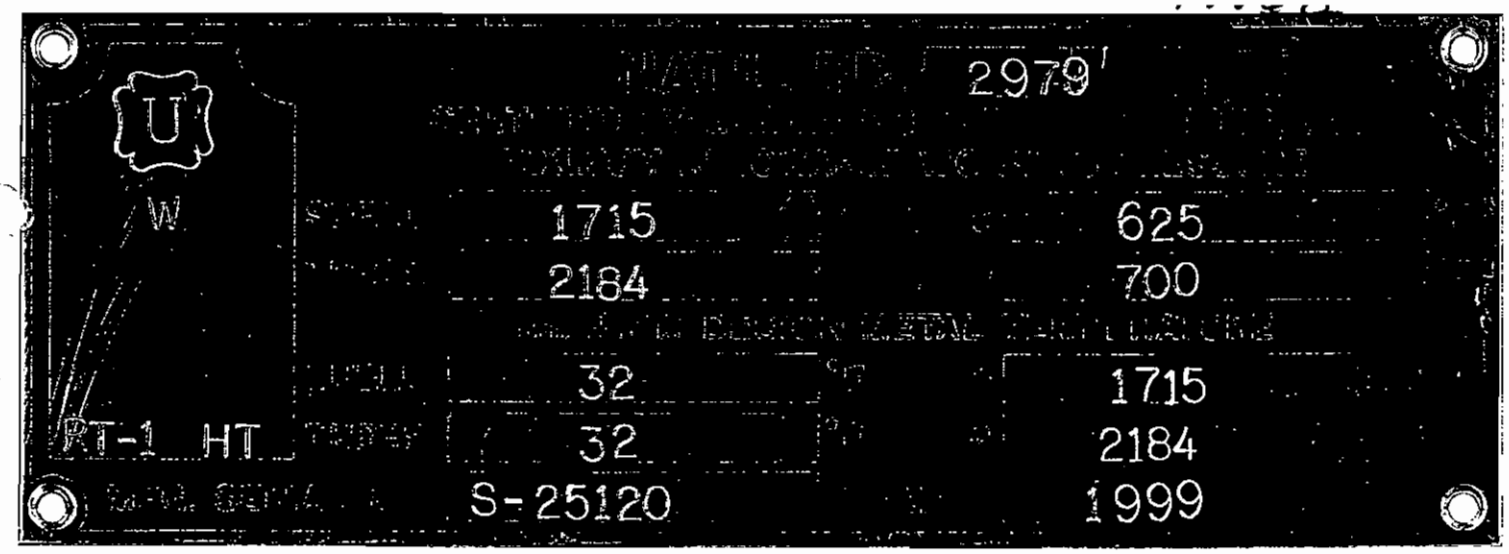
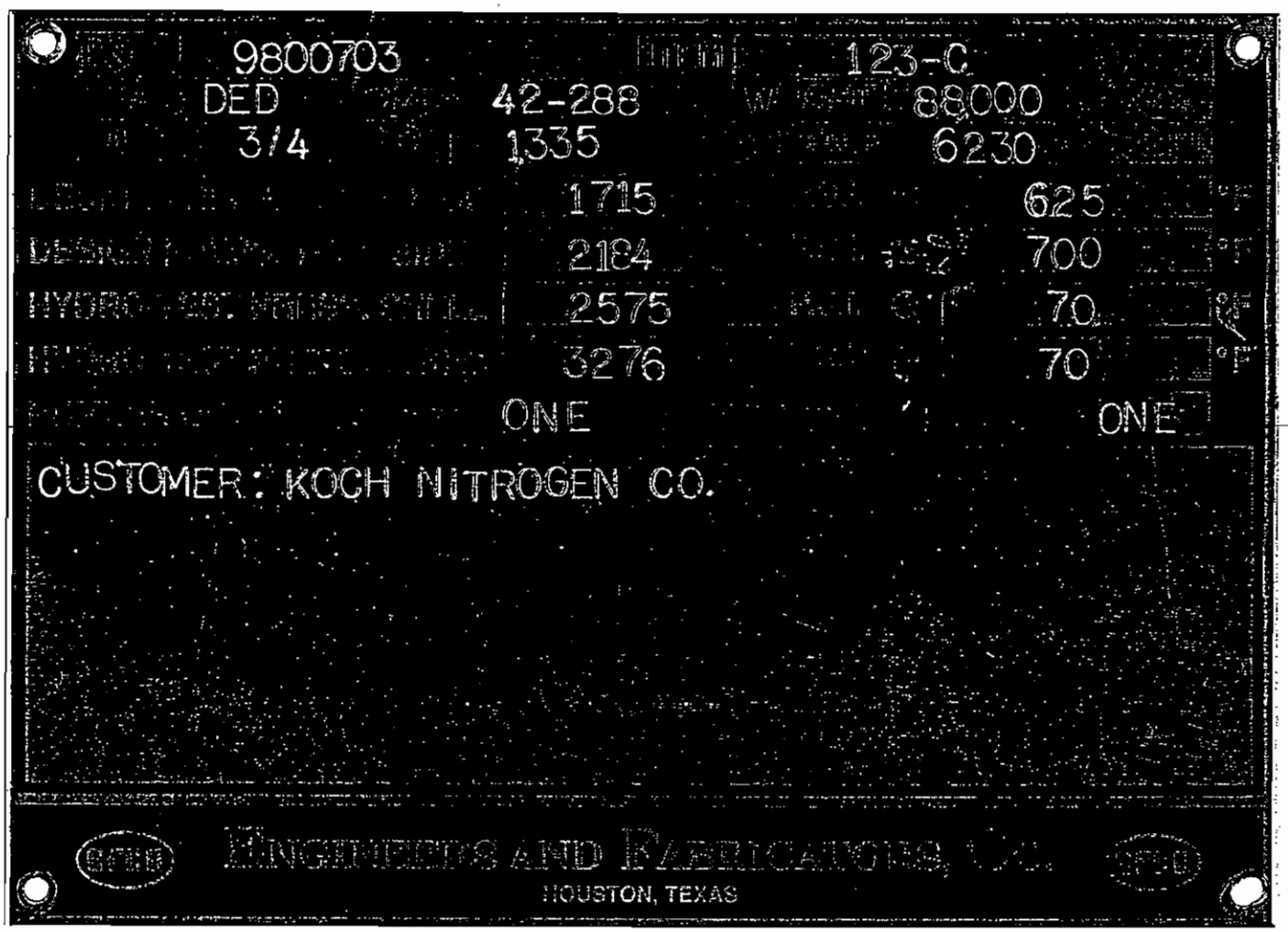

2979
1715
625
2184
700
32
1715
RT-1 HT
32
2184
S-25120
1999


9800703
123-C
DED
42-288
88,000
3/4
1335
6230
1715
625
2184
700
2575
70
3276
70
ONE
ONE
CUSTOMER: KOCH NITROGEN CO.
HOUSTON, TEXAS

1 8860

FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS

As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1 KOCH NITROGEN CO.

1. Manufactured and certified by ENGINEERS AND FABRICATORS CO., 3501 WEST 11TH STREET, HOUSTON, TEXAS 77008
(Name and address of Manufacturer)

2. Manufactured for KOCH NITROGEN COMPANY, 6310 HORSESHOE LAKE ROAD, STERLINGTON, LA 71280
(Name and address of Purchaser)

3. Location of Installation KOCH NITROGEN COMPANY, HWY 2, STERLINGTON, LA 71280
(Name and address)

4. Type:						
Vertical	HEAT EXCHANGER	25120	XXXXX	CD-25120	2979	1999
(Horiz., vert., or sphere)	(Tank separator, kt. vessel, heat exh., etc.)	(Mfg's serial No.)	(CRN)	(Drawing No.)	(Nat'l. Bd. No.)	(Year built)

5. ASME Code, Section VIII, Div. 1			
Edition 1995, Addenda 1996	XXXXX	XXXXX	
Edition and Addenda (date)	Code Case No.	Special Service per UG-120(d)	

Items 6 - 11 Incl. to be completed for single wall vessels, jackets of jacketed vessels, shell of heat exchangers, or chamber of multi-chamber vessels.

6. Shell (a) No. of course(s): 3 (b) Overall length (ft & in.): 22'-9-1/4"

Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment	
No.	Diameter, in.	Length (ft & in.)	Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
2	42" ID	7'11"	SA-516-70N	2-3/8"	1/16"	1	Full	100	1	Full	100	1150	2H25M
1	42" ID	6'11-1/4"	SA-516-70N	2-3/8"	1/16"	1	Full	100	1	Full	100	1150	2H25M

7. Heads: (a) NONE (b)
(Mat'l Spec. No., Grade or Type) H.T. - Time & Temp (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None	Eff.
(a)														
(b)														

If removable, bolts used (describe other fastening)
(Mat'l Spec. No., Grade, Size, No.)

8. Type of jacket Jacket closure
(Describe as ogee & weld, bar, etc.)

If bar, give dimensions If bolted, describe or sketch.

9. MAWP 1715 (internal) (external) psi at max. temp. 625 (internal) (external) °F Min. design metal temp. 32 °F at 1715 psi.

10. Impact test EXEMPT PER UCS-66(a)&(b)
(indicate yes or no and the component(s) impact tested)

11. Hydro., ~~Pneu.~~, or ~~Comb.~~ test press 2575 Proof test

Items 12 and 13 to be completed for tube sections.

12. Tubesheet:					
SA-336 Cl F11W/OVERLAY	42"	5-7/8"	1/16"	WELDED	
Stationary (Mat'l Spec. No.)	Dia., in (subject to press.)	Nom. thk., in.	Corr. Allow., in.	Attachment (welded or bolted)	
SA-266 Cl 2	42"	5-5/8"	1/16"	WELDED	
Floating (Mat'l Spec. No.)	Dia., in.	Nom. thk., in.	Corr. Allow., in.	Attachment	

13. Tubes:				
SA-213 Gr T11	3/4"	.109"	1335	STRAIGHT
Mat'l Spec. No., Grade or Type	O.D., in.	Nom. thk., in. or gauge	Number	Type (Straight or U)

Items 14 - 18 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

14. Shell (a) No. of course(s): A-1, B-1 (b) Overall length (ft & in.): SEE BELOW

Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment	
No.	Diameter, in.	Length (ft. & in.)	Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	42" ID	3'3-1/2"	SA-387 Gr 11 Cl2	3-3/8"	1/16"	1	FULL	100	1	Full	100	1275	3H25M
1	42" ID	3'3-1/2"	SA-516-70N	3-3/8"	1/16"	1	Full	100	1	Full	100	1150	2H25M

15. Heads: (a) SA-387 Gr 11 Cl2 1275F/3H25M (b) SA-516-70N 1150F/2H25M
(Mat'l Spec. No., Grade or Type) H.T. - Time & Temp. (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp.

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None	Eff.
(a)	End	1.543"	1/16"					22"			YES	T1	Full	100
(b)	End	1.543"	1/16"					22"			YES	T1	Full	100

If removable, bolts used (describe other fastening) ENDS ARE WELDED TO CHANNEL CYLINDERS
(Mat'l Spec. No., Grade, Size, No.)

78868

16. MAWP 2184 (internal) (external) psi at max. temp. 700 (internal) (external) °F Min. design metal temp. 32 °F at 2184 psi.

17. Impact test YES, TOP AND BOTTOM CHANNELS
(Indicate yes or no and the component(s) impact tested)

18( )p., #####., or #####. test pressure 3276 Proof test

19. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Flange Type	Material		Nozzle Thickness		Reinforcement Material	How Attached		Location (Insp. Open.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
TS IN	1	18"	RTJ LWN	-	SA-336 Cl F11	1500#	1/16"	INHERENT	WELDED	UW16.1(d)	
TS OUT	1	18"	BFW	SA-266 Cl 2	-	5-3/16"	1/16"	INHERENT	UW16.1(d)	-	
SS IN/OUT	2	8"	BFW	SA-266 Cl 2	-	2-1/8"	1/16"	INHERENT	UW16.1(d)	-	
Manway/Cvr	1	31-1/8"	-	SA-336 Cl F11	-	6-1/2"	1/16"	INHERENT	BOLTED	-	
Manway/Cvr	1	31-1/8"	-	SA-266 Cl 2	-	6-1/2"	1/16"	INHERENT	BOLTED	-	
INSPECTION	1	20"	MANWAY	SA-336 Cl F11	-	5-9/16"	1/16"	INHERENT	UW16.1(d)	-	
INSPECTION	1	20"	MANWAY	SA-266 Cl 2	-	5-9/16"	1/16"	INHERENT	UW16.1(d)	-	

20. Supports: Skirt NO (Yes or No.) Lugs 2 (No.) Legs - (No.) Others - (Describe) Attached SHELL/WELDED (Where and How)

21. Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: (List the name of part, item number, mfg's. name and identifying number)

22. Remarks: ITEM 123-C INSPECTION - SHELL - SEE UG-46(a)
PRESSURE RELIEF PER UG-125(a) CHANNEL - REMOVE MANWAY COVER
SEE U-4 FOR ADDITIONAL NOZZLES

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. 11,516 Expires 8-3, 2001

( ) 6/14/99 Name ENGINEERS AND FABRICATORS CO. (Manufacturer) Signed (Representative)

CERTIFICATE OF SHOP 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 TEXAS and employed by IB&M RE, INC. of ARLINGTON, TEXAS have inspected the pressure vessel described in this Manufacturer's Data Report on 6/4, 1999, 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 this Manufacturer's 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 6/14/99 Signed (Authorized Inspector) Commissions TEXAS NO. 1033, NBN 9280BA (Nat'l Board incl. endorsement, State, Province and No.)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the statements on this report are correct and that the field assembly construction of all parts of this vessel conforms with the requirements of ASME Code, Section VIII, Division 1.

U Certificate of Authorization No. Expires

Date Name (Assembler) Signed (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 Manufacturer's 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 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 this Manufacturer's 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.

( ) Signed (Authorized Inspector) Commissions (Nat'l Board incl. endorsement, State, Province and No.)

98868

FORM U-4 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET

As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

KOCH NITROGEN CO.

1. Manufactured and certified by ENGINEERS AND FABRICATORS CO., 3501 WEST 11TH STREET, HOUSTON, TEXAS 77008
(Name and address of Manufacturer)

ufactured for KOCH NITROGEN CO., 6310 HORSESHOE LAKE ROAD, STERLINGTON, LA 71280
(Name and address of Purchaser)

3. Location of Installation KOCH NITROGEN CO., HWY 2, STERLINGTON, LA 71280
(Name and address)

4. Type: Vertical (Horiz., vert., or sphere) | HEAT EXCHANGER (Tank separator, heat exh., etc) | 25120 (Mfg's serial No.)

XXXX (CRN) | CD-25120 (Drawing No.) | 2979 (Nat'l. Bd. No.) | 1999 (Year built)

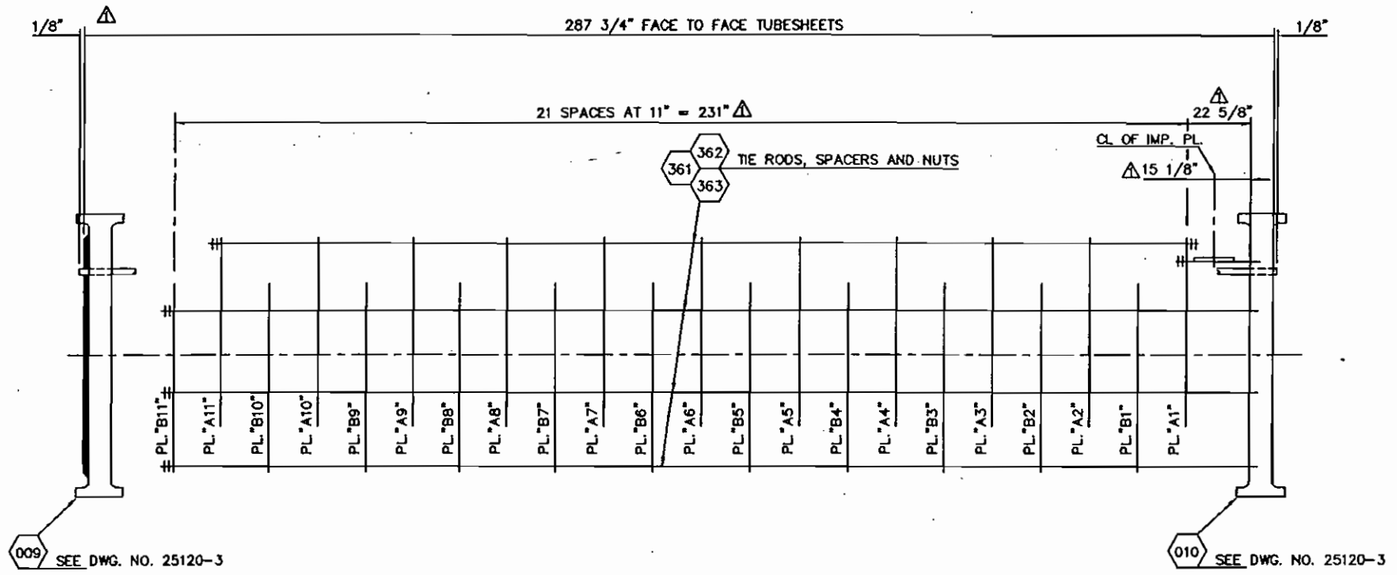
Data Report Item Number	Remarks
	ADDITIONAL NOZZLES:
	VENT - 2) 1-1/2",SA-335-P11,.281"THK,1/16" CORR.,INHERENT,UW16.1(d)
	VENT - 2) 1-1/2",SA-106-B,.281"THK,1/16" CORR.,INHERENT, UW16.1(d)
	TOP CHANNEL COVER WAS STRESS RELIEVED @ 1275F FOR 2 HRS.

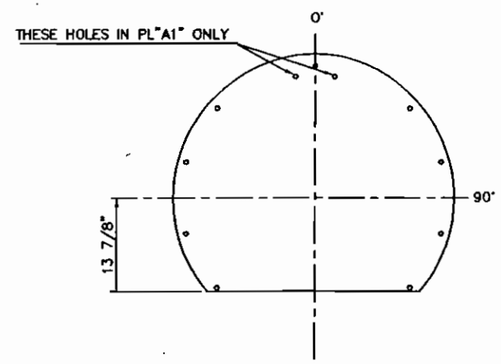
Certificate of Authorization: Type U No. 11,516 Expires 8-3 , 2001

Date 6/14/99 Name ENGINEERS AND FABRICATORS CO. (Manufacturer) Signed K. Rutherford (Representative)

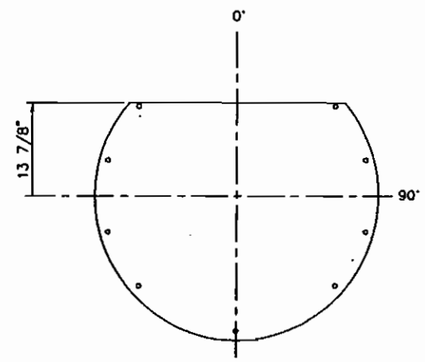
Date 6/14/99 Name Ronald Talbot (Authorized Inspector) Commission TEXAS NO. 1033, NBN 9280BA (Nat'l Board incl. endorsement, state, province and no.)

#98868





043 3/8" PL. BAFFLE "A"
(11 REQ'D.)



043 3/8" PL. BAFFLE "B"
(11 REQ'D.)

BAFFLE O.D. = 41 3/4"

10	22 7/16"			
1	33 7/16"	9	250"	
168	10 5/8"	1	223"	
20	21 5/8"	2	19"	
NO. REQ'D	LENGTH	NO. REQ'D.	LENGTH	
363 3/4" O.D. x #16 BWG TUBING		361 1/2" ø 362 1/2" N.C. (26 REQ'D.)		
SPACERS		TIE RODS / NUTS		

REV.	DESCRIPTION	DRAWN	CHK'D.	APPRV'D.
1	REV. TIE RODS & SPACERS LENGTHS.	JS 10-12-98	CC 10-12-98	DDB 10/29/98

TITLE: TUBE BUNDLE ASSEMBLY
TYPE: DED SUB-ASSY.: 100
SERVICE NH3 CONV. EFFLUENT COOLER/BFW HEATER

CUSTOMER: KOCH NITROGEN CO.
CUST. P.O. NO.: 9800703
ITEM NO.: 123-C

DRAWN KS 8-26-98
JOB NO. 16510
CHECKED DDB 9-11-98
SHOP ORDER XH-25120
APPROVED DDB 9-18-98
SCALE ----

ENGINEERS AND FABRICATORS, Co.
HOUSTON, TEXAS
EFCO

DRAWING NUMBER XH-25120-2
REV. 1

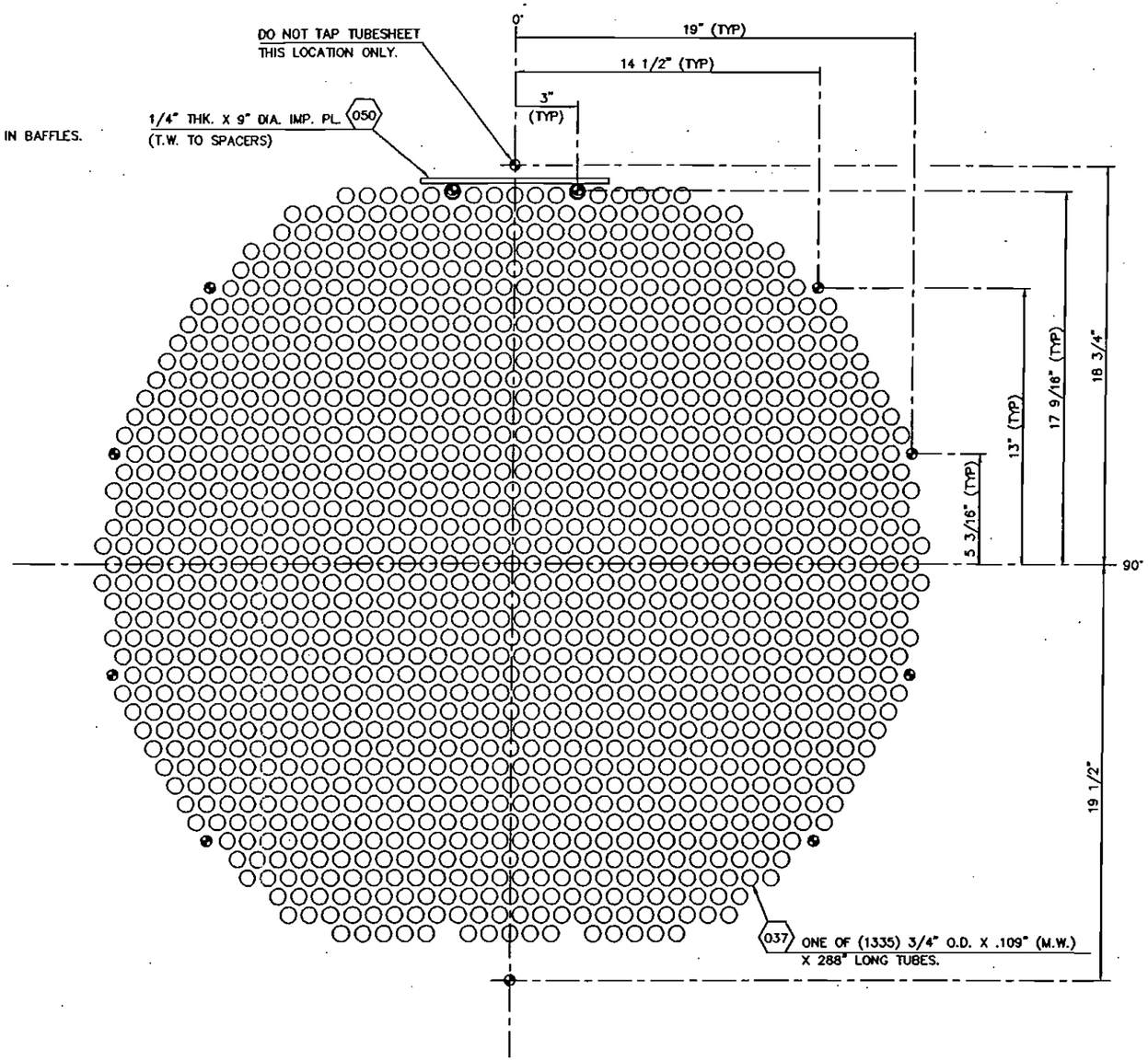
PLOT SCALE: 0.7500 = 12
N:\16510\XH-25120\25120-2

#98684

NO. OF TUBE HOLES: 1335
TUBE PITCH: 1" TRI.
CL OUTER MOST TUBE: 39 1/32"

◓ DRILL & TAP 5/8" DEEP IN SHELL SIDE OF #010 TUBESHEET FOR 11 – 1/2" ø TIE RODS. DRILL 9/16" ø HOLES IN BAFFLES.

○ DRILL 25/32" ø (.791" MAX. DIA.) TUBE HOLES IN BAFFLES.



LAYOUT VIEWED FROM SHELL SIDE OF #010 TUBESHEET

N:\16510\XH-25120\25120-1 PLOT SCALE: 0.7500 = 12

REV.	DESCRIPTION	DRAWN	CHK'D.	APPRV'D.

TITLE: TUBE LAYOUT
TYPE: DED SUB. ASS'Y: 100
SERVICE: NH3 CONV. EFFLUENT COOLER / BFW HEATER
DRAWN KS 8-25-98 JOB NO. 16510
CHECKED DDB 9-11-98 SHOP ORDER XH-25120
APPROVED DDB 9/18/98 SCALE

CUSTOMER: KOCH NITROGEN CO.
CUST. P.O. NO.: 9800703
ITEM NO.: 123-C

ENGINEERS AND FABRICATORS, CO.
HOUSTON, TEXAS EFCO

DRAWING NUMBER XH-25120-1 REV.

#98868

GENERAL NOTES

1. CODES & SPECS: ASME SECTION VIII, DIV. 1, 1995 ED., 1996 ADDENDA.
TEMA STANDARDS, 7TH EDITION, CLASS "R".

2. FABRICATION: TOLERANCES PER APPLICABLE TEMA SECTION.

ALL NOZZLE CONNECTIONS SHALL BE SMOOTH WITH THE INSIDE DIAMETER OF THE PART TO WHICH THEY ARE WELDED.

SEE DWG "WP" FOR WELD BEVEL DETAILS. IN ALL CASES, THE DETAILS SHALL BE THE REQUIRED DOCUMENTATION TO THE WPS AS REQUIRED IN ASME SECTION IX.

MANWAY COVERS TO BE STAMPED "TOP COVER" AND "BOTTOM COVER" TO PREVENT MISASSEMBLY IN FIELD.

3. BASE METAL AND PRODUCTION WELD IMPACT TEST: SHELL SIDE EXEMPT PER UCS-66(a) & (b). TUBE SIDE BASE METAL CVN REQUIREMENTS LISTED ON "BML" DRAWING SPECIAL REQUIREMENTS. PRODUCTION WELD IMPACTS REQUIRED @ +32°F. TOP CHANNEL REQUIRES 23/15 FT-LBS. BOTTOM CHANNEL REQUIRES 18/12 FT-LBS.

4. N.D.E.: RADIOGRAPHY: FULL RADIOGRAPHY, JOINT EFFICIENCY = 100%. UT SHELL CLOSING SEAMS, JOINT EFFICIENCY = 100%.

PT FINISHED SURFACE OF ALL WELD OVERLAY.

TUBE/TUBESHEET WELDS SHALL BE BUBBLE TESTED WITH 25 PSIG MINIMUM AIR TEST PRESSURE BEFORE FINAL TUBE END ROLLING.

PT TUBE-TO-TUBESHEET WELDS AFTER TUBE EXPANSION.

MT ALL NOZZLE ATTACHMENT WELDS. EXAMINE THE BACK-CHIPPED SURFACE OF THE ROOT PASS AND THE COMPLETED WELD.

UT ALL NOZZLE ATTACHMENT WELDS. (THIS DOES NOT INCLUDE MANWAY ATTACHMENT WELDS.)

MT ALL ACCESSIBLE SURFACES OF NOZZLE AND STRUCTURAL ATTACHMENT WELDS AFTER PWHT.

ALL TEMPORARY ATTACHMENT WELDS AND ARC STRIKES ON PRESSURE RETAINING PARTS SHALL BE REMOVED. THE SURFACES SHALL BE PROPERLY CONDITIONED TO ELIMINATE STRESS RISERS. SUCH SURFACES SHALL BE MT OR PT EXAMINED.

5. HEAT TREATMENT: TOP TUBESHEET/OVERLAY TO RECEIVE INTERMEDIATE PWHT OF 1275 ±25°F FOR ONE HOUR.

STRESS RELIEVE THE FOLLOWING SUBASSEMBLIES @ 1275 ±25°F AS FOLLOWS: TOP CHANNEL COVER WITH LIFT LUG - 2 HOURS; TOP CHANNEL HEAD, MANWAY, CHANNEL CYLINDER, NOZZLES - 3 HOURS 25 MINUTES. LOCALLY STRESS RELIEVE TOP TUBESHEET TO CHANNEL CYLINDER - 3 HOURS 25 MINUTES. LOCALLY STRESS RELIEVE TOP TUBESHEET TO SHELL CYLINDER - 2 HOURS 25 MINUTES.

STRESS RELIEVE THE FOLLOWING SUBASSEMBLIES @ 1150 ±25°F AS FOLLOWS: SHELL, SHELL NOZZLES, SUPPORT GUIDES, INSULATION RING CLIPS, - 2 HOURS 25 MINUTES. BOTTOM CHANNEL CYLINDER, NOZZLES, BOTTOM CHANNEL HEAD WITH MANWAY - 2 HOURS 25 MINUTES. LOCALLY STRESS RELIEVE BOTTOM TUBESHEET TO CHANNEL CYLINDER AND SUPPORT LUG ASSEMBLIES TO BOTH - 2 HOURS 25 MINUTES. LOCALLY STRESS RELIEVE SHELL TO BOTTOM TUBESHEET - 2 HOURS 25 MINUTES. (BOTTOM CHANNEL COVER W/ LIFT LUGS DOES NOT STRESS RELIEVE.)

NO WELDING (OTHER THAN DIAPHRAGM CLOSURES) TO PRESSURE PARTS SHALL BE PERFORMED AFTER FINAL PWHT.

6. CLEANING: BEFORE THE PRESSURE TEST, ALL INTERNAL SURFACES SHALL BE CLEANED BY SWEEPING, VACUUM CLEANING, OR OTHER METHODS SO THE EXCHANGER WILL BE FREE OF ANY LOOSE SCALE, DIRT, WELDING SLAG & FLUX, AND OTHER DEBRIS.

7. HYDROTEST: HYDROTEST EACH SIDE FOR MINIMUM OF ONE HOUR EACH. MINIMUM TEST TEMPERATURE = 70°F. POTABLE WATER SHALL BE USED. AFTER HYDRO, DRAIN & DRY BY BLOWING WITH AIR.

8. SHIPPING: WELD BEVELS SHALL BE COATED ON INSIDE AND OUTSIDE FOR APPROXIMATELY 3 INCHES WITH DEOXALUMINITE, AND CLOSED WITH METAL OR PLASTIC CAPS TO PREVENT DAMAGE AND ENTRANCE OF FOREIGN MATERIALS.

MACHINED AND THREADED SURFACES OF CARBON STEEL SHALL BE COATED WITH RUST-VETO NO. 342 OR RUST BAN NO. 326. FLANGED OPENINGS SHALL BE PROTECTED AND MADE WATERPROOF WITH PLASTIC FLANGE COVERS OR FULL SIZE 10 GAGE MIN THICK STEEL COVERS AND 1/8 INCH THICK RUBBER GASKETS.

PAINT STENCIL IN 3" HIGH LETTERS THE RECEIVING ADDRESS, ITEM 123-C, P.O. # 9800703.

PAINT STENCIL IN 3" HIGH LETTERS - WELDING OR BURNING OTHER THAN DIAPHRAGM CLOSURES ON THIS EXCHANGER IS PROHIBITED.

U
W
RT-1 HT

NAT'L BD.

CERTIFIED BY - ENGINEERS AND FABRICATORS, CO.

MAXIMUM ALLOWABLE WORKING PRESSURE

SHELL	1715	P.S.I. @	625	°F
TUBES	2184	P.S.I. @	700	°F

MINIMUM DESIGN METAL TEMPERATURE

SHELL	32 °F	@	1715	P.S.I.
TUBES	32 °F	@	2184	P.S.I.

MFG. SERIAL NO. S-25120 YEAR

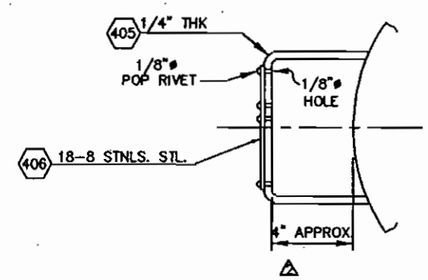
P.O.	9800703			ITEM	123-C		
TYPE	DED	SIZE	42-288	WEIGHT		LBS.	
TUBE O.D.	3/4"	NO.	1,335	SURFACE	6230	SQ. FT.	

DESIGN PRESS. SHELL SIDE	1715	PSI @	625	°F
DESIGN PRESS. TUBE SIDE	2184	PSI @	700	°F
HYDRO-TEST PRESS. SHELL	2575	PSI @	70	°F
HYDRO-TEST PRESS. TUBES	3276	PSI @	70	°F

NUMBER OF SHELL PASSES ONE NUMBER OF TUBE PASSES ONE

CUSTOMER: KOCH NITROGEN CO.

EFCO ENGINEERS AND FABRICATORS, CO. EFCO
HOUSTON, TEXAS



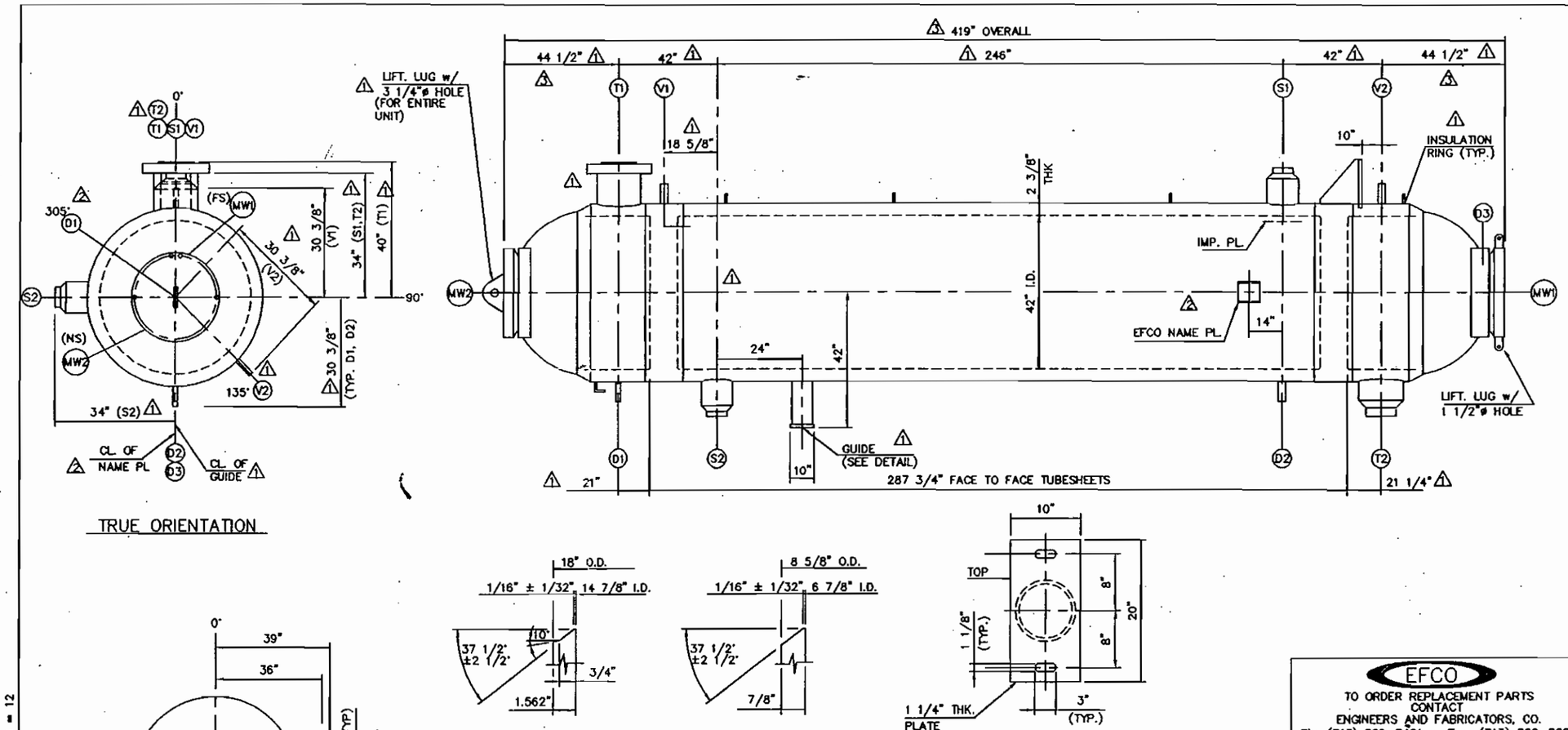
PLOT SCALE: 3/4 = 12

N:\16510\XH-25120\25120GN

REV.	DESCRIPTION	DRAWN	CHK'D.	APPRV'D.
4	CHANGED PWHT SUB-ASSEMBLIES, NOTE 5; CHANGED NOTE 4	DB 4-21-99	SE 4-21-99	DDB 4/21/99
3	CHANGED PWHT SUB-ASSEMBLIES, NOTE 5	DB 2-16-99	SE 2-16-99	DDB 2/16/99
2	REV. NAME PLATE PROJECTION	DON 11-11-98	CC 11-11-98	DDB 11/11/98
1	REV. NOTE # 5 (REMOVE TRUNNIONS & ADD INSULATION RINGS).	JS 10-12-98	CC 10-12-98	DDB 10-27-98

TITLE: GENERAL NOTES & NAME PLATE		CUSTOMER: KOCH NITROGEN CO.	
TYPE: DED		CUST. P.O. NO.: 9800703	
SERVICE: NH3 CONV. EFFLUENT COOLER/BFW HEATER		ITEM NO.: 123-C	
DRAWN KS 8-27-98	JOB NO. 16510	ENGINEERS AND FABRICATORS, CO.	
CHECKED DDB 9-11-98	SHOP ORDER XH-25120	HOUSTON, TEXAS EFCO	
APPROVED DDB 9-18-98	SCALE -----	DRAWING NUMBER GN-25120	REV. 4

98868 139



PLOT SCALE: 3/8 = 12

N:\16510\XH-25120\25120CD

DESIGN CONDITIONS		
TEMA TYPE: DED TEMA CLASS: "R" SIZE: 42-288		
STAMP REQ'D: YES NATIONAL BD. REQ'D.: YES		
CODE: ASME SECTION VIII DIV.1, 1995 EDITION, 1996 ADDN.		
	SHELL SIDE	TUBE SIDE
PRESSURE (DESIGN) PSIG	1715	2184
DESIGN TEMP °F.(MIN/MAX)	32/625	32/700
TEST PRESS. PSIG	2575	3276
CORR. ALLOW. INCHES	1/16"	1/16"
NO. PASSES	ONE	ONE
RADIOGRAPH	FULL	FULL
PWHT	YES	YES

CONNECTION SCHEDULE		
MK.	SIZE	SERVICE
D3	1" N.P.T. w/ PLUG	DRAIN
MW2	20" MANWAY w/ BLD.	INSPECTION
MW1	20" MANWAY w/ BLD.	INSPECTION
V1-2	1 1/2" SCH. 160 w/ PLAIN END	VENT
D1-2	1 1/2" SCH. 160 w/ PLAIN END	VALVE
S2	8" REINF. NK. BFW (SEE DETAIL "B")	OUTLET
S1	8" REINF. NK. BFW (SEE DETAIL "B")	INLET
T2	18" REINF. NK. BFW (SEE DETAIL "A")	OUTLET
T1	18" - 1500# RTJ HB LWN	INLET

WEIGHT: DRY 88,000 FULL OF WATER -104,300 LBS.
EFFECTIVE SURFACE AREA: 6230
INSULATION THICKNESS: S.S.-3" T.S.-3" ⚠1

GENERAL NOTES

1) ALL BOLT HOLES TO STRADDLE NORMAL CENTERLINES
2) PAINT NOTE: NONE

EFCO
TO ORDER REPLACEMENT PARTS CONTACT
ENGINEERS AND FABRICATORS, CO.
Ph: (713) 869-3461 or Fax: (713) 869-8088
Please refer to:
Exchanger serial # S-25120 or drawing number and provide description of part needed.
3501 W. 11th St., Houston, TX 77008-6001

REV.	DESCRIPTION	DRAWN	CHK'D.	APPRV'D.
⚠3	SHORTEN OVERALL LENGTH.	KS 2-11-99	SE 2-11-99	[illegible]
⚠2	REV. LOCATION OF "D1" & NAME PL.	DON 11-10-98	CC 11-10-98	DDB 11-11-98
⚠1	REV. NOZZ. ORIENT., REMOVED TRUNNIONS, REV. DIM'S., ADD GUIDE, INSUL. RING, & LIFT. LUG	JS 10-12-98	CC 10-12-98	DDB 10-27-98

TITLE: OUTLINE DIMENSIONS
PROJECT:
SERVICE: NH3 CONV. EFFLUENT COOLER/BFW HEATER

CUSTOMER: KOCH NITROGEN CO.
CUST. P.O. NO.: 9800703
ITEM NO.: 123-C

DRAWN	JOB NO.
KS 8-27-98	1651D
CHECKED	SHOP ORDER
DDB 9-11-98	XH-25120
APPROVED	SCALE
DDB 9-18-98	------

ENGINEERS AND FABRICATORS, CO.
HOUSTON, TEXAS
EFCO

DRAWING NUMBER CD-25120
REV. ⚠3