



Receipt Date: April 7, 2017
Cal. Date: April 12, 2017
Report Date: April 13, 2017

Report No.: 337554
Serial No.: 15-92453
Barcode: 202815

Calibration Certificate

O'DAY EQUIPMENT
1301 40TH ST NW
FARGO, ND 58102-2813
Contact: NICOLE DUNCOMB
Phone: 701-282-9260
PO Number: None
Procedure: NIST SOP 19
Technician ID: 19

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Stainless Steel
Type: Measure
Condition: Good
Temperature: 19.3 °C
Pressure: 742.4 mmHg
Relative Humidity: 48.3 %
Standard H₂O Temp.: 16.4 °C
Artifact H₂O Temp.: 16.4 °C

| Nominal Volume (gal) | | Calibrated | | | k | U (in ³) | CCE (°F) |
|-------------------------|----------|--------------|--------------------------|--|------|----------------------|-----------|
| | | Volume (gal) | Error (in ³) | | | | |
| 5 | As Found | 5.0011 | 0.25 | | 2.06 | 0.25 | 0.0000265 |
| | As Left | 5.0011 | 0.25 | | | | |

Neck Calibration: No neck calibration was performed at this time.

This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 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 item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

Erik Alfvin

Metrologist

Reviewed by:

Mark Nicollet

Quality Manager



Receipt Date: April 7, 2017
Cal. Date: April 12, 2017
Report Date: April 13, 2017

Report No.: 337553
Serial No.: 15-92427
Barcode: 202813

Calibration Certificate

O'DAY EQUIPMENT
1301 40TH ST NW
FARGO, ND 58102-2813

Contact: NICOLE DUNCOMB
Phone: 701-282-9260
PO Number: None
Procedure: NIST SOP 19
Technician ID: 19

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Stainless Steel
Type: Measure
Condition: Good
Temperature: 19.3 °C
Pressure: 742.4 mmHg
Relative Humidity: 48.3 %
Standard H₂O Temp.: 16.0 °C
Artifact H₂O Temp.: 16.0 °C

| Nominal Volume (gal) | | Calibrated | | <i>k</i> | U (in ³) | CCE (°F) |
|-------------------------|----------|--------------|--------------------------|----------|----------------------|-----------|
| | | Volume (gal) | Error (in ³) | | | |
| 5 | As Found | 4.9994 | -0.14 | 2.06 | 0.25 | 0.0000265 |
| | As Left | 4.9994 | -0.14 | | | |

Neck Calibration: No neck calibration was performed at this time.

This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 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 item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

Erik Alfvin

Metrologist

Reviewed by:

Mark Nicollet

Quality Manager



Receipt Date: April 7, 2017
Cal. Date: April 12, 2017
Report Date: April 13, 2017

Report No.: 337552
Serial No.: 15-92404
Barcode: 202812

Calibration Certificate

O'DAY EQUIPMENT
1301 40TH ST NW
FARGO, ND 58102-2813
Contact: NICOLE DUNCOMB
Phone: 701-282-9260
PO Number: None
Procedure: NIST SOP 19
Technician ID: 19

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Stainless Steel
Type: Measure
Condition: Good
Temperature: 19.3 °C
Pressure: 742.4 mmHg
Relative Humidity: 48.3 %
Standard H₂O Temp.: 15.2 °C
Artifact H₂O Temp.: 15.2 °C

| Nominal Volume (gal) | | Calibrated | | <i>k</i> | U (in ³) | CCE (°F) |
|-------------------------|----------|--------------|--------------------------|----------|----------------------|-----------|
| | | Volume (gal) | Error (in ³) | | | |
| 5 | As Found | 5.0020 | 0.46 | 2.06 | 0.25 | 0.0000265 |
| | As Left | 5.0002 | 0.04 | | | |

Neck Calibration: No neck calibration was performed at this time.

This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 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 item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

Erik Alfvin

Metrologist

Reviewed by:

Mark Nicollet

Quality Manager



Receipt Date: April 7, 2017
Cal. Date: April 12, 2017
Report Date: April 13, 2017

Report No.: 337551
Serial No.: 15-92451
Barcode: 202810

Calibration Certificate

O'DAY EQUIPMENT
1301 40TH ST NW
FARGO, ND 58102-2813

Contact: NICOLE DUNCOMB
Phone: 701-282-9260
PO Number: None
Procedure: NIST SOP 19
Technician ID: 19

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Stainless Steel
Type: Measure
Condition: Good
Temperature: 19.3 °C
Pressure: 742.4 mmHg
Relative Humidity: 48.3 %
Standard H₂O Temp.: 16.2 °C
Artifact H₂O Temp.: 16.1 °C

| Nominal Volume (gal) | | Calibrated Volume (gal) | Error (in ³) | <i>k</i> | U (in ³) | CCE (°F) |
|-------------------------|----------|----------------------------|--------------------------|----------|----------------------|-----------|
| 5 | As Found | 4.9981 | -0.45 | 2.06 | 0.25 | 0.0000265 |
| | As Left | 4.9999 | -0.02 | | | |

Neck Calibration: No neck calibration was performed at this time.

This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 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 item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

Erik Alfvin

Metrologist

Reviewed by:

Mark Nicollet

Quality Manager



Receipt Date: April 7, 2017
Cal. Date: April 11, 2017
Report Date: April 11, 2017

Report No.: 337550
Serial No.: 09-49760-11
Barcode: 200945

Calibration Certificate

O'DAY EQUIPMENT
1301 40TH ST NW
FARGO, ND 58102-2813
Contact: NICOLE DUNCOMB
Phone: 701-282-9260
PO Number: NONE
Procedure: NIST SOP 19
Technician ID: 11

Item(s) Submitted: 5 Gallon Prover
Manufacturer: Seraphin
Material: Stainless Steel
Type: No Bottom Zero
Condition: Good
Temperature: 19.5 °C
Pressure: 742.8 mmHg
Relative Humidity: 44.4 %
Standard H₂O Temp.: 14.3 °C
Artifact H₂O Temp.: 14.5 °C

| Nominal | | Calibrated | | | | |
|--------------|----------|--------------|--------------------------|----------|----------------------|-----------|
| Volume (gal) | | Volume (gal) | Error (in ³) | <i>k</i> | U (in ³) | CCE (°F) |
| 5 | As Found | 4.9995 | -0.11 | 2.06 | 0.25 | 0.0000265 |
| | As Left | 4.9995 | -0.11 | | | |

Neck Calibration: No neck calibration was performed at this time.

This prover has been calibrated as a "to contain after wet down" vessel with a drain time of 30 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 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 item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

Pete Whebbe

Metrologist

Reviewed by:

Erik Alfvén

Metrologist



Receipt Date: April 7, 2017
Cal. Date: April 11, 2017
Report Date: April 11, 2017

Report No.: 337548
Serial No.: 42853
Barcode: 019892

Calibration Certificate

O'DAY EQUIPMENT
1301 40TH ST NW
FARGO, ND 58102-2813
Contact: NICOLE DUNCOMB
Phone: 701-282-9260
PO Number: NONE
Procedure: NIST SOP 19
Technician ID: 11

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Mild Steel
Type: Measure
Condition: Good
Temperature: 19.1 °C
Pressure: 743.4 mmHg
Relative Humidity: 46.5 %
Standard H₂O Temp.: 11.8 °C
Artifact H₂O Temp.: 12.0 °C

| Nominal Volume (gal) | | Calibrated | | <i>k</i> | U (in ³) | CCE (°F) |
|-------------------------|----------|--------------|--------------------------|----------|----------------------|-----------|
| | | Volume (gal) | Error (in ³) | | | |
| 5 | As Found | 4.9994 | -0.13 | 2.06 | 0.25 | 0.0000186 |
| | As Left | 4.9994 | -0.13 | | | |

Neck Calibration: No neck calibration was performed at this time.

This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 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 item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

Pete Whebbe


Metrologist

Reviewed by:

Mark Nicollet


Quality Manager



Receipt Date: April 7, 2017
Cal. Date: April 11, 2017
Report Date: April 11, 2017

Report No.: 337547
Serial No.: 29726
Barcode: 019891

Calibration Certificate

O'DAY EQUIPMENT
1301 40TH ST NW
FARGO, ND 58102-2813

Contact: NICOLE DUNCOMB
Phone: 701-282-9260
PO Number: NONE
Procedure: NIST SOP 19
Technician ID: 11

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Mild Steel
Type: Measure
Condition: Fair
Temperature: 19.1 °C
Pressure: 743.4 mmHg
Relative Humidity: 46.5 %
Standard H₂O Temp.: 11.2 °C
Artifact H₂O Temp.: 11.4 °C

| Nominal Volume (gal) | | Calibrated | | <i>k</i> | U (in ³) | CCE (°F) |
|-------------------------|----------|--------------|--------------------------|----------|----------------------|-----------|
| | | Volume (gal) | Error (in ³) | | | |
| 5 | As Found | 5.0033 | 0.76 | 2.06 | 0.25 | 0.0000186 |
| | As Left | 5.0000 | -0.01 | | | |

Neck Calibration: No neck calibration was performed at this time.

This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 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 item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

Pete Whebbe

Metrologist

Reviewed by:

Mark Nicollet

Quality Manager



Receipt Date: April 7, 2017
 Cal. Date: April 11, 2017
 Report Date: April 11, 2017

Report No.: 337546
 Serial No.: 40961
 Barcode: 019293

Calibration Certificate

O'DAY EQUIPMENT
 1301 40TH ST NW
 FARGO, ND 58102-2813
 Contact: NICOLE DUNCOMB
 Phone: 701-282-9260
 PO Number: NONE
 Procedure: NIST SOP 19
 Technician ID: 11

Item(s) Submitted: 5 Gallon Measure
 Manufacturer: Seraphin
 Material: Mild Steel
 Type: Measure
 Condition: Fair/Dirty
 Temperature: 19.1 °C
 Pressure: 743.4 mmHg
 Relative Humidity: 46.5 %
 Standard H₂O Temp.: 10.7 °C
 Artifact H₂O Temp.: 11.0 °C

| Nominal Volume (gal) | | Calibrated | | | <i>k</i> | U (in ³) | CCE (°F) |
|-------------------------|----------|--------------|--------------------------|--|----------|----------------------|-----------|
| | | Volume (gal) | Error (in ³) | | | | |
| 5 | As Found | 4.9994 | -0.15 | | 2.06 | 0.25 | 0.0000186 |
| | As Left | 4.9994 | -0.15 | | | | |

Neck Calibration: No neck calibration was performed at this time.

This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 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 item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
 Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

Pete Whebbe

Metrologist

Reviewed by:

Mark Nicollet

Quality Manager



Receipt Date: April 20, 2017
 Cal. Date: April 25, 2017
 Report Date: April 25, 2017

Report No.: 337625
 Serial No.: 11-06413
 Barcode: 202099

Calibration Certificate

O'DAY EQUIPMENT
 1301 40TH ST NW
 FARGO, ND 58102-2813
 Contact: NICOLE DUNCOMB
 Phone: 701-282-9260
 PO Number: NONE
 Procedure: NIST SOP 19
 Technician ID: 11

Item(s) Submitted: 5 Gallon Measure
 Manufacturer: Seraphin
 Material: Stainless Steel
 Type: Measure
 Condition: Good
 Temperature: 20.2 °C
 Pressure: 725.7 mmHg
 Relative Humidity: 54.4 %
 Standard H₂O Temp.: 17.1 °C
 Artifact H₂O Temp.: 17.4 °C

| Nominal | | Calibrated | | | | |
|--------------|----------|--------------|--------------------------|----------|----------------------|-----------|
| Volume (gal) | | Volume (gal) | Error (in ³) | <i>k</i> | U (in ³) | CCE (°F) |
| 5 | As Found | 4.9994 | -0.15 | 2.06 | 0.25 | 0.0000265 |
| | As Left | 4.9994 | -0.15 | | | |

Neck Calibration: No neck calibration was performed at this time.

This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 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 item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
 Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

Pete Whebbe

Peter J. Whebbe
 Metrologist

Reviewed by:

Mark Nicollet

Mark Nicollet
 Quality Manager



Receipt Date: April 7, 2017
Cal. Date: April 11, 2017
Report Date: April 11, 2017

Report No.: 337549
Serial No.: 42840
Barcode: 200167

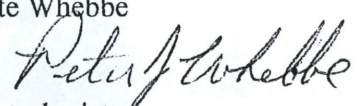
Calibration Certificate

O'DAY EQUIPMENT
1301 40TH ST NW
FARGO, ND 58102-2813
Contact: NICOLE DUNCOMB
Phone: 701-282-9260
PO Number: NONE
Procedure: NIST SOP 19
Technician ID: 11

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Mild Steel
Type: Measure
Condition: Poor/Dirty/Neck Uniformity*
Temperature: 19.1 °C
Pressure: 743.4 mmHg
Relative Humidity: 46.5 %
Standard H₂O Temp.: 20.0 °C
Artifact H₂O Temp.: 20.0 °C

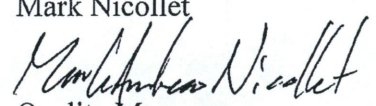
***Measure does not meet NIST Handbook 105-3 section 4.5.4
for neck uniformity and is REJECTED.**

Pete Whebbe


Metrologist

Reviewed by:

Mark Nicollet


Quality Manager



Receipt Date: April 20, 2017
Cal. Date: April 26, 2017
Report Date: April 26, 2017

Report No.: 337640
Serial No.: 3758 (Tall)
Barcode: 019923

Calibration Certificate

O'DAY EQUIPMENT
1301 40TH ST NW
FARGO, ND 58102-2813
Contact: NICOLE DUNCOMB
Phone: 701-282-9260
PO Number: None
Procedure: NIST SOP 19
Technician ID: 19

Item(s) Submitted: 100 Gallon Prover
Manufacturer: Unknown
Material: Mild Steel
Type: No Bottom Zero
Condition: Good
Temperature: 20.3 °C
Pressure: 725.8 mmHg
Relative Humidity: 48.8 %
Standard H₂O Temp.: 10.4 °C
Artifact H₂O Temp.: 10.8 °C

| Nominal | | Calibrated | | | | |
|--------------|----------|--------------|--------------------------|----------|----------------------|-----------|
| Volume (gal) | | Volume (gal) | Error (in ³) | <i>k</i> | U (in ³) | CCE (°F) |
| 100 | As Found | 100.017 | 4.0 | 2.00 | 2.3 | 0.0000186 |
| | As Left | 100.017 | 4.0 | | | |

Neck Calibration: No neck calibration was performed at this time.

This prover has been calibrated as a "to contain after wet down" vessel with a drain time of 30 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 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 item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

Erik Alfvín

Metrologist

Reviewed by:

Mark Nicollet

Quality Manager



Receipt Date: April 20, 2017
Cal. Date: April 26, 2017
Report Date: April 26, 2017

Report No.: 337641
Serial No.: 103 (Short)
Barcode: 018789

Calibration Certificate

O'DAY EQUIPMENT
1301 40TH ST NW
FARGO, ND 58102-2813
Contact: NICOLE DUNCOMB
Phone: 701-282-9260
PO Number: None
Procedure: NIST SOP 19
Technician ID: 19

Item(s) Submitted: 100 Gallon Prover
Manufacturer: Kleespie
Material: Mild Steel
Type: No Bottom Zero
Condition: Good
Temperature: 20.6 °C
Pressure: 724.9 mmHg
Relative Humidity: 52.0 %
Standard H₂O Temp.: 10.0 °C
Artifact H₂O Temp.: 10.2 °C

| Nominal | | Calibrated | | | | |
|--------------|----------|--------------|--------------------------|----------|----------------------|-----------|
| Volume (gal) | | Volume (gal) | Error (in ³) | <i>k</i> | U (in ³) | CCE (°F) |
| 100 | As Found | 100.014 | 3.3 | 2.00 | 2.3 | 0.0000186 |
| | As Left | 100.014 | 3.3 | | | |

Neck Calibration: No neck calibration was performed at this time.

This prover has been calibrated as a "to contain after wet down" vessel with a drain time of 30 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 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 item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

Erik Alfvin

Metrologist

Reviewed by:

Mark Nicollet

Quality Manager



Receipt Date: April 7, 2017
Cal. Date: April 11, 2017
Report Date: April 11, 2017

Report No.: 337545
Serial No.: 12640
Barcode: 019910

Calibration Certificate

O'DAY EQUIPMENT
1301 40TH ST NW
FARGO, ND 58102-2813
Contact: NICOLE DUNCOMB
Phone: 701-282-9260
PO Number: NONE
Procedure: NIST SOP 21
Technician ID: 07

Item(s) Submitted: 100 Gallon LPG Prover
Manufacturer: Arrow Tank
Material: Mild Steel
Description: Zero Bottom
Condition: Good
Temperature: 19.7 °C
Pressure: 742.0 mmHg
Relative Humidity: 46.0 %
Standard H₂O Temp. 8.6 °C
Artifact H₂O Temp.: 9.0 °C

| Nominal | | Calibrated | | | | |
|--------------|------------------------|--------------|--------------------------|----------|----------------------|------------|
| Volume (gal) | | Volume (gal) | Error (in ³) | <i>k</i> | U (in ³) | CCE (1/°F) |
| 100 | As Found (at 100 psig) | 99.9508 | -11.4 | 2.02 | 5.3 | 0.0000186 |
| | As Left (at 100 psig) | 99.9508 | -11.4 | | | |

Neck Calibration: No neck calibration was performed at this time.

This prover has been calibrated as a "to contain after wet down" vessel with a drain time of 30 seconds after cessation of full flow. The prover listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-4 (2016). Uncertainty calculations contain the components in NIST SOP 21 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 item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F.

Mark Nicollet

Mark Nicollet
Quality Manager

Reviewed by:

Pete Whebbe

Pete Whebbe
Metrologist



Receipt Date: April 7, 2017
 Cal. Date: April 11, 2017
 Report Date: April 11, 2017

Report No.: 337545
 Serial No.: 12640
 Barcode: 019910

Pressure Correction Chart

O'DAY EQUIPMENT
 1301 40TH ST NW
 FARGO, ND 58102-2813
 Contact: NICOLE DUNCOMB
 Phone: 701-282-9260
 PO Number: NONE
 SOP: NIST SOP 21
 Technician ID: 7

Item(s) Submitted: 100 Gallon LPG Prover
 Manufacturer: Arrow Tank
 Material: Mild Steel
 Description: Zero Bottom
 Condition: Good
 Temperature: 19.7 °C
 Pressure: 742. mmHg
 Relative Humidity: 46.0 %

| Pressure Gauge Reading (psig) | Corrected Volume (gal) |
|----------------------------------|---------------------------|
| 0 | 99.8333 |
| 10 | 99.8458 |
| 20 | 99.8583 |
| 30 | 99.8708 |
| 40 | 99.8833 |
| 50 | 99.8958 |
| 60 | 99.9068 |
| 70 | 99.9178 |
| 80 | 99.9288 |
| 90 | 99.9398 |
| 100 | 99.9508 |
| 110 | 99.9578 |
| 120 | 99.9648 |
| 130 | 99.9718 |
| 140 | 99.9788 |
| 150 | 99.9858 |
| 160 | 99.9918 |
| 170 | 99.9978 |
| 180 | 100.0038 |
| 190 | 100.0098 |
| 200 | 100.0158 |

Mark Nicollet

Quality Manager



NVLAP LAB CODE 105003-0

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

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