

**CERTIFICATE OF QUALIFICATION VISUAL AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING INSPECTION**

THIS REPORT COMPLIES WITH RECOGNIZED INTERNATIONAL STANDARDS & TECHNICAL REQUIREMENTS

CLIENT:	<b>HALLIBURTON</b>	REPORT NO.:	QC-24-10-TSS-NDT-001
LOCATION:	TSS YARD	STANDARD:	ASTM E709 & ASTM E797 & AP6A
WORK ORDER #	*****		
DATE OF INSPECTION:	Tuesday, October 15, 2024	INSPECTION. DUE DATE:	Monday, April 14, 2025
TYPE OF INSPECTION:	VISUAL INSPECTION AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING		
DESCRIPTION:	BALON VALVE 3" 600 CL	DIVERTER MANIFOLD SAP NO:	MF001
		SERIAL NO:	FCG-0043

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

POINTS	THICKNESS AT POSITION		MINIMUM THICKNESS PROVIDED BY CUSTOMER
	A	B	
0°	11.72	12.14	5.61 MM
90°	11.49	11.54	
180°	11.77	12.02	
270°	11.89	11.70	

**INSPECTION RESULT**

VT & MPI	Accepted	According to ASTM E709
UT	Accepted	According to ASTM E 797

**Inspection Evaluation**

(MPI) The Above Item Has No Significant Discontinuous At The Time Of Inspection And Found Acceptable According to ASTM E709

U.T-The Above Item Was Found Acceptable As Per ASTM E797

INSPECTION EQUIPMENT DETAILS				TECHNICAL DETAILS			
AC YOKE S.N:	201504048	CAL DUE DATE	11-Apr-25	White Contrast WCP-2	MANUFACTURE	BATCH NO	EXPIRE DATE
Digital Lux Meter WHITE LIGHT	2722003	CAL DUE DATE	13-Apr-25		Magnaflux	220602	JUN,2025
UT THICKNESS GAUGE:	5500391	CAL DUE DATE	11-Apr-25	Black Magnetic Ink 7HF	MANUFACTURE	BATCH NO	EXPIRE DATE
UT TEST BLOCK:	NoBo5087	CAL DUE DATE	12-Apr-25		Magnaflux	220605	JULY,2025
ASTM Test Block:	1657	CAL DUE DATE	11-Apr-25	Concentration of 7HF:		1.2 to2.4 ml/100 ml	
WHITE LIGHT INTENSITY:	3620 lux						

**PERSON DETAILS**

**REVIEW BY**

INSPECTOR NAME:	M.Shahzad Ahmed	SENIOR INSPECTOR:	NAVEED HUSSAIN	CLIENT:	
QUALIFICATION:	NDT Level 2	INSPECTION SUPERVISOR:	HANI ALI	HB&SIGN	
SIGNATURE & STAMP:				DATE:	

**CERTIFICATE OF QUALIFICATION VISUAL AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING INSPECTION**

THIS REPORT COMPLIES WITH RECOGNIZED INTERNATIONAL STANDARDS & TECHNICAL REQUIREMENTS

CLIENT:	<b>HALLIBURTON</b>	REPORT NO.:	QC-24-10-TSS-NDT-002
LOCATION:	TSS YARD	STANDARD:	ASTM E709 & ASTM E797 & AP6A
WORK ORDER #	*****		
DATE OF INSPECTION:	Tuesday, October 15, 2024	INSPECTION. DUE DATE:	Monday, April 14, 2025
TYPE OF INSPECTION:	VISUAL INSPECTION AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING		
DESCRIPTION:	BALON VALVE 3" 600 CL	DIVERTER MANIFOLD SAP NO:	MF001
		SERIAL NO:	FCG-0044

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

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

POINTS	THICKNESS AT POSITION		MINIMUM THICKNESS PROVIDED BY CUSTOMER
	A	B	
0°	11.43	11.66	5.61 MM
90°	11.58	11.70	
180°	11.67	11.54	
270°	11.31	11.74	

**INSPECTION RESULT**

VT & MPI	Accepted	According to ASTM E709
UT	Accepted	According to ASTM E 797

**Inspection Evaluation**

(MPI) The Above Item Has No Significant Discontinuous At The Time Of Inspection And Found Acceptable According to ASTM E709

U.T-The Above Item Was Found Acceptable As Per ASTM E797

INSPECTION EQUIPMENT DETAILS				TECHNICAL DETAILS			
AC YOKE S.N:	201504048	CAL DUE DATE	11-Apr-25	White Contrast WCP-2	MANUFACTURE	BATCH NO	EXPIRE DATE
Digital Lux Meter WHITE LIGHT	2722003	CAL DUE DATE	13-Apr-25		Magnaflux	220602	JUN,2025
UT THICKNESS GAUGE:	5500391	CAL DUE DATE	11-Apr-25	Black Magnetic Ink 7HF	MANUFACTURE	BATCH NO	EXPIRE DATE
UT TEST BLOCK:	NoBo5087	CAL DUE DATE	12-Apr-25		Magnaflux	220605	JULY,2025
ASTM Test Block:	1657	CAL DUE DATE	11-Apr-25	Concentration of 7HF:		1.2 to2.4 ml/100 ml	
WHITE LIGHT INTENSITY:	3620 lux						

**PERSON DETAILS**

**REVIEW BY**

INSPECTOR NAME:	M.Shahzad Ahmed	SENIOR INSPECTOR:	NAVEED HUSSAIN	CLIENT:	
QUALIFICATION:	NDT Level 2	INSPECTION SUPERVISOR:	HANI ALI	HB&SIGN	
SIGNATURE & STAMP:				DATE:	

**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**

THIS REPORT COMPLIES WITH RECOGNIZED INTERNATIONAL STANDARDS & TECHNICAL REQUIREMENTS

CLIENT:	<b>HALLIBURTON</b>	REPORT NO.:	QC-24-10-TSS-NDT-003
LOCATION:	TSS YARD	STANDARD:	ASTM E709 & ASTM E797 & AP6A
WORK ORDER #	*****		
DATE OF INSPECTION:	Tuesday, October 15, 2024	INSPECTION. DUE DATE:	<b>Monday, April 14, 2025</b>
TYPE OF INSPECTION:	<b>VISUAL INSPECTION AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING</b>		
DESCRIPTION:	FLANGE: 3" 600 CL X 4" 206 WING	DIVERTER MANIFOLD SAP NO:	MF001
		SERIAL NO:	FCG-0040

(a) Normal condition  
Underside  
Reflection echo becomes wide small by diffused reflection caused by corroded scabrous surface.

ONLINE TRACEABILITY

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

POINTS	THICKNESS AT POSITION		MINIMUM THICKNESS PROVIDED BY CUSTOMER
	A		
0°	8.23		3.15 MM
90°	8.40		
180°	8.16		
270°	8.37		

**INSPECTION RESULT**

VT & MPI	Accepted	According to ASTM E709
UT	Accepted	According to ASTM E 797

**Inspection Evaluation**

(MPI) The Above Item Has No Significant Discontinuous At The Time Of Inspection And Found Acceptable According to ASTM E709

Note:MPI Wet Fluorescent inspection Thread With UltraViolet Light

U.T-The Above Item Was Found Acceptable As Per ASTM E797

INSPECTION EQUIPMENT DETAILS				TECHNICAL DETAILS			
AC YOKE S.N:	201504048	CAL DUE DATE	11-Apr-25	White Contrast WCP-2	MANUFACTURE	BATCH NO	EXPIRE DATE
Digital Lux Meter WHITE LIGHT	2722003	CAL DUE DATE	13-Apr-25		Magnaflux	220602	JUN,2025
UT THICKNESS GAUGE:	5500391	CAL DUE DATE	11-Apr-25	Black Magnetic Ink 7HF	MANUFACTURE	BATCH NO	EXPIRE DATE
UT TEST BLOCK:	NoBo5087	CAL DUE DATE	12-Apr-25		Magnaflux	220605	JULY,2025
ASTM Test Block:	1657	CAL DUE DATE	11-Apr-25	Fluorescent Magnetic Ink 14HF	MANUFACTURE	BATCH NO	EXPIRE DATE
DC COIL:	22650	CAL DUE DATE	12-Apr-25		Magnaflux	220306	March,2025
UV BLACK LIGHT:	1898977	CAL DUE DATE	11-Apr-25	Concentration of 14HF:		0.1 to 0.4 ml/100 ml	
WHITE LIGHT INTENSITY:	3620 lux	UV BLACK LIGHT INTENSITY:	3140 μw/cm <sup>2</sup>	Concentration of 7HF:		1.2 to 2.4 ml/100 ml	

**PERSON DETAILS**

**REVIEW BY**

INSPECTOR NAME:		SENIOR INSPECTOR:	NAVEED HUSSAIN	CLIENT:	
QUALIFICATION:		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**

THIS REPORT COMPLIES WITH RECOGNIZED INTERNATIONAL STANDARDS & TECHNICAL REQUIREMENTS

CLIENT:	<b>HALLIBURTON</b>	REPORT NO.:	QC-24-10-TSS-NDT-004
LOCATION:	TSS YARD	STANDARD:	ASTM E709 & ASTM E797 & AP6A
WORK ORDER #	*****		
DATE OF INSPECTION:	Tuesday, October 15, 2024	INSPECTION. DUE DATE:	<b>Monday, April 14, 2025</b>
TYPE OF INSPECTION:	<b>VISUAL INSPECTION AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING</b>		

DESCRIPTION:	FLANGE: 3" 600 CL X 4" 206 WING	DIVERTER MANIFOLD SAP NO:	MF001
		SERIAL NO:	FCG-0041

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

(b) Corrosion present on back surface: Small reflection echo, Area of diffused echo, Detector, Surface, Target. Reflection echo become wide small by diffused reflection caused by corroded scabrous surface.

ONLINE TRACEABILITY

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

POINTS	THICKNESS AT POSITION		MINIMUM THICKNESS PROVIDED BY CUSTOMER
	A		
0°	8.33	3.15 MM	
90°	8.21		
180°	8.09		
270°	8.05		

**INSPECTION RESULT**

VT & MPI	Accepted	According to ASTM E709
UT	Accepted	According to ASTM E 797

**Inspection Evaluation**

(MPI) The Above Item Has No Significant Discontinuous At The Time Of Inspection And Found Acceptable According to ASTM E709  
 Note:MPI Wet Fluorescent inspection Thread With UltraViolet Light  
 U.T-The Above Item Was Found Acceptable As Per ASTM E797

INSPECTION EQUIPMENT DETAILS				TECHNICAL DETAILS			
AC YOKE S.N:	201504048	CAL DUE DATE	11-Apr-25	White Contrast WCP-2	MANUFACTURE	BATCH NO	EXPIRE DATE
Digital Lux Meter WHITE LIGHT	2722003	CAL DUE DATE	13-Apr-25		Magnaflux	220602	JUN,2025
UT THICKNESS GAUGE:	5500391	CAL DUE DATE	11-Apr-25	Black Magnetic Ink 7HF	MANUFACTURE	BATCH NO	EXPIRE DATE
UT TEST BLOCK:	NoBo5087	CAL DUE DATE	12-Apr-25		Magnaflux	220605	JULY,2025
ASTM Test Block:	1657	CAL DUE DATE	11-Apr-25	Fluorescent Magnetic Ink 14HF	MANUFACTURE	BATCH NO	EXPIRE DATE
DC COIL:	22650	CAL DUE DATE	12-Apr-25		Magnaflux	220306	March,2025
UV BLACK LIGHT:	1898977	CAL DUE DATE	11-Apr-25	Concentration of 14HF:	0.1 to 0.4 ml/100 ml		
WHITE LIGHT INTENSITY:	3620 lux	UV BLACK LIGHT INTENSITY:	3140 μw/cm <sup>2</sup>	Concentration of 7HF:	1.2 to 2.4 ml/100 ml		

PERSON DETAILS		REVIEW BY		
INSPECTOR NAME:	M. Shihzad Ahmed	SENIOR INSPECTOR:	NAVEED HUSSAIN	CLIENT:
QUALIFICATION:		INSPECTION SUPERVISOR:	HANI ALI	HS&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**

THIS REPORT COMPLIES WITH RECOGNIZED INTERNATIONAL STANDARDS & TECHNICAL REQUIREMENTS

CLIENT:	<b>HALLIBURTON</b>	REPORT NO.:	QC-24-10-TSS-NDT-005
LOCATION:	TSS YARD	STANDARD:	ASTM E709 & ASTM E797 & AP6A
WORK ORDER #	*****		
DATE OF INSPECTION:	Tuesday, October 15, 2024	INSPECTION. DUE DATE:	<b>Monday, April 14, 2025</b>
TYPE OF INSPECTION:	<b>VISUAL INSPECTION AND MAGNETIC PARTICLE INSPECTION AND ULTRASONIC THICKNESS GAUGING</b>		
DESCRIPTION:	TEE: 3" 600 FLANGE X 3" 600 FLANGE X 4" 206 THREAD	DIVERTER MANIFOLD SAP NO:	MF001
		SERIAL NO:	FCG-0049

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

POINTS	THICKNESS AT POSITION			MINIMUM THICKNESS PROVIDED BY CUSTOMER
	A	B	C	
0°	7.87	8.02	8.25	3.15 MM
90°	8.19	8.31	8.46	
180°	8.26	8.32	8.20	
270°	7.99	8.02	8.29	

**INSPECTION RESULT**

VT & MPI	Accepted	According to ASTM E709
UT	Accepted	According to ASTM E 797

**Inspection Evaluation**

(MPI) The Above Item Has No Significant Discontinuous At The Time Of Inspection And Found Acceptable According to ASTM E709

Note:MPI Wet Fluorescent inspection Thread With UltraViolet Light

U.T-The Above Item Was Found Acceptable As Per ASTM E797

INSPECTION EQUIPMENT DETAILS				TECHNICAL DETAILS			
AC YOKE S.N:	201504048	CAL DUE DATE	11-Apr-25	White Contrast WCP-2	MANUFACTURE	BATCH NO	EXPIRE DATE
Digital Lux Meter WHITE LIGHT	2722003	CAL DUE DATE	13-Apr-25		Magnaflux	220602	JUN,2025
UT THICKNESS GAUGE:	5500391	CAL DUE DATE	11-Apr-25	Black Magnetic Ink 7HF	MANUFACTURE	BATCH NO	EXPIRE DATE
UT TEST BLOCK:	NoBo5087	CAL DUE DATE	12-Apr-25		Magnaflux	220605	JULY,2025
ASTM Test Block:	1657	CAL DUE DATE	11-Apr-25	Fluorescent Magnetic Ink 14HF	MANUFACTURE	BATCH NO	EXPIRE DATE
DC COIL:	22650	CAL DUE DATE	12-Apr-25		Magnaflux	220306	March,2025
UV BLACK LIGHT:	1898977	CAL DUE DATE	11-Apr-25	Concentration of 14HF:	0.1 to 0.4 ml/100 ml		
WHITE LIGHT INTENSITY:	3620 lux	UV BLACK LIGHT INTENSITY:	3140 µw/cm²	Concentration of 7HF:	1.2 to 2.4 ml/100 ml		

**PERSON DETAILS**

**REVIEW BY**

INSPECTOR NAME:	M. Shalwan Ahmed	SENIOR INSPECTOR:	NAVEED HUSSAIN	CLIENT:	
QUALIFICATION:		INSPECTION SUPERVISOR:	HANI ALI	HB&SIGN	
SIGNATURE & STAMP:				DATE:	

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