ADNOC	EPC FOR SAHIL PHASE III DEVELOPMENT PROJECT	TARGET

COMMENT RESOLUTION SHEET

Document Title:	**MANUAL VALVE SPECIFICATION**	**Company Response**
Document No. & Rev :	**P16093-30-99-12-1604 Rev-B**	☐ CODE 1 - No comments, work to proceed. ☑ CODE 2 - With minor Comments, work can proceed subject to incorporation of comments.
Contract No.: 4700021779	**Project No.: P16093** — **Transmittal Ref : EPC-AON-SDP-TR-OUT-0144**	☐ CODE 3 - Major comments, work cannot proceed. ☐ CODE 4 - Exception comments, document for information only.

S.No.	Rev No.	COMMENT SECTION / CLAUSE / DRAWING REFERENCE / Page No.	COMMENTED PERSON NAME	DISCIPLINE	COMPANY COMMENTS	CONTRACTOR RESOLUTION	COMPANY CONFIRMATION	REMARKS
1	B	Page no. 16	Sujay Ashok	Piping	Page repeated please delete	Noted. Repeated page deleted	closed	
1	A	Clause 4.2.1 company specification, Rev.A	Sujay Ashok	Piping	Mention AGES Specs AGES-GL-13-001_Contractors QAQC Requirement AGES-GL-13-002_Positive Material Identification of Equipment and Piping AGES-SP-13-001_Criticality Rating Specification AGES-SP-13-002_Procurement Inspection and Certification Requirement in Projects	Noted.AGES document numbers are included to clause 4.2.1.	Noted	
2	A	Clause 4.3.6 MESC Standards, Rev.A	Sujay Ashok	Piping	SPE 77/110 SPE77/312 SPE 77/300	Noted.Shell MESC codes are included to clause 4.3.6.	Noted	
3	A	Page number 14, Rev.A	Sujay Ashok	Piping	add amendment to clause 16 to mention the below AGES specs AGES-GL-13-001_Contractors QAQC Requirement AGES-GL-13-002_Positive Material Identification of Equipment and Piping AGES-SP-13-001_Criticality Rating Specification AGES-SP-13-002_Procurement Inspection and Certification Requirement in Projects	Noted and updated in clause 5.4 as an amendment.	Noted	

DOCUMENT REVIEW STATUS

■ CODE-1: APPROVED

☐ CODE-2: APPROVED WITH COMMENT (MINOR COMMENTS)

☐ CODE-3: REVISED AND RESUBMIT (MAJOR COMMENTS)

☐ CODE-4: FOR INFORMATION

NAME: Anil Kumar

DATE: 15-Mar-24

Review / Approval by CONTRACTOR shall not in any way relieve the Subcontractor / Vendor from his responsibility to meet the project specification and contractual requirement.

EPC OF SAHIL PHASE 3 DEVELOPMENT PROJECT

ADNOC Onshore Contract No.: 4700021779
ADNOC Onshore Project No.: P16093

MANUAL VALVE SPECIFICATION

(AMENDMENT TO ENGINEERING STANDARD – SPECIFICATION FOR PIPING VALVES DOC. No. 30-99-12-3209)

1	15-Mar-2024	MAN	SDH	SHA	Issued for Construction
B	08-Mar-2024	MAN	SDH	MAS	Issued for Approval
A	29-Feb-2024	MAN	SDH	MEB	Issued for Review
REV.	**DATE**	**ORIGINATOR**	**REVIEWED**	**APPROVED**	**DESCRIPTION**

THIS DOCUMENT IS INTENDED FOR USE BY ADNOC AND ITS NOMINATED CONSULTANTS, CONTRACTORS, MANUFACTURERS AND SUPPLIERS.

EPC CONTRACTOR: **TARGET ENGINEERING CONSTRUCTION COMPANY LLC**	TARGET
SUB-CONTRACTOR: **REJLERS INTERNATIONAL ENGINEERING SOLUTIONS AB**	REJLERS

ADNOC Onshore Document No.	: P16093-30-99-12-1604	Document Class	: 1
ORGINATOR Project No	: 5900702	Revision	: 1
ADNOC Onshore Project No	: P16093	Date	: 15-Mar-2024
		Page	: **1** of **17**

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ADNOC Onshore

MANUAL VALVE SPECIFICATION

Document No.	**: P16093-30-99-12-1604**	**Rev**	**: 1**
Project No. P16093	**Agreement No. 4700021779**	**Page**	**: 2 of 17**

The table below is a brief summary of the most recent revisions to this document. Details of all revisions are held on document by the issuing department.

Sr. No.	Rev. No.	Issue No.	Date of issue	Description of revision
1	A	1	02-Feb-2024	Issued for Review
2	B	2	08-Mar-2024	Issue for Approval
3	1	3	15-Mar-2024	Issued for Construction

Notes: All the changes shall be marked with track changes in right hand side with Blue font

MANUAL VALVE SPECIFICATION

HOLDS

Sr. No.	Section	HOLD Description
1	-	-

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MANUAL VALVE SPECIFICATION

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MANUAL VALVE SPECIFICATION

Document No.	**: P16093-30-99-12-1604**	**Rev**	**: 1**
Project No. P16093	**Agreement No. 4700021779**	**Page**	**: 5 of 17**

1. INTRODUCTION

ADNOC Onshore (AON) operates four onshore assets: Bab, North East Bab, Bu Hasa, and South East including 11 oil and gas fields spanning over 12,000 km2, connected by a vast pipeline network to two export terminals in Jebel Dhanna and Fujairah. Part of Sout East (SE) asset, Sahil field is located 120 km south Abu Dhabi city and produces 104 MBOPD.

To comply with ADNOC direction of restoring 20% Technical Rate margin by 2025, Sahil Phase 3 development project intends to increase the field sustainable production to 114 MBOPD by debottlenecking the existing facilities and installing new facilities to handle 30 years field profile production forecast.

The project includes brownfield works in Sahil CDS, Sahil RDS-1 and ASAB CDS, and greenfield installation of CDS extension at Sahil compromises of gas export compressor, glycol dehydration package and a vapour recovery unit, in addition to two new underground pipelines: 16” x 47 km export gas pipeline from Sahil CDS to ASAB CDS and 20” x 5.6 km oil transfer line from Sahil RDS-1 to Sahil CDS.

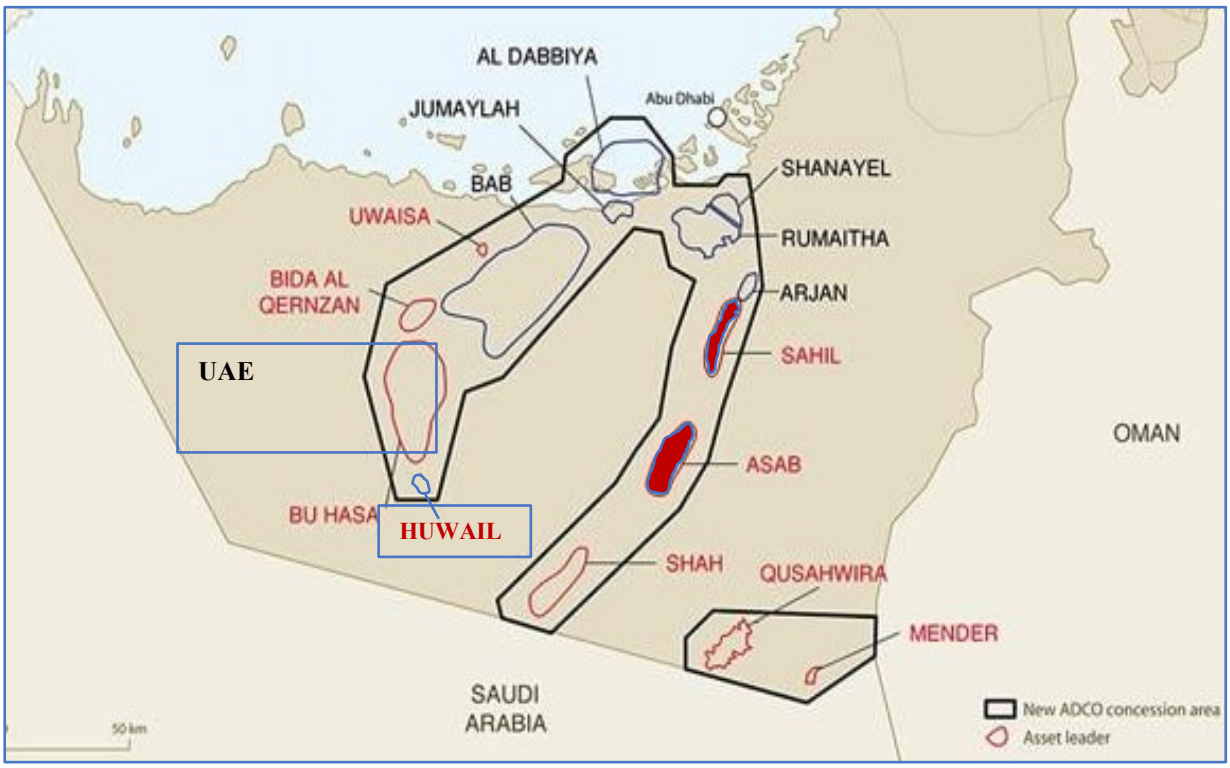

Figure 1-1 Overall Field Lay Out of ADNOC Onshore Fields

2. PURPOSE AND SCOPE

VENDOR shall provide the Equipment/Material/Pacakge Unit in strict accordance with the conditions stated in this document and any attached documents. Exceptions, deviations and alternatives are valid only if approved in writing by CONTRACTOR / COMPANY. This document shall be read in conjunction with the Datasheets, Specifications & documents listed under reference documents in Section 4. It defines the minimum requirements for the Materials, Manufacture/ Fabrication, Inspection, Testing, Painting/Coating, Documentation, Transportation, Packing and Forwarding of piping valves to be procured for the EPC OF SAHIL PHASE 3 DEVELOPMENT project.

3. DEFINITIONS AND ABBREVIATIONS

3.1. Definitions

COMPANY	:	Abu Dhabi Company for Onshore Petroleum Operations Ltd. (ADNOC ONSHORE)
CONTRACTOR	:	Target Engineering Construction Company-Sole Proprietorship LLC.
ENGINEERING SUB-CONTRACTOR	:	Rejlers International Engineering Solution AB – Rejlers Abu Dhabi (Appinted by EPC CONTRCATORfor carrying out Detailed Engineering scope of the project)
CONTRACTOR	:	The party which carries out the detailed engineering, procurement, construction, commissioning and management of the “EPC OF SAHIL PHASE 3 DEVELOPMENT PROJECT”.
SUB-CONTRACTOR	:	The party which has a subcontract with CONTRACTOR to provide services or carries out all or part of the design, procurement, installation and testing of the systems as specified by CONTRACTOR.
PROJECT	:	EPC OF SAHIL PHASE 3 DEVELOPMENT PROJECT
PROJECT NO.	:	P16093 - The Project number shall be referred for all drawings and documents, coversheets. Agreement No.: 4700021779
EDMS	:	Contractor Electronic Document Management System, which is WRENCH
SHALL	:	Indicates a mandatory requirement
SHOULD	:	Indicates a strong recommendation to comply with the requirements of this document

Sustainable Rate	:	The rate at which a well, or processing plant, can be operated continuously for 365 days per year with no adverse impact on the reservoir, or plant
Technical Rate	:	The higher rate at which a well, or processing plant can be operated for short periods (7 days in any 30 day period) without adverse impact on the reservoir, or plant.
VENDOR /SUPPLIER /MANUFACTURER	:	The party (parties) which manufactures and/or supplies materials, equipment, technical documents, or drawings and/or services to perform the duties specified by the CONTRACTOR / COMPANY. This includes all Sub vendors / tradesman &Contractors.

3.2. Abbreviations

ADNOC	:	Abu Dhabi National Oil Company (ADNOC Onshore)
AFC	:	Approved For Construction
AGES	:	ADNOC Group Engineering Standards & Specifications
BS	:	British Standards
CRS	:	Comment Resolution Sheet
CA	:	Corrosion Allowance
CDS	:	Central Degassing Terminal
DC	:	Document Controller
DBB	:	Double block and Bleed
DEP	:	Design Engineering Practice (Shell)
EDDR	:	Engineering Document Deliverable Register
HSE	:	Health, Safety and Environment
IMS	:	Integrated Management System

IFR	:	Issued For Review
IFA	:	Issued For Approval
IFD	:	Issued For Design
IFE	:	Issued For Enquiry
IFP	:	Issued For Purchase
IFC	:	Issued for Construction
IDC	:	Inter Disciplinary Check
ITP	:	Inspection and Test Plan
LLI	:	Long Lead Item
MBOPD	:	Thousand Barrels Oil per Day
MMBOPD	:	Million Barrels Oil Per Day
MMSCFD	:	Million Standard Cubic Feet Per Day
MR	:	Material Requisition
MESC	:	Material & Equipment Standards & Codes
MOC	:	Material of Construction
MOL	:	Main Oil Line
MOV	:	Motor Operated Valve
MPS	:	Main Pumping Station (for MP21)
MSS SP	:	Manufacturers Standardisation Society-Standard Practice
NCR	:	Non-Conformance Report
NDE	:	Non Destructive Examination

NDT	:	Non-Destructive Testing
NPS	:	Nominal Pipe size
OEM	:	Original Equipment Manufacture
PDDL	:	Project Document Deliverable List
P&ID	:	Piping and Instrumentation Diagram
PFD	:	Process Flow Diagram
QMS	:	Quality Management System
QA	:	Quality Assurance
QC	:	Quality Control
RDS	:	Remote Degassing Station
SSV	:	Surface safety valves
TAT	:	Type acceptance test
TBE	:	Technical Bid Evaluation
TPI	:	Third Party Inspector
TD	:	Technical Deviation
VDDL	:	Vendor Document Deliverable List

4. REFERENCE DOCUMENTS

4.1. Project Documentation

Document Number	Document Title
16-99-93-0650	EPC Scope of Work for SAHIL PHASE III DEVELOPMENT PROJECT

Note: The latest edition of the applicable Project documents shall be included with Revision Numbers.

4.1.1 Project Datasheets

Document Number	Document Title
P16093-30-99-18-1611	Datasheets for Gate Valves, Globe Valves & Check Valve
P16093-30-99-18-1627	Datasheets for Ball Valves
P16093-30-99-18-1613	Datasheets for Double Block & Bleed Valves
P16093-30-99-18-1614	Datasheets for Butterfly Valves
P16093-30-99-18-1615	Datasheets for Needle Valves

4.1.2 Project Specifications

Document Number	Document Title
P16093-30-99-12-1602	Piping Materials Specification
P16093-30-99-12-1628	Specification for pipe insulation

4.1.3 Design basis and Philosophies

Document Number	Document Title
P16093-30-99-23-1601	Piping Design Basis
P16093-30-99-91-1603	Process Design Basis
P16093-30-99-52-1601	Instrumentation & Control Design Basis

4.2. COMPANY and SHELL Specifications & Standards

4.2.1 COMPANY Specifications

Document Number	Document Title
30-99-11-0159	IES / Smart Systems Requirements Typical For EPC
30.99.37.0013	Painting And Coating of New Equipment

Document Number	Document Title
30-99-11-0149	IES / Smart Systems Requirements Typical for Construction
30-99-90-0024	"Preparation of Supplier's / Vendor's Engineering Drawings and Documents"
30-99-95-0004	ADNOC Onshore CAD Manual
30-99-90-0047	COMPANY Planning / Schedule Procedure
30-99-90-0040	Project Risk Management Guideline
AGES-GL-13-001	Contractors QAQC requirement
AGES-GL-13-002	Positive Material Identification of Equiment and Piping.
AGES-SP-13-001	Criticality Rating Specification
AGES-SP-13-002	Procurement Inspection and Certification Requirement in Project

4.2.2 Shell DEP Specifications

Document Number	Document Title
DEP 31.38.01.10-Gen	Piping Classes - Basis of Design
DEP 31.38.01.11-Gen	Piping - General requirements
DEP 32.36.01.17-Gen	Control valves - Selection, sizing, and specification
DEP 30.48.00.31-Gen.	Protective coating for onshore and offshore facilities
DEP 30.060.20 -Gen	Human factors engineering – physical workspace design

Note: The latest edition of COMPANY Standard, specifications, SHELL DEP- Version 41 shall be followed.

4.3. International Code and Standards

It is the CONTRACTOR's responsibility to obtain and be familiar with all codes and standards so referenced in the relevant documentation. Requirements indicated in such codes and

standards shall not supersede the requirements of this scope of work but shall be complementary.

4.3.1 American Society of Mechanical Engineers (ASME)

Document No.	Document Title
ASME B31.3	Process Piping
ASME B36.10M	Welded and Seamless Wrought Steel Pipe

4.3.2 American Society of Testing Materials (ASTM)

Document No.	Document Title
A106	Specification for Seamless Carbon Steel Pipe for High Temperature Service
A672	Standard Specification for Electric Fusion Welded Steel Pipe for high pressure and moderate Temperatures

4.3.3 American Petroleum Institute (API)

Document No.	Document Title
API 600	Steel Gate Valves Flanged or Butt-Welding Ends, Bolted and Pressure seal Bonnet
API 594	Check Valves, Wafer, Wafer-Lug and Double-flanged Type
API 609	Butterfly valves – Double flanged, Lug and wafer type
API 602	Compact Steel Gate valves – Flanged, Threaded, Welding and Extended Body Bonnet
API 608	Metal Ball Valves—Flanged, Threaded, and Welding Ends
API 598	Valve Inspection and Testing

4.3.4 British Standards

Document No.	Document Title
BS 1868	Specification for Steel Check valves (Flanged and butt welding ends)
BS 1873	Specification for Steel Globe and Globe Stop and Check Valves
BS 5155	Specification for Butterfly Valves
BS EN ISO 17292	Metal ball valves for petroleum, petrochemical and allied industries (superseded BS 5351)

4.3.5 ISO - International Organization for Standardization

Document No.	Document Title
ISO 9001:2015	Quality Management Systems - Requirements

4.3.6 MESC Standards

Document No.	Description
SPE 77/100	Ball Valves to BS 5351
SPE 77/101	Gate, Globe and Check Valves to ISO 15761
SPE 77/102	Gate Valves to ISO 10434
SPE 77/103	Globe Valves to BS 1873
SPE 77/105	Gate, Globe Check Valves to BS 5154
SPE 77/106	Butterfly Valves, Resilient Lined, Soft Seated, Design to BS EN 593
SPE 77/130	Ball Valves to ISO 14313/API 6D, Flanged or Butt-weld Ends

Document No.	Description
SPE 77/133	Dual Plate Check Valves to API 594
SPE 77/134	Butterfly Valves to API 609.BS EN 593, MSS-SP-67, MSS- SP68 or Manufacturer's Standard
SPE 77/165	Integral Double Block & Bleed Valves Assembly
SPE 77/191	Small-Bore High-Pressure Ball Valves
SPE 77/208	Gate/Globe Valves with Restricted Gland Package
SPE 77/110	Ball Valves (Amendments/Supplements to ISO 17292)
SPE 77/312	Technical Specifications-Fugitive Emission Production Testing
SPE 77/300	Procedure And Technical Specification for Design Validation Testing of Industrial Valves

4.3.7 MSS-SP Standards

Document No.	Description
MSS-SP-55	Quality Standard for Steel Castings for Valves, Flanges and Fittings and other piping components: Visual Method for Evaluation of Surface Irregularities

Note: The latest editions of the applicable International Standards shall be included with Revision Numbers.

4.4. ORDER OF PRECEDENCE

All design and construction shall be performed in accordance with the Specifications, Standards, Codes, Regulations, latest Shell DEPs, etc. listed in the Contract. In any areas of conflict, the order of precedence of different applicable standards, specifications and project specifications shall follow the order:

- The laws, standards, and Regulations of United Arab Emirates
- ADNOC HSE Standards, HSE manuals and policies.
- Project Specific documents.
- ADNOC Onshore applicable Specifications, Amendments and Codes/Standards
- ADNOC Onshore applicable Specifications, Codes and Standards.
- Shell DEPs Version 41.
- International Oil & Gas Industry Codes, Standards, and Recommended practices.
- Internationally recognized oil and gas industry sound practices.

In the event of any conflict of data or requirements in any of the project applicable specified documents and standards in which some of the requirement could be of more stringent, then the Subcontractor/ Vendor shall carefully scrutiny on the most stringent requirements with regards, to the safety, environmental, economic and legal aspects.

5. ADDENDUM TO ES 30-99-12-3209

Manual Valve specification shall adhere to COMPANY Engineering Specification: Specification for Piping Valves (30-99-12-3209) including addendum listed on the succeeding sections

The reference is made to the original paragraphs of the ES 30-99-12-3209. The ES 30-99-12-3209 sections shall apply in their entirety unless amended or modified

5.1. Modification of point 9 of section 7 of ES 30-99-12-3209 as mentioned below:

- All bolts & nuts used in valves shall be coated either by TAKECOAT 1000 or XYLAN1070.

5.2. Modification of point 6 of section 9 of ES 30-99-12-3209 as mentioned below:

- All ball valves in wet sour service shall be provided with upper and lower trunnion bearings of equivalent trim material as minimum with PTFE coating. Torque calculations shall consider the friction coefficient of bearing material.

5.3. Modification of point 5 & 17 of section 10 of ES 30-99-12-3209 as mentioned below:

- All through conduit gate valve shall be bidirectional with double block and bleed design in compliance with SPE 77/131, non-rising stem with position indicator. The valve seat

sealing system shall be dual type with primary metal-to-metal and secondary mechanical energized soft seal. The valve slab shall be floating type self-cleaning design.

5.4. Addendum to Section 16 of ES 30-99-12-3209 as mentioned below:

- AGES-GL-13-001 Contractors QA / QC requirement
- AGES-GL-13-002 Positive Material Identification of Equiment and Piping.
- AGES-SP-13-001 Criticality Rating Specification
- AGES-SP-13-002 Procurement Inspection and Certification Requirement in Project

6. Attachments

Attachment – 1: Doc: 30-99-12-3209 Specification for Piping Valves

6.1. Attachment – 1: Doc: 30-99-12-3209 Specification for Piping Valves

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ADNOC

TECHNICAL CENTER & PROJECTS (TC&P)
TECHNICAL CENTER (Engineering)

ENGINEERING SPECIFICATION

Specification for Piping Valves

DOC. No. 30-99-12-3209

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ADNOC Onshore

Technical Centre - Engineering Specification
Specification for Piping Valves

Document Control

Control Document Information:

Document Owner	Technical Centre - Engineering
Document Author	Amr Abdel Maguid – Senior Specialist Pipeline
Document Custodian	Engineering Support Department
Document Security Code	3 – Confidential
Document Number	30-99-12-3209

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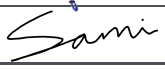
	Name	Signature	Position	Date
Reviewed By	**Amr Abdel Maguid**		**SSP**	26/04/2021
Endorsed By	**Nasser A. AlJneibi**		**MES**	27.04.2021
Approved by	**Sami Al Ankar**		**VPTC**	06/05/2021

Technical Centre - Engineering Specification
Specification for Piping Valves

Document No. : 30-99-12-3209 **Rev** : 2

Project No. : MASTER **Page** : 3 of 47

Sr. No.	Rev. No.	Date	Description of revision
1	1	June 2014	First Issue
2	2	Oct. 2020	Reformatting and Rebranding

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Technical Centre - Engineering Specification
Specification for Piping Valves

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1 Scope

This document specifies the minimum requirements for design, manufacturing, inspection, testing, certification and supply of piping valves (Gate, Globe, Check, Ball, Butterfly, Double Block & Bleed (DBB) and Needle Valves).

This specification shall be read in conjunction with the Project Piping Material Specification and valve data sheets and documents/drawings referred in the Material Requisition (MR) or Purchase order when develop during FEED & Detail engineering stage and with relevant codes and standards specified in the section 4.0 of this specification.

The scope of this document excludes pipeline valves, control & shutdown valve actuator, well head equipment's, instrument control and safety valves trim.

2 Definition

For this specification, the following definitions are applicable:

COMPANY ADNOC Onshore (Abu Dhabi Company for Onshore Oil Operations).

EPC CONTRACTOR The party, which carries, out all or part of the design, engineering, procurement, construction, pre-commissioning, commissioning and of the PROJECT.

BIDDER / SUPPLIER	all the possible ENTITIES contacted before an order is placed.
VENDOR	Once the order is placed, the selected ENTITY
SUBCONTRACTOR	Any person or persons, firm, partnership, corporation or
PURCHASER	combination thereof (not being an employee of CONTRACTOR), including vendors and suppliers, to whom any part of the works has been subcontracted to by CONTRACTOR, (including any Contracts and Orders assigned by ADNOC Onshore to CONTRACTOR) and the successors and assignees of such person, firm, partnership, corporation or combination thereof.
SHALL	Indicates a mandatory requirement

SHOULD Indicates a strong recommendation to comply with the requirements of this document.

MAY / CAN Indicates an acceptable course of action.

3 Abbreviation

The following abbreviations are used in this document:

Abbreviation	Description
ADNOC Onshore	Abu Dhabi Company for Onshore Oil
ADS	ADNOC Onshore Developed Standards
API	American Petroleum Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AED	Anti - Explosive Decompression
BS	British Standard
CRA	Corrosion Resistive Alloy
CS	Carbon steel
DEP	Design and Engineering Practice
ED	Explosive Decompression
EN	European Norm
ENP	Electro less Nickel Plating
EPC	Engineering, Procurement & Construction
HIC	Hydrogen Induced Cracking
HP	High Pressure
ISO	International Organization for Standardization
ITP	Inspection & Testing Plan
LTCS	Low Temperature Carbon steel
MESC	Materials and Equipment Standards and Codes
MR	Material Requisition

MSS	Manufacturers Standardization Society
NACE	National Association of Corrosion Engineers
NDE	Non-Destructive Examination

Abbreviation	Description
NPS	Nominal Pipe Size
PQR	Procedure Qualification Report
RP	Recommended Practice
SDSS	Super Duplex Stainless Steel
SPE	Specifications Document
SS	Stainless steel
TSO	Tight Shut Off
UNS	Unified Numbering System
VDRL	Vendor Document Requirement List
VQRF	Vendor Quality Requirement Form

4 References

Codes, standards and specifications referred to in this document or in the Purchase Description, or in any referenced document, form a part of the requirements of this specification in the manner and to the extent specified. Latest Editions of each publication shall be used, together with any amendment /supplements/revisions thereto.

Further EPC Contractor shall provide the reference of Project specific Piping Material Specification, Material selection report in the Material requisition over and above this document for the procurement of valves.

COMPANY Specification and Documents

ES 30.99.37.0013 Painting & Coating of New Equipment's

ES 30.99.00.0102-1 Corrosion and Material Philosophy

International Codes and Standards

The International codes & standards listed below shall have same publication date as referred in latest Shell DEP version & MESC version

American Petroleum Institute (API)

API 600	Steel Gate Valves Flanged or Butt Welding Ends, Bolted and Pressure seal Bonnet
API 594	Check Valves ,Wafer,Wafer-Lug and Double-flanged Type
API 598	Valve Inspection and Testing
API 602	Compact Steel Gate valves – Flanged, Threaded, Welding and Extended Body Bonnet
API 607	Fire Test for Soft-Seated Quarter-Turn Valves
API 609	Butterfly valves – Double flanged, Lug and wafer type
API 6D	Specification for Pipeline Valves (ISO 14313)
API 6FA	Specification for Fire Test for Valves
API RP 582	Welding guidelines for the chemical, oil, and gas industries

American Society of Mechanical Engineers (ASME)

ASME B1.1	Unified inch screw Threads, UN and UNR Thread Form
ASME B1.2	Gauges and Gauging for Unified Screw Threads
ASME B1.20.1	Pipe Threads (General Purpose)
ASME B16.5	Pipe Flanges and Flanged Fittings NPS ½ Through NPS 24
ASME B16.9	Factory made Wrought Butt-welding Fittings
ASME B16.10	Face to Face and End to End Dimensions of Valves
ASME B 16.11	Forged Fittings, Socket – Welding and Threaded
ASME B16.20	Metallic Gaskets for Pipe Flanges
ASME B16.21	Non Metallic Flat Gaskets for Pipe Flanges

ASME B16.25	Butt welding ends
ASME B16.34	Valves - Flanged, threaded and welding ends
ASME B16.47	Large Diameter Steel Flanges NPS 26 Through NPS 60
ASME B 18.2.1	Square and Hex – Bolts and Screws (Inch Screw)
ASME B 18.2.2	Square and Hex - Nuts (Inch Screw)
ASME B31.3	Process Piping
ASME B 31.5	Refrigeration Piping
ASME B 36.10M	Welded and Seamless Wrought Steel Pipe
ASME B 36.19M	Stainless Steel Pipe
ASME B46.1	Surface Texture
ASME Section II	Materials
ASME Section II (Part- D)	Properties
ASME Section V	Non-destructive Methods of Examination
ASME Section VIII Div.1	ASME Boiler and Pressure Vessel Code, Section VIII, Div. 1: Rules for Construction of Pressure Vessels.
ASME Section IX	ASME Boiler and Pressure Vessel Code, Section IX: Qualification Standard for Welding and Brazing Procedures, Welders, Brazers , Welding and Brazing operators

British Standard Institute

BS EN 593	Industrial Valves – Metallic Butterfly Valves
BS 1868	Specification for Steel Check valves (Flanged and butt welding ends)
BS 1873	Specification for Steel Globe and Globe Stop and Check Valves
BS 5155	Specification for Butterfly Valves
BS 6364	Valves for Cryogenic Services
BS EN 10204	Metallic Products – Types of Inspection Documents

BS EN 12266 part 1	Industrial valves – Testing of valves. Part 1: Pressure tests, test procedures and acceptance criteria – Mandatory requirements (Superseded BS 6755-1)
BS EN 12266 part 2	Industrial valves – Testing of valves. Part 2: Tests, test procedures and acceptance criteria – Supplementary requirements (Superseded BS 6755-2)
BS EN 12288	Industrial valves – Copper Alloy Gate Valves (Superseded BS 5154)
BS EN ISO 17292	Metal ball valves for petroleum, petrochemical and allied industries (superseded BS 5351)
BS EN ISO 15761	Steel gate, globe and check valves for sizes NPS 4” and smaller, for the petroleum and natural gas industries (superseded BS 5352)

International Standardization Organization (ISO)

ISO 9001	Quality Management and Quality Assurance Standards Guidelines for Selection and Use
ISO 5208	Inspection & Testing of Valves
ISO 8501	Preparation of steel substrate before application of paints and related product – Visual assessment of surface cleanliness
BS EN ISO 10434	Bolted bonnet steel gate valves for the petroleum, petrochemical and allied industries (Superseded BS 1414)
BS EN ISO 10497	Testing of Valves – Fire Type Testing Requirements
ISO 15156 Part 1 to 3	Materials for Use in H_2S Containing Environments in Oil And Gas Production (NACE MR0175)
BS EN ISO 15848 part 1	Industrial valves – Measurement, test and qualification procedures for fugitive emissions – Part 1: Classification system and qualification procedures for type testing of valves
BS EN ISO 15848 part 2	Industrial valves – Measurement, test and qualification procedures for fugitive emissions – Part 2: Production acceptance test of valves
BS EN ISO 5208	Industrial Valves – Pressure Testing of Metallic Valves

Manufacturer's Standardization Society (MSS)

MSS-SP-6	Standard Finishes for Contact Faces
MSS-SP-9	Spot Facing for Bronze , Iron and Steel Flanges
MSS-SP-25	Standard Marking System for Valves, Fittings, Flanges and Unions
MSS-SP-44	Steel pipe line flanges
MSS-SP-54	Quality standard for steel castings for valves, flanges & fittings and other piping component
MSS-SP-55	Quality Standard (Visual Method) for Steel Castings for Valves
MSS-SP-80	Bronze Gate, Globe, Angle and Check Valves
MSS-SP-97	Integrally Reinforced Forged Branch Outlet Fittings-Socket Welding, Threaded and Butt Welding Ends

Equipment and Material Users Association

EEMUA -182	Specification for integral Block and bleed Valve Manifolds For Direct Connection to Pipe work

National Association of Corrosion Engineers (NACE)

MR 0175 / ISO/ 15516 Part 1 to 3	Petroleum and Natural Gas industries – Materials for use in H2S– Containing Environment in Oil and Gas Production
TM 0177	Test Method: Testing of Metals for Resistance to Cracking at Ambient Temperature
TM 0284	Evaluation of pipeline Steel and Pressure Vessel Steels for Resistant to Hydrogen Induced Cracking.
SP-04-72	Method and controls to prevent in service environmental cracking of carbon steel weldment in corrosive refining environment.

Shell Specifications

Shell DEP and MESC Catalogue documents are referred herein. However, FEED & EPC contractor shall use latest Shell DEP & MESC Catalogue (documents) at the time of Contract award. Frequently used Shell Specifications and standard drawings are listed in this document.

DEP82.00.10.10-Gen	Project quality assurance
DEP31.38.01.10-Gen	Piping Classes – Basis of Design
DEP31.38.01.11-Gen DEP31.38.01.12-Gen	Piping – General Requirement
DEP31.38.01.15-Gen	Piping Classes – Refinery and Chemicals
DEP 31.38.01.15-Gen	Piping Classes – Exploration and Production
DEP 31.38.01.31-Gen	Shop and Field Fabrication of Steel Piping
MESC Groups (74, 76, 77, 81, 85)	MESC Buying Descriptions and additional specification for piping components
DEP 30.48.00.31	Protective coating for onshore and offshore facility
DEP 30.10.60.18	Welding of Metals (amendments/supplements to API RP 582)
Standard Drawing	All relevant DEP Piping standard drawings

MESC Specifications

MESC SPE 74/001	Carbon steel pipe (Amendments/ supplements to API Spec. 5L)
MESC SPE 74/002	Carbon Steel Pipe (Amendments/Supplements to ASTM A 106)
MESC SPE 74/004	Carbon Steel Pipe (Amendments/Supplements to ASTM A 333)
MESC SPE 74/008	Stainless Steel Pipe (Amendments/Supplements to ASTM A 312)
MESC SPE 74/014	Pipe, Duplex/Super Duplex Stainless Steel ASTM 790
MESC SPE 74/017	Pipe, Nickel–CopperAlloyASTM B 165
MESC SPE 74/019	Nickel alloy Pipe to ASTM B 423

MESC SPE 74/026	Nickel alloy Pipe to ASTM B 444
MESC SPE 76/030	Branch Outlets
MESC SPE 76/100	Flanges (Amendments/Supplements to ASME B16.5)
MESC SPE 76/101	Flanges (Amendments/Supplements to ASME B16.47)
MESC SPE 76/110	Fittings (Amendments/Supplements to ASME B16.9)
MESC SPE 76/200	Carbon and Alloy Steel Fittings (Amendments/Supplements to ASTM A234)
MESC SPE 76/201	Carbon Steel Fittings (Amendments/Supplements to ASTM A 420)
MESC SPE 76/202	Stainless Steel Fittings (Amendments/Supplements to ASTM A 403)
MESC SPE 76/210	Carbon Steel Forgings (Amendments/Supplements to ASTM A 105)
MESC SPE 76/211	Carbon And Alloy Steel Forgings (Amendments/Supplements to ASTM A 350)
MESC SPE 76/212	Alloy And Stainless Steel Forgings (Amendments/Supplements to ASTM A 182)
MESC SPE 76/213	Nickel Alloy Forging to ASTM B 564
MESC SPE 76/220	Carbon Steel Plate (Amendments/Supplements to ASTM A 516)
MESC SPE 76/221	Alloy Steel Plate (Amendments/Supplements to ASTM A387)
MESC SPE 76/222	Stainless Steel Plate (Amendments/Supplements to ASTM A 240)
MESC SPE 76/223	Nickel Copper Plate (Amendments/Supplements to ASTM B127)
MESC SPE 77/100	Ball Valves to. BS 5351
MESC SPE 77/101	Gate, Globe and Check Valves (Amendments/Supplements to ISO 15761)
MESC SPE 77/102	Gate Valves (Amendments/Supplements to ISO 10434)
MESC SPE 77/103	Globe Valves (Amendments/Supplements to BS 1873)
MESC SPE 77/104	Check Valves (Amendments/Supplements to BS 1868)
MESC SPE 77/105	Gate, Globe And Check Valves to BS 5154 Copper Alloy, Flanged or Threaded Ends
MESC SPE 77/110	Ball Valves (Amendments/Supplements to ISO 17292)

MESC SPE 77/130	Ball Valves (Amendments/Supplements to ISO 14313)
MESC SPE 77/131	Through Conduit, Rising Stem Gate Valves to ISO 14313
MESC SPE 77/132	Swing Check Valves to ISO 14313 and API 6D.
MESC SPE 77/133	Dual Plate Check Valves to API 594
MESC SPE 77/134	Butterfly valves to API 609
MESC SPE 77/160	Gate, Globe and Swing Check Valves to ASME B16.34
MESC SPE 77/170	Process to instrument valves
MESC SPE 77/190	Ball and Check Valves, Lined, to Manufacturers Standard, Flanged
MESC SPE 77/208	Gate, Globe, Ball and Butterfly Valves with Restricted Gland Packing Tolerances Used for Special Services as Listed in SPE 77/303 Section 1.1
MESC SPE 77/211	Valve stem, adapter and bracket dimensions for floating Ball valves
MESC SPE 77/302	Technical Specifications-Valves – General Requirements
MESC SPE 77/303	Technical Specifications-Valves in Special Service
MESC SPE 77/307	Production Testing of Valves in Vacuum services
MESC SPE 77/309	Production Testing of Soft Seated Gate Valves Used for Double Block & Bleed Service
MESC SPE 77/311	Lining for Valves
MESC SPE 77/312	Technical Specifications-Fugitive Emission Production Testing
MESC SPE 77/313	Valves With Corrosion Resistant Alloy (CRA) Weld Overlay Cladding
MESC SPE 77/315	Electro less Nickel Plating sealant surface
MESC SPE 81/001	Alloy and Stainless Steel Bolts (Amendments/Supplements to ASTM A 193)
MESC SPE 81/002	Carbon and Alloy Steel Nuts (Amendments / Supplements to ASTM A 194)
MESC SPE 81/003	Stud Bolts , ASTM A 32
MESC SPE 81/006	Nickel Alloy Bolts & Nuts (Amendment/ Supplement to EN10269)

5 Conflict of Information

In the case of conflict between documentation, the following order of precedence shall apply:

1) National and / or Local Regulations
2) Data Sheets/Buying descriptions
3) This specification
4) Project Specifications
5) ADNOC Onshore Developed Standards (ADS)
6) ADNOC Onshore's Amendment/supplements to Shell Design and Engineering Practice (DEP)
7) SHELL (DEP) & MESC Specifications
8) International Codes and Standards

In the event of any further conflict between this specification, related data sheets and any other specifications, or with the applicable codes and regulations, written clarification shall be sought from COMPANY before proceeding.

6 Specification Deviation / Concession Control

EPC CONTRACTOR / SUPPLIERS shall clearly define in their offer deviations from the requirements of the material requisition and/or from the requirements of any reference specification, code or standard noted in, or attached to the material requisition.

These deviations shall be clearly listed in a separate section of the requisition entitled "**Deviations and Exceptions List Form"**

Where there are no deviations, SUPPLIER shall still submit this form along with the offer stating **"No Deviations"**

Once a purchase order/ purchase requisition has been awarded, no deviations, other than those that were listed in the Material requisition as "Agreed deviations" and as accepted by the COMPANY/**EPC CONTRACTOR** in writing shall be considered.

7 Materials

Material of construction for valves shall be as specified in the respective data sheets and Project Piping Material Specification Document. Restriction in chemical composition including carbon content, carbon equivalent and other requirements shall be fully in compliance to Project Piping Material Specification Document and MESC SPE 77/302.

1. Steel produced for valves shall be produced either in an electric furnace or by basic oxygen process.
2. Material requiring impact testing shall be in accordance with ASME B 31.3, Para 323.3 and method of testing shall be in accordance with ASTM A 370 with additional requirements of MESC SPE 77/302.
3. All materials in contact with sour service shall, as a minimum, meet the requirements of NACE MR0175 / ISO 15156 (latest edition), as specified in the MESC specifications and Project Piping Material Specification Document.
4. Austenitic & duplex stainless steel and Inconel material shall be solution annealed condition as per the relevant ASTM standard and MESC SPE 77/302 and amendments. Also, all stainless & duplex steel valves and valve components (including trim but excluding gaskets) shall be supplied in the pickled condition.
5. CS / LTCS forgings shall be fully killed fine grained and shall be supplied in the normalized or normalized & tempered condition with compliance to additional requirement of MESC SPE 77/302.
6. Cast iron material shall not be used.
7. Heat number for the castings or material specification for the forgings shall be permanently marked on the valve body.
8. Where pressure retaining parts have been specified as forged, substitution of castings is not permitted without prior approval by PURCHASER.
9. All bolts & nuts used in valves shall be coated either by TAKECOAT OR XYLAN1070
10. The material of construction of Lever / Hand Wheel shall be of Ductile Iron/ Malleable Iron/Cast steel. The Grey Flake Cast Iron shall not be used.
11. Spring material for ball valves shall be UNS 07718 and same spring material shall be used for Check valves wherever required. The hardness of spring material shall be in compliance to NACE- MR- 0175/ ISO 15156

12. Ball and through conduit gate valves seat housing & stem bearing area shall be weld overlay with material same as trim material.
13. Minimum thickness of weld overlay shall be 3.0mm as per the trim material in final machined condition (as specified in data sheet).
14. There shall be minimum hardness differential of 50 BHN between body and closure seating surfaces on stainless steel valves and 20 to 30 BHN for carbon steel valves. For sour service, all metal to metal seated valves, the maximum hardness of the body seats, body back seats and the closure (gate, wedge, disc, blade, etc.) seating surfaces shall be as per NACE MR- 0175/ ISO 15156 and relevant MESC specifications.
15. Metal seated valves shall be hard faced on seat rings/ ball / wedge as specified in the valve data sheets/ piping material specification. However, other suitable hard facing may also be proposed along with the bid for COMPANY review/ approval.
16. ENP (Electro less Nickel plating) coating on carbon steel and stainless steel surfaces is no longer recommended for valve component to protect them from corrosion & hence not acceptable.
17. CRA material used in sour service shall comply with material requirements of NACE MR 0175/ISO 15156.
18. PWHT shall be performed after weld overlay to meet requirements for sour services as per NACE MR 0175/ ISO 15156.
19. Bonnet gaskets for the valves shall be suitable for the service condition specified in the data sheets.
20. All process wetted and pressure containing parts formed from plate for sour service application shall be resistant to HIC and same shall be demonstrated.
21. Bonnet Gaskets shall have corrosion resistance equal, at least, to that of the body and bonnet materials. Asbestos shall not be used in any case. Bonnet and cover gaskets for copper alloy valves shall be no – graphite compressed synthetic fiber.
22. Where “PTFE” gaskets, stem seals, gland packing, etc., are specified, the material shall be virgin or glass fiber – reinforced polytetrafluoroethylene. All packing materials (Elastomers) shall be Anti – Decompression (AED) Type.
23. For the offered seal materials, SUPPLIER to furnish the maximum permissible

percentage of H2S, CO2, Water, NaCl, Amine (Sulphinol), Methanol, Glycol and 2.5% BTX (benzene, Toluene & Xylenes) in the process streams, seal / seat supplier's catalogues indicating the limitations on the above constituents / suitability shall be enclosed with the offer. However, the valve SUPPLIER shall verify the suitability of offered seal / seat material for the pressure & temperature conditions (stated in the data sheets). SUPPLIER to note that "Viton" shall not be used as a seal material in case of fluids with 0.2% or higher H2S content or in fluids containing amine in them.

24. Valve packing material shall meet the requirements of MESC SPE 85/200 and packing type shall suit the intended service as specified in data sheets / Material Requisition. Graphite based valve stem packing (Graph lock / Garlock Style 98 or equal) shall be used in all services to control fugitive emissions.

8 Design Requirements

1. All valves shall be suitable for services and conditions shown in the respective valve data sheets, piping classes and shall be designed for a 30 years of design life. Valves shall meet the class rating requirements of ASME B16.34 as applicable, except where otherwise noted in the Material Requisition.

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2. Block valves (Gate, Ball & Butterfly valves) shall be designed to seal in both directions against all pressures up to the maximum service pressure rating for the class.
3. All valves shall be designed, manufactured, inspected and tested in accordance with data sheets / Material Requisition, referenced international standards, ADNOC Onshore standards, ADNOC Onshore specifications, and Shell DEPs & MESC specifications.
4. Face to face and end to end dimensions of valves shall be in accordance with ASME B16.10. Ball valves shall be long pattern design unless otherwise specified.
5. Flanged ends shall be integral cast or forged with the body. Valves with welded on end flanges and all welded body are not permitted. Flange gasket contact surface finish shall be 3.2 to 6.3 □m in accordance with ASME B46.1 for raised face flanges and in accordance with MESC SPE 76/100 for other faces, unless otherwise specified.
6. Valve construction with regard to bore and closure member shall be as specified in

the respective valve data sheet or in the Material Requisition.

7. The face to face & end to end or center to end dimension (“laying length”) of any valve shall be submitted along with the bid , where this dimension differs from that in the valve specification or relevant valve dimensional standard or valve is a specialty valve not covered by a dimensional standard. Wherever face to face dimensions are not exactly as per applicable international code/ standard dimension, COMPANY approval shall be sought during bid stage.
8. The suitability of valves for low temperature with temperature below – 20 °F and its fluid service specified in valve data sheet/ piping classes shall be demonstrated during bid stage and material used for the same temperature/service shall be impact tested in accordance with ASME B 31.3
9. End flanges of NPS 24” and smaller valves shall be in accordance with ASME B16.5 and NPS 26” & higher shall be in accordance with ASME B16.47 Series A.
10. Wherever corrosion allowance is specified in data sheets / Material Requisition, the wall thickness of valve body and other pressure containing parts shall include corrosion allowance over and above to the minimum pressure wall thickness required as per ASME B16.34. However, the minimum wall thickness in any case shall not be less than the wall thickness specified in the design standards as per data sheets / Material Requisition.
11. The valve body and the valve seat pressure – temperature rating shall be submitted along with the bid, demonstrating the suitability of it for the service specified in the valve data sheets/Material Requisition. All valves shall be designed to withstand full vacuum condition in line.
12. All valves shall be provided with Renewable seats. The design of valve seal/seat rrangement shall be such that the soft seal/seats shall not displace or get out of shape both under pressure and during the depressurization of the piping system.
13. All material including miscellaneous material shall be suitable for minimum and maximum design temperature stated in the data sheet.
14. Rising stem exposed to atmosphere shall be protected by sleeve.
15. Bolt holes shall straddle the neutral axis for flanged valves.
16. Threaded/ Socket connections are prohibited for valves in sour service.
17. Threaded valve ends (to be used for plant air & instrument air services only) shall be

tapped in accordance with ASME B 1.20.1 and B 16.11

18. Forged body valves are acceptable in place of cast body and vice-versa is not acceptable. Stem shall be made from forgings / bars.
19. Forged body valves shall be forged close to final shape.
20. Valves with non- rising stem or valves with gear operators shall have position indicators, which cannot be wrongly oriented, either on initial assembly or during subsequent dismantling and re-assembly. These shall be clearly graduated and visible to show the open and closed position of the fully assembled valve. The details of the same shall be proposed along with the bid for COMPANY review and acceptance.
21. For all quarter turn valves locking facilities shall be provided by suitable brackets fitted to facilitate locking of valves in open/ close position by pad locking without chains.
22. Gate & globe valves shall be suitable for adding locking device to prevent operation in the locked open/closed position.
23. Lifting eyes to be provided for all valves of sizes 8” NPS and larger to facilitate maintenance.
24. Support saddle to be provided for valves 250 Kg and heavier to facilitate the support beneath the valve, which can take the operating load of the valve.
25. Actual /correct valve top work dimensions shall be used to design the valve interlocks.
26. Calculations for body design, for lifting lug design for stem design etc. shall be provided during bid/after bid, if requested by COMPANY.
27. 12” NPS and above valves shall be provided with body vent and drain valve connections.
28. Weld overlay on trim shall be performed as per ASME Sec. VIII Div. 1 and welding procedure to be used shall be qualified in accordance with ASME Sec. IX.
29. All soft seated valves shall be anti-static design for electrical continuity between the main valve parts (ball/disc/wedge) and body and shall be equipped with a spring or spring loaded pin to provide grounding.
30. All valves shall be “Fire Safe” design in accordance with API-607/API 6FA/BS EN ISO 10497 & MESC SPE 77/312 and have anti-static devices fitted in accordance with BS EN ISO 17292 (Supersedes BS 5351) wherever called for in the valve data sheet. Fire

& anti- static devices test certificates shall be provided during/ & after bid for the offered valves.

31. The TSO (Tight Shut – Off) valves shall comply with seat leakage rates A & B of BS EN 12266-1 & 2 (Supersedes BS 6755 Part 1) and ISO 5208 and shall comply with requirements of MESC SPE 77/100, 77/191.
32. Uni-directional valves, check valves or any valves within preferred flow direction where such design have been agreed with the PURCHASER shall have a direction arrow cast integral with the body. Where check valves have a limit on flow direction, or valve orientation, such details shall be provided to PURCHASER at the bid stage.
33. Stem design shall be blow out proof. The anti-blowout stem/body configuration shall be capable of withstanding the full internal pressure of the valve as per appropriate class. Stem retention by means of body/stem threads and packing gland are not

    acceptable. The stem retainer ring or collar shall be integral with the stem.
34. Valves shall be designed to operate freely after the stem has remained in one position for an extended period of service or till the next periodic maintenance.
35. NPS 6” & above valves shall be provided with a sealant injection system for stem and seats. Sealant connection shall incorporate an internal non return valve, giant button head; cover with vent holes which seals off the connection by plugging the sealant port. The sealant and grease injection system shall be suitable for injecting sealant / grease with the valve in operating condition.
36. Valves shall be provided with extended bonnet in accordance with MESC SPE 77/200 in the following cases:
    I. For valves having design temperature lower than -50°C.
    II. For valves having operating temperature lower than -30°C.
37. Ball, Gate, globe and butterfly valves in low temperature service having design temp in between -30°C & -50°C which will not be operated are the “Non Operable” valves and do not require bonnet extension. These valves shall be tested as per base standard and fugitive emission testing in accordance with MESC SPE 77/312.
38. Wherever corrosion allowance is specified in data sheets / Material Requisition, the

wall thickness of valve body and other pressure containing parts shall include corrosion allowance over and above to the minimum pressure wall thickness required as per ASME B16.34. However, the minimum wall thickness in any case shall not be less than the wall thickness specified in the design standards as per data sheets / Material Requisition.

VALVE OPERATORS (OTHER THAN ACTUATED VALVES)

GENERAL REQUIREMENTS

39. Valve operator shall be as specified in the valve data sheet and same shall be supplied by the Vendor. Overhead valves shall not be used.
40. The length of lever or hand wheel shall be sized such that the applied force to open or close the valve at maximum differential pressure shall not exceed 350N. Valves that require operating force more than this (350N) shall be provided with gear operator, even if gear operation is not mentioned in the material requisition / buying description / data sheets.

GEAR OPERATOR

41. Manually operated valves shall be provided with a gear operator for minimum sizes and larger as shown in the table below; unless otherwise lower sizes are being specified with gear operators somewhere else.

VALVE TYPE / ASME CLASS	BALL VALVES FB / RB ISO 17292	BALL VALVES FB / RB API 6D / ISO 14313	GATE VALVES ISO 10434	GLOBE VALVES BS1873	BUTTERFLY VALVES (lined) BS 5155	BUTTERFLY VALVES (High Performance) API 609
150	6”	6”	14”	8”	8”	8”
300	4”	4”	12”	8”	-	6”
600	4”	4”	10”	6”	-	4”
900	-	4”	6”	4”	-	-
1500	-	2”	4”	4”	-	-
2500	-	2”	4”	3”	-	-
API 10,000	-	All	All	All	-	-

42. Gear operators shall be supplied complete with hand wheels and shall be permanently marked with the word “OPEN” or “CLOSE” with a permanent arrow indicating the direction of rotation. Gear operators on valves with 600# or higher rating shall be supplied with impact resistant hand wheels.
43. Gear operators shall be totally enclosed, weatherproof type (suitable for sand storm environment), packed with a suitable lubricant. Gear boxes shall be fitted with one or more easily accessible standard grease nipples to enable the lubricant to be renewed while the valve and gear box are in service. The drawing for each gear operated shall show and identify the grease nipples and shall include the name(s) and type(s) of lubricant that can be used.
44. Gear operators shall be of a design and so installed on the valve that normal valve operation is not impaired and all gear operated valves shall be capable of being fully opened and closed. The gear box shall be in accordance with ISO 5210. 44.
45. Gear hand-wheel attachment is such that it will not interfere with the body of the valve itself in the installed condition.

46. Gear box shall be provided with limit stops to prevent over travel while operating the valve.

HAND WHEEL OPERATOR

47. Unless noted otherwise, hand wheel shall be impact tested steel. Use of Grey flake cast iron is not permitted.
48. Hand wheel diameter shall not exceed the face-to-face or end-to-end length of the valve, or 750mm, whichever is smaller unless otherwise specified for ball valves designed in accordance with ISO 17292 or ISO14313/API 6D/ BS 1873
49. Gate & Globe valves designed in accordance with ISO 15761, hand wheel diameter shall not exceed the face-to-face or end-to-end length of the valve, or 320mm, whichever is smaller unless otherwise specified.
50. Gate & Globe valves designed in accordance with BS 5154, hand wheel diameter shall not exceed the face-to-face or end-to-end length of the valve or 300mm, whichever is smaller unless otherwise specified.

LEVER OPERATION

51. Lever operated valves shall be supplied complete with suitable levers. In addition, bid shall cover each size, rating and type of lever- operated valve, the length of the lever, measured from the centerline of the valve stem to the extreme end of the lever, stated in millimeters. Whenever this dimension exceeds 450mm, the gear operation as an alternative shall be provided during bid in line with the above gear operation requirements. The required torque values shall also be provided.
52. Lever operated valves when specified in valve data sheets shall be capable of being locked with a padlock in FULL OPEN and FULL CLOSED positions. This locking feature shall be independent of the lever operator, i.e. the valve shall be so lockable with the lever in place and with the lever removed.
53. Lever operated valve stem heads shall be circular stem heads with two flat are acceptable, but in either case the design shall be such that the lever cannot be installed in a manner that would permit the valve to move through more than 90 degrees. Square stem heads are not acceptable. Stems shall be positioned such that the lever is parallel to the flow when the valve is open.
54. Lever operated valves shall be fitted with stops at the full open and full closed positions to prevent the ball from rotating more than 90 degrees. These stops shall be in the form of raised bosses, integrally cast or forged with the valve body or welded to the valve body. Removable stops and/or spring loaded pins which drop into holes at the full open or full closed positions are not acceptable. The plate or pin which strikes these stops shall be permanently affixed to the valve stem and shall not be a feature of the lever operator, in order to prevent the valve being wrongly operated when the lever is removed.
55. Valves installed in insulated lines will have box type insulation. Hand wheel or lever for such valves shall be outside the insulation for all quarter turn valves. The maximum insulation thickness which can be applied without interfering with the lever or gear hand wheel shall be shown in the drawing along with the bid/after bid.

9 Specific Requirements for Ball Valves

1. Ball valves shall be designed and supplied in accordance with BS EN ISO 17292 (Supersedes BS 5351) for class 150 & class 300 and size up to DN250 (including), with additional requirements of MESC SPE 77/100.
2. Other ball valves shall be designed and supplied in accordance with API 6D/ ISO 14313 and additional requirements of MES SPE 77/130.
3. The ball shall be of a trunnion mounted design in the following sizes; however individual material requisition / MESC description / data sheets shall prevail.

Ball Valve type	ASME Class / Rating	Size
Reduced bore	150	8” and larger
Full bore	150	8” and larger
Full and reduced bore	300, 600, 900, 1500 and 2500	2” and larger
API Ball valves	10000	For all sizes valves shall be with trunnion mounted design.

4. Trunnion mounted valves shall be provided with protection against accumulation of ingress particles in the trunnion house.
5. All trunnion mounted ball valves shall be provided with stem & seat sealant injection connections and shall be suitable for injecting sealant with the valve in operating condition. Also, for class 900# and above valves, a grease injection connection shall be provided at only lower trunnion for sizes NPS 2” & 3” and at both upper and lower trunnion for sizes 4” and above.
6. All ball valves in wet sour service shall be provided with upper and lower trunnion bearings of equivalent trim material. Torque calculations shall consider the friction coefficient of bearing material.
7. Bore for Ball Valves shall be ‘Reduced Bore’ unless otherwise specified either in the Material Requisition or the valve data sheet. The bore size of the reduced bore valves shall be corresponding to that of full bore valve of one size reduction up to

(including) 10” and two size reductions for 12” & above and in accordance with MESC SPE 77/130.

8. Ball and stem shall be one piece solid construction, either cast or forged. Welded construction is not acceptable.
9. Ball valves shall have automatic body cavity pressure relief seat to prevent over pressurization when the valve is in the closed position. Valves shall not have hole in the ball to equalize the pressure with body cavity while in the closed condition. A detail explanation of the proposed method for achieving this requirement, including drawings or sketches shall be provided along with the bid.
10. All ball valves shall be with position indicator to indicate the position of closure member.
11. All ball valves in gas service shall be provided with the lip seals.
12. Valve body design shall be of split body! end entry type unless specifically indicated as top entry type in the valve data sheet.
13. With the exception of small bore integrated valves, all ball valve stems shall protrudea minimum of 1” above the top of the lever, and have a robust and secure connection between the stem and lever.
14. Ball valves 900# class and above, and working temperature below zero degree in gas service shall have lip seal design feature as minimum.

10 Specific Requirements for Gate, Globe, Check & Needle Valves

1. The Gate valves of size NPS 2” & larger shall be designed and supplied in accordance with BS EN ISO 10434 (supersedes BS 1414) and API 6D are also acceptable subject to compliance with this specification, data sheets etc. & additional requirements of MESC SPE 77!161.
2. The small bore valves (NPS 1 1/2” and lesser) shall be in accordance with BS EN ISO 15761 (supersedes BS 5352)! API 602. The valves shall also comply with the additional requirements of MESC SPE 77/101 & 77/102.
3. Gates, in wedge gate valves shall be forged or cast. Welded fabrication is not acceptable.
4. Solid wedge for gate valves NPS 1 1/2” and larger shall be flexible type unless otherwise specified. A disc and stem connection shall be designed in such a way that the disc and the stem cannot be separated when the valve is oriented in any position or any loading the connection may see during valve operation.

5. All through conduit gate valves shall be of double block and bleed design
6. The Globe valves of sizes NPS 1 1/2” and below shall be designed and supplied in accordance with BS EN ISO 15761 (supersedes BS 5352), with additional requirements of MESC SPE 77/101.
7. Globe valves of size NPS 2” and above shall be designed and supplied in accordance with BS 1873, with additional requirements of MESC SPE 77/103.
8. Globe valves shall be provided with guided plug type disc for classes 600 and higher and for sizes 4” and higher unless otherwise specified.
9. All globe valves shall be suitable for throttling duties. An arrow to indicate the correct flow directions shall be part of the body casting or forging or shall be embossed on the valve body. Gear operated valves shall have operators of a design that will allow the valve to be set in intermediate throttling positions for long periods without having lash down the hand wheel.
10. All gate and globe valves shall be provided with back seats features.
11. 1The Check valves of size NPS 1 1/2” and below shall be designed and supplied in accordance with BS EN ISO 15761 (supersedes BS 5352) with additional requirements of MESC SPE 77/101.
12. The Check valves of size NPS 2” and above shall be designed and supplied in accordance with API 6D / ISO 14313/BS 1868 with additional requirements of MESC SPE 77/160.
13. All check valves shall be suitable for horizontal and vertical installation with flow upwards.
14. The Swing check valve disc and seats shall be replaceable. The minimum flow velocity necessary to keep the swing check valve in a fully open condition and same shall be provided during bid stage.
15. The dual plate check valves shall be designed and supplied in accordance with API 594 with additional requirements of MESC SPE 77/133.
16. The ends of “Wafer” check valves shall comply with API standard 594. The contact faces of check valves for which gaskets are specified shall receive the same machining finish as the contact faces of the flanges between which these valves will be installed. This flange finish facing is as specified in the relevant piping material class/ valve data sheets.

17. Dual plate check valves shall be of a solid lug wafer style with no penetration through the wall. Lugs shall be through hole. The valve plates and springs shall be replaceable. Larger size valves shall be provided with flange ends.
18. Copper alloy valves designed to the standard BS 5154 shall be supplied with flanges drilled to ASME B 16.5 unless otherwise specified.
19. Needle valves design shall be to manufacturer's standard incorporating all features for Globe valves (less than and equal to NPS 1 1/2") as per BS EN ISO 15761 (Supersedes BS 5352) unless noted otherwise on the valve data sheets.
20. The design, construction and material requirements shall be as specified in the Material Requisition or in the valve data sheet.
21. Flanged valves shall be provided with renewable seats unless noted otherwise on the valve data sheets.

11 Specific Requirements for Double Block & Bleed Valves

1. The double block and bleed valve shall be of integral design as single piece with two ball valves (full bore) for isolation & one needle valve for bleed.
2. All integral double block & bleed valves shall be in accordance with EEMUA publication number 182. However, the ball valves shall be designed and supplied in accordance with API 6D/ ISO 14313 and additional requirements of MES SPE 77/130 and needle valve shall be designed and supplied in accordance with BS EN ISO 15761 (supersedes BS 5352), with additional requirements of MESC SPE 77/101 as applicable.
3. Pressure temperature rating of all double block & bleed valves shall be in accordance with the appropriate class for the body material in accordance with ASME B16.5 / ASME B16.34.
4. Handles / wrench position for primary isolation and secondary isolation valve shall be on opposite directions.
5. An integral ball / stem design for floating ball valves is not acceptable.
6. All valves shall be fitted with an anti-static device.
7. The design, size and material requirements shall be as specified in the valve data sheets.
8. Where weld overlay of seat housing and stem bearing of DBB valve is not possible

due to space constrain, DBB valve shall be supplied as a single solid piece with material same as trim or higher CRA material. Two or three piece weld overlay DBB valve is not acceptable.

12 Specific Requirements For Butterfly Valves

1. The Butterfly valves shall be designed and supplied in accordance with API 609 with additional requirements of MESC SPE 77/134.
2. Butterfly valves to be used in HC and in any critical services shall be Triple Eccentric type. For all other services SHELL MESC shall be followed.

13 Specific Requirements for Non Slam Check Valves

1. When specified as Non Slam Check Valve it shall be Axial flow Non Slam Check Valve. Dual Plate Non Slam Check Valve will be used when specifically asked for.
2. Axial flow Non- slam check valve shall be designed and supplied in accordance with API 6D with additional requirements of MESC SPE 77/132.
3. Axial flow Non- slam check valve shall be designed and supplied in accordance with
    - Short stroke length to reduce closure time and eliminate water hammer
    - Seat shall be self-aligning and provide tight shut off
    - Shall be designed for minimum pressure drop loss and designed for excellent dynamic performance
    - Shall be metal seated until and unless specified otherwise
    - Face to Face dimension shall be in accordance with API 6D
4. Dual Plate Non Slam check valve shall be designed for scrub free opening. The Valve shall be designed to have independent spring to allow higher torque to be exerted against each plate with independent closing in response. It shall have independent plate support design to reduce friction forces. Dual Plate Non Slam Check Valve shall have following feature:
    - Shall be High Performance Check Valve
    - Shall be flanged designed from 12” and above and wafer lug type below 12”.
    - Shall be retainer less type
    - Designed for scrub free opening and low friction
    - Design in accordance with API 594/ API6D.

14 Repair Welds

1. No weld repair to valve bodies shall be made without a written approval from COMPANY or its authorized inspector. Weld repair procedure and qualification test shall be submitted for COMPANY approval. The COMPANY reserves the right to refuse any weld repair.
2. Weld repairs are permissible for castings only. Defective cast valve bodies and bonnets may be repaired by welding in accordance with the provisions of their respective standards and subject to agreement by the COMPANY.
3. Welds or weld repairs shall be subjected to stress relief heat treatment and shall be certified. Austenitic stainless steel and Inconel material shall be in the annealed condition. All cases for valves in sour service shall be certified as per NACE MR 0175/ISO 15156.
4. The welding procedures and qualifications of the welding procedures and welders to be employed in making the repairs must be in accordance with ASTM A488 or ASME section IX.
5. For weld repair qualification the SUPPLIER/VENDOR shall carry out any heat treatment, NDE and Charpy impact testing appropriate to the material being repaired.

15 NDT Requirements & NDE Acceptance Criteria

NDT and NDE acceptance shall be in accordance with MESC SPE 77/302, Project Piping Material Specification Document and Annexure VIII of Quality system requirement (Doc. no. EP 30-99-97-0006-1)

16 Quality Assurance / Quality Control

The EPC CONTRACTOR / VENDOR shall operate a quality system to ensure that requirements of the DEP 82.00.10.10-Gen & ISO 9001-2008 are achieved. All EPC CONTRACTOR / VENDOR and their SUB- VENDORS shall be certified to ISO 9001-2008 and shall submit a copy of their certification.

The manufacturers shall identify in documents to its SUPPLIER and SUB-CONTRACTORS all applicable QA/QC requirements imposed by the

COMPANY/EPC CONTRACTOR, and shall ensure compliance for all levels of its activity.

The level of inspection shall be as defined in the relevant material requisition, in valve data sheets and VENDOR quality requirement form “VQRF”.

17 Supplier’s Responsibilities

1. The SUPPLIER shall provide goods in full compliance with the requirements of the Purchase Order, Material Requisition and any related document, standard or specification referenced therein. Unless otherwise stated, SUPPLIER shall refer to all latest international codes and standards.
2. The SUPPLIER shall inform the PURCHASER of any exceptions, deviations / variations substitutions or non- compliance with the requirements of this specification, Purchase Order, Material Requisition or related documents. This information shall be submitted with the SUPPLIER’s quotation.
3. SUPPLIER shall submit all proposed deviations from this specification and referenced codes, standards and specifications for COMPANY review and approval.
4. SUPPLIER is required to provide guarantee for the trouble – free performance of the valves covered under this specification. SUPPLIER is fully responsible to ensure that the valve materials are suitable for the service, pressure/temperature specified in the data sheets/piping classes and design life. SUPPLIER is free to offer alternative materials in order to provide such a guarantee subject to COMPANY approval.
5. If valve interlocks are applicable, valve manufacturer shall provide valve top work dimensions to COMPANY/Interlock SUPPLIER upon to meet optimized/above referred international standard design requirements.
6. SUPPLIER shall be submitting the offer with detailed drawing for every item in this requisition. The drawing shall show the constructional features and enlarged views for stem and seat areas. In the absence of the drawings & catalogues the offer shall be considered as an incomplete offer. SUPPLIER shall ensure that the drawings can be correlated with the items in the material requisition.
7. Vent & drain of large bore valve shall be part of SUPPLIER scope & same shall be provided in line with the same specification as the main valve.

8. SUPPLIER shall provide Purchaser data sheets completely filled against their requirements, stamped, signed and deviations clearly marked for acceptance during bid stage. Quotation without above shall not be considered for technical review and evaluation.
9. SUPPLIER shall submit the pressure temperature chart for all elastomer use in valves for COMPANY / Purchaser review during bid and post bid.

18 Inspection and Testing

1. All valves shall be tested in accordance with their applicable ASTM , ASME, MSS, BS codes/ standards and in accordance with NACE MR0175/ISO 15156 (where required for sour service), with additional requirements of MESC SPE 77/302 and SPE 77/303 as applicable.
2. All austenitic stainless steel forgings shall be 100% liquid penetrate examined as per ASTM A -182 supplementary requirements S5, with acceptance criteria to ASME B 16.34, ANNEX D.
3. Valves requiring “Extended Bonnet” shall meet all the requirements as stated in MESC SPE 77/200 in addition to design and testing requirements specified in base standard of the valve & specified MESC SPEs.
4. The scope of witnessing and certification for non-destructive and other inspection & testing shall as per the Project ITP (Inspection and Test Plan), Project Material Requisition and Annexure VIII of COMPANY Quality System requirement doc. no. 3099-97-0006-1. Inspection shall ensure compliance of technical documents requirements enclosed with Material Requisition.
5. SUPPLIER shall submit the detail ITP (based on Project ITP & Project MaterialRequisitions) in line with Annexure VIII of COMPANY Quality System requirement doc. no. 30-99-97-0006-1for COMPANY/PURCHASER review and approval. The Third Party Inspection requirements (if any) shall be indicated in ITP for COMPANY/PURCHASER approval.
6. SUPPLIER shall certify that the specified heat treatments have been correctly carried out wherever required.
7. SUPPLIER shall conduct hardness test on finished components to be used for sour services, to ensure that the hardness requirements of NACE MR0175 / ISO

15156 are met. Where hardness values exceed NACE Standard acceptable values, the part shall be rejected.

8. Valve hydrostatic testing shall be as per BS EN 12266-1 & 2 (Supersedes BS 6755 Part 1) or API 598 as appropriate or as specified in the valve data sheets. However, the valve hydro test pressure shall be as per ASME B 16.34 based on Material Group and Class Rating.
9. New gaskets shall be installed in valve bonnet and cover joints that were opened for any reason during the course of testing.
10. Casting shall not be impregnated with sodium silicate or any other material to prevent leakage during pressure testing.
11. Any valve gland packing or stem seal that leaked during testing shall be replaced with new material following thorough drying of the gland and packing cavity. Shell and Seat hydrostatic testing shall then be repeated for these valves.
12. No gasket compounds shall be used on any flanged component other than a light application of either graphite and oil or light petroleum grease.
13. Testing of all valve components shall be performed, especially valve body cavities, shall be thoroughly dried prior to preparation for packing and shipment. All gaskets surfaces shall be thoroughly cleaned and dried prior to preparation for packing and shipment.
14. Fire safe test shall be as per BS EN ISO 10497 (Supersedes BS 6755 Part 2) or API 6FA. All valves offered shall have qualified Fire test certification, details of which shall be available for PURCHASER review. The material of construction of valves in the certificate shall not be different/ vary from the material in data sheet.
15. Anti-static device test shall be as per BE EN 12266-1 & 2 (Supersedes BS 6755 Part 2.
16. All metal seated isolation valves (ball & gate) in gas service shall be subjected to high pressure pneumatic shell test in accordance with Para. 3.5 of API 598 at 110% of design pressure. SUPPLIER shall refer to fluid schedule for gas service requirements.
17. For ball, gate, globe and butterfly valves, for fluids with a fugitive emission tightness class A (HS), gland packing tolerances shall be in accordance with MESC SPE 77/208.

18. Fugitive emission production testing as per MESC SPE 77/312 is applicable for supply of all valves. ADNOC Onshore may waive production testing, in either of the following cases:
    - The valve has successfully passed the fugitive emission prototype testing in accordance with ISO 15848-1 and MESC SPE77/300. The test report shall not be older than 2 years.
    - Production testing has been carried out on the same valve type, design, pressure class, size, fugitive emission class and under the same test conditions, with consistent quality over the last 6 months.
19. SUPPLIER shall prepare a sampling plan for fugitive emission production testing in accordance with annexure-A of MESC SPE 77/312 for the total number of offered valves and shall submit it along with the offer.
20. When tight shut-off (TSO) requirement is specified then it shall comply with seat leakage rates A or B, in accordance with BS EN 12266-1 unless otherwise stated.
21. Positive Material Identification (PMI) shall be conducted for all SS / CRA material as stated in material / purchase requisition.
22. For material requirements, chemical composition, heat treatment, impact testing, corrosion testing, welding & hard facing and NDE requirements SUPPLIER shall refer to MESC SPE 77/302 & MESC SPE 77/303.
23. The selection of sample valve for various tests such as radiography, magnetic / liquid penetrant, fugitive emissions shall be by ADNOC Onshore / nominated inspector.
24. The Inspection & test plan must include scheduling of tests, scope of test, standard followed for test, acceptance criteria, Hold and witness points, checklists, spec of testing medium, cleaning procedure after the test, packing etc. inspection of cleanliness and the packing shall be considered as Hold & Witness points.

19 Certification

1. The requirements of certification, drawings, reports and any other documents shall in accordance with document requirement list (VDRL) attached with the material requisition / purchase requisition.
2. The requirements for certification, reports & any other documents shall be in accordance with the MESC specification and “Vendor Document Requirement List” (VDRL) attached with the material requisition.

   The following shall be included on the supplied certificates as a minimum:

   a) EPC CONTRACTOR purchase requisition no. & the item no.
   b) MESC code / COMPANY items number
   c) Nominal diameter and rating
   d) Heat no. & Traceability no
   e) Impact test results-where applicable
   f) Hardness test results
   g) NDE results
   h) Heat analysis
   i) HIC test results, where applicable
   j) Hydrostatic / Pneumatic test results, where applicable

3. All certificates shall state the manufacturers’ name, location. Forging, casting and plate certificates shall be from original steel manufacturers. Certificates shall include the supplier’s purchase order number and purchase order item number.

20 Painting and Colour Coding

1. Painting of valves shall be in accordance with COMPANY standard document ES 30.99.37.0013 (latest revision to be used)

   Painting system shall be based on the maximum operating temperature of the fluid and shall not be based on maximum mechanical design temperature as normally listed in PMS class summary sheets.
2. Color coding of valves shall be done in line with the COMPANY document ES

30.99.37.0013. However, EPC CONTRACTOR shall prepare a detail procedure for categorizing the color coding of material based on above specified COMPANY specification.Color coding which are not covered under the above document is listed below.

Stainless steel Austenitic/Ferrite (SDSS) - Strong blue (Code no 107 of BS 381C).

21 Marking and Identification

1. Marking of the valves shall be done in accordance with applicable international standard and relevant MESC SPE specification & ADNOC Onshore specification unless otherwise stated in the material requisition.
2. All valves shall be equipped with a proper identification name-plate, which is made by SS or nickel alloy sheet and shall report following as minimum:
    - MESC code / Client Part number
    - Nominal Diameter/ Thickness
    - Rating
    - Body, trim, seat material
    - Vendor Name
    - Hydrostatic & Pneumatic test pressures
    - CONTRACTOR purchase requisition number & item serial number of the purchase requisition.
    - Stock Code
    - Heat or melt number/ Heat treatment condition (if applicable)

22 Packing and Reservation

1. For packing, marking, preservation and shipping documentation, SUPPLIER shall prepare a detailed procedure for all offered items of material requisition and obtain COMPANY approval on same. Only COMPANY approved procedure shall be used.
2. Material shall be packed ready for export in a manner which allows easy handling and prevents damage. Vendor shall submit their standard packing procedure to ADNOC Onshore for approval.
3. Open ends of valves shall be protected with heavy duty plastic end caps.
4. Valves shall have packing suitable for all type of transport (Sea and Road).

5. All valves shall be protected against the risks of corrosion during transport and/or storage. Suitable protective coating shall be applied. SUPPLIER to provide the details of the protective coating.
6. Water proof barrier material shall be used for stainless steel valves to protect against chlorine attack by exposure to salt water atmosphere.
7. Carbon steel and stainless steel valves are not allowed to be stored together and shall be packed separately.

23 Spares

The vendor shall recommend and submit his priced spare list strictly in accordance with COMPANY Spare Parts Procedure referred in the Material Requisition (SUPPLIER shall compile spare parts for commissioning, initial spares for 1 year operation and normal operation spares for 2 years after completion of 1st year of operation). The vendor shall identify any special tool requirement in his bid.

24 Warranty

Notwithstanding the valve's design code requirements, valves shall be guaranteed by the manufacturer against defective material, poor workmanship, and improper design for a period of eighteen (18) months from the date of commissioning or twenty –four (24) months from the date of delivery, whichever is later. The manufacturer shall replace the valve without charge, any valve not meeting the terms of the guarantee within this period of time.

Technical Centre - Engineering Specification
Specification for Piping Valves

Appendix – 1 : (Sample Data Sheets)

Data Sheet No. - BA-25-9-001

BALL VALVE TAG NO. - As per *MESC* numbers of respective piping class			
DESCRIPTION		**SPECIFICATION REQUIREMENT**	**VENDOR'S CONFIRM**
GENERAL DATA			
VALVE TYPE	:	2 OR 3 PIECE SPLIT BODY, BOLTED BONNET, END ENTRY, BODY CAVITY OVER PRESSURE SELF RELIEF SEAT DESIGN BALL VALVE	
VALVE SIZE RANGE	:	DN 50 TO DN 100	
VALVE ASME CLASS/RATING	:	2500 #	
VALVE PORT	:	REDUCED BORE	
VALVE SERVICE	:	INJECTION GAS (LEAN GAS)	
VALVE END CONFIGURATION	:	FLANGED RF , SMOOTH FINISH (Ra 3.2 to 6.3□m)	
PIPING CLASS	:	251490-Y	
CORROSION ALLOWANCE	:	3 MM	
DESIGN			
DESIGN PRESSURE		FULL RATING	
DESIGN/ OPERATING TEMPERATURE		-46 TO 90 ^{0C}	
VALVE DESIGN	:	BI- DIRECTIONAL, FIRE SAFE, ANTI STATIC & BUBBLE TIGHT SHUT OFF DESIGN TYPE	
VALVE OPERATION	:	GEAR OPERATED	
BALL SUPPORT	:	TRUNION MOUNTED BALL	
LOCKING FACILITY	:	REQUIRED	
STEM	:	ANTI BLOW OUT TYPE (NO CASTING)	
SEAT	:	SOFT SEATED, RENEWABLE TYPE	
STEM PACKING	:	RENEWABLE (NOTE 8)	
BONNET/COVER	:	BOLTED (NON EXTENDED)	
MATERIALS			
BODY	:	ASTM A 350 LF2 CL . 1 / ASTM A 352 GR. LCB/LCC	
COVER/BONNET / GLAND FLANGE	:	ASTM A 350 LF2 CL . 1/ ASTM A 352 GR. LCB/LCC	
BALL (SOLID)	:	AISI 316 (L)	
STEM / TRIM / GLAND RING	:	A 182 F316(L)	
PRIMARY SEAT RING	:	VIRGIN / FILLED PEEK	
SEAT POCKET & STEM SEALING AREAS		MINIMUM 3 MM THK. AISI 316(L) WELD OVERLAY	
SPRINGS		INCONEL 718 (ASTM B637 UNS N0. 7718)	
SEALS	:	LIP SEAL, PEEK (AED TYPE)	
GLAND /STEM PACKING	:	CARBON FIBRE GRAPHITE/ PERFORMED COMP. GRAPHITE/VITON B OR EQUIVALENT (NOTE 6)	
GASKET	:	SPIRAL WOUND, SS 316, GRPAHITE FILLED, CS CENTRING / ISS INNER RING	
BOLTING	:	ASTM A320-L7M / ASTM A194-7M (NOTE 9)	
CODES AND STANDARDS / TESTING / CERTIFICATION			
DESIGN CODE	:	BS EN ISO 14313/API 6D	
FACE TO FACE DIMENSIONS	:	BS EN ISO 14313/API 6D /ASME B16.10	
END CONFIGURATION / DIMENSIONS	:	ASME B 16.5	
FIRE SAFE	:	API 6FA / API 607 /BS EN ISO 10497 AS APPLICABLE	
FUGITIVE EMISSION TIGHTNESS	:	AS PER FUGITIVE EMISSION LEAK DETECTION OF VALVES SPE 77/312 , ENDURANCE CLASS B	
HYDROSTATIC TEST & PNEUMATIC TEST (BOTH MANDATORY)	:	API 598 / BS EN 12266 - 1 & 2	
NDT (MPI/DP/RADIOGRAPHY/ UT ETC.)	:	SPECIFICATION FOR VALVES (DOC. NO. 11.99.12.0603) AND ADNOC Onshore INSPECTION CLASS I	
MATERIAL CERTIFICATION	:	BS EN 10204 TYPE 3.2	
PAINTING	:	SPECIFICATION FOR PAINTING ADNOC Onshore STD.(DOC.NO.30.99.37.0013 REV 2)	

MARKING	;	MSS SP 25 & MESC SPE SPECIFICATIONS	
OTHER APPLICABLE PROJECT SPEC.	:	PIPING MATERIAL SPECIFICATION (DOC. NO. 11.99.12.0601)	
MANDATORY ADDITIONAL REQUIREMENTS (LATEST EDITION)			
MESC ,SPE 76/001, SPE 77/100, SPE 77/110, SPE 77/130 ,SPE 77/ 211, SPE 77/302, SPE 77/303, SPE 77/312, SPE 81/001, SPE 81/002, SPE 85/103, SPE 85/200, SPE 85/203 & SPE 85/204, MR 0-175/ISO 15156			

BALL VALVE TAG NO. - As per *MESC* numbers of respective piping class		
DESCRIPTION	**SPECIFICATION REQUIREMENT**	**VENDOR'S CONFIRMATION**
NOTES:		
1.	THIS DATA SHEET SHALL BE READ INCONJUNCTION WITH THE ABOVE SPECIFIED PIPING MATERIAL SPECIFICATION AND SPECIFICATION FOR PIPING VALVES	
2.	VENDOR SHALL CONFIRM THE SUITABILITY OF MATERIALS WITH RESPECT TO SERVICE/TEMPERATURE SPECIFIED IN RESPECTIVE PIPING CLASSES.	
3.	THIS DATA SHEET SHALL BE COMPLETELY FILLED BY THE VENDOR, STAMPED, SIGNED AND DEVIATIONS CLEARLY MARKED FOR ACCEPTANCE. QUOTATION WITHOUT THIS DATA SHEET WILL NOT BE CONSIDERED FOR TECHNICAL REVIEW AND EVALUATION.	
4.	SHORT PATTERN VALVES SHALL NOT BE ACCEPTABLE AND VALVES SHALL BE PROVIDED WITH ANTISTATIC DEVICES.	
5.	VENDOR SHALL CONFIRM THAT THE CORROSION ALLOWANCES (MAX. OF ABOVE) ARE CONSIDERED IN THICKNESS CALCULATION OF CARBON STEEL PARTS (IN CONTACT WITH FLUID).	
6.	GRAPHITE BASED PACKING SHALL CONTAIN CORROSION INHIBITOR TO PREVENT OXIDATION OF THE STEM.	
7.	VALVES SHALL HAVE POSITION INDICATOR SHOWING OPEN AND CLOSE POSITIONS.	
8.	ELASTOMERIC SEALS SHALL BE ANTI-EXPLOSIVE DECOMPRESSION (AED) TYPE.	
9.	ALL BOLTS AND NUTS USED IN VALVES SHALL BE COATED EITHER BY TAKECOAT 1000 OR XYLAN 1070	
10.	LIFTING EYES & SUPPORT LUGS SHALL BE PROVIDED FOR VALVES WEIGHING 250 KGS AND ABOVE.	
11.	FOR FLANGED END VALVES, BODY & FLANGES SHALL BE INTEGRALLY CAST OR FORGED.	
12.	ALL MATERIALS SHALL COMPLY WITH REQUIREMENTS OF NACE MR 0175/ ISO 15156.	
13.	FOR THE GIVEN TEMPERATURE IN THE DATA SHEET, VALVE SEAT INSERTS (SOFT) MATERIAL SHALL BE ABLE TO WITH STAND THE LIMITING PRESSURE INDICATED IN RATING TABLE OF ASME B 16.34. REDUCTION IN LIMITING PRESSURE OF VALVE DUE TO LIMITATION OF SEAT INSDERT MATERIAL IS NOT ACCEPTABLE.	
14.	VENDOR SHALL SUBMIT P-T RATING CHART OF SELECTED SEATS/SEALS COMPLYING WITH THE ABOVE AT THE TIME OF BID AS WELL AS POST ORDER.	
15.	TORQUE LIMITING DEVICE SHALL BE PROVIDED FOR GEAR OPERATED VALVES TO AVOID MALFUNCTIONING.	

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ADNOC Onshore

Technical Centre - Engineering Specification
Specification for Piping Valves

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Data Sheet No. - GA-15-1-001

GATE VALVE TAG NO. - As per *MESC* numbers of respective piping class			
DESCRIPTION		**SPECIFICATION REQUIREMENT**	**VENDOR'S CONFIRMATION**
GENERAL DATA			
VALVE TYPE	:	BOLTED BONNET, OS & Y TYPE GATE VALVE	
VALVE SIZE RANGE	:	DN 100 TO DN 250	
VALVE ASME CLASS/RATING	:	1500#	
VALVE SERVICE	:	INJECTION WATER (SOUR SERVICE)	
VALVE END CONFIGURATION	:	FLANGED (RF) , SMOOTH FINISH (Ra 3.2 to 6.3□m)	
PIPING CLASS	:	151437-X	
CORROSION ALLOWANCE	:	3 MM	
DESIGN			
DESIGN PRESSURE	:	FULL RATING	
DESIGN/OPERATING TEMPERATURE	:	0 TO 150 ^{0}C/ 64 ^{oc}	
VALVE DESIGN	:	RISING STEM, NON RISING HAND WHEEL DESIGN TYPE	
VALVE OPERATION	:	GEAR OPERATED	
GATE / WEDGE	:	FLEXIBLE WEDGE	
LOCKING FACILITY	:	REQUIRED	
STEM	:	ANTI BLOW OUT TYPE (NO CASTING)	
SEAT / BACK SEAT	:	RENEWABLE /INTEGRAL	
STEM PACKING	:	RENEWABLE	
MATERIALS			
BODY	:	ASTM A105N / ASTM A 216 GR WCB/ WCC	
COVER/BONNET	:	ASTM A105N / ASTM A 216 GR WCB/ WCC	
GATE / WEDGE	:	INCONEL 625+ STELLITE 6 (NOTE 11)	
STEM	:	INCONEL 625	
GLAND FOLLOWER/ BUSH	:	INCONEL 625	
BODY SEAT RING	:	INCONEL 625 + STELLITE 6	
BACK SEAT	:	STELLITE 6	
SEAT POCKET & STEM SEALING AREAS		MINIMUM 3 MM THK. INCONEL 625 WELD OVERLAY	
GLAND FLANGE	:	A105N	
GLAND /STEM PACKING	:	DIAGONAL BRAIDED GRAPHITE YARN/ PREFORMED COMP. GRAPHITE/ VITON B	
GASKETS	:	SPIRAL WOUND INCONEL 625, GRAPHITE FILLED, CS CENTRING/ INCONEL 625 INNER RING	
BOLTING	:	ASTM A193-B7M / ASTM A194-2HM (NOTE 10)	
CODES AND STANDARDS / TESTING / CERTIFICATION			
DESIGN CODE	:	BS EN ISO 10434 (SUPERCEDES BS 1414)/API 6D	
FACE TO FACE DIMENSIONS	:	BS EN ISO 10434 / ASME B16.10	
END CONFIGURATION / DIMENSIONS	:	ASME B 16.5	
FIRE SAFE	:	API 6FA / API 607 /BS EN ISO 10497 AS APPLICABLE	
HYDROSTATIC TEST &AIR TEST (BOTH MANDATORY)	:	API 598 / BS EN 12266 - 1 & 2	
FUGITIVE EMISSION TIGHTNESS		AS PER FUGITIVE EMISSION LEAK DETECTION OF VALVES SPE 77/312, ENDURANCE CLASS B	
NDT (MPI/DP/RADIOGRAPHY/ UT ETC.)	:	PMS & SPECIFICATION FOR PIPING VALVES (DOC. NO. 12.99.12.0607 & 0608) AND ADNOC Onshore INSPECTION CLASS I	
MATERIAL CERTIFICATION	:	BS EN 10204 TYPE 3.2	
PAINTING	:	SPECIFICATION FOR PAINTING ADNOC Onshore STD. (DOC. NO. 30.99.37.0013)	
MARKING	;	MSS SP 25 & MESC SPE SPECIFICATIONS	
OTHER APPLICABLE PROJECT SPEC.	:	PIPING MATERIAL SPECIFICATION (DOC. NO. 12.99.12.0607)	

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Technical Centre - Engineering Specification
Specification for Piping Valves

MANDATORY ADDITIONAL REQUIREMENTS (LATEST EDITION)	
	MESC , SPE 76/001, SPE 77/101, SPE77/102, SPE 77/161,SPE 77/302, SPE 77/303, SPE 77/312, SPE 81/001, SPE 81/002 SPE 85/103, SPE 85/200, SPE 85/203 & SPE 85/204, MR 0-175/ISO 15156
NOTES:	
1.	THIS DATA SHEET SHALL BE READ INCONJUNCTION WITH THE PIPING MATERIAL SPECIFICATION (DOC. NO. 12.99.12.0607) AND SPECIFICATION FOR PIPING VALVES (DOC. NO. 12.99.12.0608)

GATE VALVE TAG NO. - As per *MESC* numbers of respective piping class		
DESCRIPTION	**SPECIFICATION REQUIREMENT**	**VENDOR'S CONFIRMATION**
2.	THIS DATA SHEET SHALL BE COMPLETELY FILLED BY THE VENDOR, STAMPED, SIGNED AND DEVIATIONS CLEARLY MARKED FOR ACCEPTANCE. QUOTATION WITHOUT THIS DATA SHEET WILL NOT BE CONSIDERED FOR TECHNICAL REVIEW AND EVALUATION.	
3.	VENDOR SHALL CONFIRM THE SUITABILITY OF MATERIALS WITH RESPECT TO SERVICE/TEMPERATURE SPECIFIED IN RESPECTIVE PIPING CLASS.	
4.	VENDOR SHALL CONFIRM THAT THE CORROSION ALLOWANCES (MAX. OF ABOVE) ARE CONSIDERED IN THICKNESS CALCULATION OF CARBON STEEL PARTS (IN CONTACT WITH FLUID).	
5.	GRAPHITE BASED PACKING SHALL CONTAIN CORROSION INHIBITOR TO PREVENT OXIDATION OF THE STEM.	
6.	VALVES SHALL HAVE POSITION INDICATOR SHOWING OPEN AND CLOSE POSITIONS.	
7.	FOR FLANGED END VALVES, BODY & FLANGES SHALL BE INTEGRALLY FORGED. SHORT PATTERN VALVES ARE NOT ACCEPTABLE.	
8.	ALL MATERIALS SHALL COMPLY WITH REQUIREMENTS OF NACE MR 0175/ ISO 15156.	
9.	LIFTING EYES & SUPPORT LUGS SHALL BE PROVIDED FOR VALVES WEIGHING 250 KGS AND ABOVE.	
10.	ALL BOLTS AND NUTS USED IN VALVES SHALL BE COATED EITHER BY TAKECOAT OR XYLAN 1070	
11.	THE MATERIAL OF GATE/ WEDGE CAN BE CARBON STEEL + INCONEL 625 WELD OVERLAY FOR SIZES DN 150 AND ABOVE.	

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Data Sheet No. - GL-25-9-001

GLOBE VALVE TAG NO. - As per MESC numbers of respective piping class			
DESCRIPTION		**Specification Requirement**	**Vendor Confirmation**
GENERAL DATA			
VALVE TYPE	:	BOLTED BONNET, OS & Y TYPE GLOBE VALVE	
VALVE SIZE RANGE	:	DN 50 TO DN 80	
VALVE ASME CLASS/RATING	:	2500#	
VALVE SERVICE	:	INJECTION GAS (SOUR SERVICE)	
VALVE END CONFIGURATION	:	FLANGED (RF) , SMOOTH FINISH (Ra 3.2 to 6.3□m)	
PIPING CLASS	:	251490-Y	
CORROSION ALLOWANCE	:	3 MM	
DESIGN			
DESIGN PRESSURE	:	FULL RATING	
DESIGN TEMPERATURE	:	-46 TO 90 ^{0C}	
VALVE DESIGN	:	RISING STEM, NON RISING HAND WHEEL DESIGN TYPE, , STRAIGHT PATTERN	
VALVE OPERATION	:	HAND WHEEL OPERATED	
DISC	:	SWIVEL PLUG DISC TYPE	
LOCKING FACILITY	:	REQUIRED	
STEM	:	ANTI BLOW OUT TYPE (NO CASTING)	
SEAT / BACK SEAT	:	RENEWABLE / INTEGRAL	
STEM PACKING	:	RENEWABLE	
MATERIALS			
BODY	:	ASTM A352 LCB/LCC/A350 LF2 CL. 1	
COVER/BONNET	:	ASTM A352 LCB/LCC/A350 LF2 CL. 1	
DISC	:	AISI 316 (L) + STELLITE 6	
STEM	:	ASTM A 182 F 316 (L)	
GLAND FOLLOWER/ BUSH	:	ASTM A 182 F 316 (L)	
BODY SEAT RING	:	AISI 316 (L) + STELLITE 6	
BACK SEAT	:	AISI 316 (L) + STELLITE 6	
GLAND FLANGE	:	ASTM A352 LCB/LCC/A350 LF2 CL. 1	
SEAT POCKET & STEM SEALING AREAS		MINIMUM 3 MM THK. AISI 316 (L) WELD OVERLAY + STELLITE 6	
GLAND /STEM PACKING	:	CARBON FIBRE GRAPHITE/ PERFORMED COMP. GRAPHITE/VITON B OR EQUIVALENT (NOTE 4)	
GASKETS	:	SPIRAL WOUND, SS 316, GRPAHITE FILLED, CS CENTRING / SS INNER RING	
BOLTING	:	ASTM A 320-L7M / ASTM A194-7M (NOTE -9)	
CODES AND STANDARDS / TESTING / CERTIFICATION			
DESIGN CODE	:	BS EN 1873	
FACE TO FACE DIMENSIONS	:	BS EN 1873 / ASME B16.10	
END CONFIGURATION / DIMENSIONS	:	ASME B 16.5	
FIRE SAFE	:	API 6FA / API 607 /BS EN ISO 10497 AS APPLICABLE	
HYDROSTATIC TEST & AIR TEST (BOTH MANDATORY)	:	API 598 / BS EN 12266 - 1 & 2	
FUGITIVE EMISSION TIGHTNESS		AS PER FUGITIVE EMISSION LEAK DETECTION OF VALVES SPE 77/312, ENDURANCE CLASS B	
NDT (MPI/DP/RADIOGRAPHY/ UT ETC.)	:	SPECIFICATION FOR PIPING VALVES (DOC. NO. 11.99.12.0603) AND ADNOC Onshore INSPECTION CLASS I	
MATERIAL CERTIFICATION	:	BS EN 10204 TYPE 3.2	
PAINTING	:	SPECIFICATION FOR PAINTING ADNOC Onshore STD. (DOC. NO.	

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MARKING	; MSS SP 25 & MESC SPE SPECIFICATIONS	
OTHER APPLICABLE PROJECT SPEC.	: PIPING MATERIAL SPECIFICATION (DOC. NO. 11.99.12.0601)	
MANDATORY ADDITIONAL REQUIREMENTS (LATEST EDITION)		
MESC , SPE 76/001, SPE 77/101, SPE77/102, SPE77/103, SPE 77/161, SPE 77/303, SPE 77/303, SPE 77/312, SPE 81/001, SPE 81/002 SPE 85/103, SPE 85/200, SPE 85/203 & SPE 85/204, MR 0-175/ISO 15156		
NOTES:		
1. THIS DATA SHEET SHALL BE READ INCONJUNCTION WITH THE ABOVE SPECIFIED PIPING MATERIAL SPECIFICATION AND SPECIFICATION FOR PIPING VALVES		
2. THIS DATA SHEET SHALL BE COMPLETELY FILLED BY THE VENDOR, STAMPED, SIGNED AND DEVIATIONS CLEARLY MARKED FOR ACCEPTANCE. QUOTATION WITHOUT THIS DATA SHEET WILL NOT BE CONSIDERED FOR TECHNICAL REVIEW AND EVALUATION.		

GLOBE VALVE TAG NO. - As per *MESC* numbers of respective piping class		
DESCRIPTION	**SPECIFICATION REQUIREMENT**	**VENDOR'S CONFIRMATION**
3. VENDOR SHALL CONFIRM THE SUITABILITY OF MATERIALS WITH RESPECT TO SERVICE/TEMPERATURE SPECIFIED IN RESPECTIVE PIPING CLASS.		
4. GRAPHITE BASED PACKING SHALL CONTAIN CORROSION INHIBITOR TO PREVENT OXIDATION OF THE STEM.		
5. VALVES SHALL HAVE POSITION INDICATOR SHOWING OPEN AND CLOSE POSITIONS.		
6. FOR FLANGED END VALVES, BODY & FLANGES SHALL BE INTEGRALLY FORGED. SHORT PATTERN VALVES ARE NOT ACCEPTABLE.		
7. ALL MATERIALS SHALL COMPLY WITH REQUIREMENTS OF NACE MR 0175/ ISO 15156.		
8. LIFTING EYES & SUPPORT LUGS SHALL BE PROVIDED FOR VALVES WEIGHING 250 KGS AND ABOVE.		
9. ALL BOLTS AND NUTS USED IN VALVES SHALL BE COATED EITHER BY TAKECOAT 1000 OR XYLAN 1070		

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Specification for Piping Valves

Data Sheet No. – CH-25-1-001

CHECK VALVE TAG NO. - As per MESC numbers of respective piping class			
DESCRIPTION SPECIFICATION REQUIREMENT			**VENDOR'S CONFIRMATION**
GENERAL DATA			
VALVE TYPE	:	SWING CHECK , BOLTED COVER, UNI- DIRECTIONAL CHECK VALVE	
VALVE SIZE RANGE	:	DN 80 to DN 250	
VALVE ASME CLASS/RATING	:	2500#	
VALVE SERVICE	:	INJECTION WATER (SOUR SERVICE)	
VALVE END CONFIGURATION	:	FLANGED TO ASME B 16.5 RAISED FACE SERRATED FINISH (Ra 3.2 to 6.3□m)	
PIPING CLASS	:	251437-X	
CORROSION ALLOWANCE	:	3 MM	
DESIGN			
DESIGN PRESSURE	:	FULL RATING	
DESIGN/OPERATING TEMPERATURE	:	0 TO 150^{O}C / 64 ^{oc}	
VALVE DESIGN	:	BOLTED COVER	
VALVE INSTALLATION	:	SHALL BE SUITABLE FOR HORIZONTAL & VERTICAL INSTALLATION	
CLOSURE MEMBER	:	SWING DISC	
SEAT RING	:	RENEWABLE	
TYPE OF PATTERN	:	STANDARD (RB)	
MATERIALS			
BODY	:	ASTM A105/ ASTM A 216 WCB/ WCC	
DISC	:	INCONEL 625 + STELLITE 6	
BODY SEAT RING	:	INCONEL 625 + STELLITE 6	
HINGE / STOP PIN	:	INCONEL 625 + STELLITE 6	
SEAT POCKET AREAS		MINIMUM 3 MM THK. INCONEL 625 WELD OVERLAY	
SPRINGS	:	INCONEL 718 (ASTM B637 UNS N07718)	
BOLTING	:	ASTM A193-B7M / ASTM A194-2HM (NOTE 12)	
CODES AND STANDARDS / TESTING / CERTIFICATION			
DESIGN CODE	:	API 6D / ISO 14313	
FACE TO FACE DIMENSIONS	:	API 6D / ISO 14313/ ASME B16.10	
FIRE SAFE	:	API 6FA / API 607 /BS EN ISO 10497 AS APPLICABLE	
HYDROSTATIC TEST & AIR TEST (BOTH MANDATORY)	:	API 598 / BS EN 12266 - 1 & 2	
NDT (MPI/DP/RADIOGRAPHY/ UT ETC.)	:	SPECIFICATION FOR VALVES (DOC. NO. 12.99.12.0608) AND ADNOC Onshore INSPECTION CLASS I	
MATERIAL CERTIFICATION	:	BS EN 10204 TYPE 3.2	
PAINTING	:	SPECIFICATION FOR PAINTING (DOC. NO. 30.99.37.0013)	
MARKING	;	MSS SP 25 & MESC SPE SPECIFICATIONS	
OTHER APPLICABLE PROJECT SPEC.	:	PIPING MATERIAL SPECIFICATION (DOC. NO. 12.99.12.0607)	
MANDATORY ADDITIONAL REQUIREMENTS (LATEST EDITION)			
MESC, SPE 76/001, SPE 77/160, SPE 77/104,SPE 77/132, SPE 77/302, SPE 77/303, SPE 77/312 , SPE 85/103, SPE 85/200, SPE 85/203., NACE MR 0-175/ ISO 15156			
NOTES:			
1. THIS DATA SHEET SHALL BE READ IN CONJUNCTION WITH THE PIPING MATERIAL SPECIFICATION (DOC. NO. 12.99.12.0607) AND SPECIFICATION FOR VALVES (DOC. NO. 12.99.12.0608)			

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Specification for Piping Valves

	THIS DATA SHEET SHALL BE COMPLETELY FILLED BY THE VENDOR, STAMPED, SIGNED AND DEVIATIONS CLEARLY MARKED FOR ACCEPTANCE.
2.	QUOTATION WITHOUT THIS DATA SHEET WILL NOT BE CONSIDERED FOR TECHNICAL REVIEW AND EVALUATION.

CHECK VALVE TAG NO. - As per *MESC* numbers of respective piping class		
DESCRIPTION	**SPECIFICATION REQUIREMENT**	**VENDOR'S CONFIRMATION**
3.	VENDOR SHALL CONFIRM THE SUITABILITY OF MATERIALS WITH RESPECT TO SERVICE/TEMPERATURE SPECIFIED IN RESPECTIVE PIPING CLASS.	
4.	VENDOR SHALL CONFIRM THAT THE CORROSION ALLOWANCES ARE CONSIDERED IN THICKNESS CALCULATION OF CARBON STEEL PARTS (IN CONTACT WITH FLUID).	
5.	VALVES SHALL HAVE MARK OF FLOW DIRECTION.	
6.	ALL MATERIALS SHALL COMPLY WITH REQUIREMENTS OF NACE MR 0175/ ISO 15156.	
7.	FOR FLANGED END VALVES, BODY & FLANGES SHALL BE INTEGRALLY CAST OR FORGED.	
8.	VALVE MANUFACTURER SHALL SUBMIT TO PURCHASER TABLE OF COMPLIANCE WITH THE PURCHASER ORDER.	
9.	LIFTING EYES & SUPPORT LUGS SHALL BE PROVIDED FOR VALVES WIGHING 250 KGS AND ABOVE.	
10.	VALVE DISC SHALL BE DESIGNED TO PROVIDE SUITABLE CLEARANCE, IN ACCORDANCE WITH THE ASME CLASS RATING FOR THE VALVE AND INSIDE DIAMETER OF THE CONNECTING PIPE FLANGES.	
12.	ALL BOLTS AND NUTS USED IN VALVES SHALL BE COATED EITHER BY TAKECOAT OR XYLAN 1070	

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Specification for Piping Valves

Data Sheet No. - DBB-25-3-001

DBB VALVE TAG NO. - As per *MESC* numbers of respective piping class			
DESCRIPTION		**SPECIFICATION REQUIREMENT**	**VENDOR'S CONFIRMATION**
GENERAL DATA			
VALVE TYPE	:	FULL BORE, INTEGRAL TYPE, DOUBLE BLOCK & BLEED VALVE, TWO FULL BORE BALL VALVE FOR ISOLATION AND 1/2" GLOBE NEEDLE VALVE FOR BLEED. (NOTE-6)	
VALVE SIZE RANGE	:	DN 50 TO 50	
VALVE ASME CLASS/RATING	:	2500#	
VALVE SERVICE	:	INJECTION GAS (SOUR SERVICE)	
	:	PIPE END FLANGED (RF) (DN 50), SMOOTH FINISH (Ra 3.2 to 6.3□m)	
PIPING CLASS	:	251490-Y	
CORROSION ALLOWANCE	:	3MM (NOTE 8)	
DESIGN			
DESIGN PRESSURE	:	FULL RATING	
DESIGN / OPERATING TEMPERATURE		-46 TO 90 ^{0C}	
VALVE DESIGN	:	BALL VALVES FOR PRIMARY & SECONDARY ISOLATION (BLOCK) AND DN15-GLOBE, NEEDLE TYPE VALVE FOR BLEED, ANTI STATI FIRE SAFE DESIGN	
VALVE OPERATION	:	LEVER OPERATED	
BLOCK VALVES	:	FULL BORE, FLOATING BALL, BI-DIRECTIONAL, TIGHT SHUT OFF DESIGN	
BLEED VALVE	:	FULL BORE, ANTI TAMPER TYPE, GLOBE TYPE NEEDLE VALVE	
STEM	:	ANTI BLOW OUT TYPE (NO CASTING)	
BODY SEAT/ STEM SEAL	:	SOFT SEATS FOR BALL VALVE & METAL SEATS FOR GLOBE NEEDLE / RENEWAL TYPE, BODY CAVITY OVER PRESSURE SELF RELIEF SEAT DESIGN	
MATERIALS (BLOCK VALVES)			
BODY / COVER/BONNET/GLAND FLANGE	:	ASTM A182 F 316	
BALL	:	AISI 316 (L)	
STEM/GLAND RING	:	ASTM A182 F 316 (L)	
SEAT POCKET & STEM SEALING AREAS	:	AISI 316 (L) + COATED WITH STELLITE 6	
BODY SEAT RING	:	PEEK	
STEM SEALS	:	VITON B (AED TYPE) / GRAPHITE	
GLAND PACKING	:	CARBON FIBRE GRAPHITE/ PERFORMED COMP. GRAPHITE/VITON B OR EQUIVALENT (NOTE 5)	
MATERIALS (BLEED VALVE)			
BODY / COVER/BONNET	:	ASTM A182 F 316	
DISC	:	AISI 316 (L)	
STEM /TRIM	:	ASTM A182 F 316 (L) + STEM SEALING AREA COATED WITH STELLITE 6	
	:	CARBON FIBRE GRAPHITE/ PERFORMED COMP. GRAPHITE/VITON	
BOLTING	:	ASTM A320-L7M / ASTM A194-7M (NOTE 7)	
CODES AND STANDARDS / TESTING / CERTIFICATION			
DESIGN CODE	:	EEMUA 182 / ASME B 16.34/ BS EN ISO 17292/API 6D FOR BALL VALVE & BS EN ISO 15761 FOR NEEDLE VALVE AS APPLICABLE	
FACE TO FACE DIMENSIONS	:	MANUFACTURER'S STANDARD	
END CONFIGURATION / DIMENSIONS	:	ASME B 16.5 (FLANGED END) / B1.20.1 (THREADED END)	
FIRE SAFE	:	API 6FA / API 607 /BS EN ISO 10497 AS APPLICABLE	
HYDROSTATIC TEST & AIR TEST	:	API 598 / BS EN 12266 – 1 & 2	
NDT (MPI/DP/RADIOGRAPHY/ UT ETC.)	:	SPECIFICATION FOR VALVES (DOC. NO. 11.99.12.0603) AND ADNOC Onshore INSPECTION CALSS I	
MATERIAL CERTIFICATION	:	BS EN 10204 TYPE 3.2	
PAINTING	:	SPECIFICATION FOR PAINTING (DOC. NO. 30.99.37.0013)	
MARKING	;	MSS SP 25 & MESC SPE SPECIFICATIONS	
OTHER APPLICABLE PROJECT SPEC.	:	PIPING MATERIAL SPECIFICATION (DOC. NO. 11.99.12.0601)	
MANDATORY ADDITIONAL REQUIREMENTS (LATEST EDITION)			
MESC SPE 77/110, SPE 77/130, SPE 77/170, SPE 77/302, SPE 77/303, SPE 77/312, SPE 81/002, SPE 85/103, SPE 85/200, SPE 85/203 & SPE 85/204			
NOTES:			
THIS DATA SHEET SHALL BE READ INCONJUNCTION WITH THE ABOVE SPECIFIED PIPING MATERIAL SPECIFICATION AND SPECIFICATION FOR PIPING VALVES			

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Specification for Piping Valves

1. THIS DATA SHEET SHALL BE COMPLETELY FILLED BY THE VENDOR, DULY STAMPED & SIGNED AND DEVIATIONS CLEARLY MARKED FOR ACCEPTANCE. QUOTATION WITHOUT THIS DATA SHEET WILL NOT BE CONSIDERED FOR TECHNICAL REVIEW AND
2. VENDOR SHALL CONFIRM SUITABILITY OF MATERIALS WITH RESPECT TO SERVICE/TEMPERATURE SPECIFIED IN RESPECTIVE PIPING CLASS.

DBB VALVE TAG NO. - As per *MESC* numbers of respective piping class		
DESCRIPTION	**SPECIFICATION REQUIREMENT**	**VENDOR'S CONFIRMATION**
3.	THE DOUBLE BLOCK & BLEED ASSEMBLY SHALL HAVE THREE VALVES- PRIMARY ISOLATION, SECONDARY ISOLATION & BLEED VALVE, ALL INTEGRATED IN A SINGLE PIECE. THE HANDLES/ WRENCH POSITION OF PRIMARY ISOLATION & SECONDARY ISOLATION SHALL BE ON OPPOSITE BODY FACES.	
4.	VENDOR SHALL CONFIRM THAT THE CORROSION ALLOWANCES (MAX. OF ABOVE) ARE CONSIDERED IN THICKNESS CALCULATION OF CARBON STEEL PARTS (IN CONTACT WITH FLUID). VALVES SHALL HAVE POSITION INDICATOR SHOWING OPEN AND CLOSE POSITIONS.	
5.	GRAPHITE BASED PACKING SHALL CONTAIN CORROSION INHIBITOR TO PREVENT OXIDATION OF THE STEM.	
6.	VALVES SHALL BE ONE PIECE INTEGRALLY FORGED INCLUDING END FLANGE. ALL MATERIALS SHALL COMPLY WITH REQUIREMENTS OF NACE MR 0175/ ISO 15156.	
7.	ALL BOLTS AND NUTS USED IN VALVES SHALL BE COATED EITHER BY TAKECOAT 1000 OR XYLAN 1070	
8.	THE SPECIFIED CORROSION ALLOWANCES SHALL NOT BE APPLICABLE, IF VALVE BODY MATERIAL WILL BE STAINLESS STEEL.	

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