



Receipt Date: May 29, 2019  
Cal. Date: May 29, 2019  
Report Date: May 29, 2019

Report No.: 341160  
Serial No.: 1214688350-1  
Barcode: 202753

## Calibration Certificate

WESTMOR FLUID SOLUTIONS LLC  
14044 W. FREEWAY DRIVE  
COLUMBUS, MN 55038  
Contact: Ryan Hartin  
Phone: 651-842-2551  
PO Number: NONE  
Procedure: NIST SOP 19  
Technician ID: 20

Item(s) Submitted: 1000 Gallon Prover  
Manufacturer: Westmor Fluid Solutions  
Material: Stainless Steel (304)  
Type: No Bottom Zero  
Condition: Good  
Temperature: 19.4 °C  
Pressure: 731.3 mmHg  
Relative Humidity: 59.8 %  
Standard H<sub>2</sub>O Temp.: 11.8 °C  
Artifact H<sub>2</sub>O Temp.: 11.9 °C

Nominal Volume (gal)		Calibrated Volume (gal)	Error (in <sup>3</sup> )	<i>k</i>	U (in <sup>3</sup> )	CCE (°F)
1000	As Found	999.82	-42	2.01	24	0.0000288
	As Left	999.82	-42			

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 vessel 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 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 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.  
Conversion to SI unit: 1 gallon = 231 in<sup>3</sup> = 0.00378541 m<sup>3</sup>.

Anna Pierce

Metrologist

Reviewed by:

Pete Whebbe

Metrologist



Receipt Date: May 29, 2019  
Cal. Date: May 29, 2019  
Report Date: May 29, 2019

Report No.: 341161  
Serial No.: 1214688350-2  
Barcode: 202754

## Calibration Certificate

WESTMOR FLUID SOLUTIONS LLC  
14044 W. FREEWAY DRIVE  
COLUMBUS, MN 55038  
Contact: Ryan Hartin  
Phone: 651-842-2551  
PO Number: NONE  
Procedure: NIST SOP 19  
Technician ID: 20

Item(s) Submitted: 100 Gallon Prover  
Manufacturer: Westmor Fluid Solutions  
Material: Stainless Steel (304)  
Type: No Bottom Zero  
Condition: Good  
Temperature: 19.7 °C  
Pressure: 730.7 mmHg  
Relative Humidity: 59.7 %  
Standard H<sub>2</sub>O Temp.: 11.9 °C  
Artifact H<sub>2</sub>O Temp.: 12.0 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in <sup>3</sup> )	<i>k</i>	U (in <sup>3</sup> )	CCE (°F)
100	As Found	99.980	-4.7	2.01	2.4	0.0000288
	As Left	99.980	-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 vessel 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 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 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.  
Conversion to SI unit: 1 gallon = 231 in<sup>3</sup> = 0.00378541 m<sup>3</sup>.

Anna Pierce

Metrologist

Reviewed by:

Pete Whebbe

Metrologist

# United States Department of Commerce

## National Institute of Standards and Technology

Certificate of Metrological Traceability For:

# Minnesota

This laboratory has demonstrated evidence of an unbroken chain of metrological traceability of its standards to the international system of units (SI), documented measurement uncertainties, uses documented measurement procedures, successfully completed training and proficiency tests, documented calibration intervals, submitted a quality management system, and demonstrated suitable measurement assurance for the Scope listed on this certificate.

The Office of Weights and Measures Program assesses laboratories to NIST Handbook 143 - Program Handbook for State Weights and Measures Laboratories and ISO/IEC 17025:2005.

### Scope

Mass Echelon I	Mass Echelon III	Volume Gravimetric, I
20 kg to 1 mg	50 kg to 1 mg	20 L to 10 ml
Mass Echelon II	5000 lb to 0.001 lb	100 gal to 0.25 gal
5 kg to 1 mg	4 oz to 0.03125 oz	Volume Transfer, II
1000 lb to 250 lb	Weight Carts	1500 gal to 5 gal
50 lb to 0.001 lb	5 000 lb to 2000 lb	Volume Transfer, II LPG
	Wheel Load Weighers	200 gal to 25 gal
	12 000 lb to 2000 lb	
	Railroad Test Cars/Carts	
	110 000 lb to 80 000 lb	
	10 000 lb to 8 000 lb	



2019

*Douglas A. Olson*

Douglas A. Olson, Chief  
NIST Office of Weights and Measures

Effective Dates: 2019-01-01 to 2020-02-01