CUSTOMER	SAMSUNG HEAVY INDUSTRIES			REFERENCE NO.	Golar	
ADDRESS				CPP FILE NO.	CPP-11-104 (CH11-1234)	
PLANT LOCATION				DATE	January 31, 2012	
SERVICE OF UNIT	Single Stage H.P. LNG Vaporizer (SI Units)			ITEM NO.	HA 1100/2100/3100/ A/B	
SIZE	52648-1	TYPE	Special NJN	HORIZONTAL	inclined 3 degrees	
SURFACE (m2)	(GROSS) 789.8	SHELLS/UNIT	One	SURF/SHELL (m2)	(EFF.) 770.3	

PERFORMANCE OF ONE UNIT

		SHELL SIDE		TUBE SIDE	
FLUID CIRCULATED		Sea Water		LNG / Natural Gas	
TOTAL FLUID ENTERING		2632 m3/hr (Note 1)		104,276.10 kg/hr	
		INLET	OUTLET	INLET	OUTLET
VAPOR	kg/hr	---	---	---	104,276.10
LIQUID	kg/hr	2,697,610	2,697,610	104,276.10	---
NON-CONDENSABLES	kg/hr	---	---	---	---
DENSITY	kg/m3	1026.51	1028.66	433.56	101.26
VISCOSITY	cP	1.013	1.418	0.1186	0.0149
SPECIFIC HEAT	kJ/kg-°C	3.9289	3.9333	3.6001	3.5279
THERMAL CONDUCTIVITY	W/m-°C	0.6127	0.6023	0.1997	0.0518
LATENT HEAT	kcal/kg				
MOLECULAR WEIGHT				16.72 (Note 4)	
TEMPERATURE IN	°C	14.0		-152.9	
TEMPERATURE OUT	°C	7.22 (Note 2)		8.0	
OPERATING PRESSURE	BarG			109.0	
NO. PASSES PER SHELL		ONE		ONE	
VELOCITY					
PRESSURE DROP	Bar	1.74 (Note 3)		0.43	
FOULING RESISTANCE	m²-C/W	Note 5		Note 5	

HEAT EXCHANGED 19,934.99 kW MTD CORRECTED 44.8 °C

TRANSFER RATE – SERVICE 664.4 / 577.7 W/ m2 C (Clean / Design)

CONSTRUCTION

DESIGN PRESSURE	BarG	7.0		125		
TEST PRESSURE	BarG	Per Code		Per Code		
DESIGN TEMPERATURE (Max/Min)	°C	65	/ -170	65	/	-195.5

TUBES 254 SMO (Note 6) NO 802 OD 0.75 BWG 16 LENGTH 16.46 m PITCH 33.3375 mm

SHELL AL6XN ID OD 132.1 cm

EXPANSION JOINT (BELLOWS)	AL-6XN		
BONNET	316L SS	CHANNEL COVER	N/A
TUBESHEET-STATIONARY	AL-6XN	TUBESHEET-FLOATING	N/A
BAFFLES - CROSS	AL-6XN TYPE Seg.	FLOATING HEAD COVER	N/A
TUBE SUPPORTS	AL-6XN	IMPINGEMENT PROTECTION	Yes
GASKETS	N/A	PACKING	N/A

TUBE TO TUBESHEET JOINT Seal Welded & Rolled into Double Grooved Holes

CONNECTIONS-SHELL SIDE IN QTY (2) 20" on 26" reducer OUT 30" RATING 16K JIS

CONNECTIONS-TUBE SIDE IN 8" OUT 12" RATING 900# RFWN

CORROSION ALLOWANCE – SHELL SIDE --- TUBE SIDE ---

CODE REQUIREMENTS ASME Sec. VIII, Div. 1 TEMA CLASS "R"

OTHER DNV

NOTES (1) 1316 m3/hr in "Cold" LNG section & 1316 m3/hr in "Warm" NG section at full load

(2) SW bulk outlet temperature. SW flow of 1303 m3/hr in the "Cold" LNG section should be maintained at all times to guard against potential freeze problems.

(3) SW pressure drop when operating at full load.

(4) Standard LNG: 96.01% C1, 3.2% C2, 0.6% C3, 0.05% iC4, 0.05%nC4, 0.01%iC5, 0.08% N2 (mole %)

(5) 15% excess surface area with no additional fouling applied

(6) Helium leak tested tube to tubesheet joints

(7) The hot circuit must be started first and shut down last.

(8) Proprietary design features for tube side LNG distribution, performance, and venting.

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