



Receipt Date: May 24, 2018
 Cal. Date: May 24, 2018
 Report Date: May 24, 2018



Report No.: 339454
 Serial No.: 03-53469
 Barcode: 202183

Calibration Certificate

QUAM PETROLEUM SERVICE INC.
 4720 NORTH DAKOTA 6
 MANDAN, ND 58554
 Contact: ARDIS
 Phone: 701-663-3732
 PO Number: NONE
 Procedure: NIST SOP 19
 Technician ID: 11

Item(s) Submitted: 5 Gallon Measure
 Manufacturer: Seraphin
 Material: Mild Steel
 Type: Measure
 Condition: Fair
 Temperature: 23.4 °C
 Pressure: 736.6 mmHg
 Relative Humidity: 53.4 %
 Standard H₂O Temp.: 15.8 °C
 Artifact H₂O Temp.: 16.0 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
5	As Found	4.99946	-0.12	2.05	0.25	0.0000186
	As Left	4.99946	-0.12			

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

This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 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 in³ = 0.00378541 m³.

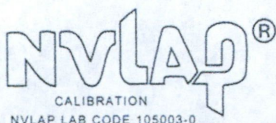
Pete Whebbe

Metrologist

Reviewed by:

Erik Alfvin

Metrologist



Receipt Date: May 24, 2018
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Report No.: 339453
Serial No.: 108515826
Barcode: 202182

Calibration Certificate

QUAM PETROLEUM SERVICE INC.
4720 NORTH DAKOTA 6
MANDAN, ND 58554
Contact: ARDIS
Phone: 701-663-3732
PO Number: None
Procedure: NIST SOP 19
Technician ID: 19

Item(s) Submitted: 100 Gallon Prover
Manufacturer: Determan
Material: Mild Steel
Type: No Bottom Zero
Condition: Good
Temperature: 23.3 °C
Pressure: 735.9 mmHg
Relative Humidity: 53.9 %
Standard H₂O Temp.: 12.1 °C
Artifact H₂O Temp.: 12.5 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
100	As Found	99.9979	-0.5	2.00	2.2	0.0000186
	As Left	99.9979	-0.5			

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 in³ = 0.00378541 m³.

Erik Alfvin

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
50 lb to 0.001 lb	5000 lb to 0.001 lb	100 gal to 0.25 gal
Mass Echelon II	4 oz to 0.03125 oz	Volume Transfer, II
20 kg to 1 mg	Weight Carts	1500 gal to 5 gal
1000 lb to 500 lb	10 000 lb to 2000 lb	200 gal to 25 gal LPG
50 lb to 0.001 lb	Wheel Load Weighers	
4 oz to 0.03125 oz	20 000 lb to 2000 lb	
	Railroad Test Cars	
	110 000 lb to 80 000 lb	

2018 to 2019



Douglas A. Olson

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

Effective Dates: 2018-01-01 to 2019-12-31