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WORLD ENERGY PARAMOUNT

World Energy Renewables Project

Paramount, California

MECHANICAL EQUIPMENT DATASHEET

Document Number A8KM-18-096-540066-A

Revision 1, 27-Feb-2023

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WORLD ENERGY RENEWABLES PROJECT

MECHANICAL EQUIPMENT DATA SHEET FOR 18-P-354A/B

SLOP OIL PUMP

Document Number A8KM-18-096-540066-A

Fluor Project No: A8KM

REV	DATE	DESCRIPTION	PAGES	ORIG	CHK'D	APPV'D
1	27-Feb-2023	Issued as Built	11	GGU	EPE	
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B	11-May-2021	Issued for Client Review	10	CP	JDM AD ME	BT
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API 610
CENTRIFUGAL PUMP DATA SHEET

Doc. No.: A8KM-18-096-540066-A

Note: This data sheet has been modified from that in the annex of API Standard 610, 11th Edition.

Contract:	A8KM		
Item No:	18-P-354A/B		
Revision:	1	Date:	27-Feb-23
Unit:	Renewable Jet Fuel Unit B		
P.O. No.:	4505606431		
Inquiry No.:	4-601D-RQ		
Sheet	2 of 11		

REV

CLIENT:	World Energy Paramount			PROJECT:	World Energy Renewables Project		
SERVICE :	Slop Oil Pump		FACILITY:	World Energy Paramount		SITE :	Paramount, CA
NO. REQ'D :	2x100% (Note 2.1)	PUMP SIZE :	1HPX11A-1-2	API TYPE :	OH2	NO. STAGES :	One (1)
MANUFACTURER :	Flowserve			MODEL :	HPX	SERIAL NO. :	21HE1044-1045
APPLICABLE TO :	○ PROPOSALS	○ PURCHASE	● AS-BUILT				

REV: 0 / 1

GENERAL

PUMPS OPERATE IN :	N/A	NO. MOTOR DRIVEN :	Two (2)	NO. TURBINE DRIVEN :	N/A
WITH :		PUMP ITEM NO. :	18-P-354A/B	PUMP ITEM NO. :	
GEAR ITEM NO. :	N/A	MOTOR ITEM NO. :	18-P-354AM/BM	TURBINE ITEM NO. :	
GEAR PROVIDED BY :		MOTOR PROVIDED BY :	Pump Supplier	TURBINE PROVIDED BY :	
GEAR MOUNTED BY :		MOTOR MOUNTED BY :	Pump Supplier	TURBINE MOUNTED BY :	
GEAR DATA SHEET NO. :		MOTOR DATA SHEET NO. :	Attached	TURBINE DATA SHEET NO. :	

LIQUID CHARACTERISTICS

	UNITS	MAXIMUM	RATED	MINIMUM
LIQUID TYPE OR NAME:		Slop Oil (Saturated Liquid)		
VAPOR PRESSURE :	psi (a)		19.7	
RELATIVE DENSITY :			0.686	
SPECIFIC HEAT :	BTU/lbm °F		0.538	0.467
VISCOSITY :	cP		0.73	

SERVICE :	INTERMITTENT*
*IF INTERMITTENT, NO. OF STARTS / DAY :	~1 /week
CORROSION DUE TO: (6.12.1.9) :	Note 2.8
EROSION DUE TO: (6.12.1.9) :	
H_2S CONCENTRATION (ppmw) (6.12.1.12) :	Note 2.8
WET (YES / NO) :	
CHLORIDE CONCENTRATION (ppmw) :	
PARTICULATE SIZE (DIA. IN MICRONS) :	
PARTICULATE CONCENTRATION (ppmw) :	
MECHANICAL DESIGN TEMPERATURE (°F)	300

OPERATING CONDITIONS (6.1.2)

	UNITS	MAXIMUM	RATED	NORMAL	MINIMUM
NPSHa DATUM :		C.L. IMPELLER (Note 2.2)			
PUMPING TEMP.:	°F	185	136	35	
FLOW :	gpm		20		10
DISCHARGE PRESS:	psi(g)		20.2		
SUCTION PRESSURE :	psi(g)	110.0	8.1		
DIFFERENTIAL PRESS.:	psi		12.2		
DIFFERENTIAL HEAD :	ft		41		
$NPSH_A$:	ft	(Note 2.2)	10.3	Excludes Req'd 3-ft. Margin	
HYDRAULIC POWER :	hp		0.1 (Note 2.8)		

The range of fluids in the slop oil is 0.668 to 0.758 SG and 0.49 to 3.47 cP viscosity.

Note 2.9 System static head is a minus 33.6 ft. (-33.6 ft.).

SITE AND UTILITY DATA (6.1.2)

LOCATION: OUTDOOR | UNHEATED

MOUNTED AT: GRADE ○ TROPICALIZATION REQ'D

ELECTRICAL AREA CLASSIFICATION: ○ NON HAZARDOUS

CLASS : CL. I, B/C/D DIVISION : 2 TEMP CODE : T3C

SITE DATA:

ELEVATION (MSL): 69 ft BAROMETER : 14.7 psia

RANGE OF AMBIENT TEMPS: MIN. / MAX. : 35 / 105 °F

RELATIVE HUMIDITY: MIN. / MAX. : Average = / 54 %

UNUSUAL CONDITIONS :

UTILITY CONDITIONS:

ELECTRICITY :	DRIVERS	HEATING	CONTROL	INSTRUMENTS
VOLTAGE :	460	120	120	24 VDC
PHASE :	3	1	1	
HERTZ :	60	60	60	

COOLING WATER : SOURCE : COOLING TOWER

SUPPLY TEMP. : 80 °F MAX. ALLOW. RETURN TEMP.: 120 °F

NORM. PRESS. : 45 psi(g) DESIGN PRESS. : 120 psi(g)

MAXIMUM RETURN PRESSURE : 35 psi(g)

MAXIMUM ALLOWABLE ΔP : 10 psi

CHLORIDE CONCENTRATION : < 840 ppm DESIGN T: 150 °F

INSTRUMENT AIR : MAX. : N/A psi(g) MIN. : psi(g)

MECH. DESIGN: psi(g) °F

STEAM :

			DRIVERS	HEATING
TEMP :	°F	MAX. :	N/A	N/A
		MIN. :		
PRESS. :	psig	MAX. :		
		MIN. :		

NOTES

2.1	2 x 100% pumps; 1 operating and 1 spare.
2.2	Pump centerline is 1.7' above top of foundation.
	Deleted.
2.3	Pump Control Method: On/Off (HLL/LLL) on Gap Level Control with manual throttle valve. Pump also has an interlock which prevents it from
	starting on HIL, which is below LLL, to prevent potentially pumping amine to the API separator.
2.4	Governing Project Specification: A8KM-PP-000-50626-A, Centrifugal Pumps for Petroleum and Natural Gas Industries - API 610.
2.5	Performance Curve for Rich Amine Upset Case @ 3.3cP on Sheet 11.
2.6	Deleted.
2.7	The pump destination is the new API Separator by WEP. A pressure drop allowance is included for the destination as no details known for the API configuration at this stage of the project.
2.8	Motor Sizing Basis is for a Rich Amine upset at 159°F, 1.048 SG, 3.3 cP to the destination. The maximum rich amine CO2 and H2S loadings are 0.1571
	lbmol/lbmol and 0.0063 lbmol/lbmol, respectively. Rich amine properties shall be confirmed per the Dow final design.

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Doc. No.: A8KM-18-096-540066-A

Note: This data sheet has been modified from that in the annex of API Standard 610, 11th Edition.

Contract:	A8KM
Item No:	18-P-354A/B
Revision:	1 — Date: 27-Feb-23
Unit:	Renewable Jet Fuel Unit B
P.O. No.:	4505606431
Inquiry No.:	4-601D-RQ
Sheet	3 of 11

REV

PERFORMANCE

PROPOSAL CURVE NO.:	1HPX11A-1-2		RPM	1740			
TEST CURVE NO.:							
IMPELLER DIA.:	RATED: 8.03	MAX: 10.63	MIN: 7.48	in			
RATED POWER:	2.64	hp	EFFICIENCY:	5.9	%		
RATED CURVE BEP FLOW: (at rated impeller dia.)				19.7	gpm		
MIN. FLOW:	THERMAL : 7.8	gpm	STABLE :	7.9	gpm		
PREFERRED OPERATING REGION: (6.1.12)			13.8	to 23.7	gpm		
ALLOWABLE OPERATING REGION:			7.9	to 28	gpm		
MAX. HEAD @ RATED IMPELLER:				64.62	ft		
MAX. POWER @ RATED IMPELLER: (6.8.9)				2.67	hp		
NPSHR at CL IMPELLER for RATED FLOW :				3.1	ft		
CL PUMP TO LOWER SIDE OF BASEPLATE:				1.7	ft		
NPSH MARGIN at RATED FLOW :				7.2	ft		
SPECIFIC SPEED:			gpm,rpm,ft	315			
SUCTION SPECIFIC SPEED LIMITATION:			gpm,rpm,ft	(Note 3.1)			
SUCTION SPECIFIC SPEED: (6.1.9):			gpm,rpm,ft	4050			
MAX. ALLOW. SOUND PRESS. LEVEL / EST.: (6.1.14) @ 3 ft			85 / <85		dBA		
MAX. ALLOW. SOUND POWER LEVEL / EST.: (6.1.14) @ 3 ft			/		dBA		
MAX. DISCHARGE PRESSURE: (6.3.2)			139.36		psig		
BASIS: (6.3.2.a, b or c)							

DRIVER (7.1.5)

DRIVER TYPE:	INDUCTION MOTOR		
GEAR:	NO		
VARIABLE SPEED REQUIRED:	NO		
SOURCE OF VARIABLE SPEED:	N/A		0
OTHER:	TEFC / IP55		0
MANUFACTURER:	TECO		
NAMEPLATE POWER:	5	hp	0
NOMINAL RPM:	1800		0
RATED LOAD RPM:	1745		0
FRAME OR MODEL:	184T		0
ORIENTATION:	HORIZONTAL		
LUBE:	GREASE		
BEARING TYPE:	ANTI-FRICTION		
RADIAL: (Qty / Brg. Number)	1 / 6306ZC35C		0
THRUST: (Qty / Brg. Number)	1 / 6306ZC35C		0
STARTING METHOD:	CLOSED VALVE (UNLOADED) START		
DRIVER DATA SHEET:	ATTACHED		
ACCESSORIES:			

CONSTRUCTION

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

NOZZLE CONNECTIONS: (6.4.2)

	SIZE	FACING	RATING	POSITION
SUCTION	2"	RF	300	END
DISCHARGE	1"	RF	300	TOP

PRESSURE CASING AUX. CONNECTIONS: (6.4.1.2)(6.4.3.1)(6.4.3.2)(6.4.3.12)

	NO.	SIZE	TYPE	FACING	RATING	POSITION
BALANCE/LEAK OFF	--					
DRAIN (Note 3.2)	1	0.75"	BW	RF	300	BOTTOM
VENT (IF NOT SELF VENT)	SELF					
PRESSURE GAUGE	--					
TEMP GAUGE	--					
WARM-UP LINE*						

*VENDOR TO ADVISE WARM-UP FLOW IF REQUIRED: gpm

DRAIN VALVE SUPPLIED BY:	SUPPLIER
DRAINS MANIFOLDED:	N/A
VENT VALVE SUPPLIED BY:	
VENTS MANIFOLDED:	N/A
THREADED CONNS FOR PIPELINE SERVICE & < 50°C:(6.4.3.2)	N/A
SPECIAL FITTINGS FOR TRANSITIONING: (6.4.3.3)	NO
CYLINDRICAL THREADS REQUIRED: (6.4.3.8)	NO
GUSSET SUPPORT REQUIRED: (6.4.3.10)	YES
MACHINED AND STUDDED CONNECTIONS: (6.4.3.12)	NO
TYPE VS6 DRAIN CONN.: (9.3.13.5)	N/A
DRAIN TO SKID EDGE:	YES
BOLTING CONFORMANCE:: (6.1.29.1)	YES
(ISO 261, ISO 262, ISO 724, ISO 965 OR ANSI/ASME B1.1)	ASME B1.1
SEAL FLUSH CASING CONNS. w/ SECONDARY SEALING REQD: (6.4.3.3)	
	NO
AUX. PIPING TERMINATIONS:	RFWN

CASING MOUNTING:	CENTERLINE		
CASING TYPE:	Volute		
OH3 BACKPULLOUT LIFING DEVICE REQ'D: (9.1.2.6)	NO		
CASE PRESSURE RATING: (Note 3.3)			
MAWP: (6.3.5)	535 psig @ 300 °F		
HYDROTEST: (8.3.2.6)	900 psig @ AMB °F		0
Hydrotest at 1.5 x MAWP of the Pump Assembly.			
HYDROTEST OH PUMP AS ASSEMBLY:	YES		
SUCTION PRESS. REGIONS DESIGNED FOR MAWP:	YES		
ROTATION: (VIEWED FROM COUPLING END)	CCW		
- IMPELLERS INDIVIDUALLY SECURED:	N/A		0
- BOLT OH 3/4/5 PUMP TO PAD / FOUNDATION:	N/A		
- PROVIDE SOLEPLATE FOR OH 3/4/5 PUMPS:	N/A		
ROTOR:			
SHAFT FLEXIBILITY INDEX (SFI): (9.1.1.3)	82.35		
FIRST CRITICAL SPEED, WET: (MULTI-STAGE)	N/A RPM		
COMPONENT BALANCE TO ISO 1940 G1.0: (6.9.4.4)	YES		
SHRINK FIT LIMITED MOVEMENT IMPELLERS: (9.2.2.3)	N/A		
COUPLING & GUARD: (7.2.2) (Note 3.4)			
MANUFACTURER:	Thomas		
MODEL:	Series 71		
RATING: (POWER/100 RPM)	1.47		0
SPACER LENGTH:	5.5 in		0
ACTUAL SF AT MOTOR NAMEPLATE:	5.31		0
RIGID:	N/A		
COUPLING WITH HYDRAULIC FIT: (7.2.10)	NO		
COUPLING BALANCED TO ISO 1940-1 G6.3: (7.2.3)	G2.5		
COUPLING WITH PROPRIETARY CLAMPING DEVICE: (7.2.11)	N/A		
COUPLING IN COMPLIANCE WITH: (7.2.4)	API 610 COMPLIANT		
COUPLING GUARD STANDARD PER: (7.2.13.a)	ANSI B15.1		
WINDOW ON COUPLING GUARD:	YES		

NOTES

3.1	Suction specific speeds greater than 11,000 for hydrocarbons and 9,000 for water (USC units) require specific approval by the Buyer.
3.2	Terminate drain piping with bellow seal gate valve at edge-of-skid. Bellow seal gate
	valves shall be per Project specification, A8KM-PP-000-60027-A, Bellow Seal Valve Criteria. Customer connections shall be flanged.
3.3	Nameplate for MAWP at mechanical design temperature.
3.4	Coupling guards shall be non-sparking.
3.5	Deleted.
	Deleted.

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Revision:	1	Date:	27-Feb-23	
Unit:	Renewable Jet Fuel Unit B			
P.O. No.:	4505606431			
Inquiry No.:	4-601D-RQ			
Sheet	4	of	11	

REV

CONSTRUCTION (CONT'D)

MATERIAL (6.12.1.1)

APPENDIX H CLASS:	A-8: 316L SS / 316L SS	
MINIMUM DESIGN METAL TEMP: (6.12.4.1)	32	°F
REDUCED HARDNESS MATERIALS REQ'D: (6.12.1.12.1)	NO	
APPLICABLE HARDNESS STANDARD: (6.12.1.12.3)	N/A	
BARREL:	--	
CASE:	A351 Gr. CF3M	
DIFFUSERS:	N/A	
IMPELLER:	A351 Gr. CF3M	
IMPELLER / CASE WEAR RING:	A743 Gr. CF3M or A276 Type 316L	
SHAFT:	A276 Type 316L	
BOWL (IF VS TYPE):	--	
INSPECTION CLASS: (API/ISO TABLE 14)	LEVEL 2	

BEARINGS AND LUBRICATION (6.10.1)

BEARING (TYPE / NUMBER):			
RADIAL:	BALL	/	6212-C3
THRUST:	BALL	/	7311 BECBM
REVIEW AND APPROVE THRUST BEARING SIZE: (9.2.5.2.4)	NO		
LUBRICATION TYPE: (6.11.3)(6.11.4)(9.2.6.1)	Slinger		
PRESSURE LUBE SYSTEM TO ISO 10438-		(9.2.6.4)	N/A
ISO 10438 DATA SHEETS ATTACHED			
PRESSURIZED LUBE OIL SYSTEM MTD. ON PUMP BASEPLATE:	N/A		
LOCATION OF PRESSURIZED LUBE OIL SYSTEM MOUNTED ON BASEPLATE:			
INTERCONNECTING PIPING PROVIDED BY:	N/A		
OIL VISC. ISO GRADE:	ISO VG 68		
CONSTANT LEVEL OILER: (6.10.2.2)	REQUIRED		

INSTRUMENTATION

SEE ATTACHED API-670 DATA SHEET:	NO
ACCELEROMETER OR VELOMETER: (7.4.2.1):	NO
QUANTITY:	
MOUNTING LOCATIONS:	
DETECTORS REQUIRED:	
THRD'D PROVISIONS ONLY PER ANSI/API 670: (6.10.2.10)	
QUANTITY:	
MOUNTING LOCATIONS:	
FLAT SURFACE REQ'D FOR MAGNETIC P/U's: (6.10.2.11)	NO
QUANTITY:	
MOUNTING LOCATIONS:	
VIBRATION PROXIMITY PROBES FOR HYDRODYNAMIC BEARINGS:	
PROVISION-ONLY FOR VIB. PROBES: (7.4.2.2)	N/A
QUANTITY PER RADIAL BEARING:	
QUANTITY PER THRUST BEARING:	
VIBR. MONITORS & CABLES SUPPLIED BY: (7.4.2.4)	
TEMP. DETECTORS FOR HYDRODYNAMIC BEARINGS: (7.4.2.3)	
PROVISION-ONLY FOR TEMPERATURE PROBES:	N/A
RADIAL BEARING TEMPERATURE PROBES:	N/A
QUANTITY PER RADIAL BEARING:	
THRUST BEARING TEMPERATURE PROBES:	N/A
QUANTITY PER THRUST BEARING ACTIVE SIDE:	
QUANTITY PER THRUST BEARING INACTIVE SIDE:	
THRD'D T/W's FOR GEARBOX TEMP GAGES: (9.1.3.6)	N/A
PRESSURE GAGE TYPE:	
TEMP. MONITORS & CABLES SUPPLIED BY: (7.4.2.4)	

BASEPLATE OR SOLE PLATE

API BASEPLATE NUMBER:	
BASEPLATE CONSTRUCTION: (7.3.14)	FULL TOP DECKING
BASEPLATE DRAINAGE: (7.3.1)	ENTIRE BASEPLATE DRAIN RIM
MOUNTING:	GROUTED
NON-GROUT CONSTRUCTION: (7.3.13)	NOT REQUIRED
VERTICAL LEVELING SCREWS:	REQUIRED
HORIZONTAL DRIVER POSITIONING SCREWS:	REQUIRED
SUPPLIED WITH: - GROUT VENT HOLES	YES
- DRAIN CONNECTION	YES
MOUNTING PADS SIZED FOR BASEPLATES LEVELING: (7.3.5)	YES
MOUNTING PADS OR SOLE PLATE TO BE MACHINED: (7.3.6)	YES
PROVIDE SPACER PLATE UNDER ALL EQUIP. FEET: (7.3.6)	
OTHER:	Furnish two (2) diagonally opposed grounding provisions per Note 6.9

NOTES

COATINGS REQ'D: (6.12.1.10)	--
4.1) SYNTHETIC OIL REQ'D: (6.10.2.12)	NO
4.2) PROVISIONS FOR PURE OR PURGE MIST: (6.11.3)	IF STD
4.3) PRESS. / CIRC. LUBE SYSTEM: 9.2.6.1)	
4.4) CONST. LEVEL OILER PREFERENCE: (6.10.2.2)	(Note 4.6)
4.5) Bearing housing isolators shall be Inpro VBXX ~~or Equal.~~	
4.6) 8-oz. constant level oiler is supplied. Trico P/N 30005	
1" NPT bullseye level gauge is supplied. Trico P/N 34343	
4.7) Oil drain furnished with single-piece Oil Sight Glass. ESCO P/N HEX3X500	

SEAL SUPPORT SYSTEM MOUNTING

BARRIER/BUFFER RESERV. MTD ON PUMP BASEPL.:(7.5.1.4)	YES
IDENTIFY LOCATION ON BASEPLATE:	
INTERCONNECTING PIPING BY:	SUPPLIER
RESERVOIR(S) SHIPPED SEPARATELY:	YES

MECHANICAL SEAL (6.8)

SEE ATTACHED API 682 DATA SHEET:	SEE PAGE 7
ADDITIONAL CENTRAL FLUSH PORT: (6.8.9)	
HEATING OR COOLING JACKET REQ'D:	N/A
MAX. CHAMBER PRESS.: (6.8.13) STATIC:	DYN.: psig
SEAL CATEGORY: (6.8.1)	Category 2 (API-610)

HEATING AND COOLING

COOLING REQUIRED: (6.1.17)	See Page 8 Seals
COOLING WATER PIPING PLAN:	Plan M
CLG WATER PIPING CONSTR.:	See Page 8 Seals
FITTINGS TYPE:	
COOLING WATER PIPING MATERIALS:	
CLG WTR REQMNTS: (BOTH ENDS IF DOUBLE ENDED)	
BEARING HOUSING(S):	gpm
SEAL SUPPORT: (HX, BUFFER, BARRIER, ETC.)	gpm
TOTAL COOLING WATER:	gpm
HEATING MEDIUM:	N/A
OTHER:	
HEATING MEDIUM PIPING CONSTRUCTION:	

PIPING & APPURTENANCES

MANIFOLD PIPING SYS. FOR PURCHASHER CONN.: (7.5.1.6)	
VENTS:	N/A
DRAINS:	N/A
COOLING WATER:	N/A
TAG ALL ORIFICES: (7.5.2.4)	YES
SOCKET WELD CONN. ON SEAL GLAND: (7.5.2.8)	NO

REV: 0 (CONSTRUCTION (CONT'D)); 0 (MATERIAL); 0 (BASEPLATE); 0 (APPENDIX H CLASS); 0 (MINIMUM DESIGN METAL TEMP); 0 (REDUCED HARDNESS); 0 (APPLICABLE HARDNESS); 0 (GROUT VENT HOLES); 0 (DRAIN CONNECTION); 0 (MOUNTING PADS SIZED); 0 (NOTES); 0 (COATINGS); 0 (4.5); 0 (4.6); 0 (1" NPT); 0 (4.7); 1 (CONSTANT LEVEL OILER); 0 (INSTRUMENTATION); 0 (SEAL SUPPORT SYSTEM MOUNTING); 0 (MECHANICAL SEAL); 0 (HEATING AND COOLING); 0 (PIPING & APPURTENANCES)

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Unit:	Renewable Jet Fuel Unit B		
P.O. No.:	4505606431		
Inquiry No.:	4-601D-RQ		
Sheet	5	of	11

SURFACE PREPARATION AND PAINT

MANUFACTURER'S STANDARD:	NO
OTHER (SEE BELOW)	YES
SPECIFICATION NUMBER:	A8KM-PP-00-500520-A
PUMP: **Meets ISO 12944-5, C4 Environment** (Only Carbon Steel Parts Painted)	
PUMP SURFACE PREPARATION:	SSPC-SP 1 + SSPC-SP 10
PRIMER:	Inorganic Zinc // Galvosil 15680
FINISH COAT:	Polyurethane // Hempathane HS 55610
BASEPLATE OR SOLE PLATE: **Meets ISO 12944-5, C4 Environment**	
SURFACE PREPARATION:	SSPC-SP 1 + SSPC-SP 10
PRIMER:	Inorganic Zinc // Galvosil 15680
FINISH COAT:	High Build Epoxy // Hempadur Mastic 45880

DETAILS OF LIFTING DEVICES:	Calcs & NDE Req'd for Lifts > 20,000 LBS
SHIPMENT: (8.4.1)	(Note 6.8)
EXPORT BOXING REQUIRED	
OUTDOOR STORAGE UP TO 6 MONTHS:	YES
SPARE ROTOR ASSEMBLY PACKAGED FOR:	
ROTOR STORAGE ORIENTATION: (9.2.8.2)	N/A
SHIP'G & STORAGE CONTAINER FOR VERT. STORAGE: (9.2.8.3)	N/A
N2 PURGE: (9.2.8.4)	N/A
SPARE PARTS: **(Note 6.1)**	
START-UP:	YES
NORMAL MAINTENANCE:	YES

WEIGHTS lb

ITEM No.	PUMP	DRIVER	ACCESSORY	BASE	TOTAL
18-P-354A/B	310.8	101.0	771.6	1565.3	2748.7

OTHER PURCHASER REQUIREMENTS

COORDINATION MEETING REQUIRED: (10.1.3)	YES
MAXIMUM DISCHARGE PRESSURE TO INCLUDE:	
MAX RELATIVE DENSITY:	YES
OPERATION TO TURBINE TRIP SPEED OR ASD OVERSPEED:	N/A
MAX DIA. IMPELLERS AND / OR NO. OF STAGES:	NO
CONNECTION DESIGN APPROVAL: (9.2.1.4) (BB Pumps)	N/A
TORSIONAL ANALYSIS / REPORT: (6.9.2.10) (REQ'D IF GEAR OR VFD)	N/A
PROGRESS REPORTS:	YES
OUTLINE OF PROCEDURE FOR OPTIONAL TESTS: (10.2.5)	YES
ADDITIONAL DATA REQUIRING 20 YEARS RETENTION: (8.2.1.1)	NO
LATERAL ANALYSIS REQUIRED: (9.1.3.4)(9.2.4.1.3)	N/A
MODAL ANALYSIS REQUIRED FOR VS PUMPS: (9.3.9.2)	N/A
DYNAMIC BALANCE ROTOR ASSEMBLY TO ISO G1.0: (9.2.4.2.3)	NO
INSTALLATION LIST IN PROPOSAL: (10.2.3.I)	NO
VFD STEADY STATE DAMPED RESPONSE ANALYSIS: (6.9.2.3)	N/A
TRANSIENT TORSIONAL RESPONSE: (6.9.2.4)	N/A
BEARING SELECTION & LIFE CALCS PER (6.10.1.1) & (6.10.1.6):	YES
IGNITION HAZARD ASSESSMENT TO EN 13463-1 FOR EXPLOSIVE ATM: (7.2.15)	N/A
CASING RETIREMENT THICKNESS DWG: (10.3.2.3)	NO
FLANGES REQ'D IN PLACE OF SOCKET WELD UNIONS: (7.5.2.8)	YES
INCLUDE PLOTTED VIBRATION SPECTRA FOR PERF. TEST: (6.9.3.3)	YES
CONNECTION BOLTING: (7.5.1.7)	SS
CADMIUM PLATED BOLTS PROHIBITED:	YES
VENDOR TO KEEP REPAIR AND HT RECORDS: (8.2.1.1.c)	YES
VENDOR TO SUBMIT TEST PROCEDURES: (8.3.1.1)	YES
VENDOR SUBMIT INSPECTION CHECK LIST:(8.1.5)	YES
TEST REQUIREMENTS PER 8.3.3.5a THROUGH 8.3.3.5d:	YES
DISASSEMBLE AND INSPECT AFTER TEST: (8.3.3.8)	NO

INSPECTION & TEST

		REV
SHOP INSPECTION: (8.1.1)	YES	
PERFORMANCE CURVE & DATA APPROVAL PRIOR TO SHIPMENT:	YES	
TEST WITH SUBSTITUTE SEAL: (8.3.3.2.b)		
MATERIAL CERT. REQUIRED: (6.12.1.8) CASING:	YES	0
IMPELLER:	YES	0
SHAFT:	YES	0
OTHER: See Note 6.3	YES	0
CASTING REPAIR PROCED. APPROVAL REQ'D: (6.12.2.5)(6.12.3.1)	Note 6.7	
INSPECTION REQ'D FOR CONN. WELDS: (6.12.3.4.d,e)		0
MAG PARTICLE:	NO	0
5%RT Butt Weld Connections to Casing RADIOGRAPHY:	YES	0
LIQUID PENETRANT:	YES	
ULTRASONIC:	NO	
INSPECTION REQUIRED FOR CASTINGS: (**TABLE 14 Level II**)		
MAG PARTICLE:	NO	
RADIOGRAPHY:	NO	
LIQUID PENETRANT:	YES	
ULTRASONIC:	NO	
HARDNESS TEST REQUIRED: (8.2.2.7) **(NACE SERVICES)**	NO	
ADDITIONAL SUBSURFACE EXAMINATION: (6.12.1.5)(8.2.1.3)	YES	
FOR: Auxiliary Piping		
METHOD: Follow Table 14 Level II for Socket or Butt Welding		
PMI TESTING REQUIRED: (8.2.2.8)	YES	
COMPONENTS TO BE TESTED: See Note 6.4		
RESIDUAL UNBALANCE TEST: (J.4.1.2)	NON-WIT	
NOTIFICATION OF SUCCESSFUL SHOP PRELIM. TEST:(8.1.1.c)(8.3.3.5)	NO	0
BASEPLATE TEST: (7.3.21)	NO	
HYDROSTATIC TEST OF CASING/HEAD:	NON-WIT	
HYDROSTATIC TEST OF BOWLS & COLUMN: (9.3.13.2)	N/A	
PERFORMANCE TEST: **(Note 6.5)**	NON-WIT	
TEST IN COMPLANCE WITH: (8.3.3.2)	8.3.3.2	
TEST DATA POINTS TO: (8.3.3.3)	8.3.3.3	
TEST TOLERANCES TO: (8.3.3.4)	TABLE 16	
NPSH TEST PTS./RETEST: (8.3.4.3.1)(8.3.4.3.4)	N/A	
NPSH TEST-1ST STAGE ONLY: (8.3.4.3.2)	N/A	
NPSH TESTING TO HI 1.6 : (8.3.4.3.3)		
PERFORMANCE TEST LIMITED TO 110% SITE NPSHA: (8.3.3.6)	NO	
RETEST ON SEAL LEAKAGE: (8.3.3.2.d)	NO	
RETEST REQUIRED AFTER FINAL HEAD ADJ.: (8.3.3.7.b)(Multistg)	N/A	
COMPLETE UNIT TEST: (8.3.4.4.1)	N/A	
SOUND LEVEL TEST: (8.3.4.5) **FOR INFORMATION ONLY**	NON-WIT	
CLEANLINESS PRIOR TO FINAL ASSEMBLY: (8.2.2.6)	NON-WIT	
LOCATION OF CLEANLINESS INSPECTION: @ SUPPLIERS		
NOZZLE LOAD TEST:	NO	
CHECK FOR CO-PLANAR MOUNTING PAD SURFACES:	NON-WIT	
MECH. RUN TEST AT RATED CAPACITY UNTIL OIL TEMP STABLE: (8.3.4.2.1)	NON-WIT	
4 HR. MECH RUN TEST AT RATED CAPACITY AFTER OIL TEMP STABLE:	N/A	
1 HR. MECH RUN TEST AT RATED CAPACITY: (8.3.4.2.2)	NON-WIT	
BEARING HSG. RESONANCE TEST: (8.3.4.7)	N/A	
STRUCTURAL RESONANCE TEST: (9.3.9.2)	N/A	
REMOVE / INSPECT HYDRODYN. BRGS. AFTER TEST: (9.2.7.5)	N/A	
AUXILIARY EQUIPMENT TEST: (8.3.4.6)	NO	
EQUIP. TO BE INCLUDED IN AUX. TESTS:		
LOCATION OF AUX. EQUIPMENT TEST:		
IMPACT TEST: (6.12.4.3) PER EN 13445	N/A	
PER ASME SECTION VIII	N/A	
REMOVE CASING AFTER TEST:	N/A	

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API 610
CENTRIFUGAL PUMP DATA SHEET

Doc. No.: A8KM-18-096-540066-A

Note: This data sheet has been modified from that in the annex of API Standard 610, 11th Edition.

Contract:	A8KM			
Item No:	18-P-354A/B			
Revision:	1	Date:	27-Feb-23	
Unit:	Renewable Jet Fuel Unit B			
P.O. No.:	4505606431			
Inquiry No.:	4-601D-RQ			
Sheet	6	of	11	REV

PRESSURE VESSEL DESIGN CODE REFERENCES

THESE REFERENCES MUST BE LISTED BY THE MANUFACTURER:

CASTING FACTORS USED IN DESIGN: (TABLE 3)

SOURCE OF MATERIAL PROPERTIES:

WELDING AND REPAIRS

THESE REFERENCES MUST BE LISTED BY THE PURCHASER (DEFAULT TO TABLE 11 IF NO PURCHASER PREFERENCE IS STATED)

ALTERNATIVE WELDING CODES AND STANDARDS:

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

WELDER/OPERATOR QUALIFICATION:

WELDING PROCEDURE QUALIFICATION:

NON-PRESSURE RETAINING STRUCTURAL WELDING SUCH AS BASEPLATES OR SUPPORTS:

MAGNETIC PARTICLE OR LIQUID PENETRANT EXAMINATION OF PLATE EDGES:

POSTWELD HEAT TREATMENT:

POSTWELD HEAT TREATMENT OF CASING FABRICATION WELDS:

MATERIAL INSPECTION

THESE REFERENCES MUST BE LISTED BY THE PURCHASER DEFAULT TO TABLE 14: **YES**

ALTERNATIVE MATERIAL INSPECTIONS AND ACCEPTANCE CRITERIA:

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

NOTES

6.1	**Provide a Start-up Spare Parts List and 2-yrs. Operating Spares List, inclusive of coupling and motor parts.**
6.2	**Pump Supplier shall provide pump performance curves, General Arrangement drawing sized for the driver, completed data sheets &**
	Bill of Material, and un-priced Sub-Supplier buyouts
6.3	**CMTR's are required for pressure casings & covers, impellers, wear rings & shaft. Include all QA documents in Quality Data Books.**
6.4	**PMI of alloy pressure containment parts, incl. seal glands, pipe & valves, is required.**
6.5	**Mechanical run testing is required**
	Mechanical run test shall be until oil temperature stabilization at Rated point, for at least one (1) hour for single-stage
	pumps, with vibration recordings at 10-minute intervals.
	Deleted.
6.6	**Deleted.**
	Deleted.
6.7	**Minor defects of a surface nature in the pressure casting (amounting to less than 20% of the wall thickness and less than 10 in^2 [65 cm^2]**
	in total area) may be repaired without Buyer's approval. See Project Pump Specification A8KM-PP-000-50626-A.
6.8	**Export Boxing is required for Ocean Transit only. Supplier shall include as applicable to their scope and place of manufacture in relation to**
	destination of equipment. All boxing shall be protective of the weather elements.
6.9	**Baseplate grounding tabs shall be 1/4" thick steel with at least one (1) 9/16" dia. hole provided. If two (2) are provided, they shall be**
	9/16" dia. spaced 1-3/4" on center. Where Stainless Steel grounding pads are provided, they shall be threaded with one (1) 1/2"-13 hole, or
	either two (2), or four (4), 1/2"-13 holes, all spaced 1-3/4" on center.

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API 682 MECHANICAL SEAL DATA SHEET

Doc. No.: A8KM-18-096-540066-A

Note: This data sheet has been modified from that in the annex of API Standard 682, Third Edition. (See Note 9.3)

Contract:	A8KM			
Item No:	18-P-354A/B			
Revision:	1	Date:	27-Feb-23	
Unit:	Renewable Jet Fuel Unit B			
P.O. No.:	4505606431			
Inquiry No.:	4-601D-RQ			
Sheet	7	of	11	REV

Client: World Energy Paramount **Project:** World Energy Renewables Project

Service: Slop Oil Pump **Facility:** World Energy Paramount

No. Seals Required per Pump: Two (2) **Site:** Paramount, CA

NOTES: Information Below to be Completed : ○ By Purchaser ■ By Manufacturer ☒ By Manufacturer or Purchaser

Seal Specification - (Ref. 4.1, Figures 1 to 6)

CATEGORY ○ Seal Category 1 ● Seal Category 2 ○ Seal Category 3 ■ Seal Code (Annex D) **23A-FIN-050-11/53B** 0

TYPE (CODE CW) ■ Type A (3.1.90) ☒ Type B (3.1.91) ☒ Alternate Stationary (Type A&B) ☒ Type C (3.1.92) ☒ Alternate Rotating (Type C) ☒ Single Spring (Type A)

ARRANGEMENT		Default Configuration	Alternate Design	Flush Plans (See Annex G)
1 (3.1.2)	Single	☒ 1CW-FX	☒ 1CW-FL ☒ Dist. Flush ☒ Alternative Bush	☒ 01 ☒ 13 ☒ 23 ☒ 50 ☒ 62 02 ☒ 14 ☒ 31 ☒ 51 ☒ 11 ☒ 21 ☒ 32 ☒ 61
2 (3.1.3)	Buffer	Liquid ☒ 2CW-CW	☒ FX ☒ Dist. Flush ☒ Tangential LBO Connection	☒ 01 ☒ 13 ☒ 23 ☒ 41 ☒ 62 ☒ 75 ☒ 02 ☒ 14 ☒ 31 ☒ 52 ☒ 71 ☒ 76
		Gas ☒ 2CW-CS	☒ 2NC-CS ☒ FX ☒ Dist. Flush	☒ 11 ☒ 21 ☒ 32 ☒ 61 ☒ 72
3 (3.1.4)	Barrier	Liquid ■ 3CW-FB	☒ 3CW-BB ☒ FX ☒ 3CW-FF ☒ Tang. LBO Conn.	☒ 01 ☒ 13 ☒ 53A ☒ 54 ☒ 74 ☒ 02 ☒ 14 ■ 53B ☒ 61
		Gas ☒ 3NC-BB	☒ 3NC-FF ☒ 3NC-FB	■ 11 ☒ 32 ☒ 53C ☒ 62

SLEEVE-SHAFT DRIVE ■ Set-Screw Onto Shaft ☒ Alternative (6.1.3.15) Specify :

MATERIALS (REFERENCE 6.1.6 & ANNEX B) (Note 7.3)

SECONDARY SEALS	SEAL FACES	METAL BELLOWS	SPRINGS	METAL PARTS
☒ FKM ■ FFKM	■ CARBON vs SIC	☒ UNS N10276 (TypeB)	■ UNS N10276	■ UNS S31600 / S31635
☒ Spiral Wound Gasket	☒ SIC vs SIC	☒ UNS N07718 (TypeC)	or UNS N06455	☒ UNS N10276
☒ EPM / EPDM ☒ NBR	☒ SS-SIC ☒ RB-SIC	☒ UNS N08020	☒ UNS S31600	☒ UNS N08020
☒ Other :	☒ vs	☒ Other :	or UNS S31635	☒ Other :

MECHANICAL SEAL DATA

● Seal Vendor :	Flowserve	■ Dynamic Sealing Pressure Rating (3.1.27) :	750	psig
○ Data Requirements Form (Annex J)		■ Static Sealing Pressure Rating (3.1.84) :	1050	psig
■ Size / Type :	2.500 / 2.500	■ Maximum Allowable Temperature (3.1.51) :	185	°F
■ Seal Drawing No.:	D0574896	● Min. Design Metal Temperature (6.1.6.11.1) :	32	°F
■ Vendor's Seal Code :	QBBW/QBQW	☐ Generated Heat at Normal Conditions :		BTU/hr
☐ Modified Faces For Pump Performance Test		☐ Heat Soak at Normal Conditions :		BTU/hr
☐ Alternative Seal For Pump Performance Test		☐ Total Seal Axial Thrust on Shaft :		lb

SEAL CHAMBER DATA (REFERENCE 6.1.2.4)

■ API 610 ☒ ASME B73.1&2 ☒ Cylindrical ☒ Tapered ☒ ISO 3069-C ☒ Other :

○ Bolt-On Chamber (6.1.2.5) ☒ Seal Chamber Flush Port Req'd ☒ Seal Chamber Vent Req'd

☒ Floating Throat Bushing ☒ Fixed Throat Bushing ☒ Chamber Heating ☒ Chamber Cooling

PUMP DATA

■ Manufacturer : **FLOWSERVE** ■ Model : **HPX** ■ Size : **1HPX11A** ■ Case Material : **A351 Gr. CF3M**

Pump Operating Pressure : ● Discharge Press. (Rated) : **20.2** psig ● Suction Press. (Rated) : **8.1** psig

Seal Chamber Press.: ■ Norm.: **11.15** psig ☐ Min/Max (MDSP 3.1.53): / psig ☐ MSSP (3.1.55) : psig

Shaft: ■ Horizontal ☒ Vertical ■ Diameter : **49.5** ■ Shaft Speed : **1740** RPM

■ Shaft Rotation (Viewed From Driver) : ■ CCW ☐ CW

NOTES

7.1	**Deleted.**
7.2	**Seal Manufacturer shall consider the Liquid Characteristics and Operating Conditions on sheet 2.**
7.3	**Seal Manufacturer shall recommend seal face material, elastomers and spring material based on pumped fluid properties.**
7.4	**Refer to 8ES-2DG1 – WEP Instrumentation & Electrical Standard Vendor List, for Instrumentation.**
7.5	**Baseplates shall be sized for mounting of seal flush systems on-base. Seal flush systems shall not interfere with pump maintenance.**
	Plan 53 systems shall be pre-piped and removed for shipping.
7.6	**Deleted.**
	Deleted.

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API 682 MECHANICAL SEAL DATA SHEET

Doc. No.: A8KM-18-096-540066-A

Note: This data sheet has been modified from that in the annex of API Standard 682, Third Edition. (See Note 9.3)

Contract:	A8KM		
Item No:	18-P-354A/B		
Revision:	1	Date:	27-Feb-23
Unit:	Renewable Jet Fuel Unit B		
P.O. No.:	4505606431		
Inquiry No.:	4-601D-RQ		
Sheet	8 of 11		

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FLUID DATA

PUMPED STREAM (PLANS 01, 02, 11, 12, 13, 14, 21, 23, 31, 41)

- ● Type or Name : **Hydrocarbons or Amine** Conc'n : **100** %
- ○ Dissolved Contaminant ● H_2S : **(Note 2.8)** ppmw ○ Wet
- ● Cl_2 : **0** ppm ○ Other: ____ @ ____ wt%
- ○ Solid Contaminant : ____
- ○ Conc'n (Mass Fract. or PPM) : ____
- ● Fluid Temp.: Min ____ °F Norm **135.9** °F Max **185** °F
- ● Spec. Gravity : @ Norm. Temp.: **0.686** @ Min. Temp.: **Note 2.8**
- ● Vapor Pressure : @ Norm Temp.: **19.7** psi(a)
- @ Max Temp.: ____ psi(a) ____
- ○ Atmospheric Boiling Point : ____ °F
- ● Viscosity : Normal : **0.73** cP Max.: **Note 2.8** cP

- ● Hazardous ● Flammable ○ ____
- ○ Fluid Solid at Ambient ○ Solidifies @ : ____ °F
- ○ Pour Point : ____ °F
- ○ Pumped Stream Solidifies Under Shear
- ○ Pumped Stream Contains Agents That Polymerize
- Specify Agents : ____ @ Temp : ____ °F
- ○ Pumped Stream Can Plate Out or Decompose :
- Specify Conditions : ____
- ● Pumped Stream is Regulated For Fugitive or Other Emissions
- Regulation Level : ____ wt%
- ○ Special Pump Cleaning Procedures : ____
- ○ Alt. Process Fluids (incl. Commissioning) Specify : ____

FLUSH FLUID (PLAN 32)

- ○ Type or Name : ____ Conc'n : ____ %
- ○ Seal Vendor Review Required
- ○ Fluid Temp : Min ____ °F Norm ____ °F Max ____ °F
- ○ Spec. Gravity : @ Norm. Temp.: ____ @ Max. Temp.: ____

- ○ Vapor Press: @ Norm. Temp: ____ psi(a) @ Max. Temp: ____ psi(a)
- ○ Viscosity @ Normal Temperature : ____ cP
- ○ Atmospheric Boiling Point: ____ °F
- ☐ Flow Rate Req'd Max. / Min.: ____ / ____ gpm
- ☐ Pressure Req'd Max. / Min.: ____ / ____ psig

QUENCH MEDIUM (PLAN 62)

- ☒ Type or Name : ____

- ☒ Supply Temperature Max. / Min. : ____ / ____ °F
- ☐ Flow Rate Req'd (@STP for gas) Max. / Min. : ____ / ____ gpm

BUFFER / BARRIER MEDIUM (PLAN 52, 53, 54, 72, 74)

- ■ Type or Name : **DURACLEAR 5-F**
- ● Purchaser Selection ☐ Seal Vendor Selection
- ● Seal Vendor Review ☐ Purchaser Review
- ☐ Flow Rate Req'd (@STP for Gas) Max. / Min.: ____ / ____ gpm
- ☒ Supply Pressure Max. / Min.: ____ / ____ psig
- ☒ Fluid Temperature :
- Min.: ____ °F Normal : ____ °F Max.: ____ °F

- ☒ Specific Gravity:
- @ Normal Temperature : ____ @ Max. Temp. : ____
- ☒ Vapor Pressure at :
- Normal Temp.: ____ psia Max. Temp.: ____ psia
- ☒ Atmospheric Boiling Point : ____ °F
- ☒ Viscosity at Normal Pump Temperature : ____ cP
- ☒ Specific Heat Capacity at Const. Press.: ____ BTU/lb°F
- ■ Cooling / Heating Required : **Yes**

0

SITE AND UTILITIES

- ● Control Voltage : V : **120** Ph : **1** Hz : **60**
- ● Area Class: Cl.: **I** Gr.: **B/C/D** Div.: **2**
- ● Design Ambient (Min. / Max.) : **35** / **105** °F
- ○ ATEX (Ex Directive 94/9/EC) : Gr.: ____ Cat.: ____ T-CLASS: **T3C**

- ● Cooling Water Supply Temp. Norm.: **80** °F ● Cl^- : **< 840** ppmw
- ● Cooling Water Supply Press. Norm./Design: **45** / **120** psi(g)
- ● Cooling Water Allowable Pressure Drop : **10.0** psi
- ● Cooling Water AllowableTemp. Rise : **40.0** °F

ACCESSORIES (Clauses 8 and 9)

GENERAL

- ○ Joint User / Vendor Layout of Equipment (8.1.3)
- ○ Pipe Taper Threads (8.2.13) ○ ISO 7 ○ ASME B1.20.1
- ○ Special Requirements For Hazardous Service
- Define : ____
- ○ Special Cleaning and Decontamination Requirements
- ○ Utility Manifold Connections Required (8.2.24)
- ○ Type and Spec. of Heat Tracing (8.3.9.1.1) :
- ____
- ○ Thermal Relief Valves Required (9.8.3)

PLAN 11, 12, 13, 14, 21, 23, 31, 32 and 41 SYSTEMS

- ● Connecting Line Supplier : **PUMP SUPPLIER**
- ○ Tubing ● Piping (8.3.5.2) **316LSS BW RF(BW Case conn.)**
- ● Restriction Orifice Nipple in Flush Line (8.3.5.4)
- ○ Cyclone Seperator Supplier : ____
- ○ Plan 32 Equipment Supplier : ____
- ○ Plan 32 Flow Indicator ○ Plan 32 Temp. Indicator
- ○ Plan 23 Temp. Indicator

COOLING SYSTEMS (PLAN 21,22,23,41,52,53B,53C) (Note 8.3)

- ● Heat Exchanger Supplier : **SEAL SUPPLIER**
- ■ Water Cooled ☒ Air Cooled ○ ISO 15649
- ■ Equipment Reference / Code : ____
- ● Cooling Water Line Supplier: **PUMP SUPPLIER**
- ○ Tubing ○ Galvanized Piping (8.2.21) ○ Gal CS Piping
- ● Sight Flow Indicators (8.2.22) ○ Open ● Closed
- ■ Cooling Water Flow Requirement & Equipment Pressure Drop:
- ☐ Primary Equipment : ____ gpm ΔP : ____ psi
- ■ Secondary Equipment : ____ gpm ΔP : ____ psi

PLAN 72 and 74 SYSTEMS

- ○ Equipment Supplier : ____
- ○ High Flow Alarm Switch (8.3.10.5)

0

PLAN 75 and 76 SYSTEMS

- ○ Equipment Supplier : ____
- ○ High Level Alarm Switch For Plan 75 (8.3.9.3.3)
- ○ Test Connection (8.3.9.3.4)

NOTES

8.1	**Pump Supplier has unit responsibility for the furnishing of all instruments & equipment associated with seal flush Plans.**
8.2	**Orifice size shall be stamped on each orifice, with direction of flow indicated. Orifice assembly shall be tagged with Buyer's orifice tag number.**
8.3	**Cooling Water Piping shall be per Material Pipe Class, TAAG2.**
	Deleted.
	Deleted.

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API 682 MECHANICAL SEAL DATA SHEET

Doc. No.: A8KM-18-096-540066-A

Note: This data sheet has been modified from that in the annex of API Standard 682, Third Edition. (See Note 9.3)

Contract:	A8KM			
Item No:	18-P-354A/B			
Revision:	1	Date:	27-Feb-23	
Unit:	Renewable Jet Fuel Unit B			
P.O. No.:	4505606431			
Inquiry No.:	4-601D-RQ			
Sheet	9	of	11	

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ACCESSORIES (Clauses 8 and 9) CONTINUED

PLAN 52 AND 53 SYSTEMS (Note 9.1)

■ Standard (Fig. G.35) ☒ Alternative (Fig. G.36)

☐ Dimensional Variations To Standard Figure G.35 :

☐ Dimensional Variations To Standard Figure G.36 :

☒ Alternative Fabrication Standard :

● Primary Equipment Supplier : **PUMP SUPPLIER**

☐ Supplier Reference / Code :

● Connecting Line Supplier : **PUMP SUPPLIER**

● Tubing ○ SCH. 80 Piping (8.2.9) **316 TUBE FITTINGS**

● Equipment Support Supplier : **PUMP SUPPLIER**

● Filling System Supplier : **BUYER**

● ASME Code Stamp Required **Req'd for All Plan 53 Services**

○ EN 13445 or Other Code Applicable :

☒ Reservoir Capacity (8.3.6.2.5a) : gal

☒ NLL to Gland Plate Height (8.3.6.2.2) : ft

☐ Reservoir MAWP (3.1.52) : psig @ °F

☒ Set Pressure Range, Max. / Min.: / psig

☒ System Hold-Up Period (Plans 53B & 53C) : days

● Temperature Indicator (Plan 53B & 53C)

● Pressure Alarm Setting (8.3.6.2.3) to Activate on :

☒ Rising Pressure (Arr 2) Set at : psig

■ Falling Pressure (Arr 3) Set at : **137** psig 0

☒ Low Level Alarm Setting Required 0

☒ High Level Alarm Setting Required (8.3.6.2.4)

○ Test Based H / Q Curve For Internal Circulating Device

○ External Circulating Pump (8.3.7)

INSTRUMENTATION

● User Specification Reference For Instrumentation / Controls :
(Note 7.4)

Pressure Gauges (9.4)

○ Oil Filled Pressure Gauges (9.4.3)

Pressure Transmitters (9.5.2) ○ Switches in Lieu of Transmitters

Level Transmitters (9.5.3) ○ Switches in Lieu of Transmitters

○ Hydrostatic (Std. Option, 9.5.3) ○ Capacitance ○ Ultrasonic

Level Indicators (9.6)

○ Weld Pad (Std. Option, 9.6.1) ○ External, Removable (9.6.2)

Flow Instruments (9.7) : ○ Transmitters (9.5.4)

INSPECTION AND TESTING

○ Purchaser Participation in Inspection & Test
Specify :

○ Inspector's Check List (10.1.7 & Annex H)

○ Purchaser Approval Req'd For Welded Connection Design (6.1.6.10.5)

○ Hardness Test (10.2.3k) Required For :

○ 100% Inspection of All Welds (6.1.6.10.5) Using :
○ Magnetic Particle ○ Liquid Penetrant
○ Radiographic ○ Ultrasonic

○ Optional Qualification Testing Required (10.3.2)

☒ Mod. Faces For Pump Test (10.3.6.1), Seal Page 1, Line 32

☒ Alternate Seal Pump Test (10.3.6.2), Seal Page 1, Line 33

NOTES

9.1 Seal flush systems and supports shall meet load requirements per Project specification A8KM-PP-000-40002-A, Structural Data For Mechanical Equipment, and A8KM-PP-000-20001-A, Plant Site Data Sheet.

9.2 Deleted.

9.3 Seal Data Sheets are in the API-682, 3rd Edition format. Paragraph references are to API-682, 4th Edition. Pump seals shall be in full compliance with API-682, 4th Edition.

9.4 Plan 53B pressure transmitter settings shall consider the full range of pump suction pressures; Rated (minimum) through maximum.

9.5 When the slop oil is flashed to 0 psig, the fluid is 4.5 wt% vapor and 95.5 wt% liquid.

FLUOR / world energy	**LOW VOLTAGE MOTOR (IEEE 841) DATA SHEET U.S. CUSTOMARY UNITS**	**Contract:**	**A8KM**
		Item No:	**18-P-354AM/BM**
		Revision:	**1** **Date:** **27-Feb-23**
	APPLICABLE MOTOR SPECIFICATION A8KM-PP-000-50670-A	**Unit:**	**Renewable Jet Fuel Unit B**
		P.O. No.:	**4505606431**
	Doc. No.: A8KM-18-096-540066-A	**Sheet**	10 **of** 10

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APPLICABLE TO ○ PROPOSAL ● PURCHASE ○ AS BUILT

CLIENT: **World Energy Paramount** SERVICE **Slop Oil Pump**

PLANT: **World Energy Paramount** MOTOR TAG NO. / NO. REQ'D **18-P-354AM/BM** / **Two (2)**

SITE: **Paramount, CA** DRIVEN EQUIPMENT TYPE / TAG NO. **Centrifugal Pump** / **18-P-354A/B**

DESIGN DATA AND ACCESSORY EQUIPMENT

NAMEPLATE **5** HP **1.15** S.F. **1800** RPM POWER (VOLTAGE/PHASE/HERTZ) **460** / **3** / **60**

ROTATION (WHEN FACING MOTOR OPPOSITE DRIVE END): ○ CW ○ CCW **Fans shall be bi-directional**

INSULATION CLASS: ○ B ● F ○ H ○ VPI TEMP. RISE **CLASS B** / ____ °C over **40** **°C** **AMBIENT**

AREA CLASSIFICATION: ● CLASS **I** , GROUP **B/C/D** DIV. **2** ● T-RATING **T3C** / ____ °F

○ UNCLASSIFIED ○ ____

LOCATION: ○ INDOOR ● OUTDOOR ○ SHELTERED UNUSUAL CONDITIONS: ○ DUST ○ OTHER ____

AMBIENT TEMPERATURE: MAX **105** °F / MIN. **35** °F ALTITUDE **69** ft

ENCLOSURE: ● TOTALLY-ENCLOSED FAN-COOLED ○ TOTALLY-ENCLOSED NONVENTILATED ○ EXPLOSION PROOF

MOUNTING METHOD: ● FOOT ○ FLANGE, TYPE: ____

MOUNTING ARRANGEMENT: ● HORIZONTAL ○ VERTICAL SHAFT DOWN ○ VERTICAL SHAFT UP

BEARING TYPE: ● BALL ○ ROLLER BEARING LUBRICATION: ● GREASE ○ OIL ○ PURE OIL MIST

CONNECTION TO LOAD: ● DIRECT CONNECTED ○ V-BELT ○ THROUGH GEAR ○ CLOSE COUPLED

EQUIPMENT OPERATION: ○ CONTINUOUS ○ SPARED CONTINUOUS ● INTERMITTENT-CYCLES / DAY ____

SOUND PRESSURE LEVEL REQUIREMENTS: **85** dBA @ **3** FEET

STARTING: ● FULL VOLTAGE ● REDUCED VOLTAGE, **80** % OF VOLTAGE **Starting Voltage Dip Allowance**

○ UNLOADED ● LOADED ○ CAPACITORS FOR POWER FACTOR CORRECTION

○ SPACE HEATERS ____ V ____ PHASE ____ °F MAX. TEMP

● OVERSIZE TERMINAL BOX ● DRAIN PLUGS Terminal Box shall be the largest feasible for the motor frame.

● SS NAMEPLATE ○ AUXILIARY NAMEPLATE

TEST ● ROUTINE ○ COMPLETE ● VIBRATION ● REPORT ● FOOT FLATNESS

REMARKS: **10.1) This data sheet applies to motors 1/2 hp through 500 hp with anti-friction bearings.**

10.2) Deleted.

10.3) IP55 degree of protection is required.

INFORMATION BELOW TO BE COMPLETED BY VENDOR

MOTOR MFR. **TECO** MODEL **AEHH8B** SERIAL NO. ____ 0

NAMEPLATE HP **5** FULL LOAD RPM **1745** FRAME **184T** WEIGHT **101** LB 0

MOTOR OUTLINE DRAWING NO. **31049U593010** 0

ROTOR CAGE MATERIAL OF CONSTRUCTION ____ MOTOR WINDING MATERIAL ____

BEARING MANUFACTURER ____ SIZE **6306ZC35C** 0

VERTICAL MOTOR THRUST BEARING: TYPE ____ CAPACITY: UP ____ LBS DOWN ____ LBS LOCATION ____

LOAD	FULL	3/4	1/2	OTHER
AMPERES	**6.12**	**-**	**-**	
EFFICIENCY, %	**89.5**	**88.5**	**88.5**	
POWER FACTOR	**85.5**	**81.5**	**71.5**	
SPEED, RPM	**1745**	**-**	**-**	

LOCKED ROTOR AMPS*	**46**	AMPS	0
FULL LOAD TORQUE*	**15.04**	FT-LB	0
LOCKED ROTOR TORQUE*	**185**	%	0
PULL UP TORQUE*	**140**	%	0
BREAKDOWN TORQUE*	**285**	%	0
ACCEL. TIME W/ LOAD (0 TO FULL SPEED)*	**15.08**	SEC.	0
STALL TIMES AT ZERO RPM* - HOT / COLD	**25** / **35**	SEC.	0
NUMBER OF CONSECUTIVE STARTS*	**HOT: 1 / COLD: 2 PER HOUR**		0

SOUND LEVEL: GUARANTEED ____ dBA / EXPECTED **54** dBA

FAN MATERIAL ____ (NON-SPARKING)

* INDICATED AT RATED VOLTAGE

INFORMATION BELOW TO BE PROVIDED BY VENDOR AFTER PURCHASE (REFER TO RFQ/PO DOCUMENTS)

● SAFE TIME - CURRENT CURVE

● SPEED - TORQUE CURVE

● SAFE LOCKED ROTOR TIME HOT ____ COLD ____

MAX. SURFACE TEMP. DURING NORMAL STARING OR OPERATION OF:

○ ROTOR ____ °F ○ STATOR ____ °F ○ ENCLOSURE ____ °F

NOTES:

10.4 **Average relative humidity is 54%.**

10.5 **Motor nameplate shall indicate service factor, area classification and T-rating. T-rating relates to both external and internal components.**

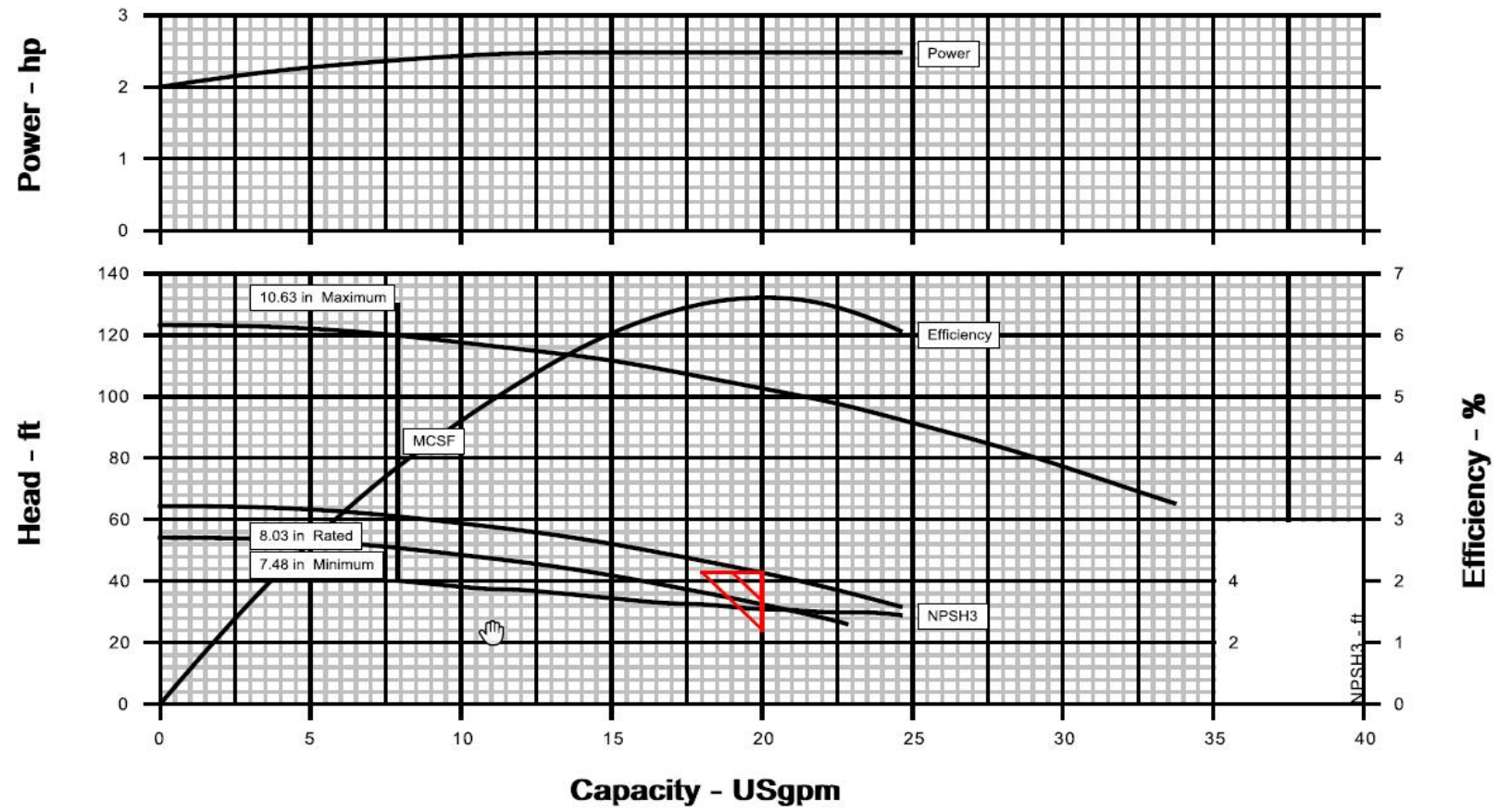
10.6 **Deleted.**

10.7 **All motors shall be rated for Cl. I, Div. 2, Gr. B,C,D and a T3C temperature code for project uniformity.**

FLUOR / world energy	**PUMP DATASHEET ANNEX**	**Contract:**	**A8KM**	
		Item No:	**18-P-354A/B**	
		Revision:	**1**	**Date:** 27-Feb-23
		Unit:	**Renewable Jet Fuel Unit B**	
		P.O. No.:	**4505606431**	
		Inquiry No.:	**4-601D-RQ**	
		Sheet 11 **of** 11		**REV**

PROPOSAL PUMP CURVES

RATED CASE: 0.73 cP



RICH AMINE UPSET CASE