

**COMPLETE VESSEL TO BE
LIFTED AT TRUNNIONS ONLY!**

DETAIL TAILING LUG
No. ONE REQD. THUS

PLAN VIEW - "A-A"

DETAIL LIFTING LUGS
No. TWO REQD. THUS

FOR TOP VESTIBULE LIFT ONLY!

DETAIL N/PLT. BRACKET

SULPHOS	PROJECT No.
	6348

DETAIL NAME PLATE

△ DETAIL LIFTING TRUNNION
No. TWO REQD. THUS

SECTIONAL VIEW - "B-B"
ANCHOR CHAIRS AND
SUPPORT STRUCTURE LAYOUT

SHELL TO SHELL VERTICAL	SHELL TO SHELL HORIZONTAL	NOZZ. TO SHELL	TYP. FILLET WELD U.O.S.
WPS 235/95 - 146/96	WPS 235/95 - 146/96	WPS 235/95 - 146/96	WPS 146/96
TYP. WELD DETAIL	TYP. WELD DETAIL	TYP. WELD DETAIL	TYP. WELD DETAIL

NOZZLE SCHEDULE									
MARK	QTY.	SIZE/NB	SCH.	NECK THICK.	"A" PROJ'N.	TYPE	RATING	SERVICE	
A	1	2000 O/D	--	10 PLT.	2810	--	--	S03 INLET	c/w SPLICE BAND
B	1	2000 O/D	--	8 PLT.	2810	--	--	S03 OUTLET	c/w SPLICE BAND
C	1	2000 O/D	--	8 PLT.	4700	--	--	S02 INLET	c/w SPLICE BAND
D	1	2000 O/D	--	8 PLT.	4700	--	--	S02 OUTLET	c/w SPLICE BAND
E1	1	100	40	6.02	2810	S.O.R.F.	150#	DRAIN	c/w BLIND FLANGE
E2	1	100	40	6.02	SEE DETAIL	S.O.R.F.	150#	DRAIN	c/w BLIND FLANGE
F1	1	610 I/D	--	8 PLT.	2810	F.F.	SEE DET'L	MANWAY/DAVIT	
F2	1	610 I/D	--	8 PLT.	3375	F.F.	SEE DET'L	MANWAY/DAVIT	
F3	1	610 I/D	--	8 PLT.	3375	F.F.	SEE DET'L	MANWAY/DAVIT	
F4	1	610 I/D	--	8 PLT.	2810	F.F.	SEE DET'L	MANWAY/DAVIT	
G	1	900 O/D	--	10 PLT.	2810	O/D 1100	12 PLT.	BYPASS	PLAIN FLG.
H	1	900 O/D	--	8 PLT.	2810	SEE DET'L	SEE DET'L	BYPASS	c/w SPLICE BAND

THIRD PARTY INSPECT. AUTHORITY :	N/A
DESIGN SPECIFICATION DATA.	

SHELL SIDE				TUBE SIDE	
DESIGN PRESSURE :	(IN/OUT)	31.90 / 30.10	kPa	20.4 / 18.90	kPa
OPERATING PRESSURE :			kPa		kPa
DESIGN TEMPERATURE :	(IN/OUT)	490 / 306	°C	104 / 343	°C
OPERATING TEMPERATURE :			°C		°C
F _{UID} :		0.7% SO ₂ GAS		12% SO ₂ GAS	
CORROSION ALLOWANCE :	(SHELL)	PROCESS SIDE	3 mm	(TUBES) INSIDE & OUTSIDE	0.851 mm
APPROX. MASS (EMPTY)				203,704	KG.

GENERAL NOTES !

4. ALL WELDS TO BE LEFT UNGROUNDED, WITH HIGH SPOTS AND WELD SPATTER REMOVED PRIOR TO CLEANING.
5. ALL HOLES ON FIXED FLANGES TO STRADDLE MATERIAL CENTRE LINE UNLESS I.T.O.
6. FOR DETAILS OF DUCT NOZZLES, MANHOLES & INTERNAL ITEMS AS STATED, SEE DRG. NO. 2853/002 & 2853/003.
7. THE TOP VESTIBULE, DUCT NOZZLES "C" & "D", AND TUBES TO BE SUPPLIED AS LOOSE ITEMS, THE TUBES (3254 OFF) TO BE INSTALLED AND EXPANDED ON SITE.
8. ALL INTERNALS, INCLUDING NOZZLES TO BE COMPLETELY MANUFACTURED, AND SUPPLIED LOOSE.
9. ALL LOOSE ITEMS TO BE ADEQUATELY MARKED FOR EASY IDENTIFICATION, AND SITE ASSEMBLY.
10. WELDING ELECTRODES FOR A516 GR. 70 MATERIAL SHALL BE E20 SERIES (OF SPEC) WELDING ELECTRODES.
11. PAINTING : VESSEL EXTERIOR AND NOZZLE DOZZLES TO BE SHOT BLASTED TO SA 2 1/2 FOLLOWED BY ONE PRIME COAT TO SULPHOS SPEC NO. M0005.
12. CERTIFICATION TO 3.1.9 FOR PRESSURE PARTS AND 2.2 FOR NON PRESSURE PART AND ALL OTHER PARTS.
13. THE HEAT EXCHANGER SHALL BE INSULATED ON ALL SURFACES, INCLUDING THE BOTTOM PLATE AND GRILLAGE.
14. 100% RT ON DISHED HEAD WELD SEAMS ; - 100% UT ON DISHED DISHED HEAD MATERIAL ON 12mm and THICKER PLATE, PRIOR TO FORMING.
15. REFERENCE TECHNICAL SPECIFICATIONS--MEC.
 - 27--000000--M--352 RE. 00 : MATERIAL AND INSTALLATION STANDARD, STEEL PLATING (MEC No. 512-171)
 - 27--000000--M--313 RE. 00 : ALTERNATE LOGIC PENETRANT EVALUATION, (MEC No. 512-174)
 - 27--000000--M--354 RE. 00 : SHOP TESTING AND INSPECTION CRITERIA FOR VESSELS AND TAN (MEC No. 512-188)

 VALMET ENGINEERING (PTY) LTD. 605 Cornick Road, Ntate, 4093 Telephone (031) 4444510 Fax (031) 4444625 P.O. Box 1181 Durban, South Africa	
MAN, NAME & COUNTRY	VALMET ENGINEERING (PTY) LTD. U.S.A.
MAN. SERIAL N°	2653 YEAR OF MAN. 2001
DESIGN CODE/STANDARD	KSMA/CP/78-1
YEAR OF ISSUE	1998 AD 1999
DESIGN TEMP. (N/OUT)	SHLL SIDE 458/296 °C TUBE SIDE 294/243 °C
OPERATING TEMP.	310/267/310 MPa 234/189/30 MPa
DESIGN PRESSURE (N/OUT)	310/267/310 MPa 234/189/30 MPa
MAX. PERMISS. OPER. PRESS.	310/267/310 MPa 234/189/30 MPa
FIELD HEAT TEST PRESS.	N/A MPa N/A MPa
RADIOGRAPHY (HEADS 100%)	SPOT N/A
ULTRASONICS	N/A
CAPACITY	448 48.92 Cub. m
PURCHASER TAG/ITEM N°	350-801-HE
INSPEC. AUTH. & SIGN.	N/A
COLD INTERPASS HEAT EXCHANGER	

3 mm THK. AISI 304L S/ST.
 ▲ NAME PLATE WELDED AT CORNERS
 ONTO N/PLT BRACKET
 -CORNERS RAD 10

34	2	END PLT. # 0550 x 12 PLT.	ASTM-A516 GR. 70	AT LIFT TRUNDRIN
33	2	TRUNDRIN + 400 N.B. SCH. 80 PIPE x 160 LG.	ASTM-A106 GR. B	AT LIFT TRUNDRIN
32	2	DOUBLING PLT. + 0800 x 10 PLT.	ASTM-A516 GR. 70	AT LIFT TRUNDRIN
31	1	LIFTING LUGS + 120 x 160 x 16 PLT.	ASTM-A516 GR. 70	
30	1	DOUBLING PLT. + 150 x 250 x 12 PLT.	ASTM-A516 GR. 70	
29	2	LIFTING LUGS + 108 x 270 x 16 PLT.	ASTM-A516 GR. 70	
28	2	DOUBLING PLT. + 150 x 330 x 12 PLT.	ASTM-A516 GR. 70	
27	3	STIFFENERS + 100 x 90 x 8 PLT.	ASTM-A516 GR. 70	"E2"
26	20	NUTS + M16	ASTM A-194 GR. 7	"E1" - "E2"
25	20	BOLTS + M16 x 90 LG.	ASTM A-193 GR. B7	"E1" - "E2"
24	2	GASKIN + 100 N.B. x 3 THK. TO ASA 150H (F.F.)	GASKIN HTG 5000	"E1" - "E2"
23	2	BLANK FLANGE + 10" N.B. F150#	ASTM-A106	"E1" - "E2"
22	1	FLANGE + 100 N.B. S.D.F.F. 150#	ASTM-A106	"E1" - "E2"
21	2	NOZZ. NECK + 100 N.B. SCH. 40 PIPE x 700 LG.	ASTM-A106 GR. B	"E1" - "E2"
20	1	NUTS + VALVE + VALVE NUT x 3 PLT.	ASTM A240-304 / S/T	
19	1	N/PLT BRACKET + 190 x 190 x 8 PLT.	ASTM-A516 GR. 70	
18	1	N/PLT BRACKET + 130 x 190 x 8 PLT.	ASTM-A516 GR. 70	
17	2	GROUNDING LUGS + 80 x 180 x 12 PLT.	ASTM A240-304 / S/T	
16	1	TOP KNUCKLED PLT. + #65258 x 10 PLT.	ASTM-A516 GR. 70	
15	1	CORNER RING O/D 6368 x I/D 5166 x 12 PLT.	ASTM-A516 GR. 70	
14	1	TRANS. CONE. O/D 6166 x I/D 5065 x 3543 HIGH	ASTM-A516 GR. 70	12 PLT.
13	1	BOTTOM PLT. + #5100 x 12 PLT.	ASTM-A516 GR. 70	
12	32664	TUBES/D/ 50.8 x 3mm W/THK. AV69X 10958 LG.	ASTM A 178 GR. A	WELDED TUBES
11	1	TOP BORE PLT. O/D 5030 x I/D 2800 x 45 THK.	ASTM-A516 GR. 70	SEE DRG 2656/002
10	1	BTM TUB HEAD O/D 2770 x I/D 2770 x 65 THK	ASTM-A516 GR. 70	SEE DRG 2656/002
9	1	BTM HEAD 102 TORISPHERICAL-D/2 2880x12 PLT.	ASTM-A516 GR. 70	
8	1	INNER TOP HEAD 102 TORISPHER-D/2 2840x8 PLT.	ASTM-A516 GR. 70	
7	1	TOP HEAD 102 TORISPHERICAL-D/2 5006x8 PLT.	ASTM-A516 GR. 70	
6	1	TOP SHELL PLT. + 2500 x 15,708 x 8 PLT.	ASTM-A516 GR. 70	
5	1	SHELL PLT. + 1823 x 19,346 x 8 PLT.	ASTM-A516 GR. 70	
4	1	SHELL PLT. + 2500 x 19,346 x 8 PLT.	ASTM-A516 GR. 70	
3	1	SHELL PLT. + 2500 x 19,346 x 8 PLT.	ASTM-A516 GR. 70	
2	1	SHELL PLT. + 2500 x 19,346 x 8 PLT.	ASTM-A516 GR. 70	
1	1	SHELL PLT. + 2488 x 15,808 x 12 PLT.	ASTM-A516 GR. 70	
ITEM No.	NA	ITEM No.	NA	ITEM No.



VALMET ENGINEERING (PTY) LTD.	
P. O. BOX 1081, DURBAN 4000, SOUTH AFRICA	
/10/2000	TITLE: <u>SULPHURIC ACID PLANT</u>
	<u>COLD INTERPASS HEAT EXCHANGER</u>
	<u>GEN. ARRGT & DETAILS</u>
	<u>EQUIP. No. 350-801-HE</u>

CLIENT. SULPHOS		
DRAWN	K.STOCKS	12/10/2000

DESIGN	D.S.	
CHECKED		
APPROVED	E.G.	

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