

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

MATERIAL		
HEADS:	SHELLSIDE	TUBESIDE
SHELL, REIN. PADS:	SB-688 (UNS N08367)	SA-240 316/316L (32000 PSI MIN. YIELD)
FORGED (A) NOZZLES:	SA-240 (or SA-479)-316/316L	SA-965 F316/316L (35000 PSI MIN. YIELD)
VACUUM STIFFENERS:	SA-240 (or SA-479)-316/316L	SA-182 F316/316L (32000 PSI MIN. YIELD)
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-320-8M 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				

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.)

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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(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

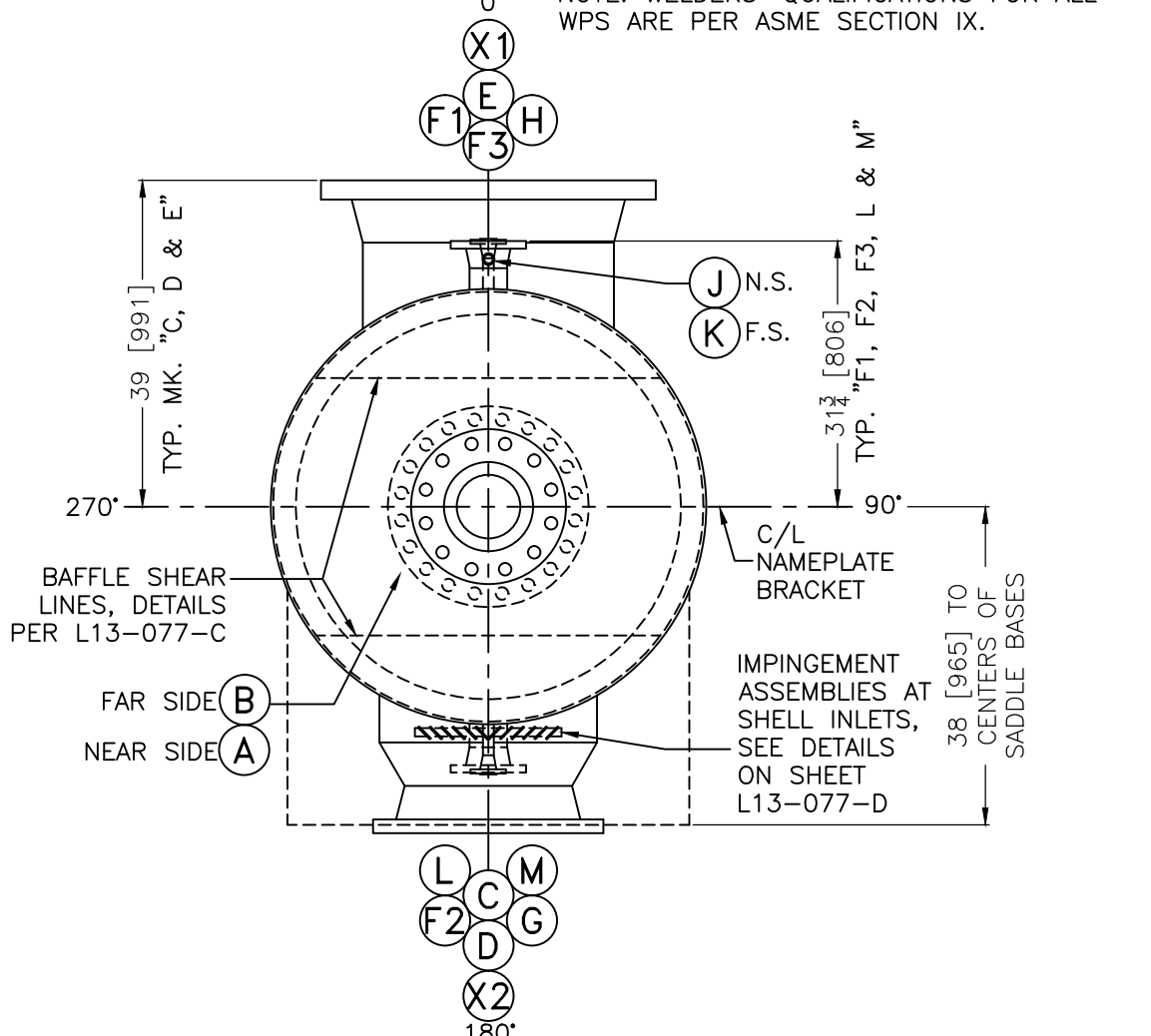
"FINAL WELD INSPECTION" BY: _____ DATE: _____

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

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.



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

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

- 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)
 - (THIS NOTE HAS BEEN DELETED)
 - 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.

HOLD POINTS:
LEAK TESTS & HYDROSTATIC TESTS (GIVE TWO-WEEK NOTICE)

★ NOTE: EXPANSION JOINT WILL BE RECEIVED AT 25 1/8" LONG. THE COURSE LENGTH IS FORECAST TO INCREASE TO 26" DURING FINAL SHELLSIDE CLOSURE WELDING.

SEE TABLE

CERTIFIED BY
KOPETZ MFG., LLC
DECATUR, ILLINOIS

SERIAL NO.	SEE TABLE	YEAR	SEE TABLE
M.A.W.P. (PSIG)	102/FV		1813
DESIGN TEMP. (°F)	150		150
M.D.M.T. SHELL	-274 °F	102/FV PSIG	
M.D.M.T. JKT.			
M.D.M.T. TUBE	-319.9 °F	1813 PSIG	

KOPETZ NAMEPLATE FACSIMILE

6 1/8 [156] APPROX.

SHELL	M.A.W.P.	FV/7 BARG AT 65°C
M.D.M.T.		-170 °C AT FV/7 BARG
TUBE	M.A.W.P.	125 BARG AT 65°C
M.D.M.T.		-195.5 °C AT 125 BARG

SECONDARY NAMEPLATE DETAIL
SHOWN WITH 1/8" [3] STAMPING

VACUUM STIFFENER DETAIL (2) REQUIRED

ALL SPLICES ARE FULL-PEN BUTT WELDS USING WPS IF8-LT316

3 [76]

10 [254]

3" [76] AT C/L

6 1/2" [165]

4" [102] PL'S

13" [330]

MIN. TO FIT APPROX. 2 [51]

TACK TYP. @ CORNERS

TG8-LT316

IF8-LT316 SEAL

IF8-LT316 SEAL

BREAK ALL SHARP CORNERS

NAMEPLATE BRACKET DETAIL

AS-BUILT