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OSE Project #061616

Nemo Power Tools

Equipment Performance Testing Final Report



Certification #CR149



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CLEANROOM CERTIFICATION REPORT

Conducted by:
One Source Environmental LLC
PO Box 64941
Burlington, Vermont 05406-4941

DATA CONTAINED WITHIN THIS REPORT REPRESENTS A PRECISE ACCOUNT OF CLEANROOM PERFORMANCE. THE RESULTS AND INFORMATION PRESENTED ARE CERTIFIED TO BE ACCURATE, AND COMPLETE TO THE EXTENT POSSIBLE BASED ON EQUIPMENT AND PROCEDURES USED DURING PERFORMANCE TESTING.

CLEANROOM EVALUATION WAS CONDUCTED IN COMPLETE ACCORDANCE WITH NEBB PROCEDURAL STANDARDS, IEST PROCEDURAL STANDARDS AND ISO 14644-1 & 2.

ONE SOURCE ENVIRONMENTAL LLC WARRANTS THAT THE CLEANROOM EVALUATED DURING THIS CERTIFICATION PROCESS WAS OPERATING AT THE LEVELS DOCUMENTED WITHIN THIS REPORT, AT AND ONLY AT THE TIME OF DATA COLLECTION. WE MAKE NO OTHER WARRANTIES, STATED OR IMPLIED, CONCERNING THE CONTINUED PERFORMANCE OR SAFE OPERATION OF THE CLEANROOM(S) DESCRIBED HEREIN.

Customer:
Nemo Power Tools

Project: #061616

Project Manager/NEBB CPT Supervisor:

Jeffrey J. Jimmo

Report Date:
September 27, 2016



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Calibration Certificates

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September 27, 2016

Nemo Power Tools

Attention: Becky Feinberg

Reference: **OSE PROJECT #061616 – EQUIPMENT PERFORMANCE TESTING**

Dear Ms. Feinberg:

We are pleased to provide this final assessment of equipment performance testing from our recent project conducted at the **One Source Environmental** facility in Milton, Vermont. Performance testing was completed September 15th, 2016 within the Cleanroom area of the facility. All performance testing was accomplished in accordance with any applicable **Nemo Power Tools** requirements, NEBB Procedural Standards, ISO 14644-1/2/3/4/6/11, cGMP's, and NSF49 as applicable.

1. Airborne Particle Count Test (Non-Viable):

Procedure: Non-Viable Particle Count testing was accomplished within a Nuare Pharmagard Positive Pressure Recirculating Compounding Aseptic Isolator using a Lighthouse 3100 laser based, one-CFM sample volume particle counter with threshold particle detection capability of 0.3 micrometers. This environment was pre-cleaned prior to all testing and after each individual test with 99.5% Isopropyl Alcohol solution. Test locations are presented in a cross formation, with one test location on each side of the test drill with a total of (4) four locations. Test sample heights were seven inches (7") above the work surface within the Isolator, with (10) ten one-minute samples at each location with the drill in forward direction and again with another (10) ten one-minute samples in reverse direction. Each drill was pre-cleaned with 99.5% Isopropyl Alcohol Solution with dust/lint free cleanroom wipes, and cleaned again once the drill changed direction. Additionally, each drill battery was fully charged prior to executing particle testing. Drill performance was based on each individual drill set to the highest possible speed, with the throttle being fully depressed. Each drill was individually tested; test variables are as follows

1. Forward Direction
2. Reverse Direction
3. Full Speed
4. Fully depressed throttle using zip ties
5. Suspended two inches from a hanging stainless steel bar using zip ties
6. Two and a half inches from the surface

Acceptance: Per the criteria outlined in ISO 14644 based on the targeted classifications as described in the table below.

Results:

- Particle count test sample locations are depicted on the attached drawings. Data is presented in a tabular format for each individual test location. Statistical analysis based on the total number of particle counts taken for each individual drill is also provided within the test data section of this report. Refer to the summary table below for a snapshot of airborne particle count test results.
- Measured particle populations for each tested drill vary significantly.

Certification “Actual” Test Results:

Room/Area Identification	Previous –	Current – September, 2016
Nemo Power Tools (combined drill counts)		ISO 7 @ 0.5, 1.0 & 5.0µm

Testing Environment



Nuare Pharmagard Positive Pressure Recirculating Compounding Aseptic Isolator with HEPA filtration.



Summary and additional observations:

Point-in-time particle measurements at 0.5µm, 1.0µm, and 5.0µm were found to be within the range limits of an ISO Class 7 cleanroom under the variables set forth and notated in the beginning of this report. (3) Three drills were tested and each drill performed differently. Areas of higher particle concentrations were observed while each drill was set in the forward operating direction with the highest particle concentrations at locations two (2) and four (4). Particulate concentrations were lower in overall count while the drill was in a reverse direction; however, particulate counts were more consistent across each individual location as compared to only two locations of the forward position *{see drawing 6028a for airborne particulate count locations}*. The bottom bezel of the drill, where the battery is affixed to the main body, has a crisscrossed pattern within the metal. This type of crisscross pattern allows particles to become trapped within the pattern, until an event disrupts the dormant particles causing the particles to be released into the vicinity of the drill. Recommended industry standards suggest that smooth round surfaces are more suitable for cleanroom use for this specific reason. Additionally, this bezel area may be a prime area of microbial growth as the porous nature of the crisscross design does not allow for a full wipe down which may have an effect on cleanliness of the drill while used in sterile facilities, additional testing may be required to confirm. Lastly, small metallic particles were observed on the surface below the testing area where the drill was located. Due to the rigorous wipe down of the test area before and after each test, these visible metallic particles came directly from the drill, and may be "shedding particles" due to first time use of the drill.

Please be assured that OSE is a completely independent NEBB certified company specializing in providing Cleanroom Performance Testing, Maintenance & Analytical Services and Solutions to a broad range of industry sectors including Advanced Manufacturing, Microelectronics, Semiconductor, Aerospace, Food Packaging, Medical Device Manufacturing, Biological, R&D, and Pharmaceutical industries. Our employees are dedicated to, and specialize in providing the expertise that your project requires and a level of attention-to-detail that it deserves.

Sincerely,

One Source Environmental, LLC (www.osets.com)

Alexander Kennedy
akennedy@osets.com

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Field Technician

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President
JJJ:AJK
061616
Enclosures

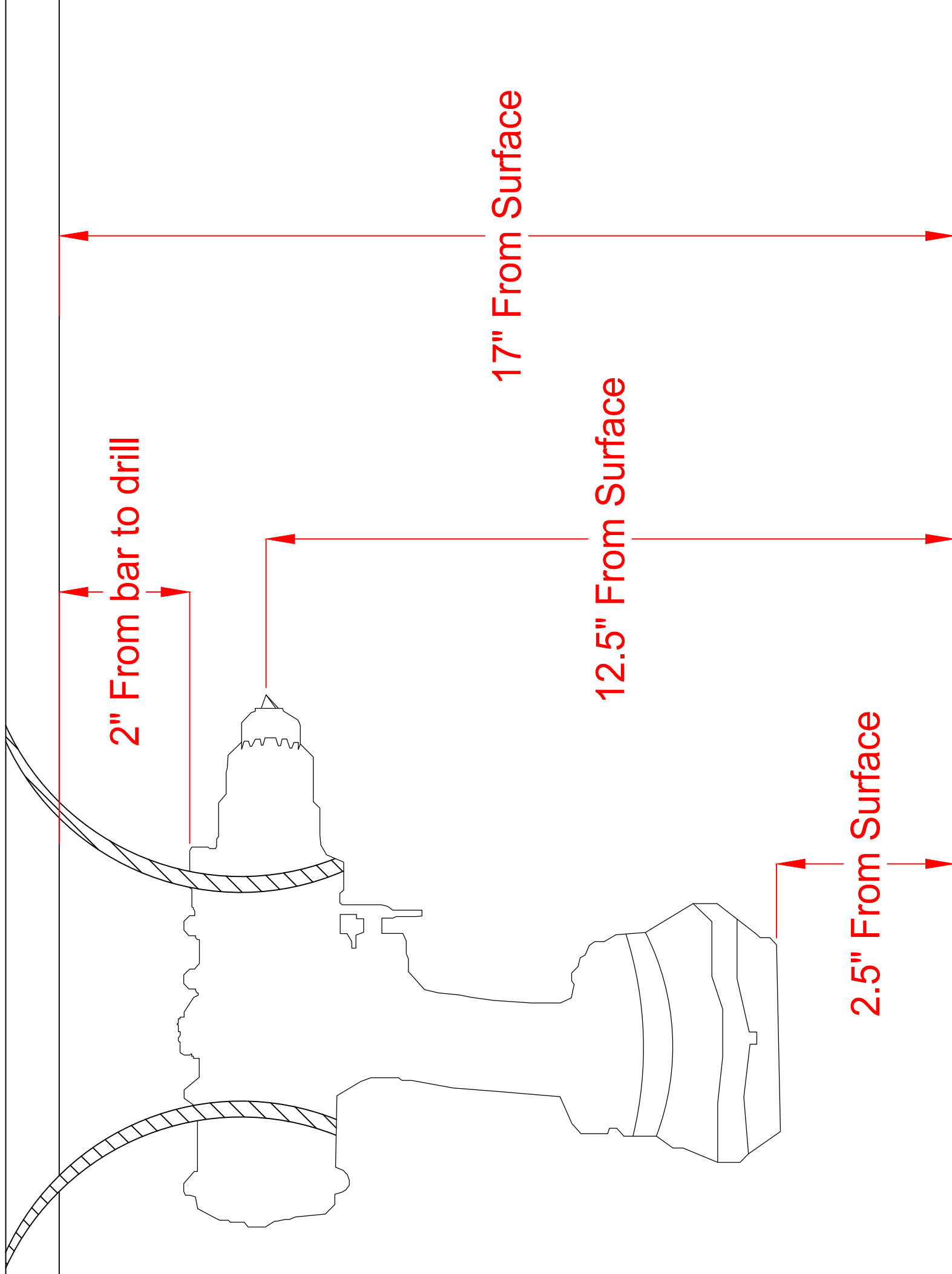
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Notes

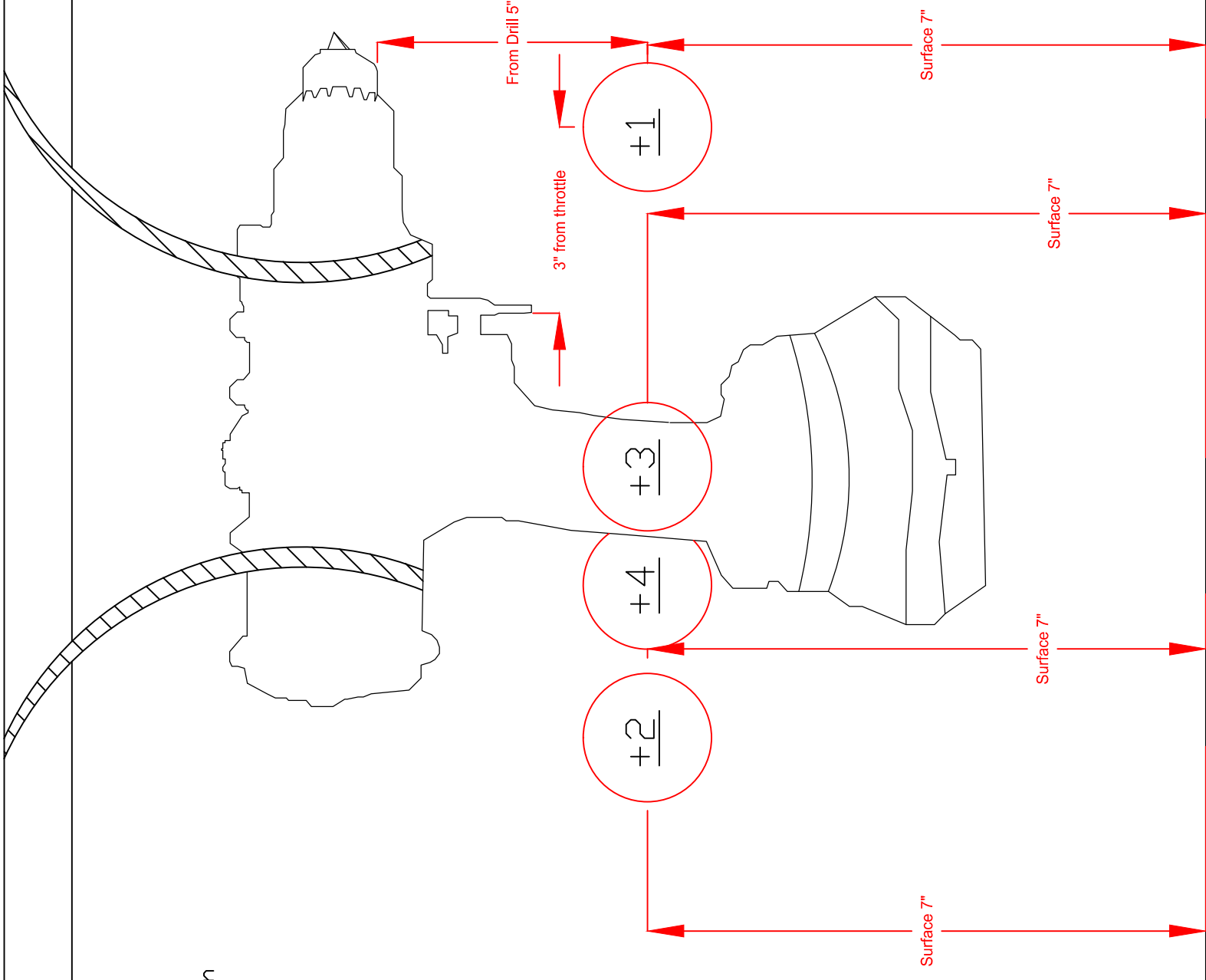
1. Particulate Testing performed inside of Nuare Pharmacad Positive Pressure recirculating Compounding Aseptic Isolator to ensure non-particulate bias from surrounding ambient areas.
2. Testing was accomplished using zip ties to secure drilling from a stainless steel bar to suspend drill to allow particulates to fall evenly to work surface and subsequent particle counting isokinetic probe location.



Drill Test Locations

Notes

1. +1 Identifies particle count location and distance from surface and drill
2. Drill set at maximum throttle
3. Drill set at highest speed
4. Each location tested, tested for a minimum of (10) ten minutes in both forward and reverse direction
5. Drill Pre-Cleaned with 99.5% Isopropyl Alcohol Solution with dust/lint free cleanroom wipes.
6. Batteries set at full charge prior to testing each drill
7. Testing Environment Pre-Cleaned prior to all testing and after each individual drill test with 99.5% Isopropyl Alcohol Solution



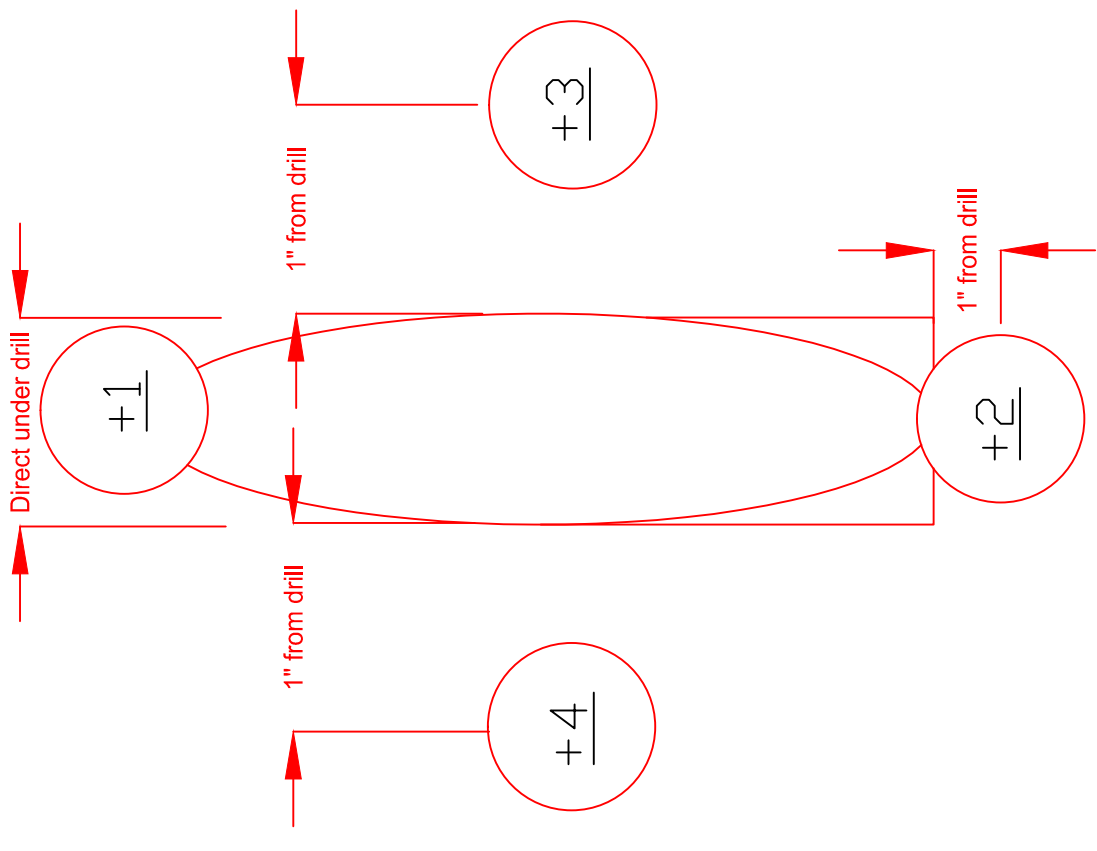
Top View view shown for informational purposes only. Does not reflect model.

Location 1: Located Directly Underneath chuck and clamps of drill to collect particulates during an operational state.

Location 2: Located Directly Behind drill to collect particulate during an operational state.

Location 3: Collected to the side of the drill to collect particulate during an operational state

Location 4: Collected to the side of the drill to collect particulate during an operational state.



FORMULAS AND EQUATIONS

Acceptance criteria for verification: The air in a cleanroom or clean zone shall have met the acceptance criteria for an airborne particulate cleanliness class and/or U descriptor when the averages of the particle concentrations measured at each of the locations fall at or below the class limit or U descriptor. Additionally, if the total number of locations sampled is less than ten, the mean of these averages must fall at or below the class limit or U descriptor with a 95% UCL.

Average particle concentration at a location: The average particle concentration, A, at a location is the sum of the individual sample particle concentrations, C_i, divided by the number of samples taken at the location, N, as shown in the equation below. If only one sample is taken, it is the average particle concentration.

$$A = \frac{(C_1 + C_2 + \dots + C_N)}{N}$$

Mean of the Average: The mean of the averages, M, is the sum of the individual averages, A_i, divided by the number of locations, L, as shown in the equation below. All locations are weighted equally, regardless of the number of samples taken.

$$M = \frac{(A_1 + A_2 + \dots + A_N)}{L}$$

Standard Deviation of the Averages: The standard deviation of the averages, SD, is the square root of the sum of the squared of differences between each of the individual averages and the mean of the averages, (A_i - M)², divided by the number of locations, L, minus one, as shown below.

$$SD = \sqrt{\frac{(A_1 - M)^2 + (A_2 - M)^2 + \dots + (A_L - M)^2}{L - 1}}$$

Standard Error of the Mean of the Averages: The standard error, SE, of the mean of the averages, M, is determined by dividing the standard deviation, SD, by the square root of the number of locations, as shown below.

$$SE = \frac{SD}{\sqrt{L}}$$

Upper Confidence Limit (UCL): The 95% UCL of the mean of the averages, M, is determined by adding to the mean the product of the appropriate UCL factor (see the table below) and the standard error, SE, as also shown below.

UCL Factor for 95% Upper Confidence Limit

No. of Individual averages	2	3	4	5 - 6	7 - 9
95% UCL factor	6.3	2.9	2.4	2.1	1.9

*When the number of locations is greater than 9, the calculation of a UCL is not required.

Customer: Nemo Power Tools

Test Date: 8/25/2016

Equipment ID: Test Drill 1

Operational Mode: Forward Direction

Design Class

N/A

AIRBORNE PARTICULATE CLEANLINESS CLASSES

Class limits are given for each class name. The limits designate specific concentrations (particles per unit volume) of airborne particles with sizes equal to and larger than the particle sizes shown.

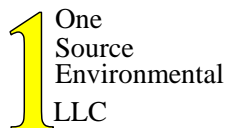
CLASS LIMITS FOR VOLUME UNITS (ft ³)						
	0.1 µM	0.2 µM	0.3 µM	0.5 µM	1.0 µM	5.0 µM
CLASS 1	0.28	0.07	N.A.	N.A.	N.A.	N.A.
CLASS 2	2.83	0.67	0.29	0.10	0.024	N.A.
CLASS 3	28.30	6.69	2.88	1.00	0.24	N.A.
CLASS 4	283.00	66.93	28.80	9.95	2.35	N.A.
CLASS 5	2,830.00	669.34	287.99	99.52	23.54	0.83
CLASS 6	28,300.00	6,693.36	2,879.88	995.24	235.39	8.28
CLASS 7	N.A.	N.A.	N.A.	9,952.42	2,353.89	82.78
CLASS 8	N.A.	N.A.	N.A.	99,524.23	23,538.91	827.81
CLASS 9	N.A.	N.A.	N.A.	995,242.30	235,389.15	8,278.06

*The class limits shown in Table I are defined for classification purposes only and do not necessarily represent the size distribution to be found in any particular situation.

Airborne Particulate Statistical Analysis						
	0.3 µM	0.5 µM	1.0 µM	3.0 µM	5.0 µM	10.0 µM
Mean	47.3	39.3	29.7	4.1	2.6	1.7
Std. Deviation	216.0	179.0	135.4	19.0	11.8	7.7
Std. Error	34.2	28.3	21.4	3.0	1.9	1.2
UCL	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Maximum	1,243.00	1,027.00	780.00	117.00	73.00	48.00

RESULTS:

Based on the data collected and statistical analysis calculations derived from ISO 14644-1, Drill 1, during testing at the One Source Environmental facility, meets the particulate requirements of a ISO Class 7 cleanroom at 0.5, 1.0 and 5.0 micrometer under operational conditions.



AIRBORNE PARTICLE COUNT STATISTICAL ANALYSIS

Customer: **Nemo Power Tools**Test Date: **8/25/2016**Equipment ID: **Test Drill 1**Operational Mode: **Forward Direction**

Sample Location Identification	Date Time	Cumulative micron size particle concentration per cubic foot volume of air.							
		0.30	0.50	1.00	3.00	5.00	10.00	Temp.	Humidity
1	8/25/2016 15:16:39	0	0	0	0	0	0	0	0
1	8/25/2016 15:17:39	0	0	0	0	0	0	0	0
1	8/25/2016 15:18:39	0	0	0	0	0	0	0	0
1	8/25/2016 15:19:39	0	0	0	0	0	0	0	0
1	8/25/2016 15:20:39	0	0	0	0	0	0	0	0
1	8/25/2016 15:21:39	0	0	0	0	0	0	0	0
1	8/25/2016 15:22:39	0	0	0	0	0	0	0	0
1	8/25/2016 15:23:39	0	0	0	0	0	0	0	0
1	8/25/2016 15:24:39	0	0	0	0	0	0	0	0
1	8/25/2016 15:25:39	0	0	0	0	0	0	0	0
2	8/25/2016 15:30:13	0	0	0	0	0	0	0	0
2	8/25/2016 15:31:13	0	0	0	0	0	0	0	0
2	8/25/2016 15:32:13	0	0	0	0	0	0	0	0
2	8/25/2016 15:33:13	0	0	0	0	0	0	0	0
2	8/25/2016 15:34:13	0	0	0	0	0	0	0	0
2	8/25/2016 15:35:13	0	0	0	0	0	0	0	0
2	8/25/2016 15:36:13	14	14	8	1	1	1	0	0
2	8/25/2016 15:37:13	0	0	0	0	0	0	0	0
2	8/25/2016 15:38:13	0	0	0	0	0	0	0	0
2	8/25/2016 15:39:13	0	0	0	0	0	0	0	0
3	8/25/2016 15:40:36	0	0	0	0	0	0	0	0
3	8/25/2016 15:41:36	0	0	0	0	0	0	0	0
3	8/25/2016 15:42:36	0	0	0	0	0	0	0	0
3	8/25/2016 15:43:36	0	0	0	0	0	0	0	0
3	8/25/2016 15:44:36	0	0	0	0	0	0	0	0
3	8/25/2016 15:45:36	1,243	1,027	780	117	73	48	0	0
3	8/25/2016 15:46:36	27	21	20	12	11	7	0	0
3	8/25/2016 15:47:36	5	5	4	3	2	2	0	0
3	8/25/2016 15:48:36	0	0	0	0	0	0	0	0
3	8/25/2016 15:49:36	0	0	0	0	0	0	0	0
4	8/25/2016 15:50:56	603	506	376	29	16	10	0	0
4	8/25/2016 15:51:56	0	0	0	0	0	0	0	0
4	8/25/2016 15:52:56	0	0	0	0	0	0	0	0
4	8/25/2016 15:53:56	0	0	0	0	0	0	0	0
4	8/25/2016 15:54:56	0	0	0	0	0	0	0	0
4	8/25/2016 15:55:56	0	0	0	0	0	0	0	0
4	8/25/2016 15:56:56	0	0	0	0	0	0	0	0
4	8/25/2016 15:57:56	0	0	0	0	0	0	0	0
4	8/25/2016 15:58:56	0	0	0	0	0	0	0	0
4	8/25/2016 15:59:56	0	0	0	0	0	0	0	0
Average		47.3	39.3	29.7	4.1	2.6	1.7	0.0	0.0

Customer: Nemo Power Tools

Test Date: 9/15/2016

Equipment ID: Test Drill 1

Operational Mode: Reverse Direction

Design Class

N/A

AIRBORNE PARTICULATE CLEANLINESS CLASSES

Class limits are given for each class name. The limits designate specific concentrations (particles per unit volume) of airborne particles with sizes equal to and larger than the particle sizes shown.

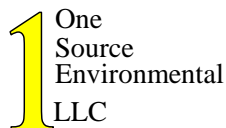
CLASS LIMITS FOR VOLUME UNITS (ft ³)						
	0.1 µM	0.2 µM	0.3 µM	0.5 µM	1.0 µM	5.0 µM
CLASS 1	0.28	0.07	N.A.	N.A.	N.A.	N.A.
CLASS 2	2.83	0.67	0.29	0.10	0.024	N.A.
CLASS 3	28.30	6.69	2.88	1.00	0.24	N.A.
CLASS 4	283.00	66.93	28.80	9.95	2.35	N.A.
CLASS 5	2,830.00	669.34	287.99	99.52	23.54	0.83
CLASS 6	28,300.00	6,693.36	2,879.88	995.24	235.39	8.28
CLASS 7	N.A.	N.A.	N.A.	9,952.42	2,353.89	82.78
CLASS 8	N.A.	N.A.	N.A.	99,524.23	23,538.91	827.81
CLASS 9	N.A.	N.A.	N.A.	995,242.30	235,389.15	8,278.06

*The class limits shown in Table I are defined for classification purposes only and do not necessarily represent the size distribution to be found in any particular situation.

Airborne Particulate Statistical Analysis						
	0.3 µM	0.5 µM	1.0 µM	3.0 µM	5.0 µM	10.0 µM
Mean	1.5	1.3	1.3	0.8	0.6	0.4
Std. Deviation	7.9	6.7	6.5	4.0	2.7	2.4
Std. Error	1.3	1.1	1.0	0.6	0.4	0.4
UCL	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Maximum	50.00	42.00	41.00	25.00	17.00	15.00

RESULTS:

Based on the data collected and statistical analysis calculations derived from ISO 14644-1, Drill 1, during testing at the One Source Environmental facility, meets the particulate requirements of a ISO Class 7 cleanroom at 0.5, 1.0 and 5.0 micrometer under operational conditions.



AIRBORNE PARTICLE COUNT STATISTICAL ANALYSIS

Customer: Nemo Power Tools

Test Date: 9/15/2016

Equipment ID: Test Drill 1

Operational Mode: Reverse Direction

Sample Location Identification	Date Time	Cumulative micron size particle concentration per cubic foot volume of air.							
		0.30	0.50	1.00	3.00	5.00	10.00	Temp.	Humidity
1	9/15/2016 09:23:55	1	1	1	1	1	1	70	50
1	9/15/2016 09:24:55	2	2	2	2	2	0	71	50
1	9/15/2016 09:25:55	1	1	1	1	1	0	71	50
1	9/15/2016 09:26:55	2	2	2	1	0	0	71	49
1	9/15/2016 09:27:55	0	0	0	0	0	0	71	49
1	9/15/2016 09:28:55	50	42	41	25	17	15	71	49
1	9/15/2016 09:29:55	0	0	0	0	0	0	72	48
1	9/15/2016 09:30:55	0	0	0	0	0	0	72	48
1	9/15/2016 09:31:55	0	0	0	0	0	0	72	48
1	9/15/2016 09:32:55	0	0	0	0	0	0	72	47
2	9/15/2016 09:36:15	0	0	0	0	0	0	72	47
2	9/15/2016 09:37:15	0	0	0	0	0	0	73	47
2	9/15/2016 09:38:15	0	0	0	0	0	0	73	46
2	9/15/2016 09:39:15	0	0	0	0	0	0	73	46
2	9/15/2016 09:40:15	0	0	0	0	0	0	73	46
2	9/15/2016 09:41:15	0	0	0	0	0	0	73	46
2	9/15/2016 09:42:15	0	0	0	0	0	0	73	45
2	9/15/2016 09:43:15	0	0	0	0	0	0	74	45
2	9/15/2016 09:44:15	0	0	0	0	0	0	74	45
2	9/15/2016 09:45:15	0	0	0	0	0	0	74	45
3	9/15/2016 09:46:30	0	0	0	0	0	0	74	45
3	9/15/2016 09:47:30	0	0	0	0	0	0	74	44
3	9/15/2016 09:48:30	0	0	0	0	0	0	74	44
3	9/15/2016 09:49:30	0	0	0	0	0	0	75	44
3	9/15/2016 09:50:30	0	0	0	0	0	0	75	44
3	9/15/2016 09:51:30	5	5	5	2	1	0	75	44
3	9/15/2016 09:52:30	0	0	0	0	0	0	75	44
3	9/15/2016 09:53:30	0	0	0	0	0	0	75	43
3	9/15/2016 09:54:30	0	0	0	0	0	0	75	43
3	9/15/2016 09:55:30	0	0	0	0	0	0	75	43
4	9/15/2016 09:56:48	0	0	0	0	0	0	76	43
4	9/15/2016 09:57:48	0	0	0	0	0	0	76	43
4	9/15/2016 09:58:48	0	0	0	0	0	0	75	42
4	9/15/2016 09:59:48	0	0	0	0	0	0	76	42
4	9/15/2016 10:00:48	0	0	0	0	0	0	76	42
4	9/15/2016 10:01:48	0	0	0	0	0	0	76	42
4	9/15/2016 10:02:48	0	0	0	0	0	0	76	42
4	9/15/2016 10:03:48	0	0	0	0	0	0	76	42
4	9/15/2016 10:04:48	0	0	0	0	0	0	77	41
4	9/15/2016 10:05:48	0	0	0	0	0	0	77	41
Average		1.5	1.3	1.3	0.8	0.6	0.4	73.8	45.1

Customer: **Nemo Power Tools**

Test Date: **9/15/2016**

Equipment ID: **Test Drill 2**

Operational Mode: **Forward Direction**

Design Class

N/A

AIRBORNE PARTICULATE CLEANLINESS CLASSES

Class limits are given for each class name. The limits designate specific concentrations (particles per unit volume) of airborne particles with sizes equal to and larger than the particle sizes shown.

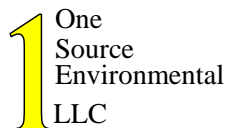
CLASS LIMITS FOR VOLUME UNITS (ft³)						
	0.1 µM	0.2 µM	0.3 µM	0.5 µM	1.0 µM	5.0 µM
CLASS 1	0.28	0.07	N.A.	N.A.	N.A.	N.A.
CLASS 2	2.83	0.67	0.29	0.10	0.024	N.A.
CLASS 3	28.30	6.69	2.88	1.00	0.24	N.A.
CLASS 4	283.00	66.93	28.80	9.95	2.35	N.A.
CLASS 5	2,830.00	669.34	287.99	99.52	23.54	0.83
CLASS 6	28,300.00	6,693.36	2,879.88	995.24	235.39	8.28
CLASS 7	N.A.	N.A.	N.A.	9,952.42	2,353.89	82.78
CLASS 8	N.A.	N.A.	N.A.	99,524.23	23,538.91	827.81
CLASS 9	N.A.	N.A.	N.A.	995,242.30	235,389.15	8,278.06

*The class limits shown in Table I are defined for classification purposes only and do not necessarily represent the size distribution to be found in any particular situation.

Airborne Particulate Statistical Analysis						
	0.3 µM	0.5 µM	1.0 µM	3.0 µM	5.0 µM	10.0 µM
Mean	523.1	261.9	88.3	2.0	0.3	0.1
Std. Deviation	766.5	371.9	111.2	2.6	0.7	0.4
Std. Error	121.2	58.8	17.6	0.4	0.1	0.1
UCL	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Maximum	2,471.00	1,207.00	377.00	10.00	3.00	2.00

RESULTS:

Based on the data collected and statistical analysis calculations derived from ISO 14644-1, Drill 2, during testing at the One Source Environmental facility, meets the particulate requirements of a ISO Class 7 cleanroom at 0.5, 1.0 and 5.0 micrometer under operational conditions.



AIRBORNE PARTICLE COUNT STATISTICAL ANALYSIS

Customer: **Nemo Power Tools**

Test Date: 9/15/2016

Equipment ID: **Test Drill 2**

Operational Mode: Forward Direction

Sample Location Identification	Date Time	Cumulative micron size particle concentration per cubic foot volume of air.							
		0.30	0.50	1.00	3.00	5.00	10.00	Temp.	Humidity
1	9/15/2016 10:37:10	49	15	8	0	0	0	75	44
1	9/15/2016 10:38:10	14	3	1	0	0	0	75	44
1	9/15/2016 10:39:10	27	9	3	0	0	0	75	43
1	9/15/2016 10:40:10	38	15	5	0	0	0	75	43
1	9/15/2016 10:41:10	33	15	7	0	0	0	75	43
1	9/15/2016 10:42:10	45	19	8	0	0	0	75	42
1	9/15/2016 10:43:10	23	12	5	0	0	0	76	42
1	9/15/2016 10:44:10	64	26	18	6	3	2	76	42
1	9/15/2016 10:45:10	36	16	3	0	0	0	76	42
1	9/15/2016 10:46:10	58	25	10	1	0	0	76	42
2	9/15/2016 10:49:03	1,721	810	201	7	2	1	77	41
2	9/15/2016 10:50:03	776	376	100	4	0	0	77	41
2	9/15/2016 10:51:03	1,828	819	225	5	1	0	77	41
2	9/15/2016 10:52:03	2,471	1,207	377	10	1	0	77	41
2	9/15/2016 10:53:03	1,151	574	179	1	0	0	78	40
2	9/15/2016 10:54:03	2,007	907	246	4	2	0	77	40
2	9/15/2016 10:55:03	1,562	817	288	8	0	0	77	40
2	9/15/2016 10:56:03	1,664	908	328	6	0	0	77	40
2	9/15/2016 10:57:03	1,255	662	231	0	0	0	78	39
2	9/15/2016 10:58:03	2,010	944	240	2	1	1	78	39
3	9/15/2016 10:59:52	27	13	6	0	0	0	78	39
3	9/15/2016 11:00:52	30	17	8	0	0	0	78	39
3	9/15/2016 11:01:52	5	3	3	1	1	0	78	38
3	9/15/2016 11:02:52	3	2	2	0	0	0	78	38
3	9/15/2016 11:03:52	7	4	4	0	0	0	78	38
3	9/15/2016 11:04:52	2,071	1,045	331	2	0	0	79	38
3	9/15/2016 11:05:52	48	22	11	0	0	0	79	38
3	9/15/2016 11:06:52	7	6	5	1	0	0	78	37
3	9/15/2016 11:07:52	6	1	1	1	0	0	79	37
3	9/15/2016 11:08:52	6	3	3	0	0	0	79	37
4	9/15/2016 11:10:04	201	126	65	2	0	0	79	37
4	9/15/2016 11:11:04	176	106	57	0	0	0	79	37
4	9/15/2016 11:12:04	153	90	57	1	0	0	79	37
4	9/15/2016 11:13:04	199	139	82	2	0	0	79	37
4	9/15/2016 11:14:04	157	98	57	2	0	0	79	37
4	9/15/2016 11:15:04	218	125	72	3	0	0	79	37
4	9/15/2016 11:16:04	183	121	74	4	0	0	79	37
4	9/15/2016 11:17:04	166	120	61	0	0	0	80	37
4	9/15/2016 11:18:04	219	125	78	3	0	0	79	37
4	9/15/2016 11:19:04	208	129	72	2	0	0	80	36
Average		523.1	261.9	88.3	2.0	0.3	0.1	77.6	39.4

Customer: **Nemo Power Tools**

Test Date: **9/15/2016**

Equipment ID: **Test Drill 2**

Operational Mode: **Reverse Direction**

Design Class

N/A

AIRBORNE PARTICULATE CLEANLINESS CLASSES

Class limits are given for each class name. The limits designate specific concentrations (particles per unit volume) of airborne particles with sizes equal to and larger than the particle sizes shown.

CLASS LIMITS FOR VOLUME UNITS (ft³)						
	0.1 µM	0.2 µM	0.3 µM	0.5 µM	1.0 µM	5.0 µM
CLASS 1	0.28	0.07	N.A.	N.A.	N.A.	N.A.
CLASS 2	2.83	0.67	0.29	0.10	0.024	N.A.
CLASS 3	28.30	6.69	2.88	1.00	0.24	N.A.
CLASS 4	283.00	66.93	28.80	9.95	2.35	N.A.
CLASS 5	2,830.00	669.34	287.99	99.52	23.54	0.83
CLASS 6	28,300.00	6,693.36	2,879.88	995.24	235.39	8.28
CLASS 7	N.A.	N.A.	N.A.	9,952.42	2,353.89	82.78
CLASS 8	N.A.	N.A.	N.A.	99,524.23	23,538.91	827.81
CLASS 9	N.A.	N.A.	N.A.	995,242.30	235,389.15	8,278.06

*The class limits shown in Table I are defined for classification purposes only and do not necessarily represent the size distribution to be found in any particular situation.

Airborne Particulate Statistical Analysis						
	0.3 µM	0.5 µM	1.0 µM	3.0 µM	5.0 µM	10.0 µM
Mean	98.9	64.4	38.8	2.1	0.5	0.1
Std. Deviation	63.8	41.1	24.7	3.8	1.9	0.4
Std. Error	10.1	6.5	3.9	0.6	0.3	0.1
UCL	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Maximum	430.00	271.00	154.00	24.00	12.00	2.00

RESULTS:

Based on the data collected and statistical analysis calculations derived from ISO 14644-1, Drill 2, during testing at the One Source Environmental facility, meets the particulate requirements of a ISO Class 7 cleanroom at 0.5, 1.0 and 5.0 micrometer under operational conditions.



AIRBORNE PARTICLE COUNT STATISTICAL ANALYSIS

Customer: **Nemo Power Tools**

Test Date: 9/15/2016

Equipment ID: **Test Drill 2**

Operational Mode: Reverse Direction

Sample Location Identification	Date Time	Cumulative micron size particle concentration per cubic foot volume of air.							
		0.30	0.50	1.00	3.00	5.00	10.00	Temp.	Humidity
1	9/15/2016 11:35:23	77	41	25	3	1	0	78	39
1	9/15/2016 11:36:23	82	52	34	2	0	0	78	38
1	9/15/2016 11:37:23	113	66	35	1	0	0	78	38
1	9/15/2016 11:38:23	149	88	57	4	0	0	79	38
1	9/15/2016 11:39:23	71	45	25	2	0	0	79	38
1	9/15/2016 11:40:23	82	60	32	1	0	0	79	38
1	9/15/2016 11:41:23	58	34	23	1	0	0	79	38
1	9/15/2016 11:42:23	72	46	29	2	0	0	79	38
1	9/15/2016 11:43:23	91	61	33	0	0	0	79	38
1	9/15/2016 11:44:23	67	43	22	1	0	0	79	38
2	9/15/2016 11:45:48	79	48	25	2	0	0	79	38
2	9/15/2016 11:46:48	430	271	154	24	12	0	79	38
2	9/15/2016 11:47:48	121	74	37	1	0	0	79	37
2	9/15/2016 11:48:48	59	37	25	0	0	0	80	37
2	9/15/2016 11:49:48	110	82	39	0	0	0	79	37
2	9/15/2016 11:50:48	84	56	30	1	0	0	80	37
2	9/15/2016 11:51:48	74	53	32	0	0	0	80	37
2	9/15/2016 11:52:48	107	68	37	0	0	0	80	37
2	9/15/2016 11:53:48	117	77	55	3	1	0	80	37
2	9/15/2016 11:54:48	68	55	32	1	0	0	80	37
3	9/15/2016 11:56:22	145	97	58	5	0	0	80	37
3	9/15/2016 11:57:22	171	104	68	2	0	0	80	37
3	9/15/2016 11:58:22	156	107	73	5	2	2	80	37
3	9/15/2016 11:59:22	121	81	48	0	0	0	80	37
3	9/15/2016 12:00:22	160	122	85	3	1	1	80	37
3	9/15/2016 12:01:22	71	57	38	0	0	0	80	37
3	9/15/2016 12:02:22	0	0	0	0	0	0	80	36
3	9/15/2016 12:55:52	48	26	15	0	0	0	74	44
3	9/15/2016 12:56:52	48	24	12	0	0	0	75	44
3	9/15/2016 12:57:52	98	63	42	2	0	0	75	43
4	9/15/2016 12:59:34	64	39	25	1	0	0	75	43
4	9/15/2016 13:00:34	51	34	20	3	1	1	76	43
4	9/15/2016 13:01:34	61	39	23	1	0	0	76	42
4	9/15/2016 13:02:34	99	61	34	2	0	0	76	42
4	9/15/2016 13:03:34	99	63	40	4	0	0	76	42
4	9/15/2016 13:04:34	81	49	34	0	0	0	76	42
4	9/15/2016 13:05:34	102	69	39	1	0	0	76	42
4	9/15/2016 13:06:34	95	61	39	4	0	0	77	41
4	9/15/2016 13:07:34	90	60	36	0	0	0	77	41
4	9/15/2016 13:08:34	86	62	41	1	0	0	77	41
Average		98.9	64.4	38.8	2.1	0.5	0.1	78.2	39.0

Customer: Nemo Power Tools

Test Date: 9/15/2016

Equipment ID: Test Drill 3

Operational Mode: Forward Direction

Design Class

N/A

AIRBORNE PARTICULATE CLEANLINESS CLASSES

Class limits are given for each class name. The limits designate specific concentrations (particles per unit volume) of airborne particles with sizes equal to and larger than the particle sizes shown.

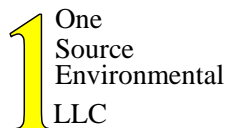
CLASS LIMITS FOR VOLUME UNITS (ft ³)						
	0.1 µM	0.2 µM	0.3 µM	0.5 µM	1.0 µM	5.0 µM
CLASS 1	0.28	0.07	N.A.	N.A.	N.A.	N.A.
CLASS 2	2.83	0.67	0.29	0.10	0.024	N.A.
CLASS 3	28.30	6.69	2.88	1.00	0.24	N.A.
CLASS 4	283.00	66.93	28.80	9.95	2.35	N.A.
CLASS 5	2,830.00	669.34	287.99	99.52	23.54	0.83
CLASS 6	28,300.00	6,693.36	2,879.88	995.24	235.39	8.28
CLASS 7	N.A.	N.A.	N.A.	9,952.42	2,353.89	82.78
CLASS 8	N.A.	N.A.	N.A.	99,524.23	23,538.91	827.81
CLASS 9	N.A.	N.A.	N.A.	995,242.30	235,389.15	8,278.06

*The class limits shown in Table I are defined for classification purposes only and do not necessarily represent the size distribution to be found in any particular situation.

Airborne Particulate Statistical Analysis						
	0.3 µM	0.5 µM	1.0 µM	3.0 µM	5.0 µM	10.0 µM
Mean	80.7	39.2	7.0	0.4	0.2	0.2
Std. Deviation	184.1	84.9	17.9	0.9	0.5	0.4
Std. Error	29.1	13.4	2.8	0.1	0.1	0.1
UCL	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Maximum	1,133.00	521.00	110.00	3.00	2.00	2.00

RESULTS:

Based on the data collected and statistical analysis calculations derived from ISO 14644-1, Drill 3, during testing at the One Source Environmental facility, meets the particulate requirements of a ISO Class 6 cleanroom at 0.3, 0.5, 1.0 and 5.0 micrometer under operational conditions.



AIRBORNE PARTICLE COUNT STATISTICAL ANALYSIS

Customer: Nemo Power Tools

Test Date: 9/15/2016

Equipment ID: Test Drill 3

Operational Mode: Forward Direction

Sample Location Identification	Date Time	Cumulative micron size particle concentration per cubic foot volume of air.							
		0.30	0.50	1.00	3.00	5.00	10.00	Temp.	Humidity
1	9/15/2016 13:59:33	0	0	0	0	0	0	77	41
1	9/15/2016 14:00:33	0	0	0	0	0	0	77	40
1	9/15/2016 14:01:33	0	0	0	0	0	0	78	40
1	9/15/2016 14:02:33	0	0	0	0	0	0	78	40
1	9/15/2016 14:03:33	0	0	0	0	0	0	78	39
1	9/15/2016 14:04:33	0	0	0	0	0	0	78	39
1	9/15/2016 14:05:33	1	1	0	0	0	0	78	39
1	9/15/2016 14:06:33	0	0	0	0	0	0	79	39
1	9/15/2016 14:07:33	12	11	7	1	0	0	79	39
1	9/15/2016 14:10:32	29	17	10	1	0	0	79	38
2	9/15/2016 14:12:00	78	47	24	3	2	2	79	38
2	9/15/2016 14:13:00	68	44	17	2	1	1	79	37
2	9/15/2016 14:14:00	86	58	12	0	0	0	79	37
2	9/15/2016 14:15:00	23	16	5	0	0	0	80	37
2	9/15/2016 14:16:00	26	14	4	0	0	0	80	37
2	9/15/2016 14:17:00	44	21	5	0	0	0	80	37
2	9/15/2016 14:18:00	1,133	521	110	3	2	1	80	37
2	9/15/2016 14:19:00	39	21	2	1	1	0	80	37
2	9/15/2016 14:20:00	14	7	0	0	0	0	80	37
2	9/15/2016 14:21:00	32	20	6	0	0	0	80	36
3	9/15/2016 14:23:08	0	0	0	0	0	0	81	36
3	9/15/2016 14:24:08	1	1	0	0	0	0	81	36
3	9/15/2016 14:25:08	0	0	0	0	0	0	80	36
3	9/15/2016 14:26:08	0	0	0	0	0	0	80	36
3	9/15/2016 14:27:08	0	0	0	0	0	0	80	36
3	9/15/2016 14:28:08	0	0	0	0	0	0	81	36
3	9/15/2016 14:29:08	0	0	0	0	0	0	81	36
3	9/15/2016 14:30:08	0	0	0	0	0	0	81	35
3	9/15/2016 14:31:08	1	0	0	0	0	0	81	35
3	9/15/2016 14:32:08	1	1	1	0	0	0	81	35
4	9/15/2016 14:46:30	208	111	9	0	0	0	82	34
4	9/15/2016 14:47:30	185	89	7	0	0	0	82	34
4	9/15/2016 14:48:30	172	86	10	1	1	1	82	34
4	9/15/2016 14:49:30	168	71	5	0	0	0	82	34
4	9/15/2016 14:50:30	165	85	1	0	0	0	82	34
4	9/15/2016 14:51:30	146	62	4	0	0	0	82	34
4	9/15/2016 14:52:30	161	66	4	1	0	0	82	34
4	9/15/2016 14:53:30	154	71	28	3	1	1	82	34
4	9/15/2016 14:54:30	118	56	3	0	0	0	82	34
4	9/15/2016 14:55:30	163	69	6	0	0	0	82	34
Average		80.7	39.2	7.0	0.4	0.2	0.2	80.1	36.5



AIRBORNE PARTICLE COUNT STATISTICAL ANALYSIS

Customer: Nemo Power Tools

Test Date: 9/15/2016

Equipment ID: Test Drill 3

Operational Mode: Reverse Direction

Design Class

N/A

AIRBORNE PARTICULATE CLEANLINESS CLASSES

Class limits are given for each class name. The limits designate specific concentrations (particles per unit volume) of airborne particles with sizes equal to and larger than the particle sizes shown.

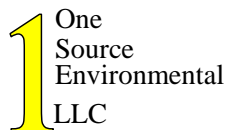
CLASS LIMITS FOR VOLUME UNITS (ft ³)						
	0.1 µM	0.2 µM	0.3 µM	0.5 µM	1.0 µM	5.0 µM
CLASS 1	0.28	0.07	N.A.	N.A.	N.A.	N.A.
CLASS 2	2.83	0.67	0.29	0.10	0.024	N.A.
CLASS 3	28.30	6.69	2.88	1.00	0.24	N.A.
CLASS 4	283.00	66.93	28.80	9.95	2.35	N.A.
CLASS 5	2,830.00	669.34	287.99	99.52	23.54	0.83
CLASS 6	28,300.00	6,693.36	2,879.88	995.24	235.39	8.28
CLASS 7	N.A.	N.A.	N.A.	9,952.42	2,353.89	82.78
CLASS 8	N.A.	N.A.	N.A.	99,524.23	23,538.91	827.81
CLASS 9	N.A.	N.A.	N.A.	995,242.30	235,389.15	8,278.06

*The class limits shown in Table I are defined for classification purposes only and do not necessarily represent the size distribution to be found in any particular situation.

Airborne Particulate Statistical Analysis						
	0.3 µM	0.5 µM	1.0 µM	3.0 µM	5.0 µM	10.0 µM
Mean	136.0	97.3	58.6	1.6	0.2	0.1
Std. Deviation	63.5	45.8	27.4	1.5	0.4	0.3
Std. Error	10.0	7.2	4.3	0.2	0.1	0.0
UCL	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Maximum	297.00	201.00	105.00	5.00	1.00	1.00

RESULTS:

Based on the data collected and statistical analysis calculations derived from ISO 14644-1, Drill 3, during testing at the One Source Environmental facility, meets the particulate requirements of a ISO Class 6 cleanroom at 0.3, 0.5, 1.0 and 5.0 micrometer under operational conditions.



AIRBORNE PARTICLE COUNT STATISTICAL ANALYSIS

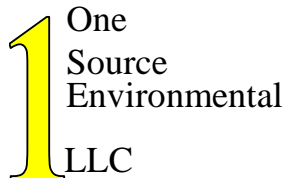
Customer: **Nemo Power Tools**

Test Date: 9/15/2016

Equipment ID: **Test Drill 3**

Operational Mode: Reverse Direction

Sample Location Identification	Date Time	Cumulative micron size particle concentration per cubic foot volume of air.							
		0.30	0.50	1.00	3.00	5.00	10.00	Temp.	Humidity
1	9/15/2016 15:26:33	60	47	26	0	0	0	80	37
1	9/15/2016 15:27:33	48	31	15	2	1	1	80	37
1	9/15/2016 15:28:33	50	36	22	0	0	0	80	36
1	9/15/2016 15:29:33	56	40	26	1	0	0	81	36
1	9/15/2016 15:30:33	46	36	27	0	0	0	80	36
1	9/15/2016 15:31:33	53	43	27	0	0	0	81	36
1	9/15/2016 15:32:33	108	69	39	1	0	0	81	36
1	9/15/2016 15:33:33	78	57	39	1	1	0	81	35
1	9/15/2016 15:34:33	93	56	34	0	0	0	81	35
1	9/15/2016 15:35:33	85	49	28	0	0	0	81	35
2	9/15/2016 15:37:02	148	94	52	1	0	0	81	35
2	9/15/2016 15:38:02	183	128	75	3	0	0	81	35
2	9/15/2016 15:39:02	168	115	60	2	0	0	81	35
2	9/15/2016 15:52:26	99	67	44	4	0	0	78	39
2	9/15/2016 15:53:26	87	58	34	1	0	0	78	38
2	9/15/2016 15:54:26	103	73	42	2	0	0	78	38
2	9/15/2016 15:55:26	78	48	31	2	1	1	79	38
2	9/15/2016 15:56:26	55	38	22	0	0	0	79	38
2	9/15/2016 15:59:02	155	119	80	0	0	0	79	38
2	9/15/2016 16:00:02	142	100	57	3	1	1	79	37
3	9/15/2016 16:01:28	228	162	104	3	1	1	80	37
3	9/15/2016 16:02:28	204	149	92	3	0	0	80	37
3	9/15/2016 16:03:28	260	167	93	1	0	0	80	37
3	9/15/2016 16:04:28	218	164	95	1	0	0	80	36
3	9/15/2016 16:05:28	213	166	97	4	0	0	80	36
3	9/15/2016 16:06:28	190	141	88	2	0	0	80	36
3	9/15/2016 16:07:28	216	158	104	4	1	0	80	36
3	9/15/2016 16:08:28	198	152	105	3	0	0	80	36
3	9/15/2016 16:09:28	199	145	99	0	0	0	80	36
3	9/15/2016 16:10:28	136	103	63	0	0	0	80	36
4	9/15/2016 16:12:59	129	88	56	1	0	0	80	36
4	9/15/2016 16:13:59	150	111	67	1	0	0	80	36
4	9/15/2016 16:14:59	297	201	95	3	0	0	80	36
4	9/15/2016 16:15:59	137	109	60	1	1	0	81	35
4	9/15/2016 16:16:59	171	111	65	0	0	0	81	35
4	9/15/2016 16:17:59	123	94	65	3	0	0	81	35
4	9/15/2016 16:18:59	121	94	54	5	0	0	81	35
4	9/15/2016 16:19:59	127	98	60	0	0	0	81	35
4	9/15/2016 16:20:59	94	72	46	4	0	0	81	34
4	9/15/2016 16:21:59	134	101	57	0	0	0	81	34
Average		136.0	97.3	58.6	1.6	0.2	0.1	80.1	36.1



AIRBORNE PARTICLE COUNT STATISTICAL ANALYSIS

Customer: Nemo Power Tools

Test Date:
8/25/2016 Thru - 9/15/2016

Equipment ID: Drill 1, 2, 3

Operational Mode:

Forward & Reverse

Design Class

N/A

AIRBORNE PARTICULATE CLEANLINESS CLASSES

Class limits are given for each class name. The limits designate specific concentrations (particles per unit volume) of airborne particles with sizes equal to and larger than the particle sizes shown.

CLASS LIMITS FOR VOLUME UNITS (ft ³)						
	0.1 µM	0.2 µM	0.3 µM	0.5 µM	1.0 µM	5.0 µM
CLASS 1	0.28	0.07	N.A.	N.A.	N.A.	N.A.
CLASS 2	2.83	0.67	0.29	0.10	0.024	N.A.
CLASS 3	28.30	6.69	2.88	1.00	0.24	N.A.
CLASS 4	283.00	66.93	28.80	9.95	2.35	N.A.
CLASS 5	2,830.00	669.34	287.99	99.52	23.54	0.83
CLASS 6	28,300.00	6,693.36	2,879.88	995.24	235.39	8.28
CLASS 7	N.A.	N.A.	N.A.	9,952.42	2,353.89	82.78
CLASS 8	N.A.	N.A.	N.A.	99,524.23	23,538.91	827.81
CLASS 9	N.A.	N.A.	N.A.	995,242.30	235,389.15	8,278.06

*The class limits shown in Table I are defined for classification purposes only and do not necessarily represent the size distribution to be found in any particular situation.

Airborne Particulate Statistical Analysis						
	0.3 µM	0.5 µM	1.0 µM	3.0 µM	5.0 µM	10.0 µM
Mean	147.9	83.9	37.3	1.8	0.7	0.4
Std. Deviation	374.7	191.8	78.6	8.2	5.0	3.3
Std. Error	24.2	12.4	5.1	0.5	0.3	0.2
UCL	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Maximum	2,471.00	1,207.00	780.00	117.00	73.00	48.00

RESULTS:

Based on the data collected and statistical analysis calculations derived from ISO 14644-1, all drills combined, during testing at the One Source Environmental facility, meets the particulate requirements of a ISO Class 7 cleanroom at 0.5, 1.0 and 5.0 micrometer under operational conditions.

3	9/15/2016 09:46:30	0	0	0	0	0	0	74	45
3	9/15/2016 09:47:30	0	0	0	0	0	0	74	44
3	9/15/2016 09:48:30	0	0	0	0	0	0	74	44
3	9/15/2016 09:49:30	0	0	0	0	0	0	75	44
3	9/15/2016 09:50:30	0	0	0	0	0	0	75	44
3	9/15/2016 09:51:30	5	5	5	2	1	0	75	44
3	9/15/2016 09:52:30	0	0	0	0	0	0	75	44
3	9/15/2016 09:53:30	0	0	0	0	0	0	75	43
3	9/15/2016 09:54:30	0	0	0	0	0	0	75	43
3	9/15/2016 09:55:30	0	0	0	0	0	0	75	43
4	9/15/2016 09:56:48	0	0	0	0	0	0	76	43
4	9/15/2016 09:57:48	0	0	0	0	0	0	76	43
4	9/15/2016 09:58:48	0	0	0	0	0	0	75	42
4	9/15/2016 09:59:48	0	0	0	0	0	0	76	42
4	9/15/2016 10:00:48	0	0	0	0	0	0	76	42
4	9/15/2016 10:01:48	0	0	0	0	0	0	76	42
4	9/15/2016 10:02:48	0	0	0	0	0	0	76	42
4	9/15/2016 10:03:48	0	0	0	0	0	0	76	42
4	9/15/2016 10:04:48	0	0	0	0	0	0	77	41
4	9/15/2016 10:05:48	0	0	0	0	0	0	77	41
1	9/15/2016 10:37:10	49	15	8	0	0	0	75	44
1	9/15/2016 10:38:10	14	3	1	0	0	0	75	44
1	9/15/2016 10:39:10	27	9	3	0	0	0	75	43
1	9/15/2016 10:40:10	38	15	5	0	0	0	75	43
1	9/15/2016 10:41:10	33	15	7	0	0	0	75	43
1	9/15/2016 10:42:10	45	19	8	0	0	0	75	42
1	9/15/2016 10:43:10	23	12	5	0	0	0	76	42
1	9/15/2016 10:44:10	64	26	18	6	3	2	76	42
1	9/15/2016 10:45:10	36	16	3	0	0	0	76	42
1	9/15/2016 10:46:10	58	25	10	1	0	0	76	42
2	9/15/2016 10:49:03	1,721	810	201	7	2	1	77	41
2	9/15/2016 10:50:03	776	376	100	4	0	0	77	41
2	9/15/2016 10:51:03	1,828	819	225	5	1	0	77	41
2	9/15/2016 10:52:03	2,471	1,207	377	10	1	0	77	41
2	9/15/2016 10:53:03	1,151	574	179	1	0	0	78	40
2	9/15/2016 10:54:03	2,007	907	246	4	2	0	77	40
2	9/15/2016 10:55:03	1,562	817	288	8	0	0	77	40
2	9/15/2016 10:56:03	1,664	908	328	6	0	0	77	40
2	9/15/2016 10:57:03	1,255	662	231	0	0	0	78	39
2	9/15/2016 10:58:03	2,010	944	240	2	1	1	78	39
3	9/15/2016 10:59:52	27	13	6	0	0	0	78	39
3	9/15/2016 11:00:52	30	17	8	0	0	0	78	39
3	9/15/2016 11:01:52	5	3	3	1	1	0	78	38
3	9/15/2016 11:02:52	3	2	2	0	0	0	78	38
3	9/15/2016 11:03:52	7	4	4	0	0	0	78	38
3	9/15/2016 11:04:52	2,071	1,045	331	2	0	0	79	38
3	9/15/2016 11:05:52	48	22	11	0	0	0	79	38
3	9/15/2016 11:06:52	7	6	5	1	0	0	78	37
3	9/15/2016 11:07:52	6	1	1	1	0	0	79	37
3	9/15/2016 11:08:52	6	3	3	0	0	0	79	37
4	9/15/2016 11:10:04	201	126	65	2	0	0	79	37
4	9/15/2016 11:11:04	176	106	57	0	0	0	79	37
4	9/15/2016 11:12:04	153	90	57	1	0	0	79	37
4	9/15/2016 11:13:04	199	139	82	2	0	0	79	37
4	9/15/2016 11:14:04	157	98	57	2	0	0	79	37
4	9/15/2016 11:15:04	218	125	72	3	0	0	79	37
4	9/15/2016 11:16:04	183	121	74	4	0	0	79	37
4	9/15/2016 11:17:04	166	120	61	0	0	0	80	37
4	9/15/2016 11:18:04	219	125	78	3	0	0	79	37
4	9/15/2016 11:19:04	208	129	72	2	0	0	80	36
1	9/15/2016 11:35:23	77	41	25	3	1	0	78	39
1	9/15/2016 11:36:23	82	52	34	2	0	0	78	38
1	9/15/2016 11:37:23	113	66	35	1	0	0	78	38
1	9/15/2016 11:38:23	149	88	57	4	0	0	79	38
1	9/15/2016 11:39:23	71	45	25	2	0	0	79	38
1	9/15/2016 11:40:23	82	60	32	1	0	0	79	38
1	9/15/2016 11:41:23	58	34	23	1	0	0	79	38
1	9/15/2016 11:42:23	72	46	29	2	0	0	79	38
1	9/15/2016 11:43:23	91	61	33	0	0	0	79	38
1	9/15/2016 11:44:23	67	43	22	1	0	0	79	38
2	9/15/2016 11:45:48	79	48	25	2	0	0	79	38
2	9/15/2016 11:46:48	430	271	154	24	12	0	79	38

2	9/15/2016 11:47:48	121	74	37	1	0	0	79	37
2	9/15/2016 11:48:48	59	37	25	0	0	0	80	37
2	9/15/2016 11:49:48	110	82	39	0	0	0	79	37
2	9/15/2016 11:50:48	84	56	30	1	0	0	80	37
2	9/15/2016 11:51:48	74	53	32	0	0	0	80	37
2	9/15/2016 11:52:48	107	68	37	0	0	0	80	37
2	9/15/2016 11:53:48	117	77	55	3	1	0	80	37
2	9/15/2016 11:54:48	68	55	32	1	0	0	80	37
3	9/15/2016 11:56:22	145	97	58	5	0	0	80	37
3	9/15/2016 11:57:22	171	104	68	2	0	0	80	37
3	9/15/2016 11:58:22	156	107	73	5	2	2	80	37
3	9/15/2016 11:59:22	121	81	48	0	0	0	80	37
3	9/15/2016 12:00:22	160	122	85	3	1	1	80	37
3	9/15/2016 12:01:22	71	57	38	0	0	0	80	37
3	9/15/2016 12:02:22	0	0	0	0	0	0	80	36
3	9/15/2016 12:55:52	48	26	15	0	0	0	74	44
3	9/15/2016 12:56:52	48	24	12	0	0	0	75	44
3	9/15/2016 12:57:52	98	63	42	2	0	0	75	43
4	9/15/2016 12:59:34	64	39	25	1	0	0	75	43
4	9/15/2016 13:00:34	51	34	20	3	1	1	76	43
4	9/15/2016 13:01:34	61	39	23	1	0	0	76	42
4	9/15/2016 13:02:34	99	61	34	2	0	0	76	42
4	9/15/2016 13:03:34	99	63	40	4	0	0	76	42
4	9/15/2016 13:04:34	81	49	34	0	0	0	76	42
4	9/15/2016 13:05:34	102	69	39	1	0	0	76	42
4	9/15/2016 13:06:34	95	61	39	4	0	0	77	41
4	9/15/2016 13:07:34	90	60	36	0	0	0	77	41
4	9/15/2016 13:08:34	86	62	41	1	0	0	77	41
1	9/15/2016 13:59:33	0	0	0	0	0	0	77	41
1	9/15/2016 14:00:33	0	0	0	0	0	0	77	40
1	9/15/2016 14:01:33	0	0	0	0	0	0	78	40
1	9/15/2016 14:02:33	0	0	0	0	0	0	78	40
1	9/15/2016 14:03:33	0	0	0	0	0	0	78	39
1	9/15/2016 14:04:33	0	0	0	0	0	0	78	39
1	9/15/2016 14:05:33	1	1	0	0	0	0	78	39
1	9/15/2016 14:06:33	0	0	0	0	0	0	79	39
1	9/15/2016 14:07:33	12	11	7	1	0	0	79	39
1	9/15/2016 14:10:32	29	17	10	1	0	0	79	38
2	9/15/2016 14:12:00	78	47	24	3	2	2	79	38
2	9/15/2016 14:13:00	68	44	17	2	1	1	79	37
2	9/15/2016 14:14:00	86	58	12	0	0	0	79	37
2	9/15/2016 14:15:00	23	16	5	0	0	0	80	37
2	9/15/2016 14:16:00	26	14	4	0	0	0	80	37
2	9/15/2016 14:17:00	44	21	5	0	0	0	80	37
2	9/15/2016 14:18:00	1,133	521	110	3	2	1	80	37
2	9/15/2016 14:19:00	39	21	2	1	1	0	80	37
2	9/15/2016 14:20:00	14	7	0	0	0	0	80	37
2	9/15/2016 14:21:00	32	20	6	0	0	0	80	36
3	9/15/2016 14:23:08	0	0	0	0	0	0	81	36
3	9/15/2016 14:24:08	1	1	0	0	0	0	81	36
3	9/15/2016 14:25:08	0	0	0	0	0	0	80	36
3	9/15/2016 14:26:08	0	0	0	0	0	0	80	36
3	9/15/2016 14:27:08	0	0	0	0	0	0	80	36
3	9/15/2016 14:28:08	0	0	0	0	0	0	81	36
3	9/15/2016 14:29:08	0	0	0	0	0	0	81	36
3	9/15/2016 14:30:08	0	0	0	0	0	0	81	35
3	9/15/2016 14:31:08	1	0	0	0	0	0	81	35
3	9/15/2016 14:32:08	1	1	1	0	0	0	81	35
4	9/15/2016 14:46:30	208	111	9	0	0	0	82	34
4	9/15/2016 14:47:30	185	89	7	0	0	0	82	34
4	9/15/2016 14:48:30	172	86	10	1	1	1	82	34
4	9/15/2016 14:49:30	168	71	5	0	0	0	82	34
4	9/15/2016 14:50:30	165	85	1	0	0	0	82	34
4	9/15/2016 14:51:30	146	62	4	0	0	0	82	34
4	9/15/2016 14:52:30	161	66	4	1	0	0	82	34
4	9/15/2016 14:53:30	154	71	28	3	1	1	82	34
4	9/15/2016 14:54:30	118	56	3	0	0	0	82	34
4	9/15/2016 14:55:30	163	69	6	0	0	0	82	34
1	9/15/2016 15:26:33	60	47	26	0	0	0	80	37
1	9/15/2016 15:27:33	48	31	15	2	1	1	80	37
1	9/15/2016 15:28:33	50	36	22	0	0	0	80	36
1	9/15/2016 15:29:33	56	40	26	1	0	0	81	36

1	9/15/2016 15:30:33	46	36	27	0	0	0	80	36
1	9/15/2016 15:31:33	53	43	27	0	0	0	81	36
1	9/15/2016 15:32:33	108	69	39	1	0	0	81	36
1	9/15/2016 15:33:33	78	57	39	1	1	0	81	35
1	9/15/2016 15:34:33	93	56	34	0	0	0	81	35
1	9/15/2016 15:35:33	85	49	28	0	0	0	81	35
2	9/15/2016 15:37:02	148	94	52	1	0	0	81	35
2	9/15/2016 15:38:02	183	128	75	3	0	0	81	35
2	9/15/2016 15:39:02	168	115	60	2	0	0	81	35
2	9/15/2016 15:52:26	99	67	44	4	0	0	78	39
2	9/15/2016 15:53:26	87	58	34	1	0	0	78	38
2	9/15/2016 15:54:26	103	73	42	2	0	0	78	38
2	9/15/2016 15:55:26	78	48	31	2	1	1	79	38
2	9/15/2016 15:56:26	55	38	22	0	0	0	79	38
2	9/15/2016 15:59:02	155	119	80	0	0	0	79	38
2	9/15/2016 16:00:02	142	100	57	3	1	1	79	37
3	9/15/2016 16:01:28	228	162	104	3	1	1	80	37
3	9/15/2016 16:02:28	204	149	92	3	0	0	80	37
3	9/15/2016 16:03:28	260	167	93	1	0	0	80	37
3	9/15/2016 16:04:28	218	164	95	1	0	0	80	36
3	9/15/2016 16:05:28	213	166	97	4	0	0	80	36
3	9/15/2016 16:06:28	190	141	88	2	0	0	80	36
3	9/15/2016 16:07:28	216	158	104	4	1	0	80	36
3	9/15/2016 16:08:28	198	152	105	3	0	0	80	36
3	9/15/2016 16:09:28	199	145	99	0	0	0	80	36
3	9/15/2016 16:10:28	136	103	63	0	0	0	80	36
4	9/15/2016 16:12:59	129	88	56	1	0	0	80	36
4	9/15/2016 16:13:59	150	111	67	1	0	0	80	36
4	9/15/2016 16:14:59	297	201	95	3	0	0	80	36
4	9/15/2016 16:15:59	137	109	60	1	1	0	81	35
4	9/15/2016 16:16:59	171	111	65	0	0	0	81	35
4	9/15/2016 16:17:59	123	94	65	3	0	0	81	35
4	9/15/2016 16:18:59	121	94	54	5	0	0	81	35
4	9/15/2016 16:19:59	127	98	60	0	0	0	81	35
4	9/15/2016 16:20:59	94	72	46	4	0	0	81	34
4	9/15/2016 16:21:59	134	101	57	0	0	0	81	34
Average		147.9	83.9	37.3	1.8	0.7	0.4	77.2	40.2

Section 3.	Calibration Certificates
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Calibration Certificates

Certificate of Calibration

RMA#: US-29880	Date Calibrated: 3/4/2015
Model#: SOLAIR 3100	Calibration Due: 3/4/2016
Serial Number 140304011	Sensor Block ID: 140304-008

Equipment Description: Laser Particle Counter

The instrument conforms to the specified tolerances for each listed channel size. The channel size calibration has been accomplished by methods defined in the applicable sections of both JIS B 9921 and ISO 21501-4:2007(E). The accuracy of the standards and equipment used in the calibration are traceable to the National Institute of Standards and Technology or have been derived from acceptable values of natural and physical constants. A record of all work performed is maintained by Lighthouse Worldwide Solutions. All work performed is in accordance with Lighthouse Worldwide Solutions, Quality Manual P/N 714252800-1. Reproduction of this certificate and accompanying documentation is prohibited without the expressed written permission of Lighthouse Worldwide Solutions.

Channel 1: Accuracy Peak Size \pm 20%
Channel 2 and above: Accuracy Peak Size \pm 10%

Calibration was performed under the following controlled conditions

Temperature of: **70.0 °F** Relative Humidity of: **32.0 %** Flow Rate **1.0 CFM**

Test Equipment:

Flow Meter: 122404	Calibration Due Date: 5/29/2015
DMM: 11740639	Calibration Due Date: 10/15/2015
MCA: 576	Calibration Due Date: 7/15/2015

Spheres: Nominal Size	Lot Number	Channel	Threshold Voltages: in Millivolts
0.30	41699	1	59
0.50	41548	2	586
1.00	41321	3	1488
3.00	41304	4	3392
5.00	43740	5	3787
10.00	43497	6	4455

Signed  Date: 3/4/2015
Frank Foti, Jr.

AIRDATA MULTIMETER CERTIFICATE OF RECALIBRATION

Customer ID: 014187 S/N: M00310
 Customer: ONE SOURCE ENVIRONMENTAL TESTING SERVICE City: COLCHESTER State: VT
 As-Received Model #: ADM-870 Converted to Model #: _____ Order #: R153622
 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: 28 Dated: 07/31/14

Calibration Technician(s): a. Josselyn D. Babb Calibration Date: 11/13/2015
 Calibration Approved by: L. Laubman Title: Cal Mgr Date: 11/16/2015

As-Received Test performed after minor repair: Yes No

AS-Received By ag
 Date 11/12/15 Rh 23 %
 Ambient Temperature 74 °F
 Barometric Pressure 28.58 in Hg
 All within spec YES NO NA

FINAL Test By DB
 Date 11/13/15 Rh 33 %
 Ambient Temperature 76 °F
 Barometric Pressure 28.45 in Hg
 All within spec YES NO

Test By _____
 Date _____ Rh _____ %
 Ambient Temperature X °F
 Barometric Pressure N in Hg
 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 #12-R S/N: 43166/44731 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #04-R S/N: 41743/42453 As-Rcvd <input checked="" type="checkbox"/> Test 2 Test 3	Pressure Standard: Heise #14-R S/N: 43412/45043 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #06-R S/N: 41742/42452 As-Rcvd Test 2 Test 3	Pressure Standard: Heise #16-R S/N: 43413/45044 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #08-R S/N: 42186/43328 As-Rcvd Test 2 Test 3	Pressure Standard: Heise #18-R S/N: 44581/46845 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #10-R S/N: 42203/43352 As-Rcvd Test 2 Test 3	Pressure Standard: Heise #20-R S/N: 44582/46847 <input checked="" type="checkbox"/> As-Rcvd Test 2 Test 3

Approx Set Pt	Standard	Test Meter	% Diff	Standard	Test Meter	% Diff	Standard	Test Meter	% Diff
14.0	13.80	13.8	0	14.10	14.0	-0.71			
28.4	28.58	28.5	-0.28	28.45	28.4	-0.18			
40.0	40.15	40.1	-0.12	40.53	40.4	-0.32			

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 #11-L S/N: 43165/44551 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #01-R S/N: 41739/42446 As-Rcvd Test 2 Test 3	Pressure Standard: Heise #11-R S/N: 43165/44730 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #02-L S/N: 41741/42454 As-Rcvd Test 2 Test 3	Pressure Standard: Heise #12-L S/N: 43166/44732 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #03-L S/N: 41738/42448 As-Rcvd <input checked="" type="checkbox"/> Test 2 Test 3	Pressure Standard: Heise #13-L S/N: 43415/45041 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #03-R S/N: 41738/42445 As-Rcvd <input checked="" type="checkbox"/> Test 2 Test 3	Pressure Standard: Heise #13-R S/N: 43415/45039 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #04-L S/N: 41743/42456 As-Rcvd <input checked="" type="checkbox"/> Test 2 Test 3	Pressure Standard: Heise #14-L S/N: 43412/45045 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #05-L S/N: 41740/42450 As-Rcvd Test 2 Test 3	Pressure Standard: Heise #15-L S/N: 43416/45042 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #05-R S/N: 41740/42447 As-Rcvd Test 2 Test 3	Pressure Standard: Heise #15-R S/N: 43416/45040 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #06-L S/N: 41742/42455 As-Rcvd Test 2 Test 3	Pressure Standard: Heise #16-L S/N: 43413/45046 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #07-L S/N: 42185/42186 As-Rcvd Test 2 Test 3	Pressure Standard: Heise #17-L S/N: 44579/46842 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #07-R S/N: 42185/43326 As-Rcvd Test 2 Test 3	Pressure Standard: Heise #17-R S/N: 44579/46841 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #08-L S/N: 42186/43329 As-Rcvd Test 2 Test 3	Pressure Standard: Heise #18-L S/N: 44581/46846 As-Rcvd Test 2 Test 3
Pressure Standard: Heise #09-L S/N: 42202/43351 As-Rcvd Test 2 Test 3	Pressure Standard: Heise #19-L S/N: 44580/46844 <input checked="" type="checkbox"/> As-Rcvd Test 2 Test 3
Pressure Standard: Heise #09-R S/N: 42202/43350 As-Rcvd Test 2 Test 3	Pressure Standard: Heise #19-R S/N: 44580/46843 <input checked="" type="checkbox"/> As-Rcvd Test 2 Test 3
Pressure Standard: Heise #10-L S/N: 42203/43353 As-Rcvd Test 2 Test 3	Pressure Standard: Heise #20-L S/N: 44582/46848 <input checked="" type="checkbox"/> As-Rcvd Test 2 Test 3

Approx Set Pt	Standard	Test Meter	% Diff	Standard	Test Meter	% Diff	Standard	Test Meter	% Diff
.0500	.0505	.0506	.20	.0502	.0503	.20			
.1250	.1257	.1261	.32	.1257	.1260	.24			
.2250	.2264	.2269	.22	.2262	.2265	.13			
.2700	.2701	.2708	.26	.2712	.2725	.48			
2.000	2.000	2.009	.45	2.020	2.027	.35			
3.600	3.604	3.618	.39	3.612	3.615	.08			
4.400	4.400	4.432	.73	4.420	4.450	.68			
27.00	27.06	27.22	.59	27.04	27.17	.48			
50.00	50.00	50.19	.38	50.03	50.14	.22			
Overrange	NA	✓	NA	NA	✓	NA	NA		NA

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AIRDATA MULTIMETER CERTIFICATE OF RECALIBRATION

S/N: m00310
Order #: R153622

LOW VELOCITY CONFIRMATION (FPM)

TEST METER TOLERANCE = $\pm 3.0\% \pm 7$ 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	112	113	1	102	102	0	N/A		
500	501	502	1	509	508	-1			

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 = $\pm 0.2^\circ$ 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	35.7	.1	35.7	.1	N/A	
95.00	95.1	.1	95.1	.1		
154.40	154.5	.1	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 _____

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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Equipment Being Tested: MultiTemp and TemProbes _____ TemProbe(s)

AS-RECEIVED TEMPERATURE TEST (° F)
 MULTITEMP TOLERANCE (MULTITEMP AND TEMPROBES TESTED AS A UNIT) = ± 0.5° F
 TEMPROBE TOLERANCE = ± 0.3° F

Thermometer #1 S/N 8A089 / Thermistor S/N A410660 Set Point: 35° F 95° F 155° F
 Thermometer #2 S/N 8B104 / Thermistor S/N 871507 Set Point: 35° F 95° F 155° F
 Thermometer #5 S/N B11780 / Thermistor S/N B10505 Set Point: 35° F 95° F 155° F
 Thermometer #6 S/N B11782 / Thermistor S/N B10509 Set Point: 35° F 95° F 155° F
 Thermometer #7 S/N B49938 / Thermistor S/N B482202 Set Point: 35° F 95° F 155° F
 Temperature Standard AirData Multimeter S/N M00136 Set Point: 35° F 95° F 155° F
 Temperature Standard AirData Multimeter S/N M96100 Set Point: 35° F 95° F 155° F

Test By: A. Goulet Date: 11/12/2015 Rh: 23 % Ambient Temperature: 74 °F Barometric Pressure: 28.58 in Hg

Approx Set Point	Temp Standard	Test Probe #1 ADT- <u>442</u>	Test Probe #2 ADT- _____	Test Probe #3 ADT- _____	Test Probe #4 ADT- <u>NA</u>	Test Probe #5 ADT- _____	Test Probe #6 ADT- _____	Test Probe #7 ADT- _____	Test Probe #8 ADT- _____
35°	35.0	34.9							
95°	95.0	94.9			<u>NA</u>				
155°	155.0	155.0							

A check in the box to the right of a TemProbe reading indicates that the reading is Out Of Specification.

If all As-Received readings were within specification, and no repairs were performed, no Final test is required.

NOTES: _____

FINAL TEMPERATURE TEST (° F)
 MULTITEMP TOLERANCE (MULTITEMP AND TEMPROBES TESTED AS A UNIT) = ± 0.5° F
 TEMPROBE TOLERANCE = ± 0.3° F

Thermometer #1 S/N 8A089 / Thermistor S/N A410660 Set Point: 35° F 95° F 155° F
 Thermometer #2 S/N 8B104 / Thermistor S/N 871507 Set Point: 35° F 95° F 155° F
 Thermometer #5 S/N B11780 / Thermistor S/N B10505 Set Point: 35° F 95° F 155° F
 Thermometer #6 S/N B11782 / Thermistor S/N B10509 Set Point: 35° F 95° F 155° F
 Thermometer #7 S/N B49938 / Thermistor S/N B482202 Set Point: 35° F 95° F 155° F
 Temperature Standard AirData Multimeter S/N M00136 Set Point: 35° F 95° F 155° F
 Temperature Standard AirData Multimeter S/N M96100 Set Point: 35° F 95° F 155° F

Test By: _____ Date: _____ Rh: 44 % Ambient Temperature: _____ °F Barometric Pressure: _____ in Hg

Approx Set Point	Temp Standard	Test Probe #1 ADT- _____	Test Probe #2 ADT- _____	Test Probe #3 ADT- <u>NA</u>	Test Probe #4 ADT- _____	Test Probe #5 ADT- _____	Test Probe #6 ADT- _____	Test Probe #7 ADT- _____	Test Probe #8 ADT- _____
35°									
95°				<u>NA</u>					
155°									

NOTES: _____

Calibration standards used by Shortridge Instruments, Inc. are traceable to NIST (National Institute of Standards and Technology). Calibration is performed in accordance with 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. This report shall not be reproduced, except in full, without the written approval of Shortridge Instruments, Inc. Results relate only to the item calibrated. Limitations on use: See Shortridge Instruments, Inc. Instruction Manual for the use of AirData Multimeters.

The enclosed ADM or HDM Calibration Standards 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.

Calibration Approved by: J. Laubner Title: Cal Mgr Date: 11/12/2015

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Shortridge Instruments, Inc. AirData Multimeter Calibration Equipment

Order Number: R153622 Serial Number: m00310 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: 11/11/14	Due Date: 11/2015
ADM #06-R	S/N: 41742/42452	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 08/19/15	Due Date: 08/2016
ADM #08-R	S/N: 42186/43328	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 03/10/15	Due Date: 03/2016
ADM #10-R	S/N: 42203/43352	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 01/15/15	Due Date: 01/2016
ADM #12-R	S/N: 43166/44731	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 07/14/15	Due Date: 07/2016
ADM #14-R	S/N: 43412/45043	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 09/10/15	Due Date: 09/2016
ADM #16-R	S/N: 43413/45044	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 02/13/15	Due Date: 02/2016
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: 11/10/14	Due Date: 11/2015
ADM #03-R	S/N: 41738/42445	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 11/10/14	Due Date: 11/2015
ADM #04-L	S/N: 41743/42456	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 11/12/14	Due Date: 11/2015
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: 08/21/15	Due Date: 08/2016
ADM #07-L	S/N: 42185/42186	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 03/13/15	Due Date: 03/2016
ADM #07-R	S/N: 42185/43326	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 03/13/15	Due Date: 03/2016
ADM #08-L	S/N: 42186/43329	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 03/13/15	Due Date: 03/2016
ADM #09-L	S/N: 42202/43351	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 01/28/15	Due Date: 01/2016
ADM #09-R	S/N: 42202/43350	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 01/28/15	Due Date: 01/2016
ADM #10-L	S/N: 42203/43353	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 01/28/15	Due Date: 01/2016
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: 43166/44732	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 07/17/15	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: 09/16/15	Due Date: 09/2016
ADM #15-L	S/N: 43416/45042	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 02/20/15	Due Date: 02/2016
ADM #15-R	S/N: 43416/45040	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 02/20/15	Due Date: 02/2016
ADM #16-L	S/N: 43413/45046	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 02/20/15	Due Date: 02/2016
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: 12/09/14	Due Date: 12/2015
Vel Eqv Transfer Standard S/N: M02803	Model ADM-870C	Mfgd & Calibrated by Shortridge Instruments, Inc.	Calibration Date: 01/14/15	Due Date: 01/2016
Vel Eqv Transfer Standard S/N: M02903	Model ADM-870C	Mfgd & Calibrated by Shortridge Instruments, Inc.	Calibration Date: 12/09/14	Due Date: 12/2015
Vel Eqv Transfer Standard S/N: M10839	Model ADM-870C	Mfgd & Calibrated by Shortridge Instruments, Inc.	Calibration Date: 12/09/14	Due Date: 12/2015
Vel Eqv Transfer Standard S/N: M10840	Model ADM-870C	Mfgd & Calibrated by Shortridge Instruments, Inc.	Calibration Date: 12/09/14	Due Date: 12/2015
Vel Eqv Transfer Standard S/N: M10897	Model ADM-870C	Mfg'd & Calibrated by Shortridge Instruments, Inc.	Calibration Date: 01/14/15	Due Date: 01/2016
Vel Eqv Transfer Standard S/N: M10901	Model ADM-870C	Mfg'd & Calibrated by Shortridge Instruments, Inc.	Calibration Date: 12/09/14	Due Date: 12/2015
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 $\pm 1.5\% \pm 3.5$ 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: 03/08/12	Due Date: 03/2016
RTD Simulator S/N: 250	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 03/08/12	Due Date: 03/2016
RTD Simulator S/N: 253	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 03/08/12	Due Date: 03/2016
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: 12/19/11	Due Date: 12/2015
RTD Simulator S/N: 293	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 12/19/11	Due Date: 12/2015
RTD Simulator S/N: 294	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 12/19/11	Due Date: 12/2015
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: 11/07/13	Due Date: 11/2015
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: 03/20/15	Due Date: 03/2016
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				

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Shortridge Instruments, Inc.
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Shortridge Instruments, Inc. AirData Multimeter Calibration Equipment

Order Number: R153622 Serial Number: m00310 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: 11/11/14	Due Date: 11/2015
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: 03/10/15	Due Date: 03/2016
ADM #10-R	S/N: 42203/43352	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 01/15/15	Due Date: 01/2016
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: 02/13/15	Due Date: 02/2016
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: 11/10/14	Due Date: 11/2015
ADM #03-R	S/N: 41738/42445	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 11/10/14	Due Date: 11/2015
ADM #04-L	S/N: 41743/42456	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 11/12/14	Due Date: 11/2015
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: 03/13/15	Due Date: 03/2016
ADM #07-R	S/N: 42185/43326	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 03/13/15	Due Date: 03/2016
ADM #08-L	S/N: 42186/43329	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 03/13/15	Due Date: 03/2016
ADM #09-L	S/N: 42202/43351	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 01/28/15	Due Date: 01/2016
ADM #09-R	S/N: 42202/43350	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 01/28/15	Due Date: 01/2016
ADM #10-L	S/N: 42203/43353	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 01/28/15	Due Date: 01/2016
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: 43166/44732	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 11/09/15	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: 02/20/15	Due Date: 02/2016
ADM #15-R	S/N: 43416/45040	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 02/20/15	Due Date: 02/2016
ADM #16-L	S/N: 43413/45046	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 02/20/15	Due Date: 02/2016
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: 12/09/14	Due Date: 12/2015
Vel Eqv Transfer Standard S/N: M02803	Model ADM-870C	Mfgd & Calibrated by Shortridge Instruments, Inc.	Calibration Date: 01/14/15	Due Date: 01/2016
Vel Eqv Transfer Standard S/N: M02903	Model ADM-870C	Mfgd & Calibrated by Shortridge Instruments, Inc.	Calibration Date: 12/09/14	Due Date: 12/2015
Vel Eqv Transfer Standard S/N: M10839	Model ADM-870C	Mfgd & Calibrated by Shortridge Instruments, Inc.	Calibration Date: 12/09/14	Due Date: 12/2015
Vel Eqv Transfer Standard S/N: M10840	Model ADM-870C	Mfgd & Calibrated by Shortridge Instruments, Inc.	Calibration Date: 12/09/14	Due Date: 12/2015
Vel Eqv Transfer Standard S/N: M10897	Model ADM-870C	Mfg'd & Calibrated by Shortridge Instruments, Inc.	Calibration Date: 01/14/15	Due Date: 01/2016
Vel Eqv Transfer Standard S/N: M10901	Model ADM-870C	Mfg'd & Calibrated by Shortridge Instruments, Inc.	Calibration Date: 12/09/14	Due Date: 12/2015
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 $\pm 1.5\% \pm 3.5$ 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: 03/08/12	Due Date: 03/2016
RTD Simulator S/N: 250	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 03/08/12	Due Date: 03/2016
RTD Simulator S/N: 253	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 03/08/12	Due Date: 03/2016
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: 12/19/11	Due Date: 12/2015
RTD Simulator S/N: 293	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 12/19/11	Due Date: 12/2015
RTD Simulator S/N: 294	Model RTD-1000/500	Mfgd by General Resistance	Calibrated by IET Labs	Calibration Date: 12/19/11	Due Date: 12/2015
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: 11/07/13	Due Date: 11/2015
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: 03/20/15	Due Date: 03/2016
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				

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