

prevention - protection - enforcement

## Office of Weights and Measures

### Metrology Laboratory

Office: 118 West Capitol Avenue, Pierre, SD 57501

Lab: 1100 Otter Rd, Bldg D, Sturgis, SD 57785

Lab: 605-347-7541, Office: 605-773-3697, Cell: 605-280-4572

Email: ron.peterson@state.sd.us https://dps.sd.gov/inspections/weights-measures

# **CALIBRATION CERTIFICATE**

Prairie Scale Systems Unit 328

**Physical Address:** 

SA# 131 **Billing Address:** 

Certificate number: MP4467

9860 Industrial Drive

9860 Industrial Drive

701-281-9373

Horace, ND 58047

Horace, ND 58047

**Cooper Anderson** 

Phone:

Contact:

01/23/2024 Received Date: Certificate Issued: 01/24/2024

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**Artifacts Submitted and Summary of Results:** 

| Quantity | Artifact             | Total Pieces | Recvd in Tol | Adjusted | Rejected | 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 factork to provide an expanded uncertainty which defines an interval having a level of confidence of approximately 95 percent. The expanded uncertainty prexented in this report is consistent with the 2008 ISO/IEC Guide to the Expression of Uncertainty in Measurement. The expanded uncertainty is not tobe confused with a tolerance limit for the user during application. For weight carts, factors included on the inspection checklist have not been included in the calibration uncertainty. However, factors on the checklist may contribute measurement errors that are significant if not progerly maintained during use.

### **Conformity Statement:**

The artifacts submitted for this calibration are calibrated to NIST Handbook 105-1 (1990 or 2019), NIST Handbook 105-8 (2019), NIST Handbook 105-3 (2010), or ASTM E617 (2018), Standard Specification for Laboratory Weights and Precision Mass Standards specifications. The reported test values relate only to the observations made at the time and conditions of the test. Artifacts fully comply with all requirements (both specifications and tolerances) of the applicable documentary standard unless otherwise stated. Stated expanded uncertaintiesare less than onethird of the specified tolerances (maximum permissible errors, m.p.e.) for mass calibrations and less than the specified tolgrances for volume calibrations. The correction value plus or minus the expanded uncertainty is within the stated tolerances. It is the decision rule of the SD State Metrology Laboratory that any cast weights determined to have a correction within 66 % of the upper tolerance or 50 % of thelower tolerance will be adjusted closer to zero mass correction, even if the mass correction originally met the applicable tolerance.

#### **Traceability Statement:**

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

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

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Ron E Peterson, Metrologist

01/24/2024

Dwight R Johnson, Reviewer 01/24/2024

| D                       | South<br>O<br>Lab: 1100 Otter Rd<br>Office: 118 West Capi | Dakota Department of Public Safety<br>ffice of Weights and Measures<br>Metrology Lab<br>, Bldg D Sturgis, SD 57785 Phone: 605-3<br>tol Avenue Pierre, SD 57501 Phone: 60 | 147-7541<br>15-773-3697    |               |  |  |
|-------------------------|---|--|----------------------------|---------------|--|--|
|                         | CALIBR  | ATION CERTIFICATE  |                            |               |  |  |
| Calibrated for:         | Prairie Scale Systems Unit                                | 328  | Certificate Number: MP4467 |               |  |  |
| Calibration Date:       | 01/24/2024  |  |                            |               |  |  |
| Environmental condition | ions at time of test:                                     |  |                            |               |  |  |
|                         | Temperature: 21 °C  | Humidity: 46 %   | Pressure: 6                | 67 mmhg       |  |  |
| Test method u           | sed: SOP 33 Calibrations of Wei                           | ght Carts, May 2019  |                            |               |  |  |
| Test equipment us       | ed: Recently calibrated weight                            | s and a Mettler SLS510 Loa   | ad Cell with IND57         | 70 Indicator. |  |  |
|                         | Vaisala PT301   |  |                            |               |  |  |
| Condition of Ca         | arts: Used but in good condition                          | I  |                            |               |  |  |
|                         |   |  |                            |               |  |  |

| N            | lanufacturer: | PSS          | <b>SN:</b> 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 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 cetificate number provides documented evidence for measurement traceability.

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Dwight R Johnson, Reviewer

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| 12             |                | Lab: 1<br>Office: 1   | South Dakota Departm<br>Office of Weights<br>Metrolog<br>100 Otter Rd, Bldg D Sturgis,<br>18 West Capitol Avenue Pierr | ent of Public Safety<br>and Measures<br>ry Lab<br>SD 57785 Phone: 605-347-7541<br>e, SD 57501 Phone: 605-773-3697 |                        | WEIGHTS A<br>MEASURES<br>STATE<br>INSPECTIONS |
|----------------|----------------|-----------------------|--|---|------------------------|---|
|                |                | Inspe                 | ection Checklist f   | for Weight Cart   |                        |   |
| Calibrated for | or:            | Prairie Scale Syste   | ms Unit 328  | Certif  | icate number:          | MP4467  |
| Calibration I  | Date:          | 01/24/2024            |  |   |                        |   |
|                |                |                       |  |   |                        |   |
| Manufactur     | er:            |                       | PSS  | Date of Manufactu   | re                     | Jul-13  |
| Model Num      | ber:           | PSS                   | 6 4k Cart  | ID/SN Number  | PSS-13-C1-4k           |   |
|                |                |                       |  |   |                        |   |
| $\checkmark$   | Nominal Mas    | s of Weight Cart      | 4000 lb:   | s Suital  | oly marked: Yes/No     | Yes   |
| $\checkmark$   | Powered by:    | Electric/             | generator 🗸  | Diesel  | Gasoline               |   |
| $\checkmark$   | Fluid Levels:  | Eng                   | gine Oil   | └   |                        |   |
|                | _              | Hvdra                 | aulic Fluid  |   | Sealed: Yes/No         |   |
|                |                | ,                     | Battery 🗸  |   | Sealed: Yes/No         | Yes   |
|                |                | Lia                   | uid Fuel   | <br>Reference L   | ine Present: Yes/No    |   |
| $\checkmark$   | Fluid drain tu | ibes extend bevon     | the body of the ca   | rt: Yes/No Y  | ′es                    |   |
| $\checkmark$   | Number of a    | xles:                 |  | 2   |                        |   |
| $\checkmark$   | Number /Size   | e of Tires            | 18   | x8x12.125   |                        |   |
| $\checkmark$   | Sealed whee    | bearings: Yes/No      |  | Yes   |                        |   |
| $\checkmark$   | Drain holes p  | resent in locations   | where water may a  | ccumulate: Yes/No   | Yes                    |   |
| $\checkmark$   | Weight restra  | aint railing perman   | ently fixed and solid  | l: Yes/No   | Yes                    |   |
| $\checkmark$   | Adjusting cav  | vity accessible: Yes  | /No Yes  | Appro   | ximate capacity:(lbs)  | 20  |
| $\checkmark$   | Adjusting cav  | vity sealed: Yes/No   | Yes  |   |                        |   |
| $\checkmark$   | Service brake  | es functioning prop   | erlv: Yes/No   | Yes   |                        |   |
| $\checkmark$   | Parking brake  | es functioning prop   | erlv: Yes/No   | Yes   |                        |   |
|                | Remote cont    | rol functioning pro   | perly: Yes/No  |   |                        |   |
|                |                | 0,0                   |  |   |                        |   |
|                | General cond   | lition at time of cal | ibration (note any a   | ccumulated dirt/debris  | , damage, loose parts, | or evidence of                                |
| $\checkmark$   | tampering or   | unauthorized entr     | y of seals).   |   |                        |   |
|                |                |                       |  |   |                        |   |
|                |                |                       |  |   |                        |   |
|                | List and repo  | rt any repair and m   | naintenance perform  | ned, parts replaced, etc.   | ., Leaks repaired, new | battery,                                      |
|                | carburetor, e  | xhaust system, wh     | eels changed, weldi  | ng performed, etc. Inclu  | ide any comments or    | changes since                                 |
| $\checkmark$   | the last calib | ration.               |  |   |                        |   |
|                |                |                       |  |   |                        |   |
|                |                |                       |  |   |                        |   |
|                |                |                       |  |   |                        |   |
|                |                |                       |  |   |                        |   |
|                |                |                       |  |   |                        |   |

None ME

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Ron E Peterson, Metrologist

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01/24/2024

Dwight R Johnson, Reviewer

| D                     | South I<br>Or<br>Lab: 1100 Otter Rd,<br>Office: 118 West Capit | Dakota Department of Public Safety<br>fice of Weights and Measures<br>Metrology Lab<br>Bldg D Sturgis, SD 57785 Phone: 605-3<br>ol Avenue Pierre, SD 57501 Phone: 60 | 347-7541<br>15-773-3697 |                   |
|-----------------------|--|--|-------------------------|-------------------|
|                       | CALIBR   | ATION CERTIFICATE  |                         |                   |
| Calibrated for:       | Prairie Scale Systems Unit                                     | 328  | Certificat              | te Number: MP4467 |
| Calibration Date:     | 01/24/2024   |  |                         |                   |
| Environmental conditi | ons at time of test:   |  |                         |                   |
|                       | Temperature: 21 °C   | Humidity: 46 %   | Pressure: 66            | 67 mmhg           |
| Test method u         | sed: SOP 33 Calibrations of Weig                               | ght Carts, May 2019  |                         |                   |
| Test equipment us     | ed: Recently calibrated weights                                | and a Mettler SLS510 Loa   | ad Cell with IND57      | 0 Indicator.      |
|                       | Vaisala PT301  |  |                         |                   |
| Condition of Ca       | arts: Used but in good condition                               |  |                         |                   |
|                       |  |  |                         |                   |

| Manufacturer: PSS |               |              |              | <b>SN:</b> 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 cetificate number provides documented evidence for measurement traceability.

None D

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Dwight R Johnson, Reviewer

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Ron E Peterson, Metrologist Ver 20231221

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| Þ              |   | Lab: 110<br>Office: 118                                | South Dakota Departmen<br>Office of Weights an<br>Metrology I<br>O Otter Rd, Bldg D Sturgis, SD<br>West Capitol Avenue Pierre, | t of Public Safety<br>d Measures<br>.ab<br>57785 Phone: 605-347-7541<br>SD 57501 Phone: 605-773-3697 |  | WEIGHTS &<br>MEASURES<br>STATE<br>INSPECTIONS |
|----------------|---|--|--|--|--|---|
|                |   | Inspec   | tion Checklist fo  | or Weight Cart   |  |   |
| Calibrated for | or:   | Prairie Scale System                                   | s Unit 328   | Certificate  | e number: I                                  | MP4467  |
| Calibration    | Date:   | 01/24/2024   |  |  |  |   |
|                |   |  |  |  |  |   |
| Manufacture    | er:   | Р  | SS   | Date of Manufacture  |  | Jul-13  |
| Model Numl     | ber:  | PSS 4  | k Cart   | ID/SN Number   | PSS-13-C2-4k                                 |   |
| $\checkmark$   | Nominal Mas<br>Powered by:<br>Fluid Levels:       | s of Weight Cart<br>Electric/ge<br>Engir<br>Hydrau     | 4000 lbs<br>nerator ✓<br>ne Oil  | Suitably n   | narked: Yes/No<br>Gasoline<br>Sealed: Yes/No | Yes   |
|                |   |  | Battery 🗸  |  | Sealed: Yes/No                               | Yes   |
|                |   | Liqui  | d Fuel   | Reference Line I   | Present: Yes/No                              |   |
| $\checkmark$   | Fluid drain tu                                    | bes extend beyond t                                    | he body of the cart  | : Yes/No Yes   |  |   |
| $\checkmark$   | Number of a                                       | des:   |  | 2  |  |   |
| $\checkmark$   | Number /Size                                      | e of Tires   | 18x8   | 3x12.125   |  |   |
| $\checkmark$   | Sealed wheel                                      | bearings: Yes/No                                       |  | Yes  |  |   |
| $\checkmark$   | Drain holes p                                     | resent in locations w                                  | here water may acc   | cumulate: Yes/No   | Yes  |   |
| $\checkmark$   | Weight restra                                     | aint railing permaner                                  | ntly fixed and solid:  | Yes/No   | Yes  |   |
| $\checkmark$   | Adjusting cav                                     | ity accessible: Yes/N                                  | o Yes  | Approxima  | ate capacity:(lbs)                           | 20  |
| ✓              | Adjusting cav                                     | ity sealed: Yes/No                                     | Yes  |  |  |   |
| ✓              | Service brake                                     | s functioning proper                                   | ly: Yes/No   | Yes  |  |   |
| ~              | Parking brake                                     | es functioning proper                                  | ly: Yes/No   | Yes  |  |   |
|                | Remote cont                                       | rol functioning prope                                  | erly: Yes/No   |  |  |   |
| ~              | General cond<br>tampering or                      | lition at time of calib<br>unauthorized entry          | ration (note any acc<br>of seals).   | cumulated dirt/debris, dan   | nage, loose parts,                           | or evidence of                                |
| ✓              | List and repo<br>carburetor, e<br>the last calibi | rt any repair and ma<br>xhaust system, whee<br>ration. | intenance performe<br>Ils changed, welding   | d, parts replaced, etc., Lea<br>g performed, etc. Include a  | aks repaired, new any comments or c          | battery,<br>changes since                     |
|                |   |  |  |  |  |   |

None ME

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Ron E Peterson, Metrologist

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01/24/2024

Dwight R Johnson, Reviewer

|                 |                    |                |              |                 |                      |                        | 1.75          |            |              |
|-----------------|--------------------|----------------|--------------|-----------------|----------------------|------------------------|---------------|------------|--------------|
|                 |                    |                | CA           | LIBRATION       | I CERTIF             | ICATE                  |               |            |              |
| Calibrated for: |                    | Prairie Scale  | Systems U    | nit 328         |                      |                        | Certificate   | number:    | MP4467       |
| Calibration Dat | e:                 | 01/24/2024     |              |                 |                      |                        | Purchase Ord  | er Number: | 0            |
| Environmontal   | conditions at tin  | no of tost:    |              |                 |                      |                        |               |            |              |
| Livionnenta     | conditions at this | Tommonotumo.   | 20 %         | 11              | 40.0/                | Dressures              | CCC mmha      |            |              |
| То              | st mothod usod:    | SOB & Modium   |              | librations of M | 48 %<br>acc Standard | rressure:              | tion May 2010 | <b>.</b>   |              |
| Test e          | auipment used:     | Lab standards  | traceable to | the SI. an XPE6 | 04KMC balar          | ice, and a Vaisala PTL | 1301          |            |              |
| Condi           | tion of Weights:   | Cleaned and pa | inted        |                 |                      | ,                      |               |            |              |
|                 | Artifact(s):       |                | 10 -         | 1000 lb weig    | hts                  |                        |               | Unit 328   |              |
| Nominal         |                    | Correction     | as Found     | Correction      | n as Left            | ASTM E 617 Class 6     | Uncertainty   |            | Condition    |
|                 | SN/ID              | lb             | g            | lb              | g                    | Tolerance (g)          | g             | k          | As Left      |
| 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     |
|                 |                    |                |              |                 |                      |                        |               |            |              |
|                 |                    |                |              |                 |                      |                        |               |            |              |
|                 |                    |                |              |                 |                      |                        |               |            |              |
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|                 |                    |                |              |                 |                      |                        |               |            |              |
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|                 |                    |                |              |                 |                      |                        |               |            |              |
|                 |                    |                |              |                 |                      |                        |               |            |              |
|                 |                    |                |              |                 |                      | <b> </b>               |               |            |              |
|                 |                    |                |              |                 |                      |                        |               |            |              |
|                 |                    |                |              |                 |                      |                        |               |            |              |
|                 |                    |                |              |                 |                      |                        |               |            |              |
|                 |                    | I              | I            |                 |                      | 1                      |               | 1          | 1            |

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

\* 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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Dwight R Johnson, Metrologist

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01/24/2024

Ron E Peterson, Reviewer

01/24/2024

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|-----------------|---------------------|-------------------------------|-------------------------------|------------------------|-----------------|---------------|--------------|
|                 |                     | C                             | ALIBRATION CERTIF             | ICATE                  |                 |               |              |
| Calibrated for: |                     | Prairie Scale Systems L       | Jnit 328                      |                        | Certificate     | number:       | MP4467       |
| Calibration Dat | te:                 | 01/24/2024                    |                               |                        | Purchase Ord    | er Number:    |              |
| Environmenta    | l conditions at tir | ne of test:                   |                               |                        |                 |               |              |
|                 |                     | Temperature: 22 °C            | Humidity: 45 %                | Pressure:              | 667 mmhg        |               |              |
| Те              | est method used:    | SOP 8 Medium Accuracy Ca      | alibrations of Mass Standards | by Modified Subtitutio | n, May 2019     |               |              |
| Test e          | equipment used:     | Lab standards traceable to    | the SI, Mettler XPR64003LD5   | SC, XPR5003SC, Mettler | r AX206, Vaisal | a PTU301      |              |
| Cond            | ition of Weights:   | Suitable for use. No signific | cant wear or damage           |                        |                 |               |              |
|                 | Artifact(s):        | 20                            | 50 lb weights                 |                        | SN              | 328           |              |
| Nominal         |                     | Correction as Found           | Correction as Left            | NIST Class F           | Uncertainty     | ,             | Condition    |
| 50.11           | SN/ID               | rng                           | rrig                          | Tolerance (mg)         | mg              | ĸ             | 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                         | /                             | 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                 | 22/7                          | 2                             | 2300                   | 200             | 2.03          | Adjusted     |
| 50 lb           | 045                 | 4/42                          | -8                            | 2300                   | 200             | 2.03          | Adjusted     |
| 50 lb           | 046                 | 2402                          | -8                            | 2300                   | 200             | 2.03          | Adjusted     |
| 50 lb           | 047                 | 3/9/                          | 12                            | 2300                   | 200             | 2.03          | Adjusted     |
| 50 lb           | 040                 | 2022                          | /12                           | 2300                   | 200             | 2.05          | In-Tolerance |
| 50 lb           | 049                 | 1442                          | -3                            | 2300                   | 200             | 2.03          | Aujusteu     |
| 50 lb           | 050                 | 1442                          | _3                            | 2300                   | 200             | 2.03          | Adjusted     |
| 50 lb           | 052                 | 6507                          | -3                            | 2300                   | 200             | 2.03          | Adjusted     |
| 50 lb           | 052                 | 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     |
|                 |                     |                               | -                             |                        |                 |               | .,           |
|                 |                     |                               |                               |                        |                 |               |              |
|                 |                     |                               |                               |                        |                 |               |              |
|                 | 1                   |                               |                               |                        | 1               |               |              |
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|                 |                     |                               |                               |                        |                 |               |              |
|                 | 1                   |                               |                               |                        | 1               |               |              |

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

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

Dugle R. Jonson

Non E M.

Dwight R Johnson, Metrologist

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01/24/2024

Ron E Peterson, Reviewer

|                 |                     |                               |                              |                        |                | EPar encountro | COLUMN COLUMN |
|-----------------|---------------------|-------------------------------|------------------------------|------------------------|----------------|----------------|---------------|
|                 |                     | CA                            | LIBRATION CERTIF             | ICATE                  |                |                |               |
| Calibrated for: |                     | Prairie Scale Systems U       | nit 328                      |                        | Certificate    | number:        | MP4467        |
| Calibration Dat | te:                 | 01/24/2024                    |                              |                        | Purchase Ord   | er Number:     |               |
| Environmental   | l conditions at tir | ne of test:                   |                              |                        |                |                |               |
|                 |                     | Temperature: 22 °C            | Humidity: 45 %               | Pressure:              | 667 mmhg       |                |               |
| Те              | st method used:     | SOP 8 Medium Accuracy Ca      | librations of Mass Standards | by Modified Subtitutio | n, May 2019    |                |               |
| Test e          | equipment used:     | Lab standards traceable to    | the SI, Mettler XPR64003LD5  | C, XPR5003SC, Mettler  | AX206, Vaisala | a PTU301       |               |
| Cond            | ition of Weights:   | Suitable for use. No signific | ant wear or damage           |                        |                |                |               |
|                 | Artifact(s):        | 20                            | 50 lb weights                |                        | SN             | 328            |               |
| Nominal         | an // 5             | Correction as Found           | Correction as Left           | NIST Class F           | Uncertainty    |                | Condition     |
|                 | SN/ID               | mg                            | mg                           | Tolerance (mg)         | mg             | k              | 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             | 3/8/                          | 2                            | 2300                   | 200            | 2.03           | Adjusted      |
| 50 lb           | 17889-1             | 4277                          | /                            | 2300                   | 200            | 2.03           | Adjusted      |
|                 |                     |                               |                              |                        |                |                |               |
|                 |                     |                               |                              |                        |                |                |               |
|                 |                     |                               |                              |                        |                |                |               |
|                 |                     |                               |                              |                        |                |                |               |
|                 |                     |                               |                              |                        |                |                |               |
|                 |                     |                               |                              |                        |                |                |               |
|                 |                     |                               |                              |                        |                |                |               |

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

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

Dufter. Jonson

Non E /

Dwight R Johnson, Metrologist

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01/24/2024

Ron E Peterson, Reviewer

| Ð   | South Dakota Department of Public Safety<br>Office of Weights and Measures<br>Metrology Lab<br>Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541<br>Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697   |                         |                    |                |             |         |              |  |  |  |  |  |
|---|--|-------------------------|--------------------|----------------|-------------|---------|--------------|--|--|--|--|--|
| CALIBRATION CERTIFICATE                   |  |                         |                    |                |             |         |              |  |  |  |  |  |
| Calibrated for:                           |  | Prairie Scale Systems U | nit 328            |                | Certificate | number: | MP4467       |  |  |  |  |  |
| Calibration Dat                           | te:  |                         | Purchase Orde      | er Number:     |             |         |              |  |  |  |  |  |
| Environmental conditions at time of test: |  |                         |                    |                |             |         |              |  |  |  |  |  |
| Te<br>Test e<br>Cond                      | Temperature:       22 °C       Humidity:       45 %       Pressure:       667 mmhg         Test method used:       SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019         Test equipment used:       Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301         Condition of Weights:       Suitable for use. No significant wear or damage         Actifact(c):       1 Avoirdunaic Woight(c)       SN 228 |                         |                    |                |             |         |              |  |  |  |  |  |
| Nominal                                   |  | Correction as Found     | Correction as Left | NIST Class F   | Uncertainty |         | Condition    |  |  |  |  |  |
|   | SN/ID  | mg                      | mg                 | Tolerance (mg) | mg          | k       | As Left      |  |  |  |  |  |
| 20 lb                                     | 65XC   | 565.12                  | 565.12             | 910            | 120         | 2.02    | In-Tolerance |  |  |  |  |  |
|   |  |                         |                    |                |             |         |              |  |  |  |  |  |
|   |  |                         |                    |                |             |         |              |  |  |  |  |  |
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|   |  |                         |                    |                |             |         |              |  |  |  |  |  |
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Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Dufter. Jonson

None Al

Dwight R Johnson, Metrologist

01/24/2024

Ron E Peterson, Reviewer

|                 |                     |                               |                              |                        |               | E Dat sourceasers | PROMITING PROVIDENCE |
|-----------------|---------------------|-------------------------------|------------------------------|------------------------|---------------|-------------------|----------------------|
|                 |                     | CA                            | ALIBRATION CERTIF            | ICATE                  |               |                   |                      |
| Calibrated for: |                     | Prairie Scale Systems U       | Init 328                     |                        | Certificate   | number:           | MP4467               |
| Calibration Dat | te:                 | 01/24/2024                    |                              |                        | Purchase Ord  | er Number:        |                      |
| Environmental   | l conditions at tir | me of test                    |                              |                        |               |                   |                      |
|                 |                     | Temperature: 21 °C            | Humidity: 47 %               | Pressure:              | 666 mmhg      |                   |                      |
| Те              | est method used:    | SOP 8 Medium Accuracy Ca      | librations of Mass Standards | by Modified Subtitutio | n. May 2019   |                   |                      |
| Test e          | equipment used:     | Lab standards traceable to    | the SI, Mettler XPR64003LD5  | 5C, XPR5003SC, Mettler | AX206, Vaisal | a PTU301          |                      |
| Cond            | ition of Weights:   | Suitable for use. No signific | ant wear or damage           |                        |               |                   |                      |
|                 | Artifact(s):        | 13                            | piece Metric Kit             |                        | SN            | 201652            |                      |
| Nominal         |                     | Correction as Found           | Correction as Left           | NIST Class F           | Uncertainty   |                   | Condition            |
|                 | SN/ID               | mg                            | mg                           | Tolerance (mg)         | mg            | k                 | 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         |
|                 |                     |                               |                              |                        |               |                   |                      |
|                 |                     |                               |                              |                        |               |                   |                      |
|                 |                     |                               |                              |                        |               |                   |                      |
|                 |                     |                               |                              |                        |               |                   |                      |
|                 |                     |                               |                              |                        |               |                   |                      |
|                 |                     |                               |                              |                        |               |                   |                      |
|                 |                     |                               |                              |                        |               |                   |                      |
|                 |                     |                               |                              |                        |               |                   |                      |
|                 |                     |                               |                              |                        |               |                   |                      |
|                 | <b> </b>            |                               |                              |                        |               |                   |                      |
|                 | <b> </b>            |                               |                              |                        |               |                   |                      |
|                 |                     |                               |                              |                        |               |                   |                      |
|                 | <u> </u>            |                               |                              |                        |               |                   |                      |
|                 |                     |                               |                              |                        |               |                   |                      |

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

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Dugle R. Jonson

Non E M

Dwight R Johnson, Metrologist

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01/24/2024

Ron E Peterson, Reviewer

| Ð               | Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541<br>Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697 |                               |                               |                        |                            |                    | STATE<br>SPECTIONS                     |  |
|-----------------|---|-------------------------------|-------------------------------|------------------------|----------------------------|--------------------|--|--|
|                 |   |                               | -                             |                        |                            | Ellar" en ortant o | ************************************** |  |
|                 |   | CA                            | ALIBRATION CERTIF             | ICATE                  |                            |                    |  |  |
| Calibrated for: |   | Prairie Scale Systems U       | Init 328                      |                        | Certificate number: MP4467 |                    |  |  |
| Calibration Dat | te:   | 01/24/2024                    |                               |                        | Purchase Ord               | er Number:         |  |  |
| Environmental   | l conditions at tir   | ne of test:                   |                               |                        |                            |                    |  |  |
|                 |   | Temperature: 21 °C            | Humidity: 46 %                | Pressure:              | 667 mmhg                   |                    |  |  |
| Те              | st method used:   | SOP 8 Medium Accuracy Ca      | alibrations of Mass Standards | by Modified Subtitutio | n, May 2019                |                    |  |  |
| Test e          | equipment used:   | Lab standards traceable to    | the SI, Mettler XPR64003LD5   | C, XPR5003SC, Mettler  | AX206, Vaisala             | a PTU301           |  |  |
| Cond            | ition of Weights:   | Suitable for use. No signific | ant wear or damage            |                        |                            |                    |  |  |
|                 | Artifact(s):  | 19                            | piece Avoirdupois Kit         |                        | SN                         | 5FXO               | •                                      |  |
| Nominal         |   | Correction as Found           | Correction as Left            | NIST Class F           | Uncertainty                |                    | Condition                              |  |
|                 | SN/ID   | mg                            | mg                            | Tolerance (mg)         | mg                         | k                  | As Left                                |  |
| 5 lb            | A   | 66                            | 66                            | 230                    | 20                         | 2.05               | In-Tolerance                           |  |
| 5 lb            | В   | 64                            | 64                            | 230                    | 20                         | 2.05               | In-Tolerance                           |  |
| 5 lb            | С   | 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            | В   | 21.5                          | 21.5 70                       |                        | 6.1                        | 2.05               | In-Tolerance                           |  |
| 1 lb            | С   | 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                           |  |
|                 |   |                               |                               |                        |                            |                    |  |  |
|                 |   |                               |                               |                        |                            |                    |  |  |
|                 |   |                               |                               |                        |                            |                    |  |  |
|                 |   |                               |                               |                        |                            |                    |  |  |
|                 |   |                               |                               |                        |                            |                    |  |  |
|                 |   |                               |                               |                        |                            |                    |  |  |
|                 |   |                               |                               |                        |                            |                    |  |  |
|                 |   |                               |                               |                        |                            |                    |  |  |
|                 |   |                               |                               |                        |                            |                    |  |  |

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

Non E M.

Dufter. Joneon

Ron E Peterson, Metrologist

01/24/2024

Dwight R Johnson, Reviewer



prevention - protection - enforcement

# Office of Weights and Measures

### Metrology Laboratory

Office: 118 West Capitol Avenue, Pierre, SD 57501

Lab: 1100 Otter Rd, Bldg D, Sturgis, SD 57785

Lab: 605-347-7541, Office: 605-773-3697, Cell: 605-280-4572

Email: ron.peterson@state.sd.us https://dps.sd.gov/inspections/weights-measures

# **CALIBRATION CERTIFICATE**

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

701-281-9373

SA# 131 **Billing Address:** 

9860 Industrial Drive

Horace, ND 58047

Certificate number: MP4338

9860 Industrial Drive

Horace, ND 58047

**Cooper Anderson** Contact:

Phone:

01/09/2023

Certificate Issued:

Received Date:

01/10/2023

| Quantity | Artifact             | Total Pieces | Recvd in Tol | Adjusted | Rejected | As Left<br>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                      |

**Artifacts Submitted and Summary of Results:** 

Uncertainty Statement: The combined standard uncertainty includes the standard uncertainty reported for the standard and the standard uncertainty for the measurement process. The combined standard uncertainty is multiplied by a coverage factor k to provide an expanded uncertainty which defines an interval having a level of confidence of approximately 95 percent. The expanded uncertainty presented in this report is consistent with the 2008 ISO/IEC Guide to the Expression of Uncertainty in Measurement. The expanded uncertainty is not to be confused with a tolerance limit for the user during application. For weight carts, factors included on the inspection checklist have not been included in the calibration uncertainty. However, factors on the checklist may contribute measurement errors that are significant if not properly maintained during use.

#### **Conformity Statement:**

The artifacts submitted for this calibration are calibrated to NIST Handbook 105-1 (1990 or 2019), NIST Handbook 105-8 (2019), NIST Handbook 105-3 (2010), or ASTM E617 (2018), Standard Specification for Laboratory Weights and Precision Mass Standards specifications. The reported test values relate only to the observations made at the time and conditions of the test. Artifacts fully comply with all requirements (both specifications and tolerances) of the applicable documentary standard unless otherwise stated. Stated expanded uncertainties are less than one-third of the specified tolerances (maximum permissible errors, m.p.e.) for mass calibrations and less than the specified tolerances for volume calibrations. The correction value plus or minus the expanded uncertainty is within the stated tolerances. It is the decision rule of the SD State Metrology Laboratory that any cast weights determined to have a correction within 66 % of the upper tolerance or 50 % of the lower tolerance will be adjusted closer to zero mass correction, even if the mass correction originally met the applicable tolerance.

### **Traceability Statement:**

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

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

01/10/2023

Ron E Peterson, Metrologist

Deftek Johnson

01/10/2023

Dwight R Johnson, Reviewer

| D                          | South<br>Lab: 1100 Otter R<br>Office: 118 West Caj | Dakota Department of Public Safety<br>Office of Weights and Measures<br>Metrology Lab<br>d, Bldg D Sturgis, SD 57785 Phone: 605-347-7541<br>oitol Avenue Pierre, SD 57501 Phone: 605-773-369 | T                          |
|----------------------------|--|--|----------------------------|
|                            | CALIBR   | ATION CERTIFICATE  |                            |
| Calibrated for:            | Prairie Scale System INC (U                        | nit 349)   | Certificate Number: MP4338 |
| Calibration Date:          | 01/10/2023   |  |                            |
| Environmental conditions a | t time of test:                                    |  |                            |
|                            | Temperature: 22.3 °C                               | Humidity: 45.3 %   | Pressure: 661.1 mmhg       |
| Test method used:          | SOP 33 Calibrations of Weig                        | ht Carts, May 2019   |                            |
| Test equipment used:       | Recently calibrated weights                        | and a Mettler SLS510 Load Cell wi  | th IND570 Indicator.       |
|                            | Vaisala PT301                                      |  |                            |

Condition of Carts: Used but in good condition

# Manufacturer: PSS

| Manufacturer: PSS |               |              | <b>SN:</b> 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:

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

### **Conformity Assessment:**

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

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

01/10/2023 NonE

Ron E Peterson, Metrologist

| Þ                                |  |   | South Dakota<br>Office of<br>Lab: 1500 N Garfield –<br>Office: 118 West Ca<br>I | Department of Pu<br>Weights and Mea<br>Metrology Lab<br>E. Truck Bypass Pl<br>bitol Avenue Phor<br>Pierre SD 57501 | blic Safety<br>sures<br>none: 605-773-31<br>ne: 605-773-3697 | 70                       | ALL CONTRACT                           | WEIGHTS &<br>MEASURES<br>STATE<br>INSPECTIONS |
|----------------------------------|--|---|---|--|--|--------------------------|--|---|
|                                  |  | Ins                                     | pection Chec  | klist for W  | eight Car  | t                        |  |   |
| Calibrated for<br>Calibration Da | r:<br>ate:                                   | Prairie Scale Syst<br>01/10/2023        | em INC (Unit 34   | 9)   |  | Certificate              | number:                                | MP4338  |
| Manufacture                      | r:   |   | PSS   | D  | ate of Manu  | Ifacture                 |  | 199   |
| Model Numb                       | Model Number:                                |   | 4k  |  | ID/SN Number   |                          | PSS-95-C1-4k                           |   |
| ✓<br>✓<br>✓                      | Nominal Mass<br>Powered by:<br>Fluid Levels: | s of Weight Cart<br>Electr<br>E         | 40<br>ic/generator<br>ngine Oil   | 00 lbs<br>✓  | Diesel   | Suitably m               | arked: Yes/No<br>Gasoline              | Yes   |
|                                  |  | Ну                                      | draulic Fluid   |  |  |                          | Sealed: Yes/No                         |   |
|                                  |  | L                                       | Battery<br>iquid Fuel   | ✓  | Refe   | erence Line              | Sealed: Yes/No<br>Present: Yes/No      | Yes   |
| $\checkmark$                     | Fluid drain tul                              | bes extend beyon                        | d the body of the   | e cart: Yes/N  | 0  | Yes                      |  |   |
| $\checkmark$                     | Number of ax                                 | les:                                    |   | 2  |  |                          |  |   |
| $\checkmark$                     | Number /Size                                 | of Tires                                |   | 16.25x5x   | 11.25  |                          |  |   |
| $\checkmark$                     | Sealed wheel                                 | bearings: Yes/No                        |   | Yes  |  |                          |  | -   |
| $\checkmark$                     | Drain holes pr                               | resent in location                      | s where water m   | ay accumula  | te: Yes/No   |                          | Yes                                    |   |
| $\checkmark$                     | Weight restra                                | int railing permai                      | nently fixed and s  | solid: Yes/N   | 0  |                          | Yes                                    |   |
| $\checkmark$                     | Adjusting cavi                               | ity accessible: Yes                     | s/No  | Yes  |  | Approxim                 | ate capacity:(lbs)                     | 2   |
| $\checkmark$                     | Adjusting cavi                               | ity sealed: Yes/No                      | )   | Yes  |  |                          |  |   |
| ✓                                | Service brakes                               | s functioning pro                       | perly: Yes/No   |  | Yes  |                          |  |   |
| $\checkmark$                     | Parking brake                                | s functioning pro                       | perly: Yes/No   | _  | Yes  |                          |  |   |
|                                  | Remote contr                                 | ol functioning pro                      | operly: Yes/No  |  |  |                          |  |   |
| $\checkmark$                     | General condi<br>tampering or                | ition at time of ca<br>unauthorized ent | llibration (note a<br>ry of seals).   | ny accumula  | ted dirt/deb   | oris, damag              | e, loose parts, or                     | evidence of                                   |
| ~                                | List and repor                               | rt any repair and i<br>m, wheels change | naintenance per<br>ed, welding perfc  | formed, par  | s replaced,<br>nclude any c                                  | etc., Leaks<br>omments c | repaired, new ba<br>or changes since t | ttery, carburetor<br>he last calibratio       |

None the 5 01/10/2023

Ron Peterson, Metrologist

|                          | Se<br>Lab: 1100 Ott<br>Office: 118 Wes      | outh Dakota Department of Public Safety<br>Office of Weights and Measures<br>Metrology Lab<br>ver Rd, Bldg D Sturgis, SD 57785 Phone: 605-347-7541<br>t Capitol Avenue Pierre, SD 57501 Phone: 605-773-369: | WEIGHTS A<br>MEASURES<br>STATE<br>INSPECTIONS |
|--------------------------|---|---|---|
|                          | CALI  | BRATION 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         | d: SOP 33 Calibrations of W                 | eight Carts, May 2019   |   |
| Test equipment used      | : Recently calibrated weig<br>Vaisala PT301 | hts and a Mettler SLS510 Load Cell wi   | th IND570 Indicator.                          |

Condition of Carts: Used but in good condition

# Manufacturer: PSS

| Manufacturer: PSS |               |              | <b>SN:</b> 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 MONE /

Ron E Peterson, Metrologist

| 12           |                                      | Sou<br>Lab: 1500 N<br>Office: 12 | uth Dakota Department<br>Office of Weights and<br>Metrology La<br>Garfield – E. Truck Bypa<br>L8 West Capitol Avenue<br>Pierre SD 575 | of Public Safety<br>I Measures<br>ab<br>ss Phone: 605-773-3170<br>Phone: 605-773-3697<br>01 | TETER DWATE              | MERGINTS &<br>MERGINTS &<br>STATE<br>STATE<br>SEPTIMES |  |  |  |  |  |
|--------------|--------------------------------------|----------------------------------|---|---|--------------------------|--|--|--|--|--|--|
|              | Inspection Checklist for Weight Cart |                                  |   |   |                          |  |  |  |  |  |  |
| Calibrated f | or:                                  | Prairie Scale System INC (       | Unit 349)   | Certi   | ificate number:          | MP4338   |  |  |  |  |  |
| Calibration  | Date:                                | 01/10/2023                       |   |   |                          |  |  |  |  |  |  |
|              |                                      |                                  |   |   |                          |  |  |  |  |  |  |
| Manufactur   | er:                                  | PSS                              |   | Date of Manufactu   | ıre                      | 1995   |  |  |  |  |  |
| Model Num    | ber:                                 | 4k                               |   | ID/SN Number  | PSS-95-C2-4k             |  |  |  |  |  |  |
|              |                                      |                                  |   |   |                          |  |  |  |  |  |  |
| $\checkmark$ | Nominal Mas                          | ss of Weight Cart                | 4000 lbs  | Suita   | bly marked: Yes/No       | Yes  |  |  |  |  |  |
| $\checkmark$ | Powered by:                          | Electric/genera                  | tor 🗸   | Diesel  | Gasoline                 |  |  |  |  |  |  |
| $\checkmark$ | Fluid Levels:                        | Engine Oil                       |   |   |                          |  |  |  |  |  |  |
| ļ            | _1                                   | Hydraulic Fl                     | uid   | -   | Sealed: Yes/No           |  |  |  |  |  |  |
|              |                                      | ,<br>Batt                        | erv 🗸   | _   | Sealed: Yes/No           | Yes  |  |  |  |  |  |
|              |                                      | Liquid Fue                       | , '   |   | e Line Present: Yes/No   |  |  |  |  |  |  |
| $\checkmark$ | Fluid drain tu                       | bes extend beyond the bo         | dv of the cart: Ye  | es/No   | Yes                      |  |  |  |  |  |  |
| $\checkmark$ | Number of a                          | xles:                            |   | 2   |                          |  |  |  |  |  |  |
| $\checkmark$ | Number /Size                         | of Tires                         | 16.25   | <br>x5x11.25  |                          |  |  |  |  |  |  |
| $\checkmark$ | Sealed wheel                         | bearings: Yes/No                 | 10.23   | Yes   |                          |  |  |  |  |  |  |
| √            | Drain holes n                        | resent in locations where w      | vater may accur   | nulate: Yes/No  | Yes                      |  |  |  |  |  |  |
| $\checkmark$ | Weight restra                        | aint railing permanently fixe    | ed and solid. Ye  | s/No  | Yes                      |  |  |  |  |  |  |
| $\checkmark$ | Adjusting cav                        | vity accessible: Yes/No          | Yes   | Ann   | roximate canacity:(lbs)  | 20   |  |  |  |  |  |
| ~            | Adjusting cav                        | vity sealed: Yes/No              | Yes   |   |                          |  |  |  |  |  |  |
| $\checkmark$ | Service brake                        | es functioning properly. Yes     | /No   | Yes   |                          |  |  |  |  |  |  |
| $\checkmark$ | Parking brake                        | es functioning properly: Yes     | s/No  | Yes   |                          |  |  |  |  |  |  |
|              | Remote cont                          | rol functioning property: Ye     | s/No  | 103   |                          |  |  |  |  |  |  |
|              |                                      | for functioning property. To     |   |   |                          |  |  |  |  |  |  |
|              | General cond                         | lition at time of calibration    | (note any accun   | nulated dirt/debris. d  | amage. loose parts, or e | vidence of   |  |  |  |  |  |
| $\checkmark$ | tampering or                         | unauthorized entry of seal       | s).   |   |                          |  |  |  |  |  |  |
|              |                                      |                                  |   |   |                          |  |  |  |  |  |  |
|              |                                      |                                  |   |   |                          |  |  |  |  |  |  |
|              | List and repo                        | rt any repair and maintena       | nce performed,  | parts replaced, etc., I   | eaks repaired, new batt  | ery, carburetor,                                       |  |  |  |  |  |
|              | exhaust syste                        | em, wheels changed, weldir       | ng performed, et  | tc. Include any comm  | ents or changes since th | e last calibration.                                    |  |  |  |  |  |
| $\checkmark$ |                                      |                                  |   |   |                          |  |  |  |  |  |  |
|              |                                      |                                  |   |   |                          |  |  |  |  |  |  |
|              |                                      |                                  |   |   |                          |  |  |  |  |  |  |
|              |                                      |                                  |   |   |                          |  |  |  |  |  |  |
|              |                                      |                                  |   |   |                          |  |  |  |  |  |  |
| 1            | 17-                                  |                                  |   |   |                          |  |  |  |  |  |  |
| Non E /      | ".L)                                 | 01/10/2023                       |   |   |                          |  |  |  |  |  |  |

Ron Peterson, Metrologist

| 1  |                   | WEIGHTS &<br>WEIGHTS &<br>MEASURES<br>STATE<br>INSPECTIONS |            |            |           |              |                |            |                      |
|--|-------------------|--|------------|------------|-----------|--------------|----------------|------------|----------------------|
|  |                   |  | CA         | LIBRATIO   | N CERTIFI | CATE         |                |            |                      |
| Calibrated for:  |                   | Prairie Scale  | System INC | (Unit 349) |           |              | Certificate    | number:    | MP4338               |
| Calibration Dat  | e:                | 01/10/2023   |            |            |           |              | Purchase Orde  | er Number: | 0                    |
| Environmental  | conditions at tim | e 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 Subtitution, May 2019         Test equipment used:       Lab standards traceable to the SI, an XPE604KMC balance, and a Vaisala PTU301         Condition of Weights:       Cleaned and painted         Artifact(s):       10 -       1000 lb weights |                   |  |            |            |           |              |                |            |                      |
| Nominal  | SN/ID             | Correction a   | as Found   | Correctio  | n as Left | NIST Class F | Uncertainty    | k          | Condition<br>As Left |
| 1000 lb  | 1k-03             | -0.04  | ع<br>171   | -0.04      | _17 1     |              | <u></u><br>4 х | 2 02       | In-Tolerance         |
| 1000 lb  | 1k-04             | 0.04   | 5.7        | 0.04       | 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         |
|  |                   |  |            |            |           |              |                |            |                      |
|  |                   |  |            |            |           |              |                |            |                      |
|  |                   |  |            |            |           |              |                |            |                      |
|  |                   |  |            |            |           |              |                |            |                      |
|  |                   |  |            |            |           |              |                |            |                      |
|  |                   |  |            |            |           |              |                |            |                      |
|  |                   |  |            |            |           |              |                |            |                      |
|  |                   |  |            |            |           |              |                |            |                      |
|  |                   |  |            |            |           |              |                |            |                      |
|  |                   |  |            |            |           |              |                |            |                      |
|  |                   |  |            |            |           |              |                |            |                      |
|  |                   |  |            |            |           |              |                |            |                      |
|  |                   |  |            |            |           |              |                |            |                      |
|  |                   |  |            |            |           |              |                |            |                      |
|  |                   |  |            |            |           |              |                |            |                      |
|  |                   |  |            |            |           |              |                |            |                      |
|  |                   |  |            |            |           |              |                |            |                      |
|  |                   |  |            |            | 1         |              |                |            |                      |
|  |                   |  | 1          |            | ļ         | ļ            | ļ              |            |                      |

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.

Non E M )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

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

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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

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

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1/10/2023

Ron E Peterson, Metrologist Ver 20220919

| Office of Weights and Measures<br>Metrology Lab         Lab: 1100 Otter Rd, Bidg. D Sturgis, SD 57785 Phone: 605-347-7541<br>Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697         Calibrated for:       Prairie Scale System INC (Unit 349)         Calibrated for:       01/10/2023         Calibration Date:       01/10/2023         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 Subtitution, May 2019         Test equipment used:       Lab standards traceable to the SI, Mettler XPR5003SC, Mettler XPR226CDR, Mettler AX206, Vaisala PTU301 |                                  |                     |                    |                |             |               |              |  |  |  |
|---|----------------------------------|---------------------|--------------------|----------------|-------------|---------------|--------------|--|--|--|
| Cond  | ition of Weights:<br>Artifact(s) | Cleaned and painted | 20 lb weight       |                |             | isala r 1030. | T            |  |  |  |
| Nominal   |                                  | Correction as Found | Correction as Left | NIST Class F   | Uncertaintv |               | Condition    |  |  |  |
|   | SN/ID                            | mg                  | mg                 | Tolerance (mg) | mg          | k             | As Left      |  |  |  |
| 20 lb   | 17904-1                          | 374                 | 374                | 910            | 110         | 2.20          | In-Tolerance |  |  |  |
|   |                                  |                     |                    |                |             |               |              |  |  |  |
|   |                                  |                     |                    |                |             |               |              |  |  |  |
|   |                                  |                     |                    |                |             |               |              |  |  |  |

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.

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

\* 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.

1/10/2023

Ron E Peterson, Metrologist Ver 20220919

| Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697 |                   |                                      |                              |                         |                 | INSPECTIONS |              |  |
|--|-------------------|--------------------------------------|------------------------------|-------------------------|-----------------|-------------|--------------|--|
|  |                   |                                      | 1974                         |                         |                 |             |              |  |
|  |                   | C/                                   | ALIBRATION CERTIF            | ICATE                   |                 |             |              |  |
| alibrated for:   |                   | Prairie Scale System INC             | C (Unit 349)                 |                         | Certificate     | number:     | MP4338       |  |
| alibration Date  | 2:                | 01/10/2023                           |                              |                         | Purchase Ord    | er Number   | 0            |  |
| nvironmental o   | conditions at tir | ne of test:                          |                              |                         |                 |             |              |  |
|  |                   | Temperature: 20.8 °C                 | Humidity: 46 %               | Pressure:               | 661.6 mmhg      |             |              |  |
| Tes  | t method used:    | SOP 8 Medium Accuracy Ca             | librations of Mass Standards | by Modified Subtitution | n, May 2019     |             |              |  |
| Test e   | quipment used:    | : Lab standards traceable to         | the SI, Mettler XPR5003SC, N | lettler XPR226CDR, Me   | ttler AX206, Va | aisala PTU3 | 01           |  |
| Condit   | tion of Weights   | : Suitable for use. No signification | ant wear or damage           |                         |                 |             |              |  |
| Naminal  | Artifact(s):      | 21                                   | piece Avoirdupois Kit        |                         | Lin oontointu   |             |              |  |
| Nominal  |                   | Correction as Found                  | Correction as Left           |                         | Uncertainty     | k           | Condition    |  |
| 5 lb   | 1                 | 105                                  | //Q                          | 220                     | 20              | 2.07        | As Left      |  |
|  | ۱<br>۵            | 49                                   | 49                           | 230                     | 20              | 2.07        |              |  |
| 5 Ib   | 2                 | 27                                   | 27                           | 230                     | 20              | 2.07        | In-Tolerance |  |
| 5 lb   | 3                 | 37                                   | 37                           | 230                     | 20              | 2.07        |              |  |
| 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 |  |
|  |                   |                                      |                              |                         |                 |             | <u> </u>     |  |
|  |                   |                                      |                              |                         |                 |             | <b> </b>     |  |
|  |                   |                                      |                              |                         |                 |             |              |  |
|  |                   |                                      |                              |                         |                 |             |              |  |
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|  |                   |                                      |                              |                         |                 |             |              |  |
|  |                   |                                      |                              |                         |                 |             | 1            |  |

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

\* 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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prevention - protection - enforcement

# Office of Weights and Measures

### **Metrology Laboratory**

Office: 118 West Capitol Avenue, Pierre, SD 57501

Lab: 1100 Otter Rd, Bldg D, Sturgis, SD 57785

Lab: 605-347-7541, Office: 605-773-3697, Cell: 605-280-4572

Email: ron.peterson@state.sd.us https://dps.sd.gov/inspections/weights-measures

# **CALIBRATION CERTIFICATE**

Prairie Scale Unit 369

SA# **131** Billing Address:

9860 Industrial Drive

Certificate number: N

MP4461

Acloft

Physical Address:

9860 Industrial Drive

Horace, ND 58047

Horace, ND 58047

Contact: Cooper Anderson

Phone: **701-281-9373** 

 Received Date:
 01/16/2024

 Certificate Issued:
 01/16/2024

**Artifacts Submitted and Summary of Results:** 

| Quantity | Artifact               | Total Pieces | Recvd in Tol | Adjusted | Rejected | 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 factork to provide an expanded uncertainty which defines an interval having a level of confidence of approximately 95 percent. The expanded uncertainty presented in this report is consistent with the 2008 ISO/IEC Guide to the Expression of Uncertainty in Measurement. The expanded uncertainty is not tobe confused with a tolerance limit for the user during application. For weight carts, factors included on the inspection checklist have not been included in the calibration uncertainty. However, factors on the checklist may contribute measurement errors that are significant if not properly maintained during use.

### **Conformity Statement:**

The artifacts submitted for this calibration are calibrated to NIST Handbook 105-1 (1990 or 2019), NIST Handbook 105-8 (2019), NIST Handbook 105-3 (2010), or ASTM E617 (2018), Standard Specification for Laboratory Weights and Precision Mass Standards specifications. The reported test values relate only to the observations made at the time and conditions of the test. Artifacts fully comply with all requirements (both specifications and tolerances) of the applicable documentary standard unless otherwise stated. Stated expanded uncertainties for volume calibrations. The correction value plus or minus the expanded uncertainty is within the stated tolerances. It is the decision rule of the SD State Metrology Laboratory that any cast weights determined to have a correction within 66 % of the upper tolerance or 50 % of thelower tolerance will be adjusted closer to zero mass correction, even if the mass correction originally met the applicable tolerance.

### **Traceability Statement:**

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

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

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Ron E Peterson, Metrologist

01/16/2024

Dwight R Johnson, Reviewer 01/16/2024

|                          | South Da<br>Offic<br>Lab: 1100 Otter Rd, B<br>Office: 118 West Capitol | kota Department of Public Safety<br>ce of Weights and Measures<br>Metrology Lab<br>ildg D Sturgis, SD 57785 Phone: 605-347-7541<br>I Avenue Pierre, SD 57501 Phone: 605-773-36 | 597                        |
|--------------------------|--|--|----------------------------|
|                          | CALIBRA  | TION CERTIFICATE   |                            |
| Calibrated for:          | Prairie Scale Unit 369   |  | Certificate Number: MP4461 |
| Calibration Date:        | 01/17/2024   |  |                            |
| Environmental conditions | at time of test:   |  | Descurse, CCC 28 mmbr      |
|                          | remperature: 20.34 C   | <b>numiaity:</b> 55.07 %   | Pressure: 000.38 mmng      |
| Test method used:        | SOP 33 Calibrations of Weigh   | nt 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 cetificate number provides documented evidence for measurement traceability.

None II Ron E Peterson, Metrologist

Ver 20231221

01/17/2024

Dwight R Johnson, Reviewer

Dugak. Joneon

|                               | South Dakota Depart<br>Office of Weigh<br>Metrol<br>Lab: 1100 Otter Rd, Bldg D Sturgi<br>Office: 118 West Capitol Avenue Pie | tment of Public Safety<br>its and Measures<br>logy Lab<br>is, SD 57785 Phone: 605-347-7541<br>erre, SD 57501 Phone: 605-773-3697 | WEIGHTS &<br>WEIGHTS &<br>WEIGHTS &<br>WEIGHTS &<br>STATE<br>INSPECTIONS |
|-------------------------------|--|--|--|
|                               | 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   |
|                               |  |  |  |
| V Nominal Ma                  | ass of Weight Cart 4000 II   | bs Suitably m  | arked: Yes/No Yes  |
| ✓ Powered by                  | r: Electric/generator ✓  | Diesel   | Gasoline   |
| ✓ Fluid Levels                | : Engine Oil   |  |  |
|                               | Hydraulic Fluid  |  | Sealed: Yes/No   |
|                               | Battery 🗸  |  | Sealed: Yes/No Yes   |
|                               | Liquid Fuel  | Reference Line P   | Present: Yes/No  |
| ✓ Fluid drain t               | tubes extend beyond the body of the c  | cart: Yes/No Yes   |  |
| ✓ Number of a                 | axles:   | 2  |  |
| ✓ Number /Siz                 | ze of Tires 16   | 1/8x5x11 1/4   |  |
| ✓ Sealed whee                 | el bearings: Yes/No  | Yes  |  |
| ✓ Drain holes                 | present in locations where water may   | accumulate: Yes/No   | Yes  |
| ✓ Weight rest                 | raint railing permanently fixed and sol  | id: Yes/No   | Yes  |
| ✓ Adjusting ca                | avity accessible: Yes/No Yes   | S Approxima  | te capacity:(Ibs) 25   |
| ✓ Adjusting ca                | avity sealed: Yes/No Yes   | S  |  |
| ✓ Service brak                | kes functioning properly: Yes/No   | Yes  |  |
| ✓ Parking bral                | kes functioning properly: Yes/No   | Yes  |  |
| Remote con                    | itrol functioning properly: Yes/No   |  |  |
| General con<br>✓ tampering c  | ndition at time of calibration (note any<br>or unauthorized entry of seals).   | accumulated dirt/debris, dam   | nage, loose parts, or evidence of  |
|                               |  |  |  |
|                               |  |  |  |
| List and rep                  | ort any repair and maintenance perfor  | rmed, parts replaced, etc., Lea  | ks repaired, new battery,  |
| carburetor, $$ the last calil | exhaust system, wheels changed, weld<br>bration.   | ding performed, etc. Include a   | ny comments or changes since   |
|                               |  |  |  |
|                               |  |  |  |
|                               |  |  |  |
|                               |  |  |  |
|                               |  |  |  |

None ME

Ver 20231221

Darfter, Joneon

Ron E Peterson, Metrologist

Ver

01/17/2024

Dwight R Johnson, Reviewer

| D                        | South Dak<br>Offic<br>Lab: 1100 Otter Rd, Blu<br>Office: 118 West Capitol | ota Department of Public Safety<br>e of Weights and Measures<br>Metrology Lab<br>dg D Sturgis, SD 57785 Phone: 605-347-7541<br>Avenue Pierre, SD 57501 Phone: 605-773-3 |                            |
|--------------------------|---|---|----------------------------|
|                          | CALIBRAT  | TION 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 Weigh  | t Carts, May 2019   |                            |
| Test equipment used:     | Recently calibrated weights a   | and a Mettler SLS510 Load Cel   | l 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 cetificate number provides documented evidence for measurement traceability.

None II Ron E Peterson, Metrologist

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01/17/2024

Dwight R Johnson, Reviewer

| Þ                                |  | So<br>Lab: 1100 Otte<br>Office: 118 West   | outh Dakota Department<br>Office of Weights and<br>Metrology La<br>er Rd, Bldg D Sturgis, SD S<br>Capitol Avenue Pierre, S | of Public Safety<br>Measures<br>ib<br>i7785 Phone: 605-347-7541<br>D 57501 Phone: 605-773-3697 |   |                           |
|----------------------------------|--|--|--|--|---|---------------------------|
|                                  |  | Inspection   | n Checklist fo   | r Weight Cart  |   |                           |
| Calibrated fo                    | r:   | Prairie Scale Unit 369   |  | Certificat   | te number:  | MP4461                    |
| Calibration D                    | ate:   | 01/17/2024   |  |  |   |                           |
|                                  |  |  |  |  |   |                           |
| Manufacture                      | r:   | PSS  |  | Date of Manufacture  |   | 42370                     |
| Model Numb                       | er:  | PSS-4k   | κ.   | ID/SN Number   | PSS-16-C2-4k  |                           |
|                                  | Nominal Mas<br>Powered by:<br>Fluid Levels:<br>Fluid drain tu<br>Number of av<br>Number /Size<br>Sealed wheel<br>Drain holes p | s of Weight Cart<br>Electric/genera<br>Engine O<br>Hydraulic F<br>Batt<br>Liquid Fu<br>bes extend beyond the b<br>des:<br>of Tires<br>bearings: Yes/No<br>resent in locations wher | 4000 lbs<br>ator ✓<br>il<br>luid<br>tery ✓<br>el<br>body of the cart:<br>16 1/8:   | Suitably<br>Diesel<br>Reference Line<br>Yes/No Yes<br>2<br>x5x11 1/4<br>(es                    | marked: Yes/No<br>Gasoline<br>Sealed: Yes/No<br>Sealed: Yes/No<br>Present: Yes/No | Yes                       |
|                                  | Weight restra<br>Adjusting cav<br>Adjusting cav<br>Service brake<br>Parking brake<br>Remote cont<br>General cond               | aint railing permanently f<br>ity accessible: Yes/No<br>ity sealed: Yes/No<br>is functioning properly: Y<br>rol functioning properly:<br>Ition at time of calibratio               | fixed and solid: Yes<br>Yes<br>Yes/No<br>Yes/No<br>Yes/No<br>on (note any acc  | Yes/No<br>Approxim<br>Yes<br>Yes<br>umulated dirt/debris, da                                   | Yes<br>nate capacity:(lbs)<br>mage, loose parts,                                  | 25<br>or evidence of      |
| <ul> <li>✓</li> <li>✓</li> </ul> | tampering or<br>List and repo<br>carburetor, e<br>the last calibi  | unauthorized entry of se<br>rt any repair and mainte<br>xhaust system, wheels cl<br>ration.  | eals).<br>nance performed<br>hanged, welding   | d, parts replaced, etc., Le<br>performed, etc. Include   | eaks repaired, new<br>any comments or o   | battery,<br>changes since |

None ME

Darfter, Joneon

Ron E Peterson, Metrologist

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Ver 20231221

01/17/2024

Dwight R Johnson, Reviewer

|                 | CALIBRATION CERTIFICATE |                |              |                  |              |                        |               |            |           |
|-----------------|-------------------------|----------------|--------------|------------------|--------------|------------------------|---------------|------------|-----------|
| Calibrated for: |                         | Prairie Scale  | Unit 369     |                  |              |                        | Certificate   | number:    | MP4461    |
| Calibration Dat | ie:                     | 01/17/2024     |              |                  |              |                        | Purchase Orde | er Number: | 0         |
| Environmental   | conditions at tin       | ne of test:    |              |                  |              |                        |               |            |           |
|                 |                         | Temperature:   | 19.5 °C      | Humidity:        | 48 %         | Pressure:              | 660.3 mmhg    |            |           |
| Te              | st method used:         | SOP 8 Medium   | Accuracy Ca  | librations of Ma | ass Standard | s by Modified Subtitu  | tion May 2019 | )          |           |
| Test e          | auipment used:          | Lab standards  | traceable to | the SI. an XPE6  | 04KMC balar  | nce, and a Vaisala PTU | 301           |            |           |
| Condi           | ition of Weights:       | Cleaned and pa | inted        | ,                |              | ,                      |               |            |           |
|                 | Artifact(s):            |                | 10 -         | 1000 lb weig     | hts          |                        |               |            |           |
| Nominal         |                         | Correction a   | as Found     | Correction       | n as Left    | ASTM E 617 Class 6     | Uncertainty   |            | Condition |
|                 | SN/ID                   | lb             | g            | lb               | g            | Tolerance (g)          | g             | k          | As Left   |
| 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  |
|                 |                         |                |              |                  |              |                        |               |            |           |
|                 |                         |                |              |                  |              |                        |               |            |           |
|                 |                         |                |              |                  |              |                        |               |            |           |
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|                 |                         |                |              |                  |              |                        |               |            |           |
|                 |                         |                |              |                  |              |                        |               |            |           |
|                 |                         |                |              |                  |              |                        |               |            |           |

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

\* 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

Dufter, Joneon

Dwight R Johnson, Metrologist

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01/17/2024

Ron E Peterson, Reviewer

01/17/2024

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| Ð  | Office of Weights and Measures<br>Metrology Lab<br>Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541<br>Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697 |                                |                              |                         |                |            |              |  |  |
|--|--|--------------------------------|------------------------------|-------------------------|----------------|------------|--------------|--|--|
|  | CALIBRATION CERTIFICATE  |                                |                              |                         |                |            |              |  |  |
| Calibrated for:  |  | Prairie Scale Unit 369         |                              |                         | Certificate    | number:    | MP4461       |  |  |
| Calibration Dat  | te:  | 01/17/2024                     |                              |                         | Purchase Orde  | er Number: |              |  |  |
| Environmental conditions at time of test:  |  |                                |                              |                         |                |            |              |  |  |
| $\mathbf{T}_{\mathbf{r}} = \mathbf{T}_{\mathbf{r}} = \mathbf{T}_{\mathbf{r}} + \mathbf{T}_{\mathbf{r}} = \mathbf{T}_{\mathbf{r}} + \mathbf{T}_{\mathbf{r}} = \mathbf{T}_{\mathbf{r}} + $ |  |                                |                              |                         |                |            |              |  |  |
| Те   | st method used:  | SOP 8 Medium Accuracy Ca       | librations of Mass Standards | by Modified Subtitution | n. May 2019    |            |              |  |  |
| Test e   | equipment used:  | Lab standards traceable to     | the SI, Mettler XPR64003LD5  | C, XPR5003SC, Mettler   | AX206, Vaisala | a PTU301   |              |  |  |
| Condi  | ition of Weights:  | Suitable for use. No significa | ant wear or damage           |                         |                |            |              |  |  |
|  | Artifact(s):   | 20                             | 50 lb weights                |                         | SN             | 369        |              |  |  |
| Nominal  |  | Correction as Found            | Correction as Left           | NIST Class F            | Uncertainty    |            | Condition    |  |  |
|  | SN/ID  | mg                             | mg                           | Tolerance (mg)          | mg             | k          | 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   | 6//                            | 6//                          | 2300                    | 200            | 2.03       | In-Tolerance |  |  |
| 50 lb  | 66AP   | 4237                           | 12                           | 2300                    | 200            | 2.03       | Adjusted     |  |  |
|  | 664C   | -4333                          | <u> </u>                     | 2300                    | 200            | 2.03       | Adjusted     |  |  |
| 5U ID  | DDAS   | 102                            | 102                          | 2300                    | 200            | 2.03       | in-Iolerance |  |  |
|  |  |                                |                              |                         |                |            |              |  |  |
|  |  |                                |                              |                         |                |            |              |  |  |
|  |  |                                |                              |                         |                |            |              |  |  |
|  |  |                                |                              |                         |                |            |              |  |  |
|  |  |                                |                              |                         |                |            |              |  |  |
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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

None Al

Dufter. Joneon

Ron E Peterson, Metrologist

01/17/2024

Dwight R Johnson, Reviewer

| Ð  | ~   | Lab: 1100 O<br>Office: 118 We  | South Dakota Department of Public<br>Office of Weights and Measure<br>Metrology Lab<br>tter Rd, Bldg. D Sturgis, SD 57785 Ph<br>st Capitol Avenue Pierre, SD 57501 | satety<br>s<br>one: 605-347-7541<br>Phone: 605-773-3697 |                |            | WEIGHTS &<br>MEASURES<br>STATE<br>SPECTIONS |  |  |
|--|---|--------------------------------|--|---|----------------|------------|---|--|--|
| CALIBRATION CERTIFICATE                  |   |                                |  |   |                |            |   |  |  |
| Calibrated for:                          |   | Prairie Scale Unit 369         |  |   | Certificate    | number:    | MP4461                                      |  |  |
| Calibration Dat                          | ie:   | 01/17/2024                     |  |   | Purchase Orde  | er Number: |   |  |  |
| Environmental conditions at time of test |   |                                |  |   |                |            |   |  |  |
| Linvironmentai                           | $\mathbf{Linviolimental conditions at time of test.}$ |                                |  |   |                |            |   |  |  |
| Те                                       | st method used:                                       | SOP 8 Medium Accuracy Ca       | librations of Mass Standards   | by Modified Subtitutio                                  | n. May 2019    |            |   |  |  |
| Test e                                   | equipment used:                                       | Lab standards traceable to     | the SI, Mettler XPR64003LD5  | C, XPR5003SC, Mettler                                   | AX206, Vaisala | a PTU301   |   |  |  |
| Condi                                    | ition of Weights:                                     | Suitable for use. No significa | ant wear or damage   |   |                |            |   |  |  |
|  | Artifact(s):  | 20                             | 50 lb weights  |   | SN             | 369        |   |  |  |
| Nominal                                  |   | Correction as Found            | Correction as Left   | NIST Class F  | Uncertainty    |            | Condition                                   |  |  |
|  | SN/ID   | mg                             | mg   | Tolerance (mg)  | mg             | k          | 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                                |  |  |
|  |   |                                |  |   |                |            |   |  |  |
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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

None Al

Dufter. Joneon

Ron E Peterson, Metrologist

01/17/2024

Dwight R Johnson, Reviewer

| Ð   | South Dakota Department of Public Safety<br>Office of Weights and Measures<br>Metrology Lab<br>Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541<br>Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697   |                     |                    |                |             |         |           |  |  |
|---|--|---------------------|--------------------|----------------|-------------|---------|-----------|--|--|
| CALIBRATION CERTIFICATE                   |  |                     |                    |                |             |         |           |  |  |
| Calibrated for:                           | Calibrated for: Prairie Scale Unit 369   |                     |                    |                |             | number: | MP4461    |  |  |
| Calibration Dat                           | te:  |                     | Purchase Orde      | er Number:     |             |         |           |  |  |
| Environmental conditions at time of test: |  |                     |                    |                |             |         |           |  |  |
| Te<br>Test e<br>Cond                      | Temperature:       19.8 °C       Humidity:       46.7 %       Pressure:       660.6 mmhg         Test method used:       SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019         Test equipment used:       Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301         Condition of Weights:       Suitable for use. No significant wear or damage |                     |                    |                |             |         |           |  |  |
| Nominal                                   |  | Correction as Found | Correction as Left | NIST Class F   | Uncertainty |         | Condition |  |  |
|   | SN/ID  | mg                  | mg                 | Tolerance (mg) | mg          | k       | As Left   |  |  |
| 20 lb                                     | A  | 3434                | -6                 | 910            | 120         | 2.02    | Adjusted  |  |  |
|   |  |                     |                    |                |             |         |           |  |  |
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Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Non E ML

Dufter. Joneon

Ron E Peterson, Metrologist

01/17/2024

Dwight R Johnson, Reviewer

| Diffice of Department Of Public Safety         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         Calibrated for:       Prairie Scale Unit 369         Calibrated for:       Prairie Scale Unit 369         Calibrated for:       01/17/2024         Calibration Date:       01/17/2024         Environmental conditions at time of test:         Temperature: 20.7 °C       Humidity: 47.8 %         Yessure: 660.6 mmhg         Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019 |             |  |  |  |  |  |  |  |
|--|-------------|--|--|--|--|--|--|--|
| Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019   |             |  |  |  |  |  |  |  |
| Test equipment used: Lab standards traceable to the SI, Mettler 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  | <b>)</b>    |  |  |  |  |  |  |  |
| SN/ID mg mg Tolerance (mg) mg k  | Condition   |  |  |  |  |  |  |  |
| 5 lb 71 71 71 230 20 2.05 lin  | As Left     |  |  |  |  |  |  |  |
| 510     71     71     230     20     2.05     In-       51b     69     69     230     20     2.05     In-  | -Tolerance  |  |  |  |  |  |  |  |
| 5 lb 71 71 230 20 2.05 lb  |             |  |  |  |  |  |  |  |
| 5 lb 71 71 230 20 2.05 ln  | -Tolerance  |  |  |  |  |  |  |  |
| 5 lb 72 72 230 20 2.05 ln  | -Tolerance  |  |  |  |  |  |  |  |
| 1 lb 20.5 20.5 70 6.1 2.05 ln-   | n-Tolerance |  |  |  |  |  |  |  |
| 1 lb 26.5 26.5 70 6.1 2.05 ln-   | n-Tolerance |  |  |  |  |  |  |  |
| 1 lb 24.5 24.5 70 6.1 2.05 ln-   | n-Tolerance |  |  |  |  |  |  |  |
| 1 lb 16.5 16.5 70 6.1 2.05 In-   | n-Tolerance |  |  |  |  |  |  |  |
| 1 lb 10.5 10.5 70 6.1 2.05 In-   | n-Tolerance |  |  |  |  |  |  |  |
| 0.5 lb 14.2 14.2 45 4.0 2.04 In-   | n-Tolerance |  |  |  |  |  |  |  |
| 0.2 lb -3.8 -3.8 18 1.6 2.05 ln-   | n-Tolerance |  |  |  |  |  |  |  |
| 0.2 lb -14.8 -14.8 18 1.6 2.05 In-   | n-Tolerance |  |  |  |  |  |  |  |
| 0.1 lb 2.46 2.46 9.1 0.79 2.05 In-   | n-Tolerance |  |  |  |  |  |  |  |
| 0.05 lb 1.42 1.42 4.5 0.39 2.05 In-  | n-Tolerance |  |  |  |  |  |  |  |
| 0.02 lb 0.57 0.57 1.8 0.16 2.05 In-  | n-Tolerance |  |  |  |  |  |  |  |
| 0.02 lb 0.12 0.12 1.8 0.16 2.05 ln-  | n-Tolerance |  |  |  |  |  |  |  |
| 0.01 lb 0.53 0.53 1.5 0.13 2.04 ln-  | n-Tolerance |  |  |  |  |  |  |  |
| 0.005 lb 0.85 0.85 1.2 0.10 2.06 In-   | n-Tolerance |  |  |  |  |  |  |  |
| 0.002 lb 0.485 0.485 0.87 0.076 2.06 ln-   | n-Tolerance |  |  |  |  |  |  |  |
| 0.002 lb 0.305 0.305 0.87 0.076 2.06 ln-   | n-Tolerance |  |  |  |  |  |  |  |
| 0.001 lb 0.539 0.539 0.7 0.062 2.06 ln-  | n-Tolerance |  |  |  |  |  |  |  |
|  |             |  |  |  |  |  |  |  |
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Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

NONE P

Dugle R. Jonson

Ron E Peterson, Metrologist

01/17/2024

Dwight R Johnson, Reviewer

01/17/2024

| Calibrated for:<br>Calibration Date<br>Environmental | South Dakota Department of Public Safety<br>Office of Weights and Measures<br>Metrology Lab       Improve Display Lab         Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541<br>Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697       Improve Display Lab         Calibrated for:       Prairie Scale Unit 369       Certificate number: MP4461         Calibrated for:       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 Subtitution, May 2019       Subtitution, May 2019 |                                |                                |                         |                |          |              |  |
|--|---|--------------------------------|--------------------------------|-------------------------|----------------|----------|--------------|--|
| Te   | st method used:   | SOP 8 Medium Accuracy Ca       | librations of Mass Standards I | by Modified Subtitution | n, May 2019    |          |              |  |
| Cond   | ition of Weights:   | Suitable for use. No significa | ant wear or damage             | C, AFROUDOSC, Mellier   | AAZUU, ValSala | 10301    |              |  |
| conu   | Artifact(s):  | 14                             | piece Avoirdupois Kit          |                         | SN             | 2019-739 | -В           |  |
| Nominal  |   | Correction as Found            | Correction as Left             | NIST Class F            | Uncertainty    |          | Condition    |  |
|  | SN/ID   | mg                             | mg                             | Tolerance (mg)          | mg             | k        | 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 |  |
|  |   |                                |                                |                         |                |          |              |  |
|  |   |                                |                                |                         |                |          |              |  |
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|  |   |                                |                                |                         |                |          |              |  |
|  |   |                                |                                |                         |                |          |              |  |

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

None MI

Dugle R. Jonson

Ron E Peterson, Metrologist

01/17/2024

Dwight R Johnson, Reviewer



prevention - protection - enforcement

## Office of Weights and Measures

### **Metrology Laboratory**

Office: 118 West Capitol Avenue, Pierre, SD 57501

Lab: 1100 Otter Rd, Bldg D, Sturgis, SD 57785

Lab: 605-347-7541, Office: 605-773-3697, Cell: 605-280-4572

Email: ron.peterson@state.sd.us https://dps.sd.gov/inspections/weights-measures

# **CALIBRATION CERTIFICATE**

Prairie Scale System Inc (Unit 397)

**Cooper Anderson** 

Physical Address:

SA# **131** 

Certificate number:

: MP4457

9860 Industrial Drive

Billing Address:

9860 Industrial Drive

Horace, ND 58047

Horace, ND 58047

Phone: **701-281-9373** 

Contact:

 Received Date:
 01/08/2024

 Certificate Issued:
 01/09/2024

As Left

**Artifacts Submitted and Summary of Results:** 

| Quantity | Artifact        | Total Pieces | Recvd in Tol | Adjusted | Rejected | In Tolerance |
|----------|-----------------|--------------|--------------|----------|----------|--------------|
| 2        | 1000 lb Weights | 2            | 0            | 2        | 0        | 2            |
| 4        | 500 lb Weights  | 4            | 0            | 4        | 0        | 4            |
| 24       | 50 lb Weights   | 24           | 23           | 5        | 0        | 24           |
| 1        | 20 lb Weight    | 1            | 1            | 0        | 0        | 1            |
| 1        | Avoirdupois kit | 22           | 22           | 0        | 0        | 22           |
| 1        | Metric 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 factork to provide an expanded uncertainty which defines an interval having a level of confidence of approximately 95 percent. The expanded uncertainty preented in this report is consistent with the 2008 ISO/IEC Guide to the Expression of Uncertainty in Measurement. The expanded uncertainty is not tobe confused with a tolerance limit for the user during application. For weight carts, factors included on the inspection checklist have not been included in the calibration uncertainty. However, factors on the checklist may contribute measurement errors that are significant if not properly maintained during use.

### **Conformity Statement:**

The artifacts submitted for this calibration are calibrated to NIST Handbook 105-1 (1990 or 2019), NIST Handbook 105-8 (2019), NIST Handbook 105-3 (2010), or ASTM E617 (2018), Standard Specification for Laboratory Weights and Precision Mass Standards specifications. The reported test values relate only to the observations made at the time and conditions of the test. Artifacts fully comply with all requirements (both specifications and tolerances) of the applicable documentary standard unless otherwise stated. Stated expanded uncertainties for volume calibrations. The correction value plus or minus the expanded uncertainty is within the stated tolerances. It is the decision rule of the SD State Metrology Laboratory that any cast weights determined to have a correction within 66 % of the upper tolerance or 50 % of thelower tolerance will be adjusted closer to zero mass correction, even if the mass correction originally met the applicable tolerance.

### **Traceability Statement:**

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

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

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Daught R. Joneon

Ron E Peterson, Metrologist

01/09/2024

Dwight R Johnson, Reviewer 01/09/2024

| Dwight R Johnson | Metrologist |
|------------------|-------------|

Darfte R. Johnson

01/09/2024

Ron E Peterson, Reviewer

01/09/2024

ns made at the time and conditions of the test. This calibration certificate, so numbered, may not be iy to those obse 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

| 1000 lb | 1k-01  | -0.16 | -71.0 | 0.00 | -0.2 | 45 | 5.1 | 2.0 | Adjusted |
|---------|--------|-------|-------|------|------|----|-----|-----|----------|
| 1000 lb | 1k-02  | -0.17 | -75.7 | 0.00 | 0.0  | 45 | 5.1 | 2.0 | Adjusted |
|         |        |       |       |      |      |    |     |     |          |
| 500 lb  | 500-01 | -0.06 | -27.6 | 0.00 | 0.2  | 23 | 2.3 | 2.0 | Adjusted |
| 500 lb  | 500-02 | -0.07 | -30.2 | 0.00 | 0.0  | 23 | 2.3 | 2.0 | Adjusted |
| 500 lb  | 500-03 | -0.05 | -23.2 | 0.00 | 0.2  | 23 | 2.3 | 2.0 | Adjusted |
| 500 lb  | 500-04 | -0.07 | -32.8 | 0.00 | -0.2 | 23 | 2.3 | 2.0 | Adjusted |
|         |        |       |       |      |      |    |     |     |          |
|         |        |       |       |      |      |    |     |     |          |
|         |        |       |       |      |      |    |     |     |          |
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|         |        |       |       |      |      |    |     |     |          |
|         |        |       |       |      |      |    |     |     |          |
|         |        |       |       |      |      |    |     |     |          |
|         |        |       |       |      |      |    |     |     |          |

Temperature: 19 °C

Artifact(s):

SN/ID

Environmental conditions at time of test:

ASTM E 617 Class 6

Tolerance (g)

Pressure: 661 mmhg

Uncertainty

g

k

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019 Test equipment used: Lab standards traceable to the SI, an XPE604KMC balance, and a Vaisala PTU301 Condition of Weights: Cleaned and painted

6 - Cast Weights

Ιb

Prairie Scale System Inc (Unit 397)

g

Correction as Found

lb

01/09/2024

**Calibrated for:** 

**Calibration Date:** 

Nominal

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

Humidity: 44.8 %

Correction as Left

g



MP4457

0

Condition

As Left

Certificate number: Purchase Order Number:

| Calibrated for: |                   | Prairie Scale System Inc   | c (Unit 397)                 | Certificate number: MP4457 |                  |            |              |  |
|-----------------|-------------------|----------------------------|------------------------------|----------------------------|------------------|------------|--------------|--|
| Calibration Dat | e:                | 01/09/2024                 |                              |                            | Purchase Orde    | er Number: |              |  |
| Environmental   | conditions at tir | ne of test:                |                              |                            |                  |            |              |  |
|                 |                   | Temperature: 21 °C         | Humidity: 45 %               | Pressure:                  | 661 mmhg         |            |              |  |
| Te              | st method used:   | SOP 8 Medium Accuracy Ca   | librations of Mass Standards | s by Modified Subtitutio   | n, May 2019      |            |              |  |
| Test e          | quipment used:    | Lab standards traceable to | the SI, Mettler XPR64003LD   | 5C, XPR5003SC, Mettle      | r AX206, Vaisala | a PTU301   |              |  |
| Condi           | tion of Weights:  | Cleaned and painted        |                              |                            |                  |            |              |  |
|                 | Artifact(s):      | 24                         | 50 lb weights                |                            | SN 349           |            |              |  |
| Nominal         |                   | Correction as Found        | Correction as Left           | NIST Class F               | Uncertainty      |            | Condition    |  |
|                 | SN/ID             | mg                         | mg                           | Tolerance (mg)             | mg               | k          | As Left      |  |
| 50 lb           | 1                 | -1018                      | -1018                        | 2300                       | 200              | 2.03       | In-Tolerance |  |
| 50 lb           | 4                 | 1842                       | -3                           | 2300                       | 200              | 2.03       | Adjusted     |  |
| 50 lb           | 6                 | -1088                      | -1088                        | 2300                       | 200              | 2.03       | In-Tolerance |  |
| 50 lb           | 7                 | -1018                      | -1018                        | 2300                       | 200              | 2.03       | In-Tolerance |  |
| 50 lb           | 11                | -428                       | -428                         | 2300                       | 200              | 2.03       | In-Tolerance |  |
| 50 lb           | 13                | -213                       | -213                         | 2300                       | 200              | 2.03       | In-Tolerance |  |
| 50 lb           | 13                | -1048                      | -1048                        | 2300                       | 200              | 2.03       | In-Tolerance |  |
| 50 lb           | 20                | -268                       | -268                         | 2300                       | 200              | 2.03       | In-Tolerance |  |
| 50 lb           | 21                | -498                       | -498                         | 2300                       | 200              | 2.03       | In-Tolerance |  |
| 50 lb           | 24                | 3317                       | -3                           | 2300                       | 200              | 2.03       | Adjusted     |  |
| 50 lb           | 27                | -148                       | -148                         | 2300                       | 200              | 2.03       | In-Tolerance |  |
| 50 lb           | 36                | -243                       | -243                         | 2300                       | 200              | 2.03       | In-Tolerance |  |
| 50 lb           | 42                | -723                       | -723                         | 2300                       | 200              | 2.03       | In-Tolerance |  |
| 50 lb           | 44                | -848                       | -848                         | 2300                       | 200              | 2.03       | In-Tolerance |  |
| 50 lb           | 50                | -1948                      | 12                           | 2300                       | 200              | 2.03       | Adjusted     |  |
| 50 lb           | 55                | 1502                       | 7                            | 2300                       | 200              | 2.03       | Adjusted     |  |
| 50 lb           | 67                | -193                       | -193                         | 2300                       | 200              | 2.03       | In-Tolerance |  |
| 50 lb           | 70                | -1063                      | -1063                        | 2300                       | 200              | 2.03       | In-Tolerance |  |
| 50 lb           | 71                | 552                        | 552                          | 2300                       | 200              | 2.03       | In-Tolerance |  |
| 50 lb           | 17879-1           | -8                         | -8                           | 2300                       | 200              | 2.03       | In-Tolerance |  |
| 50 lb           | 66AI              | -908                       | -908                         | 2300                       | 200              | 2.03       | In-Tolerance |  |
| 50 lb           | 66AJ              | -1723                      | -3                           | 2300                       | 200              | 2.03       | Adjusted     |  |
| 50 lb           | 7TV2              | 1422                       | 1422                         | 2300                       | 200              | 2.03       | In-Tolerance |  |
| 50 lb           | Х                 | -1018                      | -1018                        | 2300                       | 200              | 2.03       | In-Tolerance |  |
|                 |                   |                            |                              |                            |                  |            |              |  |
|                 |                   |                            |                              |                            |                  |            |              |  |
|                 |                   |                            |                              |                            |                  |            |              |  |
|                 |                   |                            |                              |                            | 1                |            | 1            |  |

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** 

MEDDING & MEALINGS STATE INSPECTIONS

\* 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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Dwight R Johnson, Metrologist

01/09/2024

Ron E Peterson, Reviewer

| Ð  | South Dakota Department of Public Safety<br>Office of Weights and Measures<br>Metrology Lab<br>Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541<br>Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697 |                     |                    |                |               |            |           |  |  |  |  |  |  |
|--|--|---------------------|--------------------|----------------|---------------|------------|-----------|--|--|--|--|--|--|
| CALIBRATION CERTIFICATE  |  |                     |                    |                |               |            |           |  |  |  |  |  |  |
| Calibrated for:  |  |                     | Certificate        | number:        | MP4457        |            |           |  |  |  |  |  |  |
| Calibration Dat  | te:  | 01/09/2024          |                    |                | Purchase Orde | er Number: |           |  |  |  |  |  |  |
| Environmenta   | l conditions at tin  | ne of test:         |                    |                |               |            |           |  |  |  |  |  |  |
| Temperature:       20.3 °C       Humidity:       45.5 %       Pressure:       657 mmhg         Test method used:       SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Subtitution, May 2019         Test equipment used:       Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301         Condition of Weights:       Cleaned and painted         Artifact(s):       1 Avoirdupois Weight(s)       SN 349 |  |                     |                    |                |               |            |           |  |  |  |  |  |  |
| Nominal  |  | Correction as Found | Correction as Left | NIST Class F   | Uncertainty   |            | Condition |  |  |  |  |  |  |
|  | SN/ID  | mg                  | mg                 | Tolerance (mg) | mg            | k          | As Left   |  |  |  |  |  |  |
| 20 lb  | 17904-1  | 974                 | 974                | 910.00         | 120           | 2.02       | Rejected  |  |  |  |  |  |  |
|  |  |                     |                    |                |               |            |           |  |  |  |  |  |  |
|  |  |                     |                    |                |               |            |           |  |  |  |  |  |  |
|  |  |                     |                    |                |               |            |           |  |  |  |  |  |  |
|  |  |                     |                    |                |               |            |           |  |  |  |  |  |  |
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|  |  |                     |                    |                |               |            |           |  |  |  |  |  |  |
|  |  |                     |                    |                |               |            |           |  |  |  |  |  |  |
|  |  |                     |                    |                |               |            |           |  |  |  |  |  |  |
|  |  |                     |                    |                |               |            |           |  |  |  |  |  |  |
|  |  |                     |                    |                |               |            |           |  |  |  |  |  |  |
|  |  |                     |                    |                |               |            |           |  |  |  |  |  |  |
|  |  |                     |                    |                |               |            |           |  |  |  |  |  |  |
|  |  |                     |                    |                |               |            |           |  |  |  |  |  |  |
|  |  |                     |                    |                |               |            |           |  |  |  |  |  |  |
|  |  |                     |                    |                |               |            |           |  |  |  |  |  |  |
|  |  |                     |                    |                |               |            |           |  |  |  |  |  |  |
|  |  |                     |                    |                |               |            |           |  |  |  |  |  |  |
|  |  |                     |                    |                |               |            |           |  |  |  |  |  |  |

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

Dufter. Jonson

None Al

Dwight R Johnson, Metrologist

01/09/2024

Ron E Peterson, Reviewer

|                 |                     | C                             | ALIBRATION CERTIF           | ICATE                  |                  |            |              |
|-----------------|---------------------|-------------------------------|-----------------------------|------------------------|------------------|------------|--------------|
| Calibrated for: |                     | Prairie Scale System In       | c (Unit 397)                |                        | Certificate      | number:    | MP4457       |
| Calibration Dat | te:                 | 01/09/2024                    |                             |                        | Purchase Ord     | er Number: |              |
| Environmental   | l conditions at tir | no oftact:                    |                             |                        |                  |            |              |
| LINIOIIIIeilla  | i conunions at th   | Tomporatural 21 °C            | Humiditur 17%               | Drocourse              | EEE mmba         |            |              |
| Те              | st method used.     | SOP 8 Medium Accuracy C       | Humility: 47 %              | by Modified Subtitutio | n May 2019       |            |              |
| Test e          | equipment used:     | Lab standards traceable to    | the SI, Mettler XPR64003LD5 | C, XPR5003SC, Mettler  | · AX206, Vaisala | a PTU301   |              |
| Cond            | ition of Weights:   | Suitable for use. No signific | cant wear or damage         |                        |                  |            |              |
|                 | Artifact(s):        | 22                            | piece Avoirdupois Kit       |                        | SN               | 150105A    |              |
| Nominal         |                     | NIST Class F                  | Uncertainty                 |                        | Condition        |            |              |
|                 | SN/ID               | mg                            | mg                          | Tolerance (mg)         | mg               | k          | As Left      |
| 5 lb            | 1                   | -5                            | -5                          | 230                    | 20               | 2.05       | In-Tolerance |
| 5 lb            | 2                   | -62                           | -62                         | 230                    | 20               | 2.05       | In-Tolerance |
| 5 lb            | 3                   | 24                            | 24                          | 230                    | 20               | 2.05       | In-Tolerance |
| 5 lb            | 4                   | -8                            | -8                          | 230                    | 20               | 2.05       | In-Tolerance |
| 5 lb            | 5                   | -30                           | -30                         | 230                    | 20               | 2.05       | In-Tolerance |
| 1 lb            | 6                   | -8.6                          | -8.6                        | 70                     | 6.1              | 2.05       | In-Tolerance |
| 1 lb            | 7                   | -1.6                          | -1.6                        | 70                     | 6.1              | 2.05       | In-Tolerance |
| 1 lb            | 8                   | 5.5                           | 5.5                         | 70                     | 6.1              | 2.05       | In-Tolerance |
| 1 lb            | 9                   | 24.5                          | 24.5                        | 70                     | 6.1              | 2.05       | In-Tolerance |
| 1 lb            | 10                  | -3.55                         | -3.55                       | 70                     | 6.1              | 2.05       | In-Tolerance |
| 0.5 lb          | 11                  | 14.19                         | 14.19                       | 45                     | 4.0              | 2.04       | In-Tolerance |
| 0.2 lb          | 12                  | -2.30                         | -2.30                       | 18                     | 1.6              | 2.05       | In-Tolerance |
| 0.2 lb          | 13                  | 1.50                          | 1.50                        | 18                     | 1.6              | 2.05       | In-Tolerance |
| 0.1 lb          | 14                  | 4.72                          | 4.72                        | 9.1                    | 0.79             | 2.05       | In-Tolerance |
| 0.05 lb         |                     | 3.57                          | 3.57                        | 4.5                    | 0.39             | 2.05       | In-Tolerance |
| 0.02 lb         |                     | 1.26                          | 1.26                        | 1.8                    | 0.16             | 2.05       | In-Tolerance |
| 0.02 lb         |                     | 0.7                           | 0.7                         | 1.8                    | 0.16             | 2.05       | In-Tolerance |
| 0.01 lb         |                     | 0.8                           | 0.8                         | 1.5                    | 0.13             | 2.04       | In-Tolerance |
| 0.005 lb        |                     | 0.6                           | 0.6                         | 1.2                    | 0.10             | 2.06       | In-Tolerance |
| 0.002 lb        |                     | 0.59                          | 0.59                        | 0.87                   | 0.076            | 2.06       | In-Tolerance |
| 0.002 lb        |                     | 0.38                          | 0.38                        | 0.87                   | 0.076            | 2.06       | In-Tolerance |
| 0.001 lb        |                     | 0.48                          | 0.48                        | 0.70                   | 0.062            | 2.06       | In-Tolerance |
|                 |                     |                               |                             |                        |                  |            |              |
|                 |                     |                               |                             |                        |                  |            |              |
|                 |                     |                               |                             |                        |                  |            |              |
|                 |                     |                               |                             |                        |                  |            |              |
|                 |                     |                               |                             |                        |                  | _          |              |
|                 |                     |                               |                             |                        |                  |            |              |

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

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

Dugle R. Jonson

Non E Ma

Dwight R Johnson, Metrologist

01/09/2024

Ron E Peterson, Reviewer

|                 |                     | Office: 118 We                 | est Capitol Avenue Pierre, SD 57501 | Phone: 605-773-3697    |                 | 010 IN         | STATE        |
|-----------------|---------------------|--------------------------------|-------------------------------------|------------------------|-----------------|----------------|--------------|
|                 |                     |                                |                                     |                        |                 | WER IN ADDRESS | WPOMPLOOPT S |
|                 |                     | CA                             | LIBRATION CERTIF                    | ICATE                  |                 |                |              |
| Calibrated for: |                     | Prairie Scale System Inc       | c (Unit 397)                        |                        | Certificate     | number:        | MP4457       |
| Calibration Dat | te:                 | 01/09/2024                     |                                     |                        | Purchase Ord    | er Number:     |              |
| Environmental   | l conditions at tir | ne of test:                    |                                     |                        |                 |                |              |
|                 |                     | Temperature: 21 °C             | Humidity: 46 %                      | Pressure:              | 655 mmhg        |                |              |
| Те              | st method used:     | SOP 8 Medium Accuracy Ca       | librations of Mass Standards        | by Modified Subtitutio | n, May 2019     |                |              |
| Test e          | equipment used:     | Lab standards traceable to     | the SI, Mettler XPR64003LD5         | C, XPR5003SC, Mettle   | r AX206, Vaisal | a PTU301       |              |
| Cond            | ition of Weights:   | Suitable for use. No significa | ant wear or damage                  |                        |                 |                |              |
|                 | Artifact(s):        |                                | SN                                  | 5FWZ                   |                 |                |              |
| Nominal         | CN1/1D              | Correction as Found            | Correction as Left                  | NIST Class F           | Uncertainty     |                | Condition    |
|                 | SN/ID               | mg                             | mg                                  | Tolerance (mg)         | mg              | k              | As Left      |
| 5 kg            |                     | 127                            | 127                                 | 500                    | 43              | 2.05           | In-Tolerance |
| 5 kg            | A                   | 159                            | 159                                 | 500                    | 43              | 2.05           | In-Tolerance |
| 2 kg            |                     | 76                             | 76                                  | 200                    | 17              | 2.05           | In-Tolerance |
| 2 kg            | A                   | 71                             | 71                                  | 200                    | 17              | 2.05           | In-Tolerance |
| 1 kg            |                     | 12                             | 12                                  | 100                    | 8.7             | 2.05           | In-Tolerance |
| 500 g           |                     | 17.5                           | 17.5                                | 70                     | 6.1             | 2.05           | In-Tolerance |
| 500 g           | A                   | 12.5                           | 12.5                                | 70                     | 6.1             | 2.05           | In-Tolerance |
| 500 g           | В                   | 15.5                           | 15.5                                | 70                     | 6.1             | 2.05           | In-Tolerance |
| 500 g           | D                   | 20.5                           | 20.5                                | 70                     | 6.1             | 2.05           | In-Tolerance |
| 500 g           | E                   | 12.5                           | 12.5                                | 70                     | 6.1             | 2.05           | In-Tolerance |
| 200 g           |                     | 16.6                           | 16.6                                | 40                     | 3.4             | 2.05           | In-Tolerance |
| 200 g           | A                   | 8.2                            | 8.2                                 | 40                     | 3.4             | 2.05           | In-Tolerance |
| 100 g           |                     | 7.0                            | 7.0                                 | 20                     | 1.7             | 2.05           | In-Tolerance |
| 50 g            |                     | 3.44                           | 3.44                                | 10                     | 0.86            | 2.05           | In-Tolerance |
| 20 g            |                     | 1.47                           | 1.47                                | 4.0                    | 0.35            | 2.05           | In-Tolerance |
| 20 g            |                     | 1.08                           | 1.08                                | 4.0                    | 0.35            | 2.05           | In-Tolerance |
| 10 g            |                     | 0.62                           | 0.62                                | 2.0                    | 0.17            | 2.05           | In-Tolerance |
| 5 g             |                     | 0.14                           | 0.14                                | 1.5                    | 0.13            | 2.05           | In-Tolerance |
| 2 g             |                     | 0.461                          | 0.461                               | 1.1                    | 0.095           | 2.05           | In-Tolerance |
| 2 g             |                     | 0.501                          | 0.501                               | 1.1                    | 0.095           | 2.05           | In-Tolerance |
| 1 g             |                     | 0.372                          | 0.372                               | 0.90                   | 0.078           | 2.05           | In-Tolerance |
|                 |                     |                                |                                     |                        |                 |                |              |
|                 |                     |                                |                                     |                        |                 |                |              |
|                 |                     |                                |                                     |                        |                 |                |              |
|                 |                     |                                |                                     |                        | 1               |                | 1            |
|                 |                     |                                |                                     |                        |                 |                | 1            |
|                 |                     |                                |                                     |                        |                 |                | 1            |
|                 |                     |                                |                                     |                        |                 |                | 1            |

Metrology Lab Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541

\* 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

Dugle R. Jonson

Non E Ma

Dwight R Johnson, Metrologist

01/09/2024

Ron E Peterson, Reviewer



prevention - protection - enforcement

## Office of Weights and Measures

### Metrology Laboratory

Office: 118 West Capitol Avenue, Pierre, SD 57501

Lab: 1100 Otter Rd, Bldg D, Sturgis, SD 57785

Lab: 605-347-7541, Office: 605-773-3697, Cell: 605-280-4572

Email: ron.peterson@state.sd.us https://dps.sd.gov/inspections/weights-measures

# **CALIBRATION CERTIFICATE**

Prairie Scale Systems (Unit 754)

**Physical Address:** 

SA# 131 **Billing Address:** 

9860 Industrial Drive

Horace, ND 58047

Certificate number:

9860 Industrial Drive Horace, ND 58047

**Cooper Anderson** Contact:

701-281-9373 Phone:

Received Date:

Certificate Issued: 01/24/2024

As Left

01/23/2024

**MP4468** 

**Artifacts Submitted and Summary of Results:** 

| Quantity | Artifact       | Total Pieces | Recvd in Tol | Adjusted | Rejected | 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 factork to provide an expanded uncertainty which defines an interval having a level of confidence of approximately 95 percent. The expanded uncertainty prexented in this report is consistent with the 2008 ISO/IEC Guide to the Expression of Uncertainty in Measurement. The expanded uncertainty is not tobe confused with a tolerance limit for the user during application. For weight carts, factors included on the inspection checklist have not been included in the calibration uncertainty. However, factors on the checklist may contribute measurement errors that are significant if not progerly maintained during use.

### **Conformity Statement:**

The artifacts submitted for this calibration are calibrated to NIST Handbook 105-1 (1990 or 2019), NIST Handbook 105-8 (2019), NIST Handbook 105-3 (2010), or ASTM E617 (2018), Standard Specification for Laboratory Weights and Precision Mass Standards specifications. The reported test values relate only to the observations made at the time and conditions of the test. Artifacts fully comply with all requirements (both specifications and tolerances) of the applicable documentary standard unless otherwise stated. Stated expanded uncertaintiesare less than onethird of the specified tolerances (maximum permissible errors, m.p.e.) for mass calibrations and less than the specified tolgrances for volume calibrations. The correction value plus or minus the expanded uncertainty is within the stated tolerances. It is the decision rule of the SD State Metrology Laboratory that any cast weights determined to have a correction within 66 % of the upper tolerance or 50 % of thelower tolerance will be adjusted closer to zero mass correction, even if the mass correction originally met the applicable tolerance.

### **Traceability Statement:**

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

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

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Dufter. Joneon

Ron E Peterson, Metrologist

01/24/2024

Dwight R Johnson, Reviewer 01/24/2024

| Ð                    | 2  |   | Lab: 1100 Ot<br>Office: 118 Wes                     | South Dakota Depar<br>Office of Weigl<br>Metro<br>ter Rd, Bldg. D Sturg<br>t Capitol Avenue Pi | tment of Public<br>nts and Measure<br>logy Lab<br>gis, SD 57785 Ph<br>erre, SD 57501 | Safety<br>25<br>10ne: 605-347-7541<br>Phone: 605-773-3697 | 10                      |            | PERINT &<br>REGINTS &<br>REALINES<br>STATE<br>PECTIONS |
|----------------------|--|---|---|--|--|---|-------------------------|------------|--|
|                      |  |   | CA  | LIBRATION  | <b>V CERTIF</b>  | ICATE   |                         |            |  |
| Calibrated for:      |  | Prairie Scale                                   | Systems (l  | Jnit 754)  |  |   | Certificate             | number:    | MP4468   |
| Calibration Da       | te:  | 01/24/2024                                      |   |  |  |   | Purchase Ord            | er Number: | 0  |
| Environmenta         | l conditions at tin  | ne of test:                                     |   |  |  |   |                         |            |  |
|                      |  | Temperature:                                    | 22 °C   | Humidity:  | 47 %   | Pressure:   | 666 mmhg                |            |  |
| Te<br>Test e<br>Cond | est method used:<br>equipment used:<br>ition of Weights:<br>Artifact(s): | SOP 8 Medium<br>Lab standards<br>Cleaned and pa | Accuracy Ca<br>traceable to<br>iinted<br><b>1 -</b> | librations of Mathematical fields of Mathematical fields of the SI, an XPE6                    | ass Standard<br>04KMC bala<br><b>hts</b>   | ls by Modified Subtitu<br>nce, and a Vaisala PTU          | ition, May 2019<br>J301 | Unit 754   |  |
| Nominal              |  | Correction                                      | as Found  | Correction   | n as Left  | ASTM E 617 Class 6  | Uncertainty             |            | Condition  |
| 1000                 | SN/ID  | lb  | g   | lb   | g  | Tolerance (g)   | g                       | k          | As Left  |
| 1000 lb              | AA   | 0.40  | 182.3   | 0.00   | 0.0  | 45  | 5.1                     | 2.0        | Adjusted   |
|                      |  |   |   |  |  |   |                         |            |  |
|                      |  |   |   |  |  |   |                         |            |  |
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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

Dugle R. Joneon

Dwight R Johnson, Metrologist

01/24/2024

NONE

Ron E Peterson, Reviewer

| Ð               | 2                 |                | Lab: 1100 Ot<br>Office: 118 Wes | Metrc<br>ter Rd, Bldg. D Sturş<br>st Capitol Avenue Pi | ology Lab<br>zis, SD 57785 Pho<br>erre, SD 57501 I | one: 605-347-7541<br>Phone: 605-773-3697 | 10            |            | VEIGHTS &<br>MEALURES<br>STATE<br>PECTIONS |
|-----------------|-------------------|----------------|---------------------------------|--|--|--|---------------|------------|--|
|                 |                   |                | CA                              | LIBRATION  | N CERTIF   | ICATE                                    |               |            |  |
| Calibrated for: |                   | Prairie Scale  | Systems (I                      | Unit 754)  |  |  | Certificate   | number:    | MP4468                                     |
| Calibration Dat | e:                | 01/24/2024     |                                 |  |  |  | Purchase Orde | er Number: | 0  |
| Environmental   | conditions at tin | ne of test:    |                                 |  |  |  |               |            |  |
|                 |                   | Temperature:   | 22 °C                           | Humidity   | 46 %   | Pressure                                 | 666 mmhg      |            |  |
| Те              | st method used:   | SOP 8 Medium   |                                 | librations of M  | ass Standard                                       | s by Modified Subtitu                    | tion May 2019 | 1          |  |
| Test e          | quipment used:    | Lab standards  | traceable to                    | the SI, an XPE6  | 04KMC balar  | nce, and a Vaisala PTL                   | J301          |            |  |
| Condi           | tion of Weights:  | Cleaned and pa | inted                           |  |  |  |               |            |  |
|                 | Artifact(s):      |                | 4 -                             | 500 lb weigh   | its  |  |               | Unit 754   |  |
| Nominal         |                   | Correction     | as Found                        | Correctio  | n as Left  | ASTM E 617 Class 6                       | Uncertainty   |            | Condition                                  |
| 500 !!          | SN/ID             | Ib             | g                               | lb   | g  | Tolerance (g)                            | g             | k          | As Left                                    |
| 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                                   |
| ai 002          | 7109              | 0.06           | 27.3                            | 0.00   | -0.1   | 23                                       | 2.3           | 2.0        | Adjusted                                   |
|                 |                   |                |                                 |  |  |  |               |            |  |
|                 |                   |                |                                 |  |  |  |               |            |  |
|                 |                   |                |                                 |  |  |  |               |            |  |
|                 |                   |                |                                 |  |  |  |               |            |  |
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|                 |                   |                |                                 |  |  |  |               |            |  |
|                 |                   |                |                                 |  |  |  |               |            |  |
|                 |                   |                |                                 |  |  |  |               |            |  |
|                 |                   |                |                                 |  |  |  |               |            |  |
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|                 |                   |                |                                 |  |  | 1  |               |            |  |
|                 |                   |                |                                 |  |  |  |               |            |  |
|                 |                   |                |                                 |  |  | 1  |               |            |  |
|                 |                   |                |                                 |  |  |  |               |            |  |
|                 |                   |                |                                 |  |  |  |               |            |  |

\* 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

Non E M.

Ron E Peterson, Metrologist

01/24/2024

Dufter, Joneon

Dwight R Johnson, Reviewer

01/24/2024

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|                 |                     | Office: 118 We                 | est Capitol Avenue Pierre, SD 57501 | Phone: 605-773-3697    |                 | OIO IN     | SPECTIONS    |
|-----------------|---------------------|--------------------------------|-------------------------------------|------------------------|-----------------|------------|--------------|
|                 |                     |                                |                                     |                        |                 | Like many  | POMPONTS 6   |
|                 |                     | CA                             | LIBRATION CERTIF                    | ICATE                  |                 |            |              |
| Calibrated for: |                     | Prairie Scale Systems (L       | Jnit 754)                           |                        | Certificate     | number:    | MP4468       |
| Calibration Dat | te:                 | 01/24/2024                     |                                     |                        | Purchase Ord    | er Number: |              |
| Environmental   | l conditions at tir | ne of test:                    |                                     |                        |                 |            |              |
|                 |                     | Temperature: 21 °C             | Humidity: 46 %                      | Pressure:              | 667 mmhg        |            |              |
| Те              | est method used:    | SOP 8 Medium Accuracy Ca       | librations of Mass Standards        | by Modified Subtitutio | n, May 2019     |            |              |
| Test e          | equipment used:     | Lab standards traceable to     | the SI, Mettler XPR64003LD          | 5C, XPR5003SC, Mettle  | r AX206, Vaisal | a PTU301   |              |
| Cond            | ition of Weights:   | Suitable for use. No significa | ant wear or damage                  |                        | <b>C</b> N      |            |              |
| Nominal         | Artifact(s):        | 20<br>Correction as Found      | SUID Weights                        |                        | SIN             |            |              |
| Nominai         | SN/ID               | mg                             | mg                                  | Tolerance (mg)         | mg              | k          | Condition    |
| FOIL            | 002                 | 717                            | 717                                 | 2200                   | 200             | 2.02       | As Left      |
| 50 lb           | 002                 | 717                            | 717                                 | 2300                   | 200             | 2.03       | In-Tolerance |
| 50 lb           | 005                 | 1422                           | 1422                                | 2300                   | 200             | 2.05       | In-Tolerance |
| 50 lb           | 003                 | 1452                           | 1452                                | 2300                   | 200             | 2.05       | In-Tolerance |
| 50 lb           | 000                 | 497                            | 497                                 | 2300                   | 200             | 2.05       | In-Tolerance |
| 50 lb           | 009                 | 1007                           | 1217                                | 2300                   | 200             | 2.05       | In-Tolerance |
| 50 lb           | 011                 | 1217                           | 1217                                | 2300                   | 200             | 2.05       | A division d |
| 50 lb           | 013                 | 1097<br>979                    | 2                                   | 2300                   | 200             | 2.03       | Adjusted     |
| 50 lb           | 019                 | 0/0                            | 0/0                                 | 2300                   | 200             | 2.05       | In-Tolerance |
| 50 lb           | 022                 | -330                           | -330                                | 2300                   | 200             | 2.05       | In-Tolerance |
| 50 lb           | 022                 | 557                            | 657                                 | 2300                   | 200             | 2.05       | In-Tolerance |
| 50 lb           | 020                 | 1277                           | 1277                                | 2300                   | 200             | 2.03       |              |
| 50 lb           | 020                 | 2127                           | 12                                  | 2300                   | 200             | 2.03       | Adjusted     |
| 50 lb           | 020                 | 1277                           | 1277                                | 2300                   | 200             | 2.03       | Aujusteu     |
| 50 lb           | 034                 | 707                            | 707                                 | 2300                   | 200             | 2.03       |              |
| 50 lb           | 034                 | 632                            | 632                                 | 2300                   | 200             | 2.03       | In Toloranco |
| 50 lb           | 037                 | 172                            | 172                                 | 2300                   | 200             | 2.03       | In-Tolerance |
| 50 lb           | 053                 | 172                            | 172                                 | 2300                   | 200             | 2.03       | In-Tolerance |
| 50 lb           | 052                 | 1787                           | 7                                   | 2300                   | 200             | 2.03       | Adjusted     |
| 50 lb           | 066                 | 737                            | 737                                 | 2300                   | 200             | 2.03       | In-Tolerance |
| 5010            | 000                 | , , , ,                        | , , , ,                             | 2300                   | 200             | 2.05       | in rolerance |
|                 |                     |                                |                                     | +                      |                 |            | +            |
|                 |                     |                                |                                     | +                      |                 |            | 1            |
|                 |                     |                                |                                     | 1                      |                 |            | +            |
|                 | <u> </u>            |                                |                                     | 1                      |                 |            | +            |
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|                 | 1                   |                                |                                     | 1                      |                 |            | 1            |

Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541

\* 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

Dugle R. Jonson

Non E Ma

Dwight R Johnson, Metrologist

D

01/24/2024

Ron E Peterson, Reviewer

|                 |                     | Office: 118 We                 | est Capitol Avenue Pierre, SD 57501 | Phone: 605-773-3697    |               | OLO IN          | SPECTIONS    |
|-----------------|---------------------|--------------------------------|-------------------------------------|------------------------|---------------|-----------------|--------------|
|                 |                     |                                |                                     |                        |               | Liber sevenessi | POMP SAFT    |
|                 |                     | CA                             | LIBRATION CERTIF                    | ICATE                  |               |                 |              |
| Calibrated for: |                     | Prairie Scale Systems (L       | Jnit 754)                           |                        | Certificate   | number:         | MP4468       |
| Calibration Dat | te:                 | 01/24/2024                     |                                     |                        | Purchase Ord  | er Number:      |              |
| Environmental   | l conditions at tir | ne of test:                    |                                     |                        |               |                 |              |
| Linnonnenta     |                     | Temperature: 21 °C             | Humidity: 16 %                      | Drossuro:              | 667 mmhg      |                 |              |
| Те              | st method used:     | SOP 8 Medium Accuracy Ca       | librations of Mass Standards        | by Modified Subtitutio | n. May 2019   |                 |              |
| Test e          | equipment used:     | Lab standards traceable to     | the SI, Mettler XPR64003LD5         | SC, XPR5003SC, Mettler | AX206, Vaisal | a PTU301        |              |
| Cond            | ition of Weights:   | Suitable for use. No significa | ant wear or damage                  |                        |               |                 |              |
| -               | Artifact(s):        | 14                             |                                     | SN                     | Unit 754      | -               |              |
| Nominal         |                     | Correction as Found            | Correction as Left                  | NIST Class F           | Uncertainty   |                 | Condition    |
|                 | SN/ID               | mg                             | mg                                  | Tolerance (mg)         | mg            | k               | 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 |
|                 |                     |                                |                                     |                        |               |                 |              |
|                 |                     |                                |                                     |                        |               |                 |              |
|                 |                     |                                |                                     |                        |               |                 |              |
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|                 |                     |                                |                                     |                        |               |                 |              |
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|                 |                     |                                |                                     |                        |               |                 |              |
|                 |                     |                                |                                     |                        |               |                 |              |
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|                 |                     |                                |                                     |                        |               |                 |              |
|                 |                     |                                |                                     |                        |               |                 |              |
|                 |                     |                                |                                     |                        |               |                 |              |

Metrology Lab Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541

\* 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

Dugle R. Jonson

Non E M.

Dwight R Johnson, Metrologist

1012

01/24/2024

Ron E Peterson, Reviewer



prevention - protection - enforcement

# Office of Weights and Measures

### Metrology Laboratory

Office: 118 West Capitol Avenue, Pierre, SD 57501

Lab: 1100 Otter Rd, Bldg D, Sturgis, SD 57785

Lab: 605-347-7541, Office: 605-773-3697, Cell: 605-280-4572

Email: ron.peterson@state.sd.us https://dps.sd.gov/inspections/weights-measures

# **CALIBRATION CERTIFICATE**

Prairie Scale Systems (Shop Weights)

**Physical Address:** 

Phone:

SA# 131 **Billing Address:** 

Certificate number:

9860 Industrial Drive

Horace, ND 58047

9860 Industrial Drive

Horace, ND 58047

**Cooper Anderson** Contact:

701-281-9373

Received Date: Certificate Issued:

01/24/2024

As Left

01/23/2024

MP4469

**Artifacts Submitted and Summary of Results:** 

| Quantity | Artifact          | Total Pieces | Recvd in Tol | Adjusted | Rejected | 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 factork to provide an expanded uncertainty which defines an interval having a level of confidence of approximately 95 percent. The expanded uncertainty prexented in this report is consistent with the 2008 ISO/IEC Guide to the Expression of Uncertainty in Measurement. The expanded uncertainty is not tobe confused with a tolerance limit for the user during application. For weight carts, factors included on the inspection checklist have not been included in the calibration uncertainty. However, factors on the checklist may contribute measurement errors that are significant if not progerly maintained during use.

### **Conformity Statement:**

The artifacts submitted for this calibration are calibrated to NIST Handbook 105-1 (1990 or 2019), NIST Handbook 105-8 (2019), NIST Handbook 105-3 (2010), or ASTM E617 (2018), Standard Specification for Laboratory Weights and Precision Mass Standards specifications. The reported test values relate only to the observations made at the time and conditions of the test. Artifacts fully comply with all requirements (both specifications and tolerances) of the applicable documentary standard unless otherwise stated. Stated expanded uncertaintiesare less than onethird of the specified tolerances (maximum permissible errors, m.p.e.) for mass calibrations and less than the specified tolgrances for volume calibrations. The correction value plus or minus the expanded uncertainty is within the stated tolerances. It is the decision rule of the SD State Metrology Laboratory that any cast weights determined to have a correction within 66 % of the upper tolerance or 50 % of thelower tolerance will be adjusted closer to zero mass correction, even if the mass correction originally met the applicable tolerance.

### **Traceability Statement:**

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

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

Daught R. Jonson

None Al

Dwight R Johnson, Metrologist

01/24/2024

Ron E Peterson, Reviewer

| Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541<br>Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697 |                   |                                    |                                |                            |                |            |              |
|---|-------------------|------------------------------------|--------------------------------|----------------------------|----------------|------------|--------------|
|   |                   | CA                                 | LIBRATION CERTIF               | ICATE                      |                |            |              |
| Calibrated for:   |                   | Prairie Scale Systems (S           | hop Weights)                   |                            | Certificate    | number:    | MP4469       |
| Calibration Dat   | e:                | 01/24/2024                         |                                |                            | Purchase Orde  | er Number: |              |
| Environmental   | conditions at tin | ne of test:                        |                                |                            |                |            |              |
|   |                   | Temperature: 21 °C                 | Humidity: 47 %                 | Pressure:                  | 666 mmhg       |            |              |
| Te  | st method used:   | SOP 8 Medium Accuracy Ca           | librations of Mass Standards I | by Modified Subtitution    | n, May 2019    |            |              |
| Test e  | quipment used:    | Lab standards traceable to         | the SI, Mettler XPR64003LD5    | ,<br>C, XPR5003SC, Mettler | AX206, Vaisala | a PTU301   |              |
| Condi   | tion of Weights:  | Suitable for use. No signification | ant wear or damage             |                            |                |            |              |
|   | Artifact(s):      | 21                                 | piece Metric Kit               |                            | SN             | 7IVI       |              |
| Nominal   |                   | Correction as Found                | Correction as Left             | NIST Class F               | Uncertainty    |            | Condition    |
|   | SN/ID             | mg                                 | mg                             | Tolerance (mg)             | mg             | k          | As Left      |
| 5 kg  | В                 | 115                                | 115                            | 500                        | 43             | 2.05       | In-Tolerance |
| 5 kg  | В.                | 139                                | 139                            | 500                        | 43             | 2.05       | In-Tolerance |
| 2 kg  |                   | 47                                 | 47                             | 200                        | 17             | 2.05       | In-Tolerance |
| 2 kg  | В                 | 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   | В                 | 18.5                               | 18.5                           | 70 6.1 2.05 In-T           |                |            |              |
| 500 g   | С                 | 18.5                               | 18.5                           | 70 6.1 2.05 In-To          |                |            |              |
| 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 |
|   |                   |                                    |                                |                            |                |            |              |
|   |                   |                                    |                                |                            |                |            |              |
|   |                   |                                    |                                |                            |                |            |              |
|   |                   |                                    |                                |                            |                |            |              |
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Metrology Lab

\* 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

Dufter, Jonson

Non E M

Dwight R Johnson, Metrologist

01/24/2024

Ron E Peterson, Reviewer

01/24/2024

0

| Ð               |                   | Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541<br>Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697 |                              |                        |                |            |              |  |  |
|-----------------|-------------------|---|------------------------------|------------------------|----------------|------------|--------------|--|--|
|                 |                   | EMST DESCRIPTION OF TRANS   |                              |                        |                |            |              |  |  |
|                 |                   | CA  | ALIBRATION CERTIF            | ICATE                  |                |            |              |  |  |
| Calibrated for: |                   | Prairie Scale Systems (   | Shop Weights)                |                        | Certificate    | number:    | MP4469       |  |  |
| Calibration Dat | e:                | 01/24/2024  |                              |                        | Purchase Orde  | er Number: |              |  |  |
| Environmental   | conditions at tir | ne of test:   |                              |                        |                |            |              |  |  |
|                 |                   | Temperature: 21 °C  | Humidity: 47 %               | Pressure:              | 666 mmhg       |            |              |  |  |
| Те              | st method used:   | SOP 8 Medium Accuracy Ca  | librations of Mass Standards | by Modified Subtitutio | n, May 2019    |            |              |  |  |
| Test e          | quipment used:    | Lab standards traceable to  | the SI, Mettler XPR64003LD   | 5C, XPR5003SC, Mettler | AX206, Vaisala | a PTU301   |              |  |  |
| Cond            | ition of Weights: | Suitable for use. No signific   | ant wear or damage           |                        |                |            |              |  |  |
|                 | Artifact(s):      | 8   | piece Metric Kit             | -                      | SN             | 7IVI cont  | inued        |  |  |
| Nominal         | an // 5           | Correction as Found   | Correction as Left           | NIST Class F           | Uncertainty    |            | Condition    |  |  |
|                 | SN/ID             | mg  | mg                           | Tolerance (mg)         | mg             | k          | 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 |  |  |
|                 |                   |   |                              |                        |                |            |              |  |  |
|                 |                   |   |                              |                        |                |            |              |  |  |
|                 |                   |   |                              |                        |                |            |              |  |  |
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|                 |                   |   |                              | +                      |                |            |              |  |  |
|                 |                   |   |                              | +                      |                |            |              |  |  |
|                 |                   |   |                              | 1                      |                |            | 1            |  |  |

\* 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

Dugle R. Jonson

Non E /

Dwight R Johnson, Metrologist

01/24/2024

Ron E Peterson, Reviewer



prevention - protection - enforcement

# Office of Weights and Measures

### Metrology Laboratory

Office: 118 West Capitol Avenue, Pierre, SD 57501

Lab: 1100 Otter Rd, Bldg D, Sturgis, SD 57785

Lab: 605-347-7541, Office: 605-773-3697, Cell: 605-280-4572

Email: ron.peterson@state.sd.us https://dps.sd.gov/inspections/weights-measures

# **CALIBRATION CERTIFICATE**

Prairie Scale System INC (Shop) Physical Address: 9860 Industrial Drive Horace, ND 58047

Contact:

Phone:

**Cooper Anderson** 

701-281-9373

SA# **131** Billing Address: Certificate number: MP4339

01/09/2023

01/10/2023

9860 Industrial Drive Horace, ND 58047 Received Date: Certificate Issued:

Artifacts Submitted and Summary of Results:

| Quantity | Artifact           | Total Pieces | Recvd in Tol | Adjusted | Rejected | 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.

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01/10/2023

Ron E Peterson, Metrologist

Defter Honeon

01/10/2023

Dwight R Johnson, Reviewer



\* 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.

1/10/2023

Ron E Peterson, Metrologist Ver 20220919

| 13              | Office of Weights and Measures<br>Metrology Lab<br>Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541<br>Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697 |                                    |                                |                           |                 |             |              |  |  |  |
|-----------------|--|------------------------------------|--------------------------------|---------------------------|-----------------|-------------|--------------|--|--|--|
|                 | CALIBRATION CERTIFICATE  |                                    |                                |                           |                 |             |              |  |  |  |
| Calibrated for: |  | Prairie Scale System INC           | C (Shop)                       |                           | Certificate     | number:     | MP4339       |  |  |  |
| Calibration Dat | e:   | 01/10/2023                         |                                |                           | Purchase Ord    | er Number:  | 0            |  |  |  |
|                 |  |                                    |                                |                           |                 |             |              |  |  |  |
| Linvironmentar  | Environmental conditions at time of test:  |                                    |                                |                           |                 |             |              |  |  |  |
| Те              | st method used:  | SOP 8 Medium Accuracy Ca           | librations of Mass Standards b | v Modified Subtitution    | , May 2019      |             |              |  |  |  |
| Test e          | equipment used:  | Lab standards traceable to         | the SI, Mettler XPR5003SC, M   | ,<br>ettler XPR226CDR, Me | ttler AX206, Va | isala PTU30 | )1           |  |  |  |
| Condi           | ition of Weights:  | Suitable for use. No signification | ant wear or damage             |                           |                 |             |              |  |  |  |
|                 | Artifact(s):   | 30                                 | piece Metric Kit               |                           | SN              | 7IVI        |              |  |  |  |
| Nominal         |  | Correction as Found                | Correction as Left             | NIST Class F              | Uncertainty     |             | Condition    |  |  |  |
|                 | SN/ID  | mg                                 | mg                             | Tolerance (mg)            | mg              | k           | As Left      |  |  |  |
| 5 kg            | В  | 119                                | 119                            | 500                       | 44              | 2.07        | In-Tolerance |  |  |  |
| 5 kg            | B-   | 142                                | 142                            | 500                       | 44              | 2.07        | In-Tolerance |  |  |  |
| 2 kg            | В  | 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-Tolera    |                 |             |              |  |  |  |
| 500 g           | A  | 20.5                               | 20.5                           | 70                        | In-Tolerance    |             |              |  |  |  |
| 500 g           | В  | 19.5                               | 19.5                           | 70 6.1 2.07 In-Tole       |                 |             |              |  |  |  |
| 500 g           | С  | 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 |  |  |  |
|                 |  |                                    |                                |                           |                 |             | <b> </b>     |  |  |  |
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South Dakota Department of Public Safety

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

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1/10/2023

Ron E Peterson, Metrologist Ver 20220919

|                  |                   | Lab: 1100                      | Metrology Lab<br>Otter Rd, Bldg. D Sturgis, SD 57785 Pho | one: 605-347-7541       |                  | R                | WEIGHTS &        |
|------------------|-------------------|--------------------------------|--|-------------------------|------------------|------------------|------------------|
|                  |                   | Office: 118 W                  | /est Capitol Avenue Pierre, SD 57501                     | Phone: 605-773-3697     |                  |                  | SPECTIONS        |
|                  |                   | CA                             | LIBRATION CERTIF   | ICATE                   |                  | See of second of | 174800.044101-14 |
| Calibrated for:  |                   | Prairie Scale System INC       | (Shop)   |                         | Certificate      | number:          | MP4339           |
| Calibration Date | :                 | 01/10/2023                     |  |                         | Purchase Orde    | er Number:       | 0                |
| Environmental    | conditions at tin | ne of test:                    |  |                         |                  |                  |                  |
| Invironmentar    |                   | Temperature: 20.8 °C           | Humidity: 46 %   | Pressure                | 661 6 mmhg       |                  |                  |
| Tes              | t method used:    | SOP 8 Medium Accuracy Ca       | librations of Mass Standards I                           | by Modified Subtitution | n, May 2019      |                  |                  |
| Test e           | quipment used:    | Lab standards traceable to     | the SI, Mettler XPR5003SC, N                             | lettler XPR226CDR, Me   | ttler AX206, Vai | isala PTU3       | 01               |
| Condit           | tion of Weights:  | Suitable for use. No significa | ant wear or damage                                       |                         |                  |                  |                  |
|                  | Artifact(s):      | 30                             | piece Metric Kit   |                         | SN               | 7IVI cont        | inued            |
| Nominal          |                   | Correction as Found            | Correction as Left                                       | NIST Class F            | Uncertainty      | 1.               | Condition        |
|                  | SN/ID             | mg                             | mg   | Tolerance (mg)          | mg               | K                | As Left          |
| 500 mg           |                   | 0.371                          | 0.3/1  | 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     |
|                  |                   |                                |  |                         |                  |                  |                  |
|                  |                   |                                |  |                         |                  |                  |                  |
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South Dakota Department of Public Safety

Office of Weights and Measures

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\* 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



prevention - protection - enforcement

# Office of Weights and Measures

### Metrology Laboratory

Office: 118 West Capitol Avenue, Pierre, SD 57501

Lab: 1100 Otter Rd, Bldg D, Sturgis, SD 57785

Lab: 605-347-7541, Office: 605-773-3697, Cell: 605-280-4572

Email: ron.peterson@state.sd.us https://dps.sd.gov/inspections/weights-measures

# **CALIBRATION CERTIFICATE**

Prairie Scale Systems (Precision kits)

701-281-9373

**Physical Address:** 

Phone:

SA# 131 **Billing Address:** 

9860 Industrial Drive

Certificate number:

Received Date:

MP4475

9860 Industrial Drive Horace, ND 58047

Horace, ND 58047

**Cooper Anderson** Contact:

Certificate Issued:

02/12/2024

As Left

02/08/2024

**Artifacts Submitted and Summary of Results:** 

| Quantity | Artifact              | Total Pieces | Recvd in Tol | Adjusted | Rejected | In Tolerance |
|----------|-----------------------|--------------|--------------|----------|----------|--------------|
| 2        | Precision Weight kits | 31           | 31           | 0        | 0        | 31           |
|          |                       |              |              |          |          |              |
|          |                       |              |              |          |          |              |
|          |                       |              |              |          |          |              |
|          |                       |              |              |          |          |              |
|          |                       |              |              |          |          |              |
|          |                       |              |              |          |          |              |

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 factork to provide an expanded uncertainty which defines an interval having a level of confidence of approximately 95 percent. The expanded uncertainty prexented in this report is consistent with the 2008 ISO/IEC Guide to the Expression of Uncertainty in Measurement. The expanded uncertainty is not tobe confused with a tolerance limit for the user during application. For weight carts, factors included on the inspection checklist have not been included in the calibration uncertainty. However, factors on the checklist may contribute measurement errors that are significant if not progerly maintained during use.

### **Conformity Statement:**

The artifacts submitted for this calibration are calibrated to NIST Handbook 105-1 (1990 or 2019), NIST Handbook 105-8 (2019), NIST Handbook 105-3 (2010), or ASTM E617 (2018), Standard Specification for Laboratory Weights and Precision Mass Standards specifications. The reported test values relate only to the observations made at the time and conditions of the test. Artifacts fully comply with all requirements (both specifications and tolerances) of the applicable documentary standard unless otherwise stated. Stated expanded uncertaintiesare less than onethird of the specified tolerances (maximum permissible errors, m.p.e.) for mass calibrations and less than the specified tolgrances for volume calibrations. The correction value plus or minus the expanded uncertainty is within the stated tolerances. It is the decision rule of the SD State Metrology Laboratory that any cast weights determined to have a correction within 66 % of the upper tolerance or 50 % of thelower tolerance will be adjusted closer to zero mass correction, even if the mass correction originally met the applicable tolerance.

### **Traceability Statement:**

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

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Non E M

Dufter. Joneon

Ron E Peterson, Metrologist

02/12/2024

Dwight R Johnson, Reviewer 02/12/2024



MP4475

**Certificate number:** 



# **CALIBRATION CERTIFICATE**

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

Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785Phone: 605-347-7541 Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697

Calibrated for:

**Calibration Date:** 

Environmental conditions at time of test:

Temperature: 20.5 C Humidity: 49.315 % Pressure: 666.885 mmhg

Test method used: SOP 4, Weighing by Double Substitution , May 2019

02/12/2024

Prairie Scale Systems (Precision kits)

Test equipment used: Lab standards traceable to SI through NIST and Mettler XPR5004SC, XPE505C, XPR36C, Vaisala PTU301 Condition of Weights: Suitable for use. No significant wear or damage

|         | Artifact(s): | 5                    | piece Metric Kit                |                       | SN          | H563-H566, | F197                         |
|---------|--------------|----------------------|---------------------------------|-----------------------|-------------|------------|------------------------------|
| Nominal |              | True Mass Correction | Conventional Mass<br>Correction | ASTM E 617 Class<br>2 | Uncertainty |            | Assumed                      |
|         | SN/ID        | mg                   | mg                              | Tolerance (mg)        | mg          | k          | Density (g/cm <sup>3</sup> ) |
| 5 kg    | F197         | 17.8                 | 2.5                             | 25                    | 1.9         | 2.04       | 7.84                         |
| 2 kg    | H563         | 9.23                 | 3.11                            | 10                    | 0.46        | 2.02       | 7.84                         |
| 2 kg    | H564         | 8.18                 | 2.06                            | 10                    | 0.46        | 2.02       | 7.84                         |
| 2 kg    | H565         | 8.48                 | 2.36                            | 10                    | 0.46        | 2.02       | 7.84                         |
| 2 kg    | H566         | 9.23                 | 3.11                            | 10                    | 0.46        | 2.02       | 7.84                         |
|         |              |                      |                                 |                       |             |            |                              |
|         |              |                      |                                 |                       |             |            |                              |
|         |              |                      |                                 |                       |             |            |                              |
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\* 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

02/12/2024

Dufter. Joneon

Dwight R Johnson, Reviewer

02/12/2024



Metrology Lab

Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785Phone: 605-347-7541 Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697



# 1012

CALIBRATION CERTIFICATE

Certificate number:

MP4475

Calibrated for: Calibration Date:

ibration Date: 02/12/2024

Environmental conditions at time of test:

Temperature: 20.6 C Humidity: 49.61 %

Pressure: 666.995 mmhg

Test method used: SOP 4, Weighing by Double Substitution , May 2019

Prairie Scale Systems (Precision kits)

Test equipment used: Lab standards traceable to SI through NIST and Mettler XPR5004SC, XPE505C, XPR36C, Vaisala PTU301 Condition of Weights: Suitable for use. No significant wear or damage

|         | Artifact(s): | 24                   | piece Metric Kit  | tric Kit SN F-196 |             |      |                              |
|---------|--------------|----------------------|-------------------|-------------------|-------------|------|------------------------------|
|         |              | True Mass Correction | Conventional Mass | ASTM E 617 Class  |             |      |                              |
| Nominal |              |                      | Correction        | 2                 | Uncertainty |      | Assumed                      |
|         | SN/ID        | mg                   | mg                | Tolerance (mg)    | mg          | k    | Density (g/cm <sup>3</sup> ) |
| 5 kg    |              | 18.3                 | 2.9               | 25                | 1.9         | 2.04 | 7.84                         |
| 2 kg    |              | 8.58                 | 2.46              | 10                | 0.46        | 2.02 | 7.84                         |
| 1 kg    |              | 1.8                  | -1.3              | 5                 | 1.1         | 2.04 | 7.84                         |
| 500 g   |              | 1.93                 | 0.40              | 2.5               | 0.10        | 2.01 | 7.84                         |
| 200 g   |              | 0.998                | 0.386             | 1                 | 0.060       | 2.01 | 7.84                         |
| 200 g   |              | 0.998                | 0.386             | 1                 | 0.060       | 2.01 | 7.84                         |
| 100 g   |              | -0.027               | -0.121            | 0.5               | 0.042       | 2.01 | 7.95                         |
| 50 g    |              | 0.128                | 0.081             | 0.25              | 0.041       | 2.03 | 7.95                         |
| 20 g    |              | 0.033                | 0.015             | 0.1               | 0.015       | 2.02 | 7.95                         |
| 20 g    | .            | 0.055                | 0.036             | 0.1               | 0.015       | 2.02 | 7.95                         |
| 10 g    |              | 0.032                | 0.022             | 0.074             | 0.011       | 2.02 | 7.95                         |
| 5 g     |              | 0.0347               | 0.0300            | 0.054             | 0.0088      | 2.02 | 7.95                         |
| 2 g     |              | 0.0143               | 0.0125            | 0.054             | 0.0061      | 2.02 | 7.95                         |
| 2 g     |              | 0.0148               | 0.0129            | 0.054             | 0.0061      | 2.02 | 7.95                         |
| 1 g     |              | 0.0178               | 0.0169            | 0.054             | 0.0052      | 2.02 | 7.95                         |
| 500 mg  |              | 0.0005               | 0.0000            | 0.025             | 0.0041      | 2.02 | 7.95                         |
| 200 mg  |              | 0.0007               | 0.0005            | 0.025             | 0.0035      | 2.04 | 7.95                         |
| 200 mg  |              | 0.0007               | 0.0005            | 0.025             | 0.0035      | 2.04 | 7.95                         |
| 100 mg  |              | -0.0020              | -0.0021           | 0.025             | 0.0024      | 2.03 | 7.95                         |
| 50 mg   |              | 0.0072               | 0.0072            | 0.014             | 0.0024      | 2.04 | 7.95                         |
| 20 mg   |              | 0.0015               | 0.0014            | 0.014             | 0.0026      | 2.04 | 7.95                         |
| 20 mg   |              | -0.0050              | -0.0051           | 0.014             | 0.0026      | 2.04 | 7.95                         |
| 10 mg   |              | 0.0016               | 0.0016            | 0.014             | 0.0026      | 2.04 | 7.95                         |
| 5 mg    |              | 0.0031               | 0.0031            | 0.014             | 0.0024      | 2.05 | 7.95                         |
|         |              |                      |                   |                   |             |      |                              |
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|         |              | 1                    |                   |                   |             |      |                              |

\* 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

02/12/2024

Dufter. Joneon

Dwight R Johnson, Reviewer

er 02/12/2024

# RICELAKE Certificate of Weight Calibration

ISO/IEC 17025:2017 & ANSI/NCSL-Z540-1-1994 ACCREDITED

| Traceable Cer         | rtificate Number   | 36750734  | 100        |   | anoo.  | -2040-1-1994 ACCREDITED   |
|-----------------------|--|---|------------|---|--|---|
| Contractor:           |  | PRAIRIE SCALE SYSTEMS INC   |            |   | م<br>مربع مربع                               | Gnast terror  |
| 00111101011           |  |   |            | 1. S. | $\langle \hat{e}^{\ell_0} I \hat{r}_{\ell'}$ | uncornality 2   |
|                       |  |   |            |   |  |   |
|                       |  | 1010102,100 00041-0000  |            |   | egene also                                   |   |
| Purchase Ord          | er Number:   | 103935  |            | $\int \frac{G_{3}}{20} f$                 | -  |   |
| Client:               |  | PRAIRIE SCALE SYSTEMS   |            |   |  |   |
|                       |  | 9860 INDUSTRIAL DR  |            |   |  | WIAAF gil   |
|                       |  | HORACE, ND 58047  |            |   |  | - Marenser . §/   |
|                       |  | •   |            |   |  | - N - S   |
| Date Received         | <b>i:</b>  | 31 Jan 2024   |            | N 45                                      | (3855)<br>                                   |   |
| Date Calibrate        | d:   | 16 Feb 2024   |            | 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1  | lanen -                                      | and the state of the |
| Recalibration         | Date:  | 16 Feb 2025   |            |   |  | 江的田里。   |
| NIST Certificat       | te Number:   | 684/290551-18   |            |   |  |   |
| If there are two NIS1 | numbers, one or both   | may apply   |            |   |  |   |
| Calibrated By:        |  | 28  |            |   |  |   |
| Procedure:            |  | WI05-0092 Rev. B  |            |   |  |   |
| Condition of W        | /eights:   | New   |            |   |  |   |
| Description of        | Weights:   | 1000 lb Cast Iron Heavy Capacity Weight, ASTM C   | lass 6     | , S/N AWW3                                |  |   |
| Comments:             | ೆ ಸಂಪರ್ಶಿಗಳು ಕಾರ್ಯವರ್ಷ ಕಾರಣ.<br>ಕಾರ್ಯಕ್ರಮ ಕಾರ್ಯಕ್ರಮ ಕಾರಣಕ್ರಮ | Dá sí val 1979 i val dova sí val v sa sing a sa san a sing i valim valim valim valim se sá singer en segar en s | 1757       | - TENENS - FOR STAN STAN STANDARD         |  | a da sina da sera sina da sera  |
| a (Kalikadan da)      |  | Key Notes   | 1993       | Clear                                     | ning L                                       | evels   |
| Finish                | * Indicates the we   | ight does not meet the finish requirements  | A          | Dusted with brush or cloth                |  |   |
| Material              | Indicates the wei  | ght does not meet the material requirements   | B          | Spot cleaned with ethyl alcoh             | ol   |   |
| New Wt                | \land Indicates new we                                       | zight   | U          | Full surface cleaned with eth             | yl alcoho                                    | 1   |
| Missing Wt            | 🙏 Indicates replace  | d missing weight with new weight  | D<br>E     | Spot cleaned with non-alcohe              | ol solver                                    | it followed by ethyl alcohol  |
| Damaged Wt            | K Indicates replace  | d damaged weight  |            | Full surface cleaned with non             | i-alcohol                                    | solvent followed by ethyl alcohol   |
| Replaced OOT          | A Indicates replace  | d out of tolerance weight   | -<br>1932  | No cleaning performed<br>Matorial         | Abbro  | Viatione  |
| ООТ                   | X Indicates correct  | on plus or minus Uncertainty greater than or equal to MPE   | (88)<br>Al | Aleminum                                  |  | Tantalum  |
| Magnetic Wt           | A AIndicates replace   | d magnetic weight   | SS         | Stainless Steel                           | BR   | Rraee   |
| Design                | Indicates the wei  | ght does not meet the design or shape requirements  | CI         | Cast Iron                                 | PL   | Platinum  |
| Renainted             | and indicator the web  |   | IR         | fron                                      | NS   | Nickel Silver   |
| Nepainteu             | muicates the Wei   | un was repainted after As round obtained  | MS         | Mild Steel                                | OR   | Other/Unknown   |
| Other                 | ↑ See comments a   | bove  |            |   |  |   |

Check with your local state agency for certification of compliance on Legal-for-Trade items. The weight accuracy class is referenced in the Description of Weights. Unless otherwise noted, the weights calibrated meet the requirements of the accuracy class. Results relate only to weights calibrated. The Surface Finishes of weights are evaluated visually. Weights are screened for magnetism using work instruction WI05-0035 when they are new, when requested by the customer or when weights are suspected of not meeting specifications. Density if measured using OIML R111-1 (2004) method A2. Conventional Mass is reported based on a reference density of 8.0 g/cm<sup>3</sup>. The Uncertainty of Measurement is included in the determination of Maximum Permissible Error (MPE) Pass/Fail Criteria. The specifications for Maximum Permissible Error (MPE) can be found in NIST Handbook 105-1 (2019), NIST Handbook 105-1 (1990), ASTM E617-23 or OIML R111-1 (2004), manufacturer specifications or customer specifications.

The Uncertainty assigned to the Conventional Mass values are the result of the root-sum-square of the type A and type B components, calculated in accordance with NIST SOP 29 and the Guide to the expression of uncertainty in measurement, with coverage factor (k=2), to express the expanded uncertainty with an approximate 95.45% confidence level. This report is not to be used to claim product certification, approval, or endorsement by NVLAP, NIST, A2LA, or any government agency. This document and all data within, shall not be reproduced, except in full, without the written approval of Rice Lake Weighing Systems.

Prepared By:



Rice Lake Weighing Systems®●PN 64784●12/21 230 West Coleman Street●Rice Lake, WI 54868●USA TEL: 715-234-9171●FAX: 715-234-6967 Definitions: <u>http://certs.ricelake.com/certs/DefinitionsV2.docx</u> Page 1 of 2 16 Feb 2024

Issued Date:



Weignt Balibrai Certiffeate 0 **₹164 = 14114 =** 

ISO/IEC 17025:2017 & ANSI/NCSL-Z540-1-1994 ACCREDITED

22.48 °C

Temperature Range:

3675073A

Traceable Certificate Number:

Clean Level < 1.1534 (mg/cm<sup>3</sup>) Density Air 1095Q Reference Set Used Standard 851Q Balance Used As Left Data (As Found Data is undifferentiated from As Left Data unless listed in As Found Data table) 735.58 mmHg 22 % Const. Type = Assumed Material Relative Humidity Range:  $\overline{O}$ 7.20 Pressure Range: Assumed (g/cm<sup>3</sup>) Density (Y≖Pass Pass MPE N=Fail) > 45000 (∓ mg) MPE 6200 (‡ mg) Unc. (7=7) 18552 Mass Corr. (Bm) Conv. 1000.041 (Same UOM Conv. Mass as Nom.) PRAIRIE SCALE SYSTEMS 26113 Mass Corr. (Bm) True 16 Feb 2024 1000.058 True Mass (Same UOM as Nom.) Unìque ₽ 1000 lb AWW3 Date Calibrated: Nominal Value Client: