CMC No: 13.5S DNV GL Job No: A0394874

DNV GL UK LTD
SURVEILLANCE VISIT REPORT
General.

Client: Drilltools Ltd	**Client Certification Ref: N/A**
Vendor / Location: Drilltools Ltd, Meikle Wartle	**Project Number: N/A**

SCOPE

Witness Verification testing of Drilltools 4-3/4" Sour Service DT Flapper Safety Valve as per Testing Procedure M-0101-3750H Rev.A in accordance with API Specification 7NRV

DISCIPLINE	Y	N	TASK	Y	N
Mechanical	Y		Visual Survey	Y	
Electrical		N	Document Review		N
Structural		N	Pressure Test	Y	
Other (Specify Below)	N/A		Function Test	Y	
			Load Test		N
			Other (Specify Below)	N/A	

DESCRIPTION

Witness Verification testing of Drilltools DT Flapper Safety Valve S/No DT FSV -3001 as per Testing Procedure M-0101-4750H Rev.A (As described in API Specification 7NRV)

Equipment used

Data Logger c/w 0- 2000 bar Hydrotechnik Pressure Transducer S/No: Z150141428 Calibrated 20/03/17

Marsh Funnel Viscometer as described in API RP13 B1

Flowmeter, Wafer Type 0- 6000 l/min range. S/No 16205327 Calibrated 20/03/17

<u>Activities Witnessed 11/04/17</u>

Procedure Sections

6.a to 6f . . Body Hydrostatic Proof Test: The valve body was pressurised to 250 psi and held for 5 minutes. The pressure was increased to 15,000 psi for and held for 15 minutes. No visible leakage was observed and a steady chart

6.g to 6.i Valve Seat Hydrostatic Test: The valve was pressurised below the flapper to 250 and held for 5 minutes. The pressure was increased to10,000 psi and held for 10 minutes. No visible leakage was observed and a steady chart was noted.

6.j to 6.n Valve Seat Gas Test: The valve was pressurised to 250 psi for 5minutes, dropped to 50 psi for 5 minutes then increased to 2,500 psi below the flapper and held for a period of 10 minutes. No visible leakage was observed and a steady chart was noted.

6.o to 6.q Valve Seat Hydrostatic Test: The valve was pressurised below the flapper to 10,000psi and held or 1 minutes. No visible leakage was observed and a steady chart was noted.

6.r to 6u Open and close cycle testing (5 cycles)

Other activities witnessed while on site.

Drifting of valve using 1.156" dia x 48 "

The flow media viscosity was measured prior to commencement of flow loop testing. The testing. involved the use of a Marsh Funnel Viscometer as described in API RP13 B1. The measured funnel /volume test was recorded at 73 seconds.

The sand content of the flow media was checked using sample flasks and centrifuge in accordance with API MPMS. The sand content was measured at 2.5%

Activities Witnessed 03/05/16

Procedure Sections

6.z to 6.aa Valve Seat Hydrostatic Test. The valve was pressurised below the flapper to 250 psi and held for 5 minutes then increased to10,000 psi for 15 minutes. No visible leakage was observed and a steady chart was noted.

6.bb to 6ee Valve Seat Gas Test. The valve was pressurised to 250 psi for 5 minutes, dropped to 50 psi for 5 minutes then increased to 2,500 psi below the flapper and held for a period of 15 minutes. No visible leakage was observed and a steady chart was noted.

6.ff to 6.hh Valve Seat Hydrostatic Test (Secondary). The valve was pressurised below the flapper to 250 psi and held for 5 minutes then increased to10,000 psi for 15 minutes. No visible leakage was observed and a steady chart was noted.

6.ii Drifting of valve using Drift S/No 645, 1.156" dia x 48"

Other activities witnessed while on site.

The sand content of the flow media was checked using sample flasks and centrifuge in accordance with API MPMS. The sand content was measured at 2.5%

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CONCLUSIONS

All activities witnessed and found to be in accordance with Drilltools Ltd Testing Procedure M-0101-3750H Rev A which is based on the requirements for valve qualification testing as specified in API Specification 7NRV

Surveyor: Raymond Hay	Date: 16th March 2017	Place: Drilltools, Meikle Wartle

For DNV GL UK LTD

This document has been digitally signed and will therefore not have handwritten signatures

Raymond Hay
Surveyor