

FORM U-1 MANUFACTURERS' DATA REPORT FOR PRESSURE VESSELS

as required by the provisions of the ASME Code rules, Section VIII, Division 1

1. Manufactured and certified by OHMSTEDE, INC. - LAPORTE PLANT 12415 LAPORTE RD. LAPORTE, TX 77571

(name and address of manufacturer)

2. Manufactured for M.W. KELLOGG/ TENNECO OIL CO. P.O. BOX 1307 LAPORTE, TX 77572-1307

(name and address of purchaser)

3. Location of installation TENNECO OIL CO. 1200 N. BROADWAY LAPORTE, TX 77571

(name and address)

4. Type: HORIZ. HT. EXCH. 28383 N/A 28383 166 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 A N/A N/A

(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: SA516-70 .875" .125" 2' - 10" 22' - 1 15/16"

(mat'l. (spec. no., grade)) (nom. thickness (in.)) (corr. allow. (in.)) (dia. ID (ft. & in.)) (length (overall) (ft. & in.))

7. Seams: DBL-BUTT FULL 100% N/A N/A DBL-BUTT FULL 3

(long. (dbl., sngl.)) (RT (spot or full)) (eff. (%)) (HT temp. (°F)) (time) (girth (dbl., sngl.)) (RT (spot, partial, or full)) (no. of courses)

8. Heads: (a) SA516-70 (b)

(mat'l. (spec. no., grade)) (mat'l. (spec. no., grade))

	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	.875"	.125"			2:1				CONCAVE
(b)										

If removable, bolts used (describe other fastenings): (44) 1 1/8" SA193 BY STUDS WITH SA194-HH NUTS

(mat'l., spec. no., gr., size, no.)

9. Type of jacket: N/A Proof test:

10. Jacket closure: N/A If bar, give dimensions: If bolted, describe or sketch.

(describe as ogee & we'd. bar, etc.)

11. MAWP: 640 at max. temp. 300° Min design metal temp.: 10° at 640 Hydro., pressure test pressure 960

(psi) (°F) (°F) (psi) (psi)

Items 12 and 13 to be completed for tube sections.

12. Tubesheets: SA350-LF2 36.125" 3.6875" .125" BOLTED

(stationary mat'l. (spec. no., gr.)) (dia. (in.) (subject to pressure)) (nom. thickness (in.)) (corr. allow. (in.)) (attachment (welded, bolted))

SA350-LF2 33.625" 3.6875" .125" TUBES

(floating mat'l. (spec. no., gr.)) (dia. (in.)) (nom. thickness (in.)) (corr. allow. (in.)) (attachment)

13. Tubes: SA214 3/4" .083" (MW) 734 STRAIGHT

(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: SA516-70 .875" 1/8" 2' - 10" 1' - 8 15/16"

(mat'l. (spec. no., gr.)) (nom. thickness (in.)) (corr. allow. (in.)) (dia. ID (ft. & in.)) (length (overall) (ft. & in.))

15. Seams: DBW SPOT 85% 1150° 1 HR. DBW SPOT 1

(long. (dbl., sngl.)) (RT (spot or full)) (eff. (%)) (HT temp. (°F)) (time) (girth (dbl., sngl.)) (RT (spot, partial, or full)) (no. of courses)

16. Heads: (a) CHANNEL COVER: SA350-LF2 (b) FLOATING HEAD COVER: SA516-70

(mat'l. (spec. no., grade)) (mat'l. (spec. no., grade))

	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	3 9/16"	.125"						40.875"	FLAT
(b)	END	1 3/4"	.125"	24"					29.625"	BOTH

If removable, bolts used (describe other fastenings): CHAN. COVER: (52) 7/8" DIA SA193-B7 WITH 2H NUTS

(mat'l., spec. no., gr., size, no.)

FLOATING HD. COVER: (56) 3/4" DIA SA193-B7 STUDS WITH 2H NUTS

17. MAWP: 430 at max. temp. 650° Min design metal temp.: 10° at 430 Hydro., pressure test pressure 645

(psi) (°F) (°F) (psi) (psi)

103346 06-E-101

02/04/32 13:53

OHMSTEDE INC
FORM U-1 (back)

005

18. Nozzles, Inspection and safety valve openings: PER UG 125 NOTE 39

Purpose (inlet, outlet, drain, etc.)	Number	Dia. or Size	Type	Mat'l.	Nom. Thickness	Reinforcement Material	How Attached	Location
SHELLSIDE								
INLET	1	12"300LB	RFLWN	SA105	1.687"	INTEGRAL	WELDED	TOP
OUTLET	1	12"300LB	RFLWN	SA105	1.687"	INTEGRAL	WELDED	BOTTOM
TUBESIDE								
INLET	1	8" 300LB	RFLWN	SA105	1.3125"	INTEGRAL	WELDED	BOTTOM
OUTLET	1	8" 300LB	RFLWN	SA105	1.3125"	INTEGRAL	WELDED	TOP
VENT, DRAIN	1 EA.	1"6000LB	CPLG	SA105	----	INTEGRAL	WELDED	SHELL CVR

19. Supports: Skirt NO Lugs N/A Legs N/A Other SADDLES Attached BOTTOM WELDED
(yes or no) (no.) (no.) (describe) (where and how)20. Remarks: Manufacturers' Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: MINIMUM DESIGN METAL TEMPERATURE PER UG-20
(name of part, item number, mfr's name and identifying stamp)ROLLED AND WELDED CYLINDERS FABRICATED BY OHMSTEDE, INC. - LAKE CHARLES PLANT UNDER
AUTHORIZATION # 17397 AND SERIAL #'S: 28383-1, 28383-2 AND 28383-3.
CUSTOMER ITEM # 06E-101

CERTIFICATE OF SHOP COMPLIANCE

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. 18673 expires JUNE 27, 19 92Date 9-30-91 Name OHMSTEDE, INC. - LAPORTE PLANT
(manufacturer)

Signed

(representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by OHMSTEDE, INC. at LAPORTE, TXI, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the state or province of TEXAS and employed by H.S.B.I. & I. CO.of HARTFORD, CT have inspected the pressure vessel described in this Manufacturers' Data Report on 9-30, 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 personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date _____ Signed Edmund J. Johnson Commissions NB 9263
(Authorized Inspector) (Nat'l. Bd. (incl. endorsements) state, prov. and no.)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

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 _____

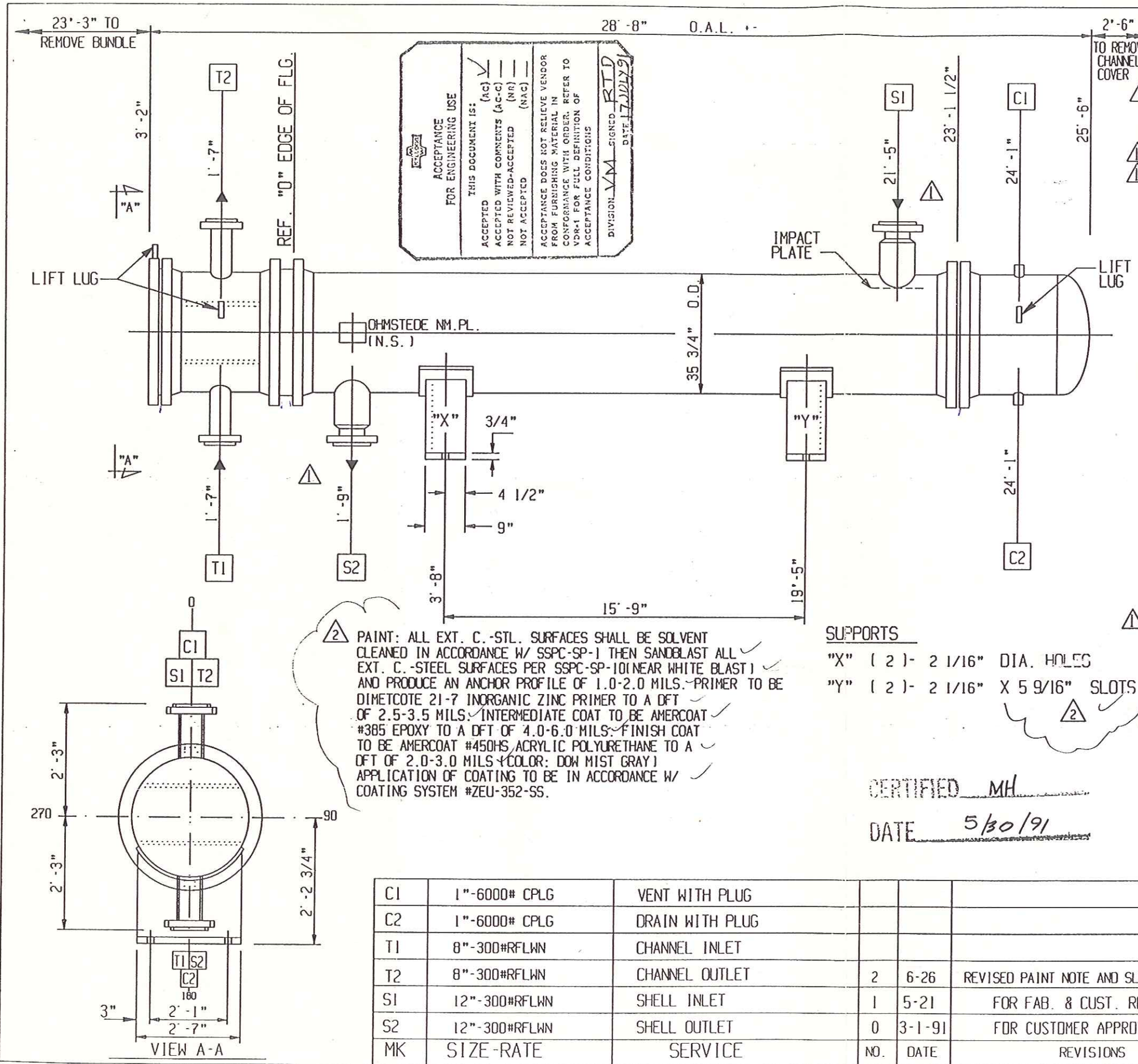
Date _____ Name _____ Signed _____
(assembler that certified and constructed field assembly) (representative)

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

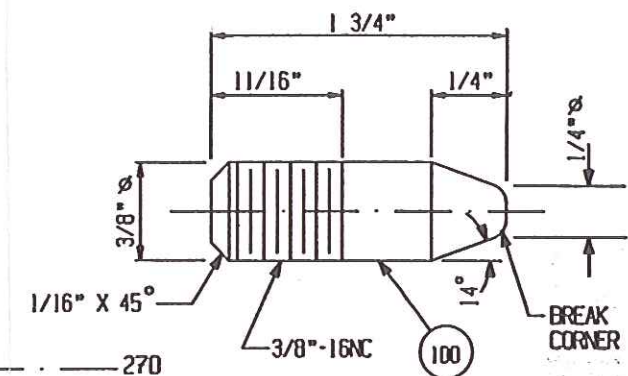
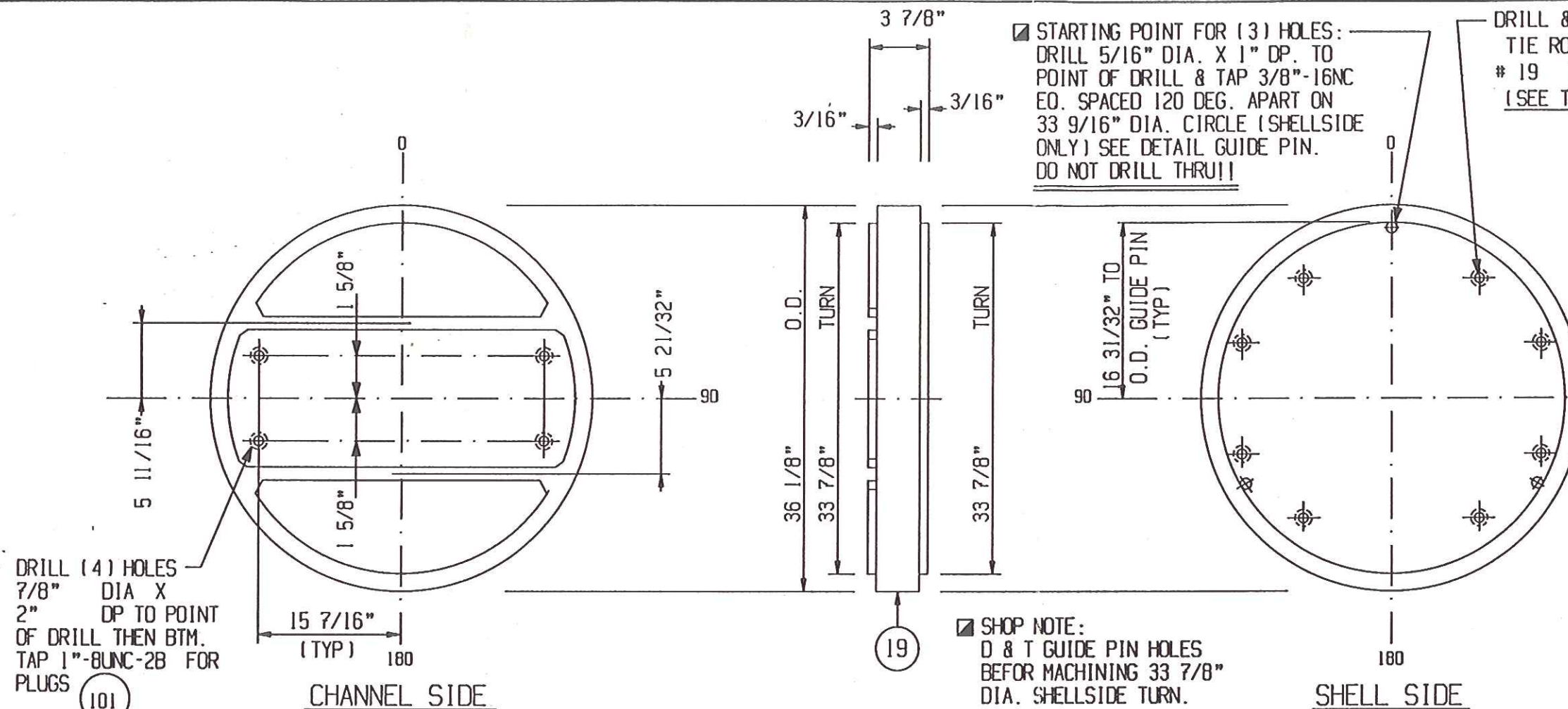
I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the state or province of _____ and employed by _____

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



DESIGN DATA		SHELL	TUBE
DESIGN PRESSURE P.S.I.G.		640	430/FV
TEST PRESSURE P.S.I.G. SHOP/FIELD		995/960	645/645
DESIGN TEMPERATURE DEG. F./MDMT (MAX/MIN)		300/ 10	650/ 110
CORROSION ALLOWANCE		.1250"	.1250"
NUMBER OF PASSES		1	4
RADIOGRAPHIC EXAMINATION		FULL(RT-1)	SPOT(RT-3)
HEAT TREAT REQUIRED		NO	YES
ESTIMATED WEIGHTS, LBS.			
DRY: 35000	BUNDLE: 17500	NET: 46500	
SPECIFICATIONS			
ASME CODE SECTION VIII DIV.1 STAMP YES		M.W. KELLOGG SPECS.	
TEMA CLASS R		C41-1E-6636	
NATIONAL BOARD REGISTRATION REQUIRED		06E-101-IFCDS	
		4-7TS-6636, 9-4S-6636	
		P42-1TS-6636	
MATERIAL			
CHANNEL:	SA-516-70 NORM.		
SHELL:	SA-516-70 NORM.		
TUBESHEETS:	SA-350-LF2		
BAFFLES:	SA36orEQUAL		
TUBES:	SA-214		
(734) 3/4"	O.D.X. .083" MIN.		
TUBE PITCH 15/16"	▷		
RECEIVED JUL 25 1991 KCI COXSTEEL, INC. LG. SURFACE 3385 SQ.FT.			
GENERAL NOTES			
ALL BOLT HOLES TO STRADDLE NATURAL CENTER LINES.			
<u>MAX. ALLOWABLE PRESSURES:</u>			
<u>SHELLSIDE</u>			
MAWP (HOT & CORR.)=640 PSIG LIM. BY SHELL FLG.			
MAP (N & C)=663 PSIG LIM. BY SHELL FLG.			
<u>TUBESIDE</u>			
MAWP (HOT & CORR.)=430 PSIG LIM. BY CH. CVR. BOLTING			
MAP (N & C)=430 PSIG LIM. BY CH. CVR. BOLTING			
GASKETS: .1250" THK. AIDJNAF			
FLTG. HD. GASKET: .0625" SOLID IRON (120 MAX. BRINELL HARDNESS)			
2 SETS OF SPARE GASKETS REQUIRED.			
CUST: M.W.KELLOGG/TENNECO			
P.O. NO.: 6636-9901-C210-01			
ITEM NO.: 06E-101			
SERVICE: MTBE REACTOR #1 FEED RECYCLE COOLER			
SHIP TO: LAPORTE, TX.			
OHMSTEDE JOB NO.: 28383			
ASSEMBLY AND SPECIFICATIONS FOR			
ONE 34-288 A E T			
DWN. BY		OHMSTEDE	
G. OHMSTEDE III			
DATE			
2-25-91			
CKD. BY		DRAWING NO.	SHEET NO.
DC		28383	1
OT LGTH.		REV.	
VIEW		2	
VAL			



DETAIL GUIDE PIN

(3) REQ'D.

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 <u>ME</u>	SIGNED <u>[Signature]</u>
DATE <u>19 JUN 91</u>	

NOTES:

- 1) MACHINE ALL GASKET SURFACES TO 125 RMS.
- 2) ALL PASS PLATE GROOVE WIDTHS TO BE 1/2" WIDE.
- 3) ALL PASS PLATE GROOVE JUNCTIONS TO BE NOTCHED 3/8" AT 45 Deg.

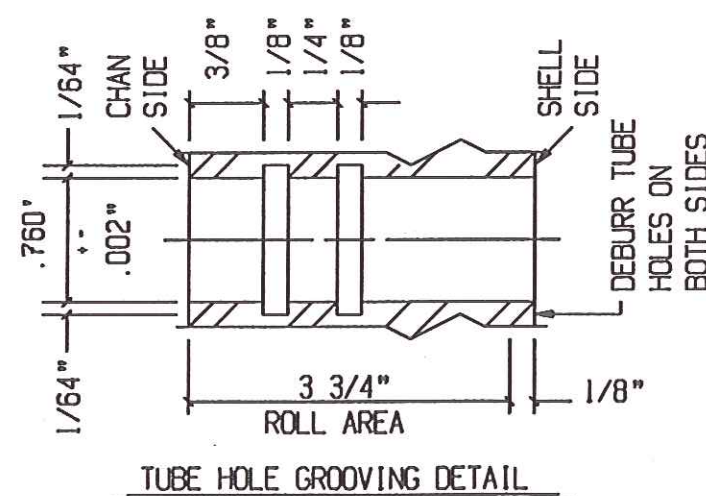
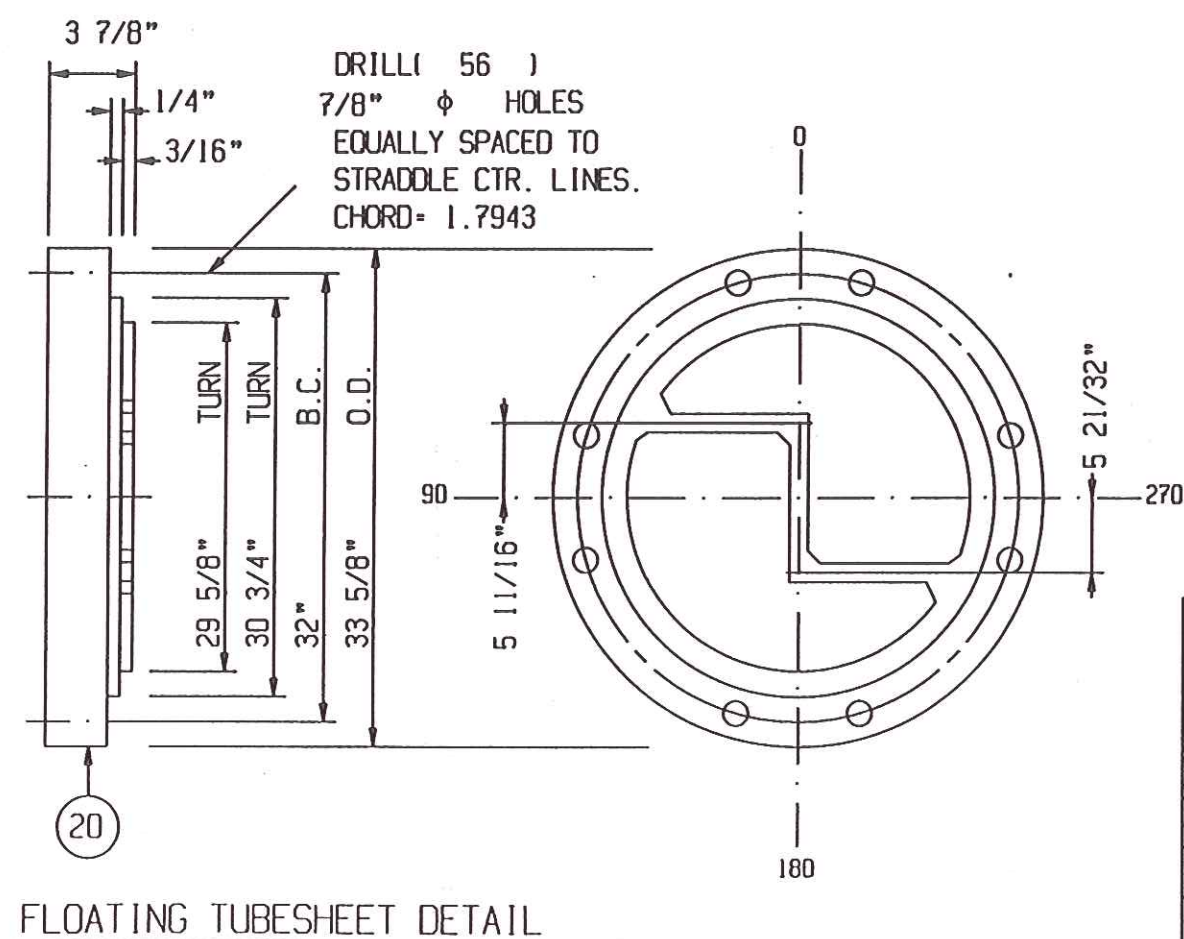
DIST: H.H.KELLOGG/TENNECO
P.O. NO.: 6636-9901-C210-01
ITEM NO.: 06E-101
SERVICE: MTBE REACTOR #1 FEED RECYCLE COOLER
SHIP TO: LAPORTE, TX.
(HSTEDE JOB NO.: 28383)

JUL 18 1991

KCI CONSTRUCTORS, INC.

TUBESHEET DETAILS

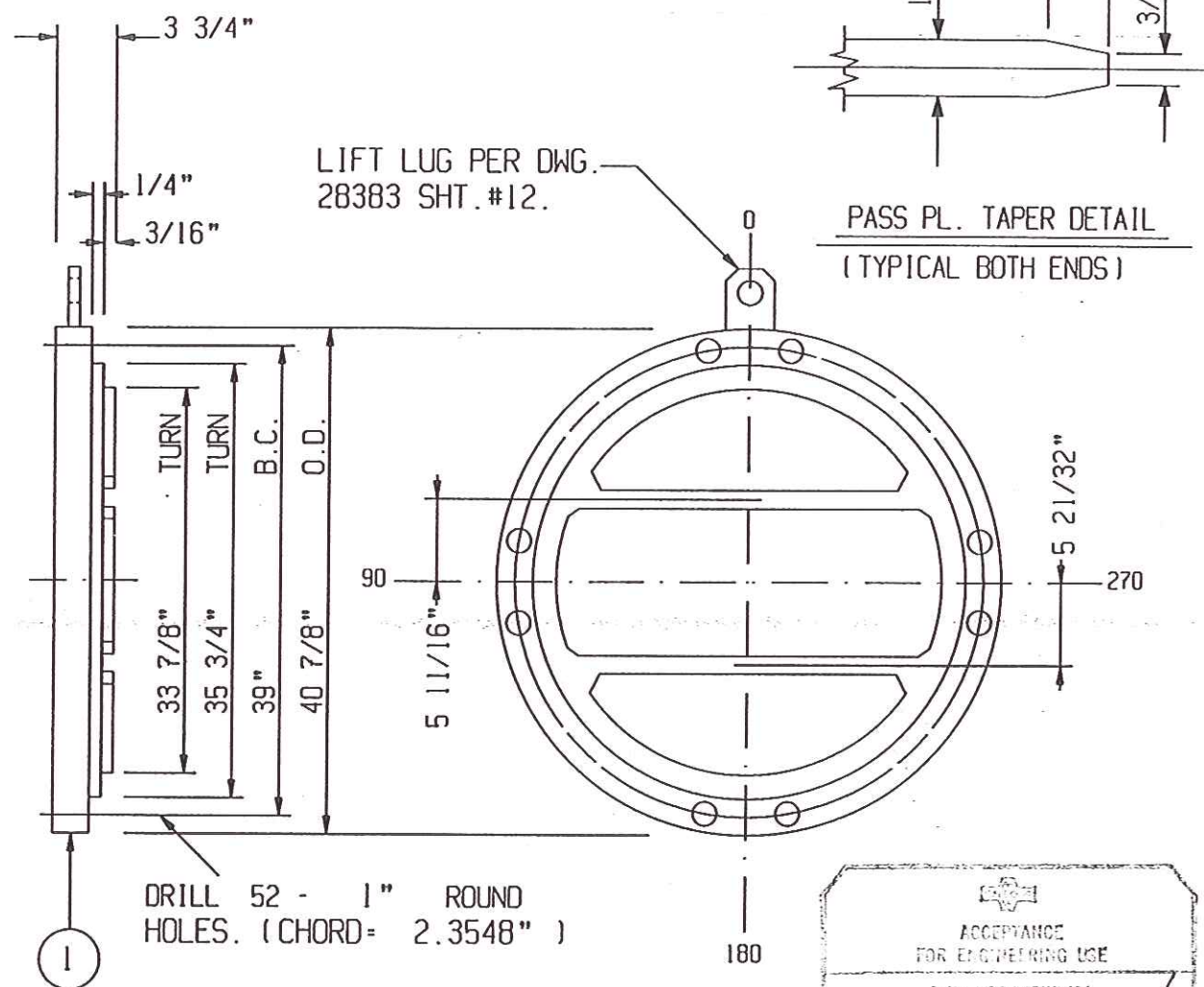
OHMSTEDE



REVISIONS			DRAWING NO. 28383		
NO.	DATE	REVISIONS	CKD. BY	SHEET NO.	REV.
0	5-21	FOR FAB. & CUST. REVIEW	DC	6	0
			OWN. BY		
			ERIC		
			DATE		
			5-16-91		

COVER NOTES:

- 1) MACHINE ALL COVER GASKET SURFACES TO 125 RMS
- 2) ALL COVER PASS PLATE GROOVE WIDTHS TO BE 1/2" WIDE.
- 3) ALL COVER PASS PLATE GROOVE JUNCTIONS TO BE NOTCHED 3/8" AT 45 Deg.



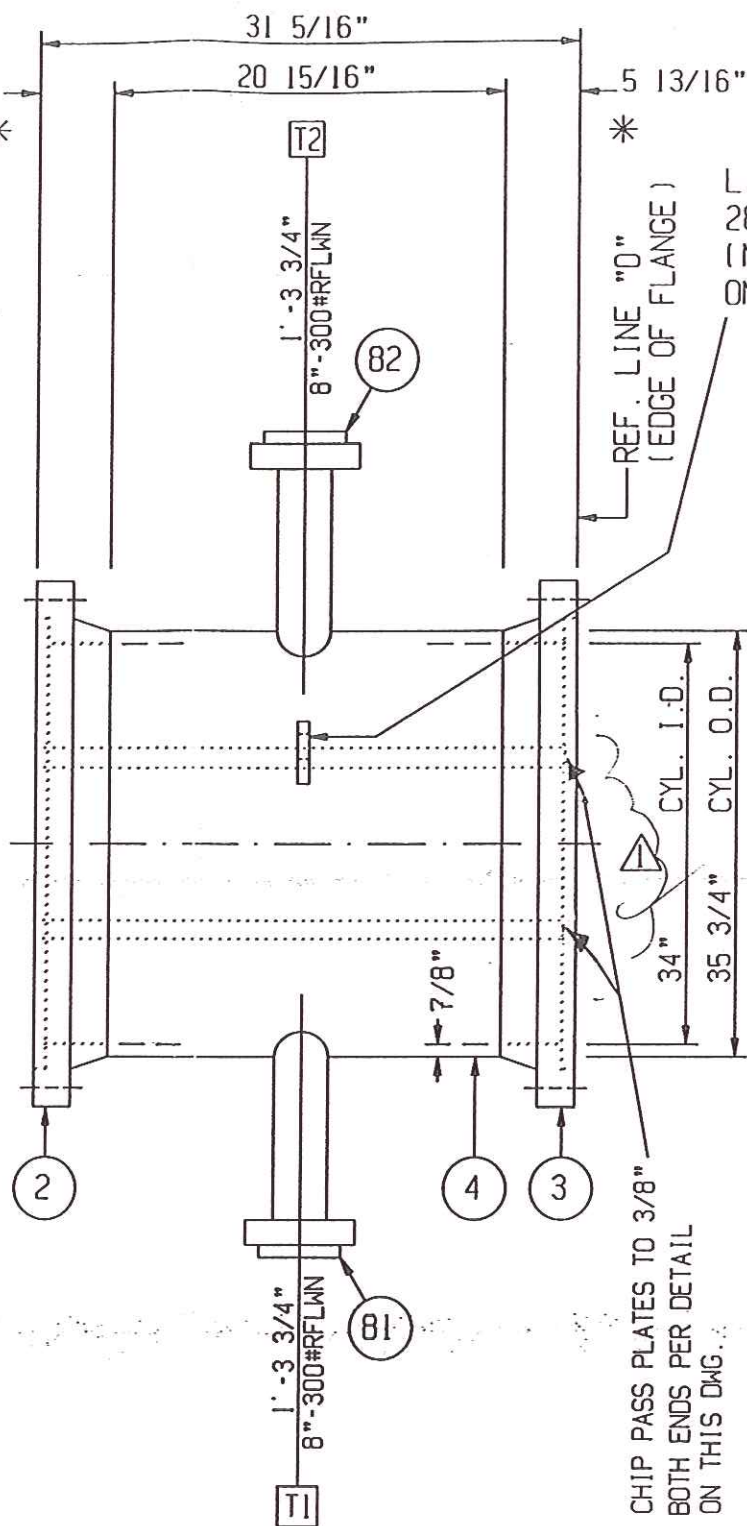
CHANNEL-COVER DETAIL

CUST: M.W.KELLOGG/TENNECO
P.O. NO.: 6636-99D1-C210-01
ITEM NO.: 06E-101
SERVICE: MTBE REACTOR #1 FEED RECYCLE COOLER
SHIP TO: LAPORTE, TX.
OHMSTEDE JOB NO.: 28383

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	DESIGNED: RTD
DATE: 17 JULY 91	

NOTES:

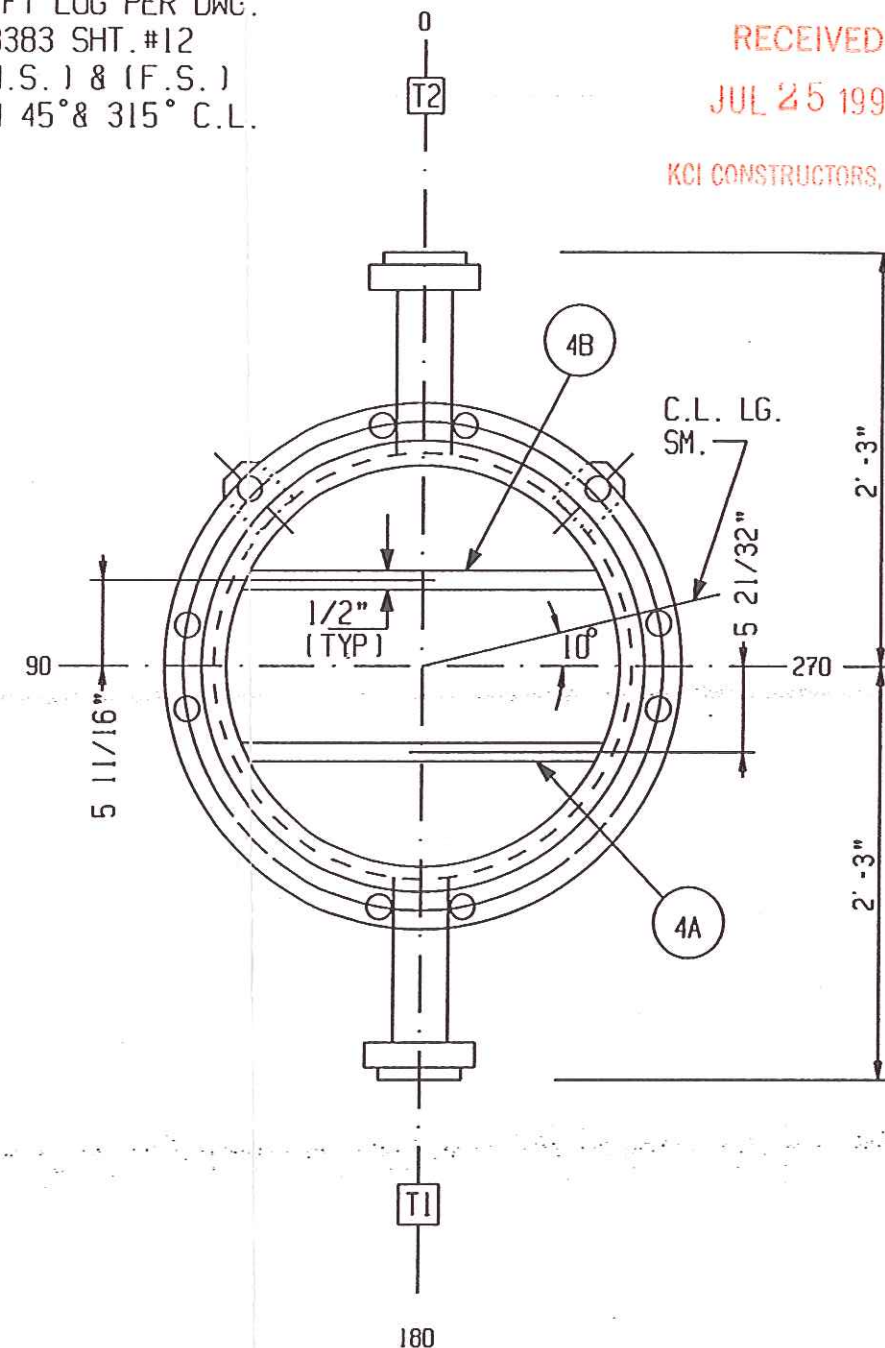
- 1) ALL WELDING TO BE IN ACCORDANCE W/ PROCEDURES #P1-IHT, #SUB-16HT
- 2) ALL BOLT HOLES TO STRADDLE CENTER LINES.
- 3) SEE DWG. 28383 SHT.#15 FOR WELD & BEVEL DETAILS.
- 4) SPOT RADIOGRAPHY.
- 5) POST-WELD HEAT TREAT CHANNEL:
 - A) HEAT FROM 800 deg.F TO 1125 deg.F AT 400 deg.F PER HOUR
 - B) HOLD AT 1125 deg.F FOR 1.00 HOUR (MIN).
 - C) COOL FROM 1125 deg.F TO 800 deg.F AT 500 deg.F PER HOUR
 - D) FURTHER COOLING MAY BE IN STILL AIR.
 - E) AN OVEN RECORDING CHART IS REQUIRED.



CHANNEL SIDE VIEW

* MACHINE GASKET FACING AFTER ALL WELDING AND HEAT TREATMENT.
FOR FLANGE DETAILS SEE DWG. 28383 SHT.#14

LIFT LUG PER DWG. 28383 SHT.#12 (N.S.) & (F.S.) ON 45° & 315° C.L.



CHANNEL END VIEW

FRONT CHANNEL DETAILS

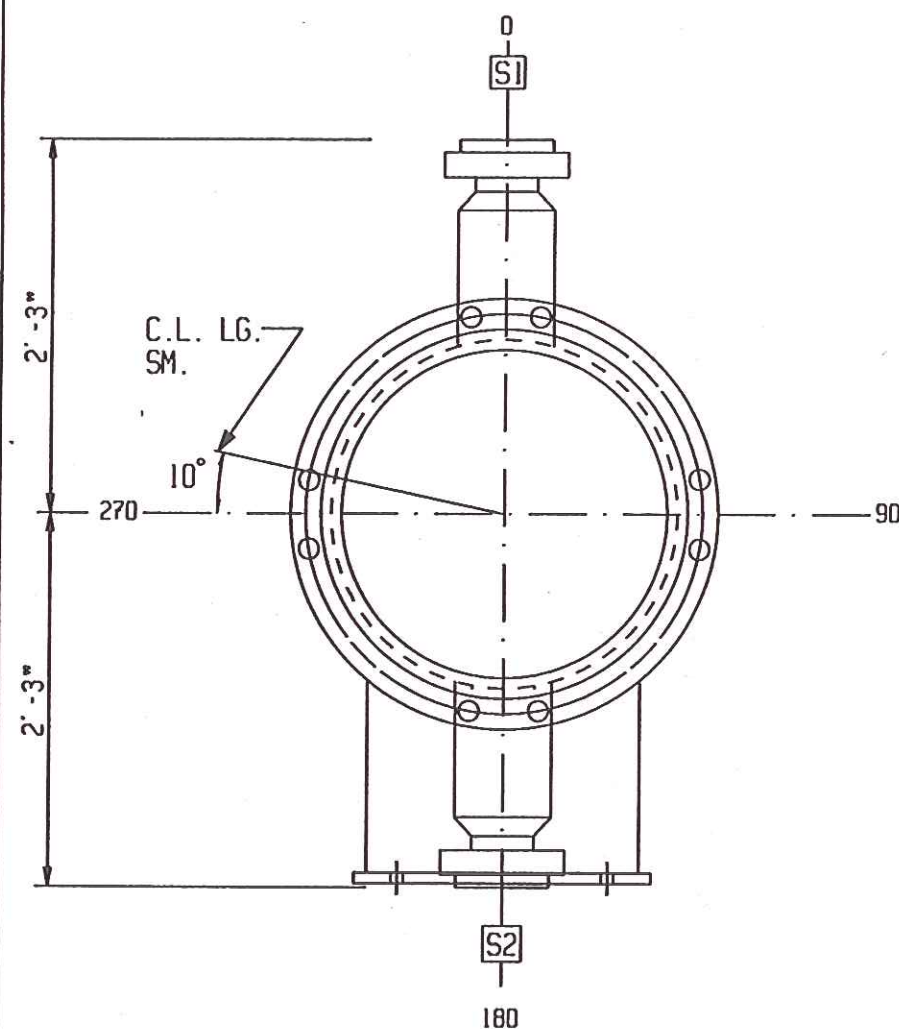
			OWN. BY ERIC		
			DATE 5-16-91		
			CKD. BY DC		
			DRAWING NO. 28383		
			SHEET NO. 3		
			REV. 1		
1	6-26	REVISED AS MARKED PER CUST.			
0	5-21	FOR FAB. & CUST. REVIEW			
NO.	DATE	REVISIONS			

OHMSTEDE

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JUL 25 1991

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FOR FLANGE DETAILS SEE DWG. 28383 SHT. #14 & 14A

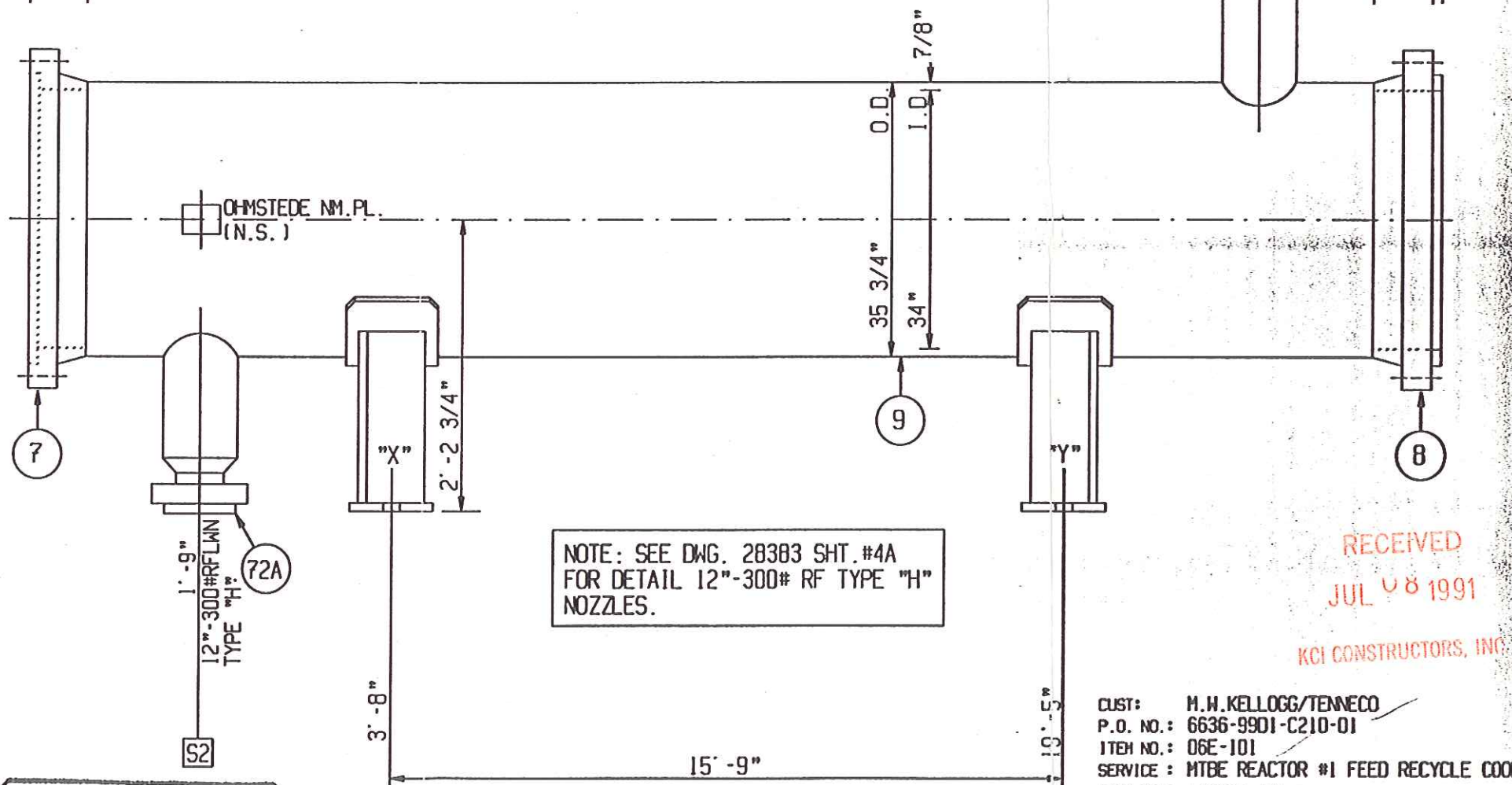


SHELL END VIEW

NOTES:

- 1) ALL WELDING TO BE IN ACCORDANCE W/ PROCEDURES #S/PI-1, #A/PI-1, #M3TR
- 2) ALL BOLT HOLES TO STRADDLE CENTER LINES.
- 3) SEE DWG. 28383 SHT. #15 FOR WELD & BEVEL DETAILS.
- 4) GRIND ALL INSIDE WELDS FLUSH.
- 5) FULL RADIOGRAPHY.

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 <u>ME</u>	SIGNED <u>[Signature]</u> DATE <u>195 JUN 91</u>



SHELL SIDE VIEW

NOTE: SEE DWG. 28383 SHT. #4A FOR DETAIL 12"-300# RF TYPE "H" NOZZLES.

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JUL 08 1991
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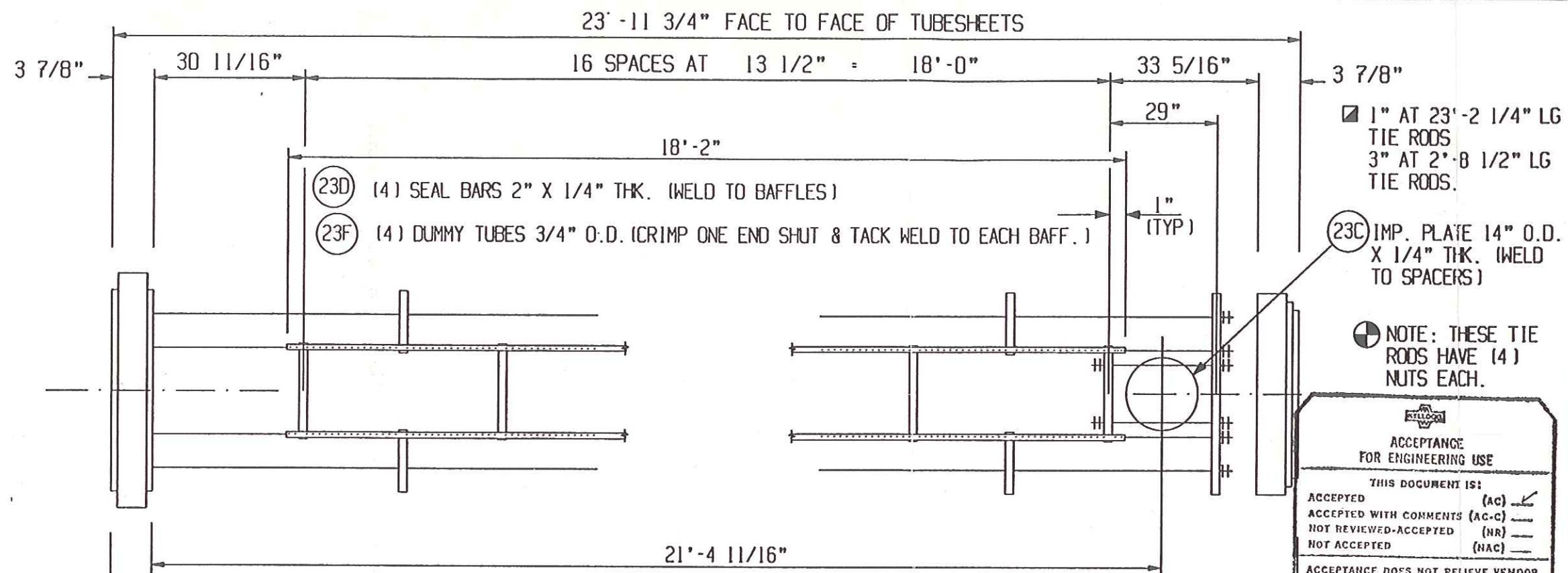
CUST: M.H. KELLOGG/TENNECO
P.O. NO.: 6636-9901-C210-01
ITEM NO.: 06E-101
SERVICE: MTBE REACTOR #1 FEED RECYCLE COOLER
SHIP TO: LAPORTE, TX.
OHMSTEDE JOB NO.: 28383

SHELL DETAILS

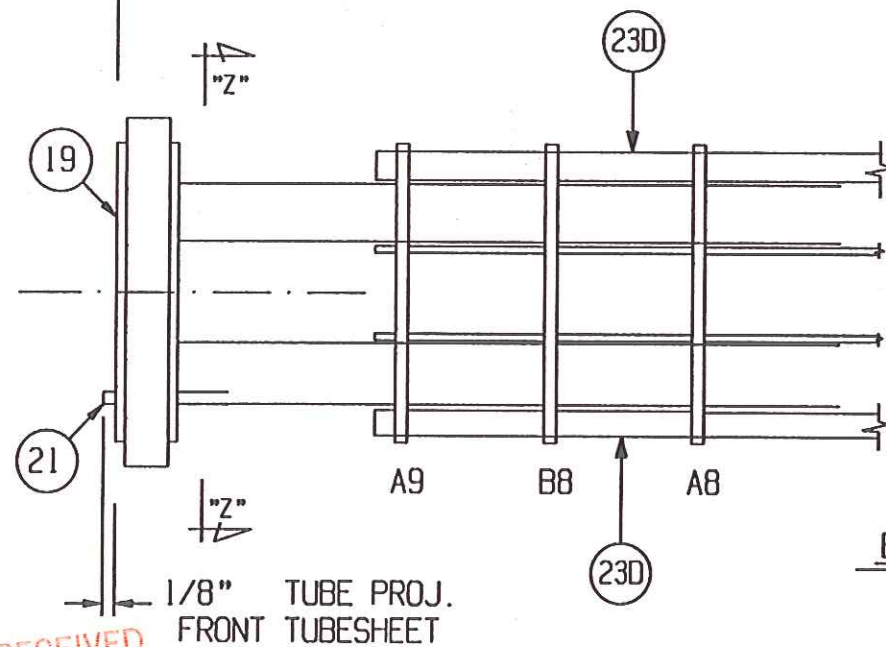
OHMSTEDE

NO.			DATE	REVISIONS	OWN. BY	DATE	CKD. BY	DRAWING NO.	SHEET NO.	REV.
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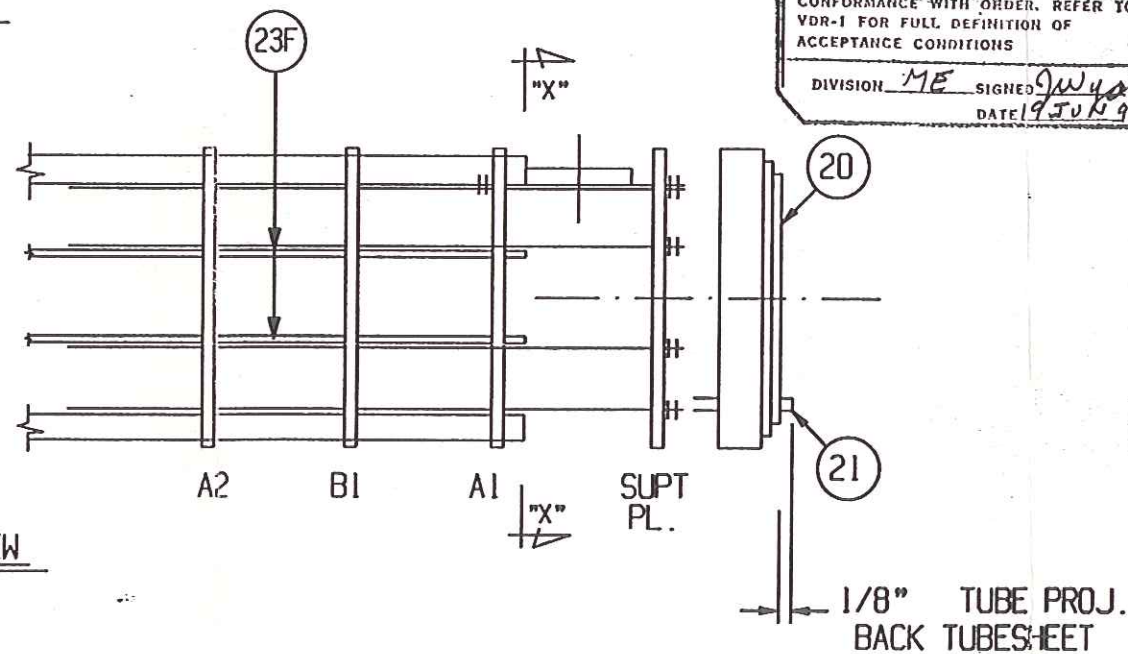
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PLAN VIEW



ELEVATION VIEW



ACCEPTANCE FOR ENGINEERING USE

THIS DOCUMENT IS:

ACCEPTED (AC) ☒

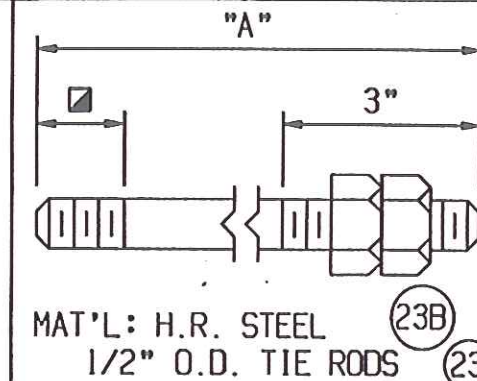
ACCEPTED WITH COMMENTS (AC-C) ☐

NOT REVIEWED-ACCEPTED (NR) ☐

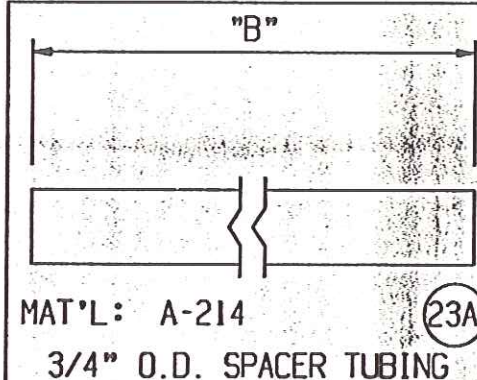
NOT ACCEPTED (NAC) ☐

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

DIVISION ME SIGNED J. W. HALL DATE 9 JUL 91



REQ'D.	"A"
8	23'-2 1/4"
2	2'-8 1/2"



REQ'D.	"B"
4	30 1/2"
4	44"
64	13 1/8"
28	26 5/8"
6	28 1/2"
4	42"

BUNDLE DETAILS

OHMSTEDE

NOTES:

1) SEE DWG. NO. 28383 SHT. #9 FOR SECTION AND VIEW DETAILS.

CUST: M.W. KELLOGG/TENNECO
P.O. NO.: 6636-9901-C210-01
ITEM NO.: 06E-101
SERVICE: MTBE REACTOR #1 FEED RECYCLE COOLER
SHIP TO: LAPORTE, TX.
OHMSTEDE JOB NO.: 28383

NO.	DATE	REVISIONS	OWN. BY	DATE	CKD. BY	DRAWING NO.	SHEET NO.	REV.
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