



Receipt Date: March 13, 2017  
Cal. Date: March 14, 2017  
Report Date: March 14, 2017

Report No.: 337408  
Set Serial No.: 11 & 22  
Barcode: 201586

## Calibration Certificate

NORTHWEST SCALE, INC.  
2210 EAST MAIN AVE UNIT 2A  
WEST FARGO, ND 58078  
Contact: JIM JACOBS  
Phone: 701-298-9527  
PO Number: NONE  
Procedure: NIST SOP 8  
Technician ID: 11

Item(s) Submitted: 2-2500 lb Weight Carts  
Manufacturer: Anderson  
Weight Type: NA  
Equipment ID: None  
Condition: Excellent  
Temperature: 19.1 °C  
Pressure: 749.1 mmHg  
Relative Humidity: 50.1 %

Nominal Value	Serial No.	CM Correction (g)		NIST HB105-8 Tolerance		k	U (g)
		As Found	As Left	As Found	As Left		
2500 lb	11	-15	-15	Meets	Meets	2.06	60.
2500 lb	22	-325	15	*	Meets	2.06	60.

\* Weight(s) as found exceed NIST HB105-8 Class F tolerance.

The resulting tolerance class of the weight is determined by combining the correction of the weight and the uncertainty of the measurement. The corrections given above correlate to a conventional mass scale versus 8.0 g/cm<sup>3</sup> density and an air density of 1.2 mg/cm<sup>3</sup> at 20 °C. The items listed above have been calibrated using the Standards of the State of Minnesota which are currently in control. These standards are traceable to the SI through NIST. Calibration processes were monitored and found to be in control. All of the tolerances and specifications were evaluated according to NIST Handbook 105-8 (2003). Uncertainty calculations contain the components in NIST SOP 8 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (k) calculated at the approximate 95.45 % confidence level. Results apply to items identified in this report only.

Pete Whebbe

*Pete Whebbe*  
Metrologist

Page 1 of 1

Reviewed by:

Erik Alfvén

*Erik Alfvén*  
Metrologist

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**Calibration Report**



Receipt Date: March 13, 2017  
Cal. Date: March 14, 2017  
Report Date: March 14, 2017

Report No.: 337407  
Set Serial No.: OV2X-Z,OV30-32  
Barcode: 201585

## Calibration Certificate

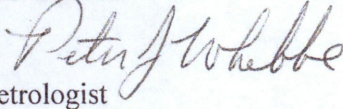
NORTHWEST SCALE, INC.  
2210 EAST MAIN AVE UNIT 2A  
WEST FARGO, ND 58078  
Contact: JIM JACOBS  
Phone: 701-298-9527  
PO Number: NONE  
Procedure: NIST SOP 8  
Technician ID: 11

Item(s) Submitted: Cast Slab Weights  
Manufacturer: Rice Lake  
Weight Type: II  
Equipment ID: None  
Condition: Excellent  
Temperature: 19.4 °C  
Pressure: 749.3 mmHg  
Relative Humidity: 51.2 %

Nominal Value	Serial No.	CM Correction (g)		NIST HB105-1 Class		k	U (g)
		As Found	As Left	As Found	As Left		
2500 lb	OV2X	56.4	56.4	F	F	2.06	8.0
2500 lb	OV2Y	31.4	31.4	F	F	2.06	8.0
2500 lb	OV2Z	29.4	29.4	F	F	2.06	8.0
2500 lb	OV30	20.4	20.4	F	F	2.06	8.0
2500 lb	OV31	-11.6	-11.6	F	F	2.06	8.0
2500 lb	OV32	62.4	62.4	F	F	2.06	8.0

The resulting tolerance class of the weight is determined by combining the correction of the weight and the uncertainty of the measurement. The corrections given above correlate to a conventional mass scale versus 8.0 g/cm<sup>3</sup> density and an air density of 1.2 mg/cm<sup>3</sup> at 20 °C. The items listed above have been calibrated using the Standards of the State of Minnesota which are currently in control. These standards are traceable to the SI through NIST. Calibration processes were monitored and found to be in control. All of the tolerances and specifications were evaluated according to NIST Handbook 105-1 (1990). Uncertainty calculations contain the components in NIST SOP 8 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (k) calculated at the approximate 95.45 % confidence level. Results apply to items identified in this report only.

Pete Whebbe



Metrologist

Reviewed by:

Erik Alfvin



Metrologist



Receipt Date: March 13, 2017  
Cal. Date: March 15, 2017  
Report Date: March 15, 2017

Report No.: 337406  
Set Serial No.: 7 thru 10  
Barcode: 201588

## Calibration Certificate

NORTHWEST SCALE, INC.  
2210 EAST MAIN AVE UNIT 2A  
WEST FARGO, ND 58078  
Contact: JIM JACOBS  
Phone: 701-298-9527  
PO Number: NONE  
Procedure: NIST SOP 8  
Technician ID: 11

Item(s) Submitted: Cast Cube Weights  
Manufacturer: PUC  
Weight Type: II  
Equipment ID: None  
Condition: Fair  
Temperature: 18.9 °C  
Pressure: 747.4 mmHg  
Relative Humidity: 50.4 %

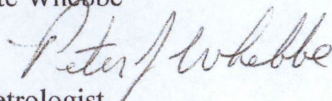
Nominal Value	Serial No.	CM Correction (g)		NIST HB105-1 Class		k	U (g)
		As Found	As Left	As Found	As Left		
500 lb	7	-42.89	-17.29	*	F	2.01	0.90
500 lb	8	-41.89	-19.89	*	F	2.01	0.90
500 lb	9	-22.89	-2.89	*	F	2.01	0.90
500 lb	10	-47.59	12.61	*	F	2.01	0.90

\* Weight(s) as found exceed NIST HB105-1 Class F tolerance.

The resulting tolerance class of the weight is determined by combining the correction of the weight and the uncertainty of the measurement. The corrections given above correlate to a conventional mass scale versus 8.0 g/cm<sup>3</sup> density and an air density of 1.2 mg/cm<sup>3</sup> at 20 °C. The items listed above have been calibrated using the Standards of the State of Minnesota which are currently in control. These standards are traceable to the SI through NIST. Calibration processes were monitored and found to be in control. All of the tolerances and specifications were evaluated according to NIST Handbook 105-1 (1990). Uncertainty calculations contain the components in NIST SOP 8 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (k) calculated at the approximate 95.45 % confidence level. Results apply to items identified in this report only.

Pete Whebbe

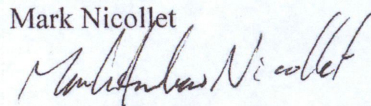
Metrologist



Reviewed by:

Mark Nicollet

Quality Manager





Receipt Date: March 13, 2017  
Cal. Date: March 14, 2017  
Report Date: March 15, 2017

Report No.: 337409  
Set Serial No.: NSI 01 - 40; None  
Barcode: 201589

## Calibration Certificate

NORTHWEST SCALE, INC.  
2210 EAST MAIN AVE UNIT 2A  
WEST FARGO, ND 58078  
Contact: JIM JACOBS  
Phone: 701-298-9527  
PO Number: NONE  
Procedure: NIST SOP 8  
Technician ID: 11

Item(s) Submitted: Cast Hand Weights  
Manufacturer: Rice Lake  
Weight Type: II  
Equipment ID: None  
Condition: Excellent  
Temperature: 19.5 °C  
Pressure: 749.7 mmHg  
Relative Humidity: 49.4 %

Nominal Value	Serial No.	CM Correction (mg)		NIST HB105-1 Class		k	U (mg)
		As Found	As Left	As Found	As Left		
50 lb	NSI 01	-500	-500	F	F	2.01	56
50 lb	NSI 02	1040	1040	F	F	2.01	56
50 lb	NSI 03	70	70	F	F	2.01	56
50 lb	NSI 04	1160	1160	F	F	2.01	56
50 lb	NSI 05	-420	-420	F	F	2.01	56
50 lb	NSI 06	1070	1070	F	F	2.01	56
50 lb	NSI 07	-1200	-1200	F	F	2.01	56
50 lb	NSI 08	-750	-750	F	F	2.01	56
50 lb	NSI 09	-380	-380	F	F	2.01	56
50 lb	NSI 10	510	510	F	F	2.01	56
50 lb	NSI 11	-1540	-1540	F	F	2.01	56
50 lb	NSI 12	-120	-120	F	F	2.01	56
50 lb	NSI 13	-2030	-2030	F	F	2.01	56
50 lb	NSI 14	-850	-850	F	F	2.01	56
50 lb	NSI 15	-1320	-1320	F	F	2.01	56
50 lb	NSI 16	1310	1310	F	F	2.01	56
50 lb	NSI 17	140	140	F	F	2.01	56
50 lb	NSI 18	30	30	F	F	2.01	56
50 lb	NSI 19	120	120	F	F	2.01	56
50 lb	NSI 20	-570	-570	F	F	2.01	56
50 lb	NSI 21	-430	-430	F	F	2.01	56
50 lb	NSI 22	640	640	F	F	2.01	56
50 lb	NSI 23	-220	-220	F	F	2.01	56
50 lb	NSI 24	-1370	-1370	F	F	2.01	56
50 lb	NSI 25	1190	1190	F	F	2.01	56
50 lb	NSI 26	90	90	F	F	2.01	56
50 lb	NSI 27	-2070	-2070	F	F	2.01	56
50 lb	NSI 28	-1800	-1800	F	F	2.01	56
50 lb	NSI 29	830	830	F	F	2.01	56
50 lb	NSI 30	320	320	F	F	2.01	56



Receipt Date: March 13, 2017  
Cal. Date: March 14, 2017  
Report Date: March 15, 2017

Report No.: 337409  
Set Serial No.: NSI 01 - 40; None  
Barcode: 201589

Continued,

## Calibration Certificate

NORTHWEST SCALE, INC.  
2210 EAST MAIN AVE UNIT 2A  
WEST FARGO, ND 58078  
Contact: JIM JACOBS  
Phone: 701-298-9527  
PO Number: NONE  
Procedure: NIST SOP 8  
Technician ID: 11

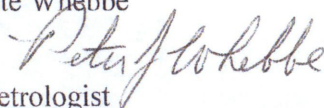
Item(s) Submitted: Cast Hand Weights  
Manufacturer: Rice Lake  
Weight Type: II  
Equipment ID: None  
Condition: Excellent  
Temperature: 19.5 °C  
Pressure: 749.7 mmHg  
Relative Humidity: 49.4 %

Nominal Value	Serial No.	CM Correction (mg)		NIST HB105-1 Class		k	U (mg)
		As Found	As Left	As Found	As Left		
50 lb	NSI 31	-320	-320	F	F	2.01	56
50 lb	NSI 32	-960	-960	F	F	2.01	56
50 lb	NSI 33	-510	-510	F	F	2.01	56
50 lb	NSI 34	250	250	F	F	2.01	56
50 lb	NSI 35	550	550	F	F	2.01	56
50 lb	NSI 36	130	130	F	F	2.01	56
50 lb	NSI 37	320	320	F	F	2.01	56
50 lb	NSI 38	210	210	F	F	2.01	56
50 lb	NSI 39	-230	-230	F	F	2.01	56
50 lb	NSI 40	1120	1120	F	F	2.01	56
25 lb		299	299	F	F	2.01	52
25 lb		29	29	F	F	2.01	52

The resulting tolerance class of the weight is determined by combining the correction of the weight and the uncertainty of the measurement. The corrections given above correlate to a conventional mass scale versus 8.0 g/cm<sup>3</sup> density and an air density of 1.2 mg/cm<sup>3</sup> at 20 °C. The items listed above have been calibrated using the Standards of the State of Minnesota which are currently in control. These standards are traceable to the SI through NIST. Calibration processes were monitored and found to be in control. All of the tolerances and specifications were evaluated according to NIST Handbook 105-1 (1990). Uncertainty calculations contain the components in NIST SOP 8 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to items identified in this report only.

Pete Whebbe

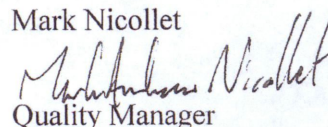
Metrologist



Reviewed by:

Mark Nicollet

Quality Manager





Receipt Date: March 13, 2017  
Cal. Date: March 14, 2017  
Report Date: March 15, 2017

Report No.: 337410  
Set Serial No.: NSI 41 - 80  
Barcode: 201587

## Calibration Certificate

NORTHWEST SCALE, INC.  
2210 EAST MAIN AVE UNIT 2A  
WEST FARGO, ND 58078  
Contact: JIM JACOBS  
Phone: 701-298-9527  
PO Number: NONE  
Procedure: NIST SOP 8  
Technician ID: 11

Item(s) Submitted: Cast Hand Weights  
Manufacturer: Rice Lake  
Weight Type: II  
Equipment ID: None  
Condition: Excellent  
Temperature: 19.4 °C  
Pressure: 748.4 mmHg  
Relative Humidity: 47.7 %

Nominal Value		Serial No.	CM Correction (mg)		NIST HB105-1 Class		k	U (mg)
			As Found	As Left	As Found	As Left		
50	lb	NSI 41	-7540	110	*	F	2.01	56
50	lb	NSI 42	-3530	1050	*	F	2.01	56
50	lb	NSI 43	-7740	380	*	F	2.01	56
50	lb	NSI 44	-8390	80	*	F	2.01	56
50	lb	NSI 45	-7830	60	*	F	2.01	56
50	lb	NSI 46	-8030	190	*	F	2.01	56
50	lb	NSI 47	-9090	120	*	F	2.01	56
50	lb	NSI 48	-4470	350	*	F	2.01	56
50	lb	NSI 49	-10250	330	*	F	2.01	56
50	lb	NSI 50	-7770	170	*	F	2.01	56
50	lb	NSI 51	-6640	0	*	F	2.01	56
50	lb	NSI 52	-5760	30	*	F	2.01	56
50	lb	NSI 53	-6440	150	*	F	2.01	56
50	lb	NSI 54	-7610	40	*	F	2.01	56
50	lb	NSI 55	-3870	140	*	F	2.01	56
50	lb	NSI 56	-7740	70	*	F	2.01	56
50	lb	NSI 57	-7170	60	*	F	2.01	56
50	lb	NSI 58	-5680	80	*	F	2.01	56
50	lb	NSI 59	-8760	240	*	F	2.01	56
50	lb	NSI 60	-2800	960	*	F	2.01	56
50	lb	NSI 61	-8920	-40	*	F	2.01	56
50	lb	NSI 62	-7800	100	*	F	2.01	56
50	lb	NSI 63	-3310	980	*	F	2.01	56
50	lb	NSI 64	-4500	10	*	F	2.01	56
50	lb	NSI 65	-2650	150	*	F	2.01	56
50	lb	NSI 66	-5780	210	*	F	2.01	56

\* Weight(s) as found exceed NIST HB105-1 Class F tolerance.



Receipt Date: March 13, 2017  
Cal. Date: March 14, 2017  
Report Date: March 15, 2017

Report No.: 337410  
Set Serial No.: NSI 41 - 80  
Barcode: 201587

Continued,  
337410  
NSI 41 - 80  
201587

## Calibration Certificate

NORTHWEST SCALE, INC.  
2210 EAST MAIN AVE UNIT 2A  
WEST FARGO, ND 58078  
Contact: JIM JACOBS  
Phone: 701-298-9527  
PO Number: NONE  
Procedure: NIST SOP 8  
Technician ID: 11

Item(s) Submitted: Cast Hand Weights  
Manufacturer: Rice Lake  
Weight Type: II  
Equipment ID: None  
Condition: Excellent  
Temperature: 19.4 °C  
Pressure: 748.4 mmHg  
Relative Humidity: 47.7 %

Nominal Value	Serial No.	CM Correction (mg)		NIST HB105-1 Class		k	U (mg)
		As Found	As Left	As Found	As Left		
50 lb	NSI 27	-3030	180	*	F	2.01	56
50 lb	NSI 28	-8020	1010	*	F	2.01	56
50 lb	NSI 29	-7370	230	*	F	2.01	56
50 lb	NSI 30	-4140	140	*	F	2.01	56
50 lb	NSI 31	-7990	30	*	F	2.01	56
50 lb	NSI 32	-7210	0	*	F	2.01	56
50 lb	NSI 33	-7490	420	*	F	2.01	56
50 lb	NSI 34	-3560	980	*	F	2.01	56
50 lb	NSI 35	-5660	0	*	F	2.01	56
50 lb	NSI 36	-4770	50	*	F	2.01	56
50 lb	NSI 37	-5500	170	*	F	2.01	56
50 lb	NSI 38	-6930	140	*	F	2.01	56
50 lb	NSI 39	-5330	110	*	F	2.01	56
50 lb	NSI 40	170	170	F	F	2.01	56

\* Weight(s) as found exceed NIST HB105-1 Class F tolerance.

The resulting tolerance class of the weight is determined by combining the correction of the weight and the uncertainty of the measurement. The corrections given above correlate to a conventional mass scale versus 8.0 g/cm<sup>3</sup> density and an air density of 1.2 mg/cm<sup>3</sup> at 20 °C. The items listed above have been calibrated using the Standards of the State of Minnesota which are currently in control. These standards are traceable to the SI through NIST. Calibration processes were monitored and found to be in control. All of the tolerances and specifications were evaluated according to NIST Handbook 105-1 (1990). Uncertainty calculations contain the components in NIST SOP 8 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (k) calculated at the approximate 95.45 % confidence level. Results apply to items identified in this report only.

Pete Whebbe

*Pete Whebbe*  
Metrologist

Reviewed by:

Mark Nicollet

*Mark Nicollet*  
Quality Manager



Receipt Date: March 13, 2017  
Cal. Date: March 14, 2017  
Report Date: March 14, 2017

Report No.: 337402  
Set Serial No.: OF44  
Barcode: 017730

## Calibration Certificate

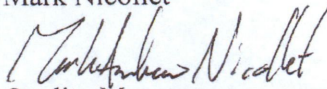
NORTHWEST SCALE, INC.  
2210 EAST MAIN AVE UNIT 2A  
WEST FARGO, ND 58078  
Contact: JIM JACOBS  
Phone: 701-298-9527  
PO Number: NONE  
Procedure: NIST SOP 8  
Technician ID: 07

Item(s) Submitted: 30 lb Weight Kit w/ oz.  
Manufacturer: Rice Lake  
Weight Type: I & II  
Equipment ID: None  
Condition: Excellent  
Temperature: 19.0 °C  
Pressure: 749.7 mmHg  
Relative Humidity: 48.6 %

Nominal Value	Serial No.	CM Correction (mg)		NIST HB105-1 Class		k	U (mg)
		As Found	As Left	As Found	As Left		
10 lb		79	79	F	F	2.01	12
10 lb		192	192	F	F	2.01	12
5 lb		76.4	76.4	F	F	2.01	6.0
1 lb		14.3	14.3	F	F	2.01	1.6
1 lb		19.1	19.1	F	F	2.01	1.6
1 lb		0.7	0.7	F	F	2.01	1.6
1 lb		30.2	30.2	F	F	2.01	1.6
1 lb		17.0	17.0	F	F	2.01	1.6
4 oz		-8.22	-8.22	F	F	2.00	0.22
4 oz		-5.68	-5.68	F	F	2.00	0.22
4 oz		-3.83	-3.83	F	F	2.00	0.22
1 oz		0.95	0.95	F	F	2.00	0.11
1 oz		1.90	1.90	F	F	2.00	0.11
1 oz		2.27	2.27	F	F	2.00	0.11
1/2 oz		0.268	0.268	F	F	2.00	0.092
1/2 oz		1.444	1.444	F	F	2.00	0.092
1/4 oz		0.709	0.709	F	F	2.00	0.056
1/4 oz		-0.099	-0.099	F	F	2.00	0.056

The resulting tolerance class of the weight is determined by combining the correction of the weight and the uncertainty of the measurement. The corrections given above correlate to a conventional mass scale versus 8.0 g/cm<sup>3</sup> density and an air density of 1.2 mg/cm<sup>3</sup> at 20 °C. The items listed above have been calibrated using the Standards of the State of Minnesota which are currently in control. These standards are traceable to the SI through NIST. Calibration processes were monitored and found to be in control. All of the tolerances and specifications were evaluated according to NIST Handbook 105-1 (1990). Uncertainty calculations contain the components in NIST SOP 8 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to items identified in this report only.

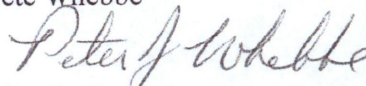
Mark Nicollet



Quality Manager

Reviewed by:

Pete Whebbe



Metrologist



Receipt Date: March 13, 2017  
Cal. Date: March 14, 2017  
Report Date: March 14, 2017

Report No.: 337403  
Set Serial No.: 1HZV  
Barcode: 200328

## Calibration Certificate

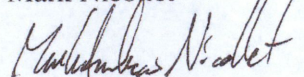
NORTHWEST SCALE, INC.  
2210 EAST MAIN AVE UNIT 2A  
WEST FARGO, ND 58078  
Contact: JIM JACOBS  
Phone: 701-298-9527  
PO Number: NONE  
Procedure: NIST SOP 8  
Technician ID: 07

Item(s) Submitted: 30 lb Weight Kit w/ Decimals  
Manufacturer: Rice Lake  
Weight Type: I & II  
Equipment ID: None  
Condition: Excellent  
Temperature: 18.5 °C  
Pressure: 749.6 mmHg  
Relative Humidity: 52.3 %

Nominal Value	Serial No.	CM Correction (mg)		ASTM E617 Class		k	U (mg)
		As Found	As Left	As Found	As Left		
10 lb		186	186	5	5	2.01	12
10 . lb		154	154	5	5	2.01	12
5 lb		93.4	93.4	5	5	2.01	6.0
2 lb		37.0	37.0	5	5	2.02	3.1
2 . lb		36.2	36.2	5	5	2.02	3.1
1 lb		18.6	18.6	5	5	2.01	1.6
0.5 lb		9.4	9.4	5	5	2.02	1.3
0.2 lb		5.65	5.65	5	5	2.02	0.22
0.2 . lb		3.72	3.72	5	5	2.02	0.22
0.1 lb		4.24	4.24	5	5	2.02	0.14
0.05 lb		1.85	1.85	5	5	2.02	0.11
0.02 lb		0.220	0.220	4	4	2.02	0.066
0.02 . lb		0.720	0.720	5	5	2.02	0.066
0.01 lb		0.631	0.631	5	5	2.02	0.052
0.005 lb		0.163	0.163	4	4	2.02	0.073
0.002 lb		0.427	0.427	5	5	2.02	0.047
0.002 . lb		0.162	0.162	5	5	2.02	0.047
0.001 lb		-0.023	-0.023	4	4	2.02	0.041

The resulting tolerance class of the weight is determined by combining the correction of the weight and the uncertainty of the measurement. The corrections given above correlate to a conventional mass scale versus 8.0 g/cm<sup>3</sup> density and an air density of 1.2 mg/cm<sup>3</sup> at 20 °C. The items listed above have been calibrated using the Standards of the State of Minnesota which are currently in control. These standards are traceable to the SI through NIST. Calibration processes were monitored and found to be in control. All of the tolerances and specifications were evaluated according to ASTM E617 (2013). Uncertainty calculations contain the components in NIST SOP 8 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (k) calculated at the approximate 95.45 % confidence level. Results apply to items identified in this report only.

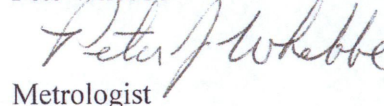
Mark Nicollet



Quality Manager

Reviewed by:

Pete Whebbe



Metrologist



Receipt Date: March 13, 2017  
Cal. Date: March 14, 2017  
Report Date: March 14, 2017

Report No.: 337404  
Set Serial No.: 1HZW  
Barcode: 200329

## Calibration Certificate

NORTHWEST SCALE, INC.  
2210 EAST MAIN AVE UNIT 2A  
WEST FARGO, ND 58078  
Contact: JIM JACOBS  
Phone: 701-298-9527  
PO Number: NONE  
Procedure: NIST SOP 8  
Technician ID: 07

Item(s) Submitted: Metric Weight Kit  
Manufacturer: Rice Lake  
Weight Type: I & II  
Equipment ID: None  
Condition: Excellent  
Temperature: 18.4 °C  
Pressure: 749.6 mmHg  
Relative Humidity: 52.5 %

Nominal Value	Serial No.	CM Correction (mg)		NIST HB105-1 Class		k	U (mg)
		As Found	As Left	As Found	As Left		
2000 g		91.1	91.1	F	F	2.02	5.7
1000 g		42.8	42.8	F	F	2.03	2.5
500 g		30.1	30.1	F	F	2.02	2.0
200 g		8.96	8.96	F	F	2.02	0.55
200 . g		14.6	14.6	F	F	2.02	0.55
100 g		8.95	8.95	F	F	2.02	0.25
50 g		4.55	4.55	F	F	2.03	0.16
20 g		1.32	1.32	F	F	2.03	0.11
20 . g		0.78	0.78	F	F	2.03	0.11
10 g		0.895	0.895	F	F	2.03	0.072
5 g		0.319	0.319	F	F	2.03	0.054
2 g		0.625	0.625	F	F	2.03	0.048
2 . g		0.435	0.435	F	F	2.03	0.048
1 g		0.594	0.594	F	F	2.03	0.039

The resulting tolerance class of the weight is determined by combining the correction of the weight and the uncertainty of the measurement. The corrections given above correlate to a conventional mass scale versus 8.0 g/cm<sup>3</sup> density and an air density of 1.2 mg/cm<sup>3</sup> at 20 °C. The items listed above have been calibrated using the Standards of the State of Minnesota which are currently in control. These standards are traceable to the SI through NIST. Calibration processes were monitored and found to be in control. All of the tolerances and specifications were evaluated according to NIST Handbook 105-1 (1990). Uncertainty calculations contain the components in NIST SOP 8 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (k) calculated at the approximate 95.45 % confidence level. Results apply to items identified in this report only.

Mark Nicollet

Quality Manager

Reviewed by:

Erik Alfvin

Metrologist



Receipt Date: March 13, 2017  
Cal. Date: March 14, 2017  
Report Date: March 14, 2017

Report No.: 337405  
Set Serial No.: OFBA  
Barcode: 017731

## Calibration Certificate

NORTHWEST SCALE, INC.  
2210 EAST MAIN AVE UNIT 2A  
WEST FARGO, ND 58078  
Contact: JIM JACOBS  
Phone: 701-298-9527  
PO Number: NONE  
Procedure: NIST SOP 8  
Technician ID: 07

Item(s) Submitted: Metric Weight Kit  
Manufacturer: Rice Lake  
Weight Type: I & II  
Equipment ID: None  
Condition: Excellent  
Temperature: 18.5 °C  
Pressure: 749.6 mmHg  
Relative Humidity: 52.4 %

Nominal Value	Serial No.	CM Correction (mg)		NIST HB105-1 Class		k	U (mg)
		As Found	As Left	As Found	As Left		
2000	SS	95.1	95.1	F	F	2.02	5.7
1000	SS	42.1	42.1	F	F	2.03	2.5
500	SS	31.3	31.3	F	F	2.02	2.0
200	SS	13.14	13.14	F	F	2.02	0.55
200	SS	9.79	9.79	F	F	2.02	0.55
100	SS	6.23	6.23	F	F	2.02	0.25
50	SS	0.84	0.84	F	F	2.03	0.16
20	SS	1.42	1.42	F	F	2.03	0.11
20	SS	1.22	1.22	F	F	2.03	0.11
10	SS	1.129	1.129	F	F	2.03	0.072
5	SS	0.277	0.277	F	F	2.03	0.054
2	SS	0.631	0.631	F	F	2.03	0.048
2	SS	-0.066	-0.066	F	F	2.03	0.048
1	SS	0.262	0.262	F	F	2.03	0.039

The resulting tolerance class of the weight is determined by combining the correction of the weight and the uncertainty of the measurement. The corrections given above correlate to a conventional mass scale versus 8.0 g/cm<sup>3</sup> density and an air density of 1.2 mg/cm<sup>3</sup> at 20 °C. The items listed above have been calibrated using the Standards of the State of Minnesota which are currently in control. These standards are traceable to the SI through NIST. Calibration processes were monitored and found to be in control. All of the tolerances and specifications were evaluated according to NIST Handbook 105-1 (1990). Uncertainty calculations contain the components in NIST SOP 8 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (k) calculated at the approximate 95.45 % confidence level. Results apply to items identified in this report only.

Mark Nicollet

*Mark Nicollet*  
Quality Manager

Reviewed by:

Erik Alfvén

*Erik Alfvén*  
Metrologist

# United States Department of Commerce

## National Institute of Standards and Technology

Certificate of Metrological Traceability For:

# Minnesota

This laboratory has demonstrated evidence of an unbroken chain of metrological traceability of its standards to the international system of units (SI), documented measurement uncertainties, uses documented measurement procedures, successfully completed training and proficiency tests, documented calibration intervals, submitted a quality management system, and demonstrated suitable measurement assurance for the Scope listed on this certificate.


The Office of Weights and Measures Program assesses laboratories to NIST Handbook 143 - Program Handbook for State Weights and Measures Laboratories and ISO/IEC 17025:2005.

### Scope

<b>Mass Echelon I</b> 10 kg to 1 mg	<b>Mass Echelon III</b> 50 kg to 1 mg 5000 lb to 0.001 lb 4 oz to 0.03125 oz	<b>Volume Gravimetric, I</b> 20 L to 10 mL 100 gal to 0.25 qt
<b>Mass Echelon II</b> 50 kg to 1 mg 1000 lb to 0.001 lb 4 oz to 0.03125 oz	<b>Weight Carts</b> 10 000 lb to 2000 lb	<b>Volume Transfer, II</b> 1500 gal to 5 gal 100 gal to 25 gal LPG
	<b>Wheel Load Weighers</b> 20 000 lb to 2000 lb	
	<b>Railroad Test Cars</b> 110 000 lb to 80 000 lb	



2017

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

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

Amended: 2016-12-31

Scope modified for 2017.