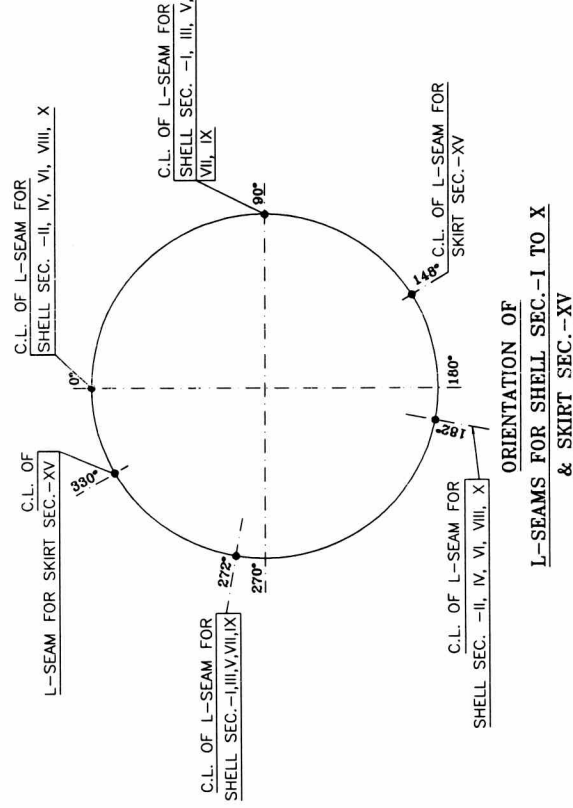
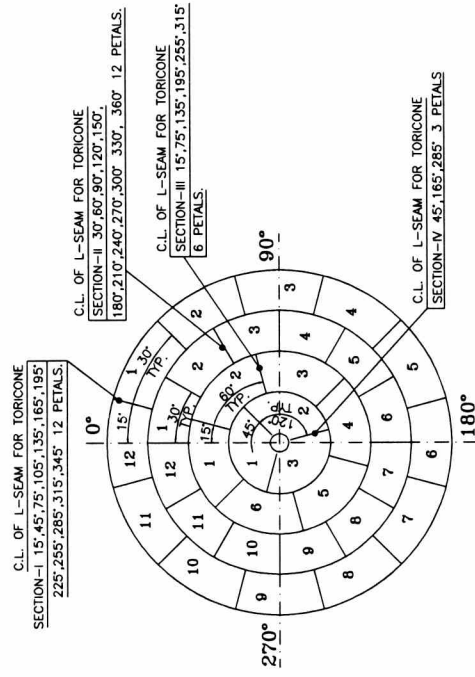
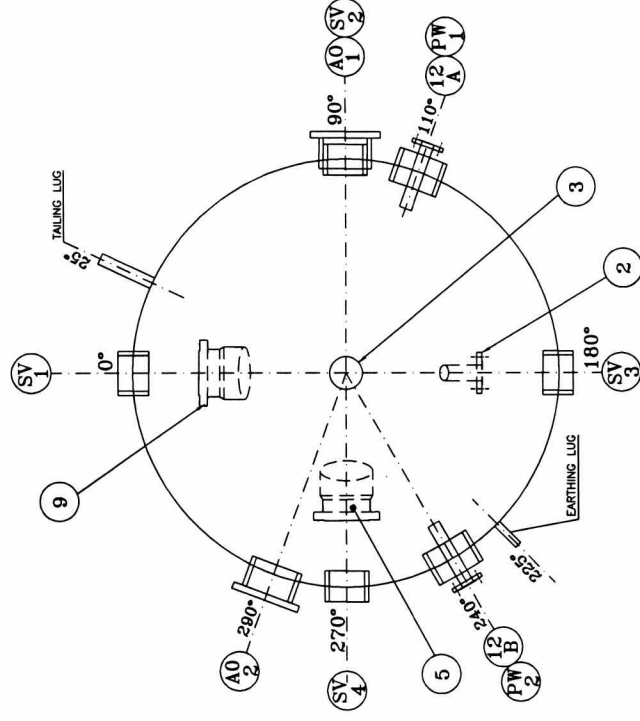
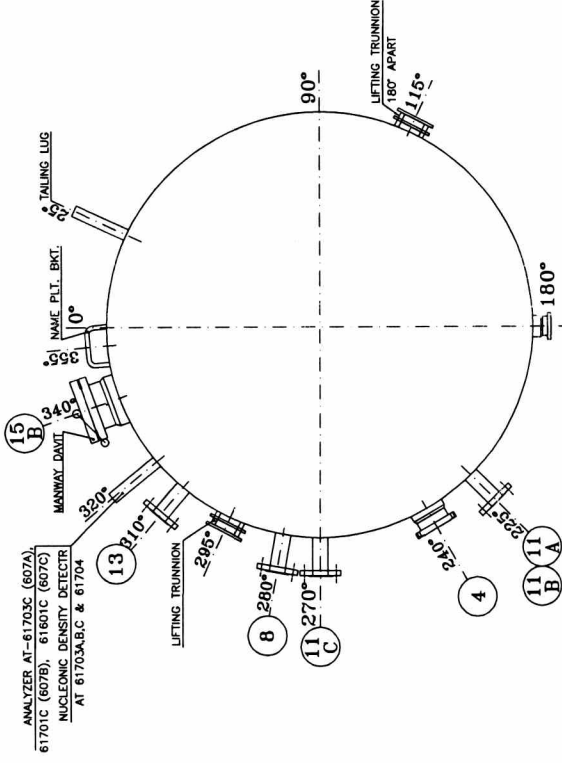
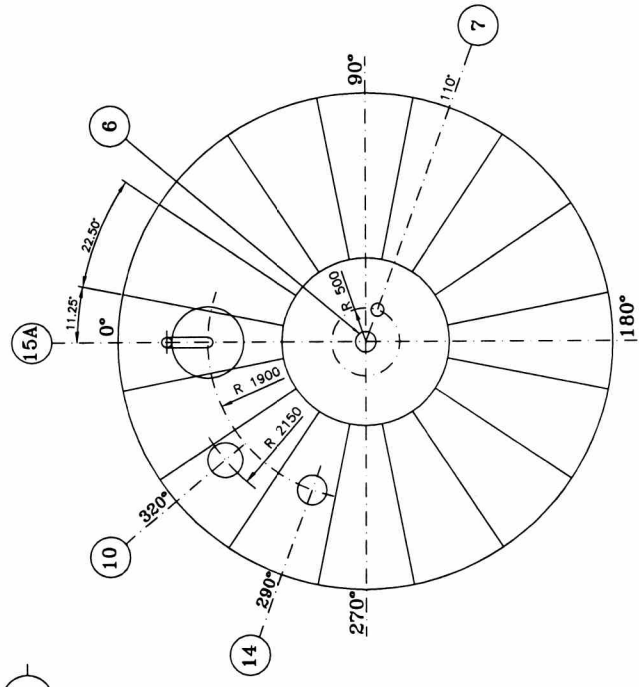
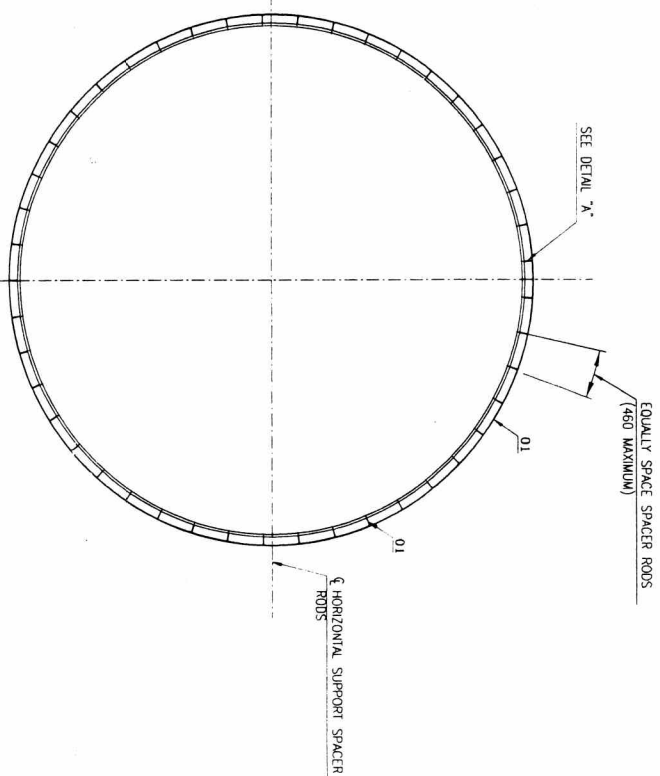


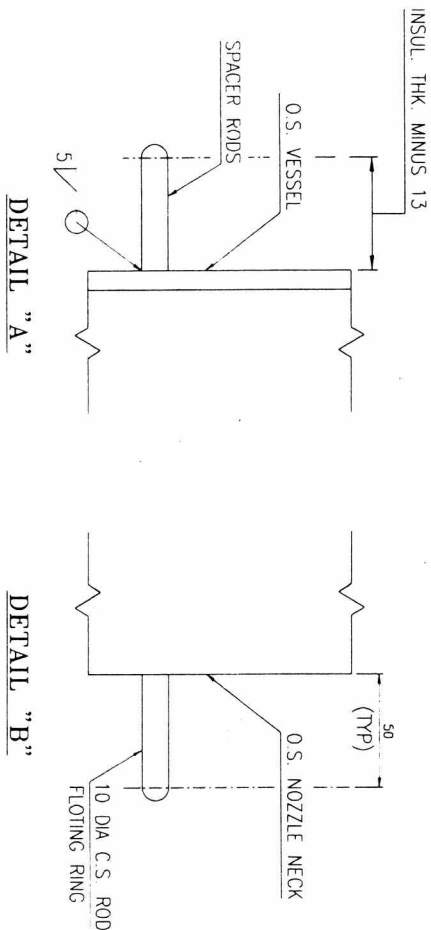
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[illegible]

L&T - CHYODA - LIMITED		COMMITTED BY	REVIEWED BY	APPROVED BY	DATE
☐ FERRY BOAT OR CONSTRUCTION VESSEL USED FOR MANUFACTURE / CONSTRUCTION OF VESSEL. CONSENT REQUIRED FOR VESSEL USE.					
☐ OVER COOL - 3 - PROCEED WITH MANUFACTURE / FABRICATION / CONSTRUCTION AS PER THE COMMITTED DOCUMENT. REVIEWED DOCUMENT REQUIRED.					
☐ REPAIR CODE - 3 - DOCUMENT DOES NOT CONFORM TO BASIC REQUIREMENTS. REPAIR REQUIRED.					
☐ B - DOCUMENT IS SUFFICIENT FOR RECORDS. PROCEED WITH MANUFACTURE / FABRICATION.					
☐ Y-VOID					
THE REVIEW / APPROVAL DOES NOT RELIEVE THE VENDOR / MANUFACTURER OF THE FULL RESPONSIBILITY AS TO DESIGN CORRECTNESS OF MANUCTIONS AND REQUIREMENTS AND WITH THE REQUIREMENTS AND / OR PHOTOCOPYED REQUIREMENTS.					



VIEW A-A



DETAIL "B"

[illegible][illegible]

DATE	ISSUED FOR APPROVAL	BY	DESCRIPTION	DATE DECIDED	APPROVED	REMOVED	APPROVED	DATE
06/01/2017								

OWNER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VASHA REFINER MODERNIZATION PROJECT
EPC- 03 PACKAGE FOR RESIDUE UP-CALCULATION FACILITY (RUF)

PWC
इंजीनियर्स
अंडा लिमिटेड
एंग्लो इन्फ्रास्ट्रक्चर प्राइवेट लिमिटेड

ENGINEERS
INDIA LIMITED
(A Group of Public Enterprises)

L&T CONTRACTOR

 L&T Hydrocarbon Engineering

DETAILED ENGINEERING
CENTER
L&T-CHIYODA LIMITED

VENDOR :	VENDOR PO NO.
	Refinery/75000-66912/NG;
	DATE:18.03.2020

VENUE DWG NO:
1-PV-150-U0114, REV.A

DATE	TIME	DEPT	IN	ENCL
05.07.20	1:30			

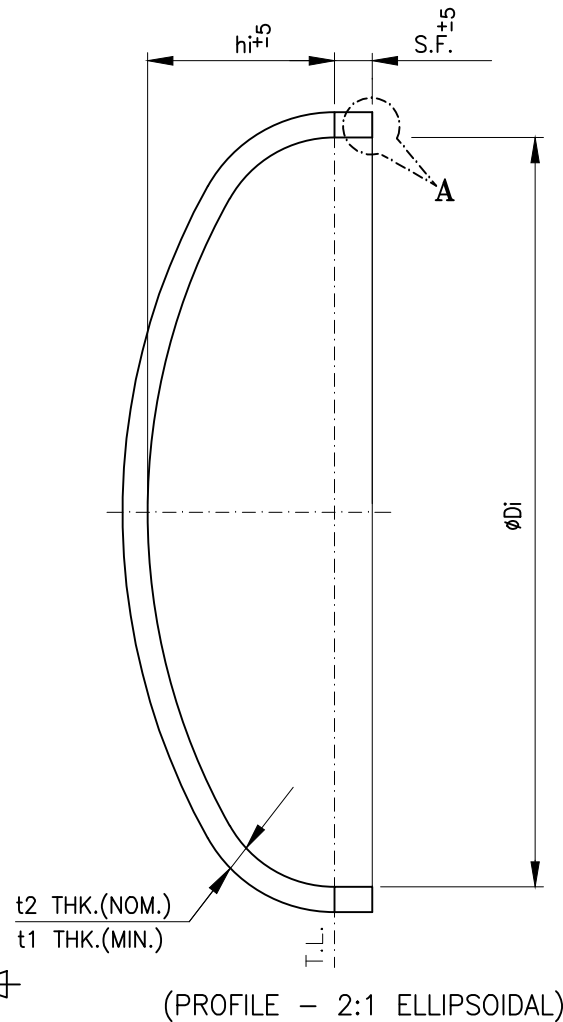
INSULATION SUPPORT DETAILS
FOR RT FLARE KO DRUM
(504-V-802) 1

DRN BT	MUNAWYA K	PROJECT	DRG NO.	SH 01 of 0
CRK BT	A V 940	PRG NO.	B016-R1F-LT-S04-MS-FD-BHEL(1)-02501	REV 00

APP BY: IAWAKSH K	CAD REF: INC USE OF SOLID OR FILE
11	12

3-PV-010-U0208

DRAWING NO:



DETAIL OF BLANK

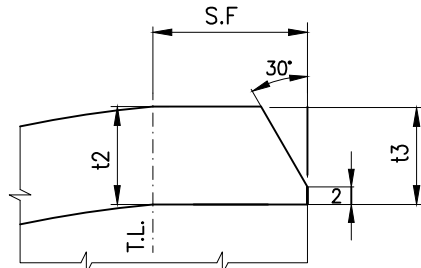
TABLE-1:

07	504-V-809	* 800	* 12	* 18	50	* 18	1100	133	02	PV-200
06	504-V-807	* 800	* 12	* 18	50	* 18	1100	133	02	PV-190
05	504-V-804	* 800	* 14	* 18	50	* 18	1100	133	02	PV-170
04	504-V-803	* 800	* 12	* 18	50	* 18	1100	133	02	PV-160
03	504-V-802	568	12	16	50	16	830	68	01	PV-150
02	504-V-801	572	12	16	50	16	830	68	01	PV-140
01	504-V-201	1468	12	16	50	16	1870	345	01	PV-070
S.No	EQUIPMENT NO	øDi	t1 (MIN.)	t2 (NOM.)	SF	t3	BLANK DIA (øX1)	WEIGHT (Kg.)	QTY.	PG-MA

NOTES:-

- MATERIAL TO BE SA 516 Gr.70 OF ASME SEC-II PART-A; 2019.
SHALL COMPLY WITH TDC: PV-PL-TDC-003 FOR SA516GR70 (FOR S.Nos. 04, 06 & 07)
SHALL COMPLY WITH TDC: PV-PL-TDC-014 FOR SA516GR70 WITH NACE REQUIREMENT (FOR S.Nos. 01, 02, 03 & 05)
- DISHED END TO BE COLD FORMED FROM SINGLE PIECE AS SHOWN
FOLLOWING ACTIVITIES NEED TO BE CARRIED OUT BEFORE & AFTER HEAT TREATMENT :
[A] AT THE WORKS OF BHEL : MAKING AND SUPPLY OF BLANK.
[B] AT THE WORKS OF DISHED END VENDOR :
FORMATION OF DISH USING COLD FORMING (MEETING THE DIMENSIONS AS SHOWN) FOLLOWED BY HEAT TREATMENT AS PER THE PROCEDURE DULY APPROVED BY BHEL. SEE NOTE-3 BELOW ALSO.
[C] AT THE WORKS OF DISHED END VENDOR : AFTER HEAT TREATMENT
(a) COMPLETE DISHED END TO BE 100% UT AS PER SA 578 LEVEL-C.
(b) EDGE PREPARATION AT SF IS REQUIRED AS PER DETAIL 'A' AS SHOWN.
(c) BOTH INSIDE & OUTSIDE OF KNUCKLE AND EDGE PREPARATION TO BE DP TESTED.
- HEAT TREATMENT :- DISHED END TO BE STRESS RELIEVED AT VENDOR WORKS AFTER FORMING AS PER THE FOLLOWING CYCLE.
(a) MAX. RATE OF HEATING - °C/HR ABOVE 400 °C : 210 FOR BOTH 16 & 18 MM THICK.
(a) MAX. RATE OF COOLING - °C/HR UPTO 400 °C : 270 FOR BOTH 16 & 18 MM THICK.
AFTER COMPLETION OF SOAKING PERIOD, DISHED END TO BE COOLED IN STILL AIR.
(c) MIN. SOAKING TIME - MINUTE : 45 FOR BOTH 16 & 18 MM THICK.
(d) SOAKING TEMPERATURE : 610 +15 DEGREE CENTIGRADE.
• DISHED ENDS TO BE PLACED ON BLOCKS IN FURNACE TO ENSURE UNIFORM HEATING AND COOLING.
• MINIMUM TWO THERMOCOUPLES SHALL BE PROVIDED.
- CENTRAL HOLE IF ANY ON DISHED END TO BE PLUGGED FOLOWED BY 100%RT FOR S.NO 04 TO 07 ONLY.
- PAINTING AFTER SURFACE CLEANING (AT THE WORKS OF DISHED VENDOR - INSIDE & OUTSIDE BOTH) : ONE COAT OF PRIMER TO AA 56101 COLOUR RED ON INSIDE & OUT SIDE SURFACE LEAVING 50 MM FROM EDGE.
- TOLERANCE : (I) OVALITY SHOULD NOT EXCEED 1.0% OF DISHED END ID. (DIFFERENCE MAX. & MIN. I.D.)
(II) MEASURED CIRCUMFERENCE SHOULD BE $\begin{matrix} -0 \\ +6 \end{matrix}$ OF CALCULATED CIRCUMFERENCE BASED ON I.D. SPECIFIED.
- CODE OF CONSTRUCTION ASME SECTION VIII DIV. 1; 2019.
- INSPECTION BY M/S BHEL / BHEL APPOINTED TPIA AND END CUSTOMER(IF ANY).
- TEMPLATE REQUIREMENT AS PER UG-81 (a).
FOR INTERNAL PRESSURE INNER SURFACE OF DISHED END SHALL NOT DEVIATE OUTSIDE OF THE SPECIFIED SHAPE BY MORE THAN 30 mm AND SHALL NOT DEVIATE BY MORE THAN 15 mm INSIDE THE SPECIFIED SHAPE, EXCEPT FOR KNUCKLE RADIUS WHICH SHALL NOT BE LESS THAN THAT SPECIFIED.
- MATERIAL IDENTIFICATION NO. TO BE MAINTAINED AT D'END SUPPLIER'S END BEFORE, DURING & AFTER FORMING OPERATION.
- DISHED END SUPPLIER TO FURNISH TEST CERTIFICATES INCLUDING (a) METHOD OF FORMING, (b) HEAT TREATMENT CARRIED OUT IF ANY, (c) DIMENSIONAL REPORT INCLUDING MINIMUM THICKNESS, (d) NDE REPORTS & (e) RESULTS OF TEMPLATE CHECK. QAP DULY APPROVED BY BHEL SHALL ALSO REQUIRED TO BE REFERRED FOR OTHER DOCUMENTS.
- D'END SUPPLIER SHALL CONFIRM THE BLANK DIAMETER TO MEET OVER ALL DIMENSIONS & MIN THK TO BE ACHIEVED AS PER TABLE 1.
- hi = Di / 4
- AFTER RECEIPT OF DISHED END AT BHEL, NDT (AS MENTIONED AT 2[C].a,c ABOVE) TO BE CARRIED OUT AGAIN WHICH REQUIRE TO BE OFFERED TO AI FOR FINAL ACCEPTANCE.
- DP TEST ALWAYS SHALL BE CARRIED OUT AS PER APPENDIX-8 OF ASME SECTION VIII DIVISION-I; 2019.

* INDICATES, THE RESPECTIVE PARAMETER IS UNDER HOLD.



DETAIL-"A"

ASME CERTIFICATION WITH
'U' STAMP

FOR TENDER
PURPOSE ONLY

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.



Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT
VISAKHAPATNAM-530012

NAME	SATISH KUMAR	DATE	16.05.20
CHD	ANVK KISHORE		16.05.20
APPD	PRASANNA Y		16.05.20

DEPT P.P.ENG	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)
CODE 031			NTS	XXXX

TITLE
DISHED ENDS FOR PRESSING
(SA516 Gr 70(NACE+HIC))

DRAWING NO :
3-PV-010-U0208
REV
0

REV NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

09920-(1)THB-01-SH-905-LT-RUF-9101 DRG. NO. 06101-081-Ld-8 BHBL DRG. NO. 06101-081-Ld-8

1. ALL DIMENSIONS & ELEVATIONS ARE IN MM UNLESS OTHERWISE STATED.

2. DESIGN PRESSURE AT BOTTOM INCLUDES TOP DESIGN PRESSURE + OPERATING LIQUID HEAD + PRESSURE DROP ACROSS THE VESSEL.

3. NORTH DIRECTION WHERE SHOWN IS WITH RESPECT TO PLAN VIEW.

4. ALL ADDITIONAL INDICATIONS SUCH AS NORTH/EAST/SOUTH/WEST ALONG WITH CG SHALL BE CLEARLY MARKED WITH WHITE PAINT.

5. ALL INTERNAL BOLTS SHALL BE PROVIDED WITH DOUBLE NUTS.

6. ALL STUD / BOLTS SHALL BE FULLY THREADED WITH 2 NOS. OF HEAVY HEXAGONAL NUTS. THREADS SHALL BE UNC ACCORDING TO ASME B1.1 COURSE THREADS FOR STUDS / BOLTS UP TO 1" AND RUN THREADS PER INCH FOR SIZES LARGER THAN 1".

7. DIMENSIONS OF FLANGES FOR NOZZLES UP TO 600 NB (24") SHALL BE AS PER ASME B16.5 AND FOR NOZZLE ABOVE 600 NB (24") SHALL BE AS PER ASME B16.47 SERIES 'B' UNLESS SPECIFIED OTHERWISE. FLANGE GASKET FACE SHALL HAVE 3.2 - 6.3 MICRONS (125~250 AARH FINISH).

8. ALL FITTINGS SHALL BE OF SEAMLESS CONSTRUCTION.

9. MATERIAL:

1. DIMENSIONS OF FLANGES FOR NOZZLES UP TO 600 NB (24") SHALL BE AS PER ASME B16.5 AND FOR NOZZLE ABOVE 600 NB (24") SHALL BE AS PER ASME B16.47 SERIES 'B' UNLESS SPECIFIED OTHERWISE. FLANGE GASKET FACE SHALL HAVE 3.2 - 6.3 MICRONS (125~250 AARH FINISH).

2. THE GASKETS USED DURING HYDRAULIC TEST SHALL BE OF SAME SPECIFICATION AS SERVICE GASKETS.

3. IN CLAD FLANGES THE THICKNESS OF FLANGES SHALL BE INCREASED EQUAL TO GROOVE DEPTH. THE W.O.L THICKNESS OF THE FACING SHALL BE MIN. 3MM AFTER MACHINING.

4. ALL MATERIALS WELDED DIRECTLY TO THE PRESSURE-RETAINING ENVELOPE SHALL BE MATERIAL OF THE SAME P NUMBER AND GROUP NUMBER IN THE APPLICABLE TABLE IN ASME CODE, SECTION II, PART D.

5. 3 THK. CLAD / W.O.L CONSIDER CORROSION ALLOWANCE.

6. IN CLAD PART OF VESSEL, WELD OVERLAY SHOULD BE MIN. 3mm UNDILUTED MATERIAL HAVING SAME CHEMISTRY AS THAT OF SPECIFIED CLAD MATERIAL.

7. THE WELD OVERLAY SHOULD BE MINIMUM TWO LAYER CONSTRUCTION. THE THICKNESS OF LAYER CONFORMING TO THE SPECIFIED COMPOSITION, EXCLUDING ANY ALLOWANCE FOR GRINDING OR MACHINING SHALL NOT BE LESS THAN 1.5MM PER LAYER.

8. HARDNESS OF GASKET SHALL BE LESS THAN HARDNESS OF FLANGE.

9. GASKET SHALL BE AS PER ASME B 16.20

10. FABRICATION:

1. THE INDICATED THICKNESS IS MINIMUM ACCEPTABLE AFTER CONSTRUCTION.

2. ALL SHARP CORNERS ARE TO BE ROUNDED OFF.

3. FOR NOZZLES ON SHELL, PROJECTIONS ARE REFERRED FROM VESSEL CENTER LINE TO FLANGE CONTACT FACE AND FOR NOZZLES ON HEAD, PROJECTIONS ARE REFERRED FROM HEAD T.L. TO FLANGE CONTACT FACE.

4. ALL FLANGE STUD/BOLT HOLES AND ANCHOR BOLT HOLES TO STRADDLE CENTER LINES AS PER ELLSTD.No. 7-12-0015. UNLESS OTHERWISE INDICATED.

5. NOZZLES IN CLADDED SECTION SHALL BE CLADDED / WELD OVERLAPPED.

6. GASKET SEATING SURFACE OF ALL EXTERNAL FLANGES SHALL HAVE SMOOTH FINISH TO 125 TO 250 AARH AND ALL INTERNAL FLANGES SHALL HAVE CONCENTRIC SERRATIONS.

7. ALL MAIN WELD SEAMS SHALL BE CLEAR OF NOZZLES, R.F.PADS, INTERVALS AND STIFFENING RINGS BY 50 mm MIN. (WELD EDGE TO WELD EDGE).

8. IN CASE OF FOULING OF ANY NOZZLE OPENING WITH VESSEL WELD SEAMS (i) GRIND FILLET OF NOZZLE TO SHELL/D'HEAD WELDING TO A SMOOTH CONCAVE RADIUS AND (ii) RE-RADIOGRAPH (100%) THE ADJACENT WELD SEAMS UP TO A DISTANCE OF 300 mm BEYOND EDGE OF NOZZLE ON EACH SIDE BEFORE WELDING THE R.F.PAD.

9. WHEREVER R.F. PADS / PADS OF OTHER ATTACHMENTS CROSS OVER WELD SEAMS OF VESSEL, THE WELD SEAM IS TO BE GROUND FLUSH AND FULLY RADIOGRAPHED UP TO 150 mm ON EITHER SIDE OF PADS BEFORE WELDING THE ATTACHMENTS.

10. ALL WELDS SHALL BE DYE PENETRATE EXAMINED.

11. WHEREVER PADS ARE COMING OVER C-SEAM OF DIFFERENTIAL THICKNESS, BOTTOM SIDE OF PAD SHALL BE GROUND TO SUIT AND WELD OVER THE C-SEAM.

12. ALL WELDS OF PRESSURE PARTS & LOAD BEARING PARTS SHALL BE FULL PENETRATION TYPE.

13. WELD EDGE TO EDGE DISTANCE SHALL BE AS PER CL. 4.7.5 OF GENERAL SPECIFICATION FOR PRESSURE VESSEL 6-12-0001.

14. FILLET WELD SIZES INDICATED SHOWS THE LEG SIZE AND ARE MINIMUM.

15. ALL FILLET WELDS INTERNAL AND EXTERNAL TO PRESSURE CONTAINING COMPONENTS SHALL BE GROUND TO A SMOOTH AND GENEROUS CONCAVE CONTOUR.

16. WHEREVER INSULATION SUPPORT RINGS ARE COMING IN WAY OF OTHER ATTACHMENTS, THE INSULATION SUPPORT RING MAY BE SUITABLY MODIFIED.

17. R.F. PAD IS TO BE WELDED TO SHELL SUCH THAT ONE TELL TALE HOLE OF DIA. 8MM WILL BE AT THE BOTTOM OF THE PAD IN THE ASSEMBLED POSITION OF THE VESSEL.

18. NO WELDING IS TO BE DONE ON THE VESSEL AFTER HEAT TREATMENT UNLESS OTHERWISE PERMITTED BY CODE/SPECIFICATION / APPROVED BY L&T

19. RADIOGRAPH THE WELD ON THE BASE MATERIAL BEFORE CARRYING OUT WELD ON THE CLAD SIDE.

20. COMPLETE EQUIPMENT UP TO WRAPPER PLATE SHALL BE STRESS RELIEVED. HARDNESS OF ALL PLATE, WELDS HAZ AFTER PWHT SHALL BE LIMITED TO 200 BHN. SHALL BE CARRIED BEFORE HYDROTEST.

21. ALL HEAT TREATMENTS SHALL BE AS PER FORMING AND HEAT TREATMENT PROCEDURES DOC. NO. B016-RUF-LT-504-QA-QD-BHEL(1)-02010

22. TELL TALE HOLES SHALL NOT BE PLUGGED AND SHALL BE FILLED WITH HARD GREASE ONLY.

23. IN CLAD FLANGES THE THICKNESS OF FLANGES SHALL BE INCREASED EQUAL TO GROOVE DEPTH. THE W.O.L THICKNESS OF THE FACING SHALL BE MIN. 3MM AFTER MACHINING.

24. TOLERANCE:

1. ALL LEVEL INSTRUMENT NOZZLES SHALL BE JIG SET WITHIN TOLERANCE OF +/- 1.0 MM

2. THE UPPER & LOWER NOZZLE CONNECTIONS FOR ANY LEVEL INSTRUMENT SHALL BE IN THE SAME PLANE.

3. EQUIPMENT TOLERANCE SHALL BE IN ACCORDANCE WITH EIL STD. 7-12-001 OR GA-C1266 OR DESIGN CODE WHICH EVER IS STRINGENT.

4. TOLERANCES INDICATED IN THE DRAWING ARE NON CUMULATIVE.

5. NDE AND TESTING:

1. ALL INSPECTION REQUIREMENTS SHALL BE AS PER INSPECTION & TEST PLAN DOC. NO. B016-RUF-LT-504-MS-QD-BHEL(1)-02001

2. CLADDED DISHED END SHALL BE ULTRASONICALLY TESTED AFTER FORMING AS PER A 578, LEVEL-C.

3. KNUCKLE PORTION OF DISHED ENDS BOTH INSIDE AND OUTSIDE SHALL BE D.P.CHECKED.

4. ALL WELDED PIPES OF SS 347 MATERIAL SHALL BE 100% DP CHECKED BOTH INSIDE AND OUTSIDE.

5. ON FORMED PIPE OF SS 347 MATERIAL, HARDNESS MEASUREMENT IN BASE METAL AND HAZ SHALL BE CARRIED OUT AFTER WELDING. THE MAXIMUM HARDNESS SHALL BE LIMITED TO 88 RB OTHERWISE NECESSARY HEAT TREATMENT SHALL BE CARRIED OUT TO BRING THE HARDNESS WITHIN THE LIMITS. ANNEALING PROCEDURE SHALL BE ESTABLISHED TO CONTROL HARDNESS.

6. ALL NOZZLES FABRICATED FROM PLATE SHALL BE 100% RADIOGRAPHED.

7. WATER USED FOR HYDRAULIC TESTING SHALL BE CLEAN & POTABLE AND HT SHALL BE CARRIED OUT AS PER DOC. NO. B016-RUF-LT-504-MS-QD-BHEL(1)-02005.

8. SURFACE PREPARATION AND PROTECTION:

1. SURFACE PREPARATION AND PAINTING SHALL BE AS PER SURFACE PREPARATION & PAINTING PROCEDURE (DOC. NO. B016-RUF-LT-504-MS-QD-BHEL(1)-02004) AND SHALL COMPLY ALL REQUIREMENTS OF B016-000-79-41-PLS-01, REV.1.

2. ALL SS / CLAD SURFACES AND WELDMENTS SHALL BE PICKLED & PASSIVATED AS PER ASTM A-380 AFTER HYDRAULIC TESTING.

3. PROTECT ALL MACHINED SURFACES AND THREADED CONNECTIONS WITH RUST PREVENTIVE IMMEDIATELY AFTER MACHINING. INSTALL WOOD OR STEEL PROTECTORS FOR FITTINGS IMMEDIATELY AFTER TESTING.

4. EARTHING LUGS ARE NOT TO BE PAINTED OR GALVANISED.

5. SHIPMENT AND HANDLING:

1. ALL REMOVABLE INTERNALS SHALL BE SIZED SO AS TO PASS THROUGH MANHOLE. (I.D.582MM)

2. AFTER HYDROTEST, EQUIPMENT SHALL BE THOROUGHLY DRAINED & DRIED OUT, ALL THE NOZZLE OPENINGS SHALL BE CLOSED WITH SUITABLE STEEL COVERS.

3. EQUIPMENT SHALL BE TRANSPORTED TO SITE IN SINGLE PIECE.

4. LIFTING OF EQUIPMENT SHALL BE DONE USING SPREADER BEAM ONLY.

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PMR REFERENCE SPECIFICATIONS

1. GENERAL SPEC. FOR PRESSURE VESSELS

2. SUPP. SPEC. FOR LAS VESSELS

3. SUPP. SPEC. FOR SS CLAD VESSELS

4. STD. SPEC. FOR BOCS PLATE

5. STD. SPEC. FOR STRUCTURAL QUALITY PLATES

6. STD. SPEC. FOR CLAD PLATES

7. STD. SPEC. FOR 2.25Cr-1% Mo PLATES

8. STD. SPEC. FOR HARDNESS REQ. STATIC EQUIPMENTS

9. HOT INSULATION SPECIFICATION

10. TECHNICAL NOTES FOR GASKETS

11. TECHNICAL NOTES FOR BOLTS & NUTS

12. MATERIAL REQ. FOR CS COMP. USED IN SOUR SERVICE

13. STD. SPEC. FOR P.M.T. SUPPLIERS WORK

14. ELEC. ENGINEERING DESIGN BASIS (PART-B)

15. ENGINEERING DESIGN BASIS, STATIC EQUIPMENT

16. JOB SPECIFICATION (EQUIPMENT DIVISION)

17. VENDOR DATA REQUIREMENTS

18. MANDATORY SPARES

19. SCOPE OF WORK

20. SITE SPECIFIC SEISMIC SPECTRA

21. JOB SPEC. FOR SURFACE PREPARATION & PROTECTIVE COATING

INSPECTION DOCUMENTS

1. INSPECTION & TEST PLAN FOR GASKETS

2. INSPECTION & TEST PLAN FOR PR VESSEL & CS COLUMN

3. INSPECTION & TEST PLAN PR. VESSEL, COLUMN, REACTORS-SS CLAD

LICENSOR SPECIFICATIONS

1. HYDROPROCESSING REACTORS AND HIGH PRESSURE VESSELS MANUFACTURED FROM 2¼Cr-1Mo AND 2¼Cr-1Mo-¼V LOW-ALLOY STEELS

2. DESIGN AND FAB. OF PRESSURE VESSEL WITH HIGH-ALLOY CLADDING OR OVERLAY

3. GENERAL SPECIFICATION FOR MATERIAL OF CONSTRUCTION

PMR REFERENCE STANDARDS

1. VESSEL TOLERANCES

2. MAN-HOLE WITH DAVIT

3. LADDER RUNGS FOR MANHOLE/DEMISTER

4. NOZZLE REINFORCEMENT AND PROJECTION

5. STANDARD BOLT HOLE ORIENTATION

6. ALLOY LINER DETAILS

7. INTERNAL FLANGES

8. EIL NAME PLATE

9. MANUFACTURER NAME PLATE

10. BRACKET FOR NAME PLATE

11. SUPPORTS FOR INTERNAL FEED PIPE

LTC STANDARDS

1. TEMPLATE FOR HORIZONTAL EQUIPMENT

2. ALLOWABLE NOZZLE LOADS

PIP STANDARDS

1. HORIZONTAL VESSEL INSULATION SUPPORTS

2. VESSEL GROUNDING LUG

LICENSOR STANDARDS

1. HORIZONTAL VESSEL - FAB. TOLERANCES

2. STRAINER AND VORTEX BREAKER FOR BOTTOM OUTLET NOZZLES

3. STANDARD CONNECTIONS & WELDING DETAILS FOR CLAD STEEL VESSELS

4. STANDARD NOZZLES AND HAND HOLES FOR THICK WALL OR HIGH TEMPERATURE PRESSURE VESSELS

5. GASKET SPECIFICATIONS AND ACCEPTABLE BRANDS

L&T - CHIYODA LIMITED

1. REVIEW CODE 1 - NO COMMENTS PROCEED WITH MANUFACTURE / FABRICATION / CONSTRUCTION AS PER THE DOCUMENT.

2. REVIEW CODE 2 - PROCEED WITH MANUFACTURE / FABRICATION / CONSTRUCTION AS PER THE DOCUMENT.

3. REVIEW CODE 3 - DOCUMENT DOES NOT CONFORM TO BASIC REQUIREMENTS AS MARKED. RESUBMIT FOR REVIEW.

4. REVIEW CODE 4 - DOCUMENT IS RETAINED FOR RECORDS. PROCEED WITH MANUFACTURE / FABRICATION

COMMENTS BY REVIEWED BY APPROVED BY DATE

THIS REVIEW / APPROVAL DOES NOT RELIEVE THE VENDOR / MANUFACTURER OF THE FULL RESPONSIBILITY AS TO DESIGN CORRECTNESS OF DIMENSIONS & COMPLIANCE WITH ALL PURCHASER SPECIFICATIONS.

PMR REFERENCE SPECIFICATIONS

1. GENERAL SPEC. FOR PRESSURE VESSELS

2. SUPP. SPEC. FOR LAS VESSELS

3. SUPP. SPEC. FOR SS CLAD VESSELS

4. STD. SPEC. FOR BOCS PLATE

5. STD. SPEC. FOR STRUCTURAL QUALITY PLATES

6. STD. SPEC. FOR CLAD PLATES

7. STD. SPEC. FOR 2.25Cr-1% Mo PLATES

8. STD. SPEC. FOR HARDNESS REQ. STATIC EQUIPMENTS

9. HOT INSULATION SPECIFICATION

10. TECHNICAL NOTES FOR GASKETS

11. TECHNICAL NOTES FOR BOLTS & NUTS

12. MATERIAL REQ. FOR CS COMP. USED IN SOUR SERVICE

13. STD. SPEC. FOR P.M.T. SUPPLIERS WORK

14. ELEC. ENGINEERING DESIGN BASIS (PART-B)

15. ENGINEERING DESIGN BASIS, STATIC EQUIPMENT

16. JOB SPECIFICATION (EQUIPMENT DIVISION)

17. VENDOR DATA REQUIREMENTS

18. MANDATORY SPARES

19. SCOPE OF WORK

20. SITE SPECIFIC SEISMIC SPECTRA

21. JOB SPEC. FOR SURFACE PREPARATION & PROTECTIVE COATING

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2. INSPECTION & TEST PLAN FOR PR VESSEL & CS COLUMN

3. INSPECTION & TEST PLAN PR. VESSEL, COLUMN, REACTORS-SS CLAD

LICENSOR SPECIFICATIONS

1. HYDROPROCESSING REACTORS AND HIGH PRESSURE VESSELS MANUFACTURED FROM 2¼Cr-1Mo AND 2¼Cr-1Mo-¼V LOW-ALLOY STEELS

2. DESIGN AND FAB. OF PRESSURE VESSEL WITH HIGH-ALLOY CLADDING OR OVERLAY

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3. LADDER RUNGS FOR MANHOLE/DEMISTER

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8. EIL NAME PLATE

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2. ALLOWABLE NOZZLE LOADS

PIP STANDARDS

1. HORIZONTAL VESSEL INSULATION SUPPORTS

2. VESSEL GROUNDING LUG

LICENSOR STANDARDS

1. HORIZONTAL VESSEL - FAB. TOLERANCES

2. STRAINER AND VORTEX BREAKER FOR BOTTOM OUTLET NOZZLES

3. STANDARD CONNECTIONS & WELDING DETAILS FOR CLAD STEEL VESSELS

4. STANDARD NOZZLES AND HAND HOLES FOR THICK WALL OR HIGH TEMPERATURE PRESSURE VESSELS

5. GASKET SPECIFICATIONS AND ACCEPTABLE BRANDS

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