

FORM U-1 MANUFACTURERS' DATA REPORT FOR PRESSURE VESSELS 08E-105
as required by the provisions of the ASME Code rules, Section VIII, Division 1

1. Manufactured and certified by HEAT TRANSFER EQUIPMENT COMPANY 1515 No. 93rd E. Ave. Tulsa, OK 74115
(name and address of manufacturer)
2. Manufactured for M.W. KELLOGG P.O. BOX 4557 HOUSTON, TX 77210-4557
(name and address of purchaser)
3. Location of installation TENNECO NGL CORP. LA PORTE, TX
(name and address)
4. Type: HORIZ. BXU 91-2173-C 91-2173-C-1 1357 1991
(horiz. or vert., tank) (mfr's. serial no.) (CRN) (drawing no.) (Nat'l. Bd. no.) (year built)
5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction and workmanship conform to ASME Code, Section VIII, Division 1: 1989
(year)
1989 UG-20(f)
(addenda (Date)) (Code Case no.) (special service per UG-120(d))

Items 6-11 inclusive to be completed for single wall vessels, jackets of jacketed vessels, or shells of heat exchangers.

6. Shell: SA-516-70 5/8" 1/8" 3'-5" 16'-4 7/8"
(mat'l. (spec. no., grade)) (nom. thickness (in.)) (corr. allow. (in.)) (dia. ID (ft. & in.)) (length (overall) (ft. & in.))
7. Seams: DBL. BUTT SPOT 85 NONE DBL. BUTT SPOT 2
(long. (dbl., single)) (RT (spot or full)) (eff. (%)) (HT temp. (°F)) (time) (girth (dbl., single)) (RT (spot, partial, or full)) (no. of courses)
8. Heads: (a) SA-516-70 (b)

	Location (top, bottom, ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (convex or concave)
(a)	END	7/16"	1/8"			2:1				CONCAVE
(b)										

If removable, bolts used (describe other fastenings):

9. Type of jacket: _____ Proof test: _____
10. Jacket closure: _____ If bar, give dimensions: _____
(describe as ogee & weld, bar, etc.)
11. MAWP: 163 at max. temp. 500 Min design metal temp.: 10 at 163 Hydro. or pneu. test pressure: 309
(psi) (°F) (°F) (psi) (psi)

Items 12 and 13 to be completed for tube sections.

12. Tubesheets: SA-516-70 42 3/4" 3 1/8" 5/16"
(stationary mat'l. (spec. no., gr.)) (dia. (in.) (subject to pressure)) (nom. thickness (in.)) (corr. allow. (in.)) (attachment (welded, bolted))
13. Tubes: SA-214 1" 12 BWG MIN 310 "U"
(floating mat'l. (spec. no., gr.)) (dia. (in.)) (nom. thickness (in.)) (corr. allow. (in.)) (attachment)
(mat'l. (spec. no., gr.)) (OD (in.)) (nom. thickness (in. or gauge)) (no.) (type (straight or U))

Items 14-17 inclusive to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

14. Shell: SA-516-70 1/2" 1/8" 3'-5" 2'-1 3/16"
(mat'l. (spec. no., gr.)) (nom. thickness (in.)) (corr. allow. (in.)) (dia. ID (ft. & in.)) (length (overall) (ft. & in.))
15. Seams: DBL. BUTT SPOT 85 NONE DBL. BUTT SPOT 1
(long (dbl., single)) (RT (spot or full)) (eff. (%)) (HT temp. (°F)) (time) (girth (dbl., single)) (RT (spot, partial, or full)) (no. of courses)
16. Heads: (a) SA-516-70 (b)

	Location (top, bottom, ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (convex or concave)
(a)	END	7/16"	1/8"			2:1				CONCAVE
(b)										

If removable, bolts used (describe other fastenings):

17. MAWP: 125* at max. temp. 650 Min design metal temp.: 10 at 125 Hydro. or pneu. test pressure: 287
(psi) (°F) (°F) (psi) (psi)

18. Nozzles, inspection and safety valve openings:

19. Supports: Skirt NO Lugs Legs Other 2-SADDLES Attached WELDED TO SHELL
(yes or no) (no.) (no.) (describe) (where and how)

P.O. NO.: 6636-02D1-C210-01

ITEM NO.: 08E-105

* ALSO DESIGNED FOR 15 PSI EXT. PRESSURE

We certify that the statements made in this report are correct and that all details of design, material, construction and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1.

"U" Certificate of Authorization no. 12,197 expires JULY 15, 19 92

Date 9-26-91 Name HEAT TRANSFER EQUIPMENT COMPANY

Signed Billy G. Walker
(representative)

1515 N. 93 E. AVE.

Vessel constructed by HEAT TRANSFER EQUIPMENT COMPANY at TULSA, OK 74115

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the state or province of OKLAHOMA and employed by COMMERCIAL UNION INSURANCE COMPANY

_____ of _____ and employed by _____
_____ of **BOSTON, MA** have inspected the pressure vessel described in this Manufacturers' Data

Report on 9-27, 19 91, and state that, to the best of my knowledge and belief, the manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1.

By signing this certificate neither the inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in the Manufacturers' Data Report. Furthermore, neither the inspector nor his employer shall be liable in any manner for any per-

personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 8-22-91 Signed [Signature] (Authorized Inspector) Commissions 20098203 OK 268
(Nat'l. Bd. (incl. endorsements) state, prov. and no.)

We certify that the field assembly construction of all parts of this vessel conforms with the requirements of Section VIII, Division 1 of the ASME BOILER AND PRESSURE VESSEL CODE.

"U" Certificate of Authorization no. _____ expires _____, 19____.

Date _____ Name _____ Signed _____
(assembler that certified and constructed field assembly) (representative)

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the state or province of _____ and employed by _____

_____ of _____ have compared the statements in this Manufacturers' Data

Report with the described pressure vessel and state that parts referred to as data items _____, not included in the

certificate of shop inspection, have been inspected by me and that to the best of my knowledge and belief, the manufacturer has constructed and assembled this pressure vessel in accordance with ASME Code, Section VIII, Division 1. The described vessel was inspected

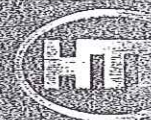
and subjected to a hydrostatic test of _____ psi.

By signing this certificate neither the inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in the Manufacturers' Data Report. Furthermore, neither the inspector nor his employer shall be liable in any manner for any per-

sonal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date _____ Signed _____ Commissions _____
(Authorized Inspector) (Nat'l. Bd. (incl. endorsements) state, prov. and no.)

NAT'L. BD. NO. 1357



CERTIFIED
HEAT TRANSFER EQUIPMENT
TULSA, OKLAHOMA

W
RT-3

MAX. W.P. TUBES 125 P.S.I.

650

MAX. W.P. SHELL 163 P.S.I.

500

MAX. DESIGN TEMP. 10

125 P

MAX. TEMP. SHELL 10

163 P

SERIAL NO. 201-21732C

YEAR 1991

TEST TUBES 188 P.S.I.

245 P

ITEM 103E-105

41-102

P.O. NO. 6636-0201-C210-01

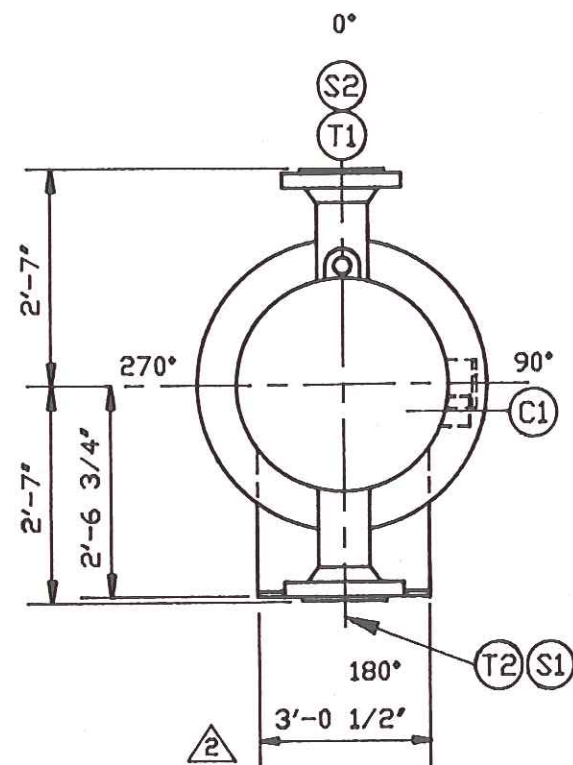
SIZE 30 FT. 2702 EFF.

SERVICE EDYB 43 REBOILER

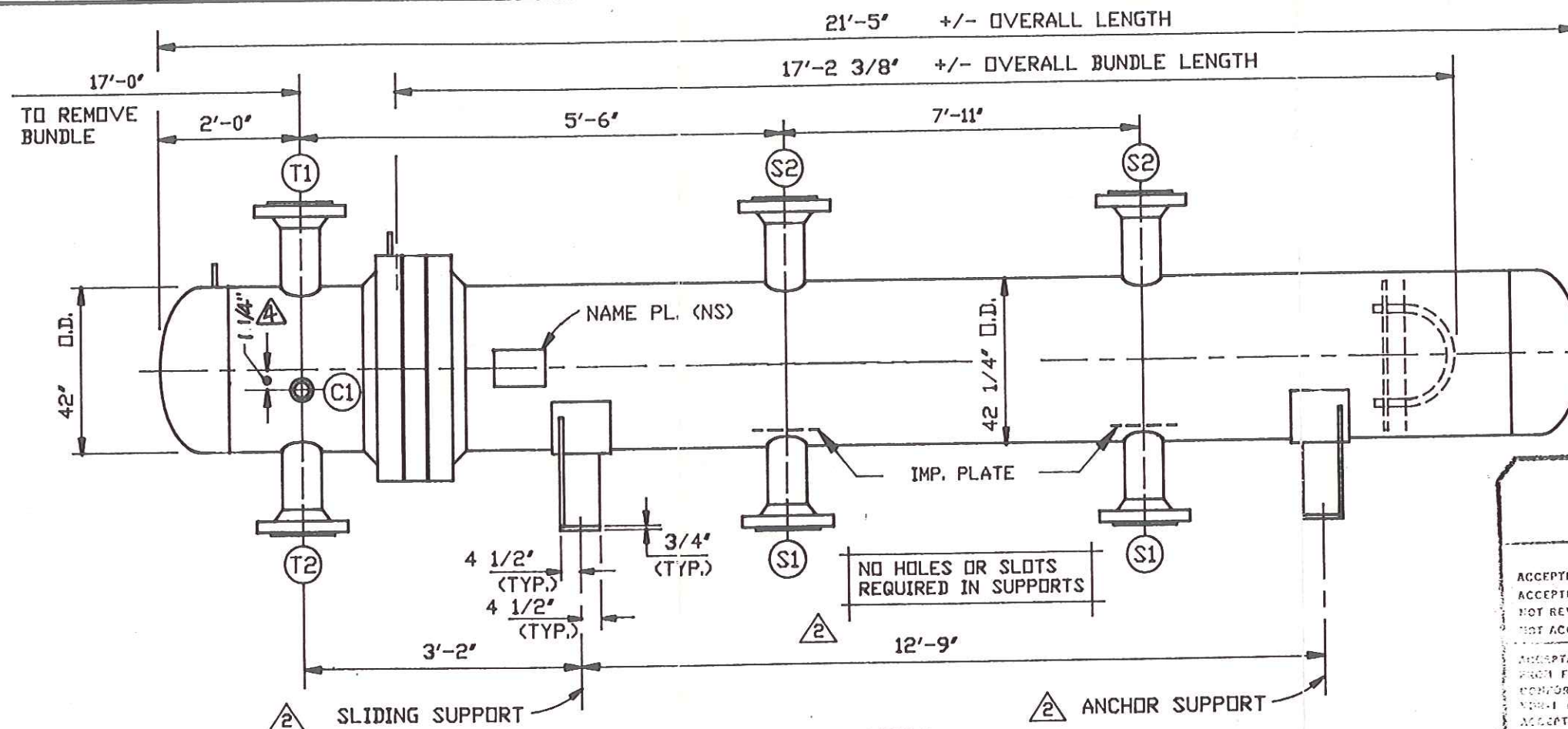
SHOP TEST PRESSURE: SHELL SIDE 309 P.S.I.

TUBE SIDE 287 P.S.I.

* ALSO DESIGNED FOR 15 P.S.I. EXT. PRESSURE



END VIEW



ELEVATION VIEW

RECEIVED
SEP 14 1991

KCI CONSTRUCTORS, INC.

ACCEPTANCE
FOR ENGINEERING USE

THIS DOCUMENT IS:
ACCEPTED (AC) ☒
ACCEPTED WITH COMMENTS (AC-C) ☐
NOT REVIEWED-ACCEPTED (NR) ☐
NOT ACCEPTED (NAC) ☐

ACCEPTANCE DOES NOT RELIEVE VENDOR FROM FURNISHING MATERIAL IN CONFORMANCE WITH ORDER. REFER TO ORDER FOR FULL DEFINITION OF ACCEPTANCE CONDITIONS

DIVISION VM SIGNED RTD
DATE 05 SEPT 91

GENERAL NOTES

- DESIGNED & CONSTRUCTED IN ACCORDANCE W/
A. SECT VIII, DIV 1, 1989 ED. & 1989 ADDENDA
OF THE ASME BOILER & PRESSURE CODE & SD
STAMPED WITH NATIONAL BOARD REGISTRATION.
B. TEMA CLASS 'R'
C. CUSTOMER SPECS: C41-1E-6636, 4-7TS-6636,
13-2S-6636 AND P42-1TS-6636

2. ALL BOLT HOLES TO STRADDLE ϕ 'S.

3. ALL GASKETS 1/8" THICK SOFT IRON DOUBLE JACKETED
NON ASBESTOS FILLED (TWO SPARE SETS REQUIRED)

4. ALL OUTSIDE SURFACES TO BE SOLVENT CLEANED PER
SSPC-SP1, CHANNEL TO BE SANDBLASTED PER SSPC-SP10
TO PRODUCE AN ANCHOR PROFILE OF 1 TO 2 MILS
PRIME COMPLETE CHANNEL WITH ONE COAT INORGANIC ZINC
(DIMETCOTE 21-7) 2.5-3.5 MILS DFT. APPLY FINISH COAT
OF SILICONE ACRYLIC (AMERCOAT 891) 1-2 MILS DFT TO
CHANNEL NOZZLES, BODY FLANGES AND LIFTING LUGS.

SHELL TO BE SANDBLASTED PER SSPC-SP10 TO PRODUCE
AN ANCHOR PROFILE TO 2 TO 4 MILS.
PRIME COMPLETE SHELL WITH ONE COAT HIGH MELT POINT
COAL TAR EPOXY (PORTER INTER'S, TARSET SUPER 1332)
10-12 MILS DFT.

NOZZLE DATA

MK.	DESCRIPTION	SERVICE
T1	14'-150#RF-WN	INLET
T2	6'-150#RF-WN	OUTLET
S1	18'-150#RF-WN	INLET
S2	24'-150#RF-WN	OUTLET
C1	3/4'-6000# CPLG.	VENT

DESIGN DATA

	SHELL SIDE	TUBE SIDE
DES. PRESS.	160 PSI	110/FV PSI
TEST PRESS.	SEE BELOW	
DES. TEMP.	500 °F	650 °F
MIN. DESIGN	+10 °F	+10 °F
METAL TEMP.	@ 163 PSI	@ 125 PSI
C. A.	0.1250	0.1250
NO. PASSES	1	2
HEAT TREAT	NO	NO
RADIOGRAPHY	SPOT (RT-3)	SPOT (RT-3)
MAWP (H&C)	163 PSI	125 PSI
FIELD TEST	245 PSI	188 PSI
MAWP (N&C)	206 PSI	191 PSI
SHOP TEST	309 PSI	287 PSI

ALL CPLGS. TO BE PLUGGED.

INSULATION (BY OTHERS)
SHELL 1 1/2"
CHANNEL 2"

CUSTOMER: M.W.KELLOGG

DESTINATION: TENNECO NGL CORP. MTBE PROJECT

LA PORTE, TEXAS

P.D.: 6636-02D1-C210-01

SERVICE: DIB #3 REBOILER

TUBES: 310-1 'ODx 12 BWG (MIN)U-TUBES x16'-0 'LG. SA-214

SURF: 2702.

FT²(EFF.)

ITEM: 08E-105

SIZE: 41-192

SERIAL NO.: 91-2173-C

TYPE: BXU

NO. REQ'D: 1

WT: DRY 22400# WET 34700#

WT: BUNDLE 12300. #



HEAT TRANSFER EQUIPMENT CO.
Tulsa, Oklahoma

OUTLINE DIMENSIONAL DRAWING

Rev	Date	Description	By
1	4-11-91	REVISED PER CUST.	FJC
2	6-14-91	REVISED SUPPORTS	FJC
3	8-7-91	REV. NOTE 4 / CUST.	BM
4	8/28/91	REV. C1 / CUST.	BM

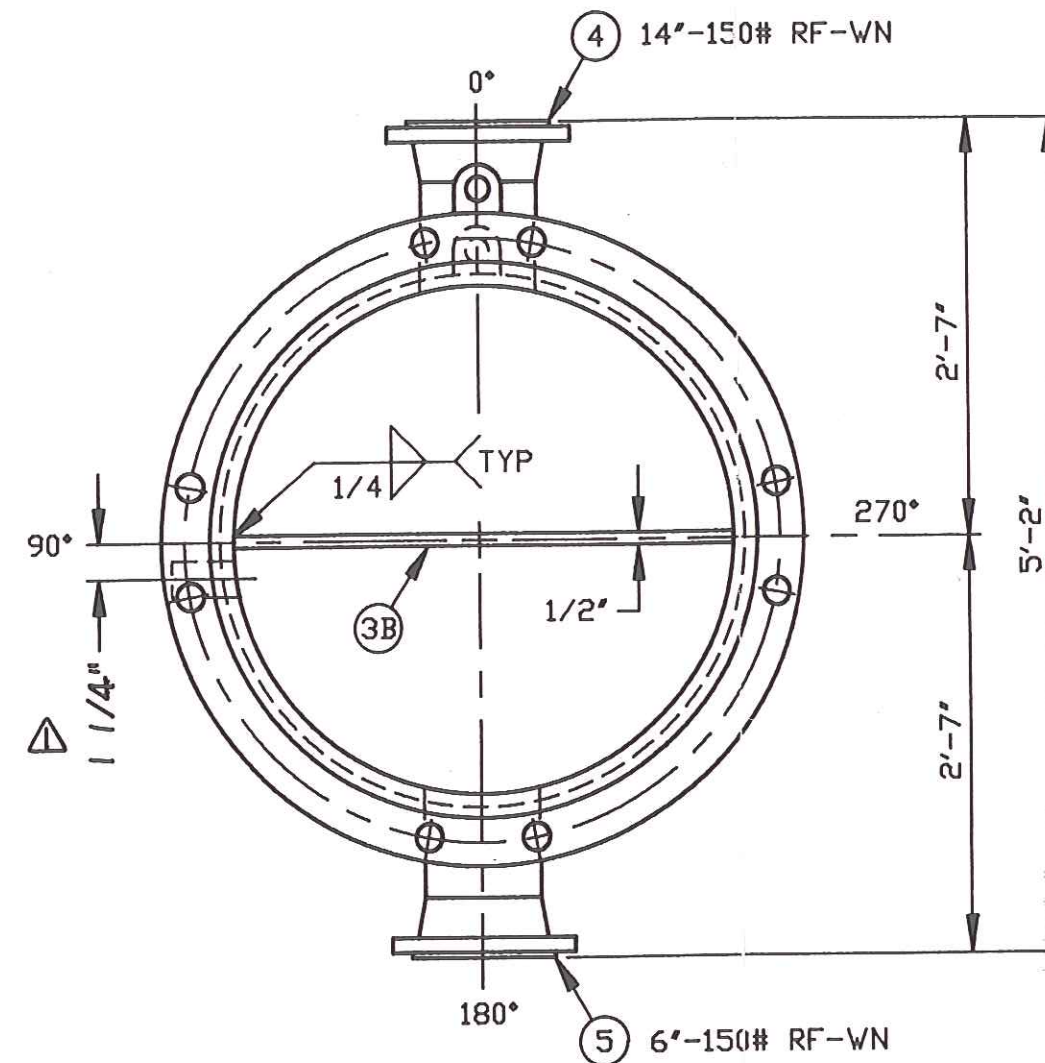
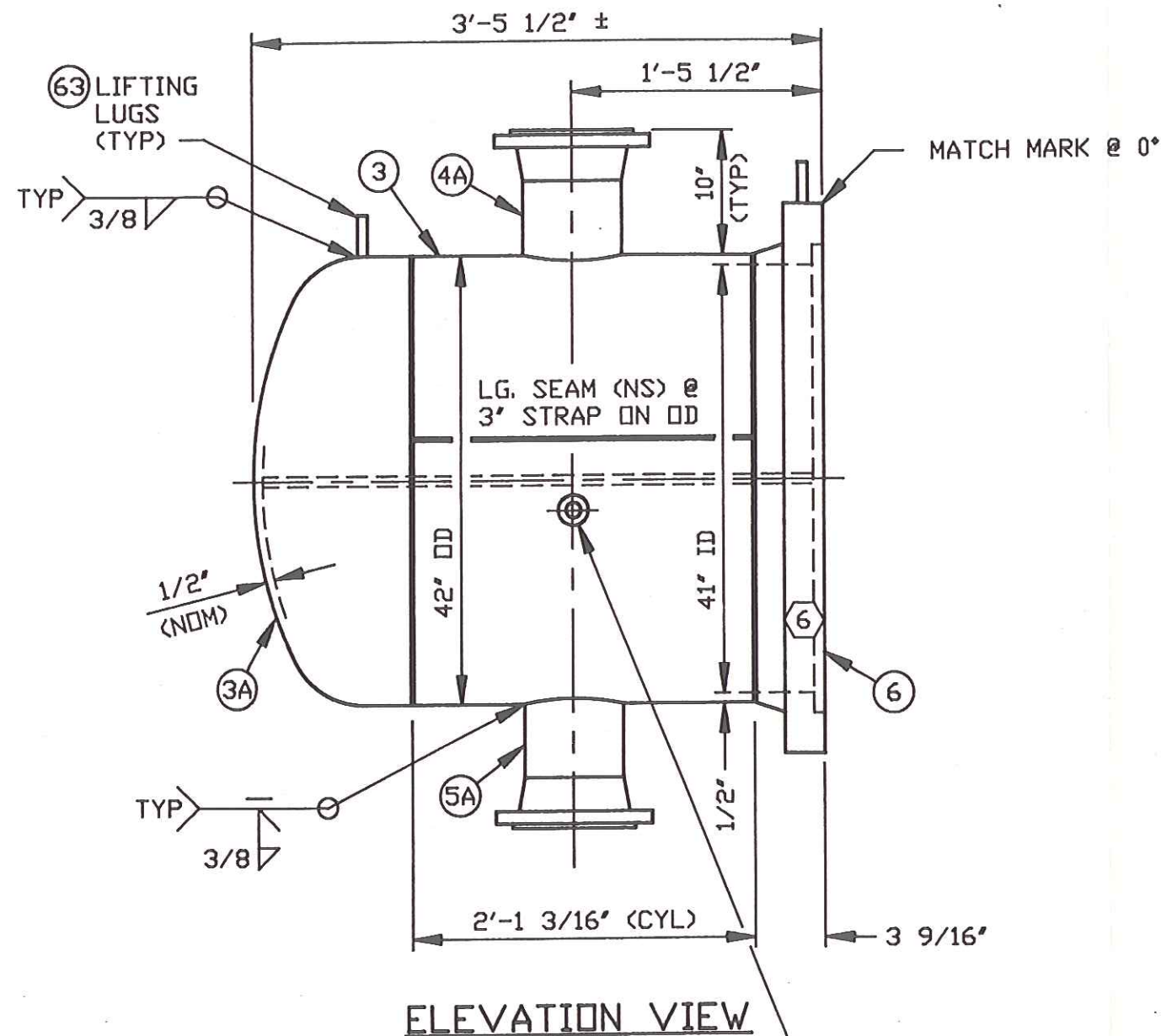
DWN. FJC CK. LDB APP. *[Signature]*
DATE 3-6-91 DATE 3-8-91 DATE 8-14-91
CERTIFIED CORRECT FOR FABRICATION
BY *[Signature]* DATE 8-28-91

DRAWING NO.:

91-2173-C-1

REV. 4

103354



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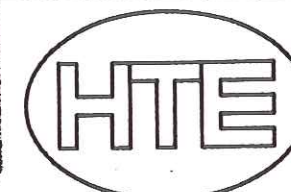
NOTES

- SPOT RADIOGRAPH.
- 1/8" (MIN.) RAD. ON NOZ. I.D. @ CHAN. I.D.
- GRIND ALL INSIDE WELDS SMOOTH AND FLUSH W/ CHAN. I.D.
- ALL BOLT HOLES TO STRADDLE CENTERLINES.
- WELDING PROCEDURES: ASA-1-1.0 & SMA-1-1.0
- SEE DWG. NO. 10 FOR BODY FLG. DETAIL.
- SEE DWG. NO. 8 FOR LIFTING LUGS.
- SEE DWG. NO. 11 FOR WELD DETAILS & GEN. NOTES.
- SEE DWG. NO. 11 BLK. NO. 4 FOR LG. AND CIRC. SEAMS.
- FINISH MACHINE FACE OF BODY FLG. AFTER FINAL WELDING.
- PASS PL. WELDS TO BE FULL PENETRATION FOR 2" MIN. FROM FACE OF BODY FLG.

60 3/4"-6000# CPLG. W/
3" LG. HEX HEAD PLUG

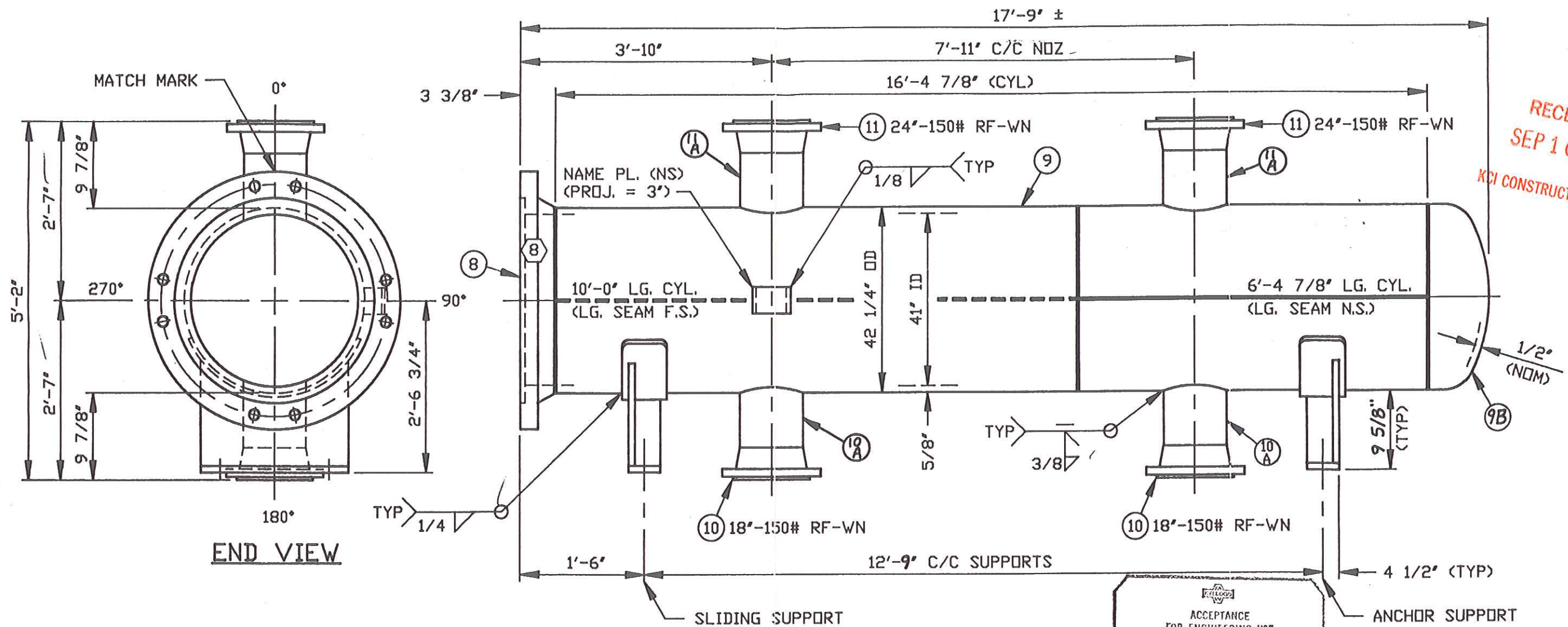
ACCEPTANCE FOR ENGINEERING USE	
THIS DOCUMENT IS:	
ACCEPTED	(AC) ☒
ACCEPTED WITH COMMENTS (AC-C)	☐
NOT REVIEWED-ACCEPTED (NR)	☐
NOT ACCEPTED	(NAC) ☐
ACCEPTANCE DOES NOT RELIEVE VENDOR OF FURNISHING MATERIAL IN PERFORMANCE WITH ORDER. REFER TO SPECIFICATION FOR FULL DEFINITION OF ACCEPTANCE CONDITIONS	
DIVISION	VM
SIGNED	RTD
DATE	05 SEPT 91

TENNECO NGL CORP.
MTBE PROJECT
LAPORTE, TEXAS
ITEM NO. 08E-105
P.O. NO. 6636-02D1-C210-01



HEAT TRANSFER EQUIPMENT CO.
Tulsa, Oklahoma

Rev	Date	Description	By	CHANNEL DETAILS			
1	8/28/91	MOVED COUPLING / CUST.	BM	DWN. BM	CK. SM	APP. [Signature]	91-2173-C-2
				DATE 8/8/91	DATE 8/14/91	DATE 8-14-91	REV. 5



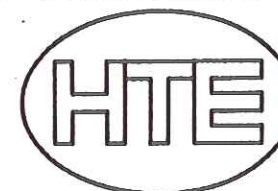
RECEIVED
SEP 10 1991
KCI CONSTRUCTORS, INC.

NOTES

1. SPOT RADIOGRAPH.
2. 1/8" (MIN.) RAD. ON NOZ. I.D. @ SHELL I.D.
3. GRIND ALL INSIDE WELDS SMOOTH & FLUSH W/ SHELL I.D.
4. ALL BOLT HOLES TO STRADDLE CENTERLINES.
5. WELDING PROCEDURES: ASA-1-1.0 & SMA-1-1.0
6. SEE DWG. NO. 10 FOR BODY FLG. DETAIL.
7. SEE DWG. NO. 11 FOR WELD DETAILS & GEN. NOTES.
8. SEE DWG. NO. 11 BLK. NO. 2 FOR LG. & CIRC. SEAMS.
9. SEE DWG. NO. 7 FOR SUPPORT DETAILS.
10. SEE DWG. NO. 8 FOR NAME PL. & BRK'T. DETAILS.
11. PLUG SHELL FOR DIA. BEFORE BUNDLE ASS'Y. W/ 2-DISCS, THE SAME DIA. AS BAFFLES, SPACED 18' APART.

ACCEPTANCE FOR ENGINEERING USE	
THIS DOCUMENT IS:	
ACCEPTED	(AC) ☒
ACCEPTED WITH COMMENTS	(AC-C) ☐
NOT REVIEWED-ACCEPTED	(NR) ☐
NOT ACCEPTED	(NAC) ☐
ACCEPTANCE DOES NOT RELIEVE VENDOR FROM FURNISHING MATERIAL IN CONFORMANCE WITH ORDER. REFER TO VDR-1 FOR FULL DEFINITION OF ACCEPTANCE CONDITIONS	
DIVISION VM	SIGNED RM
DATE 20 AUG 91	

TENNECO NGL CORP.
MTBE PROJECT
LAPORTE, TEXAS
ITEM NO. 08E-105
P.O. NO. 6636-02D1-C210-01



HEAT TRANSFER EQUIPMENT CO.
Tulsa, Oklahoma

Rev	Date	Description	By

SHELL DETAILS

DWN. BM	CK. SM	APP. RM	REV. 3
DATE 8/8/91	DATE 8/14/91	DATE 8-14-91	91-2173-C-3

B1

** TO BE ASSIGNED AT TIME OF SHIPMENT

U

W
RT-3

NAT'L. BD. NO. **

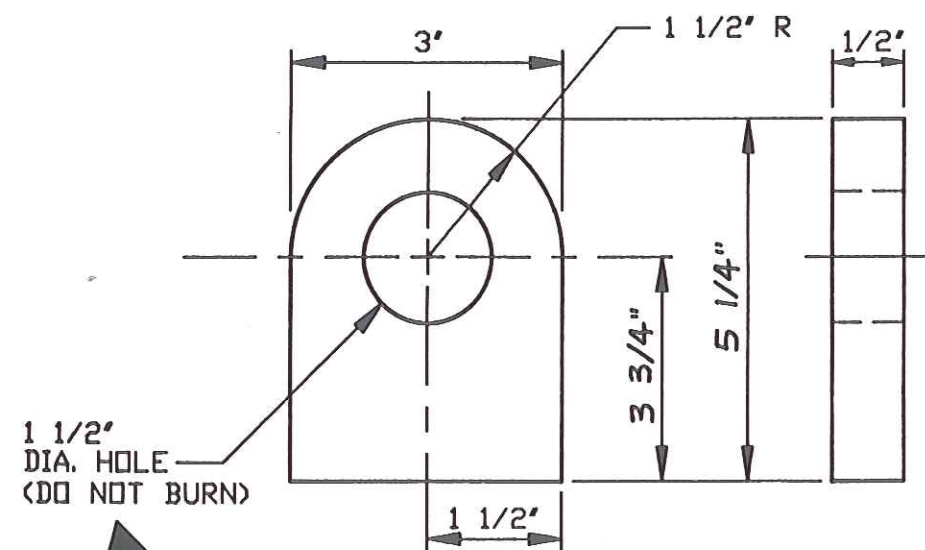
CERTIFIED BY
HEAT TRANSFER EQUIPMENT CO.
TULSA, OKLAHOMA

HTE

M.A.W.P. TUBES 125 * P.S.I. AT 650 °F
M.A.W.P. SHELL 163 / P.S.I. AT 500 °F
MIN. DESIGN TUBES 10 °F AT 125 P.S.I.
METAL TEMP. SHELL 10 °F AT 163 P.S.I.
SERIAL NO. 91-2173-C
YEAR 1991
TEST TUBES 188 P.S.I. SHELL 245 P.S.I.
ITEM 08E-105 SIZE 41-192 TYPE BXU
P.O. NO. 6636-02D1-C210-01
SURF. SQ. FT. 2702 EFF

SERVICE DIB #3 REBOILER ✓
SHOP TEST PRESSURES: SHELLSIDE = 309 PSI
TUBESIDE = 287 PSI
* ALSO DESIGNED FOR 15 PSI EXT. PRESSURE

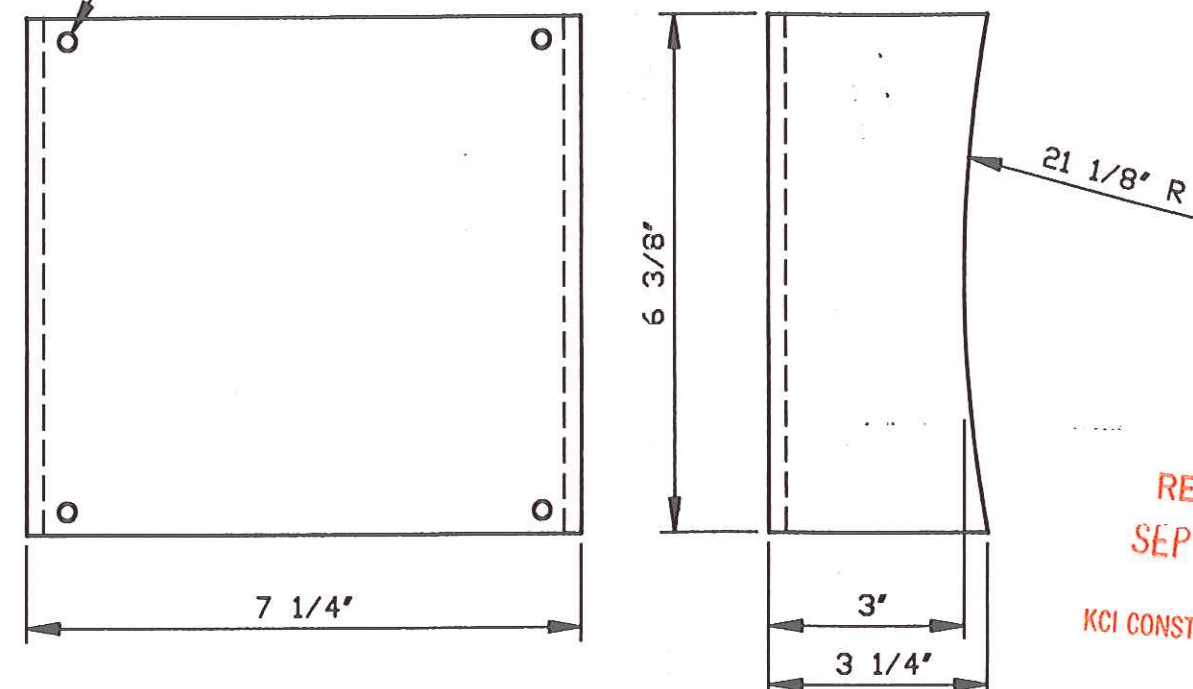
⑥1 NAME PLATE DETAIL



⑥3 LIFTING LUG DETAIL
2 - REQ'D.

RIVET EACH CORNER
TO BRACKET WITH
STN. STL. RIVETS

DRILL HOLES TO MATCH
NAME PLATE



⑥2 NAME PLATE BRACKET DETAIL
3/16" THK.

**ACCEPTANCE
FOR ENGINEERING USE**

THIS DOCUMENT IS:

ACCEPTED (AC) ✓
ACCEPTED WITH COMMENTS (AC-C) —
NOT REVIEWED-ACCEPTED (NR) —
NOT ACCEPTED (NAC) —

ACCEPTANCE DOES NOT RELIEVE VENDOR
FROM FURNISHING MATERIAL IN
CONFORMANCE WITH ORDER. REFER TO
VDR-1 FOR FULL DEFINITION OF
ACCEPTANCE CONDITIONS

DIVISION VM SIGNED RM
DATE 8/10/91

TENNECO NGL CORP.
MTBE PROJECT
LAPORTE, TEXAS
ITEM NO. 08E-105
P.O. NO. 6636-02D1-C210-01

HTE HEAT TRANSFER EQUIPMENT CO.
Tulsa, Oklahoma

Rev	Date	Description	By

NAMEPLATE DETAILS

DWN. BM	CK. <u>SM</u>	APP. <u>RM</u>	REV. <u>Δ</u>
DATE 8/6/91	DATE 9/1/91	DATE 8-18-91	91-2173-C-8

REV. Δ

10

B1

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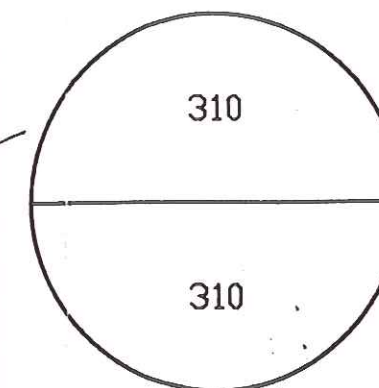
ACCEPTANCE
FOR ENGINEERING USE

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 NOT ACCEPTED (NAC) ☐

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FROM FURNISHING MATERIAL IN
CONFORMANCE WITH ORDER. REFER TO
VDR-1 FOR FULL DEFINITION OF
ACCEPTANCE CONDITIONS

DIVISION VM SIGNED RM
DATE 20 Aug 91



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KCI CONSTRUCTORS, INC.

NO. OF HOLES PER PASS

NOTES

- 1) 310 - 1" OD U-TUBES (620 - HOLES)
- 2) TUBE PITCH - 1 1/4" SQ.
- 3) 40 1/2" OUTER TUBE LINE
- 4) 2 - PASS
- 5) SEE DWG. -5 FOR TUBE DRILLING, REAMING & RING GROOVING
- 6) SEE DWG. -4A FOR BEND SCHEDULE

● DENOTES 8 - 1/2" Ø TIE RODS
W/ 3/4" OD SPACERS

TENNECO NGL CORP.
MTBE PROJECT
LAPORTE, TEXAS
ITEM NO. 08E-105
P.O. NO. 6636-02D1-C210-01



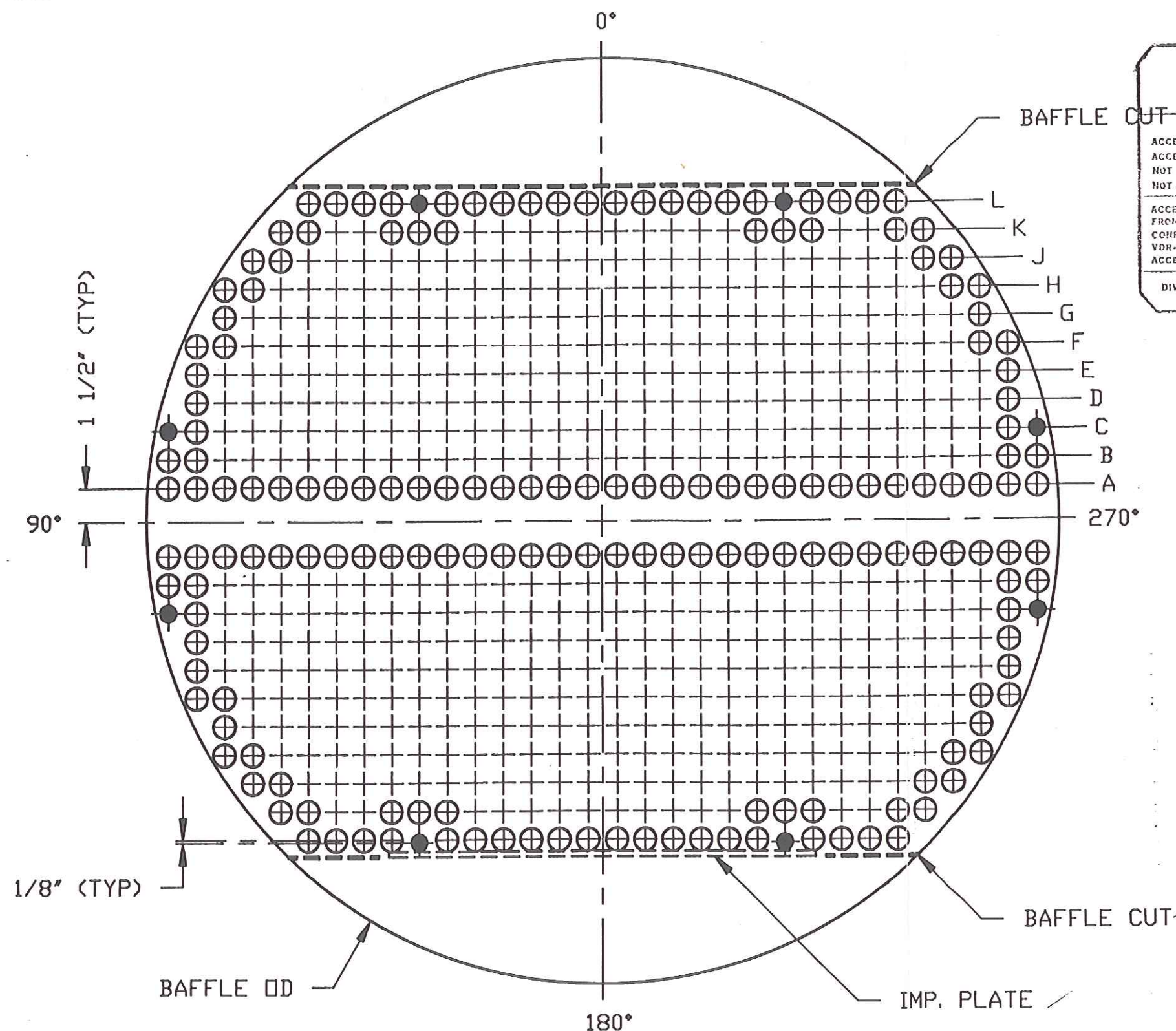
HEAT TRANSFER EQUIPMENT CO.
Tulsa, Oklahoma

TUBE LAYOUT

DWN. BM	CK. SM	APP. [Signature]	REV. [Signature]
DATE 8/6/91	DATE 8/14/91	DATE 8-14-91	91-2173-C-4

REV. [Signature]

B1



VIEW LOOKING AT SHELL SIDE
OF #7 TUBESHEET

Rev	Date	Description	By

ROW NO.	NO OF TUBES	BEND RAD.	BEND DIA.	BEND LGTH	STR. LGTH	CUT LGTH	DEV. LGTH
A	32	1 1/2"✓	3"	4 11/16"	16'-0 "✓	16'-2 "	32'-4 11/16"
B	32	2 3/4"	5 1/2"	8 5/8"	16'-0 "	16'-3 1/4"	32'-8 5/8"
C	30	4"	8"	12 9/16"	16'-0 "	16'-4 1/2"	33'-0 9/16"
D	30	5 1/4"	10 1/2"	16 1/2"	16'-0 "	16'-5 3/4"	33'-4 1/2"
E	30	6 1/2"	13"	20 7/16"	16'-0 "	16'-7 "	33'-8 7/16"
F	30	7 3/4"	15 1/2"	24 3/8"	16'-0 "	16'-8 1/4"	34'-0 3/8"
G	28	9"	18"	28 1/4"	16'-0 "	16'-9 1/2"	34'-4 1/4"
H	28	10 1/4"	20 1/2"	32 3/16"	16'-0 "	16'-10 3/4"	34'-8 3/16"
J	26	11 1/2"	23"	36 1/8"	16'-0 "	17'-0 "	35'-0 1/8"
K	24	12 3/4"	25 1/2"	40 1/16"	16'-0 "	17'-1 1/4"	35'-4 1/16"
L	20	14"	28"	44"	16'-0 "	17'-2 1/2"	35'-8 "

TOTAL 310

ACCEPTANCE
FOR ENGINEERING USE

THIS DOCUMENT IS:

ACCEPTED (AC) ☒

ACCEPTED WITH COMMENTS (AC-C) ☐

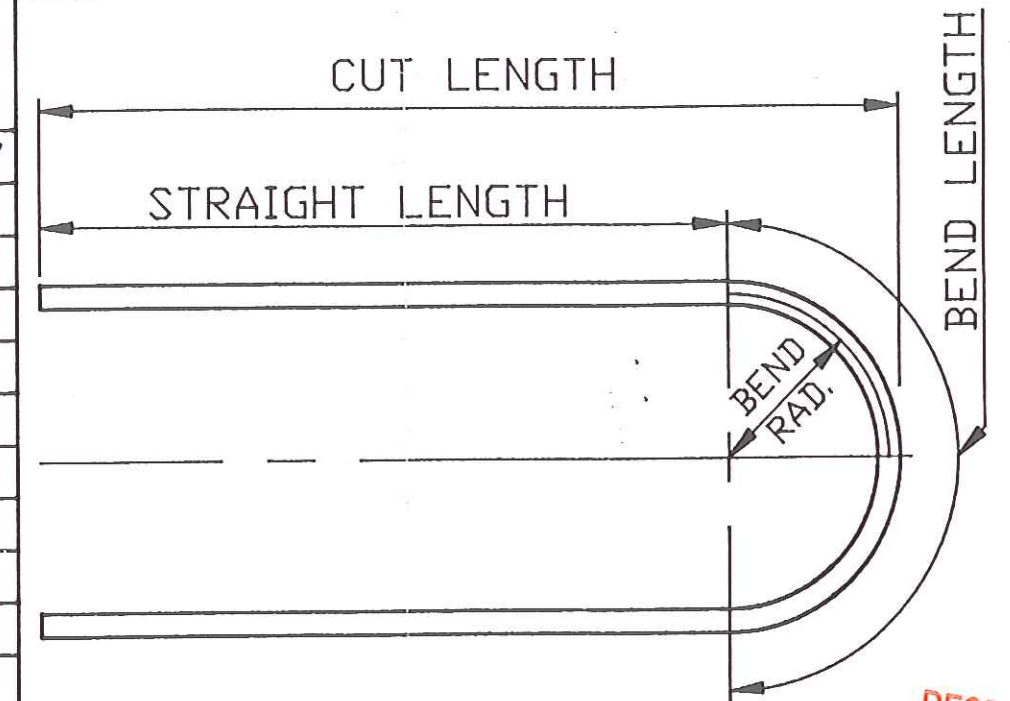
NOT REVIEWED-ACCEPTED (NR) ☐

NOT ACCEPTED (NAC) ☐

ACCEPTANCE DOES NOT RELIEVE VENDOR
FROM FURNISHING MATERIAL IN
CONFORMANCE WITH ORDER. REFER TO
VDR-1 FOR FULL DEFINITION OF
ACCEPTANCE CONDITIONS

DIVISION VM SIGNED RH
DATE 22 Aug 51

TENNECO NGL CORP.
MTBE PROJECT
LAPORTE, TEXAS
ITEM NO. 08E-105
P.O. NO. 6636-02D1-C210-01

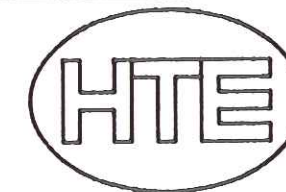


310 - 1" O.D. x 12 BWG (MIN.) U-TUBES

MAT'L. - SA-214 ✓

NOTES

1. MAX. OUT OF ROUNDNESS OF U-BENDS - NOT TO EXCEED 10%
2. FLATTENING AT THE BENDS SHALL NOT EXCEED 10% OF THE NOMINAL O.D.
3. TUBING SHALL BE IN THE FULLY HEAT TREATED CONDITIONS AS RECEIVED FROM THE MILL. ✓
4. ALL TUBING SHALL PASS A NON-DESTRUCTIVE ELECTRIC TEST IN ACCORDANCE WITH ASME SA-450 (TEST SHALL BE PERFORMED AFTER FINAL HEAT TREATMENT) ✓



HEAT TRANSFER EQUIPMENT CO.
Tulsa, Oklahoma

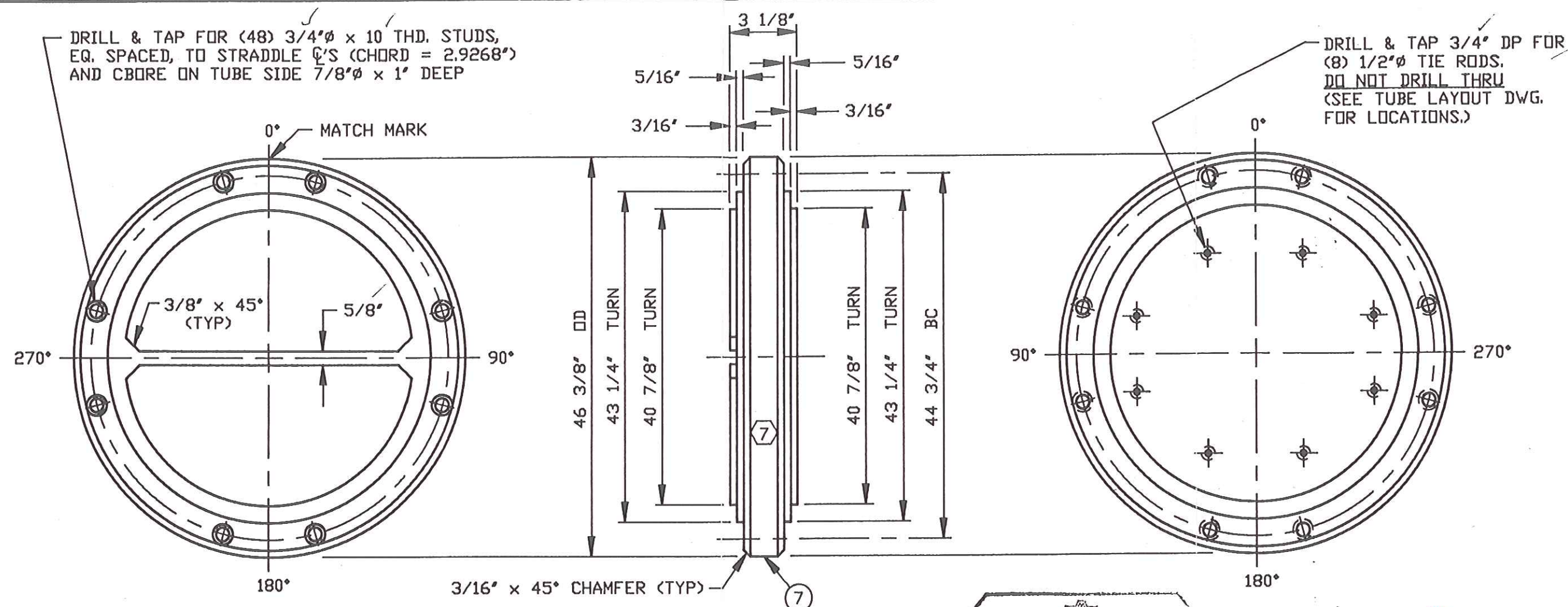
Rev	Date	Description	By
			/
			/
			/

BEND SCHEDULE

DWN, FJC	CK, <i>[Signature]</i>	APP, <i>[Signature]</i>	91-2173-C-4A	REV.
DATE 3/6/91	DATE 3-11-91	DATE 8-12-91		

91-2173-C-4A

EV.
△
3



TUBE SIDE

GASKET CONTACT SURFACES TO BE 89-139 AARH
STATIONARY TUBESHEET DETAIL

SHELL SIDE

ACCEPTANCE FOR ENGINEERING USE

THIS DOCUMENT IS:

ACCEPTED (AC) ☒

ACCEPTED WITH COMMENTS (AC-C) ☐

NOT REVIEWED-ACCEPTED (NR) ☐

NOT ACCEPTED (NAC) ☐

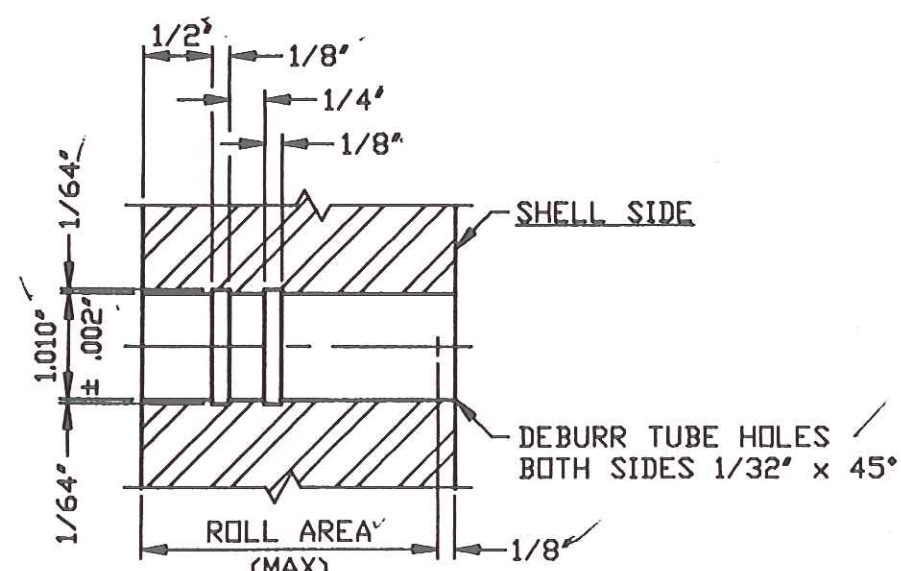
ACCEPTANCE DOES NOT RELIEVE VENDOR FROM FURNISHING MATERIAL IN CONFORMANCE WITH ORDER. REFER TO VDR-1 FOR FULL DEFINITION OF ACCEPTANCE CONDITIONS

DIVISION VM SIGNED R.M. DATE 20 AUG 91

RECEIVED
SEP 10 1991
HTE CONSTRUCTORS, INC.

TENNECO NGL CORP.
MTBE PROJECT
LAPORTE, TEXAS
ITEM NO. 08E-105
P.O. NO. 6636-02D1-C210-01

HTE HEAT TRANSFER EQUIPMENT CO.
Tulsa, Oklahoma



TUBE HOLE RING GROOVING DETAIL

Rev	Date	Description	By

TUBESHEET DETAILS

DWN. BM	CK. <i>SM</i>	APP. <i>BM</i>	REV. Δ
DATE 8/7/91	DATE 8/14/91	DATE 8-14-91	91-2173-C-5

