SOUTH DAKOTA
DEPARTMENT OF PUBLIC SAFETY
prevention ~ protection ~ enforcement

Office of Weights and Measures
Metrology Laboratory
Office: 118 West Capitol Avenue, Pierre, SD 57501
Lab: 1100 Otter Rd, Bldg D, Sturgis, SD 57785
Lab: 605-347-7541, Office: 605-773-3697, Cell: 605-280-4572
Email: ron.peterson@state.sd.us https://dps.sd.gov/inspections/weights-measures

CALIBRATION CERTIFICATE

Capital Scale SA# **61** **Certificate number:** M25009

Physical Address:
3021 Valley Forge St
Bismarck, ND 58503

Billing Address:
3021 Valley Forge St
Bismarck, ND 58503

Contact: Travis Will
Phone: 701-255-1556

Received Date: 09/30/2024
Certificate Issued: 10/01/2024

Artifacts Submitted and Summary of Results:

Quantity	Artifact	Total Pieces	Recvd in Tol	Adjusted	Rejected	As Left In Tolerance
2	2000 lb weight carts	2	1	1	0	2
16	1000 lb weights	16	16	4	0	16
20	50 lb weights	20	0	20	0	20
1	Metric kit	14	14	0	0	14
1	Avoirdupois kit	20	20	0	0	20

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*k* to provide 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 2008 ISO/IEC Guide to the Expression of Uncertainty in Measurement. The expanded uncertainty is not tobe confused with a tolerance limit for the user during application. For weight carts, factors included on the inspection checklist have not been included in the calibration uncertainty. However, factors on the checklist may contribute measurement errors that are significant if not properly maintained during use.

Conformity Statement:
The artifacts submitted for this calibration are calibrated to NIST Handbook 105-1 (1990 or 2019), NIST Handbook 105-8 (2019), NIST Handbook 105-3 (2010), or ASTM E617 (2023), Standard Specification for Laboratory Weights and Precision Mass Standards specifications. The reported test values relate only to the observations made at the time and conditions of the test. Artifacts fully comply with all requirements (both specifications and tolerances) of the applicable documentary standard unless otherwise stated. Stated expanded uncertaintiesare less than one-third of the specified tolerances (maximum permissible errors, m.p.e.) for mass calibrations and less than the specified tolerances for volume calibrations. The correction value plus or minus the expanded uncertainty is within the stated tolerances. It is the decision rule of the SD State Metrology Laboratory that any cast weights determined to have a correction within 66 % of the upper tolerance or 50 % of thelower tolerance will be adjusted closer to zero mass correction, even if the mass correction originally met the applicable tolerance.

Traceability Statement:
The Standards of the SD Metrology Laboratory used for comparison are traceable to the International System of Units (SI) through the National Institute of Standards and Technology. The laboratory certificate number identified above is the unique report number to be used in referencing measurement traceability for artifacts identified in this report only.

This document does not represent or imply endorsement by NIST Office of Weights and Measures or any agency of the State and/or national governments. This report may not be reproduced, except in full without the written approval of this laboratory. The client must not use this

Ron E Peterson, Metrologist 10/01/2024

Dwight R Johnson, Reviewer 10/01/2024

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Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697

CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale**

Certificate Number: **M25009**

Calibration Date: **09/30/2024**

Environmental conditions at time of test:

Temperature: 21.44 °C **Humidity:** 48.26 % **Pressure:** 674.52 mmhg

Test method used: SOP 33 Calibrations of Weight Carts, May 2019

Test equipment used: Recently calibrated weights and a Mettler SLS510 Load Cell with IND570 Indicator. Vaisala PT301

Condition of Carts: Used but in good condition

Manufacturer: Unk **SN:** 16037

Nominal (lb)	AS Found (lb)	As Found (g)	As Left (lb)	As Left (g)	Uncertainty (lb)	*k*	Tolerance (lb)	Condition as Left
2000	-9.47	-4299.10	-0.07	-30.19	0.12	2.01	0.70	Adjusted

Notes:

The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory.

The above weight cart was allowed to come to environmental equilibrium in the laboratory prior to calibration. The weight cart was adjusted if needed and as noted above to as close as practical to zero error. All fluid levels must be maintained as close to reference levels as possible during use. Any maintenance, repairs or damage to weight cart or its components will likely result in an out-of-tolerance condition; therefore, maintenance or replacement of components such as batteries, tires, filters, etc. will require recalibration of the weight cart prior to subsequent use.

Conformity Assessment:
The weight cart identified on this calibration certificate complies with NIST Handbook 105-8, 2019 specifications and tolerances. Additional details regarding the assessment are included in the associated checklist that is an integral part of this calibration certifcate. The weight cart was found (or adjusted) to within the specified tolerances.

The above weight cart was compared with standards of the State of South Dakota, which are traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST) and have current calibration values. The assigned certificate number provides documented evidence for measurement traceability.

Ron E Peterson, Metrologist 09/30/2024

Dwight R Johnson, Reviewer 09/30/2024

Ver 20240214

South Dakota Department of Public Safety
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Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697

Inspection Checklist for Weight Cart

Calibrated for: Capital Scale **Certificate number:** M25009

Calibration Date: 10/01/2024

Manufacturer:	Unk	**Date of Manufacture**	2016
Model Number:	2016-1	**ID/SN Number**	16037

✓	Nominal Mass of Weight Cart	2000 lbs		Suitably marked: Yes/No	Yes
✓	Powered by:	Electric/generator	✓	Diesel	Gasoline
	Fluid Levels:	Engine Oil			
		Hydraulic Fluid		Sealed: Yes/No	
		Battery	✓	Sealed: Yes/No	Yes
		Liquid Fuel		Reference Line Present: Yes/No	

✓	Fluid drain tubes extend beyond the body of the cart: Yes/No		
✓	Number of axles:	2	
✓	Number /Size of Tires	15x5x11.25	
✓	Sealed wheel bearings: Yes/No	Yes	
✓	Drain holes present in locations where water may accumulate: Yes/No		Yes
✓	Weight restraint railing permanently fixed and solid: Yes/No		Yes
✓	Adjusting cavity accessible: Yes/No	Yes	Approximate capacity:(lbs) 50
✓	Adjusting cavity sealed: Yes/No	Yes	
✓	Service brakes functioning properly: Yes/No		Yes
✓	Parking brakes functioning properly: Yes/No		Yes
	Remote control functioning properly: Yes/No		

✓	General condition at time of calibration (note any accumulated dirt/debris, damage, loose parts, or evidence of tampering or unauthorized entry of seals).
✓	List and report any repair and maintenance performed, parts replaced, etc., Leaks repaired, new battery, carburetor, exhaust system, wheels changed, welding performed, etc. Include any comments or changes since the last calibration.
	Batteries replaced

Ron E Peterson, Metrologist 09/30/2024 Dwight R Johnson, Reviewer 09/30/2024

Ver Ver 20240214

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CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale**

Certificate Number: **M25009**

Calibration Date: **09/30/2024**

Environmental conditions at time of test:

Temperature: 20.75 °C **Humidity:** 50.5 % **Pressure:** 674.6 mmhg

Test method used: SOP 33 Calibrations of Weight Carts, May 2019

Test equipment used: Recently calibrated weights and a Mettler SLS510 Load Cell with IND570 Indicator.
Vaisala PT301

Condition of Carts: Used but in good condition

Manufacturer: Unk **SN:** 16039

Nominal (lb)	AS Found (lb)	As Found (g)	As Left (lb)	As Left (g)	Uncertainty (lb)	*k*	Tolerance (lb)	Condition as Left
2000	-0.10	-45.40	-0.10	-45.40	0.12	2.01	0.70	In-Tolerance

Notes:

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Conformity Assessment:
The weight cart identified on this calibration certificate complies with NIST Handbook 105-8, 2019 specifications and tolerances. Additional details regarding the assessment are included in the associated checklist that is an integral part of this calibration certifcate. The weight cart was found (or adjusted) to within the specified tolerances.

The above weight cart was compared with standards of the State of South Dakota, which are traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST) and have current calibration values. The assigned certificate number provides documented evidence for measurement traceability.

Ron E Peterson, Metrologist 09/30/2024 Dwight R Johnson, Reviewer 09/30/2024

Ver 20240214

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Inspection Checklist for Weight Cart

Calibrated for: Capital Scale **Certificate number:** M25009

Calibration Date: 10/01/2024

Manufacturer:	Unk	**Date of Manufacture**	2016
Model Number:	2016-2	**ID/SN Number**	16039

✓	Nominal Mass of Weight Cart	2000 lbs	Suitably marked: Yes/No		Yes
✓	Powered by:	Electric/generator ✓	Diesel		Gasoline
	Fluid Levels:	Engine Oil			
		Hydraulic Fluid	Sealed: Yes/No		
		Battery ✓	Sealed: Yes/No		Yes
		Liquid Fuel	Reference Line Present: Yes/No		
✓	Fluid drain tubes extend beyond the body of the cart: Yes/No				
✓	Number of axles:	2			
✓	Number /Size of Tires	15x5x11.25			
✓	Sealed wheel bearings: Yes/No	Yes			
✓	Drain holes present in locations where water may accumulate: Yes/No			Yes	
✓	Weight restraint railing permanently fixed and solid: Yes/No			Yes	
✓	Adjusting cavity accessible: Yes/No	Yes	Approximate capacity:(lbs)		50
✓	Adjusting cavity sealed: Yes/No	Yes			
✓	Service brakes functioning properly: Yes/No		Yes		
✓	Parking brakes functioning properly: Yes/No		Yes		
	Remote control functioning properly: Yes/No				

✓	General condition at time of calibration (note any accumulated dirt/debris, damage, loose parts, or evidence of tampering or unauthorized entry of seals).
✓	List and report any repair and maintenance performed, parts replaced, etc., Leaks repaired, new battery, carburetor, exhaust system, wheels changed, welding performed, etc. Include any comments or changes since the last calibration.

Ron E Peterson, Metrologist 09/30/2024 Dwight R Johnson, Reviewer 09/30/2024

Ver Ver 20240214

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CALIBRATION CERTIFICATE

Calibrated for: Capital Scale
Certificate number: M25009
Calibration Date: 09/30/2024
Purchase Order Number: 0
Environmental conditions at time of test:
Serial#
Temperature: 21.1 °C **Humidity:** 50.8 % **Pressure:** 674.48 mmhg
Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019
Test equipment used: Lab standards traceable to the SI, an XPE604KMC balance, and a Vaisala PTU301
Condition of Weights: Cleaned and painted
Artifact(s): 16 - 1000 lb weights

Nominal		Correction as Found		Correction as Left		ASTM E 617 Class 6	Uncertainty		Condition
	SN/ID	lb	g	lb	g	Tolerance (g)	g	k	As Left
1000 lb	10.2	-0.05	-23.5	0.00	0.0	45	4.7	2.0	Adjusted
1000 lb	10.4	-0.04	-18.6	-0.04	-18.6	45	4.7	2.0	In-Tolerance
1000 lb	10.7	-0.03	-12.6	-0.03	-12.6	45	4.7	2.0	In-Tolerance
1000 lb	13.1	-0.08	-35.3	0.00	0.0	45	4.7	2.0	Adjusted
1000 lb	13.2	-0.06	-27.1	0.00	-0.1	45	4.7	2.0	Adjusted
1000 lb	13.3	-0.03	-15.2	-0.03	-15.2	45	4.7	2.0	In-Tolerance
1000 lb	13.4	-0.02	-7.6	-0.02	-7.6	45	4.7	2.0	In-Tolerance
1000 lb	13.5	-0.03	-11.8	-0.03	-11.8	45	4.7	2.0	In-Tolerance
1000 lb	13.5	-0.02	-7.1	-0.02	-7.1	45	4.7	2.0	In-Tolerance
1000 lb	13.6	-0.04	-19.4	-0.04	-19.4	45	4.7	2.0	In-Tolerance
1000 lb	13.7	-0.08	-37.9	0.00	0.1	45	4.7	2.0	Adjusted
1000 lb	13.9	-0.03	-12.9	-0.03	-12.9	45	4.7	2.0	In-Tolerance
1000 lb	16.1	-0.01	-4.6	-0.01	-4.6	45	4.7	2.0	In-Tolerance
1000 lb	16.3	-0.01	-5.3	-0.01	-5.3	45	4.7	2.0	In-Tolerance
1000 lb	16.5	-0.05	-22.3	-0.05	-22.3	45	4.7	2.0	In-Tolerance
1000 lb	16.6	-0.02	-8.3	-0.02	-8.3	45	4.7	2.0	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.

The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory. These weights were not screened for magnetism or checked for density, and effects of magnetism or density are not included in the uncertainties.

Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist 09/30/2024 Dwight R Johnson, Reviewer 09/30/2024

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CALIBRATION CERTIFICATE

Calibrated for: Capital Scale **Certificate number:** M25009

Calibration Date: 10/01/2024 **Purchase Order Number:**

Environmental conditions at time of test: Serial#

Temperature: 21.5 °C **Humidity:** 48.2 % **Pressure:** 674 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019

Test equipment used: Lab standards traceable to the SI, XPR64003LD5C, XPR5003SC, XPR226CDR, XPR36C, Vaisala PTU301

Condition of Weights: Cleaned and painted

Artifact(s): **20 50 lb weights**

Nominal		Correction as Found	Correction as Left	NIST Class F	Uncertainty		Condition
	SN/ID	mg	mg	Tolerance (mg)	mg	*k*	As Left
50 lb	0	-5243	-3	2300	200	2.02	Adjusted
50 lb	1	-9663	-3	2300	200	2.02	Adjusted
50 lb	3	-9373	7	2300	200	2.02	Adjusted
50 lb	7	-6853	-3	2300	200	2.02	Adjusted
50 lb	11	-9053	2	2300	200	2.02	Adjusted
50 lb	12	-6148	-3	2300	200	2.02	Adjusted
50 lb	17	-129703	2	2300	200	2.02	Adjusted
50 lb	28	-6173	2	2300	200	2.02	Adjusted
50 lb	38	-6488	-3	2300	200	2.02	Adjusted
50 lb	56	-2353	2	2300	200	2.02	Adjusted
50 lb	59	-9398	-8	2300	200	2.02	Adjusted
50 lb	65	-8588	-8	2300	200	2.02	Adjusted
50 lb	67	-9213	-3	2300	200	2.02	Adjusted
50 lb	68	-10108	2	2300	200	2.02	Adjusted
50 lb	78	-3263	-3	2300	200	2.02	Adjusted
50 lb	79	-9468	2	2300	200	2.02	Adjusted
50 lb	U	-10003	-3	2300	200	2.02	Adjusted
50 lb	W	-4593	7	2300	200	2.02	Adjusted
50 lb	X	-5328	-8	2300	200	2.02	Adjusted
50 lb	Y	-3738	2	2300	200	2.02	Adjusted

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.

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Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist 10/01/2024 Dwight R Johnson, Reviewer 10/01/2024

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CALIBRATION CERTIFICATE

Calibrated for: Capital Scale **Certificate number:** M25009

Calibration Date: 10/01/2024 **Purchase Order Number:**

Environmental conditions at time of test: Serial# F308

Temperature: 21.1 °C **Humidity:** 45.5 % **Pressure:** 675.6 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019

Test equipment used: Lab standards traceable to the SI, XPR64003LD5C, XPR5003SC, XPR226CDR, XPR36C, Vaisala PTU301

Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **14 piece Metric Kit** **SN F308**

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
2 kg		34	34	200	17	2.04	In-Tolerance
1 kg		29.0	29.0	100	8.7	2.04	In-Tolerance
500 g		7.5	7.5	70	6.1	2.04	In-Tolerance
200 g		10.6	10.6	40	3.4	2.04	In-Tolerance
200 g	.	13.4	13.4	40	3.4	2.04	In-Tolerance
100 g		6.8	6.8	20	1.7	2.04	In-Tolerance
50 g		2.08	2.08	10	0.86	2.04	In-Tolerance
20 g		1.37	1.37	4	0.34	2.04	In-Tolerance
20 g	.	0.61	0.61	4	0.34	2.04	In-Tolerance
10 g		0.80	0.80	2	0.17	2.04	In-Tolerance
5 g		0.16	0.16	1.5	0.13	2.04	In-Tolerance
2 g		0.936	0.936	1.1	0.095	2.04	In-Tolerance
2 g	.	0.716	0.716	1.1	0.095	2.04	In-Tolerance
1 g		0.272	0.272	0.9	0.078	2.04	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.

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Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist 10/01/2024 Dwight R Johnson, Reviewer 10/01/2024

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CALIBRATION CERTIFICATE

Calibrated for: Capital Scale **Certificate number:** M25009

Calibration Date: 10/01/2024 **Purchase Order Number:**

Environmental conditions at time of test: Serial# 1190SD

Temperature: 21.1 °C **Humidity:** 45.5 % **Pressure:** 675.6 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019

Test equipment used: Lab standards traceable to the SI, XPR64003LD5C, XPR5003SC, XPR226CDR, XPR36C, Vaisala PTU301

Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **20 piece Avoirdupois Kit** **SN 1190SD**

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
5 lb	1	37	37	230	20	2.04	In-Tolerance
5 lb	2	101	101	230	20	2.04	In-Tolerance
5 lb	3	129	129	230	20	2.04	In-Tolerance
5 lb	4	16	16	230	20	2.04	In-Tolerance
5 lb	5	46	46	230	20	2.04	In-Tolerance
1 lb	1	30.5	30.5	70	6.1	2.04	In-Tolerance
1 lb	2	12.5	12.5	70	6.1	2.04	In-Tolerance
1 lb	3	16.5	16.5	70	6.1	2.04	In-Tolerance
1 lb	4	29.5	29.5	70	6.1	2.04	In-Tolerance
1 lb	5	35.5	35.5	70	6.1	2.04	In-Tolerance
8 oz		6.2	6.2	45	4.0	2.04	In-Tolerance
4 oz		3.8	3.8	23	2.0	2.03	In-Tolerance
2 oz		2.23	2.23	11	0.95	2.04	In-Tolerance
1 oz		2.27	2.27	5.4	0.48	2.03	In-Tolerance
0.5 oz		1.31	1.31	2.8	0.25	2.04	In-Tolerance
0.25 oz		1.19	1.19	1.7	0.15	2.03	In-Tolerance
0.125 oz		0.29	0.29	1.3	0.12	2.03	In-Tolerance
0.0625 oz		0.558	0.558	1.1	0.095	2.03	In-Tolerance
0.03125 oz		0.323	0.323	0.87	0.077	2.03	In-Tolerance
0.03125 oz	.	0.301	0.301	0.87	0.077	2.03	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.

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Ron E Peterson, Metrologist 10/01/2024 Dwight R Johnson, Reviewer 10/01/2024

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CALIBRATION CERTIFICATE

Capital Scale (Big Red) SA# **61** **Certificate number:** M25048

Physical Address:
3021 Valley Forge Street
Bismarck, ND 58503

Billing Address:
3021 Valley Forge Street
Bismarck, ND 58503

Contact: Travis Will
Phone: 701-255-1556

Received Date: 01/23/2025
Certificate Issued: 01/27/2025

Artifacts Submitted and Summary of Results:

Quantity	Artifact	Total Pieces	Recvd in Tol	Adjusted	Rejected	As Left In Tolerance
2	2000 lb Weight Carts	2	0	2	0	2
16	1000 lb Weights	16	14	7	0	16
20	50 lb Weights	20	13	15	0	20
1	Avoirdupois Kit	20	20	0	0	20
1	Metric Kit	14	14	0	0	14

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 *k* to provide 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 2008 ISO/IEC 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. For weight carts, factors included on the inspection checklist have not been included in the calibration uncertainty. However, factors on the checklist may contribute measurement errors that are significant if not properly maintained during use.

Conformity Statement:
The artifacts submitted for this calibration are calibrated to NIST Handbook 105-1 (1990 or 2019), NIST Handbook 105-8 (2019), NIST Handbook 105-3 (2010), or ASTM E617 (2023), Standard Specification for Laboratory Weights and Precision Mass Standards specifications. The reported test values relate only to the observations made at the time and conditions of the test. Artifacts fully comply with all requirements (both specifications and tolerances) of the applicable documentary standard unless otherwise stated. Stated expanded uncertainties are less than one-third of the specified tolerances (maximum permissible errors, m.p.e.) for mass calibrations and less than the specified tolerances for volume calibrations. The correction value plus or minus the expanded uncertainty is within the stated tolerances. It is the decision rule of the SD State Metrology Laboratory that any cast weights determined to have a correction within 66 % of the upper tolerance or 50 % of the lower tolerance will be adjusted closer to zero mass correction, even if the mass correction originally met the applicable tolerance.

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Ron E Peterson, Metrologist 01/27/2025

NVLAP CALIBRATION
NVLAP LAB CODE 600384-0

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South Dakota Department of Public Safety
Office of Weights and Measures
Metrology Lab
Lab: 1100 Otter Rd, Bldg D Sturgis, SD 57785 Phone: 605-347-7541
Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697

CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale (Big Red)** Certificate Number: **M25048**

Calibration Date: **01/27/2025**

Environmental conditions at time of test:

Temperature: 19.55 °C **Humidity:** 48.63 % **Pressure:** 666.88 mmhg

Test method used: SOP 33 Calibrations of Weight Carts, May 2019

Test equipment used: Recently calibrated weights and a Mettler SLS510 Load Cell with IND570 Indicator.
Vaisala PT301

Condition of Carts: Used but in good condition

Manufacturer: Unk **SN:** 541094

Nominal (lb)	AS Found (lb)	As Found (g)	As Left (lb)	As Left (g)	Uncertainty (lb)	*k*	Tolerance (lb)	Condition as Left
2000	2.40	1090	0.05	23	0.11	2.01	0.70	Adjusted

Notes:

The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory.

The above weight cart was allowed to come to environmental equilibrium in the laboratory prior to calibration. The weight cart was adjusted if needed and as noted above to as close as practical to zero error. All fluid levels must be maintained as close to reference levels as possible during use. Any maintenance, repairs or damage to weight cart or its components will likely result in an out-of-tolerance condition; therefore, maintenance or replacement of components such as batteries, tires, filters, etc. will require recalibration of the weight cart prior to subsequent use.

Conformity Assessment:
The weight cart identified on this calibration certificate complies with NIST Handbook 105-8, 2019 specifications and tolerances. Additional details regarding the assessment are included in the associated checklist that is an integral part of this calibration certifcate. The weight cart was found (or adjusted) to within the specified tolerances.

The above weight cart was compared with standards of the State of South Dakota, which are traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST) and have current calibration values. The assigned certificate number provides documented evidence for measurement traceability.

Ron E Peterson, Metrologist 01/27/2025

Ver 20250114

South Dakota Department of Public Safety
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Metrology Lab
Lab: 1100 Otter Rd, Bldg D Sturgis, SD 57785 Phone: 605-347-7541
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Inspection Checklist for Weight Cart

Calibrated for: Capital Scale (Big Red) **Certificate number:** M25048

Calibration Date: 01/28/2025

Manufacturer:	Unk	**Date of Manufacture**	Unk
Model Number:	Unk	**ID/SN Number**	541094

✓	Nominal Mass of Weight Cart	2000 lbs		Suitably marked: Yes/No		Yes
✓	Powered by:	Electric/generator	✓	Diesel		Gasoline	
✓	Fluid Levels:	Engine Oil					
		Hydraulic Fluid			Sealed: Yes/No		
		Battery	✓		Sealed: Yes/No		Yes
		Liquid Fuel			Reference Line Present: Yes/No		
✓	Fluid drain tubes extend beyond the body of the cart: Yes/No					Yes	
✓	Number of axles:		2				
✓	Number /Size of Tires		16x5x11.25 18x7x12.125				
✓	Sealed wheel bearings: Yes/No		Yes				
✓	Drain holes present in locations where water may accumulate: Yes/No					Yes	
✓	Weight restraint railing permanently fixed and solid: Yes/No					Yes	
✓	Adjusting cavity accessible: Yes/No		Yes		Approximate capacity:(lbs)		100
✓	Adjusting cavity sealed: Yes/No		Yes				
✓	Service brakes functioning properly: Yes/No			Yes			
✓	Parking brakes functioning properly: Yes/No			Yes			
	Remote control functioning properly: Yes/No						

✓	General condition at time of calibration (note any accumulated dirt/debris, damage, loose parts, or evidence of tampering or unauthorized entry of seals).

✓	List and report any repair and maintenance performed, parts replaced, etc., Leaks repaired, new battery, carburetor, exhaust system, wheels changed, welding performed, etc. Include any comments or changes since the last calibration.

Ron E Peterson, Metrologist 01/27/2025

Ver Ver 20250114

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CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale (Big Red)** Certificate Number: **M25048**

Calibration Date: **01/27/2025**

Environmental conditions at time of test:

Temperature: 19.45 °C **Humidity:** 48.83 % **Pressure:** 666.92 mmhg

Test method used: SOP 33 Calibrations of Weight Carts, May 2019

Test equipment used: Recently calibrated weights and a Mettler SLS510 Load Cell with IND570 Indicator. Vaisala PT301

Condition of Carts: Used but in good condition

Manufacturer: Unk **SN:** Unk

Nominal (lb)	AS Found (lb)	As Found (g)	As Left (lb)	As Left (g)	Uncertainty (lb)	*k*	Tolerance (lb)	Condition as Left
2000	11.89	5398	0.05	23	0.11	2.01	0.70	Adjusted

Notes:

The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory.

The above weight cart was allowed to come to environmental equilibrium in the laboratory prior to calibration. The weight cart was adjusted if needed and as noted above to as close as practical to zero error. All fluid levels must be maintained as close to reference levels as possible during use. Any maintenance, repairs or damage to weight cart or its components will likely result in an out-of-tolerance condition; therefore, maintenance or replacement of components such as batteries, tires, filters, etc. will require recalibration of the weight cart prior to subsequent use.

Conformity Assessment:
The weight cart identified on this calibration certificate complies with NIST Handbook 105-8, 2019 specifications and tolerances. Additional details regarding the assessment are included in the associated checklist that is an integral part of this calibration certifcate. The weight cart was found (or adjusted) to within the specified tolerances.

The above weight cart was compared with standards of the State of South Dakota, which are traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST) and have current calibration values. The assigned certificate number provides documented evidence for measurement traceability.

Ron E Peterson, Metrologist 01/27/2025

Ver 20250114

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Inspection Checklist for Weight Cart

Calibrated for: Capital Scale (Big Red) **Certificate number:** M25048

Calibration Date: 01/28/2025

Manufacturer:	Unk	**Date of Manufacture**	Unk
Model Number:	Unk	**ID/SN Number**	Unk

✓	Nominal Mass of Weight Cart	2000 lbs		Suitably marked: Yes/No	Yes	
✓	Powered by:	Electric/generator	✓	Diesel		Gasoline	
✓	Fluid Levels:	Engine Oil					
		Hydraulic Fluid		Sealed: Yes/No		
		Battery	✓	Sealed: Yes/No	Yes	
		Liquid Fuel		Reference Line Present: Yes/No		
✓	Fluid drain tubes extend beyond the body of the cart: Yes/No				Yes	
✓	Number of axles:		2			
✓	Number /Size of Tires		16x5x11.25 18x7x12.125			
✓	Sealed wheel bearings: Yes/No		Yes			
✓	Drain holes present in locations where water may accumulate: Yes/No				Yes	
✓	Weight restraint railing permanently fixed and solid: Yes/No				Yes	
✓	Adjusting cavity accessible: Yes/No		Yes	Approximate capacity:(lbs)	100	
✓	Adjusting cavity sealed: Yes/No		Yes			
✓	Service brakes functioning properly: Yes/No			Yes		
✓	Parking brakes functioning properly: Yes/No			Yes		
	Remote control functioning properly: Yes/No					

✓	General condition at time of calibration (note any accumulated dirt/debris, damage, loose parts, or evidence of tampering or unauthorized entry of seals).

✓	List and report any repair and maintenance performed, parts replaced, etc., Leaks repaired, new battery, carburetor, exhaust system, wheels changed, welding performed, etc. Include any comments or changes since the last calibration.

Ron E Peterson, Metrologist 01/27/2025

Ver Ver 20250114

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CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale (Big Red)** **Certificate number:** **M25048**

Calibration Date: 01/27/2025 Purchase Order Number: **0**

Environmental conditions at time of test:

Temperature: 19.48 °C **Humidity:** 47.5 % **Pressure:** 666.7 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019

Test equipment used: Lab standards traceable to the SI, an XPE604KMC balance, and a Vaisala PTU301

Condition of Weights: Cleaned and painted

Artifact(s): **16 - 1000 lb weights**

Nominal		Correction as Found		Correction as Left		NIST Class F	Uncertainty		Condition
	SN/ID	lb	g	lb	g	Tolerance (g)	g	*k*	As Left
1000 lb	13.10	-0.02	-9.8	-0.02	-9.8	45	4.7	2.0	In-Tolerance
1000 lb	13.11	-0.05	-21.4	-0.05	-21.4	45	4.7	2.0	In-Tolerance
1000 lb	13.12	-0.07	-32.7	0.00	0.0	45	4.7	2.0	Adjusted
1000 lb	13.13	-0.03	-15.8	-0.03	-15.8	45	4.7	2.0	In-Tolerance
1000 lb	13.18	-0.07	-29.9	0.00	0.0	45	4.7	2.0	Adjusted
1000 lb	13.19	-0.06	-27.9	0.00	0.1	45	4.7	2.0	Adjusted
1000 lb	13.20	-0.02	-7.0	-0.02	-7.0	45	4.7	2.0	In-Tolerance
1000 lb	13.20	-0.09	-39.9	0.00	0.0	45	4.7	2.0	Adjusted
1000 lb	13.21	-0.04	-16.2	-0.04	-16.2	45	4.7	2.0	In-Tolerance
1000 lb	13.22	-0.07	-30.7	0.00	-0.1	45	4.7	2.0	Adjusted
1000 lb	13.23	-0.02	-8.0	-0.02	-8.0	45	4.7	2.0	In-Tolerance
1000 lb	13.24	-0.07	-33.8	0.00	0.2	45	4.7	2.0	Adjusted
1000 lb	13.25	-0.04	-16.9	-0.04	-16.9	45	4.7	2.0	In-Tolerance
1000 lb	13.27	-0.05	-21.3	-0.05	-21.3	45	4.7	2.0	In-Tolerance
1000 lb	13.28	-0.03	-14.2	-0.03	-14.2	45	4.7	2.0	In-Tolerance
1000 lb	13.29	-0.09	-39.7	0.00	0.0	45	4.7	2.0	Adjusted

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.

The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory. These weights were not screened for magnetism or checked for density, and effects of magnetism or density are not included in the uncertainties.

Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist 01/27/2025

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CALIBRATION CERTIFICATE

Calibrated for: Capital Scale (Big Red) **Certificate number:** M25048

Calibration Date: 01/27/2025 **Purchase Order Number:**

Environmental conditions at time of test:

Temperature: 20.2 °C **Humidity:** 46.3 % **Pressure:** 667.3 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019

Test equipment used: Lab standards traceable to the SI, XPR64003LD5C, XPR5003SC, XPR226CDR, XPR36C, Vaisala PTU301

Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **20 50 lb weights**

Nominal		Correction as Found	Correction as Left	NIST Class F	Uncertainty		Condition
	SN/ID	mg	mg	Tolerance (mg)	mg	*k*	As Left
50 lb	03	-3318	57	2300	200	2.02	Adjusted
50 lb	09	-1823	7	2300	200	2.02	Adjusted
50 lb	19	-2138	77	2300	200	2.02	Adjusted
50 lb	29	-2533	-8	2300	200	2.02	Adjusted
50 lb	32	-1148	-1148	2300	200	2.02	In-Tolerance
50 lb	42	-1433	7	2300	200	2.02	Adjusted
50 lb	43	-1933	47	2300	200	2.02	Adjusted
50 lb	44	-2328	17	2300	200	2.02	Adjusted
50 lb	45	-1853	42	2300	200	2.02	Adjusted
50 lb	51	-1903	7	2300	200	2.02	Adjusted
50 lb	60	-2183	-23	2300	200	2.02	Adjusted
50 lb	11B	-2353	77	2300	200	2.02	Adjusted
50 lb	11C	-728	-728	2300	200	2.02	In-Tolerance
50 lb	A	-3333	7	2300	200	2.02	Adjusted
50 lb	B	-718	-718	2300	200	2.02	In-Tolerance
50 lb	K	-1848	47	2300	200	2.02	Adjusted
50 lb	L	-1368	47	2300	200	2.02	Adjusted
50 lb	N	-318	-318	2300	200	2.02	In-Tolerance
50 lb	P	-1233	-23	2300	200	2.02	Adjusted
50 lb	Y	-808	-808	2300	200	2.02	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.

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Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist 01/27/2025

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CALIBRATION CERTIFICATE

Calibrated for: Capital Scale (Big Red) **Certificate number:** M25048

Calibration Date: 01/28/2025 **Purchase Order Number:**

Environmental conditions at time of test:

Temperature: 21 °C **Humidity:** 45.5 % **Pressure:** 665.4 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019

Test equipment used: Lab standards traceable to the SI, XPR64003LD5C, XPR5003SC, XPR226CDR, XPR36C, Vaisala PTU301

Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **20 piece Avoirdupois Kit** **SN 010813A**

Nominal		Correction as Found	Correction as Left	NIST Class F	Uncertainty		Condition
	SN/ID	mg	mg	Tolerance (mg)	mg	*k*	As Left
5 lb	1	67	67	230	20	2.04	In-Tolerance
5 lb	2	66	66	230	20	2.04	In-Tolerance
5 lb	3	65	65	230	20	2.04	In-Tolerance
5 lb	4	62	62	230	20	2.04	In-Tolerance
5 lb	5	64	64	230	20	2.04	In-Tolerance
1 lb	1	23.5	23.5	70	6.1	2.04	In-Tolerance
1 lb	2	22.5	22.5	70	6.1	2.04	In-Tolerance
1 lb	3	24.5	24.5	70	6.1	2.04	In-Tolerance
1 lb	4	16.5	16.5	70	6.1	2.04	In-Tolerance
1 lb	5	26.5	26.5	70	6.1	2.04	In-Tolerance
8 oz		21.2	21.2	45	4.0	2.04	In-Tolerance
4 oz		9.4	9.4	23	2.0	2.03	In-Tolerance
2 oz		3.52	3.52	11	0.95	2.04	In-Tolerance
1 oz		1.65	1.65	5.4	0.48	2.03	In-Tolerance
0.5 oz		0.98	0.98	2.8	0.25	2.04	In-Tolerance
0.25 oz		0.38	0.38	1.7	0.15	2.03	In-Tolerance
0.125 oz		0.61	0.61	1.3	0.12	2.03	In-Tolerance
0.0625 oz		0.173	0.173	1.1	0.095	2.03	In-Tolerance
0.03125 oz		0.218	0.218	0.87	0.077	2.03	In-Tolerance
0.03125 oz	.	0.323	0.323	0.87	0.077	2.03	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.

The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory. These weights were not screened for magnetism or checked for density, and effects of magnetism or density are not included in the uncertainties.

Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist 01/28/2025

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CALIBRATION CERTIFICATE

Calibrated for: Capital Scale (Big Red) **Certificate number:** M25048

Calibration Date: 01/28/2025 **Purchase Order Number:**

Environmental conditions at time of test:

Temperature: 21 °C **Humidity:** 45.5 % **Pressure:** 665.4 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019

Test equipment used: Lab standards traceable to the SI, XPR64003LD5C, XPR5003SC, XPR226CDR, XPR36C, Vaisala PTU301

Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **14 piece Avoirdupois Kit** **SN 11905E**

Nominal		Correction as Found	Correction as Left	NIST Class F	Uncertainty		Condition
	SN/ID	mg	mg	Tolerance (mg)	mg	*k*	As Left
2 kg	2	42	42	200	17	2.04	In-Tolerance
1 kg		33.0	33.0	100	8.7	2.04	In-Tolerance
500 g		27.5	27.5	70	6.1	2.04	In-Tolerance
200 g		13.3	13.3	40	3.4	2.04	In-Tolerance
200 g	.	17.9	17.9	40	3.4	2.04	In-Tolerance
100 g		9.9	9.9	20	1.7	2.04	In-Tolerance
50 g		5.18	5.18	10	0.86	2.04	In-Tolerance
20 g		2.70	2.70	4	0.34	2.04	In-Tolerance
20 g	.	0.99	0.99	4	0.34	2.04	In-Tolerance
10 g		0.42	0.42	2	0.17	2.04	In-Tolerance
5 g		0.65	0.65	1.5	0.13	2.04	In-Tolerance
2 g		0.711	0.711	1.1	0.095	2.04	In-Tolerance
2 g	.	0.151	0.151	1.1	0.095	2.04	In-Tolerance
1 g		0.342	0.342	0.9	0.078	2.04	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.

The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory. These weights were not screened for magnetism or checked for density, and effects of magnetism or density are not included in the uncertainties.

Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist 01/28/2025

SOUTH DAKOTA
DEPARTMENT OF PUBLIC SAFETY
prevention ~ protection ~ enforcement

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Lab: 605-347-7541, Office: 605-773-3697, Cell: 605-280-4572
Email: ron.peterson@state.sd.us https://dps.sd.gov/inspections/weights-measures

CALIBRATION CERTIFICATE

Capital Scale (Shop) SA# **61** **Certificate number:** M25049

Physical Address:
3021 Valley Forge Street
Bismarck, ND 58503

Billing Address:
3021 Valley Forge Street
Bismarck, ND 58503

Contact: Travis Will
Phone: 701-255-1556

Received Date: 01/23/2025
Certificate Issued: 01/27/2025

Artifacts Submitted and Summary of Results:

Quantity	Artifact	Total Pieces	Recvd in Tol	Adjusted	Rejected	As Left In Tolerance
20	50 lb Weights	20	19	7	1	19
3	25 lb and 10 lb cast Weights	3	3	0	0	3
1	Metric Kit	21	21	0	0	21
2	Avoirdupois Kits	30	30	0	0	30

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 *k* to provide 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 2008 ISO/IEC 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. For weight carts, factors included on the inspection checklist have not been included in the calibration uncertainty. However, factors on the checklist may contribute measurement errors that are significant if not properly maintained during use.

Conformity Statement:
The artifacts submitted for this calibration are calibrated to NIST Handbook 105-1 (1990 or 2019), NIST Handbook 105-8 (2019), NIST Handbook 105-3 (2010), or ASTM E617 (2023), Standard Specification for Laboratory Weights and Precision Mass Standards specifications. The reported test values relate only to the observations made at the time and conditions of the test. Artifacts fully comply with all requirements (both specifications and tolerances) of the applicable documentary standard unless otherwise stated. Stated expanded uncertainties are less than one-third of the specified tolerances (maximum permissible errors, m.p.e.) for mass calibrations and less than the specified tolerances for volume calibrations. The correction value plus or minus the expanded uncertainty is within the stated tolerances. It is the decision rule of the SD State Metrology Laboratory that any cast weights determined to have a correction within 66 % of the upper tolerance or 50 % of the lower tolerance will be adjusted closer to zero mass correction, even if the mass correction originally met the applicable tolerance.

Traceability Statement:
The Standards of the SD Metrology Laboratory used for comparison are traceable to the International System of Units (SI) through the National Institute of Standards and Technology. The laboratory certificate number identified above is the unique report number to be used in referencing measurement traceability for artifacts identified in this report only.

Ron E Peterson, Metrologist 01/27/2025

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NVLAP LAB CODE 600384-0

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CALIBRATION CERTIFICATE

Calibrated for: Capital Scale (Shop) **Certificate number:** M25049

Calibration Date: 01/27/2025 **Purchase Order Number:**

Environmental conditions at time of test: Serial#

Temperature: 19.5 °C **Humidity:** 45.3 % **Pressure:** 666.4 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019

Test equipment used: Lab standards traceable to the SI, XPR64003LD5C, XPR5003SC, XPR226CDR, XPR36C, Vaisala PTU301

Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **20 50 lb weights**

Nominal		Correction as Found	Correction as Left	NIST Class F	Uncertainty		Condition
	SN/ID	mg	mg	Tolerance (mg)	mg	*k*	As Left
50 lb	04	-1358	-18	2300	200	2.02	Adjusted
50 lb	11	-248	-248	2300	200	2.02	In-Tolerance
50 lb	13	72	72	2300	200	2.02	In-Tolerance
50 lb	15	-868	-868	2300	200	2.02	In-Tolerance
50 lb	18	-1208	17	2300	200	2.02	Adjusted
50 lb	20	-1023	-1023	2300	200	2.02	In-Tolerance
50 lb	21	762	762	2300	200	2.02	In-Tolerance
50 lb	24	-808	-808	2300	200	2.02	In-Tolerance
50 lb	33	-1008	-1008	2300	200	2.02	In-Tolerance
50 lb	34	-1213	2	2300	200	2.02	Adjusted
50 lb	34	-268	-268	2300	200	2.02	In-Tolerance
50 lb	37	32	32	2300	200	2.02	In-Tolerance
50 lb	39	-673	Broken Shoulder	2300	200	2.02	Reject
50 lb	40	-873	-873	2300	200	2.02	In-Tolerance
50 lb	70	-1958	27	2300	200	2.02	Adjusted
50 lb	71	-1193	2	2300	200	2.02	Adjusted
50 lb	72	-403	-403	2300	200	2.02	In-Tolerance
50 lb	77	-128	-128	2300	200	2.02	In-Tolerance
50 lb	11F	-1618	27	2300	200	2.02	Adjusted
50 lb	AAA	-1303	-13	2300	200	2.02	Adjusted

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.

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Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist 01/27/2025

South Dakota Department of Public Safety
Office of Weights and Measures
Metrology Lab
Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541
Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697

CALIBRATION CERTIFICATE

Calibrated for: Capital Scale (Shop) **Certificate number:** M25049

Calibration Date: 01/24/2025 **Purchase Order Number:**

Environmental conditions at time of test: Serial#

Temperature: 21.2 °C **Humidity:** 45.5 % **Pressure:** 667.1 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019

Test equipment used: Lab standards traceable to the SI, XPR64003LD5C, XPR5003SC, XPR226CDR, XPR36C, Vaisala PTU301

Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **3 Avoirdupois Weight(s)**

Nominal		Correction as Found	Correction as Left	NIST Class F	Uncertainty		Condition
	SN/ID	mg	mg	Tolerance (mg)	mg	*k*	As Left
25 lb	.	-274	-274	1100	120	2.02	In-Tolerance
10 lb	S	235	235	450	39	2.04	In-Tolerance
10 lb	1	-28	-28	450	39	2.04	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.

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Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist 01/24/2025

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CALIBRATION CERTIFICATE

Calibrated for: Capital Scale (Shop) **Certificate number:** M25049

Calibration Date: 01/24/2025 **Purchase Order Number:**

Environmental conditions at time of test: Serial# 11111A

Temperature: 21 °C **Humidity:** 45 % **Pressure:** 667.3 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019

Test equipment used: Lab standards traceable to the SI, XPR64003LD5C, XPR5003SC, XPR226CDR, XPR36C, Vaisala PTU301

Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **21 piece Metric Kit** **SN 11111A**

Nominal		Correction as Found	Correction as Left	NIST Class F	Uncertainty		Condition
	SN/ID	mg	mg	Tolerance (mg)	mg	*k*	As Left
5 kg	1	162	162	500	43	2.04	In-Tolerance
5 kg	2	142	142	500	43	2.04	In-Tolerance
2 kg	1	33	33	200	17	2.04	In-Tolerance
2 kg		44	44	200	17	2.04	In-Tolerance
1 kg		46.0	46.0	100	8.7	2.04	In-Tolerance
500 g	1	16.5	16.5	70	6.1	2.04	In-Tolerance
500 g	2	20.5	20.5	70	6.1	2.04	In-Tolerance
500 g	3	13.5	13.5	70	6.1	2.04	In-Tolerance
500 g	4	20.5	20.5	70	6.1	2.04	In-Tolerance
500 g	5	22.5	22.5	70	6.1	2.04	In-Tolerance
200 g	1	9.1	9.1	40	3.4	2.04	In-Tolerance
200 g	2	9.8	9.8	40	3.4	2.04	In-Tolerance
100 g		8.0	8.0	20	1.7	2.04	In-Tolerance
50 g		1.60	1.60	10	0.86	2.04	In-Tolerance
20 g		1.69	1.69	4	0.34	2.04	In-Tolerance
20 g	.	1.23	1.23	4	0.34	2.04	In-Tolerance
10 g		0.53	0.53	2	0.17	2.04	In-Tolerance
5 g		0.72	0.72	1.5	0.13	2.04	In-Tolerance
2 g		0.286	0.286	1.1	0.095	2.04	In-Tolerance
2 g	.	0.571	0.571	1.1	0.095	2.04	In-Tolerance
1 g		0.152	0.152	0.9	0.078	2.04	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.

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Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist 01/24/2025

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CALIBRATION CERTIFICATE

Calibrated for: Capital Scale (Shop) **Certificate number:** M25049

Calibration Date: 01/24/2025 **Purchase Order Number:**

Environmental conditions at time of test: Serial# 11905B

Temperature: 21 °C **Humidity:** 45 % **Pressure:** 667.3 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019

Test equipment used: Lab standards traceable to the SI, XPR64003LD5C, XPR5003SC, XPR226CDR, XPR36C, Vaisala PTU301

Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **17 piece Avoirdupois Kit** **SN 11905B**

Nominal		Correction as Found	Correction as Left	NIST Class F	Uncertainty		Condition
	SN/ID	mg	mg	Tolerance (mg)	mg	*k*	As Left
2 lb	1	27.4	27.4	91	7.9	2.04	In-Tolerance
2 lb	2	11.4	11.4	91	7.9	2.04	In-Tolerance
2 lb	3	12.4	12.4	91	7.9	2.04	In-Tolerance
1 lb		21.5	21.5	70	6.1	2.04	In-Tolerance
0.3 lb		-0.6	-0.6	27	3.9	2.04	In-Tolerance
0.2 lb		1.0	1.0	18	1.6	2.04	In-Tolerance
0.1 lb		4.32	4.32	9.1	0.78	2.04	In-Tolerance
0.05 lb		0.47	0.47	4.5	0.39	2.04	In-Tolerance
0.03 lb		-1.39	-1.39	2.7	0.39	2.04	In-Tolerance
0.02 lb		0.23	0.23	1.8	0.16	2.04	In-Tolerance
0.01 lb		-0.41	-0.41	1.5	0.13	2.04	In-Tolerance
8 oz		10.2	10.2	45	4.0	2.04	In-Tolerance
4 oz		-2.5	-2.5	23	2.0	2.03	In-Tolerance
2 oz		4.48	4.48	11	0.95	2.04	In-Tolerance
1 oz		0.62	0.62	5.4	0.48	2.03	In-Tolerance
0.5 oz		0.11	0.11	2.8	0.25	2.04	In-Tolerance
0.25 oz		0.37	0.37	1.7	0.15	2.03	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.

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Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist 01/24/2025

South Dakota Department of Public Safety
Office of Weights and Measures
Metrology Lab
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Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697

CALIBRATION CERTIFICATE

Calibrated for: Capital Scale (Shop) **Certificate number:** M25049

Calibration Date: 01/24/2025 **Purchase Order Number:**

Environmental conditions at time of test: Serial# 11905A

Temperature: 21 °C **Humidity:** 45 % **Pressure:** 667.3 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019

Test equipment used: Lab standards traceable to the SI, XPR64003LD5C, XPR5003SC, XPR226CDR, XPR36C, Vaisala PTU301

Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **13 piece Avoirdupois Kit** **SN 11905A**

Nominal		Correction as Found	Correction as Left	NIST Class F	Uncertainty		Condition
	SN/ID	mg	mg	Tolerance (mg)	mg	*k*	As Left
10 lb		67	67	450	39	2.04	In-Tolerance
10 lb	.	99	99	450	39	2.04	In-Tolerance
5 lb		-92	-92	230	20	2.04	In-Tolerance
2 lb		34.4	34.4	91	7.9	2.04	In-Tolerance
2 lb	.	20.4	20.4	91	7.9	2.04	In-Tolerance
1 lb		-2.6	-2.6	70	6.1	2.04	In-Tolerance
8 oz		14.2	14.2	45	4.0	2.04	In-Tolerance
4 oz		-4.3	-4.3	23	2.0	2.03	In-Tolerance
1 oz		3.01	3.01	5.4	0.48	2.03	In-Tolerance
1 oz	.	3.01	3.01	5.4	0.48	2.03	In-Tolerance
1 oz	..	1.75	1.75	5.4	0.48	2.03	In-Tolerance
0.5 oz		1.53	1.53	2.8	0.25	2.04	In-Tolerance
0.25 oz		-1.29	-1.29	1.7	0.15	2.03	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.

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Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist 01/24/2025

SOUTH DAKOTA
DEPARTMENT OF PUBLIC SAFETY
prevention – protection – enforcement

Office of Weights and Measures
Metrology Laboratory
Office: 118 West Capitol Avenue, Pierre, SD 57501
Lab: 1100 Otter Rd, Bldg D, Sturgis, SD 57785
Lab: 605-347-7541, Office: 605-773-3697, Cell: 605-280-4572
Email: ron.peterson@state.sd.us https://dps.sd.gov/inspections/weights-measures

CALIBRATION CERTIFICATE

Capital Scale (Trailer) SA# **61** **Certificate number:** M25050

Physical Address:
3021 Valley Forge Street
Bismarck, ND 58503

Billing Address:
3021 Valley Forge Street
Bismarck, ND 58503

Contact: Travis Will
Phone: 701-255-1556

Received Date: 01/23/2025
Certificate Issued: 01/27/2025

Artifacts Submitted and Summary of Results:

Quantity	Artifact	Total Pieces	Recvd in Tol	Adjusted	Rejected	As Left In Tolerance
4	1000 lb Weights	3	4	2	0	4
30	50 lb Weights	30	26	12	0	30

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 *k* to provide 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 2008 ISO/IEC 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. For weight carts, factors included on the inspection checklist have not been included in the calibration uncertainty. However, factors on the checklist may contribute measurement errors that are significant if not properly maintained during use.

Conformity Statement:
The artifacts submitted for this calibration are calibrated to NIST Handbook 105-1 (1990 or 2019), NIST Handbook 105-8 (2019), NIST Handbook 105-3 (2010), or ASTM E617 (2023), Standard Specification for Laboratory Weights and Precision Mass Standards specifications. The reported test values relate only to the observations made at the time and conditions of the test. Artifacts fully comply with all requirements (both specifications and tolerances) of the applicable documentary standard unless otherwise stated. Stated expanded uncertainties are less than one-third of the specified tolerances (maximum permissible errors, m.p.e.) for mass calibrations and less than the specified tolerances for volume calibrations. The correction value plus or minus the expanded uncertainty is within the stated tolerances. It is the decision rule of the SD State Metrology Laboratory that any cast weights determined to have a correction within 66 % of the upper tolerance or 50 % of the lower tolerance will be adjusted closer to zero mass correction, even if the mass correction originally met the applicable tolerance.

Traceability Statement:
The Standards of the SD Metrology Laboratory used for comparison are traceable to the International System of Units (SI) through the National Institute of Standards and Technology. The laboratory certificate number identified above is the unique report number to be used in referencing measurement traceability for artifacts identified in this report only.

Ron E Peterson, Metrologist 01/27/2025

NVLAP CALIBRATION
NVLAP LAB CODE 600384-0

Accredited by the National Voluntary Laboratory Accreditation Program for the specific scope of acceditation under lab code 600384-0. This certificate may not be used to claim product endorsement by NVLAP, NIST Office of Weights and Measures or any other government agency, and may not be reproduced, except in full without written approval from this laboratory.

South Dakota Department of Public Safety
Office of Weights and Measures
Metrology Lab
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Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697

CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale (Trailer)** **Certificate number:** **M25050**

Calibration Date: 01/24/2025 Purchase Order Number: **0**

Environmental conditions at time of test: Serial#

Temperature: 19.8 °C **Humidity:** 44.6 % **Pressure:** 667 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019

Test equipment used: Lab standards traceable to the SI, an XPE604KMC balance, and a Vaisala PTU301

Condition of Weights: Cleaned and painted

Artifact(s): **4 - 1000 lb weights**

Nominal		Correction as Found		Correction as Left		NIST Class F	Uncertainty		Condition
	SN/ID	lb	g	lb	g	Tolerance (g)	g	*k*	As Left
1000 lb	13.14	-0.03	-12.3	-0.03	-12.3	45	4.7	2.0	In-Tolerance
1000 lb	13.15	-0.06	-29.3	0.00	-0.1	45	4.7	2.0	Adjusted
1000 lb	13.16	-0.05	-22.9	0.00	0.0	45	4.7	2.0	Adjusted
1000 lb	13.17	-0.02	-11.1	-0.02	-11.1	45	4.7	2.0	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.

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Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist 01/24/2025

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CALIBRATION CERTIFICATE

Calibrated for: Capital Scale (Trailer) **Certificate number:** M25050

Calibration Date: 01/27/2025 **Purchase Order Number:**

Environmental conditions at time of test: Serial#

Temperature: 20 °C **Humidity:** 48 % **Pressure:** 667.2 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019

Test equipment used: Lab standards traceable to the SI, XPR64003LD5C, XPR5003SC, XPR226CDR, XPR36C, Vaisala PTU301

Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **20 50 lb weights**

Nominal		Correction as Found	Correction as Left	NIST Class F	Uncertainty		Condition
	SN/ID	mg	mg	Tolerance (mg)	mg	*k*	As Left
50 lb	02	-923	-923	2300	200	2.02	In-Tolerance
50 lb	7	-1118	-1118	2300	200	2.02	In-Tolerance
50 lb	08	-498	-498	2300	200	2.02	In-Tolerance
50 lb	10	-1018	-1018	2300	200	2.02	In-Tolerance
50 lb	16	-1258	-8	2300	200	2.02	Adjusted
50 lb	27	-383	-383	2300	200	2.02	In-Tolerance
50 lb	30	-423	-423	2300	200	2.02	In-Tolerance
50 lb	30	-44448	2	2300	200	2.02	Adjusted
50 lb	31	-2248	17	2300	200	2.02	Adjusted
50 lb	35	-1163	-1163	2300	200	2.02	In-Tolerance
50 lb	36	-2213	37	2300	200	2.02	Adjusted
50 lb	41	-1078.000	-1078	2300	200	2.02	In-Tolerance
50 lb	46	-518.000	-518	2300	200	2.02	In-Tolerance
50 lb	48	-1048.000	-1048	2300	200	2.02	In-Tolerance
50 lb	49	-483.000	-483	2300	200	2.02	In-Tolerance
50 lb	50	-753.000	-753	2300	200	2.02	In-Tolerance
50 lb	54	-1523.000	12	2300	200	2.02	Adjusted
50 lb	55	-1068.000	-1068	2300	200	2.02	In-Tolerance
50 lb	61	-1148.000	-1148	2300	200	2.02	In-Tolerance
50 lb	64	-1318.000	32	2300	200	2.02	Adjusted

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.

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Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist 01/27/2025

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CALIBRATION CERTIFICATE

Calibrated for: Capital Scale (Trailer) **Certificate number:** M25050

Calibration Date: 01/27/2025 **Purchase Order Number:**

Environmental conditions at time of test: Serial#

Temperature: 20 °C **Humidity:** 48 % **Pressure:** 667.2 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019

Test equipment used: Lab standards traceable to the SI, XPR64003LD5C, XPR5003SC, XPR226CDR, XPR36C, Vaisala PTU301

Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **10 50 lb weights**

Nominal		Correction as Found	Correction as Left	NIST Class F	Uncertainty		Condition
	SN/ID	mg	mg	Tolerance (mg)	mg	*k*	As Left
50 lb	.	-1948	22	2300	200	2.02	Adjusted
50 lb	A	907	907	2300	200	2.02	In-Tolerance
50 lb	B	-643	-643	2300	200	2.02	In-Tolerance
50 lb	E	-1943	27	2300	200	2.02	Adjusted
50 lb	J	-1473	-13	2300	200	2.02	Adjusted
50 lb	M	-2318	2	2300	200	2.02	Adjusted
50 lb	P	-1858	-13	2300	200	2.02	Adjusted
50 lb	R	-1048	-1048	2300	200	2.02	In-Tolerance
50 lb	T	-158	-158	2300	200	2.02	In-Tolerance
50 lb	U	-1418	17	2300	200	2.02	Adjusted

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.

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Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist 01/27/2025