

Calibration Certificate of Mass

Calibration Date: December 6, 2018		Certificate Number: 2018-096-1	
Submitted By: FSCP Area 75 3721 West Cuming St. Lincoln, NE 68524		Point of Contact: JT Shaw Ph. 402-471-3422 email: james.shaw@nebraska.gov PO Number: N/A	
Test Item(s): (1)-2kg, (2)-15lb, (20)-25lb, (20)-50lb, (18)-1000lb weights		Date Received: December 3, 2018	
Serial Number(s): See Next page		ID / Asset Number: N/A	
Manufacture: Various		Class Specification: NIST Class F	
Condition: Good (some wear)		Material: CI&SS	
Reference Standards Used: NSL lb standards OPI & /Den Metric		Procedure Used: NIST HB 6969, SOP 8 Metrologist: JPL	
		Equipment Used: Mettler XP 604 Sartorius CC100005 Mettler KA30-3	
Environmental Cond. Temp: 19.56 °C Pressure: 772.414 mmHg Relative Humidity: 46 %			
<u>Pertinent Information</u>			
<ul style="list-style-type: none"> The artifact(s) listed in this document have been found and/or left within the maximum permissible error for the specification stated above, except as noted. An artifact is considered in-compliance when the correction plus the measurement uncertainty is equal to or less than the maximum permissible error. RED print indicates an out-of-compliance reading. All corrections stated in this report correlate to a "Conventional Mass" (CM), also known as "apparent mass", scale verses 8.0 g/cm³ reference mass density and an air density of 1.2 mg/cm³ at 20 °C. 			
<u>Traceability Statement</u>			
The artifact(s) described in this certificate have been compared to the Standards of the State of Nebraska. The Standards of the State of Nebraska are traceable to the International System of Units (SI) through 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 calibration number for this certificate is the only unique calibration number to be used in referencing measurement traceability for the artifact(s) described in this certificate.			
<u>Uncertainty Statement</u>			
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 the standard uncertainty for any uncorrected errors associated with air buoyance corrections. The combined standard uncertainty is multiplied by a coverage factor (<i>k</i>), to give the expanded uncertainty, which defines an interval with a 95.45 percent level of confidence. The expanded uncertainty presented in this report is consistent with the <i>Guide to the Expression of Uncertainty in Measurement (2008, revised 2012)</i> . Some components of the calibration can be evaluated through a Type A evaluation, or the method of evaluation of uncertainty by the statistical analysis (standard deviation) from the observations taken. Magnetic testing has not been performed, therefore, there are no components for the effects of it in the uncertainty budget.			

Calibration Date: December 6, 2018

Certificate Number: 2018-096-1

Calibration Results

Nominal Mass	Serial Number / ID	As Found Conventional Mass Correction (g)	Adjusted (Y/N)	As Left Conventional Mass Correction (g)	Uncertainty ± (g)	(k) factor	NIST Class F MPE ± (g)	Assumed Density (g/cm ³)
15 lb	WM15-21	0.311	N	0.311	0.082	2	0.68	7.2
15 lb	WM15-22	-0.049	N	-0.049	0.082	2	0.68	7.2
25 lb	D32	0.39	N	0.39	0.14	2	1.1	7.2
25 lb	D33	0.40	N	0.40	0.14	2	1.1	7.2
25 lb	D35	-0.18	N	-0.18	0.14	2	1.1	7.2
25 lb	D36	-0.11	N	-0.11	0.14	2	1.1	7.2
25 lb	D37	-0.05	N	-0.05	0.14	2	1.1	7.2
25 lb	D39	-0.53	N	-0.53	0.14	2	1.1	7.2
25 lb	WM25-33	0.05	N	0.05	0.14	2	1.1	7.2
25 lb	WM25-39	0.15	N	0.15	0.14	2	1.1	7.2
25 lb	WM25-48	-0.20	N	-0.20	0.14	2	1.1	7.2
25 lb	WM25-49	0.14	N	0.14	0.14	2	1.1	7.2
25 lb	WM25-50	0.69	N	0.69	0.14	2	1.1	7.2
25 lb	WM25-80	0.45	N	0.45	0.14	2	1.1	7.2
25 lb	WM25-81	0.61	N	0.61	0.14	2	1.1	7.2
25 lb	WM25-82	0.30	N	0.30	0.14	2	1.1	7.2
25 lb	WM25-83	0.17	N	0.17	0.14	2	1.1	7.2
25 lb	WM25-84	0.13	N	0.13	0.14	2	1.1	7.2
25 lb	WM25-85	-0.89	N	-0.89	0.14	2	1.1	7.2
25 lb	WM25-86	0.35	N	0.35	0.14	2	1.1	7.2
25 lb	WM25-87	-0.77	N	-0.77	0.14	2	1.1	7.2
25 lb	WM25-104	0.63	N	0.63	0.14	2	1.1	7.2
50 lb	OPI-C17	0.44	N	0.44	0.28	2	2.3	7.2
50 lb	OPI-C24	1.05	N	1.05	0.28	2	2.3	7.2
50 lb	OPI-C32	1.45	N	1.45	0.28	2	2.3	7.2
50 lb	OPI-C36	0.19	N	0.19	0.28	2	2.3	7.2
50 lb	OPI-C39	1.45	N	1.45	0.28	2	2.3	7.2
50 lb	OPI-C49	0.60	N	0.60	0.28	2	2.3	7.2
50 lb	OPI-C7	2.83	Y	0.61	0.28	2	2.3	7.2
50 lb	OPI-C8	1.29	N	1.29	0.28	2	2.3	7.2
50 lb	OPI-C9	1.22	N	1.22	0.28	2	2.3	7.2
50 lb	SF-C21	1.52	N	1.52	0.28	2	2.3	7.2
50 lb	WM41	2.81	Y	0.20	0.28	2	2.3	7.2
50 lb	WM50-40	-1.16	N	-1.16	0.28	2	2.3	7.2
50 lb	WM50-70	7.64	Y	0.05	0.28	2	2.3	7.2
50 lb	WM-C-A13	1.40	N	1.40	0.28	2	2.3	7.2
50 lb	WM-C-A14	0.80	N	0.80	0.28	2	2.3	7.2
50 lb	WM-C-A15	1.90	N	1.90	0.28	2	2.3	7.2
50 lb	WM-C-A17	1.42	N	1.42	0.28	2	2.3	7.2
50 lb	WM-C-A18	1.75	N	1.75	0.28	2	2.3	7.2
50 lb	WM-C-A20	-0.32	N	-0.32	0.28	2	2.3	7.2
50 lb	WM-OPI-C23	1.48	N	1.48	0.28	2	2.3	7.2

Calibration Date: December 6, 2018

Certificate Number: 2018-096-1

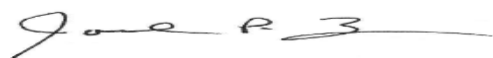
Calibration Results

Nominal Mass	Serial Number / ID	As Found Conventional Mass Correction (g)	Adjusted (Y/N)	As Left Conventional Mass Correction (g)	Uncertainty ± (g)	k factor	NIST Class F MPE ± (g)	Assumed Density (g/cm ³)
1000 lb	2193	5.0	N	5.0	6	2.008	45	7.2
1000 lb	A2	5.4	N	5.4	6	2.008	45	7.2
1000 lb	A5	-20.8	N	-20.8	6	2.008	45	7.2
1000 lb	BA-14	42.6	Y	6.4	6	2.008	45	7.2
1000 lb	OA10	11.5	N	11.5	6	2.008	45	7.2
1000 lb	OA13	10.4	N	10.4	6	2.008	45	7.2
1000 lb	OA14	-23.0	N	-23.0	6	2.008	45	7.2
1000 lb	OA16	-53.0	Y	8.9	6	2.008	45	7.2
1000 lb	OA17	1.1	N	1.1	6	2.008	45	7.2
1000 lb	OA18	-24.3	N	-24.3	6	2.008	45	7.2
1000 lb	OA19	1.9	N	1.9	6	2.008	45	7.2
1000 lb	OA3	-3.4	N	-3.4	6	2.008	45	7.2
1000 lb	OA4	-10.7	N	-10.7	6	2.008	45	7.2
1000 lb	OA5	-9.4	N	-9.4	6	2.008	45	7.2
1000 lb	OA6	-20.5	N	-20.5	6	2.008	45	7.2
1000 lb	OPI-11	-28.2	N	-28.2	6	2.008	45	7.2
1000 lb	OPI-12	-23.6	N	-23.6	6	2.008	45	7.2
1000 lb	OPI-A1	9.7	N	9.7	6	2.008	45	7.2
2 kg	K3	-0.058	N	-0.058	0.024	2	0.2	7.84

Conversion Factors

1 ounce (avoirdupois) (oz) = 28.349 52 g

1 pound (avoirdupois) (lb) = 453.592 37 g exactly



Joel P. Lavicky Metrologist

12/10/2018

Date of Issue

The results in this certificate only applies to those item specifically listed in this certificate. This certificate cannot be considered complete unless it contains all pages. This document may not be reproduced except in full, without the written consent of the Nebraska Standards Laboratory.

Calibration Certificate of Mass

Calibration Date: November 20, 2018

Certificate Number: 2018-096-2

Submitted By: FSCP Area 75
3721 West Cuming St.
Lincoln, NE 68524

Point of Contact: JT Shaw
Ph. 402-471-3422
email: james.shaw@nebraska.gov
PO Number: N/A

Test Item(s): 31 lb weight kit	Artifact(s) Description:	Date Received: November 6, 2018
Serial Number(s): WM-6C98		ID / Asset Number: P/U
Manufacture: Tromner		Class Specification: NIST Class F
Condition: Good (some wear)		Material: Stainless Steel

Reference Standards Used: NSL lb standards	Procedure Used: NIST HB 6969, SOP 8 Metrologist: JPL	Equipment Used: Sartorius CC10000S Mettler AT 106 Sartorius CC 1201 Sartorius CCE6
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Environmental Cond. **Temp:** 20.1 °C **Pressure:** 766.318 mmHg **Relative Humidity:** 48 %

Pertinent Information

- The artifact(s) listed in this document have been found and/or left within the maximum permissible error for the specification stated above, except as noted. An artifact is considered in-compliance when the correction plus the measurement uncertainty is equal to or less than the maximum permissible error. **RED** print indicates an out-of-compliance reading.
- All corrections stated in this report correlate to a "Conventional Mass" (CM), also known as "apparent mass", scale verses 8.0 g/cm³ reference mass density and an air density of 1.2 mg/cm³ at 20 °C.

Traceability Statement

The artifact(s) described in this certificate have been compared to the Standards of the State of Nebraska. The Standards of the State of Nebraska are traceable to the International System of Units (SI) through 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 calibration number for this certificate is the only unique calibration number to be used in referencing measurement traceability for the artifact(s) described in this certificate.

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 the standard uncertainty for any uncorrected errors associated with air buoyance corrections. The combined standard uncertainty is multiplied by a coverage factor (*k*), to give the expanded uncertainty, which defines an interval with a 95.45 percent level of confidence. The expanded uncertainty presented in this report is consistent with the *Guide to the Expression of Uncertainty in Measurement (2008, revised 2012)*. Some components of the calibration can be evaluated through a Type A evaluation, or the method of evaluation of uncertainty by the statistical analysis (standard deviation) from the observations taken. Magnetic testing has not been performed, therefore, there are no components for the effects of it in the uncertainty budget.

Calibration Date: **November 20, 2018**

Certificate Number: **2018-096-2**

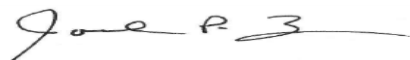
Calibration Results

Nominal Mass	Serial Number / ID	As Found Conventional Mass Correction (g)	Adjusted (Y/N)	As Left Conventional Mass Correction (g)	Uncertainty ± (g)	(k) factor	NIST Class F MPE ± (g)	Assumed Density (g/cm ³)
10 lb		0.141	n	0.141	0.054	2	0.45	7.84
5 lb		0.069	n	0.069	0.028	2	0.23	7.84
2 lb		0.040	n	0.040	0.011	2	0.091	7.84
2 lb	*	0.049	n	0.049	0.011	2	0.091	7.84
1 lb		0.0348	n	0.0348	0.0083	2	0.07	7.84
0.5 lb		0.0311	n	0.0311	0.0054	2	0.045	7.84
0.2 lb		0.0081	n	0.0081	0.0022	2	0.018	7.84
0.2 lb	*	0.0089	n	0.0089	0.0022	2	0.018	7.84
0.1 lb		0.0042	n	0.0042	0.0011	2	0.0091	7.84
0.05 lb		0.00218	n	0.00218	0.00054	2	0.0045	7.84
0.02 lb		0.00071	n	0.00071	0.00022	2	0.0018	7.84
0.02 lb	*	0.00071	n	0.00071	0.00022	2	0.0018	7.84
0.01 lb		0.00063	n	0.00063	0.00018	2	0.0015	7.84
0.005 lb		0.00070	n	0.00070	0.00014	2	0.0012	2.7
0.002 lb		0.00003	n	0.00003	0.00011	2	0.00087	2.7
0.002 lb	*	0.00047	n	0.00047	0.00011	2	0.00087	2.7
0.001 lb		0.000200	n	0.000200	0.000083	2	0.0007	2.7

Conversion Factors

1 ounce (avoirdupois) (oz) = 28.349 52 g

1 pound (avoirdupois) (lb) = 453.592 37 g exactly



Joel P. Lavicky Metrologist

11/26/2018

Date of Issue

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Calibration Certificate of Mass

Calibration Date: November 20, 2018

Certificate Number: 2018-096-3

Submitted By: FSCP Area 75
3721 West Cuming St.
Lincoln, NE 68524

Point of Contact: JT Shaw
Ph. 402-471-3422
email: james.shaw@nebraska.gov
PO Number: N/A

Test Item(s): (1) metric weight kit
Serial Number(s): WM-2-89-2
Manufacture: Tromner
Condition: Excelent (little wear)

Artifact(s) Description:

Date Received: November 6, 2018

ID / Asset Number: Scale Truck

Class Specification: NIST Class F

Material: Stainless Steel

Reference Standards Used:

OPI & /Den Metric
Volland-1707

Procedure Used:

NIST HB 6969, SOP 8

Metrologist:
JPL

Equipment Used:

Mettler AT 106
Sartorius CC 1201 Sartorius CCE6

Environmental Cond. Temp: 20.1 °C Pressure: 766.318 mmHg Relative Humidity: 48 %

Pertinent Information

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- All corrections stated in this report correlate to a "Conventional Mass" (CM), also known as "apparent mass", scale verses 8.0 g/cm³ reference mass density and an air density of 1.2 mg/cm³ at 20 °C.

Traceability Statement

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Uncertainty Statement

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Calibration Date: November 20, 2018

Certificate Number: 2018-096-3

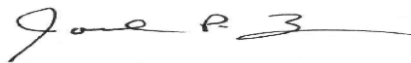
Calibration Results

Nominal Mass	Serial Number / ID	As Found Conventional Mass Correction (g)	Adjusted (Y/N)	As Left Conventional Mass Correction (g)	Uncertainty ± (g)	(k) factor	NIST Class F MPE ± (g)	Assumed Density (g/cm ³)
1 kg		0.051	n	0.051	0.012	2	0.1	7.84
500 g		0.0491	n	0.0491	0.0083	2	0.07	7.84
200 g		0.0148	n	0.0148	0.0048	2	0.04	7.84
200 g	*	0.0120	n	0.0120	0.0048	2	0.04	7.84
100 g		-0.0026	n	-0.0026	0.0024	2	0.02	7.84
50 g		0.0062	n	0.0062	0.0012	2	0.01	7.84
20 g		0.00107	n	0.00107	0.00048	2	0.004	7.84
20 g	*	0.00103	n	0.00103	0.00048	2	0.004	7.84
10 g		-0.00038	n	-0.00038	0.00024	2	0.002	7.84
5 g		-0.00013	n	-0.00013	0.00018	2	0.0015	7.84
500 mg		0.000249	n	0.000249	0.000086	2	0.00072	7.95
200 mg		0.000345	n	0.000345	0.000064	2	0.00054	7.95
200 mg	*	0.000320	n	0.000320	0.000064	2	0.00054	7.95
100 mg		0.000220	n	0.000220	0.000051	2	0.00043	7.95

Conversion Factors

1 ounce (avoirdupois) (oz) = 28.349 52 g

1 pound (avoirdupois) (lb) = 453.592 37 g exactly



Joel P. Lavicky Metrologist

11/26/2018

Date of Issue

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Calibration Certificate of Mass

Calibration Date: November 21, 2018

Certificate Number: 2018-096-4

Submitted By: FSCP Area 75
3721 West Cuming St.
Lincoln, NE 68524

Point of Contact: JT Shaw
Ph. 402-471-3422
email: james.shaw@nebraska.gov
PO Number: N/A

Test Item(s): 31 lb weight kit	Artifact(s) Description:	Date Received: November 6, 2018
Serial Number(s): 5A10		ID / Asset Number: P/U
Manufacture: Tromner		Class Specification: NIST Class F
Condition: Good (some wear)		Material: SS & AL

Reference Standards Used: NSL lb standards	Procedure Used: NIST HB 6969, SOP 8 Metrologist: JPL	Equipment Used: Mettler AT 106 Sartorius CC 1201 Sartorius CCE6
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Environmental Cond. **Temp:** 19.8 °C **Pressure:** 765.556 mmHg **Relative Humidity:** 49 %

Pertinent Information

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Calibration Date: November 21, 2018

Certificate Number: 2018-096-4

Calibration Results

Nominal Mass	Serial Number / ID	As Found Conventional Mass Correction (g)	Adjusted (Y/N)	As Left Conventional Mass Correction (g)	Uncertainty ± (g)	(k) factor	NIST Class F MPE ± (g)	Assumed Density (g/cm ³)
2 lb	1	-0.010	n	-0.010	0.011	2	0.091	7.84
2 lb	2	-0.029	n	-0.029	0.011	2	0.091	7.84
2 lb	3	-0.029	n	-0.029	0.011	2	0.091	7.84
2 lb	4	-0.034	n	-0.034	0.011	2	0.091	7.84
2 lb	5	-0.032	n	-0.032	0.011	2	0.091	7.84
2 lb	6	-0.001	n	-0.001	0.011	2	0.091	7.84
2 lb	7	-0.009	n	-0.009	0.011	2	0.091	7.84
2 lb	8	-0.021	n	-0.021	0.011	2	0.091	7.84
2 lb	9	-0.012	n	-0.012	0.011	2	0.091	7.84
2 lb	10	-0.018	n	-0.018	0.011	2	0.091	7.84
2 lb	11	-0.080	n	-0.080	0.011	2	0.091	7.84
2 lb	12	-0.011	n	-0.011	0.011	2	0.091	7.84
2 lb	13	-0.006	n	-0.006	0.011	2	0.091	7.84
2 lb	14	-0.070	n	-0.070	0.011	2	0.091	7.84
1 lb	15	-0.0330	n	-0.0330	0.0083	2	0.07	7.84
1 lb	16	-0.0363	n	-0.0363	0.0083	2	0.07	7.84
0.3 lb	26	-0.0034	n	-0.0034	0.0032	2	0.027	7.84
0.2 lb		0.0007	n	0.0007	0.0022	2	0.018	7.84
0.1 lb		-0.0036	n	-0.0036	0.0011	2	0.0091	7.84
0.05 lb		-0.00050	n	-0.00050	0.00054	2	0.0045	7.84
0.03 lb		-0.00185	n	-0.00185	0.00032	2	0.0027	7.84
0.02 lb		-0.00028	n	-0.00028	0.00022	2	0.0018	7.84
0.01 lb		0.00063	n	0.00063	0.00018	2	0.0015	7.84
0.005 lb		0.00048	n	0.00048	0.00014	2	0.0012	2.7
0.003 lb		-0.00017	n	-0.00017	0.00012	2	0.00099	2.7
0.002 lb		-0.00018	n	-0.00018	0.00011	2	0.00087	2.7
0.001 lb		0.000074	n	0.000074	0.000083	2	0.0007	2.7
0.001 lb	*	0.000280	n	0.000280	0.000083	2	0.0007	2.7
8 oz		-0.0115	n	-0.0115	0.0054	2	0.045	7.84
4 oz		0.0014	n	0.0014	0.0028	2	0.023	7.84
2 oz		0.0026	n	0.0026	0.0013	2	0.011	7.84
1 oz		-0.00406	n	-0.00406	0.00064	2	0.0054	7.84
1/2 oz		0.00035	n	0.00035	0.00034	2	0.0028	7.84
1/4 oz		0.00052	n	0.00052	0.00021	2	0.0017	7.84
1/8 oz		-0.00031	n	-0.00031	0.00016	2	0.0013	7.84
1/16 oz		0.00026	n	0.00026	0.00014	2	0.0011	7.84

Conversion Factors

1 ounce (avoirdupois) (oz) = 28.349 52 g

1 pound (avoirdupois) (lb) = 453.592 37 g exactly

Joel P. Lavicky Metrologist

11/26/2018

Date of Issue

The results in this certificate only applies to those item specifically listed in this certificate. This certificate cannot be considered complete unless it contains all pages. This document may not be reproduced except in full, without the written consent of the Nebraska Standards Laboratory.

Calibration Date: 11/19/2018

**Certificate of Calibration
of Volume Transfer**

Certificate Number: 2018-096-5

Items Submitted:

Quantity	Nominal Volume	Manufacturer	Type
2	5 gal	Seraphin	Test Measure 4" Neck

Submitted By: FSCP Area 75
3721 West Cuming St.
Lincoln, NE 68524

POC: JT Shaw
402-471-3422
0

Test Results

Nominal Volume	Serial Number	Material	Cubical Coefficient of Expansion (°F)	As Found Volume Delivered @ 60 °F	As left Volume Delivered @ 60 °F	Uncertainty (U)	(k)
5 gal	43872	SS	0.0000265	5.00196 gal	5.00196 gal	0.00100 gal	2.05
5 gal	43935 H	SS	0.0000265	4.99994 gal	4.99994 gal	0.00100 gal	2.05

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

Volume delivered at 60°F after a 30 second pour and 10 second drain for test measures. For provers and a 30 second drain time would apply.

Conversion Factors:

1 gal = 231 in³
1 gal = 3.785 412 E-03 m³

Traceability Statement:

The artifact(s) described in this report have been compared to the Standards of the State of Nebraska. The Standards of the State of Nebraska are traceable to the International System of Units (SI) through 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 calibration number for this report is the only unique calibration 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 the standard uncertainty for any uncorrected errors. The combined standard uncertainty is multiplied by a coverage factor (*k*), to give the expanded uncertainty, which defines an interval with a 95.45 percent level of confidence. The expanded uncertainty presented in this report is consistent with the Guide to the Expression of Uncertainty in Measurement (2008, revised 2012). Some components of the calibration can be evaluated through a Type A evaluation, or the method of evaluation of uncertainty by the statistical analysis (standard deviation) from the observations taken.

Pertinent Information:

The artifact(s) listed above have been found and/or left within the maximum permissible error for the specification stated above, except as noted. An artifact is considered in-compliance when the correction plus the measurement uncertainty is equal to or less than the maximum permissible error.

Condition of Item(s) Submitted for Calibration:

Good

Laboratory Reference Standard Used:

5 gal SP NE 1586

Treatment of Item(s) before Calibration:

Item(s) were tested as found

Procedure Used:

NISTIR 7383, SOP 19

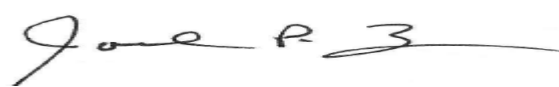
Environmental conditions at time of calibration:

Temp °C	Humidity %
20.1	47.4
Pressure mmHg	771.91

Water temperature at time of calibration:

57.94 °F

Date Submitted: 11/6/2018



Joel P. Lavicky, Metrologist

11/19/2018

Date:

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Calibration Date: 11/20/2018

**Certificate of Calibration
of Volume Transfer**

Certificate Number: 2018-096-6

Items Submitted:

Quantity	Nominal Volume	Manufacturer	Type
3	5 gal	SMI	"Special" J Prover

Submitted By: FSCP Area 75
3721 West Cuming St.
Lincoln, NE 68524

POC: JT Shaw
402-471-3422
james.shaw@nebraska.gov

Test Results

Nominal Volume	Serial Number	Material	Cubical Coefficient of Expansion (1/°F)	As Found Volume Delivered @ 60 °F	As left Volume Delivered @ 60 °F	Uncertainty (U)	(k)
5 gal	233	SS	0.0000265	4.99978 gal	4.99978 gal	0.00061 gal	2.05
5 gal	234	SS	0.0000265	4.99995 gal	4.99995 gal	0.00061 gal	2.05
5 gal	235	SS	0.0000265	5.00058 gal	5.00058 gal	0.00061 gal	2.05

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

Volume delivered at 60°F after a 30 second pour and 10 second drain for test measures. For provers and a 30 second drain time would apply.

Conversion Factors:

1 gal = 231 in³
1 gal = 3.785 412 E-03 m³

Traceability Statement:

The artifact(s) described in this report have been compared to the Standards of the State of Nebraska. The Standards of the State of Nebraska are traceable to the International System of Units (SI) through 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 calibration number for this report is the only unique calibration 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 the standard uncertainty for any uncorrected errors. The combined standard uncertainty is multiplied by a coverage factor (*k*), to give the expanded uncertainty, which defines an interval with a 95.45 percent level of confidence. The expanded uncertainty presented in this report is consistent with the Guide to the Expression of Uncertainty in Measurement (2008, revised 2012). Some components of the calibration can be evaluated through a Type A evaluation, or the method of evaluation of uncertainty by the statistical analysis (standard deviation) from the observations taken.

Pertinent Information:

The artifact(s) listed above have been found and/or left within the maximum permissible error for the specification stated above, except as noted. An artifact is considered in-compliance when the correction plus the measurement uncertainty is equal to or less than the maximum permissible error.

Condition of Item(s) Submitted for Calibration:

Minor wear

Laboratory Reference Standard Used:

5 gal SP NE 1586

Treatment of Item(s) before Calibration:

Item(s) were tested as found

Procedure Used:

NISTIR 7383, SOP 19

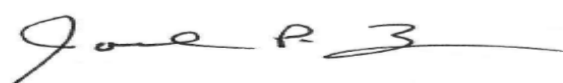
Environmental conditions at time of calibration:

Temp °C	20.1	Humidity %	47.4
Pressure mmHg	770.38		

Water temperature at time of calibration:

57.56 °F

Date Submitted: 11/6/2018



Joel P. Lavicky, Metrologist

11/19/2018

Date:

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