ऑयल इंडिया लिमिटेड
(भारत सरकार का उद्यम)
Oil India Limited
(A Government of India Enterprise)

BAGHJAN – MADHUBAN PIPELINE PROJECT (ASSAM)

BID DOCUMENT FOR PROCUREMENT OF

BI-DIRECTIONAL SCRAPPER TRAP, PIG SIGNALLERS, PSV & QOEC

Tender no. **CPG9496P19**

VOLUME – II OF II

PREPARED AND ISSUED BY

MECON LIMITED

(A Govt. of India Undertaking)

Delhi, India

CONTENTS LIST – BI-DIRECTIONAL SCRAPPER TRAP WITH PIG SIGNALLERS, PSV & QOEC

MATERIAL REQUISITION

MR DOCUMENT NO. : **MEC/23U1/05/28/M/000/S007**

PROJECT : **BAGHJAN – MADHUBAN PIPELINE PROJECT**

CLIENT : **OIL INDIA LIMITED**

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

TENDER DOC. No. : **CPG9496P19**

1.0 SCOPE OF SUPPLY

The Scope of supply includes Scrapper Traps (i.e Pig Launchers /Receivers) System welded with Quick Opening End Closures (QOEC) including Pig signalers, Pressure Safety Valves (PSV) and Quick Opening End Closures (QOEC) suitable for vertical installation on Blow down pipeline.

2.0 MATERIAL REQUISITION

MR Item No.	Description	Tag No.	Qty.	Remarks	Destination / Store
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 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., Pig Launcher/Receiver of Size 36"x30"NB & ANSI Class 300#) System along with accessories***				
1.1.1	Supply of ***Bi-Directional Scrapper Trap (i.e., Pig Launcher/Receiver of Size 36"x30"NB & ANSI Class 300#)*** 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/23U1/05/28/M/001/DS/ST-001	*	02 Nos.		Duliajan, Assam
1.1.2	Supply of Pig Signaler without isolation valve mounted on *Bi-Directional Scrapper Trap mentioned in 1.1.1 above* as per Specification No. MEC/S/05/62/048, Rev-0 and Data Sheet No. MEC/23U1/05/28/M/001/DS/PS-001	*	02 Nos.		
1.1.3	Supply of Door Seal for Quick Opening End Closure (QOEC) welded on *Bi-Directional Scrapper Traps* as mentioned in item no. 1.1.1 above	-	04 Nos.	Commissioning Spares (@ 2 Nos./ Scrapper Trap)	
1.1.4	Supply of complete set of spare seals for Pig Signalers as mentioned in item no. 1.1.2 above	-	04 Sets	Commissioning Spares (@ 2 Sets/ Pig Signaller)	
1.1.5	Supply of Pig Signaler welded with isolation valve for mounting on 30" NB Pipeline as per Specification No. MEC/S/05/62/048, Rev-0 and Data Sheet No. MEC/23U1/05/28/M/001/DS/PS-001	*	02 Nos.		

MR Item No.	Description	Tag No.	Qty.	Remarks	Destination / Store
1.1.6	Supply of complete set of spare seals for Pig Signalers as mentioned in item no. 1.1.5 above	-	04 Sets	Commissioning Spares (@ 2 Sets/ Pig Signaller)	
1.1.7	Supply of jib crane of capacity 3.0 ton to suit the pig handling for scrapper trap specified in 1.1.1 above.	-	02		
1.1.8	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.	-	02		
1.1.9	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/23U1/05/28/M/001/DS/PSV-001	*	02		
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 10"NB, 300#				
2.1.1	Supply of Quick Opening End Closure of size 10" NB, 300# as per Specification No. MEC/TS/05/21/013, Edition-1 and Data Sheet No. MEC/23U1/05/28/M/001/DS/QOEC-001	*	03		Duliajan, Assam
2.1.2	Supply of 'O' ring for Quick Opening End Closure (QOEC) mentioned in item no. 2.1.1 above	-	06	Commissioning Spares (@ 2 Nos./ QOEC)	

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:

The Successful Vendor shall propose minimum four (4) nos. of TPIA's from the below listed TPIA's along with QAP submission. OIL/MECON shall approve any one TPIA out of the four (4) nos. proposed TPIA's. The Successful Vendor shall appoint the approved TPIA for inspection purpose and mention name of the approved TPIA in QAP.

i. Det Norske Veritas (DNV)
ii. BVQI
iii. Technische Ulierwachungs Verein (TUV)
iv. LIoyds
v. RITES
vi. I.R.S.
vii. Tuboscope Vetco

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

Vendor must note that stage wise inspection for complete fabrication, testing including the raw material inspection to be carried out.

4. 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.

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 Dispatch)
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

Item	Documents & Data	A	B		C	
		No. of Copies	No. of Copies	Required Date (from FOI)	No. of Copies	Required Date (before Dispatch)
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.	Packing / shipping list with weights and dimensions	3	3	2 Weeks before shipping	3	2 Weeks (with final technical file)
8.	Design calculations for pressure containing parts	3	3	1 Week	3	2 Weeks (with final technical file)
9.	Bill of materials (on drawings)	3	3	1 Week	3	2 Weeks (with final technical file)
10.	Recommended spare parts list (for erection and commissioning)	3	-	-	3	2 Weeks (with final technical file)
11.	Recommended spares parts list (for 2 years operation)	3	-	-	3	2 Weeks (with final technical file)
12.	Welding procedure specification and records WPS / PQR	-	3	1 Week	3	2 Weeks (with final technical file)
13.	QA / QC program	3	3	1 Week	3	2 Weeks (with final technical file)
14.	Inspection and Test Procedures along with Quality Assurance Plan	3	3	1 Week	3	2 Weeks (with final technical file)
15.	Test Reports	-	-	-	3	2 Weeks (with final technical file)
16.	NDE / NDT Reports	-	-	-	3	2 Weeks (with final technical file)
17.	Heat Treatment Reports	-	-	-	3	2 Weeks (with final

Item	Documents & Data	A	B		C	
		No. of Copies	No. of Copies	Required Date (from FOI)	No. of Copies	Required Date (before Dispatch)
						technical file)
18.	Hydrotest and air test report	-	-	-	3	2 Weeks (with final technical file)
19.	Maintenance and operating manuals	-	-	-	3	2 Weeks (with final technical file)
20.	Installation instructions & Site inspection procedure	-	-	-	3	2 Weeks (with final technical file)
21.	Material certificate as per EN 10204 - 3.2	-	-	-	3	2 Weeks (with final technical file)
22.	Painting system description & procedure	3	3	1 week	3	2 Weeks (with final technical file)
23.	List of sub-vendors with their scope	3	3	1 week	-	-
24.	Training CDs/DVDs covering design, operation & maintenance	-	-	-	3	2 Weeks (with final technical file)
25.	Final technical file, preliminary copy for approval (in soft & hardcopy)	-	3	2 weeks before Dispatch/ shipping	-	-
26.	Final technical file (in soft & hardcopy)	-	-	-	3	Before shipping

Item	Documents & Data	A	B		C	
		No. of Copies	No. of Copies	Required Date (from FOI)	No. of Copies	Required Date (before Dispatch)

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 no. 9.0 of MECON's T.S. No. MEC/S/05/62/048, Rev.-0. ; of 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

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. Vendor shall establish the equivalence/superiority of any material proposed (With justification of material properties and av ailability) 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.

7. 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.

8. 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.

9. 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 Following are the preferred manufacturers of Pig Signallers & PSV

a) For Pig-Signaller:- M/s G.D. Engg., M/s Pipeline Engg., M/s Piping Technologies & M/s Inpipe Products.

b) For PSV (Pressure safety Valve)- M/s Keystone Valves (India) Pvt. Ltd. Baroda, M/s Sebim Sarasin Valves India (P) Ltd., M/s Tyco Sanmar Ltd, M/s Parcol Spa, Italy, M/s Tai Milano SPA, Italy, M/s Emerson Process, Singapore,, M/s Instrumentation Limited, Palghat

In case bidder propose pig signaller and PSV manufacturers other than above list of preferred manufacturers, bidder shall submit in support of PTR, all details/ documents for both type (with/ without isolation valve) pig signaler and f or 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 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.

STANDARD TECHNICAL SPECIFICATION FOR SCRAPER TRAP

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

(OIL & GAS SBU)
MECON LIMITED
DELHI 110 092

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

MECON LIMITED REGD. OFF: RANCHI 834002	STANDARD TECHNICAL SPECIFICATION OIL & GAS SBU, DELHI		
TITLE	SCRAPER TRAP	DOCUMENT NO. MEC/TS/05/28/007	Page 1 of 14 REVISION : 0 EDITION : 0

AMENDMENT STATUS

Sl. No.	Clause / Paragraph / Annexure / Exhibit / Drawing Amended	Page No.	Edition	Rev.	Date	By		Checked		Approved	
						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	

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

CONTENTS

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.

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:-

Diameter (inches)	Base Metal (Joules)	Weld Metal and HAZ (Joules)
For all size	27	27

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 HV_{10}. 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 HV_{10}.

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

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/ nippolet or by extrusions as indicated in the data sheet. All weldolets shall confirm to MSS-SP-97 and nippolets 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.

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.

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

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.

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

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.

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.

SPECIFICATION
FOR
PIG SIGNALLERS

SPECIFICATION NO. : MEC/S/05/62/048, Rev-0

MECON LIMITED

DELHI - 110 092

CONTENTS

PREPARED BY	CHECKED BY	APPROVED BY

1.0 **SCOPE**

This specification covers the basic requirements for the design and manufacture testing & supply of pig signallers, used for the detection of passage of scraper and instrumented gauging pigs, to be installed in pipeline systems handling hydrocarbons in liquid or gaseous phase including Liquefied Petroleum Gas (LPG). This specification does not cover pig signallers for sour hydrocarbons (liquid/ gas) service as defined in NACE Standard MR 0175–98.

2.0 **MATERIALS**

2.1 All materials used in the manufacture of the main components of the pig signallers shall be as indicated in the data sheets. Other components shall be as per manufacturer's standard suitable for the service conditions indicated in Annexure – I and data sheets which will be subject to approval by Purchaser.

2.2 Scarfed welding base, shall have Carbon Equivalent (CE) not greater than 0.45 on check analysis, calculated as per the following formula :

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

2.3 Fully killed carbon steel shall be used in the manufacture of pig signallers.

2.4 The maximum hardness of the base material, weld metal heat affected zone of the pressure containing parts shall be 248 $HV^{10.}$ Hardness test shall be carried out as per ASTM A370 for each heat of steel used.

3.0 **DESIGN AND CONSTRUCTION REQUIREMENTS**

3.1 Pig signallers shall be bi-directional type having pivot-less tumbler mechanism and laminated trigger blades.

3.2 Pig signallers shall be designed to meet the requirements of pipeline material, diameter, wall thickness & service conditions indicated in the data sheet.

3.3 Design of pig signallers shall be such that any possibility of signaller being operated by line pressure is eliminated.

3.4 Design of pig signallers shall also be such that repair and installation of internals/ accessories are possible under pressure, without removing the unit from the line.

3.5 Pig signallers shall be provided with a visual indicator to indicate the passage of pigs, by means of spring loaded metal shaft. The arm shall lock in down position when manually reset.

3.7 Pig signallers shall be fitted with sealed, weather proof and explosion proof microswitch for remote signal indication. The area classification and rating of microswitch shall be as indicated in data sheet. Suitable for installation in NEC class I Division 1, hazardous area. Microswitch shall have the following rating:

2 Amp, 24 Volts, 50 Hz.
Type : SPDT.
Contacts : 2 NO and 2 NC

3.8 All welds shall be made by welders and welding procedures qualified in accordance with the provision of ASME Section IX.

The procedure qualification shall include hardness test and shall meet the requirements of clause 2.4 of this specification

3.9 Whenever specified in the data sheet, pig signallers shall be provided with extension, suitable for installation on underground pipeline.

4.0 INSPECTION AND TESTS

4.1 Manufacturer shall perform all inspection and tests required to supply the signallers as per the requirements of this specification.

4.2 All pig signallers shall be visually inspected.

4.3 Chemical composition & mechanical properties including hardness shall be checked for each heat of steel used.

4.4 All welds shall be non destructively examined.

4.5 The welding end shall be inspected ultrasonically over the entire circumference for lamination type defects. Any lamination larger than 6.35 mm shall not be acceptable.

4.6 Hydrostatic test shall be conducted at a pressure equal to 1.5 times the design pressure. Hydrotest duration shall be 15 Minutes.

4.6 Manufacturers shall perform functional tests to establish satisfactory performance of both manual and electrical indications

5.0 TEST CERTIFICATES

5.1 Manufacturer shall supply the test certificates for material compliance as per the relevant Material Standards.

5.2 Certificate for hydrostatic test and functional test

5.3 Test reports on heat treatment carried out, if any.

6.0 PAINTING, MARKING AND SHIPMENT

6.1 Exterior surface of the pig signallers shall be thoroughly cleaned, freed from rust and grease and applied with sufficient coats of corrosion resistant paint. Manufacturer shall indicate the type and corrosion resistant paint used in the drawings submitted for approval. In case of pig signallers with extension, the burried portion shall be coated with three coats of coal tar epoxy resin. The minimum dry film thickness shall be 300 microns.

6.2 A corrosion resistant metal tag shall be permanently attached with each unit, with the following marking:-

i) Manufacturer's name

i) Suitable for installation in_____mm dia. pipeline

ii) ANSI Rating

iii) Tag No.

6.3 Each unit shall be suitably protected to avoid any damage during transit. Care shall be exercised during packing to prevent any damage to the welding ends. All machined surfaces subject to corrosion shall be well protected by a coat of grease or other suitable materials.

7.0 SPARES AND ACCESSORIES

7.1 Manufacturer shall furnish list of recommended spares and accessories for Pig Signallers required during start up and commissioning. Cost of such spares shall be included by the Manufacturer in the item rates indicated in Purchase Requisition.

7.2 Manufacturer shall furnish separately a list of recommended spares and accessories required for two years of normal operation and maintenance of Pig Signallers.

8.0 GUARANTEE

8.1 Manufacturer shall guarantee that the pig signallers comply with the requirements stated in this specification and in the purchase order. Manufacturer shall replace or repair all parts found to be defective due to inadequate engineering or quality of material. Manufacturer shall replace the signaller without delay, if the defect or malfunctioning cannot be eliminated.

8.2 Any defects occuring 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 DOCUMENTATION

9.1 At the time of bidding, bidder shall submit the following documents :-

a) General Arrangement drawing with overall dimensions.
b) Clause wise list of deviation from this specification, if any.
c) Reference list of similar supplies of pig signaller shall be furnished including project, year of supply, client, size, rating and service for last five years.
d) Quality Assurance Plan (QAP) enclosed with this tender duly signed, stamped and accepted.

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

a) Fabrication drawings/ sectional arrangement drawings showing all parts with reference numbers and material specification.

b) Assembly drawing with overall dimension.

c) Welding and testing procedure.

e) Cable connection details and cable specification.

Once the approval has been given by Purchaser, any change in design, material, etc. shall be notified to the Purchaser whose approval in writing for all changes shall be obtained before Pig Signallers are manufactured.

9.3 Within four weeks from the approval date, Manufacturer shall submit one reproducible and six copies of the approved drawings and specifications as listed in 9.2 of this specification.

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

a) Test certificates as per clause 5.0 of this specification.

b) Manual for installation, erection instructions, maintenance and operation instructions.

9.5 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

CONTENTS

1.0 **GENERAL**

1.1 **Scope**

1.1.1 This specification together with the attached data sheets covers the requirements for the design, materials, nameplate 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 :

a) Sizing calculations and selection of valve with proper relieving area to meet the operating conditions indicated.
b) Selection of materials for all parts of the valve suitable for the fluid and its conditions indicated.

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 :

a) Two years recommended operational spares for each pressure relief valve and its accessories. List of such spares without price shall be indicated alongwith technical bid and separately with price.
b) Any specific tools needed for maintenance work.

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 or reproducibles 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:

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.

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 stelliting of disc and nozzle has been specified, it stands for stelliting 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 ± 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 :

± 0.14 kg/cm^2(g) for set pressures upto and including 5 kg/cm^2(g);
±3% for set pressure above 5 kg/cm^2(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.

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.

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/cm^{2}g, the valve shall meet the seat tightness requirements specified in API RP-527. The maximum permissible leakage rates for conventional and balanced bellow valves against various sizes shall be as specified therein. Whenever the specified set pressure exceeds 70 kg/cm^{2}g, 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.

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.

Edition : 1

SPECIFICATION

FOR

QUICK OPENING END CLOSURE

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

(OIL & GAS SBU)
MECON LIMITED
DELHI 110 092

CONTENTS

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.

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 $0^{o}C$. 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 $HV_{10.}$

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.

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

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 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. 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

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 alongwith 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 ot 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 :-

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.

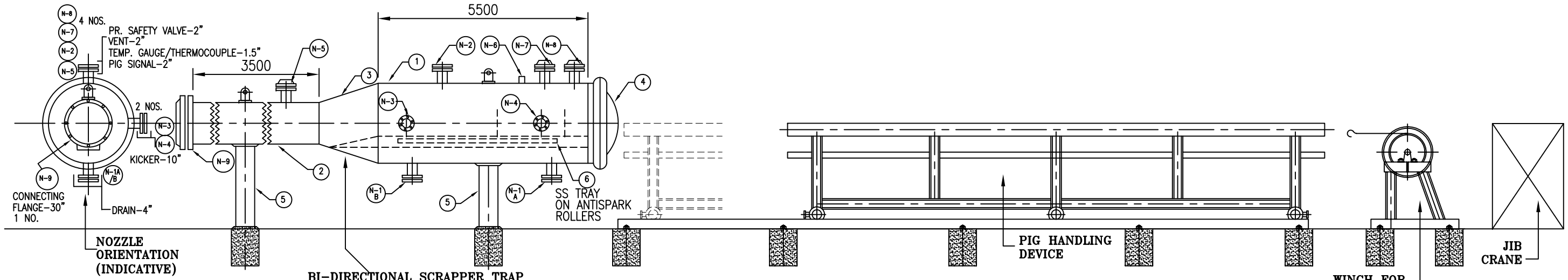
10.4 Prior to shipment, the Manufacturer shall submit one reproducible and six copies of the following :-

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.

DATASHEET NO.-MEC/23U1/05/28/M/001/DS/ST-001



TYPICAL GENERAL ARRANGEMENT

CONNECTING PIPELINE DETAILS:-

ANSI RATING (#)	: 300#
DESIGN PRESSURE (KG/CM²-G)	: 49
OPERATING PRESSURE (KG/CM² G)	: **
DESIGN TEMPERATURE (°C)	: (-)29 to (+)65
OPERATING TEMPERATURE (°C)	: 0 TO +55
DESIGN FACTOR	: 0.5
OUTSIDE DIAMETER (MM)	: 762
THICKNESS (MM)	: 12.7
CORROSION ALLOWANCE (MM)	: 5
MATERIAL	: API 5L GR. X-70, PSL-2
SERVICE	: NATURAL GAS
DESIGN CODE	: ASME B 31.8

SCRAPPER TRAP SPECIFICATION :-

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

ITEM NO./ NOZZLE NO.	DESCRIPTION	COMPONENT	ENDS/TYPES	MATERIAL 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 PSL 2 to API 5L,GR X-52,PSL 2	*	36"/*
2.	NECK(MINOR BARREL)	PIPE	BW	API 5L	API 5L Gr X-70,PSL 2	*	30"/12.7
3.	REDUCER	CONCENTRIC	BW, WELDED	MSS-SP-75	MSS-SP-75 Gr WPHY-70	*	36"x30"/*
4.	END CLOSURE	FORGED	QUICK OPENING	ASME SECTION VIII	ASTM A 694 Gr. F-70 (CHARPY) to ASTM A 694 GR. F-52(CHARPY)	*	36", 300# 5 MM CA
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"/*
N-2.	TEMP. GAUGE/ THERMOCOUPLE(1 NO.)	SOCKOLET/PIPE/FL	SW-3000#/SMLS/ FL-SWRF	MSS-SP-97/B 16.5	ASTM A106 Gr.B/ ASTM A105	*	1½"/*
N-3 N-4	KICKER/BY PASS CONN. (2 NOS.)	WELDOLET/PIPE/FL	BW/SMLS/FL-WNRF	MSS-SP-97/B 16.5	ASTM A106 Gr.B/ ASTM A105(CHARPY)	*	10"/*
N-5.	PIG SIGNAL(1 NO.)	WELDOLET/PIPE/FL	BW/SMLS/FL-WNRF	MSS-SP-97/B 16.5	A106 Gr.B(CHARPY)/ ASTM A105(CHARPY)	*	2"/*
N-6.	PR. GAUGE (1 NO.)	SOCKOLET/PIPE	SW-6000#/SMLS	MSS-SP-97	ASTM A106 Gr B	*	3/4"/*
N-7.	VENT(1 NO.)	WELDOLET/PIPE/FL	BW/SMLS/FL-WNRF	MSS-SP-97/B 16.5	A106 Gr.B(CHARPY)/ ASTM A105(CHARPY)	*	2"/*
N-8.	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"/*
N-9.	CONNECTING FLANGE (1 NO.)	FLANGE	FL-WNRF	B 16.5	ASTM A694 Gr F-70 (CHARPY)	*	30"/*

WELD NECK END THICKNESS OF MATCHING FLANGE (WNRF) FOR NOZZLE N9 SHALL BE SAME AS THAT OF CONNECTING PIPELINE THICKNESS.

NOTES :

* VENDOR TO INDICATE

** TO BE FURNISHED LATER

NOTES:

1. ORIENTATION OF ALL NOZZLES IS INDICATIVE AND SHALL BE CONFIRMED DURING DRAWING APPROVAL STAGE.
2. 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.
3. CORROSION ALLOWANCE(CA) OF 5.0 MM SHALL BE CONSIDERED FOR DESIGN OF COMPLETE SCRAPER TRAPS.
4. FLANGES – AS PER ASME B 16.5, 16.47A AS APPLICABLE.
5. HYDRAULIC TEST PR.=1.5 TIMES THE DESIGN PR., DURATION-1 Hr.
6. RADIOGRAPHY 100% ALL BUTT WELDED JOINTS.
7. PIG SIGNALLER AS PER SPEC. NO. MEC/S/05/62/048, REV-0
8. BI-DIRECTIONAL SCRAPPER TRAP SHALL BE COMPATIBLE FOR ACCOMODATING LATEST ONLINE INSPECTION TOOL/ INTELLIGENT PIGGING (LONGEST).
9. 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.
10. CHARPY-V NOTCH TEST AND HARDNESS TEST SHALL BE CONDUCTED AS PER CLAUSE NO. 3.4 & 3.5 RESPECTIVELY OF MECON TS.
11. 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.
12. 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.
13. MATCHING FLANGES(WNRF) FOR ALL NOZZLES SHALL BE PROVIDED EXCEPT FOR NOZZLES N-2, N-1 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.
14. REINFORCEMENT PAD FOR SUPPORT FOR BARREL SHALL BE PROVIDED OF SAME MATERIAL AS PROVIDED FOR BARREL.
15. ALL NOZZLES SHALL HAVE A MINIMUM PROJECTION OF 200MM NAD INTER DISTANCE BETWEEN NOZZLES SHALL BE MINIMUM 300MM.
16. PIG HANDLING SYSTEM SHALL BE SUITABLE FOR INSERTING AND RETRACTING OF ALL TYPES OF INSTRUMENTED/INTELLIGENT PIGS FROM THE TRAP.
17. PIG HANDLING SYSTEM, PUSHING ROD MECHANISM & TROLLEY SHALL BE OF DISMANTLED TYPE.
18. ALL FOUNDATION BOLTS SHALL BE PROVIDED WITH DUE APPROVAL OF ITS DETAIL DRAWINGS FROM MECON
19. THICKNESS OF MAJOR BARREL/ NOZZLES SHALL BE CALCULATED WITH 5MM CA AND SUBMITTED FOR APPROVAL.
20. JIB CRANE WITH 360 DEGREE SWING ARM SHALL BE SUPPLIED WITH DULY CERTIFIED LOAD TEST DETAILS.

NOZZLE DETAILS:

- (N-1A/B) – 4" DRAIN
- (N-2) – 1½" (TEMP. GAUGE/THERMOCOUPLE)
- (N-3) – 10" KICKER/BYPASS LINE
- (N-4) – 10" KICKER/BYPASS LINE
- (N-5) – 2" PIG SIGNALLER
- (N-6) – 3/4" PRESSURE GAUGE
- (N-7) – 2" VENT
- (N-8) – 2" PSV
- (N-9) – 30" CONNECTING FLANGE

LEGEND:

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

FOR TENDER PURPOSE ONLY

OIL INDIA LIMITED

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MECON LIMITED

REV	DESCRIPTION	BY	VERIFIED	DATE
0	REVISION			-

CONCURRED BY

REFERENCES | DRG.NO.

SECTION	OIL & GAS
LOCATION	NEW DELHI
DESIGNED	SK
DRAWN	SK
CHECKED AND VERIFIED	HK
APPROVED	SIG (ANIL KUMAR)
	DATE 15.10.18

BAGHJAN MADHUBAN PIPELINE

BI-DIRECTIONAL SCRAPPER LAUNCHER/ RECEIVER, (36" X 30", 300#)
TAG Nos. SHALL BE INDICATED TO THE SUCCESSFUL VENDOR

SCALE : NTS | SHEET 1 OF 1 | REV 0

DATASHEET NO.-MEC/23U1/05/28/M/001/DS/ST-001

DATA SHEET FOR PIG SIGNALERS

Pig Signaller Tag No.	On Equipment	TO BE INDICATED TO THE SUCCESSFUL VENDOR
	On Line	TO BE INDICATED TO THE SUCCESSFUL VENDOR
Pig Signaller Manufacturer		*
Purchaser's Specification		MEC/S/05/62/048, Rev-0
Pig Signaller Model		*
Quantity (Nos.)		4
DESIGN CONDITIONS		
Design Pressure, kg/cm2(g)		49
Temperature, °C		-29 TO +65
Design Code		ASME B 31.8
Corrosion Allowance (MM)		5.0
ANSI Rating (#)		300#
Design Factor		0.5
Service		NATURAL GAS/ RLNG
End Connection		RF on Scrapper Trap & BW on Pipeline
Installation		Above ground
Electrical Area Classification		IEC - Zone-1, Gas Group-IIA & IIB, Temp. Class-T3
DETAILS OF PIPELINE ON WHICH PIG SIGNALLERS SHALL BE MOUNTED		
Diameter (NB, mm) x Thk. (mm)		Refer connecting pipe details mentioned in respective scrapper trap datasheets
Material		Refer connecting pipe details mentioned in respective scrapper trap datasheets
PIG SIGNALLERS MATERIAL SPECIFICATION		
Body		ASTM A 105
Internals		SS-316
MICRO SWITCH DETAILS		
Rating		Potential Free Contact of Rating 24V DC, 2A, SPDT
Enclosure		Weather Proof to IP55 & Flame Proof Exd. Enclosure certified for area classification
Cable Connection		½" NPTF

NOTE : 1) * - VENDOR TO INDICATE
2) PIG SIGNALLERS ON PIPELINE SHALL BE PROVIDED WITH WELDED ISOLATION VALVE FOR ON-LINE REPAIR.
3) PAINTING SHALL BE SUITABLE FOR CORROSIVE INDUSTRIAL ENVIRONMENT.

REV. NO.	DATE	ZONE	DESCRIPTIONS	BY	APPRD	
			REVISIONS			REFERENCES DRG. NO.

SECTION PROCESS & PIPING					**CLIENT : OIL India Limited**	
	NAME	DATE	CHKD	DATE	**PROJECT:**	
DSGN	Sachin Kumar	15.10.2018	Harsh Kumar	15.10.2018	**BAGHJAN – MADHUBAN PIPELINE PROJECT**	**MECON LIMITED**
DRWN						
APPROVED			A. K. Gupta, DGM		**DATA SHEET FOR PIG SIGNALLER**	DATA SHEET NO.: MEC/23U1/05/28/M/001/DS/PS-001 REV 0

PRESSURE SAFETY VALVES

UNITS : Flow > Liquid - m^3/hr , Gas-Sm^3/day, Steam - kg/hr. Pressure -> kg/cm^2g, Temperature-°C, Level/ Length-> mm

General	01	Tag No.	**PSV-0101, PSV-0701**	
	02	Line No./ Size	As per P&ID	
	03	Vessel Protected (Scrapper Trap)	**SLR-0101, SRL-0701**	
	04	Quantity	02 No.	
	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	⊕	
	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	-	
	18	Test Gag	Required	
Material	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	26	Fluid and State	Natural Gas Vapour/RLNG	
Conditions	27	Corrosive Constituent	CO2 (1.22 vol%)	
	28	Corr. Allowance	3 mm	
	29	Required Flow Capacity	⊕	
	30	Mol. Wgt. | S.G. at Rel. Temp.	⊕⊕	⊕⊕
	31	Oper. Pressure, kg/cm^2g	As per P&ID	
	32	Oper. Temp.°C | Rel. Temp.°C	0-55	⊕
	33	Valve Discharges to	Flare Header	
	34	Back Press. | Const. Or Variable	(Note-8)	Constant/Variable
	35	Set Pressure, kg/cm^2g	(Note 5)	
	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	Model No.	⊕	
	48	Radiography & Charpy Test	Reqd. (100%)	
	49	IBR Certification	Not Required	

Notes:

⊕ VENDOR TO SPECIFY/ CONFIRM.

⊕⊕ GAS COMPOSITION & OTHER PROPERTIES WILL BE PROVIDED TO SUCESSFUL 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. DESIGNATION, RATING & SET PRESSURE OF PSVs SHALL BE DECIDED DURING DETAIL ENGINEERING.
6. PSVs SHALL BE SUPPLIED WITH INLET AND OUTLET COMPANION FLANGE OF SUITABLE SIZE & RATING FOR MOUNTING ON SCRAPPER TRAP.
7. PSV OUTLET SHALL BE CONNECTED WITH EXISTING FLARE HEADER SYSTEM.
8. FOR PSV DESIGN, EXISTING SYSTEM BACK PRESSURE TO BE CONSIDRED. SAME SHALL BE PROVIDED DURING DETAILED ENGINEERING.

REV. NO.	DATE	ZONE	DESCRIPTIONS	BY	
			REVISIONS		DRG. NO.

	NAME	DATE	CHKD	DATE		
SECTION : OIL & GAS					**CLIENT** : M/S OIL INDIA LTD.	
DSGN					**PROJECT** : GAS PIPELINE FROM GGS/EPS BAGHJAN TO CGGS MADHUBAN,DULIAJAN	**MECON LIMITED**
DRWN						
APPROVED					**PRESSURE SAFETY VALVES**	DATASHEET NO:MEC/23U1/05/28/M/001/DS/PSV-001 REV-0

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

1	QUICK OPENING END CLOSURE MFR.	:
2	ITEM NO.	: 2.1
3	SIZE	: 10" NB
4	RATING	: ANSI 300#
5	DESIGN CODE	: ASME Section VIII, Division 1
6	PURCHASER'S SPECIFICATION NO.	: MEC/TS/05/21/013
7	DESIGN PRESSURE	: 92 Kg/cm2 (g)
8	HYDROTEST PRESSURE	: 699 Kg/cm2 (g)
9	DESIGN TEMPERATURE	: -46°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 - 10" NB Thickness- Sch. XS Material- ASTM A 333 Gr.6, Seamless BE
13	CORROSION ALLOWANCE	: 5.0 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	TAG NO.	: SHALL BE INDICATED TO THE SUCCESSFUL VENDOR
17	CHARPY V-NOTCH TEST	: REQUIRED AT (-) 46°C, CV (Avg.) - 20 J & CV (Min.) - 16 J (Min. 3 Samples)
18	HARDNESS TEST	: REQUIRED AS PER MATERIAL SPECIFICATION
19	INSTALLATION	: VERTICAL POSITION AT AN ELEVATION OF 3.0M ABOVE FINISHED GROUND LEVEL/ WORKING LEVEL
20	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	
REVISIONS						REFERENCES DRG. NO.

SECTION PROCESS & PIPING					CLIENT : OIL India Limited		
	NAME	DATE	CHKD	DATE	PROJECT:		
DSGN	Sachin K	15.10.2018	Harsh Kumar	15.10.2018	BAGHJAN – MADHUBAN PIPELINE PROJECT	MECON LIMITED	
DRWN							
APPROVED A. K. Gupta, DGM					DATA SHEET FOR QUICK OPENING END CLOSURE - 4" NB (600#)	DATA SHEET NO.: MEC/23U1/05/28/M/001/DS/QOEC-001	REV 0

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

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

NOTES:

1. 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.

2. 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**

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.	1.1.2, 1.1.5,	Tools/ Accessories for retraction of Pig Signallers during repair/ maintenance	One (01) No.
2.			
3.			
4.			

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. 1 separately as per price schedule Format / Performa.**
   To be filled, signed and stamped by Bidder.

Bidder's Seal **Signature of Bidder**

	CONTRACTOR		QUALITY ASSURANCE PLAN FOR STRUCTURAL AND MECHANICAL EQUIPMENT	PROJECT : **BAGHJAN – MADHUBAN PIPELINE PROJECT**
	ORDER NO. & DATE			PACKAGE NO. :**05/51/23U1/OIL/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 :

1. 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.
2. 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
3. Separate identification number with quantity for equipment shall be indicated wherever equipment having same specifications belonging to different facilities are grouped together.
4. 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 :

Code	*Description*
1.	Visual
2.	Dimensional
3.	Fitment & Alignment
4.	Physical Test (Sample)
5.	Chemical Test (Sample)
6.	Ultrasonic Test
7.	Magnetic Particle Test (MPI)
8.	Radiography Test
9.	Dye Penetration Test
10.	Metallographic Exam.
11.	Welder's Qualification & Weld Procedure Test
12.	Approval of Test and Repair Procedure
13.	Heat Treatment
14.	Pressure Test
15.	Leakage Test
16.	Balancing
17.	Vibration Test
18.	Amplitude Test
19.	Sponge Test
20.	Dust/ Water Ingress Test
21.	Friction Factor Test
22.	Adhesion Test
23.	Performance Test/Characteristic Curve
24.	No Load/ Free Running Test
25.	Load/ Overload Test
26.	Measurement of Speeds
27.	Accoustical Test
28.	Geometrical Accuracy
29.	Repeatability and Positioning Accuracy
30.	Proving Test
31.	Surface Preparation
32.	Manufacturer's Test Certificates for bought-out items
33.	IBR/ Other Statutory agencies compliance certificate
34.	Internal Inspection Report by Contractor
35.	Hardness Test
36.	Spark Test for Lining
37.	Calibration
38.	Safety Device Test
39.	Ease of Maintenance
40.	Fire Test (Type Test)
41.	Charpy V-Notch Test
42.	Operational Torque Test
43.	ENP (Electroless Nickel Plating) Execution
44.	Painting
45.	Anti-Static Test
46.	Hydrostatic Double Block & Bleed Test
47.	Functional Test
48.	Pneumatic Double Block & Bleed Test
49.	Cyclic Test

Code	*DOCUMENTS:*
D1.	Approved GA drawings
D2.	Information and other reference drg/ stamped drgs released for mfg.
D3.	Relevant catalogues
D4.	Bill of matl./Item no./ Identification
D5.	Matchmarks details
D6.	Line/ Layout diagram
D7.	Approved erection procedures
D8.	Unpriced sub P.O. with specification and amend-ments, if any
D9.	Calibration Certificate of all measuring instruments and gauges
D10.	X-Ray Reports

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
							Raw Material and In-Process Stage Inspection			Final Inspection/ Test by					
Sl. No.	Description (with equipment heading, place of use and brief specifications)	Identification No. (MR Item No.)	Quantity Nos.	Unit Weight (Kg)	Manufacturer's Name and Address	Expected Schedule of Final Inspn.	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) (36" x 30", 600#)	1.1	2	*	*	*	As per attached sheet 2 to 6								100%
2.0	Pig Signallers : - On Scrapper Launcher/Receiver (36" x 30") - On 30" Pipeline	 1.1.2 1.1.5	 2 2	*	*	*	As per attached sheet 2 to 6								100%

For MECON (Stamp & Signature)

For CONTRACTOR/ SUB-CONTRACTOR (Stamp & Signature)

QAP NO. MEC/23U1/05/28/M/000/QAP-007

REV **0**

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			4	4	4	-	-	-	1. D1 2. Report	1. D1 2. Relevant Material Standard 3. Manufacturer's Specification	H	H	R	
		by MECON			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			1,2	1, 2	1, 2	-	-	-	1. D1 2. Report	1. D1 2. Relevant Material Standard 3. Manufacturer's Specification	H	R	R	
		by MECON)			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	

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	
					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	
					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	
1.04	Pig Signallers	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
					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	

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	
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			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	
		by MECON)			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	
					13*	13*	13*				Test Report	1. Relevant Material Standard 2. MECON's T.S. 3. MECON's D.S.	H	H	R	
3.0	Final Inspection															
3.01	Assembled Scrapper trap including QOEC and Pig Signaller	Material As per MR/ Alternate Material accepted			-	-	-	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	
		by MECON			-	-	-	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	

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	
					-	-	-	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

MECON मेकॉन ISO 9001 Company	CONTRACTOR		QUALITY ASSURANCE PLAN FOR STRUCTURAL AND MECHANICAL EQUIPMENT	PROJECT : BAGHJAN – MADHUBAN PIPELINE PROJECT
	ORDER NO. & DATE			PACKAGE NO. :05/51/23U1/OIL/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 :

1. 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.
2. 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
3. Separate identification number with quantity for equipment shall be indicated wherever equipment having same specifications belonging to different facilities are grouped together.
4. 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 :

Code	*Description*
1.	Visual
2.	Dimensional
3.	Fitment & Alignment
4.	Physical Test (Sample)
5.	Chemical Test (Sample)
6.	Ultrasonic Test
7.	Magnetic Particle Test (MPI)
8.	Radiography Test
9.	Dye Penetration Test
10.	Metallographic Exam.
11.	Welder's Qualification & Weld Procedure Test
12.	Approval of Test and Repair Procedure
13.	Heat Treatment
14.	Pressure Test
15.	Leakage Test
16.	Balancing
17.	Vibration Test
18.	Amplitude Test
19.	Sponge Test
20.	Dust/ Water Ingress Test
21.	Friction Factor Test
22.	Adhesion Test
23.	Performance Test/Characteristic Curve
24.	No Load/ Free Running Test
25.	Load/ Overload Test
26.	Measurement of Speeds
27.	Accoustical Test
28.	Geometrical Accuracy
29.	Repeatability and Positioning Accuracy
30.	Proving Test
31.	Surface Preparation
32.	Manufacturer's Test Certificates for bought-out items
33.	IBR/ Other Statutory agencies compliance certificate
34.	Internal Inspection Report by Contractor
35.	Hardness Test
36.	Spark Test for Lining
37.	Calibration
38.	Safety Device Test
39.	Ease of Maintenance
40.	Fire Test (Type Test)
41.	Charpy V-Notch Test
42.	Operational Torque Test
43.	ENP (Electroless Nickel Plating) Execution
44.	Painting
45.	Anti-Static Test
46.	Hydrostatic Double Block & Bleed Test
47.	Functional Test
48.	Pneumatic Double Block & Bleed Test
49.	Cyclic Test

Code	*DOCUMENTS:*
D1.	Approved GA drawings
D2.	Information and other reference drg/ stamped drgs released for mfg.
D3.	Relevant catalogues
D4.	Bill of matl./Item no./ Identification
D5.	Matchmarks details
D6.	Line/ Layout diagram
D7.	Approved erection procedures
D8.	Unpriced sub P.O. with specification and amend-ments, if any
D9.	Calibration Certificate of all measuring instruments and gauges
D10.	X-Ray Reports

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 Nos.	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	Quick Opening End Closures (10", 300#)	2.1	3	*	*	*	As per attached sheet 2 to 4								100%

For MECON (Stamp & Signature)

For CONTRACTOR/ SUB-CONTRACTOR (Stamp & Signature)

QAP NO. MEC/23U1/05/21/M/000/QAP-013

SHEET 1 OF 4

REV **0**

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. D1 2. Report	1. 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, 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	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	

EQUIPMENT DETAILS					INSPECTION AND TESTS											
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			Test Certificates & Documents to be submitted to MECON	Acceptance Criteria Standards/ IS/ BS/ ASME/ Norms and Documents	Inspection Codes & Sampling Plan			REMARKS
					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			-	-	-	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	
		by MECON			-	-	-	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

MECON ISO 9001 Company	CONTRACTOR	**QUALITY ASSURANCE PLAN FOR** STRUCTURAL AND MECHANICAL EQUIPMENT	PROJECT : GAS PIPELINE FROM GGS/EPS BAGHJAN TO CGGS MADHUBAN,DULIAJAN
	ORDER NO. & DATE		BID DOCUMENT NO. :
	SUB-CONTRACTOR		ITEM NAME : PRESSURE SAFETY VALVE
	ORDER NO. & DATE		SPEC. NO.: MEC/TS/05/62/056, REV-01

INSTRUCTIONS FOR FILLING UP :

1. 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.
2. 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
3. Separate identification number with quantity for equipment shall be indicated wherever equipment having same specifications belonging to different facilities are grouped together.
4. 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 :

CONTR : CONTRACTOR
MFR : MANUFACTURER
H : HOLD
R : REVIEW
W : WITNESS
P : PERFORM

KEY TO SYMBOLS :

* : MFR/ CONTRACTOR - AS APPLICABLE
** : TEST TO BE PERFORMED, IF APPLICABLE

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	20.	Dust/ Water Ingress Test	36.	Spark Test for Lining	D3.	Relevant catalogues
4.	Physical Test (Sample)	21.	Friction Factor Test	37.	Calibration	D4.	Bill of matl./Item no./ Identification
5.	Chemical Test (Sample)	22.	Adhesion Test	38.	Safety Device Test	D5.	Matchmarks details
6.	Ultrasonic Test	23.	Performance Test/Characteristic Curve	39.	Ease of Maintenance	D6.	Line/ Layout diagram
7.	Magnetic Particle Test (MPI)	24.	No Load/ Free Running Test	40.	Fire Test (Type Test)	D7.	Approved erection procedures
8.	Radiography Test	25.	Load/ Overload Test	41.	Charpy V-Notch Test	D8.	Unpriced sub P.O. with specification and amend-ments, if any
9.	Dye Penetration Test	26.	Measurement of Speeds	42.	Operational Torque Test	D9.	Calibration Certificate of all measuring instruments and gauges
10.	Metallographic Exam.	27.	Accoustical Test	43.	ENP (Electroless Nickel Plating) Execution	D10.	X-Ray Reports
11.	Welder's Qualification & Weld Procedure Test	28.	Geometrical Accuracy	44.	Painting		
12.	Approval of Test and Repa Procedure	29.	Repeatability and Positioning Accuracy	45.	Anti-Static Test		
13.	Heat Treatment	30.	Proving Test	46.	Hydrostatic Double Block & Bleed Test		
14.	Pressure Test	31.	Surface Preparation	47.	Functional Test		
15.	Leakage Test	32.	Manufacturer's Test Certificates for bought-out items	48.	Pneumatic Double Block & Bleed Test		
16.	Balancing						
17.	Vibration Test	33.	IBR/ Other Statutory agencies compliance certificate				

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.	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		CONTR / TPI		MECON		MFR		CONTR / TPI		MECON					
1	2	3	4	5	6	7	8		9		10		11		12		13		14	15	16
	SAFETY RELIEF VALVE (PSV)	-	-	-			1,2,3	P	1,2,4	W	-		1,2,3	P	1,2,3	W	1,2,3	R	1,2,3,4,5,8,14,15	D1,D3,D8,D10	47
							4,5	P	5,41	W	-		14,15	P	14,15	W	14,47	R	31,32,34,41,44,47	ASME SEC-VIII,DIV-1	100%
							8,41	P	8	R			31,32	P	44,47	W				MECON TS	
													44,47	P	31,32	R				APPROVED DS	

For MECON (Stamp & Signature)

For CONTRACTOR/ SUB-CONTRACTOR (Stamp & Signature)

QAP NO. MEC/23U1/05/28/M/001/QAP-056

SHEET 1 OF 1

REV 0

*** To be field by party as per index above & approved by MECON**