



INDRADHANUSH GAS GRID LIMITED (IGGL)

(Joint Venture of IOCL, ONGC, GAIL, OIL and NRL)

GUWAHATI, ASSAM

**NORTH -EAST GAS GRID PIPELINE PROJECT
(PIPELINE SECTION 4, 6, 7, 8, 12, 13 & 14)**

BID DOCUMENT FOR PROCUREMENT

OF

**BI-DIRECTIONAL SCRAPPER TRAP WITH PIG
SIGNALLER, PSVs and QOECs (FOR BLOW DOWN LINE)**

OPEN DOMESTIC COMPETITIVE BIDDING

Tender No.: 05/51/23VC/IGGL/007A

VOLUME – II OF II

Visit: www.tenderwizard.com/MECON

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PREPARED AND ISSUED BY

MECON LIMITED

(A Govt. of India Undertaking)

Delhi, India

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GAS GRID

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MR DOCUMENT NO. : MEC/23VC/05/28/M/000/S007A, Rev. 0

PROJECT : NORTH-EAST GAS GRID - (PHASE-2 PIPELINES)

CLIENT : INDRADHANUSH GAS GRID LIMITED

**ITEM : BI-DIRECTIONAL SCRAPER TRAP WITH PIG SIGNALLERS, PSVs and QOECs
(for Blow down Line)**

**Client :
INDRADHANUSH GAS
GRID LIMITED**

MEC/23VC/IGGL/007A

**Project :
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0 SCOPE OF SUPPLY

Item No.	Description	Tag No.	Qty. (Nos.)	Remarks	Section (Delivery State – Qty.)
1.0	Design, Manufacture & Fabrication, Procurement of Materials and bought out components, assembly at shop, inspection, testing at manufacturer's works, preparation of shipment / packing, transport, delivery, Unloading and stacking of the Bi-Directional Scrapper Trap System suitable for accommodating intelligent pigs & other cleaning / displacement / gauging pigs, welded with Quick Opening End Closure (QOEC) suitable for horizontal installation including all accessories required to make above Bi-Directional Scrapper Trap system complete operational and QOEC shall be hand operated by a single lever operation and operable by one operator. Scope of supply shall include but not limited to supply & placement of perforated SS Tray inside the Bi-Directional Scrapper Trap, supply and mounting of Pig Signaller on the Bi-Directional Scrapper Trap, supply of Pig Signaller with welded isolation ball valve for mounting on pipeline, supply of Pig Handling (insertion / retraction) System, supply of Jib Crane of sufficient capacity including supply of matching flanges for all the flanged end nozzle. Required studs, Nuts, bolts, Gaskets and foundation Bolts for Bi-Directional Scrapper Trap & associated accessories as described below are included in scope of supply. Scope of supply shall include supply of all commissioning spares & documentation as per the Material Requisition, Notes to Material Requisition, Data sheet, MECON's Standard specifications etc. and other codes and standards attached or referred.				
1.1	For supply of Bi-Directional Scrapper Trap (i.e., for Pig Launcher/Receiver of Size 24"×18" NB & ANSI Class 600#) System along with accessories .				
1.1.1	Supply of Bi-Directional Scrapper Trap (i.e., Pig Launcher/Receiver of Size 24"×18" NB & ANSI Class 600#) along with Quick Opening End closure as per Specification No. MEC/TS/05/28/007, Edn.-0, Rev-0 & as per Data Sheet No. MEC/23VC/05/28/M/001/DS/ST-002	-	4	-	Section - 6 (ASSAM / MEGHALAYA) – 4
1.1.2	Supply of Non Intrusive Pig Signallers mounted on Bi-Directional Scrapper Trap mentioned in 1.1.1 above as per Technical specification and Data Sheet attached.	-	8	-	
1.1.3	Supply of Door Seal for Quick Opening End Closure (QOEC) welded on <i>Bi-Directional Scrapper Traps</i> as mentioned in item no. 1.1.1 above	-	8	@ 2 Nos./ Scrapper Trap	
1.1.4	Supply of Non Intrusive Pig Signaller for mounting on 18" NB Pipeline as per as per Technical specification and Data Sheet attached.	-	8	-	
1.1.5	Supply of jib crane of capacity 1.0 ton to suit the pig handling for scrapper trap specified in 1.1.1 above.	-	4	-	
1.1.6	Supply of Pig Handling System with insertion/retraction facilities for inserting/pulling the SS Tray / Pigs to suit scrapper trap specified in 1.1.1 above.	-	4.	-	

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Item No.	Description	Tag No.	Qty. (Nos.)	Remarks	Section (Delivery State – Qty.)
1.1.7	PSV suitable for mounting on scrapper trap specified in 1.1.1 as per Specification No. MEC/S/05/62/056, Rev-1 and Data Sheet No. MEC/23U2/05/28/M/001/DS/PSV-001	-	4	-	
1.2	For supply of Bi-Directional Scrapper Trap (i.e., Pig Launcher/Receiver of Size 18"x 12"NB & ANSI Class 600#) System along with accessories				
1.2.1	Supply of Bi-Directional Scrapper Trap (i.e., Pig Launcher/Receiver of Size 18"x 12"NB & ANSI Class 600#) along with Quick Opening End closure as per Specification No. MEC/TS/05/28/007, Edn.-0, Rev-0 & as per Data Sheet No. MEC/23VC/05/28/M/001/DS/ST-003	-	12	-	Section - 4 (ASSAM) -2
1.2.2	Supply of Non Intrusive Pig Signalers mounted on Bi-Directional Scrapper Trap mentioned in 1.2.1 above as per Technical specification and Data Sheet attached.	-	24	-	
1.2.3	Supply of Door Seal for Quick Opening End Closure (QOEC) welded on <i>Bi-Directional Scrapper Traps</i> as mentioned in item no. 1.2.1 above	-	24	@ 2 Nos./ Scrapper Trap	Section - 7 (TRIPURA / MANIPUR) – 2
1.2.4	Supply of Non Intrusive Pig Signaler for mounting on 12" NB Pipeline as per as per Technical specification and Data Sheet attached.	-	20	-	
1.2.5	Supply of jib crane of capacity 1.0 ton to suit the pig handling for scrapper trap specified in 1.2.1 above.	-	12	-	Section - 8 (ASSAM) -2
1.2.6	Supply of Pig Handling System with insertion / retraction facilities for inserting/pulling the SS Tray / Pigs to suit scrapper trap specified in 1.2.1 above.	-	12	-	Section - 9 (TRIPURA) -2
1.2.7	PSV suitable for mounting on scrapper trap specified in 1.2.1 as per Specification No. MEC/S/05/62/056, Rev-1 and Data Sheet No. MEC/23VC/05/28/M/001/DS/PSV-001	-	12	-	Section - 12 (TRIPURA) -2
1.3	For supply of Bi-Directional Scrapper Trap (i.e., Pig Launcher/Receiver of Size 14"x 8"NB & ANSI Class 600#) System along with accessories				
1.3.1	Supply of Bi-Directional Scrapper Trap (i.e., Pig Launcher/Receiver of Size 14"x 8"NB & ANSI Class 600#) along with Quick Opening End closure as per Specification No. MEC/TS/05/28/007, Edn.-0, Rev-0 & as per Data Sheet No. MEC/23VC/05/28/M/001/DS/ST-004	-	2	-	Section - 13 (TRIPURA) -2
1.3.2	Supply of Non Intrusive Pig Signalers mounted on Bi-Directional Scrapper Trap mentioned in 1.3.1 above as per Technical specification and Data Sheet attached.	-	4	-	

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Item No.	Description	Tag No.	Qty. (Nos.)	Remarks	Section (Delivery State – Qty.)
1.3.3	Supply of Door Seal for Quick Opening End Closure (QOEC) welded on <i>Bi-Directional Scrapper Traps</i> as mentioned in item no. 1.3.1 above	-	4	@ 2 Nos./ Scrapper Trap	
1.3.4	Supply of Non Intrusive Pig Signaller for mounting on 8" NB Pipeline as per as per Technical specification and Data Sheet attached.	-	3	-	
1.3.5	Supply of Pig Handling System with insertion / retraction facilities for inserting/pulling the SS Tray / Pigs to suit scrapper trap specified in 1.3.1 above.	-	2	-	
1.3.6	PSV suitable for mounting on scrapper trap specified in 1.3.1 as per Specification No. MEC/S/05/62/056, Rev-1 and Data Sheet No. MEC/23VC/05/28/M/001/DS/PSV-001	-	2	-	
2.0	Design, Engineering, Manufacture & Fabrication, Procurement of Materials and bought out components, assembly at shop, inspection, testing at manufacturer's works, preparation of shipment / packing, transport / delivery of the Quick Opening End Closure suitable for vertical installation at height of 3.0 metre from working platform / ground level on Blow down lines and capable of operation from working platform / ground level. Scope of supply shall include supply of all commissioning spares & documentation as per the Material Requisition, Notes to Material Requisition, Data sheet, MECON's Standard specifications etc. and other codes and standards attached or referred.				
2.1	For Supply of QOEC system suitable for vertical installation of size 6"NB, 600#				
2.1.1	Supply of Quick Opening End Closure of size 6" NB, 600# as per Specification No. MEC/TS/05/21/013, Edition-1 and Data Sheet No. MEC/23VC/05/28/M/001/DS/QOEC-002		11		Section - 6 (ASSAM / MEGHALAYA) - 11
2.1.2	Supply of 'O' ring for Quick Opening End Closure (QOEC) mentioned in item no. 2.1.1 above	-	22	@ 2 Nos./ QOEC	
2.2	For Supply of QOEC system suitable for vertical installation of size 4"NB, 600#				
2.2.1	Supply of Quick Opening End Closure of size 4"NB, 600# as per Specification No. MEC/TS/05/21/013, Edition-1 and Data Sheet No. MEC/23VC/05/28/M/001/DS/QOEC-003		34		Section - 4 (ASSAM) - 4
2.2.2	Supply of 'O' Ring for Quick Opening End Closure (QOEC) mentioned in item no. 2.2.1 above	-	68	@ 2 Nos./ QOEC	Section - 7 (TRIPURA / MANIPUR) - 8 Section - 8 (ASSAM) - 9

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Item No.	Description	Tag No.	Qty. (Nos.)	Remarks	Section (Delivery State – Qty.)
					Section - 9 (TRIPURA) -2
					Section - 12 (TRIPURA) -6
					Section - 13 (TRIPURA) -2
					Section - 14 (MEGHALAY A) -3

Notes:

1. **Compliance with Specification:** The Vendor shall be completely responsible for the design, materials, manufacture & fabrication, testing, inspection, preparation for shipment and transport of the above equipment strictly in accordance with the MR and all attachment thereto. All pressure containing parts of all the items shall be provided with EN 10204-3.2 certificates.
2. **Vendor's Scope:** Vendor scope of work includes the equipment with all internals and accessories shown on the datasheets, specifications and all unmentioned parts necessary for a satisfactory operation and testing except those which are indicated to be out of the vendor's supply.
3. **Inspection:**
Inspection shall be in accordance with EN 10204 3.2 certification shall be issued for each dispatched valve. Vendor shall appoint anyone of the TPIA for inspection purpose. Vendor has to intimate the TPIA name from below listed agencies to IGGL/MECON prior to perform any inspection activity.
 - i. Det Norske Veritas (DNV)
 - ii. Germanischer Lloyd
 - iii. Bureau Veritas
 - iv. Moody International
 - v. SGS
 - vi. Certification Engineer International Ltd(CEIL)
 - vii. Technische Ulierwachungs Verein (TUV)
 - viii. Velosi

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- ix. American Bureau Services (ABS)
- x. AB-Vincotte
- xi. Lloyd Register of Industrial Services
- xii. VCS Quality Services Private Limited
- xiii. Meenar Global

Apart from inspection by TPIA, inspection shall also be performed by MECON / IGGL's delegate, as set out and specified in the codes and particular documents forming this MR.

4.0 DOCUMENTS & DATA REQUIREMENTS

- 4.1 The table hereunder specifies the quantities and the nature of the documents to be submitted by the Vendor to Purchaser.
 - 4.1.1 The documents required at the inquiry stage and to be included in the bid are listed under column A of table below under note no. 4.6.
 - 4.1.2 The documents required after award of the Contract and subject to the written approval of the Purchaser are listed under column B of table below under note no. 4.6.
 - 4.1.3 The final and certified documents are listed under column C of table below under note no. 4.6.
- 4.2 Any document, even when preliminary, shall be binding and therefore duly identified and signed by the Vendor. It shall bear the Purchaser's Project reference, the Material Requisition number and the identification number.
- 4.3 The drawings/documents shall be reviewed, checked, approved and duly signed/stamped by successful Bidder/supplier before submission. Revision number shall be changed during submission of the revised successful Bidder/supplier documents and all revisions shall be highlighted by clouds. Whenever the successful Bidder/supplier require any sub-supplier drawings to be reviewed by MECON, the same shall be submitted by the supplier after duly reviewed, approved and stamped by the successful Bidder/supplier. Direct submission of the sub-supplier's drawings without contractor's approval shall not be entertained.
- 4.4 Review/Approval of the successful Bidder/supplier drawings by MECON would be only to review the compatibility with basic designs and concepts and in no way absolve the successful Bidder/supplier of his responsibility/contractual obligation to comply with PR requirements, applicable codes, specifications and statutory rules/regulations. Any error/deficiency noticed during any stage of manufacturing/execution/installation shall be promptly corrected by the successful Bidder/supplier without any extra cost or time, whether or not comments on the same were received from MECON during the drawing review stage.

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4.5 The successful Bidder/ Supplier shall submit a prerecorded Training CDs/DVDs and it shall comprise the basic theories and fundamentals, related standards, design parameters, manufacturing & inspection methods, operating & maintenance instructions and other relevant details. The CDs/DVDs shall have to be self-contained, user-friendly using animation/videos and other multimedia techniques.

4.6 THE DOCUMENTS ARE FULLY PART OF THE SUPPLY WHICH SHALL BE COMPLETE ONLY IF AND WHEN THE DOCUMENTS COMPLYING FULLY WITH THE MATERIAL REQUISITION REQUIREMENTS ARE RECEIVED BY THE PURCHASER.

Item	Documents & Data	A	B		C	
		No. of Copies	No. of Copies	Required Date (from FOI)	No. of Copies	Required Date (before Despatch)
1.	Completed Data Sheets	3	3	1 Week	3	2 Weeks (with final technical file)
2.	Drawing / Data Submittal list / schedule	-	3	2 Weeks + monthly	3	2 Weeks
3.	Fabrication, test and delivery schedule (per item)	3	3	2 Weeks + monthly	3	2 Weeks
4.	Progress Report	-	3	2 Weeks + monthly	3	2 Weeks
5.	Catalogues / References	3	-	-	3	With final technical file
6.	GA drawings + Sectional drawings + Material specification + Unit weight. + Unit volume + Package dimensions per unit	3	3	2 Weeks	3	With final technical file
7.	“Way of Shipping” as per Note no. 6 of Material Requisition	3	3	7 days	-	-
8.	Packing / shipping list with weights and dimensions	3	3	2 Weeks before shipping	3	2 Weeks (with final technical file)

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Item	Documents & Data	A		B		C	
		No. of Copies	No. of Copies	Required Date (from FOI)	No. of Copies	Required Date (before Despatch)	
9.	Design calculations for pressure containing parts	3	3	1 Week	3	2 Weeks (with final technical file)	
10.	Bill of materials (on drawings)	3	3	1 Week	3	2 Weeks (with final technical file)	
11.	Recommended spare parts list (for erection and commissioning)	3	-	-	3	2 Weeks (with final technical file)	
12.	Recommended spares parts list (for 2 years operation)	3	-	-	3	2 Weeks (with final technical file)	
13.	Welding procedure specification and records WPS / PQR	-	3	1 Week	3	2 Weeks (with final technical file)	
14.	QA / QC program	3	3	1 Week	3	2 Weeks (with final technical file)	
15.	Inspection and Test Procedures alongwith Quality Assurance Plan	3	3	1 Week	3	2 Weeks (with final technical file)	
16.	Test Reports	-	-	-	3	2 Weeks (with final technical file)	
17.	NDE / NDT Reports	-	-	-	3	2 Weeks (with final technical file)	
18.	Heat Treatment Reports	-	-	-	3	2 Weeks (with final technical file)	
19.	Hydrotest and air test report	-	-	-	3	2 Weeks (with final technical file)	
20.	Maintenance and operating manuals	-	-	-	3	2 Weeks (with final technical file)	
21.	Installation instructions & Site inspection procedure	-	-	-	3	2 Weeks (with final technical file)	
22.	Material certificate as	-	-	-	3	2 Weeks	

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Item	Documents & Data	A		B		C	
		No. of Copies	No. of Copies	Required Date (from FOI)	No. of Copies	Required Date (before Despatch)	
	per EN 10204 - 3.2					(with final technical file)	
23.	Painting system description & procedure	3	3	1 week	3	2 Weeks (with final technical file)	
24.	List of sub-vendors with their scope	3	3	1 week	-	-	
25.	Training CDs/DVDs covering design, operation & maintenance	-	-	-	3	2 Weeks (with final technical file)	
26.	Final technical file, preliminary copy for approval (in soft & hardcopy)	-	3	2 weeks before Despatch/ shipping	-	-	
27.	Final technical file (in soft & hardcopy)	-	-	-	3	Before shipping	

NOTES

- I. In case of e-bids, only single copy of documents / drawings / data under column A need be uploaded.
- II. Durations in column B (required date) are weeks after FOI/FOA or as indicated in Table.
 - a. Durations in column C (required date) are weeks after document approval or as indicated in Table.
 - b. Due date of each document may be proposed.
- III. Final technical file shall be supplied in hard copy as indicated and in electronic format (.pdf Acrobat files) on six (6) CD-ROMs.

The above documents & data requirements shall also be supplemented by all requirements of clause 10.0 of MECON's T.S. No. MEC/S/05/62/007, R-1. ; clause 1.3 of MECON's T.S. No. MEC/TS/05/62/056, Rev-1. ; clause no. 10.0 of MECON's T.S. No. MEC/TS/05/21/013, Edn.-1, Rev-1

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5. Vendor to indicate in his offer the gross weight (in kg or Metric Tonne) per unit, volume (in m3) per unit and dimensions (L x B x H) of package (wooden box, etc.) to accommodate unit quantity.
6. The successful Bidder, within 7 days from the receipt of FOI/FOA, shall provide the **"Way of Shipping"**, i.e., break bulk / container along with dimensions (length, breadth and height), weight of packaged cargo and the size(s), type(s) and nos. of containers to be used for shipment. In case Bidder fails to furnish this information within the stipulated time, the dimensions, etc., as provided in techno-commercial offer shall be used for determining ocean freight amount and decision for converting Purchase Order from FOB to CFR shall be taken accordingly. In case the ocean freight amount increases on account of changes in dimensions / weight / volume of final cargo (with respect to earlier provided information), Purchaser reserves the right to recover the excess amount paid on this account.
7. Vendor shall establish the equivalence/superiority of any material proposed (With justification of material properties and availability) other than that specified in Datasheet. Vendor shall also indicate the ASTM equivalent of his proposed material as well as of all the AISI designated materials specified in datasheets.
8. Vendors to note that for minimum inspection and testing requirement of the supplied item shall be governed by attached QAP with this MR. However, Vendor shall submit their QAP for Approval covering the requirement specified in attached QAP.
9. Bidders to note that all the documents/drawings submitted by them as a part of bid shall be considered only to assess Bidder's technical capability and shall in no way absolve them from complying with all the requirements of the Tender. All items to be supplied by the Bidder shall be strictly in accordance with tender requirements.
10. In the event of Conflict/inconsistency among the documents attached/ referred, the following order of precedence generally shall govern in interpretation of various requirements / data.
 - Material / Purchase Requisition
 - Datasheets
 - Technical Specification
 - Codes and Standards
 - Vendor's Standards

However, Owner/Consultant reserves the right to consider most stringent requirement among the document attached / referred.
- 11.0 Preferred manufacturers of PSV are as follows:
 - i) M/s Keystone Valves (India) Pvt. Ltd. Baroda,

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- ii) M/s Sevim Sarasin Valves India (P) Ltd.,
- iii) M/s Tyco Sanmar Ltd, M/s Parcol Spa, Italy,
- iv) M/s Tai Milano SPA, Italy,
- v) M/s Emerson Process, Singapore,
- vi) M/s Instrumentation Limited, Palghat

In case bidder propose PSV manufacturers other than above list of preferred manufacturers, bidder shall submit in support of PTR, all details/ documents for PSV complying to the requirement of specification and datasheet enclosed. Submitted PTR should contain successful supply record of minimum one number of respective item of same size & rating (or higher) as quoted for.

12.0 Refer to Pig Signaller Data sheet attached for Pig Signaller make.

13.0 Pipeline & Pig details:

Pipeline Specifications	API 5L X70 PSL2
Pipeline Diameter (OD) x Thickness (mm)	18" x 12.7 mm, 12" x 9.53 mm 8" x 7.92 mm
Pipeline Wall Material	Carbon Steel
Pipeline Coating (External)	3 LPE
Pipeline Coating (Internal)	Epoxy
Orientation of Pipe	Horizontal
Pig Materials	Steel, Plastic
Pig O.D.	90% ~ 100% of pipeline ID
Pig Velocity (max.)	6 m/s
Bolting Material (Studs) (Nuts)	ASTM A 193, Gr. B7 (Galvanized) ASTM A 194, Gr. 2H (Galvanized)

14.0 Inspection requirements pertaining to NON Intrusive Pig Signaller shall be covered in QAP submitted by the vendor. The same shall be reviewed and finalised post award.

15.0 Spares List (Start-Up & Commissioning– Bi-Directional Scrapper Trap With Pig Signallers, PSV & QOEC And Spares List (2 Years Normal Operation)– Bi-Directional Scrapper Trap With Pig Signallers, PSV & QOEC are attached herewith.

16.0 Scrapper Trap functional test: Vendor shall demonstrate unrestricted passage of guage plate having minimum diameter of 95% of the I.D. of minor barrel. Guage plate to be mounted on suitable bi directional pig and the same shall be inserted using pig handling provisions to be supplied with scrapper trap. Guage plate should be launched using kicker connection provided with scrapper trap.

**MATERIAL REQUISITION – BI-DIRECTIONAL SCRAPER TRAP
WITH PIG SIGNALLERS, PSV & QUICK OPENING END
CLOSURE**



OIL & GAS SBU, DELHI

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- 17.0 Pig signaller functional test: During the Scrapper Trap functional test (refer cl. 16.0 above) functioning of pig signaller shall also be verified.

Client :
**INDRADHANUSH GAS
GRID LIMITED**

Reference No: 0035/23VC/IGGL/007A


Project :
**NORTH-EAST GAS GRID
(PHASE-2 PIPELINES)**

Document No. :
MEC/23VC/05/28/M/000/S007A

**Rev.
No.0**

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TECHNICAL SPECIFICATIONS



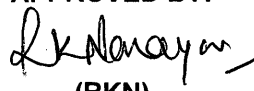
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STANDARD TECHNICAL SPECIFICATION FOR SCRAPER TRAP

SPECIFICATION NO. : MEC/TS/05/28/007



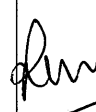



**(OIL & GAS SBU)
MECON LIMITED
DELHI 110 092**

PREPARED BY:  (BB)	CHECKED BY:  (AKJ)	APPROVED BY:  (RKN)	ISSUE DATE : SEPT. ,2014
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AMENDMENT STATUS

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						Name	Sig.	Name	Sig.	Name	Sig.
1.	Overall Revision & Tech Spec./Doc. No. Changed as MEC/TS/05/28/007 in place of previous Tech Spec. No. MEC/S/05/62/007, Rev.-1	All	0	0	Sept 2014	BB		AKJ		RKN	

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Abbreviations:

ASME	:	American Society of Mechanical Engineers
ASTM	:	American Society for Testing and Materials
API	:	American Petroleum Institute
DN	:	Nominal Size
HAZ	:	Heat Affected Zone
MSS-SP	:	Manufacturers Standardization Society – Standard Practice
NDT	:	Non Destructive Testing
NPS	:	Nominal Pipe Size
SSPC	:	Steel Structures Painting Council

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1.0 **SCOPE**

This specification covers the basic requirements for design, manufacture, inspection, testing & supply of Scraper Launching & Receiving Traps or bi-directional Scraper Traps to be installed in pipeline system transporting non-sour hydrocarbons in liquid or gaseous phase including Liquefied Petroleum Gas (LPG). This specification does not cover scraper launching & receiving trap for sour hydrocarbons (liquid/ gas) services as defined in NACE Std. MR-01-75.

2.0 **REFERENCE DOCUMENTS**

2.1 Reference has also been made in this specification to the latest edition of the following codes, standards and specifications:

- a) ASME B 31.4 : Pipeline Transportation System for Liquid Hydrocarbons and Other Liquids
- b) ASME B 31.8 : Gas Transmission and Distribution Piping System
- c) ASME B 16.5 : Steel Pipe Flanges and Flanges Fittings
- d) ASME B16.9 : Factory made Wrought Steel Butt Welding Fittings
- e) ASME B 16.11 : Forged Steel Fittings, Socket-Welding and Threaded
- f) ASME B 16.25 : Butt-Welding Ends
- g) ASTM A370 : Mechanical testing of steel products
- h) ASME Sec-VIII and IX : Boiler and Pressure Vessels Codes.
- i) API 1104 : Specification for Welding Pipeline and Related Facilities
- j) MSS-SP-44 : Specification for High Test Wrought Welding Fittings.

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- k) MSS-SP-75 : Specification for High Test Wrought Welding Fittings
- l) MSS-SP-97 : Integrally Reinforced Forged Branch Outlet Fittings Socket Welding Threaded and Butt Welding Ends
- m) SSPC-VIS-1 : Steel Structure Painting Council

In case of conflict between the requirements of this specification and the requirements of above referred documents, the requirements of this specification shall govern.

3.0 **MATERIALS**


3.1 Materials and thicknesses of main components used in manufacture of traps shall be indicated by Manufacturer and shall be suitable for service conditions indicated in the data sheets and annexures. These shall be subject to approval by Purchaser. The steel used shall have a minimum SMYS of 35,000 psi.

3.2 Fully killed carbon steel shall be used.

3.3 Material of the ends to be field welded by purchaser shall have carbon equivalent less than or equal to 0.45 based on check analysis, for each heat of steel, calculated according to the following formula.

$$CE = C + \frac{Mn}{6} + \frac{Cr + Mo + V}{5} + \frac{Ni + Cu}{15}$$

3.4 For Scraper Traps, specified to be used for Gas service or High Vapour Pressure (HVP) liquid service, Charpy V-notch test shall be conducted at 0°C for each heat of steel used in the manufacture of pressure containing parts of the traps. Test procedure shall conform to ASTM A-370. The Charpy V-notch test specimens shall be taken in the direction of principal grain flow and notched perpendicular to the original surface of the plate or forging. The minimum average absorbed impact energy values of three full sized specimens shall be as under, unless otherwise indicated in the Data sheets:-

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Diameter (inches)	Base Metal (Joules)	Weld Metal and HAZ (Joules)
----------------------	------------------------	--------------------------------

For all size	27	27
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The minimum impact energy value of any one specimen of the three specimens analyzed as above, shall not be less than 80% of the above mentioned average values.

For scraper Traps, specified to be used for other hydrocarbon service, the Charpy V-notch test requirements as stated above are not applicable. When Low Temperature Carbon Steel (LTCS) materials are specified in data sheets or offered by Manufacturer, the Charpy V-notch test requirements of applicable material standard shall be complied with.


- 3.5 For Scraper Traps, specified to be used for Gas service or High Vapour Pressure (HVP) liquid service, hardness test shall be carried out as per ASTM A370 for each heat of steel used. A full thickness cross section shall be taken for this purpose and the maximum hardness of the base material, weld metal and heat affected zone (HAZ) of all the pressure containing parts shall not exceed 248 HV₁₀. The maximum difference in hardness of Base metal, Weld metal and Heat affected zone (HAZ) of pressure containing parts of the traps shall be less than 80 points Vicker's HV₁₀.

For scraper Traps, specified to be used for other hydrocarbon service, the hardness test requirements as stated above are not applicable. When Low Temperature Carbon Steel (LTCS) materials are specified in data sheets or offered by Manufacturer, the hardness test requirements of applicable material standard shall be complied with.

4.0 **DESIGN AND CONSTRUCTION**


- 4.1 The cylindrical portion of the trap shall be designed as per design code and design factor indicated in the data sheets. Quick end closure shall be designed as per sec. ASME Sec. VIII, Div. 1 for design conditions indicated in data sheets. A corrosion allowance of 3 mm shall be considered in design of the traps. Quality of welding shall be such that weld efficiency factor of 1.0 is achieved.

- 4.2 The trap shall be capable of handling latest instrumented pigs, model like Linalog 360 of AMF Tuboscope or British gas magnetic inspection vehicle or equivalent and

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scraper / cleaning / gauging / batching pigs and shall conform to the minimum dimensions given in scraper Trap data sheets. Dimensions not shown specifically in the data sheet shall be as per manufacturer's standard and shall be subject to approval by Purchaser / Purchaser's representative.

- 4.3 The trap body and neck, diameter has been indicated in the data sheet. Trap length to suit the purpose and thickness to meet the class rating shall be suggested by the manufacturer and approved by the purchaser. Circumferential weld on scraper trap body and neck are not permitted.
- 4.4 Concentric or eccentric reducer, as indicated in data sheets, used in the manufacture of traps shall be seamless types for sizes up to and including 14"NB and welded type for sizes 16"NB and above. Reducers of size up to & including 14"NB shall conform to ASME B 16.9 and size 16"NB and above shall conform to MSS-SP-75. Thickness of reducer shall match with the adjoining body/neck thickness.
- 4.5 Vents and drains shall be provided on each trap. The trap shall be provided with a suitable slope and the drain location shall be such that complete drainage of the trap is possible. Sizes for vent and drain shall be as indicated in data sheet.
- 4.6 All branch connections shall be made by weldolets/ nipple or by extrusions as indicated in the data sheet. All weldolets shall conform to MSS-SP-97 and nipples shall be manufacturer's standard. The extruded opening shall be adequately heat treated and stress relieved. Stub-in or pipe-to-pipe connection shall not be used for making branch connection
- 4.7 End connections of traps shall be flanged or butt welded as indicated in data sheet.
- a) Flanged ends, if specified shall have dimension as per ASME B16.5 for sizes upto 24" NB (excluding 22 NB) and as per ASME B16.47 / MSS-SP-44 for sizes 22 NB and 26 NB and above. Flanges shall be as indicated in data sheets.
 - b) Butt weld ends if specified shall have ends prepared as per ASME B16.25. However, end preparation for butt welding ends having unequal thicknesses with respect, to connecting pipe shall be as per ASME B31.4/ ASME B31.8 as applicable.
 - c) The location & orientation of all nozzle connections shall be submitted for purchaser's approval before manufacturing.

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4.8 The quick opening end closure shall be of clamp ring or band lock type or equivalent design. The closure shall also consist of a safety relief system allowing the opening only when there is no pressure in the trap. Screwed type or plug-in types of end closures are not acceptable. End closure shall be hand operated by a single lever operation and operable by one operator. End closures of size 24" and above shall be fitted with worm gear operator for the opening of the closure.

Hinge of the closure shall be so designed that the weight of the end closure is fully supported with out sagging.


4.9 Receiving traps shall be provided with a pig indicator in the middle of the neck and the indicator shall conform to the specification issued for the purpose. Pig indicator shall be suitable for bi-directional operation and shall have visual flag and manual reset. The same shall also have provision for remote indication. Refer Pig Signaler Specification and Pig Signaler Data Sheet.

4.10 Suitable handling system for inserting and retracting the scraper and instrumented pigs from the trap shall be provided with each trap with complete handling device. Handling system shall consist of a fabricated structural steel framework comprising a bench fitted with a purpose-designed cradle for the pig. A pusher/ puller mechanism operated by a cable system employing a hand cranked winch shall be mounted on the bench framework for inserting/ retracting the pig from the trap. The bench frame should be suitable for bolting to the floor. All parts of the handling system in contact with each other shall be of the anti-spark type. In case of any rails are required for sliding of the handling system, the same shall be provided by the scraper trap manufacturer.


4.11 Fabricated steel supports, minimum two numbers at suitable spacing shall be provided with traps for mounting on concrete blocks. These supports will not be subjected to pipeline anchorage forces. The material of support shall be compatible with trap material for welding purposes. All welds shall be examined by magnetic particle method.

4.12 Completed assembly shall be stress relieved as per the provisions of the design codes.

4.13 All welds shall be made by welders and welding procedures qualified in accordance with the provisions of ASME Sec. IX. The procedure qualification shall include impact test and hardness test when required as per clause 3.4 & 3.5 of this specification and shall meet the requirements as specified therein.

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- 4.14 Repair by welding on parent metal is not allowed. Repair of welds shall be carried out only after specific approval by purchaser's representative for each repair. The repair welding shall be carried out by the welders and welding procedures duly qualified as per ASME Section IX and records for each repair shall be maintained. The repair welding procedure qualification shall include impact test and hardness test when required as per clause 3.4 & 3.5 of this specification and shall meet the requirements as specified therein.
- 4.15 The Pig receiving traps / Bi-directional traps shall be equipped with a half internal removable filtering basket consisting of a punched plate with a least five rows of drain holes.
- 4.16 The filtering basket shall be provided with suitable stops. Lock bracket shall be provided in such a manner that the filtering basket does not slide within the trap. Rear end of the basket shall be fitted with suitable lug to enable retrieval of the basket by hooks.
- 4.16 The filtering basket shall slide on guides on wheels and in all cases the material of the parts being in contact with each other shall be of the anti spark type.
- 4.17 The tolerance on internal diameter and out of roundness at the ends for the welding end of the neck (at the end where connecting pipeline will be welded or joined by flange) shall be as per applicable connected pipe specification as indicated in the data sheet.
- 5.0 **INSPECTION AND TESTS**
- 5.1 The manufacturer shall perform all inspections and test as per the requirements of this specification and the relevant codes prior to shipment at his works. Such inspections and tests shall be, but not limited to the following:-
- 5.1.1 All trap shall be visually inspected. The internal and external surfaces of the scraper traps shall be free from any strikes, gouges and other detrimental effects.
- 5.1.2 Chemical composition and mechanical properties including hardness shall be checked for each heat of steel used.
- 5.1.3 Dimensional check shall be carried out as per the approved drawings.
- 5.1.4 Hydrostatic test shall be conducted for all scraper traps complete in all respects including mounting of pig indicators at a pressure equal to 1.25/1.4 times the

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design pressure for liquid/gas service respectively as indicated in data sheet. The test pressure shall be held for a minimum period of one hour.

- 5.1.5 All butt welds shall be 100% radiographically inspected. Procedure and acceptance criteria shall be as per API 1104.
- 5.1.6 Ultrasonic or magnetic particle inspection shall be carried out on all welds which in Purchaser's Representative's opinion can not be radiographically inspected. Procedure and acceptance criteria shall be as per ASME Sec. VIII, Appendix-U and VI respectively.
- 5.1.7 All finished wrought weld shall be 100% ultrasonically inspected for lamination type defects for a distance of 50mm from the end. Any lamination larger than 6.35 mm shall not be acceptable.
- 5.1.8 All forgings shall be wet magnetic particle examined on 100% of the forged surfaces. Method and acceptance shall comply with MSS-SP-53.
- 5.1.9 A minimum of two closing and opening cycles shall be performed and correct operation of both quick opening closure and safety system shall be ascertained.
- 5.2 Purchaser's Representative reserves the right to perform stage wise inspection and witness tests including hydrostatic test, as indicated in specification at manufacturer's works prior to shipment. Manufacturer shall give reasonable notice of time & shall provide without charge reasonable access and facilities required for inspection, to the Purchaser's representative.


Inspection and tests performed / witnessed by Purchaser's Representative shall in no way relieve the Manufacturer's obligation of specific integrity of the scraper trap System.

Manufacturer's equipment shall be subject to examination and approval by Purchaser to ensure proper fabrication and testing of Scraper Trap System.

6.0 **TEST CERTIFICATES**

Manufacturer shall furnish the following certificates

- a) Test certificates relevant to the chemical and Mechanical properties including Hardness of the materials used for manufacture of trap as per relevant standards and this specification.

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- b) Hydrostatic test certificates.
- c) Test reports on radiography, ultrasonic inspection and magnetic particle examination.
- d) Test reports on heat treatment carried out, if any.
- e) Welding procedure and welders qualification reports

The certificate shall be considered valid only when signed by Purchaser's representative.


7.0 **PAINTING, MARKING AND SHIPMENT**

7.1 After all inspection and test required have been carried out, all external surfaces shall be thoroughly cleaned to remove grease, dust and rust. Surface preparation shall be carried out by shot blasting to SP-6 in accordance with "Steel Structures Painting Council Visual Standard - SSPC-VIS-1". Machined parts shall be coated with anti-rust removable paint and non machined parts shall be applied with two coats of protective paint. Manufactures shall indicate the type of paint used in the drawings submitted for approval.

7.2 Marking shall be done on a stainless steel plate and affixed to the body by means of corrosion resistant fasteners. Marking shall include the following:-

- a) Manufacturer's Name
- b) Trap/ Neck Diameter, Thickness
- c) Material
- d) ASME Class Rating
- e) Tag Number
- f) Design Pressure
- g) Design Temperature
- h) Test Pressure
- i) Design Factor
- j) Year of Manufacture
- k) Empty weight of the trap assembly.

7.3 Before shipment, traps shall be properly packed against damage during transportation. All machined surface subject to corrosion during transit shall be

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well protected by coat of grease or other suitable material. All traps shall be provided with suitable protectors, for flange faces, securely attached to the traps. Bevel ends shall be protected with metallic or high impact plastic bevel protectors.

7.4 Only those traps, which have been inspected and certified by the purchaser's inspector shall be supplied.

8.0 **GUARANTEE**

8.1 Manufacturer shall guarantee that the trap alongwith accessories is in compliance with the requirements of this specification for materials and workmanship. Manufacturer shall replace or repair all parts which should result defective due to inadequate design or the workmanship. In case the defect can not be eliminated, Manufacturer shall replace the trap without any delay. Any defect occurring within the time period specified elsewhere shall be repaired making all necessary modifications and repair of defective parts free of charge to the purchaser.

9.0 **SPARES**


9.1 Manufacturer shall furnish list of recommended spares and accessories for Scraper Traps required during start up and commissioning. As a minimum, the commissioning spares shall include 200% extra consumable spares viz. gaskets/ o-rings/ seals etc. for each trap. Cost of such spares shall be included by the Manufacturer in the item rates indicated in Purchase Requisition.

9.2 Manufacturer shall furnish separately a list of recommended spares and accessories required for two years of normal operation and maintenance of Scraper Traps.

10.0 **DOCUMENTATION**

10.1 Manufacturer shall furnish at the time of bidding, the following documents:-

- a) General arrangement drawing of scraper trap, pig signallers, quick opening end closure with overall dimensions.
- b) Clause wise list of deviations from this specification, if any listed at one place in the document.
- c) Reference list of similar supplies for the past five years including project, client year of supply & contact person.

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- d) Quality Assurance Plan (QAP) enclosed with this tender duly signed, stamped and accepted.

10.2 Within two weeks of placement of order, the manufacturer shall submit four copies of, but not limited to, the following drawings, documents and specifications for approval.

- a) Calculations according to the relevant codes for the body including branch connections and quick end closures.
- b) Trap assembly and sectional drawings showing all parts with materials and dimensions.
- c) Support Assembly Drawing.
- d) Arrangement & details of foundation bolts for pig handling and lifting system, where applicable.
- e) Welding procedure and method of manufacture.

Once the above said documents have been approved by the Purchaser, any changes in design, material and method of manufacturer shall be notified to the Purchaser, whose approval in writing of all changes shall be obtained before the traps are manufactured.

10.3 Within four weeks from the approval date Manufacturer shall submit one reproducible and six copies of all approved drawings, documents and specification as listed in clause 10.2 of this specification.

10.4 Prior to shipment, the manufacturer shall submit one reproducible and six copies of the following:

- a) Test certificate as listed in clause 6.0 of this specification.
- b) Manual for installation, erection instructions, maintenance and operations instruction for Scraper trap System.


10.5 All documents shall be in English Language.

PROCESS & PIPING DESIGN SECTION
MECON LIMITED
DELHI – 110 092



TECHNICAL SPECIFICATION
FOR
PRESSURE SAFETY VALVES


SPECIFICATION NO. : MEC/TS/05/62/056, Rev-1

MECON LIMITED Delhi	PROCESS & PIPING DESIGN SECTION	TECHNICAL SPECIFICATION FOR PRESSURE SAFETY VALVES	
TECHNICAL SPECIFICATION NO. : MEC/TS/05/62/056		REV-1	Page 1 of 9


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Revision No.	Date	Revised by	Checked by	Approved by
1		K.P. Singh	A.K. Johri	Niraj Gupta
PREPARED BY : K.P. SINGH		CHECKED BY : A.K. JOHRI		APPROVED BY : NIRAJ GUPTA

MECON LIMITED Delhi	PROCESS & PIPING DESIGN SECTION	TECHNICAL SPECIFICATION FOR PRESSURE SAFETY VALVES	
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1.0	<u>GENERAL</u>
1.1	Scope
1.1.1	This specification together with the attached data sheets covers the requirements for the design, materials, name plate marking, testing and shipping of pressure safety valves.
1.1.2	The related standards referred to herein and mentioned below shall be of the latest editions prior to the date of the Purchaser's enquiry :
	ASME B 1.20.1 : Pipe threads
	ASME B 16.5 : Pipe flanges and flanged fittings
	ASME B 16.20 : Ring joint gaskets and grooves for steel pipe flanges
	ASME Sec.VIII : Boiler & pressure vessels codes for unfired pressure vessel
	API RP 520 (Part-I & II) : Sizing, selection and installation of pressure relieving devices in refineries
	API RP 521 : Guide for pressure relieving and depressurising systems
	API 526 : Flanged steel safety-relief valves
	API 527 : Commercial seat tightness of refineries relief valve with metal to metal seats
	DIN 50049 : Document on material testing
	IBR : Indian boiler regulations
1.1.3	In the event of any conflict between this specification, data sheets, related standards, codes etc, the Vendor should refer the matter to the Purchaser for clarifications and only after obtaining the same, should proceed with the manufacture of the items in question.
1.1.4	Purchaser's data sheets indicate the selected valve's relieving area, materials for the body, bonnet, disc, nozzle, spring, indicative inlet/outlet connection sizes, bellows etc. However, this does not relieve the Vendor of the responsibility for proper selection with respect to the following :

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	<p>a) Sizing calculations and selection of valve with proper relieving area to meet the operating conditions indicated.</p> <p>b) Selection of materials for all parts of the valve suitable for the fluid and its conditions indicated.</p>
1.1.5	All process-wetted parts, metallic and non-metallic, shall be suitable for the fluids and service specified by the Purchaser. The service gas composition shall be as given in Annexure-I.
1.2	Bids
1.2.1	Vendor's quotation shall include a detailed specification sheet for each pressure safety valve which shall provide all the details regarding type, construction materials, relieving area, relieving capacity, orifice letter designation, overpressure, blowdown, operating pressure, etc., and any other valve accessories.
1.2.2	All the units of measurement for various items in the Vendor's specification sheets shall be to the same standards as those in Purchaser's data sheets.
1.2.3	All the material specifications for various parts in the Vendor's specification sheets shall be to the same standards as those in Purchaser's data sheets.
1.2.4	Deleted.
1.2.5	Vendor shall enclose catalogues giving detailed technical specifications and other information for each type of pressure safety valve covered in the bid.
1.2.6	Vendor's quotation, catalogues, drawings, operating and maintenance manual, etc., shall be in English.
1.2.7	Vendor's quotation shall include detailed sizing calculation for each pressure safety valve. Published data for certified discharge coefficient and certified flow capacities and actual discharge area shall be furnished. Data used by Vendor without the above mentioned supported documentation shall, on prima-facie basis, be rejected.
1.2.8	All valves shall have been type tested for capacity as per ASME. A copy of the certificate shall be provided.
1.2.9	Vendor shall also quote separately for the following :
	<p>a) Two years recommended operational spares for each pressure relief valve and its accessories. List of such spares without price shall be indicated along with technical bid and separately with price.</p> <p>b) Any specific tools needed for maintenance work.</p>

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1.2.10 Vendor's quotation shall include general arrangement and sectional drawings showing all features and major parts with reference numbers and material specification.

IMPORTANT

The drawings to be submitted alongwith the bid shall be in total compliance with the requirement of technical specification and data sheets of the valves with no exception & deviation.

1.2.11 Vendor's quotation shall include Quality Assurance Plan (QAP) enclosed with this tender duly signed, stamped & accepted.

1.3 Drawings and Data

1.3.1 Detailed drawings, data, catalogues required from the Vendor are indicated by the Purchaser in this specification. The required number of reproducible and prints should be dispatched to the address mentioned, adhering to the time limits indicated.


1.3.2 Within two weeks of placement of order, Vendor shall submit six copies of certified drawings and specification sheets for each pressure safety valve for Purchaser's final approval. These documents shall specially include the following :

- a) Flange face to face dimension.
- b) Height of the complete valve assembly.
- c) Weight of the complete valve assembly.
- d) Cold bench set pressure for the valve to be tested at atmospheric temperature and back pressure.
- e) The cold test medium to be used for bench test in case it is different from air.
- f) Horizontal reaction force at center line of valve outlet.
- g) Relieving capacity of the valve under the same operating conditions.
- h) Over pressure and blowdown/ reclosing pressure for each valve.

1.3.3 Vendor shall provide test certificates for all the tests indicated in clause 5.0 of this specification. In addition Vendor shall provide the Manufacturer's certificate of conformity to Purchaser's specifications as per clause 2.2 of Din 50049.

1.3.4 Within 30 days from the approval date, Manufacturer shall submit to Purchaser one reproducible and six copies of the approved drawings, documents and specifications as listed in clause 1.3.2 above.

1.3.5 Prior to shipment, Manufacturer shall submit one reproducible and six copies of the following:

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- a) Test certificates for all the tests indicated in clause 5.0 of this specification.
- b) Manual for installation, erection, maintenance and operation instructions, including a list of recommended spares for the valves.

2.0 **VALVE SIZING**

2.1 Sizing shall be carried out using the formulae mentioned in the following standards, whenever the sizing code mentioned in the Purchaser's data sheets refers to them:

Sizing Code	Standard
API	API RP 520 Part-I
ASME	ASME boiler and pressure vessel code section VIII titled - Unfired pressure vessels
IBR	Indian Boiler Regulations Paragraph – 293

2.2 Discharge co-efficient of Vendor's pressure safety valves shall be minimum 0.975 as per API – 520. However, for valves covered under IBR, regulations of IBR shall govern.

2.3 For flanged pressure safety valves, the orifice letter designation and the corresponding relieving area indicated in the Purchaser's data sheet shall be as per API 526. For a valve of given inlet and outlet sizes and letter designation, relieving area of the valves offered by Vendor shall meet those in API-526, as a minimum.

2.4 The discharge capacity of selected pressure safety valves shall be calculated based on certified ASME capacity curves or by using ASME certified discharge coefficient and actual orifice area. Higher valve size shall be selected in case pressure relief valve discharge capacity is less than the required flow rate.


2.5 The definitions of various terminologies used in Purchaser's data sheets are as per paragraph 3.1 of API RP 520 Part-I.

3.0 **VALVE CONSTRUCTION**

3.1 **Body**

3.1.1 Unless otherwise mentioned end connection details shall be as below :-

- a) Threaded end connections shall be to NPT as per ASME B 1.20.1.
- b) Flanged end connections shall be as per ASME B 16.5.

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c) Flanged face finish shall be serrated concentric to paragraphs 6.3.4.1, 6.3.4.2 and 6.3.4.3 of ASME B 16.5. The face finish as specified in data sheets, shall have serrations as follows.

Serrated	:	250 to 500 microinches AARH
125 AARH	:	125 to 200 microinches AARH
63 AARH	:	32 to 63 microinches AARH

3.1.2 For flanged valves, inlet and outlet sizes & ratings and center to flange face dimensions shall be in accordance with API 526. Dimensional tolerances shall be as mentioned therein.

3.1.3 Body drain with a plug shall be provided as a standard feature on every pressure safety valve.

3.2 Trim

3.2.1 The term 'trim' covers all the parts of the valves exposed to and in contact with the process fluid except for the body and bonnet assembly.

3.2.2 Valves shall in general be of the full nozzle full lift type, unless otherwise specified.

3.2.3 Wherever stellite of disc and nozzle has been specified, it stands for stellite of the seat joint and the entire disc contour, unless otherwise mentioned.

3.2.4 Resilient seat/ seal or 'O' rings wherever used shall be suitable for pressure and temperature conditions specified.

3.3 Bonnet and Spring

3.3.1 All valves shall be provided with a cap over the adjusting bolt.

3.3.2 Lifting lever shall be provided whenever the fluid to be relieved is steam or air.


3.3.3 Valve spring design shall permit an adjustment $\pm 5\%$ of the set pressure as a minimum.

3.3.4 Carbon Steel spring shall be cadmium/ nickel plated.

3.3.5 The allowable tolerances in set pressures are as below :

$\pm 0.14 \text{ kg/cm}^2(\text{g})$ for set pressures upto and including $5 \text{ kg/cm}^2(\text{g})$;
 $\pm 3\%$ for set pressure above $5 \text{ kg/cm}^2(\text{g})$.

3.3.6 Bonnet shall be of the enclosed type in general. Open type of bonnet may be used only for non-toxic fluids.

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3.4 **Pilot**

- 3.4.1 Wherever pilot operated valves are specified, pilot shall be non-flowing type and shall be designed fail safe.
- 3.4.2 All accessories like back flow preventer, pilot filter etc. required for proper operation of pilot operated valves as per indicated service conditions shall be included.
- 3.4.3 Wherever the body is part of flow path, body material shall be same as trim material, as a minimum.

4.0 **NAMEPLATE**

4.1 Each pressure safety valve shall have a S.S. nameplate attached firmly to it at a visible place, furnishing the following information:

- a) Tag number as per Purchaser's data sheets.
- b) Manufacturer's serial no. or model no.
- c) Manufacturer's name/ trade mark.
- d) Nominal flanged size in inches and rating in lbs. for both inlet and outlet.
- e) Orifice letter designation.
- f) Valve set pressure.
- g) Cold bench test set pressure.

Unit of the above pressures shall be marked in the same units as those followed in Purchaser's data sheets.


5.0 **INSPECTION & TESTING**

5.1 Unless otherwise specified, Purchaser reserves the right to test and inspect all the items at the Vendor's works.

5.1.1 Purchaser's Inspector shall perform inspection and witness test on all valves as indicated in the Quality Assurance Plan (QAP) attached with this specification.

5.2 Vendor shall submit the following test certificates and test reports for Purchaser's review:

- a) Material test certificate from the foundry (MIL certificate) for each valve body and bonnet castings, nozzle, disc etc.
- b) Certificate of radiography / x-ray for valve castings. 100% radiography shall be carried out for all valve castings with body rating of 600# and above. A minimum of two shots shall be taken for all curved portion of the body and bonnet.

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- c) Hydrostatic test reports for all valve bodies and functional test reports for all valves as per clause 5.3 and 5.4 of this specification.
- d) IBR certificate in Form III item 11 and shall be furnished for all safety valves in steam service in addition to Form III C. Form III C shall also be furnished for pressure relief valves in distribution network.

5.3 Hydrostatic Test

5.3.1 Each pressure safety valve body and nozzle shall undergo hydrostatic test as per outlet flange and inlet flange ANSI rating, respectively. However all the safety valves castings covered under IBR shall be tested as per IBR regulations. There shall not be any visible leakage during this test.

5.4 Functional Tests

5.4.1 Assembled valves shall be subjected to functional tests as below :

- a) Cold bench set pressure test

Pressure relief valve shall be tested for opening at specified set pressure and also for seat tightness.

- b) Seat Leakage test as per API

Whenever the specified set pressure is less than or equal to 70 kg/cm²g, the valve shall meet the seat tightness requirements specified in API RP-527. The maximum permissible leakage rates for conventional and balanced bellows valves against various sizes shall be as specified therein. Whenever the specified set pressure exceeds 70 kg/cm²g, the Vendor shall submit the leakage rates of valves for approval by the Purchaser.


Where bubble tightness has been specified, there shall be no leakage or bubbles of air at the specified percentage of set pressure.

- c) Valve lift test

5.5 Witness Inspection

All pressure safety valves shall be offered for pre-despatch inspection for following as a minimum :

- a) Physical dimensional checks and workmanship
- b) Hydrostatic test as per clause 5.3 of this specification.
- c) Functional test on representative samples.
- d) Review of all certificate and test reports as indicated in clause 5.2 of this specification.

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In the event of tests being not witnessed by Purchaser, the tests shall anyway be completed by the Vendor and documents for same submitted for scrutiny.

6.0 **SHIPPING**

6.1 Valves shall be supplied as a whole, complete with all the accessories like cap, lifting lever, test gag, etc.

6.2 All threaded and flanged opening shall be suitably protected to prevent entry of foreign material.

7.0 **GUARANTEE**

7.1 Manufacturer shall guarantee that the materials and machining of valves and fittings comply with the requirements in this specification and in the Purchase Order.

7.2 Manufacturer is bound to replace or repair all valve parts which should result defective due to inadequate engineering or to the quality of materials and machining.

7.3 If valve defect or malfunctioning cannot be eliminated, Manufacturer shall replace the valve without delay,

7.4 Any defect occurring during the period of Guarantee shall be attended to by making all necessary modifications and repair of defective parts free of charge to the Purchaser as per the relevant clause of the bid document.

7.5 All expenses shall be to Manufacturer's account.

8.0 **REJECTION**


8.1 Vendor shall make his offer in detail with respect to every item of the Purchaser's specifications. Any offer not conforming to this shall be summarily rejected.

**SPECIFICATION
FOR
QUICK OPENING END CLOSURE**

SPECIFICATION NO.: MEC/TS/05/21/013




**(OIL & GAS SBU)
MECON LIMITED
DELHI 110 092**

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PREPARED BY: (Amit Lavania)	CHECKED BY: (A.K. Gupta)	APPROVED BY: (A.K. Johri)	ISSUE DATE : March, 2009
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1.0 **SCOPE**

This specification covers the minimum requirements for design and manufacture of quick opening end closures to be installed at various blow-down points of the pipeline handling Natural Gas. This specification does not cover quick opening end closures for sour hydrocarbons service as defined in NACE standard MR0175-98.

2.0 **REFERENCE DOCUMENTS**

Reference has been made in this specification to the latest edition of the following codes, standards and specification :


- a) ANSI B 31.8 : Gas Transmission and Distribution Piping Systems
- b) ANSI B 16.25 : Butt - Welding Ends
- c) ASME Sec. VIII : Boiler and Pressure Vessels Code Rules for the Construction of Pressure vessels
- d) ASME Sec. IX : Qualification standard for Welding and Brazing procedures, welders, brazers and welding and brazing operators.
- e) API 6H : Specification on End closures, Connectors and Swivels
- f) API 1104 : Specification for Welding Pipeline and Related Facilities
- g) SSPC-VIS-1 : Steel Structures Painting Council

2.2 In case of conflict between the requirements of this specification and any code, Standard and Specification referred in Clause 2. 1 above. Order of precedence shall be as follows :

- Data Sheets
- This Specification
- Other Referred Codes & Standards
- Manufacturer's Standard.

3.0 **MATERIALS**

3.1 Material used in the manufacture of pressure containing parts of quick opening end-closure shall be fully killed carbon steel, forged construction. In addition, the material shall also meet the requirements specified herein.

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The minimum SMYS of the material of pressure containing part of the closure shall be 35,000 psi. Other components shall be as per Manufacturer's Standard. However, all the materials used shall be suitable for the service conditions indicated in Annexure-I, which will be subject to approval by Purchaser.

- 3.2 Material of the ends to be field welded by Purchaser shall have carbon equivalent not more than 0.45 based on check analysis, for each heat of steel used, calculated as per the following formula:

$$CE = C + \frac{Mn}{6} + \frac{Cr + Mo + V}{5} + \frac{Ni + Cu}{15}$$


- 3.3 Unless specified otherwise, Charpy V-notch test shall be conducted for each heat of steel, in accordance with the impact test provisions of ASTM A 370 at temperature of 0°C. The average absorbed impact energy values of three full-sized specimens shall be 27 joules.

The minimum impact energy value of any one specimen of the three specimens analysed as above, shall not be less than 80% of the above mentioned average values.


- 3.4 Hardness test shall be carried out as per ASTM A 370 for each heat of steel used. A full thickness cross section shall be taken for this purpose and the maximum hardness of base metal, weld metal and HAZ of all pressure containing parts shall not exceed 248 HV₁₀.

4.0 **DESIGN AND CONSTRUCTION**

- 4.1 End closure shall be designed in accordance with the provisions of ANSI B 31.8 and ASME Sec. VIII Division 1. Corrosion allowance and design factor as indicated in the data sheets shall be considered in the design of end closure.
- 4.2 Diameter, thickness, material, ANSI Rating of the pipeline with which the end closure to be welded is indicated in the Data Sheets. End closure supplied shall be suitable for the same.
- 4.3 End closure shall be of clamp ring, band lock or equivalent type and operable by a single lever operation. The threaded closures are not acceptable.
- 4.4 End closure shall be of hinged and quick opening type and shall consist of a safety system allowing the opening only when there is no pressure in the line.
- 4.5 End closure shall be suitable for installation in vertical position at an elevation of 2.0 meters above ground level. The safety system and the lever for operating the closure shall be at a convenient position so that easy access is possible for operator from ground without usage of any structure or platform.

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- 4.6 When closed, the closure shall provide a positive seal without any leakage. Gaskets or seals when provided for this purpose shall be self sealing and suitable for the service condition indicated in Annexure-I & Data Sheets.
- 4.7 For vertical installation, a suitable lifting device shall be provided to hinge the closure plug, head or door, clear for vertical access into the opened closure. The lever of the closure shall be provided in vertical plane so that vertical up and down operation is achievable.
- 4.8 The handling device shall be attached to the welding end hub, which shall be suitable for such attachment.
- 4.9 End closure shall be provided with a butt-welding end for direct welding with the pipeline. The weld end shall be prepared in accordance with ANSI B31.8.
- 4.10 All welds shall be made by welders and welding procedures qualified in accordance with the provisions of ASME Sec. IX. The procedure qualification shall also include impact test and hardness test when required as per clause 3.3 and 3.4 of this specification and shall meet the requirements as specified therein.
- 4.11 Completed assembly shall be stress relieved as per the provisions of the design codes.
- 4.12 The tolerance on internal diameter end out of roundness shall be as per connected pipe specifications indicated in the Data Sheet.
- 5.0 **INSPECTION AND TESTS**
- 5.1 Manufacturer shall perform all inspection and tests as per the requirements of this specification and the relevant codes, prior to shipment at his works. Such inspection shall be, but not limited to the following:
- 5.1.1 All closures shall be visually inspected.
- 5.1.2 Chemical composition and mechanical properties shall be checked.
- 5.1.3 Dimensional check shall be carried out as per the approved drawings.
- 5.1.4 Hydrostatic test shall be conducted for all end closures complete in all respects, at a pressure equal to 1.5 times the design pressure. Test duration shall be as 15 minutes. No leakage is allowed.
- 5.1.5 All butt welds shall be 100% radiographically inspected. Procedure and acceptance criteria shall be as per API 1104.
- 5.1.6 Welds, which cannot be radiographically inspected, shall be inspected by ultrasonic or magnetic particle methods. Procedure and acceptance criteria shall be as per ASME Sec. VIII, Appendix 'U' and Appendix-VI respectively.
- 5.1.7 All finished wrought weld ends shall be ultrasonically inspected for lamination type

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defects for a distance of 50mm from the end. Any lamination larger than 6.35mm shall not be accepted.

5.1.8 A minimum of two closing and opening cycles shall be performed and correct operation of both quick opening and safety system shall be established.

5.2 Purchaser's Representative reserves the right to perform inspection and witness tests including hydrostatic test, as indicated in para 5.1 at manufacturer's works prior to shipment. Manufacturer shall give reasonable notice of time and shall provide without charge reasonable access and facilities required for inspection, to the Purchaser's Representative.

Inspection and tests performed/ witnessed by Purchaser's Representative shall in no way relieve the Manufacturer's obligation to perform the required inspection and tests.

6.0 **TEST CERTIFICATES**

Manufacturer shall furnish the following certificates:

- a) Test certificates relevant to chemical and mechanical properties of the material used as per the relevant standards.
- b) Hydrostatic test certificates.
- c) Report on Non-Destructive examination.
- d) Certificate of satisfactory performance of end closure as per clause 5.1.8.
- e) Certificates of stress relieving.


The certificates shall be considered valid only when signed by the Purchaser's inspector.

7.0 **PAINTING, MARKING AND SHIPMENT**

7.1 After all inspection and tests required have been carried out, all external surfaces shall be thoroughly cleaned to remove grease, dust and rust. Surface preparation shall be carried out by shot blasting to S P-6 in accordance with "Steel Structures Painting Council - Visual Standard - SSPC-VIS-1". Machined parts shall be coated with anti-rust removable paint and non-machined parts shall be applied with two coats of protective paint. Manufacturer shall indicate the type of paints used in the drawings submitted for approval.

7.2 Marking shall be done on a stainless steel plate and affixed to the body permanently. Marking shall include the following :-

- a) Manufacturer's Name
- b) Suitable for _____ dia. X _____ Thick Pipeline.
- c) ANSI Rating
- d) Tag Number
- e) Year of Manufacturer

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7.3 Before shipment, closures shall be properly packed against damage during transportation. Bevel ends shall be protected with metallic & high impact plastic bevel protectors.

7.4 Only those closures, which have been inspected and certified by Purchaser's Representative, shall be shipped.

8.0 **GUARANTEE**

8.1 Manufacturer shall guarantee that the closure along with the davits is in compliance with the requirements of this specification for material and workmanship. Manufacturer shall replace or repair all parts which should result defective due to inadequate engineering of quality of material or workmanship. In case the defect cannot be eliminated, Manufacturer shall replace the closure without any delay. Any defects occurring within the time period specified elsewhere shall be required making all necessary modifications and repair of defective parts free of charge of the purchaser.

9.0 **SPARES**

9.1 Manufacturer shall furnish list of recommended spares and accessories for Quick Opening End Closures required during start up and commissioning. Cost of such spares shall be included by the Manufacturer in the item rates indicated in Purchase Requisition.


9.2 Manufacturer shall furnish separately a list of recommended spares and accessories required for two years of normal operation and maintenance of Quick Opening End Closures.

10.0 **DOCUMENTATION**

10.1 Manufacturer shall furnish at the time of bidding, the following documents:-

- a) General Arrangement Drawings of end closure with over all dimensions and showing the operational arrangement.
- b) Clause wise list of deviation from this specification, if any listed at one place in the document.
- c) Reference list of similar supplies for the past five years including project, client, year of supply & contact person.
- d) Descriptive technical catalogues of the manufacturer.
- e) Quality Assurance Plan (QAP) enclosed with this tender duly signed, stamped and accepted.

10.2 Within two weeks of placement of order, the manufacturer shall submit four copies of, but not limited to, the following drawings, documents and specifications for approval :-

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- a) Calculations according to relevant codes for the end closure.
- b) Closure assembly and sectional drawing showing all parts with materials and dimensions.
- c) Welding procedure and method of manufacture.

Once the above said documents have been approved by the Purchaser, any change in design, material and method of manufacture shall be notified to the Purchaser, whose approval in writing of all changes shall be obtained before the closures are manufactured.

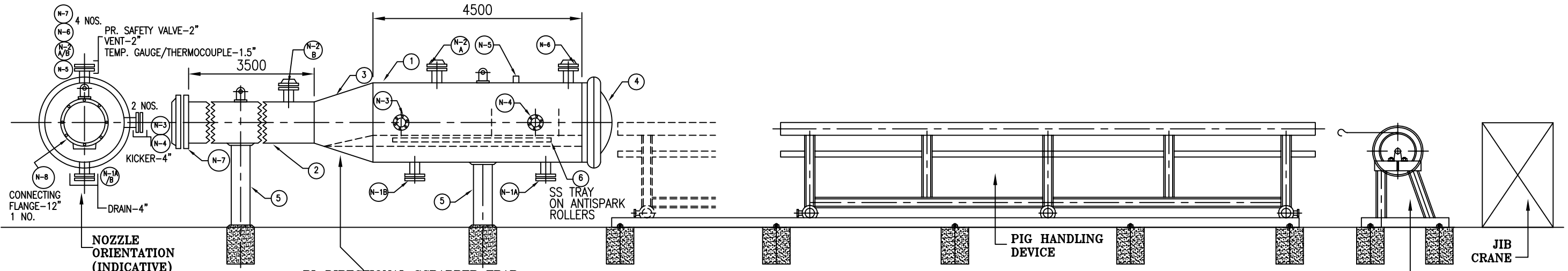
10.3 Within four weeks from the approval date, Manufacturer shall submit one reproducible and six copies of Approved drawings, documents and specifications listed in clause 10.2 of this specification.

10.4 Prior to shipment, the Manufacturer shall submit one reproducible and six copies of the following :-

- a) Test certificates as listed in clause 6.0 of this specification.
- b) Manual for installation, erection instructions, maintenance and operation instructions.

10.5 All documents shall be in English Language only.

**DATA SHEETS
OF
BI-DIRECTIONAL SCRAPPER TRAP, PIG
SIGNALLERS, QOEC & PSV**



CONNECTING PIPELINE DETAILS:-

ANSI RATING (#)	: 600#	OUTSIDE DIAMETER (MM)	: 457.2
DESIGN PRESSURE (KG/CM ² G)	: 92	THICKNESS (MM)	: 12.7
OPERATING PRESSURE (KG/CM ² G)	: **	MATERIAL	: API 5L GR. X-70, PSL-2
DESIGN TEMPERATURE (°C)	: (-)29 to (+)65	SERVICE	: NATURAL GAS/ RLNG
OPERATING TEMPERATURE (°C)	: 0 TO +55	DESIGN CODE	: ASME B 31.8
DESIGN FACTOR	: 0.5		

TYPICAL GENERAL ARRANGEMENT

SCRAPER TRAP SPECIFICATION :-

MECON'S SPECIFICATION NO. MEC/S/05/62/007 Ed.0 Rev0

ITEM NO./NOZZLE NO.	DESCRIPTION	COMPONENT	ENDS/TYPES	DESIGN CODE	MINIMUM SPECIFIED MATERIAL	MATERIAL AS GIVEN BY THE BIDDER	NB/THICKNESS
1.	BODY(MAJOR BARREL)	PIPE	BW	API 5L	API 5L Gr.X-70/X-52,PSL 2	*	24"/*
2.	NECK(MINOR BARREL)	PIPE	BW	API 5L	API 5L Gr X-70, PSL 2	*	18"/12.7
3.	REDUCER	CONCENTRIC	BW, WELDED	MSS-SP-75	MSS-SP-75 Gr WPHY-70	*	24"x18"/*
4.	END CLOSURE	FORGED	QUICK OPENING	ASME SECTION VIII	ASTM A 105(CHARPY)/ASTM A 694 GR. F-60(CHARPY)	*	24", 600#
5.	SUPPORTS	PLATE	WELDED	ASTM A 36	*	*	AS REQUIRED
6.	PERFORATED PIG HANDLING TRAY/FILTERING BASKET	SS	-		SS304	*	6 MM THK
N-1A/B	DRAIN CONN. (2 NOS.)	WELDOLET/PIPE/FL	BW/SMLS/FL-WNRF	MSS-SP-97/B 16.5	A106 Gr.B(CHARPY)/ASTM A105(CHARPY)	*	4"/S-XS
N-2A/B	VENT(1 NO.)	WELDOLET/PIPE/FL	BW/SMLS/FL-WNRF	MSS-SP-97/B 16.5	A106 Gr.B(CHARPY)/ASTM A105(CHARPY)	*	2"/S-80
N-3	KICKER/BYPASS CONN. (2 NOS.)	WELDOLET/PIPE/FL	BW/SMLS/FL-WNRF	MSS-SP-97/B 16.5	ASTM A106 Gr.B/ASTM A105(CHARPY)	*	6"/S-XS
N-5.	PR. GAUGE (1 NO.)	SOCKET/PIPE	SW-6000#/SMLS	MSS-SP-97	ASTM A106 Gr B	*	3/4"/S-160
N-6.	PR. SAFETY VALVE CONN(1 NO.)	WELDOLET/PIPE/FL	BW/SMLS/FL-WNRF	MSS-SP-97/B 16.5	A106 Gr.B(CHARPY)/ASTM A105(CHARPY)	*	2"/S-80
N-7.	CONNECTING FLANGE (1 NO.)	FLANGE	FL-WNRF	B 16.5	ASTM A694 Gr F-70 (CHARPY)	*	18"/12.7

NOTES:

- ORIENTATION OF ALL NOZZLES IS INDICATIVE AND SHALL BE CONFIRMED DURING DRAWING APPROVAL STAGE.
- THICKNESS OF BODY & REDUCER SHALL BE INDICATED BY MANUFACTURER BASED ON PIPELINE DESIGN CONDITIONS AND MANUFACTURING REQUIREMENTS. NECESSARY CALCULATIONS SHALL BE SUBMITTED TO MECON FOR REVIEW/ APPROVAL.
- THICKNESS CAL. OF MAJOR BARREL AND REDUCER SHALL BE CALCULATED WITH 1.5 MM CA AND 0.5 DESIGN FACTOR.
- FLANGES - AS PER ASME B 16.5, 16.47A AS APPLICABLE.
- HYDRAULIC TEST PR.=1.5 TIMES THE DESIGN PR., DURATION-1 Hr.
- RADIOGRAPHY 100% ALL BUTT WELDED JOINTS.
- BI-DIRECTIONAL SCRAPER TRAP SHALL BE COMPATIBLE FOR ACCOMODATING LATEST ONLINE INSPECTION TOOL/ INTELLIGENT PIGGING (LONGEST).
- PAINTING:-
(i) SURFACE PREPARATION BY SHOT BLASTING AS PER GRADE SA 2 1/2 SWEDISH STD. SIS-055909.
(ii) THREE COATS OF PAINT SHALL BE APPLIED WITH MINIMUM THICKNESS OF 300 MICRON (PERMISSIBLE THICKNESS IN EACH COAT SHALL BE 80-120 MICRON)
(iii) FINAL SHADE OF PAINTING SHALL BE DECIDED DURING DRAWING APPROVAL STAGE.
- CHARPY-V NOTCH TEST AND HARDNESS TEST SHALL BE CONDUCTED AS PER CLAUSE NO. 3.4 & 3.5 RESPECTIVELY OF MECON TS.
- DOORLOCK OF QOC OF EACH SCRAPER TRAP SHALL HAVE A SAFETY RELIEF SYSTEM ALLOWING THE OPENING OF DOOR ONLY WHEN THERE IS NO PRESSURE IN THE TRAP.
- QUICK OPENING CLOSURE SHALL BE OF HINGED TYPE AND INCLUDE SAFETY DEVICE TO PREVENT OPENING BEFORE DEPRESSURISING IN COMPLIANCE WITH ASME-SECTION VIII, DIV 1 UG-35(b) OF ASME BOILER AND PRESSURE VESSEL CODE.
- MATCHING FLANGES(WNRF) FOR ALL NOZZLES SHALL BE PROVIDED EXCEPT FOR NOZZLES N-1 (A/B) FOR WHICH BLIND FLANGES(BLRF) ARE TO BE PROVIDED. ALL FLANGES/BLINDS SUPPLIED WITH SCRAPER TRAPS SHALL HAVE SMOOTH FACE FINISH TO 125-250 AARH.
- REINFORCEMENT PAD FOR SUPPORT FOR BARREL SHALL BE PROVIDED OF SAME MATERIAL AS PROVIDED FOR BARREL.
- ALL NOZZLES SHALL HAVE A MINIMUM PROJECTION OF 200MM NAD INTER DISTANCE BETWEEN NOZZLES SHALL BE MINIMUM 300MM.
- PIG HANDLING SYSTEM SHALL BE SUITABLE FOR INSERTING AND RETRACTING OF ALL TYPES OF INSTRUMENTED/INTELLIGENT PIGS FROM THE TRAP.
- PIG HANDLING SYSTEM, PUSHING ROD MECHANISM & TROLLEY SHALL BE OF DISMANTLED TYPE.
- ALL FOUNDATION BOLTS SHALL BE PROVIDED WITH DUE APPROVAL OF ITS DETAIL DRAWINGS FROM MECON
- JIB CRANE WITH 360 DEGREE SWING ARM SHALL BE SUPPLIED WITH DULY CERTIFIED LOAD TEST DETAILS.

NOZZLE DETAILS:

- (N-1A/B) - 4" DRAIN
- (N-2A/B) - 2" VENT
- (N-3) - 6" KICKER/BYPASS LINE
- (N-4) - 6" KICKER/BYPASS LINE
- (N-5) - 3/4" PRESSURE GAUGE
- (N-6) - 2" PSV
- (N-7) - 18" CONNECTING FLANGE

LEGEND:

SMLS - SEAMLESS, BW - BUTT WELDED,
SW - SOCKET WELDED, SWRF-SOCKET WELD RAISED FACE
FL-FLANGE, WNRF-WELDNECK RAISED FACE

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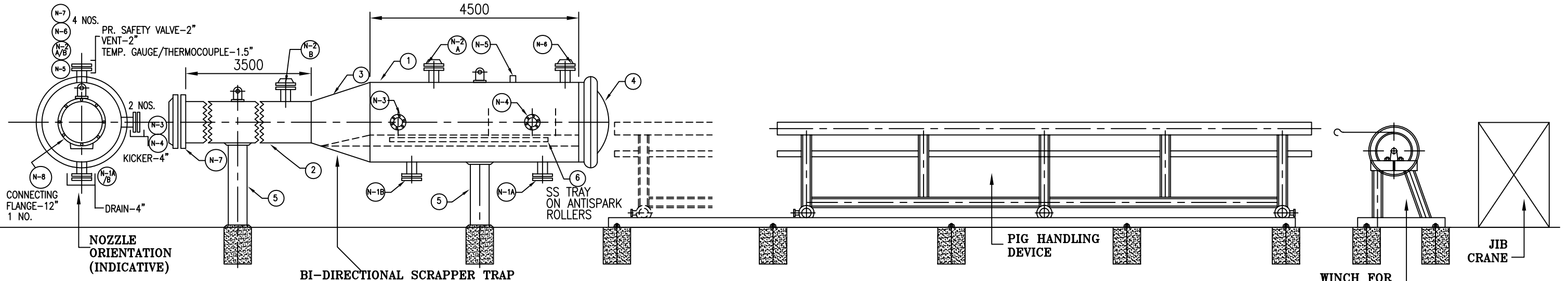
SECTION	OIL & GAS	NORTH-EAST GAS GRID (PHASE- 2 PIPELINES)
LOCATION	NEW DELHI	
DESIGNED	Ashish Muthur	BI-DIRECTIONAL SCRAPER LAUNCHER/ RECEIVER, (24" X 18", 600#)
DRAWN	Ashish Muthur	
CHECKED AND VERIFIED	HK	SCALE : NTS
APPROVED	SIG (INDRANIL SENO)	DATASHEET NO.-MEC/23VC/05/28/M/001/DS-ST-001
DATE	28.12.2021	SHEET 1 OF 1

NOTES :

- * VENDOR TO INDICATE
- ** TO BE FURNISHED LATER
- WELD NECK END THICKNESS OF MATCHING FLANGE (WNRF) FOR NOZZLE N7 SHALL SAME AS THAT OF CONNECTING PIPELINE THICKNESS.

REV.NO	DATE	ZONE	DESCRIPTION	BY	VERIFIED
0	-	-	-	-	-

REFERENCES DRG.NO.
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CONNECTING PIPELINE DETAILS:-

ANSI RATING (#)	: 600#	OUTSIDE DIAMETER (MM)	: 323.8
DESIGN PRESSURE (KG/CM ² G)	: 92	THICKNESS (MM)	: 9.5
OPERATING PRESSURE (KG/CM ² G)	: **	MATERIAL	: API 5L GR. X-70, PSL-2
DESIGN TEMPERATURE (°C)	: (-)29 to (+)65	SERVICE	: NATURAL GAS/ RLNG
OPERATING TEMPERATURE (°C)	: 0 TO +55	DESIGN CODE	: ASME B 31.8
DESIGN FACTOR	: 0.5		

TYPICAL GENERAL ARRANGEMENT

SCRAPPER TRAP SPECIFICATION :-

MECON'S SPECIFICATION NO. MEC/S/05/62/007 Ed.0 Rev0

ITEM NO./ NOZZLE NO.	DESCRIPTION	COMPONENT	ENDS/TYPES	DESIGN CODE	MINIMUM SPECIFIED MATERIAL	MATERIAL AS GIVEN BY THE BIDDER	NB/THICKNESS
1.	BODY(MAJOR BARREL)	PIPE	BW	API 5L	API 5L Gr.X-70/X-52,PSL 2	*	18"/*
2.	NECK(MINOR BARREL)	PIPE	BW	API 5L	API 5L Gr X-70, PSL 2	*	12"/9.51
3.	REDUCER	CONCENTRIC	BW, WELDED	MSS-SP-75	MSS-SP-75 Gr WPHY-70	*	18"x12"/*
4.	END CLOSURE	FORGED	QUICK OPENING	ASME SECTION VIII	ASTM A 105(CHARPY)/ASTM A 694 GR. F-60(CHARPY)	*	18", 600#
5.	SUPPORTS	PLATE	WELDED	ASTM A 36	*	*	AS REQUIRED
6.	PERFORATED PIG HANDLING TRAY/FILTERING BASKET	SS	-		SS304	*	6 MM THK
N-1A/B	DRAIN CONN. (2 NOS.)	WELDOLET/PIPE/FL	BW/SMLS/FL-WNRF	MSS-SP-97/B 16.5	A106 Gr.B(CHARPY)/ASTM A105(CHARPY)	*	4"/S-XS
N-2A/B	VENT(1 NO.)	WELDOLET/PIPE/FL	BW/SMLS/FL-WNRF	MSS-SP-97/B 16.5	A106 Gr.B(CHARPY)/ASTM A105(CHARPY)	*	2"/S-80
N-3 N-4	KICKER/BYPASS CONN. (2 NOS.)	WELDOLET/PIPE/FL	BW/SMLS/FL-WNRF	MSS-SP-97/B 16.5	ASTM A106 Gr.B/ASTM A105(CHARPY)	*	4"/S-XS
N-5.	PR. GAUGE (1 NO.)	SOCKOLET/PIPE	SW-6000#/SMLS	MSS-SP-97	ASTM A106 Gr B	*	3/4"/S-160
N-6.	PR. SAFETY VALVE CONN(1 NO.)	WELDOLET/PIPE/FL	BW/SMLS/FL-WNRF	MSS-SP-97/B 16.5	A106 Gr.B(CHARPY)/ASTM A105(CHARPY)	*	2"/S-80
N-7.	CONNECTING FLANGE (1 NO.)	FLANGE	FL-WNRF	B 16.5	ASTM A694 Gr F-70 (CHARPY)	*	12"/9.5

- NOTES:**
- ORIENTATION OF ALL NOZZLES IS INDICATIVE AND SHALL BE CONFIRMED DURING DRAWING APPROVAL STAGE.
 - THICKNESS OF BODY & REDUCER SHALL BE INDICATED BY MANUFACTURER BASED ON PIPELINE DESIGN CONDITIONS AND MANUFACTURING REQUIREMENTS. NECESSARY CALCULATIONS SHALL BE SUBMITTED TO MECON FOR REVIEW/ APPROVAL.
 - THICKNESS CAL. OF MAJOR BARREL AND REDUCER SHALL BE CALCULATED WITH 1.5 MM CA AND 0.5 DESIGN FACTOR.
 - FLANGES - AS PER ASME B 16.5, 16.47A AS APPLICABLE.
 - HYDRAULIC TEST PR.=1.5 TIMES THE DESIGN PR., DURATION-1 Hr.
 - RADIOGRAPHY 100% ALL BUTT WELDED JOINTS.
 - BI-DIRECTIONAL SCRAPPER TRAP SHALL BE COMPATIBLE FOR ACCOMODATING LATEST ONLINE INSPECTION TOOL/ INTELLIGENT PIGGING (LONGEST).
 - PAINTING:-
 (i) SURFACE PREPARATION BY SHOT BLASTING AS PER GRADE SA 2 1/2 SWEDISH STD. SIS-055909.
 (ii) THREE COATS OF PAINT SHALL BE APPLIED WITH MINIMUM THICKNESS OF 300 MICRON (PERMISSIBLE THICKNESS IN EACH COAT SHALL BE 80-120 MICRON)
 (iii) FINAL SHADE OF PAINTING SHALL BE DECIDED DURING DRAWING APPROVAL STAGE.
 - CHARPY-V NOTCH TEST AND HARDNESS TEST SHALL BE CONDUCTED AS PER CLAUSE NO. 3.4 & 3.5 RESPECTIVELY OF MECON TS.
 - DOORLOCK OF QOC OF EACH SCRAPER TRAP SHALL HAVE A SAFETY RELIEF SYSTEM ALLOWING THE OPENING OF DOOR ONLY WHEN THERE IS NO PRESSURE IN THE TRAP.
 - QUICK OPENING CLOSURE SHALL BE OF HINGED TYPE AND INCLUDE SAFETY DEVICE TO PREVENT OPENING BEFORE DEPRESSURISING IN COMPLIANCE WITH ASME-SECTION VIII, DIV 1 UG-35(b) OF ASME BOILER AND PRESSURE VESSEL CODE.
 - MATCHING FLANGES(WNRF) FOR ALL NOZZLES SHALL BE PROVIDED EXCEPT FOR NOZZLES N-1 (A/B) FOR WHICH BLIND FLANGES(BLRF) ARE TO BE PROVIDED. ALL FLANGES/BLINDS SUPPLIED WITH SCRAPPER TRAPS SHALL HAVE SMOOTH FACE FINISH TO 125-250 AARH.
 - REINFORCEMENT PAD FOR SUPPORT FOR BARREL SHALL BE PROVIDED OF SAME MATERIAL AS PROVIDED FOR BARREL.
 - ALL NOZZLES SHALL HAVE A MINIMUM PROJECTION OF 200MM NAD INTER DISTANCE BETWEEN NOZZLES SHALL BE MINIMUM 300MM.
 - PIG HANDLING SYSTEM SHALL BE SUITABLE FOR INSERTING AND RETRACTING OF ALL TYPES OF INSTRUMENTED/INTELLIGENT PIGS FROM THE TRAP.
 - PIG HANDLING SYSTEM, PUSHING ROD MECHANISM & TROLLEY SHALL BE OF DISMANTLED TYPE.
 - ALL FOUNDATION BOLTS SHALL BE PROVIDED WITH DUE APPROVAL OF ITS DETAIL DRAWINGS FROM MECON
 - JIB CRANE WITH 360 DEGREE SWING ARM SHALL BE SUPPLIED WITH DULY CERTIFIED LOAD TEST DETAILS.


NOZZLE DETAILS:


- (N-1A/B) - 4" DRAIN
- (N-2A/B) - 2" VENT
- (N-3) - 4" KICKER/BYPASS LINE
- (N-4) - 4" KICKER/BYPASS LINE
- (N-5) - 3/4" PRESSURE GAUGE
- (N-6) - 2" PSV
- (N-7) - 12" CONNECTING FLANGE

LEGEND:

SMLS - SEAMLESS, BW - BUTT WELDED,
 SW - SOCKET WELDED, SWRF-SOCKET WELD RAISED FACE
 FL-FLANGE, WNRF-WELDNECK RAISED FACE

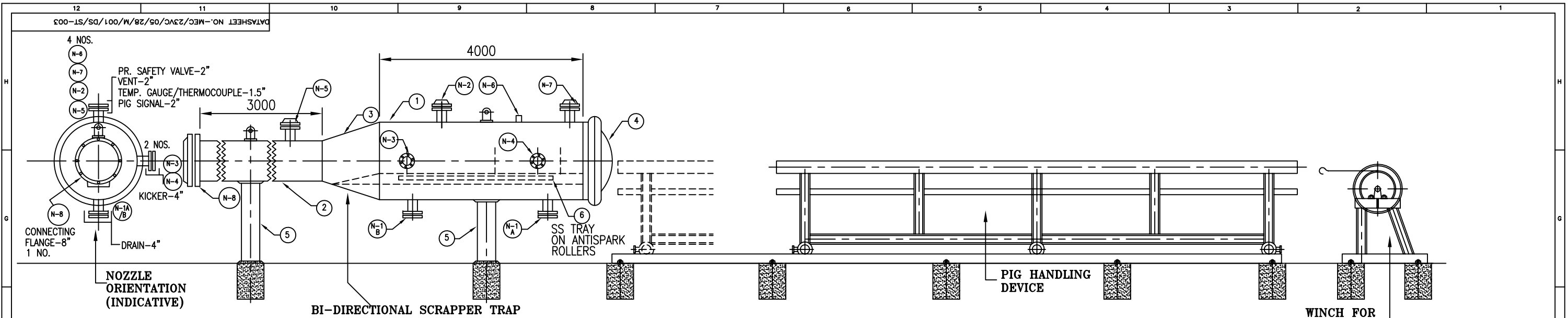
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MECON LIMITED

REV		Tender No.: 05/51/23VC/IGGL/007A		CONCURRED BY		NOTES :		SECTION OIL & GAS		NORTH-EAST GAS GRID (PHASE -2 PIPELINES)		BI-DIRECTIONAL SCRAPPER LAUNCHER/ RECEIVER, (18" X 12", 600#)		SCALE : NTS Page 51 of 71		SHEET 1 OF 1		REV 0	
SEC						* VENDOR TO INDICATE **TO BE FURNISHED LATER WELD NECK END THICKNESS OF MATCHING FLANGE (WNRF) FOR NOZZLE N7 SHALL SAME AS THAT OF CONNECTING PIPELINE THICKNESS.		REFERENCES DRG.NO.		CHECKED AND VERIFIED HK		APPROVED SIG (Indranil Sen)		DATE 28.12.2021		DATASHEET NO.-MEC/23VC/05/28/M/001/DS-ST-002			
								© Copyright MECON - All rights reserved.		THIS DRAWING IS THE PROPERTY OF MECON AND ISSUED FOR THE SPECIFIC PROJECT MENTIONED THEREIN. THIS IS NOT TO BE COPIED OR USED FOR OTHER PROJECTS UNLESS EXPRESSLY PERMITTED BY MECON.									
								REV.NO		DATE		ZONE		DESCRIPTION		BY		VERIFIED	
								0											



TYPICAL GENERAL ARRANGEMENT

CONNECTING PIPELINE DETAILS:-

ANSI RATING (#)	: 600#	OUTSIDE DIAMETER (MM)	: 219.1
DESIGN PRESSURE (KG/CM ² -G)	: 92	THICKNESS (MM)	: 7.92
OPERATING PRESSURE (KG/CM ² -G)	: **	MATERIAL	: API 5L GR. X-70, PSL-2
DESIGN TEMPERATURE (°C)	: (-)29 to (+)65	SERVICE	: NATURAL GAS/ RLNG
OPERATING TEMPERATURE (°C)	: 0 TO +55	DESIGN CODE	: ASME B 31.8
DESIGN FACTOR	: 0.5		

SCRAPPER TRAP SPECIFICATION :-

MECON'S SPECIFICATION NO. MEC/S/05/62/007 Ed.0 Rev0

ITEM NO./NOZZLE NO.	DESCRIPTION	COMPONENT	ENDS/TYPES	DESIGN CODE	MINIMUM SPECIFIED MATERIAL	MATERIAL AS GIVEN BY THE BIDDER	NB/THICKNESS
1.	BODY(MAJOR BARREL)	PIPE	BW	API 5L	API 5L Gr.X-70/X-52,PSL 2	*	14"/*
2.	NECK(MINOR BARREL)	PIPE	BW	API 5L	API 5L Gr X-70,PSL 2	*	8"/7.92
3.	REDUCER	CONCENTRIC	BW, WELDED	MSS-SP-75	MSS-SP-75 Gr WPHY-70	*	14"x8"/*
4.	END CLOSURE	FORGED	QUICK OPENING	ASME SECTION VIII	ASTM A 105(CHARPY)/ASTM A 694 GR. F-60(CHARPY)	*	14", 600#
5.	SUPPORTS	PLATE	WELDED	ASTM A 36	*	*	AS REQUIRED
6.	PERFORATED PIG HANDLING TRAY/FILTERING BASKET	SS	-		SS304	*	6 MM THK
N-1A/B	DRAIN CONN. (2 NOS.)	WELDOLET/PIPE/FL	BW/SMLS/FL-WNRF	MSS-SP-97/B 16.5	A106 Gr.B(CHARPY)/ASTM A105(CHARPY)	*	4"/S-XS
N-2.	VENT	WELDOLET/PIPE/FL	BW/SMLS/FL-WNRF	MSS-SP-97/B 16.5	A106 Gr.B(CHARPY)/ASTM A105(CHARPY)	*	2"/S80
N-3 N-4	KICKER/BYPASS CONN. (2 NOS.)	WELDOLET/PIPE/FL	BW/SMLS/FL-WNRF	MSS-SP-97/B 16.5	ASTM A106 Gr.B/ASTM A105(CHARPY)	*	4"/S-XS
N-5.	VENT	WELDOLET/PIPE/FL	BW/SMLS/FL-WNRF	MSS-SP-97/B 16.5	A106 Gr.B(CHARPY)/ASTM A105(CHARPY)	*	2"/S80
N-6.	PR. GAUGE (1 NO.)	SOCKOLET/PIPE	SW-6000#/SMLS	MSS-SP-97	ASTM A106 Gr B	*	3/4"/S160
N-7.	PR. SAFETY VALVE CONN(1 NO.)	WELDOLET/PIPE/FL	BW/SMLS/FL-WNRF	MSS-SP-97/B 16.5	A106 Gr.B(CHARPY)/ASTM A105(CHARPY)	*	2"/S80
N-8	CONNECTING FLANGE (1 NO.)	FLANGE	FL-WNRF	B 16.5	ASTM A694 Gr F-56 (CHARPY)	*	8"/7.92

- NOTES:**
- ORIENTATION OF ALL NOZZLES IS INDICATIVE AND SHALL BE CONFIRMED DURING DRAWING APPROVAL STAGE.
 - THICKNESS OF BODY, NECK & REDUCER SHALL BE INDICATED BY MANUFACTURER BASED ON PIPELINE DESIGN CONDITIONS AND MANUFACTURING REQUIREMENTS. NECESSARY CALCULATIONS SHALL BE SUBMITTED TO MECON FOR REVIEW/ APPROVAL.
 - CORROSION ALLOWANCE(CA) OF 1.5 MM SHALL BE CONSIDERED FOR DESIGN OF COMPLETE SCRAPER TRAPS.
 - FLANGES - AS PER ASME B 16.5, 16.47A AS APPLICABLE.
 - HYDRAULIC TEST PR.=1.5 TIMES THE DESIGN PR., DURATION-1 Hr.
 - RADIOGRAPHY 100% ALL BUTT WELDED JOINTS.
 - PIG SIGNALLER AS PER SPEC. NO. MEC/S/05/62/048, REV-0
 - BI-DIRECTIONAL SCRAPPER TRAP SHALL BE COMPATIBLE FOR ACCOMODATING LATEST ONLINE INSPECTION TOOL/ INTELLIGENT PIGGING (LONGEST).
 - PAINTING:-
(i) SURFACE PREPARATION BY SHOT BLASTING AS PER GRADE SA 2 1/2 SWEDISH STD. SIS-055909.
(ii) THREE COATS OF PAINT SHALL BE APPLIED WITH MINIMUM THICKNESS OF 300 MICRON (PERMISSIBLE THICKNESS IN EACH COAT SHALL BE 80-120 MICRON)
(iii) FINAL SHADE OF PAINTING SHALL BE DECIDED DURING DRAWING APPROVAL STAGE.
 - CHARPY-V NOTCH TEST AND HARDNESS TEST SHALL BE CONDUCTED AS PER CLAUSE NO. 3.4 & 3.5 RESPECTIVELY OF MECON TS.
 - DOORLOCK OF QOC OF EACH SCRAPER TRAP SHALL HAVE A SAFETY RELIEF SYSTEM ALLOWING THE OPENING OF DOOR ONLY WHEN THERE IS NO PRESSURE IN THE TRAP.
 - QUICK OPENING CLOSURE SHALL BE OF HINGED TYPE AND INCLUDE SAFETY DEVICE TO PREVENT OPENING BEFORE DEPRESSURISING IN COMPLIANCE WITH ASME-SECTION VIII, DIV 1 UG-35(b) OF ASME BOILER AND PRESSURE VESSEL CODE.
 - MATCHING FLANGES(WNRF) FOR ALL NOZZLES SHALL BE PROVIDED EXCEPT FOR NOZZLES N-1(A/B) FOR WHICH BLIND FLANGES(BLRF) ARE TO BE PROVIDED. ALL FLANGES/BLINDS SUPPLIED WITH SCRAPPER TRAPS SHALL HAVE SMOOTH FACE FINISH TO 125-250 AARH.
 - REINFORCEMENT PAD FOR SUPPORT FOR BARREL SHALL BE PROVIDED OF SAME MATERIAL AS PROVIDED FOR BARREL.
 - ALL NOZZLES SHALL HAVE A MINIMUM PROJECTION OF 200MM NAD INTER DISTANCE BETWEEN NOZZLES SHALL BE MINIMUM 300MM.
 - PIG HANDLING SYSTEM SHALL BE SUITABLE FOR INSERTING AND RETRACTING OF ALL TYPES OF INSTRUMENTED/INTELLIGENT PIGS FROM THE TRAP.
 - PIG HANDLING SYSTEM, PUSHING ROD MECHANISM & TROLLEY SHALL BE OF DISMANTLED TYPE.
 - ALL FOUNDATION BOLTS SHALL BE PROVIDED WITH DUE APPROVAL OF ITS DETAIL DRAWINGS FROM MECON
 - THICKNESS OF MINOR BARREL SHALL BE EITHER CALCULATED THICKNESS WITH 3MM CA OR CONNECTING PIPE THICKNESS WHICHEVER IS HIGHER.

NOZZLE DETAILS:

- (N-1A/B) - 4" DRAIN
- (N-2) - 2" VENT
- (N-3) - 4" KICKER/BYPASS LINE
- (N-4) - 4" KICKER/BYPASS LINE
- (N-5) - 2" VENT
- (N-6) - 3/4" PRESSURE GAUGE
- (N-7) - 2" PSV
- (N-8) - 8" CONNECTING FLANGE

LEGEND:

SMLS - SEAMLESS, BW - BUTT WELDED,
SW - SOCKET WELDED, SWRF-SOCKET WELD RAISED FACE
FL-FLANGE, WNRF-WELDNECK RAISED FACE

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REV	DATE	ZONE	DESCRIPTION	BY	VERIFIED
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NOTES : * VENDOR TO INDICATE
** TO BE FURNISHED LATER

WELD NECK END THICKNESS OF MATCHING FLANGE (WNRF) FOR NOZZLE N8 SHALL BE SAME AS THAT OF CONNECTING PIPELINE THICKNESS.

REV.NO	DATE	ZONE	DESCRIPTION	BY	VERIFIED
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SECTION	OIL & GAS	NORTH-EAST GAS GRID (PHASE- 2 PIPELINES)	
LOCATION	NEW DELHI		
DESIGNED	AM	BI-DIRECTIONAL SCRAPPER LAUNCHER/ RECEIVER, (14" X 8", 600#)	
DRAWN	AM		
CHECKED AND VERIFIED	HK	SCALE : NTS	
APPROVED	SIG (Indranil Sen)		
DATE	29.12.2021	SHEET	REV
		1	0





DATASHEET
of
Non-Intrusive Type Pig Signaller



DS No. : MEC/05/E5/DS-NIPS

Pig Signaller Make & Model	Vendor to specify
Pig Signaller Tag Nos.	To be finalised during detail engineering
General	
Service	Natural Gas
Area Classification	Zone 1, Gr. IIA, IIB, T3 as per IEC 60079
Pig Detection	At Passage
Sensing Element	
Type	Non-intrusive
Sensor Element	Piezo electrical crystal
Sensor repeatability	1% Minimum
Detection	Passive acoustics based (Ultrasonic type)
Connection	Universal Clamp-on type
Self testing capability	Required
Detection Speed	(Vendor to Advice)
Signal Output	2 No. Potential free contact (DPDT)(2NO +2 NC) (24 VDC 2A)
Housing	Hermetically sealed SS316
Terminal Box	
Body Material	SS316 as a minimum.
Degree of Protection	Explosion proof with IP65 as per IEC 60529, PESO approved
Power Supply	24V DC
Signal Interface	To Control Panel for pig detection through potential free contacts.
Cable Entry	1 Nos. power ½" NPTF /3 Nos. Signal ½" NPTF. Cable glands shall be Double compression type with PVC shroud, explosion proof and PESO Approved.
Cables	Vendor to provide sensor cable between sensor & termination box. Vendor to consider a length of 5 meters between sensor & termination box. All cables shall be terminated in terminal strips. Flying leads shall not be provided. Separate terminal strips to be considered for power & signals.
Earthing	Shall be provided as per IEC 60364.
Local Indicator	Required Green LED for Power Available Red LED for Pig detection Amber for Sensor Fault.
Local Reset Button	Required (Mushroom head) with cover.
Terminal Box Mounting	Station mounted, vendor to provide suitable mounting brackets & accessories.
	The Manufacturer shall perform all inspections and tests as per the requirements of this specification and the relevant



	DATASHEET of Non-Intrusive Type Pig Signaller	
DS No. : MEC/05/E5/DS-NIPS		

INSPECTION AND TESTS	<p>codes, standards and specifications, prior to shipment at his Works. Such inspections and tests shall be, but not limited to, the following:</p> <p>All pig signallers shall be visually inspected. The internal and external surfaces shall be free from any strikes, gouges and other detrimental defects. The surfaces shall be thoroughly cleaned and free from dirt, rust and scales.</p> <p>Testing and assembly procedure shall be detailed by Manufacturer and implemented during the work. Welding Inspection and testing shall be performed before any coating or painting is applied.</p>
SPARES AND ACCESSORIES	<p>Manufacturer shall furnish list of recommended spares and accessories for pig signallers required during start-up and commissioning and supply of such spares shall be included in the price quoted by Manufacturer.</p> <p>Manufacturer shall furnish list of recommended spares and accessories required for two years of normal operation and maintenance of pig signallers and price for such spares shall be quoted separately. Manufacturer shall provide special tools required for operation and maintenance as a part of supply, this includes but not limited to</p> <p>Any type of communicator/ cables/ connectors for configurations;</p> <p>Any Special tools required for maintenance like special type of Allen Key etc.</p>

- Reference has been made in this specification to the latest edition (edition in force at the time of issue of enquiry) of the following codes, standards and specifications.
- The Pig Signaller shall be capable of detecting all type of pigging devices as indicated below :

Pig Material	Carbon Steel, Steel and Plastic
Pig Length	Need to follow current industry practice to accommodate all types of tools
Pig Diameter (OD)	90% - 100% of Pipeline ID
Pig Velocity (max.)	6 m/s

- The Pig Signaller shall be clamped to the external surface of the pipe or the scraper trap's major & minor barrel through which the pig passes.

	<p>DATASHEET of Non-Intrusive Type Pig Signaller</p>	
<p>DS No. : MEC/05/E5/DS-NIPS</p>		

4. Documentation (Hard copies / soft copies etc.) to be submitted by Manufacturer is summarized below.

Manufacturer shall submit the following documents (in English only) :

- a) General arrangement drawings with overall dimensions and cross-sectional drawings. b) Power consumption details.
- b) Sectional arrangement drawings showing all parts with reference numbers and material specification including mounting details of pig signallers on the pipeline.
- c) Cable connection details and cable specification.
- d) Test Certificates.
- e) Manual for installation, erection instructions, maintenance and operation instructions.
- f) Manufacturer shall provide standard installation drawing for mounting of sensor on pipe, which should indicate the welding details of the support brackets to the pipe as a minimum


PRESSURE SAFETY VALVES

UNITS : Flow > Liquid - m³/hr , Gas-Sm³/day, Steam - kg/hr. Pressure -> kg/cm², Temperature-°C, Level/ Length-> mm

General	01	Tag No.	PSV-	
	02	Line No./ Size	As per P&ID	
	03	Vessel Protected (Scrapper Trap)	SLR / SRL-	
	04	Quantity	As per MR	
	05	Safety/ Relief	Safety Relief	
	06	Vendor	☐	
Valve	07	Type	Standard	
	08	Full Nozzle Full Lift Mod. Nozzle	Full Nozzle Full Lift	
	09	Bonnet Type	Closed	
	10	Conv./ Bellows/ Pilot Operated	Conventional	
	11	Inlet Conn. : Size & Rating	☐	
	12	Inlet Conn. : Facing & Finish	RF, ☐	
	13	Outlet Conn. : Size & Rating	☐	
	14	Outlet Conn. : Facing & Finish	RF, ☐	
	15	Cap Over Adj. Bolt :	Required	
	16	Screwed Bolted	Bolted	
	17	Lifting Gear - Type	-	
	Material	18	Test Gag	Required
19		Body and Bonnet	ASTM A216 Gr. WCB	
20		Nozzle and Disc	SS 316	
21		Spring	SS 316	
22		Bellows		
Options	23	Resilient Seat Seal		
Basis	24	Code	API 520, 521 & 526	
	25	Basis of Selection	Vessel Under Ext. Fire Case	
Service Conditions	26	Fluid and State	Natural Gas Vapour/RLNG-Gas	
	27	Corrosive Constituent	Tot sulphur incl. H2S (max.)-10 PPM(by wt)	
			H2S content (max)- 5PPM (by wt.)	
	28	Corr. Allowance	2 mm	
	29	Required Flow Capacity	☐	
	30	Mol. Wgt. S.G. at Rel. Temp.	☐☐	
	31	Oper. Pressure, kg/cm ²	☐☐	
	32	Oper. Temp.°C Rel. Temp.°C	0-55 ☐	
	33	Valve Discharges to	Atm.	
	34	Back Press. Const. Or Variable	Atm. Constant	
	35	Set Pressure, kg/cm ²	92	
	36	Cold Bench Test Pressure	☐	
	37	% Over Pressure % Blow Down	20 ☐	
38	Cp/Cv Compressibility Factor	☐☐ ☐☐		
39	Viscosity at Rel. Temp. (cP)	☐☐		
40	Vess. : Wall Temp.,°C Surf. Area-m ²	593 ☐		
Orifice	41	Calculated Area-inch ²	☐	
	42	Sel. Area-inch ² Orifice Design	☐ ☐	
	43	No. of Valves Reqd. for capacity	☐	
	44	Total Area-inch ²	☐	
	45	Actual Flow Capacity, SCFM	-	
	46	Relief Load	☐	
	47	Spring Range	☐	
	48	Model No.	☐	
	49	Radiography & Charpy Test	Reqd. (100%)	
	50	IBR Certification	Not Required	

Notes:


- ☐ VENDOR TO SPECIFY/ CONFIRM.
- ☐☐ GAS COMPOSITION & OTHER PROPERTIES WILL BE PROVIDED TO SUCCESSFUL BIDDER.
- 1. VENDOR SHALL FURNISH SIZING CALCULATIONS TO SUPPORT HIS VALVE SELECTION.
- 2. VALVES SHALL BE 100% RADIOGRAPHED.
- 3. VENDOR TO CONSIDER COEFFICIENT OF DISCHARGE AS PER ASME-SEC-VIII (Latest).
- 4. FOR SAFETY VALVE SIZING, FURNISH CERTIFIED CAPACITIES AS PER API-520.
- 5. SIZE, SET PRESSURE & RATING OF PSVs SHALL BE DECIDED DURING DETAIL ENGINEERING.
- 6. PSV SHALL BE SUPPLIED WITH INLET AND OUTLET COMPANION FLANGE.

REV. NO.	DATE	ZONE	DESCRIPTIONS	BY	DRG. NO.
REVISIONS					
SECTION : OIL & GAS				CLIENT :	
DSGN	NAME	DATE	CHKD	DATE	 MECON LIMITED
DRWN					
APPROVED				PSV	DATASHEET NO: MEC/U999/05/28/M/001/DS/001
					REV-0

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DATA SHEET FOR
VERTICAL QUICK OPENING END CLOSURE (FOR VENTING)

1	QUICK OPENING END CLOSURE MFR.	:	
2	MR ITEM NO.	:	2.1
3	SIZE	:	6" NB
4	RATING	:	ANSI 600#
5	DESIGN CODE	:	ASME Section VIII, Division 1
6	SPECIFICATION NO.	:	MEC/TS/05/21/013
7	DESIGN PRESSURE	:	92 Kg/cm ² (g)
8	HYDROTEST PRESSURE	:	138 Kg/cm ² (g)
9	DESIGN TEMPERATURE	:	-29°C to 65°C
10	SERVICE	:	Natural Gas / RLNG
11	END CONNECTION	:	BUTT-WELD AS PER ANSI B 31.8 & B16.25
12	CONNECTING PIPE SPECIFICATION	:	Diameter - 6" NB Thickness- Sch. XS Material- ASTM A 333 Gr.6, Seamless BE
13	CORROSION ALLOWANCE	:	1.5 mm
14	DESIGN FACTOR	:	0.5
15	MATERIALS SPECIFICATION (EQUIVALENT OR SUPERIOR)	:	
	a. BODY/ PRESSURE CONTAINING PARTS	:	ASTM A-350 Gr. LF2, CI-1
	b. INSERTS/ GASKETS	:	VITON
	b. OTHER COMPONENT	:	AS PER MANUFACTURE'S STANDARD BUT MATERIALS USED SHALL BE SUITABLE FOR SERVICE MENTIONED ABOVE. MANUFACTURER'S SHALL FURNISH MATERIAL SPECIFICATION OF EACH PARTS USED AT THE TIME OF BIDDING.
16	CHARPY V-NOTCH TEST	:	REQUIRED AT (-) 46°C, CV (Avg.) - 20 J & CV (Min.) - 16 J (Min. 3 Samples)
17	HARDNESS TEST	:	REQUIRED AS PER MATERIAL SPECIFICATION
18	INSTALLATION	:	VERTICAL POSITION AT AN ELEVATION OF 3.0M ABOVE FINISHED GROUND LEVEL/ WORKING LEVEL
19	PAINTING	:	Surface preparation by Short Blasting as per grade SA 2 1/2, Swedish Standard SIS-055 909. Three coats of paint shall be applied with minimum thickness of 300 micron. (Permissible thickness in each coat shall be within 80 to 120 micron.)

REV. NO.	DATE	ZONE	DESCRIPTIONS	BY	APPRD	REFERENCES	DRG. NO.
REVISIONS							
SECTION OIL & GAS				CLIENT : INDRADHANUSH GAS GRID LIMITED			
	PRD	DATE	CHKD	DATE	 MECON LIMITED <small>ISO 9001:2008 Company</small>		
SIGN							
NAME	AM	28.12.2021	HK	28.12.2021	PROJECT : NORTH-EAST GAS GRID (PHASE-2 PIPELINES)		
APPROVED	I. SEN			QUICK OPENING END CLOSURE - 6" NB (600#)		DATA SHEET NO.:	REV
						MEC/23VC/05/ 28/M/001/DS/QOEC-001	0

DATA SHEET FOR
VERTICAL QUICK OPENING END CLOSURE (FOR VENTING)

1	QUICK OPENING END CLOSURE MFR.	:	
2	MR ITEM NO.	:	2.2
3	SIZE	:	4" NB
4	RATING	:	ANSI 600#
5	DESIGN CODE	:	ASME Section VIII, Division 1
6	SPECIFICATION NO.	:	MEC/TS/05/21/013
7	DESIGN PRESSURE	:	92 Kg/cm2 (g)
8	HYDROTEST PRESSURE	:	138 Kg/cm2 (g)
9	DESIGN TEMPERATURE	:	-29°C to 65°C
10	SERVICE	:	Natural Gas / RLNG
11	END CONNECTION	:	BUTT-WELD AS PER ANSI B 31.8 & B16.25
12	CONNECTING PIPE SPECIFICATION	:	Diameter - 4" NB Thickness- Sch. XS Material- ASTM A 333 Gr.6, Seamless BE
13	CORROSION ALLOWANCE	:	1.5 mm
14	DESIGN FACTOR	:	0.5
15	MATERIALS SPECIFICATION (EQUIVALENT OR SUPERIOR)	:	
	a. BODY/ PRESSURE CONTAINING PARTS	:	ASTM A-350 Gr. LF2, Cl-1
	b. INSERTS/ GASKETS	:	VITON
	b. OTHER COMPONENT	:	AS PER MANUFACTURE'S STANDARD BUT MATERIALS USED SHALL BE SUITABLE FOR SERVICE MENTIONED ABOVE. MANUFACTURER'S SHALL FURNISH MATERIAL SPECIFICATION OF EACH PARTS USED AT THE TIME OF BIDDING.
16	CHARPY V-NOTCH TEST	:	REQUIRED AT (-) 46°C, CV (Avg.) - 20 J & CV (Min.) - 16 J (Min. 3 Samples)
17	HARDNESS TEST	:	REQUIRED AS PER MATERIAL SPECIFICATION
18	INSTALLATION	:	VERTICAL POSITION AT AN ELEVATION OF 3.0M ABOVE FINISHED GROUND LEVEL/ WORKING LEVEL
19	PAINTING	:	Surface preparation by Short Blasting as per grade SA 2 1/2, Swedish Standard SIS-055 909. Three coats of paint shall be applied with minimum thickness of 300 micron. (Permissible thickness in each coat shall be within 80 to 120 micron.)

REV. NO.	DATE	ZONE	DESCRIPTIONS	BY	APPRD	REFERENCES	DRG. NO.	
REVISIONS							MECON LIMITED	
SECTION OIL & GAS			CLIENT : INDRADHANUSH GAS GRID LIMITED					
SIGN	PRD	DATE	CHKD	DATE	PROJECT : NORTH-EAST GAS GRID (PHASE-2 PIPELINES)			
APPROVED	AM	28.12.2021	HK	28.12.2021	I. SEN	QUICK OPENING END CLOSURE - 4" NB (600#)	DATA SHEET NO.: MEC/23VC/05/ 28/M/001/DS/QOEC-002	REV 0

**SPARES LIST (START-UP & COMMISSIONING)
- BI-DIRECTIONAL SCRAPER TRAP WITH PIG SIGNALLERS, PSV & QUICK
OPENING END CLOSURES**



OIL & GAS SBU, DELHI

Page 1 of 1

**LIST OF COMMISSIONING SPARES AND ACCESSORIES FOR START-UP & COMMISSIONING FOR SCRAPER TRAPS,
QOC, PIG SIGNALLERS, PSV & QOEC**

Sl. No.	Item No.	Description	Quantity
1.			
2.			
3.			
4.			
5.			

NOTES:

- Bidder to indicate in the table above, the start-up and commissioning spares required for Scrapper Traps, QOC, Pig Signallers, PSV & QOEC other than those already mentioned in Material Requisition.
- Bidder to include the cost of above start-up and commissioning spares for Scrapper Traps & Pig Signallers in the quoted price for Scrapper Traps, QOC, Pig Signallers, PSV & QOEC.

To be filled, signed and stamped by Bidder.

Bidder's Seal

Signature of Bidder

**Client :
INDRADHANUSH GAS
GRID LIMITED**

**Project :
NORTH-EAST GAS GRID
(PHASE-2 PIPELINES)**

**Document No. :
MEC/23VC/05/28/M/000/S007A/CS**

**Rev. No.
0**

**SPARES LIST (2 YEARS NORMAL OPERATION)
- BI-DIRECTIONAL SCRAPPER TRAP WITH PIG SIGNALLERS, PSV & QUICK
OPENING END CLOSURES**



OIL & GAS SBU, DELHI

Page 1 of 1

**LIST OF SPARES AND ACCESSORIES FOR TWO YEARS OF NORMAL OPERATION FOR FOR SCRAPPER TRAPS, QOC ,
PIG SIGNALLERS, PSV & QOEC**

Sl. No.	MR Item No.	Description	Quantity
1.			
2.			
3.			
4.			
5.			

NOTE:

1. Bidder to indicate in the table above, the spares & accessories for two years normal operation for scraper traps, QOC, pig signallers, PSV & QOECs as per price schedule Format / Performa.
2. Bidder to quote must for Item mentioned above in SL. no. %separately as per price schedule Format / Performa.


To be filled, signed and stamped by Bidder.

Bidder's Seal

Signature of Bidder

Client : INDRADHANUSH GAS GRID LIMITED	Project : NORTH-EAST GAS GRID (PHASE-2 PIPELINES)	Document No. : MEC/23VC/05/28/M/000/S0075 /OMS	Rev. No. 0
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**QAP FOR
BI-DIRECTIONAL SCRAPPER TRAP, PIG
SIGNALLERS, QOEC & PSV**

	CONTRACTOR		QUALITY ASSURANCE PLAN FOR STRUCTURAL AND MECHANICAL EQUIPMENT	PROJECT : INDRADHANUSH GAS GRID LIMITED
	ORDER NO. & DATE			PACKAGE NO. :05/51/23VC/IGGL/007
	SUB-CONTRACTOR			PACKAGE NAME : BI-DIRECTIONAL SCRAPPER TRAP, PIG SIGNALLERS, PSV & QOEC
	ORDER NO. & DATE			ITEM NAME : BI-DIRECTIONAL SCRAPPER TRAP FITTED WITH QOEC AND PIG SIGNALLERS

INSTRUCTIONS FOR FILLING UP :

- QAP shall be submitted for each of the equipment separately with break up of assembly/sub-assembly & part/component or for group of equipment having same specification.
- Use numerical codes as indicated for extent of inspection & tests and submission of test certificates & documents. Additional codes & description for extent of inspection & tests may be added as applicable for the plant and equipment
- Separate identification number with quantity for equipment shall be indicated wherever equipment having same specifications belonging to different facilities are grouped together.
- Weight in kilograms must be indicated under Column-5 for each item. Estimated weights may be indicated wherever actual weights are not available.

ABBREVIATIONS USED :
 SV : SUB VENDOR
 MFR : MANUFACTURER
 TPI : THIRD PARTY INSPECTION AGENCY
 H : HOLD
 R : REVIEW
 W : WITNESS

KEY TO SYMBOLS :
 ** : TEST TO BE PERFORMED, IF APPLICABLE
 * : Manufacturer to fill

CODES FOR EXTENT OF INSPECTION, TESTS, TEST CERTIFICATES & DOCUMENTS :

<p><i>Code Description</i></p> <ol style="list-style-type: none"> Visual Dimensional Fitment & Alignment Physical Test (Sample) Chemical Test (Sample) Ultrasonic Test Magnetic Particle Test (MPI) Radiography Test Dye Penetration Test Metallographic Exam. Welder's Qualification & Weld Procedure Test Approval of Test and Repair Procedure Heat Treatment Pressure Test Leakage Test Balancing Vibration Test 	<p><i>Code Description</i></p> <ol style="list-style-type: none"> Amplitude Test Sponge Test Dust/ Water Ingress Test Friction Factor Test Adhesion Test Performance Test/Characteristic Curve No Load/ Free Running Test Load/ Overload Test Measurement of Speeds Accoustical Test Geometrical Accuracy Repeatability and Positioning Accuracy Proving Test Surface Preparation Manufacturer's Test Certificates for bought-out items IBR/ Other Statutory agencies compliance certificate 	<p><i>Code Description</i></p> <ol style="list-style-type: none"> Internal Inspection Report by Contractor Hardness Test Spark Test for Lining Calibration Safety Device Test Ease of Maintenance Fire Test (Type Test) Charpy V-Notch Test Operational Torque Test ENP (Electroless Nickel Plating) Execution Painting Anti-Static Test Hydrostatic Double Block & Bleed Test Functional Test Pneumatic Double Block & Bleed Test Cyclic Test 	<p><i>Code DOCUMENTS:</i></p> <ol style="list-style-type: none"> Approved GA drawings Information and other reference drg/ stamped drgs released for mfg. Relevant catalogues Bill of matl./Item no./ Identification Matchmarks details Line/ Layout diagram Approved erection procedures Unpriced sub P.O. with specification and amendments, if any Calibration Certificate of all measuring instruments and gauges X-Ray Reports
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EQUIPMENT DETAILS							INSPECTION AND TESTS						Test Certificates & Documents to be submitted to MECON	Acceptance Criteria Standards/ IS/ BS/ ASME/ Norms and Documents	REMARKS/ SAMPLING PLAN	
Sl. No.	Description (with equipment heading, place of use and brief specifications)	Identification No. (MR Item No.)	Quantity No./M	Unit Weight (Kg)	Manufacturer's Name and Address	Expected Schedule of Final Inspn.	Raw Material and In-Process Stage Inspection			Final Inspection/ Test by						
							MFR/SV	TPI	MECON	MFR/SV	TPI	MECON				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1.0	Scrapper Launcher/Receiver(Bidirectional) (24" x 18", 600#) (18" x 12", 600#) (14" x 8", 600#)	As per P.O.	As per P.O.	*	*	*	As per attached sheet 2 to 6									100%

NOTE : Vendor to propose the names of 4 TPIA while submitting QAP for approval as defined in notes to MR.


For MECON (Stamp & Signature) <div style="border: 1px solid black; width: 100px; height: 50px; margin: 10px auto;"></div>	For CONTRACTOR/ SUB-CONTRACTOR (Stamp & Signature) <div style="border: 1px solid black; width: 100px; height: 50px; margin: 10px auto;"></div>	QAP NO. MEC/23VC/05/28/M/000/QAP-007A SHEET 1 OF 6	REV 0
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EQUIPMENT DETAILS					INSPECTION AND TESTS						Test Certificates & Documents to be submitted to MECON	Acceptance Criteria Standards/ IS/ BS/ ASME/ Norms and Documents	Inspection Codes & Sampling Plan			REMARKS
Sl. No.	Description (with equipment heading, place of use and brief specifications)	Identification No.	Quantity No./M	Unit Weight (Kg)	Raw Material and In-Process stage inspection			Final Inspection/ Test by					MFR/SV	TPI	MECON	
					MFR/SV	TPI	MECON	MFR/SV	TPI	MECON						
1	2	3	4	5	8	9	10	11	12	13	14	15	16A	16B	16C	
1.0	Raw Material															
1.01	Major Barrel (Body) & Minor Barrel(Neck)	Material As per MR/ Alternate Material accepted by MECON			4	4	4	-	-	-	1. D1 2. Report	1. D1 2. Relevant Material Standard 3. Manufacturer's Specification	H	H	R	
					5	5	5	-	-	-	Material Test Certificates	1. Relevant Material Standard 2. MECON's D.S.	H	H	R	
					6 **	6 **	6 **	-	-	-	Material Test Certificates	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	W	R	Forgings, welds, wrought weld ends
					7 **	7 **	7 **	-	-	-	Test Report	1. MECON's T.S.	H	W	R	Wet MPI for 100% of internal surfaces of all castings & forgings & bevel surfaces (MPI/ DP)
					35	35	35	-	-	-	Material Test Certificates	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	H	R	
					41	41	41	-	-	-	Material Test Certificates	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	H	R	
1.02	Nozzles, Weldolets/Sockolets, Reducer & Flanges	Material Manufacturer to indicate (to be approved by MECON)			1,2	1, 2	1, 2	-	-	-	1. D1 2. Report	1. D1 2. Relevant Material Standard 3. Manufacturer's Specification	H	R	R	
					4	4	4	-	-	-	Material Test Certificates	1. Relevant Material Standard 2. MECON's D.S.	H	H	R	

EQUIPMENT DETAILS					INSPECTION AND TESTS						Test Certificates & Documents to be submitted to MECON	Acceptance Criteria Standards/ IS/ BS/ ASME/ Norms and Documents	Inspection Codes & Sampling Plan			REMARKS
Sl. No.	Description (with equipment heading, place of use and brief specifications)	Identification No.	Quantity No./M	Unit Weight (Kg)	Raw Material and In-Process stage inspection			Final Inspection/ Test by					MFR/SV	TPI	MECON	
					MFR/SV	TPI	MECON	MFR/SV	TPI	MECON						
1	2	3	4	5	8	9	10	11	12	13	14	15	16A	16B	16C	
					5	5	5	-	-	-	Material Test Certificates	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	H	R	
					6**	6**	6**	-	-	-	Test Report	1. MECON's T.S.	H	W	R	Forgings, welds, wrought weld ends
					7**	7**	7**	-	-	-	Test Report	1. MECON's T.S.	H	W	R	Wet MPI for 100% of internal surfaces of all castings & forgings & bevel surfaces (MPI/ DP)
					13	13	13	-	-	-	Report/ Material Test Certificates	1. Relevant Material Standard	H	R	R	
					35	35	35	-	-	-	Material Test Certificates	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	H	R	
					41	41	41	-	-	-	Material Test Certificates	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	H	R	
1.03	Quick Opening Closure	Material Manufacturer to indicate (to be approved by MECON)			1,2	1,2	1,2	-	-	-	1. D1 2. Report	1. D1 2. Relevant Material Standard 3. Manufacturer's Specification	H	R	R	
					4	4	4	-	-	-	Material Test Certificates	1. Relevant Material Standard 2. MECON's D.S.	H	H	R	
					5	5	5	-	-	-	Material Test Certificates	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	H	R	
					6**	6**	6**	-	-	-	Test Report	1. MECON's T.S.	H	W	R	Forgings, welds, wrought weld ends

EQUIPMENT DETAILS					INSPECTION AND TESTS						Test Certificates & Documents to be submitted to MECON	Acceptance Criteria Standards/ IS/ BS/ ASME/ Norms and Documents	Inspection Codes & Sampling Plan			REMARKS
Sl. No.	Description (with equipment heading, place of use and brief specifications)	Identification No.	Quantity No./M	Unit Weight (Kg)	Raw Material and In-Process stage inspection			Final Inspection/ Test by					MFR/SV	TPI	MECON	
					MFR/SV	TPI	MECON	MFR/SV	TPI	MECON						
1	2	3	4	5	8	9	10	11	12	13	14	15	16A	16B	16C	Wet MPI for 100% of internal surfaces of all castings & forgings & bevel surfaces (MPI/ DP)
					7 **	7 **	7 **	-	-	-	Test Report	1. MECON's T.S.	H	W	R	
					13	13	13	-	-	-	Report/ Material Test Certificates	1. Relevant Material Standard	H	R	R	
					35	35	35	-	-	-	Material Test Certificates	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	H	R	
					41	41	41	-	-	-	Material Test Certificates	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	H	R	
2.0	In Process Stage Inspection															
2.01	(Check of Lamination, Review/Approval of Procedure, Dimensions, Allignment, Workmanship & Soundness)	Material Manufacturer to indicate (to be approved by MECON)			1,2,3	1,2,3	1,2,3	-	-	-	1. D1 2. Report	1. D1 2. Relevant Material Standard 3. Manufacturer's Specification	H	R	R	
					12	12	12	-	-	-	Material Test Certificates	1. Relevant Material Standard 2. MECON's D.S.	H	H	R	
2.02	Welding (WPS/PQR/WPQ)	Material As per MR/ Alternate Material accepted by MECON			11	11	11	-	-	-	1. D1 2. Report	1. D1 2. Relevant Material Standard 3. Manufacturer's Specification	H	R	R	
2.03	Heat Treatment				13*	13*	13*				Test Report	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	R	R	
2.04	Radiography				8 **	8 **	8 **	-	-	-	RT Report	1. MECON's T.S. 2. API 1104	H	R	R	100% RT of all butt welds as per cl. 5.1.5 of TS

EQUIPMENT DETAILS					INSPECTION AND TESTS						Test Certificates & Documents to be submitted to MECON	Acceptance Criteria Standards/ IS/ BS/ ASME/ Norms and Documents	Inspection Codes & Sampling Plan			REMARKS
Sl. No.	Description (with equipment heading, place of use and brief specifications)	Identification No.	Quantity No./M	Unit Weight (Kg)	Raw Material and In-Process stage inspection			Final Inspection/ Test by					MFR/SV	TPI	MECON	
					MFR/SV	TPI	MECON	MFR/SV	TPI	MECON						
1	2	3	4	5	8	9	10	11	12	13	14	15	16A	16B	16C	
3.0	Final Inspection															
3.01	Assembled Scrapper trap including QOEC	Material As per MR/ Alternate Material accepted by MECON			-	-	-	1,2, 3	1,2, 3	1,2, 3	1. D1 2. Report	1. D1 2. Relevant Material Standard 3. Manufacturer's Specification	H	H	W/R	
					-	-	-	13**	13**	13**	Report/ Material Test Certificates	1. Relevant Material Standard	H	H	W/R	
					-	-	-	14	14	14	Material Test Certificates	1. Relevant Material Standard 2. MECON's D.S.	H	H	W/R	
					-	-	-	15	15	15	Material Test Certificates	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	H	W/R	
					-	-	-	31	31	31	Test Report	1. MECON's T.S.	H	W	W/R	
								32	32	32	Test Report	1. MECON's T.S.	H	R	R	
					-	-	-	44	44	44	Test Report	1. MECON's T.S.	H	W	W/R	
					-	-	-	47	47	47	Test Report	1. MECON's T.S.	H	H	W/R	
1.10	Final Documentation Check, Verification of TC & Compilation of Inspection Reports				-	-	-	✓	✓	✓	1. Final Report 2. Final Certificates	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	H	-	
1.11	Complete and compiled document check and Despatch Clearance				-	-	-	✓	✓	✓	1. Final Report 2. Final Certificates	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	-	H	
For MECON (Stamp & Signature)			For CONTRACTOR/ SUB-CONTRACTOR								QAP NO.: MEC/23VC/05/28/M/000/QAP-007A			REV 0		

	CONTRACTOR		QUALITY ASSURANCE PLAN FOR STRUCTURAL AND MECHANICAL EQUIPMENT	PROJECT : INDRADHANUSH GAS GRID LIMITED
	ORDER NO. & DATE			PACKAGE NO. :05/51/23VC/IGGL/007
	SUB-CONTRACTOR			PACKAGE NAME : BI-DIRECTIONAL SCRAPPER TRAP, PIG SIGNALLERS, PSV & QOEC
	ORDER NO. & DATE			ITEM NAME : QOEC (For Blow down Line)

INSTRUCTIONS FOR FILLING UP :

- QAP shall be submitted for each of the equipment separately with break up of assembly/sub-assembly & part/component or for group of equipment 1. having same specification.
- Use numerical codes as indicated for extent of inspection & tests and submission of test certificates & documents. Additional codes & description 4. for extent of inspection & tests may be added as applicable for the plant 5. and equipment
- Separate identification number with quantity for equipment shall be indicated wherever equipment having same specifications belonging 8. to different facilities are grouped together.
- Weight in kilograms must be indicated under Column-5 for each item. Estimated weights may be indicated wherever actual weights are not available.

CODES FOR EXTENT OF INSPECTION, TESTS, TEST CERTIFICATES & DOCUMENTS :

Code	Description	Code	Description	Code	Description	Code	DOCUMENTS:
1.	Visual	18.	Amplitude Test	34.	Internal Inspection Report by Contractor	D1.	Approved GA drawings
2.	Dimensional	19.	Sponge Test	35.	Hardness Test	D2.	Information and other reference drg/ stamped drgs released for mfg.
3.	Fitment & Alignment Physical Test (Sample)	20.	Dust/ Water Ingress Test	36.	Spark Test for Lining	D3.	Relevant catalogues
4.	Chemical Test (Sample)	21.	Friction Factor Test	37.	Calibration	D4.	Bill of matl./Item no./ Identification
5.	Ultrasonic Test	22.	Adhesion Test	38.	Safety Device Test	D5.	Matchmarks details
6.	Magnetic Particle Test (MPI)	23.	Performance Test/Characteristic Curve	39.	Ease of Maintenance	D6.	Line/ Layout diagram
7.	Radiography Test	24.	No Load/ Free Running Test	40.	Fire Test (Type Test)	D7.	Approved erection procedures
8.	Dye Penetration Test	25.	Load/ Overload Test	41.	Charpy V-Notch Test	D8.	Unpriced sub P.O. with specification and amendments, if any
9.	Metallographic Exam.	26.	Measurement of Speeds	42.	Operational Torque Test	D9.	Calibration Certificate of all measuring instruments and gauges
10.	Welder's Qualification & Weld Procedure Test	27.	Acoustical Test	43.	ENP (Electroless Nickel Plating) Execution	D10.	X-Ray Reports
11.	Approval of Test and Repair Procedure	28.	Geometrical Accuracy	44.	Painting		
12.	Heat Treatment	29.	Repeatability and Positioning Accuracy	45.	Anti-Static Test		
13.	Pressure Test	30.	Proving Test	46.	Hydrostatic Double Block & Bleed Test		
14.	Leakage Test	31.	Surface Preparation	47.	Functional Test		
15.	Balancing for	32.	Manufacturer's Test Certificates bought-out items	48.	Pneumatic Double Block & Bleed Test		
16.	Vibration Test	33.	IBR/ Other Statutory agencies compliance certificate	49.	Cyclic Test		

ABBREVIATIONS USED :
 SV : SUB VENDOR
 MFR : MANUFACTURER
 TPI : THIRD PARTY INSPECTION AGENCY
 H : HOLD
 R : REVIEW
 W : WITNESS

KEY TO SYMBOLS :
 ** : TEST TO BE PERFORMED, IF APPLICABLE
 * : Manufacturer to fill

Sl. No.	Description (with equipment heading, place of use and brief specifications)	EQUIPMENT DETAILS				INSPECTION AND TESTS						Test Certificates & Documents to be submitted to MECON	Acceptance Criteria Standards/ IS/ BS/ ASME/ Norms and Documents	REMARKS/ SAMPLING PLAN	
		Identification No. (MR Item No.)	Quantity No./M	Unit Weight (Kg)	Manufacturer's Name and Address	Expected Schedule of Final Inspn.	Raw Material and In-Process Stage Inspection			Final Inspection/ Test by					
							MFR/SV	TPI	MECON	MFR/SV	TPI				MECON
1.0	Quick Opening End Closures (4"x2" 1/2 600#)	As per P.O.	As per P.O.	*	*	*									100%

NOTE : Vendor to propose the names of 4 TPIA while submitting QAP for approval as defined in notes to MR.

For MECON (Stamp & Signature)	<input type="text"/>	For CONTRACTOR/ SUB-CONTRACTOR (Stamp & Signature)	<input type="text"/>
QAP NO. MEC/23VC/05/21/M/000/QAP-013		REV 0	
SHEET 1 OF 4			

EQUIPMENT DETAILS					INSPECTION AND TESTS						Test Certificates & Documents to be submitted to MECON	Acceptance Criteria Standards/ IS/ BS/ ASME/ Norms and Documents	Inspection Codes & Sampling Plan			REMARKS
Sl. No.	Description (with equipment heading, place of use and brief specifications)	Identification No.	Quantity No./M	Unit Weight (Kg)	Raw Material and In-Process stage Inspection			Final Inspection/ Test by					MFR/SV	TPI	MECON	
					MFR/SV	TPI	MECON	MFR/SV	TPI	MECON						
1	2	3	4	5	8	9	10	11	12	13	14	15	16A	16B	16C	
1.0	Raw Material															
1.01	Quick Opening Closure (Head & Hub)	Material Manufacturer to indicate (to be approved by MECON)			1	1	1	-	-	-	1. 1 2. Report	D D1 2. Relevant Material Standard 3. Manufacturer's Specification	H	W	R	
					4	4	4	-	-	-	Material Test Certificates	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	H	R	
					5	5	5	-	-	-	Material Test Certificates	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	H	R	
					6	6	6	-	-	-	Test Report	1. MECON's T.S.	H	W	R	Forgings, welds, wrought weld ends
					7	7	7	-	-	-	Test Report	1. MECON's T.S.	H	W	R	Wet MPI for 100% of internal surfaces of all forgings & bevel surfaces (MPI/ DP)
					13**	13**	13**	-	-	-	Report/ Material Test Certificates	1. Relevant Material Standard	H	R	R	
					35	35	35	-	-	-	Material Test Certificates	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	H	R	
					41	41	41	-	-	-	Material Test Certificates	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	H	R	

EQUIPMENT DETAILS					INSPECTION AND TESTS						Test Certificates & Documents to be submitted to MECON	Acceptance Criteria Standards/ IS/ BS/ ASME/ Norms and Documents	Inspection Codes & Sampling Plan			REMARKS
Sl. No.	Description (with equipment heading, place of use and brief specifications)	Identification No.	Quantity No./M	Unit Weight (Kg)	Raw Material and In-Process stage inspection			Final Inspection/ Test by					MFR/SV	TPI	MECON	
					MFR/SV	TPI	MECON	MFR/SV	TPI	MECON						
1	2	3	4	5	8	9	10	11	12	13	14	15	16A	16B	16C	
1.02	Hinge Assembly	Material Manufacturer to indicate (to be approved by MECON)			4	4	4	-	-	-	Material Test Certificates	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	R	R	
					5	5	5	-	-	-	Material Test Certificates	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	R	R	
2.0	In Process Stage Inspection															
2.01	(Check of Machining, Dimensions, Alignment, Workmanship & Soundness)	Material Manufacturer to indicate (to be approved by MECON)			1,2,3	1,2,3	1,2,3	-	-	-	1. D1 2. Report	1. D1 2. Relevant Material Standard 3. Manufacturer's Specification	H	W	R	
2.02	Welding (WPS/PQR/WPQ)	Material As per MR/ Alternate Material accepted by MECON			11	11	11	-	-	-	1. D1 2. Report	1. D1 2. Relevant Material Standard 3. Manufacturer's Specification 4. Mecon's TS 5. Mecon's DS	H	R	R	
					12	12	12	-	-	-	1. D1 2. Report	1. D1 2. Relevant Material Standard 3. Manufacturer's Specification 4. Mecon's TS 5. Mecon's DS	H	R	R	
					9	9	9	-	-	-	Test report	1. MECON's T.S. 2. MECON's D.S. 3. Relevant Code	H	R	R	
2.03					8 **	8 **	8 **	-	-	-	Test Report	1. MECON's T.S. 2. API 1104	H	R	R	100% RT of all butt welds as per cl. 5.1.5 of TS

EQUIPMENT DETAILS					INSPECTION AND TESTS						Test Certificates & Documents to be submitted to MECON	Acceptance Criteria Standards/ IS/ BS/ ASME/ Norms and Documents	Inspection Codes & Sampling Plan			REMARKS	
Sl. No.	Description (with equipment heading, place of use and brief specifications)	Identification No.	Quantity No./M	Unit Weight (Kg)	Raw Material and In-Process stage inspection			Final Inspection/ Test by					MFR/SV	TPI	MECON		
					MFR/SV	TPI	MECON	MFR/SV	TPI	MECON							
1	2	3	4	5	8	9	10	11	12	13	14	15	16A	16B	16C		
3.0	Final Inspection																
3.01	Assembled QOEC	Material As per MR/ Alternate Material accepted by MECON			-	-	-	1,2, 3	1,2, 3	1,2, 3	1. D1 2. Report	1. D1 2. Relevant Material Standard 3. Manufacturer's Specification	H	H	W/R		
					-	-	-	13**	13**	13**	Test Report	1. Relevant Material Standard	H	H	W/R		
					-	-	-	14	14	14	Test Report	1. Relevant Material Standard 2. MECON's D.S.	H	H	W/R		
					-	-	-	15	15	15	Test Report	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	H	W/R		
					-	-	-	31	31	31	Test Report	1. MECON's T.S.	H	W	W/R		
								32	32	32	Test Report	1. MECON's T.S.	H	R	R		
					-	-	-	44	44	44	1. D1 2. Report	1. MECON's D.S. 2. D1	H	W	W/R		
					-	-	-	47	47	47	Test Report	1. MECON's T.S.	H	H	W/R		
4.0	Final Documentation Check, Verification of TC & Compilation of Inspection Reports				-	-	-	✓	✓	✓	1. Final Report 2. Final Certificates	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	H	-		
5.0	Complete and compiled document check and Despatch Clearance				-	-	-	✓	✓	✓	1. Final Report 2. Final Certificates	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	-	H		
For MECON (Stamp & Signature) 											For CONTRACTOR/ SUB-CONTRACTOR 			QAP NO. MEC/23VC/05/21/M/000/QAP-013			REV 0

