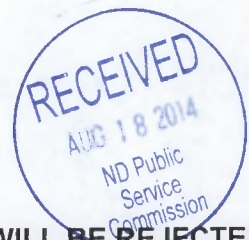




APPLICATION FOR REGISTRATION AS A REGISTERED SERVICE COMPANY

Public Service Commission
SFN 51277 (2/2014)



TYPE OR PRINT - AN INCOMPLETE OR ILLEGIBLE APPLICATION WILL BE REJECTED

Name of Company <i>T&T Measurements, Inc.</i>	Email Address <i>travist@ruggedwest.com</i>	Application Date	
Mailing Address <i>10671 43rd St. NW</i>	City <i>Newtown</i>	State <i>ND</i>	Zip Code <i>58763</i>
Telephone Number <i>701-675-2373</i>	Cell Phone Number <i>701-421-1352</i>	Fax Number <i>701-675-2372</i>	

Select below all device types your company will certify:

Scales (include maximum capacity, if applicable)	Liquid (include maximum flow rate, if applicable)
<input type="checkbox"/> 1. Rail	<input checked="" type="checkbox"/> 1. Retail Fuel (less than 20 gal. per minute)
<input type="checkbox"/> 2. Truck	<input checked="" type="checkbox"/> 2. High Flow Retail Fuel (20 gal. per minute or greater)
<input type="checkbox"/> 3. Livestock	<input checked="" type="checkbox"/> 3. Vehicle Tank: Max. Flow Rate: <i>500</i>
<input type="checkbox"/> 4. Hopper: Max. Capacity: _____	<input checked="" type="checkbox"/> 4. Stationary Bulk (fuel or oil): Max. Flow Rate: <i>100</i>
<input type="checkbox"/> 5. Belt	<input checked="" type="checkbox"/> 5. LPG
<input type="checkbox"/> 6. Over 30 lbs.: Max. Capacity: _____	<input checked="" type="checkbox"/> 6. Stationary LPG
<input type="checkbox"/> 7. 30 lbs. or less	<input checked="" type="checkbox"/> 7. Fertilizer: Max. Flow Rate: _____
<input type="checkbox"/> 8. Class II (indicate on your calibration report which weight kit is Class II certified)	<input checked="" type="checkbox"/> 8. Chemical
<input type="checkbox"/> 9. Other: Please List:	<input type="checkbox"/> 9. Anhydrous
	<input checked="" type="checkbox"/> 10. Loading Rack
	<input type="checkbox"/> 11. Other: Please List:

List below all persons employed by your company as a North Dakota Registered Service Person and the device types they are registered to certify (attach a separate sheet to list additional employees):

Permit No.	Employee	Device Types Registered to Certify (list using device type numbers from above)
<i>e.g. 1001</i>	<i>e.g. John Doe</i>	<i>e.g. Scales - 2, 3, 6, 8; e.g. Liquid - 1, 2, 6</i>
<i>1607</i>	<i>TRAVIS Thompson</i>	<i>Liquid 1, 2, 3, 4, 5, 6, 8, 10</i>
<i>1712</i>	<i>Derek Thompson</i>	<i>Liquid 1, 2, 3, 4, 5, 6, 8, 10</i>

List below all field standards (attach current calibration reports):

100 GAL LPG TANK	10-50# Weights
100 GAL LPG	
25 GAL LPG	
100 GAL Refined Fuels	
100 GAL Refined Fuels	
5 GAL Refined Fuels	
5 GAL Refined Fuels	
500 GAL Refined Fuels	

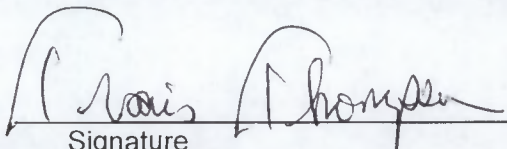
Additional Application Items (initial where appropriate):

Standardized Test Report	<input checked="" type="checkbox"/> Copy enclosed <input checked="" type="checkbox"/> No change in report filed previously
Tested and Approved Sticker	<input checked="" type="checkbox"/> Copy enclosed <input checked="" type="checkbox"/> No change in sticker filed previously
Photocopy of Crimped Lead Wire Seal	<input checked="" type="checkbox"/> Copy enclosed <input checked="" type="checkbox"/> No change in crimped lead wire seal filed previously

Public Company Listing:

Include my company information on your registered service company list for public contact.
 Yes No

I am TRAVIS Thompson, and have authority to represent this company.
 By signing this application, I declare that I have examined this form and accompanying documentation, and to the best of my knowledge and belief, the facts stated and documentation provided is true, correct, and complete.


 Signature

Send Completed Application and Related Documents To:

Public Service Commission
 600 E Boulevard Ave Dept 408
 Bismarck ND 58505-0480
 Telephone: (701) 328-2400
 Fax: (701) 328-2410

North Dakota

nd.gov Official Portal for North Dakota State Government



SECRETARY OF STATE NORTH DAKOTA



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T & T MEASUREMENTS, INC.

Corporation Details

System ID: 24873500 **Phone:** (701) 675-2373
Type: BUSINESS CORPORATION
Status: Active & Good Standing
Original File Date: 05/30/2008 **Effective Date:** 07/01/2008
State of Origin: North Dakota

Nature of Business

CERTIFICATION OF REPAIR OF METERS, LIQUID & GAS

Principal Office

10671 43RD ST NW NEW TOWN, ND 58763-9027

Registered Agent

TRAVIS THOMPSON
10671 43RD ST NW
NEW TOWN, ND 58763-9027
Established Date: Jul 01, 2008

Authorized Shares

Class	Number	Par Value
	50000.000000	\$.000000

Generate an Annual Report To File

To Generate a Annual Report form to be filed with the Secretary of State, select the appropriate year of the report you intend to file. This report does not contain details of a report previously filed with the Secretary of State. The annual report years reflected are an indication of the various report forms available in this site and is not an indication that an entity needs to file reports for all years. Missing years indicate that the forms for the missing year have not yet been deployed to the website, or have already been removed, and can be obtained by contacting the Secretary of State.

[2013](#) [2014](#) (generates a forms-fillable pdf in a new pop-up window)

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Wyoming Department of Agriculture
Weights and Measures Laboratory
6607 Campstool Road
Cheyenne, WY 82002
(307)777-7556



Calibration Certificate

For

Three-5 gallon Stainless Steel Provers and
One-100 gallon Stainless Steel Prover

Manufacturer: Listed on Following Table
Serial No.: Listed on Following Table

Submitted by
T&T Measurements Inc.
Travis Thompson
10671 23rd St Northwest
Newtown, ND 58763
(701)421-1352

Manufacturer	Model Number	Serial Number	Nominal (gal)	Prover Volume* (gal)	Prover Error (gal)	Expanded Uncertainty (gal)
Gas Service and Supply	GSB5	1427	5	4.9999	-0.0001	0.0012
Gas Service and Supply	GSB5	1428	5	4.9997	-0.0003	0.0012
Gas Service and Supply	GSB5	1429	5	4.9998	-0.0002	0.0012
Gas Service and Supply	100 USG	1425	100	100.0102	0.0102	0.0060

The data in this table applies only to those items specifically listed on this report.

* Prover Volume is Volume to Deliver after the cessation of flow and 30 second drain time at a reference temperature of 60° F.

Uncertainty Statement:

The combined standard uncertainty includes the standard uncertainty reported for the standard and the standard uncertainty for the measurement process. The combined standard uncertainty is multiplied by a coverage factor of 2.06 to give an expanded uncertainty, which defines an interval having a level of confidence of approximately 95 percent. The expanded uncertainty presented in this report is consistent with the 1993 ISO Guide to the Expression of Uncertainty in Measurement. The expanded uncertainty is not to be confused with a tolerance limit for the user during application.

Traceability Statement:

Standards used for comparison are traceable to United States national standards at NIST and are part of a comprehensive measurement assurance program for ensuring continued accuracy and traceability reported by this laboratory. The laboratory test number identified above is the unique report number to be used in referencing measurement traceability for artifacts identified in this report only. Traceability to the SI is maintained using the conversion factor: 1 gallon = 231 in³ = 3.785412 L = 0.003785412 m³.

Supplemental Information

Description of artifacts submitted for testing:

Three-5 gallon stainless steel provers; Cubical Coefficient of Thermal Expansion 0.0000265/°F. One-100 gallon Stainless Steel Test Prover; assumed Cubical Coefficient of Thermal Expansion 0.0000265/°F.

Conditions of artifacts submitted for testing:

Artifacts were in good condition and for the type and class. As found prover errors: S/N 1427 -0.0027 gal; S/N 1428 -0.0003 gal; S/N 1429 -0.0023 gal and S/N 1425 0.0102 gal.

Treatment of artifacts prior to testing:

Artifacts were degreased and thoroughly rinsed prior to calibration.

Equipment and Standards:

Standard	Range
NBS4214	5 gallons
SP100	100 gallons

Procedure used:

Volume Transfer Method (NISTIR 7383, SOP 19)

Environmental conditions are maintained within the following parameters:

Temperature	Relative Humidity
18 °C to 27 °C	40.0% to 60%

Date Artifacts Received: June 23, 2014

Date of test: June 23, 2014 and June 24, 2014

Test performed by: _____ Date of Report Preparation: June 24, 2014

Robert Weidler
WDA State Metrologist

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**Wyoming Department of Agriculture
Weights and Measures Laboratory
6607 Campstool Road
Cheyenne, WY 82002
(307)777-7556**



Calibration Certificate

For

One-5 gallon Test Measure and
One-100 gallon Prover

Manufacturer: Listed on Following Table
Serial No.: Listed on Following Table

Submitted by
T&T Measurements Inc.
Travis Thompson
10671 23rd St Northwest
Newtown, ND 58763
(701)421-1352

Manufacturer	Model Number	Serial Number	Nominal (gal)	Prover Volume* (gal)	Prover Error (gal)	Expanded Uncertainty (gal)
Ellisco	FS282-5D	16970	5	5.0002*	0.0002	0.0012
Gas Service and Supply	100 USG	12872105-2	100	100.0087**	0.0087	0.0060

The data in this table applies only to those items specifically listed on this report.

* Prover Volume is Volume to Deliver after a 30 second pour and 10 second drain time at a reference temperature of 60° F.

** Prover Volume is Volume to Deliver after the cessation of flow and 30 second drain time at a reference temperature of 60° F.

Uncertainty Statement:

The combined standard uncertainty includes the standard uncertainty reported for the standard and the standard uncertainty for the measurement process. The combined standard uncertainty is multiplied by a coverage factor of 2.06 to give an expanded uncertainty, which defines an interval having a level of confidence of approximately 95 percent. The expanded uncertainty presented in this report is consistent with the 1993 ISO Guide to the Expression of Uncertainty in Measurement. The expanded uncertainty is not to be confused with a tolerance limit for the user during application.

Traceability Statement:

Standards used for comparison are traceable to United States national standards at NIST and are part of a comprehensive measurement assurance program for ensuring continued accuracy and traceability reported by this laboratory. The laboratory test number identified above is the unique report number to be used in referencing measurement traceability for artifacts identified in this report only. Traceability to the SI is maintained using the conversion factor: 1 gallon = 231 in³ = 3.785412 L = 0.003785412 m³.

Supplemental Information

Description of artifacts submitted for testing:

One-5 gallon Mild Steel Test Measure; Cubical Coefficient of Thermal Expansion 0.0000186/°F. One-100 gallon Mild Steel Test Prover; assumed Cubical Coefficient of Thermal Expansion 0.0000186/°F.

Conditions of artifacts submitted for testing:

Artifacts were in good condition and for the type and class. As found prover errors: S/N 16970, 0.0002 gal and S/N 12872105-2, 0.0087 gal; no adjustments were made.

Treatment of artifacts prior to testing:

Artifacts were degreased and thoroughly rinsed prior to calibration.

Equipment and Standards:

Standard	Range
NBS4214	5 gallons
SP100	100 gallons

Procedure used:

Volume Transfer Method (NISTIR 7383, SOP 19)

Environmental conditions are maintained within the following parameters:

Temperature	Relative Humidity
18 °C to 27 °C	40.0% to 60%

Date Artifacts Received: July 22, 2014

Date of test: July 22, 2014

Test performed by: _____ Date of Report Preparation: July 23, 2014

Robert Weidler
WDA State Metrologist

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Wyoming Department of Agriculture
Weights and Measures Laboratory
6607 Campstool Rd
Cheyenne, WY 82002
(307)777-7556



Calibration Certificate

For

One-500 gallon Prover

Manufacturer: Listed on Following Table
Serial No.: Listed on Following Table

Submitted by
T&T Measurements Inc.
10671 23rd St Northwest
Newtown, ND 58763
(701)421-1352

Manufacturer	Model Number	Serial Number	Nominal (gal)	Prover Volume*	Prover Error	Expanded Uncertainty
Gas Service and Supply	GSB500	1430	500	499.971 gal	-0.029 gal	0.084 gal

The data in this table applies only to those items specifically listed on this report.

* Prover Volume is Volume to Deliver after the cessation of flow and 30 second drain time at a reference temperature of 60° F.

Uncertainty Statement:

The combined standard uncertainty includes the standard uncertainty reported for the standard and the standard uncertainty for the measurement process. The combined standard uncertainty is multiplied by a coverage factor of 4.53 to give an expanded uncertainty, which defines an interval having a level of confidence of approximately 95 percent. The expanded uncertainty presented in this report is consistent with the 1993 ISO Guide to the Expression of Uncertainty in Measurement. The expanded uncertainty is not to be confused with a tolerance limit for the user during application.

Traceability Statement:

Standards used for comparison are traceable to United States national standards at NIST and are part of a comprehensive measurement assurance program for ensuring continued accuracy and traceability reported by this laboratory. The laboratory test number identified above is the unique report number to be used in referencing measurement traceability for artifacts identified in this report only. Traceability to the SI is maintained using the conversion factor: 1 gallon = 231 in³ = 3.785412 L = 0.003785412 m³.

Supplemental Information

Description of artifacts submitted for testing:

One-500 gallon Stainless Steel Prover; Cubical Coefficient of Thermal Expansion 0.0000265/°F.

Conditions of artifacts submitted for testing:

Artifact was in good condition for the type and class.

Treatment of artifacts prior to testing:

Artifact was degreased and thoroughly rinsed prior to calibration.

Equipment and Standards:

Standard	Range
SP100	100 gallons

Procedure used:

Volume Transfer Method (NISTIR 7383, SOP 19)

Average environmental conditions at time of test:

Date	Temperature	Barometric Pressure	Relative Humidity
July 28, 2014	20.5 °C	621.6 mm Hg	58.7 %

Date Artifacts Received: July 28, 2014

Date of test: July 28, 2014

Test performed by: _____ Date of Report Preparation: July 28, 2014

Robert Weidler
WDA State Metrologist

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Wyoming Department of
Agriculture
Weights and Measures Laboratory
6607 Campstool Rd
Cheyenne, WY 82002



REPORT OF CALIBRATION

Issued To:

T&T Measurements Inc.
10671 23rd St Northwest
Newtown, ND 58763

Point of Contact:

Travis Thompson
Ph. 701-421-1352

Purchase Order Number:

N/A

Report Number:

140057

Calibration Date: June 24, 2014

This is to certify that the information contained in this report is true and correct as of the date of calibration.

A handwritten signature in black ink, appearing to read "Robert Weidler".

Robert Weidler, State Metrologist

6-24-14

Date of Issue

WDA Weights and Measures Metrology Laboratory

Report Number: 140057

Calibration Date: June 24, 2014

Artifact(s) Description

Test Item:	25 gal LPG Prover	Date Received:	June 23, 2014
Serial Number:	39905	Manufacture:	Gas Service and Supply
Material:	Steel, Pressure Vessel, Low Carbon	Material CCE:	0.000016 / °F
Condition:	Good	Specification:	NIST HB 105-4

Calibration Information

Job Order #:	N/A	Temperature:	18.5 °C
Metrologist:	Robert Weidler	Humidity:	60.0 % RH
Procedure:	NISTIR 7383, SOP 21	Water Temperature:	16.5 °C

Laboratory Reference Standards Used

Description	Serial Number	Cert. Number	Cal Date	Cal Due
5 gallon Slicker Plate	NBS4214	AZ	4/13/2007	4/13/2017

Traceability Statement

The artifact(s) described in this report have been compared to the Standards of the State of Wyoming. The Standards of the State of Wyoming are traceable to the National Institute of Standards and Technology (NIST) and are part of a comprehensive measurement assurance program for ensuring continued accuracy and measurement traceability within the level of uncertainty reported by this laboratory. The International System of Units (SI) for volume is the cubic meter (m³) (see Conversion Factors on page 3). The report number for this report is the only unique report number to be used in referencing measurement traceability for the artifact(s) described in this report.

Uncertainty Statement

The combined standard uncertainty includes uncertainties reported for the standard, uncertainties associated with the measurement process, uncertainties for any observed deviations from reference values which are less than surveillance limits, and other uncertainties associated with the particular artifact (i.e., material cubical coefficient of expansion, reading meniscus, etc.). The combined standard uncertainty is multiplied by k, a coverage factor of 2, to give the expanded uncertainty (which defines an interval with an approximate 95 percent level of confidence). The expanded uncertainty presented in this report is consistent with NIST Technical Note 1297.

WDA Weights and Measures Metrology Laboratory

Report Number: 140057

Calibration Date: June 24, 2014

Pertinent Information

- In-accordance-with ISO/IEC FDIS 17025, General Requirements for the Competence of Testing and Calibration Laboratories, paragraph 5.10.4.4 'A calibration certificate (or calibration label) shall not contain any recommendation on the calibration interval except where this has been agreed with the client. This requirement may be superseded by legal regulations.'
- The artifact is considered in-tolerance when the error is equal to or less than the specified tolerance minus the measurement uncertainty. RED print indicates an out-of-tolerance reading.
- The LPG Prover 'As Left' volume is 'In-Tolerance', the LPG Prover may be used in meter testing without a correction.
- Enter the Pressure Correction from Table 1 that corresponds with the pressure being tested on your LPG Meter Test form.
- The calibration item was calibrated in a "wet down" condition using water. The calibration data above applies when the prover is drained for a 30 (\pm 5) second period after cessation of the main flow.
- The results listed in this report relate only to the artifacts described and extent of calibrations performed.

Conversion Factors

From NIST Special Publication 811, *Guide for the Use of the International System of Units (SI)*

Factors in **boldface** are exact

To convert from	to	multiply by
gallon (U.S.) (gal)	to cubic meter (m ³)	3.875 412 E-03
cubic inch (in ³)	to cubic meter (m ³)	1.638 706 4 E-05
liter (L)	to cubic meter (m ³)	1.0 E-03

WDA Weights and Measures Metrology Laboratory

Report Number: 140057
Calibration Results

Calibration Date: June 24, 2014

Nominal Volume (at zero mark on gauge)	Prover Volume As Found @ 60 °F and 100 psig (gal)	Prover Volume As Left @ 60 °F and 100 psig (gal)	NIST HB 105-4 Specification Tolerance ± (gal)	Uncertainty k=2 ± (gal)
25 gal	25.0036	25.0036	0.0500	0.0069

Table 1 - LPG Prover Corrections @ 60 °F

psig	Prover Scale Reading (gal)	Pressure Correction (Pcorr) (gal) ¹	Prover Error (gal)	Prover Volume (gal)
0	0.02	-0.023549071	-0.019947673	24.98005233
10	0.016	-0.020194164	-0.016592766	24.98340723
20	0.012	-0.016839257	-0.013237859	24.98676214
30	0.008	-0.01348435	-0.009882952	24.99011705
40	0.004	-0.010129443	-0.006528045	24.99347195
50	0	-0.006774535	-0.003173138	24.99682686
60	-0.002	-0.005419628	-0.001818231	24.99818177
70	-0.004	-0.004064721	-0.000463324	24.99953668
80	-0.006	-0.002709814	0.000891583	25.00089158
90	-0.008	-0.001354907	0.00224649	25.00224649
100	-0.01	0	0.003601397	25.0036014
110	-0.012	0.001354907	0.004956305	25.0049563
120	-0.014	0.002709814	0.006311212	25.00631121
130	-0.016	0.004064721	0.007666119	25.00766612
140	-0.018	0.005419628	0.009021026	25.00902103
150	-0.02	0.006774535	0.010375933	25.01037593
160	-0.022	0.008129443	0.01173084	25.01173084
170	-0.024	0.00948435	0.013085747	25.01308575
180	-0.026	0.010839257	0.014440654	25.01444065
190	-0.028	0.012194164	0.015795561	25.01579556
200	-0.03	0.013549071	0.017150468	25.01715047

¹Gauge scale was adjusted for nominal volume at 100 psig.

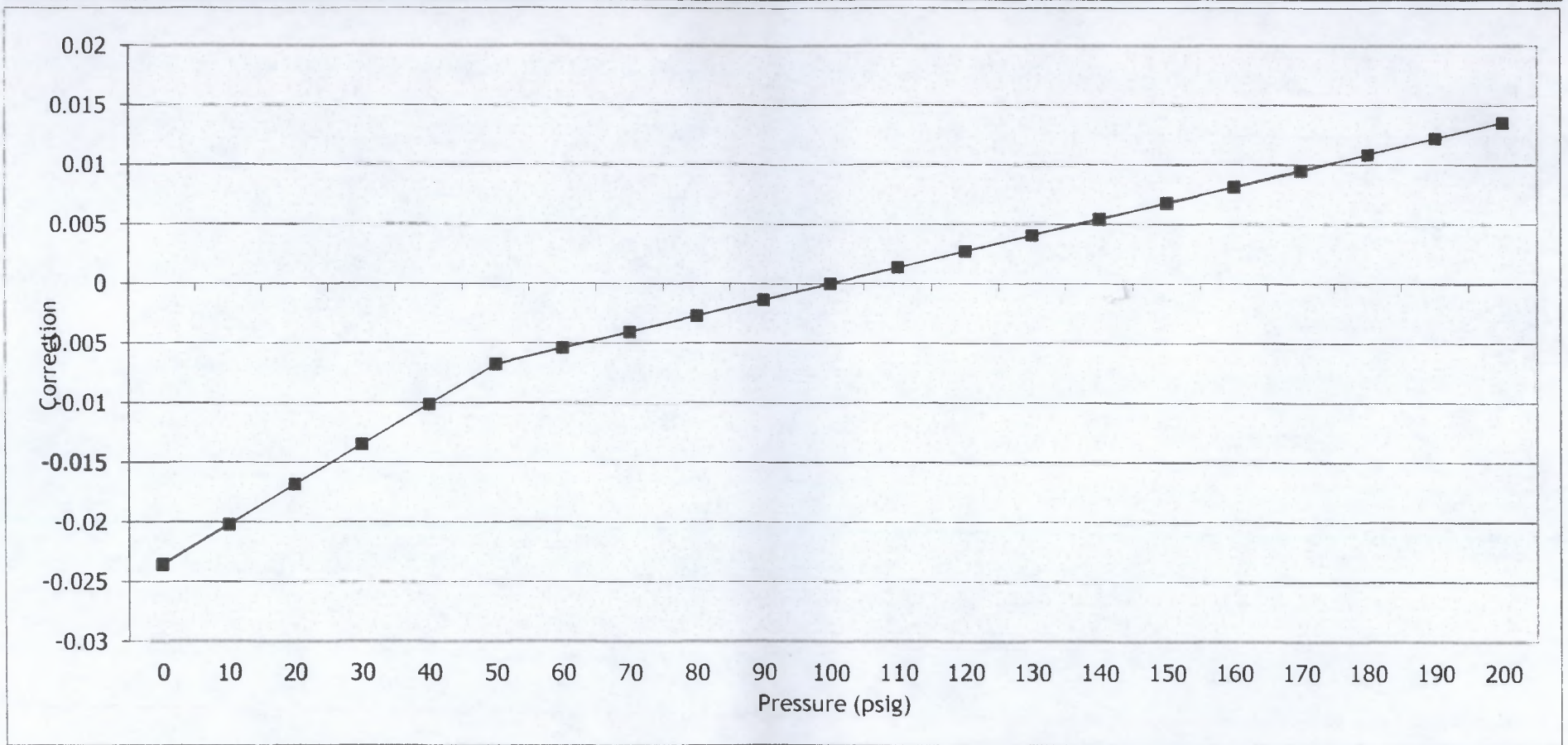
²Gauge scale could not be adjusted or did not need to be adjusted.

WDA Weights and Measures Metrology Laboratory

Report Number: 140057

Calibration Date: June 24, 2014

Chart 1 - LPG Pressure Corrections (gal) @ 60 °F





Wyoming Department of
Agriculture
Weights and Measures Laboratory
6607 Campstool Rd
Cheyenne, WY 82002



REPORT OF CALIBRATION

Issued To:

T&T Measurements Inc.
10671 23rd St Northwest
Newtown, ND 58763

Point of Contact:

Travis Thompson
Ph. 701-421-1352

Purchase Order Number:

N/A

Report Number:

140061

Calibration Date: July 22, 2014

This is to certify that the information contained in this report is true and correct as of the date of calibration.

Robert Weidler, State Metrologist

7-23-14

Date of Issue

WDA Weights and Measures Metrology Laboratory

Report Number: 140061

Calibration Date: July 22, 2014

Artifact(s) Description

Test Item:	100 gal LPG Prover	Date Received:	July 22, 2014
Serial Number:	2075	Manufacture:	Gas Service and Supply
Material:	Steel, Pressure Vessel, Low Carbon	Material CCE:	0.000016 / °F
Condition:	Good	Specification:	NIST HB 105-4

Calibration Information

Job Order #:	N/A	Temperature:	21.0 °C
Metrologist:	Robert Weidler	Humidity:	58.8 % RH
Procedure:	NISTIR 7383, SOP 21	Water Temperature:	20.9 °C

Laboratory Reference Standards Used

Description	Serial Number	Cert. Number	Cal Date	Cal Due
100 gallon Slicker Plate	11-53192	NC1203-117-GV	3/23/2012	3/23/2022

Traceability Statement

The artifact(s) described in this report have been compared to the Standards of the State of Wyoming. The Standards of the State of Wyoming are traceable to the National Institute of Standards and Technology (NIST) and are part of a comprehensive measurement assurance program for ensuring continued accuracy and measurement traceability within the level of uncertainty reported by this laboratory. The International System of Units (SI) for volume is the cubic meter (m³) (see Conversion Factors on page 3). The report number for this report is the only unique report number to be used in referencing measurement traceability for the artifact(s) described in this report.

Uncertainty Statement

The combined standard uncertainty includes uncertainties reported for the standard, uncertainties associated with the measurement process, uncertainties for any observed deviations from reference values which are less than surveillance limits, and other uncertainties associated with the particular artifact (i.e., material cubical coefficient of expansion, reading meniscus, etc.). The combined standard uncertainty is multiplied by k, a coverage factor of 2, to give the expanded uncertainty (which defines an interval with an approximate 95 percent level of confidence). The expanded uncertainty presented in this report is consistent with NIST Technical Note 1297.

WDA Weights and Measures Metrology Laboratory

Report Number: 140061

Calibration Date: July 22, 2014

Pertinent Information

- In-accordance-with ISO/IEC FDIS 17025, General Requirements for the Competence of Testing and Calibration Laboratories, paragraph 5.10.4.4 'A calibration certificate (or calibration label) shall not contain any recommendation on the calibration interval except where this has been agreed with the client. This requirement may be superseded by legal regulations.'
- The artifact is considered in-tolerance when the error is equal to or less than the specified tolerance minus the measurement uncertainty. RED print indicates an out-of-tolerance reading.
- The LPG Prover 'As Left' volume is 'In-Tolerance', the LPG Prover may be used in meter testing without a correction.
- Enter the Pressure Correction from Table 1 that corresponds with the pressure being tested on your LPG Meter Test form.
- The calibration item was calibrated in a "wet down" condition using water. The calibration data above applies when the prover is drained for a 30 (\pm 5) second period after cessation of the main flow.
- The results listed in this report relate only to the artifacts described and extent of calibrations performed.

Conversion Factors

From NIST Special Publication 811, *Guide for the Use of the International System of Units (SI)*

Factors in **boldface** are exact

To convert from	to	multiply by
gallon (U.S.) (gal)	to cubic meter (m ³)	3.875 412 E-03
cubic inch (in ³)	to cubic meter (m ³)	1.638 706 4 E-05
liter (L)	to cubic meter (m ³)	1.0 E-03

WDA Weights and Measures Metrology Laboratory

Report Number: 140061

Calibration Date: July 22, 2014

Calibration Results

Nominal Volume (at zero mark on gauge)	Prover Volume As Found @ 60 °F and 100 psig (gal)	Prover Volume As Left @ 60 °F and 100 psig (gal)	NIST HB 105-4 Specification Tolerance ± (gal)	Uncertainty k=2 ± (gal)
100 gal	100.006	100.006	0.200	0.022

Table 1 - LPG Prover Corrections @ 60 °F

psig	Prover Scale Reading (gal)	Pressure Correction (Pcorr) (gal) ²	Prover Error (gal)	Prover Volume (gal)
0	0.135	-0.099196283	-0.09291637	99.90708363
10	0.12	-0.086776655	-0.080496742	99.91950326
20	0.105	-0.074357027	-0.068077113	99.93192289
30	0.09	-0.061937398	-0.055657485	99.94434252
40	0.075	-0.04951777	-0.043237857	99.95676214
50	0.06	-0.037098142	-0.030818228	99.96918177
60	0.05	-0.029678513	-0.0233986	99.9766014
70	0.04	-0.022258885	-0.015978972	99.98402103
80	0.03	-0.014839257	-0.008559343	99.99144066
90	0.02	-0.007419628	-0.001139715	99.99886029
100	0.01	0	0.006279914	100.0062799
110	0	0.007419628	0.013699542	100.0136995
120	-0.01	0.014839257	0.02111917	100.0211192
130	-0.02	0.022258885	0.028538799	100.0285388
140	-0.03	0.029678513	0.035958427	100.0359584
150	-0.04	0.037098142	0.043378055	100.0433781
160	-0.05	0.04451777	0.050797684	100.0507977
170	-0.06	0.051937398	0.058217312	100.0582173
180	-0.07	0.059357027	0.06563694	100.0656369
190	-0.08	0.066776655	0.073056569	100.0730566
200	-0.09	0.074196283	0.080476197	100.0804762

¹Gauge scale was adjusted for nominal volume at 100 psig.

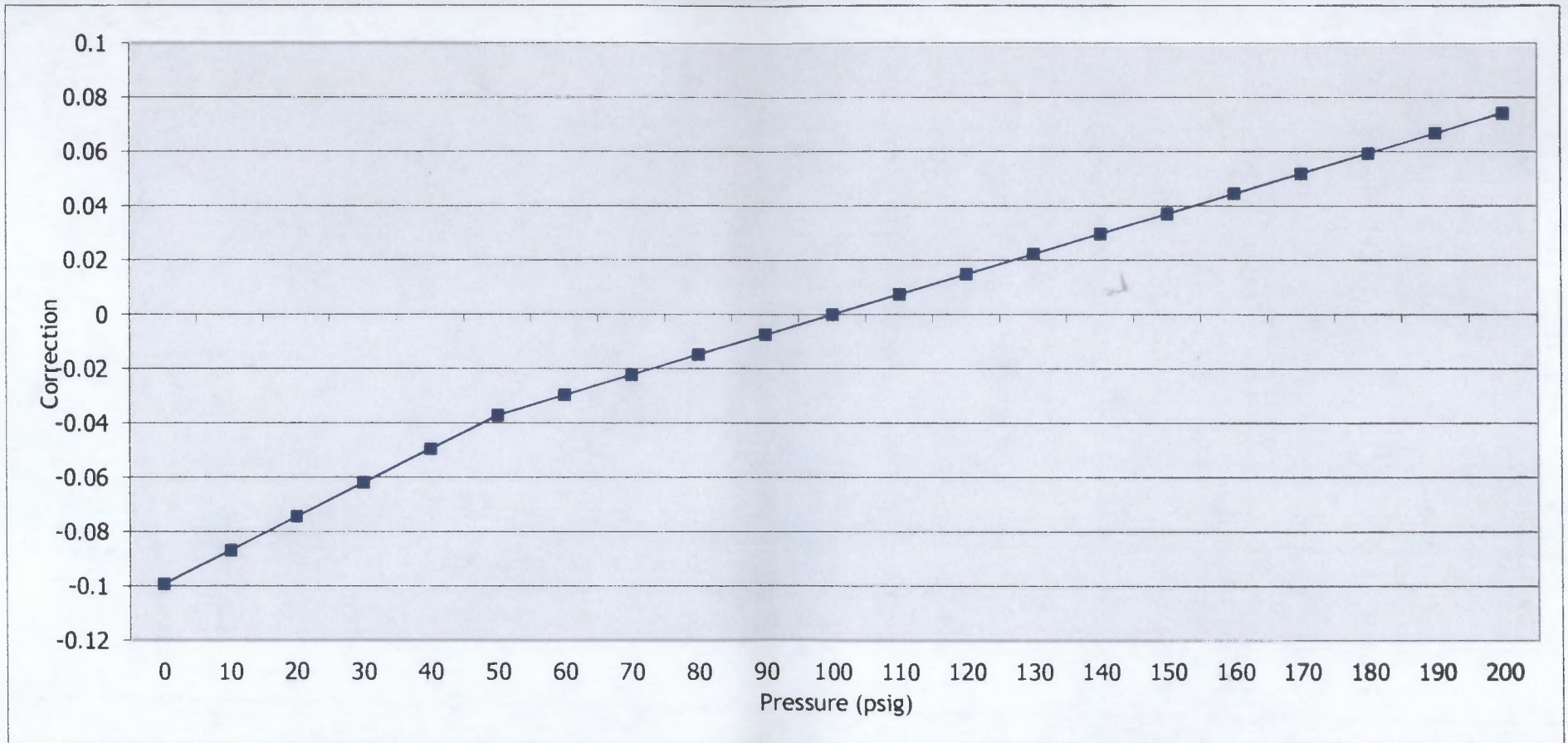
²Gauge scale could not be adjusted or did not need to be adjusted.

WDA Weights and Measures Metrology Laboratory

Report Number: 140061

Calibration Date: July 22, 2014

Chart 1 - LPG Pressure Corrections (gal) @ 60 °F





Wyoming Department of
Agriculture
Weights and Measures Laboratory
6607 Campstool Rd
Cheyenne, WY 82002



REPORT OF CALIBRATION

Issued To:

T&T Measurements Inc.
10671 23rd St Northwest
Newtown, ND 58763

Point of Contact:

Travis Thompson
Ph. 701-421-1352

Purchase Order Number:

N/A

Report Number:

140056

Calibration Date: June 23, 2014

This is to certify that the information contained in this report is true and correct as of the date of calibration.

Robert Weidler, State Metrologist

6-24-14

Date of Issue

WDA Weights and Measures Metrology Laboratory

Report Number: 140056

Calibration Date: June 23, 2014

Artifact(s) Description

Test Item:	100 gal LPG Prover	Date Received:	June 23, 2014
Serial Number:	2096	Manufacture:	Gas Service and Supply
Material:	Steel, Pressure Vessel, Low Carbon	Material CCE:	0.000016 / °F
Condition:	Good	Specification:	NIST HB 105-4

Calibration Information

Job Order #:	N/A	Temperature:	18.9 °C
Metrologist:	Robert Weidler	Humidity:	57.9 % RH
Procedure:	NISTIR 7383, SOP 21	Water Temperature:	19.4 °C

Laboratory Reference Standards Used

Description	Serial Number	Cert. Number	Cal Date	Cal Due
100 gallon Slicker Plate	11-53192	NC1203-117-GV	3/23/2012	3/23/2022

Traceability Statement

The artifact(s) described in this report have been compared to the Standards of the State of Wyoming. The Standards of the State of Wyoming are traceable to the National Institute of Standards and Technology (NIST) and are part of a comprehensive measurement assurance program for ensuring continued accuracy and measurement traceability within the level of uncertainty reported by this laboratory. The International System of Units (SI) for volume is the cubic meter (m^3) (see Conversion Factors on page 3). The report number for this report is the only unique report number to be used in referencing measurement traceability for the artifact(s) described in this report.

Uncertainty Statement

The combined standard uncertainty includes uncertainties reported for the standard, uncertainties associated with the measurement process, uncertainties for any observed deviations from reference values which are less than surveillance limits, and other uncertainties associated with the particular artifact (i.e., material cubical coefficient of expansion, reading meniscus, etc.). The combined standard uncertainty is multiplied by k, a coverage factor of 2, to give the expanded uncertainty (which defines an interval with an approximate 95 percent level of confidence). The expanded uncertainty presented in this report is consistent with NIST Technical Note 1297.

WDA Weights and Measures Metrology Laboratory

Report Number: 140056

Calibration Date: June 23, 2014

Pertinent Information

- In accordance with ISO/IEC FDIS 17025, General Requirements for the Competence of Testing and Calibration Laboratories, paragraph 5.10.4.4 'A calibration certificate (or calibration label) shall not contain any recommendation on the calibration interval except where this has been agreed with the client. This requirement may be superseded by legal regulations.'
- The artifact is considered in-tolerance when the error is equal to or less than the specified tolerance minus the measurement uncertainty. **RED** print indicates an out-of-tolerance reading.
- The LPG Prover 'As Left' volume is 'In-Tolerance', the LPG Prover may be used in meter testing without a correction.
- Enter the Pressure Correction from Table 1 that corresponds with the pressure being tested on your LPG Meter Test form.
- The calibration item was calibrated in a "wet down" condition using water. The calibration data above applies when the prover is drained for a 30 (\pm 5) second period after cessation of the main flow.
- The results listed in this report relate only to the artifacts described and extent of calibrations performed.

Conversion Factors

From NIST Special Publication 811, *Guide for the Use of the International System of Units (SI)*

Factors in **boldface** are exact

To convert from	to	multiply by
gallon (U.S.) (gal)	to cubic meter (m ³)	3.875 412 E-03
cubic inch (in ³)	to cubic meter (m ³)	1.638 706 4 E-05
liter (L)	to cubic meter (m ³)	1.0 E-03

WDA Weights and Measures Metrology Laboratory

Report Number: 140056

Calibration Date: June 23, 2014

Calibration Results

Nominal Volume (at zero mark on gauge)	Prover Volume As Found @ 60 °F and 100 psig (gal)	Prover Volume As Left @ 60 °F and 100 psig (gal)	NIST HB 105-4 Specification Tolerance ± (gal)	Uncertainty k=2 ± (gal)
100 gal	99.992	99.992	0.200	0.022

Table 1 - LPG Prover Corrections @ 60 °F

psig	Prover Scale Reading (gal)	Pressure Correction (Pcorr) (gal) ²	Prover Error (gal)	Prover Volume (gal)
0	0.1	-0.054196283	-0.062508213	99.93749179
10	0.094	-0.050776655	-0.059088584	99.94091142
20	0.088	-0.047357027	-0.055668956	99.94433104
30	0.082	-0.043937398	-0.052249328	99.94775067
40	0.076	-0.04051777	-0.048829699	99.9511703
50	0.07	-0.037098142	-0.045410071	99.95458993
60	0.06	-0.029678513	-0.037990443	99.96200956
70	0.05	-0.022258885	-0.030570814	99.96942919
80	0.04	-0.014839257	-0.023151186	99.97684881
90	0.03	-0.007419628	-0.015731558	99.98426844
100	0.02	0	-0.008311929	99.99168807
110	0.006	0.011419628	0.003107699	100.0031077
120	-0.008	0.022839257	0.014527327	100.0145273
130	-0.022	0.034258885	0.025946956	100.025947
140	-0.036	0.045678513	0.037366584	100.0373666
150	-0.05	0.057098142	0.048786212	100.0487862
160	-0.058	0.06251777	0.054205841	100.0542058
170	-0.066	0.067937398	0.059625469	100.0596255
180	-0.074	0.073357027	0.065045097	100.0650451
190	-0.082	0.078776655	0.070464726	100.0704647
200	-0.09	0.084196283	0.075884354	100.0758844

¹Gauge scale was adjusted for nominal volume at 100 psig.

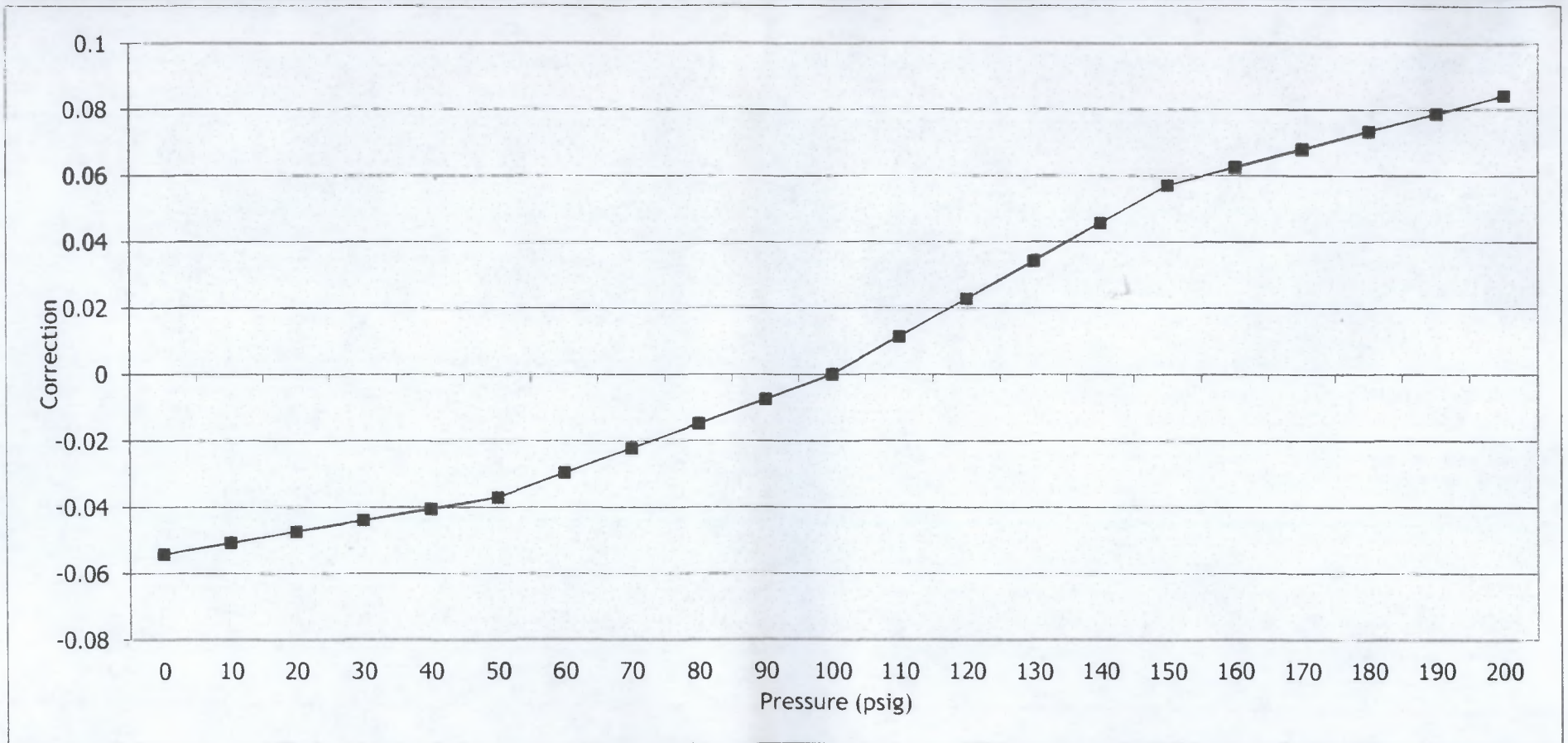
²Gauge scale could not be adjusted or did not need to be adjusted.

WDA Weights and Measures Metrology Laboratory

Report Number: 140056

Calibration Date: June 23, 2014

Chart 1 - LPG Pressure Corrections (gal) @ 60 °F





Wyoming Department of Agriculture
Weights and Measures Laboratory
6607 Campstool Rd
Cheyenne, WY 82002
(307)777-7556



Calibration Certificate For

Six – 50 lb Class F Test Weights

Manufacturer: Various
Serial No.: Listed on Following Table

Submitted by
T&T Measurements Inc.
10671 23rd St Northwest
Newtown, ND 58763
(701)421-1352

Serial Number	Nominal (lb)	Conventional Mass Correction (mg)		Tolerance (g)	Expanded Uncertainty (g)
		As Found	As Left		
1	50	-0.53	-0.53	2.3	0.21
2	50	-0.46	-0.46	2.3	0.21
3	50	-0.57	-0.57	2.3	0.21
4	50	-0.67	-0.67	2.3	0.21
5	50	-0.76	-0.76	2.3	0.21
6	50	-0.89	-0.89	2.3	0.21

The data in this table applies only to those items specifically listed on this report.

Uncertainty Statement:

The combined standard uncertainty includes the standard uncertainty reported for the standard and the standard uncertainty for the measurement process. The combined standard uncertainty is multiplied by a coverage factor of 2.17 to give an expanded uncertainty, which defines an interval having a level of confidence of approximately 95 percent. The expanded uncertainty presented in this report is consistent with the 1993 ISO Guide to the Expression of Uncertainty in Measurement. The expanded uncertainty is not to be confused with a tolerance limit for the user during application.

Traceability Statement:

Standards used for comparison are traceable to United States national standards at NIST and are part of a comprehensive measurement assurance program for ensuring continued accuracy and traceability reported by this laboratory. The laboratory test number identified above is the unique report number to be used in referencing measurement traceability for artifacts identified in this report only. Traceability is maintained to the SI using the following conversion: 1 lb = 0.45359237 kg.

Supplemental Information

Description of artifacts submitted for testing:

Six-50 lb Class F Cast Iron Test Weights with an assumed density of 7.20 g/cm³.

Conditions of artifacts submitted for testing:

Artifacts were in good condition for the type and class.

Treatment of artifacts prior to testing:

Artifacts were clean upon arrival with no further treatment needed.

Equipment and Standards:

<u>Balance</u>	<u>Range</u>	<u>Standards Used</u>
Mettler XP5003	0 kg – 32.1 kg	WY WS

Procedure used:

Single Substitution Method (NISTIR 6969, SOP 7)

Average environmental conditions at time of test:

<u>Date</u>	<u>Temperature</u>	<u>Barometric Pressure</u>	<u>Relative Humidity</u>
June 26, 2013	21.3 °C	615.30 mm Hg	52.4%

Date Artifacts Received: July 22, 2014

Date of test: July 25, 2014

Test performed by: _____ Date of Report Preparation: July 25, 2014

Robert Weidler
WDA State Metrologist

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United States Department of Commerce National Institute of Standards and Technology

Certificate of Metrological Traceability For:

Wyoming

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 III

3000 lb to 0.001 lb

8 oz to 0.03125 oz

Weight Carts

4500 lb to 2000 lb

Volume Transfer, II

1000 gal to 5 gal

100 gal to 25 gal LPG



2014 - 2015

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

Effective Dates: 2014-01-01 to 2015-12-31

Amended: 2014-03-01

Expanded Scope to increase lower
Mass Echelon III Weight Cart limit
to 2000 lb.