

GAS FLOWMETER

ITEM	DES	UNIT	QTY
1	1.1- SCOPE OF SUPPLY FOUR DIGITAL FLARE GAS FLOWMETERS (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 . 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 . THE FLAER GAS FLOWMETER MUST BE DESIGNED TO SOLVE A VARIETY OF DIFFICULT PROBLEMS SUCH AS PULSATING PRESSURE , UNSTEADY FLOW , VERY LOWEST FLOW RATE AND VARYING GAS COMPOSTION AND TEMPERATURE . THE FLOW METER MUST BE COMPLETED WITH PRESSURE AND TEMPERATURE TRANSMITTERS SMART HART TYPE . THE SCOPE OF SUPPLY SHOULD INCLUDE SYSTEM DESIGN , MANUFACTURE , ASSEBLY , DOCUMENTATION , INSPECTION , TESTING , START-UP AND COMMISSINING SPARE PARTS AND PACKING FOR SHIPMENT . ALL THE SYSTEM COMPONENT MUST BE ASSEBLIED AND FABRICATED ON 8'SPOOL WITH HEADER SIZE FLANGE 8' × 150 RF , ALSO THE PRESSURE AND TEMPRETURE TRANSMITTERS MUST BE CONNECTED ON THE SPOOL WITH MANUFACTURING INSPECTION AND CALIBRATION FOR ALL SYSTEM BEFOR SHIPMENT.	SET	4

	1.2- PROCESS DATA FLUID : NATURAL GAS. FLOW RATE: MIN 1.5 MMSCF/D - MAX 20 MMSCF/D. NORMAL FLOW RATE :- (2.5 - 10) MMSCF/D . HEADER SIZE : 8" X 150 RF METER SIZE : AS MANUFACTURER DESIGN METER TYPE : ULTRASONIC . NO. OF FLOWMETER : FOUR (TWO FOR LOW PRESS. & TWO FOR HIGH PRESS.) OPERATING PRESS. : 0.2 PSIG- 7 PSIG FOR LOW PRESSURE FLARE 7 PSIG- 42 PSIG FOR HIGH PRESSURE FLARE MIN . FLOW SENSING PRESS . = 0 PSIG . POWER SUPPLY : 200 - 240 AC 12 - 24 VDC AREA CLASSIFICATION : FLAME PROOF 1.3- <u>INSTRUMENTATION</u> : TRANSMITTERS TO BE SMART TYPE , HART WITH LOCAL INDICATORS ALL INSTRUMENTS SHOULD BE FLAME PROOF ENCLOSURE 1.4-CODE AND STANDARDS - AMERICAN PETREUM INSTITUTE (API) . - AMERICAN SOCIETY FOR TESTING MATERIAL (ASTM) . - AMERICAN SOCITY OF MECHANICAL ENINEERS (ASME) . - MANUFACTURERS STANDARDIZATION SOCIETY - STANDARD PRACTICE (MSS - SP)		
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	1.5-GAS COMPOSITION THE GAS COMPOSITION FOR NOOR AND AMMARA DEGASSING STATIONS IS SHOWN 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 <table><thead><tr><th>STAGE No.</th><th>1st</th><th>2nd</th><th>3rd</th></tr></thead><tbody><tr><td>Gas pressure (kg/cm2)</td><td>10</td><td>4.6</td><td>AT</td></tr><tr><td>Gas temperature C°</td><td>40</td><td>40</td><td>40</td></tr><tr><td>Components</td><td colspan="3">(Gas Vol. %)</td></tr><tr><td>Nitrogen</td><td>0.81</td><td>0.16</td><td></td></tr><tr><td>Carbon Dioxide</td><td>6.21</td><td>7.09</td><td></td></tr><tr><td>Hydrogen</td><td>0.08</td><td>0.1</td><td></td></tr></tbody></table>	STAGE No.	1st	2nd	3rd	Gas pressure (kg/cm2)	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	0.08	0.1			
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	Methane	65.4	47.5		
	Ethane	14.44	23.4		
	Propane	7.96	13		
	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	-	trace		
	Total	100	100		
	Gas Sp. Gr. Calculated @ 15.6 / 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 concntrations of Hydrogen Sulphide were measured in Laboratory so it is not					

	represent the actual value . 2. Trace means < 0.01 Vol. % . 3. The sample of 3rd stage not content enough gas for analysis .																		
	<u>S.O.C</u> RESEARCH AND QUALITY CONTROL DEPARTMENT GAS ANALYSIS SECTION <u>CHROMATOGRAPHIC GAS ANALYSIS</u> 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 <table><tr><td><u>STAGE No.</u></td><td><u>1st stage</u></td></tr><tr><td>Gas pressure (kg/cm2)</td><td>12</td></tr><tr><td>Gas temperature C°</td><td>38</td></tr><tr><td><u>Components</u></td><td>(Gas Vol. %)</td></tr><tr><td>Nitrogen</td><td>0.99</td></tr><tr><td>Carbon Dioxide</td><td>2.57</td></tr><tr><td>Hydrogen</td><td>1.12</td></tr><tr><td>Methane</td><td>69.16</td></tr></table>	<u>STAGE No.</u>	<u>1st stage</u>	Gas pressure (kg/cm2)	12	Gas temperature C°	38	<u>Components</u>	(Gas Vol. %)	Nitrogen	0.99	Carbon Dioxide	2.57	Hydrogen	1.12	Methane	69.16		
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	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		
	Octanes	0.07		
	Nonanes	trace		
	Total	100		
	Gas Sp. Gr. Calculated @ 15.6 / 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 is 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 FLOWMETERS 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 . WIND VELOCITY : 140 km/hr . DESIGN WIND VELOCITY : 160 km/hr . <u>NOTES :</u> 1- SUPPLIER IS REQUESTED TO SUBMIT OFFER WITH FULL TECHNICAL DETAILS . 2- ALL NECSSARY DOCUMENT SHOULD BE PROVIDED . 3- THE CERTIFICATE OF THE INSPECTION TEST MUST BE SUBMITTED 4-THE START-UP & COMMITIONING MUST BE CARRIED OUT BY THE SUPPLIER. 5- THE ACCURACY AND THE FLOW RATE RANGE MUST BE DETERMINED BASED ON PIPE SIZE 8" 6- THE SPARE PART LIST MUST BE SUBMITTED AND MUST BE CONTAINED ON THE MAIN PARTS SUCH AS COMPLETE ULTRASONIC TRANSDUCER. 7- THE COUNTRY OF ORIGIN , DELIVERY PERIOD , THE VALIDITY , THE NUMBER AND THE DATE OF OFFER SHOULD BE MENTIONED . 8- ALL EQUIPMENT SHOULD BE H2S RESISTAREE ACC.TO NACE. 9-THE GOODS TO BE SUPPLIED TO MOC WAREHOUSE (CIP MISSAN).		

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		10- THE MANUFACTURER SHOULD SUBMITT ORIGIN CERTIFICATE APPROVED BY COMMERCE & INDUSTRY CHAMBER OF THE COUNTRY OF ORIGIN & COMMERCIAL INVOICES , ORIGIN CERTIFICATE SHOULD AUTHENTICATED & STAMPED BY IRAQI COUNCIL . <u>ORIGIN OF MATERIALS:</u> USA , GERMANY , ITALY, FRANCE , UK, JAPAN, SWEDEN , HOLLAND & NORWAY.		
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GAS FLOWMETER .

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