中海油石化工程有限公司 CNOOC Petrochemical Engineering Co.,Ltd.	**DATA SHEET FOR BOOSTER PUMP (P-282221A/B/C)**	Owner Doc.No.	CMIT-240048-728-ROT-15.17-0001	
		Job's Doc. No.	253001D0728ME00D01	
		Phase	Detailed Design	
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Company:	CNOOC IRAQ LIMITED
Project:	FQN NEW DEGASSING STATION UPGRADING PROJECT
Unit:	FQN DEGASSING STATION
Contract No.:	CMIT-PRT-10.53-240048

Discipline: ROT

Prepared by: Liu H.Q.

Checked by: Xie Long

Approved by: Huang J.D.

Rev.	Description	Prepared	Checked	Approved		Date
C	ISSUED FOR APPROVAL	Liu Hanqi	Xie Long	Huang Jingdong		20250925
B	ISSUED FOR APPROVAL	Liu Hanqi	Xie Long	Huang Jingdong		20250907
A	ISSUED FOR REVIEW	Liu Hanqi	Xie Long	Huang Jingdong		20250720

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APPLICABLE TO:	PURCHASE			APPLICABLE NTL/INTNTL STANDARD:	API610 12th Edition			
FOR:	CNOOC IRAQ LIMITED			MANUFACTURER:	*			
SITE:	MISSAN OIL FIELD, MISSAN PROVINCE, IRAQ			TYPE:	CENTRIFUGAL PUMP			
UNIT:	FQN DEGASSING STATION	NO. REQ:	3(2W+1S)	MODEL:	*	SERIAL NO.:	*	
SERVICE:	BOOSTER PUMPS			NO. STAGES:	*	PUMP SIZE:	*	
ITEM NO.:	P-282221A/B/C			PID NO.:	*			

LIQUID CHARACTERISTICS

	Units	Maximum	Minimum
LIQUID TYPE OR NAME :		Oil and Water	
VAPOR PRESSURE :	kPa(a)	**1100**	
RELATIVE DENSITY :		**0.95**	**0.915**
SPECIFIC HEAT :	kJ(kg-k)		
VISCOSITY :	mPa·s	**40**	**15.2**

Note

Max/Min values referenced only to the operating conditions listed herein.

SERVICE : CONTINUOUS

PUMPS OPERATE IN :(6.1.13) PARALLEL

CORROSION DUE TO :(6.12.1.9) Cl^-, Wet H_2S, CO_2

EROSION DUE TO : (6.12.1.9)

H_2S CONCENTRATION (ppm) :(6.12.1.13) 400

CHLORIDE CONCENTRATION (mg/l) : 147200

PARTICULATE SIZE (DIA IN MICRONS)

PARTICULATE CONCENTRATION (ppm)

OIL CONTENT(ppm)

CO_2 CONCENTRATION (ppm) : 100

CORROSION ALLOWANCE :(6.3.10)(7.6.2.3) Note35

OPERATING CONDITIONS (6.1.3)

	Units	Maximum	Rated	Normal	Minimum
NPSHa Datum:			**C.L. Impeller**		
PUMPING TEMPERATURE :	℃			67~73	
FLOW :	m³/hr	135	135		
DISCHARGE PRESSURE : (6.3.2)	kPa(g)		2570	2570	
SUCTION PRESSURE :	kPa(g)	1054	1044	1044	
DIFFERENTIAL PRESSURE :	kPa		1526	1526	
DIFFERENTIAL HEAD :	m		170	170	
$NPSH_A$:	m		5	5	
HYDRAULIC POWER :	kW		*		

SITE AND UTILITY DATA

LOCATION: **OUTDOOR** **UNHEATED** **UNDER ROOF**

MOUNTED AT : **GROUND** ● TROPICALISATION REQD

ELECTRIC AREA CLASSIFICATION: (6.1.22) ZONE **2**

GROUP **IIB** **Class II /Group** TEMP CLASS **T4**

SITE DATA :

ELEVATION (MSL) : **25** m **BAROMETER :** **750.43** mm Hg

RANGE OF AMBIENT TEMPS:MIN / MAX **-5** / **55** ℃

RELATIVE HUMIDITY: MIN / MAX **25** / **80** %

UNUSUAL CONDITIONS: **DUST**

UTILITY CONDITIONS :

ELECTRICITY :	DRIVERS	HEATING	CONTROL	SHUTDOWN
VOLTAGE	**400V**		**230V**	
PHASE	**3**		**1**	
HERTZ	**50**		**50**	

COOLING WATER : N/A

	INLET	RETURN	DESIGN
TEMP ℃		MAX	
PRESS. kPa		MIN	

SOURCE

COOLING WATER CHLORIDE CONCENTRATION: ppm

INSTRUMENT AIR : MAX kPa MIN kPa

STEAM

		DRIVERS	HEATING
TEMP ℃	Max		
	Min		
PRESS. kPa	Max		
	Min		

PERFORMANCE

PROPOSAL CURVE NO.	*	RPM	*
As Tested Curve No.		*	
IMPELLER DIA.:(NOTE13)	RATED *	MAX. *	MIN. * mm
RATED POWER	* kW	EFFICIENCY	* (%)
RATED CURVE BEP FLOW (at rated impeller dia) (6.1.16)			* m³/hr
MIN FLOW :	THERMAL * m³/hr	STABLE	* m³/hr
PREFERRED OPERATING REGION (6.1.16)		* to *	m³/hr
ALLOWABLE OPERATING REGION (6.9.4.1)		* to *	m³/hr
MAX HEAD @ RATED IMPELLER			* m
MAX POWER @ RATED IMPELLER			* kW
NPSH3 AT RATED FLOW (6.1.9) :			* m
CENTERLINE OF PUMP TO NPSHA DATUM			* m
NPSH MARGIN AT RATED FLOW (6.1.10) :		*	m
SPECIFIC SPEED (6.1.17)		m³/hr,m	*
SUCTION SPECIFIC SPEED LIMIT (6.1.11)		m³/hr,m	
SUCTION SPECIFIC SPEED (6.1.11)		m³/hr,m	*
MAX. ALLOW. SOUND PRESSURE LEVEL (6.1.19)			85@1m (dBA)
ESTIMATED MAX SOUND PRESSURE LEVEL			(dBA)
MAX. ALLOWABLE SOUND POWER LEVEL (6.1.19)			*
ESTIMATED MAX SOUND POWER LEVEL			

DRIVER (7.1)

DRIVER TYPE	**MOTOR**
GEAR	**NO**
VARIABLE SPEED REQUIRED	**NO**
SOURCE OF VARIABLE SPEED	
OTHER	
MANUFACTURER	*
NAMEPLATE POWER (7.1.5)	* kW
NOMINAL RPM	*
RATED LOAD RPM	*
FRAME OR MODEL	
ORIENTATION	**HORIZONTAL**
LUBRICATION	**GREASE**
BEARING TYPE :(7.1.9)	**Anti-Friction**
RADIAL	* / *
THRUST	* / *
STARTING METHOD	**Closed-Valve (Unloaded) Start**
DRIVER DATASHEET NUMBER	*
SERVICE FACTOR / EXPLOSION PROOF:	* / Ex(d) IIB T4
DRIVER DESIGN STANDARD	*

ENCLOSURE: IP55 for motor, IP65 for junction box. INSULATION CLASS: F TEMPERATURE RISE: B

* To be filled and confirmed by the Vendor.

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CONSTRUCTION

API PUMP TYPE: OH2 [Based on API 610 definitions]

NOZZLE CONNECTIONS(6.4.2):

	Size	Facing	Rating	Position
SUCTION	VTA	RF	300	END
DISCHARGE	VTA	RF	300	TOP

PRESSURE CASING AUX. CONNECTIONS: (6.4.3) (7.6.2.2)

	No.	Size	Type	Facing	Rating	Posn.
BALANCE/LEAK OFF						
DRAIN		VTA	*	RF	300	BOTTOM
VENT						
PRESSURE GAUGE						
TEMP GAUGE						
WARM-UP LINE						
SKID DRAIN		VTA				

DRAIN VALVE SUPPLIED BY(7.6.2.5): SUPPLIER
DRAINS MANIFOLDED (7.6.2.5): YES
VENT VALVE SUPPLIED BY: SUPPLIER
VENTS MANIFOLDED:
THREADED CONS FOR PIPELINE SERVICE & ＜55℃ (6.4.3.2): NO
SPECIAL FITTINGS FOR TRANSITIONING (6.4.3.3):
CYLINDRICAL THREADS REQUIRED (6.4.3.2):
GUSSET SUPPORT REQUIRED:
MACHINED AND STUDDED CONNECTIONS (6.4.3.6):
ROUTE DRAIN TO SKID EDGE: YES

CASING MOUNTING(6.3.14, 9.3.8.3): CENTERLINE
CASING TYPE: MULTIPLE VOLUTE
OH3 BACK-PULLOUT LIFTING DEVICE REQD. (9.1.2.6):
CASE PRESSURE RATING:
MAWP(6.3.6) : * bar g @ DESIGN ℃
HYDROTEST (8.3.2)(8.3.2.2,5,6,8,11) : 1.5*MAWP bar g @ AMBIENT ℃
WETTING AGENT REQUIRED FOR HYDROTEST(8.3.2.7) : NO
HYDROTEST OH PUMP AS ASSEMBLY (8.3.2.14) : YES
SUCT'N PRESS. REGIONS DESIGNED FOR MAWP (6.3.8) : YES

ROTOR:
SHAFT FLEXIBILITY INDEX (SFI) (9.1.1.3): YES
FIRST CRITICAL SPEED WET (MULTISTAGE PUMPS ONLY): N / A
COMPONENT BALANCE TO ISO 21940-11 G1.0 (6.9.3.4): G2.5
SHRINK-FIT-LIMITED MOVEMENT IMPELLERS (9.2.2.3): N / A
ROTATION (VIEWED FROM COUPLING END) : CCW
IMPELLERS INDIVIDUALLY SECURED (6.6.3) : YES

COUPLING : (7.2)
MANUFACTURER: *
MODEL: Mechanical Flexing (Flexible) and Spacer
RATING (POWER/100 RPM): *
SPACER LENGTH (7.2.2.d): * mm
SERVICE FACTOR (7.2.3): ≥1.5
TYPE (RIGID / FLEXIBLE): FLEXIBLE
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): API 671

GUARDS : (7.3)
COUPLING AND SHAFT GUARD STANDARD (7.3): ISO 14120
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) : NON SPARKING
SHAFT GUARD MATERIAL (7.3.2.1; 7.3.3.3) :
SPARK RESISTANT MATERIAL REQUIRED (7.3.2.1) :

MATERIAL (6.12.1.1)

APPENDIX H CLASS: D-2
MINIMUM DESIGN METAL TEMPERATURE (6.12.4.1): -5 ℃
MAXIMUM ALLOWABLE TEMPERATURE(3.1.20): 101 ℃
REDUCED-HARDNESS MATERIALS REQ'D (6.12.1.14): YES
APPLICABLE HARDNESS STANDARD(6.12.1.14): MR0175
BARREL : N/A
CASE : ASTM A995 Gr.5A
DIFFUSERS :
IMPELLER : ASTM A890 Gr.5A
IMPELLER WEAR RING : *
CASE WEAR RING : *
SHAFT: ASTM A276 - UNS S32760
BOWL (IF VS-TYPE): N/A
COUPLING / COUPLING GUARD : * / *
INSPECTION CLASS: Level 3

BEARINGS AND LUBRICATION (6.10.1)

BEARING (TYPE / NUMBER): (6.10.1.1) (6.10.1.11)
RADIAL * / *
THRUST * / *
REVIEW AND APPROVE THRUST BEARING SIZE : (9.2.5.2.6)
BEARING HOUSING (6.10.2.1,9,12,13,14): YES
LUBRICATION (6.11.3) (6.11.4) (9.3.12.4) : RING OIL
PRESSURE LUBE SYSTEM TO API-614, CHAPTER:
API-614 DATA SHEETS ATTACHED (9.2.6.4):
PRESSURIZED LUBE OIL SYSTEM MOUNTED ON BASEPLATE:
LOCATION OF PRESSURIZED LUBE OIL SYSTEM:
INTERCONNECTING PIPING PROVIDED BY: SUPPLIER
OIL VISC. ISO GRADE: VG 46
VENT-TO-HOUSING CONSTANT LEVEL OILER(6.10.2.4): REQUIRED
OIL MIST PROVISIONS(6.11.3): *
GREAE LUBRICATION(6.11.4): *

BASEPLATE

API BASEPLATE NUMBER (ANNEX D) : *
IF NON-STD BASEPLATE DIMENSIONS (L×W)
BASEPLATE CONSTRUCTION (7.4): FULL TOP DECKING
BASEPLATE DRAINAGE (7.4.1): b) SLOPED FULL DECK PLATE
MOUNTING : GROUTED
NON-GROUT CONSTRUCTION (7.4.1.e) :
VERTICAL LEVELING SCREWS (7.4.20) : REQUIRED
LONGITUDINAL DRIVER POSITIONING SCREWS: REQUIRED
SUPPLIED WITH : ● GROUT AND VENT HOLES: YES
● DRAIN CONNECTION: YES
DEMONSTRATE BASEPLATE PAD FLATNESS (7.4.9) : *
MOUNTING PADS SIZED FOR BASEPLATE LEVELING (7.4.8): YES
PROVIDE SPACER PLATE UNDER ALL EQUIPMENT FEET(7.4.10): *
BOLT OH 3/4/5 PUMP TO PAD / FOUNDATION : N/A
PROVIDE SOLEPLATE FOR OH 3/4/5 PUMPS (9.1.2) : N/A
OTHER

REMARKS :

* To be filled and confirmed by the Vendor.

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	Note	INSTRUMENTATION		
		INSTRUMENTATION PER API-670 (7.5.2)		
		ACCELEROMETER (7.5.2.1)		
		NUMBER OF ACCELEROMETERS		
		MOUNTING LOCATION OF ACCELEROMETERS		
		PROVISION FOR MTG ONLY (6.10.2.13)		
		FLAT SURFACE REQUIRED (6.10.2.14)		YES
		VIBRATION PROBES (7.5.2.2) (REMARK 6, REMARK 8)		
		VIBRATION PROBES REQUIRED (7.5.2.2) :	VTC	
		NUMBER PER RADIAL BEARING		
		NUMBER PER AXIAL BEARING		
		THREADED PROVISION FOR MTG ONLY (6.10.2.13; 6.6.12)		
		FLAT SURFACE PROVISION ONLY (6.10.2.14)		
		MONITORS AND CABLES SUPPLIED BY (7.5.2.6)(7.5.2.7)		
		TEMPERATURE (7.5.2.3) (REMARK 1)		
		TEMPERATURE PROBES REQUIRED (7.5.2.3) (7.5.2.5) :	VTC	
		PROVISIONS FOR MOUNTING ONLY (6.10.2.2)		
		RADIAL BEARING TEMPERATURE :		
		NUMBER PER RADIAL BEARING :		
		THRUST BEARING TEMPERATURE :		
		NUMBER PER THRUST BEARING ACTIVE SIDE :		
		NUMBER PER THRUST BEARING INACTIVE SIDE :		
		TEMP. GAUGES (WITH THERMOWELLS) (9.1.3.5)		
		TEMP. GAUGE LOCATION :		
		SUPPLY UPPER/LOWER CASING RTD'S FOR WARMUP		
		PRESSURE GAUGE TYPE (7.6.2.10)		
		PRESSURE GAUGE LOCATION :		

Remarks

1. In Between Seals, PI and TI shall be established on the Seal Plan Supply and Return Lines.
2.. The API Seal Code, Seal Drawing, and Seal Manufacturers recommendation for the selected seal shall be furnished along with the Bid.
3. The Wetted Parts Material of Cartridge Seal shall be compatible with the Pumping Fluid and the Material of Seal Flush Systems shall be compatible with the Barrier Fluid.
4. In case Plan 53B selected, Nitrogen Charging Kit and Manual Makeup System (Portable Trolley with Hand Pump) shall be provided by the Vendor.
5. Pump shall be Self-Venting.
6.Probes Provision Supply shall be verified based on the Final Bearing Selection stated on Page 3 of 6.
7. Fan Cooling should be the 1st choice. If Fan Cooling is inadequate, one of Annex B Plans shall be selected.
8.If the booster pump provided by the Vendor is equipped with rolling bearings, an accelerometer must be installed at the bearing housing.

* To be filled and confirmed by the Vendor.

SEAL SUPPORT SYSTEM MOUNTING		
SEAL SUPPORT SYSTEM MOUNTED ON PUMP BASEPLATE (7.6.1.4)		YES
LOCATION ON OR OFF BASEPLATE (7.4.6) :		ON BASEPLATE
INTERCONNECTING PIPING BY		VENDOR
MECHANICAL SEAL (6.8.1)		
API 682 DATA SHEET ATTACHED :		VENDOR PROVIDE
ADDITIONAL CENTRAL FLUSH PORT (6.8.9)		*
HEATING JACKET REQ'D. (6.8.11)		
FLUSH PLAN (REMARK 2,3,4)		PLAN11+53B
HEATING AND COOLING (6.1.22)		
COOLING REQ'D (REMARK 7)		YES
COOLING WATER PIPING PLAN (7.6.3.1) (7.6.3.3)		
COOLING WATER PIPING (7.6.2.7) FITTINGS		
COOLING WATER PIPING MATERIALS		
COOLING WATER REQUIREMENTS:	SUPPLY PRESSURE	kPag
	BEARING HOUSING	m³/hr
	HEAT EXCHANGER	m³/hr
	TOTAL COOLING WATER	m³/hr
HEATING MEDIUM		
OTHER		
HEATING PIPING (7.6.2.7)		
PIPING & APPURTENANCES (7.6.1.1)(8.3.2.13,15,16)		
TAG ALL OPIFICES (7.6.2.4)		YES
SOCKET WELD UNION ON 1st SEAL GLAND NIPPLE (7.6.2.8)		NO
MANIFOLD AUX PIPING SYSTEMS AT SKID EDGE (7.6.1.6) :		
VENT : (REMARK 5)		N / A
DRAIN :		YES
COOLING WATER :		*
AUXILIARY SYSTEM MATERIALS (7.6.1.2) :		TABLE H.4
THREADED PIPING JOINTS ALLOWED (7.6.2.9) :		NO

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Note	SURFACE PREPARATION, PAINT & SPARES	
	MANUFACTURER'S STANDARD (8.4.3.4)	YES
	OTHER (SEE BELOW)	
	SPECIFICATION NO.	
	PUMP:	
	PUMP SURFACE PREPARATION	REQUIRED
	PRIMER	*
	FINISH COAT	*
	BASEPLATE:	
	BASEPLATE SURFACE PREPARATION	REQUIRED
	PRIMER:	*
	FINISH COAT	*
	UNDERSIDE	*
	SHIPMENT: (8.4.1)	EXPORT
	EXPORT BOXING REQUIRED	YES
	OUTDOOR STORAGE MORE THAN 12 MONTHS	YES
	SPARE ROTOR ASSEMBLY PACKAGED FOR:	
	ROTOR STORAGE ORIENTATION (9.2.8.2)	
	SHIPPING & STORAGE CONTAINER FOR VERTICAL STORAGE (9.2.8.3)	
	N2 PURGE REQUIRED (9.2.8.4)	
	SPARE PARTS (L.3.4)	
	START-UP	YES
	NORMAL MAINTENANCE	YES

WEIGHTS kg (7.1.3)

ITEM No	PUMP	DRIVER	GEAR	BASE	TOTAL
*	*	*	*	*	*

DIMENSION mm

L*W*H	*	*	*

OTHER PURCHASER REQUIREMENTS

COORDINATION MEETING REQUIRED (10.1.3)	YES
MAXIMUM DISCHARGE PRESSURE TO INCLUDE (6.3.2)	
MAX RELATIVE DENSITY	YES
OPERATION TO TRIP SPEED	
MAX DIA. IMPELLERS AND/OR NO OF STAGES	YES
CONNECTION DESIGN APPROVAL (9.2.1.4)	
TORSIONAL ANALYSIS / REPORT (6.9.2.10)	NO
ANNEXURE L REQUIREMENTS	YES
PROGRESS REPORTS (L.3.3)	YES
OUTLINE OF PROCEDURESUSED FOR OPTIONAL TESTS (L.2.5)	YES
ADDITIONNAL DATA REQUIRING 20 YEARS RETENTION (8.2.1.1)	YES
LATERAL ANALYSIS REQUIRED (9.2.4.1.2)	
ROTOR DYNAMIC BALANCE TO 4W/N (6.9.3.5)	
INSTALLATION LIST IN PROPOSAL (L.2.3.2.i))	YES
VFD STEADY STATE FORCED RESPONSE ANALYSIS (6.9.2.3)	NO
TRANSIENT FORCED RESPONSE(6.9.2.4)	
BEARING LIFE CALCULATIONS REQUIRED (6.10.1.11)	YES
CASING RETIREMENT THICKNESS DRAWING [L.3.6.1 cc) 7) xiii]	
CONNECTION BOLTING (7.6.1.7)	PTFE COATED
VENDOR TO KEEP REPAIR AND HT RCDS (8.2.1.1.c)	YES
VENDOR SUBMIT TEST PROCEDURES (8.3.1.1)	YES
SUBMIT INSPECTION CHECK LIST (8.1.5)	YES
ACOUSTIC ANALYSIS OF CROSSOVER PASSAGE (BB3,BB5) (9.2.1.5)	NO
API-691 DOCUMENTATION REQUIRED (6.1.3.1)	

* To be filled and confirmed by the Vendor.

TEST			Rev
SHOP INSPECTION (8.1.1)		Yes	
PERFORMANCE CURVE & DATA APPROVAL PRIOR TO SHIPMENT (8.3.3.4.6)		YES	
TEST WITH SUBSTITUTE SEAL (8.3.3.3.1)		NO	
MATERIAL CERTIFICATION REQUIRED (6.12.1.8):	CASING	YES	
	IMPELLER	YES	
	SHAFT	YES	
OTHER(AUXILIARY PIPING & PIPING COMPONENTS)		YES	
CASTING REPAIR WELD PROCEDURE APPR REQD (6.12.2.5) :		YES	
INSPECTION REQUIRED FOR CONNECTION WELDS (6.12.3.4)			
	MAG PARTICLE		
	RADIOGRAPHY	YES	
	LIQUID PENETRANT	YES	
	ULTRASONIC		
INSPECTION REQUIRED FOR CASTINGS (8.2.2.3.2) (8.2.2.4)			
	MAG PARTICLE		
	RADIOGRAPHY	YES	
	LIQUID PENETRANT	YES	
	ULTRASONIC		
HARDNESS TEST REQUIRED (6.12.1.14; 8.2.2.7)		YES	
ADDNL SUBSURFACE EXAMINATION (6.12.1.6) (8.2.1.3)		YES	
	FOR	SHAFT/IMPELLER	
	METHOD	ULTRASONIC	
PMI TESTING REQUIRED (8.2.2.8)		YES	
COMPONENTS TO BE TESTED		ALL PRESSURE BOUNDARY PARTS OF ALLOY MATERIALS	
RESIDUAL UNBALANCE TEST (J.4.1.2)		YES	
NOTIFICATION OF SUCCESSFUL PERFORMANCE TEST (8.1.1.3) (8.3.3.4.6)		YES	
BASEPLATE (NOZZLE LOAD) TEST (7.4.24)			
HYDROSTATIC TEST (8.3.2)		WIT	
HYDROSTATIC TEST OF BOWLS & COLUMN (9.3.13.1)			
PERFORMANCE TEST (8.3.3)		WIT	
TEST IN COMPLIANCE WITH (8.3.3.2)	YES	8.3.3.2	
TEST DATA POINTS TO (8.3.3.4)	YES	8.3.3.4	
TEST TOLERANCES TO (8.3.3.5)		TABLE 16	
ALTERNATE TEST TOLERANCES PER (8.3.3.5)			
NPSH (8.3.4.3)		WIT	
NPSH BASED IN 1ST STG ONLY ALLOWED (8.3.4.3.2)			
TEST NPSHA LIMITED TO 110% SITE NPSHA (8.3.3.7)		*	
RETEST ON SEAL LEAKAGE (8.3.3.3.2)		WIT	
RETEST REQUIRED AFTER FINAL HEAD ADJ USTMENT(8.3.3.8.2)			
COMPLETE UNIT TEST (8.3.4.4.1)		WIT	
SOUND LEVEL TEST (8.3.4.5)		WIT	
CLEANLINESS PRIOR TO FINAL ASSEMBLY (8.2.2.6)		NON-WIT	
LOCATION OF CLEANLINESS INSPECTION		@ VENDOR'S	
CHECK FOR CO-PLANAR MOUNTING PAD SURFACES (7.4.8) :		NON-WIT	
MECHANICAL RUN TEST UNTIL OIL TEMP STABLE (8.3.4.2.1) :		WIT	
4 HR. MECH RUN AFTER OIL TEMP STABLE (8.3.4.2.2)		WIT	
BRG HSG RESONANCE TEST (8.3.4.7)		*	
STRUCTURAL RESONANCE TEST (9.3.9.2)			
REMOVE / INSPECT HYDRODYNAMIC BEARINGS AFTER TEST (9.2.7.4)			
AUXILIARY EQUIPMENT TEST (8.3.4.6)		WIT	
EQUIPMENT TO BE INCLUDED IN AUXILLIARY TESTS:		SEAL PLAN 53B WHOLE SYSTEM	
LOCATION OF AUXILIARY EQUIPMENT TEST		@ VENDOR'S	
IMPACT TEST (6.12.4.3)	PER EN 13445		
	PER ASME SECTION VIII		
CASING DISASSEMBLY AFTER TEST (8.3.3.9)			
SPARE PARTS TEST (8.3.4.8)			

PRESSURE VESSEL DESIGN CODE REFERENCES

THESE REFERENCES SHALL BE PROVIDED BY THE MANUFACTURER

CASTING FACTORS USED IN DESIGN (PER TABLE 4)

SOURCE OF MATERIAL PROPERTIES (6.3.5) **YES**

WELDING AND REPAIRS (6.12.3.1)

THESE REFERENCES SHALL BE PROVIDED BY THE PURCHASER. (DEFAULT TO TABLE 11 IF NO PURCHASER PREFERENCE IS STATED)

ALTERNATE WELDING CODES AND STANDARDS: **YES**

WELDING REQUIREMENT (APPLICABLE CODE OR STANDARD) **DEFAULT PER TABLE 11**

ALTERNATE WELDER / OPERATOR QUALIFICATION STANDARD :

ALTERNATE WELDING PROCEDURE QUALIFICATION TANDARD :

NON-PRESSURE RETAINING STRUCTURAL WELDING STANDARD (BASEPLATES OR SUPPORTS) :

STANDARD FOR MAGNETIC PARTICLE OR LIQUID PENETRANT EXAMINATION (PLATE EDGES):

STANDARD FOR POSTWELD HEAT TREATMENT :

STANDARD FOR POSTWELD HEAT TREATMENT OF CASING FABRICATION WELDS :

MATERIAL INSPECTION

THESE REFERENCES MUST BE LISTED BY THE PURCHASER

DEFAULT TO TABLE 14 (8.2.2.1) **YES** TABLE 14 INSPECTION CLASS: III

ALTERNATIVE MATERIAL INSPECTIONS AND ACCEPTANCE CRITERIA (SEE TABLE 15) (8.2.2.5)

TYPE OF INSPECTION	METHOD	FOR FABRICATIONS	FOR CASTINGS
RADIOGRAPHY			
ULTRASONIC INSPECTION			
MAGNETIC PARTICLE INSPECTION			
LIQUID PENETRANT INSPECTION			
VISUAL INSPECTION (all surfaces)			

NOTES :

1. Vendor shall complete this Datasheet and validate/verify/complete all materials, dimensions and sizes against the fluid characteristics. It shall be submitted as part of the Vendor bid.
2. This data sheet shall be read in conjunction with the PID (CMIT-240048-728-PCS-15.11-0016) . The Pump Scope of Supply shall be as specified (battery limits) in the relevant PID.
3. For Detailed Medium Properties information, please refer to the Material and Heat Mass Balance PFD (CMIT-240048-728-PCS-15.01-0002).
4. The pump (including motor and auxiliaries (excluding mechanical seal, wear rings, shaft sleeve, gasket, shim and O-rings)) shall be designed and constructed for a minimum service life of 25 years and at least 3 years of continuous (uninterrupted) operation.
5. The Preferred Operating Region shall be within 70% to 120% of Pump's BE Flow-rate. The Rated Flow shall be within the region of 80% to 110% of the Pump's Best Efficiency Flow-rate as furnished.
6. For Parallel operation, Head Rise from Rated Point to Shutoff shall be ≥10%.
7. The Vendor shall furnish the Performance Curve for the Pumps with the Duty Point, Power Absorbed, Efficiency, and NPSH Required marked along with the Bid. Moreover, the Vendor shall provide a similar and discrete Performance Curve for numerous pumps' operation modes (parallel or series).
8. The Casing and Impeller types shall be selected by the Vendor based on the Fluid Properties and the targeted Operating and Design Parameters.
9. The Vendor shall select and confirm the Mechanical Seal Type and Flushing Plan suitable for the Pumping Fluid to comply with API 682-specific requirements.
10. All necessary Power/Control Panels, Instruments, Cabling, and Junction Boxes shall be supplied by the Vendor.
11. The Pump's Coating shall meet the requirements of Local Ambient Conditions such as Ultraviolet Radiation and Sandstorm. The Vendor shall select a Coating of high quality.
12. The Baseplate Rim/Pan shall be sloped at least 1:120 toward the Pump's End and equipped with a Tapped Drain Opening ≥ 2 NPS.
13. The Baseplate shall be extended under the Pump, Drive Train Components, all Pipe Joints, and Pipe Flange Faces (including Pump Suction and Discharge Flanges) where all shall be within the Drain Pan/Rim Collection Area.
14. Mounting Pads shall be provided for the Pump and all Drive Train Components.
15. The Baseplate shall be equipped with Lifting Lugs for at least a four-point lift. Lifting the Baseplate, complete with all equipment mounted, shall not permanently distort or otherwise damage the Baseplate or the Machinery mounted on it.
16. The Vendor (Manufacturer) shall guarantee the material of the Pump can meet the requirements for anticorrosion following API610/MR0175. All Pump Materials (including the Coupling Guard) shall be Non-Spark.
17. As a minimum, 1m shall be kept as NPSH Margin (difference between the NPSH3 and the determined $NPSH_a$). The NPSH3, specified by the Vendor, shall be based on water (at a Temperature <55 °C) at Rated Flow and Rated peed.
18. The Rated Impeller Diameter shall be ≤ 95% of the Maximum Impeller Size possible for the Pump's Casing.
19. All Shafts shall be of Forged Material. Rotors/Coupling shall dynamically be balanced to ISO G2.5 quality.
20. Auxiliary Connections to the Pressure Casing, except the Seal Gland, shall be Socket-Welded, Butt-Welded, or Integrally-Flanged.
21. Design and Supply of the Anchor Bolts and Levelling Screws shall be in the Vendor's Scope of Supply.
22. The Bolts/Nuts shall be coated with Anti-Rust Approved Materials. The Bolts/Nuts for Internal Parts shall be of Anti-Corrosive Materials. The Bolting for Pressure Casings shall conform to API 610-specific requirements.
23. The Pump Shutoff Pressure at the Rated Impeller Diameter shall not exceed the downstream System Design Pressure considering Maximum Suction Pressure, Maximum Density, Operation up to Trip Speed, and all applicable tolerances.
24. All Pressure Parts shall be provided with Material Certificates conforming to BS EN10204-type 3.1.
25. All fabricated joints in the Seal System Piping shall be Full Penetration Butt Welded and the Weld Root shall be made by GTAW Welding.

	Note		Rev
2		26. Noise Level (Sound Pressure Level (Lp)) shall be ≤85dBA @ 1m distance from the Equipment's (Driver + Driven Equipment Train) surface at all directions.	
3		Acoustic hoods shall be provided, if necessary to meet the Noise Level's requirements.	
4		27. The number of Vibration Probes and Temperature Detectors requirements will depend on the Equipment and the selected Bearings as it shall be finalized by the Vendor.	
5		The Monitors with the Connecting Cables to the Probes and Detectors shall be supplied by the Vendor per API670.	
6		28. Suction/Discharge Mating Flanges' along with Bolts/Nuts and Gasket to be supplied by the Vendor.	
7		29. The Vendor shall supply all Tools, Accessories, and Consumables required for the Skid Installation, Commissioning, Test-run, and 3 months of Operation.	
8		Also, the Vendor shall supply the Commissioning and 2-Year Spare Parts.	
9		30. All required Interconnecting Piping and Cabling between the Main Pump Skid and accessory Equipment Skids shall be supplied by the Pump's Vendor.	
10		31. All Witnessed Inspections and Tests are Hold Points. Purchaser prefer not to have Preliminary Tests prior to Witnessed Tests to understand any difficulties	
11		encountered during testing.	
12		32. The need for the Casing Disassembly after the Final Performance Test shall be judged by the Vendor or if any abnormal observations existed during the Test.	
13		33. Hardness Test of Parts, Welds, and Heat Affected Zones shall be performed by the Vendor.	
14		34. 100% Dye Penetration Test and 100% Radiographic Examination shall be performed for all Butt-Welded Joints.	
15		35. A Minimum of 3mm shall be considered as Corrosion Allowance for the Pump's Casing. However, the Vendor is allowed to propose an alternative CA value, including zero value,	
16		provided that the selected Material of Construction fulfills the service life requirements set in point (4) above and without affecting the pumps'safety or reliability.	