## طرح نگهداشت و افزایش تولید ۲۷ مخزن

# DATA SHEETS (W/PERFORMANCE CURVE) FOR FIRE WATER MAIN ELECTRICAL PUMP

## نگهداشت و افزایش تولید میدان نفتی بینک

| Rev. | Date | Purpose of Issue / Status | Prepared by: | Checked by: | Approved by: | CLIENT Approval |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| V02 | APR-2025 | AFC | Kalaye Pump | M.Fakharian | S.Faramarzpour | |
| V01 | JAN-2025 | IFA | Kalaye Pump | M.Fakharian | S.Faramarzpour | |
| V00 | Nov-2024 | IFA | Kalaye Pump | M.Fakharian | M.Sadeghian | |

status:

**IFA:** Issued For Approval
**IFI:** Issued For Information
**AFC:** Approved For Construction

| | | |
|---|---|---|
| NISOC | نگهداشت و افزایش تولید میدان نفتی بینک<br>سطح الارض و ابنیه تحت الارض<br>خرید پکیج پمپ های آب آتشنشانی ایستگاه تقویت فشارگاز بینک<br>(قرارداد ۰۰_۰۰۲۳-BK-HD-GCS-CO) | HIRGAN ENERGY<br>Kalaye Pump Co. |

| شماره پیمان: | DATA SHEETS (W/PERFORMANCE CURVE) FOR FIRE WATER MAIN ELECTRICAL PUMP | | | | | | | شماره صفحه: ۲ از ۱۰ |
|---|---|---|---|---|---|---|---|---|
| ۰۵۳-۰۷۳-۹۱۸٤ | پروژه | بسته کاری | صادرکننده | تسهیلات | رشته | نوع مدرک | سریال | نسخه |
| | BK | GCS | KP | 120 | ME | DS | 0002 | V02 |

**REVISION RECORD SHEET**

| page | 00 | 01 | 02 | 03 | 04 | 05 | 06 |
|---|---|---|---|---|---|---|---|
| 1 | x | x | x | | | | |
| 2 | x | x | x | | | | |
| 3 | x | | | | | | |
| 4 | x | | | | | | |
| 5 | x | x | | | | | |
| 6 | x | x | | | | | |
| 7 | x | | | | | | |
| 8 | x | x | | | | | |
| 9 | x | | | | | | |
| 10 | x | | | | | | |
| 11 | | | | | | | |
| 12 | | | | | | | |
| 13 | | | | | | | |
| 14 | | | | | | | |
| 15 | | | | | | | |
| 16 | | | | | | | |
| 17 | | | | | | | |
| 18 | | | | | | | |
| 19 | | | | | | | |
| 20 | | | | | | | |
| 21 | | | | | | | |
| 22 | | | | | | | |
| 23 | | | | | | | |
| 24 | | | | | | | |
| 25 | | | | | | | |
| 26 | | | | | | | |
| 27 | | | | | | | |
| 28 | | | | | | | |
| 29 | | | | | | | |
| 30 | | | | | | | |
| 31 | | | | | | | |
| 32 | | | | | | | |
| 33 | | | | | | | |
| 34 | | | | | | | |
| 35 | | | | | | | |
| 36 | | | | | | | |
| 37 | | | | | | | |
| 38 | | | | | | | |
| 39 | | | | | | | |
| 40 | | | | | | | |
| 41 | | | | | | | |
| 42 | | | | | | | |
| 43 | | | | | | | |
| 44 | | | | | | | |
| 45 | | | | | | | |
| 46 | | | | | | | |
| 47 | | | | | | | |
| 48 | | | | | | | |
| 49 | | | | | | | |
| 50 | | | | | | | |
| 51 | | | | | | | |
| 52 | | | | | | | |
| 53 | | | | | | | |
| 54 | | | | | | | |
| 55 | | | | | | | |
| 56 | | | | | | | |
| 57 | | | | | | | |
| 58 | | | | | | | |
| 59 | | | | | | | |
| 60 | | | | | | | |
| 61 | | | | | | | |
| 62 | | | | | | | |
| 63 | | | | | | | |
| 64 | | | | | | | |

| page | 00 | 01 | 02 | 03 | 04 | 05 | 06 |
|---|---|---|---|---|---|---|---|
| 65 | | | | | | | |
| 66 | | | | | | | |
| 67 | | | | | | | |
| 68 | | | | | | | |
| 69 | | | | | | | |
| 70 | | | | | | | |
| 71 | | | | | | | |
| 72 | | | | | | | |
| 73 | | | | | | | |
| 74 | | | | | | | |
| 75 | | | | | | | |
| 76 | | | | | | | |
| 77 | | | | | | | |
| 78 | | | | | | | |
| 79 | | | | | | | |
| 80 | | | | | | | |
| 81 | | | | | | | |
| 82 | | | | | | | |
| 83 | | | | | | | |
| 84 | | | | | | | |
| 85 | | | | | | | |
| 86 | | | | | | | |
| 87 | | | | | | | |
| 88 | | | | | | | |
| 89 | | | | | | | |
| 90 | | | | | | | |
| 91 | | | | | | | |
| 92 | | | | | | | |
| 93 | | | | | | | |
| 94 | | | | | | | |
| 95 | | | | | | | |
| 96 | | | | | | | |
| 97 | | | | | | | |
| 98 | | | | | | | |
| 99 | | | | | | | |
| 100 | | | | | | | |
| 101 | | | | | | | |
| 102 | | | | | | | |
| 103 | | | | | | | |
| 104 | | | | | | | |
| 105 | | | | | | | |
| 106 | | | | | | | |
| 107 | | | | | | | |
| 108 | | | | | | | |
| 109 | | | | | | | |
| 110 | | | | | | | |
| 111 | | | | | | | |
| 112 | | | | | | | |
| 113 | | | | | | | |
| 114 | | | | | | | |
| 115 | | | | | | | |
| 116 | | | | | | | |
| 117 | | | | | | | |
| 118 | | | | | | | |
| 119 | | | | | | | |
| 120 | | | | | | | |
| 121 | | | | | | | |
| 122 | | | | | | | |
| 123 | | | | | | | |
| 124 | | | | | | | |
| 125 | | | | | | | |
| 126 | | | | | | | |
| 127 | | | | | | | |
| 128 | | | | | | | |

## GENERAL NOTES

| | | |
|---|---|---|
| 1 | Vendor shall fill in the blanks and return the completed data sheet along with Motor data sheet, "DOC NO.: BK-GCS-PEDCO-120-EL-DT-0009. with his propo | **KPC : Confirmed** |
| 2 | Vendor shall submit ITP (Inspection & Testing Plan) with his proposal. | **KPC : Confirmed** |
| 3 | Vendor is requested to confirm the material, or propose appropriate alternative. | **KPC : Confirmed** |
| 4 | For Instrumentation, Project specification 'Specification For Instrument and Control of package Unit System (PU)' Doc. No. BK-GNRAL-PEDCO-000-IN-SP-0004. shall be followed. | **KPC : Confirmed** |
| 5 | Instead of mechanical seal, vendor shall advise the suitable Packing specification. | **KPC : Packing is confirmed** |
| 6 | NPSH test shall be done & witnessed if the margin of NPSHr & NPSHa is less than 1. | **KPC : Confirmed** |
| 7 | The Tie-in flanges shall conform to ASME B-16.1. | **KPC : Confirmed** |
| 8 | Pump drain shall be terminated at skid edge with flange connection and valved. | **KPC : Confirmed** |
| 9 | Vendor to indicate which minimum flow pumps can achieve. | **KPC : Confirmed** |
| 10 | Nozzle loads shall be 2 times the loads shown in API 610 11th Edition. | **KPC : Confirmed** |
| 11 | Electrical motor shall be rated according to project site condition; "Process Basis of Design; BK-GNRAL-PEDCO-000-PR-DB-0001". | **KPC : Confirmed** |
| 12 | The Suction line size is 12" and discharge line is 10" . | **KPC : Confirmed** |
| 13 | Welding repair procedures shall be submitted for approval. | **KPC : Confirmed** |
| 14 | Air release valve to be considered by vendor. | **KPC : Pump is self vent** |
| 15 | As the pump jobsite environmental condition is fumy and dusty, any required protection for pumps, panels and electrical parts (in accordance with IPS-E-EL-100) in this regard shall be considered by pump manufacturer. | **KPC : Confirmed** |
| 16 | Ultrasonic Test shall be performed for forged shaft. | **KPC : Confirmed** |
| 17 | Couplings shall be dry, flexible and spacer type. | **KPC : Confirmed** |
| 18 | For electrical motor descriptions, refer to 'Specification For MV Induction Motors' Doc. No.BK-GNRAL-PEDCO-000-EL-SP-0017. | **KPC : Confirmed** |
| 19 | There is no LCP for main electric motor. There is only LCS to stop (push button, return type) motor. Start (push button, return type) will be done from LCS, Pressure switch of water pipe & F&G system. Providing LCS without Local/Remote selector switch & with ammeter is in vendor scope of work. | **KPC : Confirmed** |
| 20 | Pressure sensing lines are in the vendor's scope of supply. | **KPC : Confirmed** |
| 21 | The pumps shall furnish not less than 150% of rated capacity at not less than 65% of rated head. | **KPC : Confirmed** |
| 22 | Design pressure is 15.4 barg also as per NFPA 20 standard the hydrotest pressure shall not be less than 17.24 barg. | **KPC : Confirmed** |
| 23 | Estimated BHP at rated capacity is 199.2 kW by considering 65% efficiency. | |
| 24 | Range of ambient temperature (min. / max.): 5 / 50 °c , Maximum temperature of metal surface exposed to the sun (°C): 85 °c . | **KPC : Confirmed** |
| 25 | Vendor shall consider all of the derating factors for electrical motor power such as API factor, temperature, elevation and coupling factor so that shall not be less than maximum demand power. Also the diesel engine continuous rating available at the coupling, after de-rating required for the type of service, ambient tempera | **KPC : Confirmed** |
| 26 | fuel quality, Altitude, shall exceed the maximum power demand at 100% speed by not less than 10%. | **KPC : Confirmed** |
| 27 | The motor service factor: 1 (shall be followed by vendor) | **KPC : Confirmed** |

**CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2301 A (Sheet 1 of 6)**

**CLIENT:** National Iranian South Oil Company (NISOC)

**PROJECT TITLE:** BINAK Gas Compressor Station

**JOB NUMBER:**

**EQUIPMENT NUMBER:** P-2301 A

**EQUIPMENT SERVICE:** Fire Water Main Pumps - Electrical Motor Driven

**SERIAL NUMBER:**

**REQ. / SPEC NO. :** BK-GCS-PEDCO-120-ME-SP-0005.

**PURCH ORDER NO.**

Cells coloured thus contain drop-down options

contain calculated values based on input data; do not change.

identify a cross referenced paragraph in the document note, and may also contain a drop down list

When you have completed the DS, highlight the whole page format cells pattern none
Delete these notes on completion

**COMMENTS:**

| | DATA SHEETS | | | | | |
|---|---|---|---|---|---|---|
| | ITEM No. | ATT | ITEM No. | ATT | ITEM No. | ATT |
| PUMP | P-2301 A | YES | | | | |
| MOTOR | | | | | | |
| GEAR | | | | | | |
| TURBINE | | | | | | |

NISOC

# نگهداشت و افزایش تولید میدان نفتی بینک
## سطح الارض و ابنیه تحت الارض
## خرید پکیج پمپ های آب آتشنشانی ایستگاه تقویت فشارگاز بینک
## (قرارداد ۰۰۰۲۳_۰۰-BK-HD-GCS-CO)

HIRGAN ENERGY — Kalaye Pump Co.

شماره پیمان: ۰۵۳-۰۷۳-۹۱۸۴

**DATA SHEETS (W/PERFORMANCE CURVE) FOR FIRE WATER MAIN ELECTRICAL PUMP**

| پروژه | بسته کاری | صادرکننده | تسهیلات | رشته | نوع مدرک | سریال | نسخه |
|---|---|---|---|---|---|---|---|
| BK | GCS | KP | 120 | ME | DS | 0002 | V02 |

شماره صفحه: ۵ از ۱۰

**CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2301 A (Sheet 2 of 6)**

APPLICABLE TO: **PROPOSAL** — APPLICABLE NTL/INTNTL STANDARD: **NFPA20 (2019) & IPS-M-PM-125, IPS-E-EI-100 (1)**

FOR **NISOC** — UNIT

SITE **BINAK Gas Compressor Station** — SERVICE **Fire Water Main Pumps - Electrical Motor Driven**

NO. REQ **1** — PUMP SIZE **8"x6"** — TYPE **BB1** — No. STAGES **1**

MANUFACTURER **KALAYE PUMP CO.** — MODEL **BB1 (V.T.C) KPSPF 150-570** — SERIAL NO.

### LIQUID CHARACTERISTICS

| | Units | Maximum | Minimum | Note |
|---|---|---|---|---|
| LIQUID TYPE OR NAME : | | Water | | Max & min |
| VAPOR PRESSURE : | bara | 0.0087 | 0.1219 | values refer |
| DENSITY : | kg/m³ | 997 | | only to the |
| SPECIFIC HEAT : | kj/kgC | 4.186 | | property |
| VISCOSITY : | cP | 1 | | listed |

**SERVICE :** INTERMITTENT

- IF INTERMITTENT NO. OF STARTS :
- PUMPS OPERATE IN:
- CORROSION DUE TO : (6.12.1.9)
- EROSION DUE TO : (6.12.1.9)
- H2S CONCENTRATION (ppm) : (6.12.1.12) — N.A.
- CHLORIDE CONCENTRATION (ppm) :
- PARTICULATE SIZE (DIA IN MICRONS)
- PARTICULATE CONCENTRATION (PPM)

### OPERATING CONDITIONS (6.1.2)

| | Units | Maximum | Rated | Normal | Min |
|---|---|---|---|---|---|
| $NPSH_A$ Datum: | | C.L. Impeller | | | |
| PUMPING TEMPERATURE : | °C | 50 | 33 | | 5 |
| FLOW : | m³/hr | | 454.2 | | |
| DISCHARGE PRESSURE :(6.3.2) | barg | | 10.4 | | |
| SUCTION PRESSURE : | barg | 0.83 | 0.81 | | 0.08 |
| DIFFERENTIAL PRESSURE : | bar | | 10.3 | | |
| DIFFERENTIAL HEAD : | m | | 105.0 | | |
| $NPSH_A$ : | m | | 8.8 | | |
| HYDRAULIC POWER: (Note 23) | KW | | 129.50 | | |

### SITE AND UTILITY DATA

**LOCATION:** OUTDOOR — UNHEATED — UNDER SUNSHADE

**MOUNTED AT :** — ● TROPICALISATION REQ'D

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

GROUP — TEMP CLASS

**SITE DATA :**

**ELEVATION (MSL) :** 12.5 m — **BAROMETER :** 990.77 mBar

RANGE OF DESIGN TEMPS:MIN / MAX 5 / 85 °C

RELATIVE HUMIDITY: MIN / MAX 0 / 100 % (@ 25.6 °C)

**UNUSUAL CONDITIONS:** NA

**UTILITY CONDITIONS :**

| **ELECTRICITY :** | DRIVERS | HEATING | CONTROL | SHUTDOWN |
|---|---|---|---|---|
| VOLTAGE | 3300 | | | |
| PHASE | 3 | | | |
| HERTZ | 50 | | | |

**COOLING WATER :**

| | RETURN | DESIGN |
|---|---|---|
| TEMP | | |
| PRESS. | | |

SOURCE

COOLING WATER CHLORIDE CONCENTRATION:

**INSTRUMENT AIR :** kg — MIN kg

**STEAM**

| | DRIVERS | HEATING |
|---|---|---|
| TEMP | | |
| PRESS. | | |

### PERFORMANCE

PROPOSAL CURVE NO. **KPSPF 150-570** RPM **1490**

As Tested Curve No. **KPSPF 150-570**

| | | | | |
|---|---|---|---|---|
| IMPELLER DIA.: | RATED 530 | MAX. 585 | MIN. 450 | mm |
| RATED POWER | 180.5 Kw | EFFICIENCY | 72 | (%) |
| RATED CURVE BEP FLOW (at rated impeller dia) | | | 489 | m³/hr |
| MIN FLOW : | | | 15 | m³/hr |
| PREFERRED OPERATING REGION (6.1.11) | 342 to | | 681 | m³/hr |
| ALLOWABLE OPERATING REGION | 146 to | | 681 | m³/hr |
| MAX HEAD @ RATED IMPELLER | | | 120 | m |
| MAX POWER @ RATED IMPELLER | | | 241 | kW |
| NPSH3 AT RATED FLOW : | | | 3.5 | m |
| CL PUMP TO U/S BASEPLATE | | | | m |
| NPSH MARGIN AT RATED FLOW : | | | 5.3 | m |
| SPECIFIC SPEED (6.1.9) | | | | |
| SUCTION SPECIFIC SPEED LIMIT | | | 867 | |
| SUCTION SPECIFIC SPEED | | | 8498 | |
| MAX. ALLOW. SOUND PRESS. LEVEL REQD (6.1.14) | | | 85 (dBA) | @ 1 m |
| EST MAX SOUND PRESS. LEVEL | | | (dBA) | |
| MAX. SOUND POWER LEVEL REQ'D (6.1.14) | | | | |
| EST MAX SOUND POWER LEVEL | | | | |

### DRIVER (7.1.5)

| | | |
|---|---|---|
| Driver Type | | INDUCTION MOTOR |
| GEAR | | NO |
| VARIABLE SPEED REQUIRED | | NO |
| SOURCE OF VARIABLE SPEED | | |
| OTHER | | |
| MANUFACTURER | | OME |
| NAMEPLATE POWER | @Site Condition | 250 KW |
| Nominal RPM | | 1490 |
| RATED LOAD RPM | | |
| FRAME OR MODEL | | |
| ORIENTATION | | HORIZONTAL |
| LUBE | | Grease |
| BEARING TYPE: | | Anti friction |
| RADIAL | | Ball / 1 |
| THRUST | | Ball / 1 |
| STARTING METHOD | | D.O.L/Open Discharge Valve |
| SEE DRIVER DATA SHEET | | Note 1 |
| Max Voltage Variation | | ±10% |
| Max Frequency Variation | | ±5% |
| Max Voltage and Frequency Variation together | | ±10% |
| RTD / Type | | YES / PT100 (According to IPS-M-EL-132) |

NISOC

نگهداشت و افزایش تولید میدان نفتی بینک
سطح الارض و ابنیه تحت الارض
خرید پکیج پمپ های آب آتشنشانی ایستگاه تقویت فشارگاز بینک
(BK-HD-GCS-CO-۰۰۲۳_۰۰ قرارداد)

HIRGAN ENERGY — Kalaye Pump Co.

شماره پیمان: ۰۵۳-۰۷۳-۹۱۸٤

DATA SHEETS (W/PERFORMANCE CURVE) FOR FIRE WATER MAIN ELECTRICAL PUMP

| پروژه | بسته کاری | صادرکننده | تسهیلات | رشته | نوع مدرک | سریال | نسخه |
|---|---|---|---|---|---|---|---|
| BK | GCS | KP | 120 | ME | DS | 0002 | V02 |



## CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2301 A (Sheet 3 of 6)

### CONSTRUCTION

API PUMP TYPE: BB1 [Based on API 610 definitions]

NOZZLE CONNECTIONS: (6.5.5) NOTES 7,12

| | Size | Facing | Rating | Position |
|---|---|---|---|---|
| SUCTION | 8" | RF | 150 | SIDE |
| DISCHARGE | 6" | RF | 150 | SIDE |

PRESSURE CASING AUX. CONNECTIONS: (6.4.3.2)

| | No. | Size | Type | Facing | Rating | Posn. |
|---|---|---|---|---|---|---|
| BAL./LEAK OFF | | | | | | |
| DRAIN | 1 | 1/2" | SWF | RF | 150 | SIDE |
| VENT | 1 | 1/2" | SWF | RF | 150 | SIDE |
| PRESSURE GAGE | | | | | | |
| TEMP GAGE | | | | | | |
| WARM-UP LINE | | | | | | |

| | | |
|---|---|---|
| Drain Valve Supplied By | SUPPLIER | |
| DRAINS MANIFOLDED | YES | |
| VENT Valve Supplied By | SUPPLIER | |
| VENTS MANIFOLDED | YES | |
| THREAD. CONS FOR PIPELINE SERVICE & < 50°C (6.4.3.2) | NO | |
| SPECIAL FITTINGS FOR TRANSITIONING (6.4.3.3) | NO | |
| CYLINDRICAL THREADS REQUIRED (6.4.3.8) | NO | |
| GUSSET SUPPORT REQUIRED | YES | If Needed |
| MACHINED AND STUDDED CONNECTIONS (6.4.3.12) | NO | |
| VS 6 DRAIN | N/A | |
| DRAIN TO SKID EDGE | YES | |

CASING MOUNTING: FOOT

CASING TYPE: (6.3.10) SINGLE VOLUTE

OH3 BACKPULLOUT LIFTING DEVICE REQD. (9.1.2.6)

CASE PRESSURE RATING:

MAWP : (6.3.5) 15 By vendor barg @ Amb. °C

HYDROTEST : 22.5 1.5*MAWP barg @ Amb. °C

| | |
|---|---|
| HYDROTEST OH PUMP AS ASSEMBLY | YES |
| SUCT'N PRESS. REGIONS DESIGNED FOR MAWP | YES |
| ROTATION: (VIEWED FROM COUPLING END) | CW |
| • IMPELLERS INDIVIDUALLY SECURED : | YES |
| • BOLT OH 3/4/5 PUMP TO PAD / FOUNDATION : | |
| • PROVIDE SOLEPLATE FOR OH 3/4/5 PUMPS | |
| ROTOR: | |
| SHAFT FLEXIBILITY INDEX (SFI) (9.1.1.3) | |
| First Critical Speed Wet (Multi stage pumps only) | |
| COMPONENT BALANCE TO ISO 1940 G1.0 | NO |
| SHRINK FIT -LIMITED MOVEMENT IMPELLERS (9.2.2.3) | |
| COUPLING:(7.2.3) (7.2.13.f) NOTE 16 | |
| MANUFACTURER | Colossus |
| MODEL | FLEXIBLE SPACER TYPE |
| RATING (POWER/100 RPM) | |
| SPACER LENGTH | 180 mm |
| SERVICE FACTOR | Min 1.5 |
| RIGID | NO |
| COUPLING WITH HYDRAULIC FIT (7.2.10) | |
| COUPLING BALANCED TO ISO 1940-1 G6.3 (7.2.3) | YES |
| COUPLING WITH PROPRIETARY CLAMPING DEVICE (7.2.11) | |
| COUPLING IN COMPLIANCE WITH (7.2.4) | API 671 |
| COUPLING GUARD STANDARD PER (7.2.13.a) | ISO 14120 |
| Window on Coupling Guard | YES |

### MATERIAL (6.12.1.1)

| | | |
|---|---|---|
| APPENDIX H CLASS | I-2 NOTES 3 | |
| MIN DESIGN METAL TEMP (6.12.4.1) | 5 | °C |
| REDUCED-HARDNESS MATERIALS REQ'D (6.12.1.12.1) | | |
| Applicable Hardness Standard (6.12.1.12.3) | | |
| BARREL : | | |
| CASE : | GGG40(A536 60-40-18) | |
| DIFFUSERS | | |
| IMPELLER : | C95200 | |
| IMPELLER WEAR RING : | C95200 | |
| CASE WEAR RING : | C95200 | |
| SHAFT: | A276 T420 | |
| Bowl (if VS-type) | | |
| Inspection Class (Note 2) | | |

### BEARINGS AND LUBRICATION (6.10.1.1)

BEARING (TYPE / NUMBER): (6.11.4)

RADIAL ROLLER / 1

THRUST BALL / 1

REVIEW AND APPROVE THRUST BEARING SIZE : (9.2.5.2.4)

LUBRICATION : (6.10.2.2) (6.11.3) (9.2.6) GREASE

PRESSURE LUBE SYSTEM TO ISO 10438- (9.2.6.5)

ISO 10438 DATA SHEETS ATTACHED

Pressurized Lube Oil System mtd on pump baseplate

Location of Pressurized Lube Oil System mounted on baseplate :

INTERCONNECTING PIPING PROVIDED BY Supplier

OIL VISC. ISO GRADE VG

CONSTANT LEVEL OILER :

### BASEPLATE

| | |
|---|---|
| API BASEPLATE NUMBER : | |
| BASEPLATE CONSTRUCTION (7.3.14) | |
| BASEPLATE DRAINAGE (7.3.1) | Entire Baseplate Drain Pan |
| MOUNTING : | PARTIAL TOP DECKING |
| NON-GROUT CONSTRUCTION : (7.3.13) | |
| VERTICAL LEVELING SCREWS : | REQUIRED |
| LONGITUDINAL DRIVER POSITIONING SCREWS : | REQUIRED |
| SUPPLIED WITH : ● GROUT AND VENT HOLES | YES |
| ● DRAIN CONNECTION | YES |
| MOUNTING PADS SIZED FOR BASEPLATE LEVELING (7.3.5) | YES |
| MOUNTING PADS TO BE MACHINED (7.3.6) | YES |
| PROVIDE SPACER PLATE UNDER ALL EQUIPMENT FEET | YES |

OTHER

REMARKS :

**CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2301 A (Sheet 4 of 6)**

## INSTRUMENTATION

| | | |
|---|---|---|
| SEE ATTACHED API-670 DATA SHEET | | |
| ACCELEROMETER (7.4.2.1) | | |
| Number of Accelerometers | | |
| Mounting Location of Accelerometers | | |
| PROVISION FOR MTG ONLY | (6.10.2.10) | **YES** |
| Number of Accelerometers | | |
| Mounting Location of Accelerometers | | |
| FLAT SURFACE REQUIRED | (6.10.2.11) | **N / A** |
| Number of Accelerometers | | |
| Mounting Location of Accelerometers | | |
| VIBRATION PROBES (7.4.2.2) | | **N / A** |
| PROVISIONS FOR VIB. PROBES | | |
| NUMBER PER RADIAL BEARING | | |
| NUMBER PER AXIAL BEARING | | |
| MONITORS AND CABLES SUPPLIED BY (7.4.2.4) | | |
| TEMPERATURE (7.4.2.3) | | |
| PROVISIONS FOR TEMP PROBES | | |
| RADIAL BEARING TEMP. | | |
| NUMBER PER RADIAL BEARING | | |
| THRUST BEARING TEMP. | | |
| NUMBER PER THRUST BEARING ACTIVE SIDE | | |
| NUMBER PER THRUST BEARING INACTIVE SIDE | | |
| TEMP. GAUGES (WITH THERMOWELLS) (9.1.3.6) | | |
| PRESSURE GAUGE TYPE | | |

**Remarks**

## SEAL SUPPORT SYSTEM MOUNTING

| | | |
|---|---|---|
| SEAL SUPPORT SYSTEM MOUNTED ON PUMP BASEPLATE | (7.5.1.4) | |
| IDENTIFY LOCATION ON BASEPLATE | | |
| INTERCONNECTING PIPING BY | | **Supplier** |

## MECHANICAL SEAL (6.8.1)

| | | |
|---|---|---|
| SEE ATTACHED ISO 21049/API 682 DATA SHEET | | **N / A** **NOTE 5** |
| ADDITIONAL CENTRAL FLUSH PORT | (6.8.9) | |
| HEATING JACKET REQ'D. | (6.8.11) | **N / A** |
| FLUSH PLAN | | |

## HEATING AND COOLING (6.1.17)

| | |
|---|---|
| COOLING REQ'D | **NO** |
| COOLING WATER PIPING PLAN | |
| COOLING WATER PIPING FITTINGS | |
| COOLING WATER PIPING MATERIALS | |
| COOLING WATER REQUIREMENTS: | |
| TOTAL COOLING WATER | |
| HEATING MEDIUM | |
| OTHER | |
| HEATING PIPING | |

## PIPING & APPURTENANCES

| | |
|---|---|
| MANIFOLD PIPING FOR PURCHASER CONNECTION (7.5.1.6) | |
| VENT | **YES** |
| DRAIN | **YES** |
| VALVES | **YES (NOTE 8)** |
| COOLING WATER | **NO** |
| TAG ALL ORIFICES (7.5.2.4) | **YES** |
| SOCKET WELD CONN ON SEAL GLAND (7.5.2.8) | |

NISOC

نگهداشت و افزایش تولید میدان نفتی بینک
سطح الارض و ابنیه تحت الارض
خرید پکیج پمپ های آب آتشنشانی ایستگاه تقویت فشارگاز بینک
(قرارداد ۰۰_۰۰۲۳-BK-HD-GCS-CO)

شماره پیمان:
۰۵۳-۰۷۳-۹۱۸٤

DATA SHEETS (W/PERFORMANCE CURVE) FOR FIRE WATER MAIN ELECTRICAL PUMP

| پروژه | بسته کاری | صادرکننده | تسهیلات | رشته | نوع مدرک | سریال | نسخه |
|---|---|---|---|---|---|---|---|
| BK | GCS | KP | 120 | ME | DS | 0002 | V02 |



**CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2301 A (Sheet 5 of 6)**

## SURFACE PREPARATION AND PAINT

| | |
|---|---|
| MANUFACTURER'S STANDARD | |
| OTHER (SEE BELOW) | |
| SPECIFICATION NO. | **BK-GNRAL-PEDCO-000-PI-SP-0006, "Specification for Painting"** |
| **PUMP:** | |
| PUMP SURFACE PREPARATION | |
| PRIMER | **AS PER PROJECT PAINTING SPEC.** |
| FINISH COAT | **AS PER PROJECT PAINTING SPEC.** |
| **BASEPLATE:** | |
| BASEPLATE SURFACE PREPARATION | |
| PRIMER: | **AS PER PROJECT PAINTING SPEC.** |
| FINISH COAT | **AS PER PROJECT PAINTING SPEC.** |
| DETAILS OF LIFTING DEVICES | |
| **SHIPMENT: (8.4.1)** | **EXPORT** |
| EXPORT BOXING REQUIRED | **YES** |
| OUTDOOR STORAGE MORE THAN 6 MONTHS | **YES** |
| **SPARE ROTOR ASSEMBLY PACKAGED FOR:** | |
| ROTOR STORAGE ORIENTATION (9.2.8.2) | |
| SHIPPING & STORAGE CONTAINER FOR VERT STORAGE (9.2.8.3) | |
| $N_2$ PURGE (9.2.8.4) | |
| **SPARE PARTS** | |
| START-UP | **YES** |
| NORMAL MAINTENANCE | **YES** |

| ITEM No | PUMP | DRIVER | GEAR | BASE | TOTAL |
|---|---|---|---|---|---|
| **P-2301 A** | **750** | **2340** | **Not applicable** | **900** | **4035** |
| | | | | | |
| | | | | | |

## OTHER PURCHASER REQUIREMENTS

| | | |
|---|---|---|
| COORDINATION MEETING REQUIRED (10.1.3) | **YES** | |
| MAXIMUM DISCHARGE PRESSURE TO INCLUDE | | |
| OPERATION TO TRIP SPEED | | |
| MAX DIA. IMPELLERS AND/OR NO OF STAGES | **YES** | |
| CONNECTION DESIGN APPROVAL (9.2.1.4) | **YES** | |
| TORSIONAL ANALYSIS / REPORT (6.9.2.10) | **NO** | |
| PROGRESS REPORTS | **YES** | |
| OUTLINE OF PROC FOR OPTIONAL TESTS (10.2.5) | | |
| ADDITIONAL DATA REQUIRING 20 YEARS RETENTION (8.2.1.1) | | |
| | **YES** | |
| LATERAL ANALYSIS REQUIRED (9.1.3.4) (9.2.4.1.3) | **NO** | |
| MODAL ANALYSIS REQUIRED (9.3.9.2) | | |
| DYNAMIC BALANCE ROTOR (6.9.4.4) | **YES** | |
| INSTALLATION LIST IN PROPOSAL (10.2.3.l) | **YES** | |
| VFD STEADY STATE DAMPED RESPONSE ANALYSIS (6.9.2.3) | | **NO** |
| TRANSIENT TORSIONAL RESPONSE | **NO** | |
| BEARING LIFE CALCULATIONS REQUIRED (6.10.1.6) | | |
| IGNITION HAZARD ASSMT TO EN 13463-1 (7.2.13.e) | | |
| CASING RETIREMENT THICKNESS DRAWING (10.3.2.3) | | |
| FLANGES RQD IN PLACE OF SKT WELD UNIONS (7.5.2.8) | | |
| INCLUDE PLOTTED VIBRATION SPECTRA (6.9.3.3) | | |
| CONNECTION BOLTING (7.5.1.7) | | |
| CADMIUM PLATED BOLTS PROHIBITED | | |
| VENDOR TO KEEP REPAIR AND HT RCDS (8.2.1.1.c) | | |
| VENDOR SUBMIT TEST PROCEDURES (8.3.1.1) | **YES** | |
| SUBMIT INSPECTION CHECK LIST (8.1.5) **NOTE 2** | **YES** | |

## TEST

| | | | | |
|---|---|---|---|---|
| SHOP INSPECTION (8.1.1) | | | | **Yes** |
| PERFORMANCE CURVE & DATA APPROVAL PRIOR TO SHIPMENT. | | | | **YES** |
| TEST WITH SUBSTITUTE SEAL (8.3.3.2.b) | | | | |
| MATERIAL CERTIFICATION REQUIRED | | | CASING | **YES** |
| SHAFT | **YES** | (6.12.1.8) | IMPELLER | **YES** |
| OTHER | **YES** Casing and impeller Wear ring | | | |
| CASTING REPAIR WELD PROCEDURE APPR REQD | | | | **YES** |
| INSPECTION REQUIRED FOR CONNECTION WELDS (6.12.3.4.d) | **KPC:NOT APPLICABLE** | | | |
| LIQUID PENETRANT | **YES** | | MAG PARTICLE | |
| ULTRASONIC | | | RADIOGRAPHY | **YES** |
| INSPECTION REQUIRED FOR CASTINGS | | | | |
| LIQUID PENETRANT | **YES** | | MAG PARTICLE | **NO** |
| ULTRASONIC | **YES** | | RADIOGRAPHY | |
| HARDNESS TEST REQUIRED (8.2.2.7) | | | | |
| ADDNL SUBSURFACE EXAMINATION (6.12.1.5) (8.2.1.3) | | | | |
| | | | FOR | |
| | | | METHOD | |
| PMI TESTING REQUIRED (8.2.2.8) | | | | |
| COMPONENTS TO BE TESTED | | | | |
| RESIDUAL UNBALANCE TEST (J.4.1.2) | | | | |
| NOTIFICATION OF SUCCESSFUL SHOP | | | | **YES** |
| PERFORMANCE TEST (8.1.1.c) (8.3.3.5) | | | | **YES** |
| BASEPLATE TEST (7.3.21) | | | | |
| HYDROSTATIC | | | | **WIT** |
| HYDROSTATIC TEST OF BOWLS & COLUMN (9.3.13.2) | | | | |
| PERFORMANCE TEST | | | | **WIT** |
| TEST IN COMPLIANCE WITH (8.3.3.2) | | | | **NFPA 20** |
| TEST DATA POINTS TO (8.3.3.3) | | | | **NFPA 20** |
| TEST TOLERANCES TO (8.3.3.4) | | | | **TABLE 16** |
| NPSH (8.3.4.3.1) (8.3.4.3.4) | | | **NOTE 6** | **WIT** |
| NPSH-1ST STG ONLY (8.3.4.3.2) | | | | |
| NPSH TESTING TO HI 1.6 OR ISO 9906 (8.3.4.3.3) | | | | |
| TEST NPSHA LIMITED TO 110% SITE NPSHA (8.3.3.6) | | | | |
| RETEST ON SEAL LEAKAGE (8.3.3.2.d) | | | | **OBSERVE** |
| RETEST REQUIRED AFTER FINAL HEAD ADJ (8.3.3.7.b) | | | | |
| 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) | | | | **OBSERVE** |
| LOCATION OF CLEANLINESS INSPECTION | | | | |
| NOZZLE LOAD TEST | | | | |
| CHECK FOR CO-PLANAR MOUNTING PAD SURFACES | | | | |
| MECHANICAL RUN TEST UNTIL OIL TEMP STABLE | | | | |
| 4 HR. MECH RUN AFTER OIL TEMP STABLE (8.3.4.2.1) | | | | **WIT** |
| 4 HR. MECH RUN TEST (8.3.4.2.2) | | | | |
| BRG HSG RESONANCE TEST (8.3.4.7) | | | | |
| STRUCTURAL RESONANCE TEST (9.3.9.2) | | | | |
| REMOVE / INSPECT HYDRODYNAMIC BEARINGS AFTER TEST (9.2.7.5) | | | | |
| AUXILIARY EQUIPMENT TEST (8.3.4.6) | | | | |
| EQUIPMENT TO BE INCLUDED IN AUXILIARY TESTS | | | | |
| LOCATION OF AUXILIARY EQUIPMENT TEST | | | | |
| IMPACT TEST | | PER EN 13445 | | |
| | | PER ASME SECTION VIII | | |
| REMOVE CASING AFTER TEST | | | | |

**CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2301 A (Sheet 6 of 6)**

**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 (NOTE 13)**

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

ALTERNATE WELDING CODES AND STANDARDS _____

| | |
|---|---|
| WELDING REQUIREMENT (APPLICABLE CODE OR STANDARD) | **DEFAULT PER TABLE 11** |
| WELDER/OPERATOR QUALIFICATION | **DEFAULT PER TABLE 11** |
| WELDING PROCEDURE QUALIFICATION | **DEFAULT PER TABLE 11** |
| NON-PRESSURE RETAINING STRUCTURAL WELDING SUCH AS BASEPLATES OR SUPPORTS | **DEFAULT PER TABLE 11** |
| MAGNETIC PARTICLE OR LIQUID PENETRANT EXAMINATION OF PLATE EDGES | **DEFAULT PER TABLE 11** |
| POSTWELD HEAT TREATMENT | **DEFAULT PER TABLE 11** |
| POSTWELD HEAT TREATMENT OF CASING FABRICATION WELDS | **DEFAULT PER TABLE 11** |

**MATERIAL INSPECTION**

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

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) | | | |

**REMARKS :**

# KALAYE PUMP CO.

## Performance curve

| | | | | | |
|---|---|---|---|---|---|
| Item No. | P-2301 B | Pump Model | KPSPF 150-570 | Flow,Rated ($m^3$/h) | 454.2 |
| Liquid | Water | Speed (rpm) | 1490 | Head (m) | 105 |
| Temp. (˚c) | -3.5 / 53 | Rated Imp.Dia. (mm) | 530 | Efficiency (%) | 72 |
| Density(kg/$m^3$) | 997 | Suction Size (Inch) | 8 | NPSHR (m) | 3.5 |
| Viscosity (cp) | 1 | Disch. Size (Inch) | 6 | Rated Power (kw) | 180.5 |
| NPSHA (m) | 8.8 | NSS ($m^3$/h,m,rpm) | 8498 | Motor Power (kw) | 250 |