MULTIPHASE PUMP
DATA TABLE
US-HP1_HP2

Project: MPP Feasability Study

Blue marked values must be inserted		US-HP1_HP2		
		Sep 30	Jan 34	Sep 40
Installation	---	**Offshore, Outdoor**	**Offshore, Outdoor**	**Offshore, Outdoor**
Duty	---	**Multiphase Pump**	**Multiphase Pump**	**Multiphase Pump**
Ambient Temperature	° C	**+5 ... +50**	**+5 ... +50**	**+5 ... +50**
Liquid Pumped	---	**Oil, Water, Gas**	**Oil, Water, Gas**	**Oil, Water, Gas**
Solid Content [1]	ppmw	**nil**	**nil**	**nil**
Asphaltene / Paraffin / Wax	%	**nil**	**nil**	**nil**
H_2S Content [2]	Mol %	**2,86**	**2,89**	**2,89**
Cl^- Chlorides [2]	%	**172.100**	**172.100**	**172.100**
CO_2 Content [2]	Mol %	**4,56**	**4,61**	**4,63**
Oil Flow	BOPD	**75.000**	**59.000**	**29.000**
Oil Flow	m^3/h	496,88	390,88	192,13
Water Flow	BWPD	**14.550**	**10.000**	**22.500**
Water Flow	m^3/h	96,39	66,25	149,06
Water Cut	%	**16,25**	**14,49**	**43,69**
Total Liquid Flow	BLPD	89.550	69.000	51.500
Total Liquid Flow	m^3/h	593,3	457,1	341,2
GOR	scf/stb	2640,0	2796,6	2862,1
Gas Flow	SCFD	**198.000.000**	**165.000.000**	**83.000.000**
Gas Flow @ Standard Conditions	sm^3/h	233.614	194.678	97.929
Gas Flow @ Inlet Conditions	m^3/h	6617,0	6624,1	5719,5
Total Flow Rate @ Skid inlet	m^3/h	**7210,3**	**7081,2**	**6060,7**
Total Flow Rate @ Skid inlet	BPDE	1.088.342	1.068.862	914.826
GVF	%	91,8	93,5	94,4
Inlet Temperature	°F	**126**	**128**	**145**
Inlet Temperature	°C	**68,4**	**70,4**	**87,4**
Liquid Viscosity	cP	**1,34**	**1,06**	**1,0**
Liquid Viscosity	cSt	1,74	1,36	1,20
Liquid Density	kg/m^3	**770**	**780**	**800**
Heat Capacity of Liquid min.	kJ/(kg K)	2,32	2,29	2,87
Inlet Pressure	barg	41,4	34,5	20,7
	psig	**600**	**500**	**300**
Differential Pressure	bar	37,9	34,5	34,5
	psi	550,0	500,0	500,0
Discharge Pressure	barg	79,3	69,0	55,2
	psig	**1.150**	**1.000**	**800**
RV-Set Pressure	barg	87,2	75,9	60,7
	psig	1265	1100	880
Casing Design Pressure	barg	95	95	95
Casing Design Temperature	°C	125	125	125
Minimum Hydrostatic Test Pressure	barg	**143**	**143**	**143**
Pump Size	---	**L4MG 450 /126**	**L4MG 450 /126**	**L4MG 450 /126**
No. of Pumps (operating/standby)	---	3	3	3
Flow Rate per Pump w/o recirculation	**m^3/h**	**2403,4**	**2360,4**	**2020,2**
Recirculation Flow	m^3/h	**72,1**	**70,8**	**60,6**
Recirculation Flow	BPD	10883,4	10688,6	9148,3
Total Recirculation Rate	%	3,0	3,0	3,0
Total Flow Rate per Pump	**m^3/h**	**2475,5**	**2431,2**	**2080,8**
Total Flow Rate per Pump	BPDE	373.664	366.976	314.090
GVF w/ recirculation	**%**	**89,10**	**90,82**	**91,62**
Mixed temperature at pump inlet	°C	70,82	73,75	88,32
Max. Cooling capacity per pump required	kW	**750,00**	**800,00**	**1400,00**
Pump temperature rise w/ cooler	**K**	**11,4**	**13,3**	**12,0**
Discharge temperature @ rated cond.	**°C**	**79,8**	**83,7**	**99,4**
Discharge temperature @ gas slug cond.	**°C**	89,44	90,05	88,77
Design Speed	rpm	**1780**	**1730**	**1490**
Speed Range	rpm	**700 ... 1825**	**700 ... 1825**	**700 ... 1825**
Power absorbed per pump	KW	3420	3045	2615
Power absorbed per pump	BHP	4586,2	4083,3	3506,7
Nominal Torque	Nm	18348	16808	16759
Vol. Efficiency	%	**90,50**	**91,2**	**91,9**
Total Efficiency	%	76,3	76,5	76,2
Power abs. @ R.V Set Press. [4]	KW	4086	3609	3006
Power abs. @ max Δp over pump [4]	BHP	5479	4839	4032

Notes

1) No solid content considered. If solids are present re-selection of the pump internals must be done.

2) Corrosive agents are according receipt values. Chlorides in the water phase. CO_2 & H_2S in the gas phase

3) Relief valve set pressure is acc. API 676, 10% over rated Discharge pressure or based on max Δp over the pump.

4) Power at PSV set pressure, a re-setting of the PSV is considered for the different years (Sep30 / Jan 34 / Sep40)