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**SECTION 3**

**TECHNICAL REQUIREMENTS AND SPECIFICATIONS**

**FOR**

**PERFORATED PIPES FOR (5+6) HORIZONTAL WELLS**

**TENDER No.:CMIT-PRT-10.30-150276-1**

**Dec, 2015**

**DUBAI, UAE**

**GoodS SPECIFICATION AND TECHNICAL REQUIREMENTS**

# FIELD INTRODUCTION

The MISSAN Oilfields includes three fields, ABU GHIRAB Field, FAUQI Field and BUZURGAN Field.

The ABU GHIRAB Field oil wells has been completed to produce from Asmari Pay zone, BUZURGAN Field oil wells has been completed to produce from Mishrif Pay zone, and the FAUQI Field oil wells has been completed to produce commingled from both Asmari and Mishrif formations.

# FORMATION BASIC DATA

**TABLE-1 WELL DATA**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ITEMS | ABU GHIRAB FIELD | FAUQI FIELD | BUZURGAN FIELD | REMARK |
| Reservoir | ASMARI | ASMARI | MISHRIF | MISHRIF |  |
| Ambient Temperature | -5~55℃ | -5~55℃ | -5~55℃ | -5~55℃ |  |
| Rain Interval | Nov.~March | Nov.~March | Nov.~March | Nov.~March |  |
| Humidity(in Rain Season) | 60%~90% | 60%~90% | 60%~90% | 60%~90% |  |
| **Crude Oil:** |
| °API | 21.9 | 25.4 | 25.4 | 22.5 |  |
| GOR initial/present( SCF/STB ) | 570 | 485 | 700 | 770 |  |
| Crude Oil Volume Factor | 1.36 | 1.22 | 1.46 | 1.41 |  |
| Bubble Pressure（MPa） | 16.89 | 17.93 | 18.13 | 18.34 |  |
| Asphaltenes,% wt. |  | 4.1 | 7.4 |  |  |
| Wax.% wt. |  | 3.2 | 1.66 |  |  |
| Sulphur,% wt. |  | 3.58 | 2.92 |  |  |
| Hydrogen Sulphide(ppm) |  | -- | -- |  |  |
| Salt lb/1000 brl |  | 233 | 100 |  |  |
| Water,% vol. |  | 0.25 | 0.45 |  |  |
| **Corrosive Gas Partial Pressure:** |
| CO2 (partial pressure/PSI) | 13.8~29.9 | 13.8~29.9 | 91.5~189.4 | 91.5~189.4 |  |
| H2S(partial pressure/PSI) | 0 | 0 | 16.2~118.1 | 16.2~118.1 |  |
| **Formation Water Analysis:** |
| Na (mg/L) | 16120 | 77940 | 62030 | 196 | Bus1 |
| CA (mg/L) | 2685 | 15830 | 13450 | 299 | AGS1 |
| CL (mg/L) | 34844 | 168953 | 122761 | 1165 | FQN |
| PH | 4.64 | 5.12 | 4.97 | 7.79 | FQS |

Corrosive gas content:

ASMARI reservoir gas composition: CO2 content of 0.1-1.52%; H2S content of 0-0.4%.

MISHRIF reservoir gas composition: CO2 content of 3.4-7.2%; H2S content of 0.6-2.5%.

The formation temperature and pore pressure is of normal temperature and pressure system. The formation temperature and pore pressure are as follows:

**TABLE 2 FORMATION TEMPERATURE AND PORE PRESSURE**

|  |  |  |  |
| --- | --- | --- | --- |
| Oilfield | Layer System | Pressure coefficient/pressure | Geothermal gradient(℃/100m) /temperature |
| ABU GHIRAB | ASMARI | 1.163/4300psi | 3.35/98℃ |
| FAUQI | ASMARI | 1.147/4700psi | 3.35/95℃ |
| MISHRIF | 1.148/5800psi | 3.15/138℃ |

# WELL CONSTRUCTION

Typical casing program for horizontal well

|  |  |  |  |
| --- | --- | --- | --- |
| BIT SIZE | CASING SIZE | SPECIFICATIONS OF CASING | THREAD TYPE |
| 36" | 30" | 196.1ppf, X52  | By thread or weld Up to casing purchase result |
| 26" | 20" | 94ppf, K55, BTC | BTC |
| 17-1/2" | 13-3/8" | 68ppf, N80, BTC | BTC |
| 12-1/4" | 9-5/8" | 47ppf, L80 | Premium connection |
| 9-5/8" | 58.4ppf, C-95 | Premium connection |
| 8-1/4" | 6-5/8" | 28ppf, 13Cr-L80 | Premium connection |
| 5-5/8” | Open Hole |

# SCOPE OF SUPPLY

The following tabulated completion materials are required to be run in the open hole horizontal section 5 5/8’’ hole size, and due to the company has the rest of the horizontal completion tools such as 4” oil swellable packer 11.6# Vam Top thread connections type and all of the other completion tools with specific descriptions, so, each participate bidder in the subject tender should comply with the required material specifications (size, wt., thread connection type, length, material type,…….etc) as shown in the following table:-

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item** | **Company Description** | **QTY** | **Unit** | **Country of origin** |
| 1 | Crossover Sub Max. Coupling OD: 4.937" Min. ID: 3.958"Top Connection: 4-1/2" 12.6ppf VAM TOP BoxBottom Connection: 4-1/2"12.6ppf JFE Bear PinMaterial: L80-13CRLength:6ft | 5 | EA |  |
| 2 | Crossover SubMax. Coupling OD: 5" Min. ID: 3.428"Top Connection:4-1/2” OD 12.6ppf JFE Bear BoxBottom Connection:4” OD 11.6ppf VAM TOPPinMaterial: L80-13CRLength:6ft | 11 | EA |  |
| 3 | 4” OD 11.6ppf Perforated PipeSuitable for 5-5/8” OD Open HoleMaterial: L80-13CRThread: 4” OD 11.6ppf VAM TOP Box ×PinLength: 9.6 m +/-0.3mPerforated Hole Density: 44 hole/meterPerforated Hole Diameter: 12.7mmTong Space in Box End: 36”Tong Space in Pin End: 36” | 6600 | Meters |  |
| 4 | 4” OD 11.6ppf Perforated Pup PipeSuitable for 5-5/8” OD Open HoleMaterial: L80-13CRThread: 4” OD 11.6ppf VAM TOP Box ×PinLength: 20ftPerforated Hole Density: 44 hole/meterPerforated Hole Diameter: 12.7mmTong Space in Box End: 36”Tong Space in Pin End: 36” | 22 | EA |  |
| 5 | 4” OD 11.6ppf Blank PipeSuitable for 5-5/8” OD Open HoleMaterial: L80-13CRThread: 4” OD 11.6ppf VAM TOP Box ×PinLength: 9.6 m +/-0.3m | 22 | Joints |  |
| 6 | 4” OD 11.6ppf Blank Pup jointSuitable for 5-5/8” OD Open HoleMaterial: L80-13CRThread: 4” OD 11.6ppf VAM TOP Box ×PinLength: 20ft | 22 | EA |  |
| 7 | Crossover Sub Max. OD: 4.5" Min. ID: 3.351"Top Connection: 4" 11.6 VAM TOP BoxBottom Connection: 4-1/2" 11.6# VAM TOP PinMaterial: L80-13CRLength:6ft | 5 | EA |  |
| 8 | 4-1/2” OD 12.6ppf Blank Pup jointSuitable for 5-5/8” OD Open HoleMaterial: L80-13CROD ; 4.458”Thread: 4-1/2” OD 11.6ppf VAM TOP Box ×PinLength: 20ft | 5 | EA |  |
| 9 | \*Crossover SubMax. OD: ≤ 4.5"Min. ID: 3.351"Top Connection: 4" 11.6ppf VAM TOP BoxBottom Connection: 4-1/2” OD 12.6ppf Vam FJL PinMaterial :L80-13CRLength:6ft\*Note: The subject cross over shall be located in between the Company’s 4” Perf. Tbg. Jts VAM TOP Pipe Pin down and Company’s o-ring seal sub 4-1/2” 12.6lb/ft VAM FJL Box up  | 10 | EA |  |
| 10 | \*Crossover SubMax. OD: ≤ 5"Min. ID: 3.95"Top Connection: 4-1/2” OD 12.6ppf Vam FJL BoxBottom Connection: 4-1/2” OD 12.6ppf JFE BEAR PinMaterial:L80-13CRLength: 6ft\* Note: The subject cross over shall be located in between Company’s o-ring seal sub 4-1/2” 12.6lb/ft VAM FJL Pin down and Company’s 4 ½” guide shoe with floa 4 ½” JFE Bear Box up. | 10 | EA |  |
| 11 | Lifting sub for lifting purpose of 4’’ 11.6# Pipe VAM TOP connections, length 48 inch | 7 | EA |  |
| 12 | Lifting sub for lifting purpose of 4 1/2’’ 12.6# pipe VAM TOP connections , length 48 inch | 3 | EA |  |

**NOTE**

* Contractor shall provide the detailed specification of the products (body & coupling) supplied clearly with the Technical Bids, including but not limited to the following:-

Tubular OD, Tubular ID, Connection, PPF, Approximate Length, Drift Size, Tool Joint OD, Tool Joint ID, Recommended Make-up Torque (Minimum/Optimum/Maximum), Make-up Loss Length (inch～mm), Tensile Yield: (LBs～KN), Collapse Pressure (Psi～MPa), Internal Yield Pressure (Psi～MPa).

Note:- for 4” OD VAM TOP, 11.6ppf, for more detailed specifications, refer to VAM Website

<http://www.vamservices.com/technical_information/connection_ds.aspx>

* Contractor should provide field-proven good products. Company doesn’t accept new developing products for this bided oil field.
* Contractor should provide detailed products list with the specification.
* Contractor must provide third party inspection recognized by company. The TPI cost should be in Contractors account.
* Company reserve the right to inspect and check the quality and test reports during the manufacturing time and before the delivery or done by authorized third party in supplier’s charge.
* Contractor should provide Manufacture test certification which include but not limited material test, function test and so on.
* Contractor must mark the OD, ID and thread type on the outside body for each required tool for easily recognizing.

# PERFORATED PIPE AND ACCESSORIES PURCHASED REQUIREMENTS

## SPECIFICATIONS REQUIREMENTS

### All tubular manufactured, marked and packaged should be in accordance with applicable standards API-5 CT.

### Tubular is requested with a min length of (9.6 m +/-0.3m) for each joint.

### All Tubing and pup joints to be delivered complete with box and pin thread PVC type protectors.

### Pipe connections shall be protected with suitable dope and protectors as per API guidelines during transportation.

### Third Party Inspection: The following tests and inspections shall be carried out by the Contractor , witnessed & approved by Third Party Inspector as per API-5CT ( PSL2 ) Guidelines (latest edition) and results thereof furnished to the company for verification during the manufacturing process and to be completed prior to dispatch.

### Contractor should provide third party inspection and to be recognized by the COMPANY.

### COMPANY reserve the right to inspect and check the quality and test reports during the manufacturing time and before the delivery or it may done by authorized third party at supplier’s charge.

### Contractor should provide Manufacture test certification which includes but not limited to material test, function test, seal test and so on.

### For each type of product, Contractor should submit three sets of equipment specifications.

## COUNTRY OF ORIGIN REQUIREMENTS

### Non-manufacturer is NOT acceptable.

### Only accepted Country of Origin for ALL the raw material of tubular body and coupling within this SECTION 3 – PERFORATED PIPE AND ACCESSORIES TECHNICAL REQUIREMENTS AND SPECIFICATIONS shall be USA, Western Europe, Canada / Japan.

### Contractor should provide Certificate of Origin for ALL the raw material of tubular body and coupling, which shall be stamped by the Iraq Embassy in the country where the products are manufactured from and which is acceptable by COMPANY DELIVERY REQUIREMENTS

## DOCUMENTS REQUIREMENT

### Contractor shall provide API-5 CT certificate, Thread license certificate as mentioned in connection specification and QA/QC standards certificate at the time of bid submission.

### Contractor will start the manufacturing process only upon receipt of the confirmation of acceptance of the QA/QC Plan and other relevant data. The QA/QC Plan should be first reviewed with comments by TPI and then forwarded to COMPANY for further approval.

### The Contractor shall supply a full quality file package for all supplied Products. The Quality File shall include all the test report mentioned below in TPI Scope.

### The following items should be considered ahead, while and after shipment process based on each item requirements:-

**Notes:**

* + Submission of all required shipping documents is solely under Contractor’s responsibility.
	+ All the shipping documents must be reviewed and approved by COMPANY before issuance. Draft documents shall be sent to COMPANY at least 15 days prior to shipment.
	+ It is Contractor’s responsibility to have all required documents (after legalization if required) received by COMPANY at least One (1) week before the vessel’s arrival at Umm Qasr Port.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/N** | **Document****Category** | **Original****File No.** | **Copy****File No.** | **Notes** |
| 1 | Packing List | 4 | 1 | Must be reviewed and approved by CNOOC IRAQ LTD before final issuance, English and Arabic version. |
| 2 | CommercialInvoice | 4 | 1 | Must be reviewed and approved by CNOOC IRAQ LTD before final issuance At least one, Only English Version must be legalized by local Iraq embassy in manufacturer’s country or Export country. (English and Arabic version).Request to show: TSC/MISSAN/2010, CNOOC IRAQ LTD contract no: XXX, PERMANENT IMPORT/TEMPORARY IMPORT |
| 3 | Certificate ofOrigin | 1 | 2 | Must be reviewed and approved by CNOOC Iraq Ltd before final issuance. One, original and two, 2 copies. Must be legalized by local Iraq embassy in manufacturer’s country or Export country. English version, commercial invoice no. and issuing date should be mentioned in COO. |
| 4 | Factory Test & Inspection Certificate | 1 | 1 | Must be reviewed and approved by CNOOC Iraq Ltd before final issuance, English version |
| 5 | Third Party Inspection Certificate | 1 | 1 | Must be reviewed and approved by CNOOC Iraq Ltd before final issuance TPI must be issued by approved TPI firms by MOC. English version,  |
| 6 | Certificate ofInsurance | 1 | 2 | Must be reviewed and approved by CNOOC Iraq Ltd before final issuance English version，The beneficiary will be CNOOC IRAQ LTD. |
| 7 | Bill of Lading | 3 | 3 | Must be reviewed and approved by CNOOC Iraq Ltd before final issuance English version |
| 8 | Others if any | N/A | N/A | If the items belongs to Pre-Import Inspection, Testing & Certification Program of Goods into the Republic of Iraq |

## INSTRUCTION OF TPI (THIRD PARTY INSPECTION)

The third party inspection certificate is required and the cost for the TPI should be included in the total offered price.

### Third Party Inspection Requirement:

Due to the required mechanism in third party inspection and manufacturing inspections, following notes is required to implement the inspections.

Due to the required mechanism in third party inspection and manufacturing inspections, following notes is required to implement the inspections.

* The inspectors (TPI) shall present a detailed report of inspections of materials according to the degree of PSL (Product specification levels) and PR (Performance requirements).
* The inspectors (TPI) shall confirm the validity of technical documents and place of manufacturing.
* The inspectors (TPI) shall present inspections according to API, ISO.
* The inspectors (TPI) shall confirm the certificate of manufacturing inspection handled by the manufacturer.
* Details of manufacturing inspection of materials at the factory shall be maintained according to API, ISO.
* Technical specifications of materials, their quantities and their serial number shall be mentioned.
* Each sheet of paper of inspection shall be stamped by inspectors (TPI).

### RECOMMENDED LIST OF THIRD PARTY INSPECTORS

The supplier can choose one of the following TPI Companies for your products inspection.

|  |  |  |  |
| --- | --- | --- | --- |
| **S/N** | **TPI COMPANIES** | **CONTACT INFORMATION IN DUBAI** | **CONTACT INFORMATION IN IRAQ** |
| (Focal Point, Phone No., Email Address | (Focal Point, Phone No., Email Address |
| 1 | Lioyd’S Register | Suite 2001, Festival Office Tower, Al Rebat Street; Ras Al Khor, Dubai Festival City, Po Box 29677, Dubai, United Arab EmiratesTel: +971 4 7014178; 7014100Mobil: +971 4 7014139E-mail: Caroline.Daquilos@Lr.Org |  |
| 2 | Bureau Veritas (BV) | 211 Dune Center, P.O. Box 9110Al Diyafa Street, Satwa, Dubai, UAETel: +97143453560 Ext 422;Mobil: +971 50 8752420 | Royan Britto,Chief Executive For Kuwait.Tel: + 965 9964 3095;Mobile: +96524315078/24314978;Fax:+965 24314078 |
| 3 | Intertek Global | Villa 2, Plot 307. E-19/2, Abu Dhabi, UAETel: +971 2 6428005;Mobile:+971 50 2204776E-mail: Ian.Porter@Intertek.Com |  |
| 4 | TUVR henland | Dubai Airport FreezoneAuthority Office 4a, | Mobile: +971 4 204 5260 |
| 5 | DNV | House No.9, 1591Hong Qiao Road,Shanghai | Tel: +86 21 3208 4518 |

## Delivery Tolerance

### The deliverable tolerance shall be accepted as per API-5CT acceptable ranges.

### Wall thickness tolerance - 12.5%

### Mass

**AmountTolerance**

Single length +6.5% -3.5%

Carload 18,144 kg (40,000 Ib) or more ~ 1.75%

Carload Less than 18,144 kg (40,000 Ib) ~ 3.5%

Order Item 18,144 kg (40,000 Ib) or more ~ 1.75%

Order Item Less than 18,144 kg (40,000 Ib) ~ 3.5%

## DELIVERY PLAN

### SHIPMENT REQUIREMENT

 The Contractor should work out a shipment program and meet the requirements for sea transportation that should be protected from rain, seawater, crust and shock.

### TIME DELIVERY REQUIREMENTS

The cargo should be delivered at Umm Qasr Port within six (6) months as of the contract awarding date.