



Hugh E. Weathers
Commissioner

State of South Carolina Department of Agriculture

Metrology Laboratory

Mailing Address
PO Box 11280
Columbia, SC 29211

Physical Location
237 Catawba Street
Columbia, SC 29201

803.253.4052 (Phone/Fax)
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CERTIFICATE OF CALIBRATION FOR

1000 Gallon Stainless Steel Test Prover



Manufacturer
Gas Services & Supply

Serial Number
1459

State Test Number
SC171016-1-17

Submitted by

Main Line Measurement
2717 5th Street, N.W.
Minot, ND 58701

The above described measuring device has been compared with the standards of the State of South Carolina which are traceable to the National Institute of Standards and Technology through NIST Test Numbers 684/283739-13 and NC0706-013-GV and was found or adjusted to deliver the volume listed below when the prover is level and readings are taken at eye level to the meniscus.

Scale Reading	Prover Delivery at 60°F	Prover Delivery at 60°F	Uncertainty	Tolerance
0 (1000 gallons)	1000.073 US gallons	231017 in ³	42 in ³	116 in ³
The measurement uncertainty is calculated at a coverage factor of k=2 for an approximate 95% confidence level.				

Date of Test: 10/16/17

Robert L. McGee, Director
Metrology Laboratory

Comments:

- This calibration has metrological traceability to the International System of Units (SI) through South Carolina primary standards calibrated by the National Institute of Standards and Technology (NIST).
- There are 0.003785412 cubic meters per US gallon.
- Calibration procedure used: SOP 19 from NIST IR 7383
- Prover calibrated in "Wet Down" condition using water as the calibration medium.
- Prover calibrated to a reference temperature of 60°F
- Prover condition: Clean
- Prover calibrated using a 30 drain period (+/- 5 second) beginning at the end of main flow.
- Environmental conditions at time of test: Temp: 23 °C, Humidity: 90 %RH.
- Prover assumed cubical coefficient of thermal expansion: 0.0000265 /°F
- Prover error "As Found": 17 in³ : "As Left": 17 in³

Calibration Due Date: 10/16/19

Certificate of Calibration
SC Metrology Laboratory

Date of Test: 10/17/17

Manufacturer
Gas Services & Supply

Serial Number
1460

State Test Number
SC171017-1-17

Temperature Correction Chart for 200 Gallon Stainless Steel Prover		
Product Temp (°F)	Temperature Correction (gallons)	Temperature Correction (in ³)
-20	-0.424	-98
-15	-0.398	-92
-10	-0.371	-86
-5	-0.344	-80
0	-0.318	-73
5	-0.292	-67
10	-0.265	-61
15	-0.239	-55
20	-0.212	-49
25	-0.185	-43
30	-0.159	-37
35	-0.132	-31
40	-0.106	-24
45	-0.079	-18
50	-0.053	-12
55	-0.026	-6
60	0.000	0
65	0.027	6
70	0.053	12
75	0.079	18
80	0.106	24
85	0.132	31
90	0.159	37
95	0.185	43
100	0.212	49
105	0.238	55
110	0.265	61
115	0.291	67
120	0.318	73

Note: This chart is valid only for 200 gallon stainless steel provers with cubical coefficient of expansion of 0.0000265 /°F and a product reference temperature of 60 °F.



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CERTIFICATE OF CALIBRATION FOR

200 Gallon Stainless Steel Test Prover

REC'D NOV 29 2017

Manufacturer
Gas Services & Supply

Serial Number
1460

State Test Number
SC171017-1-17

Submitted by

Main Line Measurement
2717 5th Street, N.W.
Minot, ND 58701

The above described measuring device has been compared with the standards of the State of South Carolina which are traceable to the National Institute of Standards and Technology through NIST Test Numbers 684/283739-13 and NC0706-013-GV and was found or adjusted to deliver the volume listed below when the prover is level and readings are taken at eye level to the meniscus.

Scale Reading	Prover Delivery at 60°F	Prover Delivery at 60°F	Uncertainty	Tolerance
0 (200 gallons)	200.013 US gallons	46202.92 in ³	8.6 in ³	23 in ³
The measurement uncertainty is calculated at a coverage factor of k=2 for an approximate 95% confidence level.				

Date of Test: 10/17/17

Robert L. McGee, Director
Metrology Laboratory

Comments:

- This calibration has metrological traceability to the International System of Units (SI) through South Carolina primary standards calibrated by the National Institute of Standards and Technology (NIST).
- There are 0.003785412 cubic meters per US gallon.
- Calibration procedure used: SOP 19 from NIST IR 7383
- Prover calibrated in "Wet Down" condition using water as the calibration medium.
- Prover calibrated to a reference temperature of 60°F
- Prover condition: Clean
- Prover calibrated using a 30 drain period (+/- 5 second) beginning at the end of main flow.
- Environmental conditions at time of test: Temp: 17 °C, Humidity: 49%RH.
- Prover assumed cubical coefficient of thermal expansion: 0.0000265 /°F
- Prover error "As Found": 2.92 in³ : "As Left": 2.92 in³

Calibration Due Date: 10/17/19

Certificate of Calibration
 SC Metrology Laboratory

Date of Test: 10/17/17

Manufacturer
 Gas Services & Supply

Serial Number
 1460

State Test Number
 SC171017-1-17

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-20	-0.424	-98
-15	-0.398	-92
-10	-0.371	-86
-5	-0.344	-80
0	-0.318	-73
5	-0.292	-67
10	-0.265	-61
15	-0.239	-55
20	-0.212	-49
25	-0.185	-43
30	-0.159	-37
35	-0.132	-31
40	-0.106	-24
45	-0.079	-18
50	-0.053	-12
55	-0.026	-6
60	0.000	0
65	0.027	6
70	0.053	12
75	0.079	18
80	0.106	24
85	0.132	31
90	0.159	37
95	0.185	43
100	0.212	49
105	0.238	55
110	0.265	61
115	0.291	67
120	0.318	73

Note: This chart is valid only for 200 gallon stainless steel provers with cubical coefficient of expansion of 0.0000265 /°F and a product reference temperature of 60 °F.

United States Department of Commerce

National Institute of Standards and Technology

Certificate of Metrological Traceability For:

South Carolina

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	Weight Carts	Volume Transfer, II
30 kg to 1 mg	6000 lb to 2500 lb	20 L to 1 L
Mass Echelon II	Wheel Load Weighers	1500 gal to 1 gal
50 kg to 1 mg	36 000 lb to 12 000 lb	100 gal to 20 gal LPG
1000 lb to 0.001 lb	Volume Gravimetric, I	Grain Moisture
8 oz to 0.015625 oz	20 L to 100 mL	23 % to 13 %
Mass Echelon III	5 gal to 1 gal	
1000 kg to 1 mg		
2500 lb to 0.001 lb		
8 oz to 0.015625 oz		



2016 to 2017

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

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

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