CLEANROOM PERFORMANCE TEST AND CERTIFICATION

DATE: 4/23/2014

PROJECT / FACILITY: DTI DATA CLEANROOM

ADDRESS: 1155 PASADENA AVENUE SOUTH

SOUTH PASADENA, FLORIDA 33707

PROJECT DESIGN ENGINEER: EXISTING

INSTALLING CONTRACTOR: EXISTING

PREPARED BY: JON R. SISSEL

APPROVED BY:

W. Carson Judge, CPT

Bay To Bay Balancing, Inc.

14819 N. 12th Street

Lutz, Florida 33549-3508

Phone No. 813.971.4545

Fax No. 813.971.4329

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ADDRESS: 1155 PASADENA AVENUE SOUTH

SOUTH PASADENA, FLORIDA 33707

THE DATA PRESENTED IN THIS REPORT IS AN EXACT RECORD OF CLEANROOM AND CLEANROOM SYSTEM PERFORMANCE AND WAS OBTAINED IN ACCORDANCE WITH NEBB STANDARD PROCEDURES, ANY VARIANCES FROM DESIGN QUANTITIES, WHICH EXCEED NEBB TOLERANCES, ARE NOTED THROUGHOUT THIS REPORT.

CLEANROOMS AND CLEANROOM SYSTEMS HAVE BEEN TESTED AND FINAL ADJUSTMENTS HAVE BEEN MADE IN ACCORDANCE WITH NEBB "PROCEDURAL STANDARDS FOR CERTIFIED TESTING OR CLEANROOMS" AND THE PROJECT SPECIFICATIONS.

NEBB CERTIFIED CLEANROOM PERFORMANCE TESTING CONTRACTOR: BAY TO BAY BALANCING, INC.

ADDRESS: 14819 N. 12th Street

CITY, STATE, ZIP: Lutz, FL 33549-3508

The results shown and information given in this report are certified to be accurate and complete to the extent possible by equipment and procedures used on this date.

W. Carson Judge warrants that the equipment or system listed above is operating at the specified levels as shown, at and only at this time, and makes no other warranties, stated or implied, concerning the continued performance, operation or safety in use of this equipment past this time.

SUBMITTED AND CERTIFIED BY:

NEBB C.P.T. SUPERVISOR: W. Carson Judge

SIGNATURE:

REG. NO. CR130

DATE: 4/23/2014

National Environmental Balancing Bureau
Report Not Valid Unless Stamped with
NEBB Certification Seal

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CLEANROOM REPORT NOTES

AHU	Air Handling Unit	N.O.	Number
BHP	Brake Horsepower	N.R.	Not Readable
CFM	Cubic Feet Per Minute	N.S.	Not Specified
DB	Dry Bulb	N.T.S.	No Test Site - Based on procedural standards for Test and Balance, there is not an acceptable test site to obtain the data.
db(A)	Decibel Aweighted		
DC	Direct Current		
DISP.	Displacement	O/A	Outside Air
D.P.	Dew Point	P	Pascal
E.A.T. DB	Entering Air Temperature Dry Bulb	P.D.	Pressure Drop
E.A.T. WB	Entering Air Temperature Wet Bulb	POS.	Position
FPM	Feet Per Minute	PSI	Pounds Per Square Inch
Ft	Feet	Q_T	Total Heat Flow
GPM	Gallons Per Minute	Q_L	Latent Heat Flow
HP	Horsepower	Qs	Sensible Heat
IAQ	Indoor Air Quality	R/A	Return Air
INA	Inaccessible	RPM	Revolutions Per Minute
KP	Kilopascal	SCFM	Standard Cubic Feet Per Minute
KW	Kilowatt	S.F.	Service Factor
L.A.T. DB	Leaving Air Temperature Dry Bulb	S.P.	Static Pressure
L.A.T. WB	Leaving Air Temperature Wet Bulb	TBD	To Be Determined
L.W.T.	Leaving Water Temperature	TOT. / EXT.	Total / External
MBH	1,000 British Terminal Units	VFD	Variable Frequency Drive
M/S	Meters Per Second	VEL.	Velocity
N/A	Not Applicable	W	Watt
N.I.	Not Installed	WB	Wet Bulb
N.I.C.	Not in Contract	WC	Water Column
N.L.	Not Listed	W.G.	Water Gauge

SPECIFIC NOTES

1. The facility was tested in an "in use" condition as pharmacy technicians were using the space during testing.

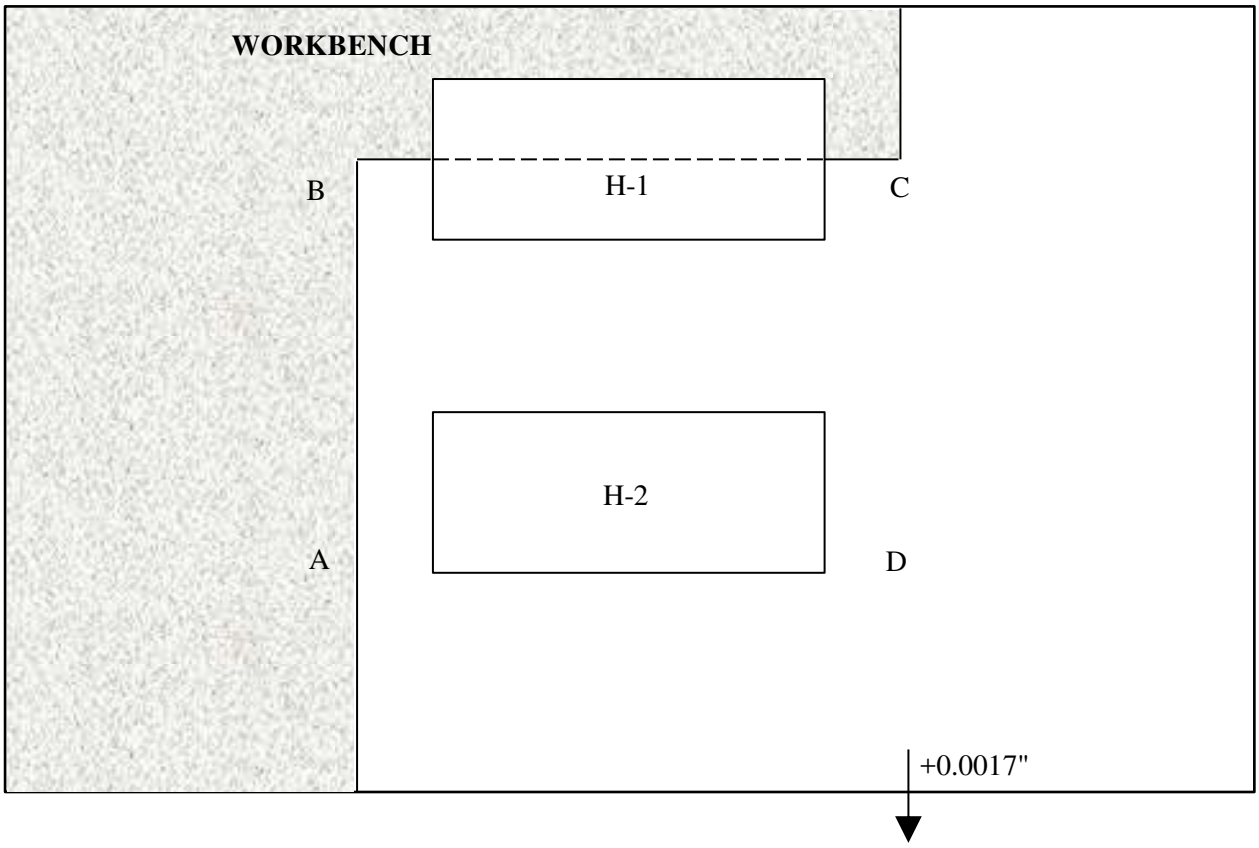
INSTRUMENT CERTIFICATION

INSTRUMENT	APPLICATION	DATES OF USE *	CALIBRATION
SHORTRIDGE AIR DATA ADM-860 MULTIMETER	AIR PRESSURE READINGS	4/23/2014	10/01/2013
SHORTRIDGE VELOGRID	AIRFLOW VELOCITY READINGS	4/23/2014	NOT REQUIRED
HACH PARTICLE COUNTER MODEL 3445	PARTICLE READINGS	4/23/2014	3/7/2014

REMARKS : *Dates of use refer to job starting date to finish date.

SYSTEM DIAGRAM

LOCATION: CLEANROOM



REMARKS:

AIRBORNE PARTICLE COUNT

LOCATION: **CLEANROOM**

DATA: 0.5 MICRON PARTICLES PER CUBIC METER

SAMPLE

LOCATION	1	2	3	4	5	TOTAL	AVERAGE
A	3413	3153	6873	428	102.3	13969	2794
B	549	632	1535	2176.2	1627.5	6519	1304
C	93	326	456	427.8	762.6	2065	413
D	939	1860	1693	1097.4	1990.2	7580	1516
						30132	1507

MEAN OF THE AVERAGES : 1507

STANDARD DEVIATION: 982

STANDARD ERROR: 105

95% UPPER CONFIDENCE LIMIT: 2931

CONCLUSION:
Based on the 95% Upper Confidence Limit and location averages, the above data satisfies the acceptance criteria for an ISO class 5 Cleanroom (FEDERAL STANDARD 209E class 100).

Number of test locations is four. These are identified as "A" through "D" on the system diagram.

Based on 0.5 um particles the maximum number of particles = 3520 particles per cubic meter of air.
Minimum sampling volume : $Vs = 20/C_{n,m}$ x 1000 = 20/3520 x 1000 = 5.68 liters

Actual sample volume was 537 liters per location

REMARKS: Refer to system diagram for particle count locations.

R10699

BECKMAN COULTER

CERTIFICATE OF CALIBRATION

Beckman Coulter certifies that the calibration performed complies with the requirements of ISO 21501 in whole or in part, as requested by the customer. This certifies that the reported sizes in the calibration information section are accurate to +/- 10%.

The accuracy of the standards & equipment used for the calibration are traceable to the US National Institute of Standards and Technology (NIST). A record of all work performed is maintained by Beckman Coulter, an ISO 9001 accredited company. This certificate may not be reproduced other than in full. Calibration certificates without a watermark & an authorized signature are not valid.

General Information

Manufacturer/Lab
Hach Company
5600 Lindbergh Drive
Loveland, CO 80538

Customer Name
PINE ENVIRONMENTAL SERVICES
1395 S MARIETTA PKWY/SUITE 252, BLDG 200
MARIETTA, GA 30067
USA

BRENT HOFFMAN

Instrument Information

Counter Model	3445	Station ID	1 cfm Svc Air 3	Temperature	21.0 °C
Part Number	2088900-32	Calibration Date	2014-Mar-07	Relative Humidity	27.0 %
Counter Serial	1007538001			Nominal Flow	100.0 LPM
Sensor Model	AIR	Calibration Due	2015-Mar-07	Laser Current (Reference Only)	62.0 mA
Sensor Serial	072310A107				
Procedure	CO88149-1 REV E				

Performance Information

Test Name	Test Result	Criteria	Pass/Fail
ISO-21501 Flow	100 LPM	±5%	Pass
Noise	22.5 mV	Reference Only	N/A
Peak to Valley	522.2:1	N/A	N/A
Hach Zero Count	0.0 particles in 1 m³	2.0 particles in 1 m³	Pass

Calibration Equipment

Type	Model	Serial	Cal Due Date
PHA	Core Counter PHA	Met 860	2014-Apr-08
Thermometer	MI70/HMP75	MET 980	2014-Nov-14
DMM	8808A	MET 865	2014-Aug-06
Flow Meter	4045	MET 1049	2014-Dec-14
O-Scope	TDS 210	X-7833	2015-Jan-13

Calibration Information

Channel	Size (µm)	Cal (mV)	Threshold (mV)	Particle Size (µm)	Mfg	Lot Number	Expiration Date
1	0.5	254.0	254.46	0.498	Thermo	39907	2014-Dec-31
2	1.0	370.0	371.64	0.994	Thermo	40849	2015-Jul-31
3	2.0	643.31	643.46	1.999	Thermo	42335	2016-Aug-31
4	3.0	780.03	779.5	3.002	Thermo	42363	2016-Jul-29
5	5.0	1577.14	1580.83	4.993	Thermo	42613	2016-Oct-31
6	10.0	4929.19	4929.19	10.0	Duke	40260	2015-Mar-31

Standard Calibration
1007538001.03.07.2014

B2B McKay

Calibrator : Benjamin McKay

AIRDATA MULTIMETER CERTIFICATE OF RECALIBRATION

Customer ID: 000620 S/N: M93739
Customer: BAY TO BAY BALANCING, INC. City: LUTZ State: FL
As-Received Model #: ADM-870 Converted to Model #: Order #: R133072
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 Z540-1-1994, 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: 27 Dated: 04/02/10

Calibration Technician(s): M. Dobbens L. Laubmeier Calibration Date: 10/01/2013
Calibration Approved by: B. Normand Title: QA Mgr Date: 10/02/2013

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

AS-Received	Test 2	Final
AS-Received By M.D.	Test 2 Test By LL	Final Test By LL
Date 09/24/13 Rh 37 %	Date 09/30/13 Rh 32 %	Date 10/01/13 Rh 30 %
Ambient Temperature 70 °F	Ambient Temperature 74 °F	Ambient Temperature 73 °F
Barometric Pressure 28.44 in Hg	Barometric Pressure 28.37 in Hg	Barometric Pressure 28.42 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	14.08	14.1	.14	14.45	14.5	.35	14.43	14.4	-.21
28.4	28.44	28.7	.91	28.37	28.6	.81	28.42	28.6	.63
40.0	40.12	40.6	1.20	40.36	40.8	1.09	40.40	40.8	.99

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: 43166/44732 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	.0531	.0533	.38	.0520	.0521	.19	.0510	.0511	.20
.1250	.1255	.1259	.32	.1241	.1242	.08	.1247	.1255	.64
.2250	.2258	.2262	.18	.2240	.2244	.18	.2254	.2268	.62
.2700	.2701	.2708	.26	.2739	.2743	.15	.2716	.2730	.52
2.000	2.066	2.073	.34	2.039	2.037	-.10	2.015	2.021	.30
3.600	3.612	3.623	.30	3.660	3.655	-.14	3.634	3.641	.19
4.400	4.415	4.446	.70	4.414	4.430	.36	4.404	4.433	.66
27.00	27.10	27.30	.74	27.13	27.22	.33	27.26	27.44	.66
50.00	50.13	50.35	.44	49.78	49.87	.18	49.99	50.24	.50
Overange	NA	✓	NA	NA	✓	NA	NA	✓	NA

Shortridge Instruments, Inc.
7855 East Redfield Road Scottsdale, Arizona 85260
(480) 991-6744 • Fax (480) 443-1267 • www.shortridge.com

National Environmental Balancing Bureau

NEBB

Recertification

THIS IS TO CERTIFY THAT

W. Carson Judge

Bay to Bay Balancing, Inc.

HAS MET ALL THE NEBB REQUIREMENTS FOR
NEBB CERTIFIED PROFESSIONAL STATUS IN

Cleanroom Performance Testing

FOR THE BOARD OF DIRECTORS:

Exp: March 31, 2016

Bay to Bay Balancing, Inc./FL

No. CR130

NEBB Cert. No.

President

President-Elect

National Environmental Balancing Bureau

NEBB

Recertification

THIS IS TO CERTIFY THAT

Bay to Bay Balancing, Inc.

in Lutz, FL

HAS MET ALL REQUIREMENTS FOR RENEWAL OF NEBB
CERTIFICATION IN THE FOLLOWING DISCIPLINE

Cleanroom Performance Testing

FOR THE BOARD OF DIRECTORS:

Exp. March 31, 2016

Bay to Bay Balancing, Inc./FL

No. CR130

NEBB Cert. No.

President

President-Elect