



Receipt Date: June 14, 2016
Cal. Date: June 16, 2016
Report Date: June 16, 2016

Report No.: 336084
Serial No.: 24360
Barcode: 201188

Calibration Certificate

WESTMOR FLUID SOLUTIONS LLC
14044 W. FREEWAY DRIVE
COLUMBUS, MN 55038
Contact: Ryan Hartin
Phone: 651-842-2551
PO Number: NONE
SOP: 34
Technician ID: 07

Item(s) Submitted: 25 Gallon LPG Prover
Manufacturer: Arrow
Material: Mild Steel
Description: Zero Bottom
Condition: Good
Temperature: 23.7 °C
Pressure: 736.5 mmHg
Relative Humidity: 56.8 %
Standard H₂O Temp. 15.8 °C
Artifact H₂O Temp.: 16.3 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
25	As Found (at 100 psig)	24.980	-4.7	2.17	1.5	0.0000186
	As Left (at 100 psig)	24.980	-4.7			

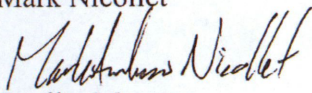
Neck Calibration: No neck calibration was performed at this time.

This prover has been calibrated as a "to contain after wet down" vessel with a drain time of 30 seconds after cessation of full flow. The prover listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-4 (2010). Uncertainty calculations contain the components in NIST SOP 21 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

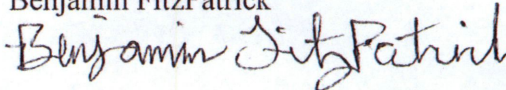
CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F.

Mark Nicollet


Quality Manager

Reviewed by:

Benjamin FitzPatrick



Deputy Director

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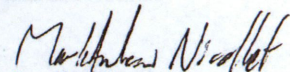
Pressure Correction Chart

WESTMOR FLUID SOLUTIONS LLC
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Temperature: 23.7 °C
Pressure: 736.5 mmHg
Relative Humidity: 56.8 %

Pressure Gauge Reading (psig)	Corrected Volume (gal)
0	24.912
10	24.921
20	24.931
30	24.941
40	24.951
50	24.961
60	24.964
70	24.968
80	24.972
90	24.976
100	24.980
110	24.982
120	24.984
130	24.986
140	24.988
150	24.990
160	24.992
170	24.995
180	24.997
190	24.999
200	25.002

Mark Nicollet


Quality Manager



Receipt Date: June 14, 2016
Cal. Date: June 15, 2016
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Report No.: 336085
Serial No.: 28816
Barcode: 019785

Calibration Certificate

WESTMOR FLUID SOLUTIONS LLC
14044 W. FREEWAY DRIVE
COLUMBUS, MN 55038
Contact: Ryan Hartin
Phone: 651-842-2551
PO Number: NONE
SOP: 34
Technician ID: 07

Item(s) Submitted: 100 Gallon LPG Prover
Manufacturer: ARROW
Material: Mild Steel
Description: Zero Bottom
Condition: Good
Temperature: 24.5 °C
Pressure: 731.1 mmHg
Relative Humidity: 58.9 %
Standard H₂O Temp. 15.1 °C
Artifact H₂O Temp.: 15.6 °C

Nominal Volume (gal)		Calibrated Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
100	As Found (at 100 psig)	99.852	-34.3	2.02	5.3	0.0000186
	As Left* (at 100 psig)	99.852	-34.3			

* Adjustment mechanism was too corroded to adjust prover into tolerance.

Neck Calibration: No neck calibration was performed at this time.

This prover has been calibrated as a "to contain after wet down" vessel with a drain time of 30 seconds after cessation of full flow. The prover listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-4 (2010). Uncertainty calculations contain the components in NIST SOP 21 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F.

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Quality Manager

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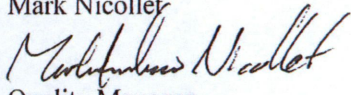
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Temperature: 24.5 °C
Pressure: 731.1 mmHg
Relative Humidity: 58.9 %

Pressure Gauge Reading (psig)	Corrected Volume (gal)
0	99.669
10	99.696
20	99.723
30	99.751
40	99.778
50	99.805
60	99.814
70	99.824
80	99.833
90	99.842
100	99.852
110	99.861
120	99.870
130	99.880
140	99.889
150	99.898
160	99.907
170	99.915
180	99.924
190	99.933
200	99.941

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Quality Manager