PAKISTAN FAST TRACK PFD - RICH LNG - 600 MMSCFD - OPEN LOOP RE-GASIFICATION - SEA WATER TEMPERATURE 66 °F - SSGC NETWORK PRESSURE 300 PSIG

Process Node			1	1B	2	2B	3	3B	4	5	6	7A	7B	8A	9A	8B	9B
Description		**Notes**	**FRSU HP Manifold / HP Loading Arm LA-1-001 Inlet**	**FRSU HP Manifold / HP Loading Arm LA-1-001-B Inlet**	**HP Loading Arm LA-1-001 Outlet**	**HP Loading Arm LA-1-001-B Outlet**	**New Jetty Approach Line Inlet**	**Jetty ESD Skid Y-1-001-B Outlet**	**Existing Jetty Approach Line Inlet**	**Onshore Reception Facility Inlet**	**Custody Transfer Station Inlet**	**Working Meter Inlet**	**Standby Meter Inlet**	**Process Gas Heater A Inlet**	**Process Gas Heater A Outlet**	**Process Gas Heater B Inlet**	**Process Gas Heater B Outlet**
Pressure Class			900	900	900	900	900	900	600	600	600	600	600	900	900	900	900
Design Parameters																	
Temperature - Maximum	°F		176	176	176	176	100	100	100	100	100	100	100	212	212	212	212
Temperature - Minimum	°F		-4	-4	-4	-4	-4	-4	23	23	23	23	23	23	23	23	23
Maximum Pressure	psig		1,943	1,943	1,943	1,943	1,943	1,943	1,479	1,479	1,479	1,479	1,479	1,479	1,479	1,479	1,479
Fluid Parameters																	
Phase	-		RLNG	RLNG	RLNG	RLNG	RLNG	RLNG	RLNG	RLNG	RLNG	RLNG	RLNG	RLNG	RLNG	RLNG	RLNG
Source	Qatar																
Composition																	
Methane	mol%		89.75														
Ethane	mol%		6.33														
Propane	mol%		2.26														
i-Butane	mol%		0.40														
n-Butane	mol%		0.61														
i-Pentane	mol%		0.02														
n-Pentane	mol%		0.01														
Hexane	mol%		0.00														
Nitrogen	mol%		0.62														
Carbon Dioxide	mol%		0.00														
Total	mol%		100.00														
Molecular Weight	kg/kmol																
Higher Heating Value	Btu/scf																
FRSU IAS Operating Parameters																	
FRSU Ordered Minimum Temperature	°F																
FRSU Ordered Maximum Pressure	psig																
FRSU Ordered Volumetric Flow Rate	MMSCFD																
Temperature	°F		41	-	39	-	39	-	39	38	34	34	34	34	80	34	80
Pressure	psig		1,015	-	983	-	983	-	977	964	919	919	919	918	903	918	903
Volumetric Flow Rate (NOTE 2)	MMSCFD		600	-	600	-	600	-	600	600	600	600	0	150	150	150	150
Heat Exchanged	MMBTU/h		-	-	-	-	-	-	-	-	-	-	-	3.05		3.05	

(NOTE 2) (NOTE 3)

Process Node			8C	9C	8D	9D	10A	11A	10B	10B	12	23	24
Description		**Notes**	**Process Gas Heater C Inlet**	**Process Gas Heater C Outlet**	**Process Gas Heater D Inlet**	**Process Gas Heater D Outlet**	**Working Back Pressure Control Stream Inlet**	**Working Back Pressure Control Stream Outlet**	**Standby Back Pressure Control Stream Inlet**	**Standby Back Pressure Control Stream Outlet**	**Custody Transfer Station Outlet / Delivery Point**	**Vent Stack Outlet**	**Fuel Gas Distribution System Inlet**
Pressure Class			900	900	900	900	600	600	600	600	600	150	600
Design Parameters													
Temperature - Maximum	°F		212	212	212	212	100	100	100	100	100	100	100
Temperature - Minimum	°F		23	23	23	23	-4	-4	-4	-4	23	-148	23
Maximum Pressure	psig		1,479	1,479	1,479	1,479	1,479	1,479	1,479	1,479	1,479	231	1,479
Fluid Parameters													
Phase	-		RLNG	RLNG	RLNG	RLNG	RLNG	RLNG	RLNG	RLNG	RLNG	RLNG	RLNG
Source	Qatar												
Composition													
Methane	mol%												
Ethane	mol%												
Propane	mol%												
i-Butane	mol%												
n-Butane	mol%												
i-Pentane	mol%												
n-Pentane	mol%												
Hexane	mol%												
Nitrogen	mol%												
Carbon Dioxide	mol%												
Total	mol%												
Molecular Weight	kg/kmol												
Higher Heating Value	Btu/scf												
FRSU IAS Operating Parameters													
FRSU Ordered Minimum Temperature	°F												
FRSU Ordered Maximum Pressure	psig												
FRSU Ordered Volumetric Flow Rate	MMSCFD												
Temperature	°F		34	80	34	80	80	41	80	41	41	-	34
Pressure	psig		918	903	918	903	903	300	903	300	300	-	919
Volumetric Flow Rate (NOTE 2)	MMSCFD		150	150	150	150	600	600	0	0	600	-	1.159
Heat Exchanged	MMBTU/h		3.05		3.05		-	-	-	-	-	-	-

NOTES

1) THE TEMPERATURE OF THE RLNG AT THE INLET TO THE DELIVERY FACILITY IS ASSUMED TO HAVE EQUALIZED WITH THE GROUND TEMPERATURE. THE DELIVERY FACILITY RLNG INLET TEMPERATURES WILL BE CONFIRMED AT DETAIL DESIGN STAGE.

2) RLNG FLOWRATE (MMSCFD) BASED ON BOD E-10100111-P-0500-001_4 INCLUDING THREE WBH. CLIENT IS ADVISED CURRENT MAXIMUM FLOW OF 400MMSCFD WITH TWO WBH INSTALLED. FOR FUTURE HIGH FLOWS ADDITIONAL HEATERS OR USE OF BYPASS TO BE CONSIDERED.

3) THE OPERATING CASE REQUIRES FOUR WBH TO PROVIDE THERMAL POWER TO ENSURE THE RLNG MEETS THE MINIMUM REQUIRED BATTERY LIMIT CONDITIONS.

REFERENCES:

PROCESS PFD'S – 10100111-P-0700-XXX

001 – PFD SCHEMATIC

002 – PFD PROCESS DATA TABLE (HP)

003 – PFD PROCESS DATA TABLE (LP)

REV	DATE	DESCRIPTION	BY	CHK	APP
6	14/02/18	FINAL (EETL EXPANSION)	RW	SS	AW
5	03/07/15	FOR INFORMATION	RW	AN	DB
4	28.03.14	FOR REVIEW	RW	AN	DB
3	07.02.14	POST HAZOP ISSUE FOR REVIEW	RW	AN	DB
2	21.01.13	ISSUED FOR HAZOP	RW	DB	JAC
1	20.01.13	ISSUED FOR HAZOP	RW	DB	JAC
0	29.08.13	FOR COMMENTS	RW	DB	JAC

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DRAWN BY	R.WHITELEY	PROJECT No	10100111
DATE	02.01.13	CLIENT REF	–
CLIENT	EXCELERATE ENERGY		

TITLE

EETL FAST TRACK LNG PROJECT – PFD
PROCESS DATA TABLE (LP)
(SHEET 3 OF 3)

SCALE @A1	DRAWING NUMBER	REVISION
NTS	E-10100111-P-0700-003	6

(A1 BORDER)