

National Institute
of Standards and Technology



National Voluntary
Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation



Revised 2/19/04

Page 1 of 15

CALIBRATION LABORATORIES

NVLAP LAB CODE 105003-0

MINNESOTA METROLOGY LABORATORY

2277 Hwy. 36
St. Paul, MN 55113-3800
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NVLAP Code: 20/A01

ANSI/NCSL Z540-1-1994; Part 1

Compliant

DIMENSIONAL

NVLAP Code: 20/D13
Surveying Rods and Tapes

<i>Range in inches</i>	<i>Best Uncertainty (\pm) in inches^{note 1}</i>	<i>Remarks</i>
1	0.0028	Rigid Rules
2	0.0028	Rigid Rules
3	0.0028	Rigid Rules
4	0.0028	Rigid Rules
5	0.0028	Rigid Rules
6	0.0028	Rigid Rules
7	0.0028	Rigid Rules
8	0.0028	Rigid Rules
9	0.0028	Rigid Rules

December 31, 2004

A handwritten signature in black ink, appearing to read "William R. Moulton".

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National Institute
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National Voluntary
Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation



Revised 2/19/04

Page 2 of 15

CALIBRATION LABORATORIES

NVLAP LAB CODE 105003-0

MINNESOTA METROLOGY LABORATORY

10	0.0028	Rigid Rules
11	0.0028	Rigid Rules
12	0.0028	Rigid Rules
24	0.0049	Rigid Rules
36	0.0069	Rigid Rules
48	0.0089	Rigid Rules
60	0.0109	Rigid Rules
72	0.0129	Rigid Rules

Range in feet	Best Uncertainty (\pm) in inches ^{note 1}	Remarks
1	0.0048	Metal Tapes (Bench Method)
2	0.0065	Metal Tapes (Bench Method)
3	0.0079	Metal Tapes (Bench Method)
4	0.0090	Metal Tapes (Bench Method)
5	0.0100	Metal Tapes (Bench Method)
6	0.0110	Metal Tapes (Bench Method)
7	0.0118	Metal Tapes (Bench Method)

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of Standards and Technology



National Voluntary
Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation



Revised 2/19/04

Page 3 of 15

CALIBRATION LABORATORIES

NVLAP LAB CODE 105003-0

MINNESOTA METROLOGY LABORATORY

8	0.0126	Metal Tapes (Bench Method)
9	0.0134	Metal Tapes (Bench Method)
10	0.0141	Metal Tapes (Bench Method)
20	0.0200	Metal Tapes (Bench Method)
30	0.0244	Metal Tapes (Bench Method)
40	0.0283	Metal Tapes (Bench Method)
50	0.0317	Metal Tapes (Bench Method)
60	0.0345	Metal Tapes (Bench Method)
70	0.0374	Metal Tapes (Bench Method)
80	0.0400	Metal Tapes (Bench Method)
90	0.0424	Metal Tapes (Bench Method)
100	0.0447	Metal Tapes (Bench Method)
110	0.0469	Metal Tapes (Bench Method)
120	0.0489	Metal Tapes (Bench Method)
130	0.0509	Metal Tapes (Bench Method)
140	0.0529	Metal Tapes (Bench Method)
150	0.0548	Metal Tapes (Bench Method)

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National Voluntary
Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation



Revised 2/19/04

Page 4 of 15

CALIBRATION LABORATORIES

NVLAP LAB CODE 105003-0

MINNESOTA METROLOGY LABORATORY

160	0.0566	Metal Tapes (Bench Method)
170	0.0584	Metal Tapes (Bench Method)
180	0.0600	Metal Tape (Bench Method)
190	0.0616	Metal Tape (Bench Method)
200	0.0632	Metal Tape (Bench Method)
1	0.0018	Pi Tapes (Bench Method)
2	0.0031	Pi Tapes (Bench Method)
3	0.0036	Pi Tapes (Bench Method)
4	0.0037	Pi Tapes (Bench Method)
5	0.0042	Pi Tapes (Bench Method)
6	0.0053	Pi Tapes (Bench Method)
7	0.0044	Pi Tapes (Bench Method)
8	0.0060	Pi Tapes (Bench Method)
9	0.0074	Pi Tapes (Bench Method)
10	0.0066	Pi Tapes (Bench Method)

December 31, 2004

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National Institute
of Standards and Technology



National Voluntary
Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation



Revised 2/19/04

Page 5 of 15

CALIBRATION LABORATORIES

NVLAP LAB CODE 105003-0

MINNESOTA METROLOGY LABORATORY

MECHANICAL

NVLAP Code: 20/M08

Mass

Range	Best Uncertainty (\pm) ^{note 1}	Remarks
30 kg	17 mg	Echelon I
20 kg	11 mg	Echelon I
10 kg	0.65 mg	Echelon I
5 kg	0.28 mg	Echelon I
3 kg	0.17 mg	Echelon I
2 kg	0.11 mg	Echelon I
1 kg	0.040 mg	Echelon I
500 g	0.023 mg	Echelon I
300 g	0.017 mg	Echelon I
200 g	0.014 mg	Echelon I
100 g	0.013 mg	Echelon I
50 g	0.010 mg	Echelon I
30 g	0.0070 mg	Echelon I

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National Voluntary
Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994



Scope of Accreditation

Revised 2/19/04

Page 6 of 15

CALIBRATION LABORATORIES

NVLAP LAB CODE 105003-0

MINNESOTA METROLOGY LABORATORY

20 g	0.0061 mg	Echelon I
10 g	0.0069 mg	Echelon I
5 g	0.0033 mg	Echelon I
3 g	0.0021 mg	Echelon I
2 g	0.0015 mg	Echelon I
1 g	0.0015 mg	Echelon I
500 mg	0.0010 mg	Echelon I
300 mg	0.00066 mg	Echelon I
200 mg	0.00062 mg	Echelon I
100 mg	0.00076 mg	Echelon I
50 mg	0.00058 mg	Echelon I
30 mg	0.00050 mg	Echelon I
20 mg	0.00048 mg	Echelon I
10 mg	0.00057 mg	Echelon I
5 mg	0.00034 mg	Echelon I
3 mg	0.00028 mg	Echelon I
2 mg	0.00024 mg	Echelon I

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of Standards and Technology



National Voluntary
Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994



Scope of Accreditation

Revised 2/19/04

Page 7 of 15

CALIBRATION LABORATORIES

NVLAP LAB CODE 105003-0

MINNESOTA METROLOGY LABORATORY

1 mg	0.00029 mg	Echelon I
50 kg	112.8 mg	Echelon II
30 kg	34.3 mg	Echelon II
20 kg	23.0 mg	Echelon II
10 kg	5.1 mg	Echelon II
5 kg	2.64 mg	Echelon II
3 kg	1.72 mg	Echelon II
2 kg	1.04 mg	Echelon II
1 kg	0.571 mg	Echelon II
500 g	0.458 mg	Echelon II
300 g	0.373 mg	Echelon II
200 g	0.299 mg	Echelon II
100 g	0.057 mg	Echelon II
50 g	0.035 mg	Echelon II
30 g	0.029 mg	Echelon II
20 g	0.013 mg	Echelon II
10 g	0.012 mg	Echelon II

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National Institute
of Standards and Technology



National Voluntary
Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation



Revised 2/19/04

Page 8 of 15

CALIBRATION LABORATORIES

NVLAP LAB CODE 105003-0

MINNESOTA METROLOGY LABORATORY

5 g	0.0086 mg	Echelon II
3 g	0.0082 mg	Echelon II
2 g	0.0081 mg	Echelon II
1 g	0.0080 mg	Echelon II
500 mg	0.0018 mg	Echelon II
300 mg	0.0016 mg	Echelon II
200 mg	0.0016 mg	Echelon II
100 mg	0.0018 mg	Echelon II
50 mg	0.0014 mg	Echelon II
30 mg	0.0013 mg	Echelon II
20 mg	0.0012 mg	Echelon II
10 mg	0.0013 mg	Echelon II
5 mg	0.0012 mg	Echelon II
3 mg	0.0012 mg	Echelon II
2 mg	0.0012 mg	Echelon II
1 mg	0.0012 mg	Echelon II
2500 lbs	8.6 g	Echelon II

December 31, 2004

Effective through

For the National Institute of Standards and Technology

National Institute
of Standards and Technology



National Voluntary
Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation



Revised 2/19/04

Page 9 of 15

CALIBRATION LABORATORIES

NVLAP LAB CODE 105003-0

MINNESOTA METROLOGY LABORATORY

1000 lbs	3.3 g	Echelon II
500 lbs	2.0 g	Echelon II
1000 kg	13.6 g	Tolerance Test
500 kg	8.1 g	Tolerance Test
300 kg	6.1 g	Tolerance Test
200 kg	4.8 g	Tolerance Test
100 kg	1.7 g	Tolerance Test
50 kg	359.7 mg	Tolerance Test
30 kg	242.6 mg	Tolerance Test
20 kg	68.3 mg	Tolerance Test
10 kg	46.5 mg	Tolerance Test
5 kg	7.78 mg	Tolerance Test
3 kg	5.87 mg	Tolerance Test
2 kg	4.43 mg	Tolerance Test
1 kg	2.39 mg	Tolerance Test
500 g	2.138 mg	Tolerance Test
300 g	1.674 mg	Tolerance Test

December 31, 2004

Effective through

For the National Institute of Standards and Technology

National Institute
of Standards and Technology



National Voluntary
Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994



Scope of Accreditation

Revised 2/19/04

Page 10 of 15

CALIBRATION LABORATORIES

NVLAP LAB CODE 105003-0

MINNESOTA METROLOGY LABORATORY

200 g	0.326 mg	Tolerance Test
100 g	0.206 mg	Tolerance Test
50 g	0.122 mg	Tolerance Test
30 g	0.100 mg	Tolerance Test
20 g	0.067 mg	Tolerance Test
10 g	0.056 mg	Tolerance Test
5 g	0.049 mg	Tolerance Test
3 g	0.047 mg	Tolerance Test
2 g	0.045 mg	Tolerance Test
1 g	0.045 mg	Tolerance Test
500 mg	0.022 mg	Tolerance Test
300 mg	0.022 mg	Tolerance Test
200 mg	0.022 mg	Tolerance Test
100 mg	0.020 mg	Tolerance Test
50 mg	0.019 mg	Tolerance Test
30 mg	0.018 mg	Tolerance Test
20 mg	0.015 mg	Tolerance Test

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National Voluntary
Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation



Revised 2/19/04

Page 11 of 15

CALIBRATION LABORATORIES

NVLAP LAB CODE 105003-0

MINNESOTA METROLOGY LABORATORY

10 mg	0.014 mg	Tolerance Test
5 mg	0.014 mg	Tolerance Test
3 mg	0.014 mg	Tolerance Test
2 mg	0.012 mg	Tolerance Test
1 mg	0.012 mg	Tolerance Test

NVLAP Code: 20/M12

Volume

Range	Best Uncertainty (\pm) ^{note 1}	Remarks
10000 ml	0.6248 ml	Gravimetric Method
1000 ml	0.0628 ml	Gravimetric Method
100 ml	0.00617 ml	Gravimetric Method
10 ml	0.00063 ml	Gravimetric Method
1 ml	0.00010 ml	Gravimetric Method
5 gal	0.484 in ³	Small Volume Volumetric
1500 gal	40.87 in ³	Large Volume Volumetric

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of Standards and Technology



National Voluntary
Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994



Scope of Accreditation

Revised 2/19/04

Page 12 of 15

CALIBRATION LABORATORIES

NVLAP LAB CODE 105003-0

MINNESOTA METROLOGY LABORATORY

1000 gal	27.25 in ³	Large Volume Volumetric
500 gal	13.62 in ³	Large Volume Volumetric
100 gal	2.72 in ³	Large Volume Volumetric
25 gal	2.25 in ³	Large Volume Volumetric
100 gal	7.71 in ³	LPG Volumetric
25 gal	2.68 in ³	LPG Volumetric

Density in the Range of 2.7 to 9.4 g/cm³

Mass Range	Best Uncertainty (\pm) ^{note 1}	Remarks
5 kg	0.00058 g/cm ³	
3 kg	0.00051 g/cm ³	
2 kg	0.00039 g/cm ³	
1 kg	0.00017 g/cm ³	
500 g	0.00188 g/cm ³	
300 g	0.00598 g/cm ³	
200 g	0.00300 g/cm ³	
100 g	0.00220 g/cm ³	

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National Institute
of Standards and Technology



National Voluntary
Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation



Revised 2/19/04

Page 13 of 15

CALIBRATION LABORATORIES

NVLAP LAB CODE 105003-0

MINNESOTA METROLOGY LABORATORY

50 g	0.00170 g/cm ³
30 g	0.00170 g/cm ³
20 g	0.00163 g/cm ³
10 g	0.00162 g/cm ³

THERMODYNAMICS

NVLAP Code: 20/T03
Laboratory Thermometers

Range	Best Uncertainty (\pm) ^{note 1}	Remarks
Triple Point of Water (TPW)	0.0303 °C	Liquid-in-glass
10 °C	0.0731 °C	Liquid-in-glass
20 °C	0.0731 °C	Liquid-in-glass
30 °C	0.0731 °C	Liquid-in-glass
40 °C	0.0731 °C	Liquid-in-glass
50 °C	0.0731 °C	Liquid-in-glass
60 °C	0.0731 °C	Liquid-in-glass
70 °C	0.0731 °C	Liquid-in-glass
80 °C	0.0731 °C	Liquid-in-glass

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National Institute
of Standards and Technology



National Voluntary
Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation



Revised 2/19/04

Page 14 of 15

CALIBRATION LABORATORIES

NVLAP LAB CODE 105003-0

MINNESOTA METROLOGY LABORATORY

90 °C	0.0731 °C	Liquid-in-glass
100 °C	0.0731 °C	Liquid-in-glass
150 °C	0.0731 °C	Liquid-in-glass
200 °C	0.0760 °C	Liquid-in-glass
250 °C	0.0760 °C	Liquid-in-glass
300 °C	0.0760 °C	Liquid-in-glass
350 °C	0.0760 °C	Liquid-in-glass
400 °C	0.0760 °C	Liquid-in-glass
450 °C	0.0760 °C	Liquid-in-glass
500 °C	0.0760 °C	Liquid-in-glass

NVLAP Code: 20/T07
Resistance Thermometry

Range	Best Uncertainty (\pm) ^{note 1}	Remarks
0 °C	0.0089 °C	Thermistors
10 °C	0.0089 °C	Thermistors
20 °C	0.0089 °C	Thermistors

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National Voluntary
Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation



Revised 2/19/04

Page 15 of 15

CALIBRATION LABORATORIES

NVLAP LAB CODE 105003-0

MINNESOTA METROLOGY LABORATORY

30 °C	0.0089 °C	Thermistors
40 °C	0.0089 °C	Thermistors
50 °C	0.0089 °C	Thermistors
60 °C	0.0090 °C	Thermistors
70 °C	0.0093 °C	Thermistors
80 °C	0.0103 °C	Thermistors
90 °C	0.0137 °C	Thermistors
100 °C	0.0226 °C	Thermistors
TPW	0.004	PRT
Tin FP	0.005	PRT
Zinc FP	0.007	PRT

1. Represents an expanded uncertainty using a coverage factor, k=2.

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