



**OIL & GAS DEVELOPMENT COMPANY LIMITED**  
**PROCUREMENT DEPARTMENT (LOCAL), ISLAMABAD**  
**SCHEDULE OF REQUIREMENT**

Material : **FIRE WATER JOCKEY PUMPS WITH CONTROLLER FOR DAKHNI PLANT**

**Due Date:**

Tender Enquiry No: **PROC-LE/17781/19**

Bid Bond Value : RS. 60,000/-

EVALUATION WILL BE CARRIED OUT ON MAIN ITEM

Attachment(if any) : YES

Sr No	Description	Quantity	Make/Brand offered	Unit	Unit Price (PKR) Inclusive Of All Taxes Except GST	Unit Price (PKR) Inclusive of GST	Total Price (PKR) Inclusive of GST	Delivery Period Offered	deviation from Tender Spec. If Any
1	Fire Water Jockey Pump with controller/instrumentation as per attached specifications and TOR	2		Number					
2	Commissioning and Operational Spare Parts for Two years (to be quoted seperately)	1		Sets					

**Special Note:** The prospective bidders also download the master set of Tender Document

- The prospective bidders may keep in touch with OGDCL web site for downloading the clarifications/amendments (if any) issued by OGDCL.
- I. BID VALIDITY IS 120 DAYS FROM TECHNICAL BID OPENING. II. MATERIAL TO BE DELIVERED AT DAKHNI FIELD WITH IN 120 DAY AFTER ISSUANCE OF LPO. III. PAYMENT TERM IS PAYMENT AFTER DELIVERY

Discount (if any) shall only be entertained on Schedule of Requirement of Bidding Document (Financial Proposal). If the discount is mentioned elsewhere in the bid, the same shall not be entertained.

Terms & Conditions.

1. The manufacturer for pump and controller should have manufacturing experience of 20 years (minimum).
2. Bidder/supplier will provide documentary evidence showing reference list of pump manufacturer/controller worldwide. (atleast 03 Nos).
3. Name of recommended manufacturers for fire water pump & controller to be confirmed in Technical Bid.
4. Technical literature for fire water pump, motor and controller should be provided with Technical Bid.
5. All the standard accessories and optional accessories should be mentioned in the Technical bid.
6. O&M manuals should also be provided with supply of fire water pump.
7. The bidder should offer guarantee of 01 year operational / 18 months after shipment, which comes earlier.
8. List of 02 years spare parts to be attached with bid (with cost of each spare part). The cost of 02 years spare parts & optional spare parts will not be included in financial evaluation. OGDCL will select the spare parts at its own choice.
9. Desired Delivery period is 120 days.
10. Pump should be in accordance to NFPA-20.
11. Controller should be UL listed as per NFPA-20.
12. Bidder to confirm supply of material as per attached Specification # 0180-MRK-9000 & P&ID # 2310-PB-2068 (Sh. 2 of 2).



**OIL & GAS DEVELOPMENT COMPANY LIMITED**  
**PROCUREMENT DEPARTMENT (LOCAL), ISLAMABAD**  
**SCHEDULE OF REQUIREMENT**

**Mandatory Checklist**

Please confirm the compliance of the following mandatory information along with the bid(s) (failing which bids(s) will not be accepted)

Documents	To be Attached with the Technical/Financial Bids	Compliance	
		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Original Bid Bond	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Copy of NTN Certificate	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Copy of GST Certificate	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Confirmation that the Firm is appearing on FBR's Active Taxpayer List	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly signed and stamped <b>Annexure-A (Un-priced)</b>	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped <b>Annexure-B</b>	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped <b>Annexure-D</b>	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped <b>Annexure-L</b> on Company's Letterhead	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly signed and stamped <b>Annexure-M</b> on Company's Letterhead	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly signed and stamped <b>Annexure-N</b> on Non-Judicial Stamp Paper duly attested by Notary Public	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped <b>Annexure-A (Priced)</b>	Financial Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped <b>Annexure-C</b>	Financial Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped <b>Annexure-E</b>	Financial Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>



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**PROCUREMENT DEPARTMENT (LOCAL), ISLAMABAD**  
**SCHEDULE OF REQUIREMENT**

For the Vendors/Contractors who opt to submit Bank Draft/Call Deposit/Pay order against Bid Bond/Performance Bond, our Accounts Department has finalized an arrangement for online payment to such Vendors/Contractors, which will be processed through (IBFT & LFT) for which following information is required:

i.	IBAN No. (International Bank Account Number 24 Digits)	
ii.	Vendor Name as per Title of their Bank Account	
iii.	Contact No.of Company's CEO/ Owner (Mobile & Landline)	
iv.	Bank Name.	
v.	Bank Branch Name and Code	

Name, Sign and Stamp of the authorized official of the Bidder(s) \_\_\_\_\_



Job No. **14-0180**

Spec. No. **0180-MRK-9000**

Page 1 of 23

Rev. **1**

## **SCOPE & SPECIFICATION FOR FIRE WATER JOCKEY PUMP**

**Project: INTEGRITY ASSESSMENT AND RELIABILITY  
CHECK OF DAKHNI PLANT**

**Owner: Oil & Gas Development Co. Ltd.**

Prepared by: **MR**  
Checked by: **SFA**  
Approved by: **AHB**  
Revised by: **-**

1	RE-ISSUED FOR BIDDING	Aug. 22, 2019	08,13
0	ISSUED FOR BIDDING	Dec. 27, 2017	
<b>Rev.</b>	<b>Description of Revision</b>	<b>Date</b>	<b>Revised Page Nos.</b>



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## **1.0 INTRODUCTION**

This specification covers the minimum requirements for the supply of Fire Water Jockey Pumps that is to be installed at OGDCL's Dakhni Gas Processing Plant.

### **1.1 Definitions**

Terms used in this specification have the following meanings:

“Company” means “Oil and Gas Development Company Limited (OGDCL)”

“Engineering Consultant” shall mean “ENAR Petrotech Services (Pvt.) Limited”

“Supplier” means Entity with whom the Company will execute a Contract for supply of equipment/material as per this document

“Project” means “Integrity Assessment and Reliability Check of Dakhni Plant”

### **1.2 Error or Omission**

The review and comments by Company / Engineering Consultant on Supplier's or its manufacturer's drawings procedures or documents shall only indicate acceptance of general requirements and shall not relieve the Supplier of its obligations to comply with the requirements of this specification and other referenced documents.

All deviations to this specification, other referred document or attachments shall be brought to the knowledge of the Company / Engineering Consultant in the bid. All deviations made during the design, procurement, manufacturing, testing and inspection shall be with written approval by the Company / Engineering Consultant prior to execution of work. Such deviations shall be shown in the documentation prepared by the Supplier.

### **1.3 Conflicting Requirements**

In the event of any conflict, inconsistency or ambiguity between this document, referred documents, codes & standards referenced in the documents, the Supplier shall refer to the Company / Engineering Consultant whose decision shall prevail.



#### **1.4 Language and Units of Measurement**

The governing language shall be English language.

All other referred quantities (head, flow rate, etc.) shall be expressed as per datasheet.

#### **1.5 Order of Precedence**

In case of conflict among this document, the referenced documents and the International Codes and Standards, the Supplier shall bring the matter to the Company/ Engineering Consultant attention for resolution and approval in writing.

The order of precedence shall be as follows:

1. Data Sheet and P&ID for Firewater Pumps.
2. This specification document and the referenced Documents.
3. Referenced International Codes and Standards.

In the event of any conflict of data or requirements in any of above documents, it is the Supplier's responsibility to resolve these conflicts and obtain Company/ Engineering Consultant's approval before proceeding with design, manufacture or purchase. In any case the most stringent requirement shall prevail. However, Company/ Engineering Consultant's interpretation shall be final.

#### **1.6 Reporting Procedure**

A reporting and documentation system shall be agreed between the Company and the Supplier for the status of procurement, design, manufacturing, inspection, testing and shipment of the Firewater Jockey Pumps to be supplied under this specification. Supplier shall provide reports and summaries for production performance and testing operations in conformance with a manufacturing schedule approved by Company.

#### **1.7 Company's Intention**

It is intention of the Company to procure the Firewater Jockey Pumps based on attached Data Sheet, P&IDs, this specification document and referenced specifications attached with this document. Supplier shall be responsible to supply the Firewater Jockey Pump,





in view of the requirements as detailed in relevant Data sheets and specifications, procure material, perform mechanical design (Supplier shall submit the pump general arrangement drawings for Company's approval prior to finalization of design), manufacture, paint, test and prepare for shipment. Supplier shall also obtain approval from Company to buy any component of the pumps. Supplier shall also be responsible for all Sub-suppliers coordination, data and other documents, provision of guarantees, provision of equipment and personnel for the trial assembly, and functional testing of complete pumps at Supplier's works and packaging and delivery as specified in this document.

### **1.8 Reference Codes and Standards**

Following codes and standards shall form a part of this specification, except as modified herein: -

NFPA 20	Installation of Stationary Pumps for Fire Protection Service
NFPA 25	Inspection and Testing of Water-Based Fire Protection Systems
ASME B31.3	Chemical Plant & Petroleum Refinery Piping
ASTM	American Society for Testing of Materials
ASME B16.5	Pipe Flanges and Flanged Fittings
ANSI/HI 1.1-1.5	Centrifugal Pumps, Nomenclature, Definition, Application and Operation
ASME V	Non Destructive Examination
ASME B73.1M	Specification for Horizontal End Suction Centrifugal Pumps for Chemical Process
NFPA 70	National Electric Codes (NEC)
UL 1004	UL Standard for Safety for Electric Motors
NEMA MG-1	Motors and Generators
ISO 3046	Reciprocating internal combustion engines



All applicable Codes and Standards of ASTM, ASME, API, NFPA, OSHA.

Compliance by the Supplier with the provisions of this specification does not relieve him of his responsibility to furnish the Jockey pumps of a proper mechanical design suited to meet the specified service conditions and/or codes governing health and safety.

### **1.9 Supplier Responsibility**

The Supplier shall be responsible for the complete design, manufacturing, supply, and inspection and testing of Firewater Jockey Pump including full compliance with all applicable design codes and standards listed in Section 1.8, of this document, and with the requirements of the certifying authority, if applicable.

Any work or material found to be defective or which doesn't meet the requirement of this specification, datasheet, P&ID and other reference specifications shall be replaced by the Supplier at his own expense.

## **2.0 SCOPE OF SUPPLY**

2.1 The Supplier shall provide the Fire water Jockey Pumps in accordance with NFPA 20:

<b>Sr. No.</b>	<b>Qty.</b>	<b>Tag No.</b>	<b>Title</b>
1	02	901-GA-3A/B	Motor Driven Firewater Jockey Pumps

2.2 Commissioning Spares and List of Spares for two years of operation for each pump.

2.3 The Supplier shall furnish all equipments and necessary ancillaries for the safe and reliable operation of Firewater Jockey Pump. Following shall be included in firewater jockey pump but not be limited to:

- a) Two (02) 2x100% duty motor driven Jockey pumps complete with the following:
  - Electric Motor.
  - Base Plate (Drain Rim Type).
  - Discharge & Suction Reducers for mating line size.
  - Mating Flanges (at suction & discharge) as per ASME B16.5.
  - All seals, couplings and guards (spark proof).



- All necessary noise suppression equipment (where applicable).
- All necessary start-up and commissioning spares.
- Export packaging of all items.
- Suction and discharge piping is excluded from Supplier's scope. However supplier will provide piping for pressure switch.
- Control panel suitable for outdoor installation for each pump as per NFPA 20.
- Pressure Switches for High and Low adjustments in compliance with NFPA 20 shall be provided for each pump.
- Flow Indicator on Pump discharge.
- The pressure adjustment for High and Low pressure switches.
- Pressure Recorder for sensing and recording the pressure in each fire pump controller for Seven Days (07) without being reset.
- Pressure gauges at suction and discharge as per NFPA 20.
- Alarm monitoring / signaling devices.
- Controller/Transfer switches & Isolation switch.
- Automatic & Manual controllers.
- One set of shim plates as required for normal alignment.
- Foundation bolts and nuts, leveling base screws for each Pump.

2.4 Equipment shall be installed on the base plate with all supports, as required, to prevent excessive equipment and piping vibration.

2.5 Supplier's instrumentation and equipment scope shall be shown in the attached P&ID.



### **3.0 ENVIRONMENTAL DESIGN CRITERIA**

#### **3.1 General**

Unless otherwise stated on the data sheets, Firewater Jockey Pumps will be located in an open exposed area.

#### **3.2 Area Classification**

All instrumentation and electrical equipment shall conform to non classified locations.

#### **3.3 Site, Environmental & Utility Design Data**

Pumps shall be designed for outdoor location with utility & site conditions and NEQs as given in Site, Environment & Utility Design Data (4908-A-1001).

#### **3.4 Noise**

The noise level from Firewater Jockey Pump shall not exceed 85 dBA at 1m.

### **4.0 DESIGN REQUIREMENT**

#### **4.1 General**

- a) The Firewater pumps shall either be horizontal or vertical type, complying with NFPA 20 requirements.
- b) Supplier shall have the responsibility that the jockey pumps, consisting of pump driver shall perform in compliance with this specification document as an entire unit when installed or when components have been replaced.
- c) Jockey pumps and its drivers shall be mounted on common fabricated base plate.
- d) All vents/drains shall be terminated at skid edge and where practical collected at common location.
- e) Fire water system with complete instrumentation and controllers shall be provided in compliance with NFPA 20. All equipment required for wiring and termination (Cables, Cable Glands and Junction Boxes) shall be provided by



supplier. If any equipment is supplied separately, Supplier shall be responsible to provide all the installation documents, drawings, installation accessories, material etc complete in all respect.

- f) The firewater Jockey pump shall be mounted on a heavy-duty structural steel baseplate designed to suit transport, lift and installation conditions. The firewater Jockey pump shall be suitable for remote, unattended operation.

#### **4.2 Material**

Material for pump parts shall be designed and fabricated in accordance with ANSI/ASTM/NFPA-20 standard. All material shall be new & best quality. Material grade which are equivalent to ANSI/ASTM shall be quoted with equivalency chart showing chemical and mechanical properties.

- a) Pump casting shall be smooth and free from scale, cracks, lumps, blister, sand hole & defects of any nature. Pump casing and bearing frame shall be of Cast Iron.
- b) Impeller shall be of Bronze & keyed to a 316SS stainless steel shaft.
- c) Casing & Impeller shall be fitted with replaceable bronze wearing rings. The rings shall be secured in a manner that will not permit rotational or axial movement. Shaft Sleeve and Packing glands will be of Bronze.
- d) Shaft shall be of 316SS stainless steel type fitted with replaceable corrosion resistant shaft sleeve.
- e) Shaft shall be mounted in two dust tight deep grooves, sealed and permanently greased ball bearings.
- f) Bearing shall be mounted in a cartridge type housing so that they shall be replaceable without opening the pump casing. Bearings shall be removable without the need of special tools or bearing puller, but only by rotating the bearing removal nut.
- g) Each stuffing box shall be fitted with a three piece bronze split gland. Stuffing box shall be fitted with an extension to facilitate the packing rings removal.



- h) Packing rings shall be removable without disturbing wetted parts or the pump bearings. Water seal rings made from non-corroding material shall be piped to pump volute.
- i) Base Plate shall be of Cast Iron.
- j) Following Material grades shall be furnished by supplier for pump components.
  - Casing.....Cast Iron (ASTM A48)
  - Impeller.....Bronze (ASTM B62)
  - Shaft.....Stainless Steel (AISI 316SS)
  - Shaft Sleeve.....Bronze (ASTM B62)
  - Case Wear Ring.....Bronze (ASTM B62)

#### **4.3 Nozzles and Miscellaneous Connections**

- a) All suction and discharge connections shall be flanged.
- b) The pump casing shall be furnished with tapped and plugged vent and drain openings for priming, which shall be valved unless plugs are specified.
- c) Drain and vent shall not be smaller than ½" where practical. All pipe and nipples shall be Schedule 80 pipe class.
- d) Suction nozzle flanges shall be of the same rating as the discharge nozzles flanges and shall be as per ASME B16.5.

#### **4.4 Minimum Fittings**

The following minimum fittings shall be provided as per NFPA20:

- a) Suction & Discharge Pressure Gauges.
- b) ¼-inch size Gauge Cocks and Nipples.
- c) 1/2 inch Air release valve.

#### **4.5 Couplings**



Supplier shall supply and install the coupling with a removable protecting guard in compliance with ANSI B 15.1 (as necessary). This protection shall be made of anti-spark material. Coupling shall be flexible, spacer type complete with easily removable guard.

#### **4.6 Base Plate**

- a) Firewater jockey pumps will be supplied in its base frame individually.

#### **4.7 Electrical Design Requirement for Fire Water Jockey Pump Motor**

Supplier scope of work will include but not limited to the selection of electrical equipment suitable for environmental conditions (IP55min.) and as required for the entire package including motors, starters, junction boxes, distribution boxes, earthing material etc. i.e. all the distribution & utilization equipment, interconnecting power, control cables shall be in the scope of package supplier supply.

The different voltages requirement whether AC & DC for the package utilization equipments motorized and non-motorized (electrical & instrumentation loads) shall be accommodated by the supplier through its own distribution system. The company shall provide a single power feeder 400 VAC, 3 Phase, 50Hz with Neutral from the own reliable distribution system to the supplier Control panels including feeders/motor starters. This Company provided power supply shall energize the supplier distribution system and feed all electrical loads including motorized and non motorized loads, electrical & instrumentation loads of the fire water pump package

The supplier shall provide a block diagram of the package which shall clearly identify power supply requirements of package, from the purchaser.

- 4.7.1 Below characteristics shall be followed as minimum design requirements for the electrical system of the fire water jockey pump motor package. The Manufacturer/Supplier may enhance these minimum requirements for safe and reliable operation of the supplied package. The supplier shall specify the electrical load requirement for the power feeder of 400VAC, 50Hz, 3 Phase and Neutral & 230 VAC, 50Hz. The electrical equipment supplied by the Supplier shall be suitable for below available power supply:

##### Power Supply



- System voltage (3-phase, 4-wire)                    400 V
- System voltage (1-phase, 3-wire)                230 V
- Frequency    50 Hz
- AC UPS (1 phase)                                    230Vac
- Motors (0.37kW and less)                        230 Vac - 1 phase (Special condition)
- Motors (above 0.37 kW)                         400 Vac - 3 phase
- Instruments & Control                            230V, 50 Hz, 1-phase from UPS

Maximum supply voltage and frequency variations shall be as follows:

- Steady State voltage variation                     $\pm 5\%$  (AC Supplies)
- Frequency variation                                  $\pm 2\%$

For any other voltage levels other than those mentioned above, the Supplier shall be responsible to provide the voltage transformation system.

4.7.2 Motors shall be designed for suitable starting method and shall be continuously rated and suitable for continuous operation at full load rating under combined variation of both voltage and frequency, as cited above.

Starting method for motors shall be applicable as given below.

Up to 37KW	Direct On-Line
>37< 100KW	Star Delta
>100KW	Variable Frequency Drive/ Soft Starting

The offered electric motors shall be squirrel cage induction motors supplied in accordance with the latest international standards and shall suit for Jockey Pump services.

All motors will be continuously rated, and all motors will be suitable for direct-on-line starting.

All motors shall be rated for maximum design ambient temperature. Motors will have class F insulation with a temperature rise limited to class B at minimum. The minimum degree of protection for motor enclosures will be IP55 to IEC-60529 and for motor terminal boxes will be IP65.

LV motors will have TEFC enclosures.





The service factor of electric motor shall be 1.0. An external earthing point shall be provided with the offered motors.

Motor equal or greater than 55 kW rating will have anti-condensation heaters.

Efficiencies of all the motors shall be minimum IE2 or greater and p.f greater than 0.9

Supplier shall identify the manufacturer of the offered motors and shall provide the preliminary manufacturer data sheet.

#### 4.7.3 Jockey Pump Motor Controller Requirement

- a. The Jockey Pump Motor Controller supplied by the supplier shall be “UL Listed as per NFPA 20”.
- b. The jockey pump motor controller shall be complete with motor starters, protection, indications. The controller shall be NEMA 4X suitable for outdoor installation.
- c. The Controller and the electric motor shall be internally pre-wired by the Manufacturer. The Client shall only provide 400V AC, 3 – Phase, 50 Hz electric power to the package.
- d. Supplier shall mention the required feeder rating of jockey pump controller.
- e. Pressure Recorder for sensing and recording the pressure in each fire pump controller for Seven Days (07) without being reset.
- f. The controller shall have provision for interface with plant DCS for monitoring. Supplier shall provide monitoring signals that will be interfaced with plant DCS with bid. The supplier shall also provide dry contacts for interfacing with DCS.
- g. The electric motor driven pump shall start automatically by pressure switch low actuation.
- h. Provision for manual starting and operation of Jockey Pump shall also be provided through push button switch. The switch shall be arranged such that the



operation of engine when manually started cannot be affected by pressure switch.

- i. Provision for manual (by push button) and automatic pump shutdown shall be provided for each pump in compliance with NFPA 20.
- j. The pumps arranged for automatic shutdown after starting causes have returned to normal, a running period timer set for at least 10 minutes running time permitted to commence at initial operation in compliance with NFPA 20.

## **5.0 PAINTING & PREPARATION FOR SHIPMENT**

Painting, protective coatings and the procedures used for the preparation of surfaces shall be as specified in the Specification Doc. No. 4989-GS-9502.

Packing and Preservation shall be suitable for transportation of materials and equipment during their handling, inland transportation and storage at site for up to 6 months in an uncovered and unheated location. Packing shall account for the fragility and physico-chemical/ mechanical damages of items.

All Loose parts etc. shall be properly tagged to allow easy identification/site assembling.

Unpainted surfaces shall be protected from corrosion during shipment and subsequent outdoor/indoor storage by coating with a rust preventative.



## **6.0 QA/QC AND CERTIFICATION**

### **6.1 Quality Assurance & Control**

#### **6.1.1 Quality Management System**

Supplier shall operate an independently verified Quality Management System that satisfies the applicable provisions of BS-EN-ISO 9000 (series), or agreed equivalent standard, commensurate with the goods and services to be provided. Current details of registration, approval of other demonstration of the status and efficient operation of the Quality System shall be provided with the bid submission. Further information may be requested at the PO stage.

Company reserves the right to require Supplier to implement additional controls, where a satisfactory level of competence cannot be demonstrated in this regard, and/or exercise additional controls not detailed in this scope and specification.

Company reserves the right to visit the premises of Supplier for the purpose of undertaking Quality Audits relating to the unit and services covered by this specification, the extent of which will be discussed with Supplier before PO award.

Prior notice will be given to Supplier of any such audits. A copy of the audit report will be forwarded to Supplier on completion. Any findings resulting from such audits shall necessitate the implementation of appropriate corrective actions based on a time scale to be agreed with Company.

#### **6.1.2 Quality Control**

It is the intention of Company to determine its involvement in the inspection of materials and activities at Supplier's work dependent on the unit complexity/criticality and the effectiveness of Supplier's QA/QC procedures. Supplier shall provide its standard format Quality Control Plan, relating to the scope of work for review at the time of bid submission. This should include those activities, which have been sub-contracted and provision made for Company design review/inspection.



Regular visits by Company for the purpose of surveillance and documentation review will not be carried out as a matter of course. However, should it become apparent that Supplier's agreed Manufacturing Quality Control Plan is either inadequate or not being implemented, Company reserves the right to increase the level or frequency of its Quality Control activities or request Supplier to revise its working practices, as necessary.

To assist Supplier in evaluating the expected level of Company involvement applicable to this scope and specification, the following activities in Quality Control Level by Company have been identified:

- QC Plan review/markup.
- Surveillance of major Sub-suppliers.
- Certification and manufacturing data review.

#### 6.1.3 Material Traceability & Certification

Supplier shall advise its proposed material traceability system by which material is assured to be fit-for-purpose and identified throughout the manufacturing process, as part of the bid submission. Supplier should note that material certification is to be provided for all pressure containing and load bearing components.

### **6.2 Certification & Manufacturing Records**

#### 6.2.1 Inspection and Certification Records

Supplier shall ensure that all inspection, test and certification records for pumps and materials procured by Supplier, and test and inspection records for Supplier's assemblies and fabrications required by legislation, codes, standards and specifications or otherwise required are provided, safely stored and available on request.



### 6.2.2 Certification and Manufacturing Data Requirements

Certification and manufacturing data requirements consist of a collection of original and type test certification, inspection and test records and final release documentation generated during the approval, manufacture and testing of the unit or material.

All Certification and Manufacturing Data (04 sets) is to be issued to Company.

## 7.0 SPARES

The supply of Firewater Jockey Pumps shall include the commissioning spare and list of recommended two years operational spares.

### 7.1 Commissioning Spares

The Supplier shall provide commissioning spares of the Firewater Jockey Pumps. These are the spares parts and other materials needed to adequately cover the requirement of installation, day to day maintenance for the pumps during the Construction phase and Commissioning stages, including start up and testing.

### 7.2 Two Years Operational Spares

Supplier shall recommend and provide list of spare parts needed for two (02) years of operation.

All spare parts furnished by Supplier shall be wrapped so that they will be preserved in original as-new conditions of storage to be anticipated and shall be properly tagged and coded so that later identification as intended for equipment usage would be facilitated. They shall be packed separately, clearly marked as "Spare Parts". Packing lists shall be furnished so that the parts can be handled without uncrating if desired.

## 8.0 PERFORMANCE GUARANTEE & WARRANTY

The Supplier will warrant the Firewater Jockey Pumps to be free of defects in material and workmanship, and that it is of adequate size and capability to fulfill the design and operating conditions specified herein. The Supplier shall replace and install, without



cost to the Company, any materials, supplies, or equipment which fails under design conditions due to defects in material or workmanship, if the defect is observed and/or such failure occurs within warranty period. Acceptance of this order will signify acceptance of all conditions of this guarantee. The complete pumping assembly and all control equipment shall be guaranteed in writing for pressure, capacity & power consumption as required by NFPA-20.

## **9.0 DOCUMENTATION REQUIREMENT**

### **9.1 Use of the English Language**

All documents shall be written in the English Language.

### **9.2 Documents to be submitted with the Bid**

The bidder shall submit the following details as a minimum on the Firewater Jockey Pumps with the bid:

#### **Technical Documents:**

1. Name of Pumps Supplier and country of manufacturing.
2. Pumps & drivers Outline drawings showing part list , materials & other details.
3. Pumps & drivers Cross Sectional Drawings.
4. Shaft Seal Drawing.
5. Shaft coupling assembly drawing with details of allowable misalignment tolerances style of coupling guard. Materials and names of the mechanical seal and coupling manufacturer.
6. Primary and auxiliary sealing schematic.
7. Electrical and instrumentation schematics and list of components.
8. Pump Performance curves which include Differential head, Efficiency, Water NPSH & brake horsepower (KW), all expressed as function of capacity.
9. Pump head capacity curve for maximum impeller diameter.
10. Deviation/Exception list for this scope & other referenced documents and specifications /NFPA 20.
11. Completed datasheet.
12. Listing certification.
13. Controller schematic diagram.
14. Equipment installation details.
15. Noise levels.
16. Commissioning spares and List of recommended Spare parts for 02 years operation.
17. Dimensional drawing of motor.



18. Name of motor/engine manufacturer and country of manufacturing.
19. Motor/engine performance data.
20. Motor/engine hazardous area classification.
21. Motor/engine startup details.
22. Civil Foundation drawings showing anchor bolts location and loading of each skid, dry and operating.
23. Recommended method for starting motor/engine driven pump.
24. Cable Termination Drawings.
25. Electrical Equipment Data sheets including Manufacturer's Electric Motor Data Sheet etc.
26. Dynamic Loading calculation of Pumps.
27. Listing certificate of controller.

**Financial Documents:**

1. Price breakup of all the Components of Firewater Jockey Pumps.
2. Performance Bank Guarantee(s).
3. Schedule of Deliveries.
4. Priced list of spare parts for two years operation (if any) with FOB and CFR Karachi basis.
5. Comments or exceptions/contractual deviations to specifications and datasheets.
6. Other requirements as specified in specifications and datasheets.



### **9.3 Documents to be submitted after Purchase Order (for Approval)**

1. Finalized Production Schedule
2. Data required for foundation design
3. Material test certificates
4. Pump operating manual including characteristic curves
5. Mechanical design calculations
6. G.A drawings
7. Sectional details/drawings
8. Hydro testing certificates
9. Performance and NPSH test certificates
10. Controller (jockey pump controller) schematic drawings, wiring and termination diagrams.
11. Motors datasheets, technical details, dimension details and performance curves etc.
12. Manufacturing Data Records (MDR)
13. Any other documents not specified above, but essential to make the unit operational and maintainable

All above documents four (04) sets shall be submitted in clearly labeled 4 ring white hard cover binders. All documents smaller than A4 shall be inserted into A4 pre-punched, top-opening plastic wallets (if original certification, etc.) or attached to A4 sheets. Documents larger than A4 shall be folded to A4 size and inserted into A4 pre-punched, top-opening plastic wallets with the project document number/title block clearly visible to the front.

### **9.4 Final Documentation**

A fabrication dossier shall be compiled concurrently with fabrication such that a full record of the fabrication, materials, inspection and testing is available.

All items in the dossier shall be numbered and bound in an A4 four post binder; Contents shall include but not be limited to the following (as applicable):

1. Front cover sheet detailing:
  - P.O. No.
  - Project Title





- Equipment Title
  - Equipment Item No.
2. Index.
  3. Company/ Engineering Consultant Release Note.
  4. Purchase Order.
  5. A list of all applicable codes, standards and specifications.
  6. All drawings “As-built” - wherever legibility can be preserved reduced to A3 and folded, where legibility cannot be preserved drawings to be folded to A4 size and inserted into pre-punched plastic wallets.
  7. All Hydrostatic/ Performance/other test reports.
  8. Photocopy of nameplate.
  9. Material chemical analysis and mechanical test certification.
  10. Final signed quality plan.
  11. Operating manuals shall also be assembled into bound volumes and shall contain:
    - a. Operating and maintenance procedures
    - b. Commissioning instructions
    - c. All “As-built” drawings
    - d. Schedules of commissioning and operating spare parts for two years service.

All above documents four (04) sets shall be submitted in clearly labeled 4 ring white hard cover binders. All documents smaller and larger than A4 shall be inserted into A4 pre-punched, top-opening plastic wallets with the project document number/title block clearly visible to the front.

#### **9.5 Transmittals**

All documents submitted to the Company/ Engineering Consultant after the award of contract shall be accompanied by a transmittal completed by the Supplier. All transmittals will be sequentially numbered.

Minimum 04 days shall be required for review and approval of drawings and documents submitted to Company/ Engineering Consultant by the Supplier.



## **9.6 Drawing Sizes**

Sizes A1, A2, A3, and A4 shall be used.

A0 size drawings are NOT acceptable.

## **9.7 Scale Ratios**

Except where stated, all drawings will be supplied in metric units using one of the following scales 1:1, 1:2, 1:5, 1:10, 1:20, 1:25, 1:50, 1:100, 1:250, 1:500, 1:1000.

## **9.8 Electronic Data**

Supplier shall also submit electronic/soft copies of all design data, documents, drawing, etc. This also includes design details by Supplier's Sub-Suppliers.

All drawings shall be provided in AutoCAD 2004 format. All documentation shall be prepared in MS Office 2003.

## **10.0 NAME PLATE**

Name plate shall be as per NFPA-20 requirement.

Stainless steel Name Plate shall be permanently affixed to the each pump. The Name Plate for the motor shall contain the minimum data specified in the motor specification.

Name Plate for pumps shall contain the following data:

- Name of Manufacturer
- Date of Manufacturer
- Model No.
- Equipment Tag No.
- Body material
- Design code
- Pressure rating
- Capacity
- Pump head
- Casing hydrostatic test pressure
- Horse Power
- Speed

Direction of rotation shall be affixed at a visible place on the pump.



## **11.0 REFERENCE DOCUMENTS**

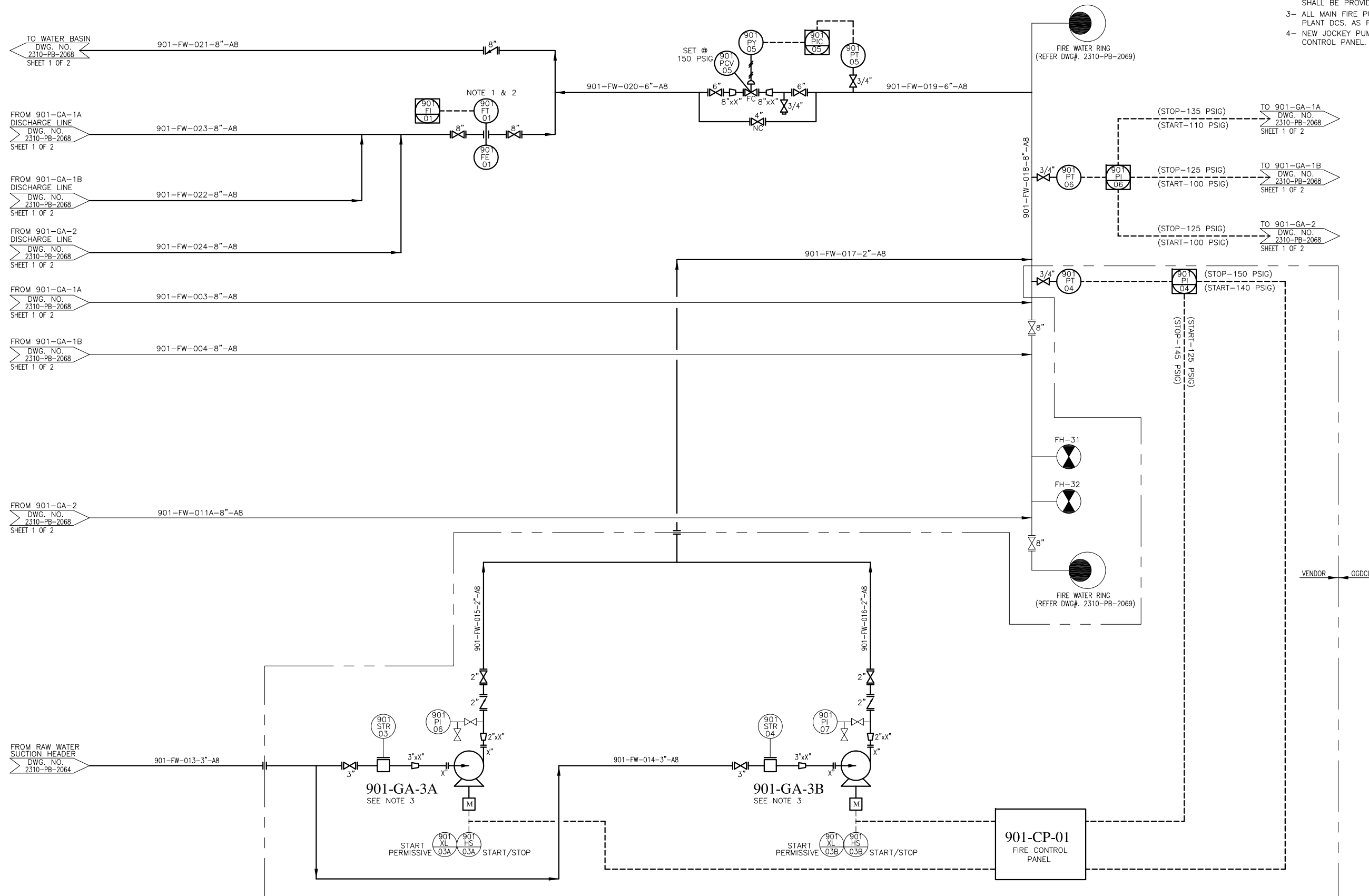
- 1) P&ID of Firewater Jockey Pumps (2310-PB-2068, Sheet 2 of 2).
- 2) Data Sheet of Motor Driven Firewater Jockey Pumps (0180-DS-1000).
- 3) Data Sheet LV Induction Motor (14-0180-6501-A)
- 4) Specification for LV Induction Motors (14-0180-ELA-6500)
- 5) Site Environment and Utility Design Data (4908-A-1001).
- 6) Specification for Painting (4989-GS-9502).
- 7) Specification for Steel Structure (4989-STA-4003)



# **PIPING & INSTRUMENT DIAGRAM (P&ID) OF FIRE WATER JOCKEY PUMPS PACKAGE**

**NOTES:**

- 1- FLOW METER TO BE CAPABLE OF 175% OF PUMP RATED CAPACITY.
- 2- STRAIGHT PIPING LENGTH OF 10D UPSTREAM AND 5D DOWNSTREAM SHALL BE PROVIDED.
- 3- ALL MAIN FIRE PUMPS SHALL BE CONTROLLED/OPERATED THROUGH PLANT DCS, AS PER EXISTING PHILOSOPHY
- 4- NEW JOCKEY PUMPS SHALL BE OPERATED THROUGH NEW FIRE CONTROL PANEL.



**901-GA-3A/B**  
**FIRE WATER JOCKEY PUMP**  
 CAPACITY : 30 GPM(US)  
 DIFF. PRESS. : 149 PSI

**LEGENDS:**  
 NEW ———  
 EXISTING - - -

1	05-01-2018	RE-ISSUED FOR APPROVAL	KI	UHI	MAS	AHB
0	03-01-2018	ISSUED FOR APPROVAL	KI	UHI	MAS	AHB
REV	DATE	DESCRIPTION OF REVISION	DRAWN	DESIGNED	CHECKED	APPR.
<b>ENAR PETROTECH SERVICES (PRIVATE) LIMITED</b> 7-B, Sector 7-A Karangi Industrial Area, Karachi Pakistan TEL: (9221) 5062791 E-mail: info@enar.com.pk			<b>Job No. 14-4908</b> <b>Dwg. No. 2310-PB-2068</b> (SHEET 2 OF 2)			
<b>OIL &amp; GAS DEVELOPMENT COMPANY LIMITED</b> DAKHNI GAS TREATMENT PLANT PIPING & INSTRUMENT DIAGRAM FIRE WATER PUMPS			COMPUTER CODE:	2/D/DAKHN	2310-PB-2068-1	
			SHT.SIZE:	A1		
			SCALE:	NTS		
			DRAWING REPLACED:	--		
THIS DOCUMENTS IS THE PROPERTY OF ENAR & THE CONTENTS MUST BE TREATED AS CONFIDENTIAL.						



# **Data Sheet of Motor Driven Firewater Jockey Pumps**



**INTEGRITY ASSESSMENT AND RELIABILITY CHECK  
OF DAKHNI PLANT  
DATA SHEET  
FIRE WATER JOCKEY PUMPS**

Doc.No 0180-DS-1000  
 Prep. UHI Chk MAS Apr AHB  
 Date 27-Dec-17  
 Sheet 1 of 1 Rev. 0

Client	OGDCL	Site	Dakhni Gas Processing Plant
Unit	Fire Water System	Service	Water
No. Req'd.	02	No. Motors Req'd	02
Item No.	901-GA-03 A/B	Item Description	Fire Water Jockey Pumps
No. Engines Req'd.		No. Turbines Req'd	
Pump Mfr.		Size and Type	Serial No.

OPERATING CONDITIONS, EACH PUMP				PERFORMANCE (NOTE-5)	
Liquid	Water	Flow at PT. (gpm) Nor.	-	Rated	30.0
PT.(°F) Nor.	77	Disch. Press. (psig) at PT.	-	Rated	150.00
Sp.Gr. at PT.	1.0	Suct. Press. (psig) at PT.	-	Rated	1.00
Vap. Press. at PT. (psia)	0.46	Diff. Press. (psi)	-		149.00
Vis. at PT. (cP)	1.00	Diff. Head (ft)	-		343.69
Corr/Eros. Caused by		NPSHa (ft)	-		32.00
Location:	<input type="radio"/> Indoor <input checked="" type="radio"/> Outdoor	Hyd.Power (HP)	-		2.61
Working:	<input checked="" type="radio"/> Continuous <input type="radio"/> Intermittent <input type="radio"/> Random	Area:	<input checked="" type="radio"/> Safe <input type="radio"/> Hazardous		
App. Code	<input type="radio"/> API - 610 <input type="radio"/> ANSI <input type="radio"/> Other				

CONSTRUCTION					SHOP TESTS	
Nozzles	Size	Rating	Facing	Location	<input type="radio"/> Non-Wit. Perf.	<input type="radio"/> Wit. Perf.
Suction	4"(NOTE-1)	150#	RF		<input type="radio"/> Non-Wit. Hydro	<input checked="" type="radio"/> Wit. Hydro
Discharge	3"(NOTE-1)	150#	RF		<input type="radio"/> NPSH Req'd.	<input checked="" type="radio"/> Wit. NPSH
Case-mount:	<input checked="" type="radio"/> Centerline <input type="radio"/> Foot <input type="radio"/> Bracket <input type="radio"/> Vert. (Type)				<input checked="" type="radio"/> Shop Inspection	
- Split:	<input type="radio"/> Axial <input checked="" type="radio"/> Rad;	Volute Type:	<input type="radio"/> SGL <input type="radio"/> DBL <input type="radio"/> Diffuser		<input type="radio"/> Dismant. & Insp. After Test	
- Press:	<input type="radio"/> Max. Allow, _____ psi @ _____ °F	<input type="radio"/> Hydro Test	_____ psig		<input checked="" type="radio"/> Other _____ Mechanical Run	
- Connect:	<input checked="" type="radio"/> Vent <input checked="" type="radio"/> Drain <input type="radio"/> Gage					
Impeller Dia. :	<input type="radio"/> Rated _____ <input type="radio"/> Max. _____	Type:				
Mount:	<input type="radio"/> Between Bearings <input type="radio"/> Overhung					
Bearings-type:	<input type="radio"/> Radial <input type="radio"/> Thrust					
Lube:	<input type="radio"/> Ring Oil <input type="radio"/> Flood <input type="radio"/> Oil Mist <input type="radio"/> Flinger <input type="radio"/> Pressure					
Coupling:	<input type="radio"/> Mfr. <input type="radio"/> Model					
Driver Mtd. By:	<input checked="" type="radio"/> Pump Mfr. <input type="radio"/> Driver Mfr. <input type="radio"/> Purchaser					
Packing:	<input type="radio"/> Mfr. & Type _____ <input type="radio"/> Size/No. of Rings _____					
Mech. Seal:	<input type="radio"/> Mfr. & Model _____ <input type="radio"/> Mfr. Code _____					

AUXILIARY PIPING				VERTICAL PUMPS (N/A)	
<input type="radio"/> C.W. Pipe Plan _____	<input type="radio"/> CS <input type="radio"/> SS	Tubing:	<input type="radio"/> Pipe <input type="radio"/> Sight F.I. Req'd		
<input type="radio"/> Total Cooling Water Rec req _____ ft <sup>3</sup> /h					
<input type="radio"/> Packing Cooling Injection Req'd: _____	Total _____ ft <sup>3</sup> /h	<input type="radio"/> CS <input checked="" type="radio"/> SS	<input type="radio"/> Tubing <input type="radio"/> Pipe _____		
<input type="radio"/> Seal Flush Piping Plan _____					
<input type="radio"/> External Seal Flush Fluid _____	_____ ft <sup>3</sup> /h	<input checked="" type="radio"/> Tubing <input type="radio"/> Pipe _____			
<input type="radio"/> Auxiliary Seal Plan _____	<input type="radio"/> CS <input checked="" type="radio"/> SS				
<input type="radio"/> Aux. Seal Quench Fluid _____					

MOTOR DRIVER				VERTICAL PUMPS (N/A)	
KW	5.5 (VTC)	RPM	VTS	Frame	VTS
Mfr.				Bearings	VTS
Cooling Type	TEFC	Insulation	F	Full Load Amps	VTS
Cable Entries	Fixed (VTC)	Temp. Rise	B	Locked Rotor Amps	VTS
Enclosure			IP55		
Terminal Box	IP65				

**NOTE :** The vendor shall confirm the kW rating & satisfactory operation of equipment at site / environmental conditions after applying the applicable derating factors including ambient temperature, Altitude, Relative Humidity etc

**NOTES:**

- 1) Suction and Discharge line Sizes. Vendor to specify pump suction and Discharge nozzle sizes accordingly and to provide connecting flanges and reducers.
- 2) Refer to Section 4.2 of Scope and Specification for Fire Water Pump Package, Doc. No. 0180-MRK-9000.
- 3) Data Presented in this sheet is based on preliminary estimates. Contractor to update the data sheet based on firm detailed engineering
- 4) VTS = Vendor To Specify
- 5) VTC = Vendor To Confirm
- 6) PT = Pumping Temperature
- 7) Refer to attached motor Data sheet 14-0180-ELA-6501-A & Specification for Induciton Motors 14-0180-ELA-6500
- 8) For site conditions refer to Site, Environment and Utility Design Data 4985-A-1000.



# **Data Sheet of Firewater Jockey Pumps Motor**





# INTEGRITY ASSESSMENT AND RELIABILITY CHECK OF DAKHNI PLANT

**ISSUED FOR REVIEW & APPROVAL**

REV	DATE	DESCRIPTION	ORIG	CHKD	LE	QA	PM	LOCAL REPR.	PROJ. MAN.
A	3-Jan-2018	Issued for Review & Approval	JAB	ZHW	AIB	MHQ	AHB		
<b>REVISIONS</b>			<b>APPROVAL</b>					<b>OWNER APPROVAL</b>	
 <b>ENAR PETROTECH SERVICES (PVT.) LTD.</b> 7-B, KORANGI INDUSTRIAL AREA, KORANGI-KARACHI			TITLE : <b>DATA SHEET FOR FIRE WATER JOCKEY PUMP MOTOR (901-GA-03 A/BM)</b>						
			DOCUMENT NO: <b>14 - 0180 - ELA - 6501 - A</b>						
CONTRACT NO. <b>14-0180</b>			PROJECT. CODE	DOCUMENT TYPE	SEQUENTIAL NUMBER	REVISION			
								<b>PAGE 1 OF 2</b>	



**ENAR PETROTECH SERVICES  
(PRIVATE) LIMITED**  
Plot No. 7-B, Sector-7A Korangi Industrial Area  
Karachi-74900

**DATA SHEET FOR FIRE WATER JOCKEY PUMP MOTOR  
(901-GA-03 A/BM)**

PROJECT NO. : 14-0180

REV. NO. : A

PROJECT NAME : **INTEGRITY ASSESSMENT AND RELIABILITY  
CHECK OF DAKHNI PLANT**

DATE : 3-Jan-18

CLIENT : **OIL & GAS DEVELOPMENT COMPANY LTD.  
(OGDCL)**

SHEET : 2 of 2

DOCUMENT NO. : 14-0180-ELA-6501-A

**LV ELECTRICAL INDUCTION MOTORS**

GENERAL SPECIFICATION				VENDOR DATA			
1	Equipment Tag	901-GA-03 A/BM	Qty 2	34	Manufacturer	VTA	
2	Equipment Service	Fire Water Jockey Pump Motor		35	Frame Size	VTA	
3	Motor Type	Squirrel Cage Induction Motor		36	Frame Material	VTA	
4	Rated Output	5.5 (VTC) kW		37	Full Load Current	VTA	A
5	Rated Voltage	400 V		38	Locked Rotor Current	VTA	A
6	Allowable Volatage Variation	± 5%		39	Starting Current Ratio	VTA	A
7	Frequency (Hz)	50		40	Rated Torque	VTA	Nm
8	Allowable Frequency Variation	± 2%		41	Moment of Inertia	VTA	kgm <sup>2</sup>
9	Phase	3		42	Rated Power	5.5kW (VTC)	
10	Speed	To suit application		43	Starting Power Factor	VTA	
11	No. of Poles	To suit application		44	Mounting	VTA	
12	Duty Type	Continuous		45	Coupling Method	<input checked="" type="checkbox"/> Direct	<input type="checkbox"/> V-Belt <input type="checkbox"/> Gear Box
13	Service Factor	1.0		46	Rotation (Facing Drive End)	<input type="checkbox"/> Clockwise	<input type="checkbox"/> Anti-Clockwise
14	Enclosure	TEFC		47	Noise Level	85 dBA at 1 m	
15	Ingress Protection	IP 55 Motor	IP 65 Terminal Box	48	Hazardous Area Certification	N/A	
16	Insulation Class	F		49	Weight of Motor	VTA	kg
17	Temperature Rise	B		50	Vibration	IEC-60034 & applicable IEC standards	
18	Motor Starting Method	<input checked="" type="checkbox"/> DOL	<input type="checkbox"/> Y-D <input type="checkbox"/> VFD <input type="checkbox"/> SoftStart	51	Efficiency	IE2-Efficiency Class as per IEC-60034-30-1	
19	Location	<input checked="" type="checkbox"/> Outdoor	<input type="checkbox"/> Indoor	52	100% Load	VTA	%
20	Area Classification	<input type="checkbox"/> Hazardous	<input checked="" type="checkbox"/> Safe	53	75% Load	VTA	%
21	Class	N/A		54	50% Load	VTA	%
22	Division	N/A		55	No Load		
23	Group	N/A		56	Power Factor		
24	Temperature Class	T3		57	100% Load		≥ 0.9
25	Altitude	1100 ft Above Mean Sea Level		58	75% Load		≥ 0.9
26	Humidity	75%		59	50% Load	VTA	
27	Ambient Temperature	50°C Maximum	0°C Minimum	60	No Load	VTA	
28	Space Heater	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	VTA Watt 230 Volt	61	Bearing		
29	Winding RTD	<input type="checkbox"/> Yes <input type="checkbox"/> No	2 Nos. Per / ph	62	Tpye	VTA	
30	Power Cable Size	Later		63	Drive End	VTA	
31	No. of Power Cable Runs	01 (One)		64	Non-Drive End	VTA	
32	Cable Type	0.6/1kV,CU/XLPE/PVC/SWA/PVC		65	Lubricant	VTA	
33	Cable Gland	Later		66	Motor Specification	14-0180-ELA-6500-A	

**NOTES:**

1. Vendor shall provide the Motor Data Sheet with Performance Curves of the offered model.
2. Please refer to Specification for Motor 14-0180-ELA-6500 for detail specification.
3. Vendor shall provide a routine test certificate for each motor.
4. Equipments shall be designed as per area classification.
5. Vendor to submit the coupling method details with drawings for OGDCL approval prior to manufacturing.
6. Vendor to ensure that voltage surges or rate of rise of Voltage surges shall not jeopardize the motor winding and its insulation life.
7. Cable Gland shall be nickel plated brass & suitable for area classification.
8. Vendor shall fill the remaining unfilled data of this data sheet.
9. Power factor of all L.V Motors shall be greater than or equal to 0.9 at 100% & 75% load.

VTA - Vendor to Advise/Provide VTC - Vendor to confirm  
N/A - Not Applicable