



Receipt Date: June 6, 2017  
Cal. Date: June 7, 2017  
Report Date: June 9, 2017

**REC'D JUN 21 2017**

Report No.: 337798  
Serial No.: 08-05150  
Barcode: 203007

## Calibration Certificate

VALLEY PETROLEUM EQUIP  
5510 10TH AVE NE  
GRAND FORKS, ND 58206-1355  
Contact: STEVE SULLAND  
Phone: 701-772-7261  
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: 23.6 °C  
Pressure: 738.5 mmHg  
Relative Humidity: 43.6 %  
Standard H<sub>2</sub>O Temp.: 20.7 °C  
Artifact H<sub>2</sub>O Temp.: 20.7 °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	4.99937	-0.15	2.06	0.25	0.0000265
	As Left	4.99937	-0.15			

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

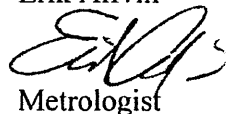
This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

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

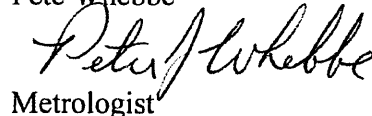
Erik Alfvin



Metrologist

Reviewed by:

Pete Whebbe



Metrologist

**4** **WM-16-743** Filed: 6/21/2017 Pages: 10  
**Calibration report**

Receipt Date: June 6, 2017  
Cal. Date: June 7, 2017  
Report Date: June 9, 2017

REC'D JUN 21 2017

Report No.: 337799  
Serial No.: 10-07753  
Barcode: 201425

## Calibration Certificate

VALLEY PETROLEUM EQUIP  
5510 10TH AVE NE  
GRAND FORKS, ND 58206-1355  
Contact: STEVE SULLAND  
Phone: 701-772-7261  
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: 23.6 °C  
Pressure: 738.5 mmHg  
Relative Humidity: 43.6 %  
Standard H<sub>2</sub>O Temp.: 20.4 °C  
Artifact H<sub>2</sub>O Temp.: 20.3 °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	4.99608	-0.91	2.06	0.25	0.0000265
	As Left	5.00034	0.08			

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

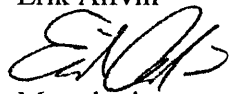
This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

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>.

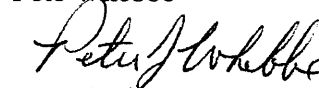
Erik Alfvin



Metrologist

Reviewed by:

Pete Whebbe



Metrologist

Receipt Date: June 6, 2017  
Cal. Date: June 7, 2017  
Report Date: June 9, 2017

REC'D JUN 21 2017

Report No.: 337800  
Serial No.: 10-07754  
Barcode: 201426

## Calibration Certificate

VALLEY PETROLEUM EQUIP  
5510 10TH AVE NE  
GRAND FORKS, ND 58206-1355  
Contact: STEVE SULLAND  
Phone: 701-772-7261  
PO Number: None  
Procedure: NIST SOP 19  
Technician ID: 19

Item(s) Submitted: 5 Gallon Measure  
Manufacturer: Seraphin  
Material: Stainless Steel  
Type: Measure  
Condition: Excellent  
Temperature: 23.6 °C  
Pressure: 738.5 mmHg  
Relative Humidity: 43.6 %  
Standard H<sub>2</sub>O Temp.: 18.3 °C  
Artifact H<sub>2</sub>O Temp.: 18.4 °C

Nominal Volume (gal)		Calibrated Volume (gal)	Error (in <sup>3</sup> )	<i>k</i>	U (in <sup>3</sup> )	CCE (°F)
5	As Found	5.00143	0.33	2.06	0.25	0.0000265
	As Left	5.00034	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>.

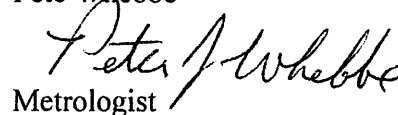
Erik Alfvin



Metrologist

Reviewed by:

Pete Whebbe



Metrologist

Receipt Date: June 6, 2017  
Cal. Date: June 8, 2017  
Report Date: June 9, 2017

REC'D JUN 21 2017

Report No.: 337801  
Serial No.: 98-8992-15  
Barcode: 018399

## Calibration Certificate

VALLEY PETROLEUM EQUIP  
5510 10TH AVE NE  
GRAND FORKS, ND 58206-1355  
Contact: STEVE SULLAND  
Phone: 701-772-7261  
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: 23.6 °C  
Pressure: 738.5 mmHg  
Relative Humidity: 43.6 %  
Standard H<sub>2</sub>O Temp.: 22.3 °C  
Artifact H<sub>2</sub>O Temp.: 22.4 °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	4.99993	-0.02	2.06	0.25	0.0000265
	As Left	4.99993	-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 in<sup>3</sup> = 0.00378541 m<sup>3</sup>.

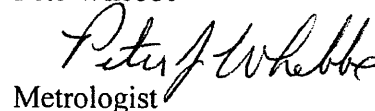
Erik Alfvin



Metrologist

Reviewed by:

Pete Whebbe



Metrologist



Receipt Date: June 6, 2017  
 Cal. Date: June 7, 2017  
 Report Date: June 9, 2017

REC'D JUN 21 2017

Report No.: 337802  
 Serial No.: 98-8992-09  
 Barcode: 018398

## Calibration Certificate

VALLEY PETROLEUM EQUIP  
 5510 10TH AVE NE  
 GRAND FORKS, ND 58206-1355  
 Contact: STEVE SULLAND  
 Phone: 701-772-7261  
 PO Number: None  
 Procedure: NIST SOP 19  
 Technician ID: 19

Item(s) Submitted: 5 Gallon Measure  
 Manufacturer: Seraphin  
 Material: Stainless Steel  
 Type: Measure  
 Condition: Excellent  
 Temperature: 23.6 °C  
 Pressure: 738.5 mmHg  
 Relative Humidity: 43.6 %  
 Standard H<sub>2</sub>O Temp.: 18.5 °C  
 Artifact H<sub>2</sub>O Temp.: 18.6 °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	4.99905	-0.22	2.06	0.25	0.0000265
	As Left	4.99905	-0.22			

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

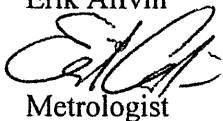
This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

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>.

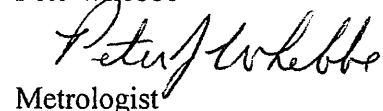
Erik Alfvin



Metrologist

Reviewed by:

Pete Whebbe



Metrologist



Receipt Date: June 6, 2017  
 Cal. Date: June 8, 2017  
 Report Date: June 9, 2017

REC'D JUN 21 2017

Report No.: 337803  
 Serial No.: 42985  
 Barcode: 017725

## Calibration Certificate

VALLEY PETROLEUM EQUIP  
 5510 10TH AVE NE  
 GRAND FORKS, ND 58206-1355  
 Contact: STEVE SULLAND  
 Phone: 701-772-7261  
 PO Number: None  
 Procedure: NIST SOP 19  
 Technician ID: 19

Item(s) Submitted: 5 Gallon Measure  
 Manufacturer: Seraphin  
 Material: Mild Steel  
 Type: Measure  
 Condition: Good  
 Temperature: 23.6 °C  
 Pressure: 738.5 mmHg  
 Relative Humidity: 43.6 %  
 Standard H<sub>2</sub>O Temp.: 18.7 °C  
 Artifact H<sub>2</sub>O Temp.: 18.9 °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	4.99719	-0.65	2.06	0.25	0.0000186
	As Left	4.99976	-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>.

Reviewed by:  
 Pete Whebbe

Metrologist

Erik Alfvín  
  
 Metrologist

Receipt Date: June 6, 2017  
Cal. Date: June 8, 2017  
Report Date: June 9, 2017

REC'D JUN 21 2017

Report No.: 337804  
Serial No.: 43326  
Barcode: 017723

## Calibration Certificate

VALLEY PETROLEUM EQUIP  
5510 10TH AVE NE  
GRAND FORKS, ND 58206-1355  
Contact: STEVE SULLAND  
Phone: 701-772-7261  
PO Number: None  
Procedure: NIST SOP 19  
Technician ID: 19

Item(s) Submitted: 5 Gallon Measure  
Manufacturer: Seraphin  
Material: Mild Steel  
Type: Measure  
Condition: Good  
Temperature: 23.6 °C  
Pressure: 738.5 mmHg  
Relative Humidity: 43.6 %  
Standard H<sub>2</sub>O Temp.: 17.7 °C  
Artifact H<sub>2</sub>O Temp.: 17.8 °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	4.99985	-0.04	2.06	0.25	0.0000186
	As Left	4.99985	-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>.

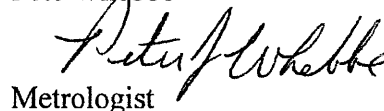
Erik Alfvin



Metrologist

Reviewed by:

Pete Whebbe



Metrologist



Receipt Date: June 7, 2017  
Cal. Date: June 8, 2017  
Report Date: June 9, 2017

REC'D JUN 21 2017

Report No.: 337805  
Serial No.: None  
Barcode: 017724

## Calibration Certificate

VALLEY PETROLEUM EQUIP  
5510 10TH AVE NE  
GRAND FORKS, ND 58206-1355  
Contact: STEVE SULLAND  
Phone: 701-772-7261  
PO Number: None  
Procedure: NIST SOP 19  
Technician ID: 19

Item(s) Submitted: 5 Gallon Measure  
Manufacturer: Ellisco  
Material: Mild Steel  
Type: Measure  
Condition: Fair\*  
Temperature: 23.6 °C  
Pressure: 738.5 mmHg  
Relative Humidity: 43.6 %  
Standard H<sub>2</sub>O Temp.: 18.6 °C  
Artifact H<sub>2</sub>O Temp.: 18.7 °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	5.00010	0.02	2.06	0.25	0.0000186
	As Left	5.00010	0.02			

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

**\*Small leak under bottom of sight glass. Scale divisions are not readable - scale plate must be replaced by the next calibration cycle.**

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.

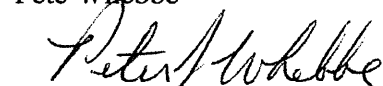
CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F  
Conversion to SI unit: 1 gallon = 231 in<sup>3</sup> = 0.00378541 m<sup>3</sup>.

Erik Alfvin

  
Metrologist

Reviewed by:

Pete Whebbe

  
Metrologist

Receipt Date: June 6, 2017  
Cal. Date: June 7, 2017  
Report Date: June 7, 2017

REC'D JUN 21 2017

Report No.: 337797  
Serial No.: 6841004-2  
Barcode: 017726

## Calibration Certificate

VALLEY PETROLEUM EQUIP  
5510 10TH AVE NE  
GRAND FORKS, ND 58206-1355  
Contact: STEVE SULLAND  
Phone: 701-772-7261  
PO Number: None  
Procedure: NIST SOP 19  
Technician ID: 19

Item(s) Submitted: 100 Gallon Prover  
Manufacturer: Determan  
Material: Mild Steel  
Type: No Bottom Zero  
Condition: Good  
Temperature: 23.0 °C  
Pressure: 739.8 mmHg  
Relative Humidity: 43.7 %  
Standard H<sub>2</sub>O Temp.: 13.9 °C  
Artifact H<sub>2</sub>O Temp.: 14.2 °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	100.0053	1.2	2.00	2.3	0.0000186
	As Left	100.0053	1.2			

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

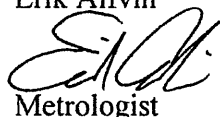
This prover has been calibrated as a "to contain after wet down" vessel with a drain time of 30 seconds after cessation of full flow.

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>.

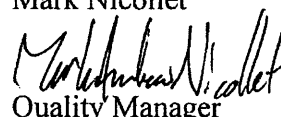
Erik Alfvin



Metrologist

Reviewed by:

Mark Nicollet



Quality Manager

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.