

CENTRIFUGAL PUMP DATASHEET

Project N°	Unit	Document Code	Serial N°	Rev	Page
218857C	04	SP 0910	0403	B	1

Doc. Client Code: 218857C-04-MAC-DS-4903-0000

IMPORTANT NOTE

Electrical Area Classification Note that the selections available allow for both Europe and US designations
Some of the drop-down selections may not adequately cover the project requirements.

PROJECT UNITS

SI

CLIENT: SOCAR

PROJECT TITLE: SOCAR DOWNSTREAM INTEGRATION NEW REFINERY IN SUMGAYIT FEED PROJECT

JOB NUMBER:

EQUIPMENT NUMBER: 04-P-403 A/B

EQUIPMENT SERVICE: UNSATURATED C4 PUMPS

SERIAL NUMBER:

REQ / SPEC NUMBER :

PURCHASE ORDER NUMBER :

Cells coloured thus contain drop-down options
Text in BLACK color are by Purchaser
Text in BLUE color are by Supplier
Text in RED color are by Purchaser OR Supplier

COMMENTS:

ADDITIONAL / RELATED DATASHEETS

PUMP(s)
MOTOR(s)
GEAR(s)
TURBINE(s)

ITEM / TAG NUMBERS	ATT	ITEM / TAG NUMBERS	ATT	ITEM / TAG NUMBERS	ATT

APPLICABLE OVERLAY STANDARDS

Rev	Status	Date	Wrt	Verif.	App/Auth.	Rev	Status	Date	Wrt	Verif.	App/Auth.
B	ISSUE FOR REVIEW (IFR)	30/01/2026	F. Tortorici	M. Pasinui	M. Sani E. Ventimiglia						
A	ISSUE FOR REVIEW (IFR)	29/09/2025	J. Clavijo	C. Ruiz C. Ariete	A. Guerrieri E. Ventimiglia						

The present document or drawing is property of TECHNIP ENERGIES ITALY S.p.A. and shall not, under any circumstances, be totally or partially, directly or indirectly, transferred, reproduced, copied, disclosed or used, without its prior written consent, for any purpose and in any way other than that for which it is specifically furnished or outside the extent of the agreed upon right of use.

				SOCAR DOWNSTREAM INTEGRATION - NEW REFINERY IN SUMGAYIT FEED PROJECT						
CENTRIFUGAL PUMP DATASHEET				Project N°	Unit	Document Code	Serial N°	Rev	Page	
				218857C	04	SP 0910	0403	B	2	
				Doc. Client Code: 218857C-04-MAC-DS-4903-0000						
GENERAL										
1	Note	APPLICABLE TO: PROPOSAL		APPLICABLE NATIONAL / INTERNATIONAL STANDARD : API-610		XII ed.		Rev		
2		CLIENT SOCAR		UNIT UNIT 04 - BULLETS STORAGE						
3		SITE NEW REFINERY SUMGAYIT - AZERBAIJAN		SERVICE UNSATURATED C4 PUMPS						
4	(1, 14)	NO. REQ 2	PUMP SIZE	TYPE VERTICAL BARREL	No. STAGES					
5		MANUFACTURER		MODEL	SERIAL NO.					
6		EQUIPMENT NUMBER 04-P-403 A/B								
LIQUID CHARACTERISTICS										
9		Units	@ RATED TEMP	@ MAXIMUM TEMP	@ MINIMUM TEMP	Alternate LIQUID				
10		LIQUID TYPE OR NAME :	UNSATURATED C4		UNSATURATED C4					
11		PUMPING TEMPERATURE :	42.0		-14					
12		VAPOR PRESSURE :	4.76		3.01					
13		RELATIVE DENSITY (3.1.53) :	0.557		0.624					
14		SPECIFIC HEAT :	2.49							
15		VISCOSITY :	0.13		0.22					
OPERATING CONDITIONS (6.1.3)										
18		Units	Rated	Normal	Alt Condition 1	Alt Condition 2	Alt Condition 3	Alt Condition 4		
19					Max.Suction Pressure	{Name 2}	{Name 3}	{Name 4}	B	
20		NPSHA Datum: C.L. Suction Nozzle								
21		PUMPING TEMPERATURE :	42.0	42.0						
22		FLOW :	92.0	83.6						
23	(9)	DISCHARGE PRESSURE (6.3.2) :	15.4						B	
24	(9, 11)	SUCTION PRESSURE :	4.80		12.89				B	
25		DIFFERENTIAL PRESSURE :	10.6						B	
26		DIFFERENTIAL HEAD :	194						B	
27	(8, 9)	NPSHA :	0.7						B	
28	(12)	HYDRAULIC POWER :	30.4						B	
SERVICE (CONTINUOUS/INTERMITTENT) : CONTINUOUS										
31	(2, 10)	• IF INTERMITTENT, NO. OF STARTS :			INSTALLATION LOCATION : OUTDOOR					
32					IF INDOOR, TEMPERATURE: MAX: °C MIN: °C					
33	(3)	PUMPS OPERATE IN: ALONE			ELECTRIC AREA CLASSIFICATION (6.1.29): HAZARDOUS					
34		CORROSION DUE TO : (6.12.1.9)			DIVISION ZONE 2					
35		EROSION DUE TO : (6.12.1.9)			GROUP Group IIA					
36		H2S CONCENTRATION (ppm) : (6.12.1.13)			TEMP CLASS T3					
37		CHLORIDE CONCENTRATION (ppm) :			PUMP VALVE START POSITION : Partially Open Valve					
38		PARTICULATE SIZE (DIA IN MICRONS)								
39		PARTICULATE CONCENTRATION (ppm)								
40		CORROSION ALLOWANCE (6.3.10) :								
41		DESIGN NOTES: Pump design shall comply with specification "CENTRIFUGAL PUMPS FOR HEAVY DUTY SERVICES AMENDMENT TO HS523217-00-MAC-PE-0001-0000								
42		Rev0 " no 218857C-00-MAC-SPE-0001-0000								
PERFORMANCE										
46		PROPOSAL CURVE NO.		RPM	DRIVER TYPE MOTOR					
47		IMPELLER DIA. : RATED	MAX.	MIN.	mm	GEAR				
48		RATED POWER : kW		EFFICIENCY	(%)	VARIABLE SPEED REQUIRED NO				
49		RATED CURVE BEP FLOW (at rated impeller diameter) (6.1.16) :			m³/h	SOURCE OF VARIABLE SPEED				
50		MIN FLOW : THERMAL	m³/h	STABLE	m³/h	MANUFACTURER				
51		PREFERRED OPERATING REGION (6.1.16)			to	NAMEPLATE POWER : kW				
52		ALLOWABLE OPERATING REGION (6.9.4.1)			to	NOMINAL RPM				
53	(20)	MAX HEAD @ RATED IMPELLER			m	RATED LOAD RPM				
54		MAX POWER @ RATED IMPELLER			kW	FRAME				
55		NPSH3 AT RATED FLOW (6.1.9) :			m	ORIENTATION VERTICAL				
56		CENTERLINE OF PUMP TO NPSHA DATUM			m	LUBRICATION				
57		NPSH MARGIN AT RATED FLOW (6.1.10) :			m	BEARING TYPE				
58		SPECIFIC SPEED (6.1.17)			m³/h, rpm, m	RADIAL				
59		SUCTION SPECIFIC SPEED LIMIT (6.1.11)			m³/h, rpm, m	THRUST				
60		SUCTION SPECIFIC SPEED (6.1.11)			m³/h, rpm, m	STARTING METHOD Direct On Line (DOL)				
61	(19)	MAX. ALLOWABLE SOUND PRESSURE LEVEL (6.1.19)			85 (dBA)	DRIVER DATASHEET NUMBER				
62		ESTIMATED MAX. SOUND PRESSURE LEVEL			(dBA)	DRIVE DESIGN STANDARD IEC				
63		MAX. ALLOWABLE SOUND POWER LEVEL (6.1.19)			(dB)					
64		ESTIMATED MAX SOUND POWER LEVEL			(dB)					

The present document or drawing is property of TECHNIP ENERGIES ITALY S.p.A. and shall not, under any circumstances, be totally or partially, directly or indirectly, transferred, reproduced, copied, disclosed or used, without its prior written consent, for any purpose and in any way other than that for which it is specifically furnished or outside the extent of the agreed upon right of use.
XLS - SP-0910 SH, 3 of 7 - Rev. 4

				SOCAR DOWNSTREAM INTEGRATION - NEW REFINERY IN SUMGAYIT FEED PROJECT																																																													
CENTRIFUGAL PUMP DATASHEET				Project N°		Unit		Document Code		Serial N°		Rev		Page																																																			
				218857C		04		SP 0910		0403		B		3																																																			
				Doc. Client Code: 218857C-04-MAC-DS-4903-0000																																																													
CONSTRUCTION																																																																	
API PUMP TYPE (Table 1): VS6																																																																	
NOZZLE CONNECTIONS (6.4.2):																																																																	
<table><tr><td></td><td>Size</td><td>Facing</td><td>Rating</td><td>Position</td></tr><tr><td>SUCTION</td><td></td><td></td><td></td><td>SIDE</td></tr><tr><td>DISCHARGE</td><td></td><td></td><td></td><td>SIDE</td></tr></table>																		Size	Facing	Rating	Position	SUCTION				SIDE	DISCHARGE				SIDE																																		
	Size	Facing	Rating	Position																																																													
SUCTION				SIDE																																																													
DISCHARGE				SIDE																																																													
PRESSURE CASING AUX. CONNECTIONS: (6.4.3)																																																																	
<table><tr><td></td><td>No.</td><td>Size</td><td>Type</td><td>Facing</td><td>Rating</td><td>Posn.</td></tr><tr><td>BALANCE/LEAK OFF</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>DRAIN</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>VENT</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>PRESSURE GAGE</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>TEMP GAGE</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>WARM-UP LINE</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>																		No.	Size	Type	Facing	Rating	Posn.	BALANCE/LEAK OFF							DRAIN							VENT							PRESSURE GAGE							TEMP GAGE							WARM-UP LINE						
	No.	Size	Type	Facing	Rating	Posn.																																																											
BALANCE/LEAK OFF																																																																	
DRAIN																																																																	
VENT																																																																	
PRESSURE GAGE																																																																	
TEMP GAGE																																																																	
WARM-UP LINE																																																																	
DRAIN VALVE SUPPLIED BY (7.6.2.5)																																																																	
DRAINS MANIFOLDED (7.6.2.5)																																																																	
VENT VALVE SUPPLIED BY																																																																	
VENTS MANIFOLDED																																																																	
THREADED CONS FOR PIPELINE SERVICE & < 55°C (6.4.3.2)																																																																	
SPECIAL FITTINGS FOR TRANSITIONING (6.4.3.3)																																																																	
CYLINDRICAL THREADS REQUIRED (6.4.3.2)																																																																	
MACHINED AND STUDDED AUX CONNECTIONS (6.4.3.6)																																																																	
ROUTE DRAIN TO SKID EDGE																																																																	
MATERIAL (6.12.1.1)																																																																	
(6) ANNEX H CLASS S-5																																																																	
(4) MINIMUM DESIGN METAL TEMPERATURE (6.12.4.1) -14 °C																																																																	
MAXIMUM ALLOWABLE TEMPERATURE (3.1.19) °C																																																																	
REDUCED-HARDNESS MATERIALS REQ'D (6.12.1.14)																																																																	
APPLICABLE HARDNESS STANDARD (6.12.1.14)																																																																	
BARREL :																																																																	
BOWL : CS																																																																	
DIFFUSERS																																																																	
IMPELLER : CS																																																																	
IMPELLER WEAR RING :																																																																	
CASE WEAR RING :																																																																	
SHAFT:																																																																	
BOWL (IF VS-TYPE)																																																																	
BEARINGS AND BEARING HOUSINGS (6.10.1)																																																																	
BEARING (TYPE / NUMBER):																																																																	
RADIAL /																																																																	
THRUST /																																																																	
REVIEW AND APPROVE THRUST BEARING SIZE : (9.2.5.2.6)																																																																	
LUBRICATION (6.11.3) (9.3.12.4):																																																																	
PRESSURE LUBE SYSTEM TO API-614, CHAPTER :																																																																	
API 614 DATASHEETS ATTACHED (9.2.6.4)																																																																	
PRESSURIZED LUBE OIL SYSTEM MOUNTED ON BASEPLATE:																																																																	
LOCATION OF PRESSURIZED LUBE OIL SYSTEM:																																																																	
(5, 13) INTERCONNECTING PIPING PROVIDED BY																																																																	
OIL VISC. ISO GRADE VG																																																																	
VENT-TO-HOUSING CONSTANT LEVEL OILER (6.10.2.4):																																																																	
OIL MIST PROVISIONS (6.11.3)																																																																	
GREASE LUBRICATION (6.11.4)																																																																	
CASING MOUNTING (6.3.14, 9.3.8.3):																																																																	
CASING TYPE:																																																																	
OH3 BACK-PULLOUT LIFTING DEVICE REQD. (9.1.2.6)																																																																	
CASING PRESSURE RATING:																																																																	
MAWP (6.3.6) : bar g @ °C																																																																	
HYDROTEST (8.3.2.2) : bar g @ °C																																																																	
WETTING AGENT REQUIRED FOR HYDROTEST (8.3.2.7) :																																																																	
HYDROTEST OH PUMP AS ASSEMBLY (8.3.2.14) :																																																																	
SUCT'N PRESS. REGIONS DESIGNED FOR MAWP (6.3.8) :																																																																	
ROTOR:																																																																	
SHAFT FLEXIBILITY INDEX (SFI) (9.1.1.3)																																																																	
FIRST CRITICAL SPEED WET (MULTISTAGE PUMPS ONLY)																																																																	
COMPONENT BALANCE TO ISO 1940-1, G1 (6.9.3.4) :																																																																	
SHRINK-FIT-LIMITED MOVEMENT IMPELLERS (9.2.2.3)																																																																	
ROTATION (VIEWED FROM COUPLING END) :																																																																	
IMPELLERS INDIVIDUALLY SECURED (6.6.3) :																																																																	
COUPLING: (7.2)																																																																	
MANUFACTURER																																																																	
MODEL																																																																	
RATING (kW / 100 RPM)																																																																	
SPACER LENGTH (7.2.2.d) mm																																																																	
SERVICE FACTOR (7.2.3)																																																																	
RIGID-TYPE																																																																	
COUPLING WITH HYDRAULIC FIT (7.2.9)																																																																	
COUPLING WITH PROPRIETARY CLAMPING DEVICE (7.2.10)																																																																	
COUPLING IN COMPLIANCE WITH (7.2.4)(7.2.2.f)																																																																	
GUARDS (7.3)																																																																	
COUPLING AND SHAFT GUARD STANDARD (7.3)																																																																	
IGNITION HAZARD ASSESSMENT PER EN 13463-1 (7.3.2.2; 7.3.3.4)																																																																	
COUPLING GUARD MATERIAL (7.3.2.1; 7.3.3.3) :																																																																	
SHAFT GUARD MATERIAL (7.3.2.1; 7.3.3.3) :																																																																	
SPARK RESISTANT MATERIAL REQUIRED (7.3.2.1) : YES																																																																	
BASEPLATE																																																																	
API BASEPLATE NUMBER (ANNEX D) :																																																																	
IF NON-STD BASEPLATE DIMENSIONS (LxW) (mm²) :																																																																	
BASEPLATE CONSTRUCTION (7.4)																																																																	
BASEPLATE DRAINAGE (7.4.1)																																																																	
MOUNTING :																																																																	
NON-GROUT CONSTRUCTION (7.4.1.e):																																																																	
SUPPLIED WITH : ● GROUT AND VENT HOLES																																																																	
● DRAIN CONNECTION																																																																	
DEMONSTRATE BASEPLATE PAD FLATNESS (7.4.9)																																																																	
PROVIDE SPACER PLATE UNDER ALL EQUIPMENT FEET (7.4.10)																																																																	
BOLT OH 3/4/5 PUMP TO PAD / FOUNDATION :																																																																	
PROVIDE SOLEPLATE FOR OH 3/4/5 PUMPS (9.1.2) :																																																																	
REMARKS :																																																																	
DISCHARGE CIRCUIT PIPING DESIGN:																																																																	
DESIGN PRESSURE 27 bar g																																																																	
DESIGN TEMPERATURE 80 °C																																																																	

The present document or drawing is property of TECHNIP ENERGIES ITALY S.p.A. and shall not, under any circumstances, be totally or partially, directly or indirectly, transferred, reproduced, copied, disclosed or used, without its prior written consent, for any purpose and in any way other than that for which it is specifically furnished or outside the extent of the agreed upon right of use.

				SOCAR DOWNSTREAM INTEGRATION - NEW REFINERY IN SUMGAYIT FEED PROJECT				
CENTRIFUGAL PUMP DATASHEET		Project N°	Unit	Document Code	Serial N°	Rev	Page	
		218857C	04	SP 0910	0403	B	4	
Doc. Client Code: 218857C-04-MAC-DS-4903-0000								
1	Note	INSTRUMENTATION				SEAL SUPPORT SYSTEM MOUNTING		Rev
2		INSTRUMENTATION PER API-670 (7.5.2)				MOUNTED ON PUMP BASEPLATE (7.6.1.4)		
3		ACCELEROMETERS (7.5.2.1)				LOCATION ON OR OFF BASEPLATE (7.4.6) :		
4		NUMBER OF ACCELEROMETERS						
5		MOUNTING LOCATION:				INTERCONNECTING PIPING BY		
6		PROVISION FOR MTG ONLY (6.10.2.13)				YES		B
7	(15)	FLAT SURFACE REQUIRED (6.10.2.14)				YES		B
8	(16)							B
9		VIBRATION PROBES (7.5.2.2)				SEAL TYPE		B
10		VIBRATION PROBES REQUIRED (7.5.2.2)				API 682 DATASHEET ATTACHED :		
11		NUMBER PER RADIAL BEARING				ADDITIONAL CENTRAL FLUSH PORT (6.8.9)		
12		NUMBER PER AXIAL BEARING				HEATING JACKET REQ'D. (6.8.11)		
13		THREADED PROVISION FOR MTG ONLY (6.10.2.13; 6.6.12)				SEAL MANUFACTURER		
14		FLAT SURFACE PROVISION ONLY (6.10.2.14)				SIZE / TYPE		
15	(21)	MONITORS AND CABLES SUPPLIED BY (7.5.2.4)				MANUFACTURER CODE		
16						ARRANGEMENT		B
17		TEMPERATURE DETECTORS (7.5.2.3)				DUAL PRESSURIZED		
18		TEMP. PROBES REQUIRED (7.5.2.3)				SEAL CHAMBER DATA:		
19		PROVISIONS FOR MOUNTING ONLY (6.10.2.2)				TEMPERATURE		°C
20		RADIAL BEARING TEMP.				PRESSURE		bar g
21		NUMBER PER RADIAL BEARING				FLOW		m³/h
22		THRUST BEARING TEMP.				SEAL FLUSH PIPING PLAN:		B
23		NUMBER PER THRUST BEARING ACTIVE SIDE				PIPE		in
24		NUMBER PER THRUST BEARING INACTIVE SIDE				STAINLESS STEEL		
25		TEMP. GAUGES (WITH THERMOWELLS) (9.1.3.5)				SEAL FLUSH FLUID TYPE		
26		TEMP. GAUGE LOCATION				PIPING ASSEMBLY		
27		SUPPLY UPPER/LOWER CASING RTD'S FOR WARMUP				AUXILIARY PIPING PLAN:		
28						PIPE		in
29		PRESSURE GAUGE TYPE				STAINLESS STEEL		B
30		PRESSURE GAUGE LOCATION				AUXILIARY FLUSH FLUID TYPE		
31						PIPING ASSEMBLY		
32		REMARKS				HEATING AND COOLING (6.1.23-6.1.27)		
33						COOLING REQ'D		
34						COOLING WATER PIPING PLAN (7.6.3.1)		
35						COOLING WATER PIPING		
36		PIPING & APPURTENANCES				FITTINGS		
37		TAG ALL ORIFICES (7.6.2.4)				COOLING WATER PIPING MATERIALS		B
38		SOCKET WELD UNION ON 1st SEAL GLAND NIPPLE (7.6.2.8)				GALVANISED		
39		MANIFOLD AUX PIPING SYSTEMS AT SKID EDGE (7.6.1.6)				COOLING WATER REQUIREMENTS:		
40						SUPPLY PRESSURE		bar g
41						BEARING HOUSING		m³/h
42						HEAT EXCHANGER		m³/h
43						TOTAL COOLING WATER		m³/h
44						HEATING MEDIUM		
45						HEATING PIPING		B
46								
47								
48								
49								
50								
51								
52								
53								
54								
55								
56								
57								
58								
59								
60								
61								
62								
63								
64								

The present document or drawing is property of TECHNIP ENERGIES ITALY S.p.A. and shall not, under any circumstances, be totally or partially, directly or indirectly, transferred, reproduced, copied, disclosed or used, without the prior written consent, for any purpose and in any way other than that for which it is specifically furnished or outside the extent of the agreed upon right of use.
XLS - SP-0910 SH, 5 of 7 - Rev. 4

							SOCAR DOWNSTREAM INTEGRATION - NEW REFINERY IN SUMGAYIT FEED PROJECT							
CENTRIFUGAL PUMP DATASHEET							Project N°	Unit	Document Code	Serial N°	Rev	Page		
							218857C	04	SP 0910	0403	B	5		
Doc. Client Code: 218857C-04-MAC-DS-4903-0000														
1	Note	SURFACE PREPARATION, PAINT & SPARES					TEST					Rev		
2		MANUFACTURER'S STANDARD (8.4.3.4)					SHOP INSPECTION (8.1.1.1)					YES	B	
3		OTHER (SEE BELOW)					PERF. CURVE & DATA APPROVAL REQ'D PRIOR TO SHIPMENT (8.3.3.4.6) :					YES	B	
4		SPECIFICATION NO. 218857C-00-MT-SPE-0005-0000					TEST WITH SUBSTITUTE SEAL (8.3.3.3.1)					NO	B	
5		PUMP:					MATERIAL CERTIFICATION REQUIRED (6.12.1.8): CASING					YES	B	
6		PUMP SURFACE PREPARATION					IMPELLER					YES	B	
7		PRIMER					SHAFT					YES	B	
8		FINISH COAT					OTHER							
9		BASEPLATE:					CASTING REPAIR WELD PROCEDURE APPROVAL REQD (6.12.2.5):					YES	B	
10		SURFACE PREPARATION					INSPECTION REQUIRED FOR CONNECTION WELDS (6.12.3.4)							
11	(23)	PRIMER:					MAG PARTICLE					YES	B	
12		FINISH COAT					RADIOGRAPHY							
13	(23)	UNDERSIDE					LIQUID PENETRANT					YES	B	
14							ULTRASONIC							
15		SHIPMENT: (8.4)					HARDNESS TEST REQUIRED (6.12.1.14; 8.2.2.7)						B	
16		EXPORT BOXING REQUIRED					ADDITIONAL SUBSURFACE EXAMINATION (6.12.1.6) (8.2.1.3)						B	
17		PREPARE FOR OUTDOOR STORAGE (NUMBER OF MONTHS) :					FOR: _____							
18							METHOD: _____							
19		SPARE ROTOR ASSEMBLY PACKAGED FOR:					PMI TESTING REQUIRED (8.2.2.8)					YES	B	
20		ROTOR STORAGE ORIENTATION (9.2.8.2)					COMPONENTS TO BE TESTED : Note 18						B	
21		SHIPPING & STORAGE CONTAINER SUITABLE FOR					RESIDUAL UNBALANCE TEST (J.4.1.2)							
22		VERTICAL STORAGE (9.2.8.3) :					NOTIFICATION OF SUCCESSFUL PERFORMANCE TEST (8.1.1.3) (8.3.3.4.6)							
23		N2 PURGE REQUIRED (9.2.8.4) :					BASEPLATE (NOZZLE LOAD) TEST (7.4.24)							
24							HYDROSTATIC TEST (8.3.2)					OBSERVE	B	
25		SPARE PARTS (10.3.4.2)					HYDROSTATIC TEST OF BOWLS & COLUMN (9.3.13.1)							
26		START-UP					PERFORMANCE TEST (8.3.3)					OBSERVE	B	
27		NORMAL MAINTENANCE					RETEST ON SEAL LEAKAGE (8.3.3.3.2)							
28							TEST DATA POINTS TO (8.3.3.4)					8.3.3.4	B	
29							ALTERNATE TEST TOLERANCES PER (8.3.3.5)							
30	(22)	MASSES kg					NPSH (8.3.4.3)					WIT	B	
31		ITEM No	PUMP	DRIVER	GEAR	BASE	TOTAL	NPSH BASED ON 1ST STG ONLY ALLOWED (8.3.4.3.2)						
32								TEST NPSHA LIMITED TO 110% SITE NPSHA (8.3.3.7)						
33								RETEST REQUIRED AFTER FINAL HEAD ADJUSTMENT (8.3.3.8.2)					OBSERVE	B
34								COMPLETE UNIT TEST (8.3.4.4.1)						
35							SOUND LEVEL TEST (8.3.4.5)					OBSERVE	B	
36		OTHER PURCHASER REQUIREMENTS					CLEANLINESS PRIOR TO FINAL ASSEMBLY (8.2.2.6)							
37		COORDINATION MEETING REQUIRED					LOCATION OF CLEANLINESS INSPECTION:							
38		MAXIMUM DISCHARGE PRESSURE TO INCLUDE (6.3.2)					CHECK FOR CO-PLANAR MOUNTING PAD FLATNESS (7.4.8)					OBSERVE	B	
39		MAX RELATIVE DENSITY					YES	MECHANICAL RUN TEST UNTIL OIL TEMP STABLE (8.3.4.2.1)					OBSERVE	B
40		OPERATION TO TRIP SPEED						4 HR. MECH RUN AFTER OIL TEMP STABLE (8.3.4.2.2)						
41		MAX DIA. IMPELLERS AND/OR NO OF STAGES						BRG HSG RESONANCE TEST (8.3.4.7)						
42		CONNECTION DESIGN APPROVAL (9.2.1.4)						STRUCTURAL RESONANCE TEST (9.3.9.2)						
43		TORSIONAL ANALYSIS / REPORT (6.9.2)						REMOVE / INSPECT HYDRODYNAMIC BEARINGS AFTER TEST (9.2.7.4)						
44		PROGRESS REPORTS (L.3.3)					YES	AUXILIARY EQUIPMENT TEST (8.3.4.6)						B
45		OUTLINE OF PROCEDURES USED FOR OPTIONAL TESTS (L.2.5)					YES	EQUIPMENT TO BE INCLUDED IN AUXILLIARY TESTS :						B
46		ADDITIONNAL DATA REQUIRING 20 YEARS RETENTION (8.2.1.1)						LOCATION OF AUXILIARY EQUIPMENT TEST :						
47		LATERAL ANALYSIS REQUIRED (9.2.4.1.2)						IMPACT TEST (6.12.4.3) PER EN 13445						
48		ROTOR DYNAMIC BALANCE TO 4W/N (6.9.3.5)						PER ASME SECTION VIII						
49		VFD STEADY STATE FORCED RESPONSE ANALYSIS (6.9.2.3)						CASING DISASSEMBLY AFTER TEST (8.3.3.9)					OBSERVE	B
50		TRANSIENT FORCED RESPONSE (6.9.2.4)						SPARE PARTS TEST (8.3.4.8)						
51		BEARING LIFE CALCULATIONS REQUIRED (6.10.1.11)												
52		CASING RETIREMENT THICKNESS DRAWING [L.3.6.1 cc) 7) xiii)]												
53		CONNECTION BOLTING (7.6.1.7)												
54		VENDOR TO KEEP REPAIR AND HT RCDS (8.2.1.1.c)												
55		VENDOR SUBMIT TEST PROCEDURES (8.3.1.1)					YES							B
56		SUBMIT INSPECTION CHECK LIST (8.1.5)												
57		ACOUSTIC ANALYSIS OF CROSSOVER PASSAGE (BB3, BB5)(9.2.1.5)												
58		API-691 DOCUMENTATION REQUIRED (6.1.3.1)												
59														
60														
61														
62														
63														
64														
65														
66														
67														
68														

CENTRIFUGAL PUMP DATASHEET

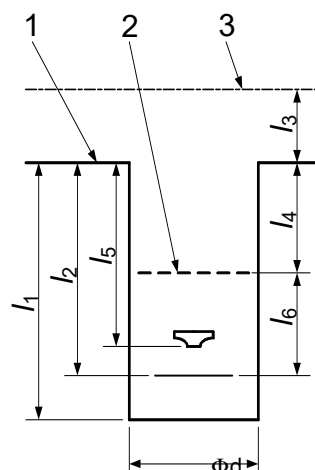
Project N° 218857C Unit 04 Document Code SP 0910 Serial N° 0403 Rev B Page 6

Doc. Client Code: 218857C-04-MAC-DS-4903-0000

Note	VERTICAL PUMP TYPE (Table 1)	VS6	Rev																																																																																
2	REMARKS																																																																																		
3																																																																																			
4																																																																																			
5																																																																																			
6	<table border="1"> <thead> <tr> <th colspan="2">VERTICAL PUMPS</th> <th colspan="2">VERTICAL PUMPS (CONT'D)</th> </tr> </thead> <tbody> <tr> <td>PUMP THRUST:</td> <td>(+) UP</td> <td>(-) DOWN</td> <td>LINE SHAFT:</td> </tr> <tr> <td>STATIC THRUST</td> <td>N</td> <td>N</td> <td>LINE SHAFT DIAMETER</td> </tr> <tr> <td>AT MIN FLOW</td> <td>N</td> <td>N</td> <td>TUBE DIAMETER</td> </tr> <tr> <td>AT RATED FLOW</td> <td>N</td> <td>N</td> <td>LINESHAFT CONNECTION</td> </tr> <tr> <td>AT MAX FLOW</td> <td>N</td> <td>N</td> <td>LEVEL CONTROL</td> </tr> <tr> <td>MAX THRUST</td> <td>N</td> <td>N</td> <td>SUCTION STRAINER TYPE</td> </tr> <tr> <td>SEPARATE SOLEPLATE REQUIRED (9.3.8.3.2)</td> <td></td> <td></td> <td>IMPELLER COLLETS ACCEPTABLE (6.6.3)</td> </tr> <tr> <td>SOLEPLATE Length x Width</td> <td>mm X</td> <td>mm</td> <td>HARDENED SLEEVES UNDER BEARINGS (9.3.10.4)</td> </tr> <tr> <td>SOLEPLATE THICKNESS</td> <td></td> <td>mm</td> <td>STRUCTURAL ANALYSIS (9.3.5)</td> </tr> <tr> <td>SEPARATE MOUNTING FLANGE REQUIRED (9.3.8.3.1)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>COLUMN PIPE:</td> <td></td> <td></td> <td>SUCTION CAN</td> </tr> <tr> <td>DIAMETER</td> <td></td> <td>mm</td> <td>THICKNESS</td> </tr> <tr> <td>TOTAL COLUMN LENGTH</td> <td></td> <td>m</td> <td>LENGTH</td> </tr> <tr> <td>NUMBER OF SECTIONS</td> <td></td> <td></td> <td>DIAMETER</td> </tr> <tr> <td>SPACING (LENGTH PER SECTION)</td> <td></td> <td>m</td> <td>CAN DRAIN PIPED TO SURFACE (9.3.13.4)</td> </tr> <tr> <td>GUIDE BUSHINGS:</td> <td></td> <td></td> <td>ELLIPTICAL BOTTOM HEAD REQUIRED (9.3.2.5)</td> </tr> <tr> <td>NUMBER</td> <td></td> <td></td> <td>PRESSURE CASING WALLS USING SEAMLESS PIPE (9.3.2.7)</td> </tr> <tr> <td>LINE SHAFT BEARING SPACING</td> <td></td> <td>mm</td> <td>HYDROTEST BOWLS/COLUMN @ MAX DIFF PRESSURE (9.3.13.1)</td> </tr> <tr> <td>GUIDE BUSHING LUBE:</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>			VERTICAL PUMPS		VERTICAL PUMPS (CONT'D)		PUMP THRUST:	(+) UP	(-) DOWN	LINE SHAFT:	STATIC THRUST	N	N	LINE SHAFT DIAMETER	AT MIN FLOW	N	N	TUBE DIAMETER	AT RATED FLOW	N	N	LINESHAFT CONNECTION	AT MAX FLOW	N	N	LEVEL CONTROL	MAX THRUST	N	N	SUCTION STRAINER TYPE	SEPARATE SOLEPLATE REQUIRED (9.3.8.3.2)			IMPELLER COLLETS ACCEPTABLE (6.6.3)	SOLEPLATE Length x Width	mm X	mm	HARDENED SLEEVES UNDER BEARINGS (9.3.10.4)	SOLEPLATE THICKNESS		mm	STRUCTURAL ANALYSIS (9.3.5)	SEPARATE MOUNTING FLANGE REQUIRED (9.3.8.3.1)				COLUMN PIPE:			SUCTION CAN	DIAMETER		mm	THICKNESS	TOTAL COLUMN LENGTH		m	LENGTH	NUMBER OF SECTIONS			DIAMETER	SPACING (LENGTH PER SECTION)		m	CAN DRAIN PIPED TO SURFACE (9.3.13.4)	GUIDE BUSHINGS:			ELLIPTICAL BOTTOM HEAD REQUIRED (9.3.2.5)	NUMBER			PRESSURE CASING WALLS USING SEAMLESS PIPE (9.3.2.7)	LINE SHAFT BEARING SPACING		mm	HYDROTEST BOWLS/COLUMN @ MAX DIFF PRESSURE (9.3.13.1)	GUIDE BUSHING LUBE:			
VERTICAL PUMPS		VERTICAL PUMPS (CONT'D)																																																																																	
PUMP THRUST:	(+) UP	(-) DOWN	LINE SHAFT:																																																																																
STATIC THRUST	N	N	LINE SHAFT DIAMETER																																																																																
AT MIN FLOW	N	N	TUBE DIAMETER																																																																																
AT RATED FLOW	N	N	LINESHAFT CONNECTION																																																																																
AT MAX FLOW	N	N	LEVEL CONTROL																																																																																
MAX THRUST	N	N	SUCTION STRAINER TYPE																																																																																
SEPARATE SOLEPLATE REQUIRED (9.3.8.3.2)			IMPELLER COLLETS ACCEPTABLE (6.6.3)																																																																																
SOLEPLATE Length x Width	mm X	mm	HARDENED SLEEVES UNDER BEARINGS (9.3.10.4)																																																																																
SOLEPLATE THICKNESS		mm	STRUCTURAL ANALYSIS (9.3.5)																																																																																
SEPARATE MOUNTING FLANGE REQUIRED (9.3.8.3.1)																																																																																			
COLUMN PIPE:			SUCTION CAN																																																																																
DIAMETER		mm	THICKNESS																																																																																
TOTAL COLUMN LENGTH		m	LENGTH																																																																																
NUMBER OF SECTIONS			DIAMETER																																																																																
SPACING (LENGTH PER SECTION)		m	CAN DRAIN PIPED TO SURFACE (9.3.13.4)																																																																																
GUIDE BUSHINGS:			ELLIPTICAL BOTTOM HEAD REQUIRED (9.3.2.5)																																																																																
NUMBER			PRESSURE CASING WALLS USING SEAMLESS PIPE (9.3.2.7)																																																																																
LINE SHAFT BEARING SPACING		mm	HYDROTEST BOWLS/COLUMN @ MAX DIFF PRESSURE (9.3.13.1)																																																																																
GUIDE BUSHING LUBE:																																																																																			

MATERIALS (additional)			
SUCTION CAN / BARREL:		LINESHAFT SLEEVES:	
DISCHARGE HEAD:		BEARING RETAINER:	
BOWL SHAFT:		SHAFT ENCLOSING TUBE:	
LINESHAFT:		DISCHARGE COLUMN:	
LINESHAFT HARDFACING:		PRESSURE RATING:	
BELLMOUTH:		HEAD	
BOWL BEARING:		COLUMN PIPE	
LINESHAFT BEARING:		BOWL	

SUMP ARRANGEMENT	
SUMP DIMENSIONS:	
GRADE ELEVATION	1 m
LOW LIQUID LEVEL ($l_3 + l_4$)	2 m
C.L. OF DISCHARGE	3 m
SUMP DEPTH	l_1 m
PUMP LENGTH	l_2 m
GRADE TO DISCH.	l_3 m
GRADE TO LOW LIQUID LVL	l_4 m
GRADE TO 1ST STG IMPL'R.	l_5 m
SUBMERGENCE REQ'D	l_6 m
SUMP DIAMETER	Φd m



CENTRIFUGAL PUMP DATASHEET

Project N°	Unit	Document Code	Serial N°	Rev	Page
218857C	04	SP 0910	0403	B	7

Doc. Client Code: 218857C-04-MAC-DS-4903-0000

1	Note #	NOTES	Rev
2	(1)	ONE PUMP IN OPERATION AND ONE SPARE.	
3	(2)	FOR SITE CONDITIONS & UTILITY DATA REFER TO DOC. 218857C-00-PR-BD-0001-0000_A.	
4	(3)	FOR HAZARDOUS AREA CLASSIFICATION REFER TO HAZARDOUS AREA CLASSIFICATION DRAWINGS.	
		DOC.NO.218857C-04-ELE-HAD-0001-0001	B
5	(4)	CORRESPONDING TO MINIMUM AMBIENT TEMPERATURE.	
6	(5)	ANTICIPATED (DISCHARGE) MECHANICAL DESIGN PRESSURE IS BASED ON ESTIMATED PUMP SHUTOFF PRESSURE. DETAIL	
7		ENGINEERING CONTRACTOR TO UPDATE DISCHARGE SYSTEM MECHANICAL DESIGN PRESSURE BASED ON ACTUAL INSTALLED	
8		PUMP SHUTOFF, WHICH SHALL NOT EXCEED 125% OF THE DIFFERENTIAL HEAD AT RATED FLOW.	
9	(6)	MATERIAL SELECTION TO BE FINALIZED ON VENDOR DESIGN.	
10	(7)	Deleted.	B
11	(8)	NPSH SHALL EXCEED THE NPSH3 BY AT LEAST 0.5M, OVER THE ENTIRE ANTICIPATED OPERATING RANGE.	
12	(9)	ALL CALCULATIONS WERE PERFORMED WITH REFERENCE TO THE GROUND LEVEL.	
13	(10)	ENVIRONMENTAL TO BE CONSIDERED MARINE SALT LADEN AND CORROSIVE. DUSTY ATMOSPHERE WITH SAND POLLUTION TO BE	
14		CONSIDERED.	
15	(11)	ALTERNATIVE CONDITION IS REFERENCED TO MAXIMUM SUCTION PRESSURE. RATED CONDITION IS REFERENCED TO MINIMUM SUCTION PRESSURE.	B
16	(12)	ESTIMATED HYDRAULIC POWER CONSIDERED THE MAXIMUM UNSATURATED C4 DENSITY AT MINIMUM TEMPERATURE.	
17	(13)	PUMP IS SUBJECTED TO STEAM OUT CONDITIONS 4.5 BARG @ 166°C AND FV @ 166°C.	
18	(14)	BARREL TYPE.	
19	(15)	Two Flat/Dimpled Faces only per Bearing Housing	B
20	(16)	Lubrication, shaft sealing and oil-control systems and auxiliares spec doc. no. 218857C-00-MAC-SPE-0004-0000.	B
21	(17)	Project welding specification to be applied 218857C-00-MT-SPE-0001-0000.	B
22	(18)	Test applicability for PMI: all pressure component in contact with process fluid including and not limited to casing, impeller, shaft.	B
23	(19)	The noise level shall be measured 1 m from the equipment and also at the ground level or nearest manned platform/workplace.	B
24	(20)	At performance Test, the measured Shut-off head shall be within 110% and 120% of the measured rated head and within the allowable Testing tolerances of API 610 XII Table 16.	
25		A calibrated and certified shop motor or a torque meter shall be used for evaluating pump rated power.	B
26		Preliminary, the mechanical seal plan selection for dual pressurized seal arrangement is Plan 53B.	
27	(21)	To be confirmed by vendor during detail engineering phase.	B
28	(22)	Witnessed NPSH3 test shall be performed on each pump, when the margin is 1.0 m or less.	B
29	(23)	Magnetic Particle or Liquid Penetrant required.	B
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
50			
51			
52			
53			
54			
55			
56			
57			
58			
59			
60			
61			
62			
63			
64			
65			
66			
67			
68			

The present document or drawing is property of TECHNIP ENERGIES ITALY S.p.A. and shall not, under any circumstances, be totally or partially, directly or indirectly, transferred, reproduced, copied, disclosed or used, without its prior written consent, for any purpose and in any way other than that for which it is specifically furnished or outside the extent of the agreed upon right of use.

XLS - SP-0910 SH 7 d 7 - Rev. 4