APPENDIX D: QA/QC DATA

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SIMS Metal Management
Clean Air Project No: 13318
TE Outlet

USEPA Method 5/29 (FPM/Metals)
QA/QC Results

Run No.		2	4	6*	
	Date (2017)	Sep 15	Sep 18	Sep 20	
	Start Time (approx.)	12:21	11:14	13:44	
	Stop Time (approx.)	13:36	12:33	15:33	
	Total Duration of Test Run (min.)	75	79	109	
	Net Sampling Time (min.)	60	60	60	
Sampling System Calibration Summary					
	Nozzle ID No:	200-1	220-2	235-1	
D_n	Nozzle Diameter (in):	0.200	0.220	0.235	
	Probe ID No:	5G-48-5	5G-48-5	5G-48-5	
C_p	Pitot Coefficient:	0.8400	0.8400	0.8400	
	Meter Box ID. No:	68-Z	68-Z	68-Z	
Y_d	Meter Box Yd - Field Sheet	0.9946	0.9946	0.9946	
	Meter Box Yd - Database	0.9946	0.9946	0.9946	
	Meter Box ΔH@ - Field Sheet	1.7216	1.7216	1.7216	
	Meter Box ΔH@ - Database	1.7216	1.7216	1.7216	
QA/QC					
	Final Leak Check				
	(a) 4% of Sampling Rate (cfm)	0.0205	0.0309	0.0359	
	(b) Allowable Rate from Method (cfm)	0.0200	0.0200	0.0200	
	Allowable Limit - minimum of a and b (cfm)	0.0200	0.0200	0.0200	
	Actual Final Leak Rate (cfm)	0.0010	0.0000	0.0020	
	Alternative Method 5 Post-Test Calibration (EPA ALT-009)				
$\sqrt{\Delta H_{avg}}$	Average of Square Root of ΔH (in. W.C.)	0.8660	1.3047	1.5114	
Y_{qa}	Alternative Meter Calibration Factor	0.9920	0.9800	0.9708	**Average**
	Variation from full-test Y_d (average ≤ ±5%)	-0.3%	-1.5%	-2.4%	**-1.4%**
	Mean Isokinetic Sampling Rate Variation				
	Minimum Allowable (%)	90	90	90	
	Maximum Allowable (%)	110	110	110	
%I	Actual Variation (%)	101.78	103.45	102.09	
	Point-by-Point Isokinetic Variation				
	Number of points <90%	0	0	0	
	Number of points >110%	0	0	0	
	Number of points <80%	0	0	0	
	Number of points >120%	0	0	0	

Comments:
Average includes 2 runs. * indicates that the run is not included in the average.

110217 132213
LPO@

Prepared by Clean Air Engineering Proprietary Software
SS ISOKINETIC Version 2006-13f

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SIMS Metal Management
Clean Air Project No: 13318
TE Outlet

USEPA Method 5/29 (FPM/Metals)
QA/QC Results

Run No.		1	3	5	
	Date (2017)	Sep 15	Sep 18	Sep 20	
	Start Time (approx.)	09:14	08:38	08:58	
	Stop Time (approx.)	10:33	09:53	12:20	
	Total Duration of Test Run (min.)	79	75	202	
	Net Sampling Time (min.)	60	60	60	
Sampling System Calibration Summary					
	Nozzle ID No:	200-1	220-1	235-1	
D_n	Nozzle Diameter (in):	0.200	0.220	0.235	
	Probe ID No:	5G-48-5	5G-48-5	5G-48-5	
C_p	Pitot Coefficient:	0.8400	0.8400	0.8400	
	Meter Box ID. No:	68-Z	68-Z	68-Z	
Y_d	Meter Box Yd - Field Sheet	0.9946	0.9946	0.9946	
	Meter Box Yd - Database	0.9946	0.9946	0.9946	
	Meter Box ΔH@ - Field Sheet	1.7216	1.7216	1.7216	
	Meter Box ΔH@ - Database	1.7216	1.7216	1.7216	
QA/QC					
	Final Leak Check				
	(a) 4% of Sampling Rate (cfm)	0.0230	0.0293	0.0345	
	(b) Allowable Rate from Method (cfm)	0.0200	0.0200	0.0200	
	Allowable Limit - minimum of a and b (cfm)	0.0200	0.0200	0.0200	
	Actual Final Leak Rate (cfm)	0.0040	0.0050	0.0020	
	Alternative Method 5 Post-Test Calibration (EPA ALT-009)				
$\sqrt{\Delta H_{avg}}$	Average of Square Root of ΔH (in. W.C.)	0.9713	1.2383	1.4706	
Y_{qa}	Alternative Meter Calibration Factor	0.9825	0.9827	0.9846	**Average**
	Variation from full-test Y_d (average ≤ ±5%)	-1.2%	-1.2%	-1.0%	**-1.1%**
	Mean Isokinetic Sampling Rate Variation				
	Minimum Allowable (%)	90	90	90	
	Maximum Allowable (%)	110	110	110	
%I	Actual Variation (%)	102.57	103.50	103.38	
	Point-by-Point Isokinetic Variation				
	Number of points <90%	0	0	1	
	Number of points >110%	1	0	0	
	Number of points <80%	0	0	0	
	Number of points >120%	0	0	0	

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P M N @

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SS ISOKINETIC Version 2006-13f

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Nozzle Calibration Sheet

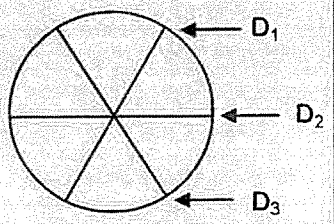
Client	Sims Metal Mgt.	Project Number	13318
Calibrated by	B. Ansell	Caliper ID	68CAL-14
Date	9/15 - 9	Unit / Runs	TTE Exhaust

	Nozzle Identification	D_1 (inches)	D_2 (inches)	D_3 (inches)	ΔD (inches)	D_{ave} (inches)
9/15	200-1	0.2000	0.2005	0.2000	0.0005	0.200
9/15	200-2	0.2000	0.2000	0.2000	0.0000	0.200
9/18	220-1	0.2205	0.2200	0.2200	0.0005	0.220
9/18	220-2	0.2200	0.2205	0.2200	0.0005	0.220
9/20	235-1	0.2355	0.2345	0.2350	0.0010	0.235
9/20	235-2	0.2350	0.2345	0.2350	0.0005	0.235
9/20	235-3	0.2355	0.2350	0.2350	0.0005	0.235

D_1, D_2, D_3 = three nozzle diameter measurements

ΔD = maximum difference between any two diameters
$\Delta D \leq 0.004$ inches*

D_{ave} = average of D_1, D_2, D_3



* (40 CFR 60, Appendix A, Method 5, Section 10.1)

QA/QC WFA
Date 9/20/17

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CDS005A-Nozzle.xlsx, August 2004
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Caliper Calibration Sheet

Calibrated by	Ashley Pallone		
Calibration Date	November 3, 2016	Expiration Date	November 4, 2017

Caliper ID	68CAL-14

Standard Caliper ID	08061634

Inside Jaw Check		
Standard Caliper Setting (in)	Caliper Reading (in)	Deviation (ΔD)
0.150	0.151	0.001
0.300	0.301	0.001
0.500	0.500	0.000

Outside Jaw Check		
Standard Caliper Setting (in)	Caliper Reading (in)	Deviation (ΔD)
0.150	0.151	0.001
0.300	0.301	0.001
0.500	0.501	0.001

ΔD = maximum deviation between standard and caliper being calibrated
ΔD ≤ 0.001 inch for every reading

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QA/QC AP
Date 11/3/16

68CAL-14 Calibration_110316.xls, August 2004
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Sample Probe Calibration

Probe Type: M5 with S-Type Pitot **I.D. Number:** 5G-48-5
Project Number:

Thermocouple Calibration

Reference Type: Thermometer Reference I.D. No: 68-P9 Pyrometer I.D. No: 68-P14 Units: °F

Point No.	Target Temp.	Reference Temp.	Indicated Temp.	Temp. Difference	% Difference*	Within spec?
1	Ambient	75.6	75.4	0.2	0.04%	**YES**
2	200°F-250°F	217.2	208.0	9.2	1.36%	**YES**

* Based on Absolute Temperature (Rankine) %Difference ≤ 1.5

YES

Geometric Pitot Calibration

Is pitot assembly in good repair? ◉ Yes ◯ No If no, explain:

"S" Pitot

	Dimensions		Dimensions	Specifications	Within Spec?
α1=	1	α2=	2	<=10 °	YES
β1=	2	β2=	0	<=5°	YES
γ=	1	θ=	2	None	N/A
A=	0.658			None	N/A
Dt=	0.250			0.1875"<=Dt<=0.375"	YES

	Calculations	Specifications	Within Spec?
A/2=Pa=Pb=	0.329 inches	None	N/A
Pa/Dt=Pb/Dt=	1.316 inches	1.05<P/Dt<1.5	YES
z = A sin γ =	0.011 inches	<=0.125"	YES
w = A sin θ =	0.023 inches	<=0.03125"	YES

Pitot Cp= 0.84 according to 40 CFR 60 section 10.1

Standard Pitot

	Measurement	Specification	Calculation	Within Spec?
Tube O.D.		None		
Static Hole I.D.		within 10% of (0.1*O.D.)		
Tip to Static		>=6*O.D.		
Static to Bend		>=8*O.D.		

Pitot Cp=

Calibrated by: Bill Dimitroff Date: 7/19/2017

CDS002D-Pitot_Geo, Feb 2004
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Meter Box Full Test Calibration

Meter Box No: 68-Z

Date of Calibration: 01/25/17

Calibration Conducted by: Bill Dimitroff

Meter Box Y_d: 0.9946

Meter Box ΔH@: 1.7216

Barometer ID: 68-1

Barometric Pressure: 29.00

				Standard Meter Gas Volume (ft^3)			Meter Box Gas Volume (ft^3)			Std. Meter Temperature (˚F)			Meter Box Temperature (˚F)			Time (min.)	Calibration Results	
Q	ΔH	ΔP	Y_{ds}	Initial	Final	V_{ds} Net	Initial	Final	V_d Net	T_{is} In	T_{os} Out	T_{ds} Avg.	T_i In	T_o Out	T_d Avg.	Θ	Y_d	ΔH@
0.381	0.50	-0.20	1.0000	48.000	62.000	14.000	554.540	568.790	14.250	67.0	67.0	67.00	75.5	71.0	73.25	35.63	0.9923	1.8636
0.391	0.50	-0.20	1.0000	62.000	72.000	10.000	568.790	579.000	10.210	67.0	67.0	67.00	79.0	74.0	76.50	24.83	0.9953	1.7641
0.688	1.50	-0.40	1.0000	89.000	99.000	10.000	596.420	606.690	10.270	67.0	67.0	67.00	86.0	77.5	81.75	14.12	0.9962	1.6990
0.693	1.50	-0.40	1.0000	99.000	114.000	15.000	606.690	622.110	15.420	67.0	67.0	67.00	87.0	78.5	82.75	21.00	0.9970	1.6679
0.981	3.00	-0.60	1.0000	23.000	33.000	10.000	631.380	641.700	10.320	67.0	67.0	67.00	90.5	79.5	85.00	9.90	0.9930	1.6650
0.978	3.00	-0.60	1.0000	33.000	57.000	24.000	641.700	666.500	24.800	67.0	67.0	67.00	91.5	80.5	86.00	23.82	0.9935	1.6699
																Averages	0.99457	1.72157

Nomenclature

- P_b Barometric Pressure (in. Hg)
- Q Flow Rate (cfm)
- ΔH Orifice Pressure differential (in. H_2O)
- ΔP Inlet Pressure Differential (in. H_2O)
- V_d Gas Meter Volume - Dry (ft^3)
- V_{ds} Standard Meter Volume - Dry (ft^3)
- T_d Average Meter Box Temperature (˚F)
- T_o Outlet Meter Box Temperature (˚F)
- T_{ds} Average Standard Meter Temperature (˚F)
- Y_d Meter Correction Factor (unitless), $Y_i \leq Y_{avg} \pm 0.02$
- Y_{ds} Standard Meter Correction Factor (unitless)
- ΔH@ Orifice Pressure Differential giving 0.75 cfm of air at 68˚F and 29.92 in. Hg (in. H_2O) $\Delta H@_i \leq \Delta H@_{avg} \pm 0.2$
- Θ Duration of Run (minutes)

Equations

$$Y_d = (Y_{ds})\left[\frac{V_{ds}}{V_d}\right]\left[\frac{T_d + 460}{T_{ds} + 460}\right]\left[\frac{P_b + \Delta P/13.6}{P_b + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{(0.0319)(\Delta H)}{P_b(T_o + 460)}\left[\frac{(T_{ds} + 460)\Theta}{(V_{ds})(Y_{ds})}\right]^2$$

$$Q = \frac{17.64(V_{ds})(P_b)}{(T_{ds} + 460)(\Theta)}$$

Vacuum Gauge

Standard (in.Hg)	Gauge (in.Hg)
5.0	5.0
10.0	10.0
15.0	15.0
20.0	20.0
25.0	25.0

CleanAir ENGINEERING

CDS005C-Meter Full, April 2004a
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Meter Box - Pyrometer Calibration Sheet

Meter Box No: 68-Z

Office: Office

Calibrated by: Bill Dimitroff

Client: NA

Date: 1/25/17

Job No: NA

Temperature Scale Used: Fahrenheit

Type of Calibration: Full-Test

Calibration Reference Settings (°F)	Pyrometer Reading for each Channel (°F)						
	1 Stack	2 Probe	3 Filter	4 Imp Out	5 Aux	6 DGM In	7 DGM Out
50	49	50	50	51	50	51	50
100	99	101	100	101	100	101	101
150	149	151	150	151	151	151	151
200	199	201	200				
250	250	251	251				
300	300	301	300				
350	350	351	351				
400	400	401	401				
450	450	451	451				
500	500	501	501				
550	550	551	551				
600	600	601	601				

Tolerance = ±2°F difference from reference setting.

Calibration Reference Information

Reference Used: DIGIMITE

Serial No: T-277617

Calibrated By: Clean Air Knoxville

Date Calibrated: 11/29/2016

Calibration Report No: CS1091-112916AF

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CDS005C-Meter Full, April 2004a
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Meter Box Critical Orifice Post-Test Calibration Data

Project No.	13318	Meter No.	68-Z	Orifice	63-F
Location	Office	Meter Yd	0.9946	Orifice K'	0.5941
Test Date	09/22/17	Meter ΔH@	1.7216	Orifice Cal. Date	01/05/17
Operator	Bill Dimitroff	Full Test Cal. Date	01/25/17		

Leak Checks

Negative Pressure

No movement of manometer in one-minute ☑ Pass

Positive Pressure

No movement of manometer in one-minute ☑ Pass

Important: All leak checks must pass in order for calibration to be valid.

Barom. Press. (P_b) 29.04 in. Hg

Run	Elapsed Time (minutes)	Meter Volume (dcf)	Meter Temperature Inlet (°F)	Meter Temperature Outlet (°F)	Ambient Temp. - T_{amb} (°F)	Orifice ΔH (in. W.C.)	Vacuum (in. Hg)	Net Run Time - Θ (minutes)	Net Meter Volume for Run - V_m (dcf)	Avg Meter Temp. for Run - T_m (°F)	DGM Calibration Factor - Y_i	Percent Variation - ΔY_i
	0.0	616.00	75	74								
	7.0	621.36	76	74	73	1.65	18	7.0	5.36	74.8	1.0145	-0.1%
	19.0	630.60	77	75	73	1.65	18	12.0	9.24	75.5	1.0103	-0.5%
	26.0	635.93	77	75	73	1.65	18	7.0	5.33	76.0	1.0226	0.7%
										Average Y_i	1.0158	
										Cal. Error	2.1%	

Calculations and Specifications

$$Y_i = \frac{K' \times P_b \times (T_m + 460) \times \theta}{17.64 \times V_m \times \left(P_b + \Delta H/13.6\right) \times \sqrt{T_{amb} + 460}}$$

$$\Delta Y_i = \frac{Y_i - \overline{Y}_i}{\overline{Y}_i} \times 100 \qquad \text{Spec.: } \Delta Y_i \leq \pm 2\%$$

$$Cal.Error = \frac{\overline{Y}_i - Y_d}{Y_d} \times 100 \qquad \text{Spec.: } Cal.Error \leq \pm 5\%$$

CDS005B-Meter Post-CO, February 2004
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Total SP LLC
Laboratory & Pharmacy Balances & Scales
Service, Sales, Calibration & Repair
22 Crest Drive Monongahela PA 15063-1081
Phone (724) 825-6872 or email: totalsp22@gmail.com

CALIBRATION REPORT

DATE OF SERVICE: August 11, 2017

NEXT CALIBRATION DUE DATE: August 31, 2018

CLEAN AIR ENGINEERING, INC.
ATTN: ASHLEY PALLONE
110 TECHNOLOGY DRIVE
PITTSBURGH PA 15275-1004

AJP 8/23/17

Procedures:
A.) Toploading balances > one kilogram capacity use procedure A5A.
B.) Toploading balances <= one kilogram capacity use procedure A4A.
C.) Analytical balances use calibration procedure A1A.
D.) Micro balances use procedure A2A.

Nr.	Manuf.	Model	Serial Nr.	Asset #	Location	Cal. Weight/ Procedure	Readability ±mg	Pre-Service Reading	Post-Service Reading	Repeatability ±mg	Condition or Not / Serviced
1	A&D	EK4100i	P1840030	68-4	FIELD	4 kg / A	100	100.0/ 500.1 2000.3/ 4000.7	100.0 => 4000.0	100	GOOD SC EXT
2	A&D	EK4100i	P1824185	68-6	FIELD	4 kg / A	100	100.0/ 500.0 2000.3/ 4000.5	100.0 => 4000.0	100	GOOD SC EXT
3	A&D	EK4100i	6A4430605	68-7	FIELD	4 kg / A	100	100.0/ 500.1 2000.3/ 4000.6	100.0 => 4000.0	100	GOOD SC EXT
4	OHAUS	TS4000	4970		FIELD	4 kg / A	100	100.0/ 500.0 2000.0/ 4000.0	100.0 => 4000.0	100	GOOD SC EXT
5	A&D	EK4100i	P1840029	68-3	FIELD	4 kg / A	100	IN FIELD	IN FIELD	100	IN FIELD
6	A&D	EK4100i	P1840031	68-5	FIELD	4 kg / A	100	100.0/ 500.0 2000.0/ 3999.9	100.0 => 4000.0	100	GOOD SC EXT
7	OHAUS	TRIP	TB-3		FIELD	10/100/500 g / B	100	10.0/ 96.2/ 499.2	10.0/ 90.0/ 499.7	100	GOOD SET EXT

Notes: Condition "good" means that the unit meets Total SP's and manufacturer's tolerances for repeatability and readability in the environment found unless otherwise noted. "INT" means internal weight is used for calibration, "EXT" means external weight is used for calibration; "SC" means unit is self calibrating, and "SET" means unit is calibrated by means of manually setting the calibration potentiometer. Balance calibrations and balance internal weights, if any, are checked against technician's test weights of TOTAL SP LLC. Test weights are calibrated annually against the primary standards of TOTAL SP LLC Set No. 4000011832, which have been certified by Henry Troemner, LLC, through Certificate No. 885615 dated 09-MAY 2016 and expires 30-APR 2017. This Certification is directly traceable to the National Standards of the National Institute of Standards and Technology through NIST Test No. 822-275872-11. Traceability documents are on file in the offices of TOTAL SP LLC and are available upon request. Calibrations comply with ANSI-NCSL Z 540-1-1994, MIL-STD-45662A and ISO 10012-1 specifications regarding calibration service and procedures.

Marian E Brna, Pres.

August 12, 2017
Date

◊ *Independent Service, Calibration, Repair & Sales of Laboratory & Pharmacy Balances & Scales from New York to California* ◊
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◊ Thank you for choosing Total SP LLC, a woman owned company ◊
◊ NIST Traceable Weights Certification ◊ Antistatic Products & Accessories ◊

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Member American Society for Quality (ASQ)
22 Crest Drive Monongahela PA 15063-1081
Phone (724) 825-6872 or email: totalsp22@gmail.com

Weight Certification

13 August 2017

CLEAN AIR ENGINEERING.
ATTN: ASHLEY PALLONE
110 TECHNOLOGY DR
PITTSBURGH PA 15275-1004

Certification Date: August, 13, 2017
Next Certification Due: August 30, 2018
PO# xxxxx-68-65000

CERTIFICATION REPORT

S/N:	Nominal value.	As Found Apparent Mass vs 8.0 g/cm^3	As Left Apparent Mass vs 8.0 g/cm^3	Class E, Mg.	Uncertainty, milligrams
1000049755	1000 g	1000.000	1000.000	2.5	5
05-J06467-1	1000 g	1000.000	1000.000	2.5	5

Assumed Densities:

When stainless:	1-5000 g	8.03 g/cm^3
When tantalum:	50 mg-500 mg	16.6 g/cm^3
When aluminum:	1-20 mg	2.7 g/cm^3

Conditions:

Temperature	26	°C
rH	51	%
Atm. Pressure	1014	mbar

This certifies that the weights designated in this report have been compared with the primary standards of TotalSP, LLC. Troemner Box No 4000011832, which have been certified by Henry Troemner, LLC, through Certificate No. 945938 dated 04-MAY-2017 and expires 04-MAY-2018.This Certification is directly traceable to the National Standards of the National Institute of Standards and Technology through NIST Test No. 822-275872-11. Complete traceability documents are on file in the offices of TotalSP, LLC and are available for inspection upon request.

CHEMRX Service, Inc. for TotalSP, LLC
Samuel M. Prepelka, President

Service, Calibration, Repair & Sales of Balances & Scales from New York to California for Over Forty Years
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UIDE Air Liquide America Specialty Gases LLC Scott

Shipped From:
1290 COMBERMERE STREET
TROY MI 48083
Phone: 248-589-2950 Fax: 248-589-2134

C E R T I F I C A T E O F A N A L Y S I S

ALA-CYL-ROMEOVILLE, IL (84131)
UNIT A GEN. STOCK
TRANSFER ACCOUNT
27 FORESTWOOD CT
ROMEOVILLE IL 60446
US

DOCUMENT#:58898376 -001
PO#: GEN. STOCK
ITEM #: 693-30AL
DATE: 24Feb2015

CYLINDER #: AAL071571
FILL PRESSURE: 2000 PSIG

PURE MATERIAL: HYDROGEN CAS# 1333-74-0

GRADE: ZERO

PURITY: 99.99%

IMPURITY	MAXIMUM CONCENTRATIONS	ACTUAL CONCENTRATIONS
THC	0.5 PPM	< 0.5 PPM

LOT# HYDBULK022515

LOT # : TRO0128024

ANALYST: _____
JEFF CROTEAU

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Tel: (323) 585-2154 Fax:(714) 542-6689
PGVPID: F22017

DocNumber: 000111990

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PRAXAIR PKG HILLSIDE IL HS
12000 ROOSEVELT RD
HILLSIDE IL 60162

Praxair Order Number: 70299728
Customer P. O. Number:
Customer Reference Number:

Fill Date: 6/21/2017
Part Number: NI CD21O3E-AS
Lot Number: 70086717209
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu ft

Certified Concentration:

Expiration Date:		7/7/2025	NIST Traceable
Cylinder Number:		CC263665	Analytical Uncertainty:
21.04	%	CARBON DIOXIDE	± 0.4 %
20.95	%	OXYGEN	± 0.2 %
	Balance	NITROGEN	

Certifcation Information: *Certification Date:* 7/7/2017 *Term:* 96 Months *Expiration Date:* 7/7/2025

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

CO2 responses have been corrected for Oxygen IR Broadening effect. O2 responses have been corrected for CO2 interference.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: CARBON DIOXIDE

Requested Concentration: 21 %
Certified Concentration: 21.04 %
Instrument Used: Horiba VIA-510 S/N 20C194WK
Analytical Method: NDIR
Last Multipoint Calibration: 6/22/2017

Reference Standard Type: GMIS
Ref. Std. Cylinder #: SA10234
Ref. Std. Conc: 20.02%
Ref. Std. Traceable to SRM #: RGM#CC28
SRM Sample #: N/A
SRM Cylinder #: RGM#CC28033

First Analysis Data:							Date: 7/7/2017
Z:	0	R:	20.03	C:	21.05	Conc:	21.039
R:	20.03	Z:	0	C:	21.05	Conc:	21.039
Z:	0	C:	21.04	R:	20.03	Conc:	21.029
UOM:	%			Mean Test Assay:			21.036%

Second Analysis Data:							Date:
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	%			Mean Test Assay:			0%

2. Component: OXYGEN

Requested Concentration: 21 %
Certified Concentration: 20.95 %
Instrument Used: PARA 1 OXYMAT 5E
Analytical Method: PARAMAGNETIC
Last Multipoint Calibration: 6/26/2017

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC98135
Ref. Std. Conc: 19.99 %
Ref. Std. Traceable to SRM #: 2659a
SRM Sample #: 71-E-19
SRM Cylinder #: FF22331

First Analysis Data:							Date: 7/7/2017
Z:	0	R:	19.94	C:	20.88	Conc:	20.932
R:	19.94	Z:	0	C:	20.9	Conc:	20.952
Z:	0	C:	20.9	R:	19.94	Conc:	20.952
UOM:	%			Mean Test Assay:			20.946%

Second Analysis Data:							Date:
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	%			Mean Test Assay:			0%

Analyzed by: Ying Yu

Certified by: Pupongmontre Pete

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc., arising out of the use of the information contained herein exceed the fee established for providing such information.

AIR LIQUIDE Air Liquide America Specialty Gases LLC Scott

RATA CLASS

Guaranteed +/- 1% Accuracy

1290 Combermere Street, Troy, MI 48083 Phone: 248-589-2950 Fax: 248-589-2134

CERTIFICATE OF ACCURACY : EPA Protocol Gas

Customer:
CLEAN AIR ENGINEERING
CLEAN AIR ENGINEERING
500 W Wood St
Palatine, IL 60067-4929
US

Assay Laboratory - PGVP Vendor ID: A22015
Air Liquide America Specialty Gases LLC
1290 Combermere Street
Troy, MI 48083

Lot No: 45006
P.O. No.: 62297-70-65000
Folio #: 12% O2/CO2/N2
Sales Order #: 20024

ANALYTICAL INFORMATION

Gas Type : CO2,O2,BALN

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards, Procedure G-1. EPA/600/R-12/531; May 2012. Do not use this standard if pressure is less than 100 psig.

Cylinder Number: alm007968
Cylinder Pressure: 2000 PSIG

Certification Date: 01Sep2015

Expiration Date: 02Sep2023
Lot No: 45006

Component Name	Concentration (Mole)	Accuracy (Absolute / Relative)
CARBON DIOXIDE	12.4 %	0.07 % / 0.6 %
OXYGEN	12.1 %	0.05 % / 0.4 %
NITROGEN	BALANCE	

TRACEABILITY

Analytical Traceability

Reference Standard

Component	Concentration	Uncertainty	Cylinder	Type	Exp. Date
CARBON DIOXIDE	13.9400 %	0.08 %	K000691	NTRM 1675	15Jan2018
OXYGEN	23.2000 %	0.09 %	K024582	NTRM 2350	04Jan2018

ANALYTICAL METHOD

1st Analysis: 08/28/2015

COMPONENT	INSTRUMENT	ANALYTICAL PRINCIPLE	CALIBRATED	CONCENTRATION
CARBON DIOXIDE	Varian 3400 SN 10693	Thermal Conductivity	08/14/2015	12.4 %

1st Analysis: 09/01/2015

COMPONENT	INSTRUMENT	ANALYTICAL PRINCIPLE	CALIBRATED	CONCENTRATION
OXYGEN	CAI 110-P SN V03018	Paramagnetic	08/03/2015	12.1 %

APPROVED BY: JEFFREY CROTEAU

DATE: 01Sep2015

PRAXAIR

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12016

DocNumber: 000016674

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PRAXAIR PKG HILLSIDE IL HS
12000 ROOSEVELT RD
HILLSIDE IL 60162

Praxair Order Number: 70088189
Customer P. O. Number:
Customer Reference Number:

Fill Date: 7/14/2016
Part Number: NI CD5O6E-AS
Lot Number: 0714GD16
Cylinder Style & Outlet: AS CGA 580
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:		7/27/2024	NIST Traceable
Cylinder Number:		CC58687	Analytical Uncertainty:
4.99	%	CARBON DIOXIDE	± 0.7 %
5.01	%	OXYGEN	± 0.4 %
	Balance	NITROGEN	

Certifcation Information: *Certification Date:* 7/27/2016 *Term:* 96 Months *Expiration Date:* 7/27/2024

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: CARBON DIOXIDE

Requested Concentration: 5.00 %
Certified Concentration: 4.99 %
Instrument Used: Horbia VA-3000
Analytical Method: NDIR
Last Multipoint Calibration: 7/23/2016

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC340252
Ref. Std. Conc: 7.01 %
Ref. Std. Traceable to SRM #: 1674b
SRM Sample #: 7-6-22
SRM Cylinder #: CAL017007

First Analysis Data:							Date: 7/27/2016
Z:	0	R:	7.06	C:	5.02	Conc:	4.984
R:	7.06	Z:	0	C:	5.03	Conc:	4.994
Z:	0	C:	5.03	R:	7.06	Conc:	4.994
UOM:	%			Mean Test Assay:			4.991 %

Second Analysis Data:							Date:
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	%			Mean Test Assay:			0 %

2. Component: OXYGEN

Requested Concentration: 5.00 %
Certified Concentration: 5.01 %
Instrument Used: Servomex 575
Analytical Method: Paramagnetic
Last Multipoint Calibration: 7/23/2016

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0023945
Ref. Std. Conc: 5.03%
Ref. Std. Traceable to SRM #: 2658a
SRM Sample #: 72-D-38
SRM Cylinder #: CAL016952

First Analysis Data:							Date: 7/27/2016
Z:	0	R:	5.03	C:	5.02	Conc:	5.02
R:	5.03	Z:	0	C:	5.01	Conc:	5.01
Z:	0	C:	5.01	R:	5.03	Conc:	5.01
UOM:	%			Mean Test Assay:			5.013 %

Second Analysis Data:							Date:
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	%			Mean Test Assay:			0 %

Analyzed by: Mike Monnette

Certified by: Rhonda Kaywood

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Download as...

1290 COMBERMERE STREET, TROY, MI 48083 Phone: 248-589-2950 Fax: 248-589-2134

RATA CLASS

Dual-Analyzed Calibration Standard

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory - PGVP Vendor ID: A22009
AIR LIQUIDE AMERICA SPECIALTY GASES LLC
1290 COMBERMERE STREET
TROY, MI 48083

P.O. No.: 57661-71-65000
Project No.: 05-80162-016

Customer
CLEAN AIR ENGINEERING
DON ALLEN
500 W. WOOD STREET
PALATINE IL 60067

ANALYTICAL INFORMATION Gas Type : NONE

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: AAL21204 **Certification Date:** 28Sep2009 **Exp. Date:** 29Sep2017
Cylinder Pressure*:** 1925 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY**	TRACEABILITY
PROPANE	861 PPM	+/- 1%	Direct NIST and VSL
AIR	BALANCE		

*** Do not use when cylinder pressure is below 150 psig.
** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1669	02Oct2012	K011507	499.3 PPM	PROPANE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
VARIAN/3400/7506	23Sep2009	TCD/FID

ANALYZER READINGS

(Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

First Triad Analysis
PROPANE
Date: 25Sep2009 Response Unit: AREA
Z1=0.00000 R1=129594.0 T1=223567.0
R2=129537.0 Z2=0.00000 T2=223409.0
Z3=0.00000 T3=223345.0 R3=128813.0
Avg. Concentration: 861.0 PPM

Second Triad Analysis

Calibration Curve
Concentration=A+Bx+Cx2+Dx3+Ex4
r=0.999999344
Constants: A=0.00085062
B=0.003909128 C=0
D=0 E=0

Special Notes:
The expiration date has been extended without re-assay per EPA 600/R23-23/542.

QUALITY ASSURANCE

APPROVED BY: SARAH HERBERT
(signature on file)

AIR LIQUIDE Air Liquide America Specialty Gases LLC Scott

RATA CLASS

Guaranteed +/- 1% Accuracy

1290 COMBERMERE STREET, TROY, MI 48083 Phone: 248-589-2950 Fax: 248-589-2134

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory - PGVP Vendor ID: A22014
AIR LIQUIDE AMERICA SPECIALTY GASES LLC
1290 COMBERMERE STREET
TROY, MI 48083

P.O. No.: 61057-70-65000
Document # : 53722742-002

Customer
CLEAN AIR ENGINEERING
500 WEST WOOD STREET
PALATINE IL 60067
US

ANALYTICAL INFORMATION Gas Type : PPN,BALA

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1. EPA/600/R-12/531; May 2012. Do not use this standard if pressure is less than 100 psig.

Cylinder Number: ALM022481 **Certification Date:** 14Feb2014 **Exp. Date:** 15Feb2022
Cylinder Pressure: 1950 PSIG **Batch No:** TRO0102894

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY (ABSOLUTE / RELATIVE)
PROPANE	456 PPM	5. PPM / 1.1 %
AIR	BALANCE	

TRACEABILITY

REFERENCE STANDARD

COMPONENT	CONCENTRATION	UNCERTAINTY	CYLINDER	TYPE/SRM SAMPLE	EXP. DATE
PROPANE	497.0000 PPM	4.0000 PPM	ALM014745	NTRM 1669	05Oct2017

ANALYTICAL METHOD

1st Analysis: 14Feb2014

COMPONENT	INSTRUMENT	ANALYTICAL/PRINCIPLE	CALIBRATED	CONCENTRATION
PROPANE	VARIAN/3400/7506	TCD/FID	04Feb2014	456.0 PPM

APPROVED BY: ROBERT LESNIAK

AIR LIQUIDE Air Liquide America Specialty Gases LLC Scott

RATA CLASS

Guaranteed +/- 1% Accuracy

1290 COMBERMERE STREET, TROY, MI 48083 Phone: 248-589-2950 Fax: 248-589-2134

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory - PGVP Vendor ID: A22014
AIR LIQUIDE AMERICA SPECIALTY GASES LLC
1290 COMBERMERE STREET
TROY, MI 48083

P.O. No.: 61002-71-65000
Document # : 53445512-015

Customer
CLEAN AIR ENGINEERING
500 WEST WOOD STREET
PALATINE IL 60067
US

ANALYTICAL INFORMATION Gas Type : PPN,BALA

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1. EPA/600/R-12/531; May 2012. Do not use this standard if pressure is less than 100 psig.

Cylinder Number: ALM060770 **Certification Date:** 21Jan2014 **Exp. Date:** 22Jan2022
Cylinder Pressure: 1950 PSIG **Batch No:** TR00101381

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ACCURACY (ABSOLUTE / RELATIVE)			
PROPANE	150	PPM	0.9	PPM	/ 0.6	%
AIR		BALANCE				

TRACEABILITY

REFERENCE STANDARD

COMPONENT	CONCENTRATION		UNCERTAINTY		CYLINDER	TYPE/SRM SAMPLE	EXP. DATE
PROPANE	98.8000	PPM	0.6000	PPM	ALM038653	NTRM 1668	12Jul2018

ANALYTICAL METHOD

1st Analysis: 21Jan2014

COMPONENT	INSTRUMENT	ANALYTICAL/PRINCIPLE	CALIBRATED	CONCENTRATION
PROPANE	VARIAN/3400/7506	TCD/FID	03Jan2014	150.0 PPM

APPROVED BY: ROBERT LESNIAK

AIR LIQUIDE Air Liquide America Specialty Gases LLC Scott

RATA CLASS

Guaranteed +/- 1% Accuracy

1290 COMBERMERE STREET, TROY, MI 48083 Phone: 248-589-2950 Fax: 248-589-2134

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory - PGVP Vendor ID: A22014
AIR LIQUIDE AMERICA SPECIALTY GASES LLC
1290 COMBERMERE STREET
TROY, MI 48083

P.O. No.: 61325-70-65000
Document # : 55296443-015

Customer
CLEAN AIR ENGINEERING
500 WEST WOOD STREET
PALATINE IL 60067
US

ANALYTICAL INFORMATION Gas Type : PPN,BALA

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1. EPA/600/R-12/531; May 2012. Do not use this standard if pressure is less than 100 psig.

Cylinder Number: ALM023930 **Certification Date:** 02Jun2014 **Exp. Date:** 03Jun2022
Cylinder Pressure: 1950 PSIG **Batch No:** TR00110790

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ACCURACY (ABSOLUTE / RELATIVE)
PROPANE	85.0	PPM	0.5 PPM / 0.6 %
AIR		BALANCE	

TRACEABILITY

REFERENCE STANDARD

COMPONENT	CONCENTRATION	UNCERTAINTY	CYLINDER	TYPE/SRM SAMPLE	EXP. DATE
PROPANE	98.8000 PPM	0.6000 PPM	ALM038653	NTRM 1668	12Jul2018

ANALYTICAL METHOD

1st Analysis: 02Jun2014

COMPONENT	INSTRUMENT	ANALYTICAL/PRINCIPLE	CALIBRATED	CONCENTRATION
PROPANE	VARIAN/3400/7506	TCD/FID	19May2014	85.00 PPM

APPROVED BY: ROBERT LESNIAK

PRAXAIR

Praxair Distribution, Inc,
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12016

DocNumber: 000018380

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PRAXAIR PKG HILLSIDE IL HS
12000 ROOSEVELT RD
HILLSIDE IL 60162

Praxair Order Number: 70124128
Customer P. O. Number:
Customer Reference Number:

Fill Date: 10/11/2016
Part Number: EV AIPR45ME-AS
Lot Number: 70001628504
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	10/20/2024		NIST Traceable
Cylinder Number:	EB0064387		Analytical Uncertainty:
45.7	ppm	PROPANE	± 0.5 %
	Balance	AIR	

Certifcation Information: *Certification Date:* 10/20/2016 *Term:* 96 Months *Expiration Date:* 10/20/2024

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

OXYGEN = 20.9%

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: PROPANE

Requested Concentration	45.0 ppm
Certified Concentration	45.7 ppm
Instrument Used	MKS 2031
Analytical Method	FOURIER-TRANSFORM INFRAR
Last Multipoint Calibration	10/10/2016

First Analysis Data:						Date:		10/20/2016	
Z:	-0.16	R:	48.3	C:	43.8	Conc:	45.728		
R:	48.3	Z:	-0.15	C:	43.8	Conc:	45.728		
Z:	-0.14	C:	43.8	R:	48.3	Conc:	45.728		
UOM:	PPM			Mean Test Assay:			45.728 PPM		

Reference Standard Type:	GMIS
Ref. Std. Cylinder #:	CC196589
Ref. Std. Conc:	50.41 PPM
Ref. Std. Traceable to SRM #:	1667B
SRM Sample #:	83-I-32
SRM Cylinder #:	XF003899B

Second Analysis Data:						Date:			
Z:	0	R:	0	C:	0	Conc:	0		
R:	0	Z:	0	C:	0	Conc:	0		
Z:	0	C:	0	R:	0	Conc:	0		
UOM:	PPM			Mean Test Assay:			0 PPM		

Analyzed by: Mike Monnette

Certified by: Rolonda Kaywood

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AIR LIQUIDE Air Liquide America Specialty Gases LLC Scott

RATA CLASS

Guaranteed +/- 1% Accuracy

1290 COMBERMERE STREET, TROY, MI 48083 Phone: 248-589-2950 Fax: 248-589-2134

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory - PGVP Vendor ID: A22014
AIR LIQUIDE AMERICA SPECIALTY GASES LLC
1290 COMBERMERE STREET
TROY, MI 48083

P.O. No.: 61748-70-65000
Document # : 57703426-017

Customer
CLEAN AIR ENGINEERING
500 WEST WOOD STREET
PALATINE IL 60067
US

ANALYTICAL INFORMATION Gas Type : PPN,BALA

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1. EPA/600/R-12/531; May 2012. Do not use this standard if pressure is less than 100 psig.

Cylinder Number: CC75663
Cylinder Pressure: 2000 PSIG
Certification Date: 05Dec2014
Exp. Date: 06Dec2022
Batch No: TRO0122294

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ACCURACY (ABSOLUTE / RELATIVE)			
PROPANE	25.1	PPM	0.2	PPM	/ 0.7	%
AIR		BALANCE				

TRACEABILITY

REFERENCE STANDARD

COMPONENT	CONCENTRATION		UNCERTAINTY		CYLINDER	TYPE/SRM SAMPLE	EXP. DATE
PROPANE	98.8000	PPM	0.6000	PPM	ALM038653	NTRM 1668	12Jul2018

ANALYTICAL METHOD

1st Analysis: 05Dec2014

COMPONENT	INSTRUMENT	ANALYTICAL/PRINCIPLE	CALIBRATED	CONCENTRATION
PROPANE	VARIAN/3400/7506	TCD/FID	05Dec2014	25.10 PPM

APPROVED BY: ROBERT LESNIAK

AIRDATA MULTIMETER CERTIFICATE OF RECALIBRATION

Customer ID: 007814 S/N: M03750
Customer: CLEAN AIR INSTRUMENT RENTAL City: PALATINE State: IL
As-Received Model #: ADM-860C Converted to Model #: Order #: R161365
PO #: Customer Eqpt ID#: Calibration Due Date:

This instrument has been calibrated using Calibration Standards which are traceable to NIST (National Institute of Standards and Technology). Quality Assurance Program and calibration procedures meet the requirements for ANSI/NCSL Z540-1, ISO 17025, MIL-STD 45662A and manufacturer's specifications. Calibration accuracy is certified when meters are used with properly functioning accessories only. All Uncertainties are expressed in expanded terms (twice the calculated uncertainty). This report shall not be reproduced, except in full, without the written approval of Shortridge Instruments, Inc. Results relate only to the item calibrated. For limitations on use, see Shortridge Instruments, Inc. Instruction Manual for the use of AirData Multimeters. Procedure used: Procedure for Differential Pressure, Absolute Pressure and Temperature Recalibration of AirData Multimeters SIP-CP02 Revision: 30 Dated: 04/04/16

Calibration Technician(s): C Kastell A. Gonzalez Calibration Date: 05/02/2016
Calibration Approved by: L. Zaulmeier Title: Cal Mg. Date: 05/04/2016

As-Received Test performed after minor repair: Yes (No)

AS-Received	Test By	Test By
By: CK	By: AG	By:
Date: 04/27/16	Date: 05/02/16	Date:
Rh: 27 %	Rh: 33 %	Rh: %
Ambient Temperature: 76 °F	Ambient Temperature: 75 °F	Ambient Temperature: NA °F
Barometric Pressure: 28.30 in Hg	Barometric Pressure: 28.48 in Hg	Barometric Pressure: in Hg
All within spec (YES) NO NA	All within spec (YES) NO	All within spec YES NO

ABSOLUTE PRESSURE TEST (in Hg)

TEST METER TOLERANCE = ± 2.0 % ± .1 in Hg AS-RECEIVED TEST WITHIN SPEC (YES) NO N/A See Notes

Pressure Standard: Heise #02-R S/N: 41741/42451 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #04-R S/N: 41743/42453 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #06-R S/N: 41742/42452 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #08-R S/N: 42186/43328 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #10-R S/N: 42203/43352 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #12-R S/N: 43166/44731 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #14-R S/N: 43412/45043 (As-Rcvd) Test 2 Test 3
Pressure Standard: Heise #16-R S/N: 43413/45044 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #18-R S/N: 44581/46845 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #20-R S/N: 44582/46847 As-Rcvd (Test 2) Test 3

Approx Set Pt	Standard	Test Meter	% Diff	Standard	Test Meter	% Diff	Standard	Test Meter	% Diff
14.0	14.16	14.2	.28	14.20	14.2	0			
28.4	28.40	28.3	-.35	28.48	28.5	.07		NA	
40.0	40.36	40.5	.35	40.50	40.6	.25			

DIFFERENTIAL PRESSURE TEST (in wc)

TEST METER TOLERANCE = ± 2.0 % ± 0.001 in wc AS-RECEIVED TEST WITHIN SPEC (YES) NO N/A See Notes

Pressure Standard: Heise #01-L S/N: 41739/42449 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #01-R S/N: 41739/42446 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #02-L S/N: 41741/42454 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #03-L S/N: 41738/42448 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #03-R S/N: 41738/42445 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #04-L S/N: 41743/42456 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #05-L S/N: 41740/42450 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #05-R S/N: 41740/42447 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #06-L S/N: 41742/42455 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #07-L S/N: 42185/42186 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #07-R S/N: 42185/43326 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #08-L S/N: 42186/43329 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #09-L S/N: 42202/43351 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #09-R S/N: 42202/43350 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #10-L S/N: 42203/43353 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #11-L S/N: 43165/44551 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #11-R S/N: 43165/44730 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #12-L S/N: 43166/48328 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #13-L S/N: 43415/45041 (As-Rcvd) Test 2 Test 3
Pressure Standard: Heise #13-R S/N: 43415/45039 (As-Rcvd) Test 2 Test 3
Pressure Standard: Heise #14-L S/N: 43412/45045 (As-Rcvd) Test 2 Test 3
Pressure Standard: Heise #15-L S/N: 43416/45042 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #15-R S/N: 43416/45040 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #16-L S/N: 43413/45046 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #17-L S/N: 44579/46842 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #17-R S/N: 44579/46841 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #18-L S/N: 44581/46846 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #19-L S/N: 44580/46844 As-Rcvd (Test 2) Test 3
Pressure Standard: Heise #19-R S/N: 44580/46843 As-Rcvd (Test 2) Test 3
Pressure Standard: Heise #20-L S/N: 44582/46848 As-Rcvd (Test 2) Test 3

Approx Set Pt	Standard	Test Meter	% Diff	Standard	Test Meter	% Diff	Standard	Test Meter	% Diff
.0500	.0517	.0515	-.39	.0506	.0506	0			
.1250	.1255	.1257	.16	.1272	.1271	-.08			
.2250	.2246	.2249	.13	.2267	.2264	-.13			
1.000	1.004	1.004	0	1.016	1.015	-.10			
2.000	2.022	2.019	-.15	2.014	2.010	-.20		NA	
3.600	3.657	3.655	-.05	3.615	3.604	-.30			
4.400	4.431	4.429	-.05	4.400	4.398	-.05			
27.00	27.15	27.16	.04	27.07	27.07	0			
50.00	49.95	50.01	.12	50.01	49.85	-.32			
Overange	NA	✓	NA	NA	✓	NA	NA		NA

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AIRDATA MULTIMETER CERTIFICATE OF RECALIBRATION

S/N: M03750
Order #: R161365

LOW VELOCITY CONFIRMATION (FPM)

TEST METER TOLERANCE = ± 3.0% ± 7 FPM AS-RECEIVED TEST WITHIN SPEC (YES) NO N/A See Notes

Vel Eqv Trans Std: S/N: M02009	As-Rcvd	Test 2	Test 3	Vel Eqv Trans Std: S/N: M10840	(As-Rcvd)	Test 2	Test 3
Vel Eqv Trans Std: S/N: M02803	As-Rcvd	Test 2	Test 3	Vel Eqv Trans Std: S/N: M10897	As-Rcvd	(Test 2)	Test 3
Vel Eqv Trans Std: S/N: M02903	As-Rcvd	Test 2	Test 3	Vel Eqv Trans Std: S/N: M10901	As-Rcvd	Test 2	Test 3
Vel Eqv Trans Std: S/N: M10839	As-Rcvd	Test 2	Test 3	Vel Eqv Trans Std: S/N: M13492	As-Rcvd	Test 2	Test 3

Approx Set Point	Standard	Test Meter	Diff	Standard	Test Meter	Diff	Standard	Test Meter	Diff
100	115	115	0	113	113	0		NA	
500	505	504	-1	509	509	0			

ADM-880C, ADM-870/870C and ADM-860/860C models are read in AirFoil Mode. ADM-850/850L models are read in Pitot Tube Mode.

TEMPERATURE TEST - AIRDATA MULTIMETER (° F)

TEST METER TOLERANCE = ± 0.2° F AS-RECEIVED TEST WITHIN SPEC (YES) NO N/A See Notes

RTD Simulator: S/N 249	As-Rcvd	(Test 2)	Test 3	Set Point: (35.6° F)	95° F	154.4° F
RTD Simulator: S/N 250	As-Rcvd	(Test 2)	Test 3	Set Point: 35.6° F	(95° F)	154.4° F
RTD Simulator: S/N 253	As-Rcvd	(Test 2)	Test 3	Set Point: 35.6° F	95° F	(154.4° F)
RTD Simulator: S/N 254	As-Rcvd	Test 2	Test 3	Set Point: 35.6° F	95° F	154.4° F
RTD Simulator: S/N 256	As-Rcvd	Test 2	Test 3	Set Point: 35.6° F	95° F	154.4° F
RTD Simulator: S/N 257	As-Rcvd	Test 2	Test 3	Set Point: 35.6° F	95° F	154.4° F
RTD Simulator: S/N 292	As-Rcvd	Test 2	Test 3	Set Point: 35.6° F	95° F	154.4° F
RTD Simulator: S/N 293	As-Rcvd	Test 2	Test 3	Set Point: 35.6° F	95° F	154.4° F
RTD Simulator: S/N 294	As-Rcvd	Test 2	Test 3	Set Point: 35.6° F	95° F	154.4° F
RTD Simulator: S/N 313	(As-Rcvd)	Test 2	Test 3	Set Point: (35.6° F)	95° F	154.4° F
RTD Simulator: S/N 314	(As-Rcvd)	Test 2	Test 3	Set Point: 35.6° F	(95° F)	154.4° F
RTD Simulator: S/N 315	(As-Rcvd)	Test 2	Test 3	Set Point: 35.6° F	95° F	(154.4° F)
RTD Simulator: S/N 316	As-Rcvd	Test 2	Test 3	Set Point: 35.6° F	95° F	154.4° F
RTD Simulator: S/N 317	As-Rcvd	Test 2	Test 3	Set Point: 35.6° F	95° F	154.4° F
RTD Simulator: S/N 318	As-Rcvd	Test 2	Test 3	Set Point: 35.6° F	95° F	154.4° F

RTD Simulator Temperature Equivalent Set Point	Test Meter	Difference	Test Meter	Difference	Test Meter	Difference
35.60	35.5	-.1	35.6	0		
95.00	95.0	0	95.0	0		NA
154.40	154.4	0	154.5	.1		

Minor Repair(s) performed prior to As-Received Test.

Pushed dislodged ribbon cable assy back into its socket ____
Replaced internal battery clip or wire ____
Repaired broken wires that power the display ____
Replaced keypad / On, Mode or Read key nonfunctional ____

Pushed dislodged IC back into its socket ____
Replaced a display that cannot be read ____
Repaired broken wire that signals the flaps jack ____
Pushed dislodged J4 connector back into its socket ____
Removed loose part from inside meter ____

NOTES: ____

The enclosed ADM Calibration Standards for Pressure and Temperature form(s) is/are an integral part of this calibration and must remain with this Certificate of Calibration. Note: There may be more than one such form included that pertains to this calibration.

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Shortridge Instruments, Inc. AirData Multimeter Calibration Equipment

Order Number: R161365 Serial Number: M03750 Test Type: Initial As-Received Final

ABSOLUTE PRESSURE STANDARDS

ADM #02-R	S/N: 41741/42451	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 04/11/15	Due Date. 04/2016
ADM #04-R	S/N: 41743/42453	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 11/30/15	Due Date: 11/2016
ADM #06-R	S/N: 41742/42452	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 11/09/15	Due Date: 08/2016
ADM #08-R	S/N: 42186/43328	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 03/16/16	Due Date: 03/2017
ADM #10-R	S/N: 42203/43352	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 01/19/16	Due Date: 01/2017
ADM #12-R	S/N: 43166/44731	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 11/09/15	Due Date: 07/2016
ADM #14-R	S/N: 43412/45043	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 11/03/15	Due Date: 09/2016
ADM #16-R	S/N: 43413/45044	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 02/22/16	Due Date: 02/2017
ADM #18-R	S/N 44581/46845	Heise Model: PPM-2	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 05/12/15	Due Date: 05/2016
ADM #20-R	S/N 44582/46847	Heise Model: PPM-2	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 06/08/15	Due Date: 06/2016

#02-R, 04-R, 06-R, 08-R, 10-R, 12-R, 14-R, 16-R Rated Accuracy: 0 05% fs (0.0305 in Hg) Range: 0-30 psia Resolution: 0.01 Uncertainty: < 0.0358

#18-R, 20-R Rated Accuracy: 0.05% fs (0 0305 in Hg) Range: 0-60 in Hg Resolution: 0.001 Uncertainty: < 0.0358

DIFFERENTIAL PRESSURE STANDARDS

ADM #01-L	S/N: 41739/42449	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 04/16/15	Due Date 04/2016
ADM #01-R	S/N: 41739/42446	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 04/17/15	Due Date: 04/2016
ADM #02-L	S/N: 41741/42454	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 04/17/15	Due Date: 04/2016
ADM #03-L	S/N: 41738/42448	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 11/24/15	Due Date: 11/2016
ADM #03-R	S/N: 41738/42445	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 11/23/15	Due Date: 11/2016
ADM #04-L	S/N: 41743/42456	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 11/30/15	Due Date: 11/2016
ADM #05-L	S/N: 41740/42450	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 08/21/15	Due Date: 08/2016
ADM #05-R	S/N. 41740/42447	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 08/21/15	Due Date: 08/2016
ADM #06-L	S/N: 41742/42455	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 11/09/15	Due Date: 08/2016
ADM #07-L	S/N: 42185/42186	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 03/24/16	Due Date: 03/2017
ADM #07-R	S/N: 42185/43326	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 03/23/16	Due Date: 03/2017
ADM #08-L	S/N: 42186/43329	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 03/23/16	Due Date: 03/2017
ADM #09-L	S/N 42202/43351	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 02/02/16	Due Date: 01/2017
ADM #09-R	S/N 42202/43350	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 02/02/16	Due Date 01/2017
ADM #10-L	S/N 42203/43353	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 01/18/16	Due Date 01/2017
ADM #11-L	S/N 43165/44551	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date 07/17/15	Due Date 07/2016
ADM #11-R	S/N 43165/44730	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date 07/17/15	Due Date 07/2016
ADM #12-L	S/N 43166/48328	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 02/10/16	Due Date 07/2016
ADM #13-L	S/N: 43415/45041	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date. 09/16/15	Due Date 09/2016
ADM #13-R	S/N: 43415/45039	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 09/16/15	Due Date: 09/2016
ADM #14-L	S/N: 43412/45045	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 11/09/15	Due Date: 09/2016
ADM #15-L	S/N: 43416/45042	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 02/26/16	Due Date: 02/2017
ADM #15-R	S/N: 43416/45040	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 02/26/16	Due Date: 02/2017
ADM #16-L	S/N: 43413/45046	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 02/25/16	Due Date: 02/2017
ADM #17-L	S/N: 44579/46842	Heise Model: PPM-1	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 05/15/15	Due Date: 05/2016
ADM #17-R	S/N: 44579/46841	Heise Model: PPM-1	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 05/15/15	Due Date: 05/2016
ADM #18-L	S/N: 44581/46846	Heise Model: PPM-1	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 05/15/15	Due Date: 05/2016
ADM #19-L	S/N: 44580/46844	Heise Model: PPM-1	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 06/10/15	Due Date: 06/2016
ADM #19-R	S/N: 44580/46843	Heise Model: PPM-1	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 06/10/15	Due Date: 06/2016
ADM #20-L	S/N: 44582/46848	Heise Model: PPM-1	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 06/09/15	Due Date: 06/2016

#01-L, 03-L, 05-L, 07-L, 09-L, 11-L, 13-L, 15-L, 17-L, 19-L Rated Accuracy: > 0.07% fs (0.000175 in wc) Range: 0.0-0.25 in wc Res.: 0 00001 Uncertainty: < 0.00035

#01-R, 03-R, 05-R, 07-R, 09-R, 11-R, 13-R, 15-R, 17-R, 19-R Rated Accuracy: > 0.06% fs (0.003 in wc) Range: 0.0-5.0 in wc Res.: 0.0001 Uncertainty: < 0.00348

#02-L, 04-L, 06-L, 08-L, 10-L, 12-L, 14-L, 16-L, 18-L, 20-L Rated Accuracy: > 0.06% fs (0.03 in wc) Range: 0.0-50 0 in wc Res.: 0.001 Uncertainty: < 0.0346

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Shortridge Instruments, Inc. AirData Multimeter Calibration Equipment

The Order Number, Serial Number, and Test Type are referenced on page 1

LOW VELOCITY EQUIVALENT CONFIRMATION STANDARDS

Vel Eqv Transfer Standard S/N: M02009	Model ADM-870C	Mfgd & Calibrated by Shortridge Instruments, Inc.	Calibration Date: 12/09/15	Due Date: 12/2016
Vel Eqv Transfer Standard S/N: M02803	Model ADM-870C	Mfgd & Calibrated by Shortridge Instruments, Inc.	Calibration Date: 01/20/16	Due Date: 01/2017
Vel Eqv Transfer Standard S/N: M02903	Model ADM-870C	Mfgd & Calibrated by Shortridge Instruments, Inc.	Calibration Date: 12/09/15	Due Date: 12/2016
Vel Eqv Transfer Standard S/N: M10839	Model ADM-870C	Mfgd & Calibrated by Shortridge Instruments, Inc.	Calibration Date: 12/09/15	Due Date: 12/2016
Vel Eqv Transfer Standard S/N: M10840	Model ADM-870C	Mfgd & Calibrated by Shortridge Instruments, Inc.	Calibration Date: 12/09/15	Due Date: 12/2016
Vel Eqv Transfer Standard S/N: M10897	Model ADM-870C	Mfg'd & Calibrated by Shortridge Instruments, Inc.	Calibration Date: 01/20/16	Due Date: 01/2017
Vel Eqv Transfer Standard S/N: M10901	Model ADM-870C	Mfg'd & Calibrated by Shortridge Instruments, Inc.	Calibration Date: 12/09/15	Due Date: 12/2016
Vel Eqv Transfer Standard S/N: M13492	Model ADM-870C	Mfg'd & Calibrated by Shortridge Instruments, Inc.	Calibration Date: 08/18/15	Due Date: 08/2016

Rated Accuracy: Velocity ± 1.5 % ± 3.5 fpm Range: 100-5000 fpm Resolution: 0.1 Uncertainty: <5.00 fpm at 100 fpm; <7.50 fpm at 500 fpm

TEMPERATURE STANDARDS

RTD Simulator S/N: 249	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 03/16/16	Due Date: 03/2020
RTD Simulator S/N: 250	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 03/16/16	Due Date: 03/2020
RTD Simulator S/N: 253	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 03/16/16	Due Date: 03/2020
RTD Simulator S/N: 254	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 04/18/12	Due Date: 04/2016
RTD Simulator S/N: 256	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 04/18/12	Due Date: 04/2016
RTD Simulator S/N: 257	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 04/18/12	Due Date: 04/2016
RTD Simulator S/N: 292	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 12/21/15	Due Date: 12/2019
RTD Simulator S/N: 293	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 12/21/15	Due Date: 12/2019
RTD Simulator S/N: 294	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 12/21/15	Due Date: 12/2019
RTD Simulator S/N: 313	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 03/13/14	Due Date: 03/2018
RTD Simulator S/N: 314	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 03/13/14	Due Date: 03/2018
RTD Simulator S/N: 315	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 03/13/14	Due Date: 03/2018
RTD Simulator S/N: 316	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 04/21/14	Due Date: 04/2018
RTD Simulator S/N: 317	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 04/21/14	Due Date: 04/2018
RTD Simulator S/N: 318	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 04/21/14	Due Date: 04/2018

Rated Accuracy: 0.025% of setting Range: 100.00 Ω to 11111.10 Ω Resolution: 0.01 Ω Uncertainty: ≤ 32 ppm

Thermometer #1 S/N 8A089/Thermistor S/N A410660	Model 1504/5610	Mfgd by Hart Scientific Calibrated by Fluke	Calibration Date: 09/22/14	Due Date: 09/2016
Thermometer #2 S/N 8B104/Thermistor S/N 871507	Model 1504/5610	Mfgd by Hart Scientific Calibrated by Fluke	Calibration Date: 10/30/14	Due Date: 10/2016
Thermometer #5 S/N B11780/Thermistor S/N B10505	Model 1504/5610	Mfgd by Hart Scientific Calibrated by Fluke	Calibration Date: 11/18/15	Due Date: 11/2017
Thermometer #6 S/N B11782/Thermistor S/N B10509	Model 1504/5610	Mfgd by Hart Scientific Calibrated by Fluke	Calibration Date: 05/27/15	Due Date: 05/2017
Thermometer #7 S/N B49938/Thermistor S/N B482202	Model 1504/5610	Mfgd and Calibrated by Fluke	Calibration Date: 09/24/14	Due Date: 09/2016

Rated Accuracy(combined): 0.0324° F Range: 32° F to 176° F Resolution: 0.001° F Combined Uncertainty with Baths: ≤ 0.040° F

Temp Transfer Standard S/N M00136	Model ADM-870	Mfgd & Calibrated by Shortridge Instruments, Inc	Calibration Date: 10/13/15	Due Date: 10/2016
Temp Transfer Standard S/N M96100	Model ADM-870	Mfgd & Calibrated by Shortridge Instruments, Inc	Calibration Date: 03/01/16	Due Date: 03/2017

Rated Accuracy: 0.03° F Range: 33° F to 158° F Resolution: 0.01° F Uncertainty: < 0.023° F

Total combined Uncertainty for MultiTemp and TemProbe testing : ≤ 0.046° F

This form must remain with the Certificate of Calibration corresponding to the Order Number listed above.

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End of Appendix