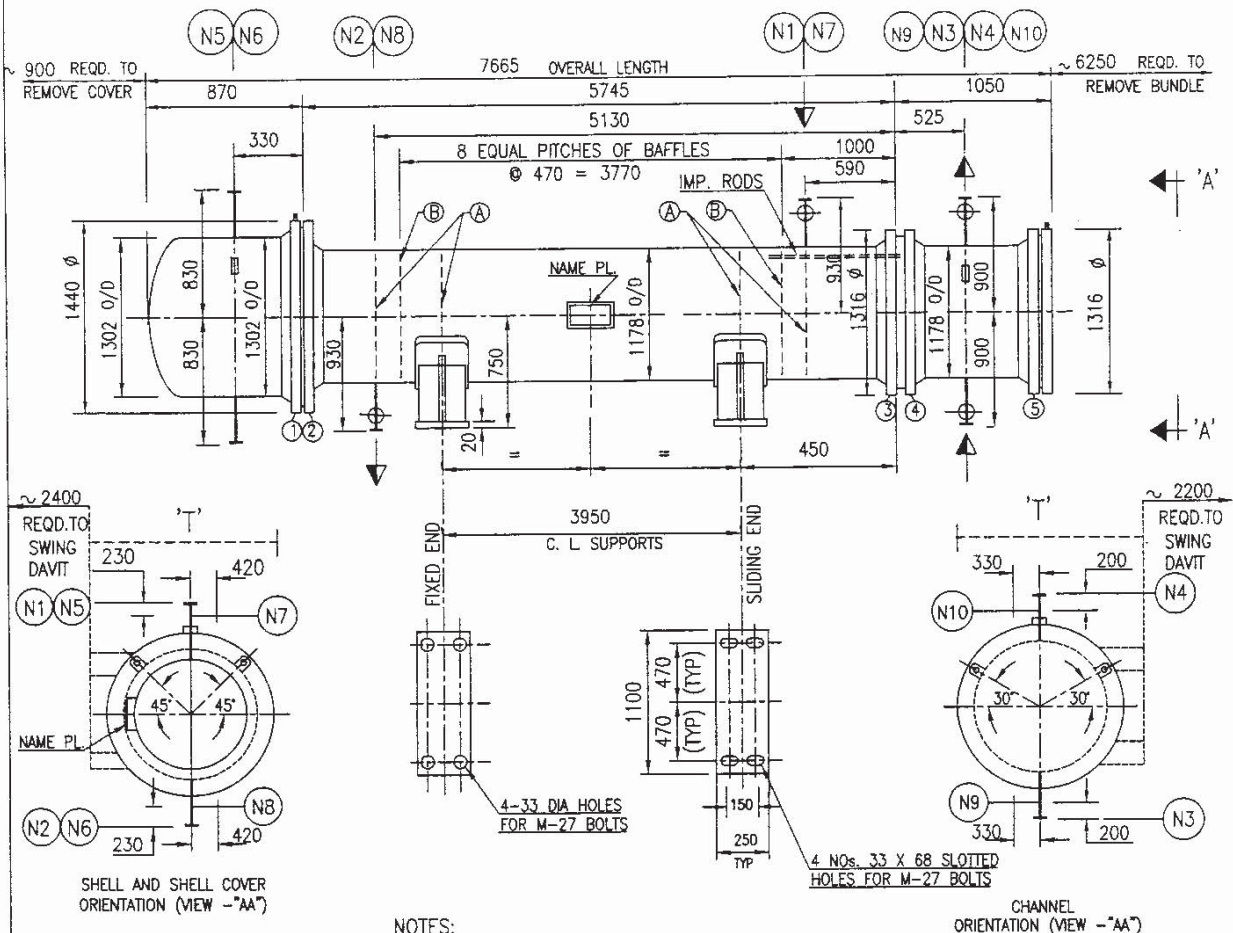


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F-0540-101 REV.2 A4-210K297



NOTES:

1. THIS UNIT HAS BEEN DESIGNED FOR PIPING LOADS AS PER SKETCH NO. 6907-00-16-46-DS-6001, REV. 0.
2. SMOOTH FINISH TO 125 AARH
3. EXCHANGER IS SUBJECTED TO STEAMING OUT @ 0.5 KG/CM²G AND 190°C OR 3.5 KG/CM²G AND 150°C.
4. MDMT = 1°C
5. DAVITS TO BE PROVIDED FOR SHELL COVER AND CHANNEL COVER
6. RED/PROCESS TO ENSURE THAT THIRD STAGE DISCHARGE TEMPERATURE OF COMPRESSOR 113-KA-201 SHALL NOT EXCEED SHELL SIDE INLET TEMPERATURE & HEAT DUTY SHALL NOT BE REVISED.
7. THERMAL DATASHEET NO. 6907-113-05-45-DS-203, REV. 1.

TYPE OF EXCH. AES (H) SERVICE : CHARGE GAS COMPRESSOR 3RD STAGE AFTERCOOLER

SHELLS PER UNIT- ONE
NO. OF UNITS - ONE

DESIGN DATA				NOZZLE DATA						
	SHELL SIDE	TUBE SIDE	NOZZLE MARK	SIZE N.B./O.D. (INCH/MM)	ASME CLASS	SCH/THK (mm)	TYPE FACING	PAO W X T (mmXmm)	FLG. FACE FINISH	DESIGNATION
DESIGN PRESSURE Kg/cm ² g	13.90	10.70	N1	24.0	150	16.00	WNRF	70.* 20.	NOTE2	SHELL INLET
DESIGN TEMPERATURE °C	120.0	65.0	N2	24.0	150	16.00	WNRF	70.* 20.	NOTE2	SHELL OULET
HYD. TEST PRESSURE Kg/cm ² g	18.1	13.9	N3	14.0	150	14.00	WNRF	60.* 14.	NOTE2	CHANNEL INLET
FLUID CIRCULATED	CHARGE GAS	COOLING WATER	N4	14.0	150	14.00	WNRF	60.* 14.	NOTE2	CHANNEL OUTLET
NO. OF PASSES	ONE	TWO	N5	1.5	150	160	WNRF		NOTE2	SHELL VENT + BF
WORKING PRESSURE Kg/cm ² g	8.35	4.30	N6	1.5	150	160	WNRF		NOTE2	SHELL DRAIN + BF
WORKING TEMP. (IN/OUT) °C	89.9/ 40.0	33.0/ 38.0	N7-N8	1.5	150	160	WNRF		NOTE2	MP CONN. + BF
CORROSION ALLOWANCE mm	3.0	3.0	N9-N10	1.5	150	160	WNRF		NOTE2	MP CONN. + BF
POST WELD HEAT TREATMENT	-	-								
RADIOGRAPHY	SPOT	SPOT								
JOINT EFFICIENCY	0.85	0.85								
INSULATION mm	LATER (PP)	0								
Q 21.10.10	ISSUED FOR PURCHASE		DP	PW	NK			BUNDLE WEIGHT (Kg)	~ 15000.	p.shell
A 15.01.2010	ISSUED FOR BIDS		D.KUMAR	PS	AKM			EMPTY WEIGHT (Kg)	~ 22500.	p.shell
NO. DATE	REVISION		BY	CHKD	APPROVALS			WT. FULL OF WATER (Kg)	~ 30500.	p.shell



ENGINEERS INDIA LTD.
STATIC EQUIPMENT DEPT.
NEW DELHI

SECTION DRAWING FOR
ITEM NO. 113-EE-203
PROJECT BPCP UNIT ECU

DRAWING NO. 6907-113-16-46-DS-4203
SHEET 1 OF 2. REV. 0

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F-0540-101 REV. 2 A4-210X297

MECHANICAL DETAILS

ITEM NO	113-EE-203	TEMA CLASS R	2007 EDITION.	ASME SEC. VIII DIV.1	2007 EDITION.	1		
SIZE	1150 X 6000	TYPE	AES (H) ;	CONNECTED IN	-	STACKING NO	2	
DUTY/UNIT	2.5910*1.10	MMKcal/hr	SURFACE AREA /	SHELL	401.0 Sqm	NO. OF UNITS- ONE	SHELLS/UNIT ONE	3

DESCRIPTION	MATERIAL	DETAILS	Wt(Kg)
SHELL	SA516Gr60	O.D. = 1178.00 ; THK = 14.00	4
SHELL COVER BARREL	SA516Gr60	O.D. = 1302.00 ; THK = 14.00	5
SHELL COVER BONNET	SA516Gr60	O.D. = 1302.00 ; THK = 14.00 (MIN 12.00) SF = 50.00 TORISPHERICAL	6
CHANNEL	SA516Gr60	O.D. = 1178.00 ; THK = 14.00	7
CHANNEL BONNET	-	O.D. = - ; THK = - (MIN -) SF = -	8
TUBES	SA179	O.D. = 20.00 ; THK = 2.00 MIN. LENGTH = 6000 NO=1102 PITCH(NOTE4)	9
TUBE SHEET	SA516Gr60	DETAIL = 1 & 12 ; THK = 75.0 F = 0. F1 = 0.	10
BAFFLES	IS2062	TYPE= DOUBLE SEGMENTAL THK= 13; NO REQD.= 11 ; CUT = (NOTE4)	11
FLOATING HEAD DISH	SA516Gr60	INSIDE RADIUS = 800.00 ; THK = 22.0 (18.0 MIN)	12

FLANGE NO.	TYPE	MATERIAL	A	BCD	B	Go	G1	H	T	GASKET DATA			BOLT DATA		Wt (Kg)
										O.D.(D)	WIDTH	TYPE	NO	BOLT DIA	
1	2	SA266CL4	1440.0	1382.0	1274.0	14.	17.	32.	110.	1346.	13.	1	44	M24	14
2	3	SA266CL4	1440.0	1382.0	1150.0	14.	20.	50.	120.	1346.	13.	1	44	M24	15
3	2	SA266CL4	1316.0	1258.0	1150.0	14.	17.	32.	100.	1222.	13.	1	40	M24	16
4	2	SA266CL4	1316.0	1258.0	1150.0	14.	17.	32.	95.	1222.	13.	4	40	M24	17
5	2	SA266CL4	1316.0	1258.0	1150.0	14.	17.	32.	85.	1222.	13.	4	40	M24	18
FL.FG	1	SA266CL4	1233.0	1175.0	1114.0			16	82.	1140.	13.	1	36	M24	19

DESCRIPTION	GASKET MATL	BOLTING MATERIAL	DESCRIPTION	MATERIAL	REMARKS	Wt(Kg)
FLANGE 1-2	(3 THK) IJA	SA193GrB7/SA194Gr2H	CHANNEL COVER	SA266CL4	DETAIL- 7 ; THK, T1 = 90.00	20
FLANGE 3	(3 THK) IJA	SA193GrB7/SA194Gr2H	BACKING RING	SA266CL4	DETAIL-1 ; T1= 96. E= 1127.	21
FLANGE 4	(3 THK) IJA	SA193GrB7/SA194Gr2H	CONN. PIECE	SA516Gr60	DETAIL-13 T2 = 24.00 A1	22
FLANGE 5	(3 THK) IJA	SA193GrB7/SA194Gr2H	PARTITION PL.	SA516Gr60	THK = 13. T1=10. T2=13. DETAIL-15	23
FL.HD. FLANGE	(3 THK) IJA	SA193GrB7M/SA194Gr2HM	IMP. ROD	IS 2062	DIA. = 20MM (REFER TUBE LAYOUT)	24
SHELL NOZZLES.	SS316SP.VL. NOTES	SA193GrB7/SA194Gr2H	SUPPORT PL.	IS2062	THK = 16.0	25
CHANNEL NOZZ.	BS7531GRX NOTE6	SA193GrB7/SA194Gr2H	TIE RODS	IS2062	DIA = (NOTE4) NOS.= (NOTE4)	26
	SHELL SIDE.	CHANNEL SIDE.	Wt(Kg)	SPACERS	IS1239 O.D. = 21.8 THK.= 2.65	27
NOZZLE NECK	SA516Gr60/SA106GrB	SA516Gr60/SA106GrB		SEALING STRIPS	SA 516 GR.60 WIDTH = (NOTE4) THK = (NOTE4) NO = (NOTE4)	28
NOZZLE FLGS.	SA105	SA105		SLIDING STRIPS	SA 516 GR.60 WIDTH = (NOTE4) THK = (NOTE4) NO = (NOTE4)	29
PAD/WRAPPER PL.	SA516Gr60	SA516Gr60		SADDLE PLATE	IS2062 DETAIL AS PER EIL STD 7-15-0004	30
GUSSET/LUGS	SA516Gr60	SA516Gr60		NAME PL /BKT.	SS/SA516Gr60 DETAIL AS PER EIL STD 7-15-0017	31
COUPLING/PLUGS	-	-		EYEBOLT/PLUG.	SA105/SA105 SIZE: (NOTE4) NOS.= (NOTE4)	32
				TEES	-	33
						34

TEST RING- YES TEST FLANGE- NO TUBE TO TUBE SHEET JOINT- EXPANDED WITHOUT GROOVES

NOTES:-

- 1 ALL DIMENSIONS ARE IN mm. UNLESS OTHERWISE STATED
- 2 FOR CONSTRUCTIONAL DETAIL AND NOMENCLATURE REFER STD. 7-15-0001,7-15-0002
- 3 ALL OVER V FINISH REQUIRED UNLESS OTHERWISE STATED.
- 4 REFER GUIDELINES FOR PREPARING TUBE LAYOUT AND TUBE LAYOUT DRG NO. 6907-113-05-45-4203, REV. 1.
- 5 SPIRAL WOUND GASKETS FOR NOZZLES SHALL BE 4.5 THK WITH GRAFIL FILLER AND 3.2 THK CS OUTER RING. DIMENSIONS AS PER ASME B16.20.
- 6 NON ASBESTOS GASKET FOR NOZZLES, DIMENSIONS AS PER ASME B16.21.

0	21-10-2010	ISSUED FOR PURCHASE	DP	APV	NK	
A	15.01.2010	ISSUED FOR BIDS	D.KUMAR	PS	AKM	
NO.	DATE	REVISION	BY	CHKD	APPROVALS	



ENGINEERS INDIA LTD.
STATIC EQUIPMENT DEPT.
NEW DELHI

SECTION DRAWING FOR
ITEM NO. 113-EE-203
PROJECT BPCP UNIT ECU

DRAWING NO. 6907-113-16-46-DS-4203
SHEET 2 OF 2. REV. 0

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Tube Layout Software Version 2.0, October 1999

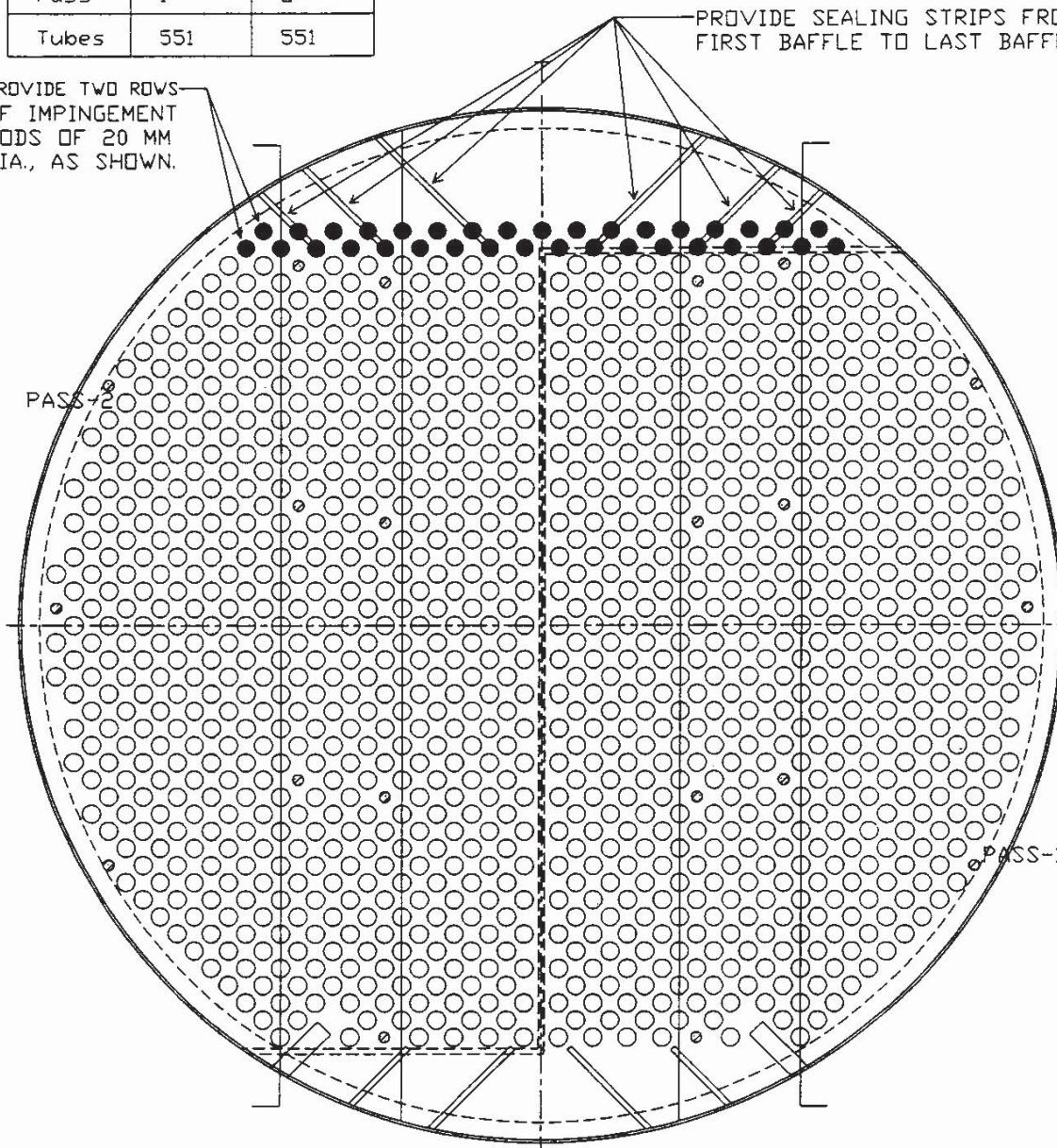
	BAFFLES	SUPPORT PL.	TUBE O.D. / THK	20/2(MIN.)	TYPE OF EXCH.	AES(H)
O.D.	1143.6	1143.6	NO. OF TUBES	1102	SHELL ID	1150
TIE ROD HOLE DIA	13	13	TUBE PITCH	27	OUTER TUBE CENTER	1085
TUBE HOLE DIA	20.4	20.4	TIE ROD DIA / NOS.	12/20	SHELL NOZZLES 24" TOP/ 24" BOT	
Percent Cut	As shown	-	SPACER O.D. / THK	20/2	IMP. PLATE	No TOP/ No BOT
NO. OF PASSES, SHELL: 1 / TUBE: 2 Passlane width, Center to center : 38.2						

Dome height provided for top nozzle = 125.89
Dome height provided for bottom nozzle = 106.79

Pass	1	2
Tubes	551	551

PROVIDE TWO ROWS OF IMPINGEMENT RODS OF 20 MM DIA., AS SHOWN.

PROVIDE SEALING STRIPS FROM FIRST BAFFLE TO LAST BAFFLE.



ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED

REV. / DATE	0 / 22.12.2009	1 / 29.12.2009						
DRAWN BY	JS	JS						
CHK'D BY	KK	KK						
APP'D BY	KK	KK						



ENGINEERS INDIA LTD.
HEAT AND MASS TRANSFER DIV.
NEW DELHI

TUBE LAYOUT FOR
ITEM NO. 113-EE-203

DRAWING NO.	REV.
6907-113-05-45-4203	1