PIPING CLASS: HN2S0D-JC

SECTION 1.0 – GENERAL

PIPE CLASS:	**HN2S0D-JC**	**DESIGN CODE:**	ASME B31.3
RATING:	10000	**PWHT:**	NOTE 5
FLANGE FACE:	RTJ	**VALVE TRIM:**	ALLOY 625
BASIC MATERIAL:	UNS N06625 (GROUP 3.8)	**SOUR:**	YES (NOTE 4 & 13)
CORROSION ALLOWANCE:	0 MM	**SPECIAL REQUIREMENT:**	NACE + CRYOGENIC SERVICE AND NOTE-9

TEMPERATURE (DEG.C) AND PRESSURE (BARG) RATING - (NOTE-177,207)

TEMP.	-122	0	38	50	100	150
PRESS.	490	490	490	490	490	490

SERVICE

REFER TO PIPING CLASS INDEX

SIZE RANGE, PIPE WALL THICKNESS (MM) TABLE –(NOTE 9, 211, 215)

NPS	1	1 ½	2	3	4	6	8
SCHEDULE	80S	80S	80S	80	120	120	140
THICKNESS	4.55	5.08	5.54	7.62	11.13	14.27	20.62

PIPING CLASS: HN2S0D-JC

SECTION 2.0 – NOTES

GENERAL NOTES

2. ALL BUTT-WELDED COMPONENT THICKNESSES SHALL MATCH THE PIPE THICKNESS.
3. FOR SPECTACLE BLINDS (FIG-8 FLANGES) & BLINDS REFER TO SPECIFICATION AGES-SP-09-002.
4. ALL MATERIAL FOR SOUR SERVICE SHALL CONFORM TO THE REQUIREMENTS FOR MATERIAL SELECTION GUIDELINES AGES-GL-07-001, REQUIREMENTS FOR MATERIALS IN SEVERE SERVICE AGES-SP-07-003 AND NACE MR0175/ISO 15156 (FOR UPSTREAM) & NACE MR0103/ISO 17945 (FOR REFINERY SERVICE).
5. PWHT SHALL BE BASED ON ASME B31.3 AND THE REQUIREMENTS OF SPECIFICATION AGES-SP-09-002 PIPING MATERIAL SPECIFCATION INDEX. FOR SOUR SERVICE PWHT REQUIREMENT SHALL BE ALSO GOVERNED BY HARDNESS CRITERIA AS PER NACE MR0175 / ISO 15156 (FOR UPSTREAM) & NACE MR0103/ISO 17945 (FOR REFINERY SERVICE).
9. WALL THICKNESS TO BE IN ACCORDANCE WITH ASME B31.3 CHAPTER IX (SECTION K304.1.2 AND FORMULA (34A)) AND ALSO THE PRESSURE -TEMPERATURE LIMITS SHALL BE ADJUSTED TO SUIT PROJECT SPECIFIC REQUIREMENTS.
13. FOR SOUR/ LETHAL SERVICE 100%RT,100%MT/PT HAS TO BE CONSIDERED IRRESPECTIVE OF RATING IN LINE WITH REQUIREMENT FOR MATERIALS IN SEVERE SERVICE AGES-SP-07-003.
16. ALL VALVES IN SOUR OR TOXIC OR HYDROCARBON SERVICE SHALL MEET FUGITIVE EMISSION TESTING REQUIREMENTS AS PER BS EN ISO 15848 PART-1 & PART-2 WITH LEAKAGE CLASS 'BH' (REFER TO VALVE SPECIFICATION AGES-SP-09-003).
37. WALL THICKNESS TO BE IN ACCORDANCE WITH ASME B31.3 CHAPTER IX (SECTION K304.1.2 AND FORMULA (34C)). ALSO, THE PRESSURE -TEMPERATURE LIMITS SHALL BE ADJUSTED SUIT PROJECT SPECIFIC REQUIREMENTS.
43. THREADED JOINTS ARE NOT PERMITTED.
49. VALVES IN SERVICES WITH DESIGN TEMPERATURE BELOW - 50°C AND CONTINOUS OPERATING TEMPERATURE BELOW - 10°C SHALL BE PROVIDED WITH AN EXTENDED BONNET AND CRYOGENIC ACCEPTANCE TESTING IN ACCORDANCE WITH THE REQUIREMENTS OF BS 6364.
50. NON-EXTENDED BONNET VALVES IN THIS PIPING CLASS ARE INTENDED FOR SHORT TERM LOW TEMPERATURE EXCURSION BELOW -50°C (WITH NORMAL OPERATING TEMPERATURE ABOVE-10 DEG). E.G NON-OPERABLE DURING DEPRESSURIZATION) (OR) NON-INSULATED VALVE ONLY. HOWEVER THE VALVE SEALS AND PACKING SHALL BE DESIGNED FOR MINIMUM DESIGN TEMPERATURE.
54. COMPLETE ORIFICE ASSEMBLY SHALL BE SUPPLIED WITH PAIR OF ORIFICE FLANGES EACH HAVING ONE NPS 1/2 FLANGED TAP (RATING SAME AS PIPE CLASS).
58. THE USE OF SOFT SEATED BALL VALVES IS RESTRICTED TO MAX. DESIGN TEMPERATURE OF 150 OC. THE MATERIALS OF CONSTRUCTION FOR SEAT ARE INDICATIVE. VENDOR IS RESPONSIBLE TO SELECT SUITABLE MATERIAL TO ENSURE SERVICE LIFE OF THE VALVE CONSIDERING THE TYPE OF FLUID, SIZE AND SERVICE CONDITIONS.
71. TO BE USED ONLY WHEN INDICATED ON THE P&ID.
81. PIPING CLASS COVERS ALL TYPES OF VALVES NORMALLY USED IN THE INDUSTRY. HOWEVER, VALVE TYPE SELECTION SHALL BE AS PER PROCESS ISOLATION PHILOSOPHY (AGES-PH-08-001, AGES-SP-09-003) AND P&ID.
84. BOLT TENSIONING REQUIREMENT SHALL BE AS PER PIPING MATERIAL SPECIFICATION AGES-SP-09-002.
85. SMALL BORE PIPE THE MINIMUM SCHEDULE SHALL BE AS PER AGES-SP-09-001 APPENDIX A1.
90. PIPING TO INSTRUMENT IDBB, FLANGED ON BOTH PROCESS SIDE AND INSTRUMENT SIDE.TO BE USED IN SOUR, TOXIC, SULPHURIC ACID AND VIBRATING SERVICE.
93. 45 DEGREE BRANCH TABLE INCLUDED IS GENERIC FOR FLARE SERVICE ONLY.REQUIREMENT FOR REINFORCEMENT PAD SHALL BE CHECKED AGAINST RESPECTIVE PROJECT DESIGN DATA.
95. ADDITIONAL REINFORCEMENT IF ANY DUE TO AIV/FIV/STRESS SHALL BE CONSIDERED DURING THE PROJECT STAGE.

PIPING CLASS: HN2S0D-JC

173. FOR API 6A (API 10,000 /5000 PSI) LINE CLASSES THE SELECTED NOMINAL SIZE OF API SPEC 6A FLANGES SHALL BE SELECTED SUCH THAT THERE IS MINIMUM DIMENSIONAL DIFFERENCE BETWEEN THE API 6A FLANGE BORE AND THE BORE OF THE MATING PIPING SYSTEM REFER SECTION 12.3 OF THIS SPECFICATION API 6A. IN ADDITION, API 6A FLANGES SHALL BE SUPPLIED WITH INTEGRAL TRANSITION SPOOL OF 75MMTO MATCH THE PIPE OD AND SCHEDULE.

176. BRANCH TO HEADER CONNECTION SHALL BE REDUCED TEES, EQUAL TEES, SWEEPOLETS OR SIMILAR IN ACCORDANCE WITH CHAPTER IX OF ASME B31.3.

177. MATERIAL CLASS-HH SOUR SERVICE AND PRODUCT SPECIFICATION LEVEL PSL-3 SELECTED BASED ON TEMPERATURE RATING TABLE FOR SERVICE AS PER API 6A.

206. 100% NDE OF ALL GIRTH, LONGITUDINAL AND BRANCH CONNECTIONS IN ACCORDANCE WITH ASME 31.3 K341.4.2.

207. FOR OPERATING TEMPERATURE ABOVE 121°C, DESIGN VERIFICATION SHALL BE DONE ACCORDING TO APPENDIX G OF API SPEC 6A. THE DE RATING SHALL BE APPLIED IN ACCORDANCE TO API 6A ANNEXURE G. IF APPLICABLE THE PROJECT SPECIFIC PIPE CLASS DESIGN TEMPERATURE SHALL BE RESTRICTED ACCORDINGLY.

208. MATERIAL TO CONFORM API 6A AND SHALL COMPLY WITH API 6A PSL 3 REQUIREMENTS.

209. VALVE BODY THICKNESS SHALL INCLUDE THE CORROSION ALLOWANCE OVER AND ABOVE THE MINIMUM THICKNESS AS REQUIRED BY API 6A.

210. WITH PRIOR APPROVAL FROM COMPANY, HUB END VALVES AND PIPE COMPONENTS MAY BE USED IN PLACE OF FLANGED ONE FOR SIZE NPS 6 AND ABOVE. ACCEPTANCE TO BE REVIEWED IN PROJECT STAGE.

211. MINIMUM SIZE FOR THIS PIPE CLASS IS DN50, UNLESS NEEDED AS CONTINUATION FOR BRANCH-OFF (BRANCH OFF SHALL BE BY REDUCING TEE ONLY).

215. THE SIZE RANGE IN THIS CLASS IS LIMITED BY COMMERCIALLY AVILABLE SEAMLESS PIPE.

PIPING CLASS: HN2S0D-JC

SECTION 3.0 – BRANCH TABLE

90^0 BRANCH CONNECTIONS (NOTE-176)

BRANCH PIPE (NPS)									
	8							E	
	6						E	T	
	4					E	T	T	
	3				E	T	T	SP	
	2			E	T	T	SP	SP	
	1 ½		E	T	T	T	SP	SP	
	1	E	T	T	SP	SP	SP	SP	
		1	**1 ½**	**2**	**3**	**4**	**6**	**8**	
		HEADER PIPE (NPS)							

LEGEND (STANDARD SYMBOLOGY)

C	CALCULATION IN ACCORDANCE WITH ASME B31.3
E	EQUAL TEE
T	REDUCING TEE
TR	REDUCING TEE + REDUCER
SP	SWEEPOLET

PIPING CLASS: HN2S0D-JC

SECTION 3.0 – BRANCH TABLE CONT,D

45^0 BRANCH CONNECTIONS (NOTE- 93,95)

BRANCH PIPE (NPS)									
	8							A	
	6						A	B	
	4					A	B	B	
	3				A	B	B	L	
	2			A	B	B	L	L	
	1 ½		A	B	B	B	L	L	
	1	A	B	B	L	L	L	L	
		1	1 ½	2	3	4	6	8	
		HEADER PIPE (NPS)							

LEGEND (STANDARD SYMBOLOGY)

A	EQUAL LATERAL TEE
B	REDUCING LATERAL TEE
LR	REDUCING LATERAL TEE + REDUCER
L	LATEROLET

PIPING CLASS: HN2S0D-JC

SECTION 4.0 – PIPING COMPONENTS

COMPONENT (TYP)	NPS (INCH)		END	DESCRIPTION	DIM/ MFG STD.	MATERIAL STD	NOTES
	FROM	TO					
PIPE (NOTE 206)							
PIPE	1	8	BE	SEAMLESS	B36.10	ASTM B444 UNS N06625 GR. 1, SOUR SERVICE	85,177,211
NIPPLE	2	2	BE	AS PIPE, L=100mm	B36.10	ASTM B444 UNS N06625 GR. 1, SOUR SERVICE	85,177
FITTINGS (NOTE 206)							
ELBOW	1	8	BE	90 DEGREE, LR, WROUGHT, SEAMLESS	B16.9	ASTM B366 GR. WPNCMC-S, SOUR SERVICE	2,177
ELBOW	1	8	BE	45 DEGREE, LR, WROUGHT, SEAMLESS	B16.9	ASTM B366 GR. WPNCMC-S, SOUR SERVICE	2,177
REDUCER	1½	8	BE	CONCENTRIC, WROUGHT, SEAMLESS	B16.9	ASTM B366 GR. WPNCMC-S, SOUR SERVICE	2,177
REDUCER	1½	8	BE	ECCENTRIC, WROUGHT, SEAMLESS	B16.9	ASTM B366 GR. WPNCMC-S, SOUR SERVICE	2,177
CAP	1	8	BE	WROUGHT, SEAMLESS	B16.9	ASTM B366 GR. WPNCMC-S, SOUR SERVICE	2,177
BRANCH FITTINGS (NOTE 176, 206)							
TEE	1	8	BE	EQUAL, WROUGHT, SEAMLESS	B16.9	ASTM B366 GR. WPNCMC-S, SOUR SERVICE	2,177
TEE	1½	8	BE	REDUCING, WROUGHT, SEAMLESS	B16.9	ASTM B366 GR. WPNCMC-S, SOUR SERVICE	2,177
LATERAL	1	8	BE	EQUAL LATERAL TEE 45 DEG, WROUGHT, SEAMLESS	MANF. STD	ASTM B366 GR. WPNCMC-S, SOUR SERVICE	2,93,95, 177
LATERAL	1½	8	BE	REDUCING LATERAL TEE 45 DEG, WROUGHT, SEAMLESS	MANF. STD	ASTM B366 GR. WPNCMC-S, SOUR SERVICE	2,93,95, 177
SWEEPOLET	1	3	BE	FORGED, SCH AS PIPE	MSS SP-97	ASTM B564 UNS N06625, SOUR SERVICE	177
LATROLET	1	3	BE	FORGED, SCH AS PIPE	MSS SP-97	ASTM B564 UNS N06625, SOUR SERVICE	93,177

PIPING CLASS: HN2S0D-JC

COMPONENT (TYP)	NPS (INCH)		END	DESCRIPTION	DIM/ MFG STD.	MATERIAL STD	NOTES
	FROM	TO					
FLANGES (NOTE-206, 207, 208)							
WELDNECK	2	8	RTJ	API 10000 PSI, TYPE 6BX WITH INTREGRAL TRANSITION PIECE TO MATCH THE OD AND BORE OF PIPE, PSL 3	API 6A	ASTM 564 UNS N06625, TEMPERATURE CLASS -KX, SOUR SERVICE	2,173, 177
BLIND	2	8	RTJ	API 10000, TYPE 6BX, PSL 3	API 6A	ASTM 564 UNS N06625, TEMPERATURE CLASS -KX, SOUR SERVICE	2,171
ORIFICE	2	8	RTJ	API 10000, TYPE 6BX, PSL 3	B16.36	ASTM 564 UNS N06625, TEMPERATURE CLASS -KX, SOUR SERVICE	2,54
LINE BLINDS							
LINE BLIND	2	8	RTJ	API 10000 PSI, TYPE 6BX, PSL3, SPADE & SPACER	API 6A	ASTM B443 UNS N06625, SOUR SERVICE, SOUR SERVICE	3,177
GASKETS							
GASKET	2	8	-	API 10000 PSI, TYPE 6BX	API 6A	UNS N06625 OCTAGONAL RING JOINT GASKET, SOUR SERVICE	177
BOLTS							
STUD BOLT & NUTS	2	8	-	STUD BOLT C/W 2 HEAVY HEX. NUTS	B18.2.1/ B18.2.2	STUD: INCOLOY 925	84,177

PIPING CLASS: HN2S0D-JC

SECTION 5.0 – VALVES

COMPONENT (TYP)	NPS (INCH)		END	DESCRIPTION	DIM/ MFG STD.	MATERIAL STD	NOTES
	FROM	TO					
VALVES (NOTE -81,207,208,209,210)							
CHECK	2	2	RTJ	API 10000 PSL, LIFT TYPE, PSL 3, SOUR SERVICE, CRYOGENIC SERVICE	API 6A	BODY: API 6A CLASS HH 60K (UNS N06625) TRIM: ALLOY 625+HF	23,173, 177
CHECK	3	8	RTJ	API 10000 PSI, SWING CHECK, PSL 3, SOUR SERVICE, CRYOGENIC SERVICE	API 6A	BODY: API 6A CLASS HH 60K (UNS N06625) TRIM: ALLOY 625+HF	23,173, 177
BALL	2	8	RTJ	API 10000 PSI, REDUCED BORE, TRUNNION MOUNTED, EXTENDED BONNET, GEAR, PSL 3, SOUR SERVICE, CRYOGENIC SERVICE	API 6A	BODY: API 6A CLASS HH 60K (UNS N06625) TRIM: ALLOY 625 SEAT: PEEK	16,23,49, 58,173, 177
BALL	2	8	RTJ	API 10000 PSI, REDUCED BORE, TRUNNION MOUNTED, GEAR, PSL 3, SOUR SERVICE, CRYOGENIC SERVICE	API 6A	BODY: API 6A CLASS HH 60K (UNS N06625) TRIM: ALLOY 625 SEAT: PEEK	16,23,50, 51,58, 173,177
BALL	2	8	RTJ	API 10000 PSI, FULL BORE, TRUNNION MOUNTED, EXTENDED BONNET, GEAR, PSL 3, SOUR SERVICE, CRYOGENIC SERVICE	API 6A	BODY: API 6A CLASS HH 60K (UNS N06625) TRIM: ALLOY 625 SEAT: PEEK	16,23,49, 58,71, 173, 177
BALL	2	8	RTJ	API 10000 PSI, FULL BORE, TRUNNION MOUNTED, GEAR, PSL 3, SOUR SERVICE, CRYOGENIC SERVICE	API 6A	BODY: API 6A CLASS HH 60K (UNS N06625) TRIM: ALLOY 625 SEAT: PEEK	16,23,49, 50,58,71, 173, 177
GLOBE	2	6	RTJ	API 10000 PSI, SWIVEL PLUG DISC, OS&Y, EXTENDED BOLTED BONNET, GEAR, PSL 3, SOUR SERVICE, CRYOGENIC SERVICE	API 6A	BODY: API 6A CLASS HH 60K (UNS N06625) TRIM: ALLOY 625+HF	16,23,49, 51,173, 177
GLOBE	2	6	RTJ	API 10000 PSI, SWIVEL PLUG DISC, OS&Y, BOLTED BONNET, GEAR, PSL 3, SOUR SERVICE, CRYOGENIC SERVICE	API 6A	BODY: API 6A CLASS HH 60K (UNS N06625) TRIM: ALLOY 625+HF	16,23,49, 50,173, 177

PIPING CLASS: HN2S0D-JC

COMPONENT (TYP)	NPS (INCH)		END	DESCRIPTION	DIM/ MFG STD.	MATERIAL STD	NOTES
	FROM	TO					
VALVES CONT,D (NOTE -81,207,208,209,210)							
IDBB VALVE (FLG X FLG)	2	2	RTJ	API 10000 PSI, BALL TYPE BLOCK AND ½" NEEDLE TYPE BLEED VALVE, SPLIT BODY, EXTENDED BONNET, TRUNNION MOUNTED, GEAR OPERATED, PSL 3, SOUR SERVICE MIN.14MM BORE	API 6A + MANF STD	BODY: API 6A CLASS HH 60K (UNS N06225) TRIM: ALLOY 625 BALL SEAT: PEEK BLEED VALVE: BODY: API 6A CLASS HH 60K (UNS N06625) TRIM: ALLOY 625+HF	16,23,49, 90,173, 177
IDBB VALVE (FLG X FLG)	2	2	RTJ	API 10000 PSI, BALL TYPE BLOCK AND ½" NEEDLE TYPE BLEED VALVE, SPLIT BODY, TRUNNION MOUNTED, GEAR OPERATED, PSL 3, SOUR SERVICE MIN.14MM BORE	API 6A + MANF STD	BODY: API 6A CLASS HH 60K (UNS N06225) TRIM: ALLOY 625 BALL SEAT: PEEK BLEED VALVE: BODY: API 6A CLASS HH 60K (UNS N06625) TRIM: ALLOY 625+HF	16,23,50, 51,90, 173,177