

WORLD ENERGY RENEWABLES PROJECT

MECHANICAL EQUIPMENT DATA SHEET FOR 18-J-274A/B/C

H2S COMPRESSOR SOUR WATER PUMPS

Document No. A8KM-18-089-540060-A

Fluor Project No: A8KM

REV	DATE	DESCRIPTION	PAGES	ORIG	CHK'D	APPV'D	CLIENT
E	11/20/2023	As Built	5				
D	6/20/2022	Issued for Purchase	5	NKP	JF AD SN	BT	
C3	12/16/2021	Re-Issued for Quotation	5	NKP	JF AD SN	BT	
C2	11/22/2021	Re-Issued for Client Review	5	VH	JF AD SN	BT	
C1	11/15/2021	Re-Issued for Internal Review	5	VH	JDM AD SN	BT	
C	2/2/2021	Issued for Quotation	10	LV	JDM AD SN	BT	
B	12/3/2020	Issued for Client Review	10	JDM	JK	BT	
A	11/13/2020	Issued for Internal Review	10	JDM			

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ROTARY PUMP MAG-DRIVE GEAR DATA SHEET

Contract:	A8KM
Item Tag(s):	18-J-274A/B/C
Revision:	D
Unit:	H2S Recovery Unit
P.O. No.:	SM00000880
Inquiry No.:	A8KM-4-622
Sheet	2 of 5

REV

Applicable To : ● Purchase — D

Client :	WORLD ENERGY PARAMOUNT	Unit:	H2S RECOVERY
Site :	PARAMOUNT, CA	No. of Pumps Required:	3
Service :	H2S COMPRESSOR SOUR WATER	Size & Type:	MAG-DRIVE GEAR / NOTE 2.6
Manufacturer :	LIQUIFLO	Serial Number:	109107-1-1 / 2 / 3 — D

GENERAL

No. Motor Driven :	3	Other Driver Type :			D
Pump Item No's.:	18-J-274A/B/C	Pump Item No's.:			D
Motor Item No's.:	18-J-274AM/BM/CM	Driver Item Nos.:		Gear Item No's.:	D
Motor Provided By :	PUMP SUPPLIER	Driver Provided By :		Gear Provided By :	D
Motor Mounted By :	PUMP SUPPLIER	Driver Mounted By :		Gear Mounted By :	D
Motor Data Sheet No. :	ATTACHED	Driver Data Sh. No. :		Gear Data Sh. No. :	D

Notes : Information Below To Be Completed : ○ By Purchaser ☐ By Supplier ☒ By Supplier Or Purchaser

● OPERATING CONDITIONS

		Min	Normal	Rated	Max
● Capacity	gpm			0.5	
○ Other Operating Conditions	gpm				
● Discharge Pressure	psig			27.9	
● Suction Pressure	psig			6.4	231.4
● Differential Pressure	psi			21.5	

● NPSH Available 3.25 ft

● NPIP Available 1.39 psia **(Excludes margin)**

● NPSHa / NPIP Datum ● CL Suction Nozzle

● Duty Cycle (Note 2.1) Intermittent

(1) Maximum - mechanical design

■ PERFORMANCE

☐ Proposal Curve No. :	H3F	
■ Rated Capacity :	0.61	gpm
■ NPSH/NPIP Required :	2 ft	psia
■ Rated Speed :	1150 rpm	RPM
☐ Displacement :	0.0006	gpm
☐ Volumetric Efficiency :	100	%
■ Pump Efficiency :	12.8	%
■ Req. Power @ Maximum Viscosity :	0.08	HP
■ Req. Power @ Pres. Limiting Val :	0.07	HP
■ Req. Power @ Rated Condition :	0.06	HP
☐ Maximum Allowable Speed :	1750	RPM
☐ Minimum Allowable Speed :	230	RPM

■ CONSTRUCTION

Connections :	Size	ANSI Rating	Facing	Position
Suction :	1/2"	150#	RF	SIDE
Discharge :	1/2"	150#	RF	SIDE
Grand Flush :				
Drains* :	1/2"	150#	RF	FRONT
Vents* :	NA			
Jacket :				

* ~~Vent and~~ Drain valves and piping by Purchaser

■ PUMP TYPE

● Sealless Mag-Drive, Gear, Close-Coupled

● PUMPED FLUID

● Type or Name of Pumped Fluid: SOUR WATER

		Min	Rated	Max
● Temperature	°F		124	175
● Vapor Pressure	psia		19.7	
● Relative Density	S.G.		0.987	
● Viscosity	cP		0.57	

● Specific Heat BTU/lb°F

● Corrosive / Erosive Agents Description

○ Erosive ● Corrosive H2S

○ Chloride Concentration (ppmw) :

● H2S Concentration (ppm) : 1680

Fluid ● Hazardous ○ Flammable ● Other Toxic

○ Gas ○ Entrained ○ Slug Flow % by volume of GVF

○ Solids Particle Size Distribution & Min/Max in

○ Shape ○ Concentration Hardness — D

● SITE AND UTILITY DATA — D

Location : ● Outdoor ● Unheated — D

○

Electrical Area Classification :

● Class: I Group: BCD Division: 2

○ Non-Classified

○ Winterization Required ○ Tropicalization Required — D

Site Data : Elevation (MSL) : 69 ft — D

Barometer : 14.7 psia

○ Range of Ambient Temps : MIN / MAX: 35 / 104 °F — D

Unusual Conditions :

○ Dust ○ Fumes ○ Salt Atmosphere

○ Other :

○ Utility Conditions — D

Electricity	Drivers	Heating	Control	Shutdown
Voltage :	460	120	120	
Hertz :	60	60	60	
Phase :	3	1	1	

Cooling Water Source :

Supply Temp °F Max Return Temp °F — D

Norm. Press psig Design Press. psig

Min. Return Press psig Max. Allow. ΔP psi

Instrument Air Max Min

Pressure : psig 80 psig

Notes :

2.1) Pump is 1x100% intermittent service for each compressor package. 18-J-274C is for spare compressor package, 18-C-270C.

2.2) Pressure relief valve by Others shall be set at 100 psig. ~~Pump shall include required BHP @ relief set point.~~ — D

2.3) Suction static head is measured from LLL.

2.4) Pump shall be rated for NACE MR0103 service with flanged connections.

2.5) Pump baseplate is mounted at grade and pump centerline is estimated to be 7" from bottom of baseplate.

2.6) Pump Model H3F Mag-Drive (H3FL6PEE102000US) / 1/2" Flange — D

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POSITIVE DISPLACEMENT PUMP - ROTARY API 676 - 3RD ED DATA SHEET

Note: This data sheet has been modified from Annex A of API Standard 676, Third Edition.

Contract:	A8KM
Item Tag(s):	18-J-274A/B/C
Revision:	D
Unit:	H2S Recovery Unit
P.O. No.:	SM00000880
Inquiry No.:	A8KM-4-622
Sheet	3 of 5

REV

PIPING AND APPURTENANCES

Manifold Piping For Purchaser Connection
- ☒ Vent ☒ Drain ☒ Steam / Cooling Water
- ○ Heating Jacket Required ☒ Cooling Required
- ☒ ☒ Fittings
- ☒
- ☒ Valves: ☒
- ☒ Flanges Required in Place of Socket Weld Unions
- ☒ Mount Seal Pot Off Baseplate

Connection Bolting ○ Cadmium Plated Bolts Prohibited
- ○ ○

HEATING AND COOLING

Heating Medium ○
- ☒ Steam Jacket / Cooling Water Press. psig @ °F

Cooling Water Requirements

☐ Bearing Housing	gpm	@	psig		
☐ Lube Oil Cooler	gpm	@	psig		
☐ Seal Oil Cooler	gpm	@	psig		
☐ Other	gpm	@	psig		
Total Cooling Water	gpm	@	psig		

INSTRUMENTATION

- ○ Accelerometer :
- ○ Provision for MTG Only
- ○ Flat Surface Required
- ○ Radial Bearing Temp. ○ Thrust Bearing Temp.
- ○ Temp. Gauges (With Thermowells)
- ○ Pressure Gauge Type
- ○ Other : Magnetrol model 961 liquid level switch
- ○ Other :
- ○ Other :

PREPARATION FOR SHIPMENT

- ● Domestic ○ Export Boxing Req'd **(Required if overseas)**
- ● Outdoor Storage for 12 Months minimum
- ● Specification 4WGN-10001, Shipment and Packing Specification

SURFACE PREPARATION AND PAINT

- ● **Supplier's Standard in compliance with below spec'**
- ● Specification Number : **A8KM-PP-000-500520-A, Painting**

Pump (8.4.3.1)
- ● Primer: Manufacturers standard
- ● Finish Coat: Manufacturers standard

Baseplate (8.4.3.1)
- ● Primer: Primer to be compatible w/ epoxy grout & ISO 12944-5 C4
- ● Finish Coat: No finish coat on underside.

WEIGHTS

■ Pump	31	lb	■ Base	33	lb	D
■ Driver	61	lb	■ Gear		lb	D
Total	125	lb				D

BASEPLATE

- ● By Pump Manufacturer Suitable For Epoxy Grout
- ○ Extended For :
- ○ Non-Grout Construction (7.4.2)
- ○ Drain - Rim ○ Drain - Pan D

OTHER PURCHASER REQUIREMENTS

- Nameplate Units : ● USGS
- ○ Relief Valves By Pump Mfgr :
- Piping For Seal Flush Furnished By :
- ○
- Piping For Cooling Water / Heating Furnished By :
- ○
- ● Provide Technical Data Manual
- ☒ Installation List in Proposal (9.2.3.1) D

NOTES

3.1) Pump shall be prepared for long term storage for minimum of 12 months outdoor.

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POSITIVE DISPLACEMENT PUMP - ROTARY API 676 - 3RD ED DATA SHEET

Note: This data sheet has been modified from Annex A of API Standard 676, Third Edition.

Contract:	A8KM
Item Tag(s):	18-J-274A/B/C
Revision:	D
Unit:	H2S Recovery Unit
P.O. No.:	SM00000880
Inquiry No.:	A8KM-4-622
Sheet	4 of 5

REV

APPLICABLE SPECIFICATIONS:

API 676 Positive Displacement Pumps - Rotary

- ○ Governing Specification (If Different)
- ● NACE MR0103 (6.13.2.13)
- ○ NACE MR0175
- ○ Other

CONSTRUCTION

Casing :

- ■ Max. Allowable Press.(6.3.1): 233 psig @ 175 °F
- ■ Max. Allow. Suction Press. : psig @ °F
- ■ Hydrostatic Test Pressure - Suct / Disch 1.5 MAWP / 350 psig
- ☐ Steam Jacket Press. : psig @ °F

Rotating Elements :

- Rotor Mount : ☐
- Timing Gears : ☐
- Bearing Type : ☐ Radial ☐ Thrust
- Bearing Number : ☐ Radial ☐ Thrust
- Lubrication Type : ○ Constant Level Oilers
  - ☐ Pumped Fluid ☒ Ring Oil ☒ Oil Mist
  - ○ External ○ Oil Flood ○ Grease
  - ☐ Lubricant Info (Visc,etc)
- ○ **Mechanical Seals : (Not Applicable. Sealless)**
  - ☐ Supplier and Model :
  - ☐ Supplier Code :
- ○ API 682 and Data Sheets :
- ☐ API 682 Seal Code :
- ○ API 682 Seal Flush Plan:

DRIVER TYPE

- ● Induction Motor
- ○ Other :

DRIVE MECHANISM

- ● Direct Coupled
- ☒ Coupling Manufacturer :
- ■ Coupling Type : **Close Coupled**
- ☐ Rating (Max Torque) ☒ Model :
- ☐ Spacer Length in ☒ S.F.
- ○ Coupling Balanced :
- ○ Coupling Per ARI 671 (7.2.4)
- ○ Coupling Hub Attachment
- ○

Coupling Guard Type

- ○
- ■ Non-Spark Coupling Guard (7.2.15)

MOTOR DRIVER

- ● IEEE 841
- ○ ASD Supplier By:
- ■ Manufacturer **BALDOR** ☐ Type
- ■ Frame **145TC** ■ Enclosure TEFC
- ■ Horizontal
- ■ HP 1 RPM 1160 Volts 460
- ● Phase 3 Hertz 60 S.F. 1.15
- ○ Variable Speed Range RPM
- ● Minimum Starting Voltage (7.1.2.2) **80% at Motor Terminals**
- ☒ Insulation F ☒ Temp Rise B
- ☒ Full Load Amps 1.7
- ☒ Locked Rotor Amps 4.5
- ☒ Starting Method DOL
- ☒ Lube Grease

Bearings (Type / Number)

- ☐ Radial 25BC02X30X
- ☐ Thrust 25BC02X30X

MATERIALS

■ MDMT (6.13.6.1) :	32	
■ Casing :	316 SS	D
■ Stator / Liner :	316 SS (CONTAINMENT SHELL)	D
■ Wear Plates:	Carbon 60	D
■ Gear :	316 SS (IDLER - PEEK)	D
☐ Vanes :		
■ Shaft :	Tungsten Carbide Coated 316 SS	D
☐ Sleeve(s) :		D
☐ Gland(s) :		
■ Bearing Housing :	Carbon 60 (Bearings) Teflon (Bearing Pins)	D
☐ Timing Gears :		
■ Elastomers / Gaskets :	TEFLON	D

QA INSPECTION AND TEST

- ○ Special Material Tests
- ○ Low Ambient Temp. Materials Tests (6.13.6.5)
- ○ Compliance with Inspector's Check List
- ● Certification of Materials (Casing, Rotor/Shaft)
- ● Surface and Sub-Surface Examinations
  - ○ Radiography
  - ○ Ultrasonic
  - ● Magnetic Particle N/A
  - ● Liquid Penetrant Case Attachment Welds
  - ● Component PMI Per A8KM-PP-000-500512-A
- ● Hardness of Parts, Welds & Heat Affected Zones
- ● Vendor to Submit Test Procedures (8.3.1.2)
- ○ Supplier to Keep Repair and HT Records (8.2.1.1)

	Non-Witn	Witn	Obsd	
● Shop Inspection (8.1)				D
● Hydrostatic	●	○	○	
● Performance (8.3.4)	○	●	○	D
○ Retest On Seal Leakage	○	○	○	
○ Npsh / Npip (8.3.7.1)	○		○	D
○ True Peak Velocity Data	○	○	○	
○ Complete Unit Test (8.3.7.2)	○	○	○	
○ Sound Level Test (8.3.7.3)	○	○	○	D
○ Cleanliness Prior To Final Assembly (8.2.3.3)	○	○	○	
○ High Discharge Pressure @ Plv	○	○	○	D
○ Check For Co-Planar At Mounting Pad Surfaces (7.4.7)	○	○	○	
○ 1 Hr Mechanical Run Test After Oil Temp Stable (8.3.5.1)	○	○	○	D
○ 4 Hr. Mech Run After Oil Temp Stable (8.3.5.2)	○	○	○	D
○ Auxiliary Equipment Test (8.3.4.3)	○	○	○	D
○ Other	○	○	○	D

- ○ Test With Substitute Seal (8.3.5.3)
- ○ Supplier Submit Test Data Within 24 Hours D
- ○ Include Plotted Vibration Spectra
- ○ Record Final Assembly Running Clearances (8.2.1.1,f)
- ● Performance Curve & Data Approval Prior to Shipment (8.3.9)

NOTES

D

4.1. ~~Rotor shall be balance to ISO 1940 G2.5~~

4.2 Vendor to advise mag coupling make during detailing D

4.3 Offered Pump Design Temp is 260 Deg F. D

4.4 Bearings are Product Lubricated D

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LOW VOLTAGE MOTOR (IEEE 841) DATA SHEET U.S. CUSTOMARY UNITS

APPLICABLE MOTOR SPECIFICATION A8KM-PP-000-50670-A

Contract:	A8KM		
Item No:	18-J-274AM/BM/CM		
Revision:	D	Date:	20-Jun-22
Unit:	H2S Recovery Unit		
RFQ / P.O. No.:	A8KM-4-622		
Sheet	5 of 5		

Rev

APPLICABLE TO ○ PROPOSAL ● PURCHASE ○ AS BUILT — D

CLIENT: WORLD ENERGY PARAMOUNT — SERVICE: H2S COMPRESSOR SOUR WATER PUMPS

PLANT: WORLD ENERGY RENEWABLES PLANT — MOTOR TAG NO. / NO. REQ'D: 18-J-274AM/BM/CM / 3

SITE: PARAMOUNT, CA — DRIVEN EQUIPMENT TYPE / TAG NO.: MAG-DRIVE GEAR / 18-J-274A/B/C

DESIGN DATA AND ACCESSORY EQUIPMENT

NAMEPLATE 1 HP 1.15 S.F. 1160 RPM — POWER (VOLTAGE/PHASE/HERTZ) 460 / 3 / 60 — D

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 104 °F / MIN. 35 °F — ALTITUDE 69 ft — D

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 — D

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 — D

● OVERSIZE TERMINAL BOX ● DRAIN PLUGS

● SS NAMEPLATE ○ AUXILIARY NAMEPLATE

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

REMARKS: **5.1) This data sheet applies to motors 1/2 hp through 500 hp with anti-friction bearings.**

~~**5.2) Space heaters are required for 100 hp and above. Space heaters shall be rated at 120V/1 ph./60Hz for operation at 120V.**~~ — D

5.3) IP55 degree of protection is required. 5.4) Average relative humidity is 54%.

INFORMATION BELOW TO BE COMPLETED BY VENDOR

MOTOR MFR. Baldor — MODEL CECP83582T-4 — SERIAL NO. ____ — D

NAMEPLATE HP 1 — FULL LOAD RPM 1160 — FRAME 145TC — WEIGHT 69 LB — D

MOTOR OUTLINE DRAWING NO. 05LYEE943

ROTOR CAGE MATERIAL OF CONSTRUCTION Iron — MOTOR WINDING MATERIAL Copper

BEARING MANUFACTURER SKF — SIZE 6205

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

LOAD	FULL	3/4	1/2	OTHER
AMPERES	1.35	1.28	1.21	
EFFICIENCY, %	79.2	75.7	69.1	
POWER FACTOR	44	36	28	
SPEED, RPM	1180	1185	1191	

LOCKED ROTOR AMPS*	4.5	AMPS
FULL LOAD TORQUE*	4.53	FT-LB — D
LOCKED ROTOR TORQUE*	12	% — D
PULL UP TORQUE*	11.1	% — D
BREAKDOWN TORQUE*	14.6	% — D
ACCEL. TIME W/ LOAD (0 TO FULL SPEED)*		SEC.
STALL TIMES AT ZERO RPM* - HOT / COLD	/	SEC. — D
NUMBER OF CONSECUTIVE STARTS*		

SOUND LEVEL: GUARANTEED 85 dBA / EXPECTED ____ 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:

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

5.6 **Delete**

5.7 **Motor shall be rated for Cl. I, Div. 2, Gr. B,C,D and a T3C temperature code.**

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