


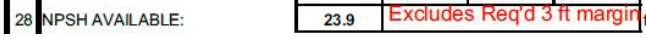
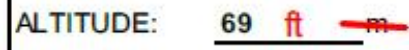


EQUIPMENT DATA SHEET (INCL. PREDICTED PERFORMANCE CURVE)

| | | |
|--------------------|---|--------------------------------|
| CLIENT | : | Air Products Manufacturing LLC |
| PROJECT NAME/NO. | : | WEP Renewables |
| CLIENT PO NO | : | 4505608736 |
| HMD DOCUMENT NO | : | HMD-4505608736-C04-02 |
| CLIENT DOCUMENT NO | : | EN207123-SNDYN-9V3-00035 |
| HMD PUMP NO | : | 839914 A/B |
| EQUIPMENT TAG NO | : | 18-P-1856 A/B |

| | | | | | |
|-----|------------|------------------|-------------|------------|-------------|
| | | | | | |
| | | | | | |
| 3 | 26/05/2023 | ISSUE FOR REVIEW | AFS | KW | NW |
| 2 | 29/09/2022 | ISSUE FOR REVIEW | KW | AFS | NW |
| 1 | 13/04/2022 | ISSUE FOR REVIEW | JLW | AFS | NW |
| 0 | 17/02/2022 | ISSUE FOR REVIEW | AFS | AFS | NW |
| REV | DATE | DESCRIPTION | PREPARED BY | CHECKED BY | APPROVED BY |

NOTE:

| <div>RESOLUTION SHEET</div> | | | | |
|---|---|--|--|--|
| Comment Number | Document Name: Equipment Data Sheet (incl. Predicted Performance Curve) | | Revision from which comment first appeared | Comment Status: Open\Closed - (Date Closed:) |
| | | | Current Rev: | |
| 1 |  | | 2 | Closed (26/05/2023) |
| 2 | Max Allowable Operating Region - 35.7 per page 5 | | 2 | Closed (26/05/2023) |
| 3 |  | | 2 | Closed (26/05/2023) |
| 4 | Confirm drain connection is correct. P-1855 is flanged. | | 2 | Closed (26/05/2023) |
| 5 | include note numbers | | 2 | Closed (26/05/2023) |



WORLD ENERGY PARAMOUNT
World Energy Renewables Project
Paramount, California

MECHANICAL EQUIPMENT DATASHEET
Document Number: A8KM-18-078-540161-A
Rev. 3, 26/05/2023
HMD-4505608736-C04-02







WORLD ENERGY RENEWABLES PROJECT
MECHANICAL EQUIPMENT DATA SHEET FOR 18-P-1856A/B
CAUSTIC DISTRIBUTION PUMP
Document No. HMD-4505608736-C04-02

Fluor Project No: A8KM

| | | | | | | | |
|-----|-----------|------------------|-------|------|-------|--------|--------|
| | | | | | | | |
| 3 | 26-May-23 | ISSUE FOR REVIEW | 5 | AFS | KW | NW | |
| 2 | 29-Sep-22 | ISSUE FOR REVIEW | 5 | KW | AFS | NW | |
| 1 | 13-Apr-22 | ISSUE FOR REVIEW | 6 | JLW | AFS | NW | |
| 0 | 17-Feb-22 | ISSUE FOR REVIEW | 4 | AFS | AFS | NW | |
| REV | DATE | DESCRIPTION | PAGES | ORIG | CHK'D | APPV'D | CLIENT |

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| | | | | | | | | | | | |
|---|--|--|---|--|------|--|--|--|--|---|---|
| <div><div> </div><div>ASME B73.3 SEALLESS PUMP DATA SHEET</div></div> | | Contract: <u>A8KM</u> Item No.: <u>18-P-1856A/B</u> Revision: <u>3</u> Date: <u>26-May-2023</u> P.O No. <u>4505608736</u> Inquiry No. <u>4-615-RQ</u> Sheet <u>2</u> of <u>5</u> | Rev | | | | | | | | |
| 1 | ISSUED FOR: <input checked="" type="checkbox"/> PROPOSAL <input type="checkbox"/> PURCHASE <input type="checkbox"/> AS BUILT | | | | | | | | | | |
| 2 | SITE <u>World Energy Renewables Project / Paramount California</u> | | | | | | | | | | |
| 3 | ITEM NAME: <u>Caustic Distribution Pump</u> | CLIENT <u>World Energy Paramount</u> | | | | | | | | | |
| 4 | ITEM TAG NO.: <u>18-P-1856A/B</u> | PROJECT NO.: <u>A8KM</u> | | | | | | | | | |
| 5 | SERVICE: <u>Caustic Distribution Pump</u> | PURCHASER ORDER NO.: <u>4505608736</u> | | | | | | | | | |
| 6 | UNIT: <u>Utilities and Offsites Firewater</u> | SUPPLIER/LOCATION: <u>Sundyne, HMD Kontro / Eastbourne, UK</u> | | | | | | | | | |
| 7 | TYPE <u>Magnetic Drive Pump</u> | SUPPLIER ORDER/SERIAL NOS.: <u> </u> / <u>839914 A/B</u> | | | | | | | | | |
| 9 | DATA PROVIDED BY: <input type="radio"/> PURCHASER <input type="radio"/> SUPPLIER <input checked="" type="radio"/> SUPPLIER IF NOT BY PURCHASER | | | | | | | | | | |
| 10 | ● GENERAL | | | | | | | | | | |
| 11 | NO. REQ.: <u>2 x 100%</u> | ◆ PUMP SIZE: <u>1.5 x 1 x 8</u> | ◆ MODEL <u>GSA Frame 1</u> | | | | | | | | |
| 12 | NUMBER MOTOR DRIVEN: <u>Two (2)</u> | NUMBER TURBINE DRIVEN: <u>N/A</u> | | | | | | | | | |
| 13 | MOTOR ITEM NUMBER: <u>18-P-1856AM/BM</u> | TURBINE ITEM NUMBER: <u>N/A</u> | GEARBOX ITEM NUMBER: <u>N/A</u> | | | | | | | | |
| 14 | MOTOR PROVIDED BY: <u>Pump Supplier</u> | TURBINE PROVIDED BY: <u>N/A</u> | GEARBOX PROVIDED BY: <u>N/A</u> | | | | | | | | |
| 15 | MOTOR MOUNTED BY: <u>Pump Supplier</u> | TURBINE MOUNTED BY: <u>N/A</u> | GEARBOX MOUNTED BY: <u>N/A</u> | | | | | | | | |
| 17 | ● OPERATING CONDITIONS | | ■ PERFORMANCE | | | | | | | | |
| 18 | RATED MAX. NORMAL MIN. | | PERFORMANCE CURVE NO.: <u>K6-13/60-2</u> | | | | | | | | |
| 19 | NPSHa Datum | <table><tr><td colspan="4">C.L.Impeller</td></tr><tr><td>30</td><td></td><td></td><td>9</td></tr></table> gpm | C.L.Impeller | | | | 30 | | | 9 | MEASURED AT CAPY.: RATED MAX. NORMAL MIN. |
| C.L.Impeller | | | | | | | | | | | |
| 30 | | | 9 | | | | | | | | |
| 20 | CAPACITY: (Note-2.3) | | | NPSH REQ'D.: <table><tr><td>4.64</td><td></td><td></td><td></td></tr></table> | 4.64 | | | | | | |
| 4.64 | | | | | | | | | | | |
| 21 | SUCTION PRESSURE: | -2.2 7 | | TOTAL DIFFERENTIAL HEAD @ RATED IMPELLER: <u>177ft</u> | | | | | | | |
| 22 | DISCHARGE PRESSURE: | 91 | | MAX. DIFFERENTIAL HEAD @ RATED IMPELLER: <u>242 ft</u> | | | | | | | |
| 23 | DIFFERENTIAL PRESSURE: | 92.9 | | MINIMUM CONTINUOUS FLOW: | | | | | | | |
| 24 | DIFFERENTIAL HEAD: | 177 | | THERMAL: <u> </u> GPM STABLE: <u>5.9</u> GPM | | | | | | | |
| 25 | HYDRAULIC POWER | 1.6 | | ALLOWABLE OPERATING REGION: <u>5.9</u> TO: <u>35.7</u> GPM | | | | | | | |
| 26 | AT DESIGNATED CAPACITY: | RATED MAX. NORMAL MIN. | | BEST EFFICIENCY POINT FOR RATED IMPELLER: <u>30.9</u> GPM | | | | | | | |
| 27 | OPERATING TIME: | | | SUCTION SPECIFIC SPEED: <u>6201</u> | | | | | | | |
| 28 | NPSH AVAILABLE: | 23.9 Excludes Required 3ft margin | | IMPELLER DIA.: RATED: <u>7.75</u> MAX.: <u>8.15</u> MIN.: <u>5.51</u> | | | | | | | |
| 29 | SYSTEM DESIGN: | | | PUMP RATED POWER: <u>12.3</u> BHP EFFICIENCY: <u>13.3</u> | | | | | | | |
| 30 | <input checked="" type="checkbox"/> STAND ALONE OPERATION <input type="checkbox"/> PARALLEL OPERATION | | | MAXIMUM POWER @ RATED IMPELLER: <u>12.9</u> BHP | | | | | | | |
| 31 | <input type="checkbox"/> SERIES OPERATION WITH ITEM NUMBER: <u> </u> | | | CASE PRESSURE RATING: | | | | | | | |
| 32 | SUCTION PRESSURE MIN/MAX: <u> </u> / <u> </u> psig | | | <input checked="" type="checkbox"/> MAX. ALLOWABLE WORKING PRES.: <u>242.2</u> PSIG @ <u>190</u> °F | | | | | | | |
| 33 | SERVICE: | | | <input checked="" type="checkbox"/> HYDROSTATIC TEST PRESSURE: <u>424.9</u> PSIG | | | | | | | |
| 34 | <input checked="" type="checkbox"/> CONTINUOUS <input type="checkbox"/> INTERMITTENT: <u> </u> STARTS/DAY | | | CONTAINMENT SHELL PRESSURE RATING: | | | | | | | |
| 35 | SYSTEM CONTROL METHOD: | | | <input type="checkbox"/> MAX. ALLOWABLE WORKING PRES.: <u>242.2</u> PSIG @ <u>190</u> °F | | | | | | | |
| 36 | <input type="checkbox"/> SPEED <input checked="" type="checkbox"/> FLOW <input type="checkbox"/> LEVEL <input type="checkbox"/> TEMPERATURE | | | <input type="checkbox"/> HYDROSTATIC TEST PRESSURE: <u>424.9</u> PSIG | | | | | | | |
| 37 | <input type="checkbox"/> PRESSURE <input type="checkbox"/> PIPE FRICTION RESISTANCE ONLY | | | | | | | | | | |
| 38 | ● PUMPED FLUID | | ● SITE CONDITIONS | | | | | | | | |
| 39 | PUMPED FLUID: <u>20wt% Caustic</u> | | LOCATION: | | | | | | | | |
| 40 | RATED MAX. NORMAL MIN. | | <input type="checkbox"/> INDOOR <input type="checkbox"/> HEATED <input type="checkbox"/> UNDER ROOF VOLTAGE: <u>460</u> | | | | | | | | |
| 41 | PUMPING TEMP.: <table><tr><td>100</td><td>140</td><td></td><td></td></tr></table> °F | 100 | 140 | | | | <input checked="" type="checkbox"/> OUTDOOR <input type="checkbox"/> UNHEATED <input type="checkbox"/> PARTIAL SIDES PHASE: <u>3</u> | | | | |
| 100 | 140 | | | | | | | | | | |
| 42 | AT DESIGNATED TEMP.: <u> </u> | | ALTITUDE: <u>69</u> ft HERTZ: <u>60</u> | | | | | | | | |
| 43 | SPECIFIC GRAVITY: <table><tr><td>1.21</td><td></td><td></td><td></td></tr></table> | 1.21 | | | | | RANGE OF AMBIENT TEMPS. MIN./MAX.: <u>35</u> / <u>105</u> °F | | | | |
| 1.21 | | | | | | | | | | | |
| 44 | VAPOR PRESSURE: <table><tr><td>0.67</td><td></td><td></td><td></td></tr></table> psia | 0.67 | | | | | ELECTRICAL CLASSIFICATION: | | | | |
| 0.67 | | | | | | | | | | | |
| 45 | VISCOSITY: <table><tr><td>3.3</td><td></td><td></td><td></td></tr></table> cP | 3.3 | | | | | CL.: <u>I</u> GR.: <u>B/C/D</u> DIV.: <u>2</u> TEMP: <u>T3C</u> | | | | |
| 3.3 | | | | | | | | | | | |
| 46 | SPECIFIC HEAT: <table><tr><td>0.87</td><td></td><td></td><td></td></tr></table> btu/lb°F | 0.87 | | | | | <input type="checkbox"/> NON HAZARDOUS <input type="checkbox"/> WINTERIZATION REQUIRED | | | | |
| 0.87 | | | | | | | | | | | |
| 47 | <input type="checkbox"/> VAPOR PRESSURE VS TEMPERATURE CURVE PROVIDED | | | ● NOTES: | | | | | | | |
| 48 | LIQUID: <input checked="" type="checkbox"/> HAZARDOUS <input type="checkbox"/> FLAMMABLE | | | <u>2.1. Pump centerline is 10.2" above top of foundation.</u> | | | | | | | |
| 49 | CORROSIVE / EROSION AGENT: <u>NaOH</u> | | | <u>2.2. Pump supports shall meet design load requirements per Project Spec. A8KM-PP-000-40002-A, Structural Data for Mechanical Equipment, and A8KM-PP-000-20001-A, Plant Site Data Sheet.</u> | | | | | | | |
| 50 | CHLORIDE CONCENTRATION: <u> </u> ppm | | | | | | | | | | |
| 51 | H ₂ S CONCENTRATION: <u> </u> ppm | | | | | | | | | | |
| 52 | OTHER: <u> </u> | | | | | | | | | | |
| 53 | % SOLIDS: <u> </u> MAX. PARTICLE SIZE: <u> </u> in | | | | | | | | | | |
| 54 | | | | | | | | | | | |
| 55 | | | | | | | | | | | |
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|---|--|---|-----|---|--|
| <div><div> </div><div>ASME B73.3 SEALLESS PUMP DATA SHEET</div></div> | | <div>Contract: A8KM</div> <div>Item No.: 18-P-1856A/B</div> <div>Revision: 3</div> <div>Date: 26-May-2023</div> <div>P.O No. 4505608736</div> <div>Inquiry No. 4-615-RQ</div> <div>Sheet 4 of 5</div> | Rev | | |
| 1 | <div>◆ COOLING OR HEATING PIPING (N/A)</div> | | 2 | INSTRUMENTATION | |
| 2 | NAME OF FLUID: _____ | | 3 | LEAK DETECTOR – SECONDARY CONTAINMENT BY: | |
| 3 | SUPPLY TEMP. NORM: _____ °F | | 4 | <input type="checkbox"/> PURCHASER <input checked="" type="checkbox"/> SUPPLIER | |
| 4 | ALLOWABLE TEMP. RISE: _____ °F | | 5 | ◆ MAKE / MODEL: <u>Magnetrol</u> | |
| 5 | Cl ₂ _____ ppmw | | 6 | VIBRATION MONITORING BY: | |
| 6 | SUPPLY PRESSURE: _____ psig | | 7 | <input type="checkbox"/> PURCHASER <input type="checkbox"/> SUPPLIER | |
| 7 | MAX. ALLOWABLE ΔP: _____ psi | | 8 | MAKE / MODEL: _____ | |
| 8 | <input type="checkbox"/> GALVANIZED PIPE <input type="checkbox"/> STAINLESS STEEL TUBING | | 9 | MOTOR LOAD PROTECTION BY: | |
| 9 | <input type="checkbox"/> SIGHT FLOW INDICATOR | | 10 | <input checked="" type="checkbox"/> PURCHASER <input type="checkbox"/> SUPPLIER | |
| 10 | <input type="checkbox"/> OUTLET SHUT-OFF VALVE | | 11 | <input type="checkbox"/> MAKE / MODEL: _____ | |
| 11 | REMARKS: _____ | | 12 | <input type="checkbox"/> MINIMUM FLOW BYPASS PROVIDED BY PURCHASER | |
| 12 | _____ | | 13 | ◆ TEMPERATURE & PRESSURE: | |
| 13 | _____ | | 14 | <input type="checkbox"/> TEMPERATURE GAUGES | |
| 14 | ◆ PIPING PLANS: ASME B73.3 | | 15 | <input type="checkbox"/> THERMOWELLS | |
| 15 | HEATING AND COOLING PIPING PLAN: _____ | | 16 | <input type="checkbox"/> PRESSURE GAUGES | |
| 16 | PUMP FLUID CIRCULATION PLAN: <u>101 or 111</u> | | 17 | <input type="checkbox"/> CONTAINMENT SHELL TEMPERATURE PROBES -MDP, CMP | |
| 17 | _____ | | 18 | <input type="checkbox"/> CANNED MOTOR WINDING THERMOSTATS | |
| 18 | ◆ MATERIALS | | 19 | <input type="checkbox"/> BEARING WEAR INDICATOR - CMP | |
| 19 | MATERIAL CLASS CODE: <u>316LSS</u> | | 20 | NOTES:- <u>4.1. Magnetrol liquid level probe to be included for leak</u> | |
| 20 | CASING: <u>316LSS</u> | | 21 | <u>detection.</u> | |
| 21 | IMPELLER: <u>316LSS</u> | | 22 | _____ | |
| 22 | CASE / IMPELLER WEAR RINGS: <u>316LSS</u> | | 23 | _____ | |
| 23 | SHAFT: <u>316LSS</u> | | 24 | _____ | |
| 24 | CONTAINMENT SHELL: <u>316LSS / Alloy C 276</u> | | 25 | _____ | |
| 25 | STATOR LINER: <u>N/A</u> | | 26 | _____ | |
| 26 | MAGNET (OUTER DRIVE RING): <u>Samarium Cobalt (Fully Encapsulated)</u> | | 27 | _____ | |
| 27 | INNER ROTOR: <u>N/A</u> | | 28 | _____ | |
| 28 | SLEEVE BEARING: <u>Silicon Carbide</u> | | 29 | _____ | |
| 29 | THRUST BEARING: <u>Silicon Carbide</u> | | 30 | _____ | |
| 30 | DRIVER BEARING HOUSING: <u>Carbon Steel</u> | | 31 | _____ | |
| 31 | WETTED FASTENERS: <u>316LSS</u> | | 32 | _____ | |
| 32 | BASEPLATE: <u>Carbon Steel</u> | | 33 | _____ | |
| 33 | COUPLING GUARD: <u>Non-Spark Brass</u> | | 34 | _____ | |
| 34 | ELECTRICAL PENETRATION SEALANT: _____ | | 35 | _____ | |
| 35 | REMARKS: _____ | | 36 | _____ | |
| 36 | _____ | | 37 | _____ | |
| 37 | _____ | | 38 | _____ | |
| 38 | _____ | | 39 | _____ | |
| 39 | _____ | | 40 | _____ | |
| 40 | _____ | | 41 | _____ | |
| 41 | _____ | | 42 | _____ | |
| 42 | _____ | | 43 | _____ | |
| 43 | _____ | | 44 | _____ | |
| 44 | _____ | | 45 | _____ | |
| 45 | _____ | | 46 | _____ | |
| 46 | _____ | | 47 | _____ | |
| 47 | _____ | | 48 | _____ | |
| 48 | _____ | | 49 | _____ | |
| 49 | _____ | | 50 | _____ | |
| 50 | _____ | | 51 | _____ | |
| 51 | _____ | | 52 | _____ | |
| 52 | _____ | | 53 | _____ | |
| 53 | _____ | | 54 | _____ | |
| 54 | _____ | | 55 | _____ | |
| 55 | _____ | | 56 | _____ | |
| 56 | _____ | | | _____ | |
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ASME B73.3
SEALLESS PUMP
DATA SHEET

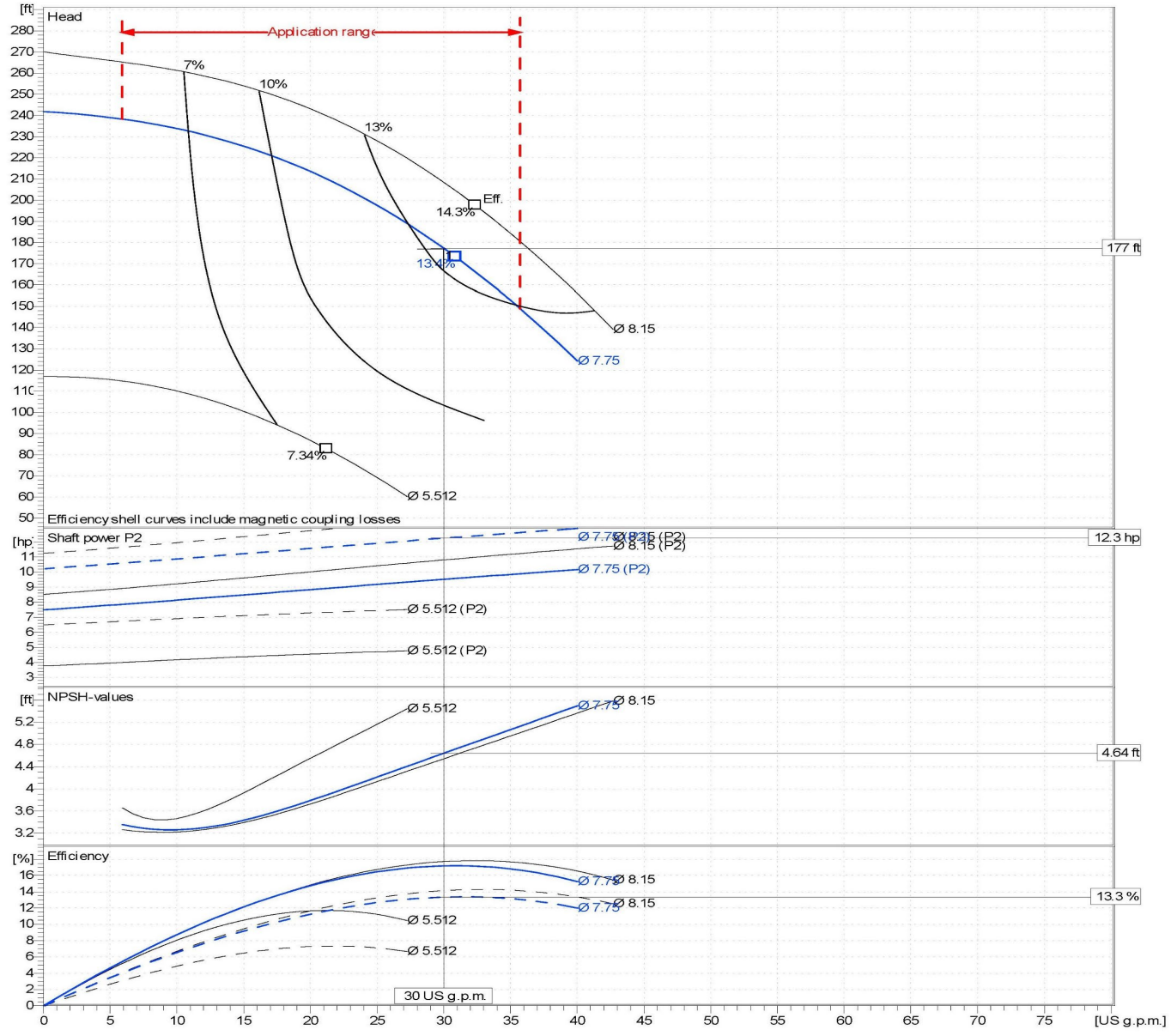
| | |
|-------------|--------------|
| Contract: | A8KM |
| Item No.: | 18-P-1856A/B |
| Revision: | 3 |
| Date: | 26-May-2023 |
| P.O No. | 4505608736 |
| Inquiry No. | 4-615-RQ |
| Sheet | 5 of 5 |

Rev

Predicted Pump Curve:
K6-13/60-2, Sundyne HMD Kontro

| Impeller | | | | | | | | | | | | | | |
|----------|------|-------------------|------|-----------|------------|-----------|----------------------|------|-----------|------------------------------|--------------|---------------|-------|----------|
| | Ø | Flow US g.p.m. | | | Head ft | | Shaft power P2 hp | | | Performance curve | | K6-13/60-2 | | |
| | | Operation Range | | | H(Q=0) | η Max. | P2(Q=0) | Max. | η Max. | Impeller type | Radial Vane | | | |
| | | Min. | Max. | η Max. | | | | | | Direction of rotation | | | | |
| | | | | | | | | | | Clockwise from the drive end | | | | |
| Actual | 7.75 | 5.9 | 35.7 | 30.9 | 242 | 173 | 10.2 | 12.9 | 12.3 | Impeller construction | Closed | | | |
| Min. | 5.51 | / | / | 21.2 | 117 | 82.7 | 6.5 | 7.51 | 7.61 | Impeller Eye Area | 4.0951 sq in | NSS (US unit) | 6201 | |
| Max. | 8.15 | / | / | 32.4 | 270 | 198 | 11.2 | 14.5 | 13.6 | Frequency | 60 Hz | Hz | Speed | 3500 rpm |

Power data referred to: 20wt% Caustic [100%] ; 140°F; 1.21kg/dm³; 2.73cSt



Note1: Solid lines represent without coupling losses
Note2: Dashed lines represent with coupling losses

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