

# AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED

Basra, North Rumaila, Quality Control Yard - Iraq



## CERTIFICATE OF QUALIFICATION VISUAL AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING INSPECTION & PRESSURE TEST

THIS REPORT COMPLIES WITH RECOGNIZED INTERNATIONAL STANDARDS & TECHNICAL REQUIREMENTS

|                     |   |                 |   |
|---------------------|---|-----------------|---|
| CLIENT:             | <b>HALLIBURTON</b>  | REPORT No.:     | QC-24-01-TSS-004-NDT-001  |
| LOCATION:           | <b>TSS WORKSHOP &amp; INSPECTION TEST AREA</b>  | STANDARD:       | ASTM E709 & ASTM E797 & ASME SECTION V ARTICLE 5,10 & 27 & ASME B31.1 |
| WORK ORDER #        | 326104072   | SPECIFICATION:  | Halliburton Acceptance Criteria<br>H2S STANDARD NACE MQ-01-76         |
| DATE OF INSP:       | 13-Jan-2024   | INSP. DUE DATE: | <b>12-Jan-2025</b>  |
| TYPE OF INSPECTION: | <b>VISUAL INSPECTION, PRESSURE TEST AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING</b> |                 |   |

|               |                         |                  |            |
|---------------|-------------------------|------------------|------------|
| DESCRIPTION:  | GATE VALVE: 3 1/16" 10K | CHOKE MANIFOLD # | 12405205   |
| MANUFACTURER: | WOM                     | SERIAL NO:       | 10114275-1 |

### INSPECTION DETAILS

|                        |                            |                     |                          |
|------------------------|----------------------------|---------------------|--------------------------|
| Max. Working Pressure: | 10,000 PSI                 | Holding Time:       | 15 Min                   |
| Low pressure:          | 300 PSI                    | Holding Time:       | 05 Min                   |
| Pump S.N.:             | 13119220 Cal DUE. AUG.2024 | Pressure Gauge NO.: | 468066 Cal DUE. AUG.2024 |

(a) Normal condition  
Underside (b) Corrosion present on back surface. Reflection echo become wide small by diffused reflection caused by corroded scabrous surface.

SECTION-1  
SECTION-2  
SECTION-3

A:12'O CLOCK / FORWARD  
B:3'O CLOCK / CENTER  
C:6'O CLOCK / AFT

\* ALL READINGS IN INCH  
\*\*MINIMUM THICKNESS PROVIDED BY CUSTMER

ONLINE TRACEABILITY

| POINTS | THICKNESS AT POSITION |             |           |           | MINIMUM THICKNESS |           |           |
|--------|-----------------------|-------------|-----------|-----------|-------------------|-----------|-----------|
|        | SECTION-1 A           | SECTION-1 B | SECTION-2 | SECTION-3 | SECTION-1         | SECTION-2 | SECTION-3 |
| 0°     | 1.210                 | 1.181       | 1.945     | 2.076     | 1.060             | 1.450     | 1.250     |
| 90°    | 1.187                 | 1.168       | 1.923     | 2.056     | 1.060             | 1.450     | 1.250     |
| 180°   | 1.213                 | 1.191       | 1.951     | 2.068     | 1.060             | 1.450     | 1.250     |
| 270°   | 1.180                 | 1.174       | 1.887     | 2.045     | 1.060             | 1.450     | 1.250     |

### INSPECTION RESULT

|          |          |   |
|----------|----------|---|
| VT & MPI | Accepted | * ACCORDING TO ASTM E709(70.94158).   |
| UT       | Accepted | According to Halliburton Procedure (H2S STANDERD NACE MQ-01-76) ASME SECTION V ARTICLE 5 (ASTM E 797) |
| BODY     | Accepted | *** These Are The Actual Readings Need To Follow As Per Halliburton Acceptance Criteria               |

### Inspection Evaluation

(MPI) The Above Item Has No Significant Discontinuous At The Time Of Inspection And Found Acceptable Accordance To The Halliburton Specification ASTM E709 (70.94158)

U.T-The Above Item Was Found Acceptable As Per Halliburton Procedure H2S STANDARD NACE MQ-01-76 ASME SECTION V ARTICLE 5 (ASTM E 797)

Pressure Test-The Above Item was Pressure Tested up to 300 PSI A low Pressure Hold for 5 min And Maximum Working pressure 10.000 psi Hold 15 min no Leak was Realized while testing & Pressure Was Stable Accordance To Chart Recorder Attached

### INSPECTION EQUIPMENT DETAILS

### TECHNICAL DETAILS

|                               |           |              |           |                              |              |          |                      |
|-------------------------------|-----------|--------------|-----------|------------------------------|--------------|----------|----------------------|
| AC YOKE S.N:                  | 201504048 | CAL DUE DATE | 14-Feb-24 | White Contrast WCP 2         | MANUFACTUR E | BATCH NO | EXPIRE DATE          |
| Digital Lux Meter WHITE LIGHT | 2722003   | CAL DUE DATE | 16-Feb-24 | Black Magnetic Ink 7HF       | MANUFAC TURE | BATCH NO | EXPIRE DATE          |
| UT THICKNESS GAUGE:           | 3997      | CAL DUE DATE | 16-Feb-24 | Fluorescent Magnetic Ink 7HF | Magnaflux    | 220605   | JULY.2025            |
| UT TEST BLOCK:                | NoBo5087  | CAL DUE DATE | 16-Feb-24 |                              |              |          |                      |
| ASTM Test Block:              | 1657      | CAL DUE DATE | 14-Feb-24 |                              |              |          |                      |
| WHITE LIGHT INTENSITY:        | 3670 lux  |              |           |                              |              |          | 1.2 to 2.4 ml/100 ml |

### PERSON DETAILS

|                    |                              |                        |                |         |  |
|--------------------|------------------------------|------------------------|----------------|---------|--|
| INSPECTOR NAME:    | M.Shahzad Ali                | SENIOR INSPECTOR:      | NAVEED HUSSAIN | CLIENT: |  |
| QUALIFICATION:     | ISO 9001, ISO 14001, UT, VT, | INSPECTION SUPERVISOR: | HANI ALI       | HB&SIGN |  |
| SIGNATURE & STAMP: |                              |                        |                | DATE:   |  |

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# AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED

Basra, North Rumaila, Quality Control Yard - Iraq



## CERTIFICATE OF QUALIFICATION VISUAL AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING INSPECTION & PRESSURE TEST

THIS REPORT COMPLIES WITH RECOGNIZED INTERNATIONAL STANDARDS & TECHNICAL REQUIREMENTS

|                     |   |                 |   |
|---------------------|---|-----------------|---|
| CLIENT:             | <b>HALLIBURTON</b>  | REPORT No.:     | QC-24-01-TSS-004-NDT-002  |
| LOCATION:           | <b>TSS WORKSHOP &amp; INSPECTION TEST AREA</b>  | STANDARD:       | ASTM E709 & ASTM E797 & ASME SECTION V ARTICLE 5,10 & 27 & ASME B31.1 |
| WORK ORDER #        | 326104072   | SPECIFICATION:  | Halliburton Acceptance Criteria<br>H2S STANDARD NACE MQ-01-76         |
| DATE OF INSP:       | 13-Jan-2024   | INSP. DUE DATE: | <b>12-Jan-2025</b>  |
| TYPE OF INSPECTION: | <b>VISUAL INSPECTION, PRESSURE TEST AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING</b> |                 |   |

|               |                         |                  |            |
|---------------|-------------------------|------------------|------------|
| DESCRIPTION:  | GATE VALVE: 3 1/16" 10K | CHOKE MANIFOLD # | 12405205   |
| MANUFACTURER: | WOM                     | SERIAL NO:       | 10114275-2 |

### INSPECTION DETAILS

|                        |                            |                     |                          |
|------------------------|----------------------------|---------------------|--------------------------|
| Max. Working Pressure: | 10,000 PSI                 | Holding Time:       | 15 Min                   |
| Low pressure:          | 300 PSI                    | Holding Time:       | 05 Min                   |
| Pump S.N.:             | 13119220 Cal DUE. AUG.2024 | Pressure Gauge NO.: | 468066 Cal DUE. AUG.2024 |

(a) Normal condition  
Underside (b) Corrosion present on back surface. Reflection echo become wide small by diffused reflection caused by corroded scabrous surface.

SECTION-1  
SECTION-2  
SECTION-3

0  
90  
180  
270

A:12'O CLOCK / FORWARD  
B:3'O CLOCK / CENTER  
C:6'O CLOCK / AFT

\* ALL READINGS IN INCH  
\*\*MINIMUM THICKNESS PROVIDED BY CUSTMER

ONLINE TRACEABILITY

| POINTS | THICKNESS AT POSITION |             |           |           | MINIMUM THICKNESS |           |           |
|--------|-----------------------|-------------|-----------|-----------|-------------------|-----------|-----------|
|        | SECTION-1 A           | SECTION-1 B | SECTION-2 | SECTION-3 | SECTION-1         | SECTION-2 | SECTION-3 |
| 0°     | 1.217                 | 1.178       | 1.912     | 2.078     | 1.060             | 1.450     | 1.250     |
| 90°    | 1.187                 | 1.192       | 1.882     | 2.106     | 1.060             | 1.450     | 1.250     |
| 180°   | 1.225                 | 1.187       | 1.867     | 2.032     | 1.060             | 1.450     | 1.250     |
| 270°   | 1.236                 | 1.212       | 1.891     | 2.025     | 1.060             | 1.450     | 1.250     |

### INSPECTION RESULT

|          |          |   |
|----------|----------|---|
| VT & MPI | Accepted | * ACCORDING TO ASTM E709(70.94158).   |
| UT       | Accepted | According to Halliburton Procedure (H2S STANDERD NACE MQ-01-76) ASME SECTION V ARTICLE 5 (ASTM E 797) |
| BODY     | Accepted | *** These Are The Actual Readings Need To Follow As Per Halliburton Acceptance Criteria               |

### Inspection Evaluation

**(MPI)** The Above Item Has No Significant Discontinuous At The Time Of Inspection And Found Acceptable Accordance To The Halliburton Specification ASTM E709 (70.94158)  
**U.T**-The Above Item Was Found Acceptable As Per Halliburton Procedure H2S STANDARD NACE MQ-01-76 ASME SECTION V ARTICLE 5 (ASTM E 797)  
**Pressure Test**-The Above Item was Pressure Tested up to 300 PSI A low Pressure Hold for 5 min And Maximum Working pressure 10.000 psi Hold 15 min no Leak was Realized while testing & Pressure Was Stable Accordance To Chart Recorder Attached

### INSPECTION EQUIPMENT DETAILS

### TECHNICAL DETAILS

|                               |           |              |           |                              |              |          |                      |
|-------------------------------|-----------|--------------|-----------|------------------------------|--------------|----------|----------------------|
| AC YOKE S.N:                  | 201504048 | CAL DUE DATE | 14-Feb-24 | White Contrast WCP 2         | MANUFACTUR E | BATCH NO | EXPIRE DATE          |
| Digital Lux Meter WHITE LIGHT | 2722003   | CAL DUE DATE | 16-Feb-24 | Black Magnetic Ink 7HF       | MANUFAC TURE | BATCH NO | EXPIRE DATE          |
| UT THICKNESS GAUGE:           | 3997      | CAL DUE DATE | 16-Feb-24 | Fluorescent Magnetic Ink 7HF | Magnaflux    | 220605   | JULY.2025            |
| UT TEST BLOCK:                | NoBo5087  | CAL DUE DATE | 16-Feb-24 |                              |              |          |                      |
| ASTM Test Block:              | 1657      | CAL DUE DATE | 14-Feb-24 |                              |              |          |                      |
| WHITE LIGHT INTENSITY:        | 3670 lux  |              |           |                              |              |          | 1.2 to 2.4 ml/100 ml |

### PERSON DETAILS

|                    |                              |                        |                |         |  |
|--------------------|------------------------------|------------------------|----------------|---------|--|
| INSPECTOR NAME:    | M.Shahzad Ali                | SENIOR INSPECTOR:      | NAVEED HUSSAIN | CLIENT: |  |
| QUALIFICATION:     | ISO 9001, ISO 14001, UT, VT, | INSPECTION SUPERVISOR: | HANI ALI       | HB&SIGN |  |
| SIGNATURE & STAMP: |                              |                        |                | DATE:   |  |

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# AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED

Basra, North Rumaila, Quality Control Yard - Iraq



## CERTIFICATE OF QUALIFICATION VISUAL AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING INSPECTION & PRESSURE TEST

THIS REPORT COMPLIES WITH RECOGNIZED INTERNATIONAL STANDARDS & TECHNICAL REQUIREMENTS

|                     |   |                 |   |
|---------------------|---|-----------------|---|
| CLIENT:             | <b>HALLIBURTON</b>  | REPORT No.:     | QC-24-01-TSS-004-NDT-003  |
| LOCATION:           | <b>TSS WORKSHOP &amp; INSPECTION TEST AREA</b>  | STANDARD:       | ASTM E709 & ASTM E797 & ASME SECTION V ARTICLE 5,10 & 27 & ASME B31.1 |
| WORK ORDER #        | 326104072   | SPECIFICATION:  | Halliburton Acceptance Criteria<br>H2S STANDARD NACE MQ-01-76         |
| DATE OF INSP:       | 13-Jan-2024   | INSP. DUE DATE: | <b>12-Jan-2025</b>  |
| TYPE OF INSPECTION: | <b>VISUAL INSPECTION, PRESSURE TEST AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING</b> |                 |   |

|               |                         |                  |            |
|---------------|-------------------------|------------------|------------|
| DESCRIPTION:  | GATE VALVE: 3 1/16" 10K | CHOKE MANIFOLD # | 12405205   |
| MANUFACTURER: | WOM                     | SERIAL NO:       | 10114275-3 |

### INSPECTION DETAILS

|                        |                            |                     |                          |
|------------------------|----------------------------|---------------------|--------------------------|
| Max. Working Pressure: | 10,000 PSI                 | Holding Time:       | 15 Min                   |
| Low pressure:          | 300 PSI                    | Holding Time:       | 05 Min                   |
| Pump S.N.:             | 13119220 Cal DUE. AUG.2024 | Pressure Gauge NO.: | 468066 Cal DUE. AUG.2024 |

(a) Normal condition  
Underside (b) Corrosion present on back surface. Reflection echo become wide small by diffused reflection caused by corroded scabrous surface.

SECTION-1  
SECTION-2  
SECTION-3

A: 12'O CLOCK / FORWARD  
B: 3'O CLOCK / CENTER  
C: 6'O CLOCK / AFT

\* ALL READINGS IN INCH  
\*\*MINIMUM THICKNESS PROVIDED BY CUSTMER

ONLINE TRACEABILITY

| POINTS | THICKNESS AT POSITION |             |           |           | MINIMUM THICKNESS |           |           |
|--------|-----------------------|-------------|-----------|-----------|-------------------|-----------|-----------|
|        | SECTION-1 A           | SECTION-1 B | SECTION-2 | SECTION-3 | SECTION-1         | SECTION-2 | SECTION-3 |
| 0°     | 1.231                 | 1.188       | 1.892     | 2.079     | 1.060             | 1.450     | 1.250     |
| 90°    | 1.198                 | 1.197       | 1.911     | 2.076     | 1.060             | 1.450     | 1.250     |
| 180°   | 1.179                 | 1.232       | 1.867     | 2.078     | 1.060             | 1.450     | 1.250     |
| 270°   | 1.215                 | 1.187       | 1.859     | 2.035     | 1.060             | 1.450     | 1.250     |

### INSPECTION RESULT

|          |          |   |
|----------|----------|---|
| VT & MPI | Accepted | * ACCORDING TO ASTM E709(70.94158).   |
| UT       | Accepted | According to Halliburton Procedure (H2S STANDERD NACE MQ-01-76) ASME SECTION V ARTICLE 5 (ASTM E 797) |
| BODY     | Accepted | *** These Are The Actual Readings Need To Follow As Per Halliburton Acceptance Criteria               |

### Inspection Evaluation

**(MPI)** The Above Item Has No Significant Discontinuous At The Time Of Inspection And Found Acceptable Accordance To The Halliburton Specification ASTM E709 (70.94158)  
**U.T**-The Above Item Was Found Acceptable As Per Halliburton Procedure H2S STANDARD NACE MQ-01-76 ASME SECTION V ARTICLE 5 (ASTM E 797)  
**Pressure Test**-The Above Item was Pressure Tested up to 300 PSI A low Pressure Hold for 5 min And Maximum Working pressure 10.000 psi Hold 15 min no Leak was Realized while testing & Pressure Was Stable Accordance To Chart Recorder Attached

### INSPECTION EQUIPMENT DETAILS

### TECHNICAL DETAILS

|                               |           |              |           |                              |              |          |                      |
|-------------------------------|-----------|--------------|-----------|------------------------------|--------------|----------|----------------------|
| AC YOKE S.N:                  | 201504048 | CAL DUE DATE | 14-Feb-24 | White Contrast WCP 2         | MANUFACTUR E | BATCH NO | EXPIRE DATE          |
| Digital Lux Meter WHITE LIGHT | 2722003   | CAL DUE DATE | 16-Feb-24 | Black Magnetic Ink 7HF       | MANUFAC TURE | BATCH NO | EXPIRE DATE          |
| UT THICKNESS GAUGE:           | 3997      | CAL DUE DATE | 16-Feb-24 | Fluorescent Magnetic Ink 7HF | Magnaflux    | 220605   | JULY.2025            |
| UT TEST BLOCK:                | NoBo5087  | CAL DUE DATE | 16-Feb-24 |                              |              |          |                      |
| ASTM Test Block:              | 1657      | CAL DUE DATE | 14-Feb-24 |                              |              |          |                      |
| WHITE LIGHT INTENSITY:        | 3670 lux  |              |           |                              |              |          | 1.2 to 2.4 ml/100 ml |

### PERSON DETAILS

|                    |                              |                        |                |         |  |
|--------------------|------------------------------|------------------------|----------------|---------|--|
| INSPECTOR NAME:    | M. Shahzad Ali               | SENIOR INSPECTOR:      | NAVEED HUSSAIN | CLIENT: |  |
| QUALIFICATION:     | ISO 9001, ISO 14001, UT, VT, | INSPECTION SUPERVISOR: | HANI ALI       | HB&SIGN |  |
| SIGNATURE & STAMP: |                              |                        |                | DATE:   |  |

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**AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED**

Basra, North Rumaila, Quality Control Yard - Iraq



**CERTIFICATE OF QUALIFICATION VISUAL AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING INSPECTION & PRESSURE TEST**  
THIS REPORT COMPLIES WITH RECOGNIZED INTERNATIONAL STANDARDS & TECHNICAL REQUIREMENTS

|                     |   |                 |   |
|---------------------|---|-----------------|---|
| CLIENT:             | <b>HALLIBURTON</b>  | REPORT No.:     | QC-24-01-TSS-004-NDT-004  |
| LOCATION:           | <b>TSS WORKSHOP &amp; INSPECTION TEST AREA</b>  | STANDARD:       | ASTM E709 & ASTM E797 & ASME SECTION V ARTICLE 5,10 & 27 & ASME B31.1 |
| WORK ORDER #        | 326104072   | SPECIFICATION:  | Halliburton Acceptance Criteria<br>H2S STANDARD NACE MQ-01-76         |
| DATE OF INSP:       | 13-Jan-2024   | INSP. DUE DATE: | <b>12-Jan-2025</b>  |
| TYPE OF INSPECTION: | <b>VISUAL INSPECTION, PRESSURE TEST AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING</b> |                 |   |

|               |                         |                  |            |
|---------------|-------------------------|------------------|------------|
| DESCRIPTION:  | GATE VALVE: 3 1/16" 10K | CHOKE MANIFOLD # | 12405205   |
| MANUFACTURER: | WOM                     | SERIAL NO:       | 10114275-4 |

**INSPECTION DETAILS**

|                        |                            |                     |                          |
|------------------------|----------------------------|---------------------|--------------------------|
| Max. Working Pressure: | 10,000 PSI                 | Holding Time:       | 15 Min                   |
| Low pressure:          | 300 PSI                    | Holding Time:       | 05 Min                   |
| Pump S.N.:             | 13119220 Cal DUE. AUG.2024 | Pressure Gauge NO.: | 468066 Cal DUE. AUG.2024 |

(a) Normal condition  
Underside (b) Corrosion present on back surface. Reflection echo become wide small by diffused reflection caused by corroded scabrous surface.

SECTION-1  
SECTION-2  
SECTION-3

A:12'O CLOCK / FORWARD  
B:3'O CLOCK / CENTER  
C:6'O CLOCK / AFT

\* ALL READINGS IN INCH  
\*\*MINIMUM THICKNESS PROVIDED BY CUSTMER

ONLINE TRACEABILITY

| POINTS | THICKNESS AT POSITION |             |           |           | MINIMUM THICKNESS |           |           |
|--------|-----------------------|-------------|-----------|-----------|-------------------|-----------|-----------|
|        | SECTION-1 A           | SECTION-1 B | SECTION-2 | SECTION-3 | SECTION-1         | SECTION-2 | SECTION-3 |
| 0°     | 1.234                 | 1.192       | 1.934     | 2.036     | 1.060             | 1.450     | 1.250     |
| 90°    | 1.217                 | 1.214       | 1.847     | 2.067     | 1.060             | 1.450     | 1.250     |
| 180°   | 1.192                 | 1.234       | 1.887     | 2.087     | 1.060             | 1.450     | 1.250     |
| 270°   | 1.187                 | 1.219       | 1.854     | 2.057     | 1.060             | 1.450     | 1.250     |

**INSPECTION RESULT**

|          |          |   |
|----------|----------|---|
| VT & MPI | Accepted | * ACCORDING TO ASTM E709(70.94158).   |
| UT       | Accepted | According to Halliburton Procedure (H2S STANDERD NACE MQ-01-76) ASME SECTION V ARTICLE 5 (ASTM E 797) |
| BODY     | Accepted | *** These Are The Actual Readings Need To Follow As Per Halliburton Acceptance Criteria               |

**Inspection Evaluation**

**(MPI)** The Above Item Has No Significant Discontinuous At The Time Of Inspection And Found Acceptable Accordance To The Halliburton Specification ASTM E709 (70.94158)  
**U.T**-The Above Item Was Found Acceptable As Per Halliburton Procedure H2S STANDARD NACE MQ-01-76 ASME SECTION V ARTICLE 5 (ASTM E 797)  
**Pressure Test**-The Above Item was Pressure Tested up to 300 PSI A low Pressure Hold for 5 min And Maximum Working pressure 10.000 psi Hold 15 min no Leak was Realized while testing & Pressure Was Stable Accordance To Chart Recorder Attached

**INSPECTION EQUIPMENT DETAILS**

**TECHNICAL DETAILS**

|                               |           |              |           |                              |              |          |                      |
|-------------------------------|-----------|--------------|-----------|------------------------------|--------------|----------|----------------------|
| AC YOKE S.N:                  | 201504048 | CAL DUE DATE | 14-Feb-24 | White Contrast WCP 2         | MANUFACTURER | BATCH NO | EXPIRE DATE          |
| Digital Lux Meter WHITE LIGHT | 2722003   | CAL DUE DATE | 16-Feb-24 | Black Magnetic Ink 7HF       | Magnaflux    | 220602   | JUN,2025             |
| UT THICKNESS GAUGE:           | 3997      | CAL DUE DATE | 16-Feb-24 | Fluorescent Magnetic Ink 7HF | MANUFACTURE  | BATCH NO | EXPIRE DATE          |
| UT TEST BLOCK:                | NoBo5087  | CAL DUE DATE | 16-Feb-24 |                              | Magnaflux    | 220605   | JULY,2025            |
| ASTM Test Block:              | 1657      | CAL DUE DATE | 14-Feb-24 |                              |              |          |                      |
| WHITE LIGHT INTENSITY:        | 3670 lux  |              |           |                              |              |          | 1.2 to 2.4 ml/100 ml |

**PERSON DETAILS**

|                    |                              |                        |                |         |  |
|--------------------|------------------------------|------------------------|----------------|---------|--|
| INSPECTOR NAME:    | M.Shahzad Ali                | SENIOR INSPECTOR:      | NAVEED HUSSAIN | CLIENT: |  |
| QUALIFICATION:     | ISO 9001, ISO 14001, UT, VT, | INSPECTION SUPERVISOR: | HANI ALI       | HB&SIGN |  |
| SIGNATURE & STAMP: |                              |                        |                | DATE:   |  |

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Basra, North Rumaila, Quality Control Yard - Iraq



## CERTIFICATE OF QUALIFICATION VISUAL AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING INSPECTION & PRESSURE TEST

THIS REPORT COMPLIES WITH RECOGNIZED INTERNATIONAL STANDARDS & TECHNICAL REQUIREMENTS

|                     |   |                 |   |
|---------------------|---|-----------------|---|
| CLIENT:             | <b>HALLIBURTON</b>  | REPORT No.:     | QC-24-01-TSS-004-NDT-005  |
| LOCATION:           | <b>TSS WORKSHOP &amp; INSPECTION TEST AREA</b>  | STANDARD:       | ASTM E709 & ASTM E797 & ASME SECTION V ARTICLE 5,10 & 27 & ASME B31.1 |
| WORK ORDER #        | 326104072   | SPECIFICATION:  | Halliburton Acceptance Criteria<br>H2S STANDARD NACE MQ-01-76         |
| DATE OF INSP:       | 13-Jan-2024   | INSP. DUE DATE: | <b>12-Jan-2025</b>  |
| TYPE OF INSPECTION: | <b>VISUAL INSPECTION, PRESSURE TEST AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING</b> |                 |   |

|               |                         |                  |            |
|---------------|-------------------------|------------------|------------|
| DESCRIPTION:  | GATE VALVE: 3 1/16" 10K | CHOKE MANIFOLD # | 12405205   |
| MANUFACTURER: | WOM                     | SERIAL NO:       | 10114275-5 |

### INSPECTION DETAILS

|                        |                            |                     |                          |
|------------------------|----------------------------|---------------------|--------------------------|
| Max. Working Pressure: | 10,000 PSI                 | Holding Time:       | 15 Min                   |
| Low pressure:          | 300 PSI                    | Holding Time:       | 05 Min                   |
| Pump S.N.:             | 13119220 Cal DUE. AUG.2024 | Pressure Gauge NO.: | 468066 Cal DUE. AUG.2024 |

(a) Normal condition  
Underside (b) Corrosion present on back surface. Reflection echo become wide small by diffused reflection caused by corroded scabrous surface.

SECTION-1  
SECTION-2  
SECTION-3

0  
90  
180  
270

A:12'O CLOCK / FORWARD  
B:3'O CLOCK / CENTER  
C:6'O CLOCK / AFT

\* ALL READINGS IN INCH  
\*\*MINIMUM THICKNESS PROVIDED BY CUSTMER

ONLINE TRACEABILITY

| POINTS | THICKNESS AT POSITION |             |           |           | MINIMUM THICKNESS |           |           |
|--------|-----------------------|-------------|-----------|-----------|-------------------|-----------|-----------|
|        | SECTION-1 A           | SECTION-1 B | SECTION-2 | SECTION-3 | SECTION-1         | SECTION-2 | SECTION-3 |
| 0°     | 1.197                 | 1.211       | 1.961     | 2.096     | 1.060             | 1.450     | 1.250     |
| 90°    | 1.208                 | 1.228       | 1.847     | 2.066     | 1.060             | 1.450     | 1.250     |
| 180°   | 1.178                 | 1.189       | 1.887     | 2.078     | 1.060             | 1.450     | 1.250     |
| 270°   | 1.192                 | 1.207       | 1.922     | 2.035     | 1.060             | 1.450     | 1.250     |

### INSPECTION RESULT

|          |          |   |
|----------|----------|---|
| VT & MPI | Accepted | * ACCORDING TO ASTM E709(70.94158).   |
| UT       | Accepted | According to Halliburton Procedure (H2S STANDERD NACE MQ-01-76) ASME SECTION V ARTICLE 5 (ASTM E 797) |
| BODY     | Accepted | *** These Are The Actual Readings Need To Follow As Per Halliburton Acceptance Criteria               |

### Inspection Evaluation

(MPI) The Above Item Has No Significant Discontinuous At The Time Of Inspection And Found Acceptable Accordance To The Halliburton Specification ASTM E709 (70.94158)

U.T-The Above Item Was Found Acceptable As Per Halliburton Procedure H2S STANDARD NACE MQ-01-76 ASME SECTION V ARTICLE 5 (ASTM E 797)

Pressure Test-The Above Item was Pressure Tested up to 300 PSI A low Pressure Hold for 5 min And Maximum Working pressure 10.000 psi Hold 15 min no Leak was Realized while testing & Pressure Was Stable Accordance To Chart Recorder Attached

### INSPECTION EQUIPMENT DETAILS

### TECHNICAL DETAILS

|                               |           |              |           |                              |              |                      |             |
|-------------------------------|-----------|--------------|-----------|------------------------------|--------------|----------------------|-------------|
| AC YOKE S.N:                  | 201504048 | CAL DUE DATE | 14-Feb-24 | White Contrast WCP 2         | MANUFACTUR E | BATCH NO             | EXPIRE DATE |
| Digital Lux Meter WHITE LIGHT | 2722003   | CAL DUE DATE | 16-Feb-24 | Black Magnetic Ink 7HF       | MANUFAC TURE | BATCH NO             | EXPIRE DATE |
| UT THICKNESS GAUGE:           | 3997      | CAL DUE DATE | 16-Feb-24 | Fluorescent Magnetic Ink 7HF | Magnaflux    | 220605               | JULY.2025   |
| UT TEST BLOCK:                | NoBo5087  | CAL DUE DATE | 16-Feb-24 |                              |              |                      |             |
| ASTM Test Block:              | 1657      | CAL DUE DATE | 14-Feb-24 |                              |              |                      |             |
| WHITE LIGHT INTENSITY:        | 3670 lux  |              |           |                              |              | 1.2 to 2.4 ml/100 ml |             |

### PERSON DETAILS

|                    |                              |                        |                |         |  |
|--------------------|------------------------------|------------------------|----------------|---------|--|
| INSPECTOR NAME:    | M.Shahzad Ali                | SENIOR INSPECTOR:      | NAVEED HUSSAIN | CLIENT: |  |
| QUALIFICATION:     | ISO 9001, ISO 14001, UT, VT, | INSPECTION SUPERVISOR: | HANI ALI       | HB&SIGN |  |
| SIGNATURE & STAMP: |                              |                        |                | DATE:   |  |

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**AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED**

Basra, North Rumaila, Quality Control Yard - Iraq



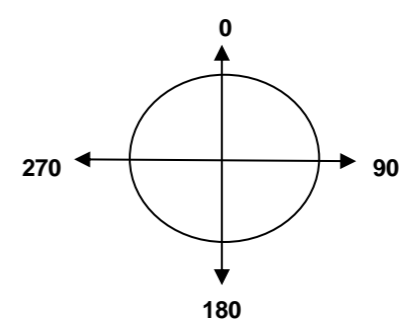
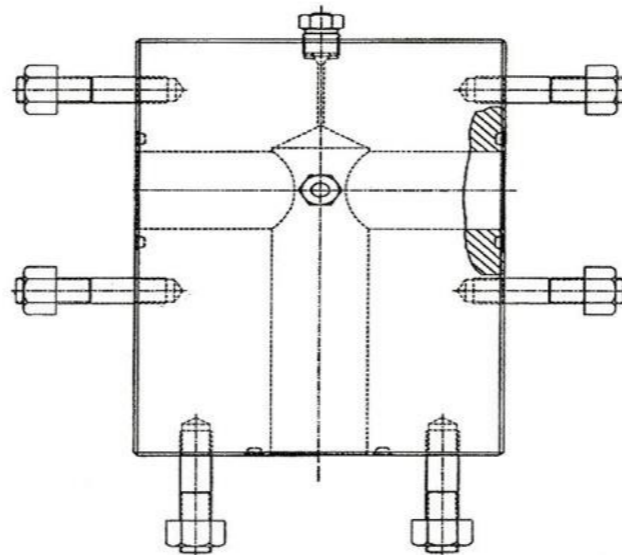
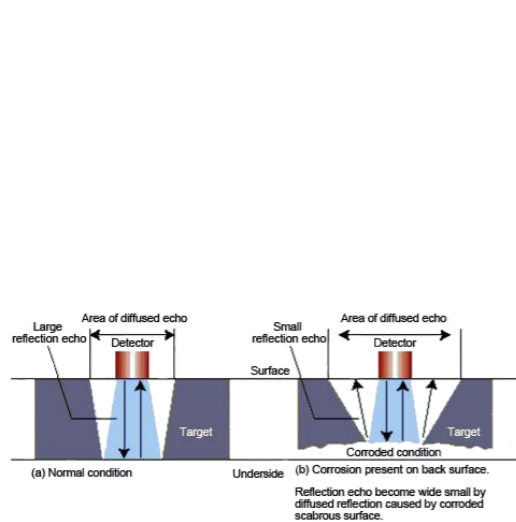
**CERTIFICATE OF QUALIFICATION VISUAL AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING INSPECTION & PRESSURE TEST**  
THIS REPORT COMPLIES WITH RECOGNIZED INTERNATIONAL STANDARDS & TECHNICAL REQUIREMENTS

|                     |   |                 |   |
|---------------------|---|-----------------|---|
| CLIENT:             | <b>HALLIBURTON</b>  | REPORT No.:     | QC-24-01-TSS-004-NDT-006  |
| LOCATION:           | <b>TSS WORKSHOP &amp; INSPECTION TEST AREA</b>  | STANDARD:       | ASTM E709 & ASTM E797 & ASME SECTION V ARTICLE 5,10 & 27 & ASME B31.1 |
| WORK ORDER #        | 326104072   | SPECIFICATION:  | Halliburton Acceptance Criteria<br>H2S STANDARD NACE MQ-01-76         |
| DATE OF INSP:       | 13-Jan-2024   | INSP. DUE DATE: | <b>12-Jan-2025</b>  |
| TYPE OF INSPECTION: | <b>VISUAL INSPECTION, PRESSURE TEST AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING</b> |                 |   |

|               |                    |                  |            |
|---------------|--------------------|------------------|------------|
| DESCRIPTION:  | BLOCK: 3 1/16" 10K | CHOKE MANIFOLD # | 12405205   |
| MANUFACTURER: | WOM                | SERIAL NO:       | 10114241-1 |

**INSPECTION DETAILS**

|                        |                            |                     |                          |
|------------------------|----------------------------|---------------------|--------------------------|
| Max. Working Pressure: | 10,000 PSI                 | Holding Time:       | 15 Min                   |
| Low pressure:          | 300 PSI                    | Holding Time:       | 05 Min                   |
| Pump S.N.:             | 13119220 Cal DUE. AUG.2024 | Pressure Gauge NO.: | 468066 Cal DUE. AUG.2024 |



ONLINE TRACEABILITY

A:12'O CLOCK / FORWARD  
B:3'O CLOCK / CENTER  
C :6'O CLOCK / AFT

\* ALL READINGS IN INCH  
\*\*MINIMUM THICKNESS PROVIDED BY CUSTMER

| POINTS | THICKNESS AT POSITION |       |       | MINIMUM THICKNESS |
|--------|-----------------------|-------|-------|-------------------|
|        | A                     | B     | C     |                   |
| 0°     | 4.667                 | 4.598 | 4.599 | 4.320             |
| 90°    | 4.618                 | 4.588 | 4.604 |                   |
| 180°   | 4.671                 | 4.512 | 4.577 |                   |
| 270°   | 4.621                 | 4.587 | 4.531 |                   |

**INSPECTION RESULT**

|          |          |   |
|----------|----------|---|
| VT & MPI | Accepted | * ACCORDING TO ASTM E709(70.94158).   |
| UT       | Accepted | According to Halliburton Procedure (H2S STANDERD NACE MQ-01-76) ASME SECTION V ARTICLE 5 (ASTM E 797) |
| BODY     | Accepted | *** These Are The Actual Readings Need To Follow As Per Halliburton Acceptance Criteria               |

**Inspection Evaluation**

(MPI) The Above Item Has No Significant Discontinuous At The Time Of Inspection And Found Acceptable Accordance To The Halliburton Specification ASTM E709 (70.94158)  
 U.T-The Above Item Was Found Acceptable As Per Halliburton Procedure H2S STANDARD NACE MQ-01-76 ASME SECTION V ARTICLE 5 (ASTM E 797)  
 Pressure Test-The Above Item was Pressure Tested up to 300 PSI A low Pressure Hold for 5 min And Maximum Working pressure 10.000 psi Hold 15 min no Leak was Realized while testing & Pressure Was Stable Accordance To Chart Recorder Attached

**INSPECTION EQUIPMENT DETAILS**

**TECHNICAL DETAILS**

|                               |           |              |           |                              |              |          |                      |
|-------------------------------|-----------|--------------|-----------|------------------------------|--------------|----------|----------------------|
| AC YOKE S.N:                  | 201504048 | CAL DUE DATE | 14-Feb-24 | White Contrast WCP 2         | MANUFACTURER | BATCH NO | EXPIRE DATE          |
| Digital Lux Meter WHITE LIGHT | 2722003   | CAL DUE DATE | 16-Feb-24 | Black Magnetic Ink 7HF       | Magnaflux    | 220602   | JUN,2025             |
| UT THICKNESS GAUGE:           | 3997      | CAL DUE DATE | 16-Feb-24 | Fluorescent Magnetic Ink 7HF | MANUFACTURE  | BATCH NO | EXPIRE DATE          |
| UT TEST BLOCK:                | NoBo5087  | CAL DUE DATE | 16-Feb-24 |                              | Magnaflux    | 220605   | JULY.2025            |
| ASTM Test Block:              | 1657      | CAL DUE DATE | 14-Feb-24 |                              |              |          |                      |
| WHITE LIGHT INTENSITY:        | 3670 lux  |              |           |                              |              |          | 1.2 to 2.4 ml/100 ml |

**PERSON DETAILS**

|                    |                              |                        |                |         |  |
|--------------------|------------------------------|------------------------|----------------|---------|--|
| INSPECTOR NAME:    | M.Shahzad Ali                | SENIOR INSPECTOR:      | NAVEED HUSSAIN | CLIENT: |  |
| QUALIFICATION:     | ISO 9001, ISO 14001, UT, VT, | INSPECTION SUPERVISOR: | HANI ALI       | HB&SIGN |  |
| SIGNATURE & STAMP: |                              |                        |                | DATE:   |  |

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**AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED**

Basra, North Rumaila, Quality Control Yard - Iraq



**CERTIFICATE OF QUALIFICATION VISUAL AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING INSPECTION & PRESSURE TEST**  
THIS REPORT COMPLIES WITH RECOGNIZED INTERNATIONAL STANDARDS & TECHNICAL REQUIREMENTS

|                     |   |                 |   |
|---------------------|---|-----------------|---|
| CLIENT:             | <b>HALLIBURTON</b>  | REPORT No.:     | QC-24-01-TSS-004-ND-007   |
| LOCATION:           | <b>TSS WORKSHOP &amp; INSPECTION TEST AREA</b>  | STANDARD:       | ASTM E709 & ASTM E797 & ASME SECTION V ARTICLE 5,10 & 27 & ASME B31.1 |
| WORK ORDER #        | 326104072   | SPECIFICATION:  | Halliburton Acceptance Criteria<br>H2S STANDARD NACE MQ-01-76         |
| DATE OF INSP:       | 13-Jan-2024   | INSP. DUE DATE: | <b>12-Jan-2025</b>  |
| TYPE OF INSPECTION: | <b>VISUAL INSPECTION, PRESSURE TEST AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING</b> |                 |   |

|               |                    |                  |            |
|---------------|--------------------|------------------|------------|
| DESCRIPTION:  | BLOCK: 3 1/16" 10K | CHOKE MANIFOLD # | 12405205   |
| MANUFACTURER: | WOM                | SERIAL NO:       | 10114241-2 |

**INSPECTION DETAILS**

|                        |                            |                     |                          |
|------------------------|----------------------------|---------------------|--------------------------|
| Max. Working Pressure: | 10,000 PSI                 | Holding Time:       | 15 Min                   |
| Low pressure:          | 300 PSI                    | Holding Time:       | 05 Min                   |
| Pump S.N.:             | 13119220 Cal DUE. AUG.2024 | Pressure Gauge NO.: | 468066 Cal DUE. AUG.2024 |

(a) Normal condition  
Underside (b) Corrosion present on back surface. Reflection echo become wide small by diffused reflection caused by corroded scabrous surface.

A:12'O CLOCK / FORWARD  
B:3'O CLOCK / CENTER  
C :6'O CLOCK / AFT

\* ALL READINGS IN INCH  
\*\*MINIMUM THICKNESS PROVIDED BY CUSTMER

ONLINE TRACEABILITY

| POINTS | THICKNESS AT POSITION |       |       | MINIMUM THICKNESS |
|--------|-----------------------|-------|-------|-------------------|
|        | A                     | B     | C     |                   |
| 0°     | 4.570                 | 4.586 | 4.542 | 4.320             |
| 90°    | 4.597                 | 4.531 | 4.545 |                   |
| 180°   | 4.527                 | 4.587 | 4.559 |                   |
| 270°   | 4.571                 | 4.576 | 4.528 |                   |

**INSPECTION RESULT**

|          |          |   |
|----------|----------|---|
| VT & MPI | Accepted | * ACCORDING TO ASTM E709(70.94158).   |
| UT       | Accepted | According to Halliburton Procedure (H2S STANDERD NACE MQ-01-76) ASME SECTION V ARTICLE 5 (ASTM E 797) |
| BODY     | Accepted | *** These Are The Actual Readings Need To Follow As Per Halliburton Acceptance Criteria               |

**Inspection Evaluation**

**(MPI)** The Above Item Has No Significant Discontinuous At The Time Of Inspection And Found Acceptable Accordance To The Halliburton Specification ASTM E709 (70.94158)  
**U.T-**The Above Item Was Found Acceptable As Per Halliburton Procedure H2S STANDARD NACE MQ-01-76 ASME SECTION V ARTICLE 5 (ASTM E 797)  
**Pressure Test-**The Above Item was Pressure Tested up to 300 PSI A low Pressure Hold for 5 min And Maximum Working pressure 10.000 psi Hold 15 min no Leak was Realized while testing & Pressure Was Stable Accordance To Chart Recorder Attached

**INSPECTION EQUIPMENT DETAILS**

**TECHNICAL DETAILS**

|                               |           |              |           |                              |                      |          |             |
|-------------------------------|-----------|--------------|-----------|------------------------------|----------------------|----------|-------------|
| AC YOKE S.N:                  | 201504048 | CAL DUE DATE | 14-Feb-24 | White Contrast WCP 2         | MANUFACTUR E         | BATCH NO | EXPIRE DATE |
| Digital Lux Meter WHITE LIGHT | 2722003   | CAL DUE DATE | 16-Feb-24 | Black Magnetic Ink 7HF       | MANUFAC TURE         | BATCH NO | EXPIRE DATE |
| UT THICKNESS GAUGE:           | 3997      | CAL DUE DATE | 16-Feb-24 | Fluorescent Magnetic Ink 7HF | 1.2 to 2.4 ml/100 ml |          |             |
| UT TEST BLOCK:                | NoBo5087  | CAL DUE DATE | 16-Feb-24 |                              |                      |          |             |
| ASTM Test Block:              | 1657      | CAL DUE DATE | 14-Feb-24 |                              |                      |          |             |
| WHITE LIGHT INTENSITY:        | 3670 lux  |              |           |                              |                      |          |             |

**PERSON DETAILS**

|                    |                              |                        |                |         |  |
|--------------------|------------------------------|------------------------|----------------|---------|--|
| INSPECTOR NAME:    | M.Shahzad Ali                | SENIOR INSPECTOR:      | NAVEED HUSSAIN | CLIENT: |  |
| QUALIFICATION:     | ISO 9001, ISO 14001, UT, VT, | INSPECTION SUPERVISOR: | HANI ALI       | HB&SIGN |  |
| SIGNATURE & STAMP: |                              |                        |                | DATE:   |  |

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**AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED**

Basra, North Rumaila, Quality Control Yard - Iraq



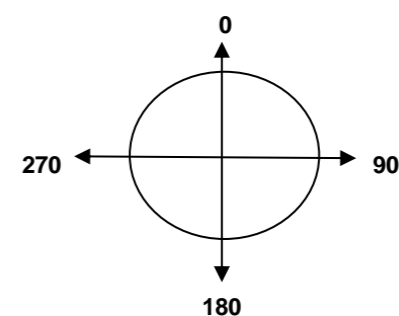
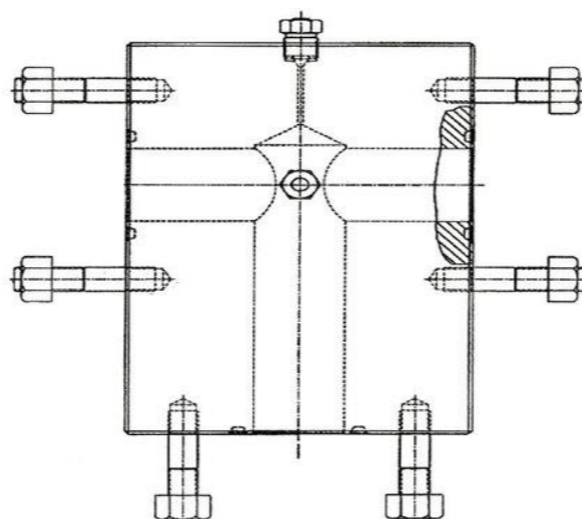
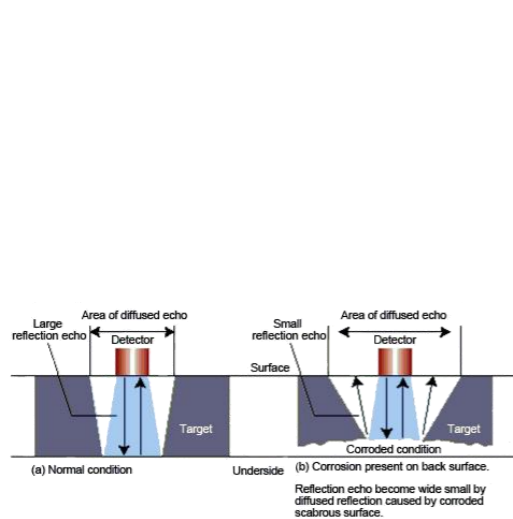
**CERTIFICATE OF QUALIFICATION VISUAL AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING INSPECTION & PRESSURE TEST**  
THIS REPORT COMPLIES WITH RECOGNIZED INTERNATIONAL STANDARDS & TECHNICAL REQUIREMENTS

|                     |   |                 |   |
|---------------------|---|-----------------|---|
| CLIENT:             | <b>HALLIBURTON</b>  | REPORT No.:     | QC-24-01-TSS-004-NDT-008  |
| LOCATION:           | <b>TSS WORKSHOP &amp; INSPECTION TEST AREA</b>  | STANDARD:       | ASTM E709 & ASTM E797 & ASME SECTION V ARTICLE 5,10 & 27 & ASME B31.1 |
| WORK ORDER #        | 326104072   | SPECIFICATION:  | Halliburton Acceptance Criteria<br>H2S STANDARD NACE MQ-01-76         |
| DATE OF INSP:       | 13-Jan-2024   | INSP. DUE DATE: | <b>12-Jan-2025</b>  |
| TYPE OF INSPECTION: | <b>VISUAL INSPECTION, PRESSURE TEST AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING</b> |                 |   |

|               |                    |                  |            |
|---------------|--------------------|------------------|------------|
| DESCRIPTION:  | BLOCK: 3 1/16" 10K | CHOKE MANIFOLD # | 12405205   |
| MANUFACTURER: | WOM                | SERIAL NO:       | 10114244-1 |

**INSPECTION DETAILS**

|                        |                            |                     |                          |
|------------------------|----------------------------|---------------------|--------------------------|
| Max. Working Pressure: | 10,000 PSI                 | Holding Time:       | 15 Min                   |
| Low pressure:          | 300 PSI                    | Holding Time:       | 05 Min                   |
| Pump S.N.:             | 13119220 Cal DUE. AUG.2024 | Pressure Gauge NO.: | 468066 Cal DUE. AUG.2024 |



ONLINE TRACEABILITY

A:12'O CLOCK / FORWARD  
B:3'O CLOCK / CENTER  
C :6'O CLOCK / AFT

\* ALL READINGS IN INCH  
\*\*MINIMUM THICKNESS PROVIDED BY CUSTMER

| POINTS | THICKNESS AT POSITION |       |       | MINIMUM THICKNESS |
|--------|-----------------------|-------|-------|-------------------|
|        | A                     | B     | C     |                   |
| 0°     | 4.567                 | 4.576 | 4.564 | 4.320             |
| 90°    | 4.549                 | 4.559 | 4.579 |                   |
| 180°   | 4.571                 | 4.560 | 4.549 |                   |
| 270°   | 4.552                 | 4.571 | 4.562 |                   |

**INSPECTION RESULT**

|          |          |   |
|----------|----------|---|
| VT & MPI | Accepted | * ACCORDING TO ASTM E709(70.94158).   |
| UT       | Accepted | According to Halliburton Procedure (H2S STANDERD NACE MQ-01-76) ASME SECTION V ARTICLE 5 (ASTM E 797) |
| BODY     | Accepted | *** These Are The Actual Readings Need To Follow As Per Halliburton Acceptance Criteria               |

**Inspection Evaluation**

(MPI) The Above Item Has No Significant Discontinuous At The Time Of Inspection And Found Acceptable Accordance To The Halliburton Specification ASTM E709 (70.94158)  
 U.T-The Above Item Was Found Acceptable As Per Halliburton Procedure H2S STANDARD NACE MQ-01-76 ASME SECTION V ARTICLE 5 (ASTM E 797)  
 Pressure Test-The Above Item was Pressure Tested up to 300 PSI A low Pressure Hold for 5 min And Maximum Working pressure 10.000 psi Hold 15 min no Leak was Realized while testing & Pressure Was Stable Accordance To Chart Recorder Attached

**INSPECTION EQUIPMENT DETAILS**

**TECHNICAL DETAILS**

|                               |           |              |           |                              |              |          |                      |
|-------------------------------|-----------|--------------|-----------|------------------------------|--------------|----------|----------------------|
| AC YOKE S.N:                  | 201504048 | CAL DUE DATE | 14-Feb-24 | White Contrast WCP 2         | MANUFACTUR E | BATCH NO | EXPIRE DATE          |
| Digital Lux Meter WHITE LIGHT | 2722003   | CAL DUE DATE | 16-Feb-24 | Black Magnetic Ink 7HF       | MANUFAC TURE | BATCH NO | EXPIRE DATE          |
| UT THICKNESS GAUGE:           | 3997      | CAL DUE DATE | 16-Feb-24 | Fluorescent Magnetic Ink 7HF | Magnaflux    | 220605   | JULY.2025            |
| UT TEST BLOCK:                | NoBo5087  | CAL DUE DATE | 16-Feb-24 |                              |              |          |                      |
| ASTM Test Block:              | 1657      | CAL DUE DATE | 14-Feb-24 |                              |              |          |                      |
| WHITE LIGHT INTENSITY:        | 3670 lux  |              |           |                              |              |          | 1.2 to 2.4 ml/100 ml |

**PERSON DETAILS**

|                    |                              |                        |                |         |  |
|--------------------|------------------------------|------------------------|----------------|---------|--|
| INSPECTOR NAME:    | M.Shahzad Ali                | SENIOR INSPECTOR:      | NAVEED HUSSAIN | CLIENT: |  |
| QUALIFICATION:     | ISO 9001, ISO 14001, UT, VT, | INSPECTION SUPERVISOR: | HANI ALI       | HB&SIGN |  |
| SIGNATURE & STAMP: |                              |                        |                | DATE:   |  |

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**AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED**

Basra, North Rumaila, Quality Control Yard - Iraq



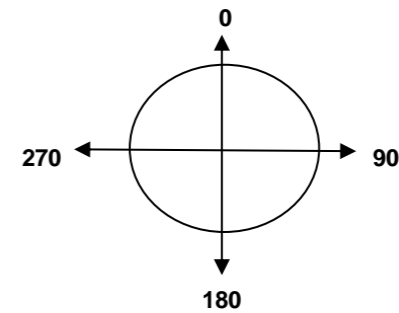
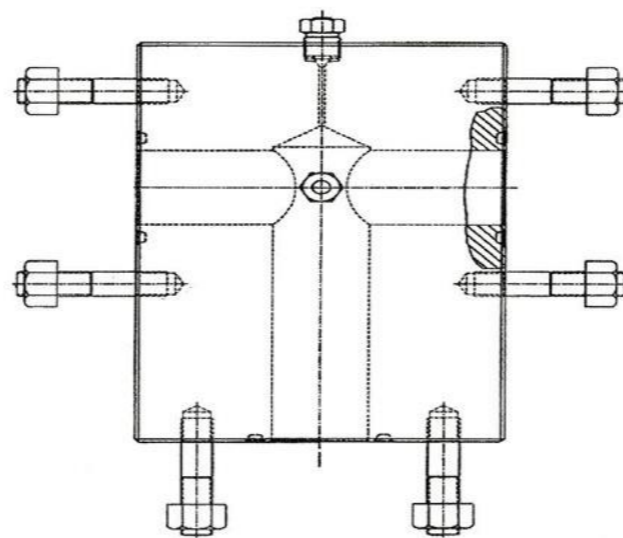
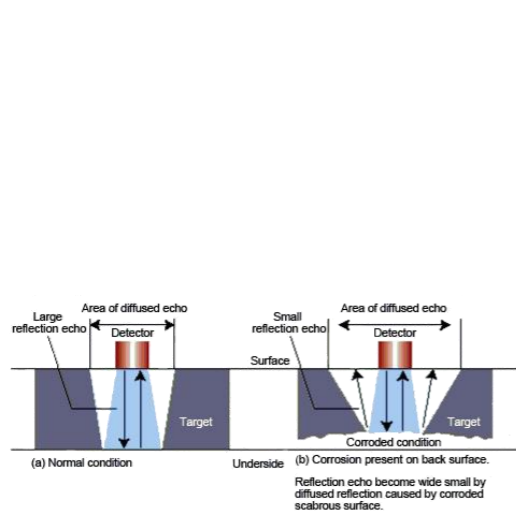
**CERTIFICATE OF QUALIFICATION VISUAL AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING INSPECTION & PRESSURE TEST**  
THIS REPORT COMPLIES WITH RECOGNIZED INTERNATIONAL STANDARDS & TECHNICAL REQUIREMENTS

|                     |   |                 |   |
|---------------------|---|-----------------|---|
| CLIENT:             | <b>HALLIBURTON</b>  | REPORT No.:     | QC-24-01-TSS-004-NDT-009  |
| LOCATION:           | <b>TSS WORKSHOP &amp; INSPECTION TEST AREA</b>  | STANDARD:       | ASTM E709 & ASTM E797 & ASME SECTION V ARTICLE 5,10 & 27 & ASME B31.1 |
| WORK ORDER #        | 326104072   | SPECIFICATION:  | Halliburton Acceptance Criteria<br>H2S STANDARD NACE MQ-01-76         |
| DATE OF INSP:       | 13-Jan-2024   | INSP. DUE DATE: | <b>12-Jan-2025</b>  |
| TYPE OF INSPECTION: | <b>VISUAL INSPECTION, PRESSURE TEST AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING</b> |                 |   |

|               |                    |                  |            |
|---------------|--------------------|------------------|------------|
| DESCRIPTION:  | BLOCK: 3 1/16" 10K | CHOKE MANIFOLD # | 12405205   |
| MANUFACTURER: | WOM                | SERIAL NO:       | 10114244-2 |

**INSPECTION DETAILS**

|                        |                            |                     |                          |
|------------------------|----------------------------|---------------------|--------------------------|
| Max. Working Pressure: | 10,000 PSI                 | Holding Time:       | 15 Min                   |
| Low pressure:          | 300 PSI                    | Holding Time:       | 05 Min                   |
| Pump S.N.:             | 13119220 Cal DUE. AUG.2024 | Pressure Gauge NO.: | 468066 Cal DUE. AUG.2024 |



ONLINE TRACEABILITY

A:12'O CLOCK / FORWARD  
B:3'O CLOCK / CENTER  
C :6'O CLOCK / AFT

\* ALL READINGS IN INCH  
\*\*MINIMUM THICKNESS PROVIDED BY CUSTMER

| POINTS | THICKNESS AT POSITION |       |       | MINIMUM THICKNESS |
|--------|-----------------------|-------|-------|-------------------|
|        | A                     | B     | C     |                   |
| 0°     | 4.539                 | 4.583 | 4.569 | 4.320             |
| 90°    | 4.561                 | 4.561 | 4.523 |                   |
| 180°   | 4.581                 | 4.567 | 4.552 |                   |
| 270°   | 4.557                 | 4.573 | 4.582 |                   |

**INSPECTION RESULT**

|          |          |   |
|----------|----------|---|
| VT & MPI | Accepted | * ACCORDING TO ASTM E709(70.94158).   |
| UT       | Accepted | According to Halliburton Procedure (H2S STANDERD NACE MQ-01-76) ASME SECTION V ARTICLE 5 (ASTM E 797) |
| BODY     | Accepted | *** These Are The Actual Readings Need To Follow As Per Halliburton Acceptance Criteria               |

**Inspection Evaluation**

(MPI) The Above Item Has No Significant Discontinuous At The Time Of Inspection And Found Acceptable Accordance To The Halliburton Specification ASTM E709 (70.94158)  
 U.T-The Above Item Was Found Acceptable As Per Halliburton Procedure H2S STANDARD NACE MQ-01-76 ASME SECTION V ARTICLE 5 (ASTM E 797)  
 Pressure Test-The Above Item was Pressure Tested up to 300 PSI A low Pressure Hold for 5 min And Maximum Working pressure 10.000 psi Hold 15 min no Leak was Realized while testing & Pressure Was Stable Accordance To Chart Recorder Attached

**INSPECTION EQUIPMENT DETAILS**

**TECHNICAL DETAILS**

|                               |           |              |           |                              |              |          |                      |
|-------------------------------|-----------|--------------|-----------|------------------------------|--------------|----------|----------------------|
| AC YOKE S.N:                  | 201504048 | CAL DUE DATE | 14-Feb-24 | White Contrast WCP 2         | MANUFACTURER | BATCH NO | EXPIRE DATE          |
| Digital Lux Meter WHITE LIGHT | 2722003   | CAL DUE DATE | 16-Feb-24 | Black Magnetic Ink 7HF       | Magnaflux    | 220602   | JUN,2025             |
| UT THICKNESS GAUGE:           | 3997      | CAL DUE DATE | 16-Feb-24 | Fluorescent Magnetic Ink 7HF | MANUFACTURE  | BATCH NO | EXPIRE DATE          |
| UT TEST BLOCK:                | NoBo5087  | CAL DUE DATE | 16-Feb-24 |                              | Magnaflux    | 220605   | JULY.2025            |
| ASTM Test Block:              | 1657      | CAL DUE DATE | 14-Feb-24 |                              |              |          |                      |
| WHITE LIGHT INTENSITY:        | 3670 lux  |              |           |                              |              |          | 1.2 to 2.4 ml/100 ml |

**PERSON DETAILS**

|                    |                              |                        |                |         |  |
|--------------------|------------------------------|------------------------|----------------|---------|--|
| INSPECTOR NAME:    | M.Shahzad Ali                | SENIOR INSPECTOR:      | NAVEED HUSSAIN | CLIENT: |  |
| QUALIFICATION:     | ISO 9001, ISO 14001, UT, VT, | INSPECTION SUPERVISOR: | HANI ALI       | HB&SIGN |  |
| SIGNATURE & STAMP: |                              |                        |                | DATE:   |  |

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**AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED**

Basra, North Rumaila, Quality Control Yard - Iraq



**CERTIFICATE OF QUALIFICATION VISUAL AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING INSPECTION & PRESSURE TEST**  
THIS REPORT COMPLIES WITH RECOGNIZED INTERNATIONAL STANDARDS & TECHNICAL REQUIREMENTS

|                     |   |                 |   |
|---------------------|---|-----------------|---|
| CLIENT:             | <b>HALLIBURTON</b>  | REPORT No.:     | QC-24-01-TSS-004-NDT-010  |
| LOCATION:           | <b>TSS WORKSHOP &amp; INSPECTION TEST AREA</b>  | STANDARD:       | ASTM E709 & ASTM E797 & ASME SECTION V ARTICLE 5,10 & 27 & ASME B31.1 |
| WORK ORDER #        | 326104072   | SPECIFICATION:  | Halliburton Acceptance Criteria<br>H2S STANDARD NACE MQ-01-76         |
| DATE OF INSP:       | 13-Jan-2024   | INSP. DUE DATE: | <b>12-Jan-2025</b>  |
| TYPE OF INSPECTION: | <b>VISUAL INSPECTION, PRESSURE TEST AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING</b> |                 |   |

|               |                              |                  |            |
|---------------|------------------------------|------------------|------------|
| DESCRIPTION:  | ADJUSTABLE CHOKE 3 1/16" 10K | CHOKE MANIFOLD # | 12405205   |
| MANUFACTURER: | WOM                          | SERIAL NO:       | 10114276-1 |

**INSPECTION DETAILS**

|                        |                            |                     |                          |
|------------------------|----------------------------|---------------------|--------------------------|
| Max. Working Pressure: | 10,000 PSI                 | Holding Time:       | 15 Min                   |
| Low pressure:          | 300 PSI                    | Holding Time:       | 05 Min                   |
| Pump S.N.:             | 13119220 Cal DUE. AUG.2024 | Pressure Gauge NO.: | 468066 Cal DUE. AUG.2024 |

(a) Normal condition  
Underside (b) Corrosion present on back surface. Reflection echo become wide small by diffused reflection caused by corroded scabrous surface.

A:12'O CLOCK / FORWARD  
B:3'O CLOCK / CENTER  
C:6'O CLOCK / AFT

\* ALL READINGS IN INCH  
\*\*MINIMUM THICKNESS PROVIDED BY CUSTMER

ONLINE TRACEABILITY

| POINTS | THICKNESS AT POSITION |           | MINIMUM THICKNESS |           |
|--------|-----------------------|-----------|-------------------|-----------|
|        | SECTION 1             | SECTION 2 | SECTION 1         | SECTION 2 |
| 0°     | 1.427                 | 1.438     | 1.060"            | 1.060"    |
| 90°    | 1.527                 | 1.442     |                   |           |
| 180°   | 1.487                 | 1.498     |                   |           |
| 270°   | 1.473                 | 1.438     |                   |           |

**INSPECTION RESULT**

|          |          |   |
|----------|----------|---|
| VT & MPI | Accepted | * ACCORDING TO ASTM E709(70.94158).   |
| UT       | Accepted | According to Halliburton Procedure (H2S STANDERD NACE MQ-01-76) ASME SECTION V ARTICLE 5 (ASTM E 797) |
| BODY     | Accepted | *** These Are The Actual Readings Need To Follow As Per Halliburton Acceptance Criteria               |

**Inspection Evaluation**

(MPI) The Above Item Has No Significant Discontinuous At The Time Of Inspection And Found Acceptable Accordance To The Halliburton Specification ASTM E709 (70.94158)  
 U.T-The Above Item Was Found Acceptable As Per Halliburton Procedure H2S STANDARD NACE MQ-01-76 ASME SECTION V ARTICLE 5 (ASTM E 797)  
 Pressure Test-The Above Item was Pressure Tested up to 300 PSI A low Pressure Hold for 5 min And Maximum Working pressure 10.000 psi Hold 15 min no Leak was Realized while testing & Pressure Was Stable Accordance To Chart Recorder Attached

| INSPECTION EQUIPMENT DETAILS  |           |              |           | TECHNICAL DETAILS            |                      |          |             |
|-------------------------------|-----------|--------------|-----------|------------------------------|----------------------|----------|-------------|
| AC YOKE S.N:                  | 201504048 | CAL DUE DATE | 14-Feb-24 | White Contrast WCP 2         | MANUFACTUR E         | BATCH NO | EXPIRE DATE |
| Digital Lux Meter WHITE LIGHT | 2722003   | CAL DUE DATE | 16-Feb-24 | Black Magnetic Ink 7HF       | MANUFAC TURE         | BATCH NO | EXPIRE DATE |
| UT THICKNESS GAUGE:           | 3997      | CAL DUE DATE | 16-Feb-24 | Fluorescent Magnetic Ink 7HF | 1.2 to 2.4 ml/100 ml |          |             |
| UT TEST BLOCK:                | NoBo5087  | CAL DUE DATE | 16-Feb-24 |                              |                      |          |             |
| ASTM Test Block:              | 1657      | CAL DUE DATE | 14-Feb-24 |                              |                      |          |             |
| WHITE LIGHT INTENSITY:        | 3670 lux  |              |           |                              |                      |          |             |

**PERSON DETAILS**

|                    |                              |                        |                |         |  |
|--------------------|------------------------------|------------------------|----------------|---------|--|
| INSPECTOR NAME:    | M.Shahzad Ali                | SENIOR INSPECTOR:      | NAVEED HUSSAIN | CLIENT: |  |
| QUALIFICATION:     | ISO 9001, ISO 14001, UT, VT, | INSPECTION SUPERVISOR: | HANI ALI       | HB&SIGN |  |
| SIGNATURE & STAMP: |                              |                        |                | DATE:   |  |

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**AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED**

Basra, North Rumaila, Quality Control Yard - Iraq



**CERTIFICATE OF QUALIFICATION VISUAL AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING INSPECTION & PRESSURE TEST**  
THIS REPORT COMPLIES WITH RECOGNIZED INTERNATIONAL STANDARDS & TECHNICAL REQUIREMENTS

|                     |   |                 |   |
|---------------------|---|-----------------|---|
| CLIENT:             | <b>HALLIBURTON</b>  | REPORT No.:     | QC-24-01-TSS-004-NDT-011  |
| LOCATION:           | <b>TSS WORKSHOP &amp; INSPECTION TEST AREA</b>  | STANDARD:       | ASTM E709 & ASTM E797 & ASME SECTION V ARTICLE 5,10 & 27 & ASME B31.1 |
| WORK ORDER #        | 326104072   | SPECIFICATION:  | Halliburton Acceptance Criteria<br>H2S STANDARD NACE MQ-01-76         |
| DATE OF INSP:       | 13-Jan-2024   | INSP. DUE DATE: | <b>12-Jan-2025</b>  |
| TYPE OF INSPECTION: | <b>VISUAL INSPECTION, PRESSURE TEST AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING</b> |                 |   |

|               |                                   |                  |                   |
|---------------|-----------------------------------|------------------|-------------------|
| DESCRIPTION:  | <b>POSITIVE CHOKE 3 1/16" 10K</b> | CHOKE MANIFOLD # | <b>12405205</b>   |
| MANUFACTURER: | <b>WOM</b>                        | SERIAL NO:       | <b>10115211-1</b> |

**INSPECTION DETAILS**

|                        |                            |                     |                          |
|------------------------|----------------------------|---------------------|--------------------------|
| Max. Working Pressure: | 10,000 PSI                 | Holding Time:       | 15 Min                   |
| Low pressure:          | 300 PSI                    | Holding Time:       | 05 Min                   |
| Pump S.N.:             | 13119220 Cal DUE. AUG.2024 | Pressure Gauge NO.: | 468066 Cal DUE. AUG.2024 |

A:12'O CLOCK / FORWARD  
B:3'O CLOCK / CENTER  
C:6'O CLOCK / AFT

\* ALL READINGS IN INCH  
\*\*MINIMUM THICKNESS PROVIDED BY CUSTMER

ONLINE TRACEABILITY

| POINTS | THICKNESS AT POSITION |           | MINIMUM THICKNESS |           |
|--------|-----------------------|-----------|-------------------|-----------|
|        | SECTION 1             | SECTION 2 | SECTION 1         | SECTION 2 |
| 0°     | 1.439                 | 1.456     | 1.060"            | 1.060"    |
| 90°    | 1.459                 | 1.471     |                   |           |
| 180°   | 1.442                 | 1.433     |                   |           |
| 270°   | 1.418                 | 1.422     |                   |           |

**INSPECTION RESULT**

|          |          |   |
|----------|----------|---|
| VT & MPI | Accepted | * ACCORDING TO ASTM E709(70.94158).   |
| UT       | Accepted | According to Halliburton Procedure (H2S STANDERD NACE MQ-01-76) ASME SECTION V ARTICLE 5 (ASTM E 797) |
| BODY     | Accepted | *** These Are The Actual Readings Need To Follow As Per Halliburton Acceptance Criteria               |

**Inspection Evaluation**

**(MPI)** The Above Item Has No Significant Discontinuous At The Time Of Inspection And Found Acceptable Accordance To The Halliburton Specification ASTM E709 (70.94158)  
**U.T-**The Above Item Was Found Acceptable As Per Halliburton Procedure H2S STANDARD NACE MQ-01-76 ASME SECTION V ARTICLE 5 (ASTM E 797)  
**Pressure Test-**The Above Item was Pressure Tested up to 300 PSI A low Pressure Hold for 5 min And Maximum Working pressure 10.000 psi Hold 15 min no Leak was Realized while testing & Pressure Was Stable Accordance To Chart Recorder Attached

**INSPECTION EQUIPMENT DETAILS**

**TECHNICAL DETAILS**

|                               |           |              |           |                              |                      |          |             |
|-------------------------------|-----------|--------------|-----------|------------------------------|----------------------|----------|-------------|
| AC YOKE S.N:                  | 201504048 | CAL DUE DATE | 14-Feb-24 | White Contrast WCP 2         | MANUFACTUR E         | BATCH NO | EXPIRE DATE |
| Digital Lux Meter WHITE LIGHT | 2722003   | CAL DUE DATE | 16-Feb-24 | Black Magnetic Ink 7HF       | MANUFAC TURE         | BATCH NO | EXPIRE DATE |
| UT THICKNESS GAUGE:           | 3997      | CAL DUE DATE | 16-Feb-24 | Fluorescent Magnetic Ink 7HF | 1.2 to 2.4 ml/100 ml |          |             |
| UT TEST BLOCK:                | NoBo5087  | CAL DUE DATE | 16-Feb-24 |                              |                      |          |             |
| ASTM Test Block:              | 1657      | CAL DUE DATE | 14-Feb-24 |                              |                      |          |             |
| WHITE LIGHT INTENSITY:        | 3670 lux  |              |           |                              |                      |          |             |

**PERSON DETAILS**

|                    |                              |                        |                |         |  |
|--------------------|------------------------------|------------------------|----------------|---------|--|
| INSPECTOR NAME:    | M.Shahzad Ali                | SENIOR INSPECTOR:      | NAVEED HUSSAIN | CLIENT: |  |
| QUALIFICATION:     | ISO 9001, ISO 14001, UT, VT, | INSPECTION SUPERVISOR: | HANI ALI       | HB&SIGN |  |
| SIGNATURE & STAMP: |                              |                        |                | DATE:   |  |

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# AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED

Basra, North Rumaila, Quality Control Yard - Iraq



## CERTIFICATE OF QUALIFICATION VISUAL AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING INSPECTION & PRESSURE TEST

THIS REPORT COMPLIES WITH RECOGNIZED INTERNATIONAL STANDARDS & TECHNICAL REQUIREMENTS

|                     |   |                 |   |
|---------------------|---|-----------------|---|
| CLIENT:             | <b>HALLIBURTON</b>  | REPORT No.:     | QC-24-01-TSS-004-NDT-012  |
| LOCATION:           | <b>TSS WORKSHOP &amp; INSPECTION TEST AREA</b>  | STANDARD:       | ASTM E709 & ASTM E797 & ASME SECTION V ARTICLE 5,10 & 27 & ASME B31.1 |
| WORK ORDER #        | 326104072   | SPECIFICATION:  | Halliburton Acceptance Criteria<br>H2S STANDARD NACE MQ-01-76         |
| DATE OF INSP:       | 13-Jan-2024   | INSP. DUE DATE: | <b>12-Jan-2025</b>  |
| TYPE OF INSPECTION: | <b>VISUAL INSPECTION, PRESSURE TEST AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING</b> |                 |   |

|               |                   |                  |          |
|---------------|-------------------|------------------|----------|
| DESCRIPTION:  | SPOOL 3 1/16" 10K | CHOKE MANIFOLD # | 12405205 |
| MANUFACTURER: | WOM               | SERIAL NO:       | M63981-1 |

### INSPECTION DETAILS

|                        |                            |                     |                          |
|------------------------|----------------------------|---------------------|--------------------------|
| Max. Working Pressure: | 10,000 PSI                 | Holding Time:       | 15 Min                   |
| Low pressure:          | 300 PSI                    | Holding Time:       | 05 Min                   |
| Pump S.N.:             | 13119220 Cal DUE. AUG.2024 | Pressure Gauge NO.: | 468066 Cal DUE. AUG.2024 |

(a) Normal condition  
Underside (b) Corrosion present on back surface. Reflection echo become wide small by diffused reflection caused by corroded scabrous surface.

A: 12'O CLOCK / FORWARD  
B: 3'O CLOCK / CENTER  
C: 6'O CLOCK / AFT

\* ALL READINGS IN INCH  
\*\*MINIMUM THICKNESS PROVIDED BY CUSTMER

ONLINE TRACEABILITY

| POINTS | THICKNESS AT POSITION |       |       | MINIMUM THICKNESS |
|--------|-----------------------|-------|-------|-------------------|
|        | A                     | B     | C     |                   |
| 0°     | 1.371                 | 1.368 | 1.366 | 1.190             |
| 90°    | 1.367                 | 1.372 | 1.287 |                   |
| 180°   | 1.384                 | 1.318 | 1.376 |                   |
| 270°   | 1.345                 | 1.312 | 1.341 |                   |

### INSPECTION RESULT

|          |          |   |
|----------|----------|---|
| VT & MPI | Accepted | * ACCORDING TO ASTM E709(70.94158).   |
| UT       | Accepted | According to Halliburton Procedure (H2S STANDERD NACE MQ-01-76) ASME SECTION V ARTICLE 5 (ASTM E 797) |
| BODY     | Accepted | *** These Are The Actual Readings Need To Follow As Per Halliburton Acceptance Criteria               |

### Inspection Evaluation

(MPI) The Above Item Has No Significant Discontinuous At The Time Of Inspection And Found Acceptable Accordance To The Halliburton Specification ASTM E709 (70.94158)  
 U.T-The Above Item Was Found Acceptable As Per Halliburton Procedure H2S STANDARD NACE MQ-01-76 ASME SECTION V ARTICLE 5 (ASTM E 797)  
 Pressure Test-The Above Item was Pressure Tested up to 300 PSI A low Pressure Hold for 5 min And Maximum Working pressure 10.000 psi Hold 15 min no Leak was Realized while testing & Pressure Was Stable Accordance To Chart Recorder Attached

### INSPECTION EQUIPMENT DETAILS

### TECHNICAL DETAILS

|                               |           |              |           |                              |                      |          |             |
|-------------------------------|-----------|--------------|-----------|------------------------------|----------------------|----------|-------------|
| AC YOKE S.N:                  | 201504048 | CAL DUE DATE | 14-Feb-24 | White Contrast WCP 2         | MANUFACTUR E         | BATCH NO | EXPIRE DATE |
| Digital Lux Meter WHITE LIGHT | 2722003   | CAL DUE DATE | 16-Feb-24 | Black Magnetic Ink 7HF       | MANUFAC TURE         | BATCH NO | EXPIRE DATE |
| UT THICKNESS GAUGE:           | 3997      | CAL DUE DATE | 16-Feb-24 | Fluorescent Magnetic Ink 7HF | 1.2 to 2.4 ml/100 ml |          |             |
| UT TEST BLOCK:                | NoBo5087  | CAL DUE DATE | 16-Feb-24 |                              |                      |          |             |
| ASTM Test Block:              | 1657      | CAL DUE DATE | 14-Feb-24 |                              |                      |          |             |
| WHITE LIGHT INTENSITY:        | 3670 lux  |              |           |                              |                      |          |             |

### PERSON DETAILS

|                    |                              |                        |                |         |  |
|--------------------|------------------------------|------------------------|----------------|---------|--|
| INSPECTOR NAME:    | M.Shahzad Ali                | SENIOR INSPECTOR:      | NAVEED HUSSAIN | CLIENT: |  |
| QUALIFICATION:     | ISO 9001, ISO 14001, UT, VT, | INSPECTION SUPERVISOR: | HANI ALI       | HB&SIGN |  |
| SIGNATURE & STAMP: |                              |                        |                | DATE:   |  |

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**AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED**

Basra, North Rumaila, Quality Control Yard - Iraq



**CERTIFICATE OF QUALIFICATION VISUAL AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING INSPECTION & PRESSURE TEST**  
THIS REPORT COMPLIES WITH RECOGNIZED INTERNATIONAL STANDARDS & TECHNICAL REQUIREMENTS

|                     |   |                 |   |
|---------------------|---|-----------------|---|
| CLIENT:             | <b>HALLIBURTON</b>  | REPORT No.:     | QC-24-01-TSS-004-NDT-013  |
| LOCATION:           | <b>TSS WORKSHOP &amp; INSPECTION TEST AREA</b>  | STANDARD:       | ASTM E709 & ASTM E797 & ASME SECTION V ARTICLE 5,10 & 27 & ASME B31.1 |
| WORK ORDER #        | 326104072   | SPECIFICATION:  | Halliburton Acceptance Criteria<br>H2S STANDARD NACE MQ-01-76         |
| DATE OF INSP:       | 13-Jan-2024   | INSP. DUE DATE: | <b>12-Jan-2025</b>  |
| TYPE OF INSPECTION: | <b>VISUAL INSPECTION, PRESSURE TEST AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING</b> |                 |   |

|               |                   |                  |          |
|---------------|-------------------|------------------|----------|
| DESCRIPTION:  | SPOOL 3 1/16" 10K | CHOKE MANIFOLD # | 12405205 |
| MANUFACTURER: | WOM               | SERIAL NO:       | M63981-3 |

**INSPECTION DETAILS**

|                        |                            |                     |                          |
|------------------------|----------------------------|---------------------|--------------------------|
| Max. Working Pressure: | 10,000 PSI                 | Holding Time:       | 15 Min                   |
| Low pressure:          | 300 PSI                    | Holding Time:       | 05 Min                   |
| Pump S.N.:             | 13119220 Cal DUE. AUG.2024 | Pressure Gauge NO.: | 468066 Cal DUE. AUG.2024 |

(a) Normal condition  
Underside (b) Corrosion present on back surface. Reflection echo become wide small by diffused reflection caused by corroded scabrous surface.

A: 12'O CLOCK / FORWARD  
B: 3'O CLOCK / CENTER  
C: 6'O CLOCK / AFT

\* ALL READINGS IN INCH  
\*\*MINIMUM THICKNESS PROVIDED BY CUSTMER

ONLINE TRACEABILITY

| POINTS | THICKNESS AT POSITION |       |       | MINIMUM THICKNESS |
|--------|-----------------------|-------|-------|-------------------|
|        | A                     | B     | C     |                   |
| 0°     | 1.412                 | 1.333 | 1.324 | 1.190             |
| 90°    | 1.382                 | 1.341 | 1.293 |                   |
| 180°   | 1.367                 | 1.368 | 1.364 |                   |
| 270°   | 1.348                 | 1.374 | 1.356 |                   |

**INSPECTION RESULT**

|          |          |   |
|----------|----------|---|
| VT & MPI | Accepted | * ACCORDING TO ASTM E709(70.94158).   |
| UT       | Accepted | According to Halliburton Procedure (H2S STANDERD NACE MQ-01-76) ASME SECTION V ARTICLE 5 (ASTM E 797) |
| BODY     | Accepted | *** These Are The Actual Readings Need To Follow As Per Halliburton Acceptance Criteria               |

**Inspection Evaluation**

(MPI) The Above Item Has No Significant Discontinuous At The Time Of Inspection And Found Acceptable Accordance To The Halliburton Specification ASTM E709 (70.94158)  
 U.T-The Above Item Was Found Acceptable As Per Halliburton Procedure H2S STANDARD NACE MQ-01-76 ASME SECTION V ARTICLE 5 (ASTM E 797)  
 Pressure Test-The Above Item was Pressure Tested up to 300 PSI A low Pressure Hold for 5 min And Maximum Working pressure 10.000 psi Hold 15 min no Leak was Realized while testing & Pressure Was Stable Accordance To Chart Recorder Attached

**INSPECTION EQUIPMENT DETAILS**

**TECHNICAL DETAILS**



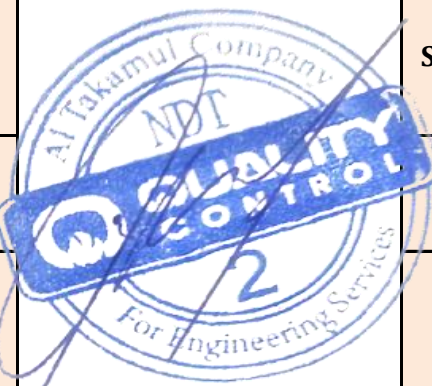
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|-------------------------------|-----------|--------------|-----------|------------------------------|----------------------|----------|-------------|
| AC YOKE S.N:                  | 201504048 | CAL DUE DATE | 14-Feb-24 | White Contrast WCP 2         | MANUFACTUR E         | BATCH NO | EXPIRE DATE |
| Digital Lux Meter WHITE LIGHT | 2722003   | CAL DUE DATE | 16-Feb-24 | Black Magnetic Ink 7HF       | MANUFAC TURE         | BATCH NO | EXPIRE DATE |
| UT THICKNESS GAUGE:           | 3997      | CAL DUE DATE | 16-Feb-24 | Fluorescent Magnetic Ink 7HF | 1.2 to 2.4 ml/100 ml |          |             |
| UT TEST BLOCK:                | NoBo5087  | CAL DUE DATE | 16-Feb-24 |                              |                      |          |             |
| ASTM Test Block:              | 1657      | CAL DUE DATE | 14-Feb-24 |                              |                      |          |             |
| WHITE LIGHT INTENSITY:        | 3670 lux  |              |           |                              |                      |          |             |

**PERSON DETAILS**

|                    |                              |                        |                |         |  |
|--------------------|------------------------------|------------------------|----------------|---------|--|
| INSPECTOR NAME:    | M.Shahzad Ali                | SENIOR INSPECTOR:      | NAVEED HUSSAIN | CLIENT: |  |
| QUALIFICATION:     | ISO 9001, ISO 14001, UT, VT, | INSPECTION SUPERVISOR: | HANI ALI       | HB&SIGN |  |
| SIGNATURE & STAMP: |                              |                        |                | DATE:   |  |

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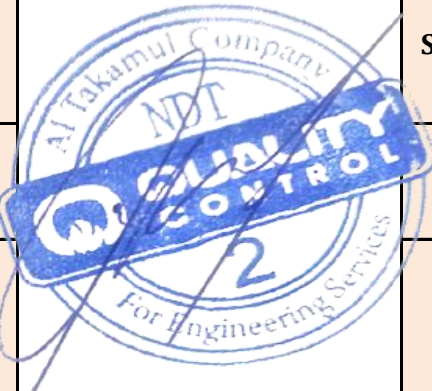


| CERTIFICATION OF VISUAL, THOROUGH EXAMINATION & MAGNETIC PARTICLE INSPECTION        |  |  |               |                      |   |                 |   |   |  |   |                            |  |                   |                |  |
|---|--|--|---------------|----------------------|---|-----------------|---|---|--|---|----------------------------|--|-------------------|----------------|--|
| Client:   |  | HALLIBURTON (TSS)  |               |                      | Report No:  |                 | QC-24-01-TSS-004-NDT-014  |   |  |   |                            |  |                   |                |  |
| Location:   |  | TSS YARD   |               |                      | WORK ORDER  |                 | 326104072   |   |  |   |                            |  |                   |                |  |
| Date:   |  | 13.JAN, 2024   |               |                      | Next Inspection Date:   |                 | 12.JAN.2025   |   |  |   |                            |  |                   |                |  |
| Type Of Inspection:   |  | VISUAL , THOROUGH EXAMINATION & MAGNETIC PARTICLE INSPECTION |               |                      | Specification:  |                 | ASTM E709 & ASTM E 1444 (2016) ASME V Article 7 (2019) & API 6A   |   |  |   |                            |  |                   |                |  |
|  |  |  |               |                      | UNIT DESCRIPTION:   |                 | BLIND FLANGE 3 1/16" 10K  |   |  |   |                            |  |                   |                |  |
|   |  |  |               |                      | UNIT S/N:   |                 | M63828-1  |   |  |   |                            |  |                   |                |  |
|   |  |  |               |                      | CHOKE MANIFOLD S/N:   |                 | 12405205  |   |  |   |                            |  |                   |                |  |
|   |  |  |               |                      | INSPECTION RESULT :   |                 |   |   |  |   |                            |  |                   |                |  |
|   |  |  |               |                      | VISUAL , THOROUGH EXAMINATION   |                 | VISUAL & MAGNETIC PARTICLE INSPECTION ( M.P.I. ) HAD BEEN DONE ON THE AVAILABLE AREAS FOR THE ABOVE DESCRIPTION |   |  |   |                            |  |                   |                |  |
|   |  |  |               |                      | MAGNETIC PARTICLE INSPECTION  |                 | Groove areas inspected and found free from cracks and other defects   |   |  |   |                            |  |                   |                |  |
|   |  |  |               |                      | FINAL RESULTS   |                 | THE ABOVE INSPECTED AREAS WAS ACCEPTED  |   |  |   |                            |  |                   |                |  |
| COMMENT:  |  |  |               |                      |  |                 |   |   |  |   |                            |  |                   |                |  |
| Magnetic Particle Inspection With A/C Hand Yoke , Black & White Contrast            |  |  |               |                      |   |                 |   |   |  |   |                            |  |                   |                |  |
| EQUIPMENT DETAILS   |  |  |               |                      | PERSON DETAILS  |                 | REVIEW BY   |   |  |   |                            |  |                   |                |  |
| EQUIPMENT :   |  | AC/DC HAND Yoke  | EQUIPMENT :   |                      | ASTM Test Block   | EQUIPMENT :     |   | UV BLACK LIGHT: 3140 μw/cm <sup>2</sup> |  | INSPECTOR NAME:   | M.SHAHZAD AHMED            |  | SENIOR INSPECTOR: | NAVEED HUSSAIN |  |
| S.NO:   |  | 201504048  | S.NO:         |                      | 1657  | S.NO:           |   | 1932401                                 |  | QUALIFICATION:  | ASNT LEVEL II MT & PT & VT |  | SUPERVISOR:       | HANI ALI       |  |
| Cal Due Date:   |  | 14.FEB.2024  | Cal Due Date: |                      | 14.FEB.2024   | Cal Due Date:   |   | 14.FEB.2024                             |  |  | CLIENT:                    |  |                   |                |  |
| FLUORESCENT 14HF  |  | Magnaflux  | Batch No:     | 220306               | EXPIRE DATE:  | MARCH,2025      |   |   |  |   |                            |  |                   |                |  |
| White Contrast Paint Manufacture:   |  | Magnaflux  | Batch No:     | 220602               | EXPIRE DATE:  | JUN,2025        |   |   |  |   |                            |  |                   |                |  |
| Digital Lux Meter WHITE LIGHT INTENSITY:  |  | TECHNICAL DETAILS  |               |                      | Black Magnetic Ink Manufacture:7HF  |                 |   |   |  |   |                            |  |                   |                |  |
| 3640 Lux/S.NO:2722003   |  | Wet FLUORESCENT Particle Concentration 14 HF                 |               | 0.1 to 0.4 ml/100 ml |   | Batch No:220605 |   |   |  |   |                            |  |                   |                |  |
| Cal Due Date:16.FEB.2024  |  | Black Magnetic Ink Concentration 7 HF                        |               | 1.2 to 2.4 ml/100 ml |   | EXPIRE DATE:    |   | Jul-25                                  |  |   |                            |  |                   |                |  |

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| CERTIFICATION OF VISUAL, THOROUGH EXAMINATION & MAGNETIC PARTICLE INSPECTION        |  |  |                 |                      |   |   |   |                   |                |
|---|--|--|-----------------|----------------------|---|---|---|-------------------|----------------|
| Client:   | HALLIBURTON (TSS)  |  |                 |                      | Report No:  | QC-24-01-TSS-004-NDT-015  |   |                   |                |
| Location:   | TSS YARD   |  |                 |                      | WORK ORDER  | 326104072   |   |                   |                |
| Date:   | 13.JAN, 2024   |  |                 |                      | Next Inspection Date:   | 12.JAN.2025   |   |                   |                |
| Type Of Inspection:   | VISUAL , THOROUGH EXAMINATION & MAGNETIC PARTICLE INSPECTION |  |                 |                      | Specification:  | ASTM E709 & ASTM E 1444 (2016) ASME V Article 7 (2019) & API 6A |   |                   |                |
|  |  |  |                 |                      | UNIT DESCRIPTION:   | BLIND FLANGE 3 1/16" 10K  |   |                   |                |
|   |  |  |                 |                      | UNIT S/N:   | M63828-2  |   |                   |                |
|   |  |  |                 |                      | CHOKE MANIFOLD S/N:   | 12405205  |   |                   |                |
|   |  |  |                 |                      | INSPECTION RESULT :   |   |   |                   |                |
|   |  |  |                 |                      | VISUAL , THOROUGH EXAMINATION   |   | VISUAL & MAGNETIC PARTICLE INSPECTION ( M.P.I. ) HAD BEEN DONE ON THE AVAILABLE AREAS FOR THE ABOVE DESCRIPTION |                   |                |
|   |  |  |                 |                      | MAGNETIC PARTICLE INSPECTION  |   | Groove areas inspected and found free from cracks and other defects   |                   |                |
|   |  |  |                 |                      | FINAL RESULTS   |   | THE ABOVE INSPECTED AREAS WAS ACCEPTED  |                   |                |
| COMMENT:  |  |  |                 |                      |  |   |   |                   |                |
| Magnetic Particle Inspection With A/C Hand Yoke , Black & White Contrast            |  |  |                 |                      |   |   |   |                   |                |
| EQUIPMENT DETAILS   |  |  |                 |                      | PERSON DETAILS  |   | REVIEW BY   |                   |                |
| EQUIPMENT :   | AC/DC<br>HAND Yoke   | EQUIPMENT :                                  | ASTM Test Block | EQUIPMENT :          | UV BLACK LIGHT: 3140<br>µw/cm <sup>2</sup>  | INSPECTOR NAME:   |                            | SENIOR INSPECTOR: | NAVEED HUSSAIN |
| S.NO:   | 201504048  | S.NO:  | 1657            | S.NO:                | 1932401   | QUALIFICATION:  |   | SUPERVISOR:       | HANI ALI       |
| Cal Due Date:   | 14.FEB.2024  | Cal Due Date:                                | 14.FEB.2024     | Cal Due Date:        | 14.FEB.2024   | ASNT LEVEL II<br>MT & PT & VT                                   |   | CLIENT:           |                |
| FLUORESCENT 14HF  |  | Magnaflux                                    | Batch No:       | 220306               | EXPIRE DATE:  | MARCH,2025  |   |                   |                |
| White Contrast Paint Manufacture:   |  | Magnaflux                                    | Batch No:       | 220602               | EXPIRE DATE:  | JUN,2025  |   |                   |                |
| Digital Lux Meter<br>WHITE LIGHT INTENSITY:   |  | TECHNICAL DETAILS                            |                 |                      | Black Magnetic Ink<br>Manufacture:7HF   |   |   |                   |                |
| 3640 Lux/S.NO:2722003   |  | Wet FLUORESCENT Particle Concentration 14 HF |                 | 0.1 to 0.4 ml/100 ml |   | Batch No:220605   |   |                   |                |
| Cal Due Date:16.FEB.2024  |  | Black Magnetic Ink Concentration 7 HF        |                 | 1.2 to 2.4 ml/100 ml |   | EXPIRE DATE:  |   | Jul-25            |                |

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| CERTIFICATION OF VISUAL, THOROUGH EXAMINATION & MAGNETIC PARTICLE INSPECTION   |  |  |                  |                      |   |   |   |                   |                |
|--|--|--|------------------|----------------------|---|---|---|-------------------|----------------|
| Client:  | HALLIBURTON (TSS)  |  |                  |                      | Report No:  | QC-24-01-TSS-004-NDT-016  |   |                   |                |
| Location:  | TSS YARD   |  |                  |                      | WORK ORDER  | 326104072   |   |                   |                |
| Date:  | 13.JAN, 2024   |  |                  |                      | Next Inspection Date:   | 12.JAN.2025   |   |                   |                |
| Type Of Inspection:  | VISUAL , THOROUGH EXAMINATION & MAGNETIC PARTICLE INSPECTION |  |                  |                      | Specification:  | ASTM E709 & ASTM E 1444 (2016) ASME V Article 7 (2019) & API 6A |   |                   |                |
|   |  |  |                  |                      | UNIT DESCRIPTION:   | FLANGE 3 1/16" 10K X 3" 1502 WING                               |   |                   |                |
|  |  |  |                  |                      | UNIT S/N:   | M65037-2  |   |                   |                |
|  |  |  |                  |                      | CHOKE MANIFOLD S/N:   | 12405205  |   |                   |                |
|  |  |  |                  |                      | INSPECTION RESULT :   |   |   |                   |                |
|  |  |  |                  |                      | VISUAL , THOROUGH EXAMINATION   |   | VISUAL & MAGNETIC PARTICLE INSPECTION ( M.P.I. ) HAD BEEN DONE ON THE AVAILABLE AREAS FOR THE ABOVE DESCRIPTION |                   |                |
|  |  |  |                  |                      | MAGNETIC PARTICLE INSPECTION  |   | Thread & Groove areas inspected and found free from cracks and other defects                                    |                   |                |
|  |  |  |                  |                      | FINAL RESULTS   |   | THE ABOVE INSPECTED AREAS WAS ACCEPTED  |                   |                |
| COMMENT:   |  |  |                  |                      |  |   |   |                   |                |
| (MPI Wet Fluorescent inspection Thread With UltraViolet Light)<br>Magnetic Particle Inspection With A/C Hand Yoke , Black & White Contrast |  |  |                  |                      |   |   |   |                   |                |
| EQUIPMENT DETAILS  |  |  |                  |                      |   | PERSON DETAILS  |   | REVIEW BY         |                |
| EQUIPMENT :  | AC/DC<br>HAND Yoke   | EQUIPMENT :                                  | Shooting Coil DC | EQUIPMENT :          | UV BLACK LIGHT: 3140<br>µw/cm <sup>2</sup>  | INSPECTOR NAME:   |                            | SENIOR INSPECTOR: | NAVEED HUSSAIN |
| S.NO:  | 201504048  | S.NO:  | 22650            | S.NO:                | 1932401   | QUALIFICATION:  |   | SUPERVISOR:       | HANI ALI       |
| Cal Due Date:  | 14.FEB.2024  | Cal Due Date:                                | 14.FEB.2024      | Cal Due Date:        | 14.FEB.2024   | ASNT LEVEL II<br>MT & PT & VT                                   |   | CLIENT:           |                |
| FLUORESCENT 14HF   |  | Magnaflux                                    | Batch No:        | 220306               | EXPIRE DATE:  | MARCH,2025  |   |                   |                |
| Whie Contrast Paint Manufacture:   |  | Magnaflux                                    | Batch No:        | 220602               | EXPIRE DATE:  | JUN,2025  |   |                   |                |
| Digital Lux Meter<br>WHITE LIGHT INTENSITY:  |  | TECHNICAL DETAILS                            |                  |                      | Black Magnetic Ink<br>Manufacture:7HF   |   |   |                   |                |
| 3640 Lux/S.NO:2722003  |  | Wet FLUORESCENT Particle Concentration 14 HF |                  | 0.1 to 0.4 ml/100 ml |   | Batch No:220605   |   |                   |                |
| Cal Due Date:16.FEB.2024   |  | Black Magnetic Ink Concentration 7 HF        |                  | 1.2 to 2.4 ml/100 ml |   | EXPIRE DATE:  |   | Jul-25            |                |

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| CERTIFICATION OF VISUAL, THOROUGH EXAMINATION & MAGNETIC PARTICLE INSPECTION   |  |  |                  |                      |   |   |   |                   |                |
|--|--|--|------------------|----------------------|---|---|---|-------------------|----------------|
| Client:  | HALLIBURTON (TSS)  |  |                  |                      | Report No:  | QC-24-01-TSS-004-NDT-017  |   |                   |                |
| Location:  | TSS YARD   |  |                  |                      | WORK ORDER  | 326104072   |   |                   |                |
| Date:  | 13.JAN, 2024   |  |                  |                      | Next Inspection Date:   | 12.JAN.2025   |   |                   |                |
| Type Of Inspection:  | VISUAL , THOROUGH EXAMINATION & MAGNETIC PARTICLE INSPECTION |  |                  |                      | Specification:  | ASTM E709 & ASTM E 1444 (2016) ASME V Article 7 (2019) & API 6A |   |                   |                |
|   |  |  |                  |                      | UNIT DESCRIPTION:   | FLANGE 3 1/16" 10K X 3" 1502 WING                               |   |                   |                |
|  |  |  |                  |                      | UNIT S/N:   | 10114196-1  |   |                   |                |
|  |  |  |                  |                      | CHOKE MANIFOLD S/N:   | 12405205  |   |                   |                |
|  |  |  |                  |                      | INSPECTION RESULT :   |   |   |                   |                |
|  |  |  |                  |                      | VISUAL , THOROUGH EXAMINATION   |   | VISUAL & MAGNETIC PARTICLE INSPECTION ( M.P.I. ) HAD BEEN DONE ON THE AVAILABLE AREAS FOR THE ABOVE DESCRIPTION |                   |                |
|  |  |  |                  |                      | MAGNETIC PARTICLE INSPECTION  |   | Thread & Groove areas inspected and found free from cracks and other defects                                    |                   |                |
| FINAL RESULTS  |  | THE ABOVE INSPECTED AREAS WAS ACCEPTED       |                  |                      |   |   |   |                   |                |
| COMMENT:   |  |  |                  |                      |  |   |   |                   |                |
| (MPI Wet Fluorescent inspection Thread With UltraViolet Light)<br>Magnetic Particle Inspection With A/C Hand Yoke , Black & White Contrast |  |  |                  |                      |   |   |   |                   |                |
| EQUIPMENT DETAILS  |  |  |                  |                      |   | PERSON DETAILS  |   | REVIEW BY         |                |
| EQUIPMENT :  | AC/DC<br>HAND Yoke   | EQUIPMENT :                                  | Shooting Coil DC | EQUIPMENT :          | UV BLACK LIGHT: 3140<br>µw/cm <sup>2</sup>  | INSPECTOR NAME:   |                            | SENIOR INSPECTOR: | NAVEED HUSSAIN |
| S.NO:  | 201504048  | S.NO:  | 22650            | S.NO:                | 1932401   | QUALIFICATION:  |   | SUPERVISOR:       | HANI ALI       |
| Cal Due Date:  | 14.FEB.2024  | Cal Due Date:                                | 14.FEB.2024      | Cal Due Date:        | 14.FEB.2024   | ASNT LEVEL II<br>MT & PT & VT                                   |   | CLIENT:           |                |
| FLUORESCENT 14HF   |  | Magnaflux                                    | Batch No:        | 220306               | EXPIRE DATE:  | MARCH,2025  |   |                   |                |
| Whie Contrast Paint Manufacture:   |  | Magnaflux                                    | Batch No:        | 220602               | EXPIRE DATE:  | JUN,2025  |   |                   |                |
| Digital Lux Meter<br>WHITE LIGHT INTENSITY:  |  | TECHNICAL DETAILS                            |                  |                      |   | Black Magnetic Ink<br>Manufacture:7HF                           |   |                   |                |
| 3640 Lux/S.NO:2722003  |  | Wet FLUORESCENT Particle Concentration 14 HF |                  | 0.1 to 0.4 ml/100 ml |   | Batch No:220605   |   |                   |                |
| Cal Due Date:16.FEB.2024   |  | Black Magnetic Ink Concentration 7 HF        |                  | 1.2 to 2.4 ml/100 ml |   | EXPIRE DATE:  |   | Jul-25            |                |

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**AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED**

Basra, North Rumaila, Quality Control Yard - Iraq



**CERTIFICATE OF QUALIFICATION VISUAL AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING INSPECTION & PRESSURE TEST**  
THIS REPORT COMPLIES WITH RECOGNIZED INTERNATIONAL STANDARDS & TECHNICAL REQUIREMENTS

|                     |   |                 |   |
|---------------------|---|-----------------|---|
| CLIENT:             | <b>HALLIBURTON</b>  | REPORT No.:     | QC-24-01-TSS-004-NDT-18   |
| LOCATION:           | <b>TSS WORKSHOP &amp; INSPECTION TEST AREA</b>  | STANDARD:       | ASTM E709 & ASTM E797 & ASME SECTION V ARTICLE 5,10 & 27 & ASME B31.1 |
| WORK ORDER #        | 326115740   | SPECIFICATION:  | Halliburton Acceptance Criteria<br>H2S STANDARD NACE MQ-01-76         |
| DATE OF INSP:       | 13-Jan-2024   | INSP. DUE DATE: | <b>12-Jan-2025</b>  |
| TYPE OF INSPECTION: | <b>VISUAL INSPECTION, PRESSURE TEST AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING</b> |                 |   |

|               |                                       |                  |          |
|---------------|---------------------------------------|------------------|----------|
| DESCRIPTION:  | DATE HEADER 10K 3" 1502 WING X THREAD | CHOKE MANIFOLD # | 12405205 |
| MANUFACTURER: | PETROFAC                              | SERIAL NO:       | 12405457 |

**INSPECTION DETAILS**

|                        |                            |                     |                          |
|------------------------|----------------------------|---------------------|--------------------------|
| Max. Working Pressure: | 10,000 PSI                 | Holding Time:       | 15 Min                   |
| Low pressure:          | 300 PSI                    | Holding Time:       | 05 Min                   |
| Pump S.N.:             | 13119220 Cal DUE. AUG.2024 | Pressure Gauge NO.: | 468066 Cal DUE. AUG.2024 |

(a) Normal condition: Large reflection echo, Area of diffused echo, Detector, Surface, Target.

(b) Corroded condition: Small reflection echo, Area of diffused echo, Detector, Corroded condition, Underside, Target. Reflection echo become very small by diffused reflection caused by corroded scabrous surface.

A: 12'O CLOCK / FORWARD  
B: 3'O CLOCK / CENTER  
C: 6'O CLOCK / AFT

\* ALL READINGS IN INCH  
\*\*MINIMUM THICKNESS PROVIDED BY CUSTOMER

ONLINE TRACEABILITY

| POINTS | THICKNESS AT POSITION |       |       |       | MINIMUM THICKNESS |
|--------|-----------------------|-------|-------|-------|-------------------|
|        | 0°                    | 90°   | 180°  | 270°  |                   |
| A      | 1.456                 | 1.424 | 1.413 | 1.435 | 1.190             |
| B      | 1.487                 | 1.471 | 1.431 | 1.416 |                   |

**INSPECTION RESULT**

|          |          |   |
|----------|----------|---|
| VT & MPI | Accepted | * ACCORDING TO ASTM E709(70.94158).   |
| UT       | Accepted | According to Halliburton Procedure (H2S STANDERD NACE MQ-01-76) ASME SECTION V ARTICLE 5 (ASTM E 797) |
| BODY     | Accepted | *** These Are The Actual Readings Need To Follow As Per Halliburton Acceptance Criteria               |

**Inspection Evaluation**

(MPI) The Above Item Has No Significant Discontinuous At The Time Of Inspection And Found Acceptable Accordance To The Halliburton Specification ASTM E709 (70.94158)

U.T-The Above Item Was Found Acceptable As Per Halliburton Procedure H2S STANDARD NACE MQ-01-76 ASME SECTION V ARTICLE 5 (ASTM E 797)

Pressure Test-The Above Item was Pressure Tested up to 300 PSI A low Pressure Hold for 5 min And Maximum Working pressure 10.000 psi Hold 15 min no Leak was Realized while testing & Pressure Was Stable Accordance To Chart Recorder Attached

| INSPECTION EQUIPMENT DETAILS  |           |              |           | TECHNICAL DETAILS            |                           |                    |                          |
|-------------------------------|-----------|--------------|-----------|------------------------------|---------------------------|--------------------|--------------------------|
| AC YOKE S.N:                  | 201504048 | CAL DUE DATE | 14-Feb-24 | White Contrast WCP 2         | MANUFACTURER<br>Magnaflux | BATCH NO<br>220602 | EXPIRE DATE<br>JUN,2025  |
| Digital Lux Meter WHITE LIGHT | 2722003   | CAL DUE DATE | 16-Feb-24 | Black Magnetic Ink 7HF       | MANUFACTURE<br>Magnaflux  | BATCH NO<br>220605 | EXPIRE DATE<br>JULY.2025 |
| UT THICKNESS GAUGE:           | 3997      | CAL DUE DATE | 16-Feb-24 | Fluorescent Magnetic Ink 7HF | 1.2 to 2.4 ml/100 ml      |                    |                          |
| UT TEST BLOCK:                | NoBo5087  | CAL DUE DATE | 16-Feb-24 |                              |                           |                    |                          |
| ASTM Test Block:              | 1657      | CAL DUE DATE | 14-Feb-24 |                              |                           |                    |                          |
| WHITE LIGHT INTENSITY:        | 3670 lux  |              |           |                              |                           |                    |                          |

**PERSON DETAILS**

|                    |                                 |                        |                |         |  |
|--------------------|---------------------------------|------------------------|----------------|---------|--|
| INSPECTOR NAME:    | M.Shahzad Ali                   | SENIOR INSPECTOR:      | NAVEED HUSSAIN | CLIENT: |  |
| QUALIFICATION:     | ISO 9001, 14001, 45001, UT, VT, | INSPECTION SUPERVISOR: | HANI ALI       | HB&SIGN |  |
| SIGNATURE & STAMP: |                                 |                        |                | DATE:   |  |

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**AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED**

Basra, North Rumaila, Quality Control Yard - Iraq



**CERTIFICATE OF QUALIFICATION VISUAL AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING INSPECTION & PRESSURE TEST**  
THIS REPORT COMPLIES WITH RECOGNIZED INTERNATIONAL STANDARDS & TECHNICAL REQUIREMENTS

|                     |   |                 |   |
|---------------------|---|-----------------|---|
| CLIENT:             | <b>HALLIBURTON</b>  | REPORT No.:     | QC-24-01-TSS-004-NDT-19   |
| LOCATION:           | <b>TSS WORKSHOP &amp; INSPECTION TEST AREA</b>  | STANDARD:       | ASTM E709 & ASTM E797 & ASME SECTION V ARTICLE 5,10 & 27 & ASME B31.1 |
| WORK ORDER #        | 326115741   | SPECIFICATION:  | Halliburton Acceptance Criteria<br>H2S STANDARD NACE MQ-01-76         |
| DATE OF INSP:       | 13-Jan-2024   | INSP. DUE DATE: | <b>12-Jan-2025</b>  |
| TYPE OF INSPECTION: | <b>VISUAL INSPECTION, PRESSURE TEST AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING</b> |                 |   |

|               |                                       |                  |          |
|---------------|---------------------------------------|------------------|----------|
| DESCRIPTION:  | DATE HEADER 10K 3" 1502 WING X THREAD | CHOKE MANIFOLD # | 12405205 |
| MANUFACTURER: | PETROFAC                              | SERIAL NO:       | 12405206 |

**INSPECTION DETAILS**

|                        |                            |                     |                          |
|------------------------|----------------------------|---------------------|--------------------------|
| Max. Working Pressure: | 10,000 PSI                 | Holding Time:       | 15 Min                   |
| Low pressure:          | 300 PSI                    | Holding Time:       | 05 Min                   |
| Pump S.N.:             | 13119220 Cal DUE. AUG.2024 | Pressure Gauge NO.: | 468066 Cal DUE. AUG.2024 |

(a) Normal condition: Large reflection echo, Area of diffused echo, Detector, Surface, Target.

(b) Corroded condition: Small reflection echo, Area of diffused echo, Detector, Corroded condition, Underside, Target. Reflection echo become very small by diffused reflection caused by corroded scabrous surface.

A: 12'O CLOCK / FORWARD  
B: 3'O CLOCK / CENTER  
C: 6'O CLOCK / AFT

\* ALL READINGS IN INCH  
\*\*MINIMUM THICKNESS PROVIDED BY CUSTOMER

ONLINE TRACEABILITY

| POINTS | THICKNESS AT POSITION |       |       |       | MINIMUM THICKNESS |
|--------|-----------------------|-------|-------|-------|-------------------|
|        | 0°                    | 90°   | 180°  | 270°  |                   |
| A      | 1.467                 | 1.438 | 1.428 | 1.481 | 1.190             |
| B      | 1.442                 | 1.454 | 1.476 | 1.414 |                   |

**INSPECTION RESULT**

|          |          |   |
|----------|----------|---|
| VT & MPI | Accepted | * ACCORDING TO ASTM E709(70.94158).   |
| UT       | Accepted | According to Halliburton Procedure (H2S STANDERD NACE MQ-01-76) ASME SECTION V ARTICLE 5 (ASTM E 797) |
| BODY     | Accepted | *** These Are The Actual Readings Need To Follow As Per Halliburton Acceptance Criteria               |

**Inspection Evaluation**

(MPI) The Above Item Has No Significant Discontinuous At The Time Of Inspection And Found Acceptable Accordance To The Halliburton Specification ASTM E709 (70.94158)

U.T-The Above Item Was Found Acceptable As Per Halliburton Procedure H2S STANDARD NACE MQ-01-76 ASME SECTION V ARTICLE 5 (ASTM E 797)

Pressure Test-The Above Item was Pressure Tested up to 300 PSI A low Pressure Hold for 5 min And Maximum Working pressure 10.000 psi Hold 15 min no Leak was Realized while testing & Pressure Was Stable Accordance To Chart Recorder Attached

| INSPECTION EQUIPMENT DETAILS  |           |              |           | TECHNICAL DETAILS            |                           |                    |                          |
|-------------------------------|-----------|--------------|-----------|------------------------------|---------------------------|--------------------|--------------------------|
| AC YOKE S.N:                  | 201504048 | CAL DUE DATE | 14-Feb-24 | White Contrast WCP 2         | MANUFACTURER<br>Magnaflux | BATCH NO<br>220602 | EXPIRE DATE<br>JUN,2025  |
| Digital Lux Meter WHITE LIGHT | 2722003   | CAL DUE DATE | 16-Feb-24 | Black Magnetic Ink 7HF       | MANUFACTURE<br>Magnaflux  | BATCH NO<br>220605 | EXPIRE DATE<br>JULY.2025 |
| UT THICKNESS GAUGE:           | 3997      | CAL DUE DATE | 16-Feb-24 | Fluorescent Magnetic Ink 7HF | 1.2 to 2.4 ml/100 ml      |                    |                          |
| UT TEST BLOCK:                | NoBo5087  | CAL DUE DATE | 16-Feb-24 |                              |                           |                    |                          |
| ASTM Test Block:              | 1657      | CAL DUE DATE | 14-Feb-24 |                              |                           |                    |                          |
| WHITE LIGHT INTENSITY:        | 3670 lux  |              |           |                              |                           |                    |                          |

**PERSON DETAILS**

|                    |                              |                        |                |         |  |
|--------------------|------------------------------|------------------------|----------------|---------|--|
| INSPECTOR NAME:    | M.Shahzad Ali                | SENIOR INSPECTOR:      | NAVEED HUSSAIN | CLIENT: |  |
| QUALIFICATION:     | ISO 9001, ISO 14001, UT, VT, | INSPECTION SUPERVISOR: | HANI ALI       | HB&SIGN |  |
| SIGNATURE & STAMP: |                              |                        |                | DATE:   |  |

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