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 Company SA# **61** Certificate number: **MP4419**

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: **08/28/2023**
Certificate Issued: **08/29/2023**

Artifacts Submitted and Summary of Results:

Quantity	Artifact	Total Pieces	Recvd in Tol	Adjusted	Rejected	As Left In Tolerance
16	1000 lb Weights	16	16	4	0	16
3	2000 lb Weight Carts	3	2	2	0	3
20	50 lb Weights	20	0	20	0	20
1	Metric kit	14	14	0	0	14
1	Avourdupois 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 (2018), 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.

Ron E Peterson, Metrologist 08/29/2023

Dwight R Johnson, Reviewer 08/29/2023

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CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale Company** Certificate Number: **MP4419**

Calibration Date: **08/29/2023**

Environmental conditions at time of test:

Temperature: 22.4 °C **Humidity:** 46.1 % **Pressure:** 673.8 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:** 2016-1

Nominal (lb)	AS Found (lb)	As Found (g)	As Left (lb)	As Left (g)	Uncertainty (lb)	*k*	Tolerance (lb)	Condition as Left
2000	0.08	37.68	0.08	37.68	0.11	2.01	0.70	In-Tolerance

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 08/29/2023 Dwight R Johnson, Reviewer 08/29/2023

Ver 20220919

South Dakota Department of Public Safety
Office of Weights and Measures
Metrology Lab
Lab: 1500 N Garfield – E. Truck Bypass Phone: 605-773-3170
Office: 118 West Capitol Avenue Phone: 605-773-3697
Pierre SD 57501

Inspection Checklist for Weight Cart

Calibrated for: Capital Scale Company **Certificate number:** MP4419

Calibration Date: 08/29/2023

Manufacturer:	**Unk**	**Date of Manufacture**	2016
Model Number:	**2000**	**ID/SN Number**	2016-1

✓	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	15.5/18			
✓	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)		25
✓	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 08/29/2023 Dwight R Johnson, Reviewer 08/29/2023

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CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale Company** Certificate Number: **MP4419**

Calibration Date: **08/29/2023**

Environmental conditions at time of test:

Temperature: 20 °C **Humidity:** 49.9 % **Pressure:** 673.8 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:** 2016-2

Nominal (lb)	AS Found (lb)	As Found (g)	As Left (lb)	As Left (g)	Uncertainty (lb)	*k*	Tolerance (lb)	Condition as Left
2000	-1.56	-706.03	0.02	11.35	0.11	2.01	0.70	Adjusted

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.

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Pierre SD 57501

Inspection Checklist for Weight Cart

Calibrated for: Capital Scale Company **Certificate number:** MP4419

Calibration Date: 08/29/2023

Manufacturer:	**Unk**	**Date of Manufacture**	2016
Model Number:	**2000**	**ID/SN Number**	2016-2

✓	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	15.5/18
✓	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
✓	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	

Approximate capacity:(lbs) 25

✓	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 08/29/2023 Dwight R Johnson, Reviewer 08/29/2023

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CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale Company** Certificate Number: **MP4419**

Calibration Date: **08/29/2023**

Environmental conditions at time of test:

Temperature: 21.5 °C **Humidity:** 46.2 % **Pressure:** 673.8 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	-0.20	-90.79	-0.05	-22.70	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.

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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.

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Inspection Checklist for Weight Cart

Calibrated for: Capital Scale Company **Certificate number:** MP4419

Calibration Date: 08/29/2023

Manufacturer:	Unk	**Date of Manufacture**	2016
Model Number:	2000	**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		15.5/18			
✓	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)	25	
✓	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 08/29/2023 Dwight R Johnson, Reviewer 08/29/2023

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CALIBRATION CERTIFICATE

Calibrated for: Capital Scale Company **Certificate number:** MP4419

Calibration Date: 08/29/2023 Purchase Order Number: 0

Environmental conditions at time of test:

Temperature: 21.1 °C **Humidity:** 47.5 % **Pressure:** 672.4 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, 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	13.1	-0.04	-20.4	-0.04	-20.4	45	4.7	2.0	In-Tolerance
1000 lb	13.2	-0.05	-21.1	-0.05	-21.1	45	4.7	2.0	In-Tolerance
1000 lb	13.3	-0.03	-13.3	-0.03	-13.3	45	4.7	2.0	In-Tolerance
1000 lb	13.4	-0.08	-36.7	0.00	0.0	45	4.7	2.0	Adjusted
1000 lb	13.5	-0.01	-4.4	-0.01	-4.4	45	4.7	2.0	In-Tolerance
1000 lb	13.6	-0.04	-20.2	-0.04	-20.2	45	4.7	2.0	In-Tolerance
1000 lb	13.7	-0.05	-21.1	-0.05	-21.1	45	4.7	2.0	In-Tolerance
1000 lb	13.8	-0.01	-6.5	-0.01	-6.5	45	4.7	2.0	In-Tolerance
1000 lb	13.9	-0.03	-12.4	-0.03	-12.4	45	4.7	2.0	In-Tolerance
1000 lb	16.1	-0.07	-31.4	0.00	0.0	45	4.7	2.0	Adjusted
1000 lb	16.2	-0.04	-18.7	-0.04	-18.7	45	4.7	2.0	In-Tolerance
1000 lb	16.3	-0.07	-30.9	0.00	-0.1	45	4.7	2.0	Adjusted
1000 lb	16.4	-0.02	-7.6	-0.02	-7.6	45	4.7	2.0	In-Tolerance
1000 lb	16.5	-0.05	-21.0	-0.05	-21.0	45	4.7	2.0	In-Tolerance
1000 lb	16.6	-0.01	-5.6	-0.01	-5.6	45	4.7	2.0	In-Tolerance
1000 lb	16.7	-0.07	-33.8	0.00	0.1	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 08/29/2023 Dwight R Johnson, Reviewer 08/29/2023

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CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale Company** **Certificate number:** **MP4419**

Calibration Date: 08/28/2023 Purchase Order Number:

Environmental conditions at time of test:

Temperature: 21.1 °C **Humidity:** 49.6 % **Pressure:** 672.8 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, Mettler XPR5003SC, Mettler XPR226CDR, Mettler AX206, 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	1	-3738	12	2300	200	2.04	Adjusted
50 lb	11	No Seal	12	2300	200	2.04	Adjusted
50 lb	12	-3908	12	2300	200	2.04	Adjusted
50 lb	14	-7178	-8	2300	200	2.04	Adjusted
50 lb	17	No Seal	12	2300	200	2.04	Adjusted
50 lb	28	-4528	2	2300	200	2.04	Adjusted
50 lb	38	-4668	12	2300	200	2.04	Adjusted
50 lb	43	-9348	2	2300	200	2.04	Adjusted
50 lb	56	-4388	-8	2300	200	2.04	Adjusted
50 lb	57	-4168	-8	2300	200	2.04	Adjusted
50 lb	65	-9348	12	2300	200	2.04	Adjusted
50 lb	67	-4378	12	2300	200	2.04	Adjusted
50 lb	68	-9568	-8	2300	200	2.04	Adjusted
50 lb	78	-3898	12	2300	200	2.04	Adjusted
50 lb	79	-4298	2	2300	200	2.04	Adjusted
50 lb	U	-7828	2	2300	200	2.04	Adjusted
50 lb	W	-3018	12	2300	200	2.04	Adjusted
50 lb	X	-3208	2	2300	200	2.04	Adjusted
50 lb	Y	No Seal	-8	2300	200	2.04	Adjusted
50 lb	Z	-3778	2	2300	200	2.04	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

Dwight R. Johnson — Dwight R Johnson, Metrologist 08/28/2023

Ron E Peterson — Ron E Peterson, Reviewer 08/28/2023

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CALIBRATION CERTIFICATE

Calibrated for: Capital Scale Company **Certificate number:** MP4419

Calibration Date: 08/29/2023 Purchase Order Number:

Environmental conditions at time of test:

Temperature: 21.2 °C **Humidity:** 46.2 % **Pressure:** 673.9 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, Mettler XPR5003SC, Mettler XPR226CDR, Mettler AX206, Vaisala PTU301

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

Artifact(s): **20 piece Avoirdupois Kit** **SN 119050**

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	38	38	230	20	2.06	In-Tolerance
5 lb	2	102	102	230	20	2.06	In-Tolerance
5 lb	3	129	129	230	20	2.06	In-Tolerance
5 lb	4	21	21	230	20	2.06	In-Tolerance
5 lb	5	49	49	230	20	2.06	In-Tolerance
1 lb	1	29.5	29.5	70	6.2	2.06	In-Tolerance
1 lb	2	10.5	10.5	70	6.2	2.06	In-Tolerance
1 lb	3	16.5	16.5	70	6.2	2.06	In-Tolerance
1 lb	4	28.5	28.5	70	6.2	2.06	In-Tolerance
1 lb	5	34.5	34.5	70	6.2	2.06	In-Tolerance
8 oz		7.2	7.2	45	4.1	2.05	In-Tolerance
4 oz		3.8	3.8	23	2.0	2.04	In-Tolerance
2 oz		2.07	2.07	11	0.95	2.05	In-Tolerance
1 oz		2.36	2.36	5.4	0.48	2.03	In-Tolerance
1/2 oz		1.42	1.42	2.8	0.25	2.05	In-Tolerance
1/4 oz		1.17	1.17	1.7	0.15	2.03	In-Tolerance
1/8 oz		0.28	0.28	1.3	0.12	2.03	In-Tolerance
1/16 oz		0.57	0.57	1.1	0.11	2.04	In-Tolerance
1/32 oz		0.313	0.313	0.87	0.077	2.04	In-Tolerance
1/32 oz	.	0.338	0.338	0.87	0.077	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

Dwight R. Johnson Ron E Peterson

Dwight R Johnson, Metrologist 08/29/2023 Ron E Peterson, Reviewer 08/29/2023

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CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale Company** **Certificate number:** **MP4419**

Calibration Date: 08/29/2023 Purchase Order Number:

Environmental conditions at time of test:

Temperature: 21.2 °C **Humidity:** 46.2 % **Pressure:** 673.9 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, Mettler XPR5003SC, Mettler XPR226CDR, Mettler AX206, Vaisala PTU301

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

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

Nominal		Correction as Found	Correction as Left	NIST Class F	Uncertainty		Condition
	SN/ID	mg	mg	Tolerance (mg)	mg	*k*	As Left
2 kg		31	31	200	17	2.06	In-Tolerance
1 kg		28.0	28.0	100	8.7	2.05	In-Tolerance
500 g		7.5	7.5	70	6.1	2.05	In-Tolerance
200 g		10.5	10.5	40	3.5	2.06	In-Tolerance
200 g	.	13.3	13.3	40	3.5	2.06	In-Tolerance
100 g		6.7	6.7	20	1.7	2.05	In-Tolerance
50 g		1.95	1.95	10	0.86	2.05	In-Tolerance
20 g		1.32	1.32	4	0.35	2.05	In-Tolerance
20 g	.	0.61	0.61	4	0.35	2.05	In-Tolerance
10 g		0.79	0.79	2	0.17	2.05	In-Tolerance
5 g		0.17	0.17	2	0.13	2.05	In-Tolerance
2 g		0.931	0.931	1	0.095	2.05	In-Tolerance
2 g	.	0.706	0.706	1	0.095	2.05	In-Tolerance
1 g	..	0.267	0.267	0.9	0.078	2.05	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

Dwight R. Johnson — Dwight R Johnson, Metrologist 08/29/2023

Ron E Peterson, Reviewer 08/29/2023

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 Company SA# **61** Certificate number: **MP4343**

Physical Address:
3021 Valley Forge Dr
Bismarck, ND 58503

Billing Address:
3021 Valley Forge Dr
Bismarck, ND 58503

Contact: **Travis Will**
Phone: **701-255-1556**

Received Date: **01/19/2023**
Certificate Issued: **01/23/2023**

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	2	0	0	2
20	1000 lb weights	20	20	1	0	20
64	50 lb weights	64	58	18	0	64
2	avoirdupois kits	33	33	0	0	33
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 (2018), 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.

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 document to claim product endorsement by this laboratory.

01/23/2023
Ron E Peterson, Metrologist

01/23/2023
Dwight R Johnson, Reviewer

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 Company** Certificate Number: **MP4343**

Calibration Date: **01/23/2023**

Environmental conditions at time of test:

Temperature: 44.6 °C **Humidity:** 20.4 % **Pressure:** 670.9 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	-0.09	-41.65	-0.09	-41.65	0.11	2.01	0.70	In-Tolerance

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 re-calibration 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 certificate. 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.

01/23/2023
Ron E Peterson, Metrologist

Ver 20220919

South Dakota Department of Public Safety
Office of Weights and Measures
Metrology Lab
Lab: 1500 N Garfield – E. Truck Bypass Phone: 605-773-3170
Office: 118 West Capitol Avenue Phone: 605-773-3697
Pierre SD 57501

Inspection Checklist for Weight Cart

Calibrated for: Capital Scale Company **Certificate number:** MP4343

Calibration Date: 01/24/2023

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	18x7x12/16x5x11	
✓	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) 20
✓	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.

✓	

01/23/2023

Ron Peterson, Metrologist

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

CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale Company** Certificate Number: **MP4343**

Calibration Date: **01/23/2023**

Environmental conditions at time of test:

Temperature: 44.6 °C **Humidity:** 20.4 % **Pressure:** 670.9 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	0.11	49.18	0.11	49.18	0.11	2.01	0.70	In-Tolerance

Notes:

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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 re-calibration 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 certificate. 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.

01/23/2023
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Metrology Lab
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Office: 118 West Capitol Avenue Phone: 605-773-3697
Pierre SD 57501

Inspection Checklist for Weight Cart

Calibrated for: Capital Scale Company **Certificate number:** MP4343

Calibration Date: 01/24/2023

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	18x7x12/16x5x11	
✓	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) 20
✓	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.

01/23/2023
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Metrology Lab
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Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697

CALIBRATION CERTIFICATE

Calibrated for: Capital Scale Company **Certificate number:** MP4343

Calibration Date: 01/23/2023 Purchase Order Number: 0

Environmental conditions at time of test:

Temperature: 21.2 °C **Humidity:** 44.8 % **Pressure:** 671.1 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, an XPE604KMC balance, and a Vaisala PTU301

Condition of Weights: Cleaned and painted

Artifact(s): 20 - 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	13.12	-0.03	-11.5	-0.03	-11.5	45	4.8	2.0	In-Tolerance
1000 lb	13.10	0.03	13.7	0.03	13.7	45	4.8	2.0	In-Tolerance
1000 lb	13.11	-0.01	-6.1	-0.01	-6.1	45	4.8	2.0	In-Tolerance
1000 lb	13.13	0.01	6.7	0.01	6.7	45	4.8	2.0	In-Tolerance
1000 lb	13.14	-0.04	-19.8	-0.04	-19.8	45	4.8	2.0	In-Tolerance
1000 lb	13.15	-0.01	-5.5	-0.01	-5.5	45	4.8	2.0	In-Tolerance
1000 lb	13.16	-0.06	-25.7	0.00	0.1	45	4.8	2.0	Adjusted
1000 lb	13.17	0.02	8.2	0.02	8.2	45	4.8	2.0	In-Tolerance
1000 lb	13.18	-0.03	-12.7	-0.03	-12.7	45	4.8	2.0	In-Tolerance
1000 lb	13.19	-0.01	-4.6	-0.01	-4.6	45	4.8	2.0	In-Tolerance
1000 lb	13.20	-0.02	-10.7	-0.02	-10.7	45	4.8	2.0	In-Tolerance
1000 lb	13.21	-0.02	-8.0	-0.02	-8.0	45	4.8	2.0	In-Tolerance
1000 lb	13.22	-0.04	-16.3	-0.04	-16.3	45	4.8	2.0	In-Tolerance
1000 lb	13.23	-0.04	-18.2	-0.04	-18.2	45	4.8	2.0	In-Tolerance
1000 lb	13.24	-0.01	-6.4	-0.01	-6.4	45	4.8	2.0	In-Tolerance
1000 lb	13.25	-0.01	-2.9	-0.01	-2.9	45	4.8	2.0	In-Tolerance
1000 lb	13.26	-0.04	-16.9	-0.04	-16.9	45	4.8	2.0	In-Tolerance
1000 lb	13.27	-0.03	-15.1	-0.03	-15.1	45	4.8	2.0	In-Tolerance
1000 lb	13.28	-0.01	-5.2	-0.01	-5.2	45	4.8	2.0	In-Tolerance
1000 lb	13.29	-0.03	-13.1	-0.03	-13.1	45	4.8	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

01/23/2023

Ron E Peterson, Metrologist

Ver 20220919

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 Company **Certificate number:** MP4343

Calibration Date: 01/23/2023 Purchase Order Number: 0

Environmental conditions at time of test:

Temperature: 20.4 °C **Humidity:** 45.2 % **Pressure:** 670.9 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, Mettler XPR5003SC, Mettler XPR226CDR, Mettler AX206, Vaisala PTU301

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

Artifact(s): **25 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	3	-1128	-1128	2300	210	2.10	In-Tolerance
50 lb	6	-1858	2	2300	210	2.10	Adjusted
50 lb	8	-618	-618	2300	210	2.10	In-Tolerance
50 lb	9	-1928	-18	2300	210	2.10	Adjusted
50 lb	10	-2098	-8	2300	210	2.10	Adjusted
50 lb	16	-1208	-18	2300	210	2.10	Adjusted
50 lb	18	-928	-928	2300	210	2.10	In-Tolerance
50 lb	19	292	292	2300	210	2.10	In-Tolerance
50 lb	20	-1038	-1038	2300	210	2.10	In-Tolerance
50 lb	22	82	82	2300	210	2.10	In-Tolerance
50 lb	24	-678	-678	2300	210	2.10	In-Tolerance
50 lb	25	82	82	2300	210	2.10	In-Tolerance
50 lb	27	-1658	-18	2300	210	2.10	Adjusted
50 lb	29	-888	-888	2300	210	2.10	In-Tolerance
50 lb	30	-948	-948	2300	210	2.10	In-Tolerance
50 lb	31	-498	-498	2300	210	2.10	In-Tolerance
50 lb	32	-2268	2	2300	210	2.10	Adjusted
50 lb	35	402	402	2300	210	2.10	In-Tolerance
50 lb	39	-2268	2	2300	210	2.10	Adjusted
50 lb	41	-78	-78	2300	210	2.10	In-Tolerance
50 lb	42	172	172	2300	210	2.10	In-Tolerance
50 lb	43	-1078	-1078	2300	210	2.10	In-Tolerance
50 lb	44	-488	-488	2300	210	2.10	In-Tolerance
50 lb	45	-1098	-1098	2300	210	2.10	In-Tolerance
50 lb	46	-348	-348	2300	210	2.10	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

1/23/2023

Ron E Peterson, Metrologist
Ver 20220919

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 Company **Certificate number:** MP4343

Calibration Date: 01/23/2023 Purchase Order Number: 0

Environmental conditions at time of test:

Temperature: 20.4 °C **Humidity:** 45.2 % **Pressure:** 670.9 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, Mettler XPR5003SC, Mettler XPR226CDR, Mettler AX206, Vaisala PTU301

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

Artifact(s): **25 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	47	-258	-258	2300	210	2.10	In-Tolerance
50 lb	48	-738	-738	2300	210	2.10	In-Tolerance
50 lb	49	102	102	2300	210	2.10	In-Tolerance
50 lb	50	1492	1492	2300	210	2.10	In-Tolerance
50 lb	51	-2068	2	2300	210	2.10	Adjusted
50 lb	54	182	182	2300	210	2.10	In-Tolerance
50 lb	55	-1668	-28	2300	210	2.10	Adjusted
50 lb	60	-528	-528	2300	210	2.10	In-Tolerance
50 lb	61	-418	-418	2300	210	2.10	In-Tolerance
50 lb	62	-888	-888	2300	210	2.10	In-Tolerance
50 lb	64	-968	-968	2300	210	2.10	In-Tolerance
50 lb	70	-1128	-1128	2300	210	2.10	In-Tolerance
50 lb	71	-1118	-1118	2300	210	2.10	In-Tolerance
50 lb	72	-798	-798	2300	210	2.10	In-Tolerance
50 lb	80	-2808	12	2300	210	2.10	Adjusted
50 lb	11A	-2408	-18	2300	210	2.10	Adjusted
50 lb	11B	-898	-898	2300	210	2.10	In-Tolerance
50 lb	11C	292	292	2300	210	2.10	In-Tolerance
50 lb	11D	-698	-698	2300	210	2.10	In-Tolerance
50 lb	11F	-1458	22	2300	210	2.10	Adjusted
50 lb	11G	-798	-798	2300	210	2.10	In-Tolerance
50 lb	A	-868	-868	2300	210	2.10	In-Tolerance
50 lb	AAA	-1148	-1148	2300	210	2.10	In-Tolerance
50 lb	B	-1488	2	2300	210	2.10	Adjusted
50 lb	C	-158	-158	2300	210	2.10	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

1/23/2023

Ron E Peterson, Metrologist
Ver 20220919

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 Company

Certificate number: MP4343

Calibration Date: 01/23/2023

Purchase Order Number: 0

Environmental conditions at time of test:

Temperature: 20.4 °C **Humidity:** 45.2 % **Pressure:** 670.9 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, Mettler XPR5003SC, Mettler XPR226CDR, Mettler AX206, Vaisala PTU301

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

Artifact(s): **14 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	D	-1578	32	2300	210	2.10	Adjusted
50 lb	E	-988	-988	2300	210	2.10	In-Tolerance
50 lb	F	-158	-158	2300	210	2.10	In-Tolerance
50 lb	GG	-1138	-1138	2300	210	2.10	In-Tolerance
50 lb	H	-8	-8	2300	210	2.10	In-Tolerance
50 lb	K	-2218	12	2300	210	2.10	Adjusted
50 lb	K	-958	-958	2300	210	2.10	In-Tolerance
50 lb	L	-1998	-8	2300	210	2.10	Adjusted
50 lb	M	-1518	-8	2300	210	2.10	Adjusted
50 lb	N4	-258	-258	2300	210	2.10	In-Tolerance
50 lb	R	-1078	-1078	2300	210	2.10	In-Tolerance
50 lb	T	-778	-778	2300	210	2.10	In-Tolerance
50 lb	W	42	42	2300	210	2.10	In-Tolerance
50 lb	Y	-1798	12	2300	210	2.10	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

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CALIBRATION CERTIFICATE

Calibrated for: Capital Scale Company **Certificate number:** MP4343

Calibration Date: 01/23/2023 Purchase Order Number: 0

Environmental conditions at time of test:

Temperature: 21 °C **Humidity:** 44.9 % **Pressure:** 670.9 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, Mettler XPR5003SC, Mettler XPR226CDR, Mettler AX206, Vaisala PTU301

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

Artifact(s): **14 piece Metric 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		49	49	200	17	2.07	In-Tolerance
1 kg		33.0	33.0	100	8.8	2.07	In-Tolerance
500 g		27.5	27.5	70	6.1	2.07	In-Tolerance
200 g		12.8	12.8	40	3.5	2.07	In-Tolerance
200 g	.	18.0	18.0	40	3.5	2.07	In-Tolerance
100 g		9.9	9.9	20	1.8	2.07	In-Tolerance
50 g		5.12	5.12	10	0.87	2.07	In-Tolerance
20 g		2.69	2.69	4	0.35	2.07	In-Tolerance
20 g	.	0.86	0.86	4	0.35	2.07	In-Tolerance
10 g		0.34	0.34	2	0.18	2.06	In-Tolerance
5 g		0.60	0.60	1.5	0.13	2.07	In-Tolerance
2 g		0.686	0.686	1.1	0.096	2.07	In-Tolerance
2 g	.	0.141	0.141	1.1	0.096	2.07	In-Tolerance
1 g		0.347	0.347	0.9	0.079	2.07	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

1/23/2023

Ron E Peterson, Metrologist
Ver 20220919

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 Company **Certificate number:** MP4343

Calibration Date: 01/24/2023 Purchase Order Number: 0

Environmental conditions at time of test:

Temperature: 20.7 °C **Humidity:** 45.7 % **Pressure:** 668 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, Mettler XPR5003SC, Mettler XPR226CDR, Mettler AX206, 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	2.07	In-Tolerance
5 lb	2	66	66	230	20	2.07	In-Tolerance
5 lb	3	64	64	230	20	2.07	In-Tolerance
5 lb	4	62	62	230	20	2.07	In-Tolerance
5 lb	5	62	62	230	20	2.07	In-Tolerance
1 lb	1	23.5	23.5	70	6.2	2.07	In-Tolerance
1 lb	2	23.5	23.5	70	6.2	2.07	In-Tolerance
1 lb	3	25.5	25.5	70	6.2	2.07	In-Tolerance
1 lb	4	18.5	18.5	70	6.2	2.07	In-Tolerance
1 lb	5	27.5	27.5	70	6.2	2.07	In-Tolerance
8 oz		21.2	21.2	45	4.1	2.06	In-Tolerance
4 oz		9.2	9.2	23	2.0	2.05	In-Tolerance
2 oz		3.80	3.80	11	0.96	2.07	In-Tolerance
1 oz		1.66	1.66	5.4	0.48	2.04	In-Tolerance
1/2 oz		0.95	0.95	2.8	0.25	2.06	In-Tolerance
1/4 oz		0.41	0.41	1.7	0.15	2.04	In-Tolerance
1/8 oz		0.61	0.61	1.3	0.12	2.04	In-Tolerance
1/16 oz		0.15	0.15	1.1	0.11	2.05	In-Tolerance
1/32 oz		0.218	0.218	0.87	0.077	2.04	In-Tolerance
1/32 oz	.	0.298	0.298	0.87	0.077	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

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CALIBRATION CERTIFICATE

Calibrated for: Capital Scale Company **Certificate number:** MP4343

Calibration Date: 01/24/2023 Purchase Order Number: 0

Environmental conditions at time of test:

Temperature: 20.7 °C **Humidity:** 45.7 % **Pressure:** 668 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, Mettler XPR5003SC, Mettler XPR226CDR, Mettler AX206, 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		63	63	450	39	2.07	In-Tolerance
10 lb	.	100	100	450	39	2.07	In-Tolerance
5 lb		-91	-91	230	20	2.07	In-Tolerance
2 lb		33.4	33.4	91	8.0	2.07	In-Tolerance
2 lb	.	18.4	18.4	91	8.0	2.07	In-Tolerance
1 lb		-4.6	-4.6	70	6.2	2.07	In-Tolerance
8 oz		14.2	14.2	45	4.1	2.06	In-Tolerance
4 oz		-4.2	-4.2	23	2.0	2.05	In-Tolerance
1 oz		2.92	2.92	5.4	0.48	2.04	In-Tolerance
1 oz	.	2.95	2.95	5.4	0.48	2.04	In-Tolerance
1 oz	..	1.69	1.69	5.4	0.48	2.04	In-Tolerance
1/2 oz		1.44	1.44	2.8	0.25	2.06	In-Tolerance
1/4 oz		-1.21	-1.21	1.7	0.15	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

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