

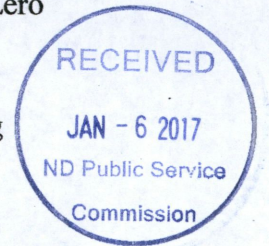
Receipt Date: December 23, 2016
Cal. Date: December 23, 2016
Report Date: December 23, 2016

Report No.: 336979
Serial No.: 051271555-0101
Barcode: 202151

Calibration Certificate

RJT TESTING & SERVICE
49134 150TH ST
DONNELLY, MN 56235
Contact: RANDY FULTS
Phone: 320-589-4421
PO Number: NONE
SOP: 19
Technician ID: 07

Item(s) Submitted: 100 Gallon Prover
Manufacturer: Determan Brownie
Material: Stainless Steel (304)
Type: No Bottom Zero
Condition: Good
Temperature: 18.6 °C
Pressure: 736.4 mmHg
Relative Humidity: 47.8 %
Standard H₂O Temp.: 10.1 °C
Artifact H₂O Temp.: 10.1 °C



Nominal Volume (gal)		Calibrated Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
100	As Found	99.992	-1.8	2.01	3.3	0.0000288
	As Left	99.992	-1.8			

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.

Mark Nicollet

Quality Manager

Reviewed by:

Erik Alfvín

Metrologist

Receipt Date: April 29, 2016
 Cal. Date: April 29, 2016
 Report Date: April 29, 2016

Report No.: 335894
 Serial No.: 44588
 Barcode: 202232

Calibration Certificate

RJT TESTING & SERVICE
 49134 150TH ST
 DONNELLY, MN 56235
 Contact: Randy Fults
 Phone: 320-589-4421
 PO Number: None
 SOP: 34
 Technician ID: 19

Item(s) Submitted: 100 Gallon LPG Prover
 Manufacturer: Arrow Tank
 Material: Mild Steel
 Description: Zero Bottom
 Condition: Good
 Temperature: 19.2 °C
 Pressure: 741 mmHg
 Relative Humidity: 45.5 %
 Standard H₂O Temp. 10.7 °C
 Artifact H₂O Temp.: 11.0 °C



Nominal Volume (gal)		Calibrated Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (/°F)
100	As Found (at 100 psig)	99.970	-7.0	2.02	5.3	0.0000186
	As Left (at 100 psig)	99.970	-7.0			

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.

Erik Alfvin

Metrologist

Reviewed by:

Mark Nicollet

Quality Manager

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Pressure Correction Chart

RJT TESTING & SERVICE
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 Manufacturer: Arrow Tank
 Material: Mild Steel
 Description: Zero Bottom
 Condition: Good
 Temperature: 19.2 °C
 Pressure: 741 mmHg
 Relative Humidity: 45.5 %



Pressure Gauge Reading (psig)	Corrected Volume (gal)
0	99.857
10	99.869
20	99.881
30	99.893
40	99.905
50	99.917
60	99.928
70	99.938
80	99.949
90	99.959
100	99.970
110	99.979
120	99.988
130	99.997
140	100.006
150	100.015
160	100.022
170	100.030
180	100.038
190	100.046
200	100.053

Erik Alfvin

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



2016 to 2017

A handwritten signature in black ink, appearing to read "Carol T. Hockert".

Carol T. Hockert, Chief
NIST Office of Weights and Measures

Effective Dates: 2016-01-01 to 2017-12-31