

58.12.4131

**FLARE GAS FLOW METER FOR NOOR & AMMARA DEG.STATIONS .**

| ITEM | DES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | UNIT | QTY |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|
|      | <p><b><u>1.1 SCOPE OF SUPPLY</u></b></p> <p>FOUR DIGITAL FLARE GAS FLOW METERS ( TWO FOR LOW PRESS. FLARE AND TWO FOR HIGH PRESS. FLARE ) MEETS THE SPECIFIED ACCURACY RATING AND IS DESIGNED FOR HIGH PERFORMANCE FLARE GAS APPLICATION .</p> <p>THE FLOW METER MUST BE HAVE TWO CHANNELS OF MEASUREMENT FOR EXTENDED PRECISION ON ONE PIPE OR MONITORING OF TWO SEPARATE PIPES WITH SAME ELECTRONIC UNIT .</p> <p>THE FLARE GAS FLOW METER MUST BE DESIGNED TO SOLVE A VARIETY OF DIFFICULT PROBLEMS SUCH AS PULSATING PRESSURE , UNSTEADY FLOW , VERY LOWEST FLOW RATE AND VARYING GAS COMPOSITION AND TEMPERATURE .</p> <p>THE FLOW METER MUST BE COMPLETED WITH PRESSURE AND TEMPERATURE TRANSMITTERS SMART HART TYPE .</p> <p>THE SCOPE OF SUPPLY SHOULD INCLUDE SYSTEM DESIGN , MANUFACTURE , ASSEMBLY , DOCUMENTATION , INSPECTION , TESTING , START-UP AND COMMISSIONING SPARE PARTS AND PACKING FOR SHIPMENT .</p> <p><b><u>1.2- PROCESS DATA</u></b></p> <hr/> <p>FLUID : NATURAL GAS.</p> <p>FLOW RATE: MIN 1.5 MMSCF/D - MAX 20 MMSCF/D.</p> <p>NORMAL FLOW RATE :- ( 2.5 - 10 ) MMSCF/D .</p> <p>HEADER SIZE : 8"X 150 RF</p> | SET  | ONE |

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| <p>METER SIZE : AS MANUFACTURER DESIGN</p> <p>NO. OF FLOW METER : FOUR ( TWO FOR LOW PRESS. &amp; TWO FOR HIGH PRESS. )</p> <p>OPERATING PRESS. : 0.2 PSIG- 7 PSIG FOR LOW PRESSURE FLARE</p> <p>7 PSIG- 42 PSIG FOR HIGH PRESSURE FLARE</p> <p>MIN . FLOW SENSING PRESS . = 0 PSIG .</p> <p>POWER SUPPLY : 200 - 240 AC</p> <p>12 - 24 VDC</p> <p>AREA CLASSIFICATION : FLAME PROOF</p> <p><b><u>1.3- INSTRUMENTATION :</u></b></p> <p>TRANSMITTERS TO BE SMART TYPE , HART WITH LOCAL INDICATORS</p> <p>ALL INSTRUMENTS SHOULD BE FLAME PROOF ENCLOSURE</p> <p><b><u>1.4-CODE AND STANDARDS</u></b></p> <p>- AMERICAN PETREUM INSTITUTE (API) .</p> <p>- AMERICAN SOCIETY FOR TESTING MATERIAL (ASTM) .</p> <p>- AMERICAN SOCITY OF MECHANICAL ENGINEERS (ASME) .</p> <p>- MANUFACTURERS STANDARDIZATION SOCIETY - STANDARD PRACTICE (MSS - SP)</p> <p><b><u>1.5-GAS COMPOSITION</u></b></p> <p>THE GAS COMPOSITION FOR NOOR AND AMMARA DEGASSING STATIONS IS SHOWN</p> |  |  |
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**FLARE GAS FLOW METER FOR NOOR & AMMARA DEG.STATIONS .**

IN THE TWO TABLES BELOW :-

S.O.C

RESEARCH AND QUALITY CONTROL DEPARTMENT  
GAS ANALYSIS SECTION  
CHROMATOGRAPHIC GAS ANALYSIS

SOURCE OF SAMPLE : NATURAL GAS FROM NOOR DEGASSING STATION .

WELLS ON STREAM : NOOR - 1,2 .

FORMATION : MISHRIF

DATE OF SAMPLING : 21.5.2009

DATE OF ANALYSIS : 21.5.2009

| STAGE NO.                          | 1st   | 2nd  | 3rd |
|------------------------------------|-------|------|-----|
| Gas pressure (Kg/Cm <sup>2</sup> ) | 10    | 4.6  | AT  |
| Gas Temperature C°                 | 40    | 40   | 40  |
| Components ( Gas Vol. % )          |       |      |     |
| Nitrogen                           | 0.81  | 0.16 |     |
| Carbon Dioxide                     | 6.21  | 7.09 |     |
| Hydrogen Sulphide                  | 0.08  | 0.1  |     |
| Methane                            | 65.4  | 47.5 |     |
| Ethane                             | 14.44 | 23.4 |     |
| Propane                            | 7.96  | 13   |     |

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|                                                    |        |       |  |
|----------------------------------------------------|--------|-------|--|
| i - Butane                                         | 0.96   | 1.68  |  |
| n - Butane                                         | 2.57   | 4.42  |  |
| i - Pentane                                        | 0.55   | 0.99  |  |
| n -Pentane                                         | 0.58   | 1.03  |  |
| Hexanes                                            | 0.43   | 0.66  |  |
| Heptanes                                           | 0.01   | 0.01  |  |
| Octanes                                            | -      | Tract |  |
| Total                                              | 100    | 100   |  |
| Gas <a href="#">Sp.Gr.Calculated@15.6</a> /15.6 C° | 0.8523 | 1.01  |  |
| Gas M.Wt Calculated                                | 24.68  | 29.3  |  |
| Density LBS/SCF                                    | 0.0649 | 0.08  |  |

Notes : 1. The concentrations of Hydrogen Sulphide were measured in Laboratory so it not represent the actual value .

2.Trace means < 0.01 Vol. % .

3. The sample of 3rd stage not content enough gas for analysis .

S.O.C

RESEARCH AND QUALITY CONTROL DEPARTMENT  
GAS ANALYSIS SECTION

CHROMATOGRAPHIC GAS ANALYSIS

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**FLARE GAS FLOW METER FOR NOOR & AMMARA DEG.STATIONS .**

SOURCE OF SAMPLE : NATURAL GAS FROM AMARA - DEGASSING STATION .

WELLS ON STREAM : AM - 3 .

FORMATION : MISHRIF

DATE OF SAMPLING : 11.05.2011

DATE OF ANALYSIS : 11.05.2011

| STAGE NO.                          | 1st stage |
|------------------------------------|-----------|
| Gas pressure (Kg/Cm <sup>2</sup> ) | 12        |
| Gas Temperature C°                 | 38        |
| Components ( Gas Vol. % )          |           |
| Nitrogen                           | 0.99      |
| Carbon Dioxide                     | 2.57      |
| Hydrogen Sulphide                  | 1.12      |
| Methane                            | 69.16     |
| Ethane                             | 14.05     |
| Propane                            | 7.1       |
| i - Butane                         | 0.9       |
| n - Butane                         | 2.27      |
| i - Pentane                        | 0.57      |
| n -Pentane                         | 0.91      |
| Hexanes                            | 0.42      |
| Heptanes                           | 0.17      |

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|                                                    |        |
|----------------------------------------------------|--------|
| Octanes                                            | 0.07   |
| Nonanes                                            | Trace  |
| Total                                              | 100    |
| Gas <a href="#">Sp.Gr.Calculated@15.6</a> /15.6 C° | 0.8131 |
| Gas M.Wt Calculated                                | 23.55  |
| Density LBS/SCF                                    | 0.0619 |

Notes : 1. The concentrations of Hydrogen Sulphide were measured in Laboratory so it not represent the actual value .

2.Trace means < 0.01 Vol. % .

1.6 - AMBIENT CONDITION

- AMBIENT TEMP . (OUTDOORS): MIN (-5)C ; MAX (60)C ;

- RELATIVE HUMIDITY : MIN (20%) , MAX (95%) .

THE FLOW METERS SHOULD BE SUITABLE TO OPERATE IN OPEN AIR WHERE SITE ENVIRONMENTAL CONDITIONS ARE CHARACTERIZED BY SAND STORM .

ATMO. PRESSURE : 1020 M bar

RAIN INTERVAL : NOVEMBER TO END OF MARCH

SNOW : NOT TO BE SEEN .

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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <p>WIND VELOCITY : 140 Km/hr .</p> <p>DESIGN WIND VELOCITY : 160 Km/hr .</p> <p><u>NOTES :</u></p> <p>1. SUPPLIER IS REQUESTED TO SUBMIT OFFER WITH FULL TECHNICAL DETAILS</p> <p>2. ALL NECESSARY DOCUMENT SHOULD BE PROVIDED .</p> <p>3. THE COUNTRY OF ORIGIN , DELIVERY PERIOD , THE VALIDITY , THE NUMBER AND THE DATE OF OFFER SHOULD BE MENTIONED .</p> <p>4.ALL EQUIPMENT SHOULD BE H<sub>2</sub>S RESISTAREE ACC. TO NACE .</p> <p>5. THE GOODS TO BE SUPPLIED TO MOC WAREHOUSE (CIP MISSAN ).</p> <p>6. THE MANUFACTURER SHOULD SUBMIT ORIGIN CERTIFICATE APPROVED BY COMMERCE &amp; INDUSTRY CHAMBER OF THE COUNTRY OF ORIGIN &amp; COMMERCIAL INVOICES , ORIGIN CERTIFICATE SHOULD AUTHENTICATED &amp; STAMPED BY IRAQI COUNCIL</p> <p><u>ORIGIN OF MATERIALS :</u></p> <p>USA , GERMANY , ITALY , FRANCE , UK , JAPAN , SWEDEN &amp; HOLLAND</p> |  |  |
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**FLARE GAS FLOW METER FOR NOOR & AMMARA DEG.STATIONS .**

استمارة الترشيح

| ITEM |      |                              |
|------|------|------------------------------|
| 1    | 80 % | المواصفات الفنية             |
| 2    | 10 % | المنشأ                       |
| 3    | 5 %  | المدة المتعلقة بتنفيذ العقد  |
| 4    | 5 %  | الأعمال المنجزة ضمن الاختصاص |