

Receipt Date: January 9, 2017
Cal. Date: January 9, 2017
Report Date: January 9, 2017



Report No.: 337037
Serial No.: 03-19207-13
Barcode: 201317

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401
Contact: Jim Schaefer
Phone: 701-293-1707
PO Number: None
SOP: 19
Technician ID: 19

Item(s) Submitted: 5 Gallon Prover
Manufacturer: Seraphin
Material: Stainless Steel
Type: No Bottom Zero
Condition: Good
Temperature: 18.7 °C
Pressure: 740.8 mmHg
Relative Humidity: 46.4 %
Standard H₂O Temp.: 15.0 °C
Artifact H₂O Temp.: 15.0 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
5	As Found	5.0006	0.13	2.06	0.25	0.0000265
	As Left	5.0006	0.13			

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:
Pete Whebbe

Metrologist



Receipt Date: January 9, 2017
Cal. Date: January 9, 2017
Report Date: January 9, 2017

Report No.: 337038
Serial No.: 01-51382
Barcode: 201318

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401
Contact: JIM SCHAEFER
Phone: 701-293-1707
PO Number: NONE
SOP: 19
Technician ID: 11

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Mild Steel
Type: Measure
Condition: Good
Temperature: 18.1 °C
Pressure: 740.5 mmHg
Relative Humidity: 47.9 %
Standard H₂O Temp.: 12.6 °C
Artifact H₂O Temp.: 12.7 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
5	As Found	4.9981	-0.45	2.06	0.25	0.0000186
	As Left	5.0002	0.05			

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

Pete Whebbe
Metrologist

Reviewed by:

Erik Alfvin

Erik Alfvin
Metrologist



Receipt Date: January 9, 2017
Cal. Date: January 9, 2017
Report Date: January 9, 2017

Report No.: 337039
Serial No.: 22459
Barcode: 201322

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401
Contact: JIM SCHAEFER
Phone: 701-293-1707
PO Number: NONE
SOP: 19
Technician ID: 11

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Ellisco
Material: Mild Steel
Type: Measure
Condition: Fair
Temperature: 18.1 °C
Pressure: 740.5 mmHg
Relative Humidity: 47.9 %
Standard H₂O Temp.: 14.2 °C
Artifact H₂O Temp.: 14.4 °C

Nominal Volume (gal)	Calibrated		Error (in ³)	k	U (in ³)	CCE (°F)
	As Found	As Left				
5	4.9911	4.9997	-2.06	2.06	0.25	0.0000186
			-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 in³ = 0.00378541 m³.

Pete Whebbe

Pete J. Whebbe
Metrologist

Reviewed by:

Erik Alfvin

Erik Alfvin
Metrologist



Receipt Date: January 9, 2017
Cal. Date: January 9, 2017
Report Date: January 9, 2017

Report No.: 337040
Serial No.: None
Barcode: 201808

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401
Contact: JIM SCHAEFER
Phone: 701-293-1707
PO Number: NONE
SOP: 19
Technician ID: 11

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Ellisco
Material: Mild Steel
Type: Measure
Condition: Good
Temperature: 18.1 °C
Pressure: 740.5 mmHg
Relative Humidity: 47.9 %
Standard H₂O Temp.: 14.9 °C
Artifact H₂O Temp.: 15.0 °C

Nominal Volume (gal)		Calibrated Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
5	As Found	4.9974	-0.61	2.06	0.25	0.0000186
	As Left	5.0001	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.

Pete Whebbe

Metrologist

Reviewed by:

Erik Alfvin

Metrologist



Receipt Date: January 9, 2017
Cal. Date: January 9, 2017
Report Date: January 9, 2017

Report No.: 337041
Serial No.: 01-51354
Barcode: 202360

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401
Contact: JIM SCHAEFER
Phone: 701-293-1707
PO Number: NONE
SOP: 19
Technician ID: 11

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Mild Steel
Type: Measure
Condition: Fair
Temperature: 18.1 °C
Pressure: 740.5 mmHg
Relative Humidity: 47.9 %
Standard H₂O Temp.: 12.2 °C
Artifact H₂O Temp.: 12.5 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
5	As Found	4.9959	-0.94	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:

Erik Alfvin

Metrologist



Receipt Date: January 9, 2017
Cal. Date: January 11, 2017
Report Date: January 11, 2017

Report No.: 337042
Serial No.: None
Barcode: 202104

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401
Contact: JIM SCHAEFER
Phone: 701-293-1707
PO Number: NONE
SOP: 19
Technician ID: 11

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Mild Steel
Type: Measure
Condition: Fair
Temperature: 18.2 °C
Pressure: 733.5 mmHg
Relative Humidity: 52.2 %
Standard H₂O Temp.: 12.4 °C
Artifact H₂O Temp.: 12.6 °C

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

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:

Erik Alfvin

Metrologist



Receipt Date: January 9, 2017
Cal. Date: January 11, 2017
Report Date: January 11, 2017

Report No.: 337043
Serial No.: None
Barcode: 201321

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401
Contact: JIM SCHAEFER
Phone: 701-293-1707
PO Number: NONE
SOP: 19
Technician ID: 11

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Mild Steel
Type: Measure
Condition: Fair
Temperature: 18.2 °C
Pressure: 733.5 mmHg
Relative Humidity: 52.2 %
Standard H₂O Temp.: 12.3 °C
Artifact H₂O Temp.: 12.5 °C

Nominal Volume (gal)		Calibrated Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (1/°F)
5	As Found	4.9944	-1.30	2.06	0.25	0.0000186
	As Left	4.9996	-0.10			

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:

Erik Alfvin

Metrologist



Receipt Date: January 9, 2017
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Report Date: January 11, 2017

Report No.: 337044
Serial No.: 02-52149
Barcode: 201319

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401
Contact: JIM SCHAEFER
Phone: 701-293-1707
PO Number: NONE
SOP: 19
Technician ID: 11

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Mild Steel
Type: Measure
Condition: Excellent
Temperature: 18.2 °C
Pressure: 733.5 mmHg
Relative Humidity: 52.2 %
Standard H₂O Temp.: 12.6 °C
Artifact H₂O Temp.: 12.8 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (1/°F)
5	As Found	5.0000	0.01	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

Peter Whebbe
Metrologist

Reviewed by:

Erik Alfvin

Erik Alfvin
Metrologist



Receipt Date: January 9, 2017
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Report Date: January 11, 2017

Report No.: 337045
Serial No.: 99-10282-32
Barcode: 202414

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401

Contact: JIM SCHAEFER
Phone: 701-293-1707
PO Number: NONE
SOP: 19
Technician ID: 11

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Stainless Steel
Type: Measure
Condition: Excellent
Temperature: 18.2 °C
Pressure: 733.5 mmHg
Relative Humidity: 52.2 %
Standard H₂O Temp.: 11.7 °C
Artifact H₂O Temp.: 11.8 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
5	As Found	5.0000	0.00	2.06	0.25	0.0000265
	As Left	5.0000	0.00			

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:

Erik Alfvén

Erik Alfvén
Metrologist



Receipt Date: January 9, 2017
Cal. Date: January 11, 2017
Report Date: January 11, 2017

Report No.: 337046
Serial No.: 45284
Barcode: 201320

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401
Contact: JIM SCHAEFER
Phone: 701-293-1707
PO Number: NONE
SOP: 19
Technician ID: 11

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Mild Steel
Type: Measure
Condition: Excellent
Temperature: 18.2 °C
Pressure: 733.5 mmHg
Relative Humidity: 52.2 %
Standard H₂O Temp.: 11.9 °C
Artifact H₂O Temp.: 12.2 °C

Nominal Volume (gal)		Calibrated Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
5	As Found	4.9955	-1.05	2.06	0.25	0.0000186
	As Left	5.0002	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.

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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 Alfvin

Metrologist



Receipt Date: January 9, 2017
Cal. Date: January 9, 2017
Report Date: January 9, 2017

Report No.: 337036
Serial No.: 3967360-5
Barcode: 201315

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401
Contact: JIM SCHAEFER
Phone: 701-293-1707
PO Number: NONE
SOP: 19
Technician ID: 11

Item(s) Submitted: 100 Gallon Prover
Manufacturer: Brownie
Material: Stainless Steel
Type: No Bottom Zero
Condition: Good
Temperature: 18.6 °C
Pressure: 740.5 mmHg
Relative Humidity: 46.1 %
Standard H₂O Temp.: 8.6 °C
Artifact H₂O Temp.: 8.7 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
100	As Found	100.007	1.7	2.01	2.3	0.0000265
	As Left	100.007	1.7			

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.

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Pete Whebbe

Metrologist

Reviewed by:

Erik Alfvin

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.

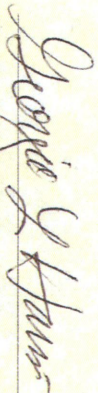
The Office of Weights and Measures Program assesses laboratories to NIST Handbook 143 - Program Handbook for State Weights and Measures Laboratories and ISO/IEC 17025:2005.

Scope

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.