

FITTING SCHEDULE

NOTE: NOZZLE FLANGE DIMENSIONS TO CONFORM TO ANSI B16.5; UNLESS OTHERWISE NOTED. BOLT HOLES TO STRADDLE CENTERLINES PARALLEL PRINCIPAL VESSEL CENTERLINES, UNLESS OTHERWISE NOTED.

MK	NO. REQ'D	SIZE & TYPE	PURPOSE
A	1	8" -900# HB R.F.L.W.N. FLG.	LIQUID NATURAL GAS INLET
B	1	12" -900# HB R.F.L.W.N. FLG.	NATURAL GAS OUTLET
C	1	500 (20")-16K JIS F.F.W.N. FLG.	SEAWATER INLET w/26" [660] O.D. x 20" [508] O.D. REDUCER
D	1	500 (20")-16K JIS F.F.W.N. FLG.	SEAWATER INLET w/26" [660] O.D. x 20" [508] O.D. REDUCER
E	1	750 (30")-16K JIS F.F.W.N. FLG.	SEAWATER OUTLET
F1-3	3	4" -150# F.F.W.N. FLG.	CLEANOUTS w/BLINDS
G	1	1" -900# R.F.W.N. FLG.	TUBESIDE DRAIN
H	1	1" -900# R.F.W.N. FLG.	TUBESIDE VENT
J	1	3/4"-3000# FULL-THREAD COUPLING	THERMOWELL w/PLUG
K	1	3/4"-3000# FULL-THREAD COUPLING	THERMOWELL w/PLUG
L	1	2" -150# F.F.W.N. FLG.	DRAIN w/BLIND
M	1	2" -150# F.F.W.N. FLG.	DRAIN w/BLIND
X1	1	40 (1.5")-16K JIS F.F.W.N. FLG.	EXPANSION JOINT VENT w/BLIND
X2	1	40 (1.5")-16K JIS F.F.W.N. FLG.	EXPANSION JOINT DRAIN w/BLIND

VESSEL SPECIFICATIONS

CONSTRUCTION CODE: ASME SECT. VIII, DIV. 1, 2010 EDITION, 2011a ADDENDA; TEMA "R"

DESIGN CONDITIONS:	SHELL	TUBE
M.A.W.P.:	15 PSIG [1.03 barG] EXT. to 102 PSIG [7 barG] INT. AT 150°F [65°C]	1813 PSIG [125 barG] INT. AT 150°F [65°C]
LIMITING COMPONENT:	NOZZLES & EXPANSION JOINT	HEADS & SHELLS
M.D.M.T.:	-274°F [-170°C] AT ABOVE M.A.W.P. VALUES	-319.9°F [-195.5°C] AT 1813 PSIG [125 barG] INT.
IMPACT TEST EXEMPT:	PER UNF-65	PER UNF-65 & UHA-51(d)
CORROSION ALLOWANCE:	NONE	NONE
RADIOGRAPH:	SPOT X-RAY PER CODE; ALSO X-RAY ALL LONGSEAMS WHICH ARE COVERED BY WRAPPERS	100% X-RAY OF ALL SHELL AND NOZZLE BUTT WELDS ON TUBESIDE
DYE PENETRANT:	ALL COMPLETED ALGN WELDS WHICH ARE LOCATED ON A PRESSURE-BOUNDARY MEMBER	ALL COMPLETED PRESSURE-BOUNDARY WELDS; ALSO AT MARKED LOCATIONS ON MACHINED T-SHEET TUBE-TO-T-SHEET LEAK TEST; HELIUM, AT 15 PSIG [1.03 barG] MIN.
PNEUMATIC TEST:	AIR/SOAP TEST AT 15 PSIG [1.03 barG] FOR ALL REIN. PADS, LINERS w/NPT HOLES	
HYDROSTATIC TEST:	170 PSIG [11.7 barG] HORIZ. OR IN-POSITION	2759 PSIG [191 barG] HORIZ. OR IN-POSITION

"FINAL WELD INSPECTION"

BY: _____ DATE: _____

WELD PROC. _____ FILLER METAL _____

IF8-LT316 E316LT1-1
 TG8-LT316 ER316L
 SAW8-LT ER316L
 M45-F44-LT ENICrMo-4
 TG45-F44 ERNiCrMo-4
 SAW45-F43-LT ERNiCrMo-4
 M458-F44-LT ENICrMo-4
 MG458-F44-LT ERNiCrMo-4
 SAW45-8-F43-LTBV ERNiCrMo-4

ACCEPTABLE WPS ALTERNATES FROM THOSE SHOWN IN WELD SYMBOLS (WITH QUALIFIED WELDER & POSITION):

SAW8-LT MAY BE USED IN PLACE OF IF8-LT-316.
 SAW45-F43-LT MAY BE USED IN PLACE OF M45-F44-LT.
 SAW45-8-F43-LTBV MAY BE USED IN PLACE OF M458-F44-LT AND MG458-F44-LT

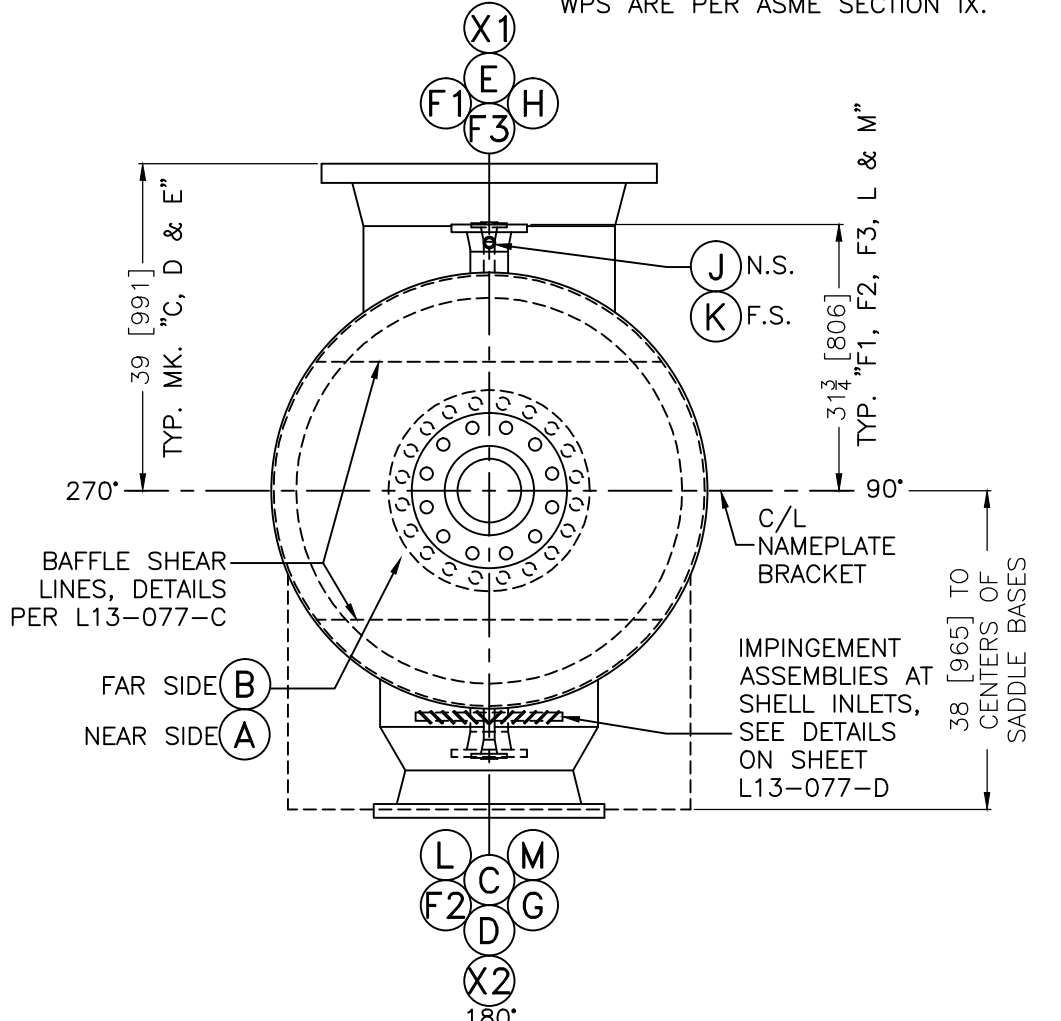
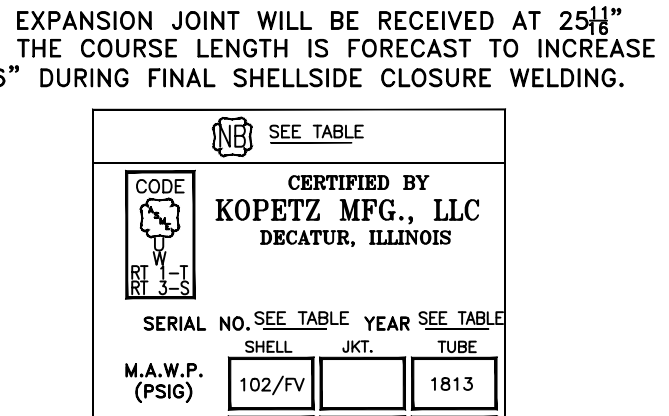
TUBE-TO-TUBESHEET WELDS

WELD PROC. _____ FILLER METAL _____
 TG45-8-TubeSheet-3-4--1-5-16-pitch ERNiCrMo-4

NOTE: WELDERS' QUALIFICATIONS FOR ALL WPS ARE PER ASME SECTION IX.

SHOP NOTES:

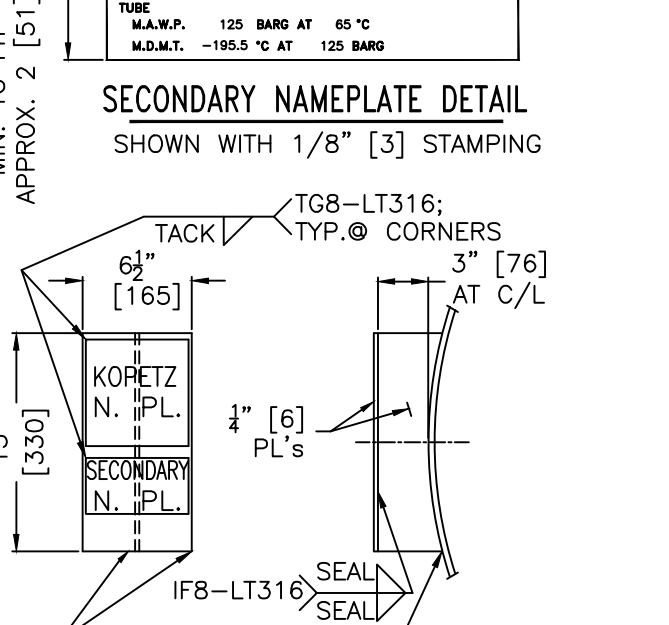
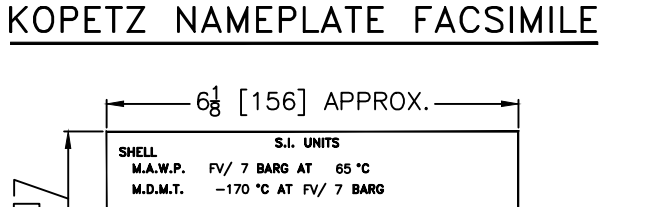
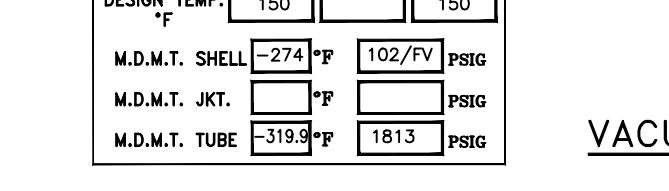
- FOR TUBES SEAL WELDED TO TUBESHEETS ON BOTH TUBESHEET FACES, USE STANDARD "FIXTURE-ASSEMBLED" SEQUENCE [WELD 1" NOZZLES INTO HEADS AFTER COMPLETING ALL OF THE STEPS (a)-(g) BELOW]:
 (a) SET TUBESHEETS INTO FIXTURE; (b) SEAL-WELD TUBES TO INSIDE TUBESHEET SURFACES PER NOTE 12 BELOW; (c) SEAL-WELD THEN EXPAND TUBES TO OUTSIDE TUBESHEET SURFACES; (d) WELD SHELLSIDE [TWO-PIECE] END SHELLS TO FILL SHELLSIDE GAPS; (e) WELD 6" LONG TUBESIDE SHELLS TO TUBESHEETS; (f) WELD HEADS TO TUBESIDE SHELLS & X-RAY WELDS; (g) WELD NOZZLES "A" & "B" TO RESPECTIVE HEADS.
- NO ADDITIONAL MACHINING REQUIRED ON STOCK NOZZLE GASKET FINISHES.
- STAMPS USED ON EXCHANGER SHALL BE EITHER ROUND-NOSED OR INTERRUPTED-DOT, LOW-STRESS DIES.
- MAXIMUM WATER RETENTION TIME IN EXCHANGER AT TEST IS 7 DAYS. DRY THE EXCHANGER TO +5°F (-15°C) DEW POINT.
- THREADED OPENINGS SHALL BE PLUGGED WITH METAL PLUGS FOR PROTECTION & SHIPMENT. USE SHIPPING BLINDS FOR OPEN NOZZLES. SHIP WITH A NITROGEN PURGE.
- FOR TUBESIDE FCW WELDING, USE E316LT1-1 FILLER MATERIAL AS NOTED ON THE WPS. ALL WPS TO BE USED ARE LOW-TEMPERATURE-QUALIFIED WPS.
- ALL PRESSURE-RETAINING MATERIALS (EXCLUDING THIN-WALL BELLOWS AND TUBES) SHALL BE IMPACT-TESTED.
- INTERNAL PICKLING/PASSIVATION MAY BE PERFORMED ANY TIME AFTER COMPLETION OF SHELLSIDE.
- (THIS NOTE HAS BEEN DELETED)
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- THE CHEMICAL COMPOSITIONS OF SA-182-F316/316L AND SA-965-F316/316L ARE IDENTICAL.
- BASIC SEQUENCE OF TUBE-TO-TUBESHEET WELDING ON INSIDE SURFACES:
 a. START ON CENTER TUBE ROW.
 b. WELD THE ACCESSIBLE TUBES IN THAT ROW ONLY, STOPPING TO DYE-CHECK AS-NEEDED, BASED ON TUBE ACCESS.
 c. DYE-CHECK THE COMPLETED TUBE WELDS; REPAIR WELDS AS-NEEDED.
 d. CLEAN PT MATERIALS FROM THE TUBESHEET BEFORE PROCEEDING TO NEXT TUBE(S) IN ROW. REPEAT STEPS b-d UNTIL ALL TUBES IN ROW ARE COMPLETE.
 e. WORK THE NEXT ROWS OUTWARD FROM THE COMPLETED ROWS (ABOVE AND BELOW) AND REPEAT STEPS b-d UNTIL ALL INSIDE TUBE WELDING IS COMPLETED.



ELEVATION

SCALE: 3/8" = 1'-0"

NOTE: EXPANSION JOINT WILL BE RECEIVED AT 25 1/2" LONG. THE COURSE LENGTH IS FORECAST TO INCREASE TO 26" DURING FINAL SHELLSIDE CLOSURE WELDING.



AS-BUILT

MATERIAL

	SHELLSIDE	TUBESIDE
HEADS:	SB-688 (UNS N08367)	SA-240 316/316L (32000 PSI MIN. YIELD)
SHELL REIN. PADS:	SB-688 (UNS N08367)	SA-965 F316/316L (35000 PSI MIN. YIELD)
FORGED (A) NOZZLES:	SA-240 (or SA-479)-316/316L	SA-182 F316/316L (32000 PSI MIN. YIELD)
VACUUM STIFFENERS:	SA-240 (or SA-479)-316/316L	
TUBESHEETS:	SB-688 (UNS N08367)	
TUBES:	SA-312 (UNS S31254) SEAMLESS	
PLATE NOZZLE NECKS:	SB-688 (UNS N08367)	
CONCENTRIC REDUCERS:	SB-688 (UNS N08367)	
INTERNAL BOLTING:	AL6XN (N08367) OR HASTELLOY C276	
GASKETS:	3/16" [5] NEOPRENE RUBBER	
NOZZLE FLANGES:	SB-462 or 564 (UNS N08367)	SA-182 F316/316L (32000 PSI MIN. YIELD)
PIPE NOZZLE NECKS:	SB-675 (UNS N08367)	SA-312-TP316/316L SMLS. (32000 PSI MIN. YIELD)
PLUGS:	TYPE 316 FOR CPLGS. SB-691 (UNS N08367)	
COUPLINGS:	SB-691 (UNS N08367)	
BLIND FLANGES:	SB-688 (or 462 or 564) (UNS N08367)	SA-182 F316/316L (32000 PSI MIN. YIELD)
SADDLES/WRAPPERS:	SA-240 316/316L (32000 PSI MIN. YIELD)	
IMPINGEMENT ASSY.:	SB-688 (UNS N08367)	
N.P. BRKT.:	SA-240 316/316L	
INTERNAL CLIPS, RODS:	AL6XN (N08367)	SA-479 TP316/316L
INTERN. PL. COMPONENTS:	SB-688 (UNS N08367)	SA-240 316/316L
EXPANSION JOINT:	SB-688 N08367 W/SB-688 N08367 BELLOWS	
PRESSURE BOLTING:	SA-320-B8M STRAIN-HARDENED STUDS; SA-194-8M NUTS	

GENERAL NOTES

BLAST (ALL EXTERIOR EXCEPT BOLTING): COMMERCIAL BLAST PER SSPC-SP 6

PAINT (ALL EXTERIOR EXCEPT BOLTING, ALL APPLIED PER PAINT MFR'S RECOMMENDATIONS): ONE (1) COAT OF INTERNATIONAL INTERCURE 200HS, 6 TO 8 MILS [152 TO 203 MICRONS] D.F.T.

ASME CODE INSPECTION & STAMP: HSB CT NATIONAL BOARD REGISTRATION: REQUIRED

THIRD-PARTY INSPECTION BY DNV

INSPECTION-OTHER: BY CUSTOMER

PURCHASE ORDER NUMBER: P10HA00052

REFERENCE DWG. & SPECS.: CHICAGO POWER & PROCESS EXCHANGER DATA SHEET

REGISTRATION TABLE

KOPETZ S/N	ITEM NO.	N.B.N. (YEAR)	KOPETZ S/N	ITEM NO.	N.B.N. (YEAR)
13077A	E-101A				
13077B	E-101B				
13077C	E-101C				
13077D	E-101D				
13077E	E-101E				
13077F	E-101F				

H2056

NOTE: ALL DIMENSIONS SHOWN ARE IN INCHES, UNLESS OTHERWISE SPECIFIED. 6 REQ'D.

WEIGHT EMPTY: 62,000-LBS (65,000 LBS. w/SHIPPING BLINDS, ETC.) NOTE: WORK THIS DRAWING WITH DWG. L13-077-B, C AND D.

WEIGHT FULL OF WATER: 108,310-LBS

VOLUME: 660-GALS. TUBESIDE / 4,740-GALS. SHELLSIDE

NO.	DESCRIPTION	DATE
Δ	CORRECTED LLC NOTATIONS.	16 DEC 2013 J.A.P.

KOPETZ MFG., LLC

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 FAX (217) 425-4921
 e-mail: info@kopetzmfg.com

(6) 52-648 MOD. NJN LNG VAPORIZERS [125 barG] GENERAL ARRANGEMENT

SAMSUNG HEAVY INDUSTRIES - GOLAR

DWN: J.A.P.	SHOP ORDER NO. 13-077	REV.
CHKD: R.D.F.		
DATE: 26 NOV. 2013	L13-077-A	1