

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

Prairie Scale Systems Unit 328	SA# 131	Certificate number: MP4467
Physical Address:	Billing Address:	
9860 Industrial Drive	9860 Industrial Drive	
Horace, ND 58047	Horace, ND 58047	
Contact: Cooper Anderson		Received Date: 01/23/2024
Phone: 701-281-9373		Certificate Issued: 01/24/2024

Artifacts Submitted and Summary of Results:



Quantity	Artifact	Total Pieces	Recvd in Tol	Adjusted	Rejected	As Left In Tolerance
2	4000 lb Weight Carts	2	0	2	0	2
8	1000 lb Weights	8	8	0	0	8
2	1000 lb Baskets	2	0	2	0	2
40	50 lb Weights	40	11	31	0	40
1	Metric Kit	13	13	0	0	13
1	Avoirdupois Kit	19	19	0	0	19
1	20 lb Weight	1	1	0	0	1

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 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

 Ron E Peterson, Metrologist	01/24/2024	 Dwight R Johnson, Reviewer
01/24/2024		

CALIBRATION CERTIFICATE

Calibrated for: **Prairie Scale Systems Unit 328** Certificate Number: **MP4467**
 Calibration Date: **01/24/2024**

Environmental conditions at time of test:

Temperature: 21 °C **Humidity:** 46 % **Pressure:** 667 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: PSS **SN:** PSS-13-C1-4k

Nominal (lb)	AS Found (lb)	As Found (g)	As Left (lb)	As Left (g)	Uncertainty (lb)	k	Tolerance (lb)	Condition as Left
4000	-1.49	-677.15	-0.07	-30.34	0.13	2.01	1.40	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 refererøte levels as possible during use. Any maintenance, repairs or damage to weight cart or its components will likely result in an outof-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 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 cetificate number provides documented evidence for measurement traceability.

	
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Ron E Peterson, Metrologist	01/24/2024	Dwight R Johnson, Reviewer	01/24/2024
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Ver 20231221



Inspection Checklist for Weight Cart

Calibrated for: Prairie Scale Systems Unit 328 **Certificate number:** MP4467
Calibration Date: 01/24/2024

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

<input checked="" type="checkbox"/>	Nominal Mass of Weight Cart	<input type="text" value="4000 lbs"/>	Suitably marked: Yes/No	<input type="text" value="Yes"/>
<input checked="" type="checkbox"/>	Powered by:	Electric/generator <input checked="" type="checkbox"/>	Diesel <input type="text"/>	Gasoline <input type="text"/>
<input checked="" type="checkbox"/>	Fluid Levels:	Engine Oil <input type="text"/>		
		Hydraulic Fluid <input type="text"/>		Sealed: Yes/No <input type="text"/>
		Battery <input checked="" type="checkbox"/>		Sealed: Yes/No <input type="text" value="Yes"/>
		Liquid Fuel <input type="text"/>		Reference Line Present: Yes/No <input type="text"/>

<input checked="" type="checkbox"/>	Fluid drain tubes extend beyond the body of the cart: Yes/No	<input type="text" value="Yes"/>
<input checked="" type="checkbox"/>	Number of axles:	<input type="text" value="2"/>
<input checked="" type="checkbox"/>	Number /Size of Tires	<input type="text" value="18x8x12.125"/>
<input checked="" type="checkbox"/>	Sealed wheel bearings: Yes/No	<input type="text" value="Yes"/>
<input checked="" type="checkbox"/>	Drain holes present in locations where water may accumulate: Yes/No	<input type="text" value="Yes"/>
<input checked="" type="checkbox"/>	Weight restraint railing permanently fixed and solid: Yes/No	<input type="text" value="Yes"/>
<input checked="" type="checkbox"/>	Adjusting cavity accessible: Yes/No	<input type="text" value="Yes"/>
<input checked="" type="checkbox"/>	Adjusting cavity sealed: Yes/No	<input type="text" value="Yes"/>
<input checked="" type="checkbox"/>	Service brakes functioning properly: Yes/No	<input type="text" value="Yes"/>
<input checked="" type="checkbox"/>	Parking brakes functioning properly: Yes/No	<input type="text" value="Yes"/>
<input type="checkbox"/>	Remote control functioning properly: Yes/No	<input type="text"/>
		Approximate capacity:(lbs) <input type="text" value="20"/>

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

Dwight R Johnson

CALIBRATION CERTIFICATE

Calibrated for: **Prairie Scale Systems Unit 328** Certificate Number: **MP4467**
 Calibration Date: **01/24/2024**

Environmental conditions at time of test:

Temperature: 21 °C **Humidity:** 46 % **Pressure:** 667 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: PSS

SN: PSS-13-C2-4k

Nominal (lb)	AS Found (lb)	As Found (g)	As Left (lb)	As Left (g)	Uncertainty (lb)	k	Tolerance (lb)	Condition as Left
4000	-1.97	-896.29	-0.13	-60.38	0.13	2.01	1.40	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 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.

	
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Ron E Peterson, Metrologist	01/24/2024	Dwight R Johnson, Reviewer	01/24/2024
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Ver 20231221



Inspection Checklist for Weight Cart

Calibrated for: Prairie Scale Systems Unit 328 **Certificate number:** MP4467
Calibration Date: 01/24/2024

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

<input checked="" type="checkbox"/>	Nominal Mass of Weight Cart	<input type="text" value="4000 lbs"/>	Suitably marked: Yes/No	<input type="text" value="Yes"/>
<input checked="" type="checkbox"/>	Powered by:	Electric/generator <input checked="" type="checkbox"/>	Diesel <input type="checkbox"/>	Gasoline <input type="checkbox"/>
<input checked="" type="checkbox"/>	Fluid Levels:	Engine Oil <input type="checkbox"/>	Sealed: Yes/No <input type="checkbox"/>	
		Hydraulic Fluid <input type="checkbox"/>	Sealed: Yes/No <input type="text" value="Yes"/>	
		Battery <input checked="" type="checkbox"/>	Reference Line Present: Yes/No <input type="checkbox"/>	
		Liquid Fuel <input type="checkbox"/>		

<input checked="" type="checkbox"/>	Fluid drain tubes extend beyond the body of the cart: Yes/No	<input type="text" value="Yes"/>
<input checked="" type="checkbox"/>	Number of axles:	<input type="text" value="2"/>
<input checked="" type="checkbox"/>	Number /Size of Tires	<input type="text" value="18x8x12.125"/>
<input checked="" type="checkbox"/>	Sealed wheel bearings: Yes/No	<input type="text" value="Yes"/>
<input checked="" type="checkbox"/>	Drain holes present in locations where water may accumulate: Yes/No	<input type="text" value="Yes"/>
<input checked="" type="checkbox"/>	Weight restraint railing permanently fixed and solid: Yes/No	<input type="text" value="Yes"/>
<input checked="" type="checkbox"/>	Adjusting cavity accessible: Yes/No	<input type="text" value="Yes"/>
<input checked="" type="checkbox"/>	Adjusting cavity sealed: Yes/No	<input type="text" value="Yes"/>
<input checked="" type="checkbox"/>	Service brakes functioning properly: Yes/No	<input type="text" value="Yes"/>
<input checked="" type="checkbox"/>	Parking brakes functioning properly: Yes/No	<input type="text" value="Yes"/>
<input type="checkbox"/>	Remote control functioning properly: Yes/No	<input type="text"/>
	Approximate capacity:(lbs)	<input type="text" value="20"/>

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

Dwight R Johnson



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: **Prairie Scale Systems Unit 328** Certificate number: **MP4467**

Calibration Date: **01/24/2024** Purchase Order Number: **0**

Environmental conditions at time of test:

Temperature: 20 °C **Humidity:** 48 % **Pressure:** 666 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, 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): **10 - 1000 lb weights** **Unit 328**

Nominal	SN/ID	Correction as Found		Correction as Left		ASTM E 617 Class 6 Tolerance (g)	Uncertainty g	k	Condition As Left
		lb	g	lb	g				
1000 lb	1k-11	0.01	2.6	0.01	2.6	45	5.1	2.0	In-Tolerance
1000 lb	1k-12	0.07	29.7	0.07	29.7	45	5.1	2.0	In-Tolerance
1000 lb	1k-13	0.03	14.1	0.03	14.1	45	5.1	2.0	In-Tolerance
1000 lb	1k-14	-0.03	-14.8	-0.03	-14.8	45	5.1	2.0	In-Tolerance
1000 lb	1k-15	0.05	20.6	0.05	20.6	45	5.1	2.0	In-Tolerance
1000 lb	1k-16	0.03	13.1	0.03	13.1	45	5.1	2.0	In-Tolerance
1000 lb	1k-17	0.05	23.7	0.05	23.7	45	5.1	2.0	In-Tolerance
1000 lb	1k-18	-0.02	-9.6	-0.02	-9.6	45	5.1	2.0	In-Tolerance
1000 lb	B1-1k	0.32	147.1	0.00	0.0	45	5.1	2.0	Adjusted
1000 lb	B2-1k	0.28	126.3	0.00	0.2	45	5.1	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

Dwight R Johnson, Metrologist 01/24/2024 Ron E Peterson, Reviewer 01/24/2024



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CALIBRATION CERTIFICATE

Calibrated for: **Prairie Scale Systems Unit 328**

Certificate number: **MP4467**

Calibration Date: **01/24/2024**

Purchase Order Number:

Environmental conditions at time of test:

Temperature: 22 °C Humidity: 45 % Pressure: 667 mmhg

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

Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301

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

Artifact(s): **20 50 lb weights** **SN 328**

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
50 lb	012	697	697	2300	200	2.03	In-Tolerance
50 lb	023	4272	-3	2300	200	2.03	Adjusted
50 lb	038	-6678	7	2300	200	2.03	Adjusted
50 lb	040	4487	-3	2300	200	2.03	Adjusted
50 lb	041	4502	2	2300	200	2.03	Adjusted
50 lb	043	2277	2	2300	200	2.03	Adjusted
50 lb	045	4742	-8	2300	200	2.03	Adjusted
50 lb	046	2402	-8	2300	200	2.03	Adjusted
50 lb	047	3797	12	2300	200	2.03	Adjusted
50 lb	048	712	712	2300	200	2.03	In-Tolerance
50 lb	049	2032	-3	2300	200	2.03	Adjusted
50 lb	050	1442	1442	2300	200	2.03	In-Tolerance
50 lb	051	4647	-3	2300	200	2.03	Adjusted
50 lb	052	6507	-3	2300	200	2.03	Adjusted
50 lb	053	1852	52	2300	200	2.03	Adjusted
50 lb	054	4577	-3	2300	200	2.03	Adjusted
50 lb	055	5877	12	2300	200	2.03	Adjusted
50 lb	056	1447	1447	2300	200	2.03	In-Tolerance
50 lb	057	5012	-3	2300	200	2.03	Adjusted
50 lb	059	6312	-3	2300	200	2.03	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, Metrologist

01/24/2024

Ron E Peterson, Reviewer

01/24/2024



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CALIBRATION CERTIFICATE

Calibrated for: **Prairie Scale Systems Unit 328** Certificate number: **MP4467**
 Calibration Date: **01/24/2024** Purchase Order Number:

Environmental conditions at time of test:

Temperature: 22 °C Humidity: 45 % Pressure: 667 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, May 2019
 Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301
 Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **20 50 lb weights SN 328**

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	<i>k</i>	Condition As Left
50 lb	060	3722	-3	2300	200	2.03	Adjusted
50 lb	061	3102	7	2300	200	2.03	Adjusted
50 lb	062	5742	-3	2300	200	2.03	Adjusted
50 lb	063	227	227	2300	200	2.03	In-Tolerance
50 lb	17278-1	5152	-8	2300	200	2.03	Adjusted
50 lb	17377-1	2982	-8	2300	200	2.03	Adjusted
50 lb	17835-1	5932	12	2300	200	2.03	Adjusted
50 lb	17866-1	5817	12	2300	200	2.03	Adjusted
50 lb	17873-1	2722	2	2300	200	2.03	Adjusted
50 lb	17875-1	3362	2	2300	200	2.03	Adjusted
50 lb	17876-1	-208	-208	2300	200	2.03	In-Tolerance
50 lb	17877-1	-938	-938	2300	200	2.03	In-Tolerance
50 lb	17879-1	4442	17	2300	200	2.03	Adjusted
50 lb	17880-1	6622	-3	2300	200	2.03	Adjusted
50 lb	17882-1	557	557	2300	200	2.03	In-Tolerance
50 lb	17884-1	2707	2	2300	200	2.03	Adjusted
50 lb	17887-0	6882	12	2300	200	2.03	Adjusted
50 lb	17887-1	-1093	-1093	2300	200	2.03	In-Tolerance
50 lb	17888-1	3787	2	2300	200	2.03	Adjusted
50 lb	17889-1	4277	7	2300	200	2.03	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

Dwight R. Johnson

Ron E. Peterson

Dwight R Johnson, Metrologist 01/24/2024 Ron E Peterson, Reviewer 01/24/2024



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CALIBRATION CERTIFICATE

Calibrated for: Prairie Scale Systems Unit 328 **Certificate number:** MP4467

Calibration Date: 01/24/2024 **Purchase Order Number:**

Environmental conditions at time of test:

Temperature: 22 °C **Humidity:** 45 % **Pressure:** 667 mmhg

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

Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301

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

Artifact(s): **1 Avoirdupois Weight(s)** **SN 328**

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
20 lb	65XC	565.12	565.12	910	120	2.02	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, Metrologist 01/24/2024 Ron E Peterson, Reviewer 01/24/2024



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CALIBRATION CERTIFICATE

Calibrated for: Prairie Scale Systems Unit 328

Certificate number: MP4467

Calibration Date: 01/24/2024

Purchase Order Number:

Environmental conditions at time of test:

Temperature: 21 °C

Humidity: 47 %

Pressure: 666 mmhg

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

Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301

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

Artifact(s):

13 piece Metric Kit

SN 201652

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
1 kg		30.0	30.0	100	8.7	2.05	In-Tolerance
500 g		32.5	32.5	70	6.1	2.05	In-Tolerance
200 g		14.5	14.5	40	3.4	2.05	In-Tolerance
200 g	.	12.6	12.6	40	3.4	2.05	In-Tolerance
100 g		3.1	3.1	20	1.7	2.05	In-Tolerance
50 g		0.79	0.79	10	0.86	2.05	In-Tolerance
20 g	.	1.54	1.54	4	0.35	2.05	In-Tolerance
20 g	..	0.76	0.76	4	0.35	2.05	In-Tolerance
10 g		-0.24	-0.24	2	0.17	2.05	In-Tolerance
5 g		0.38	0.38	1.5	0.13	2.05	In-Tolerance
2 g		0.406	0.406	1.1	0.095	2.05	In-Tolerance
2 g	.	0.341	0.341	1.1	0.095	2.05	In-Tolerance
1 g		0.367	0.367	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.
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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 01/24/2024 Ron E Peterson, Reviewer 01/24/2024



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CALIBRATION CERTIFICATE

Calibrated for: **Prairie Scale Systems Unit 328**
Certificate number: **MP4467**
Calibration Date: 01/24/2024
Purchase Order Number:

Environmental conditions at time of test:

Temperature: 21 °C **Humidity:** 46 % **Pressure:** 667 mmhg

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

Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301

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

Artifact(s): **19 piece Avoirdupois Kit**
SN 5FX0

Nominal	SN/ID	Correction as Found	Correction as Left	NIST Class F Tolerance (mg)	Uncertainty	k	Condition As Left
		mg	mg		mg		
5 lb	A	66	66	230	20	2.05	In-Tolerance
5 lb	B	64	64	230	20	2.05	In-Tolerance
5 lb	C	106	106	230	20	2.05	In-Tolerance
5 lb	D	65	65	230	20	2.05	In-Tolerance
5 lb	E	56	56	230	20	2.05	In-Tolerance
1 lb	A	22.5	22.5	70	6.1	2.05	In-Tolerance
1 lb	B	21.5	21.5	70	6.1	2.05	In-Tolerance
1 lb	C	22.5	22.5	70	6.1	2.05	In-Tolerance
1 lb	D	21.5	21.5	70	6.1	2.05	In-Tolerance
1 lb	E	20.5	20.5	70	6.1	2.05	In-Tolerance
8 oz		21.2	21.2	45	4.0	2.04	In-Tolerance
4 oz		7.7	7.7	23	2.0	2.04	In-Tolerance
2 oz		3.93	3.93	11	0.95	2.05	In-Tolerance
1 oz		2.13	2.13	5.4	0.48	2.03	In-Tolerance
0.5 oz		0.60	0.60	2.8	0.25	2.05	In-Tolerance
0.2 oz		0.60	0.60	1.6	0.15	2.05	In-Tolerance
0.2 oz		0.40	0.40	1.6	0.15	2.05	In-Tolerance
0.1 oz		0.44	0.44	1.3	0.11	2.05	In-Tolerance
0.05 oz		0.204	0.204	1.0	0.095	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

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

Prairie Scale System INC (Unit 349)

SA# **131**

Certificate number: **MP4338**

Physical Address:

Billing Address:

9860 Industrial Drive

9860 Industrial Drive

Horace, ND 58047

Horace, ND 58047

Contact: **Cooper Anderson**

Received Date: **01/09/2023**

Phone: **701-281-9373**

Certificate Issued: **01/10/2023**

Artifacts Submitted and Summary of Results:

Quantity	Artifact	Total Pieces	Recvd in Tol	Adjusted	Rejected	As Left In Tolerance
2	4000 lb weight carts	2	2	1	0	2
8	1000 lb weights	8	8	0	0	8
2	1000 lb baskets	2	1	1	0	2
40	50 lb weights	40	39	3	0	40
1	20 lb weight	1	1	0	0	1
1	metric kit	22	22	0	0	22
1	avourdupois kit	21	21	0	0	21

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.



Ron E Peterson, Metrologist

01/10/2023



Dwight R Johnson, Reviewer

01/10/2023



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: **Prairie Scale System INC (Unit 349)** Certificate Number: **MP4338**
 Calibration Date: **01/10/2023**

Environmental conditions at time of test:

Temperature: 22.3 °C **Humidity:** 45.3 % **Pressure:** 661.1 mmhg

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

Test equipment used: Recently calibrated weights and a Mettler SL5510 Load Cell with IND570 Indicator.
 Vaisala PT301

Condition of Carts: Used but in good condition

Manufacturer: PSS

SN: PSS-95-C1-4k

Nominal (lb)	AS Found (lb)	As Found (g)	As Left (lb)	As Left (g)	Uncertainty (lb)	k	Tolerance (lb)	Condition as Left
4000	0.93	423.69	-0.07	-34.05	0.13	2.01	1.40	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 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.

 01/10/2023
 Ron E Peterson, Metrologist



Inspection Checklist for Weight Cart

Calibrated for: Prairie Scale System INC (Unit 349) **Certificate number:** MP4338
Calibration Date: 01/10/2023

Manufacturer: PSS **Date of Manufacture:** 1995
Model Number: 4k **ID/SN Number:** PSS-95-C1-4k

<input checked="" type="checkbox"/>	Nominal Mass of Weight Cart	4000 lbs	Suitably marked: Yes/No	<input checked="" type="checkbox"/> Yes
<input checked="" type="checkbox"/>	Powered by:	Electric/generator <input checked="" type="checkbox"/>	Diesel <input type="checkbox"/>	Gasoline <input type="checkbox"/>
<input checked="" type="checkbox"/>	Fluid Levels:	Engine Oil <input type="checkbox"/>		
		Hydraulic Fluid <input type="checkbox"/>	Sealed: Yes/No	<input type="checkbox"/>
		Battery <input checked="" type="checkbox"/>	Sealed: Yes/No	<input checked="" type="checkbox"/> Yes
		Liquid Fuel <input type="checkbox"/>	Reference Line Present: Yes/No	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Fluid drain tubes extend beyond the body of the cart: Yes/No		<input checked="" type="checkbox"/> Yes	
<input checked="" type="checkbox"/>	Number of axles:	2		
<input checked="" type="checkbox"/>	Number /Size of Tires	16.25x5x11.25		
<input checked="" type="checkbox"/>	Sealed wheel bearings: Yes/No	Yes		
<input checked="" type="checkbox"/>	Drain holes present in locations where water may accumulate: Yes/No		<input checked="" type="checkbox"/> Yes	
<input checked="" type="checkbox"/>	Weight restraint railing permanently fixed and solid: Yes/No		<input checked="" type="checkbox"/> Yes	
<input checked="" type="checkbox"/>	Adjusting cavity accessible: Yes/No	Yes	Approximate capacity:(lbs)	20
<input checked="" type="checkbox"/>	Adjusting cavity sealed: Yes/No	Yes		
<input checked="" type="checkbox"/>	Service brakes functioning properly: Yes/No	Yes		
<input checked="" type="checkbox"/>	Parking brakes functioning properly: Yes/No	Yes		
<input type="checkbox"/>	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 Peterson 01/10/2023

Ron Peterson, Metrologist

Ver 20220919



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: **Prairie Scale System INC (Unit 349)** Certificate Number: **MP4338**
 Calibration Date: **01/10/2023**

Environmental conditions at time of test:

Temperature: 22.3 °C **Humidity:** 45.3 % **Pressure:** 661.1 mmhg

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

Test equipment used: Recently calibrated weights and a Mettler SL5510 Load Cell with IND570 Indicator.
 Vaisala PT301

Condition of Carts: Used but in good condition

Manufacturer: PSS

SN: PSS-95-C2-4k

Nominal (lb)	AS Found (lb)	As Found (g)	As Left (lb)	As Left (g)	Uncertainty (lb)	k	Tolerance (lb)	Condition as Left
4000	0.11	49.03	0.11	49.03	0.13	2.01	1.40	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.

 01/10/2023
 Ron E Peterson, Metrologist



Inspection Checklist for Weight Cart

Calibrated for: Prairie Scale System INC (Unit 349) **Certificate number:** MP4338
Calibration Date: 01/10/2023

Manufacturer: PSS **Date of Manufacture:** 1995
Model Number: 4k **ID/SN Number:** PSS-95-C2-4k

<input checked="" type="checkbox"/>	Nominal Mass of Weight Cart	4000 lbs	Suitably marked: Yes/No	<input checked="" type="checkbox"/> Yes
<input checked="" type="checkbox"/>	Powered by:	Electric/generator <input checked="" type="checkbox"/>	Diesel <input type="checkbox"/>	Gasoline <input type="checkbox"/>
<input checked="" type="checkbox"/>	Fluid Levels:	Engine Oil <input type="checkbox"/>		
		Hydraulic Fluid <input type="checkbox"/>	Sealed: Yes/No	<input type="checkbox"/>
		Battery <input checked="" type="checkbox"/>	Sealed: Yes/No	<input checked="" type="checkbox"/> Yes
		Liquid Fuel <input type="checkbox"/>	Reference Line Present: Yes/No	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Fluid drain tubes extend beyond the body of the cart: Yes/No		<input checked="" type="checkbox"/> Yes	
<input checked="" type="checkbox"/>	Number of axles:	<input type="text" value="2"/>		
<input checked="" type="checkbox"/>	Number /Size of Tires	<input type="text" value="16.25x5x11.25"/>		
<input checked="" type="checkbox"/>	Sealed wheel bearings: Yes/No	<input type="text" value="Yes"/>		
<input checked="" type="checkbox"/>	Drain holes present in locations where water may accumulate: Yes/No		<input type="text" value="Yes"/>	
<input checked="" type="checkbox"/>	Weight restraint railing permanently fixed and solid: Yes/No		<input type="text" value="Yes"/>	
<input checked="" type="checkbox"/>	Adjusting cavity accessible: Yes/No	<input type="text" value="Yes"/>	Approximate capacity:(lbs)	<input type="text" value="20"/>
<input checked="" type="checkbox"/>	Adjusting cavity sealed: Yes/No	<input type="text" value="Yes"/>		
<input checked="" type="checkbox"/>	Service brakes functioning properly: Yes/No	<input type="text" value="Yes"/>		
<input checked="" type="checkbox"/>	Parking brakes functioning properly: Yes/No	<input type="text" value="Yes"/>		
<input type="checkbox"/>	Remote control functioning properly: Yes/No	<input type="text"/>		

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.

 01/10/2023

Ron 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: Prairie Scale System INC (Unit 349) **Certificate number:** MP4338
Calibration Date: 01/10/2023 **Purchase Order Number:** 0
Environmental conditions at time of test:
Temperature: 21.2 °C **Humidity:** 45.3 % **Pressure:** 661.1 mmhg
Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, 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): 10 - 1000 lb weights

Nominal	SN/ID	Correction as Found		Correction as Left		NIST Class F Tolerance (g)	Uncertainty g	k	Condition As Left
		lb	g	lb	g				
1000 lb	1k-03	-0.04	-17.1	-0.04	-17.1	45	4.8	2.02	In-Tolerance
1000 lb	1k-04	0.01	5.7	0.01	5.7	45	4.8	2.02	In-Tolerance
1000 lb	1k-05	0.01	5.0	0.01	5.0	45	4.8	2.02	In-Tolerance
1000 lb	1k-06	0.01	2.5	0.01	2.5	45	4.8	2.02	In-Tolerance
1000 lb	1k-07	-0.02	-8.5	-0.02	-8.5	45	4.8	2.02	In-Tolerance
1000 lb	1k-08	0.03	12.2	0.03	12.2	45	4.8	2.02	In-Tolerance
1000 lb	1k-09	-0.04	-19.2	-0.04	-19.2	45	4.8	2.02	In-Tolerance
1000 lb	1k-10	0.01	4.4	0.01	4.4	45	4.8	2.02	In-Tolerance
1000 lb	PSS-11-1995	0.17	77.3	0.00	0.1	45	4.8	2.02	Adjusted
1000 lb	PSS-22-1995	0.06	27.7	0.06	27.7	45	4.8	2.02	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

 01/10/2023

Ron E Peterson, Metrologist
Ver 20220919



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



CALIBRATION CERTIFICATE

Calibrated for: **Prairie Scale System INC (Unit 349)** Certificate number: **MP4338**

Calibration Date: **01/10/2023** Purchase Order Number: **0**

Environmental conditions at time of test:

Temperature: 21.4 °C Humidity: 46.4 % Pressure: 661.3 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, 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	SN/ID	Correction as Found	Correction as Left	NIST Class F	Uncertainty	k	Condition As Left
		mg	mg	Tolerance (mg)	mg		
50 lb	17870-1	-1138	-1138	2300	210	2.10	In-Tolerance
50 lb	17852-1	-1088	-1088	2300	210	2.10	In-Tolerance
50 lb	17858-1	-1078	-1078	2300	210	2.10	In-Tolerance
50 lb	17846-1	-1018	-1018	2300	210	2.10	In-Tolerance
50 lb	17847-1	-788	-788	2300	210	2.10	In-Tolerance
50 lb	17850-1	-748	-748	2300	210	2.10	In-Tolerance
50 lb	17863-1	-738	-738	2300	210	2.10	In-Tolerance
50 lb	17838-1	-728	-728	2300	210	2.10	In-Tolerance
50 lb	17848-1	-688	-688	2300	210	2.10	In-Tolerance
50 lb	17841-1	-688	-688	2300	210	2.10	In-Tolerance
50 lb	17854-1	-678	-678	2300	210	2.10	In-Tolerance
50 lb	17871-1	-668	-668	2300	210	2.10	In-Tolerance
50 lb	17832-1	-638	-638	2300	210	2.10	In-Tolerance
50 lb	17859-1	-468	-468	2300	210	2.10	In-Tolerance
50 lb	17856-1	-438	-438	2300	210	2.10	In-Tolerance
50 lb	17835-1	-418	-418	2300	210	2.10	In-Tolerance
50 lb	17843-1	-348	-348	2300	210	2.10	In-Tolerance
50 lb	17862-1	-348	-348	2300	210	2.10	In-Tolerance
50 lb	17839-1	-328	-328	2300	210	2.10	In-Tolerance
50 lb	17886-1	-318	-318	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

1/10/2023

Ron E Peterson, Metrologist
Ver 20220919



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



CALIBRATION CERTIFICATE

Calibrated for: Prairie Scale System INC (Unit 349) **Certificate number:** MP4338

Calibration Date: 01/10/2023 **Purchase Order Number:** 0

Environmental conditions at time of test:

Temperature: 21.4 °C **Humidity:** 46.4 % **Pressure:** 661.3 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, 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	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
50 lb	17884-1	-278	-278	2300	210	2.10	In-Tolerance
50 lb	17864-1	-178	-178	2300	210	2.10	In-Tolerance
50 lb	17844-1	-138	-138	2300	210	2.10	In-Tolerance
50 lb	17833-1	-108	-108	2300	210	2.10	In-Tolerance
50 lb	17840-1	-58	-58	2300	210	2.10	In-Tolerance
50 lb	17855-1	-8	-8	2300	210	2.10	In-Tolerance
50 lb	17845-1	2672	-8	2300	210	2.10	Adjusted
50 lb	17842-1	-1318	2	2300	210	2.10	Adjusted
50 lb	17849-1	1912	2	2300	210	2.10	Adjusted
50 lb	17937-1	62	62	2300	210	2.10	In-Tolerance
50 lb	17865-1	352	352	2300	210	2.10	In-Tolerance
50 lb	17860-1	392	392	2300	210	2.10	In-Tolerance
50 lb	17836-1	832	832	2300	210	2.10	In-Tolerance
50 lb	17866-1	1332	1332	2300	210	2.10	In-Tolerance
50 lb	17853-1	1402	1402	2300	210	2.10	In-Tolerance
50 lb	17834-1	-1008	-1008	2300	210	2.10	In-Tolerance
50 lb	10	-898	-898	2300	210	2.10	In-Tolerance
50 lb	14	-168	-168	2300	210	2.10	In-Tolerance
50 lb	30	-1118	-1118	2300	210	2.10	In-Tolerance
50 lb	64	1462	1462	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

Ron E Peterson, Metrologist 1/10/2023

Ron E Peterson, Metrologist
Ver 20220919



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 Metrology Lab
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CALIBRATION CERTIFICATE

Calibrated for: **Prairie Scale System INC (Unit 349)** Certificate number: **MP4338**
 Calibration Date: **01/10/2023** Purchase Order Number: **0**

Environmental conditions at time of test:
 Temperature: 21.4 °C Humidity: 46.4 % Pressure: 661.3 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, 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): **1 20 lb weight**

Nominal	SN/ID	Correction as Found	Correction as Left	NIST Class F	Uncertainty		Condition
		mg	mg	Tolerance (mg)	mg	k	As Left
20 lb	17904-1	374	374	910	110	2.20	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

 1/10/2023

Ron E Peterson, Metrologist
 Ver 20220919



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CALIBRATION CERTIFICATE

Calibrated for: Prairie Scale System INC (Unit 349) **Certificate number:** MP4338
Calibration Date: 01/10/2023 **Purchase Order Number:** 0

Environmental conditions at time of test:

Temperature: 20.8 °C **Humidity:** 46 % **Pressure:** 661.6 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, 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): **22 piece Metric Kit**

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
1 kg	1	10.0	10.0	100	8.8	2.07	In-Tolerance
1 kg	2	14.0	14.0	100	8.8	2.07	In-Tolerance
500 g		13.5	13.5	70	6.1	2.07	In-Tolerance
200 g	1	5.6	5.6	40	3.5	2.07	In-Tolerance
200 g	2	10.8	10.8	40	3.5	2.07	In-Tolerance
100 g		6.8	6.8	20	1.8	2.07	In-Tolerance
50 g		4.49	4.49	10	0.87	2.07	In-Tolerance
20 g		1.28	1.28	4	0.35	2.07	In-Tolerance
20 g		1.20	1.20	4	0.35	2.07	In-Tolerance
10 g		1.12	1.12	2	0.18	2.06	In-Tolerance
5 g		0.29	0.29	1.5	0.13	2.07	In-Tolerance
2 g		0.691	0.691	1.1	0.096	2.07	In-Tolerance
2 g		0.381	0.381	1.1	0.096	2.07	In-Tolerance
1 g		0.737	0.737	0.9	0.079	2.07	In-Tolerance
500 mg		0.360	0.360	0.72	0.064	2.06	In-Tolerance
200 mg		0.064	0.064	0.54	0.079	2.06	In-Tolerance
200 mg		0.249	0.249	0.54	0.079	2.06	In-Tolerance
100 mg		0.224	0.224	0.43	0.041	2.04	In-Tolerance
50 mg		0.147	0.147	0.35	0.033	2.05	In-Tolerance
20 mg		0.038	0.038	0.26	0.029	2.03	In-Tolerance
20 mg		0.062	0.062	0.26	0.029	2.03	In-Tolerance
10 mg		0.015	0.015	0.21	0.024	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

 1/10/2023

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: **Prairie Scale System INC (Unit 349)**

Certificate number: **MP4338**

Calibration Date: **01/10/2023**

Purchase Order Number: **0**

Environmental conditions at time of test:

Temperature: 20.8 °C **Humidity:** 46 % **Pressure:** 661.6 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, 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): **21 piece Avoirdupois Kit**

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	<i>k</i>	Condition As Left
5 lb	1	49	49	230	20	2.07	In-Tolerance
5 lb	2	27	27	230	20	2.07	In-Tolerance
5 lb	3	37	37	230	20	2.07	In-Tolerance
5 lb	4	38	38	230	20	2.07	In-Tolerance
5 lb	5	49	49	230	20	2.07	In-Tolerance
1 lb	1	18.5	18.5	70	6.2	2.07	In-Tolerance
1 lb	2	21.5	21.5	70	6.2	2.07	In-Tolerance
1 lb	3	13.5	13.5	70	6.2	2.07	In-Tolerance
1 lb	4	13.5	13.5	70	6.2	2.07	In-Tolerance
1 lb	5	7.5	7.5	70	6.2	2.07	In-Tolerance
0.5 lb		8.2	8.2	45.0	4.1	2.06	In-Tolerance
0.2 lb		2.1	2.1	18.0	1.6	2.07	In-Tolerance
0.2 lb	.	8.0	8.0	18.0	1.6	2.07	In-Tolerance
0.1 lb		1.41	1.41	9.1	0.79	2.07	In-Tolerance
0.05 lb		1.58	1.58	4.50	0.39	2.07	In-Tolerance
0.02 lb		-0.92	-0.92	1.80	0.16	2.06	In-Tolerance
0.02 lb	.	-0.51	-0.51	1.80	0.16	2.06	In-Tolerance
0.01 lb		0.43	0.43	1.50	0.13	2.06	In-Tolerance
0.005 lb		0.48	0.48	1.20	0.23	2.05	In-Tolerance
0.002 lb		0.24	0.24	0.87	0.14	2.06	In-Tolerance
0.001 lb		0.349	0.349	0.70	0.065	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

 01/10/2023

Ron E Peterson, Metrologist
Ver 20220919

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

Prairie Scale Unit 369	SA# 131	Certificate number: MP4461
Physical Address:	Billing Address:	
9860 Industrial Drive	9860 Industrial Drive	
Horace, ND 58047	Horace, ND 58047	
Contact: Cooper Anderson		Received Date: 01/16/2024
Phone: 701-281-9373		Certificate Issued: 01/16/2024

Artifacts Submitted and Summary of Results:

Quantity	Artifact	Total Pieces	Recvd in Tol	Adjusted	Rejected	As Left In Tolerance
2	4000 lb Weight Carts	2	2	1	0	2
8	1000 lb Weights	8	2	8	0	8
2	1000 lb Baskets	2	0	2	0	2
40	50 lb Weights	40	24	20	0	40
1	Avoirdupois Weight Kit	22	22	0	0	22
1	Metric Weight Kit	14	14	0	0	14
1	20 lb Weight	1	0	1	0	1

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 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

		
Ron E Peterson, Metrologist	01/16/2024	Dwight R Johnson, Reviewer 01/16/2024

CALIBRATION CERTIFICATE

Calibrated for: **Prairie Scale Unit 369** Certificate Number: **MP4461**
 Calibration Date: **01/17/2024**

Environmental conditions at time of test:
Temperature: 20.34 °C
Humidity: 55.07 %
Pressure: 666.38 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: PSS **SN:** PSS_16-C1-4k

Nominal (lb)	AS Found (lb)	As Found (g)	As Left (lb)	As Left (g)	Uncertainty (lb)	k	Tolerance (lb)	Condition as Left
4000	-0.20	-90.57	0.07	33.78	0.13	2.01	1.40	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 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.

	
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Ron E Peterson, Metrologist	01/17/2024	Dwight R Johnson, Reviewer	01/17/2024
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Ver 20231221



Inspection Checklist for Weight Cart

Calibrated for: Prairie Scale Unit 369 Certificate number: MP4461
Calibration Date: 01/17/2024

Manufacturer: **PSS** Date of Manufacture: **42370**
Model Number: **PSS-4k** ID/SN Number: **PSS_16-C1-4k**

<input checked="" type="checkbox"/>	Nominal Mass of Weight Cart	4000 lbs	Suitably marked: Yes/No	Yes
<input checked="" type="checkbox"/>	Powered by:	Electric/generator <input checked="" type="checkbox"/>	Diesel <input type="checkbox"/>	Gasoline <input type="checkbox"/>
<input checked="" type="checkbox"/>	Fluid Levels:	Engine Oil <input type="checkbox"/>		
		Hydraulic Fluid <input type="checkbox"/>		Sealed: Yes/No <input type="checkbox"/>
		Battery <input checked="" type="checkbox"/>		Sealed: Yes/No Yes
		Liquid Fuel <input type="checkbox"/>		Reference Line Present: Yes/No <input type="checkbox"/>

<input checked="" type="checkbox"/>	Fluid drain tubes extend beyond the body of the cart: Yes/No	Yes	
<input checked="" type="checkbox"/>	Number of axles:	2	
<input checked="" type="checkbox"/>	Number /Size of Tires	16 1/8x5x11 1/4	
<input checked="" type="checkbox"/>	Sealed wheel bearings: Yes/No	Yes	
<input checked="" type="checkbox"/>	Drain holes present in locations where water may accumulate: Yes/No		Yes
<input checked="" type="checkbox"/>	Weight restraint railing permanently fixed and solid: Yes/No		Yes
<input checked="" type="checkbox"/>	Adjusting cavity accessible: Yes/No	Yes	Approximate capacity:(lbs) 25
<input checked="" type="checkbox"/>	Adjusting cavity sealed: Yes/No	Yes	
<input checked="" type="checkbox"/>	Service brakes functioning properly: Yes/No		Yes
<input checked="" type="checkbox"/>	Parking brakes functioning properly: Yes/No		Yes
<input type="checkbox"/>	Remote control functioning properly: Yes/No		<input type="checkbox"/>

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

Dwight R Johnson

CALIBRATION CERTIFICATE

Calibrated for: **Prairie Scale Unit 369** Certificate Number: **MP4461**
 Calibration Date: **01/17/2024**

Environmental conditions at time of test:
Temperature: 19.94 °C
Humidity: 47.32 %
Pressure: 666.47 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: PSS **SN:** PSS-16-C2-4k

Nominal (lb)	AS Found (lb)	As Found (g)	As Left (lb)	As Left (g)	Uncertainty (lb)	k	Tolerance (lb)	Condition as Left
4000	0.37	169.60	0.37	169.60	0.13	2.01	1.40	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 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.

	
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Ron E Peterson, Metrologist	01/17/2024	Dwight R Johnson, Reviewer	01/17/2024
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Ver 20231221



Inspection Checklist for Weight Cart

Calibrated for: Prairie Scale Unit 369 Certificate number: MP4461
Calibration Date: 01/17/2024

Manufacturer: **PSS** Date of Manufacture: **42370**
Model Number: **PSS-4k** ID/SN Number: **PSS-16-C2-4k**

<input checked="" type="checkbox"/>	Nominal Mass of Weight Cart	4000 lbs	Suitably marked: Yes/No	Yes
<input checked="" type="checkbox"/>	Powered by:	Electric/generator <input checked="" type="checkbox"/>	Diesel <input type="checkbox"/>	Gasoline <input type="checkbox"/>
<input checked="" type="checkbox"/>	Fluid Levels:	Engine Oil <input type="checkbox"/>		
		Hydraulic Fluid <input type="checkbox"/>		Sealed: Yes/No <input type="checkbox"/>
		Battery <input checked="" type="checkbox"/>		Sealed: Yes/No Yes
		Liquid Fuel <input type="checkbox"/>		Reference Line Present: Yes/No <input type="checkbox"/>

<input checked="" type="checkbox"/>	Fluid drain tubes extend beyond the body of the cart: Yes/No	Yes		
<input checked="" type="checkbox"/>	Number of axles:	2		
<input checked="" type="checkbox"/>	Number /Size of Tires	16 1/8x5x11 1/4		
<input checked="" type="checkbox"/>	Sealed wheel bearings: Yes/No	Yes		
<input checked="" type="checkbox"/>	Drain holes present in locations where water may accumulate: Yes/No	Yes		
<input checked="" type="checkbox"/>	Weight restraint railing permanently fixed and solid: Yes/No	Yes		
<input checked="" type="checkbox"/>	Adjusting cavity accessible: Yes/No	Yes	Approximate capacity:(lbs)	25
<input checked="" type="checkbox"/>	Adjusting cavity sealed: Yes/No	Yes		
<input checked="" type="checkbox"/>	Service brakes functioning properly: Yes/No	Yes		
<input checked="" type="checkbox"/>	Parking brakes functioning properly: Yes/No	Yes		
<input type="checkbox"/>	Remote control functioning properly: Yes/No	<input type="checkbox"/>		

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

Dwight R Johnson



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: **Prairie Scale Unit 369**

Certificate number: **MP4461**

Calibration Date: **01/17/2024**

Purchase Order Number: **0**

Environmental conditions at time of test:

Temperature: 19.5 °C **Humidity:** 48 % **Pressure:** 660.3 mmHg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, 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): 10 - 1000 lb weights

Nominal	SN/ID	Correction as Found		Correction as Left		ASTM E 617 Class 6 Tolerance (g)	Uncertainty		Condition As Left
		lb	g	lb	g		g	k	
1000 lb	1k-19	-0.09	-39.1	0.00	0.0	45	5.1	2.0	Adjusted
1000 lb	1k-20	-0.10	-43.5	0.00	0.0	45	5.1	2.0	Adjusted
1000 lb	1k-21	-0.12	-53.1	0.00	0.2	45	5.1	2.0	Adjusted
1000 lb	1k-22	-0.12	-55.2	0.00	0.0	45	5.1	2.0	Adjusted
1000 lb	1k-23	-0.08	-38.2	0.00	0.0	45	5.1	2.0	Adjusted
1000 lb	1k-24	-0.12	-54.6	0.00	-0.1	45	5.1	2.0	Adjusted
1000 lb	1k-25	-0.13	-59.2	0.00	0.0	45	5.1	2.0	Adjusted
1000 lb	1k-26	-0.09	-42.2	0.00	0.1	45	5.1	2.0	Adjusted
1000 lb	PSS-16-B1-1k	-0.50	-228.5	0.00	0.2	45	5.1	2.0	Adjusted
1000 lb	PSS-16-B2-1k	-0.58	-261.4	0.00	-0.1	45	5.1	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

Dwight R. Johnson
 Dwight R Johnson, Metrologist

Ron E Peterson
 Ron E Peterson, Reviewer

01/17/2024

01/17/2024



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: **Prairie Scale Unit 369**

Certificate number: **MP4461**

Calibration Date: **01/17/2024**

Purchase Order Number:

Environmental conditions at time of test:

Temperature: 19.8 °C

Humidity: 46.7 %

Pressure: 660.6 mmhg

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

Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301

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

Artifact(s): **20 50 lb weights SN 369**

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
50 lb	66A6	-3028	-3	2300	200	2.03	Adjusted
50 lb	66A7	-2138	-8	2300	200	2.03	Adjusted
50 lb	66A8	-2183	-13	2300	200	2.03	Adjusted
50 lb	66A9	-2228	2	2300	200	2.03	Adjusted
50 lb	66AA	-383	-383	2300	200	2.03	In-Tolerance
50 lb	66AB	4797	2	2300	200	2.03	Adjusted
50 lb	66AC	-2168	-3	2300	200	2.03	Adjusted
50 lb	66AD	-3728	17	2300	200	2.03	Adjusted
50 lb	66AE	-728	-728	2300	200	2.03	In-Tolerance
50 lb	66AF	67	67	2300	200	2.03	In-Tolerance
50 lb	66AG	-668	-668	2300	200	2.03	In-Tolerance
50 lb	66AH	-3873	22	2300	200	2.03	Adjusted
50 lb	66AK	-4803	17	2300	200	2.03	Adjusted
50 lb	66AL	547	547	2300	200	2.03	In-Tolerance
50 lb	66AM	1217	1217	2300	200	2.03	In-Tolerance
50 lb	66AN	837	837	2300	200	2.03	In-Tolerance
50 lb	66AO	677	677	2300	200	2.03	In-Tolerance
50 lb	66AP	4237	12	2300	200	2.03	Adjusted
50 lb	66AR	-4333	2	2300	200	2.03	Adjusted
50 lb	66AS	162	162	2300	200	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

01/17/2024

Dwight R Johnson, Reviewer

01/17/2024



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: Prairie Scale Unit 369

Certificate number: MP4461

Calibration Date: 01/17/2024

Purchase Order Number:

Environmental conditions at time of test:

Temperature: 19.8 °C **Humidity:** 46.7 % **Pressure:** 660.6 mmhg

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

Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301

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

Artifact(s): **20 50 lb weights** **SN 369**

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
50 lb	66AT	-4283	-8	2300	200	2.03	Adjusted
50 lb	66AU	-1193	12	2300	200	2.03	Adjusted
50 lb	66AV	3037	-8	2300	200	2.03	Adjusted
50 lb	66AW	-468	-468	2300	200	2.03	In-Tolerance
50 lb	66AX	1722	22	2300	200	2.03	Adjusted
50 lb	66AY	247	247	2300	200	2.03	In-Tolerance
50 lb	66AZ	-658	-658	2300	200	2.03	In-Tolerance
50 lb	66B1	-668	-668	2300	200	2.03	In-Tolerance
50 lb	66B4	787	787	2300	200	2.03	In-Tolerance
50 lb	66B5	-703	-703	2300	200	2.03	In-Tolerance
50 lb	66B6	887	887	2300	200	2.03	In-Tolerance
50 lb	66B7	-833	-833	2300	200	2.03	In-Tolerance
50 lb	66B8	-3113	2	2300	200	2.03	Adjusted
50 lb	66B8	-1708	2	2300	200	2.03	Adjusted
50 lb	66B9	-3593	2	2300	200	2.03	Adjusted
50 lb	66BA	1447	-13	2300	200	2.03	Adjusted
50 lb	66BB	-3338	12	2300	200	2.03	Adjusted
50 lb	66BC	-168	-168	2300	200	2.03	In-Tolerance
50 lb	66BO	282	282	2300	200	2.03	In-Tolerance
50 lb	66BZ	872	872	2300	200	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



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CALIBRATION CERTIFICATE

Calibrated for: Prairie Scale Unit 369 **Certificate number:** MP4461
Calibration Date: 01/17/2024 **Purchase Order Number:**

Environmental conditions at time of test:

Temperature: 19.8 °C **Humidity:** 46.7 % **Pressure:** 660.6 mmhg

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

Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301

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

Artifact(s): **1 Avoirdupois Weight(s)** **SN 369**

Nominal	SN/ID	Correction as Found	Correction as Left	NIST Class F Tolerance (mg)	Uncertainty	k	Condition As Left
20 lb	A	3434	-6	910	120	2.02	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 01/17/2024 Dwight R Johnson, Reviewer 01/17/2024



CALIBRATION CERTIFICATE

Calibrated for: **Prairie Scale Unit 369** Certificate number: **MP4461**

Calibration Date: **01/17/2024** Purchase Order Number:

Environmental conditions at time of test:

Temperature: 20.7 °C **Humidity:** 47.8 % **Pressure:** 660.6 mmhg

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

Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301

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

Artifact(s): 22 piece Avoirdupois Kit SN 2019-739-B

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
5 lb		71	71	230	20	2.05	In-Tolerance
5 lb		69	69	230	20	2.05	In-Tolerance
5 lb		71	71	230	20	2.05	In-Tolerance
5 lb		71	71	230	20	2.05	In-Tolerance
5 lb		72	72	230	20	2.05	In-Tolerance
1 lb		20.5	20.5	70	6.1	2.05	In-Tolerance
1 lb		26.5	26.5	70	6.1	2.05	In-Tolerance
1 lb		24.5	24.5	70	6.1	2.05	In-Tolerance
1 lb		16.5	16.5	70	6.1	2.05	In-Tolerance
1 lb		10.5	10.5	70	6.1	2.05	In-Tolerance
0.5 lb		14.2	14.2	45	4.0	2.04	In-Tolerance
0.2 lb		-3.8	-3.8	18	1.6	2.05	In-Tolerance
0.2 lb		-14.8	-14.8	18	1.6	2.05	In-Tolerance
0.1 lb		2.46	2.46	9.1	0.79	2.05	In-Tolerance
0.05 lb		1.42	1.42	4.5	0.39	2.05	In-Tolerance
0.02 lb		0.57	0.57	1.8	0.16	2.05	In-Tolerance
0.02 lb		0.12	0.12	1.8	0.16	2.05	In-Tolerance
0.01 lb		0.53	0.53	1.5	0.13	2.04	In-Tolerance
0.005 lb		0.85	0.85	1.2	0.10	2.06	In-Tolerance
0.002 lb		0.485	0.485	0.87	0.076	2.06	In-Tolerance
0.002 lb		0.305	0.305	0.87	0.076	2.06	In-Tolerance
0.001 lb		0.539	0.539	0.7	0.062	2.06	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



CALIBRATION CERTIFICATE

Calibrated for: **Prairie Scale Unit 369**

Certificate number: **MP4461**

Calibration Date: **01/17/2024**

Purchase Order Number:

Environmental conditions at time of test:

Temperature: 20.7 °C Humidity: 47.8 % Pressure: 660.6 mmhg

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

Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301

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

Artifact(s): **14 piece Avoirdupois Kit**

SN 2019-739-B

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
1 kg		35.0	35.0	100	8.7	2.05	In-Tolerance
1 kg		15.0	15.0	100	8.7	2.05	In-Tolerance
500 g		24.5	24.5	70	6.1	2.05	In-Tolerance
200 g		12.6	12.6	40	3.4	2.05	In-Tolerance
200 g		9.7	9.7	40	3.4	2.05	In-Tolerance
100 g		4.1	4.1	20	1.7	2.05	In-Tolerance
50 g		2.21	2.21	10	0.86	2.05	In-Tolerance
20 g		0.81	0.81	4	0.35	2.05	In-Tolerance
20 g		1.03	1.03	4	0.35	2.05	In-Tolerance
10 g		0.47	0.47	2	0.17	2.05	In-Tolerance
5 g		0.10	0.10	1.5	0.13	2.05	In-Tolerance
2 g		0.336	0.336	1.1	0.095	2.05	In-Tolerance
2 g		0.406	0.406	1.1	0.095	2.05	In-Tolerance
1 g		0.172	0.172	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

Ron E Peterson

Dwight R Johnson

Ron E Peterson, Metrologist 01/17/2024 Dwight R Johnson, Reviewer 01/17/2024

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

Prairie Scale Systems (Unit 754)	SA# 131	Certificate number: MP4468
Physical Address:	Billing Address:	
9860 Industrial Drive	9860 Industrial Drive	
Horace, ND 58047	Horace, ND 58047	
Contact: Cooper Anderson		Received Date: 01/23/2024
Phone: 701-281-9373		Certificate Issued: 01/24/2024



Artifacts Submitted and Summary of Results:						
Quantity	Artifact	Total Pieces	Recvd in Tol	Adjusted	Rejected	As Left In Tolerance
1	1000 lb Weight	1	0	1	0	1
4	500 lb Weights	4	0	4	0	4
34	50 lb Weights	34	32	6	0	34

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 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

 Ron E Peterson, Metrologist	01/24/2024	 Dwight R Johnson, Reviewer	01/24/2024
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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: **Prairie Scale Systems (Unit 754)** Certificate number: **MP4468**

Calibration Date: **01/24/2024** Purchase Order Number: **0**

Environmental conditions at time of test:

Temperature: 22 °C Humidity: 47 % Pressure: 666 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, 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): **1 - 1000 lb weights** Unit 754

Nominal	SN/ID	Correction as Found		Correction as Left		ASTM E 617 Class 6 Tolerance (g)	Uncertainty g	k	Condition As Left
		lb	g	lb	g				
1000 lb	AA	0.40	182.3	0.00	0.0	45	5.1	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



 Dwight R Johnson, Metrologist 01/24/2024 Ron E Peterson, Reviewer 01/24/2024



CALIBRATION CERTIFICATE

Calibrated for: **Prairie Scale Systems (Unit 754)** Certificate number: **MP4468**

Calibration Date: **01/24/2024** Purchase Order Number: **0**

Environmental conditions at time of test:
 Temperature: 22 °C Humidity: 46 % Pressure: 666 mmhg

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

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

Condition of Weights: Cleaned and painted

Nominal	SN/ID	Correction as Found		Correction as Left		ASTM E 617 Class 6 Tolerance (g)	Uncertainty (g)	Unit 754 k	Condition As Left
		lb	g	lb	g				
500 lb	71V6	0.07	30.2	0.00	0.1	23	2.3	2.0	Adjusted
500 lb	71V7	0.07	30.0	0.00	0.0	23	2.3	2.0	Adjusted
500 lb	71V8	0.06	28.1	0.00	0.1	23	2.3	2.0	Adjusted
500 lb	71V9	0.06	27.3	0.00	-0.1	23	2.3	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
 Ron E Peterson, Metrologist 01/24/2024 *Dwight R Johnson* Dwight R Johnson, Reviewer 01/24/2024



CALIBRATION CERTIFICATE

Calibrated for: **Prairie Scale Systems (Unit 754)** **Certificate number:** **MP4468**
Calibration Date: 01/24/2024 **Purchase Order Number:**

Environmental conditions at time of test:

Temperature: 21 °C **Humidity:** 46 % **Pressure:** 667 mmhg
Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, May 2019
Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301
Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **20 50 lb weights** **SN Unit 754**

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
50 lb	002	717	717	2300	200	2.03	In-Tolerance
50 lb	003	782	782	2300	200	2.03	In-Tolerance
50 lb	005	1432	1432	2300	200	2.03	In-Tolerance
50 lb	008	497	497	2300	200	2.03	In-Tolerance
50 lb	009	1007	1007	2300	200	2.03	In-Tolerance
50 lb	011	1217	1217	2300	200	2.03	In-Tolerance
50 lb	015	1697	2	2300	200	2.03	Adjusted
50 lb	019	878	878	2300	200	2.03	In-Tolerance
50 lb	022	-338	-338	2300	200	2.03	In-Tolerance
50 lb	022	537	537	2300	200	2.03	In-Tolerance
50 lb	026	657	657	2300	200	2.03	In-Tolerance
50 lb	026	1377	1377	2300	200	2.03	In-Tolerance
50 lb	028	2137	-13	2300	200	2.03	Adjusted
50 lb	031	1277	1277	2300	200	2.03	In-Tolerance
50 lb	034	797	797	2300	200	2.03	In-Tolerance
50 lb	037	632	632	2300	200	2.03	In-Tolerance
50 lb	039	172	172	2300	200	2.03	In-Tolerance
50 lb	052	1202	1202	2300	200	2.03	In-Tolerance
50 lb	058	1787	7	2300	200	2.03	Adjusted
50 lb	066	737	737	2300	200	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

Dwight R. Johnson

Ron E. Peterson



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: **Prairie Scale Systems (Unit 754)** **Certificate number:** **MP4468**

Calibration Date: 01/24/2024 **Purchase Order Number:**

Environmental conditions at time of test:

Temperature: 21 °C **Humidity:** 46 % **Pressure:** 667 mmhg

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

Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301

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

Artifact(s): **14 50 lb weights** **SN Unit 754**

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
50 lb	068	1032	1032	2300	200	2.03	In-Tolerance
50 lb	069	2197	17	2300	200	2.03	Adjusted
50 lb	072	1137	1137	2300	200	2.03	In-Tolerance
50 lb	073	1812	2	2300	200	2.03	Adjusted
50 lb	074	442	442	2300	200	2.03	In-Tolerance
50 lb	075	577	577	2300	200	2.03	In-Tolerance
50 lb	076	-563	-563	2300	200	2.03	In-Tolerance
50 lb	077	857	857	2300	200	2.03	In-Tolerance
50 lb	078	452	452	2300	200	2.03	In-Tolerance
50 lb	079	1792	-8	2300	200	2.03	Adjusted
50 lb	080	527	527	2300	200	2.03	In-Tolerance
50 lb	7IV3	377	377	2300	200	2.03	In-Tolerance
50 lb	7IV4	607	607	2300	200	2.03	In-Tolerance
50 lb	7IV5	82	82	2300	200	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

Dwight R Johnson

Ron E Peterson

Dwight R Johnson, Metrologist 01/24/2024 Ron E Peterson, Reviewer 01/24/2024

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

Prairie Scale Systems (Shop Weights)	SA# 131	Certificate number: MP4469	
Physical Address:	Billing Address:		
9860 Industrial Drive	9860 Industrial Drive		
Horace, ND 58047	Horace, ND 58047		
Contact: Cooper Anderson		Received Date: 01/23/2024	
Phone: 701-281-9373		Certificate Issued: 01/24/2024	



Artifacts Submitted and Summary of Results:						
Quantity	Artifact	Total Pieces	Recvd in Tol	Adjusted	Rejected	As Left In Tolerance
1	Metric Weight Kit	29	29	0	0	29

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 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.

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Dwight R Johnson, Metrologist	Ron E Peterson, Reviewer	
01/24/2024	01/24/2024	



CALIBRATION CERTIFICATE

Calibrated for: **Prairie Scale Systems (Shop Weights)** Certificate number: **MP4469**

Calibration Date: 01/24/2024 Purchase Order Number:

Environmental conditions at time of test:

Temperature: 21 °C Humidity: 47 % Pressure: 666 mmhg

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

Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301

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

Artifact(s): **21 piece Metric Kit** **SN 71VI**

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
5 kg	B	115	115	500	43	2.05	In-Tolerance
5 kg	B.	139	139	500	43	2.05	In-Tolerance
2 kg	.	47	47	200	17	2.05	In-Tolerance
2 kg	B	91	91	200	17	2.05	In-Tolerance
1 kg		23.0	23.0	100	8.7	2.05	In-Tolerance
500 g	A	20.5	20.5	70	6.1	2.05	In-Tolerance
500 g	B	18.5	18.5	70	6.1	2.05	In-Tolerance
500 g	C	18.5	18.5	70	6.1	2.05	In-Tolerance
500 g	D	22.5	22.5	70	6.1	2.05	In-Tolerance
500 g	E	18.5	18.5	70	6.1	2.05	In-Tolerance
200 g		6.4	6.4	40	3.4	2.05	In-Tolerance
200 g	.	3.8	3.8	40	3.4	2.05	In-Tolerance
100 g		6.8	6.8	20	1.7	2.05	In-Tolerance
50 g		4.22	4.22	10	0.86	2.05	In-Tolerance
20 g		1.54	1.54	4	0.35	2.05	In-Tolerance
20 g	.	1.59	1.59	4	0.35	2.05	In-Tolerance
10 g		0.55	0.55	2	0.17	2.05	In-Tolerance
5 g		0.11	0.11	1.5	0.13	2.05	In-Tolerance
2 g		0.406	0.406	1.1	0.095	2.05	In-Tolerance
2 g	.	0.001	0.001	1.1	0.095	2.05	In-Tolerance
1 g		0.408	0.408	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

Ron E. Peterson



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: **Prairie Scale Systems (Shop Weights)** Certificate number: **MP4469**

Calibration Date: **01/24/2024** Purchase Order Number:

Environmental conditions at time of test:

Temperature: 21 °C **Humidity:** 47 % **Pressure:** 666 mmhg

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

Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301

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

Artifact(s): **8 piece Metric Kit** **SN 71VI continued**

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
500 mg		0.400	0.400	0.72	0.064	2.04	In-Tolerance
200 mg		0.124	0.124	0.54	0.048	2.04	In-Tolerance
200 mg		0.186	0.186	0.54	0.048	2.04	In-Tolerance
100 mg		0.092	0.092	0.43	0.040	2.03	In-Tolerance
50 mg		0.157	0.157	0.35	0.033	2.03	In-Tolerance
20 mg		0.126	0.126	0.26	0.029	2.03	In-Tolerance
10 mg		0.073	0.073	0.21	0.023	2.02	In-Tolerance
2 mg		0.028	0.028	0.12	0.020	2.02	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

Ron E. Peterson

Dwight R Johnson, Metrologist 01/24/2024 Ron E Peterson, Reviewer 01/24/2024

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

Prairie Scale System INC (Shop)

SA# **131**

Certificate number: **MP4339**

Physical Address:

Billing Address:

9860 Industrial Drive

9860 Industrial Drive

Horace, ND 58047

Horace, ND 58047

Contact: **Cooper Anderson**

Received Date: **01/09/2023**

Phone: **701-281-9373**

Certificate Issued: **01/10/2023**

Artifacts Submitted and Summary of Results:

Quantity	Artifact	Total Pieces	Recvd in Tol	Adjusted	Rejected	As Left In Tolerance
20	50 lb cast weights	20	20	0	0	20
1	Metric kit	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 (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.



 Ron E Peterson, Metrologist

01/10/2023



 Dwight R Johnson, Reviewer

01/10/2023



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: **Prairie Scale System INC (Shop)** Certificate number: **MP4339**
 Calibration Date: **01/10/2023** Purchase Order Number: **0**

Environmental conditions at time of test:

Temperature: 22.4 °C **Humidity:** 45.6 % **Pressure:** 661.1 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, 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	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	<i>k</i>	Condition As Left
50 lb	A	222	222	2300	210	2.10	In-Tolerance
50 lb	2	702	702	2300	210	2.10	In-Tolerance
50 lb	3	992	992	2300	210	2.10	In-Tolerance
50 lb	5	1462	1462	2300	210	2.10	In-Tolerance
50 lb	8	242	242	2300	210	2.10	In-Tolerance
50 lb	9	742	742	2300	210	2.10	In-Tolerance
50 lb	11	1032	1032	2300	210	2.10	In-Tolerance
50 lb	12	232	232	2300	210	2.10	In-Tolerance
50 lb	15	1292	1292	2300	210	2.10	In-Tolerance
50 lb	19	662	662	2300	210	2.10	In-Tolerance
50 lb	22	-598	-598	2300	210	2.10	In-Tolerance
50 lb	23	1452	1452	2300	210	2.10	In-Tolerance
50 lb	23	722	722	2300	210	2.10	In-Tolerance
50 lb	25	922	922	2300	210	2.10	In-Tolerance
50 lb	26	322	322	2300	210	2.10	In-Tolerance
50 lb	31	-378	-378	2300	210	2.10	In-Tolerance
50 lb	33	262	262	2300	210	2.10	In-Tolerance
50 lb	34	732	732	2300	210	2.10	In-Tolerance
50 lb	52	712	712	2300	210	2.10	In-Tolerance
50 lb	58	1482	1482	2300	210	2.10	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

 01/10/2023

Ron E Peterson, Metrologist
 Ver 20220919



South Dakota Department of Public Safety
Office of Weights and Measures
Metrology Lab
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CALIBRATION CERTIFICATE

Calibrated for: Prairie Scale System INC (Shop) **Certificate number:** MP4339
Calibration Date: 01/10/2023 **Purchase Order Number:** 0

Environmental conditions at time of test:

Temperature: 20.8 °C **Humidity:** 46 % **Pressure:** 661.6 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, 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): **30 piece Metric Kit** **SN 71VI**

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	<i>k</i>	Condition As Left
5 kg	B	119	119	500	44	2.07	In-Tolerance
5 kg	B-	142	142	500	44	2.07	In-Tolerance
2 kg	B	91	91	200	17	2.07	In-Tolerance
2 kg	.	50	50	200	17	2.07	In-Tolerance
1 kg		25.0	25.0	100	8.8	2.07	In-Tolerance
500 g	A	20.5	20.5	70	6.1	2.07	In-Tolerance
500 g	B	19.5	19.5	70	6.1	2.07	In-Tolerance
500 g	C	19.5	19.5	70	6.1	2.07	In-Tolerance
500 g	D	24.5	24.5	70	6.1	2.07	In-Tolerance
500 g	E	19.5	19.5	70	6.1	2.07	In-Tolerance
200 g		6.3	6.3	40	3.5	2.07	In-Tolerance
200 g	.	3.9	3.9	40	3.5	2.07	In-Tolerance
100 g		6.5	6.5	20	1.8	2.07	In-Tolerance
50 g		3.79	3.79	10	0.87	2.07	In-Tolerance
20 g		1.34	1.34	4	0.35	2.07	In-Tolerance
20 g	.	1.33	1.33	4	0.35	2.07	In-Tolerance
10 g		0.46	0.46	2	0.18	2.06	In-Tolerance
5 g		0.52	0.52	1.5	0.13	2.07	In-Tolerance
2 g		0.041	0.041	1.1	0.096	2.07	In-Tolerance
2 g	.	0.361	0.361	1.1	0.096	2.07	In-Tolerance
1 g		-0.024	-0.024	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

 1/10/2023
Ron E Peterson, Metrologist
Ver 20220919



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CALIBRATION CERTIFICATE

Calibrated for: **Prairie Scale System INC (Shop)**

Certificate number: **MP4339**

Calibration Date: **01/10/2023**

Purchase Order Number: **0**

Environmental conditions at time of test:

Temperature: 20.8 °C **Humidity:** 46 % **Pressure:** 661.6 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, 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): **30 piece Metric Kit** **SN 71VI continued**

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	<i>k</i>	Condition As Left
500 mg		0.371	0.371	0.72	0.064	2.06	In-Tolerance
200 mg		0.186	0.186	0.54	0.079	2.06	In-Tolerance
200 mg		0.120	0.120	0.54	0.079	2.06	In-Tolerance
100 mg		0.080	0.080	0.43	0.041	2.04	In-Tolerance
50 mg		0.139	0.139	0.35	0.033	2.05	In-Tolerance
20 mg		0.097	0.097	0.26	0.029	2.03	In-Tolerance
10 mg		0.085	0.085	0.21	0.024	2.03	In-Tolerance
5 mg		0.076	0.076	0.17	0.023	2.04	In-Tolerance
2 mg		0.040	0.040	0.12	0.021	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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