

113151

THE BOEING COMPANY  
AREA 4  
Meteorological Monitoring Program

ANNUAL REPORT  
JANUARY – DECEMBER 2012



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**EMC** Environmental Monitoring Company, Inc.

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580 Linne Rd., Suite 150 Paso Robles, CA 93446 USA

Tel (805) 226-2275 Fax (805) 226-2280

**EMC**



**Environmental Monitoring Company, Inc.**

580 Linne Rd., Suite 150 Paso Robles, CA 93446 USA

Tel (805) 226-2275

Fax (805) 226-2280

09 January 2013

The Boeing Company  
Attn: Paul Costa  
P.O. Box 7922  
Canoga Park, CA 91309-7922

Re: Submission of Boeing 2012 Meteorological Data

Dear Paul:

Enclosed is the Boeing 2012 Meteorological Data.

1. CD-ROM with all Boeing SSFL Area 4 Station meteorological data for 2012 in a single file in ASCII format.
2. CD-ROM with all Boeing SSFL Area 4 Station meteorological data for 2012 in a single file in Excel format.
3. A yearly 2012 wind rose for the Boeing SSFL Area 4 Station.
4. A certificate stating that the Boeing SSFL Area 4 Station was run in compliance with the USEPA Guidelines, as stated in EPA-454/R-99-005, February 2000, including twice yearly calibrations by EMC, an independent party, and completion of a station log.
5. A hard copy of the station log, including Audit Result printouts.

Please give me a call at (805) 226-2275 or email at [REDACTED] if you have questions or need more information.

Sincerely,  
Environmental Monitoring Company, Inc.

Steve Gersh  
President

W/enclosures



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**Environmental Monitoring Company, Inc.**

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580 Linne Rd., Suite 150 Paso Robles, CA 93446 USA Tel (805) 226-2275 Fax (805) 226-2280

09 January 2013

The Boeing Company  
Attn: Paul Costa  
P.O. Box 7922  
Canoga Park, CA 91309-7922

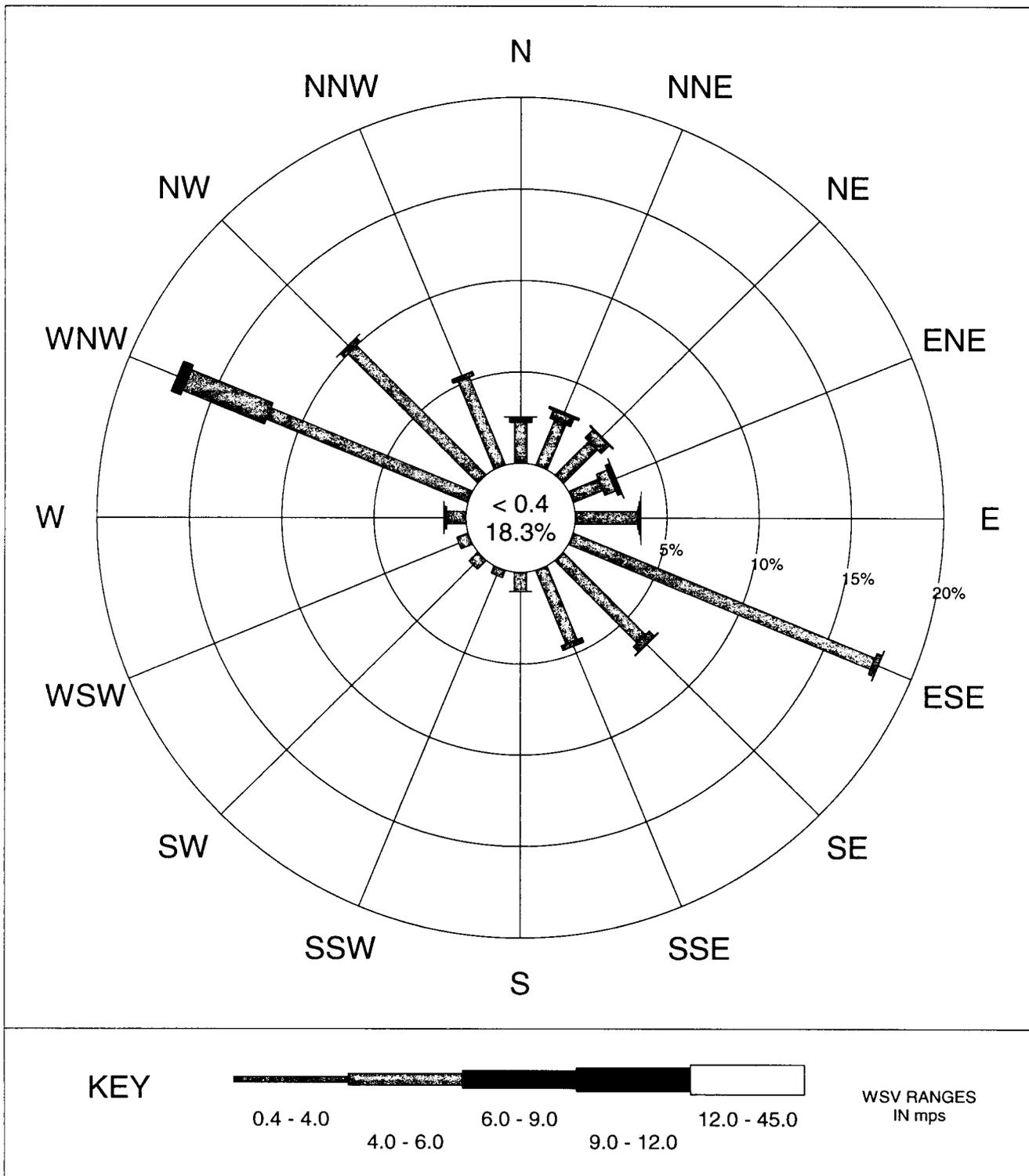
Re: Certificate of Operation for Boeing Area 4 Meteorological Monitoring Station

This certifies that during the year 2012, Environmental Monitoring Company, Inc. (EMC) performed calibrations and performance audits of the Boeing Area 4 meteorological monitoring station according to US EPA specifications contained in EPA-454/R-99-005, February 2000, including twice yearly calibrations, independent staff, and completion of a station log. During this period, EMC performed maintenance of the monitoring station as needed.

Sincerely,  
Environmental Monitoring Company, Inc.

Steve Gersh  
President

01 Jan 12 - 31 Dec 12  
 Station: Area4  
 WSV versus WDV  
 Frequency of Occurrence (%)



## Site Notes

**Monitoring Site:** Boeing Area 4

**Year:** 2012

Date	Initials	Time	Notes:
21 Mar 12	CT	1158	Arrived 436. Weather cool, partly cloudy, slight breeze.
		1204	Cal rain gauge.
		1205	Depart.
		1213	Arrived Canyon RG.
		1215	Cal rain gauge.
		1219	Depart.
		1226	Arrived Happy Valley.
		1227	Cal rain gauge.
		1230	Depart.
		1239	Arrived LOX RG.
		1240	Cal rain gauge.
		1243	Depart.
		1249	Arrived Alfa.
		1250	Cal rain gauge.
		1253	Depart.
		1258	Arrived Area 4. Noticed WS sensor was not spinning.
		1303	Mark channels down.
		1308	Lower tower. Found WS Sensor bearings were bad. Replaced 2 WS Sensor bearings.
		1321	Start MET Cal.
		1350	Finish MET Cal.
1353	Raise tower.		
1356	Mark channels online. Grab Data.		
1358	Depart.		
24 Apr 12	SG/CT	1015	Arrived at new location. Weather, clear, breezy, mild.
		1030	Performed initial prep work for new location.
		1100	Put New Met Tower together.
		1210	Did some initial signal wiring.
		1310	Discussed project with Boeing Staff
		1350	Departed.
30 Apr 12	SG/CT	1005	Arrived Area 4. Weather clear, calm, mild.
		1007	Found DAS program not running, started 10:12 PST. Last hour of data was 0700 on 28 Apr 12.
		1012	Mark channels down.
		1013	Lowered Met Tower for last cal before site move.
		1014	Start MET Cal.
		1101	Finish MET Cal.
		1103	Power Down station.
		1105	Removed Station Manager PC and SIU for use at new location.
		1115	Remove Sensors from Met Tower. Left Tower down, Boeing Staff will remove.
		1125	Departed
		1135	Arrived Area 1, new location for Met Tower. Note name change from Area 4
		1150	Installed Met Sensors and original RM Young WS/WD Sensor.
		1140	Installed Station Manager PC and SIU in new shelter.
1155	Wired sensors from tower.		

		1200	New Location GPS coordinates, 34.14.04 NW 118.40.31 W
		1330	Start Initial Met Cal.
		1400	Finished Initial Met Cal.
		1420	Oriented the RM Young WD Sensor.
		1430	Finished sensor wiring.
		1450	Raised Tower.
		1455	Marked up Met Channels.
		1505	Departed.
01 May 12	SG/CT	0805	Arrived Area 1. Weather, overcast, slight drizzle, calm.
		0810	Worked on LAN access to Station Manager PC.
		0820	Verified Hamachi VPN program worked properly.
		0840	Discussed new station detail with Boeing Staff.
		0845	Site Check.
		0849	Departed.
27 Jun	CT/SG	1022	Arrived Alpha. Weather warm, clear, slight breeze.
		1024	Audit rain gauge.
		1035	Departed.
		1041	Arrived LOX RG.
		1043	Found Data Logger Battery Dead. Removed Battery, will grab spare and return.
		1051	Departed.
		1058	Arrived Canyon RG.
		1103	Audit rain gauge.
		1108	Departed.
		1112	Arrived Happy Valley.
		1115	Audit rain gauge.
		1119	Departed.
		1122	Arrived 436.
		1125	Audit rain gauge.
		1128	Departed.
			Note: Area4 Rainfall Gauge removed.
		1131	Arrived Area1.
		1132	Mark channels down. Tower Down.
		1133	Change time 5 minute ahead. Start MET Audit.
		1200	Mark channels online. Tower Up.
		1203	Departed.
		1225	Arrived LOX RG.
		1228	Installed Spare Battery.
		1230	Audit rain gauge.
		1235	Departed.
			Arrived Area 4. Weather overcast, slight rain, cool, windy. Skipped Rain Gauge Audits do to rain as requested by Paul Costa. Will need to make up.
			Mark channels down.
			Start MET Audit.
			Finish MET Audit.
			Mark channels online.
			Depart.
26 Sep	CT/SG	1022	Arrived Alpha. Weather warm, clear, slight breeze.
		1024	Calibrate rain gauge.
		1030	Departed.
		1034	Arrived LOX RG.
		1037	Calibrate rain gauge.
		1042	Departed.
		1047	Arrived Canyon RG.
		1050	Calibrate rain gauge.



# Meteorological Calibration

## Rainfall Sensor

Station: Boeing (Happy Valley)  
 Tech: Charlie Tsou & Walter Wright  
 Date: 21-Mar-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> NOVA Lynx 260-2501
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 2480
<b>Range:</b> 0 - 50 ml @ 5 Tips/Min	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 20 September 2011

Parameter	Source input		Response		Criteria (Max Error)	Pass	Fail
	Point	Tips/Min	DAS	Error (Diff)			
Rainfall	1	10	10	0.0	Maximum Error + 1.0 in/hr	X	

# Meteorological Calibration

## Rainfall Sensor

Station: Boeing (436)  
 Tech: Charlie Tsou & Walter Wright  
 Date: 21-Mar-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> NOVA Lynx 260-2501
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 2487
<b>Range:</b> 0 - 50 ml @ 5 Tips/Min	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 20 September 2011

Parameter	Source input		Response		Criteria (Max Error)	Pass	Fail
	Point	Tips/Min	DAS	Error (Diff)			
Rainfall	1	10	10	0.0	Maximum Error + 1.0 in/hr	X	

# Meteorological Calibration

## Rainfall Sensor

Station: Boeing (Alfa)  
 Tech: Charlie Tsou & Walter Wright  
 Date: 21-Mar-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> NOVA Lynx 260-2501
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 2486
<b>Range:</b> 0 - 50 ml @ 5 Tips/Min	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 20 September 2011

Parameter	Source input		Response		Criteria (Max Error)	Pass	Fail
	Point	Tips/Min	DAS	Error (Diff)			
<b>Rainfall</b>	1	10	10	0.0	Maximum Error + 1.0 in/hr	<b>X</b>	

# Meteorological Calibration

## Rainfall Sensor

Station: Boeing (Canyon RG)  
 Tech: Charlie Tsou & Walter Wright  
 Date: 21-Mar-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> NOVA Lynx 260-2501
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 2480
<b>Range:</b> 0 - 50 ml @ 5 Tips/Min	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 20 September 2011

Parameter	Source input		Response		Criteria (Max Error)	Pass	Fail
	Point	Tips/Min	DAS	Error (Diff)			
Rainfall	1	10	10	0.0	Maximum Error + 1.0 in/hr	X	

# Meteorological Calibration

## Rainfall Sensor

Station: Boeing (LOXRG)  
 Tech: Charlie Tsou & Walter Wright  
 Date: 21-Mar-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> NOVA Lynx 260-2501
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 2479
<b>Range:</b> 0 - 50 ml @ 5 Tips/Min	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 20 September 2011

Parameter	Source input		Response		Criteria (Max Error)	Pass	Fail
	Point	Tips/Min	DAS	Error (Diff)			
<b>Rainfall</b>	1	10	10	0.0	Maximum Error + 1.0 in/hr	<b>X</b>	

# Meteorological Calibration

## ATM

Station: Boeing Area 4

Tech: Charlie Tsou & Walter Wright

Date: 21-Mar-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Thermometer	<b>Make/Model:</b> Met One
<b>Serial Number:</b> N/A	<b>Serial Number:</b> 060A
<b>Range:</b> N/A	<b>Range:</b> 0 - 50 Degrees C
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 20 September 2011
	<b>Site Declination:</b> 14 degrees

Parameter	Point	DAS			Criteria (Max Error)	Pass	Fail
		Source Value	As Is Resp.	Diff			
ATM	1	0.26	-0.30	-0.56	1.0 deg C +	X	
	2	18.25	17.60	-0.65			
	3	45.16	44.60	-0.56			

# Meteorological Calibration

## Barometric Pressure Sensor

Station: Boeing Area 4

Tech: Charlie Tsou & Walter Wright

Date: 21-Mar-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Barigo	<b>Make/Model:</b> Climatronics
<b>Serial Number:</b> N/A	<b>Serial Number:</b> N/A
<b>Range:</b> N/A	<b>Range:</b> 0 -50 Degrees C
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 20 September 2011
	<b>Site Declination:</b> 14 degrees

Parameter	Point	DAS			Criteria (Max Error)	Pass	Fail
		Source Value	As Is Resp.	Diff			
BP	1	949.00	582.30	366.70	10 MB		X

# Meteorological Calibration

## Horizontal Wind Speed Sensor

Station: Boeing Area 4  
 Tech: Charlie Tsou & Walter Wright  
 Date: 21-Mar-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> R.M.Young Anemometer	<b>Make/Model:</b> R.M. Young
<b>Serial Number:</b>	<b>Serial Number:</b> WM86117
<b>Range:</b> 200 to 15000 RPM	<b>Range:</b> 0 - 50 mps
<b>Date of Last Calibration:</b>	<b>Date of Last Calibration:</b> 20 September 2011
	<b>Site Declination:</b> 14 Degrees

Parameter	Point	DAS			Criteria (Max Error)	Pass	Fail
		Source	Source Value	As Is Resp.			
Horiz. WS	1	0	0.20	0.30	0.10	X	
	2	1500	7.80	7.80	0.00		
	3	3000	15.40	15.50	0.10		
	4	6000	30.70	31.00	0.30		

# Meteorological Calibration

## Horizontal Wind Direction Sensor

Station: Boeing Area 4  
 Tech: Charlie Tsou & Walter Wright  
 Date: 21-Mar-2012

### Meteorological Calibration Device

### Station Sensor

<b>Make/Model:</b> Compass	<b>Make:</b> R.M Young
<b>Serial Number:</b> N/A	<b>Serial Number:</b> WM86117
<b>Range:</b> N/A	<b>Range:</b> 0 -360 Degrees Asimuth
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 20 September 2011
	<b>Site Declination:</b> 14 Degrees

Parameter	Point	DAS			Criteria (Max Error)	Pass	Fail
		Source Value	As Is Resp.	Diff			
Horiz. WD	1	90	92.6	2.60	< 5 deg	X	
	2	180	181.9	1.90			
	3	270	269.6	-0.40			
	4	360	362.4	2.40			

# Meteorological Calibration

## Relative Humidity Sensor

Station: Boeing Area 4  
 Tech: Charlie Tsou & Walter Wright  
 Date: 21-Mar-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Weksler 5211	<b>Make/Model:</b> RM Young 41375C/VF
<b>Serial Number:</b> 20943	<b>Serial Number:</b> None
<b>Range:</b> -30 to +50 DegC	<b>Range:</b> 0-100 %
<b>Date of Last Calibration:</b> N/A	<b>Date of Last Calibration:</b> 20 September 2011

Parameter	Reference		Response		Criteria (Max Error)	Pass	Fail
	Point	Reading	DAS	Error (Diff)			
RH	1	23.5	23.6	0.43%	Maximum Error $\pm$ 5.0 percent	X	

# Meteorological Calibration

## ATM (initial)

Station: Boeing Area 1  
 Tech: Charlie Tsou & Steve Gersh  
 Date: 30-Apr-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Thermometer	<b>Make/Model:</b> RM Young 41372VC
<b>Serial Number:</b> N/A	<b>Serial Number:</b> TS000210063
<b>Range:</b> N/A	<b>Range:</b> +/- 50 Degrees C
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> Initial
	<b>Site Declination:</b> 14 degrees

Parameter	Point	DAS			Criteria (Max Error)	Pass	Fail
		Source Value	As Is Resp.	Diff			
ATM	1	0.92	1.00	0.08	1.0 deg C +	X	
	2	19.60	19.70	0.10			
	3	49.30	49.50	0.20			

# Meteorological Calibration

## ATM (final)

Station: Boeing Area 4

Tech: Charlie Tsou & Steve Gersh

Date: 30-Apr-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Thermometer	<b>Make/Model:</b> Met One
<b>Serial Number:</b> N/A	<b>Serial Number:</b> 060A
<b>Range:</b> N/A	<b>Range:</b> 0 - 50 Degrees C
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 20 Sep 2011
	<b>Site Declination:</b> 14 degrees

Parameter	Point	DAS			Criteria (Max Error)	Pass	Fail
		Source Value	As Is Resp.	Diff			
<b>ATM</b>	1	0.40	-0.10	-0.50	1.0 deg C +	<b>X</b>	
	2	16.00	15.20	-0.80			
	3	44.00	43.10	-0.90			

# Meteorological Calibration

## Barometric Pressure Sensor

(FINAL)

Station: Boeing Area 1

Tech: Charlie Tsou & Steve Gersh

Date: 30-Apr-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Barigo	<b>Make/Model:</b> RM Young
<b>Serial Number:</b> N/A	<b>Serial Number:</b> BPA0004262
<b>Range:</b> N/A	<b>Range:</b> 500 - 1100 MBR
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> Initial
	<b>Site Declination:</b> 14 degrees

Parameter	Point	DAS			Criteria (Max Error)	Pass	Fail
		Source Value	As Is Resp.	Diff			
BP	1	945.00	946.90	-1.90	10 MB	X	

# Meteorological Calibration

## Barometric Pressure Sensor

(INITIAL)

Station: Boeing Area 4

Tech: Charlie Tsou & Steve Gersh

Date: 30-Apr-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Barigo	<b>Make/Model:</b> Climatronics
<b>Serial Number:</b> N/A	<b>Serial Number:</b> N/A
<b>Range:</b> N/A	<b>Range:</b> 0 -50 Degrees C
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 20 Sep 2011
	<b>Site Declination:</b> 14 degrees

Parameter	Point	DAS			Criteria (Max Error)	Pass	Fail
		Source Value	As Is Resp.	Diff			
BP	1	946.00	579.90	366.10	10 MB		X

# Meteorological Calibration

## Rainfall Sensor (initial)

Station: Boeing Area 1  
 Tech: Charlie Tsou & Steve Gersh  
 Date: 30-Apr-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> Texas Electronics 525I
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 42042407
<b>Range:</b> 0 - 50 ml @ 5 Tips/Min	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 30 Apr 2012

Parameter	Source input		Response		Criteria (Max Error)	Pass	Fail
	Point	Tips/Min	DAS	Error (Diff)			
Rainfall	1	10	10	0.0	Maximum Error + 1.0 in/hr	X	

# Meteorological Calibration

## Rainfall Sensor (final)

Station: Boeing Area 4  
 Tech: Charlie Tsou & Steve Gersh  
 Date: 30-Apr-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> Texas Electronics 525I
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 42042407
<b>Range:</b> 0 - 50 ml @ 5 Tips/Min	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 20 Sep 2011

Parameter	Source input		Response		Criteria (Max Error)	Pass	Fail
	Point	Tips/Min	DAS	Error (Diff)			
<b>Rainfall</b>	1	12	12	0.0	Maximum Error + 1.0 in/hr	X	

# Meteorological Calibration

## Relative Humidity Sensor (initial)

Station: Boeing Area 1  
 Tech: Charlie Tsou & Steve Gersh  
 Date: 30-Apr-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Weksler 5211	<b>Make/Model:</b> RM Young 41372VC
<b>Serial Number:</b> 20943	<b>Serial Number:</b> TS00021063
<b>Range:</b> -30 to +50 DegC	<b>Range:</b> 0-100 %
<b>Date of Last Calibration:</b> N/A	<b>Date of Last Calibration:</b> Initial

Parameter	Reference		Response		Criteria (Max Error)	Pass	Fail
	Point	Reading	DAS	Error (Diff)			
RH	1	59.8	59.3	-0.85%	Maximum Error $\pm$ 5.0 percent	X	

# Meteorological Calibration

## Relative Humidity Sensor (final)

Station: Boeing Area 4  
 Tech: Charlie Tsou & Steve Gersh  
 Date: 30-Apr-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Weksler 5211	<b>Make/Model:</b> RM Young 41375C/VF
<b>Serial Number:</b> 20943	<b>Serial Number:</b> None
<b>Range:</b> -30 to +50 DegC	<b>Range:</b> 0-100 %
<b>Date of Last Calibration:</b> N/A	<b>Date of Last Calibration:</b> 20 Sep 2011

Parameter	Reference		Response		Criteria (Max Error)	Pass	Fail
	Point	Reading	DAS	Error (Diff)			
RH	1	68.9	69.8	1.31%	Maximum Error $\pm$ 5.0 percent	X	

# Meteorological Calibration

## Horizontal Wind Direction Sensor (initial)

Station: Boeing Area 1  
 Tech: Charlie Tsou & Steve Gersh  
 Date: 30-Apr-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Compass	<b>Make:</b> R.M Young
<b>Serial Number:</b> N/A	<b>Serial Number:</b> WM86117
<b>Range:</b> N/A	<b>Range:</b> 0 -360 Degrees Asimuth
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 30 Apr 2012
	<b>Site Declination:</b> 14 Degrees

Parameter	Point	DAS			Criteria (Max Error)	Pass	Fail
		Source Value	As Is Resp.	Diff			
Horiz. WD	1	90	91.1	1.10	< 5 deg	<b>X</b>	
	2	180	180.1	0.10			
	3	270	269.9	-0.10			
	4	360	0.5	0.50			

# Meteorological Calibration

## Horizontal Wind Direction Sensor (final)

Station: Boeing Area 4  
 Tech: Charlie Tsou & Steve Gersh  
 Date: 30-Apr-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Compass	<b>Make:</b> R.M Young
<b>Serial Number:</b> N/A	<b>Serial Number:</b> WM86117
<b>Range:</b> N/A	<b>Range:</b> 0 -360 Degrees Asimuth
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 20 Sep 2011
	<b>Site Declination:</b> 14 Degrees

Parameter	Point	DAS			Criteria (Max Error)	Pass	Fail
		Source Value	As Is Resp.	Diff			
Horiz. WD	1	90	91.5	1.50	< 5 deg	<b>X</b>	
	2	180	181.1	1.10			
	3	270	269.9	-0.10			
	4	360	0.04	0.04			

# Meteorological Calibration

## Horizontal Wind Speed Sensor (initial)

Station: Boeing Area 1  
 Tech: Charlie Tsou & Steve Gersh  
 Date: 30-Apr-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> R.M.Young Anemometer	<b>Make/Model:</b> R.M. Young
<b>Serial Number:</b>	<b>Serial Number:</b> WM86117
<b>Range:</b> 200 to 15000 RPM	<b>Range:</b> 0 - 50 mps
<b>Date of Last Calibration:</b>	<b>Date of Last Calibration:</b> 30 Apr 2012
	<b>Site Declination:</b> 14 Degrees

Parameter	Point	DAS			Criteria (Max Error)	Pass	Fail
		Source	Source Value	As Is Resp.			
Horiz. WS	1	0	0.20	0.20	0.00	X	
	2	3000	15.40	15.60	0.20		
	3	6000	30.70	31.10	0.40		
	4	9000	46.20	46.60	0.40		

# Meteorological Calibration

## Horizontal Wind Speed Sensor

Station: Boeing Area 4

Tech: Charlie Tsou & Steve Gersh

Date: 30-Apr-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> R.M.Young Anemometer	<b>Make/Model:</b> R.M. Young
<b>Serial Number:</b>	<b>Serial Number:</b> WM86117
<b>Range:</b> 200 to 15000 RPM	<b>Range:</b> 0 - 50 mps
<b>Date of Last Calibration:</b>	<b>Date of Last Calibration:</b> 20 Sep 2011
	<b>Site Declination:</b> 14 Degrees

Parameter	Point	DAS			Diff	Criteria (Max Error)	Pass	Fail
		Source	Source Value	As Is Resp.				
Horiz. WS	1	0	0.20	0.30	0.10	0.300 + m/s when w/s <5 m/s _ 5% of source when w/s >5	<b>X</b>	
	2	3000	15.40	15.50	0.10			
	3	6000	30.70	31.00	0.30			
	4	9000	46.20	46.40	0.20			

# Meteorological Audit

## Rainfall Sensor

Station: Boeing (Happy Valley)  
 Auditor: Charlie Tsou & Steve Gersh  
 Date: 27-Jun-2012

Audit Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> NOVA Lynx 260-2501
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 2488
<b>Range:</b> 0 - 50 ml	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> Mar 2012

Parameter	Audit Input		Audit Results		Audit Criteria (Max Error)	Pass	Fail
	Point	Tips	DAS	Error (Diff)			
Rainfall	1	10	10	0.0	Maximum Error + 1.0 in/hr	X	

# Meteorological Audit

## Rainfall Sensor

Station: Boeing (436)  
 Auditor: Charlie Tsou & Steve Gersh  
 Date: 27-Jun-2012

Audit Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> NOVA Lynx 260-2501
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 2487
<b>Range:</b> 0 - 50 ml	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> Mar 2012

Parameter	Audit Input		Audit Results		Audit Criteria (Max Error)	Pass	Fail
	Point	Tips	DAS	Error (Diff)			
Rainfall	1	10	10	0.0	Maximum Error + 1.0 in/hr	X	

# Meteorological Audit

## Rainfall Sensor

Station: Boeing (Alfa)  
 Auditor: Charlie Tsou & Steve Gersh  
 Date: 27-Jun-2012

Audit Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> NOVA Lynx 260-2501
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 2486
<b>Range:</b> 0 - 50 ml	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> Mar 2012

Parameter	Audit Input		Audit Results		Audit Criteria (Max Error)	Pass	Fail
	Point	Tips	DAS	Error (Diff)			
Rainfall	1	10	10	0.0	Maximum Error + 1.0 in/hr	X	

# Meteorological Audit

## Rainfall Sensor

Station: Boeing (CanyonRG)  
 Auditor: Charlie Tsou & Steve Gersh  
 Date: 27-Jun-2012

Audit Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> NOVA Lynx 260-2501
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 2480
<b>Range:</b> 0 - 50 ml	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> Mar 2012

Parameter	Audit Input		Audit Results		Audit Criteria (Max Error)	Pass	Fail
	Point	Tips	DAS	Error (Diff)			
Rainfall	1	10	10	0.0	Maximum Error + 1.0 in/hr	X	

# Meteorological Audit

## Rainfall Sensor

Station: Boeing (LOXRG)

Auditor: Charlie Tsou & Steve Gersh

Date: 27-Jun-2012

Audit Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> NOVA Lynx 260-2501
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 2479
<b>Range:</b> 0 - 50 ml	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> Mar 2012

Parameter	Audit Input		Audit Results		Audit Criteria (Max Error)	Pass	Fail
	Point	Tips	DAS	Error (Diff)			
Rainfall	1	10	10	0.0	Maximum Error + 1.0 in/hr	X	

# Meteorological Audit

## ATM

Station: Boeing Area 1  
 Auditor: Charlie Tsou & Steve Gersh  
 Date: 27-Jun-2012

Audit Device	Station Sensor
<b>Make/Model:</b> VWR 61027-205	<b>Make/Model:</b> Met One
<b>Serial Number:</b> 01490	<b>Serial Number:</b> 060A
<b>Range:</b> -1.0 to +51.0 DegC	<b>Range:</b> 0 -50 Degrees C
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> Apr 2012
	<b>Site Declination:</b> 14 Degrss

Parameter	Audit Input		Audit Results		Audit Criteria (Max Error)	Pass	Fail
	Point	Temp DegC	DAS	Error (Diff)			
<b>ATM</b>	1	0.03	0.02	-0.01	Maximum Error + 1.0 DegC	<b>X</b>	
	2	18.70	18.70	0.00			
	3	46.70	46.70	0.00			

# Meteorological Audit

## Barometric Pressure Sensor

Station: Boeing Area 1  
 Auditor: Charlie Tsou & Steve Gersh  
 Date: 27-Jun-2012

Audit Device	Station Sensor
<b>Make/Model:</b> Barigo	<b>Make/Model:</b> Climatronics
<b>Serial Number:</b> N/A	<b>Serial Number:</b> N/A
<b>Range:</b> N/A	<b>Range:</b> 850.0 to 1100.0 MBR
<b>Date of Last Calibration:</b> N/A	<b>Date of Last Calibration:</b> Apr 2012

Parameter	Audit Input		Audit Results			Audit Criteria (Max Error)	Pass	Fail
	mmHg	mBar	DAS	Actual (Diff)	Percent (Diff)			
<b>BP</b>		944.0	944.8	0.8	0.08%	Maxumim Error + 1.0 MB	<b>X</b>	

# Meteorological Audit

## Horizontal Wind Speed Sensor

Station: Boeing Area 1  
 Auditor: Charlie Tsou & Steve Gersh  
 Date: 27-Jun-2012

Audit Device	Station Sensor
<b>Make/Model:</b> R.M.Young Anemometer	<b>Make/Model:</b> R.M Young
<b>Serial Number:</b>	<b>Serial Number:</b> WM86117
<b>Range:</b> 200 to 15000 RPM	<b>Range:</b> 0 - 50 mps
<b>Date of Last Calibration:</b>	<b>Date of Last Calibration:</b> May 2012
	<b>Site Declination:</b> 14 Degrees

Parameter	Audit Input		Audit Results			Audit Criteria (Max Error)	Slope Criteria	Pass	Fail
	Speed	Met-1	DAS	Actual (Diff)	Percent (Diff)				
	RMP	010B							
<b>Horiz. WS</b>	0	0.3	0.20	-0.10	-33.33%	>5 m/s max. Error 2.5 m/s	Between 1.0500 and 0.9500	<b>X</b>	
	1500	7.40	7.55	0.15	2.03%				
	3000	14.70	15.50	0.80	5.44%	<5 m/s max. Error 0.25 m/s			
	6000	29.30	31.00	1.70	5.80%				
	Strating Threshold: 0.5 m/s		Torque 0.3 gm/cm			Audit Criteria: 0.5 m/s			

**AUDIT SLOPE: 1.0695**

# Meteorological Audit

## Horizontal Wind Direction Sensor

Station: Boeing Area 1  
 Auditor: Charlie Tsou & Steve Gersh  
 Date: 27-Jun-2012

Audit Device	Station Sensor
<b>Make/Model:</b> Compass	<b>Make/Model:</b> R.M. Young
<b>Serial Number:</b> N/A	<b>Serial Number:</b> WM86117
<b>Range:</b> N/A	<b>Range:</b> 0 -360 Degrees Asimuth
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> May 2012
	<b>Site Declination:</b> 14 Degrees

Parameter	Audit Input		Audit Results		Audit Criteria (Max Error)	Pass	Fail
	Point	Reference Degrees	DAS	Error (Diff)			
Horiz. WD	1	90	90	0.00	Maximum Error <5 Deg	X	
	2	180	179.9	-0.10			
	3	270	270	0.00			
	4	360	359	-1.00			
Starting Threshold: 0.5gm/cm		Torque: 2.0gm/cm		Audit Criteria: 0.5gm/cm			

# Meteorological Audit

## Relative Humidity Sensor

Station: Boeing Area 1  
 Auditor: Charlie Tsou & Steve Gersh  
 Date: 27-Jun-2012

Audit Device	Station Sensor
<b>Make/Model:</b> Weksler 5211	<b>Make/Model:</b> RM Young 41375C/VF
<b>Serial Number:</b> 20943	<b>Serial Number:</b> None
<b>Range:</b> -30 to +50 DegC	<b>Range:</b> 0-100 %
<b>Date of Last Calibration:</b> N/A	<b>Date of Last Calibration:</b> May 2012

Parameter	Referance		Response		Audit Criteria (Max Error)	Pass	Fail
	Point	Reading	DAS	Error (Diff)			
RH	1	21.2	21.3	0.47%	Maximum Error $\pm$ 5.0 percent	X	

# Meteorological Calibration

## Rainfall Sensor

Station: Boeing Area 4  
 Tech: Charlie Tsou & Steve Gersh  
 Date: 26-Sep-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> Texas Electronics 525I
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 42042407
<b>Range:</b> 0 - 50 ml @ 5 Tips/Min	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 21 March 2012

Parameter	Source input		Response		Criteria (Max Error)	Pass	Fail
	Point	Tips/Min	DAS	Error (Diff)			
<b>Rainfall</b>	1	17	17	0.0	Maximum Error + 1.0 in/hr	<b>X</b>	

# Meteorological Calibration

## Rainfall Sensor

Station: Boeing (Happy Valley)  
 Tech: Charlie Tsou & Steve Gersh  
 Date: 29-Sep-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> NOVA Lynx 260-2501
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 2480
<b>Range:</b> 0 - 50 ml @ 5 Tips/Min	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 21 March 2012

Parameter	Source input		Response		Criteria (Max Error)	Pass	Fail
	Point	Tips/Min	DAS	Error (Diff)			
Rainfall	1	10	10	0.0	Maximum Error + 1.0 in/hr	X	

# Meteorological Calibration

## Rainfall Sensor

Station: Boeing (436)

Tech: Charlie Tsou & Steve Gersh

Date: 29-Sep-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> NOVA Lynx 260-2501
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 2487
<b>Range:</b> 0 - 50 ml @ 5 Tips/Min	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 21 March 2012

Parameter	Source input		Response		Criteria (Max Error)	Pass	Fail
	Point	Tips/Min	DAS	Error (Diff)			
Rainfall	1	10	10	0.0	Maximum Error + 1.0 in/hr	X	

# Meteorological Calibration

## Rainfall Sensor

Station: Boeing (Alfa)

Tech: Charlie Tsou & Steve Gersh

Date: 26-Sep-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> NOVA Lynx 260-2501
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 2486
<b>Range:</b> 0 - 50 ml @ 5 Tips/Min	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 21 March 2012

Parameter	Source input		Response		Criteria (Max Error)	Pass	Fail
	Point	Tips/Min	DAS	Error (Diff)			
Rainfall	1	10	10	0.0	Maximum Error + 1.0 in/hr	X	

# Meteorological Calibration

## Rainfall Sensor

Station: Boeing (Canyon RG)  
 Tech: Charlie Tsou & Steve Gersh  
 Date: 29-Sep-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> NOVA Lynx 260-2501
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 2480
<b>Range:</b> 0 - 50 ml @ 5 Tips/Min	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 21 March 2012

Parameter	Source input		Response		Criteria (Max Error)	Pass	Fail
	Point	Tips/Min	DAS	Error (Diff)			
Rainfall	1	10	10	0.0	Maximum Error + 1.0 in/hr	X	

# Meteorological Calibration

## Rainfall Sensor

Station: Boeing (LOXRG)  
 Tech: Charlie Tsou & Steve Gersh  
 Date: 26-Sep-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> NOVA Lynx 260-2501
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 2479
<b>Range:</b> 0 - 50 ml @ 5 Tips/Min	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 21 Mar 2012

Parameter	Source input		Response		Criteria (Max Error)	Pass	Fail
	Point	Tips/Min	DAS	Error (Diff)			
Rainfall	1	10	10	0.0	Maximum Error + 1.0 in/hr	X	

# Meteorological Calibration

## ATM

Station: Boeing Area 4  
 Tech: Charlie Tsou & Steve Gersh  
 Date: 26-Sep-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Thermometer	<b>Make/Model:</b> Met One
<b>Serial Number:</b> N/A	<b>Serial Number:</b> 060A
<b>Range:</b> N/A	<b>Range:</b> 0 - 50 Degrees C
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 21 March 2012
	<b>Site Declination:</b> 14 degrees

Parameter	Point	DAS			Criteria (Max Error)	Pass	Fail
		Source Value	As Is Resp.	Diff			
ATM	1	0.20	0.30	0.10	1.0 deg C +	X	
	2	18.10	18.30	0.20			
	3	49.20	49.50	0.30			

# Meteorological Calibration

## Barometric Pressure Sensor

Station: Boeing Area 4  
 Tech: Charlie Tsou & Steve Gersh  
 Date: 27-Sep-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Barigo	<b>Make/Model:</b> Climatronics
<b>Serial Number:</b> N/A	<b>Serial Number:</b> N/A
<b>Range:</b> N/A	<b>Range:</b> 0 -50 Degrees C
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 21 March 2012
	<b>Site Declination:</b> 14 degrees

Parameter	Point	DAS			Criteria (Max Error)	Pass	Fail
		Source Value	As Is Resp.	Diff			
BP	1	943.00	944.10	-1.10	10 MB	X	

# Meteorological Calibration

## Horizontal Wind Speed Sensor

Station: Boeing Area 4  
 Tech: Charlie Tsou & Steve Gersh  
 Date: 26-Sep-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> R.M.Young Anemometer	<b>Make/Model:</b> R.M. Young
<b>Serial Number:</b>	<b>Serial Number:</b> WM86117
<b>Range:</b> 200 to 15000 RPM	<b>Range:</b> 0 - 50 mps
<b>Date of Last Calibration:</b>	<b>Date of Last Calibration:</b> 21 March 2012
	<b>Site Declination:</b> 14 Degrees

Parameter	Point	DAS				Criteria (Max Error)	Pass	Fail
		Source	Source Value	As Is Resp.	Diff			
Horiz. WS	1	0	0.20	0.20	0.00	0.300 + m/s when w/s <5 m/s - 5% of source when w/s >5	X	
	2	1500	7.80	7.80	0.00			
	3	3000	15.40	15.60	0.20			
	4	6000	30.70	31.10	0.40			

# Meteorological Calibration

## Horizontal Wind Direction Sensor

Station: Boeing Area 4  
 Tech: Charlie Tsou & Steve Gersh  
 Date: 26-Sep-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Compass	<b>Make:</b> R.M Young
<b>Serial Number:</b> N/A	<b>Serial Number:</b> WM86117
<b>Range:</b> N/A	<b>Range:</b> 0 -360 Degrees Asimuth
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> 21 March 2012
	<b>Site Declination:</b> 14 Degrees

Parameter	Point	DAS			Criteria (Max Error)	Pass	Fail
		Source Value	As Is Resp.	Diff			
<b>Horiz. WD</b>	1	90	92	2.00	< 5 deg	<b>X</b>	
	2	180	178.8	-1.20			
	3	270	270.1	0.10			
	4	360	359.7	-0.30			

# Meteorological Calibration

## Relative Humidity Sensor

Station: Boeing Area 4  
 Tech: Charlie Tsou & Steve Gersh  
 Date: 27-Sep-2012

Meteorological Calibration Device	Station Sensor
<b>Make/Model:</b> Weksler 5211	<b>Make/Model:</b> RM Young 41375C/VF
<b>Serial Number:</b> 20943	<b>Serial Number:</b> None
<b>Range:</b> -30 to +50 DegC	<b>Range:</b> 0-100 %
<b>Date of Last Calibration:</b> N/A	<b>Date of Last Calibration:</b> 21 March 2012

Parameter	Reference		Response		Criteria (Max Error)	Pass	Fail
	Point	Reading	DAS	Error (Diff)			
RH	1	40.1	40.3	0.50%	Maximum Error $\pm$ 5.0 percent	X	

# Meteorological Audit

## Rainfall Sensor

Station: Boeing (Happy Valley)  
 Auditor: Charlie Tsou & Steve Gersh  
 Date: 17-Dec-2012

Audit Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> NOVA Lynx 260-2501
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 2488
<b>Range:</b> 0 - 50 ml	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> Mar 2012

Parameter	Audit Input		Audit Results		Audit Criteria (Max Error)	Pass	Fail
	Point	Tips	DAS	Error (Diff)			
Rainfall	1	10	10	0.0	Maximum Error + 1.0 in/hr	X	

# Meteorological Audit

## Rainfall Sensor

Station: Boeing (436)  
 Auditor: Charlie Tsou & Steve Gersh  
 Date: 17-Dec-2012

Audit Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> NOVA Lynx 260-2501
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 2487
<b>Range:</b> 0 - 50 ml	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> Mar 2012

Parameter	Audit Input		Audit Results		Audit Criteria (Max Error)	Pass	Fail
	Point	Tips	DAS	Error (Diff)			
Rainfall	1	10	10	0.0	Maximum Error + 1.0 in/hr	X	

# Meteorological Audit

## Rainfall Sensor

Station: Boeing (Alfa)  
 Auditor: Charlie Tsou & Steve Gersh  
 Date: 17-Dec-2012

Audit Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> NOVA Lynx 260-2501
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 2486
<b>Range:</b> 0 - 50 ml	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> Mar 2012

Parameter	Audit Input		Audit Results		Audit Criteria (Max Error)	Pass	Fail
	Point	Tips	DAS	Error (Diff)			
Rainfall	1	10	10	0.0	Maximum Error + 1.0 in/hr	X	

# Meteorological Audit

## Rainfall Sensor

Station: Boeing (CanyonRG)  
 Auditor: Charlie Tsou & Steve Gersh  
 Date: 17-Dec-2012

Audit Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> NOVA Lynx 260-2501
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 2480
<b>Range:</b> 0 - 50 ml	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> Mar 2012

Parameter	Audit Input		Audit Results		Audit Criteria (Max Error)	Pass	Fail
	Point	Tips	DAS	Error (Diff)			
<b>Rainfall</b>	1	10	10	0.0	Maximum Error + 1.0 in/hr	<b>X</b>	

# Meteorological Audit

## Rainfall Sensor

Station: Boeing (LOXRG)  
 Auditor: Charlie Tsou & Steve Gersh  
 Date: 17-Dec-2012

Audit Device	Station Sensor
<b>Make/Model:</b> Graduated Cylinder - NIST	<b>Make/Model:</b> NOVA Lynx 260-2501
<b>Serial Number:</b> 39269	<b>Serial Number:</b> 2479
<b>Range:</b> 0 - 50 ml	<b>Range:</b> 0 - 10 in/hr
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> Mar 2012

Parameter	Audit Input		Audit Results		Audit Criteria (Max Error)	Pass	Fail
	Point	Tips	DAS	Error (Diff)			
Rainfall	1	10	10	0.0	Maximum Error + 1.0 in/hr	X	

# Meteorological Audit

## ATM

Station: Boeing Area 1  
 Auditor: Charlie Tsou & Steve Gersh  
 Date: 17-Dec-2012

Audit Device	Station Sensor
<b>Make/Model:</b> VWR 61027-205	<b>Make/Model:</b> Met One
<b>Serial Number:</b> 01490	<b>Serial Number:</b> 060A
<b>Range:</b> -1.0 to +51.0 DegC	<b>Range:</b> 0 -50 Degrees C
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> Apr 2012
	<b>Site Declination:</b> 14 Degrass

Parameter	Audit Input		Audit Results		Audit Criteria (Max Error)	Pass	Fail
	Point	Temp DegC	DAS	Error (Diff)			
<b>ATM</b>	1	0.10	0.34	0.24	Maximum Error + 1.0 DegC	<b>X</b>	
	2	17.80	17.90	0.10			
	3	47.50	48.10	0.60			

# Meteorological Audit

## Barometric Pressure Sensor

Station: Boeing Area 1  
 Auditor: Charlie Tsou & Steve Gersh  
 Date: 17-Dec-2012

Audit Device	Station Sensor
<b>Make/Model:</b> Barigo	<b>Make/Model:</b> Climatronics
<b>Serial Number:</b> N/A	<b>Serial Number:</b> N/A
<b>Range:</b> N/A	<b>Range:</b> 850.0 to 1100.0 MBR
<b>Date of Last Calibration:</b> N/A	<b>Date of Last Calibration:</b> Apr 2012

Parameter	Audit Input		Audit Results			Audit Criteria (Max Error)	Pass	Fail
	mmHg	mBar	DAS	Actual (Diff)	Percent (Diff)			
<b>BP</b>		948.0	950.1	2.1	0.22%	Maxumim Error + 1.0 MB	<b>X</b>	

# Meteorological Audit

## Horizontal Wind Speed Sensor

Station: Boeing Area 1  
 Auditor: Charlie Tsou & Steve Gersh  
 Date: 17-Dec-2012

Audit Device	Station Sensor
<b>Make/Model:</b> R.M.Young Anemometer	<b>Make/Model:</b> R.M Young
<b>Serial Number:</b>	<b>Serial Number:</b> WM86117
<b>Range:</b> 200 to 15000 RPM	<b>Range:</b> 0 - 50 mps
<b>Date of Last Calibration:</b>	<b>Date of Last Calibration:</b> May 2012
	<b>Site Declination:</b> 14 Degrees

Parameter	Audit Input		Audit Results			Audit Criteria (Max Error)	Slope Criteria	Pass	Fail
	Speed	Met-1	DAS	Actual (Diff)	Percent (Diff)				
	RMP	010B							
Horiz. WS	0	0.3	0.25	-0.05	-16.67%	>5 m/s max. Error 2.5 m/s	X		
	1500	7.40	7.60	0.20	2.70%				
	3000	14.70	15.60	0.90	6.12%	<5 m/s max. Error 0.25 m/s			
	6000	29.30	31.10	1.80	6.14%				
	Strating Threshold: 0.5 m/s		Torque 0.3 gm/cm			Audit Criteria: 0.5 m/s			

**AUDIT SLOPE: 1.0714**

# Meteorological Audit

## Horizontal Wind Direction Sensor

Station: Boeing Area 1  
 Auditor: Charlie Tsou & Steve Gersh  
 Date: 17-Dec-2012

Audit Device	Station Sensor
<b>Make/Model:</b> Compass	<b>Make/Model:</b> R.M. Young
<b>Serial Number:</b> N/A	<b>Serial Number:</b> WM86117
<b>Range:</b> N/A	<b>Range:</b> 0 -360 Degrees Asimuth
<b>Date of Last Calibration:</b> NIST	<b>Date of Last Calibration:</b> May 2012
	<b>Site Declination:</b> 14 Degrees

Parameter	Audit Input		Audit Results		Audit Criteria (Max Error)	Pass	Fail
	Point	Referenc e Degrees	DAS	Error (Diff)			
Horiz. WD	1	90	90.5	0.50	Maximum Error <5 Deg	X	
	2	180	180.2	0.20			
	3	270	271	1.00			
	4	360	357	-3.00			
	Starting Threshold: 0.5gm/cm		Torque: 2.0gm/cm		Audit Criteria: 0.5gm/cm		

# Meteorological Audit

## Relative Humidity Sensor

Station: Boeing Area 1  
 Auditor: Charlie Tsou & Steve Gersh  
 Date: 17-Dec-2012

Audit Device	Station Sensor
<b>Make/Model:</b> Weksler 5211	<b>Make/Model:</b> RM Young 41375C/VF
<b>Serial Number:</b> 20943	<b>Serial Number:</b> None
<b>Range:</b> -30 to +50 DegC	<b>Range:</b> 0-100 %
<b>Date of Last Calibration:</b> N/A	<b>Date of Last Calibration:</b> May 2012

Parameter	Referance		Response		Audit Criteria (Max Error)	Pass	Fail
	Point	Reading	DAS	Error (Diff)			
RH	1	68.3	67.1	-1.76%	Maximum Error $\pm$ 5.0 percent	X	