

**OIL & GAS DEVELOPMENT COMPANY LIMITED**  
**PROCUREMENT DEPARTMENT, ISLAMABAD**  
**FOREIGN SECTION B**

(To be completed, filled in, signed and stamped by the principal)

**ANNEXURE 'A'**

**Material** GLOBE, BALL AND CHECK VALVES  
**Tender Enquiry No** PROC-FB/CB/PROD-4891/2020  
**Due Date**  
**Evaluation Criteria** GROUP WISE

**SCHEDULE OF REQUIREMENT**

Sr No	Description	Unit	Quantity	Unit Price (FOB)	Total Price (FOB)	Unit Price C & F BY SEA	Total Price C & F BY SEA	Deviated From Tender Spec. If Any
<b>Group A</b>								
1	Globe Valve 4", 900 Class, RTJ, Specifications as per Data Sheet at Annexure "A3"	Number	✓ 20					
<b>Group B</b>								
2	Ball Valve 2", 300 Class, RF, Specifications as per Data Sheet at Annexure "A1"	Number	✓ 20					
3	Ball Valve 4", 300 Class, RF, Specifications as per Data Sheet at Annexure "A1"	Number	✓ 20					
4	Ball Valve 6", 300 Class, RF, Specifications as per Data Sheet at Annexure "A1"	Number	✓ 15					
5	Ball Valve 8", 300 Class, RF, Specifications as per Data Sheet at Annexure "A1"	Number	✓ 15					
6	Ball Valve 8", 900 Class, RTJ, Specifications as per Data Sheet at Annexure "A1"	Number	✓ 30					
7	Ball Valve 6", 600 Class, RTJ, Specifications as per Data Sheet at Annexure "A1"	Number	✓ 20					
8	Ball Valve 8", 600 Class, RTJ, Specifications as per Data Sheet at Annexure "A1"	Number	✓ 1					
9	Ball Valve 4", 1500 Class, RTJ, Specifications as per Data Sheet at Annexure "A1"	Number	✓ 12					
10	Ball Valve 4", 600 Class, RTJ, Specifications as per Data Sheet at Annexure "A1"	Number	✓ 30					
<b>Group C</b>								
11	Check Valve 4", 300 Class, RF, Specifications as per Data Sheet at Annexure "A2"	Number	✓ 5					
12	Check Valve 4", 1500 Class, RTJ, Specifications as per Data Sheet at Annexure "A2"	Number	✓ 4					
13	Check Valve 8", 900 Class, RTJ, Specifications as per Data Sheet at Annexure "A2"	Number	✓ 9					

**Note:** (1) EVALUATION CRITERIA: EACH GROUP WISE ON CFR BY SEA KARACHI PAKISTAN BASIS (2) DELIVERY PERIOD IS FOUR (04) MONTHS ON CFR BY SEA BASIS FROM DATE OF ESTABLISHMENT OF LETTER OF CREDIT (3) TENDER DOCUMENTS AVAILABLE ON OGDCL'S WEBSITE UNDER TAB "MASTER SET OF FOREIGN TENDER DOCUMENTS (PRESS-SINGLE STAGE TWO ENVELOP) - UPDATED", (4) BID BOND AMOUNT: GROUP-A=USD 490/-, GROUP-B=USD 8,500/-, GROUP-C=USD 990/- OR EQUIVALENT PAK RUPEES

## TOR


1. Valid API 6D certification of the manufacturer is mandatory for Ball & Check Valves. In case Single Bidder / manufacturer has more than one mill, Bidder has the right to supply product from any of the mill. But API Certification is mandatory for each mill for Ball & Check Valves. Bidder to submit API certifications with the bid.
2. In case Single Bidder / manufacturer has more than one mill, authority letter should include names and addresses of all mills.
3. One manufacturer can authorize only one bidder to participate.
4. Acceptable delivery time is 04 Months on C.F.R by Sea Karachi basis. Delivery period will start from Letter of Credit establishment date.
5. Submission of documents should be as per check list.
6. Incomplete information in the bid may lead to non-compliant & rejection of bid.
7. Third party inspection during manufacturing will be arranged by OGDCL at their own expense and manufacturer will facilitate accordingly.
8. Bidder to comply tender specifications and codes. In case of conflict most stringent requirement will prevail.
9. Authority letters in original from the manufacturer to bidder and from bidder to local agent for offered material with tender enquiry number must be furnished with the technical offer. The authority letter must be on company letter head in original duly signed and stamped.
10. Bidder to fill completely Annexures 1,2 & 3 and submit with technical bid.
11. The Manufacturer/Bidder must submit with technical bid, the printed Annual Audited Accounts reports of Manufacturer for the last 3 consecutive years in order to verify the liquidity position, revenues, profitability of the company. In case these reports are not in English Language, then in addition to these printed reports the English translation of the same must also be submitted with the technical bid, with each page to be signed and stamped by Notary Public & Foreign Officer to be certified as a true copy of the original.
12. Any information provided by the bidder that appears false and materially inaccurate or submitted forged/fake documents will be Rejected and blacklisted.
13. All the documents should be submitted in original, properly numbered, duly signed and stamped. Any document not signed and stamped will not be considered for evaluation purpose.
14. Any documents other than English language should be translated in English language first and should be duly attested by foreign office.
15. Clean acceptance of Terms & Conditions of Tender Documents, Schedule of Requirement is required from Manufacturer / Bidder.



## LIST OF ANNEXURES

### LIST OF ANNEXURES

ANNEXURE - I	:	CORPORATE & FINANCIAL INFORMATION
ANNEXURE - II	:	RELATED PROJECTS EXECUTED DURING LAST FIVE (05) YEARS WITH LEADING E&P COMPANIES
ANNEXURE - III	:	DOCUMENTS SUBMISSION CHECKLIST
ANNEXURE - IV	:	TECHNICAL EVALUATION CRITERIA
ANNEXURE - V	:	SPECIFICATIONS FOR VALVES
ANNEXURE A-1	:	DATA SHEET BALL VALVE
ANNEXURE A-2	:	DATA SHEET CHECK VALVE
ANNEXURE A-3	:	DATA SHEET GLOBE VALVE


  
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J.E (Mech) - PE & FD  
OGDCL, Islamabad.  
Ext: 2632

ANNEXURE-I

FORMAT OF CORPORATE & FINANCIAL INFORMATION  
(To be filled by Bidder & Manufacturer Separately)

PART - I  
GENERAL INFORMATION

1. Name (Full Company Name):
  - Postal Address :
  - Contact Person Name :
  - Contact Person Mobile No :
  - Company Telephone:
  - Facsimile:
  - Valid e-mail for correspondence:
  - Website Address:
  - 1.1 Has the Company operated under any other name? If yes please give name, date of change and reason for change.
2. Type of Entity/Firm:
  - Corporation/Stock Company
  - Public Limited
  - Private Limited
  - Partnership
  - Proprietorship
3. Shareholders information/pattern with names and addresses of majority shareholders.
4. Place of Incorporation/Registration:
5. Year of Incorporation/Registration:  
(Please provide copies of Incorporation/Registration Certificates and Memorandum & Articles of Association)
6. Company's National Tax No.
7. Company's Core Business Areas and their annual sales revenue/earnings during last five (5) years.
8. Name & Address of Owners/Directors

  
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OGDCL, Islamabad.  
Ext: 2632



**PART - II**  
**FINANCIAL STRENGTH**

1. Provide details with regard to the financial standing of the applicant including copies of last three (3) years annual audited profit & loss account and balance sheet. Complete postal address, email address and contact numbers of the audited firm should be provided along with the bid. Also, please fill the financial summary as per below table In USD only;

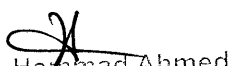
S. No.	Description	Years		
1	Sales Revenue			
2	Paid Up Capital			
3	Profit Before Tax			
4	Profit After Tax			
5	Current Assets			
6	T. Asset			
7	Owner Equity			
8	Long Term Debt			
9	Current Liability			
10	Total Liabilities			

2. Bank(s) credit worthiness certificates (Latest Period) of applicant organization and available credit ceiling/limits with Account Number/Title.
3. Detail record with regard to litigation/arbitration proceedings or any other dispute related to project undertaken/being undertaken by the Bidder their Sub-Contractors and Suppliers (Specially with OGDCL its Joint Venture Partners or other public and private organizations working in the Oil & Gas sector of Pakistan) during past five (05) years.
4. Any information including brochures, references and other documentary evidence of technical qualification, capability and experience of the Applicant to execute the Project.

The undersigned on behalf of \_\_\_\_\_ hereby declare that the statements made and the information provided official herewith is complete, true and correct in every detail

Signature

Official Seal of the Company

  
Hamid Ahmed  
J.E (Mech) - PE & FD  
OGDCL, Islamabad.  
Ext: 2652





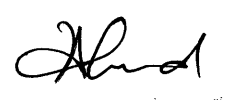
**ELIGIBILITY CRITERIA/ Documents submission check List**

Bidder to submit following documents with bid for technical evaluation:

Sr. No	Description	Bidder	Ball, Check Valves	Globe Valves
			Manufacturer	Manufacturer
1	Authority Letter	In favor of local agent	In favor of bidder	In favor of bidder
2	Valid API 6D	Not Required	Yes	Not Required
4	API 6D Certificates for last 5 years	Not Required	Yes	Not Required
6	Quality Certificates (ISO 9001, ISO 14001, API Q1, OHSAS 18001)	Yes	Yes	Yes
8	Supply record to leading E&P Companies during last 5 years as per Annex II	Yes	Yes	Yes
9	Copies of purchase orders	Yes	Yes	Yes
10	Copies of third party inspection reports	Yes	Yes	Yes
11	Copies of performance certificates of Material supplied to companies.	Yes	Yes	Yes
12	Proof of Prequalification with Companies.	Yes	Yes	Yes
13	Lab Equipment details	Not Required	Yes	Yes
14	Details of order in hand	Yes	Yes	Yes
15	Audited financial reports for last three years	Yes	Yes	Yes
16	Delivery Schedule Confirmation	Yes	Yes	Yes
17	Corporate Information (Submit Annexure-I)	Yes	Yes	Yes
18	Mill/ Product Catalogue	Not Required	Yes	Yes
19	Equipment details	Not Required	Yes	Yes
20	Manufacturing Procedure	Not Required	Yes	Yes
21	HSEQ Information	Yes	Yes	Yes

**Note:**

1. Bid documents should be signed and stamped by bidder and should be properly tagged and numbered.
2. Bid should be submitted in book binding form.
3. Contents of the authority letter should include the following:
  - a. Tender Inquiry Number.
  - b. Supply of new Valves as per tender specification.
  - c. Signed / Stamped by manufacturer.
  - d. Contact details (Name, address, telephone numbers, email).
  - e. Delivery schedule.
  - f. List of documents provided by manufacturer (Documents not mentioned in the authority letter but part of the bid will not be considered).

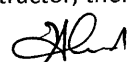

  
 Mr. Ahmad  
 J.E (Mech) - PE & PD  
 OGDCL, Islamabad.  
 P-2220

**TECHNICAL EVALUATION CRITERIA (Globe Valves) ANNEXURE-IV-A**

Sr. No	REQUIREMENT / DESCRIPTION	TOTAL SCORE	SCORE OBTAINED
1	<b>Authority letter of Bidder /manufacturer &amp; local agent(05 Nos)</b> i) Authority letter. ii) Not Submitted.	5 Rejected.	
2	<b>Compliance to Data Sheet &amp; Specifications (10)</b> i) Yes ii) No	10 Rejected	
3	<b>Certifications (10 Nos)</b> i) ISO 9001 ii) ISO 14001 iii) API Q1 iv) OHSAS 18001 Note: Copies of valid certificate to be submitted.	2.5 2.5 2.5 2.5	
4	<b>Supply record during last 5 years to *International E&amp;P Companies (20Nos) See Note 4.</b> i) At least One Agreement with value greater than or equal to 0.5 MMUSD. OR ii) At least One Agreement with value $0.3 < x < 0.5$ MMUSD OR iii) At least 03 Agreements with value $0.1 < x < 0.3$ MMUSD iv) Noncompliance to any of the three conditions. Note: Copies of Purchase Orders to be submitted. ▪ Supply record as per table attached at Annex-II	20  15  10 Rejected.	
5	<b>Complete Copies of third party Inspection Reports of *International E&amp;P Companies (05 Nos) See Note 4.</b> i) If Submitted ii) If not submitted	5 0	
6	<b>Copies of Performance Certificate of material Supplied to *International E&amp;P Companies (05Nos) See Note 4.</b> i) For $X \geq 3$ ii) For $1 \leq X < 3$ iii) For $X = 0$	5 2 0	
7	<b>Proof of Pre-qualification of manufacturer with *International E&amp;P Companies (10 Nos) See Note 4.</b> i) For $X \geq 3$ ii) For $1 \leq X < 3$ iii) For $X = 0$	10 5 0	
8	<b>Financial Strength of the Company (15 Nos)</b> i. Three Years Audited Financial reports of the bidder / manufacturer. ii. Non submission of Three years audited financial reports of bidder / manufacturer. ▪ Filling of information as per Annex-I.	15 Rejected.	
9	<b>Manufacturer Document Compliance / Submission (20 Nos) .</b> i) Product Catalogue. ii) Quality Plan. iii) Equipment Details. iv) Manufacturer specifications	5 5 5 5	

**Note:**

1. Minimum pre-qualification criteria is to obtain 70 Score.
2. Bid exceeding 70 Score but rejected in sub category 1, 2, 4 & 8 will be non-responsive.
3. Date of tender opening will be considered to calculate 05 years requirement of API certificate.
4. International E&P Companies should be a upstream member of either International Association of Oil & Gas Producers (IOGP) or Pakistan Petroleum Exploration & Production Companies Association (PPEPCA).
5. In case Bidder supplied material to companies fall under note 4 through contractor, then proof to be submitted.



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*Handwritten signature*  
J.E (Mech) - PE & FD  
M. J. S. Shahad.

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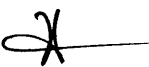
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5. In case Bidder supplied material to companies fall under note 4 through contractor, then proof to be submitted.

*[Signature]*  
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ODDCL Islamabad.

## SPECIFICATION

### FOR METALLIC VALVES & SPECIAL PIPING (SP) ITEMS

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## 1 SCOPE

- 1.1 This Specification states the minimum technical, manufacturing and inspection requirements for Prequalification of Valves and Speciality Piping (SP) Items for use on OGDCL Surface Facilities.
- 1.2 This Specification is an integral part of any Enquiry, Material Requisition or Purchase order package for Piping Valves and Components, and shall be read in conjunction with the documentation referenced in the Enquiry, Material Requisition or Purchase Order Package.
- 1.3 In case of conflict between any requirement specified herein and the requirements of any other referenced document, the hierarchy for resolving the conflict shall be:
1. The Material Requisition (Inquiry /SOR)
  2. Data Sheets
  3. This Specification

## 2 REFERENCES

The following documents and specifications shall be read in conjunction with this specification:

- Item Data Sheets

## 3 CODES AND STANDARDS

The latest editions of following Codes, Standards and Statutory Regulations (where applicable) shall be used:

### 3.1 American Society of Mechanical Engineers

ASME V	Boiler and Pressure Vessel Code Section V – Non Destructive Examination
ASME VIII	Boiler and Pressure Vessel Code Section VIII Div.1 & Div. 2 Rules for Construction of Pressure Vessels
ASME IX	Boiler and Pressure Vessel Code Section IX - Welding Qualifications
ASME B31.3	Process Piping
ASME B1.20.1	Pipe Threads General Purpose (Inch.)
ASME B16.5	Pipe Flanges and Flanged Fittings
ASME B16.10	Face-to-Face and End-to-End Dimensions of Valves
ASME B16.20	Metallic Gaskets for Pipe Flanges – Ring-Joint, Spiral- Wound, and Jacketed
ASME B16.21	Non-Metallic Flat Gaskets for Pipe Flanges
ASME B16.25	Butt welding Ends
ASME B16.34	Valves – Flanged, Threaded and Welding End
ASME B16.47	Large Diameter Steel Flanges
ASME B46.1	Surface Texture, Surface Roughness, Waviness & Lay

### 3.2 American Petroleum Institute

API 6D	Specification for Pipeline Valves
API 6FA	Specification for Fire Test for Valves
API 594	Wafer Check Valves
API 598	Valve Inspection and Testing
API 600	Steel Gate Valves - Flanged and Butt welding Ends
API 602	Compact Carbon Steel Gate Valves – Flanged, Threaded, Weld Extended Body Ends
API 607	Fire Test for Soft-Seated Quarter-Turn Valves
API 608	Metal Ball Valves – Flanged, Threaded and Butt-Welding Ends
API 609	Butterfly Valves: Double Flanged, Lug - and Wafer-Type

### 3.3 American Society of Testing and Materials

ASTM A105	Specification Carbon Steel Forgings for Piping Applications
ASTM A106	Specification for Seamless Carbon Steel Pipe For High- Temperature Service
ASTM A182	Specification for Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High Temperature Service
ASTM A193	Specification for Alloy-Steel and Stainless Steel Bolting Materials for High Temperature Service
ASTM A194	Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure or High Temperature Service, or Both
ASTM A216	Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High Temperature Service
ASTM A320	Specification for Alloy / Steel Bolting Materials for Low Temperature Service
ASTM A350	Specification for Carbon and Low-Alloy Steel Forgings, Requiring Notch Toughness Testing for Piping Components
ASTM A351	Specification for Castings, Austenitic, Austenitic-Ferritic (Duplex), for Pressure Containing Parts
ASTM A352	Specification for Steel Castings, Ferritic and Martensitic, for Pressure-Containing Parts, Suitable for Low-Temperature Service
ASTM A694	Specification for Carbon and Alloy Steel Pipe Flanges, Fittings, Valves and Parts for High Pressure Transmission Service.
ASTM A890	Specification for Castings, Iron-Chromium-Nickel- Molybdenum Corrosion-Resistant, Duplex (Austenitic/Ferritic) for General Application
ASTM B62	Standard Specification for Composition Bronze or Ounce Metal Castings
ASTM B148	Standard Specification for Aluminium-Bronze Sand Castings
ASTM B150	Standard Specification for Aluminium Bronze Rod, Bar, and Shapes
ASTM B564	Standard Specification for Nickel Alloy Forgings
ASTM B584	Standard Specification for Copper Alloy Sand Castings for General Applications
ASTM G48	Standard Test Methods for Pitting and Crevice Corrosion Resistance of Stainless Steels and Related Alloys by use of Ferric Chloride Solution.

### 3.4 British Standards Institution

BS 1414	Steel Wedge Gate Valves (Flanged and Butt welding Ends)
BS 1868	Flanged Steel Check Valves
BS 1873	Steel Globe, Globe Stop and Check Valves (Flanged and Butt welding Ends)
BS 2080	Face to Face, Centre to Face, End to End and Centre Dimensions of Valves
BS 3799	Steel Pipe Fittings, Screwed and Socket Welding
BS 5146	Inspection and Test of Steel Valves
BS 5154	Copper Alloy Globe Stop and Check, Check and Gate Valves
BS 5155	Butterfly Valves
BS 5351	Steel Ball Valves
BS 5352	Steel Gate, Globe and Check Valves $\leq 50\text{mm}$
BS 5353	Plug Valves
BS 6755	Testing of Valves
BS EN 10204	Metallic Products – Types of Inspection Documents

### 3.5 Det Norske Veritas

DNV OS-F101	Offshore Standard - Submarine Pipeline Systems
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### 3.6 Manufacturer's Standardisation Society of the Valves and Fittings Industry

MSS SP25	Standard Marking System for Valves, Fittings, Flanges and Unions.
MSS SP44	Steel Pipe Line Flanges
MSS SP55	Quality Standard for Steel Castings for Valves

### 3.7 National Association of Corrosion Engineers

NACE MR-01-75	Sulfide Stress Cracking Resistant Metallic Materials for Equipment.
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## 4 GENERAL REQUIREMENTS

### 4.1 Units of Measure

- Nominal valve sizes are to be shown in inches and fractions. General dimensions shall be in millimetres.
- Pressure classes are to be shown as ASME Ratings (i.e. Class 150 etc.), pressures shall be expressed in kilopascals gauge (kPag).
- Temperatures shall be expressed in degrees Celcius ( $^{\circ}\text{C}$ ).

4.2 The welding of flanges on to valves to meet the requirements for a flanged end valve specification is not acceptable without prior approval.

4.3 The use of asbestos material for non-metallic gaskets, gasket components or gland packing is prohibited.

4.4 Valve and SP Item end requirements shall be as follows:

- i) Butt welding ends shall conform to ASME B16.25.

- ii) Socket welding ends shall conform to ASME B16.11.
- iii) Threaded ends shall conform to ASME B1.20.1.
- iv) Flanged ends shall conform to ASME B16.5 for sizes DN 15 to DN 600 and ASME B16.47 Series A for sizes greater than DN 600.

**4.5** Flange facing shall be as follows:

- i) Raised face serrated finish, Ra 3.2 to 6.3µm
- ii) Ring type joint contact faces, Ra 0.4 to 1.6µm

**4.6** Ring joint flange grooves shall have the following minimum hardness:

- |  |   |        |
|--|---|--------|
| i. Carbon Steel                          | - | 110 HB |
| ii. Low Temperature Carbon Steel         | - | 110 HB |
| iii. Austenitic Stainless Steel AISI 316 | - | 180 HB |
| iv. Duplex Stainless Steel               | - | 200 HB |
| v. Super Duplex Stainless Steel          | - | 200 HB |

**4.7** Valve dimensional details shall be in accordance with the design standard specified in the valve data sheet. SP item dimensional details shall be in accordance with the applicable SP item data sheet. Face to face dimensions are critical and must be confirmed with bid, top works and overall dimensions shall also be provided with bid.

**4.8** Where stated on the valve data sheet, valves shall be 'Certified Fire Safe' in accordance with BS6755 Part 2, API 6FA or API 607 as applicable. All valves offered shall be qualified by applicable fire test certification, details of which shall be available for Purchaser review, if requested.

## 5 MATERIAL REQUIREMENTS

### 5.1 Carbon Steel and Impact Tested Carbon Steel

The chemical composition of carbon steel castings and forgings shall be limited as follows:

Carbon content 0.25% max (non-NACE Castings)  
 Carbon content 0.22% max (NACE Forgings and Castings)  
 Carbon equivalent 0.43% max by ladle analysis where:

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

Maximum permitted sulphur content shall be as follows:

ASTM A216 Gr. WCB (Non NACE)	0.045% Max.
ASTM A216 Gr. WCB (NACE MR0175)	0.025% Max.
ASTM A105 Gr B (NACE and Non NACE)	0.025% Max.
ASTM A106 Gr B (NACE and Non NACE)	0.035% Max.
ASTM A350 Gr LF2 (NACE and Non NACE)	0.025% Max.
ASTM A352 Gr. LCC (NACE MR0175 & Non NACE)	0.025% Max.



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NACE MR0175 specified material shall also have limitation on sulphur content of 0.010% max.

All castings for sour service (NACE MR0175) and impact tested carbon steel castings shall be suitably heat treated after all welding operations have been performed. This requirement also applies to the weld repair of defects irrespective of size.

All ASTM A105 materials shall be supplied in a normalised condition.

All impact tested carbon steel to ASTM A350 LF2 shall be Class 1.

## 5.2 1 ¼% Chrome ½ % Moly

Cast valve and SP items bodies / components shall be supplied in accordance with ASTM A216 Gr. WCB and shall be supplied in the normalised and tempered condition. Heat treatment shall be carried out after all welding operations have been performed including any Purchaser permitted weld repair.

Forged valves shall be supplied in accordance with ASTM A105. Weld repairs are not permitted.

## 5.3 Austenitic Stainless Steel

Austenitic stainless steel shall be supplied in a solution annealed condition. Solution annealing shall be carried out after all welding operations have been performed including any Purchaser permitted weld repair.

Butt weld valves and SP items specified as 316 / 316L stainless steel shall be supplied dual certified i.e. having the mechanical properties of 316 SS and the chemical composition of 316L SS.

Butt weld valves and SP items specified as 304/ 304L stainless steel shall be supplied dual certified i.e. having the mechanical properties of 304 SS and the chemical composition of 304L SS.

The use of stainless steel to UNS S30400 or equivalent is not permitted for any pressure containing or bolting application in an Offshore or saliferous environment.

## 5.4 Duplex and Super Duplex Stainless Steel

All materials shall meet the mechanical requirements and chemical composition defined by the following product specifications:

Duplex stainless steel (22 Cr.)

Cast Valves - ASTM A890 UNS J92205

Forged Valves - ASTM A182 F51 (UNS S31803)

Super Duplex stainless steel (25 Cr.)

Cast Valves - ASTM A890 UNS J93380

Forged Valves - ASTM A182 F53 (UNS S32750)

Alloy composition shall provide a minimum Pitting Resistance Equivalent (PRE) as defined by the equation:

PRE = %Cr + 3.3% Mo + 16% N (Calculated by % weight)

Duplex stainless steel (22 Cr.) PRE shall be 35

### Super Duplex stainless steel (25 Cr.) PRE shall be 43

All components shall be supplied in a solution annealed condition. Solution annealing shall be carried out after all welding operations have been completed. Maximum hardness shall not exceed the following:

Duplex stainless steel (22 Cr.)	- 28 HRC
Super Duplex stainless steel (25 Cr.)	- 32 HRC

Micrographic examination is required for both Duplex and Super Duplex stainless steels and shall cover the mid-thickness region. The ferrite content shall be determined according to ASTM E562 or approved equivalent and shall be within 35 - 55 %. The microstructure, as examined at 400X magnification on a suitably etched specimen, shall be free from intermetallic phases and precipitates. For Procedure Qualification Records (PQR) of casting weld repairs, examination shall be carried out on both the base and weld material.

Corrosion Testing is required for both Duplex and Super Duplex stainless steels and shall be carried out on each heat and heat treatment batch of material to establish sigma phase intergranular attack in accordance with ASTM G48 Method A. The samples shall be exposed to 10% FeCl<sub>3</sub> solution at 25°C for 72 hours. Test specimens shall be in the 'as delivered / manufactured' condition, no surface preparation is permitted, except for cut edges. The test specimens shall include the full section thickness. Where thickness exceeds 50mm, the samples shall include at least one original surface and shall extend at least to the centre-section of the thickness. Visual examination shall be performed on all of the specimens with at least 20x magnification. No pitting is acceptable. Weight loss shall not exceed 4.0 g/m<sup>2</sup>.

Vendors shall submit for review with bid, details of all Manufacturers and include any further standard production testing which demonstrates resistance to Pitting and Crevice Corrosion for evaluation.

Charpy impact testing is required for cast duplex and super duplex stainless steel components in accordance with ASTM A370 at minus 46°C. The minimum absorbed energy values shall be 45 Joules min average, 35 Joules min individual.

Test samples for impact testing, microstructure, hardness and corrosion testing shall be carried out for each heat and heat treatment batch. For forgings the test sample shall be taken from the 'rough forging' or a prolongation representing the heaviest wall thickness. Castings shall have integrally cast coupons or test blocks which shall be heat treated together with the castings they represent.

Cast duplex and super duplex valve bodies and SP items bodies shall have a pressure / temperature rating in accordance with ASME B16.34 material group 2.8.

## 5.5 17/4 PH Stainless Steel

17/4 PH stainless steel shall be heat treated in accordance with NACE MR0175 and be supplied with a maximum hardness of 33 HRC.

Where the minimum design temperature stated on the valve and SP Item data sheet is below minus 29° C, Impact testing of 17/4 PH stainless steel is required in accordance with ASME B31.3

For valves with a minimum design temperature of minus 46°C, impact testing shall be carried out at minus 46°C. The minimum transverse absorbed energy values for a 10mm

x 10mm specimen shall be 38 Joules min average, 28 Joules min individual. Minimum lateral expansion shall be 0.38mm.

17/4 PH SS is not an acceptable substitute for 316 SS were valve or SP item body of 316 SS is specified.

#### **5.6 NACE MR0175 Requirements**

Valves and SP items specified to NACE MR0175 shall be certified as meeting all requirements for all parts which can be contacted by the sour environment. All materials shall be fabricated, tested and inspected in accordance with the requirements of NACE MR 0175.

Cast duplex not listed in NACE must be qualified and certified for use in sour service, with the requirements and hardness of wrought duplex UNS S31803 (28 HRC) being met. Vendor shall submit previous qualification data with bid, together with sour service history for material, from casting source offered.

#### **5.7 Amine Service Requirements**

In addition to the requirements of Para 6.1, carbon steel and impact tested carbon steel valves and SP items, specified for use in amine service, shall have all welds stress relieved by post weld heat treatment. The weld heat affected zone hardness shall be less than 248 HV10.

Copper and copper based alloys, monel and aluminium alloys shall not be exposed to amine service.

#### **5.8 Soft Seat and Seat Materials**

All seat and seal materials shall be suitable for the maximum design conditions and service fluids stated in the Valve and SP item Data Sheets. Material data sheets shall be submitted with the bid and detail pressure / temperature ratings for all non-metallic materials.

All non-metallic materials in hydrocarbon gas service shall be resistant to explosive decompression.

Vendor shall confirm suitability of seat and seal material where Methanol or Amine service is indicated on the Valve or SP Data Sheet.

#### **5.9 Welding and Weld Repairs**

Weld repairs are permissible for castings only, forgings shall not be weld repaired. No weld repair shall be completed until Purchaser approval of procedures has been obtained.

#### **5.10 Corrosion Resistant Overlays and Plated Materials**

~~Bidders shall provide details and extent of any corrosion resistant overlays provided or plating of internal components with their bid.~~

## 6 CORROSION ALLOWANCE

- 6.1 Valve and SP item bodies in carbon steel and impact tested carbon steel shall be of sufficient thickness to allow for a corrosion allowance of 3mm, unless specified otherwise in the data sheet.
- 6.2 Where a corrosion allowance of 6mm is specified in the data sheet, the Vendor shall confirm the valve or SP item includes this corrosion allowance over and above that - Orequired for pressure containment and the component will be fully functional in the fully corroded condition.

## 7 VALVE DESIGN

Valves shall comply with the relevant standards and codes as specified herein and in the valve data sheets.

### 7.1 Ball Valves

All ball valves shall be of a fire tested design to BS6755 Pt 2, API 6FA or API 607. Test certification shall be provided by the manufacturer to verify the valves performance.

Valves shall be fitted with fire safe seals.

Valves shall be of anti-static design with 'blow-out' proof stems.

The design of all ball valves shall incorporate body cavity pressure relief, which shall be achieved through seat design. A hole drilled in the ball to achieve body cavity relief is not acceptable.

Ball valves shall be reduced bore pattern DN 50 and above, unless otherwise specified as full bore on the individual data sheets. Reduced bores shall be limited to one line size smaller than body size.

All balls shall be solid, one piece design.

Where a 6.0mm corrosion allowance is specified in the valve data sheet, valves shall include a 316 SS weld overlay on seat pocket areas.

### 7.2 Gate, Globe, Check and Needle Valves

**Regular port design shall be supplied unless noted otherwise on the individual valve data sheets.**

**Gate, globe and needle valves shall be suitable for re-packing under pressure in the fully open position.**

The direction of flow shall be cast or steel stamped on the globe valve and check valve bodies and on uni-directional valves. Low stress stamps must be used where required, but are not permitted on valves with a minimum design temperature below minus 46°C.

Valves DN 50mm and above with Outside Screw and Yokes shall be provided with stem protectors and visual position indicators.

Vendor shall submit CV values for Globe Valves with bid.

### 7.3 Butterfly Valves

All butterfly valves shall be fully lugged type with holes through drilled and tapped ASME B1.1 coarse thread series (UNC) 1" diameter and smaller and 8 thread series (UN) 1 1/8" diameter and greater. If valves are required to accommodate galvanised bolting, then this requirement will be stated on the individual valve data sheet.

The valve supplier shall stipulate the number and length of bolts required for each size and type of valve where partial penetration tapped holes are used in their design.

Valves shall be suitable for installation between ASME B16.5 RF flanges DN 80 to DN 600 and ASME B16.47 Series A RF flanges DN 650 and greater, up to and including Class 600.

For rubber lined valves the Vendor shall submit with bid, full details of how the liner is locked into the body, and how it is sealed around the valve stem.

The Vendor is responsible for checking the liner and seal rings suitability for the design conditions and service fluids stated on the valve data sheets. Confirmation of the suitability shall be stated in the Vendor's bid.

Where specified on the data sheet, valves shall be of a fire tested design to BS6755 Pt 2 or API 607, certified accordingly and fitted with fire safe seals.

### 7.4 Monoflange and Modular Valves

The technical requirements specified herein shall be applicable to valves of 'Monoblock' or 'Modular' construction where single block and bleed valve or double block and bleed service is required for instrument isolation or similar services in size DN15 to DN50.

Monoblock' or 'Modular' valves shall be in full compliance with the requirements of ASME B16.34.

The pressure and temperature rating of the valve body and pressure containing parts shall be in compliance with ASME B16.34. Resilient seats shall be fully rated to 150 deg. C.

Valve dimensions shall be in accordance with Manufacturer's written standard.

'Monoblock' or 'Modular' valves shall be integral single block and bleed valve or double block and bleed valves with one of the following types of assemblies as identified in the data sheets:

- Integral one piece forged body with one or two individual isolation valves with a bleed valve for vent / drain the isolated section.
- **Slim-line type assembly, consisting of Monoflange body with one or two isolating valves and a bleed valve.**

**All Isolation and Bleed valves shall have bolted bonnets.**

Needle valves shall have non-rotating tip and open from the flow side.

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Gate valves shall be of conical plug or solid wedge type.

Pressure passage hole in the monoflanges shall be minimum 6.0mm and maximum 6.5mm.

End connections shall be as indicated in the data sheets. Vent connection shall be anti-tamper type. Vent port shall be fitted with a plug.

Stems shall be blow out proof.

The monoblock valve shall provide for instrument connections as indicated in the data sheets. Where threaded connection for instrumentation are indicated, the threading shall be 1/2" NPTF.

Fully assembled valves shall be production shell hydrostatic tested and seat hydrostatic tested in accordance with BS 6755 Part 1 or similar. Leakage rate shall be zero.

## 7.5 Hot Oil Service Requirements

Where specified on the valve data sheet, valves shall be suitable for hot oil service and have a previous history of use in this service, details of which shall be submitted with bid.

## 8 VALVE OPERATOR REQUIREMENTS

8.1 Levers and hand wheels on valves including gear operators shall be permanently marked "OPEN" or "CLOSE" with an arrow to indicate direction of rotation.

8.2 Where stated on the valve data sheet, valves shall be fitted with a facility for locking in the open or closed position. Locking shall be achieved by the insertion of the shank of a standard padlock. Keys and padlocks will be supplied by 'others'.

8.3 All valves shall be suitable for the retrofitting of Valve Interlocks after installation at site, by others, without affecting the pressure envelope of the valve or valve manufacturers warranty. The Vendor shall be responsible for liaison with the selected interlock manufacturer to ensure compatibility of valve and locking device. All valve topworks details required by interlock manufacturer shall be supplied by Vendor free of charge.

8.4 Valves shall be capable of satisfactory operation with the valve stem in any position i.e. vertical, horizontal or inclined.

8.5 Valve operators shall be as stated on the valve data sheets provided the torque or direct force does not exceed 350N under maximum differential pressure. Where this torque is exceeded the Vendor shall highlight this in the bid.

### 8.6 Wrench and Lever Operators

8.6.1 Wrench and lever operators shall be fitted with stops at the fully open and closed positions to prevent the ball or blades moving through more than 90°. These stops may be raised bosses, integrally cast or forged with the valve body. Preferred location for the plate, which strikes the stops, is permanently attached to the stem as opposed to attached to the wrench, which may be removed allowing mal-operation.

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8.6.2 Butterfly valves shall have lever locating spigots and holes at intermediate points of their travel to regulate the flow as well as at the fully-open & fully-closed positions, this is not a locking device unless otherwise called for in the valve data sheet.

8.6.3 Valves shall be fitted with the facility of a stem extension to clear insulation if stated in the valve data sheet. Valves shall also be suitable for retro-fitting vendor's extension devices at site.

## 8.7 Gear Operators

8.7.1 Bevel or worm gear types shall be complete with handwheels and position indicators. The operators shall be weatherproof, totally enclosed and packed with suitable lubricant. Where the units are not "sealed for life" they shall be suitable for re-packing with grease whilst the valve is installed in line. Gear operators shall be mounted in such a way that they can be easily unbolted from the valve body and subsequently be re-positioned in 90° increments.

8.7.2 Bevel or worm gear types shall be complete with handwheels and position indicators. The operators shall be weatherproof, totally enclosed and packed with suitable lubricant. Where the units are not "sealed for life" they shall be suitable for re-packing with grease whilst the valve is installed in line. Gear operators shall be mounted in such a way that they can be easily unbolted from the valve body and subsequently be re-positioned in 90° increments.

## 8.8 Cryogenic Service

8.8.1 Valves required for 'Cryogenic Service' shall have extended bonnets of with sufficient length and vapour space between body and stuffing box to maintain the gland packing and/or seals near ambient temperature and to keep them soft and pliable for optimum sealing. All valve extensions shall have a stuffing box packing or seal at the top.

8.8.2 Valves shall be provided with an insulating collar/drip plate welded around the extended bonnet. In case of a flanged bonnet construction, there shall be a sufficient **distance between the drip plate and bonnet flange to facilitate mounting of the bonnet flange bolts.**

## 9 SPECIALTY PIPING (SP) ITEM DESIGN

9.1 SP items shall be in accordance with the relevant Codes and Standards unless otherwise stated on the individual data sheets. If there is no relevant code or standard then these shall be in accordance with ASME B31.3 1999 – 'Process Piping'.

9.2 The Vendor is responsible for selecting all seats, seals or pressure-limiting component to ensure that these are of suitable grade to meet the design conditions specified on the data sheet. Confirmation of the suitability or limitation e.g. maximum pressure at the specified temperature shall be stated in the Vendor's bid.

## 10 PRESSURE RETAINING BOLTING REQUIREMENTS

10.1 Body, bonnet and gland bolting on valves and SP items shall be as stated on the data sheet and shall generally comply with the following:

Bolting Material	Bolting Material Specification	Nut Material Specification (Heavy)	Design Temperature °C	NACE MR01-75 Compliant
Alloy steel	ASTM A193 Gr. B7	ASTM A194 Gr. 2H	-46 to 350	No
Alloy steel	ASTM A193 Gr. B7M	ASTM A194 Gr. 2HM	-46 to 300	Yes
Low Temp Alloy steel	ASTM A320 Gr. L7M	ASTM A194 Gr.7M	-50 to 300	Yes
316 SS Note i	ASTM A193 Gr.B8M Class 2	ASTM A194 Gr.8MA	-100 to 200	No
Duplex SS (22 Cr)	Duplex SS (UNS S31803)	Duplex SS (UNS S31803)	-50 to 100	Yes
Super Duplex SS (25 Cr) Note iii	Duplex SS (UNS S32750)	Duplex SS (UNS S33750)	-50 to 145	Yes

**Note:**

- i) The use of stainless steel bolting to UNS S31600 (B8M or B8M Class 2) or equivalent is not permitted for any pressure containing application in an Offshore or saliferous environment were the operating temperature is above 60°C.
- ii) The use of stainless steel bolting to UNS S30400 (B8) or equivalent is not permitted for any pressure containing application in an Offshore or saliferous environment.
- iii) Pressure containing bolting to UNS S32750 (or approved equivalent) shall be supplied with mechanical properties equal to or greater than ASTM A193 B7. Pitting resistance equivalent shall be PRE 40 or greater.

**11 TESTING**

- 11.1 Floating ball, gate, globe, needle and piston check valves, shall be pressure tested in accordance with BS6755 Part 1, leakage rate 'A' (i.e. zero) unless specified otherwise in the data sheet.
- 11.2 Trunnion mounted ball, butterfly, swing check and dual plate wafer check valves, shall be pressure tested in accordance with API 598. Butterfly valves DN 350 and larger shall also be subjected to a disk strength test in accordance with BS5155.
- 11.3 See Table 1 and 2 for additional non-destructive testing requirements and Table 3 for specific pressure testing requirements.
- 11.4 SP items shall be tested in accordance with manufacturers and accepted industry standards. Vendor shall provide details of all testing offered for purchaser review with bid.
- 11.5 Valves and SP items shall be clean built, unpainted and free from preservatives and grease during testing.
- 11.6 Hydrostatic testing shall be completed using potable water containing 1% by volume of biodegradable wetting agent. Maximum chloride content shall be 25ppm and the pH value shall be between 6.0 and 8.0.
- 11.7 Castings shall not be impregnated with any material to prevent leakage.



- 11.8 Upon completion of satisfactory testing all components to be thoroughly drained and dried prior to preparation for packing.

## 12 PAINTING

- 12.1 All carbon steel valves, SP items and corrodible external parts shall be supplied finish painted to Purchaser approved manufacturers standard. Details of preparation and painting offered shall be supplied by Vendor at bid stage for review and shall include the following:

- Manufacturers data sheet for the paint system offered
- Manufacturers procedure for surface preparation and application of the paint system, including a repair procedure.

The paint system offered shall be suitable for final coating by others, using the manufacturers standard paint system as an intermediate coat. Finish colour shall be Pastel Grey.

- 12.2 Painting shall be carried out after successful completion of all testing and inspection.

## 13 MARKING

- 13.1 In addition to the markings required by MSS SP-25 each valve / SP item shall be provided with a stainless steel tag 50mm x 20mm x 3mm with the valve / SP item tag number, purchase order number and purchase order item number punched on. The tag shall be attached to the valve with stainless steel wire.

## 14 PREPARATION FOR SHIPMENT

- 14.1 **Gate, globe, needle and butterfly valves shall be dispatched in the fully closed position. Ball valves shall be dispatched in the open position.**

- 14.2 All valves and SP items shall be protected against corrosion and mechanical damage and the Vendors / Manufacturers procedures, a copy of which shall be supplied with bid for Purchaser review.

- 14.3 All flange faces shall be supplied with proprietary heavy duty plastic flange protectors or bolted on wooden covers. Butt weld and threaded ends shall be supplied with suitable bevel and thread protectors and plugs to prevent the ingress of dirt.

## 15 INSPECTION REQUIREMENTS

- 15.1 Typical Inspection & Test Plan shall be submitted for review with the bid. All valves and SP items will be subject to inspection in accordance with the Purchaser approved Vendor Inspection & Test Plan.



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- 15.1 Bidder to submit manufacturing schedule with the bid in order arrange third party inspection during manufacturing process. All cost related to 3<sup>rd</sup> party will be borne by OGDCL. Bidder to provide accommodation and necessary support to 3<sup>rd</sup> party during manufacturing process.

## 16 GUARANTEE

- 16.1 Vendor shall guarantee all equipment as being suitable for the design conditions and service fluids stated on the valve & SP item data sheets. Confirmation of suitability shall be stated in the Vendors bid e.g. seats, seals etc.

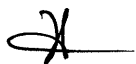
## 17 CERTIFICATION & TRACEABILITY

- 17.1 All valves and SP items shall be certified and copies of all documentation shall be supplied for each valve and SP item. Blanket certification is not acceptable. Certificates shall be provided in accordance with material requisition Document Data Submittal Requirements (DDSR) covering each item supplied. All certificates shall be fully traceable to the item covered and shall be marked with the Purchasers order number, item number and tag/part number. They shall be clearly legible, in the English language.
- 17.2 Material Certificates for basic material i.e. plate, forgings, or castings used in the manufacture of flanges and valve/SP item bodies, bonnets and pressure retaining parts shall be furnished as test certificates of the EN 10204 3.1B type. Vendor shall confirm which parts are considered pressure retaining (see RFQ/PO Exhibit 'E' Attachment No 1) and shall include a list in the bid for Purchaser review.
- 17.3 The certificates shall be issued, stamped and signed by the material Manufacturer's inspector, who shall be independent of the Manufacturer's Production Department. This certificate shall also be stamped and verified by the valve Manufacturer's QA/QC Department.
- 17.4 Where basic material is further processed by the Vendor to form the valve/SP item body or internal components and such process may change the mechanical properties, etc., the Vendor shall also furnish EN 10204 -3.1B type certificates for the Manufacture of the furnished item.
- 17.5 For valve and SP item internals and non-pressure containing parts, works reports of the BS EN 10204 2.2 type shall be acceptable.
- 17.6 The valve/SP item supplier shall supply certificates of conformity for non-metallic components of valves/SP items.

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## 18 DOCUMENTATION

- 18.1 Documentation shall be submitted in accordance with material requisition Document Data Submittal Requirements (DDSR).




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**TABLE 1 - NON-DESTRUCTIVE TESTING REQUIREMENTS**

Material	Pressure Rating Class	Manufacturing Method	Visual Inspection	Radiography / Ultrasonic Inspection	Magnetic Particle Inspection	Liquid Penetrant Inspection	Liner Spark Test
All	150 to 2500	Forging	100%	N/A	N/A	N/A	N/A
LT Carbon Steel	150 to 600	Casting	100%	N/A	N/A	N/A	N/A
Carbon Steel	900		100%	10%	10%	N/A	N/A
Bronze	1500 to 2500		100%	100%	100%	N/A	N/A
Duplex SS	150 to 600	Casting	100%	N/A	N/A	N/A	N/A
Austenitic SS	900		100%	10%	N/A	10%	N/A
	1500 to 2500		100%	100%	N/A	100%	N/A
Rubber Lined Ductile Iron / Carbon Steel	All	All	100%	N/A	N/A	N/A	100%

- 1.1 All prototype castings shall have been subjected to 100% volumetric examination in accordance with ASME B16.34 Section 8.0.
- 1.2 Radiography shall be carried out on critical areas as defined by ASME B16.34.
- 1.3 MPI or DPI shall be carried on all accessible interior and exterior surfaces, including machined surfaces.
- 1.4 Ultrasonic examination of castings may be carried after specific approval by the Purchaser, where radiographic inspection is not feasible.
- 1.5 Testing to be carried on the percentage of casting quantity shown, within a minimum of one.
- 1.6 Refer to Table 2 for NDE method and acceptance criteria.

  
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**TABLE 2 - NON-DESTRUCTIVE TESTING STANDARDS**

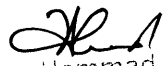
NDE Method	Standard & Acceptance Criteria
<u>Visual</u> Casting Forging	MSS SP 55 ASME V Article 9
<u>Radiography</u> Casting	ASME B16.34 ANNEX B
<u>Ultrasonics</u> Castings	ASME B16.34 ANNEX E
<u>Magnetic Particle</u> Casting	ASME B16.34 ANNEX C
<u>Liquid Penetrant</u> Casting	ASME B16.34 ANNEX D

**TABLE 3 - PRESSURE TESTING REQUIREMENTS**


Valve Type	Hydrotest Body (1.5 x DP)	Hydrotest Seat (1.1 x DP)	Hydrotest Backseat (1.1 x DP)	Pneumatic Test Seat (6 bar)	Disc Strength Test (1.5 x DP)
Ball	100%	100%	N/A	100%	N/A
Gate	100%	100%	100%	100%	N/A
Globe/Needle	100%	100%	100%	100%	N/A
Check	100%	100%	N/A	100%	N/A
Butterfly	100%	100%	N/A	100%	Valves 14" NPS & Larger

1 Annexure-A1


CONSTRUCTION		COMPLIANCE
Valve Type :	Ball, Full Bore	
Design Standard :	API 6D or BS 5351 (see note 3)	
End Connection:	Flanged to ASME B16.5	
End Connection Finish :	Ra 3.2 to 6.3µm.	
Face to Face Dimension :	ASME B16.10, 15mm to 100mm S/Pattern, 150mm to 600mm L/Pattern	
Body Design :	Split body (two or three piece), Anti-static, Blowout-proof stem	
Trim Design :	15mm to 50mm Floating Ball, 80mm to 600mm Trunnion Mounted	
Valve Operator :	15mm to 100mm Lever 150mm to 600mm Bevel gear (weatherproof)	
MATERIAL		
Body Material :	15mm to 40mm - Forged Carbon Steel ASTM A105N 50mm to 600mm Cast Carbon Steel ASTM A216 Gr WCB or Forged Carbon Steel ASTM A105N	
Trim Material : Ball :	Stainless steel 316	
Stem / Trunnion :	Stainless steel 316 or 17-4PH	
Seat Ring :	Stainless steel 316	
Seat Insert :	Reinforced PTFE	
Gaskets/Seals :	Manufacturers Standard suitable for service	
Springs :	Inconel X-750	
Bolting Material :	ASTM A193 Gr B7M / A194 Gr 2HM	
Corrosion Allowance :	3 mm	
External Coating :	Finish Painted in accordance with Manufacturers Standard	
MISCELLANEOUS		
Testing :	API 598 or BS 6755 Pt1 Leakage Rate A	
Visual Inspection :	MSS-SP-55	
Fire Test :	API 607, API 6FA or BS 6755 Pt2	
Service :	HC Gas(sour), HC liquids(sour), Mixed Phase(sour) Vent(sour), Drain(sour)	
Gas Composition:	H <sub>2</sub> S: 0.0001, CO <sub>2</sub> : 0.0764, N <sub>2</sub> : 0.0967, Methane: 0.7677, Ethane: 0.0098, Propane: 0.0024, i-Butane: 0.0005, n-Butane: 0.0006, i-Pentane: 0.0003, n-Pentane: 0.0002, C <sub>6</sub> +: 0.0022, H <sub>2</sub> O: 0.0429	
NOTES		
1 Bidder must complete the Compliance column.		
2 Floating Ball valves to be in accordance with BS5351, Trunnion Mounted valves in accordance with API 6D		
3 Materials for the valve shall be suitable for sour service in accordance with NACE MR-0175 requirements		
4 Valve to have facility for locking in the fully open or fully closed position		

  
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1	<b>Annexure-A2</b>		
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4	<b>CONSTRUCTION</b>		<b>COMPLIANCE</b>
5	Valve Type :	Check, Swing Type	
6	Design Standard :	API 6D	
7			
8	End Connection and Rating :	Suitable for mounting between ASME B16.5 flanges	
9	Face to Face Dimension :	API 6D	
10	Body Design :	Swing Type	
11	Trim Design :		
12	Valve Operator :	n/a	
13	NACE MR 0175 compliance	Yes (Sour Service)	
14			
15	<b>MATERIAL</b>		
16	Body Material :	Cast Carbon Steel ASTM A216 Gr WCB + 13% Cr on seating area or Forged Carbon Steel ASTM A105N + 13% Cr on seating area	
17	Trim Material : Plates	13% Cr	
18	Hinge / Stop Pins :	13% Cr	
19	Springs :	Inconel X-750	
20	Gland Packing :	n/a	
21	Flange Ring Gasket	SS 316	
22	Bolting Material :	ASTM A193 Gr B7M / A194 Gr 2HM	
23	Corrosion Allowance :	3 mm	
24	External Coating :	Finish Painted in accordance with Manufacturer's Standard	
25	Flange Material	A105, Sch 80, NACE MR 01 75 compliance (MTCs to be attached)	
26	Flange Details	Sch 80 for all sizes	
27	<b>MISCELLANEOUS</b>		
28	Testing :	API 598	
29	Visual Inspection :	MSS-SP-55	
30	Fire Test :	n/a	
31	Service :	HC Gas(sour), HC liquids(sour), Mixed Phase(sour) Closed Drain(sour)	
32	Gas Composition:	H <sub>2</sub> S: 0.0001, CO <sub>2</sub> : 0.0764, N <sub>2</sub> : 0.0967, Methane: 0.7677, Ethane: 0.0098, Propane: 0.0024, i-Butane: 0.0005, n-Butane: 0.0006, i-Pentane: 0.0003, n-Pentane: 0.0002, C <sub>6</sub> +: 0.0022, H <sub>2</sub> O: 0.0429	
33	<b>NOTES</b>		
34	1 Bidder must complete the Compliance column.		
35	2 Materials for the valve shall be suitable for NACE MR-0175 requirements.		
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1	<b>Annexure-A3</b>		
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4	<b>CONSTRUCTION</b>		<b>COMPLIANCE</b>
5	Valve Type :	Globe, Regular Bore	
6			
7	Design Standard :	BS 5352 / BS 1873 (see note 3)	
8			
9			
10	End Connection :	Flanged to ASME B16.5	
11	End Connection Finish :	Ra 3.2 to 6.3µm.	
12	Face to Face Dimension :	ASME B16.10	
13	Body Design :	Bolted Bonnet, OS&Y, Rising Stem, Straight Pattern	
14	Trim Design :	Renewable plug type disc	
15	Valve Operator :	Handwheel	
16			
17			
18			
19	<b>MATERIAL</b>		
20	Body Material :	15mm to 40mm : Forged Carbon Steel ASTM A105N	
21		50mm to 300mm : Cast Carbon Steel ASTM A216 Gr WCB	
22		or Forged Carbon Steel ASTM A105N	
23	Trim Material : Disc :	13% Cr (see note 4)	
24	Stem :	13% Cr	
25	Seat Ring /		
26	Back Seat Bush :	13% Cr Stellite 6 Hardfaced (Renewable) (see note 5)	
27	Gland Packing :	Reinforced Graphite Filament	
28	Bonnet Gasket :	Manufacturer's Standard suitable for service	
29			
30	Bolting Material :	ASTM A193 Gr B7M / A194 Gr 2HM	
31	Corrosion Allowance :	3 mm	
32	External Coating :	Finish Painted in accordance with Manufacturer's Standard	
33			
34			
35	<b>MISCELLANEOUS</b>		
36	Testing :	BS 6755 Pt 1, leakage rate A	
37	Visual Inspection :	MSS-SP-55	
38	Fire Test :	n/a	
39			
40	Service :	HC Gas(sour), HC liquids(sour), Mixed Phase(sour)	
41		Vent(sour), Drain(sour)	
42	Gas Composition:	H <sub>2</sub> S: 0.0001, CO <sub>2</sub> : 0.0764, N <sub>2</sub> : 0.0967, Methane: 0.7677, Ethane: 0.0098,	
43		Propane: 0.0024, i-Butane: 0.0005, n-Butane: 0.0006, i-Pentane: 0.0003,	
44		n-Pentane: 0.0002, C <sub>6</sub> +: 0.0022, H <sub>2</sub> O: 0.0429	
45			
46	<b>NOTES</b>		
47	1 Bidder must complete the Compliance column.		
48	2 Materials for the valve shall be suitable for NACE MR-0175 requirements.		
49	3 15mm to 40mm valves to be in accordance with BS 5352.		
50	50mm to 200mm valves in accordance with BS 1873.		
51	4 50mm to 300mm NPS valves acceptable with base material same as body and seating surface overlaid.		
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## **TOR FOR THIRD PARTY INSPECTION & EXPEDITING**

### **1. Introduction:**

Inspection of Valves (100%) in the light of following scope of work and documents; TPI to ensure complete compliance.

- Purchase Order
- Data Sheet / Specifications
- Relevant codes & Standards.

### **2. Scope of Inspection**

TPI to proceed with following detailed scope of work in order to ensure quality inspection.

#### **2.1 Documents Review for Approval by TPI.**

- 2.2.1 Review of Manufacturing Procedure Specification
- 2.2.2 Review of Inspection / Testing Procedures & Plan
- 2.2.3 Review of Calibration Certificates of NDT & Destructive tests Equipments.
- 2.2.4 Review of Inspection test plan
- 2.2.5 Review of Raw Material & verification through MTC'S
- 2.2.6 Review of NDT Personnel Certifications & records
- 2.2.7 Review of Manufacturing schedule.

#### **2.2 Visual Inspection of Raw Material and Witness of Associated Tests**

- 2.3.1 Visual inspection of raw material to evaluate the dimensional features
- 2.3.2 Visual inspection of raw material to detect surface imperfections like lamination, gouges &/or pitting.

- 2.3.3 Witnessing of chemical test of raw material, to ensure chemical properties of raw material to be used.
- 2.3.4 Witnessing / Verification of test reports as per applicable code/standard &/or clients specification.

### **2.3 Verification of Material:**

- Verify type of packing and trim materials for conformance to purchase order and specifications.

### **2.4 Witnessing of Hydrostatic Test of Valves in accordance with Applicable Standard**

- Test pressure shall be designated in accordance with applicable standard
- Test duration shall be in accordance with applicable standard
- Ensuring no leakage during test from end seal for constant test pressure.
- Witness of Hydrostatic test data.

### **2.6 Witnessing of Non-Destructive Evaluation in Accordance with Applicable Standard**

- Witnessing of valves inspected by NDT & Verification of NDT test reports.

### **2.7 Final Inspection:**

The scope for Open Box Pre-shipment inspection of Material to be carried out by third party inspector is outlined below:

- Ensure complete compliance with documents.
- Check valves dimensions and identification marking (on body and/or nameplate) for conformance to purchase order and specifications.
- Check for any indications of damage.
- Check preparation for shipment and packaging as per specification.
- If gear or hand wheel operated, check that the clockwise operation of the operator closed the valve.

- Review the detailed listing (will be provided by Manufacturer) of the equipment, materials, tools, accessories, spare parts, and all other relevant parts being shipped, Material Test Certificates, Purchase Order and other relevant documents.
- Each package shall contain following information with un washable paint.
    - a) Oil & Gas Development Company Ltd, UCH II Development Project.
    - b) Oil & Gas Development Company Ltd, Islamabad Pakistan.
    - c) Contract No. \_\_\_\_\_
    - d) L/C No. \_\_\_\_\_
    - e) Equipment No. \_\_\_\_\_
    - f) Case No. \_\_\_\_\_
    - g) Storing and handling instructions for fragile and perishable items.
    - h) Gross Weight (in metric tons)
    - i) Dimensions (length\*width\*height in metric system)
    - j) Place of Origin
  - Verify the completeness of Material based on the final Packing List provided by Manufacturer.
  - Compliance check for safety standards of transportation/ shipment for Material.
  - Physical check for any damages of Material.
  - Instructions necessary for the storage of Material to maintain its integrity at site and before startup.
  - Integrity of coating/exterior paint must be checked and ensured. Make sure that paint does not contain Lead or chromates.
  - All exterior surfaces except for corrosion resistant material shall be coated with rust preventive material.
  - All interior surfaces shall be physically checked to ensure that no dust, oily particles, welding spatters and other damaging particles reside there and those surfaces shall be coated for rust prevention.
  - All the material must be closed with some standard procedure.
  - All the threaded openings must be secured with steel plugs and openings beveled for welding shall be secured to prevent entrance of any moisture contents or dust.
  - Centre of Gravity and lifting points must be marked clearly on the equipment.

- All the connections whether piping, component or electrical shall be thoroughly inspected for their integrity.
  - All the components being shipped separately shall be tagged with item and serial number of the equipment for which it is intended.
  - All the equipment and components to be shipped shall comply with Occupational Health and Safety Standards.
  - Any connections dismantled for shipment purpose shall be match marked for ease of assembly.
  - Copy of installation / Maintenance manual must be shipped along with the material.
  - Copy of As Built drawing of valves must be shipped along with material.
- Preparation of report in light of above inspection, applicable codes/ standards and clearly identify the acceptance criteria.

### 3.0 Reporting Structure:

- Verification of Progress / Quality reports of all activities prepared by manufacturer.
- Submit a Non Conformance report to OGDCL signifying the quality concern & remedy.
- Stage wise inspection report.
- Detailed report at the end of complete inspection (Soft and hard copy).

### Notes:

- 3<sup>rd</sup> Party inspector shall be present at the factory during stages of inspection mentioned above and for any increase in inspection time OGDCL will not be responsible.
- CV of third Party inspector from the aforementioned company should be immediately submitted to OGDCL for review and approval and should comply to following minimum requirements:
  - 10 Years of Minimum experience.
  - Carried Out third Party inspection of similar 10 Nos of Jobs (Proof to be attached).

- 3rd Party inspector will inform to company immediately for any delays in the manufacturing process and shall expedite the whole manufacturing process.
- Reference numbers of all documents reviewed / approved to be mentioned in daily and final report.
- Review and approval of documents related to project is included in scope of work of third party.
- Kindly appoint focal person of the project.