

Receipt Date: March 16, 2017  
Cal. Date: March 22, 2017  
Report Date: March 22, 2017

Report No.: 337442  
Serial No.: 07-45256-07  
Barcode: 202242

## Calibration Certificate

O'DAY EQUIPMENT LLC  
635 31ST ST SE  
MINOT, ND 58701  
Contact: AJ GRAVES  
Phone: 701-356-8472  
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: 19.2 °C  
Pressure: 750.3 mmHg  
Relative Humidity: 36.4 %  
Standard H<sub>2</sub>O Temp.: 11.1 °C  
Artifact H<sub>2</sub>O Temp.: 11.5 °C



Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in <sup>3</sup> )	<i>k</i>	U (in <sup>3</sup> )	CCE (°F)
5	As Found	4.9998	-0.06	2.06	0.25	0.0000265
	As Left	4.9998	-0.06			

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 in<sup>3</sup> = 0.00378541 m<sup>3</sup>.

Pete Whebbe

Metrologist

Reviewed by:

Mark Nicollet

Quality Manager

Receipt Date: March 16, 2017  
Cal. Date: March 22, 2017  
Report Date: March 22, 2017

Report No.: 337443  
Serial No.: 09-06135  
Barcode: 202245

## Calibration Certificate

O'DAY EQUIPMENT LLC  
635 31ST ST SE  
MINOT, ND 58701  
Contact: AJ GRAVES  
Phone: 701-356-8472  
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: 19.1 °C  
Pressure: 747.9 mmHg  
Relative Humidity: 38.2 %  
Standard H<sub>2</sub>O Temp.: 12.1 °C  
Artifact H<sub>2</sub>O Temp.: 12.2 °C



Nominal		Calibrated		<i>k</i>	U (in <sup>3</sup> )	CCE (°F)
Volume (gal)		Volume (gal)	Error (in <sup>3</sup> )			
5	As Found	4.9991	-0.21	2.06	0.25	0.0000265
	As Left	4.9991	-0.21			

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 in<sup>3</sup> = 0.00378541 m<sup>3</sup>.

Erik Alfvin

Metrologist

Reviewed by:

Pete Whebbe

Metrologist

Receipt Date: March 16, 2017  
Cal. Date: March 22, 2017  
Report Date: March 22, 2017

Report No.: 337444  
Serial No.: 11-88799  
Barcode: 202244

## Calibration Certificate

O'DAY EQUIPMENT LLC  
635 31ST ST SE  
MINOT, ND 58701

Contact: AJ GRAVES  
Phone: 701-356-8472  
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: 19.1 °C  
Pressure: 747.9 mmHg  
Relative Humidity: 38.2 %  
Standard H<sub>2</sub>O Temp.: 11.8 °C  
Artifact H<sub>2</sub>O Temp.: 11.8 °C



Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in <sup>3</sup> )	<i>k</i>	U (in <sup>3</sup> )	CCE (°F)
5	As Found	4.9991	-0.21	2.06	0.25	0.0000265
	As Left	4.9991	-0.21			

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 in<sup>3</sup> = 0.00378541 m<sup>3</sup>.

Erik Alfvin

Metrologist

Reviewed by:

Pete Whebbe

Metrologist

Receipt Date: March 16, 2017  
Cal. Date: March 22, 2017  
Report Date: March 22, 2017

Report No.: 337445  
Serial No.: 15-92443  
Barcode: 202811

## Calibration Certificate

O'DAY EQUIPMENT LLC

635 31ST ST SE

MINOT, ND 58701

Contact: AJ GRAVES

Phone: 701-356-8472

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: 19.1 °C

Pressure: 747.9 mmHg

Relative Humidity: 38.2 %

Standard H<sub>2</sub>O Temp.: 11.7 °C

Artifact H<sub>2</sub>O Temp.: 11.8 °C



Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in <sup>3</sup> )	<i>k</i>	U (in <sup>3</sup> )	CCE (°F)
5	As Found	5.0002	0.04	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 in<sup>3</sup> = 0.00378541 m<sup>3</sup>.

Erik Alfvin

Metrologist

Reviewed by:

Pete Whebbe

Metrologist

Receipt Date: March 16, 2017  
Cal. Date: March 22, 2017  
Report Date: March 22, 2017

Report No.: 337447  
Serial No.: 45401  
Barcode: 202249



## Calibration Certificate

O'DAY EQUIPMENT LLC  
635 31ST ST SE  
MINOT, ND 58701  
Contact: AJ GRAVES  
Phone: 701-356-8472  
PO Number: None  
Procedure: NIST SOP 19  
Technician ID: 19

Item(s) Submitted: 5 Gallon Measure  
Manufacturer: Seraphin  
Material: Mild Steel  
Type: Measure  
Condition: Fair  
Temperature: 19.1 °C  
Pressure: 747.9 mmHg  
Relative Humidity: 38.2 %  
Standard H<sub>2</sub>O Temp.: 10.4 °C  
Artifact H<sub>2</sub>O Temp.: 10.4 °C

Nominal Volume (gal)		Calibrated		<i>k</i>	U (in <sup>3</sup> ) CCE (°F)	
		Volume (gal)	Error (in <sup>3</sup> )			
5	As Found	4.9977	-0.52	2.06	0.25	0.0000186
	As Left	5.0001	0.03			

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 in<sup>3</sup> = 0.00378541 m<sup>3</sup>.

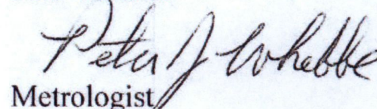
Erik Alfvén



Metrologist

Reviewed by:

Pete Whebbe



Metrologist

Receipt Date: March 16, 2017  
Cal. Date: March 23, 2017  
Report Date: March 23, 2017

Report No.: 337448  
Serial No.: 15-92411  
Barcode: 202817

## Calibration Certificate

O'DAY EQUIPMENT LLC  
635 31ST ST SE  
MINOT, ND 58701  
Contact: AJ GRAVES  
Phone: 701-356-8472  
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: 18.6 °C  
Pressure: 740.4 mmHg  
Relative Humidity: 42.9 %  
Standard H<sub>2</sub>O Temp.: 12.7 °C  
Artifact H<sub>2</sub>O Temp.: 12.9 °C



Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in <sup>3</sup> )	<i>k</i>	U (in <sup>3</sup> )	CCE (°F)
5	As Found	4.9997	-0.06	2.06	0.25	0.0000265
	As Left	4.9997	-0.06			

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

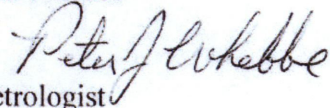
This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

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.

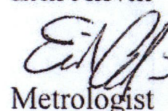
CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F  
Conversion to SI unit: 1 gallon = 231 in<sup>3</sup> = 0.00378541 m<sup>3</sup>.

Pete Whebbe

  
Metrologist

Reviewed by:

Erik Alfvin

  
Metrologist

Receipt Date: March 16, 2017  
Cal. Date: March 23, 2017  
Report Date: March 23, 2017

Report No.: 337449  
Serial No.: 09-06136  
Barcode: 202243

## Calibration Certificate



O'DAY EQUIPMENT LLC  
635 31ST ST SE  
MINOT, ND 58701  
Contact: AJ GRAVES  
Phone: 701-356-8472  
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: 18.6 °C  
Pressure: 740.4 mmHg  
Relative Humidity: 42.9 %  
Standard H<sub>2</sub>O Temp.: 12.2 °C  
Artifact H<sub>2</sub>O Temp.: 12.5 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in <sup>3</sup> )	<i>k</i>	U (in <sup>3</sup> )	CCE (°F)
5	As Found	5.0010	0.23	2.06	0.25	0.0000265
	As Left	5.0010	0.23			

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 in<sup>3</sup> = 0.00378541 m<sup>3</sup>.

Pete Whebbe

*Peter J. Whebbe*  
Metrologist

Reviewed by:

Erik Alfvén

*Erik Alfvén*  
Metrologist

RECEIVED  
APR 11 2017  
ND Public  
Service  
Commission

REC  
APR 11 2017  
Commission

Receipt Date: March 16, 2017  
Cal. Date: March 23, 2017  
Report Date: March 23, 2017

Report No.: 337450  
Serial No.: 42653  
Barcode: 202970

## Calibration Certificate

O'DAY EQUIPMENT LLC  
635 31ST ST SE  
MINOT, ND 58701  
Contact: AJ GRAVES  
Phone: 701-356-8472  
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: 18.6 °C  
Pressure: 740.4 mmHg  
Relative Humidity: 42.9 %  
Standard H<sub>2</sub>O Temp.: 12.4 °C  
Artifact H<sub>2</sub>O Temp.: 12.6 °C

Nominal Volume (gal)		Calibrated		<i>k</i>	U (in <sup>3</sup> )	CCE (°F)
		Volume (gal)	Error (in <sup>3</sup> )			
5	As Found	4.9997	-0.07	2.06	0.25	0.0000186
	As Left	4.9997	-0.07			

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

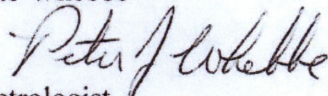
This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

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.

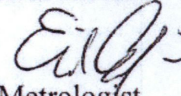
CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F  
Conversion to SI unit: 1 gallon = 231 in<sup>3</sup> = 0.00378541 m<sup>3</sup>.

Pete Whebbe

  
Metrologist

Reviewed by:

Erik Alfvin

  
Metrologist



Receipt Date: March 16, 2017  
Cal. Date: March 23, 2017  
Report Date: March 23, 2017

Report No.: 337451  
Serial No.: 09-06131  
Barcode: 202247

## Calibration Certificate

O'DAY EQUIPMENT LLC  
635 31ST ST SE  
MINOT, ND 58701  
Contact: AJ GRAVES  
Phone: 701-356-8472  
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: 18.6 °C  
Pressure: 740.4 mmHg  
Relative Humidity: 42.9 %  
Standard H<sub>2</sub>O Temp.: 12.6 °C  
Artifact H<sub>2</sub>O Temp.: 12.7 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in <sup>3</sup> )	<i>k</i>	U (in <sup>3</sup> )	CCE (°F)
5	As Found	4.9977	-0.52	2.06	0.25	0.0000265
	As Left	5.0003	0.08			

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 in<sup>3</sup> = 0.00378541 m<sup>3</sup>.

Pete Whebbe

Metrologist

Reviewed by:

Erik Alfvin

Metrologist



Receipt Date: March 16, 2017  
Cal. Date: March 23, 2017  
Report Date: March 23, 2017

Report No.: 337452  
Serial No.: 15-92450  
Barcode: 202816

## Calibration Certificate

O'DAY EQUIPMENT LLC

635 31ST ST SE

MINOT, ND 58701

Contact: AJ GRAVES

Phone: 701-356-8472

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: 18.6 °C

Pressure: 740.4 mmHg

Relative Humidity: 42.9 %

Standard H<sub>2</sub>O Temp.: 10.2 °C

Artifact H<sub>2</sub>O Temp.: 10.5 °C

Nominal Volume (gal)		Calibrated		<i>k</i>	U (in <sup>3</sup> )	CCE (°F)
		Volume (gal)	Error (in <sup>3</sup> )			
5	As Found	5.0001	0.03	2.06	0.25	0.0000265
	As Left	5.0001	0.03			

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 in<sup>3</sup> = 0.00378541 m<sup>3</sup>.

Pete Whebbe

*Peter J. Whebbe*  
Metrologist

Reviewed by:

Erik Alfvin

*Erik Alfvin*  
Metrologist



Receipt Date: March 16, 2017  
Cal. Date: March 22, 2017  
Report Date: March 22, 2017

Report No.: 337440  
Serial No.: 051320997-0103  
Barcode: 202318

## Calibration Certificate

O'DAY EQUIPMENT LLC

635 31ST ST SE

MINOT, ND 58701

Contact: AJ GRAVES

Phone: 701-356-8472

PO Number: NONE

Procedure: NIST SOP 19

Technician ID: 07

Item(s) Submitted: 100 Gallon Prover  
Manufacturer: Determan Brownie  
Material: Stainless Steel (304)  
Type: No Bottom Zero  
Condition: Good  
Temperature: 19.1 °C  
Pressure: 747.8 mmHg  
Relative Humidity: 40.5 %  
Standard H<sub>2</sub>O Temp.: 7.1 °C  
Artifact H<sub>2</sub>O Temp.: 7.3 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in <sup>3</sup> )	<i>k</i>	U (in <sup>3</sup> )	CCE (°F)
100	As Found	99.998	-0.5	2.00	2.3	0.0000288
	As Left	99.998	-0.5			

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 in<sup>3</sup> = 0.00378541 m<sup>3</sup>.

Mark Nicollet

*Mark Nicollet*  
Quality Manager

Reviewed by:  
Pete Whebbe

*Peter Whebbe*  
Metrologist



Receipt Date: March 16, 2017  
Cal. Date: March 21, 2017  
Report Date: March 21, 2017

Report No.: 337439  
Serial No.: 041320840-0102  
Barcode: 202317

## Calibration Certificate

O'DAY EQUIPMENT LLC  
635 31ST ST SE  
MINOT, ND 58701

Contact: AJ GRAVES  
Phone: 701-356-8472  
PO Number: NONE  
Procedure: NIST SOP 19  
Technician ID: 07

Item(s) Submitted: 100 Gallon Prover  
Manufacturer: Determan Brownie  
Material: Stainless Steel (304)  
Type: No Bottom Zero  
Condition: Excellent  
Temperature: 18.8 °C  
Pressure: 747.2 mmHg  
Relative Humidity: 45.0 %  
Standard H<sub>2</sub>O Temp.: 6.8 °C  
Artifact H<sub>2</sub>O Temp.: 7.0 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in <sup>3</sup> )	<i>k</i>	U (in <sup>3</sup> )	CCE (°F)
100	As Found	100.025	5.7	2.00	2.3	0.0000288
	As Left	100.025	5.7			

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

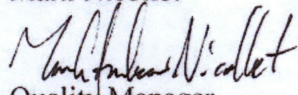
This prover has been calibrated as a "to contain after wet down" vessel with a drain time of 30 seconds after cessation of full flow.

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.

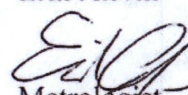
CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F  
Conversion to SI unit: 1 gallon = 231 in<sup>3</sup> = 0.00378541 m<sup>3</sup>.

Mark Nicollet

  
Quality Manager

Reviewed by:

Erik Alfvin

  
Metrologist



Receipt Date: March 16, 2017  
Cal. Date: March 23, 2017  
Report Date: March 23, 2017

Report No.: 337441  
Serial No.: 44753  
Barcode: 202355

## Calibration Certificate

O'DAY EQUIPMENT LLC  
635 31ST ST SE  
MINOT, ND 58701  
Contact: AJ GRAVES  
Phone: 701-356-8472  
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: 18.6 °C  
Pressure: 735.8 mmHg  
Relative Humidity: 43.8 %  
Standard H<sub>2</sub>O Temp. 7.9 °C  
Artifact H<sub>2</sub>O Temp.: 8.5 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in <sup>3</sup> )	<i>k</i>	U (in <sup>3</sup> )	CCE (°F)
100	As Found (at 100 psig)	100.010	2.4	2.02	5.3	0.0000186
	As Left (at 100 psig)	100.010	2.4			

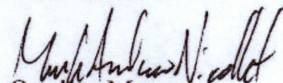
Neck Calibration: No neck calibration was performed at this time.

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

  
Quality Manager

Reviewed by:

Erik Alfvín

  
Metrologist



Receipt Date: March 16, 2017  
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Report No.: 337441  
 Serial No.: 44753  
 Barcode: 202355

## Pressure Correction Chart

O'DAY EQUIPMENT LLC  
 635 31ST ST SE  
 MINOT, ND 58701  
 Contact: AJ GRAVES  
 Phone: 701-356-8472  
 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: 18.6 °C  
 Pressure: 735.8 mmHg  
 Relative Humidity: 43.8 %

Pressure Gauge Reading (psig)	Corrected Volume (gal)
0	99.890
10	99.900
20	99.910
30	99.920
40	99.930
50	99.940
60	99.954
70	99.968
80	99.982
90	99.996
100	100.010
110	100.016
120	100.022
130	100.028
140	100.034
150	100.040
160	100.050
170	100.060
180	100.070
190	100.080
200	100.090

Mark Nicollet

*Mark Nicollet*  
 Quality Manager

Receipt Date: March 16, 2017  
 Cal. Date: March 22, 2017  
 Report Date: March 22, 2017

Report No.: 337446  
 Serial No.: 07-03144  
 Barcode: 202246

## Calibration Certificate

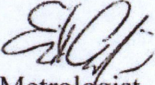


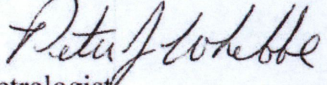
O'DAY EQUIPMENT LLC  
 635 31ST ST SE  
 MINOT, ND 58701  
 Contact: AJ GRAVES  
 Phone: 701-356-8472  
 PO Number: None  
 Procedure:  
 Technician ID: 19

Item(s) Submitted: 5 Gallon Measure  
 Manufacturer: Seraphin  
 Material: Stainless Steel  
 Type: Measure  
 Condition: Broken\*  
 Temperature: 19.1 °C  
 Pressure: 747.9 mmHg  
 Relative Humidity: 38.2 %  
 Standard H<sub>2</sub>O Temp.:  
 Artifact H<sub>2</sub>O Temp.:

Nominal	Calibrated			
Volume (gal)	Volume (gal)	Error (in <sup>3</sup> )	<i>k</i>	U (in <sup>3</sup> ) CCE (°F)
5	As Found			
	As Left			

**\*REJECTED** - Measure is broken and cannot be used for testing purposes. Scale plate must be replaced and measure recalibrated before commercial use.

Erik Alfvin  
  
 Metrologist

Reviewed by:  
 Pete Whebbe  
  
 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.

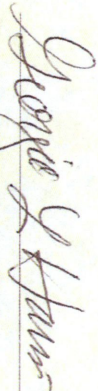
The Office of Weights and Measures Program assesses laboratories to NIST Handbook 143 - Program Handbook for State Weights and Measures Laboratories and ISO/IEC 17025:2005.

### Scope

<b>Mass Echelon I</b>	<b>Mass Echelon III</b>	<b>Volume Gravimetric, I</b>
10 kg to 1 mg	50 kg to 1 mg	20 L to 10 ml
<b>Mass Echelon II</b>	5000 lb to 0.001 lb	100 gal to 0.25 qt
50 kg to 1 mg	4 oz to 0.03125 oz	<b>Volume Transfer, II</b>
1000 lb to 0.001 lb	<b>Weight Carts</b>	1500 gal to 5 gal
4 oz to 0.03125 oz	10 000 lb to 2000 lb	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.