



Certificate of Mass Calibration

Montana Department of Labor & Industry Metrology Laboratory
2801 N Cooke St. Helena, Montana 59601
(406)449-2582 FAX (406)443-8163

Company Name & Address:

John McFerran
B & L Scales
351 Scott Street
Billings, MT 59101

Date of Test:

6/13/2017

Test Number:

2017-071

Calibration Expiration Date

6/2019

All results contained within this report only relate to the item(s) listed in this report. This calibration report must not be used to claim product endorsement by the State of Montana or any other government agency.

Date these weights were received:

6/12/2017

Description and condition of artifacts received:

Items were in excellent condition. Vacuumed out Cart WY-2500-18

Environmental Conditions at Time of Test:

Temperature °C		Pressure mmHg	Relative Humidity %	
Start	End	Duration of Test	Start	End
21.03	22.91	664.21	41.31	42.42

Conventional Mass Value:

Assumed Density of Artifacts:

7.2 g/cm³

Nominal	Serial No.	As Found (g)	As Left (g)	Uncertainty ± (g)	NIST 105-1 Class F ± (g)	k factor
2500 lb	141	-28.3	-28.3	9.1	110	2.13
2500 lb	142	-10.3	-10.3	9.1	110	2.13
2500 lb	143	3.7	3.7	9.1	110	2.13
2500 lb	WY-2500-05	187.6	187.6	9.1	227	2.13
2500 lb	WY-2500-18	217.6	199.9	9.1	227	2.13

Standards and Procedures used for testing:

The Standards used for this comparison are continuously monitored by a measurement control program for ensuring continued accuracy and traceability within the level of uncertainty reported. These standards were calibrated by a nationally accredited laboratory on 10/2009 (Reports on File) and are traceable to the SI. The test number listed above is traceable to National Standards through an unbroken chain of comparison each having stated uncertainties. This information is on file and available upon request.

Procedure Used: SOP-7

All procedures used in this laboratory are in accordance to National Institute of Standards and Technology Intermediate Report (NISTIR) 6969, issue February 2012, and the *Quality Assurance of Metrological Measurements*.

Traceability Statement:

The equipment in this report has been compared to the standards of the State of Montana. The States equipment complies with the specifications and tolerances listed in NIST 105-1 Class F tolerances. The standards of the State of Montana are traceable to the SI through the National Institute of Standards and Technology.

Uncertainty Statement:

The expanded uncertainty presented in this report is consistent with the 1993 *ISO Guide to Expression of Uncertainty in Measurement* and follows *NISTIR 6969*, issue February 2012, SOP-29. The reported uncertainty is calculated by combining the uncertainty of the standard used, with the uncertainty of the measurement process in a root sum square formula using a calculated *k* factor, for a confidence level of 95.45%.

State Metrologist: *Dave Fraser*

David Fraser

Email: dafraser@mt.gov

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Company Name & Address:	Date of Test:	Test Number:
John McFerran	6/12/2017	2017-072
B & L Scales		Calibration Expiration Date
351 Scott Street		6/2019
Billings, MT 59101		

All results contained within this report only relate to the item(s) listed in this report. This calibration report must not be used to claim product endorsement by the State of Montana or any other government agency.

Date these weights were received: 6/12/2017
 Description and condition of artifacts received: Items were in excellent condition - freshly painted.

Environmental Conditions at Time of Test:

Temperature °C		Pressure mmHg	Relative Humidity %	
Start	End	Duration of Test	Start	End
22.95	23.64	658.11	41.28	44.23

Conventional Mass Value: Assumed Density of Artifacts: 7.2 g/cm³

Nominal	Serial No.	As Found ± (g)	As Left ± (g)	Uncertainty ± (g)	NIST 105-1 Class F ± (g)	k factor
50 lb	15	-1.79	-1.79	0.28	2.3	2.13
50 lb	22	-0.58	-0.58	0.28	2.3	2.13
50 lb	18	-1.29	-1.29	0.28	2.3	2.13
50 lb	17	-0.20	-0.20	0.28	2.3	2.13
50 lb	23	0.31	0.31	0.28	2.3	2.13
50 lb	19	0.48	0.48	0.28	2.3	2.13
50 lb	24	0.34	0.34	0.28	2.3	2.13
50 lb	20	0.36	0.36	0.28	2.3	2.13
50 lb	13	0.16	0.16	0.28	2.3	2.13

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Date these weights were received: 6/12/2017
 Description and condition of artifacts received: Items were in excellent condition - freshly painted.

Environmental Conditions at Time of Test:

Temperature °C		Pressure mmHg	Relative Humidity %	
Start	End	Duration of Test	Start	End
22.95	23.64	658.11	41.28	44.23

Conventional Mass Value: Assumed Density of Artifacts: 7.2 g/cm³

Nominal	Serial No.	As Found ± (g)	As Left ± (g)	Uncertainty ± (g)	NIST 105-1 Class F ± (g)	k factor
50 lb	14	-3.47	-0.46	0.28	2.3	2.13
50 lb	16	-4.10	-0.48	0.28	2.3	2.13
50 lb	21	0.27	0.27	0.28	2.3	2.13
50 lb	25	-0.52	-0.52	0.28	2.3	2.13
25 lb	9	0.34	0.34	0.28	1.1	2.13
25 lb	13	0.85	0.85	0.28	1.1	2.13
25 lb	14	0.94	0.94	0.28	1.1	2.13
25 lb	8	-0.20	-0.20	0.28	1.1	2.13
25 lb	11	-0.33	-0.33	0.28	1.1	2.13

Standards and Procedures used for testing:

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Environmental Conditions at Time of Test:

Temperature °C		Pressure mmHg	Relative Humidity %	
Start	End	Duration of Test	Start	End
22.95	23.64	658.11	41.28	44.23

Conventional Mass Value:		Assumed Density of Artifacts: 7.2 g/cm ³				
Nominal	Serial No.	As Found (g)	As Left (g)	Uncertainty ± (g)	NIST 105-1 Class F ± (g)	k factor
25 lb	10	-0.48	-0.48	0.28	1.1	2.13
25 lb	12	-0.30	-0.30	0.28	1.1	2.13

Standards and Procedures used for testing:
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B & L Scales
351 Scott Street
Billings, MT 59101

Date of Test:

6/14/2017

Test Number:

2017-073

Calibration Expiration

6/2019

All results contained within this report only relate to the item(s) listed in this report. This calibration report must not be used to claim product endorsement by the State of Montana or any other government agency.

Date these weights were received:

6/12/2017

Description and condition of artifacts received:

Items were in good condition with no discernable defects.

Environmental Conditions at Time of Test:

Temperature °C		Pressure mmHg	Relative Humidity %	
Start	End	Duration of Test	Start	End
21.26	22.54	667.00	42.05	43.64

Conventional Mass Value:

Assumed Density of Artifacts:

7.84 g/cm³

Nominal	Serial No.	As Found ±(g)	As Left ±(g)	Uncertainty ± (g)	NIST 105-1 Class F ± (g)	k factor
5 lb 1	200	0.036	0.036	0.016	0.23	2.13
5 lb 2	200	0.034	0.034	0.016	0.23	2.13
5 lb 3	200	0.040	0.040	0.016	0.23	2.13
5 lb 4	200	0.044	0.044	0.016	0.23	2.13
5 lb 5	200	0.048	0.048	0.016	0.23	2.13
1 lb 1	200	0.0304	0.0304	0.0021	0.07	2.13
1 lb 2	200	0.0249	0.0249	0.0021	0.07	2.13
1 lb 3	200	0.0245	0.0245	0.0021	0.07	2.13
1 lb 4	200	0.0081	0.0081	0.0021	0.07	2.13

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Date these weights were received: 6/12/2017
Description and condition of artifacts received: Items were in good condition with no discernable defects.

Environmental Conditions at Time of Test:

Temperature °C		Pressure mmHg	Relative Humidity %	
Start	End	Duration of Test	Start	End
21.26	22.54	667.00	42.05	43.64

Conventional Mass Value: Assumed Density of Artifacts: 7.84 g/cm³

Nominal	Serial No.	As Found ±(g)	As Left ±(g)	Uncertainty ±(g)	NIST 105-1 Class F ±(g)	k factor
1 lb 5	200	0.0041	0.0041	0.0021	0.07	2.13
8 oz	200	0.0097	0.0097	0.0021	0.045	2.13

Standards and Procedures used for testing:
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Environmental Conditions at Time of Test:

Temperature °C		Pressure mmHg	Relative Humidity %	
Start	End	Duration of Test	Start	End
20.34	21.77	667.00	42.10	42.60

Conventional Mass Value:

Assumed Density of Artifacts:

7.84 g/cm³

Nominal	Serial No.	As Found ±(g)	As Left ±(g)	Uncertainty ± (g)	NIST 105-1 Class F ± (g)	k factor
0.2 lb	200	0.00783	0.00783	0.00190	0.018	2.13
0.2 lb *	200	0.00663	0.00663	0.00190	0.018	2.13
0.1 lb	200	0.00376	0.00376	0.00100	0.0091	2.13
0.05 lb	200	0.00127	0.00127	0.00053	0.0045	2.13
0.02 lb	200	-0.00012	-0.00012	0.00034	0.0018	2.13
0.02 lb *	200	0.00027	0.00027	0.00034	0.0018	2.13
0.01 lb	200	-0.00049	-0.00049	0.00027	0.0015	2.13
0.005 lb	200	-0.00041	-0.00041	0.00031	0.0012	2.13

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Date these weights were received: 6/12/2017

Description and condition of artifacts received: Items were in good condition with no discernable defects.

Environmental Conditions at Time of Test:

Temperature °C		Pressure mmHg	Relative Humidity %	
Start	End	Duration of Test	Start	End
21.82	21.99	663.45	41.23	42.17

Conventional Mass Value: Assumed Density of Artifacts: 2.70 g/cm³

Nominal	Serial No.	As Found ±(g)	As Left ±(g)	Uncertainty ± (g)	NIST 105-1 Class F ± (g)	k factor
0.002 lb	200	0.00004	0.00004	0.00014	0.00087	2.13
0.002 lb *	200	0.00001	0.00001	0.00014	0.00087	2.13
0.001 lb	200	0.00012	0.00012	0.00014	0.00070	2.13

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NOTE TO FILE:

On August 22, 2017, I talked to John with B & L Scales regarding his 4000 lb. weight cart and 16 – 1000 lb. weights. I did not receive calibration reports for those standards.

He did not have them recertified this year. The Montana calibration on those standards is good for two years and the Montana lab did not have time to do them.

John will not be testing any devices in North Dakota that require more than the 10,825 lbs. of weight he has certified.

Shelly Bauske
August 22, 2017

United States Department of Commerce

National Institute of Standards and Technology

Certificate of Metrological Traceability For:

Montana

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	Volume Transfer, II
30 kg to 1 mg	1500 gal to 5 gal
3000 lb to 0.001 lb	100 gal to 25 gal LPG
8 oz to 0.03125 oz	
Weight Carts	
5000 lb to 2000 lb	



2017


Georgia L. Harris, Acting Chief
NIST Office of Weights and Measures

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