



**KHANH MY – DAM DOI FIELDS DEVELOPMENT PROJECT,
BLOCK 46/13, OFFSHORE VIETNAM**

**PROVISION OF ENGINEERING, PROCUREMENT, CONSTRUCTION,
TRANSPORTATION, INSTALLATION, HOOK-UP AND
COMMISSIONING (EPCI)**

Package/ Contract Number

PVEP-KM/DEV/2025/010

TECHNICAL REQUISITION FOR SMART FLANGE

Document Number

KDP-000-03-RQ-U-0001

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1 INTRODUCTION

PVEP–KHANH MY (herein referred to as COMPANY) is undertaking development of Khanh My and Dam Doi fields, which are located in Block 46/13, Malay - Tho Chu Basin, S. R. Vietnam, approximately 205 km southwest of Cape Ca Mau and about 30 km northwest of the Bunga Kekwa field of Block PM3 CAA, with a water depth of approximately 53 m. The Project First Gas is expected in Quarter 4 of 2027.

Location map of Block 46/13 is as shown in **Figure 1-1**.

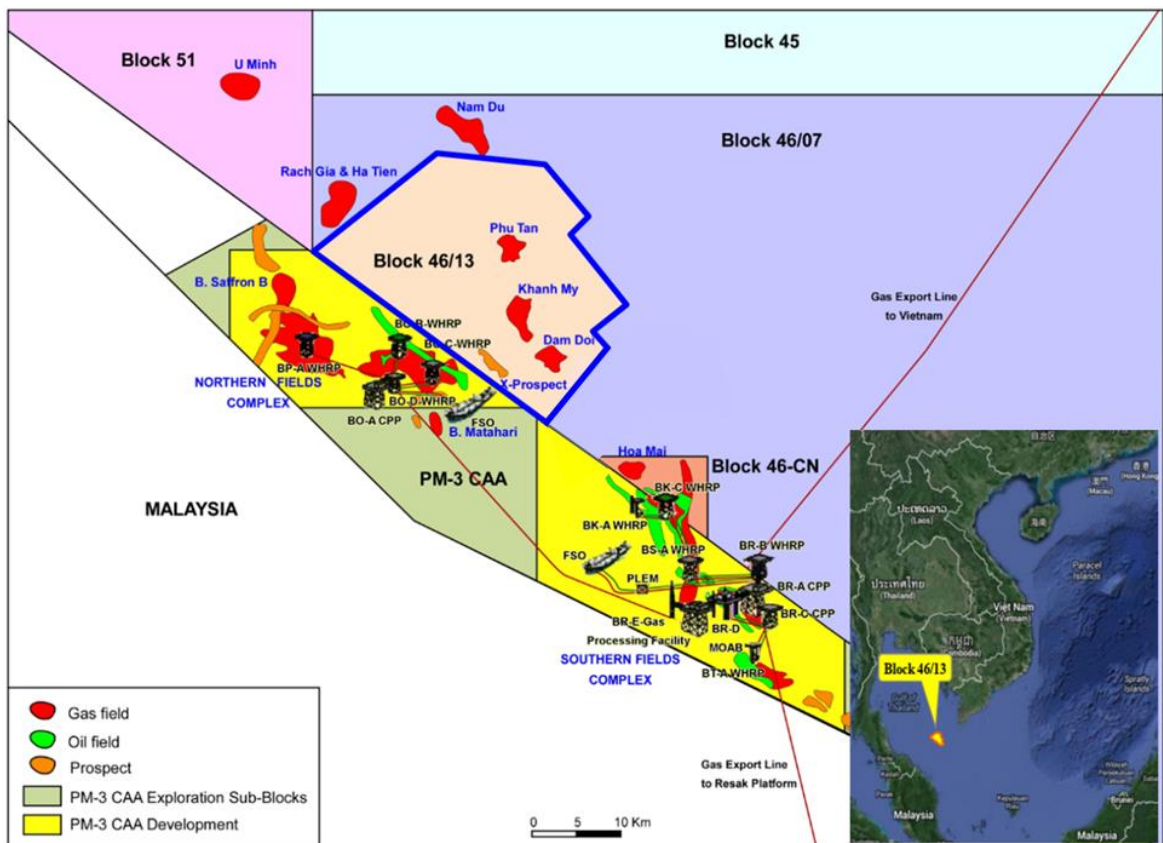




Figure 1-1. Location map of Block 46/13

The development of Khanh My and Dam Doi fields will comprise of the following new facilities:

- One (1) unmanned wellhead platform KM-WHP.
- One (1) unmanned wellhead platform DD-WHP.
- 20” x 6.7 km long FWS rigid pipeline from KM-WHP to DD-WHP.
- 20” x 22.0 km long FWS rigid pipeline from DD-WHP to the existing BK-C WHP.

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- Subsea pig-gable wye fitting which has one inlet spared for Block 46-CN Development located at tie-in point approximately 14 km downstream of DD-WHP.

Development scheme of Khanh My and Dam Doi fields is as shown in **Figure 1-2**.

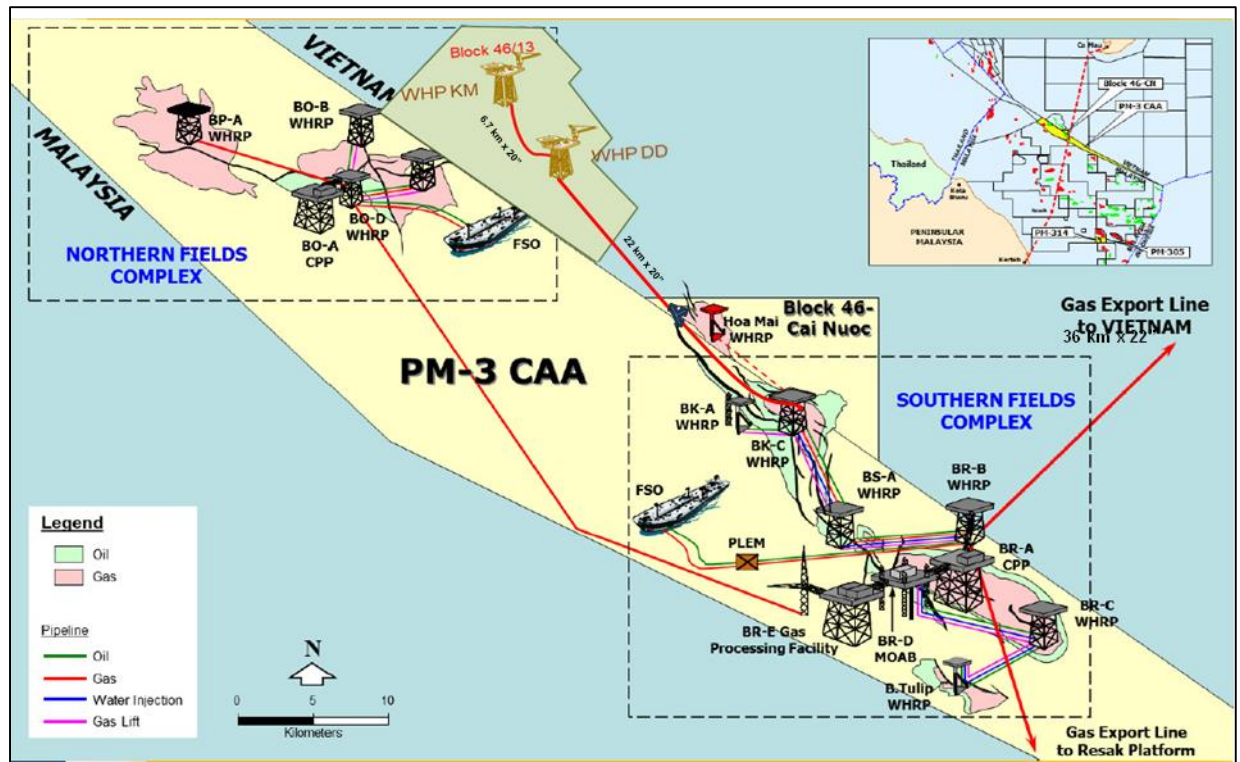




Figure 1-2. Field development scheme

In addition, the field development will also consist of modifications to the existing BK- C WHRP and BR-A CPP of Block PM3 CAA including:

- A new retrofit 20” riser and clamps, structural deck extension, topside piping and valves, pig receiver, allocation gas metering skid, electrical terminations, and associated miscellaneous work on BK-C WHRP.
- Upgrade of the existing DCS on BR-A CPP for operation monitoring and remote control of KM-WHP and DD-WHP.
- Upgrade of the existing Telecom, Network System on BR-A CPP and HML’s office to accommodate the KM-WHP, DD-WHP communication via Digital Microwave Radio (DMR) to support operation monitoring and remote control; and data transmission from HML’s office to PVEP-KHANH MY’s office.

Produced fluids of Khanh My and Dam Doi fields will be transferred from KM-WHP and DD-WHP to BK-C WHRP, and then to the existing processing facilities at PM3 Southern

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Field (PM3S) prior to exporting from Bunga Raya-B platform (BR-B WHP) to Vietnam shore via the existing 18” PM3 - Ca Mau gas export pipeline. Separated condensates will be stored in and offloaded later from FSO PM-3 CAA.



The platforms will be remotely monitored and controlled from BR-A CPP of Block PM3 CAA as well as being monitored from mainland of Vietnam. Dedicated facilities of PM3S will be modified, upgraded or extended to cater for additional production and additional facilities to be monitored and controlled.

KM-WHP and DD-WHP are designed as unmanned platforms for burn down concepts and minimum facilities. Each new platform has a total of four (04) conductor slots, and each conductor slot is designed to accommodate two (02) individual wells. The facilities are designed for simultaneous drilling and production (SIPROD).

The topsides facilities and subsea pipelines will have a design life of 10 years. The platform structures will have a design life of 15 years.

1.1 PROJECT SCHEDULE

- EPCI LOI: 30 March 2026
- 1st Gas Target: Q4 -2027

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1.2 PURPOSE

This Technical Requisition defines the minimum technical engineering requirements for the design, manufacture, inspection, testing, certification and technical documentation of Smart Flange Connector assemblies.

This document shall be used as the technical input to the Material Requisition prepared by the EPCI CONTRACTOR.



Commercial, contractual, delivery schedule, warranty, expediting, VENDOR qualification, price, bid administration and other procurement-related requirements shall be specified separately in the Material Requisition and/or Purchase Order.

This Technical Requisition covers the technical requirements for the Smart Flange Connector assembly, including pipe interface, pressure containment, sealing and gripping, flange/gasket/bolting interface, external load capacity, materials, type approval, project-specific verification, manufacture, inspection, testing, installation technical requirements and VENDOR technical documentation.



1.3 DEFINITION OF TERM

The following terms as used in this document, assume the meaning given below:

| | |
|-----------------|---|
| COMPANY | Khanh My Petroleum Operating Branch – Petrovietnam Exploration Production Corporation Limited (PVEP-KHANH MY) |
| CONTRACT | The terms and conditions of the CONTRACT, and the exhibits references, and documents attached hereto or incorporated by reference, including any subsequent amendments to them. |
| EPCI CONTRACTOR | Vietsovetro Joint Venture (VSP) |
| SUBCONTRACTOR | Research and Engineering Institute (REI) |
| WORKS | All activities or services to be performed and rendered by CONTRACTOR or its SUBCONTRACTOR as expressly set forth in the CONTRACT and all of contractor’s activities that are reasonably inferable from the description of the WORKS. This shall include work or services performed pursuant to any authorization for WORK or changes, which may be issued to CONTRACTOR from time to time and shall therein become part of the WORK. |



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| SUPPLIER | Any third party or parties, approved in writing by COMPANY, engaged in the provision or delivery of materials, equipment, or goods required for the performance of the WORK, whether directly to COMPANY, CONTRACTOR, or any SUBCONTRACTOR |
| VENDOR | The party which manufactures or supplies materials, equipment and services to perform the duties specified by PURCHASER |
| SUB-VENDOR | Other entity employed by VENDOR to perform work/services and/or supply materials/equipment |
| MANUFACTURER | Any third party or parties, approved in writing by COMPANY, responsible for the production, fabrication, or assembly of equipment, components, or materials specified for the WORK, whether supplying directly or through a SUPPLIER |
| PURCHASER | The party which places the purchase order or signs the contract. |
| CLASSIFICATION AUTHORITY (CA) | The Classification Authority (CA) is an independent organization that establishes and maintains technical standards for the construction and operation of ships and offshore structures. |
| THIRD-PARTY INSPECTOR (TPI) | A Third-Party Inspector (TPI) is the body or bodies appointed by COMPANY or appointed by CONTRACTOR and approved by COMPANY to verify and certify that WORK or any partials of WORK conform to all statutory and other requirements |
| TIE-IN HOST PARTY | Means HML, the operator of Block PM3 CAA PSC, in which HML, HML PM3, PETRONAS Carigali and PVEP are the Partners. |
| Shall | Indicates mandatory requirements. |
| Should | Indicates a strong recommendation for which COMPANY approved justification is required to deviate. |
| May | Indicates one possible acceptable solution. |

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1.4 ABBREVIATIONS

| | |
|-----------|--|
| API | American Petroleum Institute |
| ASME | American Society of Mechanical Engineers |
| ASTM | American Society for Testing and Materials |
| BV | Bureau Veritas |
| CA | Certification Authority |
| FAT | Factory Acceptance Test |
| FEA | Finite Element Analysis |
| FWS | Full Well Stream |
| GA | General Arrangement |
| HSE | Health, Safety and Environment |
| IOM | Installation, Operation and Maintenance Manual |
| ITP | Inspection and Test Plan |
| MDR | Manufacturer's Data Report |
| MR | Material Requisition |
| MTO | Material Take-Off |
| NDE / NDT | Non-Destructive Examination / Testing |
| PMI | Positive Material Identification |
| PO | Purchase Order |
| RTJ | Ring Type Joint |
| TPI | Third-Party Inspector |
| VDRL | VENDOR Document Requirement List |
| WPS / PQR | Welding Procedure Specification / Procedure Qualification Record |

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2 **SCOPE OF WORK/ SUPPLY**

VENDOR shall supply the Smart Flange Connector assembly in compliance with the requirements of this Technical Requisition, applicable project documents, applicable codes and standards, and approved VENDOR documents.



The scope of technical supply shall include, but not be limited to, the following:

- Engineering Activities Required for Design and Manufacture;
- Design Documentation, Including Failure Mode, Effect and Criticality Analysis (FMECA) or Equivalent Technical Risk Assessment Covering Relevant Phases from FAT, Installation, Pre-Commissioning and Operation;
- Project-Specific Design Verification;
- Procurement of Raw Materials and Critical Components Required for the Smart Flange Connector Assembly, Including Forged Materials, Sealing and Gripping Materials, Bolting Materials and Gaskets;
- Manufacturing and Assembly of the Smart Flange Connector;
- Smart Flange Connector Body;
- Matching Swivel Flange or Mating Flange;
- RTJ Gasket, Leak-Testable Type Where Applicable;
- Stud Bolts and Heavy Hex Nuts;
- Internal Gripping, Sealing, Locking and Retaining Components;
- Pipe OD / Ovality Verification Tool, Where Required;
- Gap Gauge / Feeler Gauge for Installed Flange Gap Verification, Where Required;
- Product-Specific Installation Accessories and Special Tools Required for Proper Installation, Connector Activation, Bolt Tensioning, Leak Testing and Post-Installation Verification, Where Applicable;
- Coating and Corrosion Protection;
- FAT, Hydrostatic Test and/or Leak Test Accessories;
- Inspection, Testing, Certification, Material Traceability and Quality Records, Including Third-Party Inspection Records Where Required by the MR / PO or Project Certification Scheme;
- VENDOR Technical Documentation;
- Manufacturer’s Data Report.

Any component, accessory, special tool or technical document necessary for the safe installation, testing, commissioning and operation of the Smart Flange Connector shall be included in VENDOR’s technical scope, whether specifically listed or not.

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The Smart Flange installation procedure indicates that the connector is normally supplied with the required studs, nuts and RTJ gasket; one spare gasket may also be supplied, and special stud length / tommy holes may be provided for hydraulic bolt tensioning equipment.

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3 GENERAL TECHNICAL INSTRUCTION TO VENDOR

VENDOR shall submit full technical details of the proposed Smart Flange Connector assembly to demonstrate compliance with this Technical Requisition and the referenced project documents.

VENDOR shall be fully responsible for the design adequacy, pressure integrity, sealing performance, gripping capacity, structural capacity, manufacturing quality and fitness for purpose of the Smart Flange Connector.



VENDOR shall review the existing pipeline data, tie-in arrangement, project design data, pressure/temperature requirements, pipe OD/WT, pipe condition, coating condition and installation requirements before finalizing the connector design.

VENDOR shall clearly identify any deviation from this Technical Requisition.

Any technical exception or deviation not listed in the Technical Exception and Deviation Register shall not be considered accepted.

VENDOR shall provide technical clarification where the project data are incomplete, inconsistent or insufficient for final design.

VENDOR shall not proceed with final manufacture until the critical technical documents, including datasheet, GA drawing, design calculation/FEA, ITP and FAT/leak test procedure, have been reviewed or approved as required by COMPANY/PURCHASER.



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4 ORDER OF PRECEDENCE

The order of precedence, in descending order of priority:



1. Government Laws, Rules and Regulations;
2. Enquiry / Purchase Order or Contract;
3. This Requisition;
4. Other referenced Project Specifications and all its Exhibits;
5. National/International Codes and Standards and recommended practices;
6. Other related referenced documents;
7. The **VENDOR**'s quotation or proposal.

For precedence No.1, whenever Malaysian Legislation is applicable, the more stringent requirement between Vietnamese and Malaysian Legislation will be used.

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5 LIST OF TECHNICAL DOCUMENTS

| | |
|----------------------|---|
| KDP-OOO-03-BD-U-0001 | Pipeline and Riser Design Basis |
| KDP-OOO-03-BM-U-0001 | Material Take-Off (MTO) for Pipeline System |
| - | Existing 22-inch Pipeline As-built / ILI Data |
| KDP-DDA-03-DW-U-0001 | Pipeline Route Drawing from DD-WHP to Subsea Tie-in Point |
| KDP-DDA-03-DW-U-1307 | Tie-in Spool General Arrangement at Subsea Tie-In Point |

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6 GENERAL INSTRUCTION FOR VENDOR DOCUMENTATION

VENDOR’s technical documentation shall be prepared in English and SI units, unless otherwise approved by COMPANY.



All technical documents shall be clear, traceable, project-specific and consistent with the project datasheet, MTO, design basis and applicable codes.

Documents submitted for approval shall be approved by COMPANY/PURCHASER before the relevant engineering, manufacture, inspection, testing or installation activity proceeds.

VENDOR’s technical documentation shall include sufficient information to verify:

- Design Basis and Assumptions;
- Pressure Containment;
- Sealing Performance;
- Gripping Capacity;
- External Load Capacity;
- Pipe Interface Suitability;
- Material Compliance;
- Coating / Corrosion Protection;
- Inspection And Testing;
- Installation Method;
- Final As-Built Configuration.

Commercial documents, delivery schedule, warranty, price, VENDOR qualification and procurement administration documents are excluded from this Technical Requisition and shall be covered by the MR/PO.

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7 VENDOR TECHNICAL DOCUMENT REQUIREMENT LIST - VDRL

7.1 NOTES TO VENDOR

Data marked with “C” in the Critical column shall be treated as critical technical documents.

Documents marked “For Approval” shall be reviewed and approved before VENDOR proceeds with the related activity.



Final documents shall be included in the Manufacturer’s Data Report where applicable.

The VDRL below is limited to technical, engineering, inspection, testing, installation and MDR documents only. Commercial, contractual, delivery and VENDOR qualification documents shall be specified in the MR/PO.



VENDOR provide VDRL mark-up to specify the applicable deliverables applied for the project.

7.2 VDRL FOR SMART FLANGE



| VENDOR DATA REQUIREMENT LIST - VDRL | | | | | | | | |
|-------------------------------------|---|----------|--------|-------------|--------------|---------------|------------|---------|
| VDRL Code | Data/Document Description | Critical | Accept | With Tender | For Approval | | Final Data | |
| | | | | No. Copies | No. Copies | Date Required | No. Copies | IOM/MDR |
| 1 | Drawing / General | | | | | | | |
| D01 | Smart Flange Connector Datasheet | C | | 4P | 1E | 2 Wks AW | 4P+1E | M |
| D02 | General Arrangement Drawing | C | | 4P | 1E | 4 Wks AW | 4P+1E | M |
| D03 | Assembly Drawing | C | | | 1E | 4 Wks AW | 4P+1E | M |
| D04 | Bill Of Materials | C | | | 1E | 4 Wks AW | 4P+1E | M |
| D05 | Type Approval / Type Examination Certificate | C | | 4P | 1E | 2 Wks AW | 4P+1E | M |
| D06 | Pipe Interface And Pipe Preparation Requirement | C | | | 1E | 4 Wks AW | 4P+1E | I/M |
| D07 | Coating / Corrosion Protection Details | C | | | 1E | 4 Wks AW | 4P+1E | M |
| D08 | Nameplate / Marking Details | | | | 1E | 4 Wks AW | 4P+1E | M |

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| 2 | Mechanical / Structural | | | | | | | |
| M01 | Design Basis / Design Input Summary | C | | | 1E | 2 Wks AW | 4P+1E | M |
| M02 | Mechanical Design Calculation Report | C | | | 1E | 4 Wks AW / BM | 4P+1E | M |
| M03 | FEA Report | C | | | 1E | 4 Wks AW / BM | 4P+1E | M |
| M04 | External Load / Gripping Capacity Verification Report | C | | | 1E | 4 Wks AW / BM | 4P+1E | M |
| M05 | Sealing Integrity Verification Report | C | | | 1E | 4 Wks AW / BM | 4P+1E | M |
| M06 | Pipe Collapse / Activation Load Verification Report | C | | | 1E | 4 Wks AW / BM | 4P+1E | M |
| M07 | Fatigue / Ratcheting Assessment, Where Applicable | C | | | 1E | 4 Wks AW / BM | 4P+1E | M |
| M08 | Cathodic Protection / Electrical Continuity Compatibility Note | | | | 1E | 4 Wks AW | 4P+1E | M |
| M09 | Lifting / Handling Design Details, Where Applicable | | | | 1E | 4 Wks AW | 4P+1E | I/M |
| 3 | Manufacturing / General Technical Documents | | | | | | | |
| G01 | Descriptive Literature And Catalogue Information | | | 4P | 1E | 2 Wks AW | 4P+1E | I/M |
| G02 | Manufacturing Procedure Specification | C | | | 1E | 4 Wks AW / BM | 4P+1E | M |
| G03 | List Of Special Tools | C | | 4P | 1E | 4 Wks AW | 4P+1E | I/M |
| G04 | Surface Preparation And Paint System Specification | C | | | 1E | 4 Wks AW / BM | 4P+1E | M |
| G05 | Weight, Centre Of Gravity And Handling Data | | | | 1E | 4 Wks AW | 4P+1E | I/M |
| G06 | Preservation And Storage Procedure | | | | 1E | 4 Wks AW | 4P+1E | I/M |
| G07 | Packing, Handling And Transportation Technical Procedure | | | | 1E | 4 Wks AW | 4P+1E | I/M |
| 4 | Performance / Test Procedures | | | | | | | |

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| P01 | Factory Acceptance Test Procedure | C | | | 1E | 4 Wks AW / BT | 4P+1E | M |
| P02 | Hydrostatic / Leak Test Procedure | C | | | 1E | 4 Wks AW / BT | 4P+1E | M |
| P03 | Sealing Integrity Test Procedure | C | | | 1E | 4 Wks AW / BT | 4P+1E | M |
| P04 | Gripping / Slip Verification Procedure, Where Applicable | C | | | 1E | 4 Wks AW / BT | 4P+1E | M |
| P05 | Pipe OD / Ovality Verification Procedure | C | | | 1E | 4 Wks AW | 4P+1E | I/M |
| P06 | Bolt Tensioning / Tightening Procedure | C | | | 1E | 4 Wks AW | 4P+1E | I/M |
| P07 | Surface Preparation And Painting Procedure | C | | | 1E | 4 Wks AW / BM | 4P+1E | M |
| P08 | Non-Conformance Control Procedure | C | | | 1E | 2 Wks AW | 4P+1E | M |
| P09 | Material Control, Storage And Traceability Procedure | C | | | 1E | 2 Wks AW | 4P+1E | M |
| 5 | QA / Certification | | | | | | | |
| Q01 | Inspection And Test Plan | C | | 4P | 1E | 2 Wks AW | 4P+1E | M |
| Q02 | NDE / PMI Procedures | C | | | 1E | 4 Wks AW / BM | 4P+1E | M |
| Q03 | WPS / PQR, Where Applicable | C | | | 1E | 4 Wks AW / BM | 4P+1E | M |
| Q04 | Material Test Certificates | C | | | 1E | AT | 4P+1E | M |
| Q05 | NDE Reports | C | | | 1E | AT | 4P+1E | M |
| Q06 | PMI Reports | C | | | 1E | AT | 4P+1E | M |
| Q07 | Dimensional Inspection Reports | C | | | 1E | AT | 4P+1E | M |
| Q08 | Hardness Test Reports | C | | | 1E | AT | 4P+1E | M |
| Q09 | Charpy Impact Test Reports, Where Applicable | | | | 1E | AT | 4P+1E | M |
| Q10 | Hydrostatic / Leak / FAT Reports | C | | | 1E | 2 Wks AT | 4P+1E | M |
| Q11 | Coating Inspection Reports | C | | | 1E | AT | 4P+1E | M |

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| Q12 | Calibration Certificates For Test Equipment | | | | 1E | BT / AT | 4P+1E | M |
| Q13 | Non-Conformance Reports, Where Applicable | C | | | 1E | When occurred | 4P+1E | M |
| Q14 | Certificate Of Conformity | C | | | 1E | Final | 4P+1E | M |
| 6 | Installation / Manuals | | | | | | | |
| R01 | Field Installation Procedure | C | | 4P | 1E | 4 Wks AW | 4P+1E | I/M |
| R02 | Connector Activation Procedure | C | | | 1E | 4 Wks AW | 4P+1E | I/M |
| R03 | Bolt Tensioning / Tightening Procedure | C | | | 1E | 4 Wks AW | 4P+1E | I/M |
| R04 | Special Tooling List and Tooling Datasheets | C | | 4P | 1E | 4 Wks AW | 4P+1E | I/M |
| R05 | Installation, Operation and Maintenance Manual | C | | | 1E | Before Installation | 4P+1E | I |
| R06 | As-Built Drawings | C | | | 1E | Final | 4P+1E | M |
| 7 | Final Technical Documentation | | | | | | | |
| DB01 | Manufacturer's Data Report Index | C | | | 1E | 4 Wks AW | 4P+1E | M |
| DB02 | Design Data | C | | | 1E | Final | 4P+1E | M |
| DB03 | Fabrication Data | C | | | 1E | Final | 4P+1E | M |
| DB04 | Inspection And Test Data | C | | | 1E | Final | 4P+1E | M |
| DB05 | Installation, Operation and Maintenance Data | C | | | 1E | Final | 4P+1E | I/M |
| DB06 | Manufacturer's Data Report | C | | | 1E | Final | 4P+1E | M |

Notes:

1. "AD" denotes After Dispatch.
2. "AT" denotes After Test.
3. "AW" denotes After Award.
4. "BD" denotes Before Delivery.
5. "BM" denotes Before Manufacture.
6. "BT" denotes Before Test.
7. "C" denotes Critical technical document.
8. "E" denotes electronic copy.
9. "P" denotes Paper print.
10. "I" denotes document to be included in the Installation, Operation and Maintenance Manual.
11. "M" denotes document to be included in the Manufacturer's Data Report.

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12. *The date required shown in this technical VDRL is for engineering control only. The final submission dates, number of copies and document submission schedule shall be governed by the Material Requisition / Purchase Order.*

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8 INSPECTION AND TEST REQUIREMENT

8.1 GENERAL

VENDOR shall assume final responsibility for inspection and testing of the Smart Flange Connector in accordance with this Technical Requisition, approved ITP, approved procedures, applicable codes and project requirements.

Inspection and testing shall verify, as a minimum:

- Material compliance;
- Dimensional compliance;
- Pressure containment;
- Sealing integrity;
- Gripping / slip resistance;
- Flange and gasket fit-up;
- Bolting compatibility;
- Coating compliance;
- Installation readiness;
- Final documentation completeness.

VENDOR shall submit the type approval certificate, typical GA drawing, MPS, FAT Procedure, installation procedure in the technical proposal for technical evaluation.



All components shall be provided with BS EN 10204 Type 3.2 Certificate.

VENDOR shall provide Third Party Inspector (TPI) for the package from approved agencies (LR, BV, DNV, ABS).



The agreed ITP shall be part of VENDOR's technical scope.

8.2 DEFINITION OF INSPECTION ACTIVITY

| Inspection Activity | | Definition of Inspection Activity |
|---------------------|-----|---|
| Approval | (A) | A point is defined where VENDOR/SUPPLIER is required to submit document/dossier for approval before proceeding with the next relevant work steps. |
| Document | (D) | Document provided/submitted |

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| Inspection Activity | | Definition of Inspection Activity |
|---------------------|-----|---|
| Hold | (H) | The activity shall not proceed without formal release by the nominated party. Notification to The Relevant Parties is compulsory in agreed notification days. The VENDOR/SUPPLIER shall not change/deviate this point unless formally notified by The Relevant Parties. |
| Monitor | (M) | Witnessing or inspections by specified Parties is not mandatory, but optional. No notification is required. The Relevant Parties may witness/inspect the activities during monitoring or quality control management visits. |
| Witness | (W) | “The activity shall be notified for witnessing. VENDOR may proceed if the nominated party does not attend after proper notification. Notification to The Relevant Parties is compulsory in agreed notification days. The VENDOR/ SUPPLIER may proceed works in case the Relevant Parties do not attend. |
| Verify | (V) | Verification of inspection, manufacturing, testing or document activity |
| Review | (R) | A point is defined as which a record/dossier is required. The nominated Party is required to review/endorse these records/dossiers. The review shall be complied with Purchase Order. |
| Other | | Additional activity as required by VENDOR and subject to CLIENT acceptance |

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The below inspection and testing matrix specifies the minimum requirements. VENDOR to prepare detailed ITP for CLIENT / PURCHASER's approval.

| ITEM No. | Activity Description | Documentation | Inspection / Surveillance Activities | | | |
|----------|--|---------------|--------------------------------------|-----------------------|----------------------|--|
| | | | VENDOR | 3 rd Party | Client/ Purchaser | CLIENT's Certification Authority (*) |
| 1. | Quality Audit | | D | H | R | |
| 2. | Pre-Fabrication Meeting (When required) | | D | H | H | |
| 3. | Verification Of Shop Order Sheet | | D | R | R | |
| 4. | Review Of Type Approval / Type Examination Certificate | | D | R | R | R |
| 5. | Review Of Design Calculation / FEA Report | | D | R | A / R | R |
| 6. | Review Of External Load / Gripping Capacity Verification | | D | R | A / R | R |
| 7. | Review Of Sealing Integrity Verification | | D | R | R | R |



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| ITEM No. | Activity Description | Documentation | Inspection / Surveillance Activities | | | |
|----------|---|---------------|--------------------------------------|-----------------------|----------------------|--|
| | | | VENDOR | 3 rd Party | Client/ Purchaser | CLIENT's Certification Authority (*) |
| 8. | Review Of Pipe Interface Verification | | D | R | R | |
| 9. | Review Of Material Certificates | | D | R | R | R |
| 10. | Incoming Material Inspection | | D | W | R | |
| 11. | Positive Material Identification | | D | W | R | |
| 12. | Review Of Heat Treatment Records | | D | R | R | |
| 13. | Dimensional Check | | D | W | R | |
| 14. | NDE For Pressure-Containing and Load-Bearing Components | | D | W | R | |
| 15. | Hardness Test | | D | R | R | |
| 16. | Charpy Impact Test, Where Applicable | | D | R | R | |





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| ITEM No. | Activity Description | Documentation | Inspection / Surveillance Activities | | | |
|----------|---|---------------|--------------------------------------|-----------------------|----------------------|--|
| | | | VENDOR | 3 rd Party | Client/ Purchaser | CLIENT's Certification Authority (*) |
| 17. | Weld / Overlay Inspection, Where Applicable | | D | W | R | |
| 18. | Coating / Painting Inspection | | D | W | R | |
| 19. | Assembly Inspection | | D | W | R | |
| 20. | Bolting And Gasket Verification | | D | R | R | |
| 21. | Factory Acceptance Test | | D | H | W | W / R |
| 22. | Hydrostatic / Leak Test | | D | H | W | W / R |
| 23. | Connector Activation / Fit-Up Verification | | D | W | R | |
| 24. | Final Visual and Dimensional Inspection | | D | H | W | |
| 25. | Preservation And Packing Inspection | | D | W | R | |
| 26. | Review Of Final Documentation / MDR | | D | R | R | R |



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| ITEM No. | Activity Description | Documentation | Inspection / Surveillance Activities | | | |
|----------|----------------------|---------------|--------------------------------------|-----------------------|----------------------|--|
| | | | VENDOR | 3 rd Party | Client/ Purchaser | CLIENT's Certification Authority (*) |
| 27. | Final Release | | D | H | W | W/R |



Note:

- BIDDER is requested to submit ITP in the technical proposal for evaluation and finalize it before PO.*

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9 TECHNICAL EXCEPTION AND DEVIATION

VENDOR shall clearly identify all technical exceptions and deviations from this Technical Requisition, project datasheet, project specifications, applicable codes and project design basis.

All technical exceptions and deviations shall be subject to COMPANY/PURCHASER approval in writing.



If exceptions or deviations are not stated in the Technical Exception and Deviation Register, it shall be interpreted as full compliance with this Technical Requisition and all referenced technical documents.

If there is any conflict between applicable codes, standards, project requirements or VENDOR standard design, VENDOR shall seek clarification in writing before proceeding.

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10 APPENDICES

| | |
|------------|--|
| Appendix 1 | MTO for Smart Flange Connector |
| Appendix 2 | Technical Datasheet for Smart Flange Connector |

| | | |
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APPENDIX 1

MTO FOR SMART FLANGE CONNECTOR

(02 Pages – including this page)

Table 1: MTO for Smart Flange

| Item | Description | Unit | Quantity | | Total | Remark |
|------|---|------|----------|-------|-------|--|
| | | | Required | Spare | | |
| 1 | <p>22-inch Class 900 Smart Flange/ Mechanical Pipeline Connector complete assembly for connection between the existing 22-inch API 5L subsea pipeline and the tie-in spool at the subsea tie-in location near BKC-WHP.</p> <p>One (1) complete assembly shall include, as a minimum:</p> <p>a. One (1) Smart Flange Connector body suitable for installation onto the existing 22-inch API 5L subsea pipeline with nominal OD 559 mm and WT 19.1 mm, subject to confirmation by as-built / ILI data and field measurement;</p> <p>b. One (1) matching swivel flange, Class 900, RTJ type, Alloy 625 cladding groove face, suitable for connection to the Smart Flange Connector and welding / integration with the tie-in spool;</p> <p>c. One (1) complete set + 100% spare bolting material (including RTJ Kamos gasket, stud bolts and heavy hex nuts for the Smart Flange-to-mating flange connection);</p> <p>d. All sealing, gripping, locking and retaining components required for connector activation and pressure sealing;</p> <p>e. All installation accessories, special tools, preservation materials, test accessories and complete technical documentation required for installation, testing, commissioning and operation.</p> | set | 1 | 1 | 2 | 01 spare is optional and it shall be confirmed before PO. |
| 2 | Blind Flange 22-inch, 900#, ASTM A694 F65 RTJ, C/W Hole ¾ inch SW | pcs | 2 | 0 | 2 | 01 for protecting the smart flange 01 for hydrotest spool |

E0



E0

| Item | Description | Unit | Quantity | | Total | Remark |
|------|--|------|----------|-------|-------|--|
| | | | Required | Spare | | |
| 3 | Octagonal Ring Joint Gasket 22", 900#, Alloy 625, ASME B16.20 | pcs | 2 | 0 | 2 | 02 for hydrotest and protection smart flange |
| 4 | Test Ring for Smart Flange (ID = 520.6mm, WT = 19.1mm, 500mm length) | Pcs | 3 | 0 | 3 | |



Note:

1. For the non-standard 22-inch Smart Flange Connector, final RTJ ring dimensions shall be advised and verified by VENDOR / SUPPLIER
2. The length and diameter of stud bolts shall be advised by VENDOR/ SUPPLIER to suit for connecting 22-inch Smart Flange Connector and mating swivel neck flange.

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APPENDIX 2

TECHNICAL DATASHEET FOR SMART FLANGE CONNECTOR

(02 pages – including this page)

Table 2: Technical Datasheet for Smart Flange Connector

| No | Parameter | Requirement |
|-----|--|---|
| 1. | Connector type | Smart Flange/ Mechanical Pipeline Connector |
| 2. | Connector Configuration | Smart Flange Test Port Connector (SFTP), with test port, suitable for local leak test / sealing integrity verification. Test method shall be confirmed by VENDOR. |
| 3. | Application | Existing 22-inch subsea pipeline tie-in near BKC-WHP |
| 4. | Pipeline size | 22-inch NPS |
| 5. | Pipeline OD | 559 mm nominal |
| 6. | Pipeline WT | 19.1 mm |
| 7. | Pressure class | ASME Class 900 |
| 8. | Service | Full Well Stream, Non-Sour |
| 9. | Design pressure | 92 barg |
| 10. | Design temperature | 80 °C |
| 11. | Design life | Minimum 10 years |
| 12. | Water depth | Minimum 57.54 m below MSL or as per actual tie-in location |
| 13. | Flange facing | RTJ, 3mm Alloy 625 cladding for groove face |
| 14. | Gasket | RTJ, leak-testable type where applicable |
| 15. | Gasket material | Alloy 625 or VENDOR qualified equivalent |
| 16. | Bolting | Suitable for hydraulic bolt tensioning |
| 17. | Nut type | Heavy hex nuts with tommy holes where required |
| 18. | Coating | Offshore/subsea suitable coating system |
| 19. | Leak Test / Sealing Integrity Verification | Required. VENDOR shall verify sealing integrity during FAT and provide annulus / local leak test method through the test port for field verification. |
| 20. | Certificate | BS EN 10204, Type 3.2 |
| 21. | Axial force | TBC |
| 22. | Bending Moment | TBC |
| 23. | Pipe Collapse / Activation Load Verification | Required |
| 24. | Project-specific verification | Required |
| 25. | FAT / leak test | Required |
| 26. | Installation procedure | Required |
| 27. | Bolt tensioning procedure | Required |


 E0

| No | Parameter | Requirement |
|-----|------------------------------|-------------|
| 28. | Pipe OD/ovality verification | Required |
| 29. | Flange gap verification | Required |

Notes:

1. "TBC" denotes to be Confirmed.
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