

## Certificate of Calibration

Al Takamul Yard, North Rumailah South Iraq

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**Date of Issue:**

May 26, 2024

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REF NUMBER	: By Contract	APPROVED BY CALIBRATION CHARGE QC
Job No #	: QC/JN/24/00224	
CERTIFICATE NUMBER	: <b>QC240526-01</b>	

**CUSTOMER DETAILS**

Name : **Halliburton Worldwide IRAQ (Sperry)**  
 Address : Basra - Iraq ( ZPEC Rig-25 )

**EQUIPMENT IDENTIFICATION AND SPECIFICATIONS**

Description : **10 Fixed Gas Sensors**  
 Type : Digital  
 Calibrated Range : 40 PPM H2S                      50% LEL  
 Calibrated By : Asjad Rafiq  
 Calibration Date : May 26, 2024  
 Calibration Due : **August 25, 2024**  
 Location : ZPEC25



Serial Number	Sensor Type	Location	Manufacturer	Model
A20-401750165-10-001	LEL	Cellar	MSA	Ultima XE
A17-400767645-10-013	LEL	Shale Shaker	MSA	Ultima XE
J17-401011572-10-001	LEL	Rig Floor	MSA	Ultima XE
A20-401750165-10-008	LEL	Bell Nipple	MSA	Ultima XE
D19-401486482-10-003	H2S	Cellar	MSA	Ultima XE
L16-401486486-10-010	H2S	Shale Shaker	MSA	Ultima XE
W351716-013	H2S	Rig Floor	CROWNCON	XGARD BRIGHT
K19-401702086-10-003	H2S	Bell Nipple	MSA	Ultima XE
G19-401578793-10-003	LEL	Spare	MSA	Ultima XE
K19-401702086-10-018	H2S	Spare	MSA	Ultima XE

**ENVIRONMENTAL CONDITIONS DURING TEST**

Ambient Temperature : 38 °C ± 2 °C  
 Relative Humidity : 20 %RH ± 5 %RH

**CALIBRATION METHOD**

Reference cylinders consisting of gases LEL & H2S is used , which are detected by gas detector by diffusion.

**TRACEABILITY**

The measurements made by Quality Control, realize the physical units of measurements (SI), through its state of the art calibration standards that are controlled and maintained by QC.

**REFERENCE EQUIPMENT USED :**

DESCRIPTION	SERIAL NO.	Make	Valid Until
Calibration Gas Cylinder (40PPM H2S)	555895	Gulf Cryo	25-Dec-2024
Calibration Gas Cylinder (50% LEL)	140135	Bristol	18-Oct-2024

**CALIBRATION TEST RESULTS**

Applied Gas	Values of UUC	Values on Reference Standard	Error in Reading of UUC	Uncertainty of Measurement
Methane(LEL)% (Cellar)	50.0	50	0.0	± 1
Methane(LEL)% (Rig Floor)	49.0	50	-1.0	± 1
Methane(LEL)% (Shale Shaker)	51.0	50	1.0	± 1
Methane(LEL)% ( Bell Nipple)	50.0	50	0.0	± 1
H2S PPM (Cellar)	39.0	40	-1.0	± 1
H2S PPM (Rig Floor)	40.0	40	0.0	± 1
H2S PPM (Shale Shaker)	39.8	40	-0.2	± 1
H2S PPM ( Bell Nipple)	40.2	40	0.2	± 1
Methane(LEL)% (Spare)	50.0	50	0.0	± 1
H2S PPM (Spare)	40.1	40	0.1	± 1