NEBRAS	KA	Nebraska Standards Laboratory	Director of Agriculture Steve Wellman
Good Life, Great I	Roots	3721 West Cuming St. Lincoln, NE 68524	P.O. Box 9494 Lincoln, NE 68509-494
Jood Life, Oreat i	10003.	(402)-471-2087	(402) 471-234
DEPARTMENT OF AGRI	CULTURE	(,	www.nda.nebraska.go
	C	alibration Certificate of Mass	
Calibration Date:	September 21, 2020	;;	
<u>Submitted By</u> :	FSCP Area 20 3721 West Cuming S Lincoln, NE 68524	email:	Kurt Wenninghoff Ph. 402-471-3422 kurt.wenninghoff@nebraska.gov
Test Item(s)): (20)-25, (4)-50 & (2	<u>PO Number:</u> 0)-1000lb weights	Date Received: August 14, 2020
Serial Number(s)) / Asset Number: FSCP Area 90
Manufacture	-		ass Specification: NIST Class F
Condition	: Good (some wear)		Material: Cast Iron
Reference Standards I	Jsed:	Procedure Used:	Equipment Used:
NSL lb standards	<u></u>		Mettler XPR32003
		<u>Metrologist:</u> JPL	Mettler XP 604
nvironmental Cond.	Temp: 21.	9 °C Pressure: 741.17 mmHg Relative Humidity:	51.4 %
	161101 211	Pertinent Information	511 / <i>N</i>
		ates an out-of-compliance reading. All of the tolerances and sp ASTM E617 (2018) and/or NIST HB 105-1 (2019). elate to a "Conventional Mass" (CM), also known as "apparent r mass density and an air density of 1.2 mg/cm ³ at 20 °C.	-
are traceable to t comprehensive meas	he International Syste surement assurance p	<u>Traceability Statement</u> have been compared to the Standards of the State of Nebraska em of Units (SI) through the National Institute of Standards and rogram for ensuring continued accuracy and measurement trace number for this certificate is the only unique calibration number traceability for the artifact(s) described in this certificate.	d Technology (NIST) and are part of a ceability within the level of uncertainty
		Uncertainty Statement	
uncertainties for a uncorrected errors ass expanded uncertaint consistent with the evaluated through	ny observed deviation ociated with air buoy y, which defines an in <i>Guide to the Express</i> a Type A evaluation,	des uncertainties reported for the standard, uncertainties asso as from reference values which are less than surveillance limits ance corrections. The combined standard uncertainty is multip interval with a 95.45 percent level of confidence. The expanded on of Uncertainty in Measurement (2008, revised 2012). Some or the method of evaluation of uncertainty by the statistical a of been performed, therefore, there are no components for the	and the standard uncertainty for any olied by a coverage factor (k) , to give the d uncertainty presented in this report is e components of the calibration can be analysis (standard deviation) from the

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Calibrati	on Date: Se	eptember 21, 2020			Certificat	te Numbe	r: 2020-084-	·1		
Calibration Results										
Nominal Mass	Serial Number / ID	As Found Conventional Mass Correction (g)	Adjusted (Y/N)	As Left Conventional Mass Correction (g)	Uncertainty ± (g)	(k) factor	NIST Class F MPE ± (g)	Assumed Density (g/cm ³)		
25 lb	WM25-1	-12.38	Y	-0.23	0.14	2	1.1	7.2		
25 lb	WM25-1S	-10.21	Y	0.33	0.14	2	1.1	7.2		
25 lb	WM25-2	-10.48	Y	0.13	0.14	2	1.1	7.2		
25 lb	WM25-3	-7.46	Y	0.31	0.14	2	1.1	7.2		
25 lb	WM25-4	-7.34	Y	-0.13	0.14	2	1.1	7.2		
25 lb	WM25-5	-12.86	Y	-0.06	0.14	2	1.1	7.2		
25 lb	WM25-6	-8.90	Y	-0.13	0.14	2	1.1	7.2		
25 lb	WM25-7	-10.51	Y	0.14	0.14	2	1.1	7.2		
25 lb	WM25-8	-12.16	Y	-0.19	0.14	2	1.1	7.2		
25 lb	WM25-10	-12.86	Y	0.09	0.14	2	1.1	7.2		
25 lb	WM25-11	-8.68	Y	-0.31	0.14	2	1.1	7.2		
25 lb	WM25-12	-8.55	Y	0.32	0.14	2	1.1	7.2		
25 lb	WM25-13	-10.00	Y	0.27	0.14	2	1.1	7.2		
25 lb	WM25-14	-10.06	Y	0.09	0.14	2	1.1	7.2		
25 lb	WM25-15	-11.84	Y	-0.45	0.14	2	1.1	7.2		
25 lb	WM25-16	-11.78	Y	-0.17	0.14	2	1.1	7.2		
25 lb	WM25-17	-14.16	Y	-0.12	0.14	2	1.1	7.2		
25 lb	WM25-18	-8.96	Y	0.10	0.14	2	1.1	7.2		
25 lb	WM25-19	-10.03	Y	0.59	0.14	2	1.1	7.2		
25 lb	WM25-20	-12.09	Y	0.46	0.14	2	1.1	7.2		
1000 lb	2189	15.9	N	15.9	5.6	2.009	45	7.2		
1000 lb	2190	32.6	N	32.6	5.6	2.009	45	7.2		
1000 lb	2191	0.2	N	0.2	5.6	2.009	45	7.2		
1000 lb	2192	-5.4	N	-5.4	5.6	2.009	45	7.2		
1000 lb	2194	-18.0	N	-18.0	5.6	2.009	45	7.2		
1000 lb	2195	8.6	Ν	8.6	5.6	2.009	45	7.2		
1000 lb	2196	34.6	N	34.6	5.6	2.009	45	7.2		
1000 lb	2197	-4.8	N	-4.8	5.6	2.009	45	7.2		
1000 lb	2198	-15.1	N	-15.1	5.6	2.009	45	7.2		
1000 lb	A-1	112.5	Y	8.3	5.6	2.009	45	7.2		
1000 lb	A-3	10.1	N	10.1	5.6	2.009	45	7.2		
1000 lb	A-4	42.8	Y	13.2	5.6	2.009	45	7.2		
1000 lb	A-7	-10.7	N	-10.7	5.6	2.009	45	7.2		
1000 lb	A-8	-6.5	Ν	-6.5	5.6	2.009	45	7.2		
1000 lb	A-9	0.5	Ν	0.5	5.6	2.009	45	7.2		
1000 lb	A-10	39.4	Ν	39.4	5.6	2.009	45	7.2		
1000 lb	A-14	1.4	Ν	1.4	5.6	2.009	45	7.2		
1000 lb	A-17	-19.9	Ν	-19.9	5.6	2.009	45	7.2		
1000 lb	A-18	-32.6	Ν	-32.6	5.6	2.009	45	7.2		
1000 lb	A-20	-4.9	Ν	-4.9	5.6	2.009	45	7.2		

Conversion Factors

1 ounce (avoirdupois) (oz) = 28.349 52 g

1 pound (avoirdupois) (lb) = 453.592 37 g exactly

Joel P. Lavicky Metrologist

The results in this certificate only applies to those item specifically listed in this certificate. This certificate cannot be considered complete unless it contains all pages. This document may not be reproduced except in <u>full</u>, without the written consent of the Nebraska Standards Laboratory.

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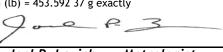
Nebraska Standards Laboratory

3721 West Cuming St. Lincoln, NE 68524 (402)-471-2087

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9/21/2020

Date of Issue

			Director of Agriculture		
NEBRASKA	Nebraska Standards L		Steve Wellman		
	3721 West Cuming		P.O. Box 9494'		
Good Life. Great Roots.	Lincoln, NE 6852		Lincoln, NE 68509-494		
	(402)-471-2087		(402) 471-234		
DEPARTMENT OF AGRICULTURE		v	ww.nda.nebraska.go		
(Calibration Certific	ate of Mass			
Calibration Date: August 20	, 2020	Certificate Number:	2020-084-2		
Submitted By: FSCP Area 20		Point of Contact: Kurt Wenni	nghoff		
3721 West Cu	ming St.	Ph. 402-47	-		
Lincoln, NE 68	•	email: kurt.wenningh	off@nebraska.gov		
		PO Number: N/A			
Test Item(s): lb weight kit		Date Receive	d: August 14, 2020		
Serial Number(s): WM-2D86	Artifact(s) Descript	ion: ID / Asset Numbe	r: FSCP Area 20		
Manufacture: RL		Class Specificatio	n: NIST Class F		
Condition: Good (some we	ar)	Materia	al: Stainless Steel		
Reference Standards Used:	Procedure Used	<u>:</u> Equip	ment Used:		
NSL lb standards	NIST HB 6969, SOP 8 (2	2018) Sartorius CC1000	0S Mettler AT 106		
	Metrologist:	Sartorius CC 12	01 Sartorius CCE6		
	JPL				
Environmental Cond. Temp: 2	22 °C Pressure: 728.72 mmHg	Relative Humidity: 48 %			
	Pertinent Informat	ion			
	ent have been found and/or left within				
•	considered in-compliance when the cor	•			
•	or. RED print indicates an out-of-complia	-	specifications were		
ev	aluaed according to ASTM E617 (2018) a	ונואוטו חם וטס-ו (2019).			
•	rt correlate to a "Conventional Mass" (C eference mass density and an air density		cale verses 8.0 g/cm ³		
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Traceability Statement

The artifact(s) described in this certificate have been compared to the Standards of the State of Nebraska. The Standards of the State of Nebraska are traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST) and are part of a comprehensive measurement assurance program for ensuring continued accuracy and measurement traceability within the level of uncertainty reported by this laboratory. The calibration number for this certificate is the only unique calibration number to be used in referencing measurement traceability for the artifact(s) described in this certificate.

Uncertainty Statement

The combined standard uncertainty includes uncertainties reported for the standard, uncertainties associated with the measurement process, uncertainties for any observed deviations from reference values which are less than surveillance limits and the standard uncertainty for any uncorrected errors associated with air buoyance corrections. The combined standard uncertainty is multiplied by a coverage factor (*k*), to give the expanded uncertainty, which defines an interval with a 95.45 percent level of confidence. The expanded uncertainty presented in this report is consistent with the *Guide to the Expression of Uncertainty in Measurement (2008, revised 2012)*. Some components of the calibration can be evaluated through a Type A evaluation, or the method of evaluation of uncertainty by the statistical analysis (standard deviation) from the observations taken. Magnetic testing has not been performed, therefore, there are no components for the effects of it in the uncertainty budget.



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3721 West Cuming St. Lincoln, NE 68524 (402)-471-2087 Director of Agriculture Steve Wellman P.O. Box 94947 Lincoln, NE 68509-4947 (402) 471-2341 www.nda.nebraska.gov

DEPARTMENT OF AGRICULTURE

Calibration Date: August 20, 2020			Certific	ate Numb	ber: 2020	-084-2				
Calibration Results										
Nominal Mass	Serial Number / ID	As Found Conventional Mass Correction (g)	Adjusted (Y/N)	As Left Conventional Mass Correction (g)	Uncertainty ± (g)	(k) factor	NIST Class F MPE ± (g)	Assumed Density (g/cm ³)		
5 lb	1	-0.083	n	-0.083	0.028	2	0.23	7.84		
5 lb	2	-0.111	n	-0.111	0.028	2	0.23	7.84		
5 lb	3	-0.105	n	-0.105	0.028	2	0.23	7.84		
5 lb	4	-0.046	n	-0.046	0.028	2	0.23	7.84		
5 lb	5	-0.063	n	-0.063	0.028	2	0.23	7.84		
1 lb	1	0.0087	n	0.0087	0.0083	2	0.07	7.84		
1 lb	2	0.0322	n	0.0322	0.0083	2	0.07	7.84		
1 lb	3	-0.0244	n	-0.0244	0.0083	2	0.07	7.84		
1 lb	4	0.0010	n	0.0010	0.0083	2	0.07	7.84		
1 lb	5	-0.0282	n	-0.0282	0.0083	2	0.07	7.84		
0.2 lb		0.0083	n	0.0083	0.0022	2	0.018	7.84		
0.2 lb	*	0.0081	n	0.0081	0.0022	2	0.018	7.84		
0.1 lb		0.0041	n	0.0041	0.0011	2	0.0091	7.84		
0.05 lb		0.00171	n	0.00171	0.00054	2	0.0045	7.84		
0.02 lb		0.00035	n	0.00035	0.00022	2	0.0018	7.84		
0.02 lb	*	0.00030	n	0.00030	0.00022	2	0.0018	7.84		
0.01 lb		0.00038	n	0.00038	0.00018	2	0.0015	7.84		
8 oz	11	0.0045	n	0.0045	0.0054	2	0.045	7.84		
4 oz	13	0.0002	n	0.0002	0.0028	2	0.023	7.84		
2 oz		-0.0026	n	-0.0026	0.0013	2	0.011	7.84		
1 oz		0.00176	n	0.00176	0.00064	2	0.0054	7.84		

Conversion Factors

1 ounce (avoirdupois) (oz) = 28.349 52 g

1 pound (avoirdupois) (lb) = 453.592 37 g exactly

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Metrologist

Joel P. Lavicky

8/28/2020 Date of Issue

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NEBRAS	SKA		a Standards Lab	oratory	Γ	Director of Agricultur Steve Wellman
		3	721 West Cuming St.			P.O. Box 94947
Good Life. Great	t Roots.		Lincoln, NE 68524		L	incoln, NE 68509-4947
The second second second second second	and the second second		(402)-471-2087			(402) 471-234
DEPARTMENT OF AG	RICULTURE				W	ww.nda.nebraska.gov
	Ca	libratior	n Certifica	te of Mass		
Calibration Date:	August 20, 2020			Certificate Numbe	er:	2020-084-3
<u>Submitted By</u> :	FSCP Area 20	Ch		Point of Contact: K	urt Wenningho h. 402-471-342	
	3721 West Cuming	51.		-		
	Lincoln, NE 68524			<u> </u>	urt.wenninghoff	@nebraska.gov
				PO Number: N	/A	
Test Item(s):	Metric weight kit	<u>A</u>	rtifact(s) Descriptior	<u>ו:</u> Da	te Received:	8/14/2020
Serial Number(s):	WM-2-89-4			ID / As	sset Number:	Area 20
Manufacture	Troemner			Class S	specification:	NIST Class F
Condition	Good (some wear)				Material:	Stainless Steel
Reference Standards	Used:		Procedure Used:		Equipme	ent Used:
OPI & /Den Metric		NIS	T HB 6969, SOP 8 (20	18) Sartoi	rius CC10000S	Mettler AT 106
			Metrologist:	Sart	orius CC 1201	Sartorius CCE6
			JPL			
Environmental Cond.	Temp: 22 °	°C Pressure:	728.72 mmHg	Relative Humidity:	48 %	
		<u>F</u>	Pertinent Information	<u>n</u>		

• The artifact(s) listed in this document have been found and/or left within the maximum permissible error for the specification stated above, except as noted. An artifact is considered in-compliance when the correction plus the measurement uncertainty is equal to or less than the maximum permissible error. RED print indicates an out-of-compliance reading. All of the tolerances and specifications were evaluated according to ASTM E617 (2018) and NIST HB 105-1 (2019).

• All corrections stated in this report correlate to a "Conventional Mass" (CM), also known as "apparent mass", scale verses 8.0 g/cm³ reference mass density and an air density of 1.2 mg/cm³ at 20 °C.

Traceability Statement

The artifact(s) described in this certificate have been compared to the Standards of the State of Nebraska. The Standards of the State of Nebraska are traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST) and are part of a comprehensive measurement assurance program for ensuring continued accuracy and measurement traceability within the level of uncertainty reported by this laboratory. The calibration number for this certificate is the only unique calibration number to be used in referencing measurement traceability for the artifact(s) described in this certificate.

Uncertainty Statement

The combined standard uncertainty includes uncertainties reported for the standard, uncertainties associated with the measurement process, uncertainties for any observed deviations from reference values which are less than surveillance limits and the standard uncertainty for any uncorrected errors associated with air buoyance corrections. The combined standard uncertainty is multiplied by a coverage factor (k), to give the expanded uncertainty, which defines an interval with a 95.45 percent level of confidence. The expanded uncertainty presented in this report is consistent with the Guide to the Expression of Uncertainty in Measurement (2008, revised 2012). Some components of the calibration can be evaluated through a Type A evaluation, or the method of evaluation of uncertainty by the statistical analysis (standard deviation) from the observations taken. Magnetic testing has not been performed, therefore, there are no components for the effects of it in the uncertainty budget.



Nebraska Standards Laboratory

3721 West Cuming St. Lincoln, NE 68524 (402)-471-2087 Director of Agriculture Steve Wellman P.O. Box 94947 Lincoln, NE 68509-4947 (402) 471-2341 www.nda.nebraska.gov

Good Life. Great Roots.

DEPARTMENT OF AGRICULTURE

Calibration Date: August 20, 2020 Certificate Number: 2020-084-3										
Calibration Results										
Nominal Mass	Serial Number / ID	As Found Conventional Mass Correction (g)	Adjusted (Y/N)	As Left Conventional Mass Correction (g)	Uncertainty ± (g)	(k) factor	NIST Class F MPE ± (g)	Assumed Density (g/cm³)		
1 kg	1	-0.003	n	-0.003	0.012	2	0.1	7.84		
500 g	2	-0.0116	n	-0.0116	0.0083	2	0.07	7.84		
200 g	3	0.0012	n	0.0012	0.0048	2	0.04	7.84		
200 g	4	-0.0064	n	-0.0064	0.0048	2	0.04	7.84		
100 g		0.0112	n	0.0112	0.0024	2	0.02	7.84		
50 g		-0.0064	n	-0.0064	0.0012	2	0.01	7.84		
20 g		0.00093	n	0.00093	0.00048	2	0.004	7.84		
20 g	*	0.00118	n	0.00118	0.00048	2	0.004	7.84		
10 g		-0.00109	n	-0.00109	0.00024	2	0.002	7.84		

Conversion Factors

1 ounce (avoirdupois) (oz) = 28.349 52 g

1 pound (avoirdupois) (lb) = 453.592 37 g exactly

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Joel P. Lavicky Metrologist

8/28/2020 Date of Issue

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