



GAIL (INDIA) LIMITED
(A.GOV'T OF INDIA UNDERTAKING)

INVENTORY CREATION PROJECT

BID DOCUMENT

FOR

PROCUREMENT OF ASSORTED PIPES

VOL II OF II – TECHNICAL

(BID DOCUMENT NO11/0330B/WGI/GAIL/05-R0)

OPEN INTERNATIONAL COMPETITIVE BIDDING



DELIVERS. EVOLVES.

WHOLE LIFE SOLUTIONS FOR PIPELINE AND SUBSEA SYSTEMS

ISSUED BY



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**MATERIAL REQUISITION
FOR ASSORTED PIPE**

Document No.

Rev

11-0330B-01-08-06-008

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LIST OF ATTACHMENTS

S.No.	DOCUMENT TITLE	DOCUMENT NUMBER	No. of Sheets
1.0	TECHNICAL SPECIFICATION FOR ASSORTED PIPE	11-0330B-02-08-02-019 (Rev 0)	8
2.0	QUALITY ASSURANCE PLAN	11-0330B-02-08-10-020(Rev 0)	1



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1.0 SCOPE OF SUPPLY

1.1 General

This Specification covers the scope of supply of Assorted Pipe to be used in the Inventory Creation Project for GAIL (India) Ltd.

1.2 Material Delivery Requirements

The finished materials are to be delivered by the Supplier at the nominated delivery point, fixed by the Purchaser/ Purchaser Representative.

The Supplier shall be responsible for all handling and transportation between his production plant and the nominated delivery point in accordance with this specification.

1.3 Assorted pipes

Item No	Description				
	Line Size	WT in mm / SCH	Ends	Material / Grade	Qty in meters
1	4"	6.020 / STD	BE	ASTM A106GrB / A333Gr6 SMLS	6000
2	6"	7.112 / STD	BE	ASTM A106GrB / A333Gr6 SMLS	4000
3	8"	10.312 / 60	BE	ASTM A106GrB / A333Gr6 SMLS	2500
4	12"	12.700 / XS	BE	ASTM A106GrB / A333Gr6 SMLS	2500

LEGENDS

WT: - Wall thickness
SCH: - Schedule

BE: - Beveled Ends
SMLS: - Seamless

- Bidders are required to quote for full quantity for each item, failing which their bid is liable to be rejected.

2.0 GENERAL NOTES TO MR

2.1 All Assorted Pipe shall be used for Natural Gas/ R-LNG/LPG service.

2.2 All material shall be delivered at Company's designated storage yard. The destination for delivery of items is GAIL (India) Limited, GIDC Industrial Estate, Vaghodia-391760, Dist. Vadodara.

2.4 Bidder must submit duly filled up and signed Check List along with his offer.

In the absence of this information, Purchaser reserves the right to reject bidder's offer without any reference to Bidder in this regard.

3.0 REMARKS

3.1 PRICE Evaluation Basis :-

It shall be evaluated on item wise basis for MR item nos. 1 to 4.

The Bidder must quote for full quantity against each quoted items, without which bidder's offer will be liable for rejection.



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3.2 **Supplier's Compliance :-**

Bidder shall include the following statement in his bid:

We certify that our bid is fully complying with your enquiry dated and referenced,

Compliance with this material Requisition in any instance shall not relieve the Vendor of his responsibility to meet the specified performance.

3.3 **Compliance with Specification :-**

The supplier shall be completely responsible for the receiving / taking over, design, materials, fabrication, testing, and inspection, preparation for shipment & transfer of above material to nominated delivery point strictly in accordance with the MR & all attachments thereto.

3.4 **Inspection :-**

- a) Lloyd Register of Industrial Services
- b) Technische Ulierwachungs Verein (TUV)
- c) Det Norske Veritas (DNV)
- d) AB- Vincotte
- e) Bureau Veritas
- f) SGS
- g) American Bureau Services
- h) Velosi Certification Services
- i) Indian Register of Shipping
- j) German ischer Lloyd
- k) Certification Engineers International Limited
- l) IBR

Inspection shall also be performed by a designated Third Party Inspection agency, Inspection shall also be performed by GAIL and or its authorized inspection agency (AIA as set out & specified in the codes & particular documents forming this MR.

4.0 SPECIAL INSTRUCTIONS TO BIDDERS

4.1 Bidder to note that no correspondence shall be entered into or entertained after the bid submission.

4.2 Bidder shall furnish quotation only in case he can supply material strictly as per this Material Requisition and specification forming part of Material Requisition.

4.3 If the offer contains any technical deviations or clarifications or stipulates any technical specifications (even if in line with MR requirements) and does not include complete scope & technical/ performance data required to be submitted with the offer, the offer shall be liable for rejection.

4.4 The submission of prices by the Bidder shall be construed to mean that he has confirmed compliance with all technical specifications of the corresponding item(s).

4.5 If a bidder quotes as an authorized stockiest, then bidder must submit the valid test certificate along with offer mentioning year of manufacturing, part no / heat no of pipes from the manufacturer as per terms and conditions of tender. The valid test certificate should not be later than one year reckoned from bid submission date.



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CHECK LIST – TECHNICAL

REQUISITION FOR :	SEAMLESS CARBON STEEL PIPES
PROJECT :	INVENTORY CREATION PROJECT

Bidder confirms following, as a minimum, have been enclosed in the offer:

Sl. No.	Requirements	Complied by Bidder
1.0	Total compliance to technical requirements of the Material Requisition	Yes/No
2.0	Bidder has clearly identified the quoted items covered in Material Requisition including location of pipe where the quoted items are proposed to be manufacture or provided.	Yes/No
3.0	Bidder meets Bidder's qualification criteria (BQC) and documentary evidence in support of BQC is enclosed.	Yes/No
4.0	If a bidder quotes as an authorized stockiest, then bidder must submit the valid test certificate along with offer mentioning year of manufacturing, part no / heat no of pipes from the manufacturer as per terms and conditions of tender. The valid test certificate should not be later than one year reckoned from bid submission date	Yes/No

To be filled, signed and stamped by Bidder.

Bidder's seal

Signature of Bidder



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CLIENT JOB NO.

-

TOTAL SHEETS

08

DOCUMENT NO

11

0330B

02

08

02

019



REV	DATE	DESCRIPTION	PREP	CHK	APPR
0	09/05/11	ISSUED FOR TENDER	AD	ASD	ASD
A	17/01/11	ISSUED FOR IDC	YS	AS	JLG

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1.0 GENERAL

1.1 All pipes and their dimensions, tolerances, chemical composition, physical properties, heat treatment, hydro test and other testing and marking requirements shall conform to the latest codes and standards .Deviation(s), if any, shall be clearly highlighted in the offer.

1.2 Testing

1.2.1 Test reports shall be supplied for all mandatory tests as per the applicable Material specifications. Test reports shall also be furnished for any supplementary tests as specified in the Clauses 1.10 & 1.11.

1.2.2 Material test certificates (physical property, chemical Composition & treatment report) shall also be furnished for the pipes supplied.

1.3 Manufacturing Processes

1.3.1 Steel made by Acid Bessemer Process shall not be acceptable.

1.3.2 All longitudinally welded pipes other than IS: 3589 should employ automatic welding.

1.4 Pipe shall be supplied in single or double random length of 4 to 7 and 7 to 14 meters, respectively Seamless and E.R.W. pipes shall not have any circumferential seam joint in a random length. However, in case of E.F.S.W. pipe, in one random length one welded circumferential seam same quality as longitudinal weld is permitted. This weld shall be at least 2.5 m from either end.

1.5

- a) The longitudinal seams of the two portions shall be staggered by 90°. Single random length in such cases shall be 5 to 7m.
- b) Unless otherwise mentioned in the respective material code, E.F.S.W. pipes < 36" shall not have more than one longitudinal seam joint and E.F.S.W. pipes >36" shall not have more than two longitudinal seam joints.

1.6 Pipe with screwed ends shall have NPT external taper pipe threads conforming to ASME/ ANSI B1.20.1 upto 1.5" NB & IS:554 for 2" to 6" NB.

1.7 Pipe with bevelled ends shall be in accordance with ASME B16.25. Weld contours shall be as follows

Material	Wall Thickness	Weld Contour
Carbon Steel (Except Low Temp. Carbon Steel)	Upto 22mm	Figure 2 Type A
> 22mm		Figure 3 Type A
Alloy Steel Stainless Steel & Low Temp. Carbon Steel	Upto 10 mm	Figure 4
>10 mm & Upto 25 mm		Figure 5 Type A
>25mm		Figure 6 Type A

1.8 Galvanized pipes shall be coated with zinc by hot dip process conforming to IS: 4736/ ASTM A 153.

1.9 All austenitic stainless steel pipes shall be supplied in solution annealed condition.

1.10 I.G.C. Test for Stainless Steels

1.10.1 For all austenitic stainless steel pipes, Intergranular corrosion test shall have to be conducted as



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per following:

ASTM A262 practice "B" with acceptance criteria of "60 mils/ year (max.)"

OR

ASTM 262 practice "E" with acceptance criteria of "No cracks as observed from 20X magnification" & "Microscopic structure to be observed from 250X magnification".

- 1.10.2 When specifically asked for high temperature application of some grades of austenitic stainless steel (e.g. .SS 309, 310, 316, 316H etc.), ASTM A262 practice "C" with acceptance criteria of "15 mils/ year (max.)" shall have to be conducted.
- 1.10.3 For the IGC test as described in 1.10.1 & 1.10.2, two sets of samples shall be drawn from each solution annealing lot; one set corresponding to highest carbon content and the other corresponding to the highest pipe thickness. When testing in is conducted as per Practice "E", photograph of microscopic structure shall be submitted for record.
- 1.11 All welded pipes indicated as 'CRYO' & 'LT' in shall be impact tested per requirement and acceptance criteria of ASME B31.3. The impact test temperature shall be -196°C & 0°C for stainless steel and carbon steel, respectively, unless specifically mentioned otherwise in MR.
- 1.12 Specified heat treatment for carbon steel & alloy steel and solution annealing for stainless steel pipes shall be carried out after weld repairs. Number of weld repairs at the same spot shall be restricted to maximum two by approved repair procedure.
- 1.13 For black or galvanized pipes to IS: 1239, the minimum percentage of elongation shall be 20%.

2.0 IBR PIPES

2.1 IBR Documentation

- 2.1.1 Pipes under purview of IBR shall be accompanied with IBR certificate original in Form III A / IIID, Duly approved and counter signed by IBR authority / local authority empowered by the Central Boiler Board of India. Photocopy of the original certificate duly attested by the local boiler inspector where the supplier is located is the minimum requirement for acceptance.
- 2.1.2 For materials 1-1/4 Cr- 1/2 Mo (ASTM A335 Gr. P11 A691 Gr. 1 1/4 Cr) & 2-1/4 Cr- 1 Mo (ASTM A335r.P22/ A691 Gr. 2 1/4 Cr.), from III-A approved by IBR shall include the tabulation of E , S & Sr values for the entire temperature range given below. Et, S & Sr values shall be such that throughout the temperature range.

$$\begin{aligned} E_t / 1.5 & \geq S_a \\ S_r / 1.5 & \geq S_a \\ S_c & \geq S_a \end{aligned}$$

where,

- Sa : Allowable stress at the working metal temperature.
- Et : Yield point (0.2% proof stress at the working metal temperature.
- Sc : The average stress to produce elongation of 1% (creep) in 1, 00,000 hrs at the working metal temperature.
- Sr : The average stress to produce rupture in 1,00,000 hrs. at the working metal temperature and in no case more than 1.33 times the lowest stress to produce rupture at this temperature.



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SA (psi)	Temperature (°F)											
	500	600	650	700	750	800	850	900	950	1000	1050	1100
A335 Gr. P11	17200	16700	16200	15600	15200	15000	14500	12800	9300	6300	4200	2800
A 691 Gr. 1½ Cr	18900	18300	18000	17600	17300	16800	16300	15000	9900	6300	4200	2800
A335 Gr. P2/ A691 Gr. 2 1/4 Cr	17900	17900	17900	17900	17900	17800	14500	12800	10800	7800	5100	3200

Note: Sa values given above are as per ASME B31.3-1999. Values shall be as per the latest edition prevailing.

2.2 For carbon steel pipes under IBR, the chemical composition shall conform to the following:

Carbon (max.): 0.25%

Others (S, P, Mn): As prescribed in IBR regulation.

The chemical composition as indicated in this clause is not applicable for pipes other than IBR services.

3.0 HYDROSTATIC TEST

Refer Annexure — I.

4.0 MARKING AND DESPATCH

4.1 All pipes shall be marked in accordance with the applicable codes, standards and specifications. In addition, the purchase order number, the item code & special conditions like "IBR", "CRYO", "NACE", etc., shall also be marked.

4.2 Pipes under "IBR", "CRYO", & "NACE" shall be painted in red stripes, light purple brown stripes & canary yellow stripes, respectively, longitudinally throughout the length for easy identification.

4.3 Paint or ink for marking shall not contain any harmful metal or metallic salts such as zinc, lead or copper which cause corrosive attack on heating.

4.4 Pipes shall be dry, clean and free from from moisture, dirt and loose foreign materials of any kind.

4.5 Pipes shall be protected from rust, corrosion and mechanical damage during transportation, shipment and storage.

4.6 Rust preventive used on machined surfaces to be welded shall be easily removable with petroleum solvent and the same shall not be harmful to welding.

4.7 Both ends of the pipe shall be protected with the following material:

Plain end : Plastic cap
 Bevel end : Wood, Metal or Plastic cover
 Threaded end : Metal or Plastic threaded cap

4.8 End protectors to be used on beveled ends shall be securely and tightly attached with belt or wire.



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4.9 Steel end protectors to be used on galvanized pipes shall be galvanized.

ANNEXURE — I

3.0 HYDROSTATIC TEST

- 3.1 All pipes shall be hydrostatically tested.
- 3.2 The mill test pressure shall be as follows:

3.2.1 Seamless, E.R.W. & Spiral Welded

a) Carbon Steel

Material Standard	Test Pressure Standard
ASTM A 106 Gr. B	ASTM A 530
API 5L Gr. B, Seamless	API 5L
API 5L, E.R.W.	API 5L
API 5L, Spiral	API 5L
ASTM A333 Gr.3 & 6, Seamless	ASTM A 530
ASTM A 333 Gr. 3 & 6, E.R.W.	ASTM A 530

b) Seamless Alloy Steel

Material Standard	Test Pressure Standard
ASTM A335 GR.P1, P12, P11, P22, P5 P9	ASTM A 530
ASTM A268 TP 405, TP410	ASTM A 530

c) Seamless Stainless Steel

Material Standard	Test Pressure Standard
ASTM A312 GR.TP304,304L,304H, 316,316L, 316H, 321,347	ASTM A 530

d) Seamless Nickel Alloy

Material Standard	Test Pressure Standard
ASTM B161 UNS No.2200	ASTM B161
ASTM B165 UNS No.4400	ASTM B165
ASTM B167 UNS No.6600	ASTM B167
ASTM B407 UNS No. 8800	ASTM B407

e) Welded Nickel Alloy

Material Standard	Test Pressure Standard
ASTM B725 UNS No.2200,4400	ASTM B725
ASTM B517 UNS No.6600	ASTM B517
ASTM B514 UNS No.8800	ASTM B514



3.2.2 Electric Fusion Welded

a) Carbon Steel & Alloy Steel E.FS.W. (16" & above)

Material Standard	Test Pressure Standard
API 5L Gr.B	P=2ST / D
ASTM A 671 Gr. CC65, 70 (Cl.32) ASTM A 672 Gr.C60,65,70 (Cl.12,22) ASTM A 671 Gr.CF60,65,66,70 (Cl.32) ASTM A 691 Gr. ½ Cr, 1Cr, 1 1/4Cr, 2 1/4Cr,5Cr,9Cr (Cl.42)	S=90% OF SMYS (except for API 5L Gr.B) S=85% of SMYS for API 5L Gr.B T=Nominal Wall Thickness D=O.D. of pipe

b) Stainless Steel E.FS.W. (2" to 6")

The hydrostatic test pressure in kg /cm² for the following materials shall be as given below:

Material Gr.1: ASTM A312 TP304/ 304H/ 316/ 316H/ 321/347 welded

Material Gr.2: ASTM A312 TP 304L/ 316L welded

Size	Pipe Schedule: S 10		Pipe Schedule: S 40		Pipe Schedule: S 80	
	Material Gr.1	Material Gr.2	Material Gr.1.	Material Gr.2	Material Gr.1	Material Gr.2
2"	100	80	155	130	230	190
3"	80	60	155	130	230	190
4"	80	50	155	130	230	190
6"	65	35	90	75	155	130

c) Stainless Steel E.FS.W. (8" and above)

Material Standard	Test Pressure standard
ASTM A358 TP 304L,304,304H,316L,316,316H,321,347 (Classes 1, 3 & 4)	P=2ST/D S=85% of SMYS T=Nominal wall thickness D=O.D. of pipe
ASTM A358 TP 304L, 304, 304H, 316L, 316 316H, 321, 347 (Classes 2 & 5)	P=2ST/D S=72% of SMYS T=Nominal Wall thickness D=O.D. of pipe



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3.2.3 **Carbon Steel Pipes to IS Standards**

Material Standard	Test Pressure Standard
IS : 1239	IS : 1239
IS : 3589	IS : 3589



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	CONTRACTOR		QUALITY ASSURANCE PLAN FOR ASSORTED PIPES	Client	M/s GAIL (INDIA) LIMITED
	ORDER NO & DATE			Project	INVENTORY CREATION PROJECT
	SUB CONTRACTOR			Package No.	1
	ORDER NO & DATE			Package Name	Assorted Pipes

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 group of equipment having same specification.

2. Use numerical codes as indicated for extend 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 whenever equipment having same specifications belonging to different facilities are grouped together.

4. Weight in tonnes(T) 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

CODES FOR EXTENT OF INSPECTION ,TESTS,TEST CERTIFICATES & DOCUMENTS:					
Code	Description	Code	Description	Code	Description
1	Visual	19	Charpy V-Notch Test	D1	Approved GA drawings
2	Dimensional			D2	Approved Single Line Diagram/ Schematic Diagram
3	Fitment & Alignment			D3	Approved Data Sheet
4	Physical Test(Sample)certificates			D4	Approved Bill of materials
5	Chemical Test			D5	Unpriced PO Copy
6	UltrasonicTest			D6	Calibration Certificate of all measuring instruments and gauges
7	Magnetic Particle Test(MPT)				
8	Radiography Test				
9	Dye Penetration Test				
10	Metallographic Exam				
11	Welder's Qualification & WPS				
12	Approval of repair procedure				
13	Heat Treatment				
14	Pressure Test				
15	Leakage test				
16	Manufacturer's Test Certificates of Bought-out items				
17	Internal inspection Report by Contractor				
18	Hardness Test				

EQUIPMENT DETAILS							INSPECTION AND TESTS						Test Certification & Documents to be submitted to WGI	Acceptance Criteria Standards/IS/BS/ASME/Norms and Documents	REMARKS / SAMPLING PLAN
SL. NO.	DESC.	IDENTIFICATION NO.	QUANTITY	MANUFACTURER'S NAME AND ADDRESS		EXPECTED SCHEDULE OF FINAL INSPECTION	RAW MATERIAL AND INPROCESS STAGE INSPECTION			INSPECTION / TEST BY					
			No/M				MFR	CONTR	WGI	MFR	CONTR	WGI /TPI			
1	2	2	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Assorted pipes	Refer MR	As per MR				1,2,4,5,19			1,2,14,18	1,2,14,18	1,2,14,18	1,2,4,5,16,17,D6	WGI Tech Specs and Relevant Standards mentioned therein	100% Witness by Owner/WGI approved TPI

For Woodgroup Kenny India Pvt Ltd
(Stamp & Signature)

For Contractor/Sub Contractor
(Stamp & Signature)

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