MATERIALS

	COMPONENTS	MATERIALS SPECIFICATIONS
P	PLATES	
1	SHELLS	SA 240 304L (G5)
2	HEADS	SA 240 304L (G5)
3		
4	NOZZLE FROM PLATE	SA 240 304L
5	REINFORCING PADS	SA 240 304L
6	SUPPORT SADDLES	SA 285 GR C
7	TRANSITION PLATE	SA 240 304L
8		
9	INTERNALS	AISI 304 L
10	INTERNAL SUPPORTS	AISI 304 L
11	PLATF.&LADDERS SUPP.	SA 240 304L + SA 285 C
12		
13		
14		
T	PIPES	
1		
	NOZZLES FROM PIPE	SA 312 TP304L (smls)
	INTERNAL PIPES	SA 312 TP304L (smls)
4		
5		
F	FORGINGS	
1	FL. & BLIND	SA 182 F304L
2		
3		
4		
5	ELBOWS & REDUCERS	–
6		
	BOLTING	
	INT. STUD B. & NUTS	–
2	EXT. STUD B. & NUTS	A 193 B7/A 194 2H
3		
S	SHAPES	
1		
2		
3	INSULATION SUPPORTS	SA 240 304L + SA 285 C
	INTERNAL SHAPES	
	GASKETS	
1	EXT. GASKETS	GFP (GLASS FIBRE FILLED PTFE)
2	INT. GASKETS	–
3		
	NOTES	
	FLANGE FINISHING	6.4÷12.5 MICROMETERS Ra(ISO 468)
	TREATMENTS	
	RADIOGRAPHY	SPOT
	STRESS RELIEVING	NOT REQ'D
	DIMENSIONS	
	PIPES	ASME B36.19M
	FLANGES	ANSI B16.5
	FITTINGS	ANSI B16.9
	THREADS	ASME B1.1 CLASS 2A OR 2B
	GASKETS	API 601

NOZZLES

MARK	N.D. in	FLANGES RATING	TYPE	FAC.	THK. mm	R.PAD D.xTHK. mm	PROJ. FM CL mm	OR. °	ECC. mm	SERVICE	NOTES
N1	1.5"	150	LWN	RF	–	–	1575		–	BUTYL ACETATE MAKE-UP	
N2	3"	150	WN	RF	5.4	190x8	1575		–	LIQUID OUTLET	
N3	1.5"	150	LWN	RF	–	–	1575		–	LIQUID INLET	
N4	6"	150	WN	RF	7.1	270x8	1575		–	VENT	
N5	1"	150	LWN	RF	–	–	SEE DWG		–	UTILITY CONNECTION	
L1A	3"	150	WN	RF	5.4	190x8	1575		–	LEVEL BRIDLE	
L1B	3"	150	WN	RF	5.4	190x8	1575		–	LEVEL BRIDLE	
T1	1.5"	150	LWN	RF	–	–	SEE DWG		–	TEMPERATURE CONNECTION	
M1	24"	150	WN	RF	8.0	930x8	SEE DWG		–	MANWAY	Bl.flange, Davit

GENERAL NOTES

1 The static pressure of the contents shall be added to this pressure.
2 This vessel is subject to steamout at 120°C. and 0.5 bar g. (0.5 F.V.)
3 All dimensions are in mm (unless otherwise specified)
4 The indicated thicknesses are the minimum acceptable after construction.
5 Nozzles projections referred from vessel centerline to flange contact face.
6 Nozzles flange stud bolts holes straddle C.L.
7 ASME "U" stamp is not req.d.
8 Reinforcing plates shall be provided with 1/4 inch NPT diameter tell tale holes, to be filled with grease.
9 All instrument nozzles sizes and location are hold.
10 90–100% butyl acetate, 0÷10% water and acetic acid.

WEIGHTS & LOADING DATA

		ERECT.	TEST	OPERAT.
WEIGHTS	Kgf	6380	57340	49320
EART.VERT.LOADS	N	–		–
SHEAR				
LG.WIND/EARTH.	N	8160 / 9180	1632 / –	8872 / 77806
TV.WIND/EARTH.	N	18152 / 9180	3671 / –	28145 / 86780
MOMENT				
LG.WIND/EARTH.	N.m	12645 / 14380	2550 / –	13971 / 122062
TV.WIND/EARTH.	N.m	28451 / 14380	5711 / –	44053 / 136135

REFERENCE STANDARDS

Q01–E15	VESSEL LIFTING LUGS: TWO PLATE TYPE
Q01–F01	PRESSURE VESSELS: WELDING AND FABRICATION
Q01–F07	PRESSURE VESSELS – FABRICATION
Q01–F13	STEEL SADDLES SUPPORTS FOR HORIZONTAL VESSELS
Q01–F15	VESSELS: NAME PLATE AND STAMPING
Q01–F17	GRAB RUNGS AND STEPS FOR MANWAYS
Q01–F18	VORTEX BREAKER
Q01–F20	DAVIT FOR OUTDOOR MANHOLE COVERS
Q01–F21	VESSELS: PIPE GUIDE
Q01–F22	PRESSURE VESSELS: PIPE SUPPORT
Q01–F23/VEVF 1123	VESSELS: INSULATION AND FIRE PROOFING SUPPORT
Q01–F25	VESSELS: GROUNDING AND LUG DETAILS
Q01–F28	ALLOWABLE FABRICATION TOLERANCES HORIZONTAL AND VERTICAL PRESSURE VESSEL
Q01–F37	AUSTENITIC AND H.A. STEEL PRESS. VESSEL: FABRICATION
Q01–T02	INSPECTION REQUIREMENTS FOR PRESSURE VESSELS
W01–F01	WELDING AND INSPECTION
22854–SP–000–X–002	SHOP AND FIELD PAINTING
SZ5D	RECOMMENDED COATING SYSTEMS FOR EXTERNAL PROTECTION
1000.00.ST.0800.01	NAME PLATE
Q01–E01	PRESSURE VESSELS – GENERAL
Q01–E14	HORIZONTAL VESSEL ON TWO SADDLE: DESIGN
Q01–T01	TESTING AND INSPECTION – PRESSURE VESSELS
Q01–T06	PRESSURE VESSELS MATERIAL CONTROL PROGRAM
Q01–T07	MATERIALS IDENTIFICATION PROGRAM

REVISIONS

REV	DATE	DESCRIPTION	PREP.D	CHKD	APPD.	AUT.D
0	30-09-2002	ISSUED FOR PURCHASE TO M.I.S.	DE LUCA	MERET	IORIO	TILLI
B	04-07-2002	REVISED AS SHOWN–REISSUED FOR INQUIRY	DE LUCA	MERET	IORIO	TILLI
1	25-11-2002	REVISED AS SHOWN	DE LUCA	MERET	IORIO	TILLI

DESIGN DATA

CALCULAT. CODES	ASME VIII DIV.1 LAST EDIT. (NOTE 7)
ALLOW.STRESSES	ASME VIII DIV.1 LAST EDIT.
INSPECTION	SEE MR
SPECIFICATIONS	SEE MR
WIND/EARTHQUAKE	SEE JSD 0400.01 /SEE JSD 0400.01
TYPE OF TEST	HYDRAULIC
POSITION IN TEST	HORIZONTAL
FLUID	(10)
HAZARD CONSIDERATIONS	FLAMMABLE/TOXIC
FLUID DENSITY	815/890 Kg/m3

No.	ELEMENT	PRESSURE Bars g (1) (2) DESIGN 1st	DESIGN 2nd	DESIGN Ext.	TEST	TEMPERATURE °C DESIGN 1st	DESIGN 2nd	DESIGN Ext.	EFF.	CORR. mm
1	HEAD	5.0	–	F.V.	BY MFR	105	–	105	.85	–
2	SHELL	5.0	–	F.V.		105	–	105	.85	–
3	HEAD	5.0	–	F.V.		105	–	105	.85	–
		OPERATION Bars g				OPERATION				
		1.40	–	NORM 47/MAX 85/MIN 9						

MAX OPER. STATIC HEAD	FULL	m
TOTAL VOLUME	48.45	m3
EMPTY WEIGHT	6380	Kgf
REMOV.INTERNAL WEIGHT	–	Kgf
TRAYS WEIGHT	–	Kgf
PACKING WEIGHT	–	Kgf
EXTERNAL SURFACE	82	m2 (SUPPORTS EXCLUDED)

LINING & PAINTING DATA

	TYPE	THK. mm	SURF. m2
INSULATION 1	P.P.	40	83
INSULATION 2	–	–	–
EXT.PAINTING	SEE REFER. STANDARD		–
INT.COATING	–	–	–
FIRE PROOFING	–	–	–
SURF.PREPAR. INT./EXT.	SEE REFER. STANDARD		

TECHNIP-COFLEXIP سابك sabic

SABIC ACETIC ACID PLANT
IBN RUSHD SITE – YANBU – KINGDOM OF SAUDI ARABIA

XXXX Status	ITEM : 100–D252					
– CAD model	SERVICE : ENTRAINER HOLDING DRUM					
/ Scale	2121 Project	05 Unit	DW Type of doc.	0811 – 02 Code & progressive	1 of 2 Sheet	1 Rev.

GENERAL NOTES

1 All dimensions are in mm (unless otherwise specified)
2 Indicated values refer to one apparatus only.
3 The indicated thicknesses are the minimum acceptable after construction.
4 Nozzles projections referred from reactor centerline to flange contact face.
5 Nozzles flange stud bolts holes straddle C.L.
6 Nozzles flange contact faces finishing shall be: 3.2 TO 6.3 micrometers Ra (ISO468)
7 ASME "U" stamp req.d.
tbe side is subject to steamout at 120°C. and 0.5 barg
/hell side to be raised to 120°C. before steamout)
9 Tubes shall be verified at ext. pressure of 67.0 barg at 315°C.
10 Vendor shall verify and modify projections in order to dismount bolts from back side of flanges.
11 Clad plate according to SA 264
12 Pipe fittings shall be the same size and thickness as the attached pipe, elbows and bends shall be lung radius type unless otherwise noted.
13 All stainless steil welds (including heat effect zones) shall be dye penetrant inspected.
14 tube to lower tubesheet joint to be strenght welded to tubesheet and tested in accordance with fig.2a of EEMUA 143 or equivalent.
Tube to upper tubesheet joint to have an equivalent integrity welded joint as the lower but the joint is to form a smooth contour to allow complete drainage of top channel.
Tube to tubesheet joints to be lightly expanded after welding.
15 Tube holes in tubesheets to be TEMA special close fit.
16 A detailed tube-hole layout shall be produced by the equipment supplier, who shall confirm the vessel diameter on the basis of the tube -hole layout.
17 Tubesheet details shown on the attached sheets are typical only, alternative arrangements may be acceptable. The equipment supplier shall carry out a detailed analysis to confirm the integrity of the chosen arrangement.
Design shall consider: A) Design life pressure and temperature cycles agreed between Detailed engineering contractor and Supplier.
B) Pressure drop through the catalyst tubes.
C) the worst combination of pressure/no pressure on either side of tubesheet.
18 Water inlets (A to H) and steam outlets (A to H) are to be equi spaced around the shell circunference.
19 The following data shall be used in the equipment and catalyst support device design :
-Catalyst density : 1460 - 1550 Kg/m3
-catalyst size : 3.175mm x 3.175mm (cylindrical)
-Design pressure drop through catalyst : 8.0 Bar (downwards).
Top of tubes are to be filled with 6mm diamenter inert balls.
Vendor shall include details of proposed catalyst support. Vendor to supply catalyst support plus 5% spare and include any necessary insertion / removal tools.
Vendor shall perform a pullout test on 3 sample catalyst support using a section of production tube prior to manufacture of the remaining catalyst support. test load on spring to be 100 Kg minimum.
20 Tubeside process gas at inlet is as follows (mol%) :
Normal operation- 48.5% C_2H_6 ; 20.3% CH_4 ; 18.3% N_2 ; 5.1% CO_2 ; 5% O_2 ; 1.5% C_2H_4 ; 0.9% H_2O 0.2% C_3H_8 ; 0.2% Ar ; 0.1% impurities.
Start-up/Shutdown- Nitrogen
21 The equipment operating conditions are the following :

-Case 1 SOR	43.2 bara at 255 °C	33.0/28.1 bara at 225/258 °C
-Case 2 EOR	55.1 bara at 270 °C	33.0/27.2 bara at 225/271 °C
-Future case	29 bara at 232 °C	

22 In addition of design conditions specified on design data, the tubes, tubesheets and shell side barrel shall be designed for the following combinations of temperature and pressure.

	SHELL SIDE	TUBE SIDE
-Case 1	43.2 bara at 255 °C	33.0 bara at 259 °C Tube Average Metal Temperature
-Case 2	55.1 bara at 270 °C	33.0 bara at 271 °C Tube Average Metal Temperature
-Case 3	55.1 bara at 270 °C	33.0 bara at 267 °C Tube Average Metal Temperature

Case 3 is emergency shutdown and purge.
23 At shutdown shellside will be cooled at a rate of 15 °C/hour.
The maximum allowable differential metal temperature betwenn tubes and shell is to advised by vendor.
The equipment Supplier is required to confirm that shell bellows will not be required.
Vendor is to ensure all manifolds are subjected to flexibility analysis.
24 Tube support grids shall preferably be of rod or bar type and designed by equipment supplier. Other design may be acceptable and are to be detailed in quotation.
Equipment supplier to advise number of tube support grids required. Tube support must not cause vapour pockets or disturb vapour flow. Equipment supplier to ensure that tube vibration is avoided during all cases listed above.
25 All tube side surfaces in contact with the process gas shall be throughly cleaned and degreased prior to despatch.
26 If solid stainless steel nozzles are used the vendor must ensure that mechanical properties are not impaired by Post Weld Heat Treatment.
27 Details shown for perforated impingement cylinder and flow baffle are typical only.
To be designed impingement cylinder and flow baffle to ensure even distribution of water across tube bundle. Vapour relase holes are to be provided in the flow baffle between tubes
28 Temperature T1 to T4 are accomodate 20 tubeside thermocouples (18 "in tube" and 2 reactor head thermocouples). The two reactor head thermocouples shall be secured to the inside of the top dished head (see detail on follow sheets).

NOZZLES

MARK	N.D. in	FLANGES RATING	TYPE	FAC.	THK. mm	R.PAD D.xTHK. mm	PROJ. FM CL (4) mm	OR. °	ECC. mm	SERVICE	NOTES
N1	16	600	WN	RF	12.7+3	SELF REINF	SEE DWG		–	GAS INLET	
N2	16	600	WN	RF	12.7+3	SELF REINF	SEE DWG		–	GAS OUTLET	
N3A	12	BUTT WELD			12.7	SELF REINF	SEE DWG		–	STEAM OUTLET FROM MANIFOLD	
N3B	12	BUTT WELD			12.7	SELF REINF	SEE DWG		–	STEAM OUTLET FROM MANIFOLD	
N4A	6	BUTT WELD			11	SELF REINF	2050		–	PUMP DISCHARGE	
N4B	6	BUTT WELD			11	SELF REINF	2050		–	PUMP DISCHARGE	
N5	1.5	600	LWN	RF	–	–	2040		–	STEAM VENT	
N6	2	BUTT WELD			8.7	SELF REINF	2000		–	INTERMITTENT BLOWDOWN	
N7	1.5	600	LWN	RF	–	–	2000		–	UTILITY CONNECTION	
N8	2"	600	LWN	RF	–	–	SEE DWG		–	GAS VENT	
N9A	10"	BUTT WELD			12.7	SELF REINF	SEE DWG		–	DOWNCOMER CONNECTION TO MANIFOLD	
N9B	10"	BUTT WELD			12.7	SELF REINF	SEE DWG		–	DOWNCOMER CONNECTION TO MANIFOLD	
N10	1"	600	LWN	RF	–	–	2020		–	DRAIN	(BL. FLG.)
P1	1.5	600	LWN	RF	–	–	2000		–	PRESSURE TAPPING	
P2	1.5	600	LWN	RF	–	–	2000		–	PRESSURE TAPPING	
P3	1.5	600	LWN	RF	–	–	SEE DWG		–	PRESSURE TAPPING	
P4	1.5	600	LWN	RF	–	–	SEE DWG		–	PRESSURE TAPPING	
T1	4	600	WN	RF	11.1+3	SELF REINF	SEE DWG		–	TEMPERATURE TAPPING	
T2	4	600	WN	RF	11.1+3	SELF REINF	SEE DWG		–	TEMPERATURE TAPPING	
T3	4	600	WN	RF	11.1+3	SELF REINF	SEE DWG		–	TEMPERATURE TAPPING	
T4	4	600	WN	RF	11.1+3	SELF REINF	SEE DWG		–	TEMPERATURE TAPPING	
T5	1.5	900	LWN	RF	–	–	SEE DWG		–	TEMPERATURE TAPPING	
T6	1.5	900	LWN	RF	–	–	SEE DWG		–	TEMPERATURE TAPPING	
T7	1.5	900	LWN	RF	–	–	SEE DWG		–	TEMPERATURE TAPPING	
T8	1.5	900	LWN	RF	–	–	SEE DWG		–	TEMPERATURE TAPPING	
M1	24	600	WN	RF	10+3	SELF REINF	SEE DWG		–	MANWAY	(37)
M2	24	600	WN	RF	10+3	SELF REINF	SEE DWG		–	MANWAY	(37)
M3	24	600	WN	RF	10+3	SELF REINF	SEE DWG		–	MANWAY	(37)

29 Temperature tapping T5 to T8 accomodate 4 shellside thermocouples. Typical thermocouple entry details are shown in detail on sheet 6. The machined coupling shall be welded to the perforated tube prior to insertion of the tube into the tubesheet. The upper portion of the coupling shall be left blind until after shellside hydrotest. After shell side hydrotest the upper portion of the coupling shall be drilled out and the assebly completed.
It is iperative that the nozzles T5 to T8 are accurately aligned with the respective perforated tube.
30 DELETE
31 Vendor shall undertake the flexibility analysis of the riser and downcomers piping system.
All risers and downcomer support and guides shall be provided. Horizontal legs shall be avoided in the riser pipe.
32 Upset conditions : Equipment supplier to take in to consideration that an upset condition exisits whereby the generation in the reactor process side is 128% of Design Rate. Equipment supplier to ensure that the thermal and mechanical integry of the reactor can be maintained at this up set condition.
33 Reactor designer shall ensure that the vessel is designed for a site hydrotest and that the requirements of the design code are met.
34 Holes in coolant thermocouple tubes shall be smooth (de-burred) to allow insertion of thermocouples.
35 DELETE
36 Tubesheets shall be designed acc. to ASME VIII Div.1 + Finite Elements Analysis
37 With blind flange and davit.
38 Minimum design temperature at pressure:
Shell side: 9°C at 67.0 barg F.V.
Tube side: 9°C at 42.0 barg
39 All carbon steel material shall be supplied as normalized condition.

DESIGN DATA

CALCULAT. CODES	ASME VIII DIV.1 - LAST EDIT. (36)	
ALLOW.STRESSES	ASME VIII DIV.1 - LAST EDIT.	
INSPECTION	SEE MR	
SPECIFICATIONS	SEE MR	
WIND/EARTHQUAKE	SEE MR / SEE MR	
	SHELL SIDE	TUBE SIDE
FLUID	BOILER FEED WATER/STEAM(COOLANT)	PROCESS GAS (20)
DESIGN PRESSURE	67.0 Bars g	42.0 Bars g
DESIGN TEMPERAT.	295 °C	315 °C
TEST PRESSURE	BY MFR Bars g	BY MFR Bars g
EXTERNAL PRESS.	F. V. AT 295°C	(9) Bars g
TUBESHEET PRESS.	– Bars g	
TUBESHEET TEMPER.	315 °C	
TUBESHEET TOT.CORR.	3 + CLAD mm	
FLOAT.HEAD TOT.CORR.	– mm	
WORK. TEMP. (IN)	NOTE 21	NOTE 21
WORK. TEMP. (OUT)	NOTE 21	NOTE 21
FLUID DENSITY	950 Kg/m3	22.63 (SOR) Kg/m3
CORROSION	3 mm	3 CLAD mm
JOINT EFFICIENCY	1.0	1.0
NO. OF PASSES	1	1
RADIOGRAPHY	FULL	FULL
STRESS RELIEVING	YES	YES
FLOAT.HEAD STRESS RE	–	
TOTAL VOLUME	126.67 m3	
HAZARD CONSIDERATION	–	YES-OXYGEN+H/C
FATIGUE DESIGN REQ.D	–	TUBESHEET-NOTE 17

TUBE BUNDLE DATA

NO.TUBES	3600		O.D.	38.1	mm
THK. (MIN.)	12 BWG	mm	LENGTH	10400	mm
PITCH	48.1	mm	LAYOUT	◇	
SURFACE (net)	BY MFR	m2	JOINT	(SEE NOTE 14)	
SECT.IN PAR.	–		SECT.IN SER.	–	

LINING & PAINTING DATA

	TYPE		THK. mm		SURF. m2	
	S.S.	T.S.	S.S.	T.S.	S.S.	T.S.
INT.COATING	–	–	–	–	–	–
INSULATION	H.C.	H.C.	75	75	–	–
EXT.PAINTING	SEE REFERENCE STANDARD				–	–
SURF.PREPAR. INT./EXT.	SEE REFERENCE STANDARD					

WEIGHTS & LOADING DATA

WEIGHT OF EACH SECTION		TOTAL DRY 255000 Kgf		
		FULL OF WATER 395300 Kgf		
		ERECT.	TEST	OPERAT.
WEIGHTS	Kgf	255000	395300	367700
EXT.VERT.LOADS	N	–		–
SHEAR				
LG.WIND/EARTH.	N	/	/	/
TV.WIND/EARTH.	N	37300 /328800	7700 /	42000 /521400
MOMENT				
LG.WIND/EARTH.	N.m	/	/	/
TV.WIND/EARTH.	N.m	94800 /1575300	19500 /	106900 /2440000

REVISIONS

REV	DATE	DESCRIPTION	PREP.D	CHKD.	APPD.	AUT.D
0	29-07-02	ISSUED FOR PURCHASE TO HITACHI ZOSEN	De Luco	Merel	Iorio	Titli
B	10-06-02	REISSUED FOR INQUIRY	De Luco	Merel	Iorio	Titli
A	19-04-02	ISSUED FOR INQUIRY	De Luco	Merel	Iorio	Titli

TECHNIP-COFLEXIP

سابك sabic

SABIC ACETIC ACID PLANT
IBN RUSHD SITE - YANBU - KINGDOM OF SAUDI ARABIA

XXXX Status	ITEM : 100-R-121					
- CAD model	SERVICE : REACTOR					
/ Scale	2121 Project	02 Unit	DW Type of doc.	0411 - 01 Code & progressive	1 of 6 Sheet	0 Rev.

MATERIALS

SHELL	
TUBE SUPPORT GRIDS	SA 516 Gr 70
TUBE AND CATALYST SUPPORTS	AISI 316L STAINLESS SPRING STEEL
BARREL	SA 516 Gr 70
MANIFOLDS AND PIPING	SA 106 B
NOZZLE FROM PIPE	SA 106 B
NOZZLE FROM PLATE	SA 516 Gr 70
NOZZLES FLANGES	SA 105
PIPE FITTINGS	SA 234 WPB
NOZZLE REINF.PAD	SA 516 Gr 70
REACTOR SUPPORTS (BRACKETS)	SA 516 Gr 70
FORGINGS	SA 266 GR 4
STIFFENING RINGS	–
EXPANSION JOINT	–
MANIFOLD STUBS	SA 105 / SA 106 Gr B
INT. ATTACHMENTS	SA 516 Gr 70
EXT. ATTACHMENTS	SA 516 Gr 70
SHELL COVER	
BARREL	–
COVER	–
FLANGES	–
CHANNEL (11)	
BARREL	SA 516 Gr 70+3mm AISI 316L
ANNULAR FORGING	SA 266 GR 4 + 3mm AISI 316L W.O.(TUBE SIDE)
HEADS	SA 516 Gr 70 + 3mm AISI 316L W.O.
FLAT COVER	–
NOZZLES FLANGES	SA 105 + AISI 316L W.O. (26)
NOZZLE FROM PLATE	SA 516 Gr 70 + 3mm AISI 316L
MANIFOLDS AND PIPING	SA 312 TP 316L
COUPLINGS & PLUGS	SA 403 WP 316L
REINFORCING	SA 266 GR 4 + 3mm AISI 316L W.O.
PARTITION PLATES	–
INT. ATTACHMENTS	SA 240 316L
EXT. ATTACHMENTS	SA 516 Gr 70
FLOATING HEAD	
COVER	–
FLANGES	–
SPLIT RING	–
TUBE BUNDLE	
TUBES	SA 789 UNS S31803 (SMLS) (SAF 2205)
TUBESHEETS	SA 516 Gr 70 + AISI 316L W.O. (TUBE SIDE)
BAFFLES/SUPPORTS/IMP.PLATE	SA 516 Gr 70
TIE RODS & SPACERS	C.S.
BOLTS & NUTS	
EXT. BOLTS	SA 193 B7 / SA 194 2H
INT. BOLTING	AISI 316L
GASKETS	
BLIND COVER MANHOLE	AISI 316L SP. WOUND FIBRE FILLED+AISI 316 INNER RING AND C.S. CENTERING RING
NOTES	
FLANGE FINISHING	SEE NOTE 6
TREATMENTS	
RADIOGRAPHY	FULL
STRESS RELIEVING	YES
DIMENSIONS	
PIPES	ASME B36.10M/B36.19M
FLANGES	ANSI B16.5
FITTINGS	ANSI B16.9
THREADS	ANSI B1.1 CLASS 2A OR 2B
GASKETS	API 601

REFERENCE STANDARDS

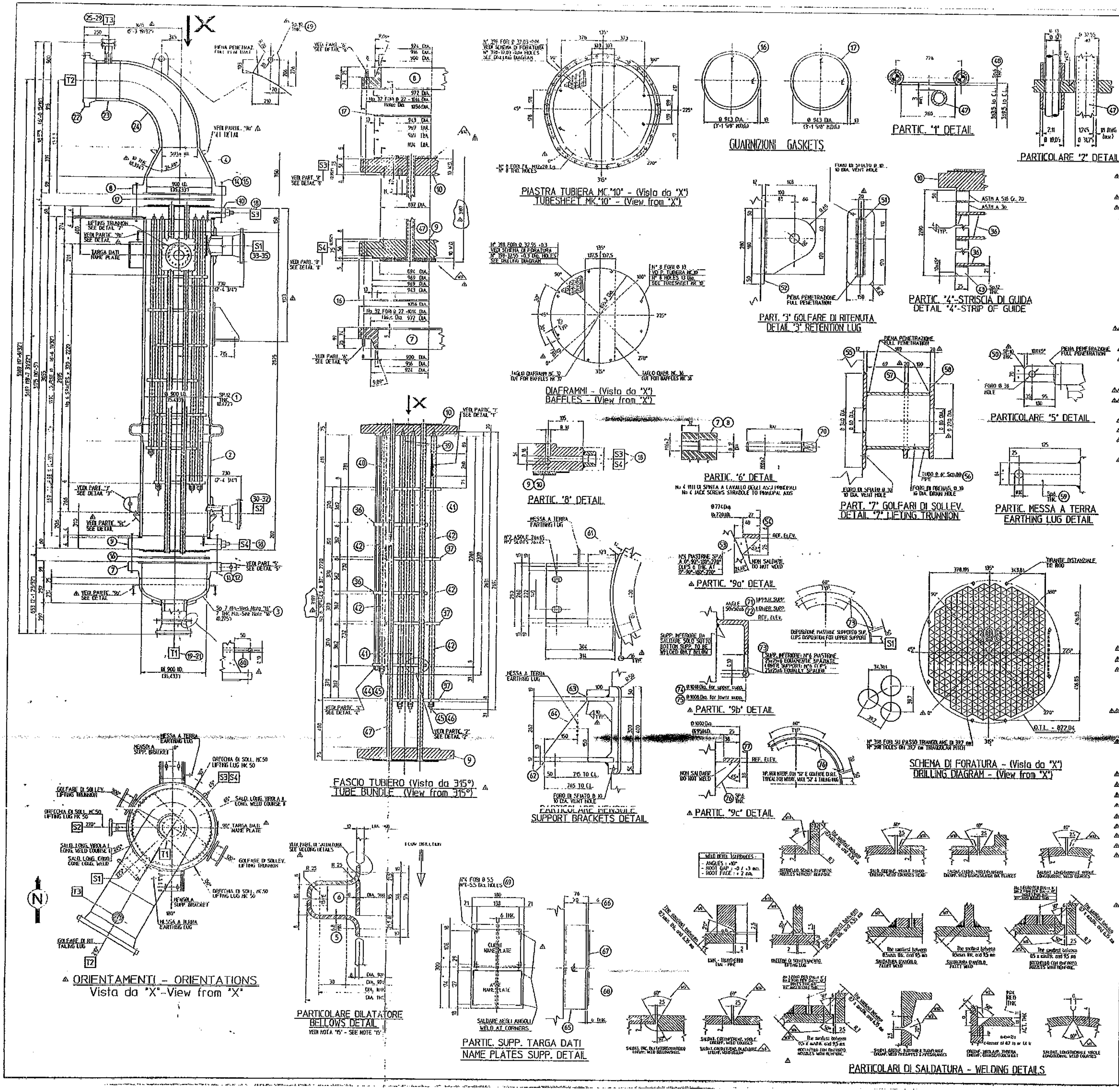
Q01-E10	THICK WALLED VESSELS AND HEAT EXCHANGERS – DESIGN CRITERIA
Q01-E13	VESSEL LIFTING LUGS: TRUNNION AND DOUBLE RING TYPE
Q01-E24	PRESSURE VESSELS: ALLOY CLAD CARBON STEEL – DESIGN CRITERIA
Q01-F01	PRESSURE VESSELS: WELDING AND FABRICATION
Q01-F05	VESSELS – SUPPORT LUG FABRICATION
Q01-F07	PRESSURE VESSELS – FABRICATION
Q01-F08	WELDING OVERLAY AND WELDING OF CLAD MATERIAL
Q01-F10	FABRICATION (ALLOY CLAD CARBON STEEL)
Q01-F15	VESSELS: NAME PLATE AND STAMPING
Q01-F20	DAVIT FOR OUTDOOR MANHOLE COVERS
Q01-F21	VESSELS: PIPE GUIDE
Q01-F22	PRESSURE VESSELS: PIPE SUPPORT
Q01-F23/VEVF 1123	VESSELS: INSULATION AND FIRE PROOFING SUPPORT
Q01-F25	VESSELS: GROUNDING AND LUG DETAILS
Q01-F28	ALLOWABLE FABRICATION TOLERANCES HORIZONTAL AND VERTICAL PRESSURE VESSEL
Q01-F34	CARBON AND LOW ALLOY STEELS FABRICATION – PRESSURE VESSELS
Q01-F35	THICK WALLED – FABRICATION
Q01-F37	AUSTENITIC AND HIGH ALLOY STEEL PRESSURE VESSEL : FABRICATION
Q01-T02	INSPECTION REQUIREMENTS FOR PRESSURE VESSELS
Q01-T07	MATERIALS IDENTIFICATION PROGRAM
22854-SP-000-X-002	SHOP AND FIELD PAINTING
SZ5D	RECOMMENDED COATING SYSTEMS FOR EXTERNAL PROTECTION
1000.00.ST.0800.01	NAME PLATE
Q01-T02	INSPECTION REQUIREMENTS FOR PRESSURE VESSELS
Q01-T02	INSPECTION REQUIREMENTS FOR PRESSURE VESSELS
Q01-T02	INSPECTION REQUIREMENTS FOR PRESSURE VESSELS
Q01-T02	INSPECTION REQUIREMENTS FOR PRESSURE VESSELS
SG1-12S	DELETED

TECHNIP-COFLEXIP

سابك sabic

SABIC ACETIC ACID PLANT
IBN RUSHD SITE – YANBU – KINGDOM OF SAUDI ARABIA

XXXX Status	ITEM : 100-R121					
– CAD model	SERVICE : REACTOR					
/ Scale	2121 Project	02 Unit	DW Type of doc.	0411 – 01 Code & progressive	2 of 6 Sheet	0 Rev.



5	1	DILATATORE / BELLOWS	SEE DETAIL & NOTE "15"	SB 168 UNS N06600
4	1	FONDO PIANO PEZZO CONF. / FLAT CONE PIECE	900/516 I.D.-10 THK-339 Lg.	SB 424 UNS N08825
3	1	FONDO (Vedi Nota "15") / HEAD (See Note "15")	900 I.D.-7 THK Nom.	SB 424 UNS N08825
2	1	VIROLA MANTELLO / SHELL ELEMENT	900 I.D.-17 THK-689 Lg.	SA 516 Gr. 70
1	1	VIROLA MANTELLO / SHELL ELEMENT	900 I.D.-17 THK-1590 Lg.	SA 516 Gr. 70
MC. / MK.	No PEZZI / No PIECES	DESCRIZIONE / DESCRIPTION	MISURE / SIZE	MATERIALE / MATERIALS

DESCRIZIONE / DESCRIPTION		LATO MANTELLO / SHELL SIDE	LATO TUBI / TUBE SIDE
CONDIZIONE DI STEAM-OUT / STEAM-OUT CONDITION	Bar g	----	0.5 AT 120 °C (7.25 PSIG at 248 °F)
TEMPERATURA DI P. IDRAULICA / HYDRAULIC TEST TEMPERATURE	°C	7 (45 °F)	
PRESSIONE DI P. IDRAULICA / HYDRAULIC TEST PRESSURE	Bar g	22.1 (321 PSIG)	17.4 (253 PSIG)
M.A.W.P. (A CALDO IN CONDIZIONE CORROSA) / M.A.W.P. (HOT & CORRODED CONDITION)	Bar g	17.03 AT 295 °C (247 PSIG AT 563 °F)	13.4 AT 200 °C (195 PSIG AT 392 °F)
TEMPERATURA MINIMA DI PROGETTO / MINIMUM DESIGN METAL TEMPERATURE		-10°C AT 16 Bar G (14 °F AT 232 PSIG)	-10°C AT 12.4 Bar G (14 °F AT 180 PSIG)
TEMPERATURA DI ESERCIZIO / OPERATING TEMPERATURE IN/OUT	°C	192/194 (378/381 °F)	141/141 (286/286 °F)
TEMPERATURA DI PROGETTO / DESIGN TEMPERATURE	°C	295 (563 °F)	200 (392 °F)
PRESSIONE DI ESERCIZIO / OPERATING PRESSURE	Bar g	----	----
PRESSIONE DI PROGETTO / DESIGN PRESSURE	Bar g	16 (232 PSIG)/F.V.	12.4 (180 PSIG)/F.V.

DATI DI PROGETTO - DESIGN DATA

SECTION 3

TECHNIP-COFLEXIP — sabic

MATERIAL REQUISITION No. 2121 MR 10/6/1/0/0/1
ITEM 100-E132
SR Doc. CODE: A1113

REV. / REV.	DATA / DATE	REVISIONI / REVISIONS	MADE / DRFH.	CHECK. / CHC.	APPR. / E.H.	REVIEW / CCK
4	26-05 2003	UPDATED FINAL- [illegible]				
3	07-05 2003	FINAL ISSUE- [illegible]	T.C.	A.B.	D.P.	N.T.
2	22-03 2003	[illegible] BRACKETS ELEVATION [illegible]	GDF	A.B.	D.P.	N.T.
1	31-01 2003	[illegible]		A.B.	D.P.	N.T.
0	08-11 2002	ISSUED FOR APPROVAL	GDF	A.B.	D.P.	N.T.

REVISIONI - REVISIONS

DESTINATION : YANBU - SAUDI ARABIA
CUSTOMER : TECHNIP ITALY - ROMA
ORDER No : 2121A0011
PROJECT : ACETIC ACID PLANT - SABIC

BREMBANA COSTRUZIONI INDUSTRIALI
Valbrembo - Bergamo - Italy

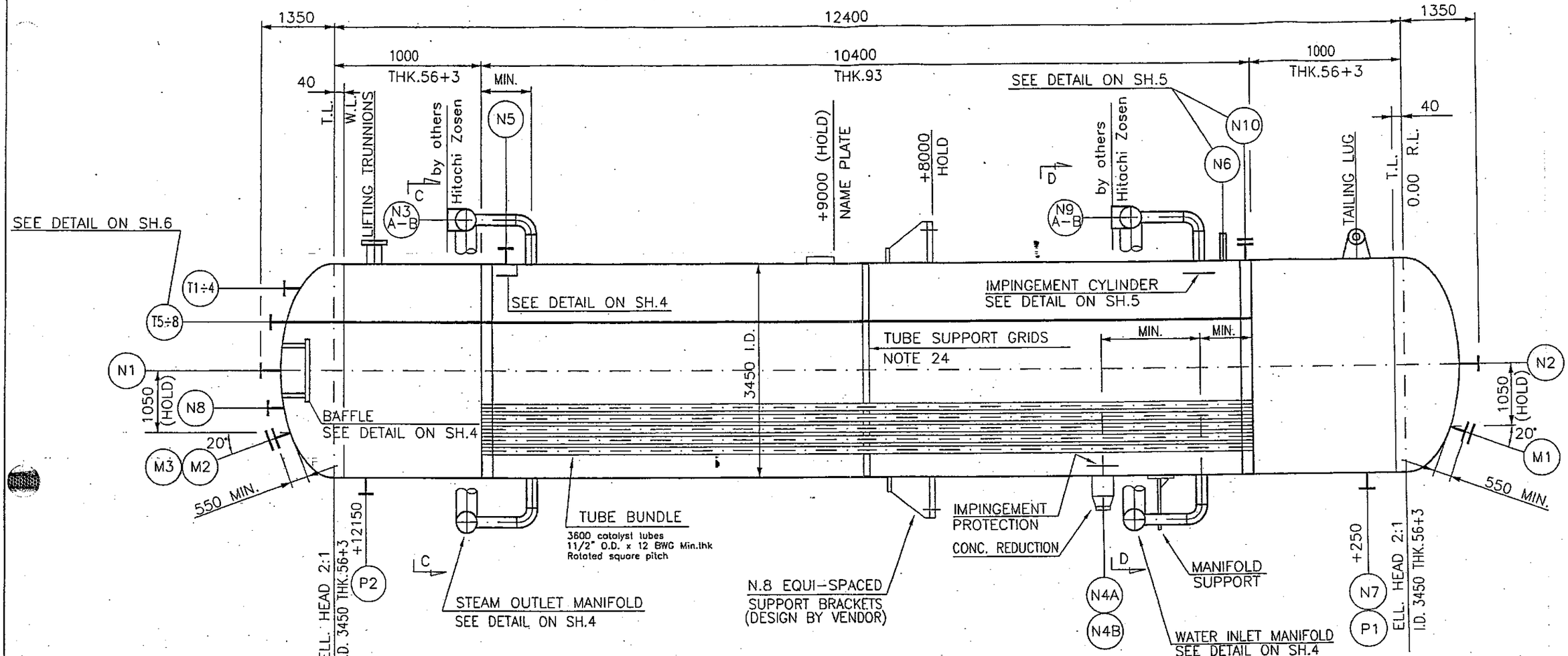
DEHYDRATION COLUMN
REBOILER
ITEM: 100-E132

LIST OF DRAWINGS	
CALCOLI MECCANICI / MECHANICAL CALC.	2135-6860/MC
NITROGEN PROTECT.	2135/N
GUARNIZIONI / GASKETS	2135-6860/G
SCHEMA DI MONTAGGIO / SETTING PLAN	2135-6860/S
SCHEMA DI VERNIC. / PAINTING PLAN	2135-6860/V
TARGA DATI / NAME PLATE	2135-6860/A

No DI FABBRICA / MFRS. SERIAL No 4137

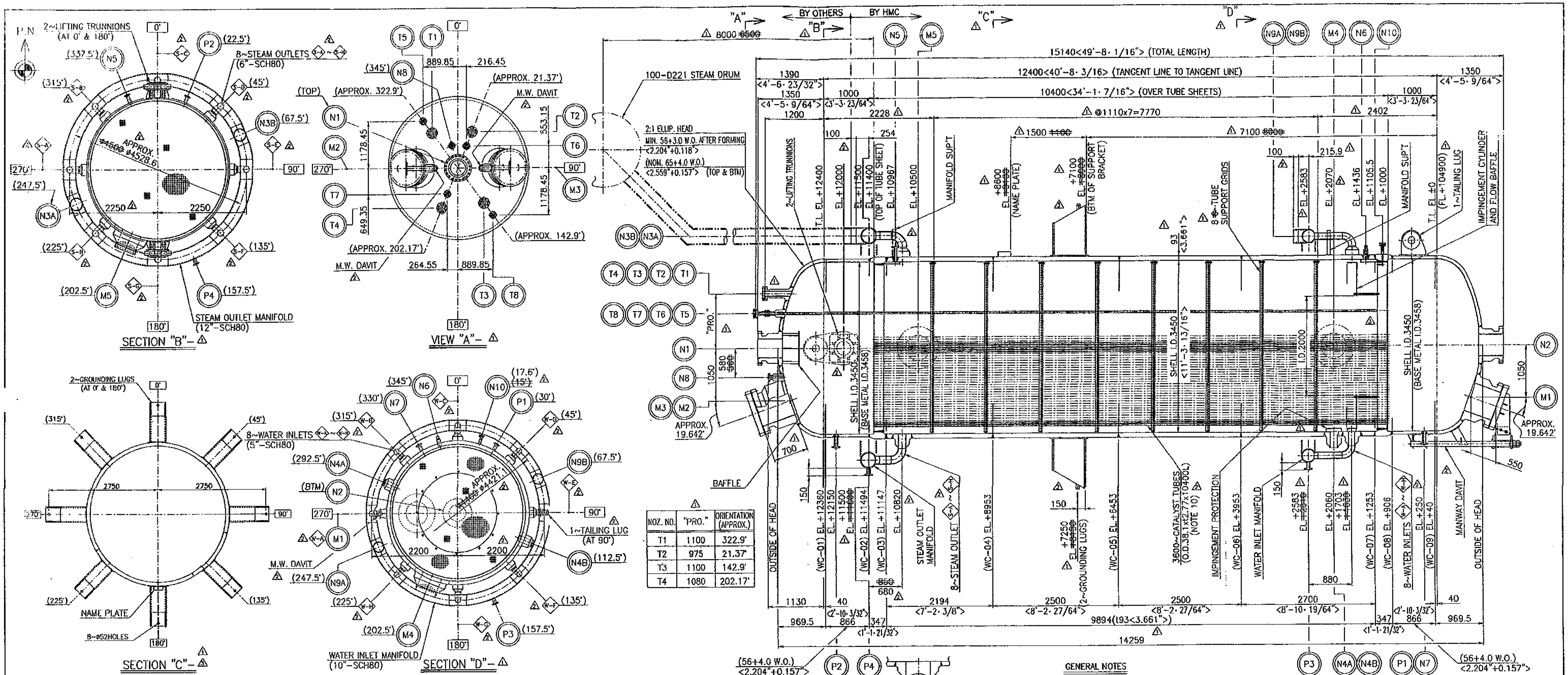
TIPO / TYPE BEM | SIZE 900 x 3200 | SUPERFICIE / SURFACE m2 177 | SCALA / SCALE /

DWG. 2135-6860 REV. 4

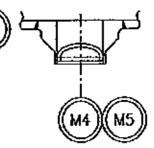


ORIENTATION TO BE DEFINED LATER

TECHNIP-COFLEXIP					سابك sabic	
SABIC ACETIC ACID PLANT IBN RUSHD SITE – YANBU – KINGDOM OF SAUDI ARABIA						
XXXX Status	ITEM : 100–R121 SERVICE : REACTOR					
– CAD model						
/ Scale	2121 Project	02 Unit	DW Type of doc.	0411 – 01 Code & progressive	3 of 6 Sheet	0 Rev.



NOZ. NO.	"PRO."	ORIENTATION (APPROX.)
T1	1100	322.9°
T2	975	21.37°
T3	1100	142.9°
T4	1080	202.17°



MARK	NO. REQ'D	SIZE	SCH (THK)	FLANGE RATING	FLANGE FACING	FLANGE TYPE	SERVICE & DESCRIPTION	PROJECTION
M4,5	2	20"	I.D.508.0	—	—	—	MANWAY	2193
[illegible]	2	24"	I.D.583.6	ASME #600	RF	LWN	MANWAY W/DAVIT	SEE DWG.
[illegible]	1	24"	I.D.583.6	ASME #600	RF	LWN	MANWAY W/DAVIT	SEE DWG.
					△			
T5~8	4	1·1/2"	I.D.38.14	ASME #900	RTJ	LWN	TEMPERATURE TAPPING W/B.F. △	SEE DWG.
T1~4	4	4"	I.D.95.6	ASME #600	RF	LWN	TEMPERATURE TAPPING	SEE DWG.
			△					
P3,4	2	1·1/2"	I.D.38.1	ASME #600	RF	LWN	PRESSURE TAPPING	SEE DWG.
P1,2	2	1·1/2"	I.D.38.1	ASME #600	RF	LWN	PRESSURE TAPPING	2000
			△					
N10	1	1"	I.D.24.3	ASME #600	RF	LWN	DRAIN W/B.F.	2020
N9A,B	2	10"	XS △	—	BUTT WELD		DOWNCOMER CONNECTION TO MANIFOLD	SEE DWG.
N8	1	2"	I.D.50.8	ASME #600	RF	LWN	GAS VENT	SEE DWG.
N7	1	1·1/2"	I.D.38.1	ASME #600	RF	LWN	UTILITY CONNECTION	2000
N6	1	2"	SCH160	—	BUTT WELD		INTERMITTENT BLOWDOWN	2000
N5	1	1·1/2"	I.D.38.1	ASME #600	RF	LWN	STEAM VENT	2040
N4A,B	2	6"	SCH80	—	BUTT WELD		PUMP DISCHARGE	2050
N3A,B	2	12"	XS △	—	BUTT WELD		STEAM OUTLET FROM MANIFOLD	SEE DWG.
N2	1	18" △	I.D.425.8	ASME #600	RF	LWN	GAS OUTLET	SEE DWG.
N1	1	16"	I.D.375.0	ASME #600	RF	LWN	GAS INLET	SEE DWG.

NOZZLE LIST

△ DESIGN DATA (CONTINUED)

	SHELL SIDE	TUBE SIDE
24. FLUID DENSITY	950 kg/m3	22.63 (SOR) kg/m3
NO. OF PASSES	1	1
HAZARD CONSIDERATION	———	YES-OXYGEN+H/C
27. FATIGUE DESIGN REQ'D	———	TUBESHEET

DESIGN DATA

		SHELL SIDE	TUBE SIDE
1. REGULATION		———	
2. DESIGN CODE		ASME SEC. VIII DIV.1 2001 EDITION	
3. DESIGN PRESSURE	(INT.)	67.0 bar G(68.4 kg/cm² G) <971.8 psi G>	42.0 bar G(42.9 kg/cm² G) <609.2 psi G>
	(EXT.)	1.03 bar G : F.V.(1.051 kg/cm² G) <15.0 psi G>	67.0 bar G(68.4 kg/cm² G) <971.8 psi G> ON TUBES
4. DESIGN TEMPERATURE		295.0 °C (563.0 °F)	315.0 °C (599.0 °F)
5. OPERATING PRESSURE		SEE NOTE 9	SEE NOTE 9
6. OPERATING TEMPERATURE		SEE NOTE 9	SEE NOTE 9
7. MAX. ALLOW. WORKING PRESS. △		HOT & CORRODED : 68.2 bar G(69.6 kg/cm² G) <989.1 psi G>	HOT & CORRODED : 42.4 bar G(43.3 kg/cm² G) <614.9 psi G>
△		NEW & COLD : 71.9 bar G(73.4 kg/cm² G) <1042.8 psi G>	NEW & COLD : 43.7 bar G(44.6 kg/cm² G) <633.8 psi G>
8. HYDROSTATIC TEST PRESS.		93.24 bar G(95.08 kg/cm² G) △ <1352.4 psi G>	56.52 bar G(57.64 kg/cm² G) △ <819.8 psi G>
9. PNEUMATIC TEST PRESS.		———	———
10. POSTWELD HEAT TREATMENT		YES	YES
11. RADIOGRAPHED		FULL	FULL
12. JOINT EFFICIENCY		1.0	1.0
13. CORROSION ALLOWANCE		3.0 mm	NIL △ (SHELL & HEAD : NOM. 4.0(MIN.3.0) W.O. OVER 6" SIZE NOZZLES : NOM. 6.0(MIN. 3.0) W.O. 6" & UNDER SIZE NOZZLES : NOM. 4.0(MIN. 3.0) W.O.)
14. INSULATION(HOT/~~COLD~~)		TYPE : HEAT CONSERVATION 75 mm<TOP HEAD : 50 mm> (MIN.128 kg/m³) (BY OTHERS)	
15. FIREPROOFING		△ NONE	
16. WIND DESIGN CODE		ASCE 7-1995 EDITION (EXPOSURE CATEGORY C)	
17. WIND DESIGN VELOCITY/FACTOR I		38.9 m/s AT 10m ABOVE GROUND	1
18. EARTHQUAKE CODE		UNINFORM BUILDING CODE-1994 EDITION	
19. EARTHQUAKE ZONE/FACTOR I		2A	1.25
20. MIN. DESIGN METAL TEMP. △		9.0 °C(48.2 °F) AT DESIGN PRESS.	9.0 °C(48.2 °F) AT DESIGN PRESS.
21. CAPACITY		28.1 m³	88.4 m³
22. CODE STAMP		YES	
23. OPERATION FLUID		BOILER FEED WATER/STEAM(COOLANT)	PROCESS GAS

MATERIAL SPECIFICATION

	SHELL SIDE	TUBE SIDE
1. SHELL	SA516Gr.70	SA516Gr.70 + TYPE316L W.O.
2. HEAD	———	SA516Gr.70 + TYPE316L W.O.
3. ANNULAR FORGING	SA266Gr.4 + TYPE316L W.O.	
4. SUPPORT BRACKET	SA516Gr.70	———
5. BASE PLATE	SA516Gr.70	———
6. STIFFENING RING	———	———
7. NOZZLE NECKS (FORGING)	SA105	SA105 + TYPE316L W.O.
8. NOZZLE NECKS (PIPE)	SA106Gr.B	SA312TP316L △
9. NOZZLE NECKS (PLATE)	———	———
10. FLANGES	SA105	SA105 + TYPE316L W.O.
11. T5~T8 STUB & NOZZLE	———	SA182Gr.F316L
12. N7,P1,P2 FORGED NOZZLE	———	SA182Gr.F316L
13. LINING	———	———
14. EXTERNAL BOLTINGS	B : SA193Gr.B7 / N : SA194Gr.2H	
15. EXTERNAL GASKETS	ST. STEEL AISI 316L SPIRAL WOUND, FIBRE FILLED + AISI 316 INNER RING AND C.S. CENTERING RING	
16. INTERNAL BOLTINGS	TYPE316L S.S.	
17. INTERNAL GASKETS	———	
18. INTERNALS (WELDED)	SA516Gr.70	SA240TYPE316L
19. EXTERNAL CLIPS	SA516Gr.70	SA516Gr.70
20. TUBE SUPPORT GRID	JIS SS400	———
21. TUBE SHEET	SA516Gr.70 + TYPE316L W.O.	
22. TUBE	SA789 UNS S31803(SEAMLESS)	
23. TUBE END CATALYST SUPPORT	△ TYPE304 STAINLESS STEEL SPRING	
24. STEAM OUTLET MANIFOLD △	SA106Gr.B / SA234Gr.WPB	
25. WATER INLET MANIFOLD △	SA106Gr.B / SA234Gr.WPB	

LOADING DATA △

1. ERECTION W'T	2,380,000 N	
2. OPERATING W'T	3,040,000 N	
3. OVERTURN'G MOMENT	212,000 N-m	
4. HORIZ'L FORCE	392,000 N	

REFERENCE DRAWINGS

5550-22-51-2	SHIPPING SKID △
-51-1	SHIPPING STYLE
~~-41~~	~~TEMPLATE~~
-31 △	NAME PLATE
-21-3,~~4~~	EXTERNAL ATTACHMENT ~~(1/2),(2/2)~~ △
-21-2	STEAM OUTLET AND WATER INLET PIPE
-21-1	LIFTING TRUNNION & TAILING LUG
-11-7	CATALYST SUPPORT SPRING △
-11-6	INTERNAL ATTACHMENT
-11-5	IMPINGEMENT CYLINDER & FLOW BAFFLE
-11-4	TUBE SUPPORT GRID
-11-3	LOWER TUBE SHEET
-11-2	UPPER TUBE SHEET
-11-1	TUBE BUNDLE ASSEMBLY
-03-6	NOZZLE (4/4) △
-03-5	"M2,N3" MANWAY DAVIT
-03-4	"M1" MANWAY DAVIT
-03-1~3	NOZZLE (1/4)~(3/4) △
5550-22-02	SHELL AND HEAD

GENERAL NOTES

1. VERTICAL MAIN ELEVATION IS DIAGRAMMATIC ONLY. FOR ORIENTATION OF NOZZLE AND/OR DECKS, SEE PLAN.
2. ALL VESSEL SEAMS SHALL BE LOCATED TO CLEAR OPENINGS AND IMPORTANT INTERNALS.
3. ALL LONGITUDINAL AND CIRCUMFERENTIAL SEAMS AND SIMILAR JOINTS SHALL BE FULL PENETRATION DOUBLE BUTT JOINTS EXCEPT AS SPECIFIED IN DWG.
4. NOZZLE POSITIONS ARE FROM REFERENCE LINES EXCEPT AS SPECIFIED IN DWG.
5. NOZZLE PROJECTIONS ARE FROM TANGENTIAL LINE OR CENTER LINE OF VESSEL TO FLANGE FACE.
6. ALL BOLT HOLES OF FLANGES SHALL STRADDLE VESSEL CENTER LINES.
7. VESSEL SHALL BE THOROUGHLY CLEANED INSIDE AND OUTSIDE AND FREE FROM WELD SPATTER AND FOREIGN MATTER.
8. SURFACE PREPARATION, PAINTING AND PICKLING.

PARTS	SURFACE PREPARATION	PAINTING
INSIDE AND OUTSIDE OF VESSEL(SHELL SIDE)	PER HMC'S PAINTING PROCEDURE, 5550-34-04	PER HMC'S PAINTING PROCEDURE,5550-34-04
INSIDE AND OUTSIDE OF VESSEL(TUBE SIDE)	PER HMC'S PAINTING PROCEDURE, 5550-34-04	

9. OPERATING PRESSURE & TEMPERATURE

	SHELL SIDE	TUBE SIDE(INLET/OUTLET)
CASE 1 SOR	43.2 bar.a at 255 °C	33.0/28.1 bar.a at 225/258 °C
CASE 2 EOR	55.1 bar.a at 270 °C	33.0/27.2 bar.a at 225/271 °C
FUTURE RUN	29.0 bar.a at 232 °C	33.0/28.0 bar.a at 225/234 °C

△ 10. CATALYST BULK DENSITY : 1500–1600 kg/m³

AS BUILT

U

1~VESSEL REQUIRED

TECHNIP-COFLEXIP سابك sabic

PROJ.: SABIC ACETIC ACID PROJECT
CLIENT: SABIC – YANBU – KINGDOM OF SAUDI ARABIA

MATERIAL REQUISITION No.
2121 MR 0 4 1 1 0 1
ITEM: 100-R-121
SR Doc. CODE: A1103

VENDOR DOCUMENT REVIEW
☐1 REVISE AND RESUBMIT
☐2 TO BE ISSUED AS FINAL PROVIDED COMMENTS ARE INCORPORATED
☒3 NO COMMENT – FINAL ISSUE
☐4 FOR INFORMATION ONLY (INTERNAL USE)
U.O.: TECHNIP ITALY S.p.A.
BY: [signature] DATE: 31/7/03

Rev.	Prepared by	Reviewed by	Approved by	Approved by Q.A.E.	Description
3	K.ESAKI 4/10'03 K.NAGAO 4/11,'03	T.CHIKUSHI 4/11,'03	K.KURATOMI 4/11,'03	R.FUKUDA 4/11,'03	REVISED DIMENSION AND QTY. OF SHELL SUPPORT LUGS, etc.
2	A.TSUCHIYAMA 12/25'02 K.NAGAO 12/25'02	T.CHIKUSHI 12/25'02	K.KURATOMI 12/25'02	R.FUKUDA 12/25'02	REVISED NOZ. ELEVATION & INS. THK. ADDED M.W. DAVIT & NOTE
1	A.TSUCHIYAMA 10/26'02 K.NAGAO 10/26'02	R.NAKASHIMA 10/26'02	R.NAKASHIMA 10/26'02	R.FUKUDA 10/26'02	FIXED ORIENTATION OF NOZ. NOZZLE & LIFTING TRUNNIONS REVISED PROJECTION OF NOZ. ON TOP HEAD & etc.

2163030 — TECHNIP ITALY S.p.A. / SABIC △

P.O. NO. : 2121AD001
PROJECT : 2121-SABIC ACETIC ACID PROJECT
ITEM NO. : 100-R-121 REACTOR

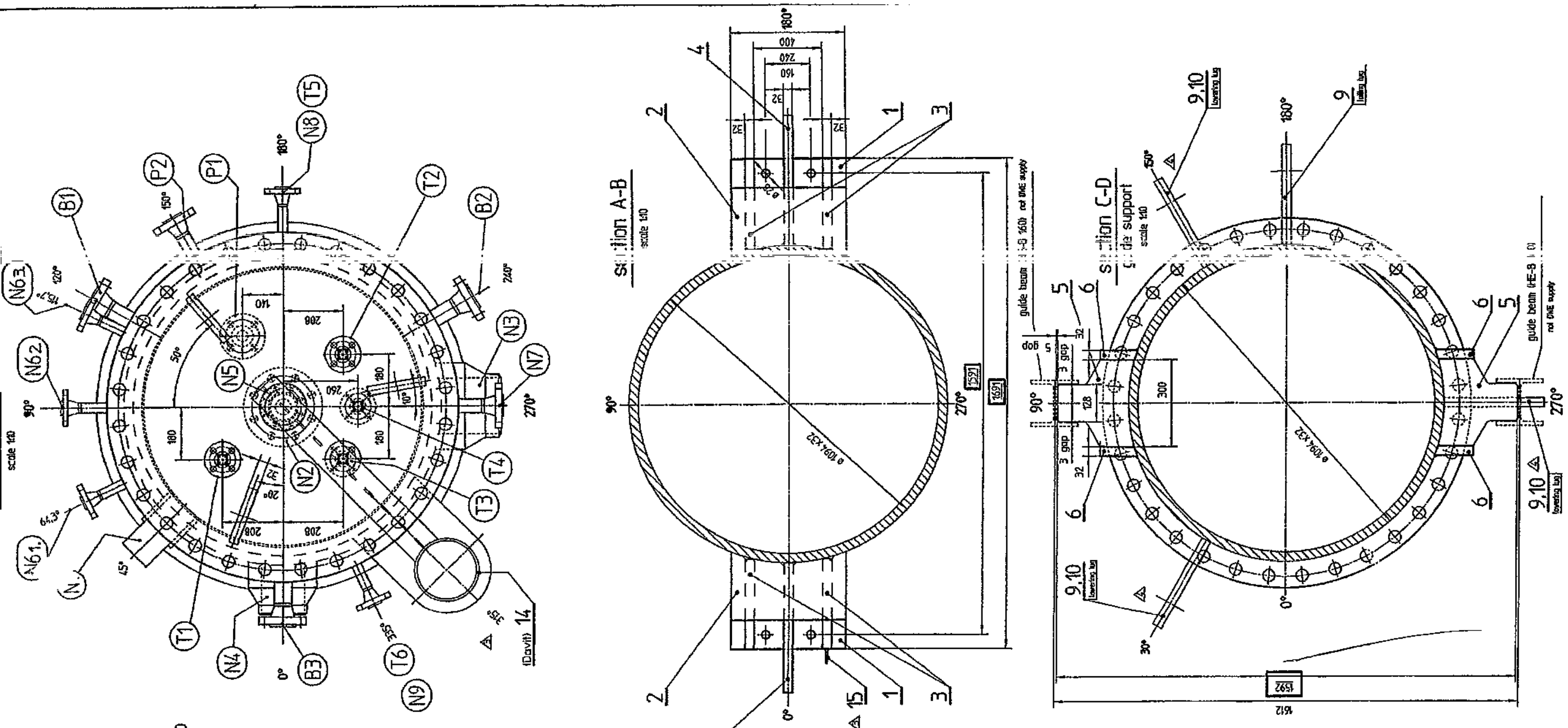
GENERAL ASSEMBLY — SCALE 1/50,1/40

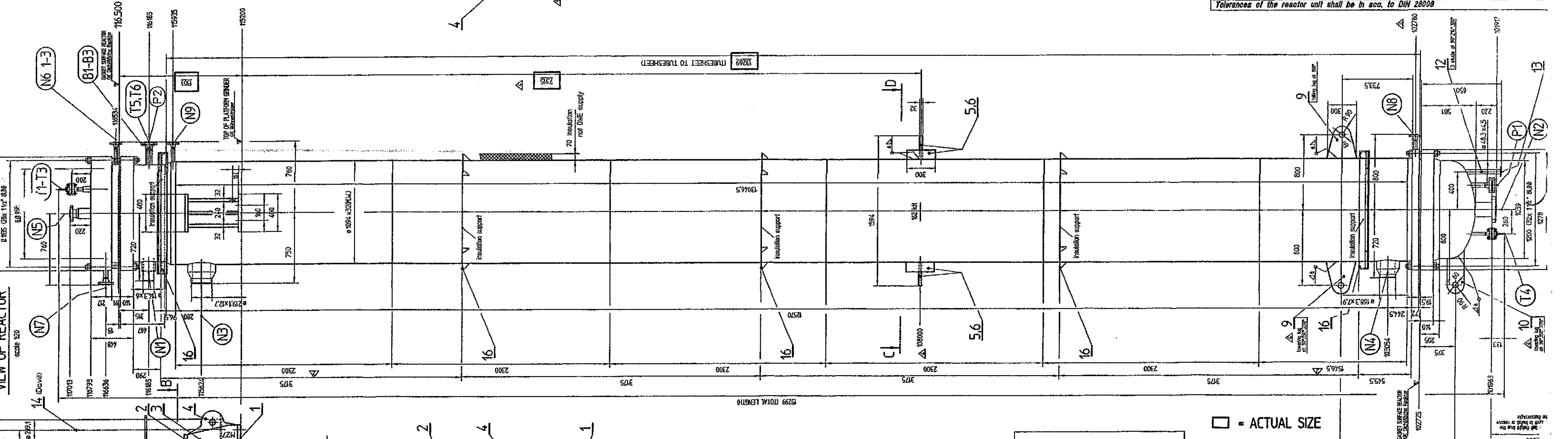
HITACHI ZOSEN MECHANICAL CORPORATION

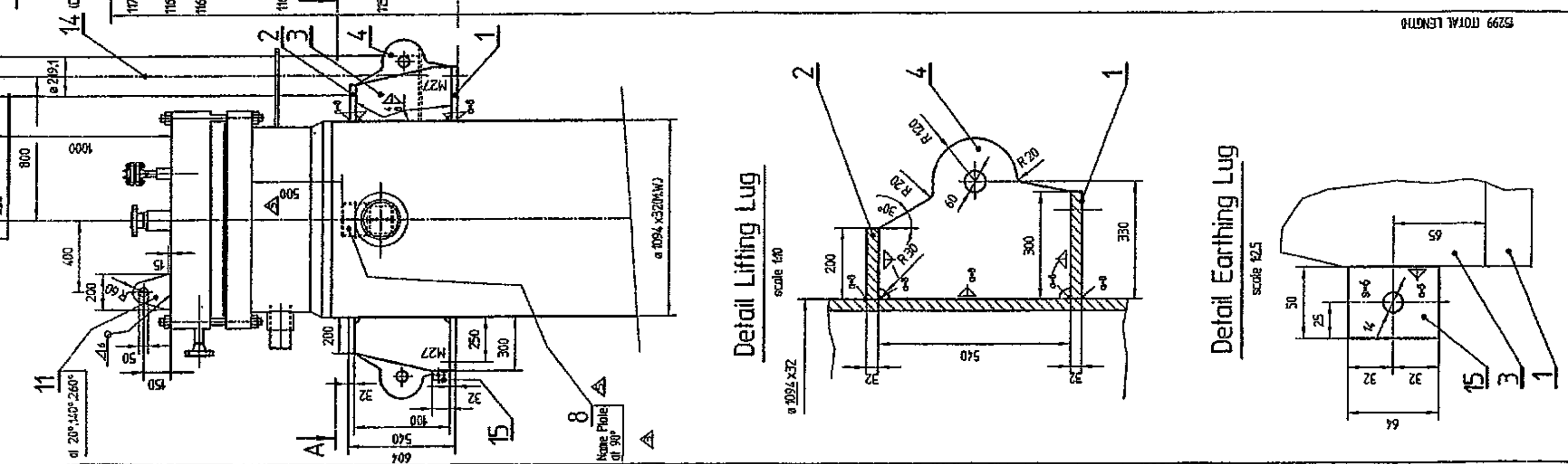
Drawn By	KEI-U	8/30,'02
Prepared By	K.NAGAO	8/30,'02
Reviewed By	T.CHIKUSHI	8/30,'02
Approved By	R.NAKASHIMA	8/30,'02
Approved By QAE	R.FUKUDA	8/30,'02

DATE 8/30 '02 — RELATED SECTION ———
MANUF. NO. 2163030
SHEET NO. ———
CODE NO. ———
DRAWING NO. 5550-22-01 △3

配布先	A	F
提出	6C	6C
アサヒ	1	1
アサヒ(B)	2	2
アサヨ	1	1
アサヒ(工1)	2	2
アサヒ(工2)	1	1
[illegible]	1	1
アサカ	2	2
CP	1	1
NTI (B)	2	2
アサL	1	1
KEI-U	1	1
累 (アサヒ)	1	1
計	6C +16	6C +20







STUTZENTABELLE / NOZZLE DATA

	Zeichen / Mark	Anzahl / No.	NW / Size	ND / Rating	Norm / Code	Dichtfl. / Facing	Rohr	Service	Verwendung
66									
65	T5,T6	2	1"	600 lbs	ANSI B16.5	RF	ø3.. x 3,4	TEMPERATURE T101	Temperatur T101
64	T4	1	1"	600 lbs	ANSI B16.5	RF	ø33,4 ..5 /lødkt	MULTI-POINT T104	Multipoint T104
63	T1-T3	3	1"	600 lbs	ANSI B16.5	RF	ø33,4 ..5 /lødkt	MULTI-POINT T102	Multipoint T102
62	P1,P2	2	1 1/2"	600 lbs	ANSI B16.5	RF	ø4.. x 4,5	Pressure measuring nozzle	Druckmeßstutzen
61	B1-B3	3	2"	600 lbs	ANSI B16.5	RF	ø6.. x 5,5	FLAME DETECTOR	Flammerkennung
60	N9	1	1"	600 lbs	ANSI B16.5	RF	ø3.. x 3,4	VENT	Entlüftung
59	N8	1	1"	600 lbs	ANSI B16.5	RF	ø3.. x 3,4	DRAIN INTERMITTENT BLOWDOWN	Entleerung Bodenentschlämmung
58	N7	1	1 1/2"	600 lbs	ANSI B16.5	RF	ø4.. x 4,5	OXYGEN PURGE	Sauerstoff-Ableitung
57	N6 1-3	3	1"	600 lbs	ANSI B16.5	RF	ø3.. x 3,4	SEALING GAS INLET	Sperrgas-Einlaß
56	N5	1	2"	600 lbs	ANSI B16.5	RF	ø6.. x 5,5	OXYGEN-INLET	Sauerstoff-Eintritt
55	N4	1	6"	600 lbs	weld bevel	-	ø1.. x 7,9	WATER-INLET	Speisewasserzufuhr
54	N3	1	8"	600 lbs	weld bevel	-	ø2.. x 12,7	STEAM-OUTLET	Dampf-Austritt
53	N2	1	4"	600 lbs	ANSI B16.5	RF	Long.. fl.neck	REACTOR-OUTLET	Reaktor-Austritt
52	N1	1	4"	600 lbs	weld bevel	-	ø1.. x 6,0	MIXED GAS-INLET	Mischgas-Eintritt

BERECHNUNGSDATEN / DESIGN DATA

		Rohrseite TUBESIDE	Mantelseite SHELLSIDE	Sperrgas (Trennplatte) SEALING GAS (NITROGEN)
51	Berechnungsnorm / Code for calculation:	ASME SEC. VIII DIV. 1 EDITION 01, ADDENDA —		
50	Inhalt / Capacity:	4050 ltr. cu.ft.	6840 ltr. cu.ft.	3 x ~0,9 ltr. cu.ft.
49	Zulässiger Betriebsüberdruck/Auslegungsdruck / Maximum allowable working pressure/Design press.:	42 bar psig.	68 bar psig.	52 bar psig.
48	Zulässige Betriebstemperatur/Auslegungstemperatur / Maximum allowable working temp./Design temp.:	315 °C °F	295 °C °F	315 °C °F
47	Arbeitsüberdruck dp = 12 bar / Operating pressure:	31 bar psig.	50 bar psig.	39 bar psig.
46	Arbeitstemperatur: dT(Rohr-Mantel) (TUBE-SHELL) = 5 °C / Operating temperature:	285 °C °F	265 °C °F	225 °C °F
45	Probeüberdruck / Test pressure:	63 bar psig.	102 bar psig.	78 bar psig.
44	Prüfmedium / Test-medium: 1*	Wasser/WATER	Wasser/WATER	Wasser/WATER
43	Korrosionszuschlag / Corrosion allowance:	0 mm	3 mm	0 mm
42	Ausnutzung der zul. Berechnungs-Spannung / Joint efficiency:	100 %	100 %	100 %
41	Medium: S = fest, L = flüssig, G = gasförmig / Medium: S = solid, L = liquid, G = gas:	G	L/G	G
40	Lastwechselzahl / Number of load changes:			/ ...
39	Statische Zusatzkräfte (Wind, Auflagerkräfte o.ä.) / Additional static forces (wind, support forces etc.)			
38	Aufstellungsort / Installation place: im Freien / outdoors ☒	in Gebäude / indoors ☐		
37	Behälterlage / Position of vessel: bei Erstm. Druckprüfung / at first pressure test; im Betrieb / in operating:	liegend / horizontal ☒ ☒	stehend / vertical ☐ ☐	
36	Minimum design metal temperature:	[illegible] °C at 42 bar	+9 °C bei 68 bar	+9 °C bei 52 bar
35	Leergewicht / Empty Weight	[illegible] kg		

OBERFLÄCHEN-SCHUTZ gem. DIN 55928 / SURFACE TREATMENT acc. to DIN 55928

Untergrund-Vorbereitung / Surface preparation	gestrahlt (innen+aussen,ausgen. Rohre) / blast cleaned (inside+outside exc.tubes)			
Entrostungsgrad / Degree of derusting	SA 2,5			
1 xGrundanstrich / Primer coat mil/ with	Erozink	Schichtdicke	30	µm
1 xDeckanstrich / Finish coat mil/ with	Erozink	(film thickness)	30	µm

WEITERE ANGABEN / OTHER DATA

1* Wasser mit Korrosionsschutzmittel (2% METAX R1684) / water with corrosion inhibitor (2% METAX R1684)

Behälter Abmaße und Fertigungstoleranzen nach DIN 28008

Tolerances of the reactor unit shall be in acc. to DIN 28008

☐ = ACTUAL SIZE

Insulation support rings and the davit on the reactor see drawing no. Z1.50206.20.160.

Achtung ! **Attention !** **Attention !** **¡ Advertencia !**

Änd. / rev.	Beschreibung / description	Datum / date	Ausgef. / by	Geprüft / checked
5	Position of name plate revised	08.07.03	Wagner	
4	Position of lowering lugs and item 5 and 6, others as marked	12.02.03	Schiller	
3	drawing completely revised	26.11.02	Wagner	
2	dP=12 bar, test pressure	16.10.02	Wagner	
1	drawing completely revised	23.09.02	Wagner	

ÄNDERUNGEN REVISIONS

CAD ÄNDERUNGEN NUR IM CAD SYSTEM CAD

Maßstab / scale		Datum / date	Name / name	Unterschrift / sign
1:20	Gezeichnet / drawn	14.08.02	Wagner	
1:10 1:5	Geprüft / checked		Dr.Schuster	

Deggendorfer Werft und Eisenbau GmbH

Methode E

AS BUILT DRAWING

SABIC

PARTIAL OXIDATION PILOT REACTOR

Reaktor-Übersicht

REACTOR-OVERVIEW

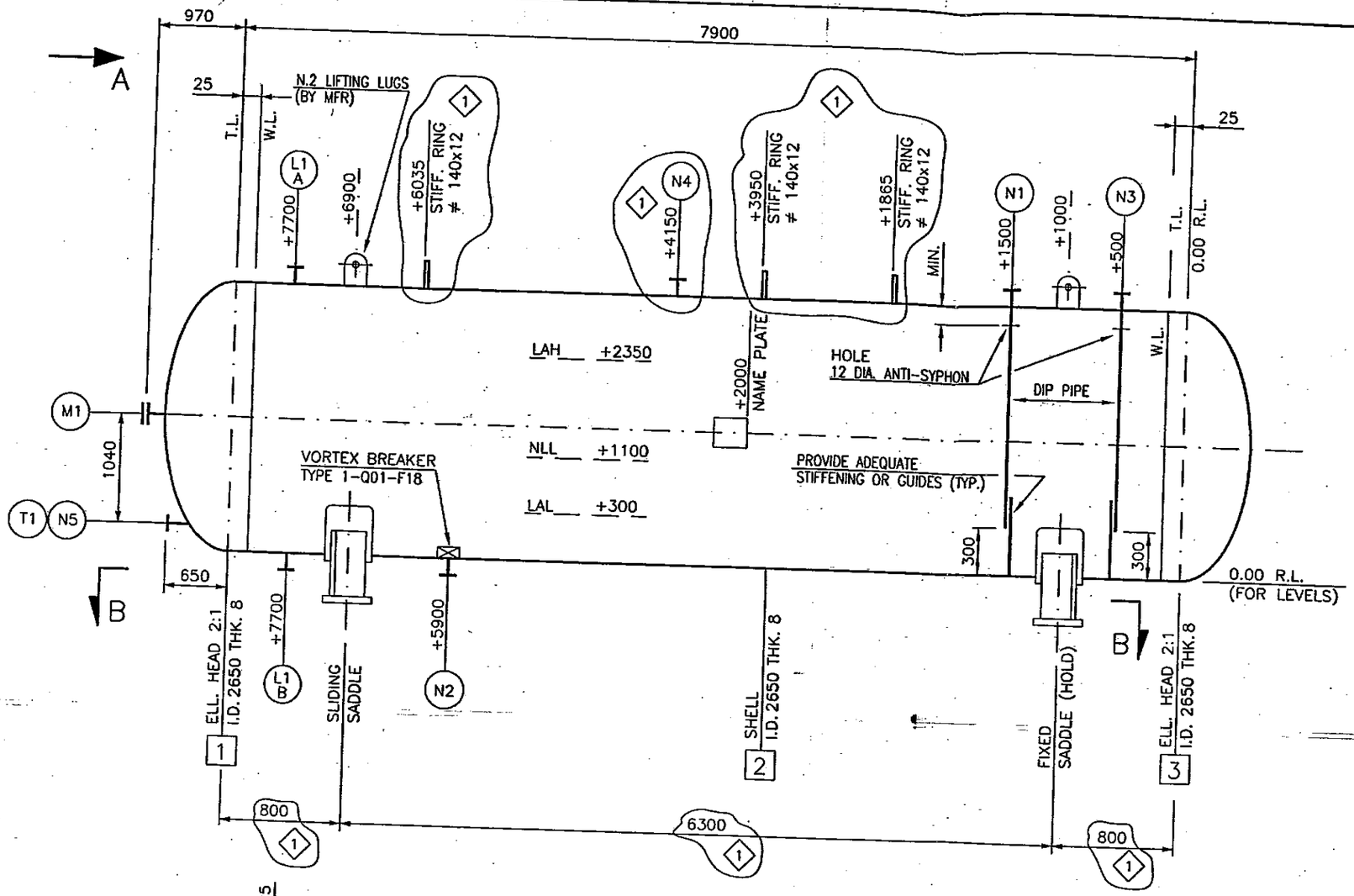
Format	Kom.Nr.	Z.Nr.	Baugr.	Rev.
Z1	50206	01	100	05

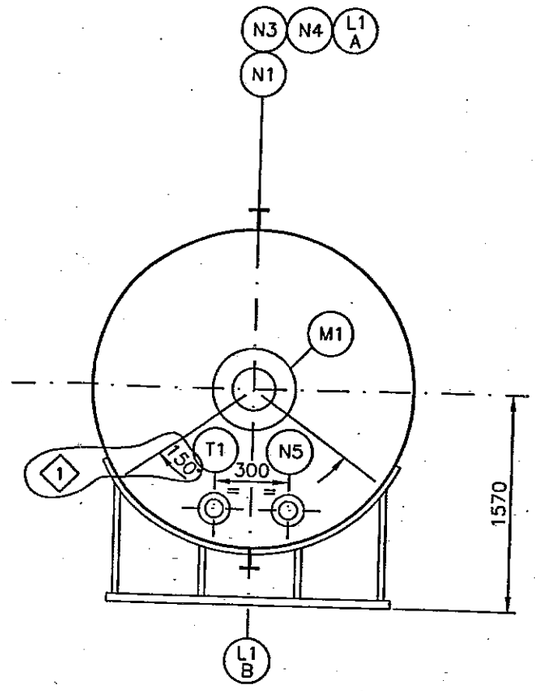
Zeichnungs Nr. / drawg. no.

Ersatz für: / substitute for:

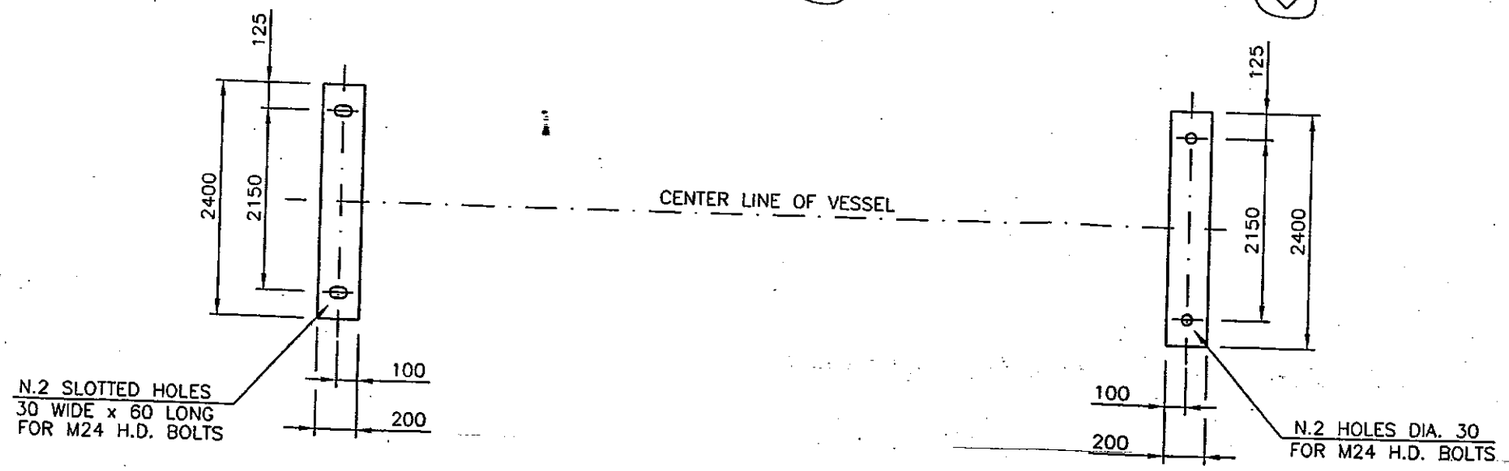
Ersetzt durch: / substituted by:

Entstanden aus: / originated from:





VIEW A
ORIENTATION HOLD

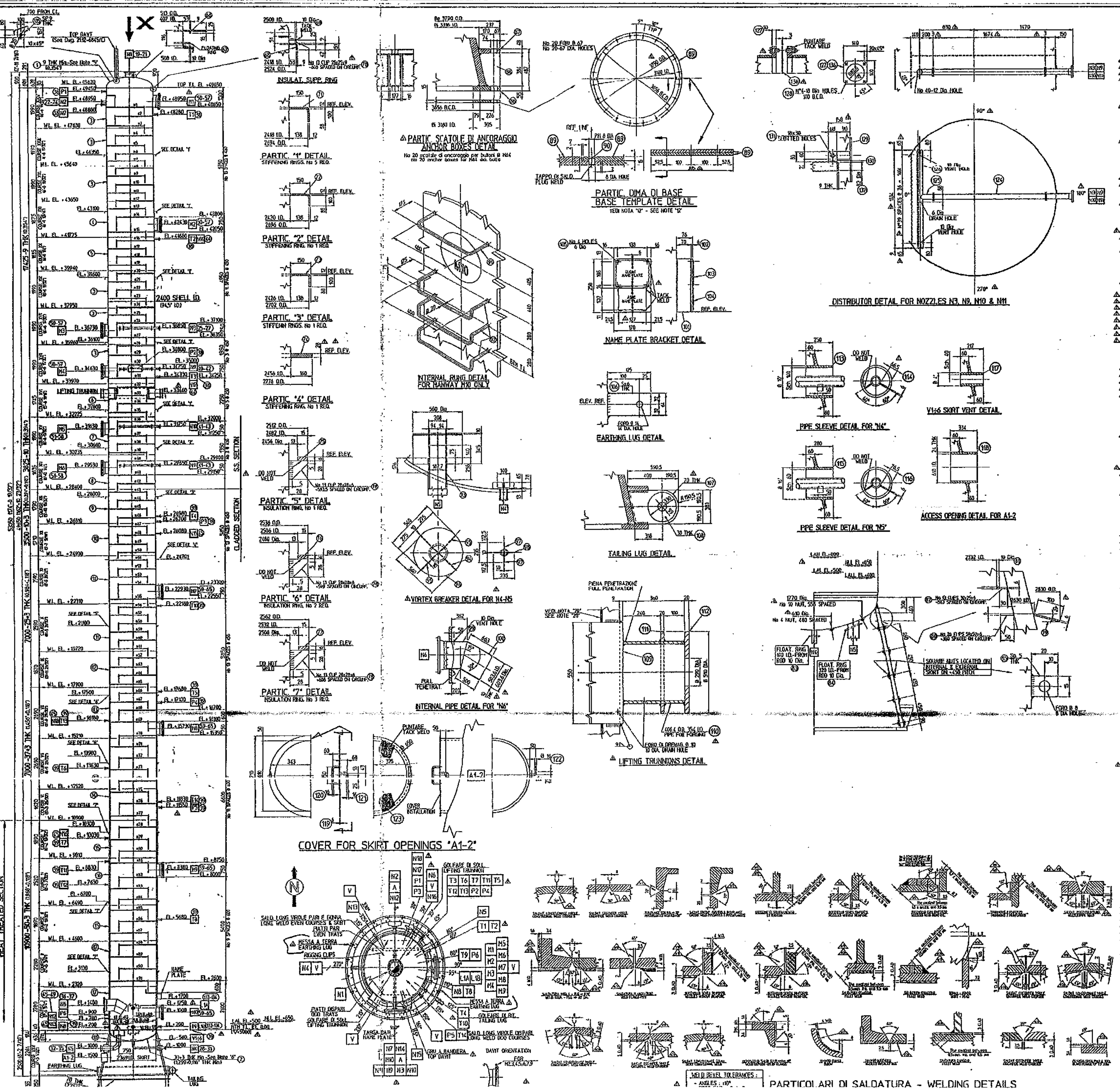


VIEW "B-B"
SUPPORT BASES

TECHNIP-COFLEXIP سابك sabic

SABIC ACETIC ACID PLANT
IBN RUSHD SITE – YANBU – KINGDOM OF SAUDI ARABIA

XXXX Status	ITEM : 100-D252					
– CAD model	SERVICE : ENTRAINER HOLDING DRUM					
/ Scale	2121 Project	05 Unit	DW Type of doc.	0811 – 02 Code & progressive	2 of 2 Sheet	1 Rev.



MK.	No PIECES	DESCRIZIONE / DESCRIPTION	MISURE / SIZE	MATERIALE / MATERIALS
144				
143				
142				
141				
140				
139				
138				
137				
Δ 136	8	GASKET	3 THK-SEE DETAIL	PTFE
Δ 135	4	HOLDING CLIP	100 x 120 x 9 THK	SA 240 - 316 L
Δ 134	2	PIPE	Ø 3" Sch80-L-192 Lg	[illegible] 825
Δ 133	2	FLANGE	Ø 3"-150#-WN-RF-Sch80-L	[illegible] 825
132	8	DISK FROM PLATE	82 Dia. - 9 THK	SA 240 - 316 L
131	8	BOLT WITH NUT	M16 - 45 Lg	316 L SS
130	8	CLIP	60 x 80 x 10 THK	SA 240 - 316 L
Δ 129	8	CLIP	150 x 80 x 10 THK	SA 240 - 316 L
128	32	BOLT WITH NUT	M16 - 45 Lg	316 L SS
127	6	DISTRIB. FROM PLATE	140 x 140 x 10 THK	SA 240 - 316 L
126	4	PIPE	Ø 3" Sch10s- 1820 Lg	SA 312 TP 316 L
125	4	PIPE	Ø 3" Sch10s- 1820 Lg	SA 312 TP 316 L
Δ 124	4	PIPE	Ø 3" Sch10s- 1874 Lg	SA 312 TP 316 L
123	2	WIRE NET	356 MESH-WIRE Ø2-650 Dia.	304 SS
122	4	ROD	16 Dia. - 75 Lg	SA 36
121	4	ROD	16 Dia. - 118 Lg	SA 36
120	4	ROD	16 Dia. - 370 Lg	SA 36
119	2	RING	710 OD.-610 ID.-6 THK	SA 283 Gr. C
Δ 118	2	PIPE FROM PLATE	610 ID.-24 THK-334 Lg	SA 516 Gr. 70
Δ 117	6	PIPE	Ø 4" Sch40- 217 Lg	SA 106 Gr. B
116	2	RIBS	76.5 x 50 x 6 THK	SA 516 Gr. 70
115	1	PIPE	Ø 16" Sch60- 260 Lg	SA 106 Gr. B
Δ 114	2	RIBS	66.5 x 50 x 6 THK	SA 516 Gr. 70
113	1	PIPE	Ø 10" Sch140- 250 Lg	SA 106 Gr. B
112	2	DISK FROM PLATE	510 OD.-290 ID.-20 THK	SA 516 Gr. 70
111	2	RING FROM PLATE	510 OD.-407 ID.-20 THK	SA 516 Gr. 70
ΔΔ 110	2	PIPE FOR FORGING	406.4 OD. 354 ID.- 377 Lg	SA 105
Δ 109	2	WEAR PLATE	550 x 9 THK-2625 Dev.	SA 240 - 316 L
108	2	DISK FORGING	330 OD.-93 ID.-30 THK	SA 516 Gr. 70
Δ 107	1	TAILING LUG	590.5 x 381 x 70 THK	SA 516 Gr. 70
106	2	EARTHING LUG	125 x 64 x 6 THK	304 SS
105	4	RIVET	5 Dia. - 15 Lg	COPPER
104	1	ASME NAME PLATE	SEE DWG 2132-6845/A	304 SS / 3 THK
103	1	CLIENT NAME PLATE	SEE DWG 2132-6845/A	304 SS / 3 THK
Δ 102	1	NAME PLATE BRACKET	250 x 170 x 6 THK	SA 516 Gr. 70
101	1	NAME PLATE BRACKET	250 x 70 x 6 THK	SA 516 Gr. 70
ΔΔ 100	1	PIPE FROM PLATE	563.6 ID -10 THK-463 Lg	SB 424 UNS NO 8825
ΔΔ 99	1	PIPE FROM PLATE	533.6 ID -10 THK-353 Lg	SB 424 UNS NO 8825
ΔΔ 98	1	PLATE	235 x 76 x 10 THK	SB 424 UNS NO 8825
ΔΔ 97	2	PLATE	112.5 x 76 x 10 THK	SB 424 UNS NO 8825
ΔΔ 96	1	DISK FROM PLATE	560 Dia.-10 THK	SB 424 UNS NO 8825
ΔΔ 95	2	PLATE	275 x 345 x 10 THK	SB 424 UNS NO 8825
ΔΔ 94	1	PLATE	560 x 345 x 10 THK	SB 424 UNS NO 8825
ΔΔ 93	1	PIPE FROM PLATE	187.7 ID-10 THK-230 Lg	SB 424 UNS NO 8825
92	3	RING FROM ROD	20 Dia. - 900 Lg	INCOLOY 825
91	1	RING FROM ROD	20 Dia. - 750 Lg	INCOLOY 825
90	4	PIN	8 Dia. - 11 Lg	SA 36
Δ 89	1	BASE TEMPLATE	3790 OD.-3180 ID.-15 THK	SA 283 Gr. C
Δ 88	10	STIFFENING	237 x 384 x 16 THK	SA 516 Gr. 70
Δ 87	1	RING FROM PLATE	3790 OD.-3316 ID.-48 THK	SA 516 Gr. 70
Δ 86	1	RING FROM PLATE	3790 OD.-3160 ID.-55 THK	SA 516 Gr. 70
Δ 85	313	SQUARE NUT	20 x 15 x 5 THK	SA 516 Gr. 60
84	1	RING FROM ROD	320 ID. - 10 Dia.	SA 36
83	1	RING FROM ROD	160 ID. - 10 Dia.	SA 36
82	13	CLIPS	30 x 25 x 6 THK	SA 36
81	1	RING FROM ROD	2332 ID. - 10 Dia.	SA 36
80	26	CLIPS	50 x 50 x 6 THK	SA 36
Δ 79	1	[illegible] RING	2830 OD.-2630 ID.-6 THK	SA 283 Gr. C
78	78	CLIPS	28 x 28 x 6 THK	SA 516 Gr. 70
77	3	RING FROM FLAT BAR	2562 OD.-2532 ID.-6 THK	SA 36
76	2	RING FROM FLAT BAR	2536 OD.-2506 ID.-6 THK	SA 36
75	1	RING FROM FLAT BAR	2512 OD.-2482 ID.-5 THK	SA 36
ΔΔ 74	1	RING FROM PLATE	2776 OD.-2456 ID.-28 THK	SA 516 Gr. 70
Δ 73	1	ANGLE FROM PLATE	150x100x12 THK-6526 Dev.	SA 516 Gr. 70
72	1	ANGLE FROM PLATE	150x100x12 THK-6527 Dev.	SA 240 - 316 L
71	5	ANGLE FROM PLATE	150x100x12 THK-6501 Dev.	SA 240 - 316 L
Δ 70	12	CLIPS	25 x 25 x 9 THK	SA 240 - 316 L
69	1	RING FROM ROD	2508 ID. - 10 Dia.	316L SS
68	1	ANGLE FROM PLATE	62x35x9 THK-7958 Dev.	SA 240 - 316 L
67	1	RING FROM ROD	508 ID. - 10 Dia.	316L SS
66	1	ANGLE FROM PLATE	62x25x9 THK-1610 Dev.	SA 240 - 316 L
65	4	DAVIT FOR MANHOLE	SEE DWG2132-6845/E2	SEE DWG2132-6845/E2
Δ 64	4+4+4	GASKET	FOR FLG. 24"-150#-RF-15 THK	GLASS FIBRE FILLED PTFE
Δ 63	[illegible]	HEXAGONAL NUT	Ø 1 1/4"-8UN-2B	SA 194 Gr. 2H
Δ 62	[illegible]	STUD BOLT	Ø 1 1/4"-8UN-2A-185 Lg	SA 193 Gr. B7
61	4	[illegible] FROM PLATE	609.6 OD.-10+3 THK-208 Lg	[illegible]
60	4	BLIND FLANGE	Ø 24"-150#-RF	[illegible]
59	4	FLANGE	Ø 24"-150#-WN-RF-9+4 THK	[illegible]
58	2	REINFORCING PLATE	1065/610 Dia.- 10 THK	SA 240 - 316 L
57	4	DAVIT FOR MANHOLE	SEE DWG2132-6845/E1	SEE DWG2132-6845/E1
Δ 56	8+4+8	GASKET	FOR FLG. 24"-150#-RF-15 THK	GLASS FIBRE FILLED PTFE
Δ 55	[illegible]	HEXAGONAL NUT	Ø 1 1/4"-8UN-2B	SA 194 Gr. 2H
Δ 54	[illegible]	STUD BOLT	Ø 1 1/4"-8UN-2A-170 Lg	SA 193 Gr. B7
53	1	PIPE FROM PLATE	609.6 OD.-13 THK-217 Lg	SA 240 - 316 L
52	1	BLIND FLANGE	Ø 24"-150#-RF	SA 182 F 316 L
51	6	FLANGE	Ø 24"-150#-WN-RF-10 THK	SA 182 F 316 L
50	4	REINFORCING PLATE	1160/610 Dia.- 9 THK	SA 240 - 316 L
Δ 49	1+1+1	GASKET	FOR FLG. 1"-150#-RF-1.5 THK	GLASS FIBRE FILLED PTFE
Δ 48	4+4+4	HEXAGONAL NUT	Ø 1/2"-UNC-2B	SA 194 Gr. 2H
Δ 47	4+2+2	STUD BOLT	Ø 1/2"-UNC-2A-65 Lg	SA 193 Gr. B7
46	1	BLIND FLANGE	Ø 1"-150#-RF	SB 564 UNS NO8825
45	5	FLANGE	Ø 1"-150#-LWN-RF-266 Lg	SB 564 UNS NO8825
44	2	FLANGE	Ø 1"-150#-LWN-RF-270 Lg	SA 182 F 316 L
43	2	REINFORCING PLATE	190/90 Dia.- 10 THK	SA 240 - 316 L
42	3	PIPE	Ø 3" Sch80s-315 Lg	SA 312 TP 316 L
41	3	FLANGE	Ø 3"-150#-WN-RF-Sch80s	SA 182 F 316 L
40	1	REINFORCING PLATE	190/90 Dia.- 9 THK	SA 240 - 316 L
39	16	FLANGE	Ø 1 1/2"-150#-LWN-RF-266 Lg	SB 564 UNS NO8825
38	6	FLANGE	Ø 1 1/2"-150#-LWN-RF-270 Lg	SA 182 F 316 L
Δ 37	1	PIPE FROM PLATE	609.6 OD.-10+3 THK-393 Lg	[illegible]
36	1	FLANGE	Ø 24"-150#-WN-RF-9+4 THK	[illegible]
Δ 35	1	PIPE	Ø 8" Sch80-L-286 Lg	[illegible]
34	1	ELBOW	Ø 8" Sch80-L-90°-LR	[illegible]
Δ 33	1	PIPE	Ø 8" Sch80-L-538 Lg	[illegible]
32	1	FLANGE	Ø 8"-150#-WN-RF-Sch80-L	[illegible]
Δ 31	1	PIPE	Ø 3" Sch40S - 282 Lg	SB 423 UNS NO8825
Δ 30	1	ELBOW	Ø 3" Sch40S - 90°-LR	SB 366 [illegible]
ΔΔ 29	1	PIPE	Ø 3" Sch40S - 158 Lg	SB 423 UNS NO8825
Δ 28	1	FLANGE	Ø 3"-150#-WN-RF-Sch40S	SB 564 UNS NO8825
27	1	REINFORCING PLATE	[illegible]	[illegible]
26	1	PIPE	Ø 3" Sch80s-315 Lg	SA 312 TP 316 L
25	1	FLANGE	Ø 3"-150#-WN-RF-Sch80s	SA 182 F 316 L
24	1	REINFORCING PLATE	190/90 Dia.- 9 THK	SA 240 - 316 L
Δ 23	1	PIPE	Ø 3" Sch80s-201 Lg	SA 312 TP 316 L
22	1	FLANGE	Ø 3"-150#-WN-RF-Sch80s	SA 182 F 316 L
21	1	REINFORCING PLATE	650/407 Dia.- 9 THK	SA 240 - 316 L
Δ 20	1	PIPE FROM PLATE	406.4 OD.-13 THK-183 Lg	SA 240 - 316 L
Δ 19	1	FLANGE	Ø 16"-150#-WN-RF-13 THK	SA 182 F 316 L
Δ 18	1	CONICAL COURSE (IN 2 PIECES)	3334/2369 ID.-70 THK-2261 Lg	ASTM A 516 Gr. 70
17	2	COURSE	2400 ID.-50+3 THK-2280 Lg	[illegible]
16	1	COURSE	2400 ID.-50+3 THK-2520 Lg	[illegible]
15	1	COURSE	2400 ID.-50+3 THK-1890 Lg	[illegible]
14	1	COURSE	2400 ID.-37+3 THK-1620 Lg	[illegible]
13	2	COURSE	2400 ID.-37+3 THK-2690 Lg	[illegible]
12	1	COURSE	2400 ID.-25+3 THK-1870 Lg	[illegible]
11	2	COURSE	2400 ID.-25+3 THK-2590 Lg	[illegible]
10	1	COURSE	2400 ID.-10+3 THK-1710 Lg	[illegible]
9	1	COURSE	2400 ID.-10+3 THK-1720 Lg	[illegible]
Δ 8	1	COURSE	2400 ID.-10 THK-1835 Lg	SA 240 - 316 L
Δ 7	1	COURSE	2400 ID.-10 THK-1990 Lg	SA 240 - 316 L
Δ 6	1	COURSE	2400 ID.-9 THK-1745 Lg	SA 240 - 316 L
Δ 5	1	COURSE	2400 ID.-9 THK-1835 Lg	SA 240 - 316 L
Δ 4	1	COURSE	2400 ID.-9 THK-1875 Lg	SA 240 - 316 L
Δ 3	4	COURSE	2400 ID.-9 THK-1990 Lg	SA 240 - 316 L
2	1	HEAD See Note "6"	2400 ID.-33+3 THK Min.	[illegible]
Δ 1	1	HEAD See Note "5"	2400 ID.-9 THK Min.	SA 240 - 316 L

NOTE - NOTES

1) COSTRUIRE No UNA COLONNA - I PEZZI IN TABELLA INDICANO LE QUANTITÀ TOTALI PER COSTRUIRLA.
-COLUMN No ONE REQUESTED - NUMBER OF PIECES IN BILL OF MATERIAL IS FOR ONE UNIT.
2) COLONNA DA COSTRUIRE A DISEGNO ED IN CONFORMITÀ ALLE NORME:
-CONSTRUCTION OF VESSEL WILL BE ACCORDING TO: ASME VIII DIV. 1, 2001 EDITION
3) TUTTE LE FLANGE DOVRANNO ESSERE POSIZIONATE CON I FORI DEI TIRANTI A CAVALLO DEGLI ASSI PRINCIPALI DELL'APPARECCHIO.
-THE BOLTS HOLES OF ALL FLANGES SHALL STRADDLE THE MAIN AXIS.
4) LA FACCIA DI CONTATTO DELLE FLANGE DEI BOCCHELLI DEVE AVERE FINITURA:
-THE UPPER FACE OF NOZZLE FLANGES SHALL HAVE THE FINISHING
Ra 6.4 To 12.5 MICROMETER (ISO 468) FOR RF NOZZLES : N1, N2, N3, N7, N9, N10, N11, N14 N17, P1, P2, M1÷M10, T1, T2, T3
LA FACCIA DI CONTATTO DELLE FLANGE DEI BOCCHELLI DEVE AVERE FINITURA:
-THE UPPER FACE OF NOZZLE FLANGES SHALL HAVE THE FINISHING
Ra 3.2 To 6.3 MICROMETER (ISO 468) FOR RF NOZZLES : N4, N5, N6, N8, N12, N13, N15 N16, N18, P3, P4, P5, P6, T4÷T14, L1A, L1B
5) FONDO HC "1" ELL. 2:1 - FORMATO A FREDDO IN UN PEZZO DA LAMIERA SP. 12 CON TRATTAMENTO TERMICO DI SOLUBILIZZAZIONE DOPO FORMATURA.
-2:1 ELL. HEADS MK."1"-COLD FORMED IN ONE PIECE FROM PLATE 12 THK. SOLUTION ANNEALED AFTER FORMING.
6) FONDO HC "2" ELL. 2:1 - FORMATO A CALDO IN UN PEZZO DA LAMIERA SP.37+3.5 NORMALIZZATO A.C. E RINVENUTO DOPO FORMATURA.
-2:1 ELL. HEAD MK."2"-HOT FORMED IN ONE PIECE FROM PLATE 37+3.5 THK, NORMALIZED A.C. AND TEMPERED AFTER FORMING.
7) TUTTE LE SCORIE, SCAGLIE, SCHIZZI DI SALDATURA, OLII, VERNICI ED ALTRI MATERIALI SARANNO RIMOSSI PRIMA DELL'ISPEZIONE FINALE.
-ALL SLAG, LOOSE SCALE, DIRT, WELD SPATTER, OILS, PAINT AND OTHER MATERIALS SHALL BE REMOVED BEFORE THE FINAL INSPECTION.
8) PER SPEDIZIONE TUTTI I TRONCHETTI SARANNO TAPPATI ERMETICAMENTE CON DISCHI DI LAMIERA E GUARNIZIONI IN GOMMA. L'APPARECCHIO SARÀ PROTETTO INTERNAMENTE CON AZOTO (VEDI DIS. 2132/N).
-FOR SHIPPING ALL NOZZLES SHALL BE SEALED HERMETICALLY WITH BLIND FLANGES FROM PLATE AND RUBBER GASKET. THE EQUIPMENT SHALL BE INTERNALLY PROTECTED WITH NITROGEN (SEE DWG 2132/N).
9) DOPO LA PROVA IDRAULICA DRENARE L'APPARECCHIO.
-AFTER HYDRAULIC TEST THE INTERNAL EQUIPMENT SHALL BE DRAINED.
10) TUTTE LE CONNESSIONI E GLI ATTACCHI NON INTERFERIRANNO CON LE SALDATURE, TRA LE SALDATURE SARÀ TENUTA LA DISTANZA MAGGIORE TRA DUE VOLTE LO SPESSORE DEL MANTELLO E 50mm.
-MINIMUM DISTANCE BETWEEN ATTACHMENT WELDS AND ADJACENT SEAMS TO BE THE GREATER BETWEEN TWICE THE SHELL THICKNESS AND 50 mm.
11) NORME ADOTTATE SE NON ALTRIMENTI INDICATO: FLANGE <= 24" SECONDO ANSI B16.5, TIRANTI E DADI SECONDO ANSI B.1.1 2A/2B, TUBI IN ACCIAIO AL CARBONIO SECONDO ANSI B.36.10, TUBI IN ACCIAIO INOX SECONDO ANSI B.36.19, RACCORDI SECONDO ANSI B.16.9.
-STANDARD EMPLOYED UNLESS OTHERWISE INDICATED: ANSI B.16.5 FOR FLANGES <= 24", ANSI B.1.1 2A/2B FOR STUD BOLTS AND NUTS, ANSI B.36.10 FOR C.S. PIPES, ANSI B.36.19 FOR S.S. PIPES, ANSI B.16.9 FOR FITTINGS.
12) STAMPIGLIARE SULLA DIMA DI BASE IL NUMERO DI ITEM, I GRADI (0°-90°-180°-270°), LA PARTE SUPERIORE, IL NUMERO DI PROGETTO ED IL NUMERO DI IMPIANTO.
-STAMP ON BASE TEMPLATE ITEM NUMBER, DEGREES (0°-90°-180°-270°), TOP SIDE, PROJECT NUMBER AND PLANT NUMBER.
13) MATERIALE ESENTE DA PROVE DI RESILIENZA IN ACC. AI PARAGRAFI UG20, UCS66 & UHA51
-MATERIALS EXEMPTED FROM IMPACT TEST ACCORDING TO PARA UG20, UCS66 & UHA51
14) MATERIALI PER PARTI A PRESSIONE E AD ESSE SALDATE FORNITI CON CERTIFICATO IN ACCORDO A EN 10204 TIPO 3.1B.
-MATERIALS FOR PRESSURE PARTS AND PARTS WELDED TO THEM SUPPLIED WITH CERTIFICATE ACCORDING TO EN 10204 TYPE 3.1B.
15) GLI INTERNI RIMOVIBILI DEVONO PASSARE ATTRAVERSO I PASSI D'UOMO (PER DI VEDI TABELLA CONNESSIONI).
-REMOVABLE INTERNALS SHALL BE DESIGNED TO PASS THROUGH THE EQUIPMENT MANWAY (SEE NOZZLES TABLE FOR ID).
16) TUTTE LE DIMENSIONI SONO ESPRESSE IN MILLIMETRI SE NON DIVERSAMENTE INDICATO.
-ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
17) GLI SPESSORI INDICATI SONO I MINIMI ACCETTABILI DOPO COSTRUZIONE.
-THE INDICATED THICKNESSES ARE THE MINIMUM ACCEPTABLE AFTER CONSTRUCTION.
18) CALCOLI ESEGUITI CONSIDERANDO IL BATTENTE IDRAULICO INDICATO NEI DATI DI PROGETTO.
-CALCULATION PERFORMED CONSIDERING THE STATIC HEAD INDICATED WITHIN DESIGN DATA.
19) STANDARD DI RIFERIMENTO CLIENTE:
-CLIENT'S REFERENCE STANDARDS: 001-E03, 001-E12, 001-E13, 001-E24, 001-F01, 001-F02, 001-F07, 001-F12, 001-F16, 001-F17, 001-F18, 001-F19, 001-F20, 001-F21, 001-F22, 001-F23 / YEVF 103, 001-F25, 001-F28, 001-F34, 001-F37, 001-F72, 001-T02, 001-T07, 001-T72, W01-F01, W12-F04, 22654-SP-000-X-002, SG125, SG125, S250, DVS 177, 100.00.ST.0300-01.
20) LA PARTE DI SALDATURA COPERTA DALLA PIASTRA DI RINFORZO SARÀ MOLATA A FILO.
-THE PART OF WELD COVERED BY THE WEAR PLATE SHALL BE GROUND FLUSH.
21) MOLARE A FILO DEL MANTELLO LA SUPERFICIE INTERNA DEI BOCCHELLI
-INNER EDGE OF NOZZLES TO BE GROUND FLUSH WITH THE SHELL.

POS. / MK.	QUANT. / Q.TY	Ø / DIA	SERIE / RATING	TIPO FLANGIA / TYPE FLANGE	SCH/SPESS. / PIPE SCH/THK	PIASTRA RINF. / REINFOR. PAD	SPORG. DA / PROJ. FROM	SERVIZIO / SERVICE
M7-M10	4	24"	150#	WN-RF-BLIND	10+3 (0.394"+0.118")	——	1530	Manway+Davit
M5-M6	2	24"	150#	WN-RF-BLIND	9 (0.354")	Ø 1065x10 THK	1530	Manway+Davit
M1-M4	4	24"	150#	WN-RF-BLIND	9 (0.354")	Ø 1160x9 THK	1530	Manway+Davit
T1-T14	14	1 1/2"	150#	LWN-RF	43 (0.563")	——	1470	Temperature Topping
P1-P6	6	1 1/2"	150#	LWN-RF	43 (0.563")	——	1470	Pressure Topping
L1A/B	2	3"	150#	WN-RF	Sch80s (0.67)	——	1470	Level Bridle
N14-N18	5	1"	150#	LWN-RF	27 (0.500")	——	1470	Sample Point
N13	1	1"	150#	LWN-RF	27 (0.500")	——	1470	Pump Spillback
N12	1	1"	150#	LWN-RF-BLIND	27 (0.500")	——	1470	Spare
N11	1	3"	150#	WN-RF	Sch80s	Ø 190x10 THK	1470	Feed
N10	1	3"	150#	WN-RF	Sch80s	Ø 190x10 THK	1470	Feed
N9	1	3"	150#	WN-RF	Sch80s	Ø 190x9 THK	1470	Feed
N8	1	1 1/2"	150#	LWN-RF	43 (0.563")	——	1470	Utility Connection
N7	1	1 1/2"	150#	LWN-RF	43 (0.563")	——	1470	Aqueous Recycle
N6	1	24"	150#	WN-RF	10+3 (0.394"+0.118")	——	1520	Reboiler Return
N5	1	8"	150#	WN-RF	Sch80s (0.67)	——	1700	Reboiler Feed
N4	1	3"	150#	WN-RF	Sch40S	——	1700	Bottom Product
N3	1	3"	150#	WN-RF	Sch80s	Ø 190x9 THK	1470	Feed
N2	1	3"	150#	WN-RF	Sch80s	Ø 150x9 THK	1470	Reflux Return
N1	1	16"	150#	WN-RF	13 (0.512")	Ø 650x9 THK	See Dwg.	Overhead Product

THE SAFETY VALVE (P.S.V) SHALL BE MOUNTED ON THE PIPELINE OF THE NOZZLE N1

TABELLA CONNESSIONI - NOZZLES TABLE

"U" STAMP		YES
BATTENTE IDRAULICO IN ESERCIZIO / MAXIMUM OPERATING STATIC HEAD	m	4.9
ISOLAMENTO / INSULATION	Sp. THK	40 mm (H.C.)
PESO IN ESERCIZIO / OPERATING WEIGHT	Kg	171290
PESO IN PROVA IDRAULICA / WEIGHT HYDRAULIC TEST	Kg	335460 (EXCLUDED INT. TRAYS)
PESO APPARECCHIO / APPARATUS AS BUILT WEIGHT	Kg	107250 (EXCLUDED INT. TRAYS)
CAPACITÀ / CAPACITY	m3	228.23
OVALIZZAZIONE MAX. AMMISSIBILE / MAX. OVALIZATION OF DIAMETER	%	1
CONTROLLI NON DISTRUTTIVI / NDT		VEDI / SEE INSPECTION PLAN
EFFICIENZA GIUNTI / JOINT EFFICIENCY		1
RADIOGRAFIA / RADIOGRAPHY		FULL
TRATTAMENTO TERMICO / STRESS RELIEVING		LOWER PART ONLY (See Drawing)
TALLONE DI SALDATURA / WELDING COUPON		NO
VENTO / WIND DESIGN		ASCE 7/95 - 1-1 - EXPOS. C
TERREMOTO / EARTHQUAKE DESIGN		UBC 94 - Z-2A - 1-1.25
NORME DI COSTRUZIONE / CODE OF CONSTRUCTION		VEDERE NOTA / SEE NOTE "2"
COLLAUDO / INSPECTION		TECHNIP / A.I. / BREMBANA Q.C.
CORROSIONE / CORROSION	mm	0.00 (3 / 0.118") CLADD ON LOWER SECTION
FLUIDO / FLUID		ACETIC ACID, WATER, BUTYL ACETATE, MINOR IMPURITIES
CATEGORIA DI RISCHIO / HAZARD CONSIDERATION		FLAMMABLE / TOXIC
DENSITÀ FLUIDO / FLUID DENSITY	Kg/m3	800÷940
CONDIZIONE DI STEAMOUT / STEAMOUT CONDITION		120 °C AT 0.5 Bar g. 248 °F AT 7.25 PSIG
PRESS. PROVA IDRAULICA / HYDRAULIC TEST	Bar g	[illegible] AT TOP - IN FIELD IN SHOP
PRESS. PROVA IDRAULICA A NUOVO ORIZZ. / HYDRAULIC TEST - AS NEW-HORIZ. POSITION	Bar g	11.5 (167 PSIG)
MAWP A FREDDO E NUOVO / MAWP NEW & COLD CONDITION		8.59 Bar g. 125.58 PSIG LIMITED BY S.S. SHELL 9 THK
MAWP A CALDO E CORROSO / MAWP HOT & CORRODED CONDITION		8.12 Bar g. 117.78 PSIG LIMITED BY S.S. SHELL 9 THK
MDMT / MINIMUM DESIGN METAL TEMPERATURE		-10 °C AT 5?-103 Bar g. 14 °F AT 72.5/-15 PSIG
TEMPERATURA DI PROVA IDRAULICA / HYDRAULIC TEST TEMPERATURE	°C	7 (44.6 °F)
TEMPERATURA DI ESERCIZIO / OPERATING TEMPERATURE	°C	100 / 212 °F AT TOP; 142 / 287.6 °F AT BOTTOM
TEMPERATURA DI PROGETTO / DESIGN TEMPERATURE	°C	200 (392 °F)
PRESSIONE DI ESERCIZIO / OPERATING PRESSURE	Bar g	1 / 14.5 PSIG AT TOP; 2 / 16.5 PSIG AT BTM
PRESSIONE DI PROGETTO / DESIGN PRESSURE	Bar g	5.0 (72.5 PSIG) / F.V.

DESCRIZIONE - DESCRIPTION

DATI DI PROGETTO - DESIGN DATA

TECHNIP-COFLEXIP — SABIC
PROJ.: SABIC ACETIC ACID PROJECT
CLIENT: SABIC - YANBU - KINGDOM OF SAUDI ARABIA
VENDOR DOCUMENT REVIEW
1 REVISE AND RESUBMIT
2 TO BE ISSUED AS FINAL PROVIDED COMMENTS ARE INCORPORATED
3 NO COMMENT - FINAL ISSUE
4 FOR INFORMATION ONLY (INTERNAL USE)
MATERIAL REQUISITION No. 2121 00 MR 1015111101111
ITEM 100-C132
SR Doc. CODE A1103
QUAL. TECHNIP ITALY S.p.A. BY. DATE 19.05.03

BREMBANA COSTRUZIONI INDUSTRIALI
Valbrembo - Bergamo - Italy
No DI FABBRICA / MFR'S SERIAL No 4119

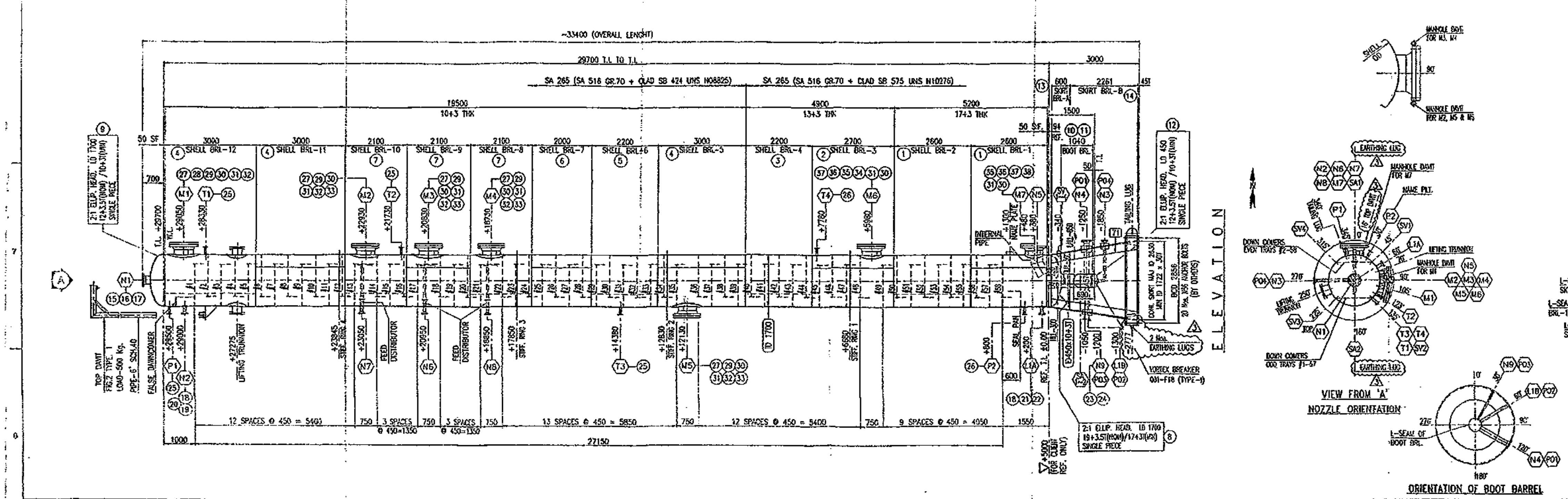
DESTINATION : YANBU - SAUDI ARABIA
CUSTOMER : TECHNIP ITALY - ROMA
ORDER No : 2121 No. A0005
PROJECT : SABIC ACETIC ACID PLANT

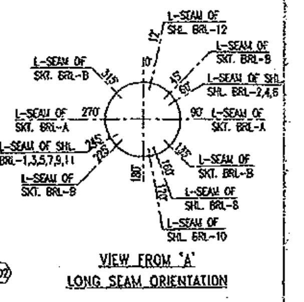
DEHYDRATION COLUMN
ITEM: 100-C132

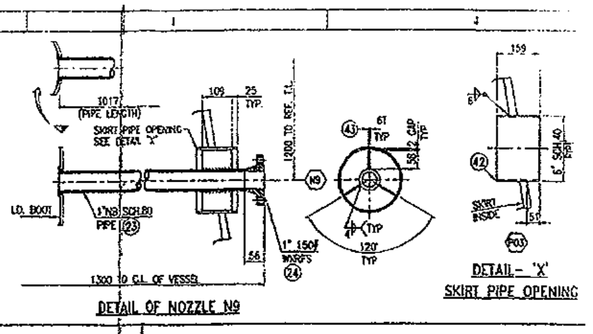
REV.	DATA / DATE	REVISIONI / REVISIONS	FATTO / MADE DRFT.	CONTR. / CHECK. QC	APPR. EM	APPR. DCH
4	18-04 2003	ADDED NOTE "21", MODIFIED WEIGHTS AND ORIENTATION OF EARTHING CLIPS	[illegible]	A.B.	D.P.	N.T.
3	27-02 2003	[illegible]	T.C.	A.B.	D.P.	N.T.
2	13-01 2003	REVISED ORIENTATION FOR NOZZLES T1&T2, DEFINED N17/18 AND WHERE INDICATED WITH Δ	T.C.	A.B.	D.P.	N.T.
1	04-11 2002	[illegible]	[illegible]	A.B.	D.P.	N.T.
0	12-10 2001	ISSUED FOR APPROVAL	GDF	A.B.	D.P.	N.T.

MECHANICAL CALCULAT.	2132-6845/MCT
PLATFORMS AND LADDERS	2132-6845/PL
PLATE AND LADDERS CLIPS	2132-6845/[illegible]
INTERN. TRAYS SUPPORTS	2132-6845/I
NITROGEN PROTECTION	2132/N
TOP DAVIT	2132-6845/C
DAVIT FOR MANWAY	2132-6845/E1
DAVIT FOR MANWAY	2132-6845/E2
SHIPPING	2132-6845/T
PAINTING PLAN	2132-6845/V
NAME PLATE	2132-6845/A

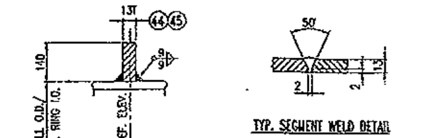
LIST OF DRAWINGS





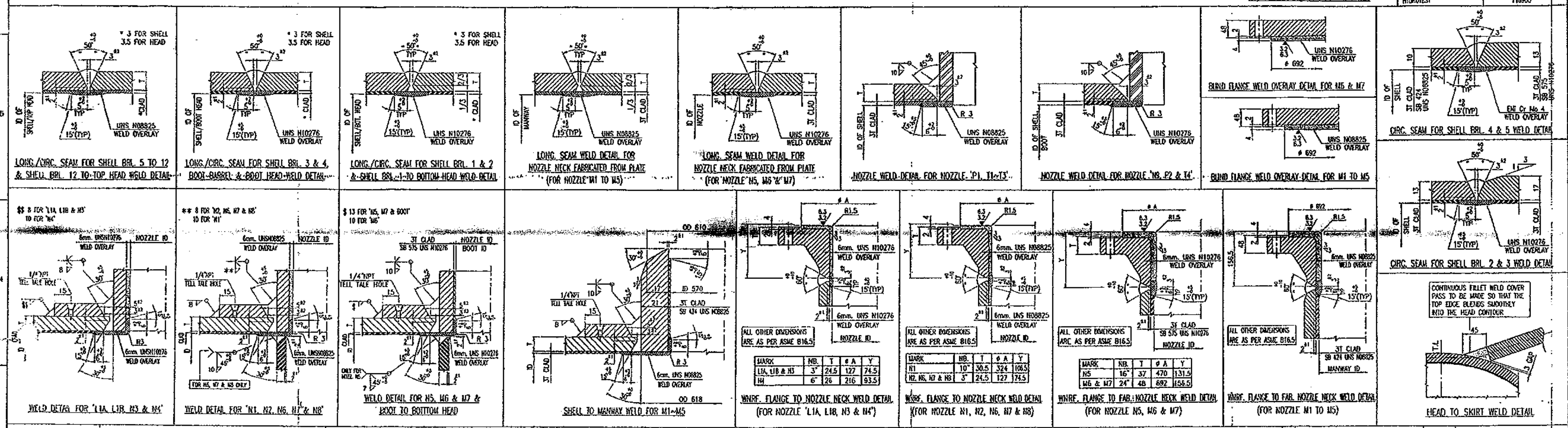


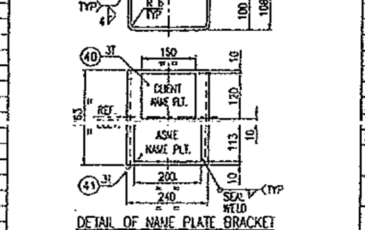
EQUIPMENT LOAD DATA	
LOAD / CONDITION	VERTICAL LOAD (kg)
EMPTY (ERECTION)	48600
OPERATING	72100
HYDROTEST	116900



St. No.	DESCRIPTION	SIZE	POS. No.
1	STIFF. RING-1	OD.2012/ID.1732	44
2	STIFF. RING-2,3&4	OD.2006/ID.1726	45

STIFFENER RING DETAIL





- * SA 265 (SA 516 GR.70 + CLAD SB 575 UNS N10276)
- ** SA 265 (SA 516 GR.70 + CLAD SB 424 UNS N08825)
- *** SA 106 GR.B + 6mm. UNS N10276 WELD OVERLAY
- **** SA 106 GR.B + 6mm. UNS N08825 WELD OVERLAY
- ● SA 105 + 6mm. UNS N10276 WELD OVERLAY
- ●● SA 105 + 6mm. UNS N08825 WELD OVERLAY
- ∮ GLASS FIBRE FILLED PTFE (GFP)
- ∮ SA 193 GR.B7 / SA 194 GR.2H

TOTAL WT. = 28607.3 Kgs.

REF.	ITEM POS.	QTY FOR ONE EQUIP.	DESCRIPTION	LENGTH	WIDTH	THICK	WT. IN Kg. For ONE POS.	WT. IN Kg. For ONE EQUIP.	MAT'L	MAT'L CODE	MR. NO.
	45	3	S RING OD.2006/ID.1726	0	0	13.0	83.7	251.1	SA516GR.70		
	44	1	S RING OD.2012/ID.1732	0	0	13.0	84.0	84.0	SA516GR.70		
	43	3	STIFF. PLATE	109	58	6.0	0.3	0.9	SA516GR.70	[illegible]	STOCK
	42	1	PI 6" SCH.40	159	0	0.0	4.5	4.5	SA106GR.B	[illegible]	STOCK
	41	1	ASME NAME PLATE	200	113	3.0	0.5	0.5	SS304	STOCK	STOCK
	40	1	CLIENT NAME PLATE	150	120	3.0	0.4	0.4	SS304	STOCK	STOCK
	39	1	NAME PLATE BRACKET	436	263	6.0	5.3	5.3	SA516GR.70	[illegible]	STOCK
	38	1	RP-00710/620/16T	0	0	0.0	11.8	11.8	SA516GR.70	[illegible]	ROHAN
	37	2	BF-24" 150# RF	0	0	0.0	182.0	364.0	●	[illegible]	739100-009
	36	2	F-24" WNRFS-150#	0	0	0.0	118.0	236.0	●	[illegible]	739100-009
	35	2	FAB. PIPE 24" (14+3)	1862	207	0.0	51.5	103.0	*	[illegible]	739100-005
	34	1	RP-00910/620/12T	0	0	0.0	32.9	32.9	SA516GR.70	[illegible]	739100-005
	33	4	FAB. PIPE 24" (21+3)	1966	209	0.0	73.9	295.6	**	[illegible]	739100-007
	32	5	BF-24" 150# RF	0	0	0.0	182.0	910.0	●●	[illegible]	739100-009
	31	154	STUD 1 1/4" RUN	199	0	0.0	1.2	184.8	∮	[illegible]	739100-019
	30	21	GK 24" 150# RF	0	0	0.0	0.0	0.0	∮	[illegible]	739100-018
	29	5	F-24" WNRFS-150#	0	0	0.0	118.0	590.0	●●	[illegible]	739100-009
	28	1	FAB. PIPE 24" (21+3)	1466	249	0.0	88.0	88.0	**	[illegible]	739100-007
	27	5	RP-01076/630/10T	0	0	0.0	44.8	224.0	SA516GR.70	[illegible]	739100-006
	26	2	F-1.5" LWNRFS-150#	268	0	0.0	6.2	12.4	[illegible]	[illegible]	739100-008
	25	4	F-1.5" LWNRFS-150#	268	0	0.0	6.2	24.8	[illegible]	[illegible]	739100-008
	24	1	F-1" WNRFS-150#	0	0	0.0	0.9	0.9	[illegible]	[illegible]	739100-008
	23	1	PI-1"-SCH.80	1317	0	0.0	3.3	3.3	[illegible]	[illegible]	739100-012
	22	1	F-3" WNRFS-150#	0	0	0.0	4.5	4.5	●	[illegible]	739100-009
	21	1	PI-3"-SCH.80	1114	0	0.0	5.0	5.0	***	[illegible]	STOCK
	20	1	F-3" WNRFS-150#	0	0	0.0	4.5	4.5	●●	[illegible]	739100-009
	19	1	PI-3"-SCH.80	1114	0	0.0	5.0	5.0	****	[illegible]	STOCK
	18	2	RP-00190/99/10T	0	0	0.0	1.6	3.2	SA516GR.70	[illegible]	739100-006
	17	1	F-10" WNRFS-150#	0	0	0.0	23.6	23.6	●●	[illegible]	739100-009
	16	1	PI-10"-SCH.40	371	0	0.0	15.7	15.7	****	[illegible]	STOCK
	15	1	RP-00475/283/10T	0	0	0.0	9.0	9.0	SA516GR.70	[illegible]	739100-005
	14	1	SKIRT BRL-B OD630/ID1913	0	0	30.0	3987.0	3987.0	SA516GR.70	[illegible]	739100-005
	13	1	SKIRT BRL-A OD1915/1722	0	0	30.0	823.8	823.8	SA516GR.70	[illegible]	739100-005
	12	1	DE 2:1 ID550x12+3.5	0	0	0.0	40.3	40.3	*	[illegible]	739100-003
	11	1	BOOT BRL-(10+3T)	1455	1040	0.0	156.0	156.0	*	[illegible]	739100-003
	10	1	RP-01580/485/18T	0	0	0.0	9.9	9.9	SA516GR.70	[illegible]	ROHAN
	9	1	DE 2:1 ID1700x12+3.5	0	0	0.0	447.6	447.6	**	[illegible]	739100-002
	8	1	DE 2:1 ID1700x19+3.5	0	0	0.0	654.8	654.8	*	[illegible]	739100-003
	7	3	BRL-8,9&10 (10+3T)	5382	2100	0.0	1158.3	3474.9	**	[illegible]	739100-002
	6	1	BRL-7 (10+3T)	5382	2000	0.0	1702.4	1702.4	**	[illegible]	739100-002
	5	1	BRL-6 (10+3T)	5382	2200	0.0	1213.5	1213.5	**	[illegible]	739100-002
	4	3	BRL-5,11&12 (10+3T)	5382	3000	0.0	1654.8	4964.4	**	[illegible]	739100-002
	3	1	BRL-4 (13+3T)	5381	2200	0.0	1485.0	1485.0	*	[illegible]	739100-003
	2	1	BRL-3 (13+3T)	5381	2700	0.0	1835.0	1835.0	*	[illegible]	739100-003
	1	2	BRL-1&2 (17+3T)	5404	2600	0.0	2212.0	4424.0	*	[illegible]	739100-003

LIST OF MATERIAL

DRAWING No	DESCRIPTION
Q01-E03	AUSTENITIC AND HIGH ALLOY STEELS PRESSURE VESSELS DESIGN CRITERIA
Q01-G01	SHOP PREPARATION OF EQUIPMENTS FOR SHIPMENT
Q01-T05	PRESSURE VESSEL MATERIAL CONTROL PROGRAM
Q01-F35	FABRICATION ALLOY CARBON STEEL
1006.03.SI.0800.01	NAME PLATE
DVS 177	STANDARD VORTEX BREAKERS – TYPE II
SZ56	RECOMMENDED COATING SYSTEMS FOR EXTERNAL PROTECTION
Q01-F08	WELDING OVERLAY AND WELDING CLAD MATERIALS
22854-SP-000-X-002	SHOP AND FIELD PAINTING
Q01-T72	COLUMN, TRAYS AND INTERNAL – TESTING AND INSPECTION
Q01-T07	MATERIALS IDENTIFICATION PROGRAM
Q01-F02	INSPECTION REQUIREMENTS FOR PRESSURE VESSELS
Q01-F[illegible]	CARBON AND LOW ALLOY STEELS FABRICATION – PRESSURE VESSELS
Q01-[illegible]	DAVIT FOR OUTDOOR MANHOLE COVERS
Q01-F19	COLUMN DAVIT FABRICATION DETAIL
Q01-F17	GRAB RUNGS AND STEPS FOR MANWAYS
Q01-F32	COLUMN FABRICATION
Q01-F01	PRESSURE VESSELS: WELDING AND FABRICATION
Q01-E24	PRESSURE VESSELS: ALLOY CLAD CARBON STEEL – DESIGN CRITERIA
Q01-F26	ALLOWABLE FABRICATION TOLERANCE.
Q01-F25	VESSEL LUG MANUFACTURE & GROUNDING DETAIL
Q01-F23/VEVF1123	VESSEL INSULATION AND FIRE PROFING SUPPORT
Q01-F22	PRESSURE VESSEL PIPE SUPPORT
Q01-F21	VESSEL PIPE GUIDE
Q01-F16	VORTEX BREAKER
Q01-F15	VESSEL NAME PLATE AND STAMPING
Q01-F13	VESSEL LIFTING LUGS, TRUNNION & DOBLE RING TYPE
Q01-F12	SKIRT-TYPE SUPPORTS, VERTICAL VESSELS
Q01-T01	TESTING & INSPECTION PRESSURE VESSELS
Q01-E01	PRESSURE VESSELS – GENERAL
Q01-F72	COLUMN, TRAYS & INTERNAL FABRICATION
Q01-F03	PRESSURE VESSELS – FABRICATION
Q01-E12	COLUMN-DESIGN CRITERIA
2121.03.DW.0511-03 (4 SHTS) REV.0	DATA SHEET

CLIENT'S REF. DWGS. & SPECS.

DRAWING No.	DESCRIPTION
TP-7391-02-001	TEMPLATE
ST-7391-02-001	FINISH REQUIREMENTS
DO-7391-02-001	HYDRO TEST & SHIPPING ARRGT.
DA-7391-00-005	TOP DAVIT
DA-7391-00-006	SKIRT ACCESS OPENING COVER
DA-7391-00-001	MANWAY DAVIT DETAIL
DS-7391-02-002	LADDER ASSY. & DETAILS.
DS-7391-02-001	PLATFORM ASSY. & DETAILS
DM-7391-02-001	GENERAL ASSY. FOR PLATFORMS & LADDERS.
DA-7391-02-010	CLIPS FOR PIPE SUPP./GUIDES, INSULATION & FIRE PROOFING.
DA-7391-02-009	CLIPS FOR PLTF. & LADDERS
DA-7391-02-008	ASME NAME PLATE
DA-7391-02-007	CLIENT NAME PLATE
DA-7391-02-006	FORMED HEAD (BOOT)
DA-7391-02-005	FORMED HEAD (BOTT.)
DA-7391-02-004	FORMED HEAD (TOP)
DA-7391-02-003	TRAY SUPPORT DETAILS
DA-7391-02-002	DETAIL DRAWING

BELLELI REFERENCE DRAWINGS

GENERAL NOTES

23. BOOT HEAD SHALL BE STRESS RELIEVED AFTER FORMING AS PER THE CYCLE GIVEN BELOW.
    - LOADING TEMPERATURE : 427°C (800°F) MAX. HOLDING TIME : 30 MINUTES (MIN.)
    - RATE OF HEATING : 222°C (400°F) PER HOUR MAX. HOLDING TEMP. : 610±10°C (1130±18°F)
    - RATE OF COOLING : 277°C (500°F) PER HOUR MAX. UNLOADING TEMP. : 427°C (800°F) MAX.
22. INTERNAL SURFACE SHALL BE PICKLED AND PASSIVATED.
20. THE STATIC PRESSURE OF THE CONTENTS IS ADDED TO DESIGN PRESSURE.
19. ORIENTATION SHALL BE MARKED ON THE TOP, MIDDLE AND BOTTOM PORTIONS OF THE SURFACE OF THE SHELLS AT 0°, 90°, 180° & 270° RESPECTIVELY, WITH PUNCH AND WHITE PAINT.
18. MANWAY/NOZZLES INCLUDING THEIR REINFORCEMENT & OTHER ATTACHMENT SHALL NOT BE LOCATED WITHIN 50 mm. OF WELD SEAM (TOE TO TOE).
17. THE VESSEL SHALL BE THOROUGHLY CLEANED INSIDE & OUTSIDE AND SHALL BE FREE OF ALL DIRT, WELD ROD STUBS & LOOSE FOREIGN MATERIALS ETC.
16. ALL R.F.PADS SHALL BE PROVIDED WITH 1/4"NPT TELL TALE HOLE. THIS SHALL BE PNEUMATICALLY TESTED AT 5 psig. TELL TALE HOLES SHALL BE CLOSED WITH RUST PREVENTIVE GREASE AFTER PRESSURE TESTING OF VESSEL
15. MINIMUM TEMPERATURE OF HYDROTEST WATER SHALL BE 18°C AND THE TEST PRESSURE SHALL BE HELD FOR A MINIMUM OF ONE HOUR. CHLORIDE CONTENT OF TEST WATER SHALL BE LESS THAN 50 PPM.
14. THE LONGITUDINAL BUTT WELD OF NOZZLES FABRICATED FROM PLATE SHALL BE 100% RADIOGRAPHED.
13. ALL INT. & EXT. ATTACHMENT WELDED TO THE VESSEL SHALL BE CONTINUOUSLY SEAL WELDED.
12. ALL NOZZLES AND MANWAY THAT DO NOT EXTEND INTO THE VESSEL SHALL BE FINISHED FLUSH WITH THE INSIDE & THE INNER EDGE SHALL BE ROUNDED OFF. TO A MIN. 3mm RADIUS.
11. ▭ MARK INDICATES THE BSHI WELD STANDARD NUMBER.
    ○ MARK INDICATES THE POSITION NUMBER WITH REFERENCE TO LIST OF MATERIAL.
    ○ MARK INDICATES THE NOZZLE MARK NUMBER.
10. SERVICE GASKETS & BOLTING FOR BLINDED NOZZLES SHALL BE USED FOR PRESSURE TESTING. GASKETS FOR OTHER NOZZLES SHALL BE NON ASBESTOS FIBRE.
9. TWO SPARE GASKETS AND 10% (2 Nos. MIN. PER SIZE) OF FASTENERS ARE TO BE SHIPPED LOOSE FOR ALL SERVICE BLINDED NOZZLES & MANWAYS AS CONSTRUCTION / COMMISSIONING SPARES.
8. ALL REMOVABLE INTERNALS SHALL PASS THROUGH THE NEAREST MANHOLE.
7. NOZZLE PROJECTION IS FROM C.L. OF VESSEL TO GASKET FACE OF FLG. UNLESS OTHERWISE SPECIFIED.
6. FLANGES UPTO & INCL. 24"NB SHALL BE AS PER ANSI B16.5.
5. ALL BOLTS & NUTS SHALL BE OF UNC SERIES UPTO AND INCL. 1" SIZE AND 8UN ABOVE 1"SIZE.
4. NOZZLES POSITIONS ON VESSEL ELEVATIONS ARE CONVENTIONAL. FOR TRUE LOCATION SEE END VIEW.
3. FLANGE FACE FINISH SHALL HAVE SMOOTH FINISH WITH A ROUGHNESS FROM Ra 3.2 TO 6.3 MICROMETERS (125-250 AARH).
2. ALL FLANGE BOLT HOLES SHALL STRADDLE VERTICAL AND/OR NORTH-SOUTH CENTER LINES UNLESS SHOWN OTHERWISE.
1. ALL DIMENSIONS ARE IN mm. UNLESS OTHERWISE SPECIFIED.

- * SA 106 GR.B + 6 mm. UNS N08825 WELD OVERLAY
- ** SA 106 GR.B + 6 mm. UNS N10276 WELD OVERLAY
- ⊙ SA 265 (SA 516 GR.70 + 3 THK CLAD SB 424 UNS N08825)
- ⊙⊙ SA 265 (SA 516 GR.70 + 3 THK CLAD SB 575 UNS N10276)

MARK	QTY	SIZE	PROJ. FROM C.L.	SERVICE	NOZZLE NECK O.D.	NOZZLE NECK SCH	NOZZLE NECK THK.	NOZZ. FLANGE TYPE	NOZZ. FLANGE RATING LB	REINF. PAD O.D.	REINF. PAD THK.
P04	1	10"	-	PIPE OPENING FOR N7	273.1	40	7.11	-	-	-	-
P03	1	6"	-	PIPE OPENING FOR N9	168.3	40	7.11	-	-	-	-
P02	1	10"	-	PIPE OPENING FOR L1B	273.1	40	9.27	-	-	-	-
P01	1	14"	-	PIPE OPENING FOR N4	355.6	PLT.	8	-	-	-	-
SA1~2	2	-	-	SKIRT ACCESS	SEE DWG.	PLT.	8	-	-	-	-
SV1~4	4	4"	-	SKIRT VENT	114.3	40	6.02	-	-	-	-
M7	1	24"	1160	MANHOLE W/BLD. FLG. & DAVIT	609.6	PLT.	14+3 ⊙⊙	WNRFS	150∮	710	16
M6	1	24"	1160	MANHOLE W/BLD. FLG. & DAVIT	609.6	PLT.	14+3 ⊙⊙	WNRFS	150∮	910	12
M2~M5	4	24"	1160	MANHOLE W/BLD. FLG. & DAVIT	SEE MANWAY WELD DETAIL ⊙			WNRFS	150∮	1076	10
M1	1	24"	1200	MANHOLE W/BLD. FLG. & DAVIT	SEE MANWAY WELD DETAIL ⊙			WNRFS	150∮	1076	10
BOOT	1	450 ID	-	BOOT R.F.PAD	-	-	-	-	-	580	16
T4	1	1.5"	1120	TEMPERATURE TAPPING	66.7	-	14.3	LWNRFS	150∮	-	-
T1~3	3	1.5"	1120	TEMPERATURE TAPPING	66.7	-	14.3	LWNRFS	150∮	-	-
P2	1	1.5"	1120	PRESSURE TAPPING	66.7	-	14.3	LWNRFS	150∮	-	-
P1	1	1.5"	1120	PRESSURE TAPPING	66.7	-	14.3	LWNRFS	150∮	-	-
L1B	1	3"	1350	LEVEL BRIDLE	88.9	80	7.62+6 **	WNRFS	150∮	190	10
L1A	1	3"	1120	LEVEL BRIDLE	88.9	80	7.62+6 **	WNRFS	150∮	190	10
N9	1	1"	1300	UTILITY CONNECTION	33.4	80S	4.55	WNRFS	150∮	-	-
N8	1	3"	1120	ALTERNATIVE FEED	88.9	80	7.62+6 *	WNRFS	150∮	190	10
N7	1	3"	1120	ALTERNATIVE FEED	88.9	80	7.62+6 *	WNRFS	150∮	190	10
N6	1	3"	1120	FEED	88.9	80	7.62+6 *	WNRFS	150∮	190	10
N5	1	16"	1170	REBOILER RETURN	406.4	PLT	10+3 ⊙⊙	WNRFS	150∮	510	16
N4	1	6"	1350	REBOILER FEED	168.3	80	10.97+6 **	WNRFS	150∮	270	10
N3	1	3"	1350	BOTT. PRODUCT OUTLET	88.9	80	7.62+6 **	WNRFS	150∮	190	10
N2	1	3"	1120	REFLUX RETURN	88.9	80	7.62+6 *	WNRFS	150∮	190	10
N1	1	10"	SEE DWG	OVERHEAD PRODUCT OUTLET	273.1	40	9.27+6 *	WNRFS	150∮	475	10

NOZZLE SCHEDULE

No.	DESIGN CONDITIONS	UNITS	VALUES
37.	DELETED		
36.	DELETED		
35.	FULL OF WATER WEIGHT (SHOP)	kg (lb)	103300 (227777)
34.	DELETED		
33.	FABRICATED WEIGHT	kg (lb)	34600 (76293)
32.	MANUFACTURER'S SERIAL No.	----	3215
31.	JOB NUMBER	---	7391-02
30.	MANUFACTURER'S NAME	---	BELLELI S.H.I LTD.
29.	CODE STAMP	---	YES 'U' STAMP
28.	DESIGN CODE	---	ASME SECTION VIII DIV.1 2001 EDITION
27.	HAZARD CONSIDERATIONS	---	FLAMMABLE / TOXIC
26.	SERVICE	---	PRODUCT COLUMN
25.	VOLUME	m^3 (ft^3)	68.7 (2426)
24.	FIREPROOFING (ON SKIRT) (BY OTHERS)	mm	50 (INSIDE & OUTSIDE)
23.	INSULATION (BY OTHERS)	mm	50 (HC)
22.	MAX. OPERATING STATIC HEAD	m	3.4
21.	FLUID	---	ACETIC ACID AND MINOR IMPURITIES
20.	LIQUID SPECIFIC GRAVITY	---	0.825 – 0.95
19.	INSPECTION AUTHORITY	---	CLIENT/BSHI/AI
18.	WIND VELOCITY	kph (mph)	140 (87)
17.	EARTHQUAKE ZONE	---	2A
16.	MINIMUM DESIGN METAL TEMPERATURE	°C (°F)	1 (33.8)
15.	CHARPY IMPACT TEST	---	NO, EXEMPTED AS PER UCS-66(a)
14.	LETHAL SERVICE/CYCLIC SERVICE	---	NO/NO
13.	WET SOUR SERVICE	---	NO
12.	POST-WELD HEAT TREATMENT	---	NO
11.	JOINT EFFICIENCY	%	100
10.	RADIOGRAPHY	---	FULL (RT-1)
9.	CORROSION ALLOWANCE	mm	3 mm. CLAD
8.	M.A.W.P. AT DESIGN TEMPERATURE	barg (psig)	13.47 (195.3) LIMITED BY NOZZLE N5
7.	M.A.P. (NEW & COLD)	barg (psig)	15.13 (219.4) LIMITED BY MANWAYS M1 & M2
6.	FIELD HYDROTEST PRESSURE (CORRODED)	barg (psig)	17.51 (254)
5.	SHOP HYDROTEST PRESSURE (HOR.-TOP)	barg (psig)	19.51 (283)
4.	WORKING TEMPERATURE (TOP/BOT.)	°C (°F)	134 (273.2) / 174 (345.2)
3.	WORKING PRESSURE (TOP/BOT.)	barg (psig)	1.6 (23.2) / 1.9 (27.55)
2.	DESIGN TEMPERATURE (INT / EXT.)	°C (°F)	200 (392) / 200 (392)
1.	DESIGN PRESSURE (INT / EXT.)	barg (psig)	5 (72.5) / F.V. (SEE NOTE: 20&21)

DESIGN DATA

TECHNIP-COFLEXIP — MATERIAL REQUISITION No. 2121 MR — ITEM 100-C133

BELLELI SAUDI HEAVY INDUSTRIES — AS BUILT — CERTIFIED BY

REV.	DATE	DESCRIPTION	DRAWN	CHK'D
3	08 Sept. '03	REVISED AS MARKED △3 & 'AS BUILT'	VINAYAK	
2	26 Jul. '03	REVISED AS PER CLIENT-COMMENTS MARKED △2	AHM	UO/GOPAL
1	20 Jan. 03	REVISED AS PER CLIENT COMMENTS MARKED △1 & ISSUED FOR CONSTRUCTION.	UNM/JOB	N/SURESH
0	30 Sept. 02	ISSUED FOR APPROVAL & INTERNAL COMMENTS.	REDDY/ VINAYAK	N/GOPAL/ SURESH

SCALE: 1 : 60

CLIENT: TECHNIP–COFLEXIP

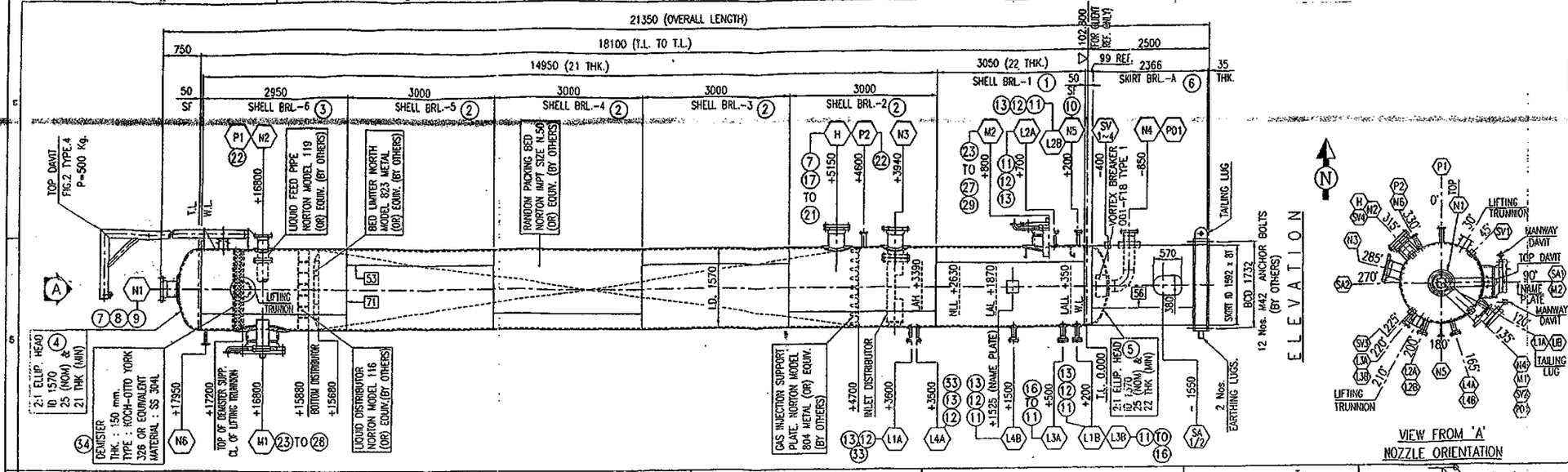
ORDER: 2121N'A0006

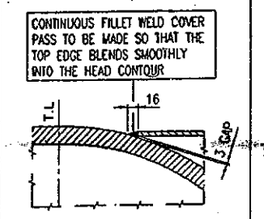
APPROVED FOR CONSTRUCTION BY ...KGAS... DATE 20 Jan. 03

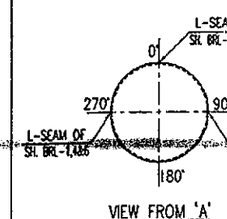
BELLELI SAUDI HEAVY INDUSTRIES LTD. — بلليلي السعودية
AL-JUBAIL, KINGDOM OF SAUDI ARABIA

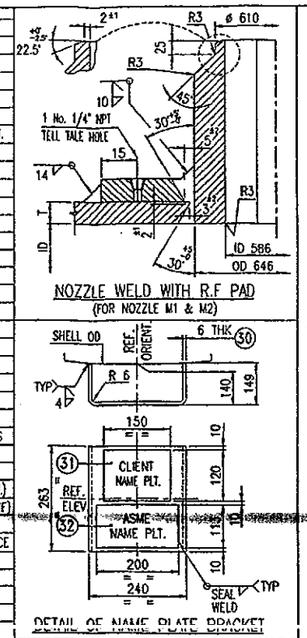
SABIC ACETIC ACID PLANT
IBN RUSHD SITE–YANBU–KINGDOM OF SAUDI ARABIA
PRODUCT COLUMN (ITEM NO. 100-C133)
GENERAL ASSEMBLY

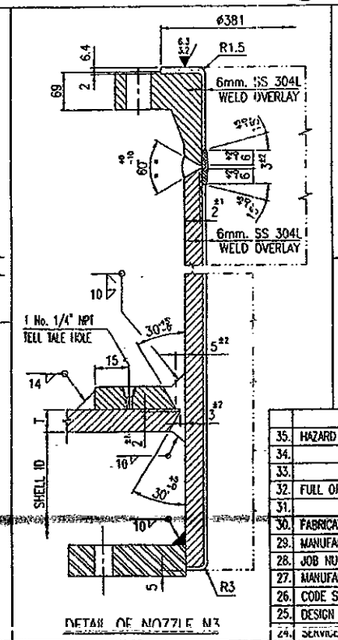
DRAWING NO. DA-7391-02-001

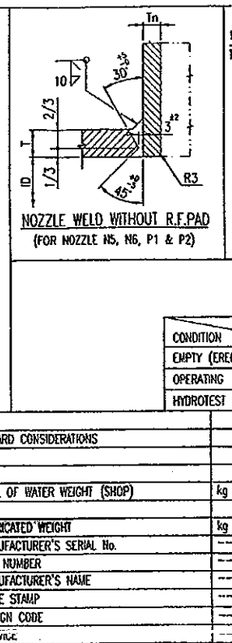


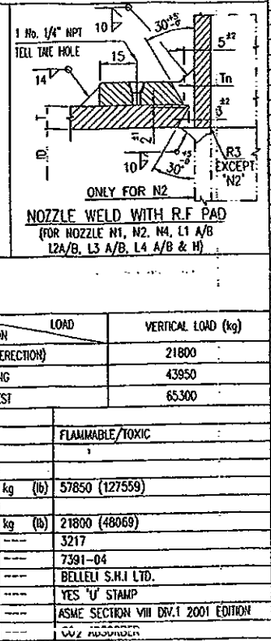












BELLELI REFERENCE DRAWINGS

DA-7391-04-002	DETAIL DRAWING
DA-7391-04-003	FORMED HEAD (TOP)
DA-7391-04-004	FORMED HEAD (BOTT.)
DA-7391-04-005	CLIENT NAME PLATE . :
DA-7391-04-006	ASME NAME PLATE
DA-7391-04-007	CLIPS FOR PLTF. & LADDERS
DA-7391-04-008	CLIPS FOR PIPE SUPP./GUIDES & INSULATION.
DA-7391-04-009	DEMISTER SUPPORT DETAILS
DA-7391-04-010	INTERNAL ATTACHMENTS
DM-7391-04-001	GEN.ASSY. FOR PLATFORM & LADDERS.
DS-7391-04-001	PLATFORM & HANDRAIL DETAILS
DS-7391-04-002	LADDERS & SAFETY GUARD DETAIL
DA-7391-00-002	MANWAY DAVIT DETAIL
DA-7391-00-007	SKIRT ACCESS OPENING COVER
DA-7391-00-005	TOP DAVIT
DA-7391-00-009	HAND HOLE HINGE 12"-300#
DO-7391-04-001	SHIPPING ARRANGEMENT
ST-7391-04-001	FINISH REQUIREMENTS
?-7391-04-001	TEMPLATE

G01-G01	SHOP PREPARATION OF EQUIPMENT FOR SHIPMENT.
G01-T06	PRESSURE VESSEL MATERIAL CONTROL PROGRAM.
1080.07.ST.0800.01	NAME PLATE
SZ5D	RECOMMENDED COATING SYS. FOR EXT. PROTECTION
2284-SP-000-X-002	SHOP AND FIELD PAINTING
W12-F04	HEAT TREATMENT AND STRESS RELIEF OF WELD
W01-F01	WELDING AND INSPECTION
G01-T72	COLUMN, TRAYS AND INTERNAL - TESTING AND INSPECTION
G01-T07	MATERIALS IDENTIFICATION PROGRAM
G01-T02	INSPECTION REQUIREMENTS FOR PRESSURE VESSELS
G01-F72	COLUMN, TRAYS & INTERNAL FABRICATION.
G01-F34	CARBON & LOW ALLOY STEELS FABRICATION - PRESSURE VESSELS
G01-F31	DEMISTER PAD ASSEMBLY AND DETAILS.
G01-F20	DAVIT FOR OUTDOOR MANHOLE COVERS.
G01-F19	COLUMN DAVIT FABRICATION DETAIL
G01-F17	GRAB RUNGS AND STEPS FOR MANWAYS.
G01-F02	COLUMN FABRICATION
-F01	PRESSURE VESSELS: WELDING AND FABRICATION
G01-E02	PRESSURE VESSELS: CARBON AND LOW ALLOY-STEELS-DESIGN CRITERIA
G01-F28	ALLOWABLE FABRICATION TOLERANCES.
G01-F25	VESSEL LUG MANUFACTURE & GROUNDING DETAIL
G01-F23/MEW1123	VESSEL INSULATION AND FIRE PROOFING SUPPORT
G01-F22	PRESSURE VESSEL PIPE SUPPORT
G01-F21	VESSEL PIPE GUIDE
G01-F18	VORTEX BREAKER
G01-F15	VESSEL NAME PLATE AND STAMPING
G01-E13	VESSEL LIFTING LUGS, TRUNNION & DOBLE RING TYPE
G01-F12	SKIRT-TYPE SUPPORTS, VERTICAL VESSELS
G01-T01	TESTING & INSPECTION PRESSURE VESSELS
G01-E01	PRESSURE VESSELS - GENERAL
G01-F07	PRESSURE VESSELS - FABRICATION
G01-E12	COLUMN-DESIGN CRITERIA
2121.M.DW.0511-01 (5 SHTS) REV.0	DATA SHEET

DRAWING No. | DESCRIPTION

27. INSULATION THICKNESS REQUIRED FOR PROCESS REASON AND SHALL INCLUDE HANDWAYS AND MANWAY COVERS.
26. PACKING BED SUPPORT SHALL BE DESIGNED AND INSTALLED SUCH THAT A CONSTANT 3 mm. GAP IS MAINTAINED BETWEEN THE INSIDE OF THE SHELL AND THE OUTER DIAMETER OF THE PACKING BED SUPPORT.
25. PACKING DENSITY IS 160 Kg/m3
24. THE PACKING MATERIAL SHALL BE SS 304 WITH THE TOP 600 mm OF THE BED CONSISTING OF PACKING IN 304L OR 316L STAINLESS STEEL.
23. FEED COMPOSITION :

VAPOUR	(MOL %)	LIQUID	(MOL %)
ETHANE	48.1	WATER	85.6
METHANE	21.1	POTASSIUM ACETATE	3.9
NITROGEN	19	POTASSIUM CARBONATE	4.6
CARBON DIOXIDE	7.2	POTASSIUM BICARBONATE	4
ETHYLENE	1.5	ADDITIVE 922A	1
WATER	2.3	ADDITIVE 922B	1
OXYGEN	0.4		
ARGON	0.2		
PROPANE	0.2		
OTHERS	0.1		

22. COLUMN IS SUBJECT TO STEAM OUT AT 120° AND 0.5 BAR(G)
21. FOLLOWING SHALL BE MARKED ON THE VESSEL AFTER PAINTING USING 100 mm. HIGH BLOCK LETTERS & CONTRASTING PAINT COLOUR. " CAUTION - POST WELD HEAT TREATED - DO NOT WELD"
20. EQUIPMENT SHALL UNDERGO PWHT AS PER THE FOLLOWING CYCLE :
LOADING TEMP. : 426.7°C (800°F) MAX. HOLDING TIME : 1 HOUR 15 MINUTES (MIN.)
RATE OF HEATING : 185°C (333°F) PER HR. MAX. HOLDING TEMP. : 610°±10°C (1130°±18°F)
RATE OF COOLING : 235°C (425°F) PER HR. MAX. UNLOADING TEMP : 426.7°C (800°F) MAX.
19. ORIENTATION SHALL BE MARKED ON THE TOP, MIDDLE AND BOTTOM PORTIONS OF THE SURFACE OF THE SHELLS AT 0°, 90°, 180° & 270° RESPECTIVELY, WITH PUNCH AND WHITE PAINT.
18. MANWAY/NOZZLES INCLUDING THEIR REINFORCEMENT & OTHER ATTACHMENT SHALL NOT BE LOCATED WITHIN 50 mm. OF WELD SEAM (TOE TO TOE).
17. THE VESSEL SHALL BE THOROUGHLY CLEANED INSIDE & OUTSIDE AND SHALL BE FREE OF ALL DIRT, WELD ROD STUBS & LOOSE FOREIGN MATERIALS ETC.
16. ALL R.F.PADS SHALL BE PROVIDED WITH 1/4"NPT TELL TALE HOLE. THIS SHALL BE PNEUMATICALLY TESTED AT 5 psig. TELL TALE HOLES SHALL BE CLOSED WITH RUST PREVENTIVE GREASE AFTER PRESSURE TESTING OF VESSEL.
15. MINIMUM TEMPERATURE OF HYDROTEST WATER SHALL BE 18°C AND THE TEST PRESSURE SHALL BE HELD FOR A MINIMUM OF ONE HOUR. CHLORIDE CONTENT OF TEST WATER SHALL BE LESS THAN 50 PPM.
14. THE LONGITUDINAL BUTT WELD OF NOZZLES FABRICATED FROM PLATE SHALL BE 100% RADIOGRAPHED.
13. ALL INT. & EXT. ATTACHMENT WELDED TO THE VESSEL SHALL BE CONTINUOUSLY SEAL WELDED.
12. ALL NOZZLES AND MANWAY THAT DO NOT EXTEND INTO THE VESSEL SHALL BE FINISHED FLUSH WITH THE INSIDE & THE INNER EDGE SHALL BE ROUNDED OFF. TO A MIN. 3mm RADIUS.
11. □ MARK INDICATES THE BSHI WELD STANDARD NUMBER.
○ MARK INDICATES THE POSITION NUMBER WITH REFERENCE TO LIST OF MATERIAL. (A) (L3B)
○ MARK INDICATES THE NOZZLE MARK NUMBER. L4A
10. SERVICE GASKETS & BOLTING FOR BLINDED NOZZLES SHALL BE USED FOR PRESSURE TESTING. (A) L3A/L4B
GASKETS FOR OTHER NOZZLES SHALL BE SPIRAL WOUND. L2A/B
9. TWO SPARE GASKETS AND 10% (2 Nos. MIN. PER SIZE) OF FASTENERS ARE TO BE SHIPPED LOOSE FOR ALL SERVICE BUNDLED NOZZLES & MANWAYS AS CONSTRUCTION / COMMISSIONING SPARES. L1B, L1A
8. ALL REMOVABLE INTERNALS SHALL PASS THROUGH THE NEAREST MANHOLE. N5
7. NOZZLE PROJECTION IS FROM C.L. OF VESSEL TO GASKET FACE OF FLG. UNLESS OTHERWISE SPECIFIED. N5
6. FLANGES UPTO & INCL. 24"NB SHALL BE AS PER ANSI B16.5. N4
5. ALL BOLTS & NUTS SHALL BE OF UNC SERIES UPTO AND INCL. 1" SIZE AND BUM ABOVE 1"SIZE. N3
4. NOZZLES POSITIONS ON VESSEL ELEVATIONS ARE CONVENTIONAL. FOR TRUE LOCATION SEE END VIEW. N2
3. FLANGE FACE FINISH SHALL HAVE SMOOTH FINISH WITH A ROUGHNESS FROM Ra 3.2 TO 6.3 MICROMETERS (125-250 AARH). N1.
2. ALL FLANGE BOLT HOLES SHALL STRADDLE VERTICAL AND/OR NORTH-SOUTH CENTER LINES UNLESS SHOWN OTHERWISE.
1. ALL DIMENSIONS ARE IN mm. UNLESS OTHERWISE SPECIFIED.

MARK	QTY	SIZE	PROJ. FROM C	SERVICE	NOZZLE NECK O.D.	SCH	THK.	NOZZ. FLANGE RTG. SEE NOTE 6	RATING LB	REINF. PAD O.D.	THK.
P01	1	18"	-	PIPE OPENING FOR 'N4'	457	PLT.	8	-	-	-	-
SA1~2	2	-	-	SKIRT ACCESS	SEE DWG.	-	8	-	-	-	-
SV1~4	4	4"	-	SKIRT VENT	114.3	40	6.02	-	-	-	-
M2	1	24"	1210	MANWAY W/BLIND FLG. & DAVIT	SEE DETAIL			WNRFS	300#	1050	25
M1	1	24"	1210	MANWAY W/BLIND FLG. & DAVIT	SEE DETAIL			WNRFS	300#	1100	25
H	1	12"	1200	HANDHOLE W/BLIND FLG. & HINGE	323.9	60	14.27	WNRFS	300#	625	21
P1/P2	2	2"	1100	PRESSURE TAPPING	84.0	--	16.6	LWNRFS	300#	--	--
L3B	1	3"	1100	LEVEL INSTRUMENT	88.9	160	11.13	WNRFS	300#	190	22
L4A	1	3"	1100	LEVEL INSTRUMENT	88.9	160	11.13	WNRFS	300#	190	21
L3A/L4B	2	3"	1100	SPARE + BLIND	88.9	160	11.13	WNRFS	300#	190	22
L2A/B	2	3"	1100	LEVEL TRIP	88.9	160	11.13	WNRFS	300#	190	22
L1B	1	3"	1100	LEVEL GAUGE	88.9	160	11.13	WNRFS	300#	190	22
L1A	1	3"	1100	LEVEL GAUGE	88.9	160	11.13	WNRFS	300#	190	21
N5	1	1.5"	1100	DEMISTER WASHING	48.3	160	7.14	WNRFS	600#	--	--
N5	1	1"	1100	UTILITY CONNNECTION	54.0	--	14.3	LWNRFS	300#	--	--
N4	1	8"	1100	LIQUID OUTLET	219.1	80	12.7	WNRFS	300#	420	22
N3	1	12"	1200	VAPOUR INLET	323.9	60	14.27*	WNRFS	600#	625	21
N2	1	8"	1100	LIQUID INLET	219.1	80	12.7	WNRFS	300#	420	21
N1	1	12"	SEE DWG	VAPOUR OUTLET	323.9	60	14.27	WNRFS	300#	575	21

* PLUS 6mm. SS304L WELD OVERLAY

CONDITION	LOAD	VERTICAL LOAD (kg)
EMPTY (ERECTION)		21800
OPERATING		43950
HYDROTEST		65300

No.	DESIGN CONDITIONS	UNITS	VALUES
35.	HAZARD CONSIDERATIONS		FLAMMABLE/TOXIC
34.			
33.			
32.	FULL OF WATER WEIGHT (SHOP)	kg (lb)	57850 (127559)
31.			
30.	FABRICATED WEIGHT	kg (lb)	21800 (48069)
29.	MANUFACTURER'S SERIAL No.	----	3217
28.	JOB NUMBER	----	7391-04
27.	MANUFACTURER'S NAME	----	BELLELI S.H.I LTD.
26.	CODE STAMP	----	YES 'U' STAMP
25.	DESIGN CODE	----	ASME SECTION VIII DIV.1 2001 EDITION
24.	SERVICE	----	W2 ABSORBER
23.	VOLUME	m^3 (ft)^3	36.05 (1273)
22.	FIREPROOFING	----	NO
21.	INSULATION (BY OTHERS)	mm	90 (HC) NOTE-27
20.	LIQUID SPECIFIC GRAVITY	----	1.256-1.258
19.	INSPECTION AUTHORITY	----	CLIENT/BSHI/AI
18.	WIND VELOCITY	kph (mph)	140 (87)
17.	EARTHQUAKE ZONE	----	2A
16.	MINIMUM DESIGN METAL TEMPERATURE	°C (°F)	1 (33.8)
15.	CHARPY IMPACT TEST	----	NO. EXEMPTED AS PER UCS-66 (a)
14.	LETHAL SERVICE/CYCLIC SERVICE	----	NO/NO
13.	WET SOUR SERVICE	----	NO
12.	POST WELD HEAT TREATMENT	----	YES (SEE NOTE No. 20)
11.	JOINT EFFICIENCY	%	100
10.	RADIOGRAPHY	----	FULL (RT-1)
9.	CORROSION ALLOWANCE	mm	3.0
8.	M.A.W.P AT DESIGN TEMPERATURE (HEW & COLD)	barg (psig)	31.04 (450.1) LIMITED BY SHELL 2
7.	M.A.P.	barg (psig)	36.31 (526.5) LIMITED BY SHELL 2 TO 6
6.	FIELD HYDROTEST PRESSURE (CORRODED)	barg (psig)	40.35 (585)
5.	SHOP HYDROTEST PRESSURE (HOR.-TOP)	barg (psig)	47 (682)
4.	WORKING TEMPERATURE (TOP/BOT.)	°C (°F)	110.1 (230) / 108.9 (228)
3.	WORKING PRESSURE (TOP/BOT.)	barg (psig)	25.46 (369.2) / 25.6 (371.2)
2.	DESIGN TEMPERATURE (INT/EXT.)	°C (°F)	150 (302) / 120 (248)
1.	DESIGN PRESSURE (INT/EXT.)	barg (psig)	31 (449.6) / 0.5 (7.5) (SEE NOTE 22)

\$ L1B, L2A/B, L3A/B, L4B
** SA193GR.B7/SA194GR.2H
*** SS 304L SPIRAL WOUND/GRAPHITE FILLED WITH SS304L INTERNAL COMPRESSION RING AND EXTERNAL C.S. CENTERING RING.

TOTAL WT. = 19438.3 Kgs.

ITEM	POS.	QTY FOR ONE POS.	QTY FOR ONE FAM.	DESCRIPTION	LENGTH	WIDTH	THICK	WT. IN Kg. For ONE POS.	WT. IN Kg. For ONE FAM.	MAT'L	MAT'L CODE	MR. NO.	REMARK
34	1			DEMISTER	0	0	0.0	0.0	0.0	SS304L	7391A17202	7391G0-017	REMOVABLE
33	2			RP OD 180/99	0	0	21.0	3.4	6.8	SA516GR.70	7391A05E14	7391G0-005	L1A/L4A
32	1			ASME NAME PLATE	200	113	3.0	0.5	0.5	SS304	STOCK	STOCK	
31	1			CLIENT NAME PLATE	150	120	3.0	0.4	0.4	SS304	STOCK	STOCK	
30	1			NAME PLATE BRT	518	263	6.0	6.4	6.4	SA516GR.70	7390A01125	STOCK	
29	1			RP OD 1050/620	0	0	25.0	112.6	112.6	SA516GR.70	7387A01E41	7387G0-001	M2
28	1			RP OD 1100/620	0	0	25.0	127.3	127.3	SA516GR.70	7387A01E41	7387G0-001	M1
27	54			ST+2NT 1 1/2" BUM	270	0	0.0	3.5	189.0	**	7391A19B09	7391G0-019	(48+6 SPARE)
26	6			GK-24"-300∫-RF 4.5T	0	0	0.0	0.0	0.0	***	7391A1BG07	7391G0-018	(24 SPARE)
25	2			BFRF-24"-300∫	0	0	0.0	355.0	710.0	SA105	7391A05F10	7391G0-006	M1,M2
24	2			FAB. PIPE	1935	327	30.0	149.0	298.0	SA516GR70	7391A05L18	7391G0-005	M1,M2
23	2			F-24"-WNRF-300∫	0	0	0.0	260.0	520.0	SA105	7391A06F07	7391G0-006	M1,M2
22	2			F-2"-WNRF-300∫	316	0	0.0	21.9	43.8	SA105	7391A06F03	7391G0-006	P1,P2
21	18			ST+2NT 1 1/8" BUM	175	0	0.0	1.2	21.6	**	7391A19B05	7391G0-019	(18+2 SPARE)
20	3			GK-12"-300∫-RF 4.5T	0	0	0.0	0.0	0.0	***	7391A1BG06	7391G0-018	(12 SPARE)
19	1			RP OD 625/334	0	0	21.0	36.0	36.0	SA516GR.70	7391A05L14	7391G0-005	H
18	1			PI 12" SCH.60	302	0	0.0	32.9	32.9	SA106GRB	7200A1410TR002	STOCK	H
17	1			BFRF-12"-300∫	0	0	0.0	80.0	80.0	SA105	7391A06F09	7391G0-006	H
16	20			ST+2NT 3/4" UNC	110	0	0.0	0.3	6.0	**	7391A19B02	7391G0-019	(16+4 SPARE)
15	6			GK-3"-300∫-RF 4.5T	0	0	0.0	0.0	0.0	***	7391A1BG04	7391G0-018	(2+4 SPARE)
14	2			F-3"-BFRF-300∫	0	0	0.0	7.0	14.0	SA105	7391A06F08	7391G0-006	L3A,L3B
13	8			F-3"-WNRF-300∫-160	0	0	0.0	6.8	54.4	SA105	7391A06F04	7391G0-006	L1A,L4B
12	8			PI 3" SCH.160	237	0	0.0	5.0	40.0	SA106GR.B	7051A06T08	STOCK	L1A,L4B
11	6			RP OD 180/99	0	0	22.0	3.5	21.0	SA516GR.70	7391A05C16	7391G0-006	$
10	1			F-1"-WNRF-300∫	315	0	0.0	5.5	5.5	SA105	7391A06F01	7391G0-006	N5
9	1			RP OD 575/334	0	0	21.0	28.0	28.0	SA516GR.70	7391A05L13	7391G0-005	N1
8	1			PI 12" SCH.60	237	0	0.0	25.8	25.8	SA106GR.B	7200A1410TR002	STOCK	N1
7	2			F-12"-WNRF-300∫-60	0	0	0.0	62.0	124.0	SA105	7391A06F06	7391G0-005	N1,P1,P2
6	1			SKI. BRL.-A	5026	2366	8.0	746.8	746.8	SA516GR.70	7391A05L01	7391G0-005	
5	1			EH.-ID 1570x25T	0	0	0.0	618.0	618.0	SA516GR.70	7387A01L41	7387G0-001	
4	1			EH.-ID 1570x25T	0	0	0.0	618.0	618.0	SA516GR.70	7387A01L41	7387G0-001	
3	1			SKI. BRL.-6	4998	2950	21.0	2430.5	2430.5	SA516GR.70	7391A05L14	7391G0-005	
2	4			SKI. BRL.-2,3,4,5	4998	3000	21.0	2471.7	9886.8	SA516GR.70	7391A05L14/15	7391G0-005	
01-01	1	1	1	SKI. BRL.-1	5001	3050	22.0	2634.2	2634.2	SA516GR.70	7391A05L16	7391G0-005	

LIST OF MATERIAL

BELLELI SAUDI HEAVY INDUSTRIES LTD.
AS BUILT
CERTIFIED BY.....

TECHNIP-COFLEXIP
PROJ.: SABIC ACETIC ACID PROJECT
CLIENT: SABIC - YANBU - KINGDOM OF SAUDI ARABIA
MATERIAL REQUISITION No.
2121 MR 0511102
ITEM: 100-C141
SR Doc. CODE: A1103 / A0402

VENDOR DOCUMENT REVIEW
1 REVISE AND RESUBMIT
2 TO BE ISSUED AS FINAL PROVIDED COMMENTS ARE INCORPORATED
3 NO COMMENT - FINAL ISSUE
4 FOR INFORMATION ONLY (INTERNAL USE)
U.O.: TECHNIP ITALY S.p.A.
BY. DATE: 11/6/06

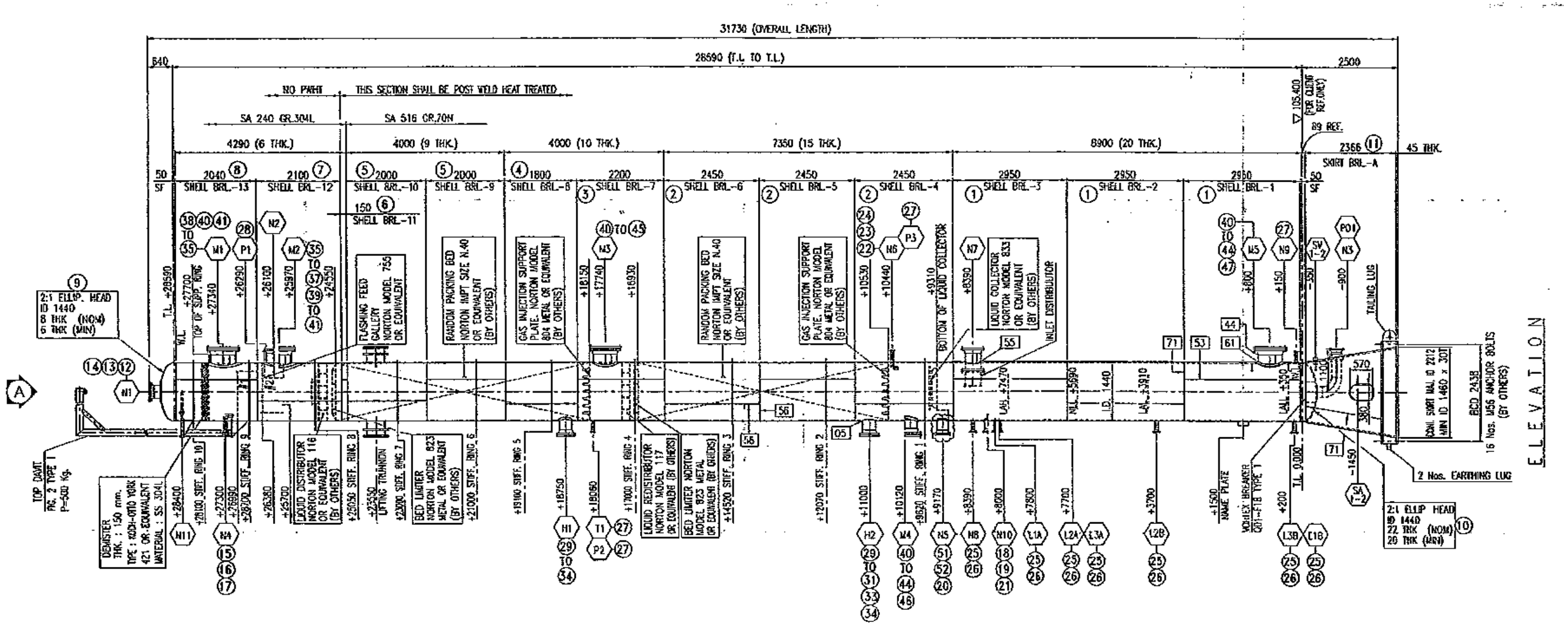
REV.	DATE	DESCRIPTION	DRAWN	CHK'D	APP'D
4	30 Apr.'05	REVISED AS PER CLIENT COMMENTS MARKED (A) & 'AS BUILT'	HEMANT	SHETTY	SHAJI
3	12 Jul.'03	REVISED AS MARKED (A) & 'AS BUILT'.	VINAYAK	GUPTA	
2	26 Apr.'03	REVISED AS PER CLIENT COMMENTS MARKED (A)	VINAYAK	JV/GUPTA	SHAJI
1	26 Dec. 02	REVISED AS PER CLIENT COMMENTS & ISSUED FOR CONSTRUCTION.	ANIL/SOUMEN	JV/SURESH	SHAJI
0	27 Sep. 02	ISSUED FOR APPROVAL & INTERNAL COMMENTS.	EUGENE/VINAYAK	JV/SURESH GUPTA	SHAJI

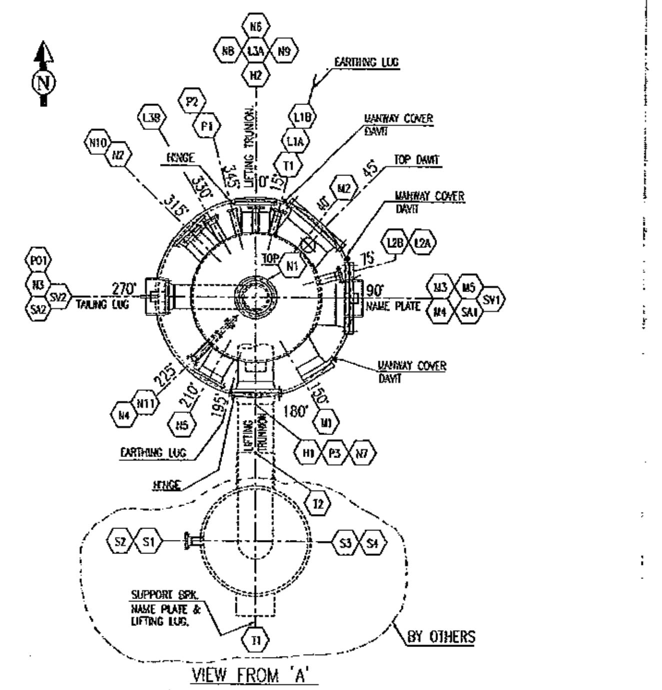
SCALE: 1 : 50
CLIENT: TECHNIP-COFLEXIP
ORDER: 2121NA0006
APPROVED FOR CONSTRUCTION BY.....SHAJI DATE...26/12/02

BELLELI SAUDI بيليلي السعودية
HEAVY INDUSTRIES LTD. شركة بيليلي السعودية المحدودة
AL- JUBAIL, KINGDOM OF SAUDI ARABIA الجبيل

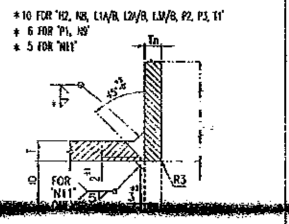
SABIC ACETIC ACID PLANT
IBN RUSHD SITE-YANBU-KINGDOM OF SAUDI ARABIA
CO_2 ABSORBER (ITEM NO. 100-C141)
GENERAL ASSEMBLY

DRAWING NO. DA-7391-04-001 REV. 4

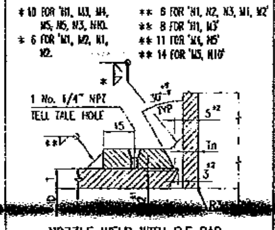




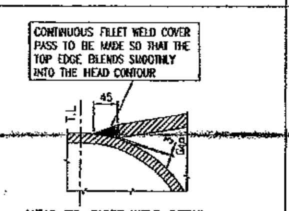
VIEW FROM 'A'
(NOZZLE ORIENTATION)



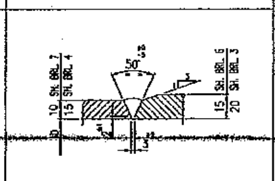
NOZZLE WELD WITHOUT R.F PAD



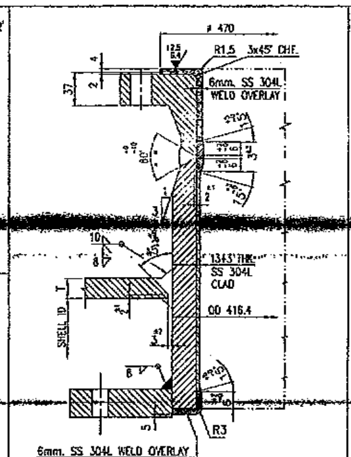
NOZZLE WELD WITH R.F PAD



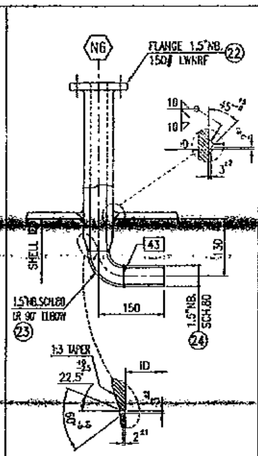
HEAD TO SKIRT WELD DETAIL



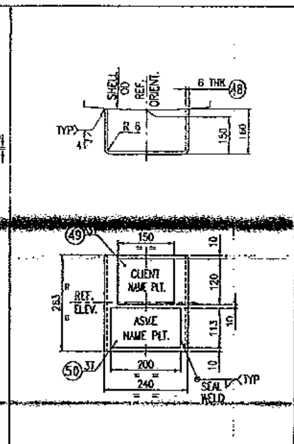
CIRC. SEAM WELD DETAIL
(FOR BARRELS 6 TO 7 & BARRELS 3 TO 4)



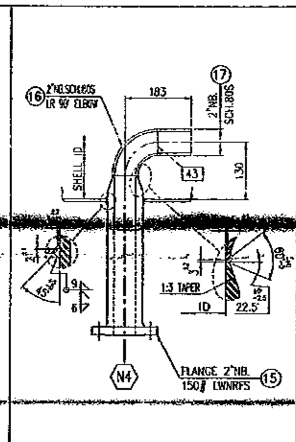
DETAIL OF NOZZLE 'N7'



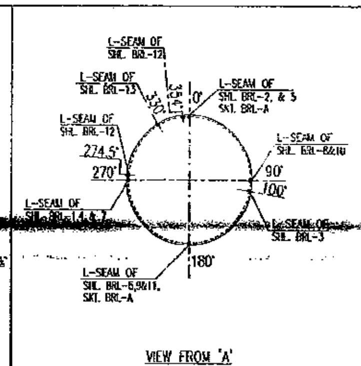
DETAIL OF NOZZLE 'N6'



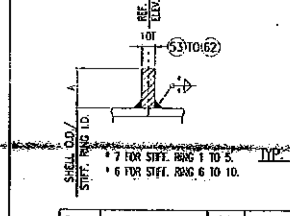
DETAIL OF NAME PLATE BRACKET

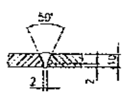


DETAIL OF NOZZLE 'N4'



VIEW FROM 'A'
LONG SEAM ORIENTATION





TYP. SEGMENT WELD DETAIL

SL. No.	DESCRIPTION	'A'	SIZE	POS. No.
1	STIFF. RING-1,2&3	90	OD.1650/ID.1470	53
2	STIFF. RING-4&5	65	OD.1590/ID.1460	54
3	STIFF. RING-6&7	65	OD.1588/ID.1458	55
4	STIFF. RING-8,9&10.	65	OD.1582/ID.1452	56

STIFFENER RING DETAIL

LOAD / CONDITION	VERTICAL LOAD (kg)
EMPTY (ERECTION)	24300
OPERATING	62050
HYDROTEST	65000

CLIENT'S REF. DWGS. & SPECS. / BELLELI REFERENCE DRAWINGS

DRAWING No.	DESCRIPTION	DRAWING No.	DESCRIPTION
Q01-G01	SHOP PREPARATION OF EQUIPMENT FOR SHIPMENT		
Q01-T05	PRESSURE VESSEL MATERIAL CONTROL PROGRAM		
1000.00.ST.0800.01	NAME PLATE		
SZ5D	RECOMMENDED COATING SYSTEMS FOR EXTERNAL PROTECTION		
22854-SP-000-Y-002	SHOP AND FIELD PAINTING		
W12-F04	HEAT TREATMENT AND STRESS RELIEF OF WELD		
W01-F01	WELDING AND INSPECTION		
Q01-T72	COLUMN, TRAYS AND INTERNAL - TESTING AND INSPECTION		
Q01-T07	MATERIALS IDENTIFICATION PROGRAM		
Q01-T02	INSPECTION REQUIREMENTS FOR PRESSURE VESSELS		
Q01-F37	AUSTENITIC AND HIGH ALLOY STEELS PRESSURE VESSELS: FABRICATION		
Q01-F34	CARBON & LOW ALLOY STEELS FABRICATION - PRESSURE VESSELS		
Q01-F31	DEMISTER PAD ASSEMBLY AND DETAILS		
Q01-F27	VESSELS: MANHOLE COVER HINGE DETAILS		
Q01-F20	DAVIT FOR OUTDOOR MANHOLE COVERS	TP-7391-05-001	TEMPLATE
Q01-F19	COLUMN DAVIT FABRICATION DETAIL	ST-7391-05-001	FINISH REQUIREMENTS
Q01-F17	GRAB RUNGS AND STEPS FOR MANWAYS	DO-7391-05-001	HYDRO TEST & SHIPPING ARRGT.
Q01-F02	COLUMN FABRICATION		
Q01-F01	PRESSURE VESSELS : WELDING & FABRICATION	DA-7391-00-008	HANDHOLE HINGE
Q01-E03	AUSTENITIC & HIGH ALLOY STEEL PRESSURE VESSELS: DESIGN CRITERIA	DA-7391-00-005	TOP DAVIT
Q01-E02	PRESSURE VESSELS: CARBON AND LOW ALLOY STEELS-DESIGN CRITERIA	DA-7391-00-007	SKIRT ACCESS OPENING COVER
Q01-F28	ALLOWABLE FABRICATION TOLERANCE	DA-7391-00-001 (2 SHTS.)	MANWAY DAVIT DETAIL
Q01-F25	VESSEL LUG MANUFACTURE & GROUNDING DETAIL		
Q01-F23/VEVF1123	VESSEL INSULATION AND FIRE PROFING SUPPORT	DU-7391-05-001	GENERAL ASSY. FOR PLATFORM & LADDERS
Q01-F22	PRESSURE VESSEL PIPE SUPPORT	DS-7391-05-002	LADDERS & SAFETY GUARD DETAILS.
Q01-F21	VESSEL PIPE GUIDE	DS-7391-05-001	PLATFORM & HANDRAIL DETAILS.
Q01-F18	VORTEX BREAKER		
Q01-F15	VESSEL NAME PLATE AND STAMPING	DA-7391-05-010	INTERNAL ATTACHMENTS.
Q01-E13	VESSEL LIFTING LUGS, TRUNNION & DOBLE RING TYPE	DA-7391-05-009	DEMISTER SUPPORT DETAILS
Q01-F12	SKIRT-TYPE SUPPORTS, VERTICAL VESSELS	DA-7391-05-008	CLIPS FOR PIPE SUPP./GUIDES & INSULATION.
Q01-T01	TESTING & INSPECTION PRESSURE VESSELS		
Q01-E01	PRESSURE VESSELS - GENERAL	DA-7391-05-007	CLIPS FOR PLTF. & LADDERS
Q01-F72	COLUMN, TRAYS & INTERNAL FABRICATION	DA-7391-05-006	ASME NAME PLATE
Q01-F07	PRESSURE VESSELS - FABRICATION	DA-7391-05-005	CLIENT NAME PLATE
Q01-E12	COLUMN-DESIGN CRITERIA	DA-7391-05-004	FORMED HEAD (BOTT.)
2121.04.DW.0511-02 (4 SHTS) REV.0	DATA SHEET	DA-7391-05-003	FORMED HEAD (TOP)
		DA-7391-05-002	DETAIL DRAWING

GENERAL NOTES

25. FEED COMPOSITION :

VAPOUR	MOL %	LIQUID	MOL %
CARBON DIOXIDE	33	WATER	84.3
WATER	67	POTASSIUM ACETATE	3.5
		POTASSIUM CARBONATE	3.7
		POTASSIUM BICARBONATE	6.1
		ADDITIVE 922A	1
		ADDITIVE 922B	1

24. COLUMN IS SUBJECT TO STEAMOUT AT 120°C. AND 0.5 barg.
23. INSULATION SHALL BE EXTENDED UPTO & INCLUDE COVERS OF MANWAY AND HANDWAY.
22. FULL RADIOGRAPHY IS APPLICABLE FOR THE CARBON STEEL PORTION OF THE COLUMN INCLUDING CS TO SS CIRC. SEAM AND SPOT RADIOGRAPHY IS APPLICABLE FOR THE STAINLESS STEEL PORTION OF THE COLUMN.
21. FOLLOWING SHALL BE MARKED ON THE VESSEL AFTER PAINTING USING 100mm. HIGH BLOCK LETTERS & CONTRASTING PAINT COLOUR. "CAUTION - POST WELD HEAT TREATED - DO NOT WELD"
20. THE ENTIRE CARBON STEEL SECTION OF THE COLUMN INCLUDING BARREL 11 SHALL BE POST WELD HEAT TREATED AS PER THE FOLLOWING CYCLE. THE STAINLESS STEEL SECTION (BARRELS 12, 13 & TOP HEAD) DOES NOT REQUIRE POST WELD HEAT TREATMENT. A 150 mm. LONG SS BARREL (SHELL BARREL 11) SHALL BE WELDED TO THE CARBON STEEL SECTION PRIOR TO POST WELD HEAT TREATMENT. THE REMAINDER OF THE SS SECTION (BARREL 12, 13 & TOP HEAD) SHALL BE WELDED TO THE SHELL BARREL 11 AFTER POST WELD HEAT TREATMENT.

LOADING TEMP.	: 427°C (800°F) MAX.	HOLDING TIME	: 55 MINUTES (MIN)
RATE OF HEATING	: 222°C (400°F) PER HOUR MAX.	HOLDING TEMP.	: 610°±10°C (1130°±18°F) MAX.
RATE OF COOLING	: 277°C (500°F) PER HOUR MAX.	UNLOADING TEMP.	: 427°C (800°F) MAX.

19. ORIENTATION SHALL BE MARKED ON THE TOP, MIDDLE AND BOTTOM PORTIONS OF THE SURFACE OF THE SHELLS AT 0°, 90°, 180° & 270° RESPECTIVELY, WITH PUNCH AND WHITE PAINT.
18. MANWAY/NOZZLES INCLUDING THEIR REINFORCEMENT & OTHER ATTACHMENT SHALL NOT BE LOCATED WITHIN 50 mm. OF WELD SEAM (TOE TO TOE).
17. THE VESSEL SHALL BE THOROUGHLY CLEANED INSIDE & OUTSIDE AND SHALL BE FREE OF ALL DIRT, WELD ROD STUBS & LOOSE FOREIGN MATERIALS ETC.
16. ALL R.F.PADS SHALL BE PROVIDED WITH 1/4"NPT TELL TALE HOLE. THIS SHALL BE PNEUMATICALLY TESTED AT 5 psig. TELL TALE HOLES SHALL BE CLOSED WITH RUST PREVENTIVE GREASE AFTER PRESSURE TESTING OF VESSEL.
15. MINIMUM TEMPERATURE OF HYDROTEST WATER SHALL BE 16°C AND THE TEST PRESSURE SHALL BE HELD FOR A MINIMUM OF ONE HOUR. CHLORIDE CONTENT OF TEST WATER SHALL BE LESS THAN 50 PPM.
14. THE LONGITUDINAL BUTT WELD OF NOZZLES FABRICATED FROM PLATE SHALL BE 100% RADIOGRAPHED.
13. ALL INT. & EXT. ATTACHMENT WELDED TO THE VESSEL SHALL BE CONTINUOUSLY SEAL WELDED.
12. ALL NOZZLES AND MANWAY THAT DO NOT EXTEND INTO THE VESSEL SHALL BE FINISHED FLUSH WITH THE INSIDE & THE INNER EDGE SHALL BE ROUNDED OFF. TO A MIN. 3mm RADIUS.
11. ☐ MARK INDICATES THE BSHI WELD STANDARD NUMBER. ○ MARK INDICATES THE POSITION NUMBER WITH REFERENCE TO LIST OF MATERIAL. ⬡ MARK INDICATES THE NOZZLE MARK NUMBER.
10. SERVICE GASKETS & BOLTING FOR BLINDED NOZZLES SHALL BE USED FOR PRESSURE TESTING. GASKETS FOR OTHER NOZZLES SHALL BE NON ASBESTOS FIBRE. ⚠
9. TWO SPARE GASKETS AND 10% (2 Nos. MIN. PER SIZE) OF FASTENERS ARE TO BE SHIPPED LOOSE FOR ALL SERVICE BLINDED NOZZLES & MANWAYS AS CONSTRUCTION / COMMISSIONING SPARES.
8. ALL REMOVABLE INTERNALS SHALL PASS THROUGH THE NEAREST MANHOLE.
7. NOZZLE PROJECTION IS FROM C.L. OF VESSEL TO GASKET FACE OF FLG. UNLESS OTHERWISE SPECIFIED.
6. FLANGES UPTO & INCL. 24"NB SHALL BE AS PER ANSI B16.5.
5. ALL BOLTS & NUTS SHALL BE OF UNC SERIES UPTO AND INCL. 1" SIZE AND 8UN ABOVE 1"SIZE
4. NOZZLES POSITIONS ON VESSEL ELEVATIONS ARE CONVENTIONAL. FOR TRUE LOCATION SEE END VIEW.
3. FLANGE FACE FINISH SHALL HAVE SMOOTH FINISH WITH A ROUGHNESS FROM Ra 3.2 TO 6.3 FOR RFS AND 6.4-12.5 FOR RF.
2. ALL FLANGE BOLT HOLES SHALL STRADDLE VERTICAL AND/OR NORTH-SOUTH CENTER LINES UNLESS SHOWN OTHERWISE.
1. ALL DIMENSIONS ARE IN mm. UNLESS OTHERWISE SPECIFIED.

28. INTERNAL SS SURFACE SHALL BE PICKLED AND PASSIVATED.
27. PACKING DENSITY IS 256 Kg/m3.
26. THE PACKING MATERIAL SHALL BE AS A MINIMUM CARBON STEEL WITH THE TOP 600 mm OF EACH BED CONSISTING OF PACKING IN 304L STAINLESS STEEL.

GENERAL NOTES CONTD....

NOZZLE SCHEDULE

$$ PLUS 6 mm. SS 304L WELD OVERLAY
$ PLUS 3 mm. SS 304L CLAD.

MARK	QTY	SIZE	PROJ. FROM CL	SERVICE	NOZZLE NECK O.D.	NOZZLE NECK SCH	NOZZLE NECK THK.	NOZZ. FLANGE TYPE	NOZZ. FLANGE RATING LB	REINF. PAD O.D.	REINF. PAD THK.
P01	1	400 Ø	-	PIPE OPENING FOR 'N3'	466	PLT.	8	-	-	-	-
SA1~2	2	-	-	SKIRT ACCESS	SEE DWG.	-	8	-	-	-	-
SV1~2	2	4"	-	SKIRT VENT	114.3	40	6.02	-	-	-	-
M5	1	24"	1080	MANWAY W/BLIND FLG. & DAVIT	609.6	PLT	10	WNRF	150#	760	20
M4	1	24"	1080	MANWAY W/BLIND FLG. & DAVIT	609.6	PLT	10	WNRF	150#	760	15
M3	1	24"	1080	MANWAY W/BLIND FLG. & DAVIT	609.6	PLT	10	WNRF	150#	715	10
M2	1	24"	1080	MANWAY W/BLIND FLG. & DAVIT	609.6	PLT	20	WNRFS	150#	930	6
M1	1	24"	1080	MANWAY W/BLIND FLG. & DAVIT	609.6	PLT	20	WNRFS	150#	1010	6
H2	1	12"	1080	HAND HOLE WITH BLIND FLG.	323.9	30	8.38	WNRF	150#	-	-
H1	1	12"	1090	HAND HOLE WITH BLIND FLG.	323.9	30	8.38	WNRF	150#	430	10
T1	1	1.5"	1030	TEMPERATURE TAPPING	66.7	-	14.3	LWNRF	150#	-	-
P1	1	1.5"	1030	PRESSURE TAPPING	66.7	-	14.3	LWNRFS	150#	-	-
P2,P3	2	1.5"	1030	PRESSURE TAPPING	66.7	-	14.3	LWNRF	150#	-	-
⚠ L3A/B	2	3"	1030	LEVEL INSTRUMENT LT-4104	88.9	160	11.13	WNRF	150#	-	-
⚠ L2A/B	2	3"	1030	LEVEL INSTRUMENT / ALARM LT4105	88.9	160	11.13	WNRF	150#	-	-
L1A/B	2	3"	1030	LEVEL GUAGE	88.9	160	11.13	WNRF	150#	-	-
N11	1	1.5"	1030	DEMISTER WASHING	48.3	80S	5.08	WNRFS	150#	-	-
N10	1	6"	1030	PUMP SPILLBACK	168.3	80	10.97	WNRF	150#	275	20
⚠ N9	1	1.5"	1030	LEVEL ALARM LT 4016	66.7	-	14.3	LWNRF	150#	-	-
N8	1	3"	1030	SOLUTION DUMP	88.9	160	11.13	WNRFS	150#	-	-
N7	1	16"	1080	REBOILER RETURN	416.4	PLT.	13+3$	WNRFS$$	150#	-	-
N6	1	1.5"	1030	CONDENSATE INLET	66.7	-	14.3	LWNRFS	150#	-	-
N5	1	10"	1030	SOLUTION TO REBOILER	273.1	80	15.09	WNRF	150#	375	15
N4	1	2"	1030	CONDENSATE INLET	82.5	-	15.8	LWNRFS	150#	-	-
N3	1	10"	SEE DWG	LEAN SOLUTION OUTLET	273.1	40	9.27	WNRF	150#	375	8
N2	1	12"	1080	RICH SOLUTION INLET	323.8	40S	9.52	WNRFS	150#	550	6
N1	1	12"	SEE DWG	VAPOUR OUTLET	323.8	40S	9.52	WNRFS	150#	530	6

DESIGN DATA

No.	DESIGN CONDITIONS	UNITS	VALUES
31.	FULL OF WATER WEIGHT (SHOP)	kg (lb)	71640 (157866)
30.	FABRICATED WEIGHT	kg (lb)	24300 (53582)
29.	MANUFACTURER'S SERIAL No.	---	3218
28.	JOB NUMBER	---	7391-05
27.	MANUFACTURER'S NAME	---	BELLELI S.H.I LTD.
26.	CODE STAMP	---	YES 'U' STAMP
25.	DESIGN CODE	---	ASME SECTION VIII DIV.1 2001 EDITION
24.	SERVICE	---	CO_2 SOLUTION REGENERATOR
23.	VOLUME	m^3 (ft^3)	47.34 (1671.8)
22.	FIREPROOFING	---	NO
21.	INSULATION (BY OTHERS)	mm	90 (HC)
20.	LIQUID SPECIFIC GRAVITY	---	0.953 - 1.263
19.	INSPECTION AUTHORITY	---	CLIENT/BSHI/AI
18.	WIND VELOCITY	kph (mph)	140 (87)
17.	EARTHQUAKE ZONE	---	2A
16.	MINIMUM DESIGN METAL TEMPERATURE	°C (°F)	1 (33.8)
15.	CHARPY IMPACT TEST	---	NO. EXEMPTED AS PER UCS-66(a)
14.	LETHAL SERVICE/CYCLIC SERVICE	---	NO/NO
13.	WET SOUR SERVICE	---	NO
12.	POST WELD HEAT TREATMENT	---	YES (SEE NOTE No.20)
11.	JOINT EFFICIENCY (SS/CS)	%	85 / 100
10.	RADIOGRAPHY (SS/CS)	---	SPOT / FULL (RT4 - SEE NOTE 22)
9.	CORROSION ALLOWANCE (SS/CS)	mm	0 / 3
8.	M.A.W.P AT DESIGN TEMPERATURE	barg (psig)	8.11 (117.6) LIMITES BY SHELL 12 & 13
7.	M.A.P. (NEW & COLD)	barg (psig)	8.12 (117.7) LIMITES BY SHELL 12 & 13
6.	FIELD HYDROTEST PRESSURE (CORRODED)	barg (psig)	10.54 (153)
5.	SHOP HYDROTEST PRESSURE (HOR.-TOP)	barg (psig)	10.54 (153)
4.	WORKING TEMPERATURE (TOP/BOT.)	°C (°F)	93.6 (200.48) / 110.1 (230.18)
3.	WORKING PRESSURE (TOP/BOT.)	barg (psig)	1.16 (16.82) / 1.24 (17.98)
2.	DESIGN TEMPERATURE (INT/EXT.)	°C (°F)	150 (302) / 150 (302)
1.	DESIGN PRESSURE (INT/EXT.)	barg (psig)	3.5 (50.75) / F.V. (SEE NOTE 24)

LIST OF MATERIAL

* SA193GR.B7/SA194GR.2H
*** SS 304L SPIRAL WOUND,GRAPHITE FILLED WITH SS304L INTERNAL COMPRESSION RING AND EXTERNAL C.S. CENTRING RING.
@@ N8, L1A/B, L2A/B, L3A/B

TOTAL WT. = 21359.1 Kgs.

REF.	ITEM POS.	QTY TOT.	DESCRIPTION	LENGTH	WIDTH	THICK	WT. IN Kg. For ONE	WT. IN Kg. For ONE	MAT'L	MAT'L CODE	MR. NO.	REMARKS
	56	3	S RING OD.1582/1452	0	0	12.0	29.2	87.6	SA240GR.304L	STOCK	STOCK	
	55	2	S RING OD.1588/1458	0	0	10.0	24.4	48.8	SA516GR.70N	7391A05L04	739100-005	
	54	2	S RING OD.1590/1460	0	0	10.0	24.5	49.0	SA516GR.70N	7391A05L04	739100-005	
	53	3	S RING OD.1650/1470	0	0	10.0	34.6	103.8	SA516GR.70N	7391A05L04	739100-005	
	52	1	PI 10" SCH80	221	0	0.0	21.0	21.0	SA106GRB	7378A04104Q001	STOCK	N5
	51	1	F-10"-WNRF-150#-80	0	0	0.0	25.0	25.0	SA105	7533A04753	STOCK	N5
	50	1	ASME NAME PLATE	220	113	3.0	0.5	0.5	SS304	STOCK	STOCK	
	49	1	CLIENT NAME PLATE	150	120	3.0	0.4	0.4	SS304	STOCK	STOCK	
	48	1	NAME PLATE BRACKET	543	263	6.0	6.5	6.5	SA516GR.70N	7390A01125	STOCK	
	47	1	RP OD 760/620	0	0	20.0	24.0	24.0	SA516GR.70N	7391A05L13	739100-005	M5
	46	1	RP OD 760/620	0	0	15.0	18.0	18.0	SA516GR.70N	7391A05L10	739100-005	M4
	45	1	RP OD 715/620	0	0	10.0	8.0	8.0	SA516GR.70N	7391A05L04	739100-005	M3
	44	3	24"-BFRF-150#	0	0	0.0	188.0	564.0	SA105	7391A06F17	739100-006	M3,M4,M5
	43	3	FAB. PIPE	1884	276	10.0	40.6	121.8	SA516GR.70N	7391A05L04	739100-005	M3,M4,M5
	42	3	F-24"-WNRF-150#	0	0	0.0	118.0	354.0	SA105	7391A06F16	739100-006	M3,M4,M5
	41	110	STUD 1 1/4" 8UN	180	0	0.0	1.7	187.0	*	7391A19606	739100-019	(D+19 SPARE)
	40	15	GK-24"-150#-RF 4.5T	0	0	0.0	0.0	0.0	***	7391A18008	739100-018	(D+19 SPARE)
	39	1	RP OD 930/620	0	0	6.0	20.0	20.0	SA240GR304L	7391A04L02	739100-004	M2
	38	1	RP OD 1010/620	0	0	6.0	23.5	23.5	SA240GR304L	7391A04L02	739100-004	M1
	37	2	24"-BFRF-150#	0	0	0.0	190.0	380.0	SA182F304L	7391A07F15	739100-007	M1,M2
	36	2	FAB. PIPE	1652	276	20.0	85.0	170.0	SA240GR.304L	7391A04L04	739100-004	M1,M2
	35	2	F-24"-WNRF-150#	0	0	0.0	115.0	230.0	SA182F304L	7391A07F14	739100-007	M1,M2
	34	28	STUD 7/8" UNC	120	0	0.0	0.6	15.8	*	7391A19804	739100-019	(24+4 SPARE)
	33	6	GK-12"-150#-RF 4.5T	0	0	0.0	0.0	0.0	***	7391A18005	739100-018	(2+4 SPARE)
	32	1	RP OD 430/334	0	0	10.0	4.5	4.5	SA516GR.70N	7391A05L04	739100-005	H1
	31	2	PI 12" SCH30	264	0	0.0	17.0	34.0	SA106GRB	7321A021Q1B001	STOCK	H1,H2
	30	2	12"-BFRF-150#	0	0	0.0	45.0	90.0	SA105	7391A06F19	739100-006	H1,H2
	29	2	F-12"-WNRF-150#-30	0	0	0.0	38.0	76.0	SA105	7391A06F18	739100-006	H1,H2
	28	1	F-1.5"-LWNRFS-150#	315	0	0.0	6.9	6.9	SA182F304L	7391A07F11	739100-007	P1
	27	4	F-1.5"-LWNRF-150#	315	0	0.0	5.3	21.2	SA105	7391A06F12	739100-006	N9,P2,P3,T1
	26	7	PI 3" SCH.160	242	0	11.1	0.5	3.5	SA106GRB	7051A06T08	STOCK	@@
	25	7	F-3"-WNRF-150#-160	0	0	0.0	4.5	31.8	SA105	7391A06F13	739100-006	@@
	24	1	PI 1.5" SCH80	93	0	0.0	0.5	0.5	SA106GRB	7345A05T05R001	STOCK	N6
	23	1	ELBOW 1.5"-80LR90	0	0	0.0	0.5	0.5	SA234GRWPB	7391A13001	739100-013	N6
	22	1	F-1.5"-LWRF-150#	383	0	0.0	6.9	6.9	SA105	7391A06F10	739100-006	N6
	21	1	RP OD 275/178	0	0	20.0	5.4	5.4	SA516GR.70N	7391A05L13	739100-005	N10
	20	1	RP OD 375/283	0	0	15.0	5.6	5.6	SA516GR.70N	7391A05L09	739100-005	N5
	19	1	PI 6" SCH80	228	0	0.0	9.6	9.6	SA106GRB	7137A12T01B001	STOCK	N10
	18	1	F-6"-WNRF-150#-80	0	0	0.0	10.8	10.8	SA105	7391A05F14	739100-006	N10
	17	1	PI 2" SCH80S	107	0	0.0	1.0	1.0	SA312TP304L	7137A05T01	STOCK	N4
	16	1	ELBOW 2"-80SLR90	0	0	0.0	1.0	1.0	SA403WP304L	7391A14001	739100-014	N4
	15	1	F-2"-LWNRFS-150#	355	0	0.0	11.5	11.5	SA182F304L	7391A07F12	739100-007	N4
	14	1	RP OD 530/334	0	0	5.0	6.0	6.0	SA240GR.304L	7391A02L01	739100-002	N1
	13	1	PI 12" SCH40S	176	0	0.0	13.0	13.0	SA312TP304L	7381A11T05	739100-011	N1
	12	1	F-12"-WNRFS-150#	0	0	0.0	37.0	37.0	SA182F304L	7391A07F13	739100-007	N1
	11	1	SKT. BRL.-A	7045	2359	30.0	3929.0	3929.0	SA516GR.70N	7391A05L08	739100-005	(IN 2 SEC)
	10	1	DH-ID1440X22THK	0	0	22.0	462.0	462.0	SA516GR.70N	7391A05L16	739100-005	
	9	1	DH-ID1440X8THK	0	0	8.0	165.0	165.0	SA240GR.304L	7391A04L03	739100-004	
	8	1	SH. BRL.-13	4543	2040	6.0	445.0	445.0	SA240GR.304L	7391A04L02	739100-004	
	7	1	SH. BRL.-12	4543	2100	6.0	458.0	458.0	SA240GR.304L	7391A04L02	739100-004	
	6	1	SH. BRL.-11	4543	150	6.0	32.7	32.7	SA240GR.304L	7391A04L01	739100-004	
	5	2	SH. BRL.-9,10	4552	2000	9.0	643.1	1286.2	SA516GR.70N	7391A05L03	739100-005	
	4	1	SH. BRL.-8	4555	1800	10.0	643.6	643.6	SA516GR.70N	7391A05L04	739100-005	
	3	1	SH. BRL.-7	4555	2200	10.0	786.6	786.6	SA516GR.70N	7391A05L04	739100-005	
	2	3	SH. BRL.-4,5,6	4571	2450	15.0	1318.6	3955.8	SA516GR.70N	7391A05L10/9	739100-005	
05-01	1	3	SH. BRL.-1,2,3	4587	2950	20.0	2124.0	6372.0	SA516GR.70N	7391A05L11/12	739100-005	

TECHNIP-COFLEXIP
sabic
SABIC ACETIC ACID PROJECT
CLIENT: SABIC - YANBU - KINGDOM OF SAUDI ARABIA
MATERIAL REQUISITION No. 2121 N3
ITEM: 100-C142
VENDOR DOCUMENT REVIEW

BELLELI SAUDI HEAVY INDUSTRIES LTD.
AS BUILT
CERTIFIED BY

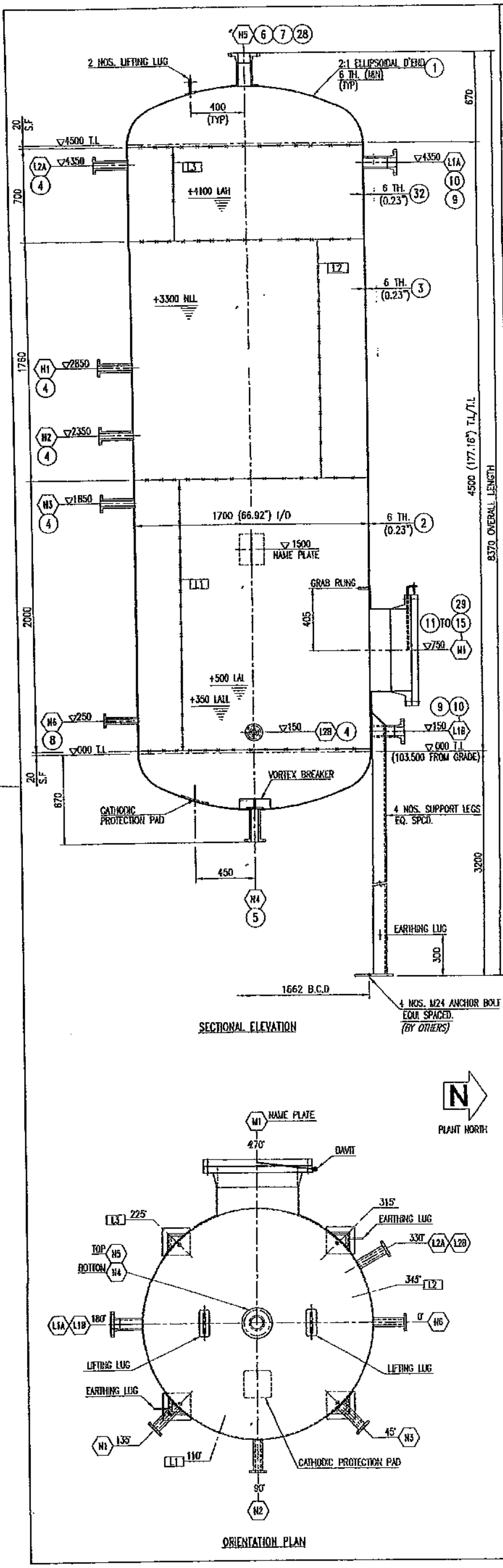
REV.	DATE	DESCRIPTION	DRAWN	CHK'D	APP'D
4	30 Apr.'05	REVISED AS PER CLIENT COMMENTS MARKED ⚠ & 'AS BUILT'	HEMANT		
3	12 Aug.'03	REVISED AS MARKED ⚠ & 'AS BUILT'	JOSEPH	SHIV GUPTA	SHAJI
2	23 Apr.'03	REVISED AS PER CLIENT COMMENTS MARKED ⚠	ANIL/VINAYAK	M/GUPTA	SHAJI
1	24 Dec.'02	REVISED AS PER CLIENT COMMENTS & ISSUED FOR CONSTRUCTION		M/SURESH	SHAJI
0	12 Oct.'02	ISSUED FOR APPROVAL & INTERNAL COMMENTS.	DUCENE/VINAYAK	M/SURESH GUPTA	SHAJI

SCALE: 1 : 60
CLIENT: TECHNIP-COFLEXIP
ORDER: 2121N'A0006
APPROVED FOR CONSTRUCTION BY.... SHAJI
DATE... 24/12/02

BELLELI SAUDI بيلليلي السعودية
HEAVY INDUSTRIES LTD.
AL- JUBAIL, KINGDOM OF SAUDI ARABIA

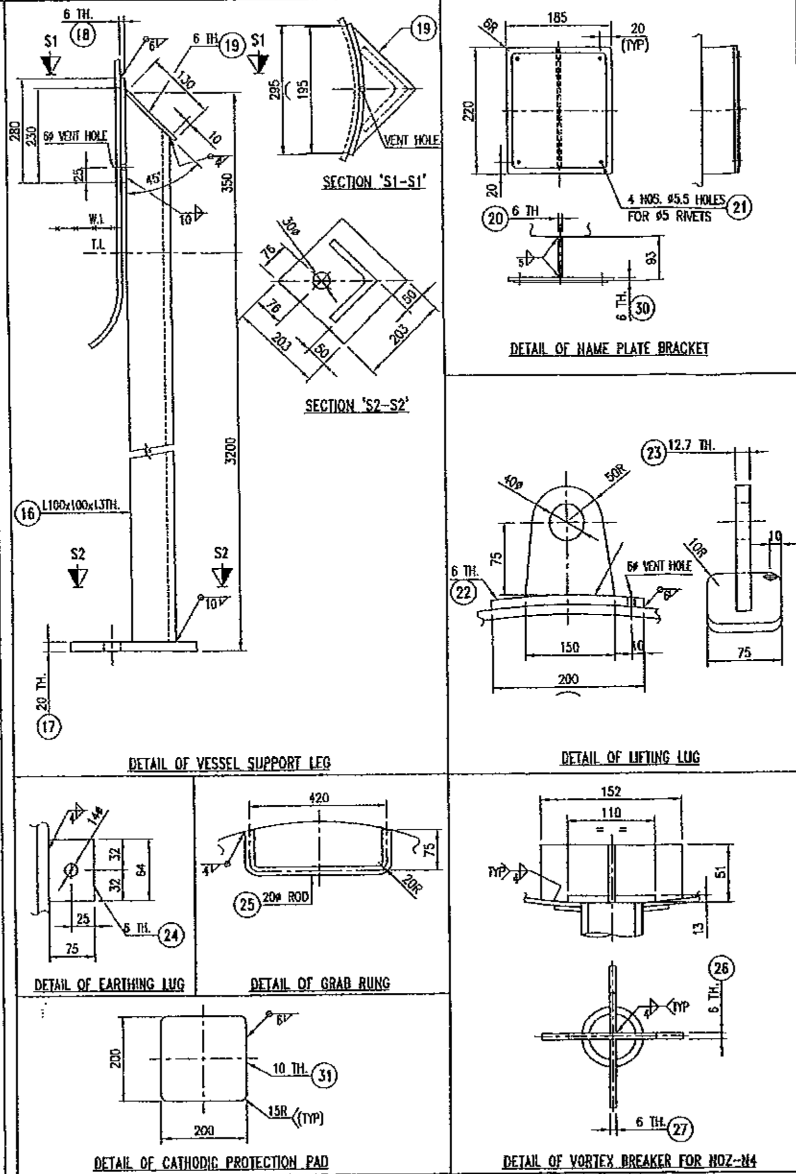
SABIC ACETIC ACID PLANT
IBN RUSHD SITE-YANBU-KINGDOM OF SAUDI ARABIA
CO_2 SOLUTION REGENERATOR (ITEM NO. 100-C142)
GENERAL ASSEMBLY

DRAWING NO. DA-7391-05-001 REV. 4



SECTIONAL ELEVATION

ORIENTATION PLAN



SECTION 'S1-S1'

SECTION 'S2-S2'

DETAIL OF NAME PLATE BRACKET

DETAIL OF VESSEL SUPPORT LEG

DETAIL OF LIFTING LUG

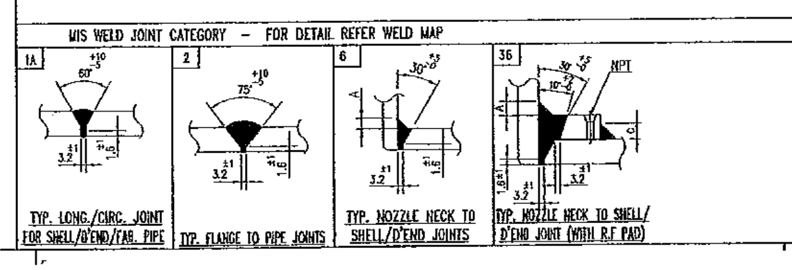
DETAIL OF EARTHING LUG

DETAIL OF GRAB RUNG

DETAIL OF CATHODIC PROTECTION PAD

DETAIL OF VORTEX BREAKER FOR NOZ-N4

MIS WELD JOINT CATEGORY - FOR DETAIL REFER WELD MAP



TYP. LONG./CIRC. JOINT FOR SHELL/D'END/FAB. PIPE

TYP. FLANGE TO PIPE JOINTS

TYP. NOZZLE NECK TO SHELL/D'END JOINTS

TYP. NOZZLE NECK TO SHELL/D'END JOINT (WITH R.F PAD)

GENERAL NOTES

1. THE VESSEL SHALL BE FABRICATED AS PER ASME SEC. VIII DIV. 1, ED. 2001.
2. ALL DIMENSIONS ARE IN MM & NOZZLE ELEVATIONS ARE FROM TAN LINE UNLESS OTHERWISE NOTED.
3. NOZZLE PROJECTIONS REFERED FROM VESSEL CENTERLINE TO FLANGE CONTACT FACE.
4. FLANGE GASKET CONTACT SURFACE FINISH SHALL BE AS PER ASME B 16.5 TO SUIT GASKET, 6.4 TO 12.5 Ra. (ISO 468).
5. NOZZLE BOLT HOLES SHALL STRADDLE PRINCIPAL CENTER LINES.
6. ALL NOZZLES RF PADS SHALL HAVE 1 NO. 1/4" NPT TEL-TALE HOLE FOR AIR TEST AT 30 kPa WITH SOAP SUDS. THE HOLE SHALL BE FILLED WITH HARD GREASE AFTER HYDROTEST.
7. ALL NOZZLES INSIDE EDGES EXCEPT NOZZLES WITH INSIDE PROJECTIONS SHALL BE FLUSHED WITH INTERNAL SURFACE OF VESSEL & ROUNDED OFF WITH 3 MM RADIUS.
8. ALL PRESSURE RETAINING WELDS TO BE FULL PENETRATION.
9. ALL INTERNAL WELDS SHALL BE CONTINUOUS FILLET WELDS.
10. WELDING & NDT PER WELD MAP No. MIS-4674-M010-V & QC INSPECTION PLAN.
11. [ ] INDICATES WELD SEAM NUMBER.
12. HYDROTEST SHALL BE CARRIED OUT IN HORIZONTAL POSITION USING POTABLE WATER WITH CHLORIDE CONTENT NOT EXCEEDING 50 PPM MAX. FOR 1 HR. TEMPERATURE FOR HYDROTEST SHALL BE 17° C MINIMUM AFTER TEST VESSEL SHALL BE FLUSHED WITH CLEAN WATER & SHALL BE THOROUGHLY DRAINED & DRIED.
13. THE VESSEL SHALL BE THOROUGHLY DRIED AND CLEANED INSIDE AND OUTSIDE. IT SHALL BE FREE FROM WELD SPATTER, SCALE, SLAG, RUST AND ANY FOREIGN MATTERS.
14. THE FABRICATION TOLERANCES SHALL BE AS PER CODE AS WELL AS SABIC STD. DWG. NO. : Q01-F28 REV. 0
15. FLANGED CONNECTIONS & ALL OTHER MACHINED SURFACES SHALL BE PROTECTED BY A COATING & FITTED WITH STEEL OR WOODEN COVER, 3 MM THK & NEOPRENE GASKET USING AT LEAST 4 BOLTS.
16. EXTERNAL S.S. SURFACE PREPARATION & PAINTING : AS PER SYSTEM SZ 306 OF TECHNIP SPEC. 2121-00-JSD-2300-01.
    - VESSEL COMPONENTS (SHELL, DISHED ENDS, NOZZLES ETC.)
      ALL EXTERNAL S.S. SURFACES PREPARATION SHALL BE AS PER - SSPC SP 7.
      PAINTING : 2 COATS OF EPOXY PHENOLIC 150 MICRONS DFT.
      TOTAL DFT - 300 MICRONS

    EXTERNAL C.S. SURFACE PREPARATION & PAINTING : AS PER SYSTEM 'S1' OF TECHNIP SPEC. 2121-00-JSD-2300-01.
    - SUPPORT LEG, EXTERNAL ATTACHMENT ETC.
      ALL EXTERNAL C.S. SURFACES SHALL BE GRIT BLASTED AS PER - SA 2
      PAINTING : PRIMER - EPOXY MASTIC - 125 MICRONS DFT.
      TOP COAT - POLYEURITHYNE ENAMEL (ALIPHATIC) - 50 MICRONS DFT.
      TOTAL DFT - 175 MICRONS
17. EXTERNAL ATTACHMENT PADS SHALL HAVE 1 No. #6 VENT HOLES & SHALL BE FILLED WITH HARD GREASE ONLY AFTER HYDROTEST.
18. MARKINGS ON VESSEL BEFORE SHIPMENT SHALL BE IN ACCORDANCE WITH SPECS. Q01-G01.
19. THE INDICATED THICKNESS ARE THE MINIMUM ACCEPTABLE AFTER CONSTRUCTION
20. INSIDE SURFACE OF S.S SHALL BE PICKLED AND PASSIVATED AS PER SPEC. 2121-00-JSD-3200-01

DESIGN DATA

DESIGN CODE	: ASME SEC. VIII, DIV-1, ED.2001	CODE STAMP	: YES
INT. DESIGN PRESSURE SHELL	: 3.5 BARG (50.76 PSIG)	SERIAL NO.	: 152-11
INT. DESIGN PRESSURE HEAD	: 3.5 BARG (50.76 PSIG)	YEAR BUILT	: 2003
DESIGN PRESSURE (EXT.)	: N/A	OPERATING PRESSURE	: 3.0 BARa (43.5 PSIa)
MAX. OPER. STATIC HEAD (**)	: 4.25 m	OPERATING TEMP. NOR./MAX.	: 100° C (212° F)/117° C (243 ° F)
DESIGN TEMPERATURE	: 155° C (331° F)	MAWP (H&C)	: 6.38 BARG (92.53 PSIG)
MIN. DESIGN METAL TEMP	: 9° C (48.2° F)	MAWP (N&C)	: 6.88 BARG (99.78 PSIG)
CORROSION ALLOWANCE	: NIL	HYDROTEST PRESSURE SHOP	: 8.94 BARG (129.66 PSIG)
IMPACT TEST	: NO	HYDROTEST PRESSURE SITE	: 8.29 BARG (120.23 PSIG)
RADIOGRAPHY	: SPOT	FIRE PROOFING	: YES (BY OTHERS)
JOINT EFFICIENCY	: 0.85	INSULATION	: 25 MM (BY OTHERS) (P.P.)
P.W.H.T.	: NO	CYCLIC/SOUR/LETHAL SERVICE	: NO / NO / NO
EARTH QUAKE	: UBC-ZONE 2A	EXTERNAL PAINT	: YES (SEE NOTES)
WIND SPEED	: 38.9 m/s (ASCE-7)	INTERNAL COATING	: NO
INSPECTION	: A.I.	OPERATING MEDIUM	: (*)
WEIGHTS ERECTION	: 2400 KGS.	SPECIFIC GRAVITY OF LIQUID	: 1000
WEIGHTS HYDROTEST	: 15300 KGS.	NORMAL CAPACITY	: 11.50 CUM.
WEIGHTS OPERATING	: 14100 KGS.		

(*) OPERATING FLUID mol% (WATER) 99.7 TO 99.9, ACETIC ACID 0.1 TO 0.2, OTHERS UP TO 0.1 /5\

(**) - THE STATIC PRESSURE OF CONTENTS SHALL BE ADDED TO DESIGN PRESSURE.

MATERIAL OF CONSTRUCTION

SHELL	: SA 240 GR 304L (G5)	INTERNAL ATTACH.	: SS 304L
HEAD	: SA 240 GR 304L (G5)	EXTERNAL ATTACH.	: SA 240 GR 304L /SA 516 GR. 70
FLANGES	: SA 182 F 304L	BOLTING EXTERNAL	: SA 193 GR B7/SA 194 GR 2H
LEG SUPPORT	: SA 240 GR 304L / A 36 OR EQ.	BOLTING INTERNAL	: N/A
FAB. NOZZLE NECK	: SA 240 GR 304L	GASKETS (EXT.)	: GLASS FIBRE FILLED PTFE (GFP)
NOZ. PIPES	: SA 312 TP 304L	FITTINGS	: N/A
RF. PAD	: SA 240 GR 304L		

BILL OF MATERIAL (BOM IS FOR 1 NO. EQPT.)

TOTAL WT. 2193

PART NO.	QTY.	PART	DESCRIPTION	MATERIAL	REF. DRG. (MIS USE)	WT. (KGS.)
32	1	SHELL	PLATE 6 TH. x 700W x 5360 LG.	SA 240 GR 304L(G5)	SHOP DWG	177
31	1	PAD PLATE	PLATE 10 TH. x 200 x 200	SA 240 GR 304L(G5)	SEE DWG	3
30	1	NAME PLT. BRACKET	PLATE 6 TH. x 185 x 220	SA 240 GR 304L	SEE DWG	4
29	1	NOZ-M1	PAD PLATE 6 TH. x 950 O/D x 627 I/D	SA 240 GR 304L	SHOP DWG	19
28	1	NOZ-N5	PAD PLATE 6 TH. x 200 O/D x 132 I/D	SA 240 GR 304L	SHOP DWG	1
27	2	VORTEX BREAKER	PLATE 6 TH. x 73 x 51	SA 240 GR 304L	SEE DWG	-
26	1	VORTEX BREAKER	PLATE 6 TH. x 152 x 51	SA 240 GR 304L	SEE DWG	-
25	1	GRAB RUNG	ROD 20ø x 550 (CUT TO SUIT)	SS 304L	SEE DWG	1
24	2	EARTHING LUG	PLATE 6 TH. x 75 x 64	SS 316L	SEE DWG	-
23	2	LIFTING LUG	PLATE 12.7 TH. x 150 x 200 (CUT TO SUIT)	SA 516 GR. 70	SEE DWG	2
22	2	LIFTING LUG	PAD PLATE 6 TH. x 130 x 75	SA 240 GR 304L	SEE DWG	2
21	4	NAME PLT. BRACKET	RIVET 5ø	SS	SEE DWG	-
20	1	NAME PLT. BRACKET	PLATE 6 TH. x 87 x 220	SA 240 GR 304L	SEE DWG	2
19	4	SUPPORT	PLATE 6 TH 195 x 145 (CUT TO SUIT)	SA 516 GR. 70	SEE DWG	6
18	4	SUPPORT	PAD PLATE 6 TH. x 295 x 280	SA 240 GR 304L	SEE DWG	15
17	4	SUPPORT	BASE PLATE 20 TH. x 203 x 203	SA 516 GR. 70	SEE DWG	23
16	4	SUPPORT	ANGLE 100 x 100x 13 TH. x 3530 LG.	A 36 OR EQ.	SEE DWG	229
15	20+2	NOZ-M1	STUD BOLT 1 1/4"ø x 7" LG. W/2 HVY. HEX. NUTS	SA 193 GR. B7/SA 194 GR. 2H	SEE DWG	41
14	1+2	NOZ-M1	GASKET 24" 150# API 601	GLASS FIBRE FILLED PTFE	SEE DWG	-
13	1	NOZ-M1	BLIND FLANGE 24" 150# RF ASME B16.5	SA 182 F 304L	SEE DWG	186
12	1	NOZ-M1	FAB PIPE 6 TH. x 215W x 1896 LG.	SA 240 GR 304L	SHOP DWG	20
11	1	NOZ-M1	FLANGE WN 24" 150# RF ASME B16.5 (597.6 BORE)	SA 182 F 304L	SEE DWG	118
10	2	NOZ-L1A/L1B	PIPE 3" NB SCH 40S x 182 LG.	SA 312 TP 304L	SHOP DWG	2
9	2	NOZ-L1A/L1B	FLANGE WN 3' 150# RF ASME B 16.5 SCH 40S	SA 182 F 304L	SEE DWG	8
8	1	NOZ-N6	FLANGE LWN 1" 150# RF ASME B 16.5 x 251 LG.	SA 182 F 304L	SEE DWG	3
7	1	NOZ-N5	PIPE 4" NB SCH 40S x 169 LG.	SA 312 TP 304L	SHOP DWG	3
6	1	NOZ-N5	FLANGE WN 4' 150# RF ASME B 16.5 SCH 40S	SA 182 F 304L	SEE DWG	7
5	1	NOZ-N4	FLANGE LWN 2" 150# RF ASME B16.5 x 245 LG.	SA 182 F 304L	SEE DWG	7
4	5	NOZ-N1/N2/N3 NOZ-L2A/L2B	FLANGE LWN 1 1/2" 150# RF ASME B16.5 x 253 LG.	SA 182 F 304L	SEE DWG	30
3	1	SHELL	PLATE 6 TH. x 1760W x 5360 LG.	SA 240 GR 304L(G5)	SHOP DWG	444
2	1	SHELL	PLATE 6 TH. x 2000W x 5360 LG.	SA 240 GR 304L(G5)	SHOP DWG	505
1	2	HEAD	2:1 ELLIPTICAL HEAD 1700 I/D x 6 TH. MIN.	SA 240 GR 304L(G5)	SHOP DWG	335

NOZZLE SCHEDULE

NOZZLE MARK	QTY.	SIZE	SCH/THK.	RATING	TYPE	FACE	PROJECTION (NOTE 3) IN	PROJECTION (NOTE 3) FROM C.L.	SERVICE	WELDING CONFIGURATION TYPE	A	B	C	REMARKS
M1	1	24"	6 TH.	150#	WN	RF	-	1160	MANWAY	1A,2,36	6	-	6	BLIND FLG / DAVIT & RF PAD 6 TH. x 950ø
L2B	1	1 1/2"	14.2 TH.	150#	LWN	RF	-	1100	LEVEL TRIP	6	6	-	-	
L2A	1	1 1/2"	14.2 TH.	150#	LWN	RF	-	1100	LEVEL TRIP	6	6	-	-	
L1B	1	3"	SCH 40S	150#	WN	RF	-	1100	LEVEL BRIDLE	2,6	6	-	-	
L1A	1	3"	SCH 40S	150#	WN	RF	-	1100	LEVEL BRIDLE	2,6	6	-	-	
N6	1	1"	12.7 TH.	150#	LWN	RF	-	1100	PUMP SPILLBACK	6	6	-	-	
N5	1	4"	SCH 40S	150#	WN	RF	-	SEE DRG.	VENT	2,36	6	-	6	RF PAD 6 TH. x 200ø
N4	1	2"	13.2 TH.	150#	LWN	RF	-	SEE DRG.	LIQUID OUTLET	6	6	-	-	VORTEX BREAKER
N3	1	1 1/2"	14.2 TH.	150#	LWN	RF	-	1100	RECYCLE WATER FEED	6	6	-	-	
N2	1	1 1/2"	14.2 TH.	150#	LWN	RF	-	1100	RECYCLE CONDENSATE FEED	6	6	-	-	
N1	1	1 1/2"	14.2 TH.	150#	LWN	RF	-	1100	DEMINERALISED WATER FEED	6	6	-	-	

MIS REFERENCE DRG. No.	
MIS-4674-047-V	NAME PLATE
MIS-4674-046-V	MANWAY DAVIT
MIS-4674-045-V	EXTERNAL CLEATS

APPLICABLE CLIENT REF DWG./SPECS./STDS.	
Q01-G01	SHOP PREPARATION OF EQUIPMENT FOR SHIPMENT
Q01-T07	MATERIAL IDENTIFICATION PROGRAM
Q01-T06	PRESSURE VESSELS MATERIAL CONTROL PROGRAM
Q01-T01	TESTING AND INSPECTION - PRESSURE VESSELS
Q01-E01	PRESSURE VESSELS - GENERAL
10000.00.ST.0800.01	NAME PLATE
S750	RECOMMENDED COATING SYSTEM FOR EXTERNAL PROTECTION
2121 00 JSD 2300 01	SHOP AND FIELD PAINTING
W01-F01	WELDING AND INSPECTION
Q01-T02	INSPECTION REQUIREMENTS FOR PRESSURE VESSELS
Q01-F37	AUSTENITIC AND HA. STEEL PRESSURE VESSEL FABRICATION
Q01-F28	ALLOWABLE FAB. TOLERANCES HOR. & VER. PR.VESSEL
Q01-F25	VESSELS : GROUNDING AND LUG DETAILS
Q01-F23/VEVF 1123	VESSELS INSULATION & FIREPROOFING SUPPORTS
Q01-F21/22	PIPE GUIDE/SUPPORT
Q01-F20	DAVIT FOR OUTDOOR MANHOLE COVER
Q01-F18	VORTEX BREAKER
Q01-F17	GRAB RUNGS AND STEPS FOR MANWAYS
Q01-F15	VESSELS : NAME PLATE AND STAMPING
Q01-F07	PRESSURE VESSELS : FABRICATION
Q01-F14	VERTICAL VESSEL LEG SUPPORTS
Q01-F01	PRESSURE VESSELS : WELDING AND FABRICATION
Q01-E15	VESSEL LIFTING LUGS : TWO PLATE TYPE
2121 03 DW 0811-01 REV. 0 (2 SHT.)	VESSEL DATA SHEET & STD. THEREIN

TECHNIP-COFLEXIP سابك sabic

PROJ.: SABIC ACETIC ACID PROJECT

CLIENT: SABIC - YANBU - KINGDOM OF SAUDI ARABIA

MATERIAL REQUISITION No. 2121 MR 0 8 1 1 0 2

ITEM: 100-D231

SR Doc. CODE: A1103

VENDOR DOCUMENT REVIEW

- [ ] 1 REVISE AND RESUBMIT
- [ ] 2 TO BE ISSUED AS FINAL PROVIDED COMMENTS ARE INCORPORATED
- [ ] 3 NO COMMENT - FINAL ISSUE
- [ ] 4 FOR INFORMATION ONLY (INTERNAL USE)

U.O.: TECHNIP ITALY S.p.A.

BY: DATE:

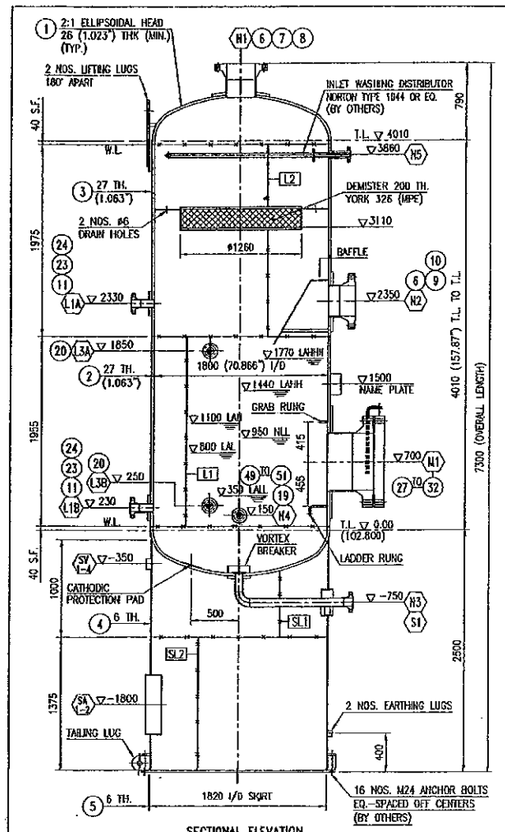
ASME

NAT'L BOARD No. 27

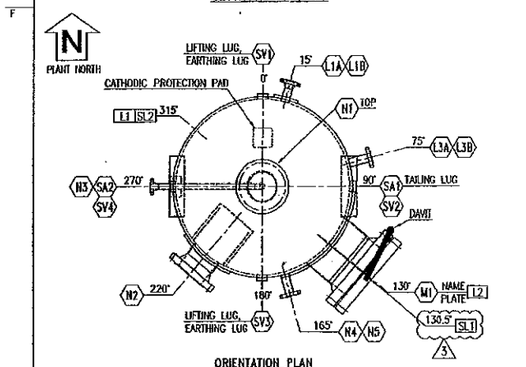
REV.	DATE	DESCRIPTION	BY	CHKD/APPD
5	09.09.03	AS BUILT.	RO	
4	12.07.03	AS BUILT.	PJ	PL/MHD/RSS
3	15.04.03	REVISED AS MARKED.	RO	PL/MHD/RSS
2	03.04.03	REVISED AS MARKED.	RO	PL/MHD/RSS
1	02.03.03	REVISED AS MARKED.	SMK	PL/MHD/RSS
0	24.01.03	ISSUED FOR CONSTRUCTION & REVISED AS MARKED.	SMK	PL/MHD/RSS
A	08.12.02	ISSUED FOR CLIENT'S APPROVAL.	PJ	PL/MHD/RSS

MARITIME INDUSTRIAL SERVICES CO. LTD. INC.
P.O.BOX 4596, SHARJAH, UNITED ARAB EMIRATES

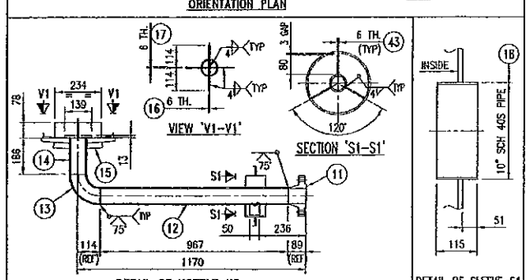
DRN BY : PJ	
DATE : 08.12.02	CLIENT : TECHNIP-COFLEXIP - SABIC
CHKD / APPD BY :	PROJECT : SABIC ACETIC ACID PLANT, IBN RUSHD SITE - YANBU, K.S.A.
DATE : 08.12.02	
JOB NO. 4674	EQUIPMENT SCRUBBER FEED WATER DRUM (100-D231) GENERAL ARRANGEMENT & DETAILS
CAD FILE NAME: 46740441	SCALE : 1:20
QTY. ONE	DRAWING NO. MIS-4674-044-V 01 OF 01 /5\

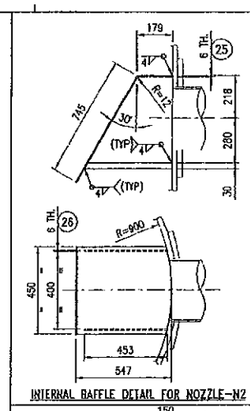


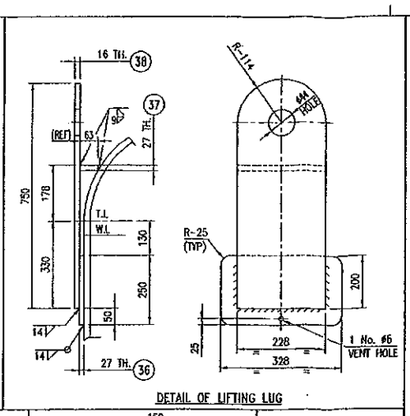
SECTIONAL ELEVATION



ORIENTATION PLAN







GENERAL NOTES

1. THE VESSEL SHALL BE FABRICATED AS PER ASME SEC. VIII DIV. 1, ED. 2001.
2. ALL DIMENSIONS ARE IN MM & NOZZLE ELEVATIONS ARE FROM TAN LINE UNLESS OTHERWISE NOTED.
3. NOZZLE PROJECTIONS REFERED FROM VESSEL CENTERLINE TO FLANGE CONTACT FACE.
4. FLANGE GASKET CONTACT SURFACE FINISH SHALL BE AS PER ASME B 16.5 TO SUIT GASKET, 3.2 TO 6.3 Ra. (ISO 468).
5. NOZZLE BOLT HOLES SHALL STRADDLE PRINCIPAL CENTER LINES.
6. ALL NOZZLES RF PADS SHALL HAVE 1 NO. 1/4" NPT TEL-TALE HOLE FOR AIR TEST AT 30 kPa WITH SOAP SUDS. THE HOLE SHALL BE FILLED WITH HARD GREASE AFTER HYDROTEST.
7. ALL NOZZLES INSIDE EDGES EXCEPT NOZZLES WITH INSIDE PROJECTIONS SHALL BE FLUSHED WITH INTERNAL SURFACE OF VESSEL & ROUNDED OFF WITH 3 MM RADIUS.
8. ALL PRESSURE RETAINING WELDS TO BE FULL PENETRATION.
9. ALL INTERNAL WELDS SHALL BE CONTINUOUS FILLET WELDS.
10. WELDING & NDT PER WELD MAP No. MIS-4674-M013-V & QC INSPECTION PLAN.
11. [ ] INDICATES WELD SEAM NUMBER.
12. HYDROTEST SHALL BE CARRIED OUT IN HORIZONTAL POSITION USING POTABLE WATER WITH CHLORIDE CONTENT 50 PPM FOR 1 HR. 15 MINUTES. TEMPERATURE FOR HYDROTEST SHALL BE 17° C MINIMUM AFTER TEST VESSEL SHALL BE FLUSHED WITH CLEAN WATER & SHALL BE THOROUGHLY DRAINED & DRIED.
13. THE VESSEL SHALL BE THOROUGHLY DRIED AND CLEANED INSIDE AND OUTSIDE. IT SHALL BE FREE FROM WELD SPATTER, SCALE, SLAG, RUST AND ANY FOREIGN MATTERS.
14. SERVICE GASKETS & BOLTINGS SHALL BE USED DURING HYDROTEST.
15. THE FABRICATION TOLERANCES SHALL BE AS PER CODE AS WELL AS SABIC STD. DWG. NO. : Q01-F28 REV. 0
16. FLANGED CONNECTIONS & ALL OTHER MACHINED SURFACES SHALL BE PROTECTED BY A COATING & FITTED WITH STEEL OR WOODEN COVER, 3 MM THK & NEOPRENE GASKET USING AT LEAST 4 BOLTS.
17. EXTERNAL S.S. SURFACE PREPARATION & PAINTING : AS PER SYSTEM SZ 306 OF TECHNIP SPEC. 2121-00-JSD-2300-01, REV. 0
    - VESSEL COMPONENTS (SHELL, DISHED ENDS, NOZZLES, TOP S.S. SKIRT INTERNAL/EXTERNAL ETC.)
      ALL EXTERNAL S.S. SURFACES PREPRATION SHALL BE AS PER - SSPC SP 7.
      PAINTING : 2 COATS OF EPOXY PHENOLIC 150 MICRONS DFT.
      TOTAL DFT - 300 MICRONS
    EXTERNAL C.S. SURFACE PREPARATION & PAINTING : AS PER SYSTEM 'S1' OF TECHNIP SPEC. 2121-00-JSD-2300-01, REV. 0
    - VESSEL COMPONENTS (BOT. C.S. SKIRT, EXTERNAL ETC.)
      ALL EXTERNAL C.S. SURFACES SHALL BE GRIT BLASTED AS PER - SA 2
      PAINTING : PRIMER - EPOXY MASTIC - 125 MICRONS DFT.
      TOP COAT - POLYURETHYNE ENAMEL (ALIPHARC) - 50 MICRONS DFT.
      TOTAL DFT - 175 MICRONS
18. EXTERNAL ATTACHMENT PADS SHALL HAVE 1 No. Ø6 VENT HOLES & SHALL BE FILLED WITH HARD GREASE ONLY AFTER HYDROTEST.
19. MARKINGS ON VESSEL BEFORE SHIPMENT SHALL BE IN ACCORDANCE WITH SPECS. Q01-G01.
20. ALL REMOVABLE INTERNALS SHALL PASS THROUGH 590 MM I.D MANWAY
21. THE STATIC PRESSURE OF THE CONTENTS SHALL BE ADDED TO THIS PRESSURE.
22. DEMISTER TO BE KOCH OFFO YORK 326 OR EQUIVALENT AND IS TO BE REMOVABLE FROM BELOW. AS PER STD. Q01-F31 FOR SUPPORT DETAILS. DEMISTER TO BE 1260 DIA. AND TO BE 200 mm THK.
23. FLUID COMPOSITION (mol%) : VAPOUR: ETHANE 51.4, METHANE 22.6, NITROGEN 20.3, CARBON DIOXIDE 2.5, ETHYLENE 1.6, WATER 0.8, OXYGEN 0.4, ARGON 0.2, PROPANE 0.2, OTHERS 0.1
    LIQUID : WATER 100.0
24. MINIMUM DESIGN TEMPERATURE AT 9°C AT 31.6 barg.
25. INSIDE SURFACE OF S.S SHALL BE PICKLED AND PASSIVATED AS PER SPEC. 2121-00-JSD-3200-01

BILL OF MATERIAL

BILL OF MATERIAL Contd....

PART NO.	QTY.	PART	DESCRIPTION	MATERIAL	REF. DRG. (MIS USE)	WT. (KGS.)
				TOTAL WT.		8612
52	1	PAD PLATE	PLATE 10 TH. x 200 x 200	SA 240 GR. 304L	SEE DRG.	3
51	4+3	NOZ. N4	STUD Ø5/8" x 3 1/2" LG. w/2 HEX NUTS	SA 193-B7/194-2H	SEE DRG.	2
50	1+2	NOZ. N4	GASKET SPIRAL WOUND 1" 600# RF API-601	##	SEE DRG.	–
49	1	NOZ. N4	BLIND FLANGE 1" 600# RFS ASME B16.5	SA 182 F 304L	SEE DRG.	3
48	1	LADDER RUNG	ROD Ø12 x 886 LG.	SS 304L	SEE DRG.	3
47	4	NAME PLATE	RIVETS Ø5 (A)	SS	SEE DRG.	–
46	32	GUSSET	PLATE 8 TH. x 152 x 91	SA 516 GR. 70	SHOP DRG.	28
45	1	COMP. RING	PLATE 22 TH. x 2010 O/D x 1832 I/D	SA 516 GR. 70	SHOP DRG.	93
44	1	BASE RING	PLATE 22 TH. x 2010 O/D x 1740 I/D	SA 516 GR. 70	SHOP DRG.	137
43	3	NOZ. N3	FIN PLATE 6 TH. x 50 x 85 (CUT TO SUIT)	SA 240 GR. 304L	SEE DRG.	1
42	2	SKIRT ACCESS	FAB. PIPE PLT. 6 TH. x 1686 x 1935	A 36 GR EQ.	SEE DRG.	39
41	4	SKIRT VENT	PIPE 3" SCH 40S x 58 LG.	SA 312 TP 304L	SEE DRG.	3
40	2	EARTHING LUG	PLATE 6 TH. x 64 x 75	SS	SEE DRG.	1
39	1	TAILING LUG	PLATE 20 TH. x 226 x 152	SA 516 GR. 70	SEE DRG.	5
PART NO.	QTY.	PART	DESCRIPTION	MATERIAL	REF. DRG. (MIS USE)	WT. (KGS.)

LOADING DATA

		ERECTION	OPERATION	HYDROTEST
WEIGHT (KGS)		8900	16300	22700
SHEAR (N.)	WIND	15667	15552	9035
	SEISMIC	13489	30234	–
MOM (N.m.)	WIND	57202	60253	33901
	SEISMIC	52925	110000	–

(*) – RFS STANDS FOR RAISED FACE SMOOTH FINISH 3.2-6.3 Ra.

NOZZLE SCHEDULE

NOZZLE MARK	QTY.	SIZE	SCH/THK.	RATING	TYPE	FACE (*)	IN PROJECTION (NOTE 3)	SERVICE	TYPE	A	B	C	REMARKS
									MIS WELD JOINT CATEGORY				
S1	1	10"	SCH 40S	–	–	–	–	SLEEVE OPENING NOZ.N3	14	6	–	–	
SV1-4	4	3"	SCH 40S	–	–	–	–	SKIRT VENT	6	6	–	–	
SA1-2	2	Ø10 I/D	6 TH.	–	–	–	–	SKIRT ACCESS	1A,14	6	–	–	
M1	1	24"	12 TH.	600#	WN	RFS	–	1370 MANWAY	1A2,36	9	–	14	w/B.F., (WN & RF. PAD Ø1165x27 TH.
L3A/B	2	1 1/2"	15.88 TH.	600#	LWN	RFS	–	1130 LEVEL TRIP	6	9	–	–	
L1A/B	2	3"	SCH 40S	600#	WN	RFS	–	1130 LEVEL GAUGE	2,36	9	–	14	R.F. PAD Ø255x27 TH.
N5	1	1 1/2"	15.88 TH.	600#	LWN	RFS	SEE DRG.	1130 DEMISTER WASHING	6	9	–	–	
N4	1	1"	14.22 TH.	600#	LWN	RFS	–	1130 UTILITY CONNECTION	6	9	–	–	w/B.F.
N3	1	3"	SCH 40S	600#	WN	RFS	–	SEE DRG. LIQUID OUTLET	2,36	9	–	14	R.F. PAD Ø245x27 TH.
N2	1	12"	10 TH.	600#	WN	RFS	–	1180 VAPOUR/LIQUID INLET	1A2,36	9	–	14	R.F. PAD Ø510x27 TH.
N1	1	12"	10 TH.	600#	WN	RFS	–	SEE DRG. VAPOUR OUTLET	1A2,36	9	–	14	R.F. PAD Ø510x27 TH.

BILL OF MATERIAL

PART NO.	QTY.	PART	DESCRIPTION	MATERIAL	REF. DRG. (MIS USE)	WT. (KGS.)
MIS-4674-061-V		SKIRT TEMPLATE				
MIS-4674-060-V		NAME PLATE				
MIS-4674-059-V		MANWAY DAVIT				
MIS-4674-058-V		INTERNAL DETAILS				
MIS-4674-057-V		EXTERNAL CLEATS	2121 04 DW 0861-01 REV.0 (2 SHT.) VESSEL DATA SHEET & STD. THEREIN			
MIS REFERENCE DRG. No.			APPLICABLE CLIENT REF DWG./SPECS./STDS.			

DESIGN DATA

DESIGN CODE	: ASME SEC. VIII, DIV-1, ED.2001	CODE STAMP	: YES
DESIGN PRESSURE SHELL	: 31.6 BARG (458.3 PSIG)	SERIAL NO.	: 152-14
DESIGN PRESSURE HEAD	: 31.6 BARG (458.3 PSIG)	YEAR BUILT	: 2003
DESIGN PRESSURE (EXT.)	: NIL	OPERATING PRESSURE	: 25.28/26.16 BARg (366.3/379.4 PSIg)
DESIGN TEMPERATURE	: 150° C (302° F)	OPERATING TEMP. MAX.	: 60° C (140° F)
MIN. DESIGN METAL TEMP	: 9° C (48.2° F)	MAWP (H&C)	: 32.45 BARG (470.6 PSIG)
CORROSION ALLOWANCE	: NIL	MAWP (H&C)	: 32.7 BARG (474.3 PSIG)
IMPACT TEST	: NO	HYDROTEST PRESSURE SHOP	: 42.82 BARG (621.1 PSIG)
RADIOGRAPHY	: RT-1	HYDROTEST PRESSURE SITE	: 42.51 BARG (616.5 PSIG)
JOINT EFFICIENCY	: 1.0	FIRE PROOFING	: NO
P.W.H.T.	: NO	INSULATION	: NO
MAX. OPER. STATIC HEAD	: FULL	CYCLIC/SOUR/LETHAL SERVICE	: NO / NO / NO
EARTH QUAKE	: UBC-ZONE 2A	EXTERNAL PART	: YES (SEE NOTE-17)
WIND SPEED	: 38.9 m/s (ASCE-7)	INTERNAL COATING	: NO
INSPECTION	: A1	OPERATING MEDIUM	: SEE NOTE-23
WEIGHTS ERECTION	: 8900 KGS.	SPECIFIC GRAVITY OF LIQUID	: 0.981
WEIGHTS OPERATING	: 16300 KGS.	HAZARD CONSEQUENCE	: FLAMMABLE
WEIGHTS HYDROTEST	: 22700 KGS.	NORMAL CAPACITY	: 11.73 CUM.

MATERIAL OF CONSTRUCTION

SHELL	: SA 240 GR. 304L	INTERNALS	: SS 304L
HEAD	: SA 240 GR. 304L	INTERNAL PIPE	: SA 312 TP 304L
FLANGES	: SA 182 F 304L	EXTERNAL ATTACH.	: SA 240 GR .304L/A 36 GR EQ.
PIPE	: SA 312 TP 304L (SMLS)	BOLTING EXTERNAL	: SA 193 GR B7/SA 194 GR 2H
FAB. PIPE	: SA 240 GR. 304L	BOLTING INTERNAL	: SS 304L
TOP SKIRT	: SA 240 GR. 304L	GASKETS (EXT.)	: SS 304L SPIRD GRAPHITE FILLED
BOTTOM SKIRT	: SA 516 GR. 70	GASKETS (INT.)	: NAF
ANCHOR CHAIR, BASE/COMP. PLT.	: SA 516 GR. 70	FITTINGS	: SA 403 WP 304L

BILL OF MATERIAL Contd....

BILL OF MATERIAL

PART NO.	QTY.	PART	DESCRIPTION	MATERIAL	REF. DRG. (MIS USE)	WT. (KGS.)
38	2	LIFTING LUG	PLATE 16 TH. x 228 x 750	SA 516 GR. 70	SEE DRG.	43
37	2	LIFTING LUG	PLATE 27 TH. x 100 x 228 (CUT TO SUIT)	SA 240 GR. 304L	SEE DRG.	7
36	2	LIFTING LUG	PAD PLATE 27 TH. x 250 x 328	SA 240 GR. 304L	SEE DRG.	31
35	1	GRAB RUNG	ROD Ø18 x 553 LG. (A)	SS 304L	SEE DRG.	2
34	1	NAME PLATE	PLATE 6 TH. x 185 x 220	SA 240 GR. 304L	SEE DRG.	2
33	1	NAME PLATE	PLATE 6 TH. x 76 x 220	SA 240 GR. 304L	SEE DRG.	2
32	24+3	MANWAY-M1	STUD Ø1 7/8" x 13" LG. w/2 HEX NUTS	SA 193-B7/194-2H	SEE DRG.	183
31	1+2	MANWAY-M1	GASKET SPIRAL WOUND 24" 600# RF API-601	##	SEE DRG.	
30	1	MANWAY-M1	BLIND FLANGE 24" 600# RFS ASME B16.5	SA 182 F 304L	SEE DRG.	543
29	1	MANWAY-M1	R.F PAD PLATE 27 TH. x 1165 O/D x 622 I/D	SA 240 GR. 304L	SHOP DRG.	165
28	1	MANWAY-M1	FAB. PIPE 12 TH. x 314 x 1891	SA 240 GR. 304L	SHOP DRG.	75
27	1	MANWAY-M1	FLANGE 24" WN 600# RFS ASME B16.5 (Ø590 BORE)	SA 182 F 304L	SEE DRG.	365
26	2	INT. BAFFLE	PLATE 6 TH. x 30 x 453	SA 240 GR. 304L	SEE DRG.	1
25	1	INT. BAFFLE	PLATE 6 TH. x 450 x 935 (CUT TO SUIT)	SA 240 GR. 304L	SEE DRG.	23
24	2	NOZ. L1A/B	R.F PAD PLATE 27 TH. x 255 O/D x 102 I/D	SA 240 GR. 304L	SHOP DRG.	32
23	2	NOZ. L1A/B	PIPE 3" SCH 40S x 142 LG.	SA 312 TP 304L	SHOP DRG.	11
22	1	NOZ. N5	PLATE FLANGE 10 TH. x 123 O/D x 50 I/D	SS 304L	SEE DRG.	3
21	1	NOZ. N5	PIPE 1½" SCH 80S x 147 LG.	SA 312 TP 304L	SEE DRG.	1
20	3	NOZ. N5,L3A/B	FLANGE 1½" LWN 600# RFS x 231 LG. ASME B16.5	SA 182 F 304L	SEE DRG.	16
19	1	NOZ. N4	FLANGE 1" LWN 600# RFS x 231 LG. ASME B16.5	SA 182 F 304L	SEE DRG.	6
18	1	NOZ. N3	SLEEVE PIPE 10" SCH 40S x 118 LG.	SA 312 TP 304L	SEE DRG.	5
17	2	VORTEX BREAKER	PLATE 6 TH. x 78 x 114	SA 240 GR. 304L	SEE DRG.	1
16	1	VORTEX BREAKER	PLATE 6 TH. x 78 x 234	SA 240 GR. 304L	SEE DRG.	1
15	1	NOZ. N3	R.F PAD PLATE 27 TH. x 245 O/D x 102 I/D	SA 240 GR. 304L	SHOP DRG.	16
14	1	NOZ. N3	PIPE 3" SCH 40S x 186 LG.	SA 312 TP 304L	SEE DRG.	2
13	1	NOZ. N3	ELBOW 3" SCH 40S STD LR. ASME B16.9	SA 403 WP 304L	SEE DRG.	6
12	1	NOZ. N3	PIPE 3" SCH 40S x 967 LG.	SA 312 TP 304L	SEE DRG.	11
11	3	NOZ. N3,L1A/B	FLANGE 3" WN 600# RFS ASME B16.5 (SCH 40S BORE)	SA 182 F 304L	SEE DRG.	32
10	1	NOZ. N2	R.F PAD PLATE 27 TH. x 610 O/D x 342 I/D	SA 240 GR. 304L	SHOP DRG.	43
9	1	NOZ. N1	FAB. PIPE 10 TH. 132W x 989 LG.	SA 240 GR. 304L	SHOP DRG.	11
8	1	NOZ. N1	R.F PAD PLATE 27 TH. x 610 O/D x 342 I/D	SA 240 GR. 304L	SHOP DRG.	43
7	1	NOZ. N1	FAB. PIPE 10 TH. 186W x 989 LG.	SA 240 GR. 304L	SHOP DRG.	15
6	2	NOZ. N1,N2	FLANGE 12" WN 600# RFS ASME B16.5 (SCH 40S BORE)	SA 182 F 304L	SEE DRG.	204
5	1	SKIRT	PLATE 6 TH. x 1375W x 5737 LG.	SA 516 GR. 70	SHOP DRG.	372
4	1	SKIRT	PLATE 6 TH. x 1050W x 5737 LG. (ALLOWANCE ADDED)	SA 240 GR. 304L	SHOP DRG.	289
3	1	SHELL	PLATE 27 TH. x 1975W x 5740 LG.	SA 240 GR. 304L (CS)	SHOP DRG.	2487
2	1	SHELL	PLATE 27 TH. x 1955W x 5740 LG.	SA 240 GR. 304L (CS)	SHOP DRG.	2424
1	2	HEAD	2:1 ELLIPSOIDAL HEAD 1800 I/D x 26 TH. (MIN)	SA 240 GR. 304L (CS)	SEE DRG.	821

BILL OF MATERIAL

TECHNIP-COFLEXIP / سابك sabic

FINAL SABIC ACETIC ACID PROJECT
CLIENT: SABIC - YANBU – KINGDOM OF SAUDI ARABIA

MATERIAL REQUISITION No. 2121 MR 0|8|1|1|0|2|
ITEM: 100-D241
SR Doc. CODE: A1103

VENDOR DOCUMENT REVIEW
☐1 REVISE AND RESUBMIT
☐2 TO BE ISSUED AS FINAL PROVIDED COMMENTS ARE INCORPORATED
☐3 NO COMMENT – FINAL ISSUE
☐4 FOR INFORMATION ONLY (AFTERSALE USE)
V.O.: TECHNIP ITALY S.p.A.
BY: DATE:

ASME
NATL. BOARD No (21)

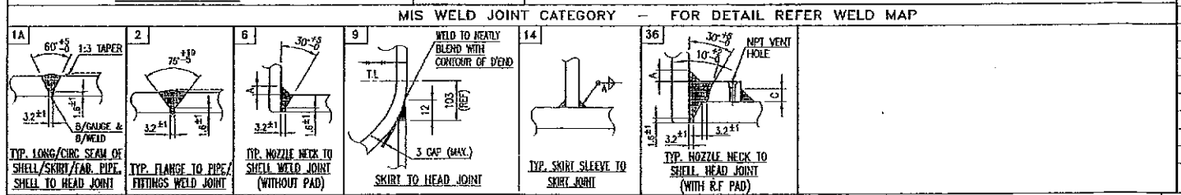
REV	DATE	DESCRIPTION	BY	CHKD/APPD
3	12.07.03	AS BUILT.	SMK	MHD/RSS
2	07.04.03	REVISED AS MARKED.	RO	MHD/RSS
1	22.02.03	REVISED AS MARKED.	SMK	MHD/RSS
0	05.01.03	ISSUED FOR CONSTRUCTION & REVISED AS MARKED.	SMK	MHD/RSS
A	16.11.02	ISSUED FOR CLIENT'S APPROVAL.	SMK	MHD/RSS

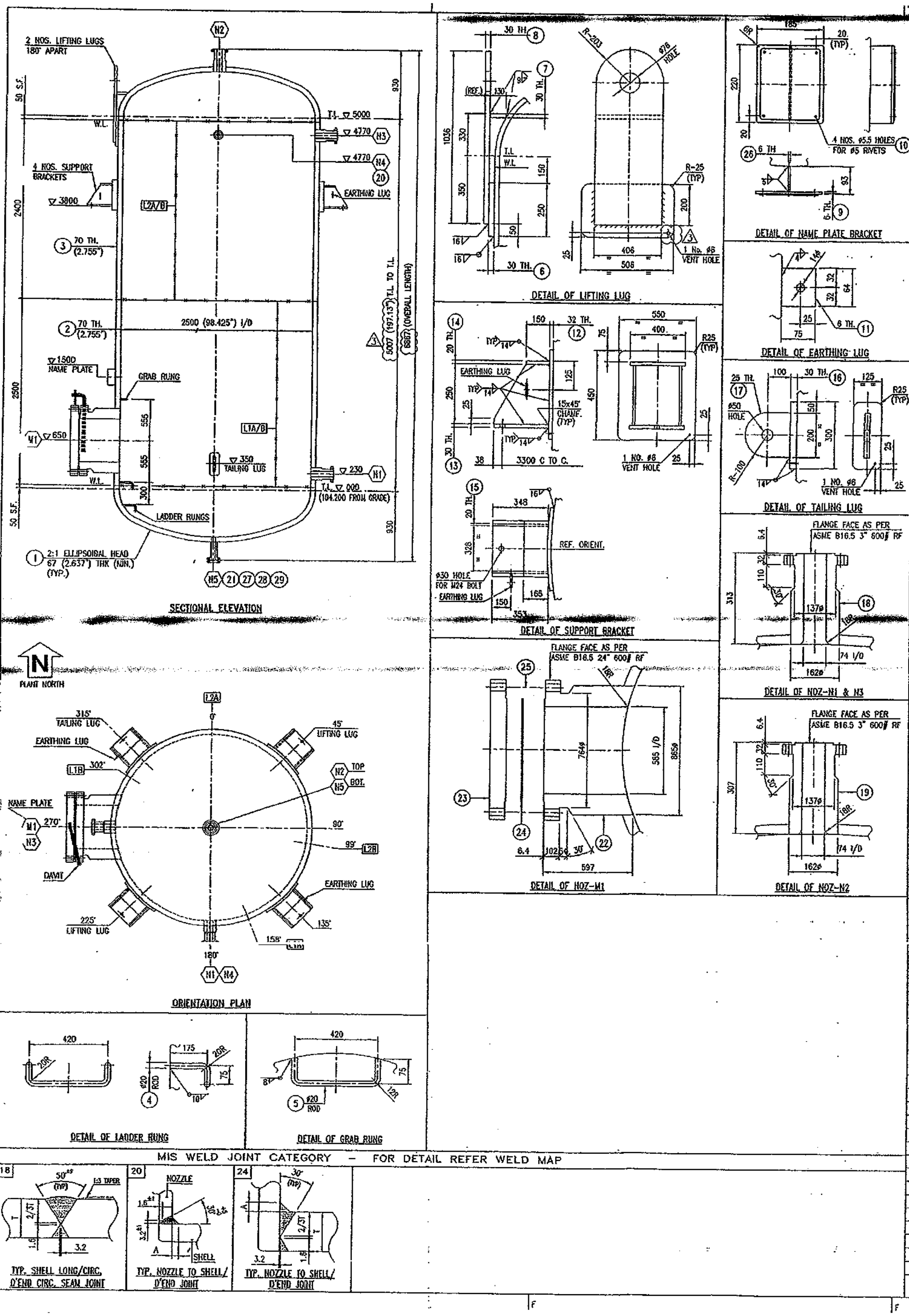
DRN BY : SMK
DATE : 16.11.02
CHKD. / APPD. BY
DATE : 16.11.02
JOB No. 4674
CAD FILE NAME : 4674056
QTY. ONE

MARITIME INDUSTRIAL SERVICES CO. LTD. INC.
P.O.BOX 4596, SHARJAH, UNITED ARAB EMIRATES

CLIENT : TECHNIP-COFLEXIP – SABIC
PROJECT : SABIC ACETIC ACID PLANT, IBN RUSHD SITE – YANBU, K.S.A.
EQUIPMENT : TREATED GAS KO DRUM (ITEM NO. 100-D241)
GENERAL ARRANGEMENT & DETAILS
SCALE : 1:30
DRAWING NO. MIS-4674-056-V, 0.1 OF 0.1, (3)

MIS WELD JOINT CATEGORY – FOR DETAIL REFER WELD MAP





GENERAL NOTES

1. THE VESSEL SHALL BE FABRICATED AS PER ASME SEC. VIII DIV. 1, ED. 2001.
2. ALL DIMENSIONS ARE IN MM & NOZZLE ELEVATIONS ARE FROM TAN LINE UNLESS OTHERWISE NOTED.
3. NOZZLE PROJECTIONS REFERED FROM VESSEL CENTERLINE TO FLANGE CONTACT FACE.
4. FLANGE GASKET CONTACT SURFACE FINISH SHALL BE AS PER ASME B 16.5 TO SUIT GASKET, 3.2 TO 6.3 Ra. (ISO 468).
5. NOZZLE BOLT HOLES SHALL STRADDLE PRINCIPAL CENTER LINES.
6. ALL NOZZLES INSIDE EDGES EXCEPT NOZZLES WITH INSIDE PROJECTIONS SHALL BE FLUSHED WITH INTERNAL SURFACE OF VESSEL & ROUNDED OFF WITH 3 MM RADIUS.
7. ALL PRESSURE RETAINING WELDS TO BE FULL PENETRATION.
8. ALL INTERNAL WELDS SHALL BE CONTINUOUS FILLET WELDS.
9. WELDING & NDT PER WELD MAP No. MIS-4674-M005-V & QC INSPECTION PLAN.
10. [ ] INDICATES WELD SEAM NUMBER.
11. P.W.H.T SHALL BE CARRIED OUT AS PER MIS PROCEDURE # QCQC-AP-001-8 & SABIC SPEC. W12-F04.
12. FLANGE FACES TO BE PROTECTED DURING P.W.H.T WITH HIGH TEMPERATURE GREASE.
13. AFTER PWHT, NO WELDING SHALL BE PERMITTED ON THE VESSEL.
14. BEFORE SHIPMENT, STENCIL WITH 100 MM HIGH BOLD LETTERS AS FOLLOWING BLOCK SHALL BE LOCATED ON TWO OPPOSITE SIDES.

   "CAUTION"
   POSTWELD HEAT TREATED
   Do Not Weld

15. HYDROTEST SHALL BE CARRIED OUT IN HORIZONTAL POSITION USING POTABLE WATER FOR 2 HR. 30 MINUTES. TEMPERATURE FOR HYDROTEST SHALL BE 17° C MINIMUM. AFTER TEST VESSEL SHALL BE FLUSHED WITH CLEAN WATER & SHALL BE THOROUGHLY DRAINED & DRIED.
16. THE VESSEL SHALL BE THOROUGHLY DRIED AND CLEANED INSIDE AND OUTSIDE. IT SHALL BE FREE FROM WELD SPATTER, SCALE, SLAG, RUST AND ANY FOREIGN MATTERS.
17. SERVICE GASKETS & BOLTINGS SHALL BE USED DURING HYDROTEST.
18. THE FABRICATION TOLERANCES SHALL BE AS PER CODE AS WELL AS SABIC STD. DWG. NO. : 001-F28 REV. 0
19. FLANGED CONNECTIONS & ALL OTHER MACHINED SURFACES SHALL BE PROTECTED BY A COATING & FITTED WITH STEEL OR WOODEN COVER, 3 MM THK & NEOPRENE GASKET USING AT LEAST 4 BOLTS.
20. EXTERNAL SURFACE PREPARATION & PAINTING : AS PER SYSTEM 'S1' OF SPEC. 2121 00 JSD 2300 01.
   - VESSEL COMPONENTS (SHELL, DISHED ENDS, NOZZLES, BRACKET SUPPORTS ETC.)
   ALL EXTERNAL SURFACES SHALL BE GRIT BLASTED AS PER - SA 2 1/2
   PAINTING : PRIMER - EPOXY MASTIC - 125 MICRONS DFT.
   TOP COAT - POLYURETHANE ENAMEL (ALIPHATIC) - 50 MICRONS DFT.
   TOTAL DFT - 175 MICRONS
21. EXTERNAL ATTACHMENT PADS SHALL HAVE 1 No. ø6 VENT HOLES & SHALL BE FILLED WITH HARD GREASE ONLY AFTER HYDROTEST.
22. MARKINGS ON THE VESSEL BEFORE SHIPMENT SHALL BE IN ACCORDANCE WITH SPECS. 001-G01.

DESIGN DATA

DESIGN CODE	: ASME SEC. VIII, DIV-1, ED.2001	CODE STAMP	: YES
INT. DESIGN PRESSURE — SHELL	: 68.0 BARG (986.2 PSIG)	SERIAL NO.	: 152-5
INT. DESIGN PRESSURE — HEAD	: 68.0 BARG (986.2 PSIG)	YEAR BUILT	: 2003
DESIGN PRESSURE (EXT.)	: NIL	OPERATING PRESSURE	: 60 BARa (870.2 PSIa)
DESIGN TEMPERATURE	: 175° C (347° F)	OPERATING TEMP. MAX.	: 100° C (212° F)
MIN. DESIGN METAL TEMP	: 9° C (48.2° F) AT 68 BARG	MAWP (H&C)	: 68.34 BARG (991.2 PSIG)
CORROSION ALLOWANCE	: 3.0 MM	MAWP (N&C)	: 71.61 BARG (1038.6 PSIG)
IMPACT TEST	: NO	HYDROTEST PRESSURE — SHOP	: 93.09 BARG (1350.2 PSIG)
RADIOGRAPHY	: RT-1	HYDROTEST PRESSURE — SITE	: 88.84 BARG (1288.5 PSIG)
JOINT EFFICIENCY	: 1.0	FIRE PROOFING	: NO
P.W.H.T.	: YES	INSULATION	: NO
EARTH QUAKE	: UBC-ZONE 2A	CYCLIC/SOUR/LETHAL SERVICE	: NO / NO / NO
WIND SPEED	: 38.9 m/s (ASCE-7)	EXTERNAL PAINT	: YES (SEE NOTES)
INSPECTION	: A.I.	INTERNAL COATING	: NO
WEIGHTS — ERECTION	: 33800 KGS.	OPERATING MEDIUM	: NITROGEN
WEIGHTS — HYDROTEST	: 63200 KGS.	SPECIFIC GRAVITY OF LIQUID	: NEGLIGIBLE
WEIGHTS — OPERATING	: 34500 KGS.	NORMAL CAPACITY	: 28.63 CUM.

MATERIAL OF CONSTRUCTION

SHELL	: SA 516 GR 70	BOLTING EXTERNAL	: SA 193 GR B7/SA 194 GR 2H
HEAD	: SA 516 GR 70	BOLTING INTERNAL	: N.A.
FLANGES/FORGINGS	: SA 105	GASKETS (EXT.)	: SS 304L SPWD NAF FILLED, SS 304L INNER RING & C.S. OUTER RING
SUPPORT BRACKET	: SA 516 GR 70/A 36		
EXTERNAL ATTACH.	: SA 516 GR 70/A 36	GASKETS (INT.)	: N.A.

#SS 304L SPWD NAF FILLED, SS 304L INNER RING & C.S. OUTER RING

BILL OF MATERIAL (BOM IS FOR 1 NO. EQPT.)

PART NO.	QTY.	PART	DESCRIPTION	MATERIAL	REF. DRG. (MIS USE)	WT. (KGS.)
					TOTAL WT.	32489
29	8+2	NOZ-N5	STUD BOLT 5/8"ø x 4 1/4" LG. W/2 HVY HEX NUTS	SA 193 GR B7/SA 194 GR 2H	SEE DRG.	12
28	1+2	NOZ-N5	GASKET 2" 600# RF API 601	#	SEE DRG.	-
27	1	NOZ-N5	BLIND FLANGE 2" 600# RF ASME B16.5	SA 105	SEE DRG.	6
26	1	NAME PLATE	PLATE 6 TH. x 87 x 220	SA 516 GR. 70	SEE DRG.	2
25	24+3	NOZ-M1	STUD BOLT 1 7/8"ø x 13" LG. W/2 HVY HEX NUTS	SA 193 GR B7/SA 194 GR 2H	SEE DRG.	183
24	1+2	NOZ-M1	GASKET 24" 600# RF API 601	#	SEE DRG.	-
23	1	NOZ-M1	BLIND FLANGE 24" 600# RF ASME B16.5	SA 105	SEE DRG.	573
22	1	NOZ-M1	SR FORGING 24" 600# RF x 597 LG. (SEE DETAIL)	SA 105	SEE DRG.	1482
21	1	NOZ-N5	FLANGE LWN 2" 600# RF ASME B16.5 x 236 LG.	SA 105	SEE DRG.	10
20	1	NOZ-N4	FLANGE LWN 1" 600# RF ASME B16.5 x 242 LG.	SA 105	SEE DRG.	11
19	1	NOZ-N2	SR FORGING 3" 600# RF x 307 LG. (SEE DETAIL)	SA 105	SEE DRG.	41
18	2	NOZ-N1 & N3	SR FORGING 3" 600# RF x 313 LG. (SEE DETAIL)	SA 105	SEE DRG.	83
17	1	TAILING LUG	PLATE 25 TH. x 200 x 200	A 36	SEE DRG.	8
16	1	TAILING LUG	PAD PLATE 30 TH. x 300 x 125	SA 516 GR. 70	SEE DRG.	9
15	8	SUPT. BRACKET	PLATE 20 TH. x 348 x 250	A 36	SEE DRG.	110
14	4	SUPT. BRACKET	PLATE 20 TH. x 400 x 165	A 36	SEE DRG.	41
13	4	SUPT. BRACKET	PLATE 30 TH. x 400 x 353	A 36	SEE DRG.	132
12	4	SUPT. BRACKET	PAD PLATE 32 TH. x 450 x 550	SA 516 GR. 70	SEE DRG.	233
11	2	EARTHING LUG	PLATE 6 TH. x 64 x 75	SS	SEE DRG.	1
10	4	NAME PLATE	RIVETS ø5	(3) SS	SEE DRG.	-
9	1	NAME PLATE	PLATE 6 TH. x 185 x 220	SA 516 GR. 70	SEE DRG.	2
8	2	LIFTING LUG	PLATE 30 TH. x 406 x 1036	A 36	SEE DRG.	198
7	2	LIFTING LUG	PLATE 30 TH. x 150 x 406 (CUT TO SUIT)	SA 516 GR. 70	SEE DRG.	32
6	2	LIFTING LUG	PAD PLATE 30 TH. x 250 x 506	SA 516 GR. 70	SEE DRG.	60
5	1	GRAB RUNG	ROD ø20 x 590 LG. (CUT TO SUIT)	A 36 OR EQ.	SEE DRG.	2
4	2	LADDER RUNG	ROD ø20 x 940 LG. (CUT TO SUIT)	A 36 OR EQ.	SEE DRG.	6
3	1	SHELL	PLATE 70 TH. x 2400W x 8074 LG.	SA 516 GR. 70	SHOP DRG	10640
2	1	SHELL	PLATE 70 TH. x 2500W x 8074 LG.	SA 516 GR. 70	SHOP DRG	11084
1	2	HEAD	2:1 ELLIPSOIDAL D'END 2500 I/D x 68 TH. (MIN).	SA 516 GR. 70	SEE DRG.	7546

NOZZLE SCHEDULE

(*) - RFS STANDS FOR RAISED FACE SMOOTH FINISH 3.2-6.3 Ra.

NOZZLE MARK	QTY.	SIZE	SCH/THK.	RATING	TYPE	FACE	PROJECTION (NOTE 3) IN	PROJECTION (NOTE 3) OUT	SERVICE	MIS WELD JOINT CATEGORY TYPE	A	B	C	REMARKS
M1	1	24"	140 TH.	600#	SR	RFS	-	1770	MANWAY	24	10	-	-	w/B.F. & DAVIT
N5	1	2"	16.6 TH.	600#	LWN	RFS	-	SEE DRG	DRAIN	20	10	-	-	w/B.F.
N4	1	1"	14.2 TH.	600#	LWN	RFS	-	1560	OUTLET TO SABOOR REACT. SYSTEM	20	10	-	-	
N3	1	3"	44 TH.	600#	SR	RFS	-	1560	OUTLET TO REACTOR SYSTEM	24	10	-	-	
N2	1	3"	44 TH.	600#	SR	RFS	-	SEE DRG	OUTLET TO SHUTDOWN SYSTEM	24	10	-	-	
N1	1	3"	44 TH.	600#	SR	RFS	-	1551	FEED (3)	24	10	-	-	

MIS REFERENCE DRG. No.		APPLICABLE CLIENT REF DWG./SPECS./STDS.	
MIS-4674-023-V	NAME PLATE	001-E15	VESSEL LIFTING LUGS : TWO PLATE TYPE.
MIS-4674-022-V	MANWAY DAVIT	001-G01	SHOP INSPECTION OF EQUIPMENT FOR SHIPMENT
		001-T07	MATERIAL IDENTIFICATION PROGRAM
		001-T06	PRESSURE VESSELS MATERIAL CONTROL PROGRAM
		001-T01	TESTING AND INSPECTION - PRESSURE VESSELS.
		001-E01	PRESSURE VESSELS - GENERAL
		10000.00.ST.0800.01	NAME PLATE
		S230	RECOMMENDED COATING SYSTEM FOR EXTERNAL PROTECTION
		2121 00 JSD 2300 01	SHOP AND FIELD PAINTING
		W12-F04	HEAT TREATMENT AND STRESS RELIEF OF WELDS
		W01-T01	WELDING AND INSPECTION
		001-T02	INSPECTION REQUIREMENTS FOR PRESSURE VESSELS
		001-F34	CARBON AND LOW ALLOY STEEL FABRICATION-PRESS. VESSELS
		001-F28	ALLOWABLE FAB. TOLERANCES HOR. & VER. PR.VESSEL
		001-F25	VESSELS : GROUNDING AND LUG DETAILS
		001-F23/VEVF 1123	VESSELS : INSULATION & FIREPROOFING SUPPORTS
		001-F21/22	PIPE GUIDE/SUPPORT
		001-F20	DAVIT FOR OUTDOOR MANHOLE COVERS
		001-F17	GRAB RUNGS & STEPS FOR MANHOLES
		001-F15	VESSELS : NAME PLATE AND STAMPING
		001-F10	THICK WALLED FABRICATION
		001-F07	PRESSURE VESSELS : FABRICATION
		001-F05	VESSEL SUPPORT LUG FABRICATION
		001-F01	PRESSURE VESSELS : WELDING AND FABRICATION
		001-E10	THICK WALLED VESSELS
		2121 07 DW 0811-01 REV. 0 (2 SH.)	VESSEL DATA SHEET & STD. THEREIN

TECHNIP-COFLEXIP — sabic
PROJ.: SABIC ACETIC ACID PROJECT
CLIENT: SABIC - YANBU - KINGDOM OF SAUDI ARABIA
MATERIAL REQUISITION No. 2121 MR 0|8|1|1|0|1
ITEM: 100-D274
SR Doc. CODE: A1103

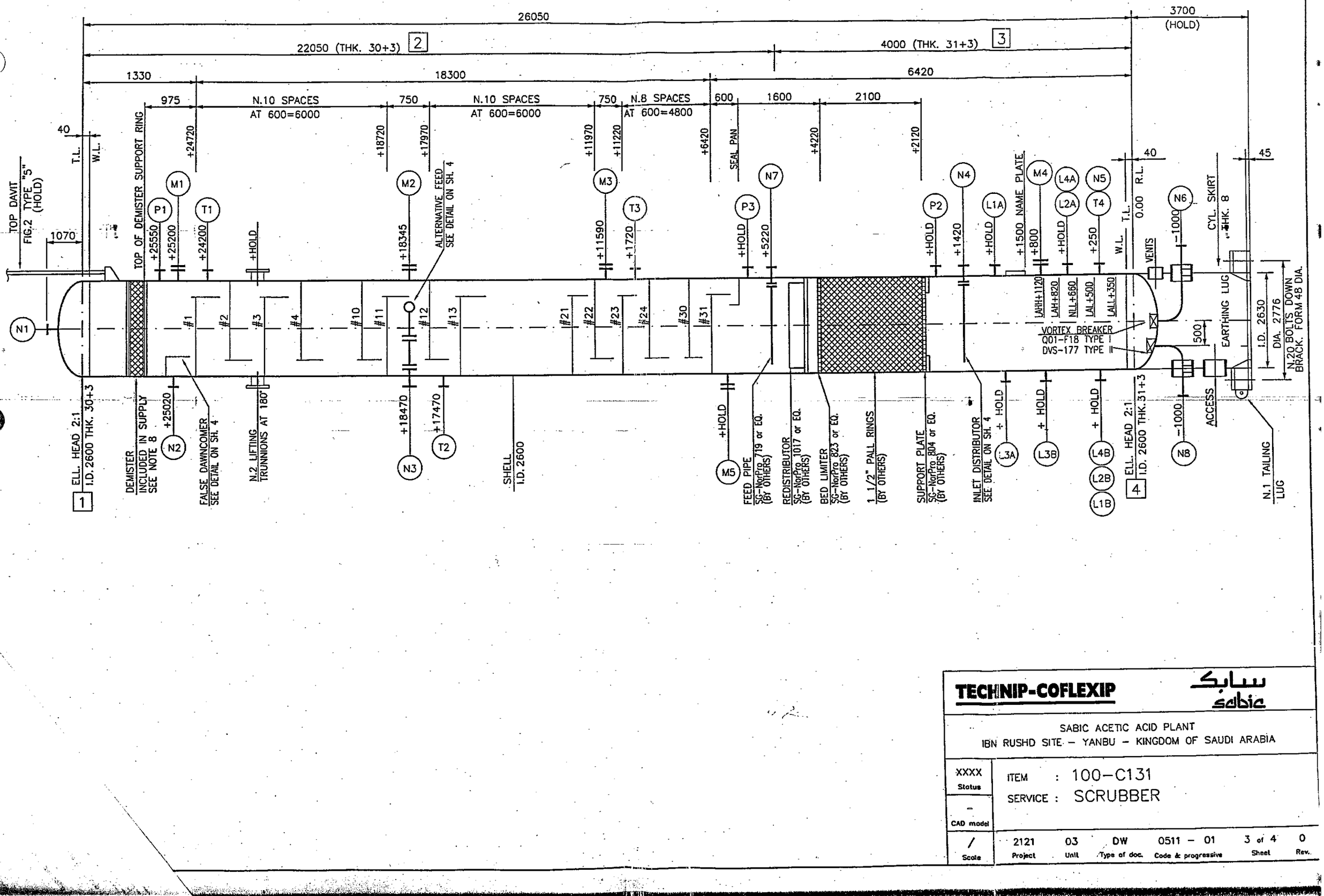
☐1 REVISE AND RESUBMIT
☐2 TO BE ISSUED AS FINAL PROVIDED COMMENTS ARE INCORPORATED
☐3 NO COMMENT - FINAL ISSUE
☐4 FOR INFORMATION ONLY (INTERNAL USE)
U.O.: TECHNIP ITALY S.p.A.
BY: DATE:

ASME
NAT'L BOARD No. 20 (3)

REV	DATE	DESCRIPTION	BY	CHKD/APPD
3	12.07.03	AS BUILT	SMK	
2	18.03.03	REVISED AS MARKED.	SMK	PL/MHD
1	02.03.03	REVISED AS MARKED.	SMK	PL/MHD
0	22.01.03	ISSUED FOR CONSTRUCTION & REVISED AS MARKED.	SMK	PL/MHD
A	27.11.02	ISSUED FOR CLIENT'S APPROVAL.	SMK	PL/MHD

MARITIME INDUSTRIAL SERVICES CO. LTD. INC.
P.O.BOX 4596, SHARJAH, UNITED ARAB EMIRATES

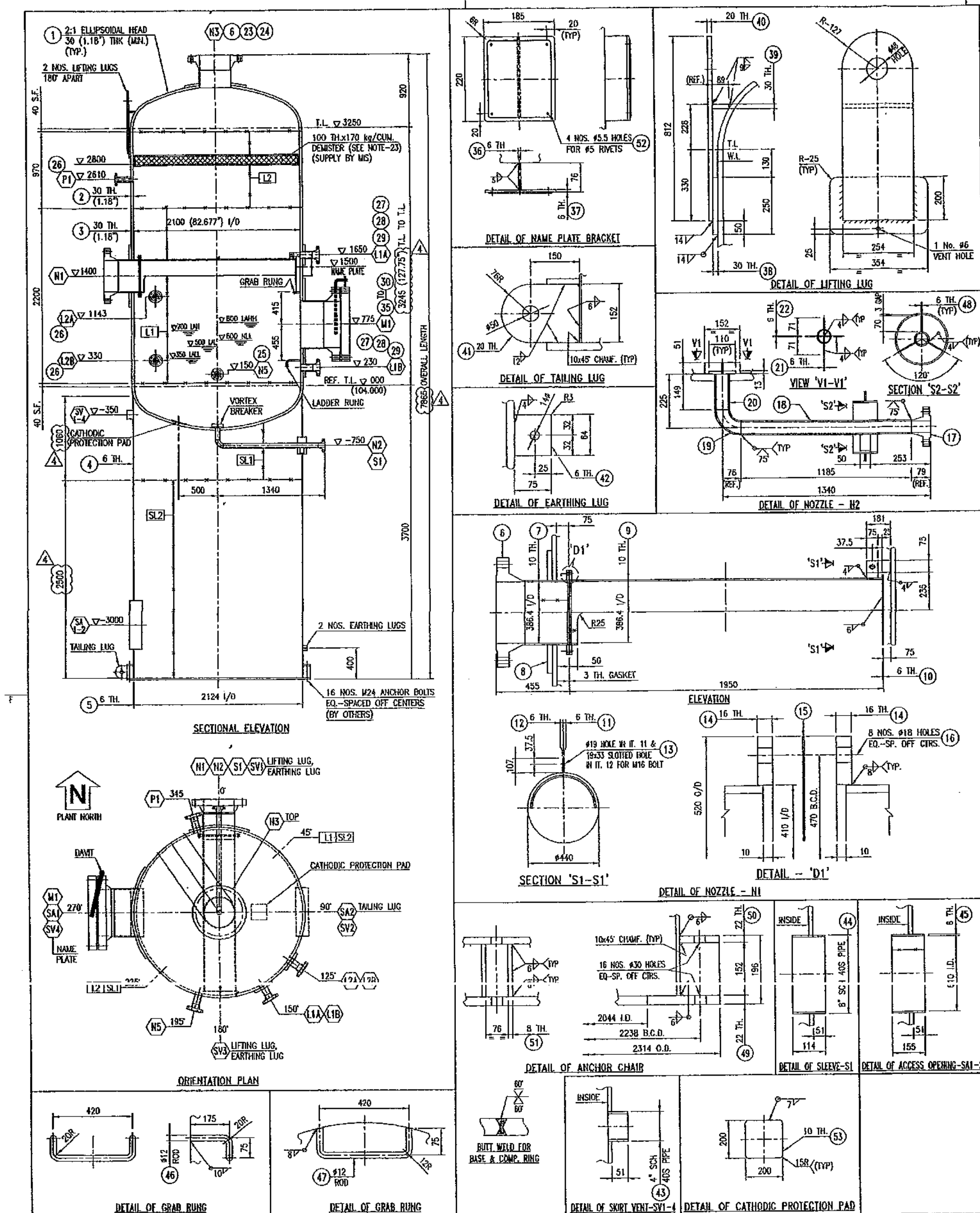
DRN BY : SMK
DATE : 27.11.02
CHKD. / APPD. BY
DATE : 27.11.02
CLIENT : TECHNIP-COFLEXIP - SABIC
PROJECT : SABIC ACETIC ACID PLANT, IBN RUSHD SITE - YANBU, K.S.A.
JOB No. 4674
EQUIPMENT HP START-UP NITROGEN VESSEL (ITEM NO. 100-D274) GENERAL ARRANGEMENT & DETAILS
CAD FILE NAME : 4674020
QTY. ONE
SCALE : 1:30
DRAWING NO. MIS-4674-020-V, 01 OF 01, (3)



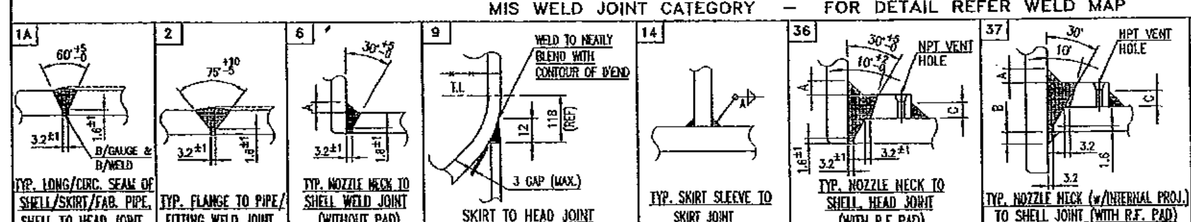
TECHNIP-COFLEXIP سابك sabic

SABIC ACETIC ACID PLANT
IBN RUSHD SITE – YANBU – KINGDOM OF SAUDI ARABIA

XXXX Status	ITEM : 100–C131					
– CAD model	SERVICE : SCRUBBER					
/ Scale	2121 Project	03 Unit	DW Type of doc.	0511 – 01 Code & progressive	3 of 4 Sheet	0 Rev.



MIS WELD JOINT CATEGORY – FOR DETAIL REFER WELD MAP



GENERAL NOTES

1. THE VESSEL SHALL BE FABRICATED AS PER ASME SEC. VIII DIV. 1, ED. 2001.
2. ALL DIMENSIONS ARE IN MM & NOZZLE ELEVATIONS ARE FROM TAN LINE UNLESS OTHERWISE NOTED.
3. NOZZLE PROJECTIONS REFERED FROM VESSEL CENTERLINE TO FLANGE CONTACT FACE.
4. FLANGE GASKET CONTACT SURFACE FINISH SHALL BE AS PER ASME B 16.5 TO SUIT GASKET, 3.2 TO 6.3 Ra. (ISO 468).
5. NOZZLE BOLT HOLES SHALL STRADDLE PRINCIPAL CENTER LINES.
6. ALL NOZZLES RF PADS SHALL HAVE 1 NO. 1/4" NPT TEL-TALE HOLE FOR AIR TEST AT 30 kPa WITH SOAP SUDS. THE HOLE SHALL BE FILLED WITH HARD GREASE AFTER HYDROTEST.
7. ALL NOZZLES INSIDE EDGES EXCEPT NOZZLES WITH INSIDE PROJECTIONS SHALL BE FLUSHED WITH INTERNAL SURFACE OF VESSEL & ROUNDED OFF WITH 3 MM RADIUS.
8. ALL PRESSURE RETAINING WELDS TO BE FULL PENETRATION.
9. ALL INTERNAL WELDS SHALL BE CONTINUOUS FILLET WELDS.
10. WELDING & NDT PER WELD MAP No. MIS-4674-M009-V & QC INSPECTION PLAN.
11. [ ] INDICATES WELD SEAM NUMBER.
12. HYDROTEST SHALL BE CARRIED OUT IN HORIZONTAL POSITION USING POTABLE WATER WITH CHLORIDE CONTENT 50 PPM FOR 1 HR. 15 MINUTES. TEMPERATURE FOR HYDROTEST SHALL BE 17° C MINIMUM. AFTER TEST VESSEL SHALL BE FLUSHED WITH CLEAN WATER & SHALL BE THOROUGHLY DRAINED & DRIED.
13. THE VESSEL SHALL BE THOROUGHLY DRIED AND CLEANED INSIDE AND OUTSIDE. IT SHALL BE FREE FROM WELD SPATTER, SCALE, SLAG, RUST AND ANY FOREIGN MATTERS.
14. SERVICE GASKETS & BOLTINGS SHALL BE USED DURING HYDROTEST.
15. THE FABRICATION TOLERANCES SHALL BE AS PER CODE AS WELL AS SABIC STD. DWG. NO. : Q01-F28 REV. 0
16. FLANGED CONNECTIONS & ALL OTHER MACHINED SURFACES SHALL BE PROTECTED BY A COATING & FITTED WITH STEEL OR WOODEN COVER, 3 MM THK & NEOPRENE GASKET USING AT LEAST 4 BOLTS.
17. EXTERNAL S.S. SURFACE PREPARATION & PAINTING : AS PER SYSTEM SZ 306 OF TECHNIP SPEC. 2121-00-JSD-2300-01, REV. 0
    - VESSEL COMPONENTS (SHELL, DISHED ENDS, NOZZLES, TOP S.S. SKIRT INTERNAL/EXTERNAL ETC.)
    ALL EXTERNAL S.S. SURFACES PREPRATION SHALL BE AS PER – SSPC SP 7.
    PAINTING : 2 COATS OF EPOXY PHENOLIC 150 MICRONS DFT.
    TOTAL DFT – 300 MICRONS
    EXTERNAL C.S. SURFACE PREPARATION & PAINTING : AS PER SYSTEM 'S1' OF TECHNIP SPEC. 2121-00-JSD-2300-01, REV.0
    - VESSEL COMPONENTS (BOT. C.S. SKIRT, EXTERNAL ETC.)
    ALL EXTERNAL C.S. SURFACES SHALL BE GRIT BLASTED AS PER – SA 2
    PAINTING : PRIMER – EPOXY MASTIC – 125 MICRONS DFT.
    TOP COAT – POLYEURTHYNE ENAMEL (ALIPHATIC) – 50 MICRONS DFT
    TOTAL DFT – 175 MICRONS
18. EXTERNAL ATTACHMENT PADS SHALL HAVE 1 No. ø6 VENT HOLES & SHALL BE FILLED WITH HARD GREASE ONLY AFTER HYDROTEST.
19. MARKINGS ON VESSEL BEFORE SHIPMENT SHALL BE IN ACCORDANCE WITH SPECS. Q01-G01.
20. ALL REMOVABLE INTERNALS SHALL PASS THROUGH 590 MM I.D MANWAY
21. THE STATIC PRESSURE OF THE CONTENTS SHALL BE ADDED TO THIS PRESSURE.
22. THE INDICATED THICKNESS ARE THE MINIMUM ACCEPTABLE AFTER CONSTRUCTION.
23. DEMISTER TO BE KNITMESH TYPE 9032 OR EQUIVALENT.
    THICKNESS : 100mm, FREE VALUME : 97.90%, BULK DENSITY : 170 Kg/CUM, SURFACE AREA : 350 SQM/CUM MIN.
    DEMISTER TO BE SUITABLE FOR THE FOLLOWING PROCESS CONDITION :
    DESIGN VAPOUR FLORATE : 145992 Kg/h   LIQUID DENSITY : 980 Kg/CUM.
    MIN. OPERATING VAPOUR FLORATE : 79402 Kg/h   MAX. ALLOWABLE PRESSURE DROP : 0.05 bar
    VAPOUR DENSITY : 25.5 Kg/CUM.
    DEMISTER IS TO BE REMOVABLE FROM BELOW. AS PER STD. Q01-F31 FOR SUPPORT DETAILS.
24. FLUID COMPOSITION (mol%) : VAPOUR: ETHANE 49.7, METHANE 21.8, NITROGEN 19.6, DIOXIDE 5.5, ETHYLENE 1.6, WATER 0.9, OXYGEN 0.4, ARGON 0.2, PROPANE 0.2, OTHERS 0.1
    LIQUID : WATER 99.4, ACETIC ACID 0.5, OTHERS 0.1
25. THE DRUM IS SUBJECT TO STEAM OUT AT 120°C AND 0.5 barg.
26. MINIMUM DESIGN TEMPERATURE AT 9°C AT 31.6 barg.
27. INSIDE SURFACE OF S.S SHALL BE PICKLED AND PASSIVATED AS PER SPEC. 2121-00-JSD-3200-01

DESIGN DATA

DESIGN CODE	: ASME SEC. VIII, DIV-1, ED.2001	CODE STAMP	: YES
INT. DESIGN PRESSURE – SHELL	: 31.6 BARG (458.3 PSIG)	SERIAL NO.	: 152-10
INT. DESIGN PRESSURE – HEAD	: 31.6 BARG (458.3 PSIG)	YEAR BUILT	: 2003
DESIGN PRESSURE (EXT.)	: 0.5 BARG (7.25 PSIG) @ 120°C	OPERATING PRESSURE NORM./MAX.	: 24.4/25.4 BARg (353.9/368.4 PSIg)
DESIGN TEMPERATURE	: 125° C (257° F)	OPERATING TEMP. MAX.	: 60° C (140° F)
MIN. DESIGN METAL TEMP	: 9° C (48.2° F)	MAWP (H&C)	: 32.21 BARG (467.2 PSIG)
CORROSION ALLOWANCE	: NIL	MAWP (N&C)	: 32.34 BARG (469.1 PSIG)
IMPACT TEST	: NO	HYDROTEST PRESSURE – SHOP	: 42.3 BARG (613.5 PSIG)
RADIOGRAPHY	: RT-1	HYDROTEST PRESSURE – SITE	: 41.87 BARG (607.3 PSIG)
JOINT EFFICIENCY	: 1.0	FIRE PROOFING	: YES (50 mm BY OTHERS)
P.W.H.T.	: NO	INSULATION	: NO
MAX. OPER. STATIC HEAD	: 0.85m	CYCLIC/SOUR/LETHAL SERVICE	: NO / NO / NO
EARTH QUAKE	: UBC-ZONE 2A	EXTERNAL PAINT	: YES (SEE NOTE-17)
WIND SPEED	: 38.9 m/s (ASCE-7)	INTERNAL COATING	: NO
INSPECTION	: A.I.	OPERATING MEDIUM	: SEE NOTE-24
WEIGHTS – ERECTION	: 12800 KGS.	SPECIFIC GRAVITY OF LIQUID	: 0.98
WEIGHTS – HYDROTEST	: 28800 KGS.	HAZARD CONSIDERATION	: FLAMMABLE
WEIGHTS – OPERATING	: 18100 KGS.	NORMAL CAPACITY	: 13.68 CUM.

MATERIAL OF CONSTRUCTION

SHELL	: SA 240 GR. 304L	INTERNALS	: SS 304L
HEAD	: SA 240 GR. 304L	INTERNAL PIPE	: SA 240 GR. 304L
FLANGES	: SA 182 F 304L	EXTERNAL ATTACH.	: SA 240 GR. 304L/SA 516 GR. 70
PIPE	: SA 312 TP 304L (SMLS)	BOLTING EXTERNAL	: A 193 GR B7/A 194 GR 2H
FAB. PIPE	: SA 240 GR. 304L	BOLTING INTERNAL	: SS 304L
TOP SKIRT	: SA 240 GR. 304L	GASKETS (EXT.)	: SS 316L SPWD NAF FILLED, SS 316L INNER RING & C.S. OUTER RING
BOTTOM SKIRT	: SA 516 GR. 70	GASKETS (INT.)	: NAF
ANCHOR CHAIR, BASE/COMP. PLT.	: SA 516 GR. 70	FITTINGS	: SA 403 WP 304L
INTERNAL ATTACHMENTS	: SS 304L		

BILL OF MATERIAL (BOM IS FOR 1 NO. EQPT.)

– SS 316L SPIRAL WOUND NAF FILLED, SS 316L INNER RING & C.S OUTER RING

(*) – RFS STANDS FOR RAISED FACE SMOOTH FINISH 3.2÷6.3 Ra.

PART NO.	QTY.	PART	DESCRIPTION	MATERIAL	REF. DRG. (MIS USE)	WT. (KGS.)
53	1	PAD PLATE	PLATE 10 TH. x 200 x 200	SA 240 GR. 304L	SEE DRG.	3
52	4	NAME PLATE	RIVETS ø5 (rev. 4)	SS	SEE DRG.	–
51	32	GUSSET	PLATE 8 TH. x 152 x 91	SA 516 GR. 70	SHOP DRG.	28
50	1	COMP. RING	PLATE 22 TH. x 2314 O/D x 2136 I/D	SA 516 GR. 70	SHOP DRG.	80
49	1	BASE RING	PLATE 22 TH. x 2314 O/D x 2044 I/D	SA 516 GR .70	SHOP DRG.	147
48	3	NOZ. N2	FIN PLATE 6 TH. x 50 x 73 (CUT TO SUIT)	SA 240 GR. 304L	SEE DRG.	1
47	1	GRAB RUNG	ROD ø12 x 553 LG.	SS 304L	SEE DRG.	2
46	1	LADDER RUNG	ROD ø12 x 886 LG.	SS 304L	SEE DRG.	3
45	2	SKIRT ACCESS	FAB. PIPE PLT. 6 TH. x 155W x 1935	SA 516 GR. 70	SHOP DRG.	26
44	1	SLEEVE	PIPE 8" SCH 40S x 114 LG.	SA 312 TP 304L	SEE DRG.	5
43	4	SKIRT VENT	PIPE 4" SCH 40S x 59 LG.	SA 312 TP 304L	SEE DRG.	3
42	2	EARTHING LUG	PLATE 6 TH. x 64 x 75	SS	SEE DRG.	1
41	1	TAILING LUG	PLATE 20 TH. x 226 x 152	SA 516 GR. 70	SEE DRG.	5
40	2	LIFTING LUG	PLATE 20 TH. x 254 x 812	SA 516 GR .70	SEE DRG.	65
39	2	LIFTING LUG	PLATE 30 TH. x 100 x 254 (CUT TO SUIT)	SA 240 GR. 304L	SEE DRG.	11
38	2	LIFTING LUG	PAD PLATE 30 TH. x 250 x 354	SA 240 GR. 304L	SEE DRG.	42
37	1	NAME PLATE	PLATE 6 TH. x 185 x 220	SA 240 GR. 304L	SEE DRG	4
36	1	NAME PLATE	PLATE 6 TH. x 220 x 50	SA 240 GR. 304L	SEE DRG.	2
35	24+3	MANWAY-M1	STUD ø1 7/8" x 13" LG. w/2 HEX NUTS	SA 193-B7/194-2H	SEE DRG.	183
34	1+2	MANWAY-M1	GASKET SPIRAL WOUND 24" 600# RF	##	SEE DRG.	–
33	1	MANWAY-M1	BLIND FLANGE 24" 600# RFS ASME B16.5	SA 182 F 304L	SEE DRG.	543
32	1	MANWAY-M1	R.F PAD PLATE 30 TH. x 1170 O/D x 622 I/D	SA 240 GR. 304L	SHOP DRG.	185
31	1	MANWAY-M1	FAB. PIPE 10 TH. x 326W x 1885	SA 240 GR. 304L	SHOP DRG.	47
30	1	MANWAY-M1	FLANGE 24" WN 600# RFS ASME B16.5 (ø590 BORE)	SA 182 F 304L	SEE DRG.	365
29	2	NOZ. L1A/B	R.F PAD PLATE 30 TH. x 270 O/D x 102 I/D	SA 240 GR. 304L	SHOP DRG.	36
28	2	NOZ. L1A/B	PIPE 3" SCH 40S x 147 LG.	SA 312 TP 304L	SHOP DRG.	3
27	2	NOZ. L1A/B	FLANGE 3" WN 600# RFS ASME B16.5 (SCH 40S BORE)	SA 182 F 304L	SEE DRG.	22
26	3	NOZ. P1,L2A/B	FLANGE 1½" LWN 600# RFS x 237 LG. ASME B16.5	SA 182 F 304L	SEE DRG.	16
25	1	NOZ. N5	FLANGE 1" LWN 600# RFS x 236 LG. ASME B16.5	SA 182 F 304L	SEE DRG.	7
24	1	NOZ. N3	R.F PAD PLATE 30 TH. x 755 O/D x 414 I/D	SA 240 GR. 304L	SHOP DRG.	38
23	1	NOZ. N3	FAB. PIPE 10 TH. x 222W x 1245 LG.	SA 240 GR. 304L	SHOP DRG.	22
22	2	VORTEX BREAKER	PLATE 6 TH. x 51 x 73	SA 240 GR. 304L	SEE DRG.	1
21	1	VORTEX BREAKER	PLATE 6 TH. x 51 x 152	SA 240 GR. 304L	SEE DRG.	1
20	1	NOZ. N2	PIPE 2" SCH 80S x 149 LG.	SA 312 TP 304L	SEE DRG.	1
19	1	NOZ. N2	ELBOW 2" SCH 80S 90°-LR. ASME B16.9	SA 403 WP 304L	SEE DRG.	3
18	1	NOZ. N2	PIPE 2" SCH 80S x 1185 LG.	SA 312 TP 304L	SEE DRG.	9
17	1	NOZ. N2	FLANGE 2" WN 600# RFS ASME B16.5 (SCH 80S BORE)	SA 182 F 304L	SEE DRG.	6
16	8	NOZ. N1	HEX. BOLT M16 x 55 LG. w/1 HEX. NUT	SS 304L	SEE DRG.	–
15	1	NOZ. N1	GASKET 3 TH. x 520 O/D x 410 I/D	NAF	SEE DRG.	–
14	2	NOZ. N1	PLATE FLANGE 16 TH. x 520 O/D x 410 I/D	SA 240 GR. 304L	SEE DRG.	21
13	1	NOZ. N1	HEX. BOLT M16 x 35 LG. w/1 HEX. NUT	SS 304L	SEE DRG.	–
12	1	NOZ. N1	PLATE 6 TH. x 75 x 107	SA 240 GR. 304L	SHOP DRG.	1
11	1	NOZ. N1	PLATE 6 TH. x 75 x 181	SA 240 GR. 304L	SHOP DRG	2
10	1	NOZ. N1	PLATE 6 TH. x ø440	SA 240 GR. 304L	SHOP DRG.	7
9	1	NOZ. N1	FAB. PIPE 10 TH. x 1245W x 1934 LG.	SA 240 GR. 304L	SHOP DRG.	192
8	1	NOZ. N1	R.F PAD PLATE 30 TH. x 770 O/D x 414 I/D	SA 240 GR. 304L	SHOP DRG.	38
7	1	NOZ. N1	FAB. PIPE 10 TH. x 286W x 1245 LG.	SA 240 GR. 304L	SHOP DRG.	28
6	2	NOZ. N1,N3	FLANGE 16" WN 600# RFS ASME B16.5 (ø386.4 BORE)	SA 182 F 304L	SEE DRG.	380
5	1	SKIRT (rev. 4)	PLATE 6 TH. x 2500W x 6692 LG.	SA 516 GR. 70	SHOP DRG.	808
4	1	SKIRT (rev. 4)	PLATE 6 TH. x 1110W x 6692 LG. (ALLOWANCE ADDED)	SA 240 GR. 304L	SHOP DRG.	337
3	1	SHELL	PLATE 30 TH. x 2200W x 6692 LG.	SA 240 GR. 304L (G5)	SHOP DRG.	3533
2	1	SHELL	PLATE 30 TH. x 970W x 6692 LG.	SA 240 GR. 304L (G5)	SHOP DRG	1558
1	2	HEAD	2:1 ELLIPSOIDAL HEAD 2100 I/D x 30 TH. (MIN)	SA 240 GR. 304L (G5)	SEE DRG.	2413

TOTAL WT. 11234

NOZZLE SCHEDULE

NOZZLE MARK	QTY.	SIZE	SCH/THK	RATING	TYPE	FACE (*)	PROJECTION (NOTE 3) IN	PROJECTION (NOTE 3) FROM C.L.	SERVICE	MIS WELD JOINT CATEGORY TYPE	A	B	C	REMARKS
S1	1	8"	SCH 40S	–	–	–	–	–	SLEEVE OPENING NOZ.N2	14	6	–	–	
SV1-4	4	4"	SCH 40S	–	–	–	–	–	SKIRT VENT	6	6	–	–	
SA1-2	2	610 I/D	6 TH.	–	–	–	–	–	SKIRT ACCESS	1A,14	6	–	–	
M1	1	24"	10 TH.	600#	WN	RFS	–	1540	MANWAY	1A,2,36	9	–	14	w/B.F., DAVIT & R.F. PAD ø1170x30 TH.
L2A/B	2	1 1/2"	15.88 TH.	600#	LWN	RFS	–	1285	LEVEL TRIP	6	9	–	–	
L1A/B	2	3"	SCH 40S	600#	WN	RFS	–	1285	LEVEL BRIDLE	2,36	9	–	14	R.F. PAD ø270x30 TH.
P1	1	1 1/2"	15.88 TH.	600#	LWN	RFS	–	1285	PRESSURE TAPPING	6	9	–	–	
N5	1	1"	14.22 TH.	600#	LWN	RFS	–	1285	UTILITY CONNECTION	6	9	–	–	
N3	1	16"	10 TH.	600#	WN	RFS	–	SEE DRG	VAPOUR OUTLET	1A,2,36	9	–	14	R.F. PAD ø755x30 TH.
N2	1	2"	SCH 80S	600#	WN	RFS	–	SEE DRG	LIQUID OUTLET	2,6	9	–	–	
N1	1	16"	10 TH.	600#	WN	RFS	SEE DRG	1430	FEED	1A,2,37	9	9	14	R.F. PAD ø770x30 TH.

MIS REFERENCE DRG. No.

MIS-4674-043-V	SKIRT TEMPLATE
MIS-4674-042-V	NAME PLATE
MIS-4674-041-V	MANWAY DAVIT
MIS-4674-040-V	NOZZLE & INTERNAL DETAILS
MIS-4674-039-V	EXTERNAL CLEATS & FIREPROOFING SUPPORTS

APPLICABLE CLIENT REF DWG./SPECS./STDS.

Q01-G01	SHOP PREPARATION OF EQUIPMENT FOR SHIPMENT
Q01-T07	MATERIAL IDENTIFICATION PROGRAM
Q01-T06	PRESSURE VESSELS MATERIAL CONTROL PROGRAM
Q01-T01	TESTING AND INSPECTION – PRESSURE VESSELS
Q01-E01	PRESSURE VESSELS – GENERAL
10000.00.ST.0800.01	NAME PLATE
S250	RECOMMENDED COATING SYSTEM FOR EXTERNAL PROTECTION
22854-SP-000-X-002	SHOP AND FIELD PAINTING
W01-F01	WELDING AND INSPECTION
Q01-T02	INSPECTION REQUIREMENTS FOR PRESSURE VESSELS
Q01-F37	AUSTENITIC AND H.A. STEEL PRESS. VESSEL: FABRICATION
Q01-F31	DEMISTER PAD ASSEMBLY & DETAILS
Q01-F28	ALLOWABLE FAB. TOLERANCES HOR. & VER. PR.VESSEL
Q01-F25	VESSELS : GROUNDING AND LUG DETAILS
Q01-F21/22	PIPE GUIDE/SUPPORT
Q01-F20	DAVIT FOR OUTDOOR MANHOLE COVER
Q01-F18	VORTEX BREAKER
Q01-F17	GRAB RUNGS AND STEPS FOR MANWAYS
Q01-F15	VESSELS : NAME PLATE AND STAMPING
Q01-F07	PRESSURE VESSELS : FABRICATION
Q01-F01	PRESSURE VESSELS : WELDING AND FABRICATION
Q01-E15	VESSEL LIFTING LUGS : TWO PLATE TYPE
2121 01 DN 0811-02 REV.0(2 SHT.)	VESSEL DATA SHEET & STD. THEREIN

TECHNIP-COFLEXIP — SABIC

PROJ.: SABIC ACETIC ACID PROJECT
CLIENT: SABIC – YANBU – KINGDOM OF SAUDI ARABIA
MATERIAL REQUISITION No. 2121 MR 0|8|1|1|0|2|
ITEM: 100-D211
SR Doc. CODE: A1TD3

VENDOR DOCUMENT REVIEW
☐1 REVISE AND RESUBMIT
☐2 TO BE ISSUED AS FINAL PROVIDED COMMENTS ARE INCORPORATED
☐3 NO COMMENT – FINAL ISSUE
☐4 FOR INFORMATION ONLY (INTERNAL USE)
U.O.: TECHNIP ITALY S.p.A.
BY: DATE:

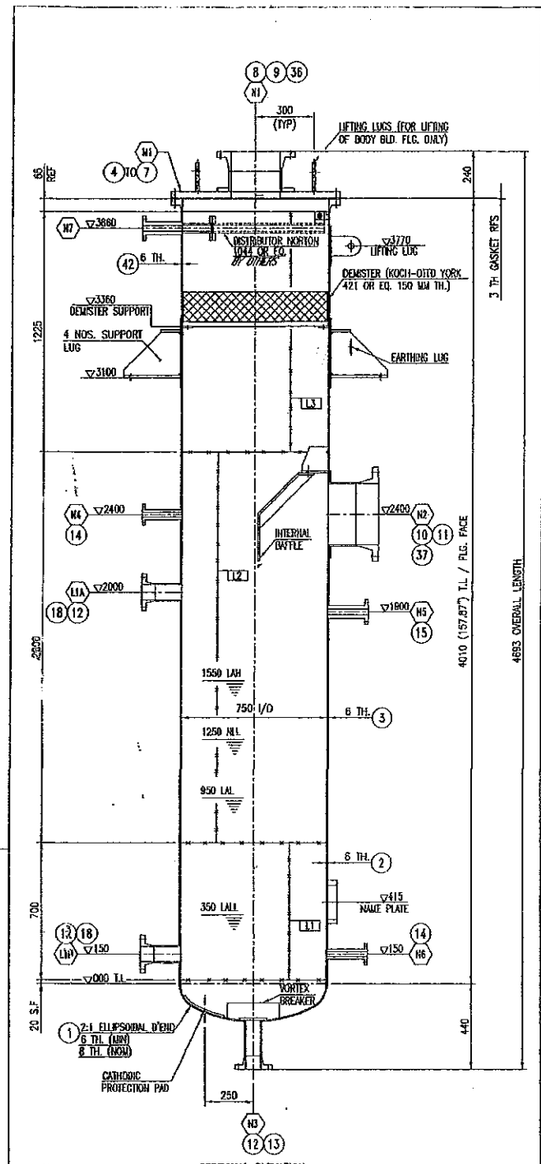
ASME
NATL. BOARD No. 10

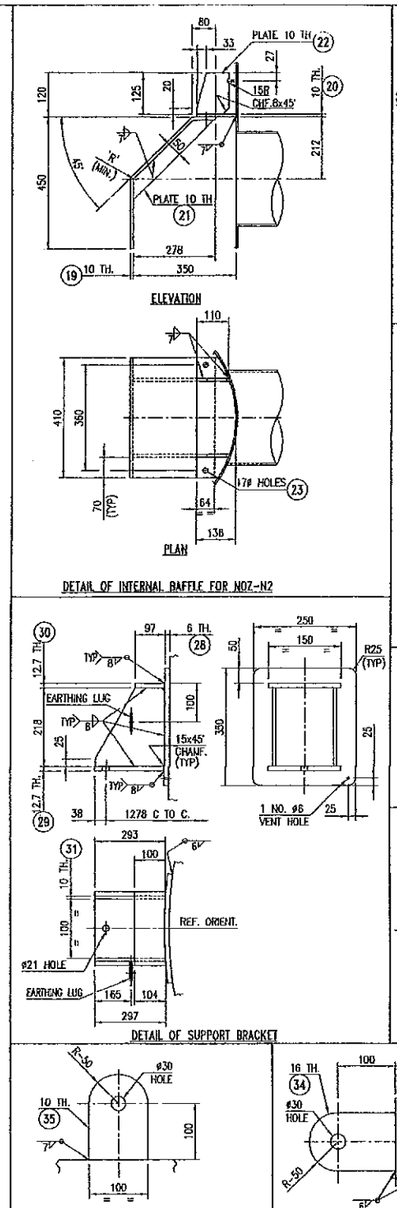
REV	DATE	DESCRIPTION	BY	CHKD/APPD
4	12.07.03	AS BUILT		
3	07.04.03	REVISED AS MARKED.	RO	PL/MHD
2	18.03.03	REVISED AS MARKED.	SMK	PL/MHD
1	09.02.03	REVISED AS MARKED.	SMK	PL/MHD
0	04.01.03	ISSUED FOR CONSTRUCTION & REVISED AS MARKED.	SMK	PL/MHD
A	16.11.02	ISSUED FOR CLIENT'S APPROVAL.	SMK	PL/MHD

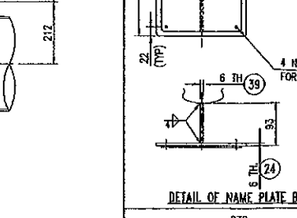
MARITIME INDUSTRIAL SERVICES CO. LTD. INC.
P.O.BOX 4596, SHARJAH, UNITED ARAB EMIRATES

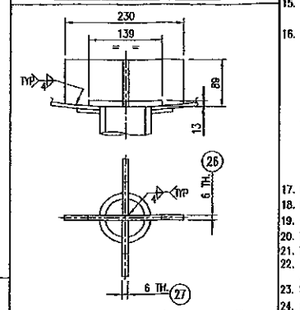
DRN BY : SMK DATE : 16.11.02
CHKD. / APPD. BY DATE : 16.11.02
JOB No. 4674
CAD FILE NAME : 4674038
QTY. ONE

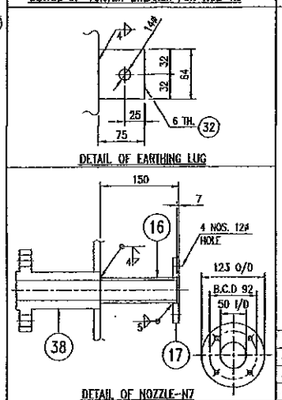
CLIENT : TECHNIP-COFLEXIP – SABIC
PROJECT : SABIC ACETIC ACID PLANT, IBN RUSHD SITE – YANBU, K.S.A.
EQUIPMENT : RECYCLE GAS KO DRUM (ITEM NO. 100-D211) GENERAL ARRANGEMENT & DETAILS
SCALE : 1:30
DRAWING NO. MIS-4674-038-V 01 OF 01 (rev. 4)

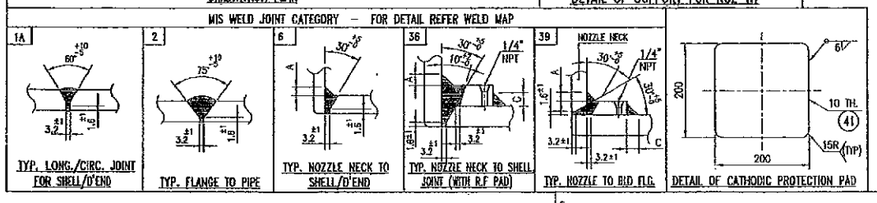












GENERAL NOTES

1. THE VESSEL SHALL BE FABRICATED AS PER ASME SEC. VIII DIV. 1, ED. 2001.
2. ALL DIMENSIONS ARE IN MM & NOZZLE ELEVATIONS ARE FROM TAN LINE UNLESS OTHERWISE NOTED.
3. NOZZLE PROJECTIONS REFERED FROM VESSEL CENTERLINE TO FLANGE CONTACT FACE.
4. FLANGE GASKET CONTACT SURFACE FINISH SHALL BE AS PER ASME B 16.5 TO SUIT GASKET. 3.2 TO 6.4 RFS & 6.4 TO 12.5 FOR RF
5. NOZZLE BOLT HOLES SHALL STRADDLE PRINCIPAL CENTER LINES.
6. ALL NOZZLES RF PADS SHALL HAVE 1 NO. 1/4" NPT TEL-TALE HOLE FOR AIR TEST AT 30 kPa WITH SOAP SUDS. THE HOLE SHALL BE FILLED WITH HARD GREASE AFTER HYDROTEST.
7. ALL NOZZLES INSIDE EDGES EXCEPT NOZZLES WITH INSIDE PROJECTIONS SHALL BE FLUSHED WITH INTERNAL SURFACE OF VESSEL & ROUNDED OFF WITH 3 MM RADIUS.
8. ALL PRESSURE RETAINING WELDS TO BE FULL PENETRATION.
9. ALL INTERNAL WELDS SHALL BE CONTINUOUS FILLET WELDS.
10. WELDING & NDT PER WELD MAP No. MIS-4674-M014-V & QC INSPECTION PLAN.
11. ☐ INDICATES WELD SEAM NUMBER.
12. HYDROTEST SHALL BE CARRIED OUT IN HORIZONTAL POSITION USING POTABLE WATER WITH CHLORIDE CONTENT NOT EXCEEDING 50 PPM MAX. FOR 1 HR. TEMPERATURE FOR HYDROTEST SHALL BE 17 C MINIMUM. AFTER TEST VESSEL SHALL BE FLUSHED WITH CLEAN WATER & SHALL BE THOROUGHLY DRAINED & DRIED.
13. THE VESSEL SHALL BE THOROUGHLY DRIED AND CLEANED INSIDE AND OUTSIDE. IT SHALL BE FREE FROM WELD SPATTER, SCALE, SLAG, RUST AND ANY FOREIGN MATTERS.
14. THE FABRICATION TOLERANCES SHALL BE AS PER CODE AS WELL AS SABIC STD. DWG. NO. : Q01-F28 REV. 0
15. FLANGED CONNECTIONS & ALL OTHER MACHINED SURFACES SHALL BE PROTECTED BY A COATING & FITTED WITH STEEL OR WOODEN COVER, 3 MM THK & NEOPRENE GASKET USING AT LEAST 4 BOLTS.
16. EXTERNAL S.S. SURFACE PREPARATION & PAINTING : AS PER SYSTEM SZ 306 OF TECHNIP SPEC. 2121-00-JSD-2300-01
    - VESSEL COMPONENTS (SHELL, DISHED ENDS, NOZZLES ETC.)
      ALL EXTERNAL S.S. SURFACES PREPRATION SHALL BE AS PER – SSPC SP 7.
      PAINTING : 2 COATS OF EPOXY PHENOLIC 150 MICRONS DFT.
      TOTAL DFT – 300 MICRONS
    EXTERNAL C.S. SURFACE PREPARATION & PAINTING : AS PER SYSTEM 'S1' OF SPEC. 2121-00 JSD 2300-01
    - SUPPORT BRACKET, EXTERNAL ATTACHMENT ETC.
      ALL EXTERNAL C.S. SURFACES SHALL BE GRIT BLASTED AS PER – SA 2 1/2 OR SSPC-SP6
      PAINTING : PRIMER – EPOXY MASTIC 125 MICRONS
      TOP COAT – PLOYURETHANE ENAMEL (ALIPHATIC) 50 MICRONS
      TOTAL DFT – 175 MICRONS
17. EXTERNAL ATTACHMENT PADS SHALL HAVE 1 No. ø6 VENT HOLES & SHALL BE FILLED WITH HARD GREASE ONLY AFTER HYDROTEST.
18. MARKINGS ON VESSEL BEFORE SHIPMENT SHALL BE IN ACCORDANCE WITH SPECS. Q01-C01.
19. ALL REMOVABLE INTERNALS SHALL PASS THROUGH 750 MM I.D BODY FLANGE.
20. THE INDICATED THICKNESS ARE THE MINIMUM ACCEPTABLE AFTER CONSTRUCTION.
21. THE STATIC PRESSURE OF THE CONTENT SHALL BE ADDED TO THIS PRESSURE.
22. FLUID COMPOSITION (mol%).
    VAPOUR: ETHANE 0.3, METHANE 0.2, NITROGEN 0.5, CARBON DIOXIDE 79.7, WATER 19.3 LIQUID WATER 100.0
23. STATIC HEAD SHALL ADD TO DESIGN PRESSURE.
24. INSIDE SURFACE OF S.S SHALL BE PICKLED AND PASSIVATED AS PER SPEC. 2121-00-JSD-3200-01

DESIGN DATA

DESIGN CODE	: ASME SEC. VIII, DIV-1, ED.2001	CODE STAMP	: NO
INT. DESIGN PRESSURE SHELL	: 3.5 BARG (50.76 PSIG)	SERIAL NO.	: 152-15
INT. DESIGN PRESSURE HEAD	: 3.5 BARG (50.76 PSIG)	YEAR BUILT	: 2003
DESIGN PRESSURE (EXT.)	: F.V @ 150° C	OPERATING PRESSURE	: 1.03 BAR(a) (15 PSI(a)
DESIGN TEMPERATURE	: 150° C (302° F)	OPERATING TEMP. MAX.	: 60° C (140° F)
MIN. DESIGN METAL TEMP	: 8° C (48° F) AT 3.5 BARG & F.V	MAWP (H&C)	: 5.85 BARG (84.8 PSIG)
CORROSION ALLOWANCE	: NIL	MAWP (N&C)	: 7.93 BARG (115 PSIG)
IMPACT TEST	: NO	HYDROTEST PRESSURE SHOP	: 10.31 BARG (149.6 PSIG)
RADIOGRAPHY	: SPOT	HYDROTEST PRESSURE SITE	: 7.61 BARG (110.3 PSIG)
JOINT EFFICIENCY	: 0.85	FIRE PROOFING	: NO
P.W.H.T.	: NO	INSULATION	: NO
EARTH QUAKE	: UBC-ZONE 2A	CYCLIC/SOUR/LETHAL SERVICE	: NO / NO / NO
WIND SPEED	: 38.9 m/s (ASCE-7)	EXTERNAL PAINT	: YES (SEE NOTES)
INSPECTION	: A1	INTERNAL COATING	: NO
WEIGHTS ERECTION	: 1300 KGS.	OPERATING MEDIUM	: SEE NOTE-22
WEIGHTS HYDROTEST	: 3400 KGS.	SPECIFIC GRAVITY OF LIQUID	: 981 kg/m³
WEIGHTS OPERATING	: 3300 KGS.	NORMAL CAPACITY	: 1.83 CUM.
MAX. OPER. STATIC HEAD	: FULL (NOTE-23)		

MATERIAL OF CONSTRUCTION

SHELL	: SA 240 GR 304L (G5)	INTERNAL ATTACH.	: SS 304L
HEAD	: SA 240 GR 304L (G5)	EXTERNAL ATTACH.	: SA 240 GR 304L
FLANGES	: SA 182F 304L	BOLTING EXTERNAL	: SA 193 GR B7/SA 194 GR 2H
SUPPORT BRACKET	: SA 240 GR 304L /SA 516 GR 70	BOLTING INTERNAL	: 304L
FAB. NOZZLE NECK	: SA 240 GR 304L	GASKETS (EXT.) EXCEPT NOZ-N5	: 304L S.W GRAPH. FILLED -AISI 304L INNER COMPRESSION RING+EXT. C.S CENTERING
NOZ. PIPES	: SA 312 TP 304L	GASKETS (EXT.) FOR NOZ-N5	: NAF
RF. PAD	: SA 240 GR 304L	GASKETS (INT.)	: NAF

304L S.W GRAPH. FILLED -AISI 304L INNER COMPRESSION RING+EXT. C.S CENT. RING

BILL OF MATERIAL Contd....

40	1	NOZ-N7	PLATE 8 TH. x 70 x 40	SA 240 GR 304L	SEE DWG 2
39	1	NAME PLT. BRACKET	PLATE 6 TH. x 140 x 67	SA 240 GR 304L	SEE DWG 2
38	1	NOZ-N7	FLANGE LWN 1 1/2" 150# RFS ASME B 16.5 x 206 LG	SA 182F 304L	SEE DWG 6
37	1	NOZ-N2	PAD PLATE 8 TH. x 450 O/D x 342 I/D	SA 240 GR 304L	SEE DWG 3
36	1	NOZ-N1	PAD PLATE 27 TH. x 400 O/D x 307 I/D	SA 240 GR 304L	SEE DWG 11
35	2	LIFTING LUG	PLATE 10 TH. x 150 x 100	SA 240 GR 304L	SEE DWG 2
34	2	LIFTING LUG	PLATE 16 TH. x 150 x 100	SA 516 GR 70	SEE DWG 4
33	2	LIFTING LUG	PAD PLATE 6 TH. x 200 x 125	SA 240 GR 304L	SEE DWG 2
32	2	EARTHING LUG	PLATE 6 TH. x 75 x 64	SS 316L	SEE DWG –
31	8	SUPPORT LUG	PLATE 10 TH. x 218 x 293	SA 516 GR 70	SEE DWG 40
30	4	SUPPORT LUG	PLATE 12.7 TH. x 100 x 150	SA 516 GR 70	SEE DWG 6
29	4	SUPPORT LUG	PLATE 12.7 TH. x 297 x 150	SA 516 GR 70	SEE DWG 18
28	4	SUPPORT LUG	PLATE 6 TH. x 350 x 250	SA 240 GR 304L	SEE DWG 17
27	2	VORTEX BREAKER	PLATE 6 TH x 112 x 89	SA 240 GR 304L	SEE DWG 1
26	1	VORTEX BREAKER	PLATE 6 TH x 230 x 89	SA 240 GR 304L	SE DWG 1
25	4	NAME PLT. BRACKET	RIVET 5ø	SS 5	SEE DWG –
24	1	NAME PLT. BRACKET	PLATE 6 TH. x 152 x 170	SA 240 GR 304L	SEE DWG 2
23	2	INTERNAL BAFFLE	HEX BOLT M16 x 60 LG. W/ TWO HEX NUT	AISI 304L	SEE DWG –
22	2	INTERNAL BAFFLE	PLATE 10 TH. x 110 x 125	SA 240 GR 304L	SEE DWG 2
21	2	INTERNAL BAFFLE	PLATE 10 TH. x 50W x 390 LG.	SA 240 GR 304L	SEE DWG 3
20	1	INTERNAL BAFFLE	PLATE 10 TH. x 410 x 136	SA 240 GR 304L	SEE DWG 4
19	1	INTERNAL BAFFLE	PLATE 10 TH. x 410 x 630 (CUT TO SUIT)	SA 240 GR 304L	SEE DWG 21
18	2	NOZ-L1A/L1B	PIPE 3" NB SCH 40S x 138 LG.	SA 312 TP 304L	SEE DWG 3
17	1	NOZ. N7	PLATE FANGE 10 TH. x 123 O/D x 50 I/D	SS 304L	SEE DWG 3
16	1	NOZ. N7	PIPE 1½" SCH 80S x 146 LG.	SA 312 TP 304L	SEE DWG 1
15	1	NOZ-N5	FLANGE LWN 1 1/2" 150# RFS ASME B 16.5 x 206 LG	SA 182F 304L	SEE DWG 6
14	2	NOZ-N4/N6	FLANGE LWN 1" 150# RFS ASME B 16.5 x 206 LG	SA 182F 304L	SEE DWG 6
13	1	NOZ-N3	PIPE 3" NB SCH 40S x 184 LG.	SA 312 TP 304L	SHOP DWG 2
12	3	NOZ-N3/L1A/L1B	FLANGE WN 3" 150# RFS ASME B 16.5 SCH 40S	SA 182F 304L	SEE DWG 14
11	1	NOZ-N2	PAD PIPE 8 TH. x (188W)x 999 LG. 5	SA 240 GR 304L	SHOP DWG 8
10	1	NOZ-N2	FLANGE WN 12" 150# RFS ASME B 16.5 (311.9 BORE)	SA 182F 304L	SEE DWG 37
9	1	NOZ-N1	PIPE 10" NB SCH 40S x 105 LG.	SA 312 TP 304L	SHOP DWG 6
8	1	NOZ-N1	FLANGE WN 10" 150# RFS ASME B 16.5 SCH 40S	SA 182F 304L	SEE DWG 24
7	44+4	BODY FLANGE	STUD BOLT 5/8"ø x 5" LG W/TWO HVY HEX NUT	SA 193B7/SA 194 2H	SEE DWG 155
6	1+2	BODY FLANGE	SPIRAL WOUND GASKET 30" 75# RF API 601	1	SEE DWG –
5	1	BODY FLANGE	BLIND FLANGE 30" 75# RFS ASME B16.47 (SERIES B)	SA 182F 304L	SEE DWG 155
4	1	BODY FLANGE	FLANGE WN 30" 75# RFS ASME B 16.47 (SERIES B)	SA 182F 304L	SEE DWG 43
3	1	SHELL	PLATE 6 TH. x 2000W x 2375 LG.	SA 240 GR 304L (G5)	SHOP DWG 224
2	1	SHELL	PLATE 6 TH. x 700W x 2375 LG.	SA 240 GR 304L (G5)	SHOP DWG 78
1	1	HEAD	2:1 ELLIPSOIDAL HEAD 750 I/D x 6 TH. MIN.	SA 240 GR 304L (G5)	SHOP DWG 65

PART NO.	QTY.	PART	DESCRIPTION	MATERIAL	REF. DRG (MIS USE)	WT. (KGS.)
					TOTAL WT.	1122
43	1	DEMISTER SUPPORT	PAD PLATE 6 TH. x 750 O/D x 650 I/D	SA 240 GR 304L	SEE DWG	5
42	1	SHELL	PLATE 6 TH. x 1225W x 2375 LG.	SA 240 GR 304L (G5)	SHOP DWG	137
41	1	PAD PLATE	PLATE 10 TH. x 200 x 200	SA 240 GR 304L	SEE DWG	3

BILL OF MATERIAL (BOM IS FOR 1 NO. EQPT.)

* RFS STANDS FOR RAISED FACE SMOOTH FINISH 3.2-6.3 Ra.
RF STANDS FOR RAISED FACE SMOOTH FINISH 6.4-12.5 Ra

NOZZLE	QTY.	SIZE	SCH/THK.	RATING	TYPE	FACE (*)	PROJECTION (NOTE 3) IN	PROJECTION (NOTE 3) OUT	SERVICE	WELDING CONFIGURATION TYPE	A	B	C	REMARKS
N1	1	30"	–	75#	WN	RFS	–	SEE DRG.	BODY FLANGE	1A,2	6		–	RAISED FACE/GASKET/STUD BOLT
L1B	1	3"	SCH 40S	150#	WN	RFS	–	580	LEVEL GRIDLE	2,6	6		–	–
L1A	1	3"	SCH 40S	150#	WN	RFS	–	580	LEVEL BRIDLE	2,6	6		–	–
N7	1	1 1/2"	14.2 TH.	150#	LWN	RFS	SEE DWG	580	DEMISTER WASHING	6	6		–	–
N6	1	1"	13.2 TH.	150#	LWN	RFS	–	580	UTILITY CONNECTION	6	6		–	–
N5	1	1 1/2"	14.2 TH.	150#	LWN	RFS	–	580	DOWNCOMER INNER MAKE UP	6	6		–	–
N4	1	1"	12.7 TH.	150#	LWN	RFS	–	580	PUMP SPILLBACK	6	6		–	–
N3	1	3"	SCH 40S	150#	WN	RFS	–	SEE DRG.	LIQUID OUTLET	2,6	6		–	VORTEX BREAKER
N2	1	12"	6 TH.	150#	WN	RFS	5	620	VAPOUR / LIQUID INLET	1A,2,6	6	–	6	INTERNAL BAFFLE & RF PAD, 6 TH. x 450ø
N1	1	10"	SCH 40S	150#	WN	RFS	–	SEE DRG.	VAPOUR OUTLET	2,39	6	–	14	RF PAD 27TH. x 400ø

NOZZLE SCHEDULE

Q01-G01		SHOP PREPARATION OF EQUIPMENT FOR SHIPMENT
Q01-T07		MATERIAL IDENTIFICATION PROGRAM
Q01-T05		PRESSURE VESSELS MATERIAL CONTROL PROGRAM
Q01-T01		TESTING AND INSPECTION – PRESSURE VESSELS
Q01-E01		PRESSURE VESSELS – GENERAL
10000.00.ST.0800.01		NAME PLATE
SZ9D		RECOMMENDED COATING SYSTEM FOR EXTERNAL PROTECTION
2121 00 JSD 2300.01		SHOP AND FIELD PAINTING
W01-F01		WELDING AND INSPECTION
Q01-I02		INSPECTION REQUIREMENTS FOR PRESSURE VESSELS
Q01-F37		AUSTENITIC AND H.A TEEL PRESSURE VESSEL FABRICATION
Q01-F31		DEMISTER PAD ASSEMBLY AND DETAILS
Q01-F28		ALLOWABLE TAC TOLERANCES FOR C.R VES. PRESSEL
Q01-F26		VESSELS : GROUNDING AND LUG DETAILS
Q01-F21/22		PIPE CLIDE/SUPPORT
Q01-F20		DAVIT FOR OUTDOOR MANHOLE COVER
Q01-F18		VORTEX BREAKER
Q01-F13		VESSELS : NAME PLATE AND STAMPING
Q01-F05		VESSEL SUPPORT LUG FABRICATION
Q01-F07		PRESSURE VESSELS : FABRICATION
Q01-F01		PRESSURE VESSELS : WELDING AND FABRICATION
Q01-E15		VESSEL LIFTING LUGS : TWO PLATE TYPE
2121 DS 09 0811-01 REV. 0 (2 SHT.)		VESSEL DATA SHEET

MIS-4674-064-V NAME PLATE
MIS-4674-063-V EXTERNAL CLEATS

MIS REFERENCE DRG. No.

APPLICABLE CLIENT REF DWG./SPECS./STDS.

BILL OF MATERIAL (BOM IS FOR 1 NO. EQPT.)

TECHNIP-COFLEXIP سابك sabic

PROJ.: SABIC ACETIC ACID PROJECT
CLIENT: SABIC – YANBU – KINGDOM OF SAUDI ARABIA

MATERIAL REQUISITION No. 2121 MR 0|8|1|1|0|2|
ITEM: 100-D242
SR Doc. CODE: A1103

VENDOR DOCUMENT REVIEW
☐1 REVISE AND RESUBMIT
☐2 TO BE ISSUED AS FINAL PROVIDED COMMENTS ARE INCORPORATED
☐3 NO COMMENT – FINAL ISSUE
☐4 FOR INFORMATION ONLY (INTERNAL USE)
U.O.: TECHNIP ITALY S.p.A.
BY: DATE:

REV.	DATE	DESCRIPTION	BY	CHKD/APPD
5	12.07.03	AS BUILT	PJ	RSS/AHD
4	18.05.03	HOLD ON NAME PLATE RELEASED.	PJ	RSS/AHD
3	15.04.03	REVISED AS MARKED.	RD	RSS/AHD
2	03.04.03	REVISED AS MARKED.	RD	RSS/AHD
1	02.03.03	REVISED AS MARKED.	PJ	PL/AHD

DRN BY : PJ
DATE : 07.12.02
CHKD / APPD BY :
DATE : 07.12.02
JOB NO. 4674
CAD FILE NAME: 46740621
QTY. ONE

MARITIME INDUSTRIAL SERVICES CO. LTD. INC.
P.O.BOX 4596, SHARJAH, UNITED ARAB EMIRATES

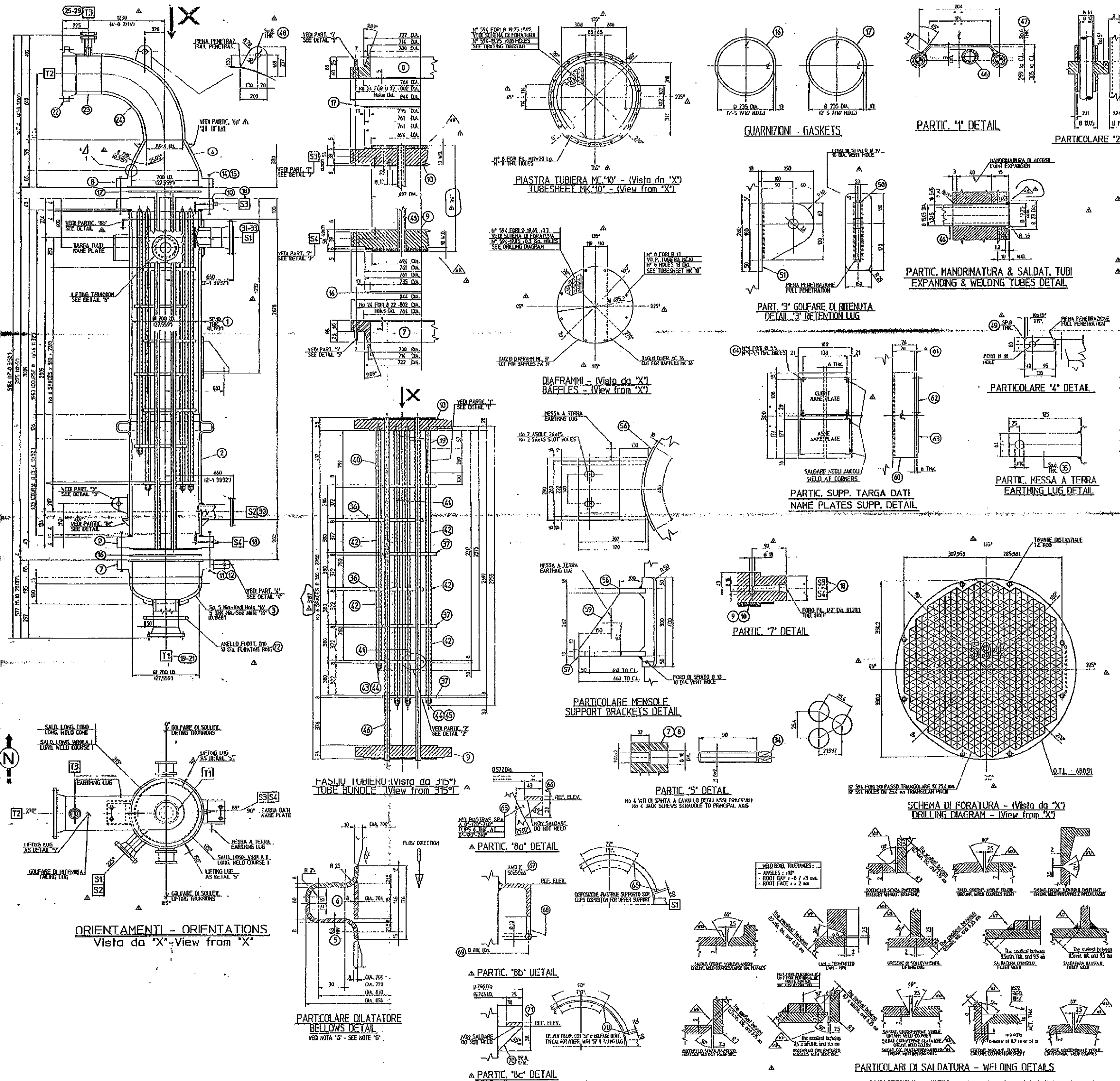
CLIENT : TECHNIP-COFLEXIP – SABIC

PROJECT : SABIC ACETIC ACID PLANT, IBN RUSHD SITE – YANBU, K.S.A.

EQUIPMENT : CO_2 KO DRUM (100-D242)
GENERAL ARRANGEMENT & DETAILS

SCALE : 1:15

DRAWING NO. MIS-4674-062-V, 01 OF 01, 5



NOTE - NOTES

1) COSTRUIRE No UNO SCAMBIATORE - I PEZZI IN TABELLA INDICANO LA QUANTITA' TOTALE PER COSTRUIRLO.
-EXCHANGER No ONE REQUEST - NUMBER OF PIECES IN BILL OF MATERIAL IS FOR ONE UNIT.

2) SCAMBIATORE DA COSTRUIRE A DISEGNO ED IN CONFORMITA' ALLE NORME E STANDARDS:
-CONSTRUCTION OF EXCHANGER WILL BE ACCORDING TO ASME VIII DIV1 2001 ED. TEMA "R" 8th ED. 1999, API 660 5th ED. JUNE 93, EJMA 1998 EDITION
-REFERENCE STANDARDS: 002-E01 / 002-E09 / 002-F01 / 001-F05 / 001-F08 / 001-F16 001-F35 / 002-F17 / 001-J07 / 002-T01 / N01-F01 / 1000.00.ST.0800.01 72854-SP-000-X-002.

3) TUTTE LE FLANGE E I FLANGIONI DOVRANNO ESSERE POSIZIONATI CON I FORI DEI TIRANTI A CAVALLO DEGLI ASSI PRINCIPALI DELL'APPARECCHIO.
-THE BOLTS HOLES OF ALL FLANGES AND LARGE DIA. FLANGES SHALL STRADDLE THE MAIN AXIS.

4) LA FACCIA DI CONTATTO DELLE FLANGE DEI BOCCHELLI DEVE AVERE FINITURA:
-THE GASKET CONTACT SURFACE OF NOZZLES SHALL BE: Ra 6,4 TO 12,5 Micro m (S.S.) Ra 3,2 TO 6,4 Micro m (T.S.)

5) TUTTE LE SUPERFICI DI TENUTA DEI FLANGIONI E DELLE PIASTRE TUBIERE DEVONO AVERE FINITURA LISCIA CON UN VALORE DI RUGOSITA' 125 TO 250 Micro inch.
-ALL LARGE DIA. FLANGES AND TUBE SHEET SEALING SURFACE ARE SMOOTH FINISH WITH ROUGHNESS VALUE: 125 TO 250 Micro inch.

6) TUTTE LE SCORIE, SCAGLIE, SPRUZZI DI SALDATURA, OLIO, VERNICI ED ALTRI MATERIALI SARANNO RIMOSSI PRIMA DELL'ISPEZIONE FINALE.
ALL SLAG, DROSS, SCALE, DIRT, WELD SPATTER, OILS, PAINT AND OTHERS MATERIALS SHALL BE REMOVED BEFORE THE FINAL INSPECTION.

7) PER SPEDIZIONE: TUTTI I TRONCHETTI SARANNO TAPPATI ERMETICAMENTE CON DISCHI DA LAMIERA E GUARNIZIONI IN GOMMA, L'APPARECCHIO SARA' INTERNAMENTE PROTETTO CON AZOTO (VEDI DIS. 2135/N).
-FOR SHIPPING ALL NOZZLES SHALL BE SEALED HERMETICALLY WITH BLIND FLANGES FROM PLATE AND RUBBER GASKET. THE INTERNAL OF EQUIPMENT SHALL BE PROTECTED WITH NITROGEN (SEE DWG 2135/N).

8) DOPO LA PROVA IDRAULICA DRENARE L'APPARECCHIO.
-AFTER HYDROTEST THE EQUIPMENT SHALL BE DRAINED.

9) TUTTE LE CONNESSIONI E GLI ATTACCHI NON INTERFERIRANNO CON LE SALDATURE MA TRA SALDATURA E SALDATURA SARA' TENUTA UNA DISTANZA Min. DI 50 mm
-MINIMUM DISTANCE ADJACENT BETWEEN ATTACHMENT WELDS AND ADJACENT SEAMS TO BE 50 mm

10) MATERIALI PER PARTI A PRESSIONE E PARTI A LORO SALDATE SONO FORNITI CON CERTIFICATO IN ACCORDO ALLE EN 10204 TIPO 3.1B
-PRESSURE PART MATERIALS AND PARTS TO THEM WELDED TO BE FURNISHED WITH CERTIFICATE AS PER EN 10204 TYPE 3.1B

11) MATERIALI ESENTI DA PROVE DI RESILIENZA IN ACCORDO AI PARAG. UG-20, UCS-66 E UHA-51
-MATERIAL EXEMPTED FROM IMPACT TEST ACCORDING TO PARAG. UG-20, UCS-66 & UHA-51

12) GUARNIZIONE SPIROTALLICA IN 316L S.S. Sp. 4,5 CON INSERZIONI DI GRAFITE E ANELLO ESTERNO DI CENTRAGGIO IN 316L S.S. Sp.3 (AS PER ASME B16.20).
-SPIRAL WOUND GASKET IN 316L S.S. 4,5 THK GRAPHITE INSERTION WITH EXTERNAL CENTERING RING IN 316L S.S. 3 THK (AS PER ASME B16.20).

MC / MK	No PEZZI / No PIECES	DESCRIZIONE / DESCRIPTION	MISURE / SIZE	MATERIALE / MATERIALS
6	1	SLEEVE INTERNO / INTERNAL SLEEVE	704 I.D.-8 THK-95 Lg.	SB 168 UNS N06600
5	1	DILATATORE / BELLOWS	SEE DETAIL & NOTE "15"	SB 168 UNS N06600
4	1	FONDO IN UN PEZZO / ONE IN ONE PIECE	700/392,4 I.D.-8 THK-327 Lg.	SB 575 UNS N10276
3	1	FONDO (Vedi Nota "16") / HEAD (See Note "16")	700 I.D.-5 THK Min.	SB 575 UNS N10276
2	1	VIROLA MANTELLO / SHELL ELEMENT	700 I.D.-10 THK-923 Lg.	SA 516 Gr. 70
1	1	VIROLA MANTELLO / SHELL ELEMENT	700 I.D.-10 THK-1890 Lg.	SA 516 Gr. 70

REV.	DATA / DATE	REVISIONI / REVISIONS	MADE / DRFTD.	CHECK. / D.C.	APPR. / E.H.	REVIEW / O.I.K.
4	26-05 2003	UPDATED FINAL				
3	07-05 2003	FINAL ISSUE	I.C.	A.B.	D.P.	N.T.
2	24-03 2003		G.D.F.	A.B.	D.P.	N.T.
1	04-02 2003		I.C.	A.B.	D.P.	N.T.
0	14-11 2002	ISSUED FOR APPROVAL		A.B.	D.P.	N.T.

REVISIONI - REVISIONS

TECHNIP-COFLEXIP

VENDOR DOCUMENT REVIEW

MATERIAL REQUISITION No. 2121 HR

ITEM 100-E133

DESTINATION : YANBU - SAUDI ARABIA
CUSTOMER : TECHNIP ITALY - ROMA
ORDER No : 2121A0011
PROJECT : ACETIC ACID PLANT - SABIC

BREMBANA COSTRUZIONI INDUSTRIALI
Valtrebbo - Bergamo - Italy

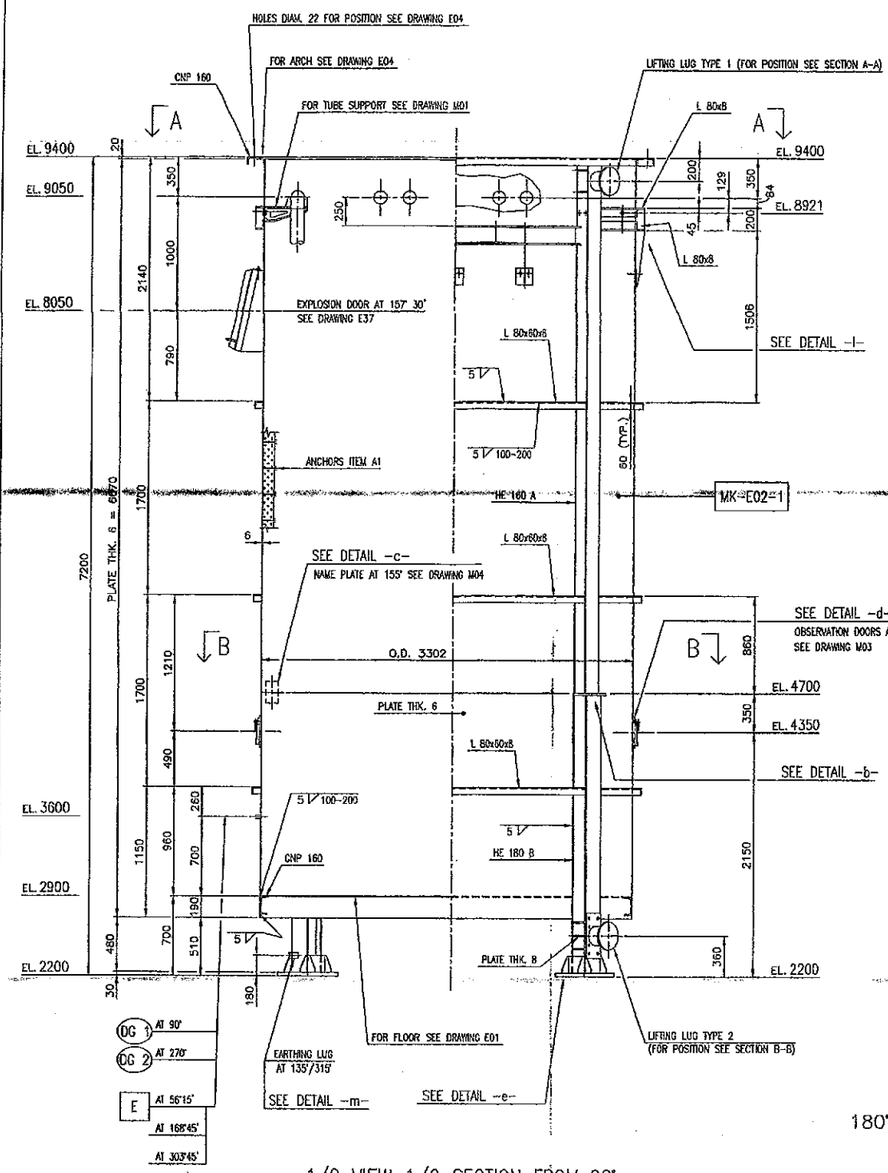
PRODUCT COLUMN REBOILER
ITEM: 100-E133
SECTION 3
SHEET 3

LIST OF DRAWINGS

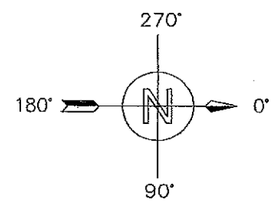
CALCOLI MECCANICI / MECHANICAL CALC.	2135-6861/MC1
PROTEZ. D'AZOTO / NITROGEN PROTECT.	2135/N
GUARNIZIONI / GASKETS	2135-6861/G
SCHEMA DI MONTAGGIO / SETTING PLAN	2135-6861/S
SCHEMA DI VERNIC. / PAINTING PLAN	2135-6861/V
TARGA DATI / NAME PLATE	2135-6861/A

No DI FABBRICA / MFRS. SERIAL No 4138

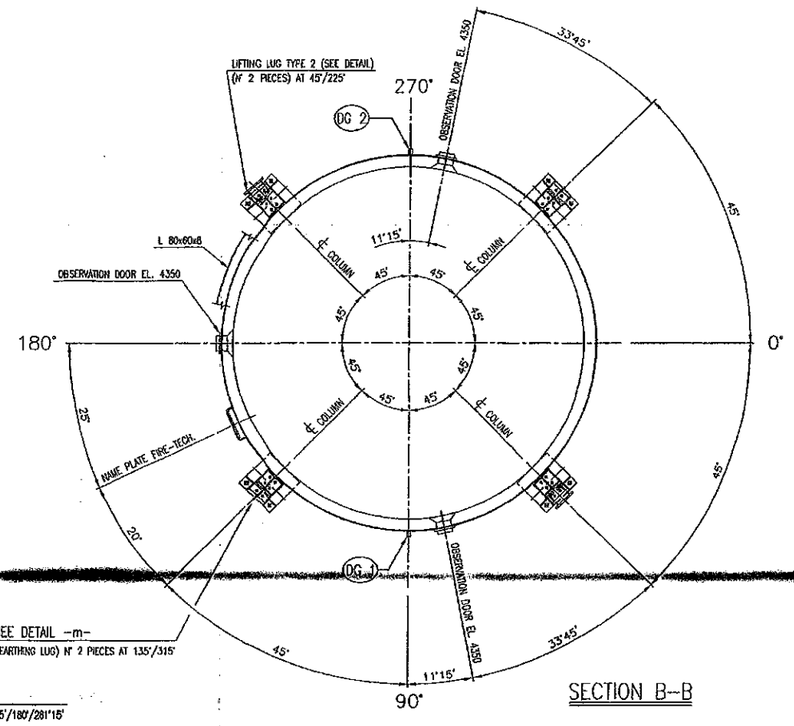
DWG. 2135-6861 REV. 4



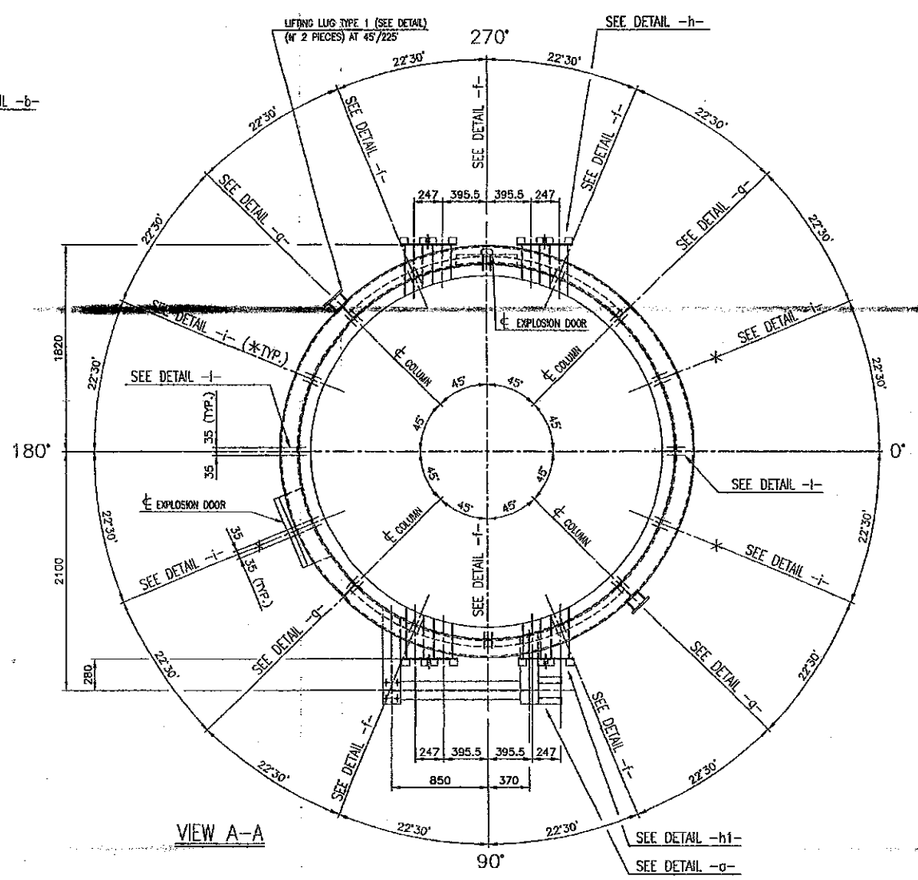
1/2 VIEW 1/2 SECTION FROM 90°



CONVENTIONAL NORTH



SECTION B-B



VIEW A-A

- INSULATION ANCHORS WILL BE WELDED IN SHOP
- LINING APPLICATION WILL BE IN SHOP

GENERAL NOTES:

1) FOR GENERAL ARRANGEMENT SEE DRAWINGS B01 / B02
2) FOR RADIANT SECTION (DETAILS) SEE DRAWING E03
3) FOR RADIANT SUPPORT FOR TUBE ND 3 1/2" SEE DRAWING M01
4) FOR INSULATION ANCHORS SEE DRAWING M02
5) FOR OBSERVATION DOOR SEE DRAWING M03
6) FOR NAME PLATE SEE DRAWING M04
7) FOR FLOOR SEE DRAWING E01
8) FOR ARCH SEE DRAWING E04
9) FOR EXPLOSION DOOR SEE DRAWING E37
10) FOR INSTRUMENT CONNECTION SEE DRAWING E50
11) FOR GENERAL NOTES FOR STEELWORK SEE SPECIFICATION E65
12) FOR LIST OF MARKS SEE SPECIFICATION E60
13) FOR LIST OF BOLTS FOR ERECTION SEE SPECIFICATION E61

TECHNIP-COFLEXIP — سابك sabic

PROJ.: SABIC ACETIC ACID PROJECT
CLIENT: SABIC - YANBU - KINGDOM OF SAUDI ARABIA
MATERIAL REQUISITION No.
2121 MR 0|1|3|0|1|
ITEM: 100-H-161
SR Doc. CODE: A 2061

VENDOR DOCUMENT REVIEW
☐1 REVISE AND RESUBMIT
☐2 TO BE ISSUED AS FINAL PROVIDED COMMENTS ARE INCORPORATED
☒ NO COMMENT - FINAL ISSUE
☐4 FOR INFORMATION ONLY (INTERNAL USE)
U.O. TECHNIP ITALY S.p.A.
BY: DATE: 5/12/03

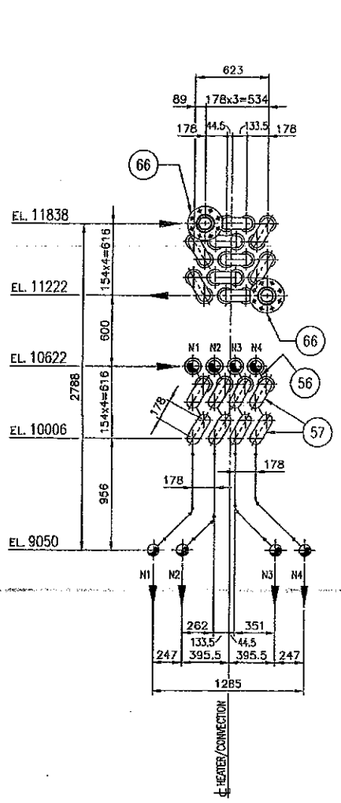
REV.	DATE	DESCRIPTION	DRAWN	CHECKED	APPROV.
2	14/07/03	AS BUILT	O. PELIS	CI	C.Benedit.
1	19/02/03	ISSUED FOR CONSTRUCTION	A.E.	F.ANDRESI	C.Benedit.
0	16/01/03	ISSUED FOR APPROVAL	A.E.	F.ANDRESI	C.Benedit.

FIRE-TECH. ENGINEERING S.r.l.

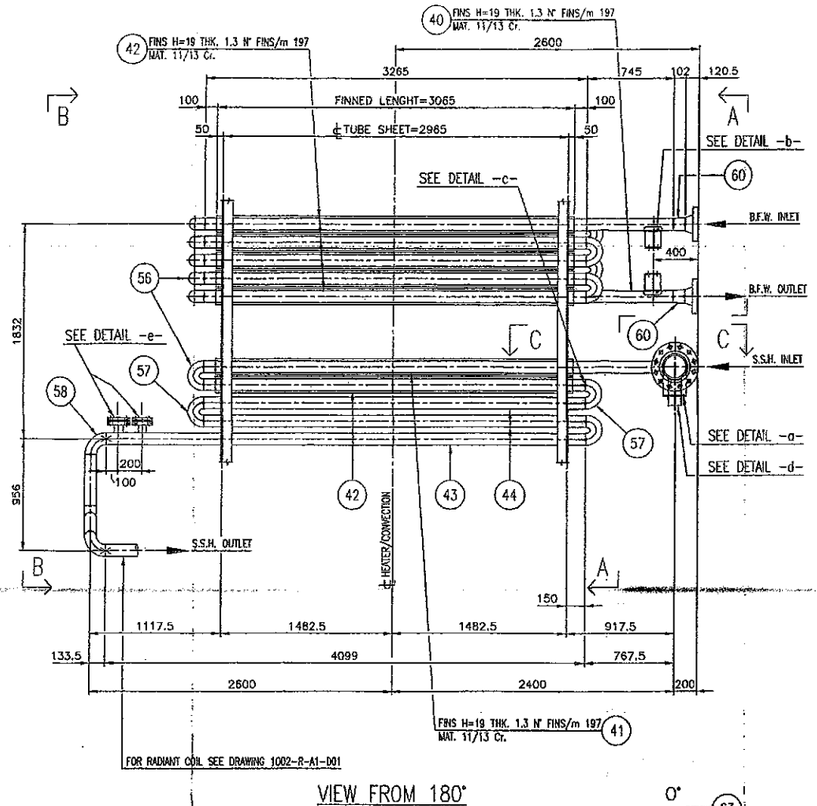
TECHNIP FOR SABIC-SAUDI ARABIA
SABIC ACETIC ACID PROJECT
STEAM FIRED HEATER ITEM 100-H161
RADIANT SECTION (ASSEMBLY)

SCALE: 1:25
NAME FILE: C336-02-401-A1-R2
DRAWING No. 1002-R-A1-E02
REV. 2

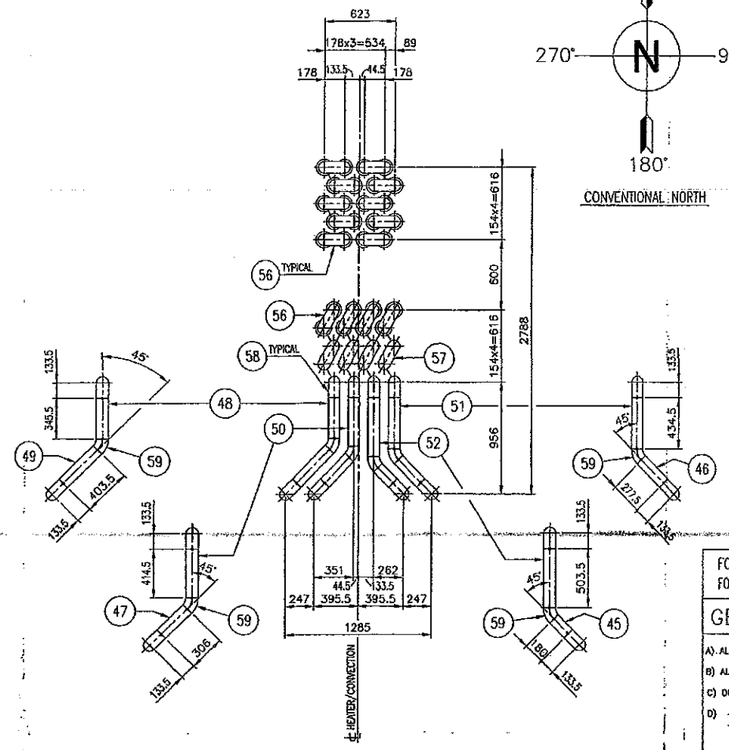
C336-02-401-A1-R1



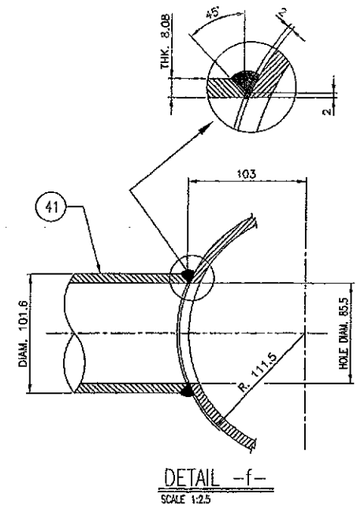
SECTION A-A
(FROM 90°)



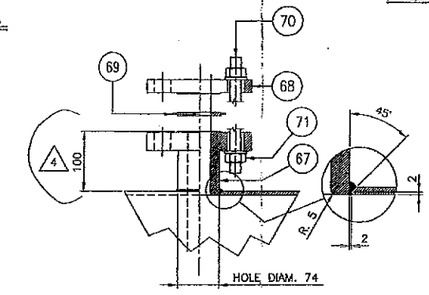
VIEW FROM 180°



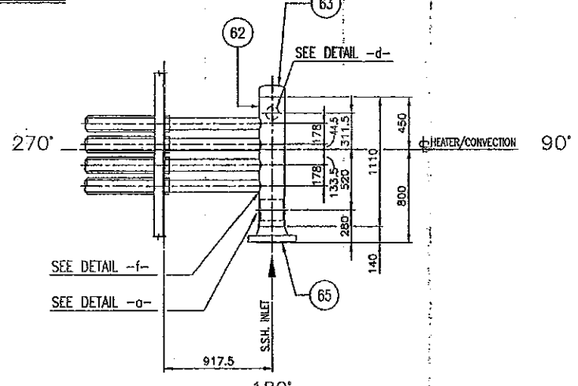
VIEW B-B
(FROM 270°)



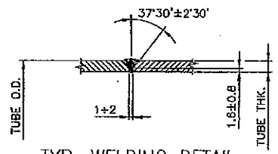
DETAIL -f-
SCALE 1:2.5



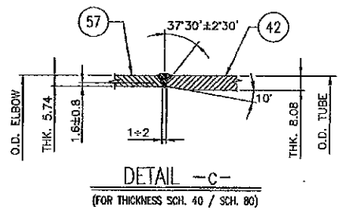
DETAIL -e-
SCALE 1:5 (1W CONNECTION)
(N° PIECES 8)



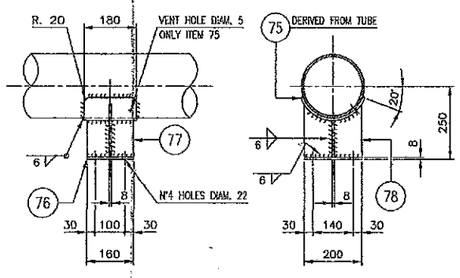
180°
SECTION C-C



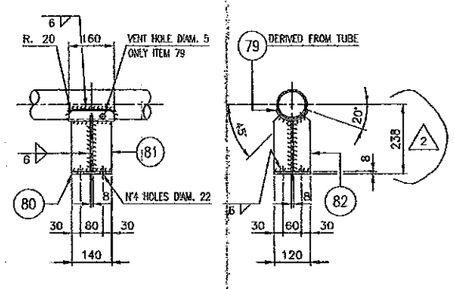
TYP. WELDING DETAIL



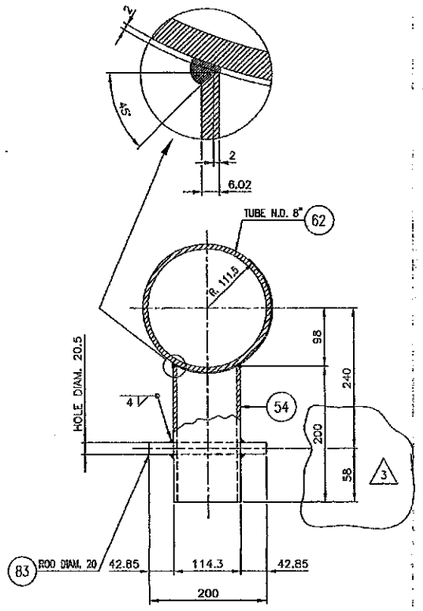
DETAIL -c-
(FOR THICKNESS SCH. 40 / SCH. 80)



DETAIL -a- STOP FOR MANIFOLD
SCALE 1:10 (N° PIECE 1)



DETAIL -b- STOP FOR COIL
SCALE 1:10 (N° PIECES 2)



DETAIL -d- SLIDING MANIFOLD POINT
SCALE 1:10 (N° PIECE 1)

FOR RADIANT COIL SEE DRAWING 1002-R-A1-D01
FOR MATERIAL LIST, DESIGN DATA AND WELDING SPECIFICATION SEE DRAWING 1002-R-A2-D03

GENERAL NOTES

A) ALL WELDS PREPARATION WILL BE IN ACCORDANCE TO ANSI B 16-25

B) ALL DIMENSIONS ARE IN mm EXCEPT OTHERWISE NOTED

C) DURING CONSTRUCTION VERIFY THE TUBES EXACT LENGHT SO THAT ALL THE COIL IS PERFECTLY ALIGNED

D) —✳— SHOWS FIELD WELDING
—+— SHOWS WORKSHOP WELDING

TECHNIP-COFLEXIP	سابك sabic
PROJ.: SABIC ACETIC ACID PROJECT	
CLIENT: SABIC - YANBU - KINGDOM OF SAUDI ARABIA	
MATERIAL REQUISITION No.	2121 MR 101110101
ITEM:	100-R-161
SR Doc. CODE:	A 1103

VENDOR DOCUMENT REVIEW
☐1 REVISE AND RESUBMIT
☐2 TO BE ISSUED AS FINAL PROVIDED COMMENTS ARE INCORPORATED
☒3 NO COMMENT - FINAL ISSUE
☐4 FOR INFORMATION ONLY (INTERNAL USE)
W.O.: TECHNIP ITALY S.p.A.
BY: DATE: 3/12/03

REV.	DATE	DESCRIPTION	DRAWN	CHECKED	APPROV.
4	14/07/03	AS-BUILT (4)	O. Pelis	CI	C.BENEDITTINI
3	12/05/03	ISSUED FOR CONSTRUCTION (3)	O. Pelis	CI	C.BENEDITTINI
2	06/03/03	ISSUED FOR CONSTRUCTION (2)	A.E.	F.ANDRESI	C.BENEDITTINI
1	30/01/03	REVISED WHERE SHOWN WITH (1)	A.E.	F.ANDRESI	C.Benedit.
0	14/11/02	ISSUED FOR APPROVAL	A.E.	F.ANDRESI	C.Benedit.

FIRE-TECH. ENGINEERING S.r.l.

TECHNIP FOR SABIC-SAUDI ARABIA
SABIC ACETIC ACID PROJECT
STEAM FIRED HEATER ITEM 100-H161
COIL ARRANGEMENT (CONVECTION AND CROSS-OVER)

SCALE: 1:25
NAME FILE: C336-02-D41-A1-R4
DRAWING No. 1002-R-A1-D02
REV. 4