

## Certificate of Calibration

Al Takamul Yard, North Rumailah South Iraq

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**Date of Issue:**

September 10, 2024

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|                    |                  |                                         |
|--------------------|------------------|-----------------------------------------|
| REF NUMBER         | : By Contract    | APPROVED BY CALIBRATION LAB INCHARGE QC |
| Job No #           | : QC/JN/24/00347 |                                         |
| CERTIFICATE NUMBER | : QC240910-01    |                                         |

**CUSTOMER DETAILS**

Name: **Halliburton Worldwide IRAQ (Sperry) HH029**  
 Address: **Western Burjesia, Oil Street, District Zubair-South Iraq**

**EQUIPMENT IDENTIFICATION AND SPECIFICATIONS**

Description: **10 Gas Sensors**  
 Type: **Digital**  
 Calibrated Range: **40 PPM H2S 50% LEL**  
 Calibrated By: **Hussein Alaa**  
 Calibration Date: **September 10, 2024**  
 Calibration Due: **December 9, 2024**



| Serial Number        | Sensor Type | Manufacturer | Model     |
|----------------------|-------------|--------------|-----------|
| D19-401486482-10-001 | H2S         | MSA          | Ultima XE |
| D19-401486482-10-009 | H2S         | MSA          | Ultima XE |
| B22-402321480-10-006 | H2S         | MSA          | Ultima XE |
| D19-401486482-10-012 | H2S         | MSA          | Ultima XE |
| K21-402321477-10-010 | H2S         | MSA          | Ultima XE |
| G15-400275617-01-005 | LEL         | MSA          | Ultima XE |
| B18-401094266-10-004 | LEL         | MSA          | Ultima XE |
| A20-401750165-10-010 | LEL         | MSA          | Ultima XE |
| A20-401750165-10-009 | LEL         | MSA          | Ultima XE |
| A20-401750165-10-001 | LEL         | MSA          | Ultima XE |
| A17-400767645-10-012 | LEL         | MSA          | Ultima XE |

**ENVIRONMENTAL CONDITIONS DURING TEST**

Ambient Temperature : 34 °C ± 2 °C  
 Relative Humidity : 30 %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) | 555894     | Gulf Cryo | 25-Dec-2024 |
| Calibration Gas Cylinder (50% LEL)   | 140188     | Bristol   | 26-Oct-2024 |

**CALIBRATION TEST RESULTS**

| Applied Gas   | Values of UUC | Values on Reference Standard | Error in Reading of UUC | Uncertainty of Measurement |
|---------------|---------------|------------------------------|-------------------------|----------------------------|
| Methane(LEL)% | 50.0          | 50                           | 0.0                     | ± 1                        |
| Methane(LEL)% | 50.0          | 50                           | 0.0                     | ± 1                        |
| Methane(LEL)% | 49.0          | 50                           | -1.0                    | ± 1                        |
| Methane(LEL)% | 50.0          | 50                           | 0.0                     | ± 1                        |
| Methane(LEL)% | 50.0          | 50                           | 0.0                     | ± 1                        |
| Methane(LEL)% | 50.0          | 50                           | 0.0                     | ± 1                        |
| H2S PPM       | 39.5          | 40                           | -0.5                    | ± 1                        |
| H2S PPM       | 40.0          | 40                           | 0.0                     | ± 1                        |
| H2S PPM       | 40.2          | 40                           | 0.2                     | ± 1                        |
| H2S PPM       | 40.0          | 40                           | 0.0                     | ± 1                        |
| H2S PPM       | 39.9          | 40                           | -0.1                    | ± 1                        |