping, Fitting, Support for Grouting System BK-TNHA Jacket.

Số hiệu: DVN-VT-3582/25-XL-DA-TTH-LANLT.TM.

Dự án: Dự án Phát triển mỏ Thiên Nga -Hải Âu Giai đoạn 1 Lô 12/11, ngoài khơi Việt Nam.

STT	Tài liệu	Tài liệu số	Mục	Nội dung	Vietsovpetro sửa đổi
1	Yêu cầu kỹ thuật	9001-2211-QX-3101 (Rev. B3)	Appendix A: Material Take Off for Flooding System of BK-TNHA Jacket.	Appendix A: Cập nhật lại MTO (Rev.B3).	Appendix A: Group 2_– 2.2_ FITTINGS, FLANGES, GASKETS, BOLTS & NUTS - Cập nhật và bổ sung thêm các mục: 18, 19, 20.

Dính kèm:

- 9001-2211-QX-3101_Rev.B3_TR for Flooding Valve, Piping, Fitting, Support for Grouting System BK-TNHA.
- 9001-2211-QX-3201_Rev.B1_TE for Flooding Valve, Piping, Fitting, Support for Grouting System BK-TNHA.

Ký tắt:

- Tổ Trưởng Tổ xét thầu

- Tổ Phó phụ trách kỹ thuật





**THIEN NGA – HAI AU PHASE 1 PROJECT
BLOCK 12/11, OFFSHORE VIETNAM**

**Approved by Director
“OCD - VIETSOVPETRO”**

PHAM THANH BINH

**TECHNICAL REQUIREMENT
TOP-UP FOR FLOODING VALVE, PIPING, FITTING,
SUPPORT FOR GROUTING SYSTEM (BK-TNHA)**

Ref No: 9001-2211-QX-3102





**THIEN NGA – HAI AU PHASE 1 PROJECT
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**TECHNICAL REQUIREMENT TOP-UP FOR FLOODING VALVE, PIPING,
FITTING, SUPPORT FOR GROUTING SYSTEM (BK-TNHA)**

TRACK CHANGES

Nº	Revision Nº	Content of revision	Note
1	B1	Issue for Approval	17.09.25
2	B2	Re-Issue for Approval	03.10.25
3	B3	Re-Issue for Approval	13.11.25





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**TECHNICAL REQUIREMENT TOP-UP FOR FLOODING VALVE, PIPING,
FITTING, SUPPORT FOR GROUTING SYSTEM (BK-TNHA)**

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THIEN NGA – HAI AU PHASE 1 PROJECT BLOCK 12/11, OFFSHORE VIETNAM

TECHNICAL REQUIREMENT TOP-UP FOR FLOODING VALVE, PIPING, FITTING, SUPPORT FOR GROUTING SYSTEM (BK-TNHA)

1. INTRODUCTION

The block 12/11 covers 5347.4 km² (excluded the part of Premier Oil company and returning area after completing the second of exploration phase) is 320 km from the Vung Tau city, belongs to the Southwest of the Nam Con Son basin. The block is spread out from 07°08' to 07°45' North latitude and from 107°45' to 108°30' East longitude, which is adjoined with 11-2/09 and 11-2 blocks to the North, 13/03 block to the South, 20 and 21 blocks to the West and the 06/94 to the East. The block has a flat bathymetry with the water depth of 70 – 120 m.

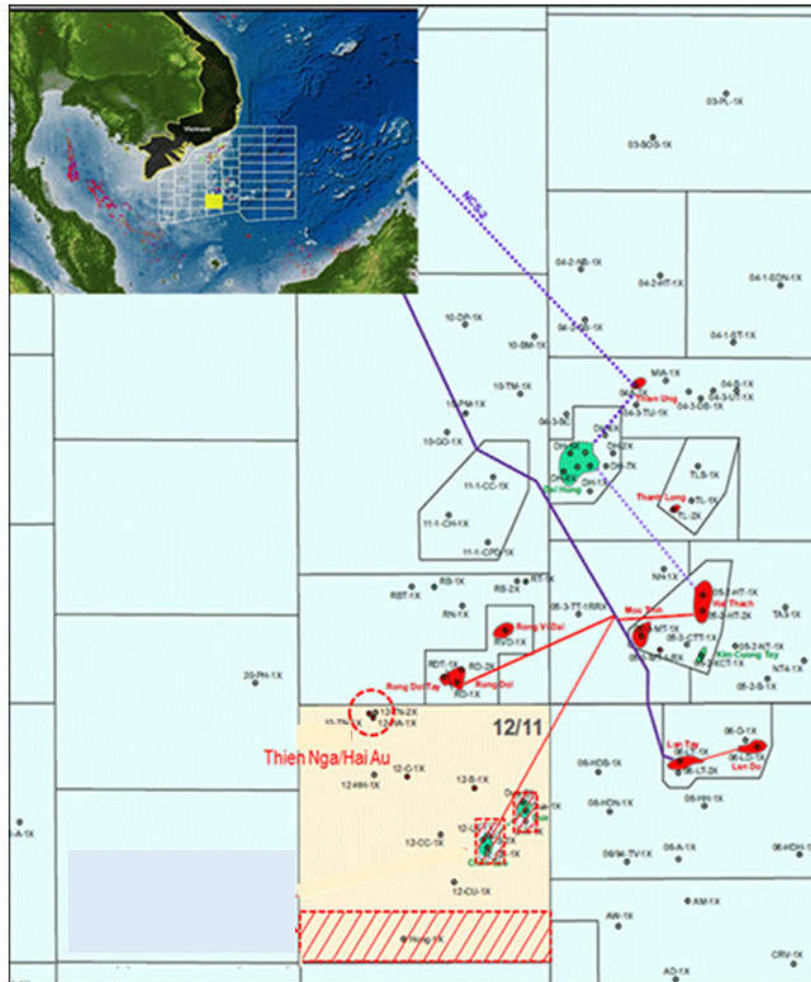


Figure 1.1: Thien Nga – Hai Au location in Block 12/11, Nam Con Son Basin

In 2010, Vietsovpetro and JSC Zarubezhneft got the Petrovietnam's bidding invitation for PSC of block 12/11 block after it had been returned by the Premier Oil Company.





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TECHNICAL REQUIREMENT TOP-UP FOR FLOODING VALVE, PIPING, FITTING, SUPPORT FOR GROUTING SYSTEM (BK-TNHA)

In 2011, NIPi institute, Vietsovpetro have conducted the technical and economic evaluation of 12/11 project for JSC Zarubezhneft. Following the bidding result, JSC Zarubezhneft got the 100% interest of block 12/11 PSC, and Vietsovpetro then was assigned to become the Operator.

In June 2023, Vietsovpetro had signed transferred of Operatorship to the custodian of Zarubezhneft EP Vietnam.

The field development plan consists of a new platform BK-TNHA, a new subsea pipeline and risers between BK-TNHA to existing wellhead platform at WHd Rong Doi and upgrading/modification of CPP Rong Doi.

1) BK-TNHA (Thien Nga-Hai Au Wellhead Platform)

- Automated unmanned facilities operations, monitored and controlled from CPP RD.
- Total 9 wells (4 production wells, 2 future production wells & 3 spare slots).
- Covers TN-3X & HA-1X areas.

2) Subsea Pipeline from BK-TNHA to WHd RD

- 16” FWS x 36km subsea pipeline from WHP BK-TNHA to WHd RD.

3) Modifications Rong Doi (WHd RD/ CPP RD)

Brownfield upgrade/modification on existing platform to cater the condensate and gas from BK-TNHA with required arrival pressure of 23 barg.



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FITTING, SUPPORT FOR GROUTING SYSTEM (BK-TNHA)

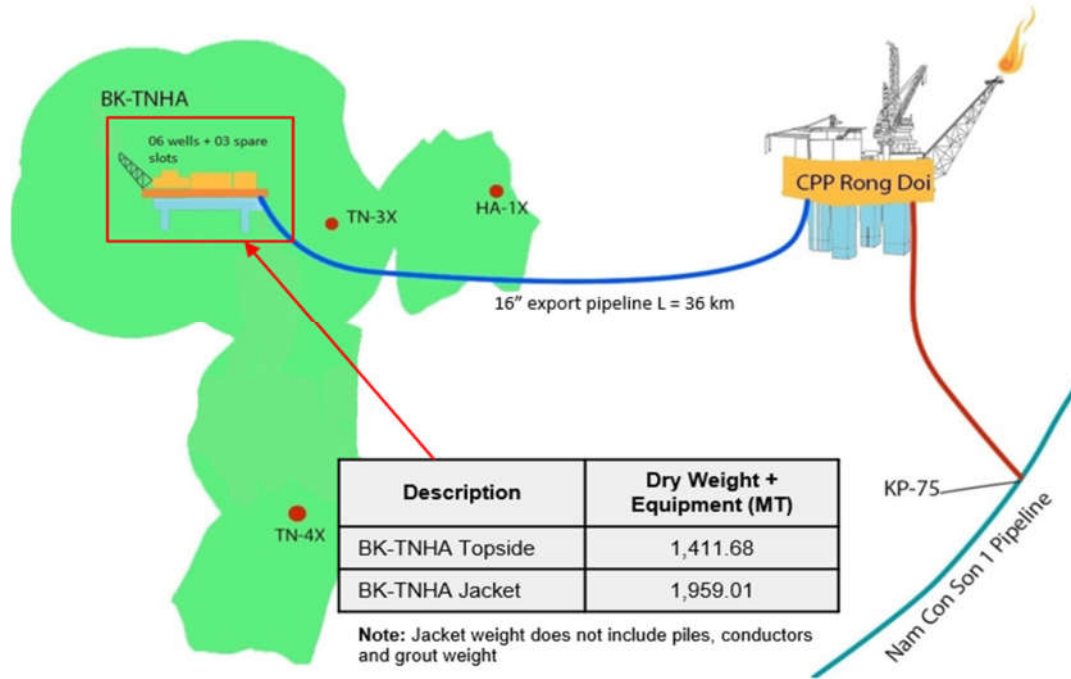


Figure 1.2: Thien Nga Hai Au Development Scheme In Phase 1.

2. DEFINITIONS AND ABBREVIATIONS

CLIENT /ZNEPV	Zarubezhneft EP Vietnam
CONTRACTOR /VSP	Vietsovpetro Joint Venture.
Correspondence	Letters, Faxes, Transmittals, Emails, Minutes of Meetings
CA	Certifying Authority
DCC	Document Controller
Document	Comprises of all Correspondence, Technical Deliverables, Shop Drawings, and Vendor Data, Technical Query, CONTRACTOR /CLIENT's Supplied Data, etc.
NCR	Non-conformance report
OCD	Offshore Construction Division.
PQA/QCM	Project QA/QC Manager
PM	Project Manager
PMT	Project Management Team
Sub-Contractor	Contractor's sub-contracted party for any part of the EPCIC work scope.





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**TECHNICAL REQUIREMENT TOP-UP FOR FLOODING VALVE, PIPING,
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Technical Deliverables	Drawings, Specifications, Datasheets, Calculations, Reports, Procedures, TQs, Work Instructions, etc.
WHP	Wellhead Platform
FAT	Factory Acceptance Test
SAT	Site Acceptance Test

3. SCOPE OF WORK/SUPPLY

BIDDER/VENDOR is requested to quote full items for each group or all groups as below (here in after referred to as “Goods”):

GROUP	DESCRIPTION
1	VALVES: - HYDRAULIC ACTUATOR VALVE - ROV VALVE - MANUAL VALVE
2	PIPING, FITTING AND TUBING

Detail of each group to be followed Appendix A. Material Take Off for Flooding Valve, Piping, Fitting, Support For Grouting System (BK-TNHA).

4. TECHNICAL REQUIREMENT

- The Materials shall be complied with all Technical Documents listed in Appendix B.
- In the event of any conflict between this Technical Requirement, Datasheets, Drawings, Specification and other documents, the order of the precedence of the documents is as follows:
 - Mandatory Laws, Standards and Regulation of Vietnam
 - This technical requirement.
 - Datasheets
 - Specifications.
 - Other documents and drawings
 - International Codes and Standards

5. COUNTRY OF ORIGIN





**THIEN NGA – HAI AU PHASE 1 PROJECT
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**TECHNICAL REQUIREMENT TOP-UP FOR FLOODING VALVE, PIPING,
FITTING, SUPPORT FOR GROUTING SYSTEM (BK-TNHA)**

Description	Recommended Country of Origin
HYDRAULIC ACTUATOR VALVE (VALVE, ACTUATOR...)	Europe, G7, Russia, Australia, Korea
COMPLETED HYDRAULIC ACTUATOR VALVE (ASSEMBLED, INTEGRATED, TESTING...)	Europe, G7, Russia, Australia, Korea, Singapore, Malaysia, Thailand, Indonesia, Vietnam
ROV AND MANUAL VALVE	Europe, G7, Russia, Australia, Korea, Singapore
PIPE, FITTING, TUBING	Europe, G7, Russia, Australia, Korea, Singapore, Malaysia, Thailand, Indonesia.

World-wide competitive basis (excluding India and China) and no Equipment & Material made in India or China shall be used for Quality Control unless otherwise approved by COMPANY

6. DELIVERY PLACE AND DELIVERY LEAD TIME

All GOODS shall be delivered at VSP Site, No.67, 30/4 Road, Thang Nhat Ward, Vung Tau City, S.R Viet Nam.

Delivery lead time of Goods shall be as below:

✓ Group 1:

- For Hydraulic Actuator valve: not later than 210 calendar days after issue of Letter of Award (LOA).
- For ROV valve and Manual valve: not later than 150 calendar days after issue of Letter of Intent (LOA).

✓ Group 2:

- Delivery lead time of Goods shall be not later than 90 calendar days after issue of Letter of Intent (LOA).

Note: Contractor has to follow Contractor/Company's HSE policy when delivery goods to Vietsovpetro site/offshore.

7. YEAR OF MANUFACTURE

Group 1: Goods must be brand new, unused and manufactured in 2025 year or later.

Group 2:

For Ex-Mill: Goods must be brand new and manufactured in the 2025 year or later.





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For Ex-Stock: Goods must be unused and manufactured in the 2024 year or later.

8. WARRANTY

The warranty and Performance Guarantee of GOODS shall be 24 months from the date of received GOODS.

9. CERTIFICATION

All relevant certificates must be confirmed or committed to provide and to be submitted before delivery, but not limited to the following:

No.	Certificate	Group 1		Group 2 Pipe, fitting, tubing ...
		Hydraulic Actuator Valve	ROV and Manual Valve	
1.	Certificate of Origin issued by the Commerce Department of Manufacturer's country or Export country	Original or Electronic Cert	Original or Electronic Cert	Original for Ex-Mill Or True-Copy for Ex-Stock
2.	Certificate of quality, quantity issued by Manufacturer.	Original	Original	Original for Ex-Mill Or True-Copy for Ex-Stock
3.	Material certificate in accordance with BS EN 10204 Type 3.1 issued by Mills	Certified copy by Manufacturer	Certified copy by Manufacturer	Certified copy by Manufacturer
4.	Hydrostatic testing and leak test to API 598 / API 6D issued by manufacturer/ integrator, witnessed and endorsed by third party.	Original	Original	
5.	Actuator Pressure test and Torque test report for valve and actuator issued by manufacturer/ integrator as per specifications.	Original		
6.	Testing/inspection report (by Manufacturer as per Client/Purchaser's Datasheets and Specifications	Original	Original	
7.	FAT certificate issued by TPI (Third party shall be DNV/GL / BV / ABS / Lloyds Register / RMRS/ VR)	Original		





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**TECHNICAL REQUIREMENT TOP-UP FOR FLOODING VALVE, PIPING,
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No.	Certificate	Group 1		Group 2 Pipe, fitting, tubing ...
		Hydraulic Actuator Valve	ROV and Manual Valve	
8.	API 5L Certificate issued by Manufacturer for Ex-mill items/issued by the Supplier/Authorized distributor for Ex-stock items.			True-copy
9.	Certificates of Guarantee issued by the Seller	Original	Original	Original

10. VENDOR DATA REQUIREMENT LIST – VDRL

10.1 NOTES TO VENDOR

Data marked with a 'C' in the Critical column is to be expedited as a priority.

Please tick in the 'Accept' columns on VDRL to verify you are able to supply the data.

1. * = Additional 2 copies of these Data/Documents to be shipped with equipment/materials.
2. CF Data/Documents due 2 weeks after receipt of FA Data/Documents by VENDOR.
3. MDR Data/Documents due 2 weeks after shipment.
4. IOM Data/Documents due 4 weeks before shipment.

10.2 DEFINITION

- C Critical data
- AD After Dispatch
- AW After Award
- CF Certified Final
- E Electronic
- FA For Approval
- I Included in IOM
- IOM Installation and Operation Manual
- M Included in MDR
- P Paper Print
- MDR Manufacturers Data Report
- BD Before Delivery
- BT Before Test
- AT After Test





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**TECHNICAL REQUIREMENT TOP-UP FOR FLOODING VALVE, PIPING,
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VDRL Code	Data/Document Description	Critical	Accept	With Tender	For Approval		Final Data	
				No. Copies	No. Copies	Date Required	No. Copies	IOM/MDR
1	Commercial / Contractual							
C01	VENDOR Data Schedule (VDS)	C		4P+1E	1E	2wks AW	4P+1E	M
C02	Manufacturing and Delivery / Construction Schedule	C		4P+1E	1E	2wks AW	4P+1E	M
C03	Sub Contract Work Proposal				1E	2wks AW	4P+1E	M
C04	Safety Policy and Performance Records			4P+1E	1E	4wks AW	4P+1E	M
C05	Insurance Confirmation					2wks BD	4P+1E	M
C06	Delivery, Handling and Packing Proposals				1E	6wks BD	4P+1E	M
C07	Statement of Conformance with Specification	C		4P+1E	1E	2wks AW	4P+1E	M
C08	VENDOR's Sub-Orders				1E	4wks AW	4P+1E	M
C09	Warranty/Guarantee Confirmation	C		4P+1E	1E	2wks BD	4P+1E	M
2	Drawing – General							
D01	Fabrication/Production Schedule	C		1E	1E	4wks AW	3P+2E	M
D02	General Arrangement Drawings	C		4P+1E	1E	4wks AW	4P+1E	I/M
D03	Assembly Drawings (include in D01)	C			1E	6wks AW	4P+1E	I/M
D04	Shop Details	C			1E	6wks AW	4P+1E	M
D05	Installation Drawings (As Applicable)	C			1E	8wks AW	4P+1E	M
D06	Process Flow Diagrams including Mass and Heat Balance							
D07	Process and Instrument Drawings							
D08	All Approved "As-Built" - Drawings and Data Sheets				1E	4wks AW	4P+1E	M
3	Mechanical/Structural							
M01	Foundation Load and Anchor Bolt Location							
M02	Detail Drawings Mechanical / Structural							
M03	Drive Assembly Details							
M04	Input / Output Nozzle Schedules							





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M05	Mechanical Design Calculations							
M06	Structural Design Calculations							
M07	Pipe Stress Calculations							
4	Instrument/Electrical							
J01	Package Electrical Termination Drawings			4P+1E	1E	6wks AW	4P+1E	M
J02	Panel Layout and Details	C		4P+1E	1E	6wks AW	4P+1E	M
J03	Panel Wiring Diagrams	C		4P+1E	1E	6wks AW	4P+1E	M
J04	Instrument / Fire and Gas Location Plans / Cable Layouts							
J05	Instrument / Fire and Gas Installation Details / Hook-ups				1E	6wks AW	4P+1E	I
J06	Loop Diagrams							
J07	Shutdown and Control Function Charts, Safe Charts							
J08	Alarm / Trip Set Point List							
J09	Electrical Wiring Diagrams and Schematics	C		4P+1E	1E	6wks AW	4P+1E	M
J10	Electrical Schematic Diagrams	C		4P+1E	1E	6wks AW	4P+1E	M
J11	Electrical Single Line Diagrams			4P+1E	1E	6wks AW	4P+1E	M
J12	Sequence and Logic Diagrams, Cause and Effect Diagrams							
J13	Instrument/Electrical Data Sheets	C		4P+1E	1E	4wks AW	4P+1E	M
J14	Functional Design Specifications							
J15	Cable block diagram, SR Data link Address & Screen Graphics							
5	Data - General							
G01	Descriptive Literature and Catalogue Information			4P+1E	1E	4wks AW	4P+1E	I/M
G02	Sub-VENDOR Data Sheets / Literature / Manuals			4P+1E	1E	4wks AW	4P+1E	I/M
G03	Recommended Spare Parts For 2 Year Operation, Priced			4P+1E	1E	4wks BD	4P+1E	I
G04	Recommended Spare parts for Start-up & Commissioning Priced			4P+1E	1E	8wks BD	4P+1E	I
G05	List of Special Tools			4P+1E	1E	8wks BD	4P+1E	I
G06	Surface Preparation and Paint System Specification			4P+1E	1E	8wks AW	4P+1E	M
G07	Design Calculations	C		4P+1E	1E	8wks AW	4P+1E	M





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G08	Foundation Static and Dynamic Loads							
G09	Bills of Material	C		4P+1E	1E	4wks BD	4P+1E	M
G10*	Commissioning and Site Acceptance Test Procedures							
G11	Factory Acceptance Test Procedure				1E	8wks BT	4P+1E	M
G12	Cable Schedule							
G13	Nameplate Details				1E	6wks AW	4P+1E	M
G14	Instrument Index							
G15	I/O Schedules							
G16	Centre of Gravity Sketch	C			1E	12wksAW	4P+1E	M
G17	Utility Requirements – Power / Air / Water / Other	C		4P+1E	1E	4wks AW	4P+1E	M
G18	Weight Control				1E	8wks AW	4P+1E	M
G19	Lubrication Requirements							
G20	Maximum Acceptable Nozzle Forces and Moments							
G21	Special Requirements (Grounding, etc.)				1E	6wks BD	4P+1E	M
G22	Dynamic Characteristics: Lateral & Torsional Analysis							
G23	Loading, Transport and Unloading Details				1E	6wks BD	4P+1E	M
G24	Preservation and Storage Procedure				1E	8wks BD	4P+1E	M
G25	Lifting Lug Details / Calculations (Pulling Head)	C			1E	12wksAW	4P+1E	M
G26	Spreader Bar and Sling Certification				1E	4wks BD	4P+1E	M
G27	Hazardous Area Dossier	C		4P+1E	1E	2wks AT	4P+1E	I
G28	Hardware Standard Software Data/Documentation							
G29	Equipment Specific Software Data/Document							
6	Data – Performance							
P01	Performance Test Procedure	C			1E	6wks AW	4P+1E	M
P02	Performance Curves and Data				1E	2wks AT	4P+1E	M
P03	Completed Client Data Sheets	C		4P+1E	1E	4wks AW	4P+1E	M
P04	Trial Assembly Report				1E	2wks AT	4P+1E	M
P05	Performance Test Reports	C			1E	2wks AT	4P+1E	M
P06	Noise Test Data				1E	2wks AT	4P+1E	M





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P07	FAT Results (performance, leak and functional systems tests)				1E	2wks AT	4P+1E	M
P08	Commissioning and Site Acceptance Test Results							
7	QA/Certification							
Q01	QA Accreditation Certification	C		4P+1E	1E	4wks AW	4P+1E	M
Q02	Contract Quality Plan			4P+1E	1E	4wks AW	4P+1E	M
Q03	Welding Procedures & Qualification Test Reports				1E	4wks AW	4P+1E	M
Q04	Inspection and Test Plan	C		4P+1E	1E	6wks AW	4P+1E	M
Q05	Inspection and Test Reports	C			1E	2wks AT	4P+1E	M
Q06	Calibration Procedures & Results				1E	4wks AW	4P+1E	M
Q07	Hydrotest Procedures				1E	8wks BT	4P+1E	M
Q08	Hydrotest Reports	C			1E	2wks AT	4P+1E	M
Q09	Material Certification	C			1E	2wks AT	4P+1E	M
Q10	Electrical Type Test Certificates				1E	2wks AT	4P+1E	M
Q11	Approval of Relevant Authorities	C			1E	2wks BD	4P+1E	M
Q12	Statement of Code Compliance	C			1E	2wks BD	4P+1E	M
Q13	Hazardous Area Electrical Equipment Certification	C		4P+1E	1E	2wks AT	4P+1E	I/M
Q14	Post Weld Heat Treatment Records	C				2wks AT	4P+1E	M
Q15	Charpy Impact Test Records							
Q16	Radiographic Reports	C				2wks AT	4P+1E	M
8	Manuals & Indices							
R01	Installation Operation and Maintenance Manual (IOM)				1E	4wks BD	4P+1E	I
R02	Manufacturer's Data Report (MDR)				1E	2wks AT	4P+1E	M
R03	Data Manual				1E	4wks BD	4P+1E	M
R04	Training Manuals (Operation and Maintenance)				1E	4wks BD	4P+1E	I
9	Miscellaneous							
Z	Specialty Documents as identified on VDS							





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TECHNICAL REQUIREMENT TOP-UP FOR FLOODING VALVE, PIPING, FITTING, SUPPORT FOR GROUTING SYSTEM (BK-TNHA)

11. VENDOR CAPABILITY AND EXPERIENCE

For Group 1

- Actuated Valve assembly shall have proven track record. Vendor shall submit project history record, related to oil and gas projects, with the bid proposal.
- Manufacturer of Valve body have valid certificate of Authority to use Official API-6D Monogram as per Datasheet.
- Bidder shall have at least 02 (two) similar executed contracts in the last 10 (ten) years for the quoted groups. Similar contracts are contracts supplying Actuated Valves
- Valve Integrator have at least 02 years' experience in integrating completed valves (valve body, actuator and accessories).
- Valve Integrator have valid ISO 9001 certificate or Equivalent certificate applicable to: Assembly, Testing of Actuators, Actuator Accessories and Valve Assemblies issued by Third party (except completed valve is integrated by Manufacturer of Valve Body or Actuator)

For Group 2

Bidder shall have 02 (two) similar executed contracts in the last 05 (five) years. Similar contracts are contracts supplying Piping, fitting and tubing.

12. TECHNICAL PROPOSAL

12.1 TECHNICAL DOCUMENTS WITH PROPOSAL

- ✓ Bidding Technical proposal
- ✓ Project schedule: lead time of GOODS to show all activities from LOI/LOA such as: Design drawings/procedure; Manufacture; testing; transportation and delivery at site.
- ✓ Scope of Supply with detailed model or Part No, manufacturer, Origin (group 1/group 2) and quantity. (No information or any information such as “or equal”, “or equivalent” is not acceptable).
- ✓ Letter of commitment for Ex-Mill
- ✓ ISO 9001 for Valve Automation or equivalent.
- ✓ Valid API 5L Certificate for Group 2.
- ✓ Datasheet fully technical information from manufacturers (Datasheet form stamped and signed by manufacturer) for Group 1.
- ✓ Torque characteristics of the valves and actuator stamped and signed by manufacturer for Hydraulic Actuator valve.





THIEN NGA – HAI AU PHASE 1 PROJECT BLOCK 12/11, OFFSHORE VIETNAM

TECHNICAL REQUIREMENT TOP-UP FOR FLOODING VALVE, PIPING, FITTING, SUPPORT FOR GROUTING SYSTEM (BK-TNHA)

- ✓ Inspection and Test Plan (ITP) as per Company's Specification
- ✓ Control Schematic drawing and Hook-up Drawing
- ✓ Valve General Arrangement drawing (dimension of Valve).
- ✓ Manufacturer specifications and catalogue (Valve, Actuator, Accessories, pipe, fitting, flange, bolt, gasket, tubing...)
- ✓ List of Bidder's similar executed contracts in the last 05 (five) years and Bidder's Copied similar executed contracts with detailed scope of supply.
- ✓ List of previous project and relevant documentation proving Manufacturer has experienced in those projects.
- ✓ And other documents or drawings with bid required in Technical Requisition for Valves in VDRL

12.2 **VENDOR DATA AFTER LOI:**

Vendor also shall be full responsibility to submit for Vendor Data Register List (VDRL) to Company for review and consideration.

12.3 **ALL FINAL DOCUMENTS:**

Vendor shall be provided with one (1) original and five (5) copies and one (1) set of electronic copy on CD/DVD.

13. **APPENDICES**

Appendix A: Material Take Off for Flooding system of BK-TNHA Jacket.

Appendix B: Technical Documents

Notes: Technical Documents in appendix B are preliminary engineering (basic engineering). Same changes input above (if any) for detail engineering design document and drawing shall be updated via bulletin during bidding.

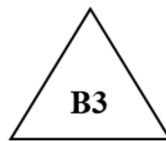




**THIEN NGA – HAI AU PHASE 1 PROJECT
BLOCK 12/11, OFFSHORE VIETNAM**

**TECHNICAL REQUIREMENT TOP-UP FOR FLOODING VALVE, PIPING,
FITTING, SUPPORT FOR GROUTING SYSTEM (BK-TNHA)**

**APPENDIX A – MATERIAL TAKE OFF FOR FLOODING SYSTEM OF BK-TNHA
JACKET.**





**THIEN NGA – HAI AU PHASE 1 PROJECT
BLOCK 12/11, OFFSHORE VIETNAM**

**TECHNICAL REQUIREMENT TOP-UP FOR FLOODING VALVE, PIPING,
FITTING, SUPPORT FOR GROUTING SYSTEM (BK-TNHA)**

APPENDIX B

TECHNICAL DOCUMENTS

Link download Technical Documents:

<https://drive.google.com/drive/folders/1yzjBP2ns-tkHDJlQYHMNFwAoDwBnCVjS?usp=sharing>

Item	Description	Document No.	Rev.
I	DATASHEET		
1	DATASHEET FOR GRATING, ROV VALVE, ACTUATED VALVES AND ANY OTHER JACKET MISCELLANEOUS ITEM	9001-2211-KS-0001	A1
2	MANUAL VALVE DATASHEETS (BK-TNHA)	9001-2201-KX-0001	A1
II	SPECIFICATION		
1	SPECIFICATION FOR ACTUATED ON OFF VALVE (BK-TNHA)	9001-2201-SJ-0005	B1
2	SPECIFICATION FOR MANUAL VALVES (BK-TNHA)	9001-2201-SX-0002	B1
3	PIPING MATERIAL CLASS SPECIFICATION (BK-TNHA)	9001-2201-SX-0001	B1
4	SPECIFICATION FOR PAINTING AND COATING	9001-2000-SS-0003	B1
III	DRAWING		
1	BK-TNHA JACKET FLOODING SYSTEM ARRANGEMENT SHEET 1	9001-2211-DS-1012-01	A1
2	BK-TNHA JACKET FLOODING SYSTEM ARRANGEMENT SHEET 2	9001-2211-DS-1012-02	A1
3	BK-TNHA JACKET FLOODING SYSTEM ARRANGEMENT SHEET 3	9001-2211-DS-1012-03	A1
4	BK-TNHA JACKET FLOODING SYSTEM ARRANGEMENT SHEET 4	9001-2211-DS-1012-04	A1
5	BK-TNHA JACKET FLOODING SYSTEM ARRANGEMENT SHEET 5	9001-2211-DS-1012-05	A1
6	BK-TNHA JACKET FLOODING SYSTEM ARRANGEMENT SHEET 6	9001-2211-DS-1012-06	A1
7	BK-TNHA JACKET FLOODING SYSTEM ARRANGEMENT SHEET 7	9001-2211-DS-1012-07	A1
8	BK-TNHA JACKET FLOODING SYSTEM ARRANGEMENT SHEET 8	9001-2211-DS-1012-08	A1
9	GROUTING SYSTEM	9001-2211-DS-0042-01	B1 (FEED)
10	BK-TNHA JACKET GROUTING SYSTEM DETAILS - SHEET 1	9001-2211-DS-0039-01	A1





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**TECHNICAL REQUIREMENT TOP-UP FOR FLOODING VALVE, PIPING,
FITTING, SUPPORT FOR GROUTING SYSTEM (BK-TNHA)**

Item	Description	Document No.	Rev.
11	BK-TNHA JACKET GROUTING SYSTEM DETAILS - SHEET 2	9001-2211-DS-0039-02	A1
12	BK-TNHA JACKET GROUTING SYSTEM DETAILS - SHEET 3	9001-2211-DS-0039-03	A1
13	BK-TNHA JACKET GROUTING SYSTEM DETAILS - SHEET 4	9001-2211-DS-0039-04	A1
14	BK-TNHA JACKET GROUTING SYSTEM DETAILS - SHEET 5	9001-2211-DS-0039-05	A1
15	BK-TNHA UPENDING AND POSITIONING SEQUENCE - SHEET 1	9001-2211-DS-1006-01	A1
16	BK-TNHA UPENDING AND POSITIONING SEQUENCE - SHEET 2	9001-2211-DS-1006-02	A1
17	BK-TNHA UPENDING AND POSITIONING SEQUENCE - SHEET 3	9001-2211-DS-1006-03	A1
18	BK-TNHA UPENDING AND POSITIONING SEQUENCE - SHEET 4	9001-2211-DS-1006-04	A1
19	BK-TNHA UPENDING AND POSITIONING SEQUENCE - SHEET 5	9001-2211-DS-1006-05	A1
20	BK-TNHA UPENDING AND POSITIONING SEQUENCE - SHEET 6	9001-2211-DS-1006-06	A1

Note: Technical documents may be updated and complemented during bidding stage.





THIEN NGA – HAI AU PHASE 1 PROJECT BLOCK 12/11, OFFSHORE VIETNAM

MATERIAL TAKE OFF FOR TOP-UP FOR FLOODING VALVE, PIPING, FITTING, SUPPORT FOR GROUTING SYSTEM (BK-TNHA)

Document No:


Revision: B3

Date 13-Nov-25

ITEM NUMBER	CATEGORY	SIZE	CLASS	DESCRIPTION	MATERIAL	TOTAL QUANTITY	CONTIGENCY	Q'TY	UNIT	REMARK
GROUP 1: VALVES										
1.1. HYDRAULIC ACTUATOR VALVE										
1	VALVE	6"	150#	SPRING CLOSE BALL VALVE WITH HYDRAULIC SINGLE ACTING SPRING RETURN ACTUATOR WITH FILTER/STRAINER: VALVE: BALL VALVE API 6D FLANGE RF ACTUATOR: HYDRAULIC SINGLE ACTING SPRING RETURN ACTUATOR, SAFETY FACTOR MIN. 1.5, FAIL CLOSED	SEE DATASHEET FOR HYDRAULIC ACTUATOR VALVE	2	1.00	2	SET	FOR FLOODING OF ADDITIONAL BOUYANCY TANK
1.2. ROV VALVE										
2	VALVE	6"	150#	BALL VALVE DIVER/ROV OPERATED SECONDERY FLOOD VALVE WITH FILTER/STRAINER: BALL VALVE FITTED WITH HANDWHEEL API 6D FLANGED RF, - FITER/STRAINER: SS 316/316L	SEE DATASHEET FOR ROV VALVE	2	1.00	2	PCS	FOR FLOODING OF ADDITIONAL BOUYANCY TANK
1.3. MANUAL VALVE										
3	VALVE	2"	150#	BALL VALVE WITH HANDWHEEL FOR VENTING API 6D FLANGED RF,	SEE DATASHEET FOR BALL VALVE	2	1.00	2	PCS	FOR VENT OF ADDITIONAL BOUYANCY TANK
4	VALVE	1/2"	800#	BALL VALVE 1/2", 800# / 3000 Psig SWxFNPT WITH 1 PUP END PE 100mm LENGTH , RB, FLOATING, LEVER OPERATED, BODY A105N	SEE DATASHEET FOR BALL VALVE	2	1.00	2	PCS	FOR PRSSURE GAUGE OF ADDITIONAL BOUYANCY TANK
5	VALVE	3/8"		BALL VALVE WORKING PRESSURE SUITABLE FOR HYDRAULIC SERVICE BALL VALVE 3/8" NPTF, SS316, 6000PSI	SEE DATASHEET FOR BALL VALVE	2	1.25	3	PCS	FOR HYDRAULIC OF ADDITIONAL BOUYANCY TANK
GROUP 2: PIPES AND FITTINGS										
2.1. PIPINGS										
6	PIPE	2"		PIPE SEAMLESS, ASME B36.10, BE, SCH-80, 6M PER LENGTHH	API 5L GRB PSL2 UNO	1122	1.20	1344	Kg	180 M
2.2. FITTINGS, FLANGES, GASKETS, BOLTS & NUTS										
7	ELBOW	6"		ELBOW LR 90DEG SEAMLESS, LR, ASME 16.9, BW, SCH-80	ASTM A234 Gr. WPB	2	1.20	3	PCS	
8	ELBOW	2"		ELBOW LR 45DEG SEAMLESS, LR, ASME 16.9, BW, SCH-80	ASTM A105	12	1.20	15	PCS	
9	ELBOW	2"		ELBOW LR 90DEG SEAMLESS, LR, ASME 16.9, BW, SCH-80	ASTM A105	12	1.20	15	PCS	
10	TEE	4"x2"		TEE REDUCING SCH-80 ASME B16.9	ASTM A234 Gr. WPB	2	1.20	3	PCS	





ITEM NUMBER	CATEGORY	SIZE	CLASS	DESCRIPTION	MATERIAL	TOTAL QUANTITY	CONTINGENCY	Q'TY	UNIT	REMARK
11	OLET	2"x1/2"	3000#	THREAOLET 3000# NPTF ASME B16.11,	A105	2	1.20	3	SET	
12	FLANGE	6"	150#	FLANGE WN, ASME B16.5, RF, SCH80;	ASTM A105	20	1.10	22	PCS	
13	FLANGE	2"	150#	FLANGE WN, ASME B16.5, RF, SCH80;	ASTM A105	4	1.20	5	PCS	
14	GASKET	6"	150#	GASKET 150#, 4.4 mm THK SPIRAL WOUND, 316SS WINDING, GRAPHITE FILLER, 316SS INNER AND OUTER GUIDE RINGS	SS316	4	2.00	8	PCS	
15	GASKET	2"	150#	GASKET 150#, 4.4 mm THK SPIRAL WOUND, 316SS WINDING, GRAPHITE FILLER, 316SS INNER AND OUTER GUIDE RINGS	SS316	4	2.00	8	PCS	
16	BOLTS	3/4"x105mm		STUD BOLTS W/2 HEX. NUTS.XYLAN FLUOROCARBON COATED, ASME B18.2.1/18.22.	A193-B7/ A194-2H	16	1.50	24	SET	
17	BOLTS	5/8"x90mm		STUD BOLTS W/2 HEX. NUTS.XYLAN FLUOROCARBON COATED, ASME B18.2.1/18.22.	A193-B7/ A194-2H	16	1.50	24	SET	
18	CAP	2"	3000#	THREADED CAP NPT 3000#	ASTM A105	4	1.20	5	PCS	
19	TEE	2"		LATERAL TEE 2", BW, SCH 80, ASTM A234 Gr.WPB, ASME B16.9	ASTM A234 Gr.WPB	4	1.20	5	PCS	
20	NIPPLE	2"		2" x 100MM LEGHTH, PIPE NIPPLE BE X NPTM, SCH-80, API 5L GR.B	API 5L GRB	4	1.20	5	PCS	
2.3. TUBINGS										
18	TUBING	3/8"		TUBING BUNDLE SUITABLE FOR HYDRAULIC SERVICE. - WALL THICKNESS 0.049", MINIMUM 250M/LENGTH	SS 316L	1	1.00	250	M	
19	CAP/PLUG	1/2"		DUST CAP/PLUG FOR QUICK DISSCONNECT	RUBBER	2	1.20	3	SET	
20	QUICK DISSCONNECT	1/2"		QUICK DISSCONNECT AND FEMALE HALF	SS 316L	2	1.20	3	SET	
21	CONNECTOR	3/8" x 1/2"		3/8" TUBE x 1/2" BULKHEAD NPT MALE CONNECTOR	SS 316L	2	2.00	4	PCS	
22	CONNECTOR	3/8" x 1/2"		3/8" TUBE x 1/2" NPT MALE CONNECTOR	SS 316L	2	1.20	3	PCS	
23	CONNECTOR	3/8" x 3/8"		3/8" TUBE x 3/8" NPT MALE CONNECTOR	SS 316L	2	1.20	3	PCS	
24	NIPPLE	3/8"		3/8" HEX NIPPLE NPT-M SUITABLE FOR HYDRAULIC SERVICE	SS 316L	2	1.20	3	PCS	
25	TUBING BAND	0.03" x 3/4" WIDE		TUBING BAND 0.03" x 3/4" WIDE, SS316/SS316L, LENGTH = 30 M AND 100 SET STRAPPING BAND SS316/SS316L	SS 316/ 316L	6	1.50	9	SET	
26	GAUGE	1/2"		PRESSURE GAUGE 1.2" NPTM, PANEL MOUNTED , Φ100MM, R: 20 BAR	ASTM A182 SS316/316L	2	1.2	3	PCS	
2.4. SUPPORTS										





ITEM NUMBER	CATEGORY	SIZE	CLASS	DESCRIPTION	MATERIAL	TOTAL QUANTITY	CONTIGENCY	Q'TY	UNIT	REMARK
27	U-BOLT	2"		U-BOLTS GUIDE FOR PIPE 2"(M10) C/W: - 01 U-BOLT ASTM A36, HOT-DIP GALVANIZED, - 04 NUTS ASTM A36, HOT-DIP GALVANIZED;	ASTM A36, HOT-DIP GALVANIZED,	100	1.2	120	PCS	

Notes:

- 1.This MTO is based on Updated drawings
- 2.This MTO shall be read in conjunction with the following project documents:
- DATA SHEETS FOR HYDRAULIC ACTUATOR VALVES, ROV VALVES AND MANUAL VALVE DATASHEETS (BK-TNHA) NO. 9001-2201-KX-0001

