

PRE-BID CLARIFICATION#01
AGAINST T.E#PROC-FB/CB/P&P-4747/2020

This is with reference to subject tender enquiry, please be noted following clarifications:

SR#	BIDDER QUERY	OGDCL RESPONSE
1	<p>Please refer to the above noted tender for the supply of Valves and draw your attention towards Clause 2 that OEM manufacturers must have experience of 20 years.</p> <p>For a healthy competition, please reduce this condition to 5 years which is enough for a manufacturers to prove its credibility.</p>	<p>OGDCL SOR can't be changed. Please submit the bid as per SOR requirement.</p>
2	<p>1- As per API 6D/B.S. 5351 standard, the size of reduced bore has only 6"x4" size.</p> <p>2. - For item 6,11,21, pls kindly confirm the Bore Type of Ball Valve is Reduced Bore or Full Bore.</p> <p>The description of Page 1-2 request Full Bore, but attached details of Page 3-4 request Reduced Bore.</p> <p>Pls kindly confirm the Bore Type.</p>	<p>With reference to the Tender PROC-FB/CB/P&P-4747/2020, all the potential bidders may consider the details attached to the SOR (i-e Page No 3 & 4) for submission of bids, also Valve Datasheets are attached if something found missing.</p> <ol style="list-style-type: none"> 1. Item No 1 of SOR should read as 6"x 4" instead of 6"x 5". 2. For item no 6, 11,21 of SOR follow detail attached at page No 3 & 4. 3. The forged valve seat is not integral. <p>If there still exists any ambiguity in the SOR and attached details, the specs provided in the attached details should be considered as final.</p> <p>Further, it is suggested to all the potential bidders to refer the Valve Data Sheets (attached) against the valve specification codes like A2RRL, D2RRC, etc. The valve specification codes are given in the details attached to the SOR. The serial no. of each item of the SOR is referred against the serial nos of the details attached to SOR.</p> <p>Datasheets contain all the technical details required by the suppliers and it is a standard document to refer to during the entire process of supply.</p>

NOTE: All other terms & conditions remain unchanged.

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
3. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
4. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S. 2080
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. SIZES 12" AND ABOVE, 100% MPI
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS

VALVE TYPE	GATE
VALVE STANDARD	B.S. 1414 OR API 600
PRESSURE CLASS	ANSI 150lb
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	2" TO 24"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : FLEXIBLE WEDGE RENEWABLE SEATS
BODY MATERIAL	CARBON STEEL : CAST - ASTM A216 GR.WCB
TRIM	13% CHROME (A182 GR.F6 OR AISI 410.416) HARD FACED SEATS
VALVE OPERATOR	2" TO 14" HANDWHEEL 16" TO 24" BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SPIRAL WOUND (S. STL.)
BOLTING	STUDBOLTS : ASTM A193 GR B7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 2H CADMIUM PLATED
TEMP. LIMITATIONS	-29°C (-20°F) TO 350°C (650°F)
SERVICE CONDITIONS	AA2 AG

REV	BY	DATE	DESCRIPTION	CHK	APP	CLIENT APPROVED	CLOUGH Engineering Group	Job No. 583 CAD No. AIRRC	Project DHODAK GAS PROJECT (Client) OIL & GAS DEVELOPMENT CORPORATION
								VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001	
ISSUED FOR CONSTRUCTION 12/3/93							SHT. 1 OF 1		

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH 16.3 TO 12.5 MICRO METRE) ROUGHNESS
3. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
4. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S. 2080
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. SIZES 12" AND ABOVE, 100% MPI
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS

VALVE TYPE	GATE
VALVE STANDARD	B.S. 1414 OR API 600
PRESSURE CLASS	ANSI 150lb
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	2" TO 24"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : FLEXIBLE WEDGE RENEWABLE SEATS
BODY MATERIAL	CARBON STEEL LOW TEMP : CAST - ASTM A352 GR LCB
TRIM	STAINLESS STEEL TYPE 316 HARD FACED SEATS
VALVE OPERATOR	2" TO 14" HANDWHEEL 16" TO 24" BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SPIRAL WOUND (S. STL.)
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR CADMIUM PLATED
TEMP. LIMITATIONS	-46°C (-50°F) TO 200°C (400°F)
SERVICE CONDITIONS	AB2

Drawn J.W. 12.01.93 Traced Checked Supervisor Designed Project Engineer App for Construction Client Approved		CLOUGH Engineering Group Job No. 583 CAD No. A1RRL Project DHODAK GAS PROJECT Client OIL & GAS DEVELOPMENT CORPORATION	VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001	
REVISIONS 0 J.W. 12/3/93 ISSUED FOR CONSTRUCTION REV BY DATE DESCRIPTION CKD			DATA SHEET No. DS-00-L-0002	SHT. 1 OF 1 VALVE TAG No. A1RRL REV. 0

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
3. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
4. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S. 2080
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
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7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS

VALVE TYPE	GATE
VALVE STANDARD	B.S. 1414 OR API 600
PRESSURE CLASS	ANSI 150lb
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	2" TO 24" ...
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : FLEXIBLE WEDGE RENEWABLE SEATS
BODY MATERIAL	STAINLESS STEEL TO ASTM A-351 CF8M
TRIM	STAINLESS STEEL TYPE 316 HARD FACED SEATS
VALVE OPERATOR	2" TO 14" HANDWHEEL 16" TO 24" BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SPIRAL WOUND (S. STL. TYPE 316)
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-100°C (-150°F) TO 350°C (650°F)
SERVICE CONDITIONS	AC

REVISIONS <table border="1"> <tr><td>REV</td><td>BY</td><td>DATE</td><td>DESCRIPTION</td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>		REV	BY	DATE	DESCRIPTION													Drawn J.W. 12.01.93 Traced Checked Supervisor Designed Project Engineer App for Construction Client Approved	CLOUGH Engineering Group	Job No. 583 CAD No. A1RRS	Project: DHOAK GAS PROJECT Client: OIL & GAS DEVELOPMENT CORPORATION	VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001	DATA SHEET No. DS-00-L-0003	SHEET 1 OF 1 VALVE TAG No. A1RRS REV. 0
REV	BY	DATE	DESCRIPTION																					

DUSA 02-81

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NOTES:

1. CERTIFICATES REQUIRED: MANUFACTURER'S CERTIFICATE OF COMPLIANCE.
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
3. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
4. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION TO MANUFACTURER'S STANDARD INSPECTION.
5. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
6. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
7. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS

<u>VALVE TYPE</u>	GATE
<u>VALVE STANDARD</u>	B.S. 5154
<u>PRESSURE CLASS</u>	PN.25 SERIES B.
<u>END CONNECTIONS</u>	THREADED API
<u>SIZE RANGE</u>	1/2" TO 2"
<u>CONSTRUCTION</u>	BODY : UNION BONNET RISING STEM TRIM : SOLID WEDGE
<u>BODY MATERIAL</u>	BRONZE TO B.S. 1400 LG2
<u>TRIM</u>	BRONZE TO B.S. 1400 LG2
<u>VALVE OPERATOR</u>	HANDWHEEL
<u>GLAND PACKING</u>	REINFORCED GRAPHITED ASBESTOS
<u>BONNET GASKET</u>	NONE
<u>BOLTING</u>	NONE
<u>TEMP. LIMITATIONS</u>	-9°C (15°F) TO 100°C (200°F)
<u>SERVICE CONDITIONS</u>	AG

REVISIONS									
0	J.W.	12/3/92	ISSUED FOR CONSTRUCTION						
REV	BY	DATE	DESCRIPTION	CKD	APP	Client Approved			

Drawn	J.W.	12.01.92	CLOUGH Engineering Group	Job No.	583	Project	OHODAK GAS PROJECT
Traced				CAD No.	ATSRB	Client	
Checked							
Supervisor							
Designed				VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001			
Project Engineer				DATA SHEET No.	DS-00-L-0004	SMT. 1	OF 1
App for Construction				VALVE TAG NO.	ATSRB	REV.	0
Client Approved							

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NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
3. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
4. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S. 2080
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
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7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS
11. THESE VALVES ARE TO BE SUITABLE FOR OPERATION IN CRYOGENIC SERVICE TO THE LIMITS OF THE PRESSURE CLASS AND TEMPERATURES SHOWN.

<u>VALVE TYPE</u>	GATE
<u>VALVE STANDARD</u>	B.S. 1414 OR API 600
<u>PRESSURE CLASS</u>	ANSI 3001b
<u>END CONNECTIONS</u>	FLANGED TO ANSI B16.5 RF
<u>SIZE RANGE</u>	2" TO 24"
<u>CONSTRUCTION</u>	BODY : BOLTED BONNET & GLAND, EXTENDED BONNET AND STEM, O.S. & Y. TRIM : FLEXIBLE WEDGE RENEWABLE SEATS
<u>BODY MATERIAL</u>	STAINLESS STEEL TO ASTM A-351 CFBM
<u>TRIM</u>	STAINLESS STEEL TYPE 316 HARD FACED SEATS
<u>VALVE OPERATOR</u>	2" TO 16" HANDWHEEL 16" TO 24" BEVEL GEAR (WEATHERPROOF TYPE)
<u>GLAND PACKING</u>	REINFORCED GRAPHITED ASBESTOS OR PTFE
<u>BONNET GASKET</u>	SPIRAL WOUND (S. STL. TYPE 316)
<u>BOLTING</u>	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
<u>TEMP. LIMITATIONS</u>	-100°C (-150°F) TO 350°C (650°F)
<u>SERVICE CONDITIONS</u>	BC

REVISIONS	Drawn	DWH	9/3/93	CLOUGH Engineering Group	Job No.	583	Project	DHOAK GAS PROJECT
	Traced				Client	BIRRU	Oil & Gas Development Corporation	
	Checked				VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001			
	Supervisor							
	Designed							
Project Engineer			App for Construction	DATA SHEET No.	DS-00-L-0013	SHT. 1 OF 1		
Client Approved				VALVE TAG No.	BIRRU	REV.	0	

ENCL 4/12/93

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NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
3. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
4. ALL VALVE FORGINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION TO MANUFACTURER'S STANDARD INSPECTION
5. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
6. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
7. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS
8. FOR FERRITIC STEELS INTENDED FOR WELDING, THE CARBON CONTENT SHALL BE 0.25% MAXIMUM AND THE CARBON EQUIVALENT (CE) SHALL BE 0.45% MAXIMUM

THE CARBON EQUIVALENT SHALL BE ESTABLISHED USING THE FORMULA :

$$CE = C + MN/6 + 0.04$$

<u>VALVE TYPE</u>	GATE
<u>VALVE STANDARD</u>	B.S. 5352 OR API 602
<u>PRESSURE CLASS</u>	ANSI 8001b
<u>END CONNECTIONS</u>	S/WELD x THREADED TO ANSI B16.11
<u>SIZE RANGE</u>	1/2" TO 1 1/2"
<u>CONSTRUCTION</u>	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : SOLID WEDGE RENEWABLE SEATS
<u>BODY MATERIAL</u>	CARBON STEEL : FORGED - ASTM A105 NORMALISED
<u>TRIM</u>	DISC, STEM & SEAT RINGS 13% CHROME HARD FACED SEATS
<u>VALVE OPERATOR</u>	HANDWHEEL
<u>GLAND PACKING</u>	REINFORCED GRAPHITED ASBESTOS
<u>BONNET GASKET</u>	SPIRAL WOUND (S. STL.)
<u>BOLTING</u>	STUDBOLTS : ASTM A193 GR B7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 2H CADMIUM PLATED
<u>TEMP. LIMITATIONS</u>	-29°C (-20°F) TO 350°C (650°F)
<u>SERVICE CONDITIONS</u>	AA2 BA2 DA2 DA3

REVISIONS					
	J.W.	11/3/93	ISSUED FOR CONSTRUCTION		
REV	BY	DATE	DESCRIPTION	CHK	APP

Drawn	J.W.	12.01.93
Traced		
Checked		
Supervisor		
Designed		
Project Engineer		
App for Construction		
Client approved		

CLOUGH Engineering Group	Job No.	583	Project	DHODAK GAS PROJECT
	CAD No.	D1HRC	Client	
VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001		OIL & GAS DEVELOPMENT CORPORATION		
DATA SHEET No.	DS-00-L-0020	SHT. 1	OF 1	REV.
		VALVE TAG No.	D1HRC	0

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.6 FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
3. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
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5. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
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7. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS

VALVE TYPE	GATE
VALVE STANDARD	B.S. 5352 OR API 602
PRESSURE CLASS	ANSI 800lb
END CONNECTIONS	S/WELD x THREADED TO ANSI B16.11
SIZE RANGE	1/2" TO 1 1/2"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : SOLID WEDGE RENEWABLE SEATS
BODY MATERIAL	STAINLESS STEEL TO ASTM A-182 GR 316
TRIM	STAINLESS STEEL TYPE 316 TRIM STELLITE FACED SEATS
VALVE OPERATOR	HANDWHEEL
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SPIRAL WOUND (S. STL. TYPE 316)
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR A CADMIUM PLATED
TEMP. LIMITATIONS	-100°C (-150°F) TO 350°C (650°F)
SERVICE CONDITIONS	AC BC DC

REVISIONS	Drawn	J.W. 12.01.03	CLOUGH Engineering Group	Job No.	583	Project	DHODAK GAS PROJECT
	Traced			CAD No.		Client	OIL & GAS DEVELOPMENT CORPORATION
	Checked	<i>[Signature]</i>		DTHRS			
	Supervisor	<i>[Signature]</i>					
	Designed	<i>[Signature]</i>					
	Project Engineer	<i>[Signature]</i>					
	App for Construction	<i>[Signature]</i>					
	Client Approved	<i>[Signature]</i>					
	REV	BY	DATE	DESCRIPTION	CKD		
			12/5/03	ISSUED FOR CONSTRUCTION			

VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION
SP-00-L-0001

DATA SHEET No. DS-00-L-0022

SHT. 1 OF 1

VALVE TAG No. DTHRS

REV. 0

18-00-05-00

NOTES:

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7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS

<u>VALVE TYPE</u>	GATE
<u>VALVE STANDARD</u>	B.S. 1414 OR API 600
<u>PRESSURE CLASS</u>	ANSI 600lb
<u>END CONNECTIONS</u>	FLANGED TO ANSI B16.5 RF
<u>SIZE RANGE</u>	2" TO 24"
<u>CONSTRUCTION</u>	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : FLEXIBLE WEDGE RENEWABLE SEATS
<u>BODY MATERIAL</u>	STAINLESS STEEL TO ASTM A-351 CF8M
<u>TRIM</u>	STAINLESS STEEL TYPE 316 HARD FACED SEATS
<u>VALVE OPERATOR</u>	2" TO 14" HANDWHEEL 16" TO 24" BEVEL GEAR (WEATHERPROOF TYPE)
<u>GLAND PACKING</u>	REINFORCED GRAPHITED ASBESTOS
<u>BONNET GASKET</u>	SPIRAL WOUND (S. STL. TYPE 316) OR STAINLESS STEEL TYPE 316 RING JOINT
<u>BOLTING</u>	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
<u>TEMP. LIMITATIONS</u>	-100°C (-150°F) TO 350°C (650°F)
<u>SERVICE CONDITIONS</u>	DC

REVISIONS									
0	J.W.	12/3/93	ISSUED FOR CONSTRUCTION						
REV	BY	DATE	DESCRIPTION	CKD	APP	Client Approved			

Drawn J.W. 12.01.93

Traced

Checked *[Signature]*

Supervisor *[Signature]*

Designed *[Signature]*

Project Engineer *[Signature]*

App for Construction *[Signature]*

Client Approved *[Signature]*

CLOUGH
Engineering Group

VALVE DATA SHEET FOR
PIPING MATERIAL SPECIFICATION
SP-00-L-0001

Job No. 583
CKD No. DIRRS
Project OROAK GAS PROJECT
Client OIL & GAS DEVELOPMENT CORPORATION

DATA SHEET No. DS-00-L-0025

VALVE TAG No. DIRRS


REV. 0

054407-83

NOTES:

1. CERTIFICATES REQUIRED TO DIN S0049.3.1.6 FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
3. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT*
4. ALL VALVE FORGINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION TO MANUFACTURER'S STANDARD INSPECTION
5. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
6. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
7. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS

VALVE TYPE	GATE
VALVE STANDARD	B.S. 5352 OR API 602
PRESSURE CLASS	ANSI 800lb
END CONNECTIONS	SOCKET WELD TO ANSI B16.11
SIZE RANGE	1/2" TO 1 1/2"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : SOLID WEDGE
BODY MATERIAL	STAINLESS STEEL TO ASTM A-182 GR 316
TRIM	STAINLESS STEEL TYPE 316 TRIM STELLITE FACED SEATS
VALVE OPERATOR	HANDWHEEL
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SPIRAL WOUND (S. STL. TYPE 316)
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-100°C (-150°F) TO 350°C (650°F)
SERVICE CONDITIONS	AC BC DC

REVISIONS	Drawn	J.W. 12.01.93		Job No.	583	Project	CHODAK GAS PROJECT	
	Trace			CAD No.	D1ZRS	Client	DL & GAS DEVELOPMENT CORPORATION	
	Checked	<i>[Signature]</i>		VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001				
	Supervisor	<i>[Signature]</i>		DATA SHEET No.	DS-00-L-0028	SHT. 1 OF 1	VALVE TAG No.	D1ZRS
Designed	<i>[Signature]</i>	Project Engineer	<i>[Signature]</i>	Client Approved: <i>[Signature]</i>				
REV	BY	DATE	DESCRIPTION	CHKD				

DS-00-L-0028

55

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
3. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S. 2080
4. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
5. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. ALL SIZES 100% MPI
6. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
7. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
8. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
9. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS

VALVE TYPE	GATE
VALVE STANDARD	B.S. 1414 OR API 600
PRESSURE CLASS	ANSI 9001b
END CONNECTIONS	FLANGED TO ANSI B16.5 RTJ
SIZE RANGE	3" TO 24"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : FLEXIBLE WEDGE RENEWABLE SEATS
BODY MATERIAL	CARBON STEEL : CAST - ASTM A216 GR WCB
TRIM	13% CHROME (A182 GR F6 OR AISI 410.4.16) HARD FACED SEATS
VALVE OPERATOR	3" TO 6" HANDWHEEL 8" TO 24" BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SOFT IRON OVAL RING JOINT
BOLTING	STUDBOLTS : ASTM A193 GR B7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 2H CADMIUM PLATED
TEMP. LIMITATIONS	-29°C (-20°F) TO 350°C (650°F)
SERVICE CONDITIONS	EA2 EA3 EA4

REVISIONS	Drawn	J.W. 12.01.93	CLOUGH Engineering Group	Job No.	583	Project	DHODAK GAS PROJECT	
	Traced			CAD No.	E1JRC	Client	Oil & Gas Development Corporation	
	Checked	<i>[Signature]</i>		VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001				
	Supervisor	<i>[Signature]</i>						
	Designed	<i>[Signature]</i>						
Project Engineer	<i>[Signature]</i>	App for Construction	DATA SHEET No.	DS-00-L-0033	SHT. 1 OF 1	VALVE TAG No.	E1JRC	
Client Approved	<i>[Signature]</i>		REV.	0				

DS-02-BL

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
3. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S. 2080
4. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
5. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. ALL SIZES 100% MPI
6. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
7. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
8. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
9. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS

<u>VALVE TYPE</u>	GATE
<u>VALVE STANDARD</u>	B.S. 1414 OR API 600
<u>PRESSURE CLASS</u>	ANSI 1500lb
<u>END CONNECTIONS</u>	FLANGED TO ANSI B16.5 RTJ
<u>SIZE RANGE</u>	2" TO 24"
<u>CONSTRUCTION</u>	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : FLEXIBLE WEDGE RENEWABLE SEATS
<u>BODY MATERIAL</u>	CARBON STEEL : CAST - ASTM A216 GR WCB
<u>TRIM</u>	13% CHROME (A182 GR F6 OR AISI 410.416) HARD FACED SEATS
<u>VALVE OPERATOR</u>	2" TO 6" HANDWHEEL 8" TO 24" BEVEL GEAR (WEATHERPROOF TYPE)
<u>GLAND PACKING</u>	REINFORCED GRAPHITED ASBESTOS
<u>BONNET GASKET</u>	SOFT IRON OVAL RING JOINT
<u>BOLTING</u>	STUDBOLTS : ASTM A193 GR B7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 2H CADMIUM PLATED
<u>TEMP. LIMITATIONS</u>	-29°C (-20°F) TO 350°C (650°F)
<u>SERVICE CONDITIONS</u>	EA2 ≤ 2" EA3 ≤ 2" EA4 ≤ 2" FA2 FA3

REVISIONS	Drawn	J.W.	12.01.93	CLOUGH Engineering Group	Job No.	583	Project	DHODAK GAS PROJECT
	Traced				CAD No.	F1JRC	Client	OIL & GAS DEVELOPMENT CORPORATION
	Checked				VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001			
	Supervisor				DATA SHEET No.	DS-00-L-0042	SHT. 1	OF 1
	Designed				VALVE TAG No.	F1JRC	REV.	0
Project Engineer			Client Approved					
BY	J.W.	12/3/93	ISSUED FOR CONSTRUCTION					
REV	BY	Date	DESCRIPTION	CHKD	APP			

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
3. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S. 2080
4. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
5. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. ALL SIZES 100% LPI
6. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
7. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
8. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
9. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS

VALVE TYPE	GATE
VALVE STANDARD	B.S. 1414 OR API 600
PRESSURE CLASS	ANSI 1500lb
END CONNECTIONS	FLANGED TO ANSI B16.5 RTJ
SIZE RANGE	2" TO 12"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : FLEXIBLE WEDGE RENEWABLE SEATS
BODY MATERIAL	STAINLESS STEEL TO ASTM A-351 CF8M
TRIM	STAINLESS STEEL TYPE 316 TRIM STELLITE FACED SEATS
VALVE OPERATOR	2" TO 6" HANDWHEEL 8" TO 12" BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	STAINLESS STEEL TYPE 316 RING JOINT
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-100°C (-150°F) TO 350°C (650°F)
SERVICE CONDITIONS	FC

<table border="1"> <tr> <td>Drawn</td> <td>J.W.</td> <td>12.01.93</td> </tr> <tr> <td>Traced</td> <td></td> <td></td> </tr> <tr> <td>Checked</td> <td></td> <td></td> </tr> <tr> <td>Supervisor</td> <td><i>[Signature]</i></td> <td></td> </tr> <tr> <td>Designed</td> <td><i>[Signature]</i></td> <td></td> </tr> <tr> <td>Project Engineer</td> <td><i>[Signature]</i></td> <td></td> </tr> <tr> <td>App for Construction</td> <td><i>[Signature]</i></td> <td></td> </tr> <tr> <td>Client Approved</td> <td><i>[Signature]</i></td> <td></td> </tr> </table>				Drawn	J.W.	12.01.93	Traced			Checked			Supervisor	<i>[Signature]</i>		Designed	<i>[Signature]</i>		Project Engineer	<i>[Signature]</i>		App for Construction	<i>[Signature]</i>		Client Approved	<i>[Signature]</i>		Clough Engineering Group		Job No. 583 CAD No. F1JRS	Project DHODAK GAS PROJECT Client ORIL & GAS DEVELOPMENT CORPORATION
Drawn	J.W.	12.01.93																													
Traced																															
Checked																															
Supervisor	<i>[Signature]</i>																														
Designed	<i>[Signature]</i>																														
Project Engineer	<i>[Signature]</i>																														
App for Construction	<i>[Signature]</i>																														
Client Approved	<i>[Signature]</i>																														
VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001				DATA SHEET No. DS-00-L-0043																											
SHEET 1 OF 1				VALVE TAG No. F1JRS	REV. 0																										

REV	BY	DATE	DESCRIPTION	CKD
0	J.W.	12/3/93	ISSUED FOR CONSTRUCTION	

DS-00-L-0043

NOTES:

1. CERTIFICATES REQUIRED TO DIN S0049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
3. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
4. ALL VALVE FORGINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION TO MANUFACTURER'S STANDARD INSPECTION
5. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
6. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
7. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS
8. FOR FERRITIC STEELS INTENDED FOR WELDING, THE CARBON CONTENT SHALL BE 0.25% MAXIMUM AND THE CARBON EQUIVALENT (CE) SHALL BE 0.45% MAXIMUM

THE CARBON EQUIVALENT SHALL BE ESTABLISHED USING THE FORMULA :

$$CE = C + MN/6 + 0.04$$

VALVE TYPE	GATE
VALVE STANDARD	B.S. 5352 OR API 602
PRESSURE CLASS	ANSI 15001b
END CONNECTIONS	SOCKET WELD TO ANSI B16.11
SIZE RANGE	1/2" TO 1 1/2"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : SOLID WEDGE RENEWABLE SEATS
BODY MATERIAL	CARBON STEEL : FORGED - ASTM A105 NORMALISED
TRIM	DISC, STEM & SEAT RINGS 13% CHROME HARD FACED SEATS
VALVE OPERATOR	HANDWHEEL
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SPIRAL WOUND (S. STL.) SOFT IRON RING JOINT
BOLTING	STUDBOLTS : ASTM A193 GR B7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 2H (SF) CADMIUM PLATED
TEMP. LIMITATIONS	-29°C (-20°F) TO 350°C (650°F)
SERVICE CONDITIONS	EA2 EA3 EA4 FA2 FA3

REVISIONS	Drawn	J.W. 12.01.93	Clough Engineering Group	Job No.	583	Project	DHOAK GAS PROJECT
	Traced			CAD No.	F1ZRC	Client	DR. & GAS DEVELOPMENT CORPORATION
	Checked			VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001			
	Supervisor			DATA SHEET No.	DS-00-L-0045	SHT. 1	OF 1
	Designed			VALVE TAG No.	F1ZRC	REV.	0
Project Engineer		Client Approve					
App for Construction							
REV	BY	DATE	DESCRIPTION	CHKD			
1	J.W.	12/01/93	ISSUED FOR CONSTRUCTION				

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S.2080 (2" TO 4" - SHORT PATTERN, 6" TO 24" - LONG PATTERN)
3. VALVES TO BE FIRESAFE TO B.S. 6755
4. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. SIZES 12" AND ABOVE, 100% MPI
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. VALVE BODY SHALL BE DESIGNED TO WITHSTAND THE PRESSURE RELATIVE TO THE ANSI CLASS IN WHICH IT IS BEING USED. THE SELF-RELIEVING CHARACTERISTIC OF THE VALVE SHALL NOT BE TAKEN INTO ACCOUNT WHEN DESIGNING THE HYDRAULICS OF THE PIPING SYSTEM. ON NO ACCOUNT WILL THE ABILITY OF SOME BALL VALVES TO ENABLE THE BODY CAVITY TO BE VENTED WHILST THE LINE IS UNDER PRESSURE BE USED AS A BLOCK AND BLEED DEVICE. TWO VALVES WILL ALWAYS BE USED FOR SAFETY ie. CONVENTIONAL DOUBLE BLOCK AND BLEED. DEPARTURE FROM THIS DESIGN PHILOSOPHY SHALL ALWAYS BE APPROVED BY THE CHIEF PIPING ENGINEER.
11. WRENCH OPERATED VALVE STEM HEADS SHALL BE CIRCULAR WITH A KEY-WAY FOR ATTACHING THE WRENCH. CIRCULAR STEM HEADS WITH ONE OR TWO FLATS ARE ACCEPTABLE BUT IN EITHER CASE THE DESIGN MUST BE SUCH THAT THE WRENCH CANNOT BE INSTALLED IN A MANNER THAT ALLOWS THE BALL TO MOVE THROUGH MORE THAN 90 DEGREES. SQUARE STEM HEADS ARE NOT ACCEPTABLE.
12. WRENCH OPERATED VALVES ARE TO BE FITTED WITH STOPS AT THE FULLY OPENED AND FULLY CLOSED POSITIONS TO PREVENT THE BALL MOVING THROUGH MORE THAN 90 DEGREES. THESE STOPS MUST BE INTEGRAL WITH THE VALVE BODY. REMOVABLE STOPS AND/OR SPRING LOADED PINS WHICH DROP INTO HOLES AT THE OPEN OR CLOSED POSITION ARE NOT ACCEPTABLE.
13. ALL VALVES ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS.

VALVE TYPE	BALL - FULL BORE
VALVE STANDARD	B.S. 5351 OR API 6D
PRESSURE CLASS	ANSI 1501b
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	FACE TO FACE DIMENSIONS, 2" TO 4" - SHORT PATTERN 6" TO 24" - LONG PATTERN
CONSTRUCTION	BODY : BOLTED FULL BORE TRIM : 2" TO 8" : FLOATING BALL OR TRUNNION MOUNTED 10" > : TRUNNION MOUNTED. : ANTI STATIC BLOW-OUT PROOF STEM : FIRE SAFE TO B.S. 6755/API.607/API 6FA
BODY MATERIAL	CARBON STEEL : FORGED - ASTM A105 OR CAST - ASTM A216 GR.WCB
TRIM	BALL, STEM, SEAT HOLDER AND TRUNNION : S.STEEL, TYPE 316 OR C.STEEL WITH 0.003" ENP. SEATS - NYLON OR REINFORCED PTFE
VALVE OPERATOR	2" TO 8" - LEVER 10" TO 24" BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	MANUFACTURER'S STANDARD
BONNET GASKET	MANUFACTURER'S STANDARD
BOLTING	STUDBOLTS : ASTM A193 GR B7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 2H CADMIUM PLATED
TEMP. LIMITATIONS	-29°C (-20°F) TO 150°C (300°F)
SERVICE CONDITIONS	AA2 AG

<table border="1"> <tr> <td>Drawn</td> <td>JTM</td> <td>12.01.93</td> </tr> <tr> <td>Traced</td> <td></td> <td></td> </tr> <tr> <td>Checked</td> <td></td> <td></td> </tr> <tr> <td>Supervisor</td> <td><i>[Signature]</i></td> <td></td> </tr> <tr> <td>Designed</td> <td><i>[Signature]</i></td> <td></td> </tr> <tr> <td>Project Engineer</td> <td><i>[Signature]</i></td> <td></td> </tr> <tr> <td>App for Construction</td> <td><i>[Signature]</i></td> <td></td> </tr> <tr> <td>Client Approved</td> <td><i>[Signature]</i></td> <td></td> </tr> </table>		Drawn	JTM	12.01.93	Traced			Checked			Supervisor	<i>[Signature]</i>		Designed	<i>[Signature]</i>		Project Engineer	<i>[Signature]</i>		App for Construction	<i>[Signature]</i>		Client Approved	<i>[Signature]</i>		<p>CLOUGH Engineering Group</p> <p>Job No. 583 CAD No. A2RFC</p> <p>Project: DHOAK GAS PROJECT Client: OIL & GAS DEVELOPMENT CORPORATION</p> <p>VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001</p> <p>DATA SHEET No. DS-00-L-0050</p>	<p>SHT. 1 OF 1</p> <p>VALVE TAG No. A2RFC REV. 0</p>
Drawn	JTM	12.01.93																									
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Designed	<i>[Signature]</i>																										
Project Engineer	<i>[Signature]</i>																										
App for Construction	<i>[Signature]</i>																										
Client Approved	<i>[Signature]</i>																										
<table border="1"> <tr> <td>REV</td> <td>BY</td> <td>DATE</td> <td>DESCRIPTION</td> <td>CHKD</td> </tr> <tr> <td>0</td> <td>JTM</td> <td>12/01/93</td> <td>ISSUED FOR CONSTRUCTION</td> <td></td> </tr> </table>			REV	BY	DATE	DESCRIPTION	CHKD	0	JTM	12/01/93	ISSUED FOR CONSTRUCTION																
REV	BY	DATE	DESCRIPTION	CHKD																							
0	JTM	12/01/93	ISSUED FOR CONSTRUCTION																								

DISK 07-86

NOTES:

1. CERTIFICATES REQUIRED MANUFACTURER'S CERTIFICATE OF COMPLIANCE
2. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUE OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT.
3. EACH VALVE SHALL BE MARKED IN ACCORDANCE WITH MSS-SP-25.
4. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND SECURELY ATTACHED TO THE VALVE WITH STAINLESS STEEL WIRE.

VALVE TYPE	BALL - REDUCED BORE
VALVE STANDARD	MANUFACTURES STD
PRESSURE CLASS	125 LB CWP
END CONNECTIONS	FLANGED TO ANSI B.16.5 FLAT FACED
SIZE RANGE	
CONSTRUCTION	BODY : UNION OR FLANGED TRIM : FLOATING BALL PTFE SEAT EPDM/VITON 'O' RING SEALS
BODY MATERIAL	PVC TYPE 1 GRADE 1 (ASTM D.1784)
TRIM	PVC TYPE 1 GRADE 1 (ASTM D.1784)
VALVE OPERATOR	LEVER OR 'T' BAR WRENCH
GLAND PACKING	NONE
BONNET GASKET	NONE
BOLTING	NONE
TEMP. LIMITATIONS	32°F (0°C) TO 110°F (43°C)
SERVICE CONDITIONS	AP

REVISIONS	Drawn	JTM 11.2.93	Clough Engineering Group	Job No.	583	Project	DHOODAK GAS PROJECT			
	Traced			CAD No.	A2FRP	Client	OR & GAS DEVELOPMENT CORPORATION			
	Checked	<i>[Signature]</i>	Supervisor							
	Designed	<i>[Signature]</i>	Project Engineer	VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001						
	App for Construction	<i>[Signature]</i>	Client Approved	DATA SHEET No.	DS-00-L-0058	SHT. 1	OF 1	VALVE TAG No.	A2FRP	REV.

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S.2080 (2" TO 4" - SHORT PATTERN, 6" TO 24" - LONG PATTERN)
3. VALVES TO BE FIRESAFE TO B.S. 6755
4. CONTACT FACES OF FLANGES-TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. SIZES 12" AND ABOVE, 100% LPI
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. VALVE BODY SHALL BE DESIGNED TO WITHSTAND THE PRESSURE RELATIVE TO THE ANSI CLASS IN WHICH IT IS BEING USED. THE SELF-RELIEVING CHARACTERISTIC OF THE VALVE SHALL NOT BE TAKEN INTO ACCOUNT WHEN DESIGNING THE HYDRAULICS OF THE PIPING SYSTEM. ON NO ACCOUNT WILL THE ABILITY OF SOME BALL VALVES TO ENABLE THE BODY CAVITY TO BE VENTED WHILST THE LINE IS UNDER PRESSURE BE USED AS A BLOCK AND BLEED DEVICE. TWO VALVES WILL ALWAYS BE USED FOR SAFETY ie. CONVENTIONAL DOUBLE BLOCK AND BLEED. DEPARTURE FROM THIS DESIGN PHILOSOPHY SHALL ALWAYS BE APPROVED BY THE CHIEF PIPING ENGINEER.
11. WRENCH OPERATED VALVE STEM HEADS SHALL BE CIRCULAR WITH A KEY-WAY FOR ATTACHING THE WRENCH. CIRCULAR STEM HEADS WITH ONE OR TWO FLATS ARE ACCEPTABLE BUT IN EITHER CASE THE DESIGN MUST BE SUCH THAT THE WRENCH CANNOT BE INSTALLED IN A MANNER THAT ALLOWS THE BALL TO MOVE THROUGH MORE THAN 90 DEGREES. SQUARE STEM HEADS ARE NOT ACCEPTABLE.
12. WRENCH OPERATED VALVES ARE TO BE FITTED WITH STOPS AT THE FULLY OPENED AND FULLY CLOSED POSITIONS TO PREVENT THE BALL MOVING THROUGH MORE THAN 90 DEGREES. THESE STOPS MUST BE INTEGRAL WITH THE VALVE BODY. REMOVABLE STOPS AND/OR SPRING LOADED PINS WHICH DROP INTO HOLES AT THE OPEN OR CLOSED POSITION ARE NOT ACCEPTABLE.
13. ALL VALVES ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS.
14. THESE VALVES TO BE SUITABLE FOR OPERATION IN CRYOGENIC SERVICE TO THE LIMITS OF THE PRESSURE CLASS AND TEMPERATURES SHOWN.


VALVE TYPE	BALL - FULL BORE
VALVE STANDARD	B.S. 5351 OR API 6D
PRESSURE CLASS	ANSI 150LB
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	FACE TO FACE DIMENSIONS 2" TO 4", SHORT PATTERN 6" TO 24", LONG PATTERN
CONSTRUCTION	BODY : BOLTED, EXTENDED BONNET & STEM, FULL BORE TRIM : 2" TO 8" : FLOATING BALL OR TRUNNION MOUNTED 10" > : TRUNNION MOUNTED. : ANTI STATK, BLDW- OUT PROOF STEM : FIRE SAFE TO B.S. 6755/API.607/API 6FA
BODY MATERIAL	STAINLESS STEEL TO ASTM A-351 CF8M
TRIM	BALL,STEM, SEAT HOLDER AND TRUNNION AND TRIM S.STEEL, TYPE 316 SEATS - REINFORCED PTFE
VALVE OPERATOR	2" TO 8" - LEVER 10" TO 24" BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	MANUFACTURER'S STANDARD
BONNET GASKET	MANUFACTURER'S STANDARD
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-100°C (-150°F) TO 150°C (300°F)
SERVICE CONDITIONS	AC

REVISED	Drawn	DWH 9/13/03	CLOUGH Engineering Group	Job No.	583	Project	OHIOAK GAS PROJECT				
	Traced			CAD No.	A2RFU	Client	DL & GAS DEVELOPMENT CORPORATION				
	Checked	<i>[Signature]</i>		VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001							
	Supervisor	<i>[Signature]</i>									
Designed	<i>[Signature]</i>	Project Engineer	<i>[Signature]</i>	DATA SHEET No.	DS-00-L-0056	SHT. 1 OF 1	VALVE TAG No.	A2RFU	REV.	0	
App for Construction	<i>[Signature]</i>	Client Approved	<i>[Signature]</i>								

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S.2080 (2" TO 6" FOR - SHORT PATTERN, 8" TO 24" - LONG PATTERN)
3. VALVES TO BE FIRESAFE TO B.S. 6755
4. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. SIZES 12" AND ABOVE, 100% MPI
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. VALVE BODY SHALL BE DESIGNED TO WITHSTAND THE PRESSURE RELATIVE TO THE ANSI CLASS IN WHICH IT IS BEING USED. THE SELF-RELIEVING CHARACTERISTIC OF THE VALVE SHALL NOT BE TAKEN INTO ACCOUNT WHEN DESIGNING THE HYDRAULICS OF THE PIPING SYSTEM. ON NO ACCOUNT WILL THE ABILITY OF SOME BALL VALVES TO ENABLE THE BODY CAVITY TO BE VENTED WHILST THE LINE IS UNDER PRESSURE BE USED AS A BLOCK AND BLEED DEVICE. TWO VALVES WILL ALWAYS BE USED FOR SAFETY ie. CONVENTIONAL DOUBLE BLOCK AND BLEED. DEPARTURE FROM THIS DESIGN PHILOSOPHY SHALL ALWAYS BE APPROVED BY THE CHIEF PIPING ENGINEER.
11. WRENCH OPERATED VALVE STEM HEADS SHALL BE CIRCULAR WITH A KEY-WAY FOR ATTACHING THE WRENCH. CIRCULAR STEM HEADS WITH ONE OR TWO FLATS ARE ACCEPTABLE BUT IN EITHER CASE THE DESIGN MUST BE SUCH THAT THE WRENCH CANNOT BE INSTALLED IN A MANNER THAT ALLOWS THE BALL TO MOVE THROUGH MORE THAN 90 DEGREES. SQUARE STEM HEADS ARE NOT ACCEPTABLE.
12. WRENCH OPERATED VALVES ARE TO BE FITTED WITH STOPS AT THE FULLY OPENED AND FULLY CLOSED POSITIONS TO PREVENT THE BALL MOVING THROUGH MORE THAN 90 DEGREES. THESE STOPS MUST BE INTEGRAL WITH THE VALVE BODY. REMOVABLE STOPS AND/OR SPRING LOADED PINS WHICH DROP INTO HOLES AT THE OPEN OR CLOSED POSITION ARE NOT ACCEPTABLE.
13. ALL VALVES ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS.

VALVE TYPE	BALL - REDUCED BORE
VALVE STANDARD	B.S. 5351 OR API 6D
PRESSURE CLASS	ANSI 15016
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	FACE TO FACE DIMENSIONS "" 2" TO 6", SHORT PATTERN ANSI B16.10 8" TO 24", LONG PATTERN ANSI B16.10
CONSTRUCTION	BODY : BOLTED REDUCED BORE TRIM : 2" TO 8": FLOATING BALL OR TRUNNION MOUNTED 10" > ; TRUNNION MOUNTED. : ANTI STATK, BLOW- OUT PROOF STEM : FIRE SAFE TO B.S. 6755/APL607/API 6FA
BODY MATERIAL	CARBON STEEL : FORGED - ASTM A105 OR CAST - ASTM A216 GR WCB
TRIM	BALL,STEM, SEAT HOLDER AND TRUNNION S.STEEL, TYPE 316 OR C.STEEL WITH 0.003" ENP SEATS - NYLON OR REINFORCED PTFE
VALVE OPERATOR	2" TO 8" - LEVER 10" TO 24" BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	MANUFACTURER'S STANDARD
BONNET GASKET	MANUFACTURER'S STANDARD
BOLTING	STUDBOLTS : ASTM A193 GR B7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 2H CADMIUM PLATED
TEMP. LIMITATIONS	-29°C (-20°F) TO 150°C (300°F)
SERVICE CONDITIONS	AA2 AG

REVISIONS	Drawn	JTM 110193		Job No.	583	Project	DIKDAK GAS PROJECT
	Traced			CAD No.	AZRRC	Client	DIK & GAS DEVELOPMENT CORPORATION
	Checked	<i>[Signature]</i>	Supervisor	<i>[Signature]</i>	VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION		
	Designed	<i>[Signature]</i>	Project Engineer	<i>[Signature]</i>	SP-00-L-0001		
	App for Construction	<i>[Signature]</i>	Client Approved	<i>[Signature]</i>	DATA SHEET No.	DS-00-L-0053	SHT. 1 OF 1
REV	BY	DATE	DESCRIPTION	EKD	VALVE TAG No.	AZRRC	REV. 0

DISC# 02-86

NOTES:

1. CERTIFICATES REQUIRED MANUFACTURER'S CERTIFICATE OF COMPLIANCE
2. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUE OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT.
3. EACH VALVE SHALL BE MARKED IN ACCORDANCE WITH MSS-SP-25.
4. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND SECURELY ATTACHED TO THE VALVE WITH STAINLESS STEEL WIRE.

VALVE TYPE	BALL - REDUCED BORE
VALVE STANDARD	MANUFACTURER'S STD
PRESSURE CLASS	125 LB CWP
END CONNECTIONS	SOCKET WELD
SIZE RANGE	1/2" TO 3"
CONSTRUCTION	BODY : UNION BODY TRIM : FLOATING BALL PTFE SEAT EPDM/VITON 'O' RING SEALS
BODY MATERIAL	PVC TYPE 1 GRADE 1 (ASTM D.1784)
TRIM	PVC TYPE 1 GRADE 1 (ASTM D.1784)
VALVE OPERATOR	LEVER OR 'T' BAR WRENCH
GLAND PACKING	NONE
BONNET GASKET	NONE
BOLTING	NONE
TEMP. LIMITATIONS	32°F (0°C) TO 110°F (43°C)
SERVICE CONDITIONS	AP

REVISIONS	Drawn	JTM 11.2.93	CLOUGH Engineering Group	Job No.	583	Project	DHOQAK GAS PROJECT	
	Traced			CAD No.	A2ZRP	Client	OIL & GAS DEVELOPMENT CORPORATION	
	Checked	<i>[Signature]</i>	VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001					
	Supervisor	<i>[Signature]</i>	DATA SHEET No.	DS-00-L-0059	SHT. 1	OF 1	VALVE TAG No.	A2ZRP
	Designed	<i>[Signature]</i>	App for Construction		REV.	0		
Project Engineer	<i>[Signature]</i>	Client Approved						
REV	BY	DATE	DESCRIPTION	CKD	APP			
0	JTM	12/1/93	ISSUED FOR CONSTRUCTION					

NOTES:

1. CERTIFICATES REQUIRED TO DIN 5049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S.2080
12" TO 6" FOR - SHORT PATTERN, 8" TO 24" - LONG PATTERN)
3. VALVES TO BE FIRESAFE TO B.S. 6755
4. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH
(16.3 TO 12.5 MICRO METRE) ROUGHNESS
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. SIZES 12" AND ABOVE, 100% MPI
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. VALVE BODY SHALL BE DESIGNED TO WITHSTAND THE PRESSURE RELATIVE TO THE ANSI CLASS IN WHICH IT IS BEING USED. THE SELF-RELIEVING CHARACTERISTIC OF THE VALVE SHALL NOT BE TAKEN INTO ACCOUNT WHEN DESIGNING THE HYDRAULICS OF THE PIPING SYSTEM. ON NO ACCOUNT WILL THE ABILITY OF SOME BALL VALVES TO ENABLE THE BODY CAVITY TO BE VENTED WHILST THE LINE IS UNDER PRESSURE BE USED AS A BLOCK AND BLEED DEVICE. TWO VALVES WILL ALWAYS BE USED FOR SAFETY i.e. CONVENTIONAL DOUBLE BLOCK AND BLEED. DEPARTURE FROM THIS DESIGN PHILOSOPHY SHALL ALWAYS BE APPROVED BY THE CHIEF PIPING ENGINEER.
11. WRENCH OPERATED VALVE STEM HEADS SHALL BE CIRCULAR WITH A KEY-WAY FOR ATTACHING THE WRENCH. CIRCULAR STEM HEADS WITH ONE OR TWO FLATS ARE ACCEPTABLE BUT IN EITHER CASE THE DESIGN MUST BE SUCH THAT THE WRENCH CANNOT BE INSTALLED IN A MANNER THAT ALLOWS THE BALL TO MOVE THROUGH MORE THAN 90 DEGREES. SQUARE STEM HEADS ARE NOT ACCEPTABLE.
12. WRENCH OPERATED VALVES ARE TO BE FITTED WITH STOPS AT THE FULLY OPENED AND FULLY CLOSED POSITIONS TO PREVENT THE BALL MOVING THROUGH MORE THAN 90 DEGREES. THESE STOPS MUST BE INTEGRAL WITH THE VALVE BODY. REMOVABLE STOPS AND/OR SPRING LOADED PINS WHICH DROP INTO HOLES AT THE OPEN OR CLOSED POSITION ARE NOT ACCEPTABLE.
13. ALL VALVES ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS.

VALVE TYPE	BALL - FULL BORE
VALVE STANDARD	B.S. 5351 OR API 6D
PRESSURE CLASS	ANSI 300lb
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	2" TO 24"
CONSTRUCTION	BODY : BOLTED FULL BORE TRIM : 2" TO 8" : FLOATING BALL OR TRUNNION MOUNTED 10" > : TRUNNION MOUNTED. : ANTI STATIC, BLOW- OUT PROOF STEM : FIRE SAFE TO B.S. 6755/API.607/API 6FA
BODY MATERIAL	CARBON STEEL LOW TEMP : FORGED - ASTM A350 GR LF2 OR CAST - ASTM A352 GR LCB
TRIM	BALL,STEM, SEAT HOLDER AND TRUNNION: S.STEEL, TYPE 316 OR ASTM A350 GR LF2 ELECTROLESS NICKEL PLATED, 0.003" SEATS - NYLON OR REINFORCED PTFE
VALVE OPERATOR	2" TO 8" - LEVER 10" TO 24" - BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	MANUFACTURER'S STANDARD
BONNET GASKET	MANUFACTURER'S STANDARD
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-46°C (-50°F) TO 150°C (300°F)
SERVICE CONDITIONS	BB2

CLOUGH Engineering Group		Job No. 583 CAD No. B2RFL	Project: DUCOM GAS PROJECT Client: OIL & GAS DEVELOPMENT CORPORATION
Drawn: JTM 11.01.93 Traced: Checked: Supervisor: [Signature] Designed: [Signature] Project Engineer: App for Construction: [Signature] Client Approved: [Signature]		VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001	
DATA SHEET No. DS-00-L-0061		SHT. 1 OF 1	VALVE TAG No. REV. B2RFL 0
REV	BY	DATE	DESCRIPTION
0	JTM	12/13/93	ISSUES FOR CONSTRUCTION

DS-00-L-0061

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S.2080 (2" TO 6" FOR - SHORT PATTERN. 8" TO 24" - LONG PATTERN)
3. VALVES TO BE FIRESAFE TO B.S. 6755
4. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHDUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. SIZES 12" AND ABOVE, 100% MPI
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. VALVE BODY SHALL BE DESIGNED TO WITHSTAND THE PRESSURE RELATIVE TO THE ANSI CLASS IN WHICH IT IS BEING USED. THE SELF-RELIEVING CHARACTERISTIC OF THE VALVE SHALL NOT BE TAKEN INTO ACCOUNT WHEN DESIGNING THE HYDRAULICS OF THE PIPING SYSTEM. ON NO ACCOUNT WILL THE ABILITY OF SOME BALL VALVES TO ENABLE THE BODY CAVITY TO BE VENTED WHILST THE LINE IS UNDER PRESSURE BE USED AS A BLOCK AND BLEED DEVICE. TWO VALVES WILL ALWAYS BE USED FOR SAFETY ie. CONVENTIONAL DOUBLE BLOCK AND BLEED. DEPARTURE FROM THIS DESIGN PHILOSOPHY SHALL ALWAYS BE APPROVED BY THE CHIEF PIPING ENGINEER.
11. WRENCH OPERATED VALVE STEM HEADS SHALL BE CIRCULAR WITH A KEY-WAY FOR ATTACHING THE WRENCH. CIRCULAR STEM HEADS WITH ONE OR TWO FLATS ARE ACCEPTABLE BUT IN EITHER CASE THE DESIGN MUST BE SUCH THAT THE WRENCH CANNOT BE INSTALLED IN A MANNER THAT ALLOWS THE BALL TO MOVE THROUGH MORE THAN 90 DEGREES. SQUARE STEM HEADS ARE NOT ACCEPTABLE.
12. WRENCH OPERATED VALVES ARE TO BE FITTED WITH STOPS AT THE FULLY OPENED AND FULLY CLOSED POSITIONS TO PREVENT THE BALL MOVING THROUGH MORE THAN 90 DEGREES. THESE STOPS MUST BE INTEGRAL WITH THE VALVE BODY. REMOVABLE STOPS AND/OR SPRING LOADED PINS WHICH DROP INTO HOLES AT THE OPEN OR CLOSED POSITION ARE NOT ACCEPTABLE.
13. ALL VALVES ARE TO BE CAPABLE OF BEING LOCKED OPEN IN THE FULLY OPEN OR CLOSED POSITIONS.

VALVE TYPE	BALL - REDUCED BORE
VALVE STANDARD	B.S. 5351 OR API 6D
PRESSURE CLASS	ANSI 3001b
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	2" TO 24"
CONSTRUCTION	BODY : BOLTED REDUCED BORE TRIM : 2" TO 8" : FLOATING BALL OR TRUNNION MOUNTED 10" > : TRUNNION MOUNTED. : ANTI STATIC BLOW- OUT PROOF STEM : FIRE SAFE TO B.S. 6755/APL607/API 6FA
BODY MATERIAL	CARBON STEEL FORGED - ASTM A105 OR CAST - ASTM A216 GR WCB
TRIM	BALL,STEM, SEAT HOLDER AND TRUNNION; S.STEEL, TYPE 316 OR C.STEEL WITH 1.003" EMP SEATS - NYLON OR REINFORCED PTFE
VALVE OPERATOR	2" TO 8" - LEVER 10" TO 24" - BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	MANUFACTURER'S STANDARD
BONNET GASKET	MANUFACTURER'S STANDARD
BOLTING	STUDBOLTS ASTM A193 GR B7 CADMIUM PLATED C/W NUTS ASTM A194 GR 2H CADMIUM PLATED
TEMP. LIMITATIONS	-29°C (-20°F) TO 150°C (300°F)
SERVICE CONDITIONS	BAZ

Drawn	JTM 11.01.93
Traced	
Checked	<i>[Signature]</i>
Supervisor	<i>[Signature]</i>
Designed	<i>[Signature]</i>
Project Engineer	<i>[Signature]</i>
App for Construction	<i>[Signature]</i>
Client Approved	<i>[Signature]</i>

CLOUGH
Engineering Group

Job No. 583
CAD No. B2RRC

Project: INCEAM GAS PROJECT
Client: DR. B GAS DEVELOPMENT CORPORATION

VALVE DATA SHEET FOR
PIPING MATERIAL SPECIFICATION
SP-00-L-0001

DATA SHEET No. DS-00-L-0063

Sht. 1 of 1
VALVE TAG No. B2RRC
REV. 0

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S.2080 (2" TO 6" FOR - SHORT PATTERN, 8" TO 24" - LONG PATTERN)
3. VALVES TO BE FIRESAFE TO B.S. 6755
4. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION B. SIZES 12" AND ABOVE, 100% MPI
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. VALVE BODY SHALL BE DESIGNED TO WITHSTAND THE PRESSURE RELATIVE TO THE ANSI CLASS IN WHICH IT IS BEING USED. THE SELF-RELIEVING CHARACTERISTIC OF THE VALVE SHALL NOT BE TAKEN INTO ACCOUNT WHEN DESIGNING THE HYDRAULICS OF THE PIPING SYSTEM. ON NO ACCOUNT WILL THE ABILITY OF SOME BALL VALVES TO ENABLE THE BODY CAVITY TO BE VENTED WHILST THE LINE IS UNDER PRESSURE BE USED AS A BLOCK AND BLEED DEVICE. TWO VALVES WILL ALWAYS BE USED FOR SAFETY ie. CONVENTIONAL DOUBLE BLOCK AND BLEED. DEPARTURE FROM THIS DESIGN PHILOSOPHY SHALL ALWAYS BE APPROVED BY THE CHIEF PIPING ENGINEER.
11. WRENCH OPERATED VALVE STEM HEADS SHALL BE CIRCULAR WITH A KEY-WAY FOR ATTACHING THE WRENCH. CIRCULAR STEM HEADS WITH ONE OR TWO FLATS ARE ACCEPTABLE BUT IN EITHER CASE THE DESIGN MUST BE SUCH THAT THE WRENCH CANNOT BE INSTALLED IN A MANNER THAT ALLOWS THE BALL TO MOVE THROUGH MORE THAN 90 DEGREES. SQUARE STEM HEADS ARE NOT ACCEPTABLE.
12. WRENCH OPERATED VALVES ARE TO BE FITTED WITH STOPS AT THE FULLY OPENED AND FULLY CLOSED POSITIONS TO PREVENT THE BALL MOVING THROUGH MORE THAN 90 DEGREES. THESE STOPS MUST BE INTEGRAL WITH THE VALVE BODY. REMOVABLE STOPS AND/OR SPRING LOADED PINS WHICH DROP INTO HOLES AT THE OPEN OR CLOSED POSITION ARE NOT ACCEPTABLE.
13. ALL VALVES ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS.

VALVE TYPE	BALL - REDUCED BORE
VALVE STANDARD	B.S. 5351 OR API 6D
PRESSURE CLASS	ANSI 3001b
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	2" TO 24"
CONSTRUCTION	BODY : BOLTED REDUCED BORE TRM : 2" TO 8"; FLOATING BALL OR TRUNNION MOUNTED 10" > : TRUNNION MOUNTED. : ANTI STATIC, BLOW- OUT PROOF STEM : FIRE SAFE TO B.S. 6755/API.607/API 6FA
BODY MATERIAL	LOW TEMP CARBON STEEL : FORGED - ASTM A350 GR LF2 OR CAST - ASTM A352 GR LCB
TRIM	BALL,STEM, SEAT HOLDER AND TRUNNION; S.STEEL, TYPE 316 OR ASTM A350 GR LF2 WITH 0.003" ENP SEATS - NYLON OR REINFORCED PTFE
VALVE OPERATOR	2" TO 8" - LEVER 10" TO 24" - BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	MANUFACTURER'S STANDARD
BONNET GASKET	MANUFACTURER'S STANDARD
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-46°C (-50°F) TO 150°C (300°F)
SERVICE CONDITIONS	BB2

REVISIONS	Drawn	JTM 11.01.93	CLOUGH Engineering Group	Job No.	583	Project	DNDOK GAS PROJECT
	Traced			CAD No.	B2RRRL	Client	OIL & GAS DEVELOPMENT CORPORATION
	Checked	<i>[Signature]</i>		VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001			
	Supervisor	<i>[Signature]</i>					
Designed	<i>[Signature]</i>	App for Construction	DATA SHEET No.	DS-00-L-0064	Sht. 1	OF 1	
Project Engineer	<i>[Signature]</i>	Client Approved	VALVE TAG No.	B2RRRL	REV.	0	
REV	BY	DATE	DESCRIPTION	CKD	APP		

SUS-00-L-0064 88

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S.2080
3. VALVES TO BE FIRESAFE TO B.S. 6755
4. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. ALL SIZES 100% MPI
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. VALVE BODY SHALL BE DESIGNED TO WITHSTAND THE PRESSURE RELATIVE TO THE ANSI CLASS IN WHICH IT IS BEING USED. THE SELF-RELIEVING CHARACTERISTIC OF THE VALVE SHALL NOT BE TAKEN INTO ACCOUNT WHEN DESIGNING THE HYDRAULICS OF THE PIPING SYSTEM. ON NO ACCOUNT WILL THE ABILITY OF SOME BALL VALVES TO ENABLE THE BODY CAVITY TO BE VENTED WHILST THE LINE IS UNDER PRESSURE BE USED AS A BLOCK AND BLEED DEVICE. TWO VALVES WILL ALWAYS BE USED FOR SAFETY ie. CONVENTIONAL DOUBLE BLOCK AND BLEED. DEPARTURE FROM THIS DESIGN PHILOSOPHY SHALL ALWAYS BE APPROVED BY THE CHIEF PIPING ENGINEER.
11. WRENCH OPERATED VALVE STEM HEADS SHALL BE CIRCULAR WITH A KEY-WAY FOR ATTACHING THE WRENCH. CIRCULAR STEM HEADS WITH ONE OR TWO FLATS ARE ACCEPTABLE BUT IN EITHER CASE THE DESIGN MUST BE SUCH THAT THE WRENCH CANNOT BE INSTALLED IN A MANNER THAT ALLOWS THE BALL TO MOVE THROUGH MORE THAN 90 DEGREES. SQUARE STEM HEADS ARE NOT ACCEPTABLE.
12. WRENCH OPERATED VALVES ARE TO BE FITTED WITH STOPS AT THE FULLY OPENED AND FULLY CLOSED POSITIONS TO PREVENT THE BALL MOVING THROUGH MORE THAN 90 DEGREES. THESE STOPS MUST BE INTEGRAL WITH THE VALVE BODY. REMOVABLE STOPS AND/OR SPRING LOADED PINS WHICH DROP INTO HOLES AT THE OPEN OR CLOSED POSITION ARE NOT ACCEPTABLE.
13. ALL VALVES ARE TO BE CAPABLE OF BEING LOCKED IN THE FULLY OPEN OR CLOSED POSITIONS.

VALVE TYPE	BALL - FULL BORE
VALVE STANDARD	B.S. 5351 OR API 6D
PRESSURE CLASS	ANSI 6001b
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	2" TO 24"
CONSTRUCTION	BODY : BOLTED OR SOLID FULL BORE TRIM : 2" : FLOATING BALL OR TRUNNION MOUNTED 3" - 24" : TRUNNION MOUNTED. : ANTI STATIC, BLOW- OUT PROOF STEM : FIRE SAFE TO B.S. 6755/APL607/API 6FA
BODY MATERIAL	CARBON STEEL : FORGED - ASTM A105, OR CAST - ASTM A216 GR WCB
TRIM	BALL,STEM, SEAT HOLDER TRUNNION AND TRIM S.STEEL, TYPE 316 OR C. STEEL WITH 0.003" ENP. SEATS - NYLON OR REINFORCED PTFE
VALVE OPERATOR	2" TO 4" - LEVER 6" TO 24" - BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	MANUFACTURER'S STANDARD
BONNET GASKET	MANUFACTURER'S STANDARD
BOLTING	STUDBOLTS : ASTM A193 GR B7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 2H CADMIUM PLATED
TEMP. LIMITATIONS	-29°C (-20°F) TO 150°C (300°F)
SERVICE CONDITIONS	DA2 DA3

REVISIONS	Drawn	JTM (1619)	CLOUGH Engineering Group	Job No	583	Project	DNODAK GAS PROJECT
	Traced			CAD No.	D2RFC	Client	DL B GAS DEVELOPMENT CORPORATION
	Checked			VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001			
	Supervisor			DATA SHEET No.	DS-00-L-0070	SHT. 1 OF 1	
	Designed			VALVE TAG No.	D2RFC	REV.	0
	Project Engineer						
	App for Construction						
	Client Approved						
REV	BY	DATE	DESCRIPTION	CKD	APP		

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S.2080
3. VALVES TO BE FIRESAFE TO B.S. 6755
4. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. ALL SIZES 100% LPI
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. VALVE BODY SHALL BE DESIGNED TO WITHSTAND THE PRESSURE RELATIVE TO THE ANSI CLASS IN WHICH IT IS BEING USED. THE SELF-RELIEVING CHARACTERISTIC OF THE VALVE SHALL NOT BE TAKEN INTO ACCOUNT WHEN DESIGNING THE HYDRAULICS OF THE PIPING SYSTEM. ON NO ACCOUNT WILL THE ABILITY OF SOME BALL VALVES TO ENABLE THE BODY CAVITY TO BE VENTED WHILST THE LINE IS UNDER PRESSURE BE USED AS A BLOCK AND BLEED DEVICE. TWO VALVES WILL ALWAYS BE USED FOR SAFETY ie. CONVENTIONAL DOUBLE BLOCK AND BLEED. DEPARTURE FROM THIS DESIGN PHILOSOPHY SHALL ALWAYS BE APPROVED BY THE CHIEF PIPING ENGINEER.
11. WRENCH OPERATED VALVE STEM HEADS SHALL BE CIRCULAR WITH A KEY-WAY FOR ATTACHING THE WRENCH. CIRCULAR STEM HEADS WITH ONE OR TWO FLATS ARE ACCEPTABLE BUT IN EITHER CASE THE DESIGN MUST BE SUCH THAT THE WRENCH CANNOT BE INSTALLED IN A MANNER THAT ALLOWS THE BALL TO MOVE THROUGH MORE THAN 90 DEGREES. SQUARE STEM HEADS ARE NOT ACCEPTABLE.
12. WRENCH OPERATED VALVES ARE TO BE FITTED WITH STOPS AT THE FULLY OPENED AND FULLY CLOSED POSITIONS TO PREVENT THE BALL MOVING THROUGH MORE THAN 90 DEGREES. THESE STOPS MUST BE INTEGRAL WITH THE VALVE BODY. REMOVABLE STOPS AND/OR SPRING LOADED PINS WHICH DROP INTO HOLES AT THE OPEN OR CLOSED POSITION ARE NOT ACCEPTABLE.
13. ALL VALVES TO BE CAPABLE OF BEING LOCKED IN THE FULLY OPEN OR CLOSED POSITIONS.

VALVE TYPE	BALL - FULL BORE
VALVE STANDARD	B.S. 5351 OR API 6D
PRESSURE CLASS	ANSI 600lb
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	2" TO 24"
CONSTRUCTION	BODY : BOLTED FULL BORE TRIM : 2" : FLOATING BALL OR TRUNNION MOUNTED 3" - 24" : TRUNNION MOUNTED. : ANTI STATIC, BLOW- OUT PROOF STEM : FIRE SAFE TO B.S. 6755/API.607/API 6FA
BODY MATERIAL	STAINLESS STEEL TO ASTM A-351 CF8M
TRIM	BALL, STEM, SEAT HOLDER TRUNNION AND TRIM S.STEEL, TYPE 316 SEATS - REINFORCED PTFE
VALVE OPERATOR	2" TO 4" - LEVER 6" TO 24" - BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	MANUFACTURER'S STANDARD
BONNET GASKET	MANUFACTURER'S STANDARD
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-100°C (-150°F) TO 150°C (300°F)
SERVICE CONDITIONS	DC

REVISIONS	Drawn	JIM (11.01.9)	CLOUGH Engineering Group	Job No.	583	Project	DHODAK GAS PROJECT	
	Traced			CAD No.	D2RFS	Client	Oil & Gas Development Corporation	
	Checked			VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001				
	Supervisor							
	Designed							
Project Engineer		DATA SHEET No.	DS-00-L-0072	SHT. 1 OF 1	VALVE TAG No.	D2RFS	REV.	0
REV	BY	DATE	DESCRIPTION	CHKD	Client Approved			

1025-4-03-80

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NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S.2080
3. VALVES TO BE FIRESAFE TO B.S. 6755
4. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS.
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. ALL SIZES 100% LPI
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. VALVE BODY SHALL BE DESIGNED TO WITHSTAND THE PRESSURE RELATIVE TO THE ANSI CLASS IN WHICH IT IS BEING USED. THE SELF-RELIEVING CHARACTERISTIC OF THE VALVE SHALL NOT BE TAKEN INTO ACCOUNT WHEN DESIGNING THE HYDRAULICS OF THE PIPING SYSTEM. ON NO ACCOUNT WILL THE ABILITY OF SOME BALL VALVES TO ENABLE THE BODY CAVITY TO BE VENTED WHILST THE LINE IS UNDER PRESSURE BE USED AS A BLOCK AND BLEED DEVICE. TWO VALVES WILL ALWAYS BE USED FOR SAFETY ie. CONVENTIONAL DOUBLE BLOCK AND BLEED. DEPARTURE FROM THIS DESIGN PHILOSOPHY SHALL ALWAYS BE APPROVED BY THE CHIEF PIPING ENGINEER.
11. WRENCH OPERATED VALVE STEM HEADS SHALL BE CIRCULAR WITH A KEY-WAY FOR ATTACHING THE WRENCH. CIRCULAR STEM HEADS WITH ONE OR TWO FLATS ARE ACCEPTABLE BUT IN EITHER CASE THE DESIGN MUST BE SUCH THAT THE WRENCH CANNOT BE INSTALLED IN A MANNER THAT ALLOWS THE BALL TO MOVE THROUGH MORE THAN 90 DEGREES. SQUARE STEM HEADS ARE NOT ACCEPTABLE.
12. WRENCH OPERATED VALVES ARE TO BE FITTED WITH STOPS AT THE FULLY OPENED AND FULLY CLOSED POSITIONS TO PREVENT THE BALL MOVING THROUGH MORE THAN 90 DEGREES. THESE STOPS MUST BE INTEGRAL WITH THE VALVE BODY. REMOVABLE STOPS AND/OR SPRING LOADED PINS WHICH DROP INTO HOLES AT THE OPEN OR CLOSED POSITION ARE NOT ACCEPTABLE.
13. ALL VALVES TO BE CAPABLE OF BEING LOCKED IN THE FULLY OPEN OR CLOSED POSITIONS.
14. THESE VALVES TO BE SUITABLE FOR OPERATION IN CRYOGENIC SERVICE TO THE LIMITS OF THE PRESSURE CLASS AND TEMPERATURES SHOWN.

VALVE TYPE	BALL - FULL BORE
VALVE STANDARD	B.S. 5351 OR API 6D
PRESSURE CLASS	ANSI 600lb
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	2" TO 24"
CONSTRUCTION	BODY : BOLTED, EXTENDED BONNET AND STEM, FULL BORE TRIM : 2" : FLOATING BALL OR TRUNNION MOUNTED 3" - 24" : TRUNNION MOUNTED. : ANTI STATK. BLOW- OUT PROOF STEM : FIRE SAFE TO B.S. 6755/API.607/API 6FA
BODY MATERIAL	STAINLESS STEEL TO ASTM A-351 CF8M
TRIM	BALL, STEM, SEAT HOLDER TRUNNION AND TRIM S.STEEL, TYPE 316 SEATS - REINFORCED PTFE
VALVE OPERATOR	2" TO 4" - LEVER 6" TO 24" - BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	MANUFACTURER'S STANDARD
BONNET GASKET	MANUFACTURER'S STANDARD
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-100°C (-150°F) TO 150°C (300°F)
SERVICE CONDITIONS	DC

Drawn DWH 9/2/93 Traced Checked Supervisor Designed Project Engineer App for Construction Client Approved		CLOUGH Engineering Group	Job No. 583 CAB No. D2RFU Project DNOOK GAS PROJECT Client OIL & GAS DEVELOPMENT CORPORATION
VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001			DATA SHEET No. DS-00-L-0077
SHEET 1 OF 1			VALVE TAG No. D2RFU REV. 0

REV	BY	DATE	DESCRIPTION	CKD	APP
0	DWH	12/3/93	ISSUED FOR CONSTRUCTION		

D5A P 02-BL

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NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S.2080
3. VALVES TO BE FIRESAFE TO B.S. 6755
4. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. ALL SIZES 100% MPI
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. VALVE BODY SHALL BE DESIGNED TO WITHSTAND THE PRESSURE RELATIVE TO THE ANSI CLASS IN WHICH IT IS BEING USED. THE SELF-RELIEVING CHARACTERISTIC OF THE VALVE SHALL NOT BE TAKEN INTO ACCOUNT WHEN DESIGNING THE HYDRAULICS OF THE PIPING SYSTEM. ON NO ACCOUNT WILL THE ABILITY OF SOME BALL VALVES TO ENABLE THE BODY CAVITY TO BE VENTED WHILST THE LINE IS UNDER PRESSURE BE USED AS A BLOCK AND BLEED DEVICE. TWO VALVES WILL ALWAYS BE USED FOR SAFETY ie. CONVENTIONAL DOUBLE BLOCK AND BLEED. DEPARTURE FROM THIS DESIGN PHILOSOPHY SHALL ALWAYS BE APPROVED BY THE CHIEF PIPING ENGINEER.
11. WRENCH OPERATED VALVE STEM HEADS SHALL BE CIRCULAR WITH A KEY-WAY FOR ATTACHING THE WRENCH. CIRCULAR STEM HEADS WITH ONE OR TWO FLATS ARE ACCEPTABLE BUT IN EITHER CASE THE DESIGN MUST BE SUCH THAT THE WRENCH CANNOT BE INSTALLED IN A MANNER THAT ALLOWS THE BALL TO MOVE THROUGH MORE THAN 90 DEGREES. SQUARE STEM HEADS ARE NOT ACCEPTABLE.
12. WRENCH OPERATED VALVES ARE TO BE FITTED WITH STOPS AT THE FULLY OPENED AND FULLY CLOSED POSITIONS TO PREVENT THE BALL MOVING THROUGH MORE THAN 90 DEGREES. THESE STOPS MUST BE INTEGRAL WITH THE VALVE BODY. REMOVABLE STOPS AND/OR SPRING LOADED PINS WHICH DROP INTO HOLES AT THE OPEN OR CLOSED POSITION ARE NOT ACCEPTABLE.
13. ALL VALVES ARE TO BE CAPABLE OF BEING LOCKED IN THE FULLY OPEN OR CLOSED POSITIONS.

VALVE TYPE	BALL - REDUCED BORE
VALVE STANDARD	B.S. 5351 OR API 6D
PRESSURE CLASS	ANSI 600lb
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	2" TO 24"
CONSTRUCTION	BODY : BOLTED REDUCED BORE TRIM : 2" : FLOATING BALL OR TRUNNION MOUNTED 3" - 24" : TRUNNION MOUNTED. : ANTI STATIC, BLOW- OUT PROOF STEM : FIRE SAFE TO B.S. 6755/API.607/API 6FA
BODY MATERIAL	CARBON STEEL: FORGED - ASTM A105 OR CAST - ASTM A216 GR WCB
TRIM	BALL, STEM, SEAT HOLDER, TRUNNION AND TRIM S.STEEL, TYPE 316 OR C. STEEL WITH 0.003" ENP. SEATS - NYLON OR REINFORCED PTFE
VALVE OPERATOR	2" TO 4" - LEVER 6" TO 24" - BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	MANUFACTURER'S STANDARD
BONNET GASKET	MANUFACTURER'S STANDARD
BOLTING	STUDBOLTS : ASTM A193 GR B7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 2H CADMIUM PLATED
TEMP. LIMITATIONS	-29°C (-20°F) TO 150°C (300°F)
SERVICE CONDITIONS	DA2 DA3

CLOUGH Engineering Group		Job No. 583 CAD No. 02RRC Project: DHOAK GAS PROJECT Client: OIL & GAS DEVELOPMENT CORPORATION
VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001		SHT. 1 OF 1 VALVE TAG No. D2RRC REV. 0
DATA SHEET No. DS-00-L-0073		

Drawn	JIM	11.01.93
Traced		
Checked		
Supervisor		
Designed		
Project Engineer		
App for Construction		
Client Approved		

REV	BY	DATE	DESCRIPTION	CHKD	APP
0	JIM	12/3/93	ISSUED FOR CONSTRUCTION		

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DS-00-L-0073

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S.2080
3. VALVES TO BE FIRESAFE TO B.S. 6755
4. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. ALL SIZES 100% LPI
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. VALVE BODY SHALL BE DESIGNED TO WITHSTAND THE PRESSURE RELATIVE TO THE ANSI CLASS IN WHICH IT IS BEING USED. THE SELF-RELIEVING CHARACTERISTIC OF THE VALVE SHALL NOT BE TAKEN INTO ACCOUNT WHEN DESIGNING THE HYDRAULICS OF THE PIPING SYSTEM. ON NO ACCOUNT WILL THE ABILITY OF SOME BALL VALVES TO ENABLE THE BODY CAVITY TO BE VENTED WHILST THE LINE IS UNDER PRESSURE BE USED AS A BLOCK AND BLEED DEVICE. TWO VALVES WILL ALWAYS BE USED FOR SAFETY ie. CONVENTIONAL DOUBLE BLOCK AND BLEED. DEPARTURE FROM THIS DESIGN PHILOSOPHY SHALL ALWAYS BE APPROVED BY THE CHIEF PIPING ENGINEER.
11. WRENCH OPERATED VALVE STEM HEADS SHALL BE CIRCULAR WITH A KEY-WAY FOR ATTACHING THE WRENCH. CIRCULAR STEM HEADS WITH ONE OR TWO FLATS ARE ACCEPTABLE BUT IN EITHER CASE THE DESIGN MUST BE SUCH THAT THE WRENCH CANNOT BE INSTALLED IN A MANNER THAT ALLOWS THE BALL TO MOVE THROUGH MORE THAN 90 DEGREES. SQUARE STEM HEADS ARE NOT ACCEPTABLE.
12. WRENCH OPERATED VALVES ARE TO BE FITTED WITH STOPS AT THE FULLY OPENED AND FULLY CLOSED POSITIONS TO PREVENT THE BALL MOVING THROUGH MORE THAN 90 DEGREES. THESE STOPS MUST BE INTEGRAL WITH THE VALVE BODY. REMOVABLE STOPS AND/OR SPRING LOADED PINS WHICH DROP INTO HOLES AT THE OPEN OR CLOSED POSITION ARE NOT ACCEPTABLE.
13. ALL VALVES ARE TO BE CAPABLE OF BEING LOCKED IN THE FULLY OPEN OR CLOSED POSITIONS.

VALVE TYPE	BALL - REDUCED BORE
VALVE STANDARD	B.S. 5351 OR API 6D
PRESSURE CLASS	ANSI 600lb
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	2" TO 24"
CONSTRUCTION	BODY : BOLTED REDUCED BORE TRIM : 2" FLOATING BALL OR TRUNNION MOUNTED 3" - 24", TRUNNION MOUNTED. : ANTI STATIC, BLOW- OUT PROOF STEM : FIRE SAFE TO B.S. 6755/API.607/API 6FA
BODY MATERIAL	STAINLESS STEEL TO ASTM A-351 CF8M
TRIM	BALL, STEM, SEAT HOLDER TRUNNION AND TRIM S.STEEL, TYPE 316 SEATS - REINFORCED PTFE
VALVE OPERATOR	2" TO 4" - LEVER 6" TO 24" - BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	MANUFACTURER'S STANDARD
BONNET GASKET	MANUFACTURER'S STANDARD
BOLTING	STUBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-100°C (-150°F) TO 150°C (300°F)
SERVICE CONDITIONS	OC

REVISEMENTS	Drawn	JTM 11.01.93	CLOUGH Engineering Group	Job No.	583	Project	DHOOR GAS PROJECT	
	Traced			CAD No.	D2RRS	Client	Oil & Gas Development Corporation	
	Checked			VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001				
	Supervisor			SHT. 1 OF 1				
	Designed			DATA SHEET No. DS-00-L-0074				
Project Engineer		VALVE TAG No. REV. D2RRS 0						
App for Construction								
Client Approved								
REV	BY	DATE	DESCRIPTION	CHKD	APP			

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DS-00-L-0074

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S.2080
3. VALVES TO BE FIRESAFE TO B.S. 6755
4. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
5. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. ALL SIZES 100% MPI
6. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
7. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
8. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
9. VALVE BODY SHALL BE DESIGNED TO WITHSTAND THE PRESSURE RELATIVE TO THE ANSI CLASS IN WHICH IT IS BEING USED. THE SELF-RELIEVING CHARACTERISTIC OF THE VALVE SHALL NOT BE TAKEN INTO ACCOUNT WHEN DESIGNING THE HYDRAULICS OF THE PIPING SYSTEM. ON NO ACCOUNT WILL THE ABILITY OF SOME BALL VALVES TO ENABLE THE BODY CAVITY TO BE VENTED WHILST THE LINE IS UNDER PRESSURE BE USED AS A BLOCK AND BLEED DEVICE. TWO VALVES WILL ALWAYS BE USED FOR SAFETY i.e. CONVENTIONAL DOUBLE BLOCK AND BLEED. DEPARTURE FROM THIS DESIGN PHILOSOPHY SHALL ALWAYS BE APPROVED BY THE CHIEF PIPING ENGINEER.
10. WRENCH OPERATED VALVE STEM HEADS SHALL BE CIRCULAR WITH A KEY-WAY FOR ATTACHING THE WRENCH. CIRCULAR STEM HEADS WITH ONE OR TWO FLATS ARE ACCEPTABLE BUT IN EITHER CASE THE DESIGN MUST BE SUCH THAT THE WRENCH CANNOT BE INSTALLED IN A MANNER THAT ALLOWS THE BALL TO MOVE THROUGH MORE THAN 90 DEGREES. SQUARE STEM HEADS ARE NOT ACCEPTABLE.
11. WRENCH OPERATED VALVES ARE TO BE FITTED WITH STOPS AT THE FULLY OPENED AND FULLY CLOSED POSITIONS TO PREVENT THE BALL MOVING THROUGH MORE THAN 90 DEGREES. THESE STOPS MUST BE INTEGRAL WITH THE VALVE BODY. REMOVABLE STOPS AND/OR SPRING LOADED PINS WHICH DROP INTO HOLES AT THE OPEN OR CLOSED POSITION ARE NOT ACCEPTABLE.
12. ALL VALVES ARE TO BE CAPABLE OF BEING LOCKED IN THE FULLY OPEN OR CLOSED POSITIONS.

VALVE TYPE	BALL - REDUCED BORE
VALVE STANDARD	B.S. 5351 OR API 6D
PRESSURE CLASS	ANSI 9001b
END CONNECTIONS	FLANGED TO ANSI B16.5 RTJ
SIZE RANGE	3" TO 24"
CONSTRUCTION	BODY BOLTED REDUCED BORE TRIM 3" - 24" TRUNNION MOUNTED. ANTI STATIC BLOW-OUT PROOF STEM FIRE SAFE TO B.S. 6755/API 607/API 6FA
BODY MATERIAL	CARBON STEEL FORGED - ASTM A105, OR CAST - ASTM A216 GR WCB
TRIM	BALL, STEM, SEAT HOLDER TRUNNION AND TRIM S.STEEL, TYPE 316 OR C. STEEL WITH 0.003" ENP SEATS - NYLON OR REINFORCED PTFE
VALVE OPERATOR	3" TO 4" LEVER 6" TO 24" BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	MANUFACTURER'S STANDARD
BONNET GASKET	MANUFACTURER'S STANDARD
BOLTING	STUD BOLTS ASTM A193 GR B7 (CADIUM PLATED) C/W NUTS ASTM A194 GR 2H CADIUM PLATED
TEMP. LIMITATIONS	-29°C (-20°F) TO 150°C (300°F)
SERVICE CONDITIONS	EA2 EA3

REVISIONS					
REV	BY	DATE	DESCRIPTION	CHKD	APP
	JEM	12/20/83	ISSUED FOR CONSTRUCTION		

CLOUGH Engineering Group	Job No. 583	Project DMCOAK GAS PROJECT
	CAD No. E2JRC	Client OIL & GAS DEVELOPMENT CORPORATION
VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001		
DATA SHEET No. DS-00-L-0081	SHT. 1 OF 1	VALVE TAG No. REV. E2JRC 0

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S.2080
3. VALVES TO BE FIRESAFE TO B.S. 6755
4. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
5. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. ALL SIZES 100% MPI
6. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
7. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
8. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
9. VALVE BODY SHALL BE DESIGNED TO WITHSTAND THE PRESSURE RELATIVE TO THE ANSI CLASS IN WHICH IT IS BEING USED. THE SELF-RELIEVING CHARACTERISTIC OF THE VALVE SHALL NOT BE TAKEN INTO ACCOUNT WHEN DESIGNING THE HYDRAULICS OF THE PIPING SYSTEM. ON NO ACCOUNT WILL THE ABILITY OF SOME BALL VALVES TO ENABLE THE BODY CAVITY TO BE VENTED WHILST THE LINE IS UNDER PRESSURE BE USED AS A BLOCK AND BLEED DEVICE. TWO VALVES WILL ALWAYS BE USED FOR SAFETY ie. CONVENTIONAL DOUBLE BLOCK AND BLEED. DEPARTURE FROM THIS DESIGN PHILOSOPHY SHALL ALWAYS BE APPROVED BY THE CHIEF PIPING ENGINEER.
10. WRENCH OPERATED VALVE STEM HEADS SHALL BE CIRCULAR WITH A KEY-WAY FOR ATTACHING THE WRENCH. CIRCULAR STEM HEADS WITH ONE OR TWO FLATS ARE ACCEPTABLE BUT IN EITHER CASE THE DESIGN MUST BE SUCH THAT THE WRENCH CANNOT BE INSTALLED IN A MANNER THAT ALLOWS THE BALL TO MOVE THROUGH MORE THAN 90 DEGREES. SQUARE STEM HEADS ARE NOT ACCEPTABLE.
11. WRENCH OPERATED VALVES ARE TO BE FITTED WITH STOPS AT THE FULLY OPENED AND FULLY CLOSED POSITIONS TO PREVENT THE BALL MOVING THROUGH MORE THAN 90 DEGREES. THESE STOPS MUST BE INTEGRAL WITH THE VALVE BODY. REMOVABLE STOPS AND/OR SPRING LOADED PINS WHICH DROP INTO HOLES AT THE OPEN OR CLOSED POSITION ARE NOT ACCEPTABLE.
12. ALL VALVES ARE TO BE CAPABLE OF BEING LOCKED IN THE FULLY OPEN OR CLOSED POSITIONS.

VALVE TYPE	BALL - FULL BORE
VALVE STANDARD	B.S. 5351 OR API 6D
PRESSURE CLASS	ANSI 1500b
END CONNECTIONS	FLANGED TO ANSI B16.5 RTJ
SIZE RANGE	2" TO 24"
CONSTRUCTION	BODY : BOLTED FULL BORE TRIM : 2"; FLOATING BALL OR TRUNNION MOUNTED 3" - 24"; TRUNNION MOUNTED. : ANTI STATK. BLOW- OUT PROOF STEM : FIRE SAFE TO B.S. 6755/APL607/API 6FA
BODY MATERIAL	CARBON STEEL : FORGED - ASTM A105, OR CAST - ASTM A216 GR WCB
TRIM	BALL, STEM, SEAT HOLDER TRUNNION AND TRIM S.STEEL, TYPE 316 OR C. STEEL WITH 0.003" ENP. SEATS - NYLON OR REINFORCED PTFE
VALVE OPERATOR	2" TO 3" - LEVER 4" TO 24" - BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	MANUFACTURER'S STANDARD
BONNET GASKET	MANUFACTURER'S STANDARD
BOLTING	STUDBOLTS : ASTM A193 GR B7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 2H CADMIUM PLATED
TEMP. LIMITATIONS	-29°C (-20°F) TO 150°C (300°F)
SERVICE CONDITIONS	EA2 ≤ 2" EA3 ≤ 2" EA4 ≤ 2" FA2 FA3

REVISIONS	Drawn	JTM 11.01.93		Job No.	583	Project	DHOOK GAS PROJECT		
	Traced			CAD No.	F2JFC	Client	DL & GAS DEVELOPMENT CORPORATION		
	Checked	<i>[Signature]</i>		VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001					
	Supervisor	<i>[Signature]</i>		DATA SHEET No.	DS-00-L-0090	SHT. 1 OF 1	VALVE TAG No.	F2JFC	REV.
Designed	<i>[Signature]</i>	Project Engineer	<i>[Signature]</i>	App for Construction	<i>[Signature]</i>	Client Approved	<i>[Signature]</i>		
REV	BY	DATE	DESCRIPTION	CRD	APP	CLIENT APPROVED			

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S.2080
3. VALVES TO BE FIRESAFE TO B.S. 6755
4. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
5. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. ALL SIZES 100% MPI
6. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
7. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
8. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
9. VALVE BODY SHALL BE DESIGNED TO WITHSTAND THE PRESSURE RELATIVE TO THE ANSI CLASS IN WHICH IT IS BEING USED. THE SELF-RELIEVING CHARACTERISTIC OF THE VALVE SHALL NOT BE TAKEN INTO ACCOUNT WHEN DESIGNING THE HYDRAULICS OF THE PIPING SYSTEM. ON NO ACCOUNT WILL THE ABILITY OF SOME BALL VALVES TO ENABLE THE BODY CAVITY TO BE VENTED WHILST THE LINE IS UNDER PRESSURE BE USED AS A BLOCK AND BLEED DEVICE. TWO VALVES WILL ALWAYS BE USED FOR SAFETY ie. CONVENTIONAL DOUBLE BLOCK AND BLEED. DEPARTURE FROM THIS DESIGN PHILOSOPHY SHALL ALWAYS BE APPROVED BY THE CHIEF PIPING ENGINEER.
10. WRENCH OPERATED VALVE STEM HEADS SHALL BE CIRCULAR WITH A KEY-WAY FOR ATTACHING THE WRENCH. CIRCULAR STEM HEADS WITH ONE OR TWO FLATS ARE ACCEPTABLE BUT IN EITHER CASE THE DESIGN MUST BE SUCH THAT THE WRENCH CANNOT BE INSTALLED IN A MANNER THAT ALLOWS THE BALL TO MOVE THROUGH MORE THAN 90 DEGREES. SQUARE STEM HEADS ARE NOT ACCEPTABLE.
11. WRENCH OPERATED VALVES ARE TO BE FITTED WITH STOPS AT THE FULLY OPENED AND FULLY CLOSED POSITIONS TO PREVENT THE BALL MOVING THROUGH MORE THAN 90 DEGREES. THESE STOPS MUST BE INTEGRAL WITH THE VALVE BODY. REMOVABLE STOPS AND/OR SPRING LOADED PINS WHICH DROP INTO HOLES AT THE OPEN OR CLOSED POSITION ARE NOT ACCEPTABLE.
12. ALL VALVES ARE TO BE CAPABLE OF BEING LOCKED IN THE FULLY OPEN OR CLOSED POSITIONS.

VALVE TYPE	BALL - REDUCED BORE
VALVE STANDARD	B.S. 5351 OR API 6D
PRESSURE CLASS	ANSI 1500lb
END CONNECTIONS	FLANGED TO ANSI B16.5 RTJ
SIZE RANGE	2" TO 24"
CONSTRUCTION	BODY : BOLTED REDUCED BORE TRIM : 2": FLOATING BALL OR TRUNNION MOUNTED 3" - 24": TRUNNION MOUNTED. : ANTI STATIC, BLOW- OUT PROOF STEM : FIRE SAFE TO B.S. 6755/APL607/API 6FA
BODY MATERIAL	CARBON STEEL : FORGED - ASTM A105, OR CAST - ASTM A216 GR WCB
TRIM	BALL, STEM, SEAT HOLDER TRUNNION AND TRIM S.STEEL, TYPE 316 OR C. STEEL WITH 0.003" EMP. SEATS - NYLON OR REINFORCED PTFE
VALVE OPERATOR	2" TO 3" - LEVER 4" TO 24"- BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	MANUFACTURER'S STANDARD
BONNET GASKET	MANUFACTURER'S STANDARD
BOLTING	STUDBOLTS : ASTM A193 GR B7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 2H CADMIUM PLATED
TEMP. LIMITATIONS	-29°C (-20°F) TO 150°C (300°F)
SERVICE CONDITIONS	EA2 ≤ 2" EA3 ≤ 2" EA4 ≤ 2" FA2 FA3

REVISIONS	Drawn	JTM 11.01.93	CLOUGH Engineering Group	Job No.	583	Project	DHODAK GAS PROJECT	
	Traced			CAB No.	F2JRC	(Client)	DL & GAS DEVELOPMENT CORPORATION	
	Checked			VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001				
	Supervisor			DATA SHEET No.	DS-00-L-0092	SHT. 1 OF 1	VALVE TAG No.	F2JRC
Designed		Client Approved			REV.	0		
Project Engineer								
App for Construction								
REV	BY	DATE	DESCRIPTION	CKD	APP			

05/24/82-16

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
3. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
4. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S. 2080
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55.
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS

<u>VALVE TYPE</u>	GLOBE - STRAIGHT PATTERN
<u>VALVE STANDARD</u>	B.S. 1873
<u>PRESSURE CLASS</u>	ANSI 15016
<u>END CONNECTIONS</u>	FLANGED TO ANSI B16.5 RF
<u>SIZE RANGE</u>	2" TO 8"
<u>CONSTRUCTION</u>	BODY : BOLTED BONNET & GLAND O.S. & Y. TRM : RENEWABLE PLUG TYPE DISC RENEWABLE SEAT RING
<u>BODY MATERIAL</u>	CARBON STEEL : CAST - ASTM A216 GR WCB
<u>TRIM</u>	13% CHROME (A182 GR F6 OR AISI 410, 416) HARD FACED SEATS
<u>VALVE OPERATOR</u>	HANDWHEEL
<u>GLAND PACKING</u>	REINFORCED GRAPHITED ASBESTOS
<u>BONNET GASKET</u>	SPIRAL WOUND (S. STL.)
<u>BOLTING</u>	STUDBOLTS : ASTM A193 GR B7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 2H CADMIUM PLATED
<u>TEMP. LIMITATIONS</u>	-29°C (-20°F) TO 350°C (650°F)
<u>SERVICE CONDITIONS</u>	AA2 AG

REVISIONS	Drawn	JTM	11.01.93	CLOUGH Engineering Group	Job No.	583	Project	DHODAK GAS PROJECT			
	Traced				CAD No.	ALRRC	Client	OIL & GAS DEVELOPMENT CORPORATION			
	Checked				VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001						
	Supervisor								DATA SHEET No.	DS-00-L-0100	SHT. 1 OF 1
	Designed								VALVE TAG No.	ALRRC	REV.
Project Engineer			Client Approved								

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS.
3. VALVES TO INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
4. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S. 2080.
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT.
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55.
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. ALL VALVES 1" AND ABOVE ARE TO CAPABLE OF BEING LOCKED IN FULLY OPENED OR CLOSED POSITIONS.

VALVE TYPE	GLOBE - STRAIGHT PATTERN
VALVE STANDARD	B.S. 1873
PRESSURE CLASS	ANSI 150lb
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	2" TO 8"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : RENEWABLE PLUG TYPE DISC RENEWABLE SEAT RING
BODY MATERIAL	CARBON STEEL LOW TEMP : CAST - ASTM A352 GR LCB
TRIM	STAINLESS STEEL TYPE 316 HARD FACED SEATS
VALVE OPERATOR	HANDWHEEL
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SPRAL WOUND (S. STL.)
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-46°C (-50°F) TO 200°C (400°F)
SERVICE CONDITIONS	AB2

REVIEWS	Drawn	JTH 11.01.93	CLOUGH Engineering Group Job No. 583 CAD No. A4RRL Project DHOAK GAS PROJECT Client OIL & GAS DEVELOPMENT CORPORATION	VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001 DATA SHEET No. DS-00-L-0101	SHT. 1 OF 1 VALVE TAG No. A4RRL REV. 0	
	Traced					
	Checked					
	Supervisor					
	Designed					
Project Engineer		App for Construction				
REV	BY	DATE	DESCRIPTION	CHKD	APP	Client Approved
0	JTH	12/5/93	ISSUED FOR CONSTRUCTION.			


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DSF402-91

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
3. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
4. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S. 2080
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. SIZES 12" AND ABOVE, 100% LPI
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS
11. THESE VALVES ARE TO BE SUITABLE FOR OPERATION IN CRYOGENIC SERVICE TO THE LIMITS OF THE PRESSURE CLASS AND TEMPERATURES SHOWN.

VALVE TYPE	GLOBE - STRAIGHT PATTERN
VALVE STANDARD	B.S. 1873
PRESSURE CLASS	ANSI 1501b
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	2" TO 8"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND, EXTENDED BONNET AND STEM, O.S. & Y. TRIM : RENEWABLE PLUG TYPE DISC RENEWABLE SEAT RING
BODY MATERIAL	STAINLESS STEEL TO ASTM A-351 CF8M
TRIM	STAINLESS STEEL TYPE 316 STELLITE FACED SEATS
VALVE OPERATOR	HANDWHEEL
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS OR PTFE
BONNET GASKET	SPIRAL WOUND (S.STL TYPE 316)
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-100°C (-150°F) TO 350°C (650°F)
SERVICE CONDITIONS	AC

REVISIONS	Drawn	DWH 9/2/93		Job No.	583	Project	DHOAK GAS PROJECT		
	Traced			CAD No.	ALRRU	Client	OIL & GAS DEVELOPMENT CORPORATION		
	Checked	<i>[Signature]</i>		VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001					
	Supervisor	<i>[Signature]</i>							
	Designed	<i>[Signature]</i>							
Project Engineer	<i>[Signature]</i>	App for Construction	DATA SHEET No.	DS-00-L-0104	SHT. 1 OF 1	VALVE TAG No.	ALRRU	REV.	0
REV	BY	DATE	DESCRIPTION	END	Client Approved				

100

0104-001-01

NOTES:

1. CERTIFICATES REQUIRED: MANUFACTURER'S CERTIFICATE OF COMPLIANCE.
2. VALVES TO INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
3. ALL VALVES 1" AND ABOVE ARE TO CAPABLE OF BEING LOCKED IN FULLY OPENED OR CLOSED POSITIONS
4. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
5. CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55 IN ADDITION TO MANUFACTURER'S STANDARD INSPECTION
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.

<u>VALVE TYPE</u>	GLOBE - STRAIGHT PATTERN
<u>VALVE STANDARD</u>	B.S. 5154
<u>PRESSURE CLASS</u>	PN25 SERIES B
<u>END CONNECTIONS</u>	THREADED API
<u>SIZE -RANGE</u>	1/2" TO 2"
<u>CONSTRUCTION</u>	BODY : UNION BONNET TRIM : METAL SEAT
<u>BODY MATERIAL</u>	BRONZE TO B.S.1400 LG2
<u>TRIM</u>	BRONZE TO B.S. 1400 LG2
<u>VALVE OPERATOR</u>	HANDWHEEL
<u>GLAND PACKING</u>	REINFORCED GRAPHITED ASBESTOS
<u>BONNET GASKET</u>	NONE
<u>BOLTING</u>	NONE
<u>TEMP. LIMITATIONS</u>	-9°C (15°F) TO 100°C (200°F)
<u>SERVICE CONDITIONS</u>	AG

REVISES	Drawn	JTM 11.01.93	CLOUGH Engineering Group	Job No.	583	Project	OHIOAK GAS PROJECT		
	Traced			Client	A4SRB		OIL & GAS DEVELOPMENT CORPORATION		
	Checked			VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001					
	Supervisor			DATA SHEET No.	DS-00-L-0103	SHT. 1	OF 1	VALVE TAG No.	A4SRB
	Designed			Client Approved		REV.	0		
Project Engineer									
App for Construction									
REV	BY	DATE	DESCRIPTION	CKD	APP				
0	JTM	12/3/93	ISSUED FOR CONSTRUCTION.						

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
3. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
4. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S. 2080
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55.
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS

VALVE TYPE	GLOBE - STRAIGHT PATTERN
VALVE STANDARD	B.S. 1873
PRESSURE CLASS	ANSI 3001b
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	2" TO 8"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : RENEWABLE PLUG TYPE DISC RENEWABLE SEAT RING
BODY MATERIAL	CARBON STEEL : CAST - ASTM A216 GR WCB
TRIM	13% CHROME (A182GR F6 OR AISI 410, 416) HARD FACED SEATS
VALVE OPERATOR	HANDWHEEL
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SPIRAL WOUND (S.STL.)
BOLTING	STUDBOLTS : ASTM A193 GR B7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 2H CADMIUM PLATED
TEMP. LIMITATIONS	-29°C (-20°F) TO 350°C (650°F)
SERVICE CONDITIONS	BAZ

REVISES	Drawn	JTM 11/01/93	CLOUGH Engineering Group	Job No.	583	Project	DHODAK GAS PROJECT		
	Traced			CAD No.	B4RRC	Client	DL & GAS DEVELOPMENT CORPORATION		
	Checked	<i>[Signature]</i>		VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001					
	Supervisor	<i>[Signature]</i>							
Designed	<i>[Signature]</i>	Project Engineer	<i>[Signature]</i>	SHT. 1 OF 1					
App for Construction	<i>[Signature]</i>	Client Approve	<i>[Signature]</i>						
REV	BY	DATE	DESCRIPTION	CKD	App	Client Approve	DATA SHEET No.	VALVE TAG No.	REV.
		12/3/93	ISSUED FOR CONSTRUCTION				DS-00-L-0110	B4RRC	0

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0154#01-72

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.6 FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
3. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
4. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S. 2080
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55.
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS

VALVE TYPE	GLOBE - STRAIGHT PATTERN
VALVE STANDARD	B.S. 1873
PRESSURE CLASS	ANSI 3001b
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	2" TO 8"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : RENEWABLE PLUG TYPE DISC RENEWABLE SEAT RING
BODY MATERIAL	CARBON STEEL LOW TEMP : CAST - ASTM A352 GR LCB
TRIM	STAINLESS STEEL TYPE 316 HARD FACED SEATS
VALVE OPERATOR	HANDWHEEL
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SPIRAL WOUND (S.STL.)
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-46°C (-50°F) TO 200°C (400°F)
SERVICE CONDITIONS	BB2

REVISIONS									
0	JTM	12/13	ISSUED FOR CONSTRUCTION						
REV	BY	DATE	DESCRIPTION	CKD					

Drawn	JTM	11.01.93	CLOUGH Engineering Group	Job No.	583	Project	DHODAK GAS PROJECT
Traced				CAD No.	B4RRL	Client	
Checked							
Supervisor							
Designed							
Project Engineer							
App for Construction							
Client Approved							

VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001		DATA SHEET No.	DS-00-L-0111	SHT. 1 OF 1
VALVE TAG No.	B4RRL	REV.	0	

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05.02.92

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1b FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
3. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
4. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S. 2080
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. SIZES 12" AND ABOVE, 100% LPI
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS
11. THESE VALVES ARE TO BE SUITABLE FOR OPERATION IN CRYOGENIC SERVICE TO THE LIMITS OF THE PRESSURE CLASS AND TEMPERATURES SHOWN.

VALVE TYPE	GLOBE - STRAIGHT PATTERN
VALVE STANDARD	B.S. 1873
PRESSURE CLASS	ANSI 3001b
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	2" TO 8"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND, EXTENDED BONNET AND STEM, O.S. & Y. TRIM : RENEWABLE PLUG TYPE DISC RENEWABLE SEAT RING
BODY MATERIAL	STAINLESS STEEL TO ASTM A-351 CF8M
TRIM	STAINLESS STEEL TYPE 316 STELLITE FACED SEATS
VALVE OPERATOR	HANDWHEEL
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS OR PTFE
BONNET GASKET	SPIRAL WOUND (S.STL. TYPE 316)
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-100°C (-150°F) TO 350°C (650°F)
SERVICE CONDITIONS	BC

REVISES	Drawn	DWH	9/3/93	CLOUGH Engineering Group	Job No.	583	Project	DHODAK GAS PROJECT		
	Traced				CAD No.	B4RRU	Client	DL & GAS DEVELOPMENT CORPORATION		
	Checked				VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001					
	Supervisor				DATA SHEET No.	DS-00-L-0113	VALVE TAG No.	B4RRU	REV.	0
	Designed				SHT. 1 OF 1					
Project Engineer			App for Construction							
Client Approve										
REV	BY	DATE	DESCRIPTION	END						
1	DWH	12/5/93	ISSUED FOR CONSTRUCTION							

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03/28/93

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
3. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
4. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S. 2080
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55.
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS

<u>VALVE TYPE</u>	GLOBE - STRAIGHT PATTERN
<u>VALVE STANDARD</u>	B.S. 1873
<u>PRESSURE CLASS</u>	ANSI 3001b
<u>END CONNECTIONS</u>	FLANGED TO ANSI B16.5 RF
<u>SIZE RANGE</u>	2" TO 8"
<u>CONSTRUCTION</u>	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : RENEWABLE PLUG TYPE DISC RENEWABLE SEAT RING
<u>BODY MATERIAL</u>	STAINLESS STEEL TO ASTM A-351 CF8M
<u>TRIM</u>	STAINLESS STEEL TYPE 316 STELLITE FACED SEATS
<u>VALVE OPERATOR</u>	HANDWHEEL
<u>GLAND PACKING</u>	REINFORCED GRAPHITED ASBESTOS
<u>BONNET GASKET</u>	SPIRAL WOUND (S.STL. TYPE 316)
<u>BOLTING</u>	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
<u>TEMP. LIMITATIONS</u>	-100°C (-150°F) TO 350°C (650°F)
<u>SERVICE CONDITIONS</u>	BC


REVISIONS	Drawn	JTM 11.01.93	Clough Engineering Group VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001 DATA SHEET No. DS-00-L-0112	Job No.	583	Project	DHODAK GAS PROJECT	
	Traced			CAD No.	B4RRS	Client	DL & GAS DEVELOPMENT CORPORATION	
	Checked	<i>[Signature]</i>		SHT. 1 OF 1				
	Supervisor	<i>[Signature]</i>		VALVE TAG No.	B4RRS	REV.	0	
	Designed	<i>[Signature]</i>						
Project Engineer	<i>[Signature]</i>	Client Approved	<i>[Signature]</i>					
REV	BY	DATE	DESCRIPTION	CKD	APP			

DSV#02-97

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NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
3. ALL VALVES 1" AND ABOVE ARE TO CAPABLE OF BEING LOCKED IN FULLY OPENED OR CLOSED POSITIONS
4. FOR FERRITIC STEELS INTENDED FOR WELDING, THE CARBON CONTENT SHALL BE 0.25% MAXIMUM AND THE CARBON EQUIVALENT (CE) SHALL BE 0.45% MAXIMUM.
THE CARBON EQUIVALENT SHALL BE ESTABLISHED USING THE FORMULA :
$$CE = C + \frac{Mn}{6} + 0.04$$
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. FORGINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55 IN ADDITION TO MANUFACTURER'S STANDARD INSPECTION
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.

VALVE TYPE	GLOBE - STRAIGHT PATTERN
VALVE STANDARD	B.S. 5352 OR API 602
PRESSURE CLASS	ANSI 800lb
END CONNECTIONS	SOCKET WELD X THREADED TO ANSI B16.11
SIZE RANGE	1/2" TO 1 1/2"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : PLUG TYPE DISC RENEWABLE SEATS
BODY MATERIAL	CARBON STEEL : FORGED + ASTM A105 NORMALISED
TRIM	DISC STEM & SEAT RINGS 316 ST. STEEL (OR AISI 410, 416) HARD FACED SEATS
VALVE OPERATOR	HANDWHEEL
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SPIRAL WOUND (S.STLJ)
BOLTING	STUDBOLTS : ASTM A193 GR B7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 2H CADMIUM PLATED 
TEMP. LIMITATIONS	-29°C (-20°F) TO 200°C (400°F)
SERVICE CONDITIONS	AA2 BA2 DA2 DA3

REVISIONS	1	RH	14-08-17	BOLTING MATERIAL & TEMP. LIMITATIONS REVISED	OKR	BLJ
	0	JTM	12-03-13	ISSUED FOR CONSTRUCTION	OKR	BLJ
	REV	BY	DATE	DESCRIPTION	OKD	APP

Clough Engineering Group	Job No. 583	Project DHDGAS GAS PROJECT
	Client D4HRC	Client OIL & GAS DEVELOPMENT CORPORATION
VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001		
DATA SHEET No. DS-00-L-0120	VALVE TAG No. D4HRC	REV. 1

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
3. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
4. ALL VALVE FORGINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION TO MANUFACTURER'S STANDARD INSPECTION
5. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
6. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
7. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS

VALVE TYPE	GLOBE - STRAIGHT PATTERN
VALVE STANDARD	B.S. 5352 OR API 602
PRESSURE CLASS	ANSI 8001b
END CONNECTIONS	SOCKET WELD X THREADED TO ANSI B16.11
SIZE RANGE	1/2" TO 1 1/2"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRM : PLUG TYPE DISC RENEWABLE SEATS
BODY MATERIAL	STAINLESS STEEL TO ASTM A-182 GR.316
TRIM	STAINLESS STEEL TYPE 316 STELLITE FACED SEATS
VALVE OPERATOR	: HANDWHEEL
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SPRAL WOUND (S.STL. TYPE 316)
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-100°C (-150°F) TO 350°C (650°F)
SERVICE CONDITIONS	AC BC DC

REVISES	Drawn	JTM	11.01.93
	Traced		
	Checked	<i>[Signature]</i>	
	Supervisor	<i>[Signature]</i>	
	Designed	<i>[Signature]</i>	
	Project Engineer	<i>[Signature]</i>	
	App for Construction	<i>[Signature]</i>	
	Client Approved	<i>[Signature]</i>	

CLOUGH
Engineering Group

Job No. 583
CSD No. D4HRS

Project: DRACON GAS PROJECT
Client: OIL & GAS DEVELOPMENT CORPORATION

VALVE DATA SHEET FOR
PIPING MATERIAL SPECIFICATION
SP-00-L-0001

DATA SHEET No. DS-00-L-0122

SHT. 1 OF 1

VALVE TAG NO.	REV.
D4HRS	0

REV	BY	DATE	DESCRIPTION	CHKD	APP
0	JTM	12/5/93	ISSUED FOR CONSTRUCTION		

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USK#02-93

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
3. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
4. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S. 2080
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. ALL SIZES 100% MPI
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS

VALVE TYPE	GLOBE - STRAIGHT PATTERN
VALVE STANDARD	B.S. 1873
PRESSURE CLASS	ANSI 600lb
END CONNECTIONS	FLANGED TO ANSI B16.3 RF
SIZE RANGE	2" TO 6"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : RENEWABLE PLUG TYPE DISC RENEWABLE SEAT RING
BODY MATERIAL	CARBON STEEL : CAST - ASTM A216 GR WCB
TRIM	13% CHROME (A182 GR F6 OR AISI 410, 416) HARD FACED SEATS
VALVE OPERATOR	HANDWHEEL
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SPIRAL WOUND (S.STL.) OR SOFT IRON RING JOINT
BOLTING	STUDBOLTS : ASTM A193 GR B7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 2H CADMIUM PLATED
TEMP. LIMITATIONS	-29°C (-20°F) TO 350°C (650°F)
SERVICE CONDITIONS	DA2 DA3

REVISIONS									
2	JTM	12/3/93	ISSUED FOR CONSTRUCTION						
REV	BY	DATE	DESCRIPTION	CKD	JPP	Client Approved			

Drawn	JTM (10.1.93)	CLOUGH Engineering Group	Job No.	583	Project	DHODAR GAS PROJECT
Traced			Client	D4RRC	DL & GAS DEVELOPMENT CORPORATION	
Checked			VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001			
Supervisor			DATA SHEET No.	05-00-L-0123	SHT. 1 OF 1	
Designed		App for Construction		VALVE TAG No.	D4RRC	
Project Engineer		Client Approved		REV.	0	

D5244(01-2)

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NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS.
3. VALVES TO INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
4. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S. 2080.
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT.
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED WITH ANSI B16.34 SECTION 8. ALL SIZES 100% LPI.
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPENED OR CLOSED POSITIONS.

VALVE TYPE	GLOBE - STRAIGHT PATTERN
VALVE STANDARD	B.S. 1873
PRESSURE CLASS	ANSI 6001b
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	2" TO 6"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : RENEWABLE PLUG TYPE DISC RENEWABLE SEAT RING
BODY MATERIAL	STAINLESS STEEL TO ASTM A-351 CF8M
TRIM	STAINLESS STEEL TYPE 316 STELLITE FACED SEATS
VALVE OPERATOR	2" TO 4" : HANDWHEEL 6" : BEVEL GEAR, WEATHERPROOF TYPE
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SPIRAL WOUND (S.STL. TYPE 316) OR ST. STEEL, TYPE 316, RING JOINT
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-100°C (-150°F) TO 350°C (650°F)
SERVICE CONDITIONS	DC

CLOUGE Engineering Group		Job No. 583 Client: D4RRS	Project: DHDQAK GAS PROJECT Client: OIL & GAS DEVELOPMENT CORPORATION
VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001			
DATA SHEET No. DS-00-L-0125		SHT. 1 OF 1	VALVE TAG No. D4RRS REV. 0
Drawn: JTM (11.01.93) Traced: Checked: [Signature] Supervisor: [Signature] Designed: [Signature] Project Engineer: [Signature]		App for Construction: [Signature] Client Approved: [Signature]	
REVISIONS 4 REV BY DATE DESCRIPTION	12/5/93 ISSUED FOR CONSTRUCTION [Signature]		

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DSK#02.93

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS.
3. VALVES TO INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
4. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S. 2080.
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT.
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED WITH ANSI B16.34 SECTION B. ALL SIZES 100% LPI.
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPENED OR CLOSED POSITIONS.
11. THESE VALVES ARE TO BE SUITABLE FOR OPERATION IN CRYOGENIC SERVICE TO THE LIMITS OF THE PRESSURE CLASS AND TEMPERATURES SHOWN.

VALVE TYPE	GLOBE - STRAIGHT PATTERN
VALVE STANDARD	B.S. 1873
PRESSURE CLASS	ANSI 600lb
END CONNECTIONS	FLANGED TO ANSI B16.5 RF
SIZE RANGE	2" TO 6"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND, EXTENDED BONNET AND STEM, O.S. & Y. TRIM : RENEWABLE PLUG TYPE DISC RENEWABLE SEAT RING
BODY MATERIAL	STAINLESS STEEL TO ASTM A-351 CF8M
TRIM	STAINLESS STEEL TYPE 316 STELLITE FACED SEATS
VALVE OPERATOR	2" TO 4" : HANDWHEEL 6" : BEVEL GEAR, WEATHERPROOF TYPE
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS OR PTFE
BONNET GASKET	SPRAL WOUND (S.STL. TYPE 316) OR ST. STEEL, TYPE 316, RING JOINT
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-100°C (-150°F) TO 350°C (650°F)
SERVICE CONDITIONS	DC

REVISIONS	Drawn	DWH 9/13/93	Clough Engineering Group VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001 DATA SHEET No. DS-00-L-0131	Job No.	583	Project DUCOAK GAS PROJECT Client OIL & GAS DEVELOPMENT CORPORATION
	Traced			CAD No.	D4RRU	
	Checked	<i>[Signature]</i>		Supervisor		
	Designed	<i>[Signature]</i>		Project Engineer	<i>[Signature]</i>	
	App for Construction	<i>[Signature]</i>		Client Approved	<i>[Signature]</i>	
REV	BY	DATE	DESCRIPTION	CKD	REV.	VALVE TAG No.
		11/3/93	ISSUED FOR CONSTRUCTION			D4RRU
						0

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
3. ALL VALVES 1" AND ABOVE ARE TO CAPABLE OF BEING LOCKED IN FULLY OPENED OR CLOSED POSITIONS
4. FOR FERRITIC STEELS INTENDED FOR WELDING, THE CARBON CONTENT SHALL BE 0.25% MAXIMUM AND THE CARBON EQUIVALENT (CE) SHALL BE 0.45% MAXIMUM.
THE CARBON EQUIVALENT SHALL BE ESTABLISHED USING THE FORMULA :
$$CE = C + \frac{Mn}{6} + 0.04$$
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. FORGINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55 IN ADDITION TO MANUFACTURER'S STANDARD INSPECTION
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.

VALVE TYPE	GLOBE - STRAIGHT PATTERN
VALVE STANDARD	B.S. 5352 OR API 602
PRESSURE CLASS	ANSI 800lb
END CONNECTIONS	SOCKET WELD TO ANSI B16.11
SIZE RANGE	1/2" TO 1 1/2"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : PLUG TYPE DISC RENEWABLE SEATS
BODY MATERIAL	CARBON STEEL : FORGED - ASTM A105 NORMALISED
TRIM	DISC STEM & SEAT RINGS 316 ST. STEEL (OR AISI 410, 416) HARD FACED SEATS
VALVE OPERATOR	HANDWHEEL
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SPRAL WOUND (S.STL)
BOLTING	STUDBOLTS : ASTM A193 GR B7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 2H CADMIUM PLATED
TEMP. LIMITATIONS	-29°C (-20°F) TO 200°C (400°F)
SERVICE CONDITIONS	AA2 BA2 DA2 DA3

				Drawn JTM 11.01.93	Clough Engineering Group	Job No. 583	Project
				Traced		CAD No. 04ZRC	Client
				Checked GLK	DHODAK GAS PROJECT OIL & GAS DEVELOPMENT CORPORATION		
				Supervisor SW	VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001		
				Designed GLK	SHT. 1 OF 1		
				Project Engineer DAJ	VALVE TAG No. REV.		
				App for Construction BLJ	DS-00-L-0126 D4ZRC 1		
				Client Approved			

REV	BY	DATE	DESCRIPTION
1	RN	04-11-93	BOLTING MATERIAL AND TEMP. LIMITATIONS REVISED
2	JTM	12-03-93	ISSUED FOR CONSTRUCTION

DISK02-73

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NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
3. ALL VALVES 1" AND ABOVE ARE TO CAPABLE OF BEING LOCKED IN FULLY OPENED OR CLOSED POSITIONS
4. FOR FERRITIC STEELS INTENDED FOR WELDING, THE CARBON CONTENT SHALL BE 0.25% MAXIMUM AND THE CARBON EQUIVALENT (CE) SHALL BE 0.45% MAXIMUM.
THE CARBON EQUIVALENT SHALL BE ESTABLISHED USING THE FORMULA
$$CE = C + \frac{Mn}{6} + 0.04$$
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. FORGINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55 IN ADDITION TO MANUFACTURER'S STANDARD INSPECTION
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.

VALVE TYPE	GLOBE - STRAIGHT PATTERN
VALVE STANDARD	B.S. 5352 OR API 602
PRESSURE CLASS	ANSI 800lb
END CONNECTIONS	SOCKET WELD TO ANSI B16.11
SIZE RANGE	1/2" TO 1 1/2"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : PLUG TYPE DISC RENEWABLE SEATS
BODY MATERIAL	CARBON STEEL LOW TEMP : FORGED - ASTM A350 GR LF2
TRIM	DISC STEM & SEAT RINGS 316 ST. STEEL HARD FACED SEATS
VALVE OPERATOR	HANDWHEEL
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SPIRAL WOUND (S.STL.)
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-46°C (-50°F) TO 200°C (400°F)
SERVICE CONDITIONS	AB2 BB2 DB2

REVISIONS									
	JM	12/5/93	ISSUED FOR CONSTRUCTION						
REV	BY	DATE	DESCRIPTION	CKD	APP				

Drawn	JTM	11.01.91	CLOUGH Engineering Group	Job No.	583	Project	DHOAK GAS PROJECT
Traced				Client	D4ZRL		
Checked			VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001	DATA SHEET No.	DS-00-L-0127	SHT. 1	OF 1
Supervisor				VALVE TAG No.	D4ZRL	REV.	0
Designed							
Project Engineer							
App for Construction							
Client Approved							

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
3. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
4. ALL VALVE FORGINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION TO MANUFACTURER'S STANDARD INSPECTION
5. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
6. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
7. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS

VALVE TYPE	GLOBE - STRAIGHT PATTERN
VALVE STANDARD	B.S. 5352 OR API 602
PRESSURE CLASS	ANSI 800lb
END CONNECTIONS	SOCKET WELD TO ANSI B16.11
SIZE RANGE	1/2" TO 1 1/2"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : PLUG TYPE DISC RENEWABLE SEATS
BODY MATERIAL	STAINLESS STEEL TO ASTM A-182 GR.316
TRIM	STAINLESS STEEL TYPE 316 STELLITE FACED SEATS
VALVE OPERATOR	: HANDWHEEL
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SPIRAL WOUND (S.STL. TYPE 316)
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-100°C (-150°F) TO 350°C (650°F)
SERVICE CONDITIONS	AC BC DC

REVISES	Drawn	JTM 11.01.93	CLOUGH Engineering Group	Job No.	583	Project	DUCOAK GAS PROJECT	
	Traced			Client	D4ZRS	Oil & Gas Development Corporation		
	Checked	<i>[Signature]</i>						
	Supervisor	<i>[Signature]</i>						
	Designed	<i>[Signature]</i>	VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001					
	Project Engineer	<i>[Signature]</i>	DATA SHEET No.	DS-00-L-0128		SHT. 1 OF 1	VALVE TAG No.	REV.
	App for Construction	<i>[Signature]</i>				D4ZRS	0	
	Client Approved	<i>[Signature]</i>						
REV	BY	DATE	DESCRIPTION	CKD	APP			

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USG#02-93

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
3. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
4. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S. 2080
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. ALL SIZES 100% MPI
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS

VALVE TYPE	GLOBE - STRAIGHT PATTERN
VALVE STANDARD	B.S. 1873
PRESSURE CLASS	ANSI 9001b
END CONNECTIONS	FLANGED TO ANSI B16.5 RTJ
SIZE RANGE	3" TO 6"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRM : RENEWABLE PLUG TYPE DISC RENEWABLE SEAT RING
BODY MATERIAL	CARBON STEEL : CAST - ASTM A216 GR WCB
TRIM	13% CHROME (A182 GR F6 OR AISI 410, 416) HARD FACED SEATS
VALVE OPERATOR	3" TO 4" HANDWHEEL 6" BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SOFT IRON RING JOINT
BOLTING	STUDBOLTS : ASTM A193 GR B7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 2H CADMIUM PLATED
TEMP. LIMITATIONS	-29°C (-20°F) TO 350°C (650°F)
SERVICE CONDITIONS	EA2 EA3 EA4

REVISIONS	Drawn	JTM 11.01.93	Clough Engineering Group	Job No.	583	Project	OHIOAK GAS PROJECT
	Traced			Client	E4JRC	DL & GAS DEVELOPMENT CORPORATION	
	Checked	<i>[Signature]</i>		VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001			
	Supervisor	<i>[Signature]</i>		DATA SHEET No.	DS-00-L-0133	SHT. 1 OF 1	
	Designed	<i>[Signature]</i>		VALVE TAG No.	E4JRC	REV. 0	
Project Engineer	<i>[Signature]</i>	Client Approved	<i>[Signature]</i>				
App for Construction	<i>[Signature]</i>						
REV	BY	DATE	DESCRIPTION	CKD	APP		
0	JTM	12/5/93	ISSUED FOR CONSTRUCTION.				

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
3. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
4. ALL VALVE FORGINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION TO MANUFACTURER'S STANDARD INSPECTION
5. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
6. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
7. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS
8. FOR FERRITIC STEELS INTENDED FOR WELDING, THE CARBON CONTENT SHALL BE 0.25% MAXIMUM AND THE CARBON EQUIVALENT (CE) SHALL BE 0.45% MAXIMUM

THE CARBON EQUIVALENT SHALL BE ESTABLISHED USING THE FORMULA :

$$CE = C + MN/6 + 0.04$$

VALVE TYPE	GLOBE - STRAIGHT PATTERN
VALVE STANDARD	B.S. 5352 OR API 602
PRESSURE CLASS	ANSI 1500lb
END CONNECTIONS	SOCKET WELD X THREADED TO ANSI B16.11
SIZE RANGE	1/2" TO 1 1/2"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : PLUG TYPE DISC RENEWABLE SEATS
BODY MATERIAL	CARBON STEEL : FORGED - ASTM A105 NORMALISED
TRIM	DISC, STEM & SEAT RINGS 13% CHROME (OR AISI 410.416) HARD FACED SEATS
VALVE OPERATOR	HANDWHEEL
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SPRAL WOUND (S. STL.) OR SDFT IRON RING JOINT
BOLTING	STUDBOLTS : ASTM A193 GR B7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 2H (SF) CADMIUM PLATED
TEMP. LIMITATIONS	-29°C (-20°F) TO 350°C (650°F)
SERVICE CONDITIONS	EA2 EA3 EA4 FA2 FA3

REVISIONS					
0	J.W.	11/5/13	ISSUED FOR CONSTRUCTION.		
REV	BY	DATE	DESCRIPTION	(KD)	

CLOUGH Engineering Group	Job No. 583	Project DHOAK GAS PROJECT
	CAD No. F4HRC	Client OIL & GAS DEVELOPMENT CORPORATION
VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001		
DATA SHEET No. DS-00-L-0140	SHT. 1 OF 1	VALVE TAG No. F4HRC
		REV. 0

DISA # 02-95

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NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO BE 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS
3. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
4. FACE TO FACE DIMENSIONS SHALL CONFORM TO ANSI B16.10 OR B.S. 2080
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. ALL SIZES 100% MPI
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
9. THE WELDING OF FLANGES ONTO SOCKET WELD OR BUTTWELD END VALVES TO MEET A SPECIFICATION FOR FLANGED VALVES IS NOT ACCEPTABLE UNLESS SPECIFICALLY CALLED FOR ON A PURCHASE ORDER.
10. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS

VALVE TYPE	GLOBE - STRAIGHT PATTERN
VALVE STANDARD	B.S. 1873
PRESSURE CLASS	ANSI 1500lb
END CONNECTIONS	FLANGED TO ANSI B16.5 RTJ
SIZE RANGE	2" TO 6"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : RENEWABLE PLUG TYPE DISC RENEWABLE SEAT RING
BODY MATERIAL	CARBON STEEL : CAST - ASTM A216 GR WCB
TRIM	13% CHROME (A182 GR F6 OR AISI 410.416) HARD FACED SEATS
VALVE OPERATOR	2" TO 4" HANDWHEEL 6" BEVEL GEAR (WEATHERPROOF TYPE)
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SOFT IRON RING JOINT
BOLTING	STUDBOLTS : ASTM A193 GR B7 (CADMIUM PLATED) C/W NUTS : ASTM A194 GR 2H CADMIUM PLATED
TEMP. LIMITATIONS	-29°C (-20°F) TO 350°C (650°F)
SERVICE CONDITIONS	EA2 ≤ 2" EA3 ≤ 2" EA4 ≤ 2" FA2 FA3

		Drawn J.W. 14.01.93		CLOUGH Engineering Group	Job No. 583	Project DHOAK GAS PROJECT
		Checked			Client F4JRC	Client OIL & GAS DEVELOPMENT CORPORATION
		Supervisor			VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001	
		Designed			DATA SHEET No. DS-00-L-0141	SHT. 1 OF 1
		Project Engineer		VALVE TAG No. F4JRC	REV. 0	
		App for Construction				
		Client Approved				
REVISIONS C JTM 12/5/93 ISSUED FOR CONSTRUCTION		CKD [Signature]				
REV	BY	DATE	DESCRIPTION	CKD	APP	REV.

120

DISC 7-92-95

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1b FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
3. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
4. ALL VALVE FORGINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION TO MANUFACTURER'S STANDARD INSPECTION
5. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
6. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
7. ALL VALVES 1" AND ABOVE ARE TO BE CAPABLE OF BEING LOCKED IN FULLY OPEN OR CLOSED POSITIONS
8. FOR FERRITIC STEELS INTENDED FOR WELDING, THE CARBON CONTENT SHALL BE 0.25% MAXIMUM AND THE CARBON EQUIVALENT (CE) SHALL BE 0.45% MAXIMUM

THE CARBON EQUIVALENT SHALL BE ESTABLISHED USING THE FORMULA :

$$CE = C + MN/6 + 0.04$$

VALVE TYPE	GLOBE - STRAIGHT PATTERN
VALVE STANDARD	B.S. 5352 OR API 602
PRESSURE CLASS	ANSI 1500lb
END CONNECTIONS	SOCKET WELD TO ANSI B16.11
SIZE RANGE	1/2" TO 1 1/2"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : PLUG TYPE DISC RENEWABLE SEATS
BODY MATERIAL	CARBON STEEL : FORGED - ASTM A105 NORMALISED
TRIM	DISC, STEM & SEAT RINGS 13% CHROME (OR AISI 410.416) HARD FACED SEATS
VALVE OPERATOR	HANDWHEEL
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SPIRAL WOUND (S. STL.) OR SOFT IRON RING JOINT
BOLTING	STUDBOLTS : ASTM A193 GR B7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 2H (SF) CADMIUM PLATED
TEMP. LIMITATIONS	-29°C (-20°F) TO 350°C (650°F)
SERVICE CONDITIONS	EA2 EA3 EA4 FA2 FA3

REVISIONS					
REV	BY	DATE	DESCRIPTION	CHKD	APP

	Job No. 583	Project DHODAK GAS PROJECT
	Client F4ZRC	Client OIL & GAS DEVELOPMENT CORPORATION
VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001		
DATA SHEET No. DS-00-L-0143	SHT. 1 OF 1	VALVE TAG No. F4ZRC
Client Approved		REV. 0

DISA# 02-95

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NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH B.S. 5146
3. ALL VALVES 1" AND ABOVE ARE TO CAPABLE OF BEING LOCKED IN FULLY OPENED OR CLOSED POSITIONS
4. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT
5. FORGINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55 IN ADDITION TO MANUFACTURER'S STANDARD INSPECTION
6. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25
7. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.

VALVE TYPE	GLOBE - STRAIGHT PATTERN
VALVE STANDARD	B.S. 5352 OR API 602
PRESSURE CLASS	ANSI 1500lb
END CONNECTIONS	SOCKET WELD TO ANSI B16.11
SIZE RANGE	1/2" TO 1 1/2"
CONSTRUCTION	BODY : BOLTED BONNET & GLAND O.S. & Y. TRIM : RENEWABLE PLUG TYPE DISC RENEWABLE SEAT RING
BODY MATERIAL	STAINLESS STEEL TO ASTM A-182 GR 316
TRIM	STAINLESS STEEL TYPE 316 STELLITE FACED SEATS
VALVE OPERATOR	HANDWHEEL
GLAND PACKING	REINFORCED GRAPHITED ASBESTOS
BONNET GASKET	SPIRAL WOUND (S,STL. TYPE 316) OR STAINLESS STEEL TYPE 316 RING JOINT
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A196 GR A CADMIUM PLATED
TEMP. LIMITATIONS	-100°C (-150°F) TO 350°C (650°F)
SERVICE CONDITIONS	FC

		Drawn J.W. (H.D.P.)		Job No. 583	Project DHOAK GAS PROJECT
		Traced		CAD No. F4ZRS	Client
		Checked			
		Supervisor			
		Designed	VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001		
		Project Engineer	DATA SHEET No. DS-00-L-0144		SHT. 1 OF 1
		App for Construction	VALVE TAG No. F4ZRS		REV. 0
		Client Approved			
REVISIONS	REV	BY	DATE	DESCRIPTION	(KID) <i>[Signature]</i>
	0	JTM	12/5/73	ISSUED FOR CONSTRUCTION.	

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DS-00-L-0144

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS.
3. FACE TO FACE DIMENSIONS SHALL CONFORM TO API 594
4. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT.
5. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. SIZES 12" AND ABOVE, 100% MPI.
6. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25.
7. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.
8. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH BS. 5146.

VALVE TYPE	CHECK (WAFFER)
VALVE STANDARD	API 594
PRESSURE CLASS	ANSI 1501b
END CONNECTIONS	TO SUIT ANSI B16.5 RF
SIZE RANGE	2" TO 24"
CONSTRUCTION	BODY : WAFFER TYPE TRM : METAL TO METAL SEAT DUAL PLATE
BODY MATERIAL	LOW TEMP CARBON STEEL : CAST ASTM A352 GR LCB
TRIM	TRM - ST. STEEL TYPE 316 OR 410 DISCS - ASTM A352 GR LCB SPRING - INCONEL X
VALVE OPERATOR	NONE
GLAND PACKING	NONE
BONNET GASKET	NONE
BOLTING	NONE
TEMP. LIMITATIONS	-46°C (-50°F) TO 200°C (400°F)
SERVICE CONDITIONS	AB2

REVISONS <table border="1"> <thead> <tr> <th>REV</th> <th>BY</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>JJM</td> <td>12/07/13</td> <td>ISSUED FOR CONSTRUCTION</td> </tr> </tbody> </table>		REV	BY	DATE	DESCRIPTION	0	JJM	12/07/13	ISSUED FOR CONSTRUCTION	Drawn: JTM 11.01.93 Traced: Checked: <i>[Signature]</i> Supervisor: <i>[Signature]</i> Designed: <i>[Signature]</i> Project Engineer: <i>[Signature]</i> App for Construction: <i>[Signature]</i> Client Approved: <i>[Signature]</i>	CLOUGH Engineering Group	Job No. 583 CAD No. ASRWL Project: DHOODAK GAS PROJECT Client: OIL & GAS DEVELOPMENT CORPORATION	VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001	DATA SHEET No. DS-00-L-0150	SHT. 1 OF 1 VALVE TAG No. ASRWL REV. 0
REV	BY	DATE	DESCRIPTION												
0	JJM	12/07/13	ISSUED FOR CONSTRUCTION												


D:\51824\51824

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NOTES:

1. CERTIFICATES REQUIRED : MANUFACTURER'S CERTIFICATE OF COMPLIANCE.
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH BS 5146.
3. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT.
4. CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION TO MANUFACTURER'S STANDARD INSPECTION
5. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25.
6. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.

VALVE TYPE	CHECK (HORIZONTAL)
VALVE STANDARD	B.S. 5154
PRESSURE CLASS	PN.25 SERIES B.
END CONNECTIONS	THREADED API
SIZE RANGE	1/2" TO 2"
CONSTRUCTION	BODY : SCREWED CAP TRIM : LIFT CHECK TYPE
BODY MATERIAL	BRONZE TO B.S.14.00 LG2
TRIM	BRONZE TO B.S.14.00 LG2
VALVE OPERATOR	NONE
GLAND PACKING	NONE
BONNET GASKET	NONE
BOLTING	NONE
TEMP. LIMITATIONS	-9°C (15°F) TO 100°C (200°F)
SERVICE CONDITIONS	AG

REVISIONS	Drawn	JTM 11.01.93		Job No.	583	Project	DHOQAK GAS PROJECT		
	Treated			CAD No.	ASSLB	Client	DL & GAS DEVELOPMENT CORPORATION		
	Checked	<i>[Signature]</i>		VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001					
	Supervisor	<i>[Signature]</i>							
Designed	<i>[Signature]</i>	Project Engineer	<i>[Signature]</i>	SHT. 1 OF 1		VALVE TAG No.	REV.		
0	JTM	12/3/93	ISSUED FOR CONSTRUCTION	App for Construction	<i>[Signature]</i>	DATA SHEET No.	DS-00-L-0152	ASSLB	0
REV	BY	DATE	DESCRIPTION	CHKD	Client Approved				


DSK# 02-95

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NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS.
3. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH BS 5146.
4. FACE TO FACE DIMENSIONS SHALL CONFORM TO API 594.
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT.
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. SIZES 12" AND ABOVE, 100% MPI.
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25.
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.

<u>VALVE TYPE</u>	CHECK (WAFER)
<u>VALVE STANDARD</u>	API 594
<u>PRESSURE CLASS</u>	ANSI 1501b
<u>END CONNECTIONS</u>	TO SUIT ANSI B16.5 RF
<u>SIZE RANGE</u>	2" TO 24"
<u>CONSTRUCTION</u>	BODY : WAFER TYPE TRM : METAL TO METAL SEAT DUAL PLATE
<u>BODY MATERIAL</u>	CARBON STEEL : CAST ASTM - A216 GR WCB
<u>TRIM</u>	TRM - ST. STEEL TYPE 316 OR 410 DISCS - ASTM A-216 GR WCB SPRING - INCONEL X
<u>VALVE OPERATOR</u>	NONE
<u>GLAND PACKING</u>	NONE
<u>BONNET GASKET</u>	NONE
<u>BOLTING</u>	NONE
<u>TEMP. LIMITATIONS</u>	-29°C (-20°F) TO 350°C (650°F)
<u>SERVICE CONDITIONS</u>	AA2 AG

REVISIONS	Drawn	JIM	11.01.03	 CLOUGH Engineering Group	Job No.	583	Project	DINDAK GAS PROJECT
	Traced				CAD No.	ASRWC	Client	OIL & GAS DEVELOPMENT CORPORATION
	Checked				VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001			
	Supervisor							
Designed			Project Engineer	App for Construction	VALVE TAG No.	ASRWC	REV.	0
Client Approved								

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96-218-510

NOTES:

1. CERTIFICATES REQUIRED, MANUFACTURER'S CERTIFICATE OF COMPLIANCE
2. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUE OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT.
3. EACH VALVE SHALL BE MARKED IN ACCORDANCE WITH MSS-SP-25.
4. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND SECURELY ATTACHED TO THE VALVE WITH STAINLESS STEEL WIRE.

VALVE TYPE	CHECK - BALL
VALVE STANDARD	MANUFACTURER'S STD
PRESSURE CLASS	125 LB CWP
END CONNECTIONS	SOCKET WELD
SIZE RANGE	1/2" TO 3"
CONSTRUCTION	BODY : UNION BODY TRIM : EDPH/VITON 'O' RING SEALS
BODY MATERIAL	PVC TYPE 1, GRADE 1 (ASTM D.1784)
TRIM	PVC TYPE 1, GRADE 1 (ASTM D.1784)
VALVE OPERATOR	NONE
GLAND PACKING	NONE
BONNET GASKET	NONE
BOLTING	NONE
TEMP. LIMITATIONS	32°F (0°C) TO 110°F (43°C)
SERVICE CONDITIONS	AP

REVISIONS	Drawn	JTM	11.2.91
	Traced		
	Checked		
	Supervisor		
Designed			
Project Engineer			
App for Construction			
Client Approved			

CLOUGH Engineering Group		Job No. 583	Project DHODAK GAS PROJECT
		CAD No. A52BP	Client OIL & GAS DEVELOPMENT CORPORATION
VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001			SHT. 1 OF 1
DATA SHEET No. DS-00-L-0154	VALVE TAG No. A52BP	REV. 0	

REV	BY	DATE	DESCRIPTION	CHKD	APP
0	JEM	12/15/93	ISSUED FOR CONSTRUCTION		

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D:\5154\12-96

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS.
3. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH BS 5146.
4. FACE TO FACE DIMENSIONS SHALL CONFORM TO API 594.
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT.
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. SIZES 12" AND ABOVE, 100% LPI.
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25.
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.

VALVE TYPE	CHECK (WAFFER)
VALVE STANDARD	API 594
PRESSURE CLASS	ANSI 3001b
END CONNECTIONS	TO SUIT ANSI B16.5 RF
SIZE RANGE	2" TO 24"
CONSTRUCTION	BODY : WAFER TYPE TRM : METAL TO METAL SEAT DUAL PLATE
BODY MATERIAL	STAINLESS STEEL TO ASTM A-351 CF8M
TRIM	TRM - ST. STEEL TYPE 316 DISCS - ASTM A-351 CF8M SPRING - INCONEL X
VALVE OPERATOR	NONE
GLAND PACKING	NONE
BONNET GASKET	NONE
BOLTING	NONE
TEMP. LIMITATIONS	-100°C (-150°F) TO 350°C (650°F)
SERVICE CONDITIONS	BC

REVISIONS	Drawn	JTM 11.01.93	CLOUGH Engineering Group	Job No.	583	Project	DHODAK GAS PROJECT	
	Traced			CAD No.	BSRWS	Client	DL & GAS DEVELOPMENT CORPORATION	
	Checked	<i>[Signature]</i>		VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001				
	Supervisor	<i>[Signature]</i>		DATA SHEET No.	DS-00-L-0162	SHT. 3	OF 3	
	Designed	<i>[Signature]</i>		VALVE TAG No.	BSRWS	REV.	0	
Project Engineer	<i>[Signature]</i>	App for Construction	<i>[Signature]</i>					
Client Approved	<i>[Signature]</i>							
REV	BY	DATE	DESCRIPTION	CKD	APP			
0		12/93	ISSUED FOR CONSTRUCTION.					

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS.
3. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH BS 5146.
4. FACE TO FACE DIMENSIONS SHALL CONFORM TO API 594.
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE - SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT.
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. ALL SIZES 100% MPI.
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25.
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.

<u>VALVE TYPE</u>	CHECK (WAFER)
<u>VALVE STANDARD</u>	API 594
<u>PRESSURE CLASS</u>	ANSI 6001b
<u>END CONNECTIONS</u>	TO SUIT ANSI B16.5 RF
<u>SIZE RANGE</u>	2" TO 24"
<u>CONSTRUCTION</u>	BODY : WAFER TYPE TRIM : METAL TO METAL SEAT DUAL PLATE
<u>BODY MATERIAL</u>	CARBON STEEL : CAST ASTM - A216 GR WCB
<u>TRIM</u>	TRIM - ST. STEEL TYPE 316 OR 410 DISCS - ASTM A-216 GR WCB SPRING - INCONEL X
<u>VALVE OPERATOR</u>	NONE
<u>GLAND PACKING</u>	NONE
<u>BONNET GASKET</u>	NONE
<u>BOLTING</u>	NONE
<u>TEMP. LIMITATIONS</u>	-29°C (-20°F) TO 350°C (650°F)
<u>SERVICE CONDITIONS</u>	DA2 DA3

REVISIONS	Drawn	JTM 110193	CLOUGH Engineering Group	Job No.	583	Project	DHODAK GAS PROJECT	
	Traced			CAD No.	DSRWC	Client	Oil & Gas Development Corporation	
	Checked	<i>[Signature]</i>		VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001				
	Supervisor	<i>[Signature]</i>						
	Designed	<i>[Signature]</i>						
Project Engineer	<i>[Signature]</i>	App for Construction	DATA SHEET No.	DS-00-L-0170	SHT. 1 OF 1	VALVE TAG No.	DSRWC	
Client Approved	<i>[Signature]</i>	REV.	0					

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. CONTACT FACES OF FLANGES TO 250 TO 500 MICRO INCH (6.3 TO 12.5 MICRO METRE) ROUGHNESS.
3. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH BS 5146.
4. FACE TO FACE DIMENSIONS SHALL CONFORM TO API 594.
5. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT.
6. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. ALL SIZES 100% LPI.
7. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25.
8. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.

<u>VALVE TYPE</u>	CHECK (WAFER)
<u>VALVE STANDARD</u>	API 594
<u>PRESSURE CLASS</u>	ANSI 6001b
<u>END CONNECTIONS</u>	TO SUIT ANSI B16.5 RF
<u>SIZE RANGE</u>	2" TO 24"
<u>CONSTRUCTION</u>	BODY : WAFER TYPE TRIM : METAL TO METAL SEAT DUAL PLATE
<u>BODY MATERIAL</u>	STAINLESS STEEL TO ASTM A-351 CF8M
<u>TRIM</u>	TRIM - ST. STEEL TYPE 316 DISCS - ASTM A-351 CF8M SPRING - INCONEL X
<u>VALVE OPERATOR</u>	NONE
<u>GLAND PACKING</u>	NONE
<u>BONNET GASKET</u>	NONE
<u>BOLTING</u>	NONE
<u>TEMP. LIMITATIONS</u>	-100°C (-150°F) TO 350°C (650°F)
<u>SERVICE CONDITIONS</u>	OC

REVISIONS	Drawn	JTM (10.1.93)	CLOUGH Engineering Group	Job No.	583	Project	DHOAK GAS PROJECT	
	Traced			CAD No.	DSRWS	Client	OIL & GAS DEVELOPMENT CORPORATION	
	Checked	<i>[Signature]</i>		VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001				
	Supervisor	<i>[Signature]</i>						
	Designed	<i>[Signature]</i>						
Project Engineer	<i>[Signature]</i>	App for Construction	DATA SHEET No.	DS-00-L-0172	SHT. 1 OF 1	VALVE TAG No.	REV.	
Client Approved	<i>[Signature]</i>					DSRWS	0	

REV	BY	DATE	DESCRIPTION	CKD
1	JTM	12/3/93	ISSUED FOR CONSTRUCTION	


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89-104-05C

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH BS 5146.
3. FOR FERRITIC STEELS INTENDED FOR WELDING, THE CARBON CONTENT SHALL BE 0.25% MAXIMUM AND THE CARBON EQUIVALENT (CE) SHALL BE 0.45% MAXIMUM.
THE CARBON EQUIVALENT SHALL BE ESTABLISHED USING THE FORMULA:
$$CE = C + \frac{Mn}{6} + 0.04$$
4. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT.
5. FORGINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55 IN ADDITION TO MANUFACTURER'S STANDARD INSPECTION.
6. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25.
7. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.

VALVE TYPE	CHECK (HORIZONTAL)
VALVE STANDARD	B.S.5352
PRESSURE CLASS	ANSI 800lb
END CONNECTIONS	SOCKET WELD TO ANSI B16.11
SIZE RANGE	1/2" TO 1 1/2"
CONSTRUCTION	BODY : BOLTED COVER TRIM : PISTON TYPE RENEWABLE SEATS
BODY MATERIAL	CARBON STEEL : FORGED ASTM A105 NORMALISED
TRIM	DISC, STEM & SEAT RINGS 13% CHROME HARD FACED SEATS
VALVE OPERATOR	NONE
GLAND PACKING	NONE
BONNET GASKET	SPRAL WOUND (S. STL.)
BOLTING	STUDBOLTS : ASTM A193 GR B7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 2H CADMIUM PLATED
TEMP. LIMITATIONS	-29°C (-20°F) TO 350°C (650°F)
SERVICE COONITIONS	AA2 BA2 DA2 DA3

REVISEMENTS	Drawn	JTM 11.01.93	CLOUGH Engineering Group	Job No.	583	Project DHODAM GAS PROJECT  DHODAM GAS DEVELOPMENT CORPORATION			
	Traced			CAD No.	DSZPC				
	Checked	<i>[Signature]</i>							
	Supervised	<i>[Signature]</i>							
	Designed	<i>[Signature]</i>							
Project Engineer	<i>[Signature]</i>		VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001						
App for Construction	<i>[Signature]</i>		DATA SHEET No.	DS-00-L-0174	SHT. 1 OF 1	VALVE TAG No.	D5ZPC	REV.	0
REV	BY	DATE	DESCRIPTION	CKD	App	Client Approved			

D52PC-02-76

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NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.6 FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH BS 5146.
3. FOR FERRITIC STEELS INTENDED FOR WELDING, THE CARBON CONTENT SHALL BE 0.25% MAXIMUM AND THE CARBON EQUIVALENT (CE) SHALL BE 0.45% MAXIMUM.
THE CARBON EQUIVALENT SHALL BE ESTABLISHED USING THE FORMULA
$$CE = C + \frac{Mn}{6} + 0.04$$
4. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT.
5. FORGINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55 IN ADDITION TO MANUFACTURER'S STANDARD INSPECTION.
6. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25.
7. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.

VALVE TYPE	CHECK (HORIZONTAL)
VALVE STANDARD	B.S.5352
PRESSURE CLASS	ANSI 8001b
END CONNECTIONS	SOCKET WELD TO ANSI B16.11
SIZE RANGE	1/2" TO 1 1/2"
CONSTRUCTION	BOOY : BOLTED COVER TRIM : PISTON TYPE RENEWABLE SEATS
BODY MATERIAL	CARBON STEEL LOW TEMP : FORGED ASTM A350 GR LF2
TRIM	DISC, STEM & SEAT RINGS 316 ST. STEEL HARD FACED SEATS
VALVE OPERATOR	NONE
GLAND PACKING	NONE
BONNET GASKET	SPIRAL WOUND (S. STL.)
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-46°C (-50°F) TO 200°C (400°F)
SERVICE CONDITIONS	AB2 BB2 DB2

REVISIONS	Drawn	JTM 110193	CLOUGH Engineering Group	Job No.	583	Project	DHOQAK GAS PROJECT	
	Traced			CAD No.	DSZPL	Client	OIL & GAS DEVELOPMENT CORPORATION	
	Checked	<i>[Signature]</i>		VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001				
	Supervisor	<i>[Signature]</i>						
	Designed	<i>[Signature]</i>						
Project Engineer	<i>[Signature]</i>	App for Construction	DATA SHEET No.	DS-00-L-0175	VALVE TAG No.	DSZPL	REV.	0
Client Approved	<i>[Signature]</i>							

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH BS 5146.
3. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT.
4. FORGINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55 IN ADDITION TO MANUFACTURER'S STANDARD INSPECTION.
5. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25.
6. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.

<u>VALVE TYPE</u>	CHECK (HORIZONTAL)
<u>VALVE STANDARD</u>	B.S.5352
<u>PRESSURE CLASS</u>	ANSI 800lb
<u>END CONNECTIONS</u>	SOCKET WELD TO ANSI B16.11
<u>SIZE RANGE</u>	1/2" TO 1 1/2"
<u>CONSTRUCTION</u>	BODY : BOLTED COVER TRIM : PISTON TYPE RENEWABLE SEATS
<u>BODY MATERIAL</u>	STAINLESS STEEL TO ASTM A-182 GR.316
<u>TRIM</u>	STAINLESS STEEL TYPE 316
<u>VALVE OPERATOR</u>	NONE
<u>GLAND PACKING</u>	NONE
<u>BONNET GASKET</u>	SPRAL WOUND (S. STL. TYPE 316)
<u>BOLTING</u>	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR.4 CADMIUM PLATED
<u>TEMP. LIMITATIONS</u>	-100°C (-150°F) TO 350°C (650°F)
<u>SERVICE CONDITIONS</u>	AC BC DC

REVISIONS	Drawn	JTM 11.01.91	CLOUGH Engineering Group	Job No.	583	Project	DHOAK GAS PROJECT
	Traced			Client	DL & GAS DEVELOPMENT CORPORATION		
	Checked	<i>[Signature]</i>		Client	DL & GAS DEVELOPMENT CORPORATION		
	Supervisor	<i>[Signature]</i>					
	Designed	<i>[Signature]</i>					
Project Engineer	<i>[Signature]</i>			VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001	SHT. 1 OF 1		
App for Construction	<i>[Signature]</i>			DATA SHEET No.	DS-00-L-0176	VALVE TAG No.	05ZPS
Client Approved	<i>[Signature]</i>			REV.	0		
REV	BY	DATE	DESCRIPTION	CRD			

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH BS 5146.
3. FACE TO FACE DIMENSIONS SHALL CONFORM TO API 594.
4. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT.
5. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. ALL SIZES 100% MPI.
6. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25.
7. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.

VALVE TYPE	CHECK (WAFER)
VALVE STANDARD	API 594
PRESSURE CLASS	ANSI 900lb
END CONNECTIONS	TO SUIT ANSI B16.5 RTJ
SIZE RANGE	3" TO 24"
CONSTRUCTION	BODY : WAFER TYPE TRM : METAL TO METAL SEAT DUAL PLATE
BODY MATERIAL	CARBON STEEL : CAST ASTM - A216 GR WCB
TRIM	TRM - ST. STEEL TYPE 316 OR 410 DISCS - ASTM A-216 GR WCB SPRING - INCONEL X
VALVE OPERATOR	NONE
GLAND PACKING	NONE
BONNET GASKET	NONE
BOLTING	NONE
TEMP. LIMITATIONS	-29°C (-20°F) TO 350°C (650°F)
SERVICE CONDITIONS	EA2 EA3

REVISIONS	Drawn	JTM 11.01.93	CLOUGH Engineering Group	Job No.	583	Project	QNECAG GAS PROJECT	
	Traced			CAD No.	ESJWC	Client	OIL & GAS DEVELOPMENT CORPORATION	
	Checked	<i>[Signature]</i>		VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001				
	Supervisor	<i>[Signature]</i>						
Designed	<i>[Signature]</i>	Project Engineer	<i>[Signature]</i>	DATA SHEET No.	DS-00-L-0180	VALVE TAG No.	ESJWC	
App for Construction	<i>[Signature]</i>	Client Approved	<i>[Signature]</i>			SHT. 1 OF 1	REV.	0
REV	BY	DATE	DESCRIPTION	CKD	App			

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH BS 5146.
3. FACE TO FACE DIMENSIONS SHALL CONFORM TO API 594.
4. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT.
5. ALL VALVE CASTINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55. IN ADDITION THE FOLLOWING INSPECTION IS REQUIRED IN ACCORDANCE WITH ANSI B16.34 SECTION 8. ALL SIZES 100% LPI.
6. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25.
7. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.

<u>VALVE TYPE</u>	CHECK (WAFFER)
<u>VALVE STANDARD</u>	API 594
<u>PRESSURE CLASS</u>	ANSI 1500lb
<u>END CONNECTIONS</u>	TO SUIT ANSI B16.5 RTJ
<u>SIZE RANGE</u>	2" TO 12"
<u>CONSTRUCTION</u>	BODY : WAFER TYPE TRIM : METAL TO METAL SEAT DUAL PLATE
<u>BODY MATERIAL</u>	STAINLESS STEEL TO ASTM A-351 CF8M
<u>TRIM</u>	TRIM - ST. STEEL TYPE 316 DISCS - ASTM A-351 CF8M SPRING - INCONEL X
<u>VALVE OPERATOR</u>	NONE
<u>GLAND PACKING</u>	NONE
<u>BONNET GASKET</u>	NONE
<u>BOLTING</u>	NONE
<u>TEMP. LIMITATIONS</u>	-100°C (-150°F) TO 350°C (650°F)
<u>SERVICE CONDITIONS</u>	FC

REVISIONS	Drawn	JTM 11.01.91	CLOUGH Engineering Group	Job No.	583	Project	OHIOAK GAS PROJECT			
	Traced			CAD No.	F5JWS	Client	OIL & GAS DEVELOPMENT CORPORATION			
	Checked	<i>[Signature]</i>		VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001						
	Supervisor	<i>[Signature]</i>								
	Designed	<i>[Signature]</i>								
Project Engineer	<i>[Signature]</i>	App for Construction	<i>[Signature]</i>	DATA SHEET No.	DS-00-L-0182	SHT. 1 OF 1	VALVE TAG No.	F5JWS	REV.	0
REV	BY	DATE	DESCRIPTION	CKD	App	Client Approved				

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10-18-87-01

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.b FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH BS 5146.
3. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT.
4. FORGINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55 IN ADDITION TO MANUFACTURER'S STANDARD INSPECTION.
5. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25.
6. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.

VALVE TYPE	CHECK (HORIZONTAL)
VALVE STANDARD	B.S.5352
PRESSURE CLASS	ANSI 1500lb
END CONNECTIONS	THREADED TO ANSI B16.11
SIZE RANGE	1/2" TO 3/4"
CONSTRUCTION	BODY : BOLTED COVER TRIM : PISTON TYPE RENEWABLE SEATS
BODY MATERIAL	STAINLESS STEEL TO ASTM A-182 GR.316
TRIM	STAINLESS STEEL TYPE 316
VALVE OPERATOR	NONE
GLAND PACKING	NONE
BONNET GASKET	SPIRAL WOUND (S. STL. TYPE 316) OR ST. STEEL, TYPE 316, RING JOINT
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-29°C (-20°F) TO 150°C (300°F)
SERVICE CONDITIONS	CLASS FCT. FOR CHEMICAL INJECTION TUBING ONLY.

REVISIONS	Drawn	JTM (11.01.73)	Clough Engineering Group	Job No.	583	Project	DHOAK GAS PROJECT
	Traced			CAD No.	FSSPS	Client	OR & GAS DEVELOPMENT CORPORATION
	Checked	<i>[Signature]</i>	VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001	SHT. 1 OF 1			
	Supervised	<i>[Signature]</i>		VALVE TAG No. REV.			
	Designed	<i>[Signature]</i>		FSSPS 0			
	Project Engineer	<i>[Signature]</i>					
	App for Construction	<i>[Signature]</i>	DATA SHEET No.	DS-00-L-0183			
	Client Approved	<i>[Signature]</i>					
REV	BY	DATE	DESCRIPTION				

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10-11-87

NOTES:

1. CERTIFICATES REQUIRED TO DIN 50049.3.1.6 FOR ALL PRESSURE CONTAINING PARTS
2. VALVES TO BE INSPECTED AND TESTED IN ACCORDANCE WITH BS 5146.
3. MATERIALS SHALL BE EMPLOYED ONLY AS SHOWN ON THE VALVE DATA SHEETS OR OTHER APPLICABLE SPECIFICATION SHEETS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMPANY. SUCH APPROVAL HOWEVER SHALL IN NO WAY DIMINISH THE VENDORS OBLIGATION TO MEET THE REQUIREMENTS OF THE LATEST ISSUES OF THE STANDARDS AND SPECIFICATIONS REFERRED TO IN THIS DOCUMENT.
4. FORGINGS ARE TO BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH MSS-SP-55 IN ADDITION TO MANUFACTURER'S STANDARD INSPECTION.
5. EACH VALVE SHALL AS A MINIMUM BE MARKED IN ACCORDANCE WITH MSS-SP-25.
6. IN ADDITION TO THE PERMANENT MARKING EACH VALVE IS TO CARRY A STAINLESS STEEL IDENTIFICATION TAG WHICH IS TO BE STAMPED OR ENGRAVED WITH THE VALVE TAG NUMBER AND SIZE IN CHARACTERS AT LEAST 10mm HIGH AND ATTACHED SECURELY TO THE VALVE WITH STAINLESS STEEL WIRE.

VALVE TYPE	CHECK (HORIZONTAL)
VALVE STANDARD	B.S.5352
PRESSURE CLASS	ANSI 15001b
END CONNECTIONS	SOCKET WELD TO ANSI B16.11
SIZE RANGE	1/2" TO 1 1/2"
CONSTRUCTION	BODY : BOLTED COVER TRIM : PISTON TYPE RENEWABLE SEATS
BODY MATERIAL	STAINLESS STEEL TO ASTM A-182 GR.316
TRIM	STAINLESS STEEL TYPE 316
VALVE OPERATOR	NONE
GLAND PACKING	NONE
BONNET GASKET	SPRAL WOUND (S. STL. TYPE 316) OR ST. STEEL, TYPE 316, RING JOINT
BOLTING	STUDBOLTS : ASTM A320 GR L7 CADMIUM PLATED C/W NUTS : ASTM A194 GR 4 CADMIUM PLATED
TEMP. LIMITATIONS	-100°C (-150°F) TO 350°C (650°F)
SERVICE CONDITIONS	FC

REVISIONS	Drawn	JTM 11.01.93	CLOUGH Engineering Group	Job No.	583	Project	DHOAK GAS PROJECT			
	Traced			CAD No.	F5ZPS	Client	DL & GAS DEVELOPMENT CORPORATION			
	Checked	<i>[Signature]</i>		VALVE DATA SHEET FOR PIPING MATERIAL SPECIFICATION SP-00-L-0001						
	Supervisor	<i>[Signature]</i>								
Designed	<i>[Signature]</i>	Project Engineer	<i>[Signature]</i>	DATA SHEET No.	DS-00-L-0185	SHT. 1 OF 1	VALVE TAG No.	F5ZPS	REV.	0
REV	BY	DATE	DESCRIPTION	CHKD	Client Approved					

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10-10-a-510