

U.S. Dep't. of Commerce / OMAO / NOAA / Aircraft Operations Center

FLT ID: 20130822H1	From: KMCF	To: KMCF
FLT #:	Blk In: 1906 z	Lnd Time: 1857 z
ETD: 1200 z	Blk Out: 1155 z	T/O Time: 1207 z
ETE: 8+30	Total Blk: 7.2	Total Flt: 6.8
Sponsoring Org: AOC	Program: PMM	Purpose: WIND CAL + SFMR + INTERCOMP W N 43

AOC Flight Crew

Aircraft Commander: SWEENEY	SSA: HILL
Co-Pilot: PRICE, KIBBEY	AVAPS: RICHARDS
Navigator: GALLAGHER	Scientists:
Flight Eng: KLIPPEL HEYSTEK	Scientists:
Flt Director: HENNING MORGAN	Scientists:
SEB: RICHARDS WARNECKE	Scientists:
Crew Chief:	Visitors: /

	A/C - Takeoff	Wx Station - Takeoff	A/C - Land	Wx Station - Land
Pressure	PSM2 1017.9	STA 1017.6	PSM2 1015.0	STA 1015.8

AS REQUIRED BY ORM	YES / NO	REMARKS
VOLCANIC ASH		
SCIENCE MISSION WITHIN BOUNDARY LAYER		
LACK OF PRECIPITATION		
RELATIVE HUMIDITY AT OR ABOVE 80%		
LARGE AIR-SEA TEMPERATURE GRADIENT		
HIGH SURFACE WINDS		
LONG FETCH AND/OR DURATION OF SFC WIND		
SEA SALT ACCRETION FORECAST		
SEA SALT ACCRETION OBSERVED		

Dropsondes	5	Good: 5	Bad: 0	Sent: 5
AXBT		Good:	Bad:	Sent:

List other data sources in Remarks section

Remarks (Storm VDM Identifier, Mission ID, Fix Times)	Fix #	VDM Ob Num	Fix Time / SLP
Storm Number Identifier (VDM): (ie: AL072012)		6	
TCPOD/WSPOD Mission ID: WXWXA TRAIN (ie: NOAA2 2418A SANDY)			

Remarks:

pcarb 1017.2
 1058z preflight 30.05 (1017.9)
 psurf 1017.8
 1158z 30.05 (1017.9)
 1804z 30.03
 1858z 30.00 (1016.2) psurf and (1015.3)

TABIR 2825.2
 8300.2
 PLYER 2857
 8320



N42RF ERROR SUMMARY WIND CAL KMCF



Flight ID: 20130822H1

Sensor or system	Number or Name
INE (for wind derivation)	INE1
Accelerometer	AccZfilterI-GPS.1
Temperature Probe	TTM.1
Dew Point Probe	TDM.2 (Edgetech)
Altitude (for vertical wind)	AltGPS.3 Novatel
Static Pressure	PSM.2
Dynamic Pressure	PQM.2
Constants File	n42_xml
Project Directory	/acdata/2013/MET/20130822H1

Notes:

TDM.2 (Edgetech) performed very well through the flight except for running away during landing. TDM.1 (Buck) was much noisier but generally oscillated around a mean close to TDM.2. It also ran away at landing. TDM.3 (Maycomm) at times trended with the others but generally was inaccurate in all phases of the flight.

There were noticeable differences between the two RINU-G blended inertial/GPS altimeter values (AltI-GPS.1/.2). Before take off the AltI-GPS.1 output was reading negative, so we switched to AltI-GPS.2 for the flight. However in post-flight analysis it was observed that AltI-GPS.2 values were behaving erratically similar to the AltI-GPS.1 output. Neither the RINU-G pure GPS #1 or #2 (AltGPS.1 or AltGPS.2) displayed erratic data. Those systems and the Novatel (AltGPS.3 which was selected for post processing) all trended together within a few meters of each other throughout the flight.

PSM#1 (wingtip) was approx 5 to 6 millibars lower than PSM#2 during most of the flight.

There were 5 dropsondes deployed. All 5 were good and transmitted.

Takeoff (1207Z) Landing (1857Z)

Aircraft Static Pressure	1017.9 mb	1015.0 mb
Corrected Tower Pressure	1017.6 mb	1015.8 mb

Flight Director: Richard Henning (813) 828-3310 ext. 3086

NOAA • AOC • SED N42RF AVAPS DROP LOG

Lead Tech: Joe Bosco

Project: Hurricane 2013 Mission: WIND CALFlight ID: 20130822 41

Take Off: _____

Landing: _____

Flt Dir: Henning / Morgan

Drop #	Sonde Serial #	Rcvr #	Press Offset	Launch Time	Operator	Charge \$\$ To	Comments	Good ?
1	1137235338	1	.3	1343	JW	AOC	NEW SONDE Indicated offset .3	✓
2	132035356	2	0.0	1428	JW	AOC	NEW SONDE Indicated offset 0.0	✓
3	112115359	3	-0.7	1522	JW	AOC		✓
4	132235383	4	.5	1701	JW	AOC		✓
5	112325223	5	-0.1	1817	JW	AOC		✓
6								
7								
8								
9								
10								
11								
12								
13								
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34								

P3 Wind Calibration Exercises

Order of Operations

1500 ft RA

Leg Into Wind, 180 IAS, 3 mins then 90/270
Leg With Wind, 180 IAS, 3 mins then reverse course
Leg Into Wind, 210 IAS, 3 mins then 90/270
Leg With Wind, 210 IAS, 3 mins
Yaw Maneuver, 210 kts IAS, 5 complete cycles, $\pm 5^\circ$ Sideslip
Leg Into Wind, 240 IAS, 3 mins then 90/270
Leg With Wind, 240 IAS, 3 mins

You can fly into or
with the wind first as
long as you do both.

55 mb PDBeta
#1

CLIMB to 10K for SFMR pass 2.5 minutes either side of Buoy. Descend back to 5K

5000 ft RA

Leg Into Wind, 180 IAS, 3 mins then 90/270
~~Race track~~ Leg With Wind, 180 IAS, 3 mins then reverse course
~~Race track~~ Leg Into Wind, 210 IAS, 3 mins then 90/270
~~Race track~~ Leg With Wind, 210 IAS, 3 mins
Dropsonde Deployment
3 Concentric Circles to the Left, 30° Roll
3 Concentric Circles to the Right, 30° Roll
~~Race track~~ Leg Into Wind, 240 IAS, 3 mins then 90/270
~~Race track~~ Leg With Wind, 240 IAS, 3 mins

10000 ft RA (Ensure this segment is centered over or near Buoy to collect SFMR data)

Leg Into Wind, 180 IAS, 3 mins then 90/270
Leg With Wind, 180 IAS, 3 mins then reverse course
Leg Into Wind, 210 IAS, 3 mins then 90/270
Leg With Wind, 210 IAS, 3 mins then reverse course
Leg Into Wind, 240 IAS, 3 mins then 90/270
Leg With Wind, 240 IAS, 3 mins

15000 ft PA

Leg Into Wind, 180 IAS, 3 mins then 90/270
Leg With Wind, 180 IAS, 3 mins then reverse course
Leg Into Wind, 210 IAS, 3 mins then 90/270
Leg With Wind, 210 IAS, 3 mins
Yaw Maneuver, 210 kts IAS, 5 complete cycles, $\pm 5^\circ$ Sideslip
Leg Into Wind, 240 IAS, 3 mins then 90/270
Leg With Wind, 240 IAS, 3 mins

26 20
84 00
83

131620-131820

1159-1905

$$\begin{array}{r} 85 \\ 35 \\ \hline 120 \end{array}$$

$$\begin{array}{r} 60 \\ 25 \\ \hline 85 \\ 35 \\ \hline 120 \end{array}$$

1/ans 130807-131300-0 ~~13~~ ~~13~~
123505-123540
123735-123900
151500 FT

SLOPES

6.090056662
2.35774320

INT

131626-131820
131622-131820

Left
CIRCLES
143104-
143747
RT
CIRCLES
143810
144506

Level	Into/with Wind	IAS	wdir/wspd	Track	Start Time	Stop Time	Notes:
10000	INTO	180	130/15	130	150711	151145	150730-150931
10000	WITH	180	135/16	315	151922	152430	152020-152221
10000	INTO	210	135/17	135	152630	153139	152925-153126
10000	WITH	210	135/19	315	153656	154009	153805-154006
10000	INTO	240	140/19	140	154246	154555	154355-154556
10000	WITH	240	135/18	315	154942	155306	

5.987908192
2.365523474

155116-155317

132340 - 132430

$$\begin{array}{r} 51 \\ 69 \\ \hline 120 \end{array}$$

remove 163522-163534

P3 Wind Calibration Exercises

163033 - 163521

163535 - 163545

5.940176979

2.328934061

Level	Into/with Wind	IAS	wdir/wspd	Track	Start Time	Stop Time	Notes:
15,000	INTO	180	155/23	155	160300	160626	160435-160636
15,000	WITH	180	160/25	335	161018	161330	161140-161341
15,000	INTO	210	160/23	160	161653	162005	161650-161851
15,000	WITH	210	160/24	340	162422	162736	162555-162756
15,000	WITH	240	155/23	335	163838	164149	163915-164116
15,000	INTO	240	160/24	340	164653	165057	164850-165051
15,000							

YAW
MANU
163020 -
163531

6.109933357

2.322857042

Level	Into/with Wind	IAS	wdir/wspd	Track	Start Time	Stop Time	Notes:
20000	WITH	180	155/13	335	172758	173106	172755-172956
20000	INTO	180	155/13	155	173504	173832	+extra time
20000	WITH	210	150/14	330	174758	175118	+extra time
20000	INTO	210	150/17	150	175810	180123	175840-180041
20000	INTO	240	150/13	150	181602	1820 approx	
20000	WITH	240	155/16	335	182403	182714	
20000							

PITCH begin APPROX 1807

PITCH end

181008

180652 - 181022

181635 - 181836

182405 - 182606

173645 - 173845

174920 - 175120

AA

OVERALL

Slope 6.100597887

INT 2.349568431

SA slope
7.08900

Corr Coeff:

KOUNT

0.998686672

3649

SA Slope 7.08900

P3 Wind Calibration Exercises

DESCEND back to 10K for SFMR pass 2.5 minutes either side of Buoy. Then climb up to 20K

20000 ft PA

- Leg Into Wind, 180 IAS, 3 mins then 90/270
- Leg With Wind, 180 IAS, 3 mins then reverse course
- Leg Into Wind, 210 IAS, 3 mins then 90/270
- Leg With Wind, 210 IAS, 3 mins
- Pitch Maneuver, 210 IAS, 5 complete cycles, $\pm 5^\circ$ Pitch
- Leg Into Wind, 240 IAS, 3 mins then 90/270
- Leg With Wind, 240 IAS, 3 mins
- Dropsonde Deployment

135
180
315

Level	Into/with Wind	IAS	wdir/wspd	Track	Start Time	Stop Time	Notes:
1500	INTO	180	135/15	135	123515	123900	
1500	WITH	180	135/15	315	124450	124800	
1500	INTO	210	135/14	135	125100	125411	
1500	WITH	210	135/15	315	130000	130320	
1500	WITH	240	130/13	310	131522	131838	SCT CLDS
1500	INTO	240	130/13	135	132400	132740	SCT CLDS
1500							

Left
CIRCLES
143104
143747
RT
CIRCLES
143810
144506

Level	Into/with Wind	IAS	wdir/wspd	Track	Start Time	Stop Time	Notes:
5000	INTO	180	145/12	140	140211	140535	
5000	WITH	180	150/14	330	141005	141532	Extended 2 min
5000	INTO	210	145/12	145	141820	142145	
5000	WITH	210	155/12	335	142604	142925	
5000	INTO	240	150/10	150	144733	145050	
5000	WITH	240	155/10	330	145537	145900	
5000							

Level	Into/with Wind	IAS	wdir/wspd	Track	Start Time	Stop Time	Notes:
10000	INTO	180	130/15	130	150711	151145	
10000	WITH	180	135/16	315	151922	152430	
10000	INTO	210	135/17	135	152630	153139	
10000	WITH	210	135/19	315	153656	154009	
10000	INTO	240	140/19	140	154246	154555	
10000	WITH	240	135/18	315	154942	155306	

P3 Wind Calibration Exercises

YAW
MANU
163020 -
163531

Level	Into/with Wind	IAS	wdir/wspd	Track	Start Time	Stop Time	Notes:
15,000	INTO	180	155/23	155	160300	160626	
15,000	WITH	180	160/25	335	161018	161330	
15,000	INTO	210	160/23	160	161653	162005	
15,000	WITH	210	341 160/24	340	162422	162736	
15,000	WITH	240	155/23	335	163838	164149	
15,000	INTO	240	160/24	340	164653	165057	
15,000							

Level	Into/with Wind	IAS	wdir/wspd	Track	Start Time	Stop Time	Notes:
20000	WITH	180	155/13	335	172758	173106	
20000	INTO	180	155/13	155	173504	173832	+ extra time
20000	WITH	210	150/14	330	174758	175118	+ extra time
20000	INTO	210	150/17	150	175810	180123	175845 → 180045
20000	INTO	240	150/13	150	181602	1820	approx 181630 → 181830
20000	WITH	240	155/16	335	182403	182714	- 182400 → 182600
20000							

PITCH begin APPROX 1807

PITCH end

181008

Time

1253 - 1259

1500 ft ✓ 8/22/2017

042

1404 - 1411

~~7500 ft~~
5000 ft 1 m/s off

1419 - 1428

5000 ft ✓

1449 - 1459

5000 ft ✓

1530 - 1537

~~100 5000 ft~~ 5 m/s off
10000

161800 - 162530

15000 ft ✓

164030 - 164700

15000 ft .9 m/s off

170000 - 170630

10 K ft ✓

174100 - 174930

20 K ✓ ~~.8 m/s off~~

175130 - 175900

20 K ✓

180830 - 181500

20 K ✓

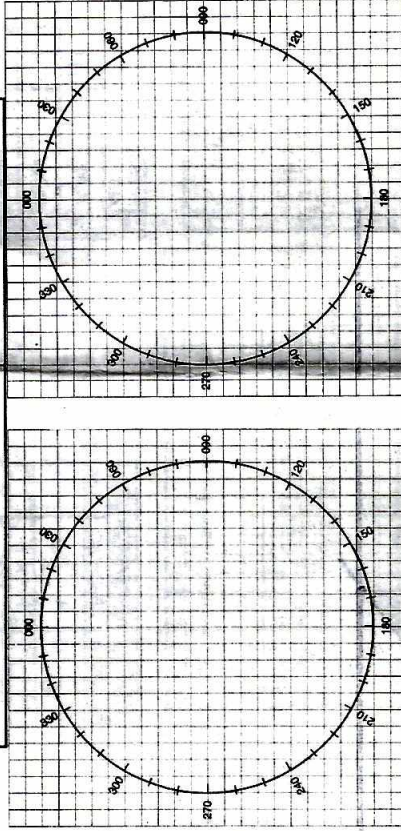
RAIBOAT LASTING CAT

Rwy 4 1600

CLEARANCES			
FREQ	ALT	HDG	OTHER
117.9	1600	Rwy	TABIR Rwy 400 ft
123.5	1600	Rwy	Rwy 400 ft
			215 V > 1600

MISSION LOG

PAGE 1 OF 1



POSITION REPORT

1. POSITION
2. TIME
3. ALTITUDE
4. NEXT POSITION
5. ETA
6. NEXT POSITION

EMERGENCY MESSAGE

TRANSMIT THE FOLLOWING MESSAGE TO ANY AGENCY ON THE AIR-GROUND FREQUENCY IN USE. IF UNABLE TO ESTABLISH COMMS, ATTEMPT CONTACT ON ANY OF THE FOLLOWING EMERGENCY FREQUENCIES:

UHF/VOICE 121.5 2182 KHZ
HF/VOICE 243.0 500 KHZ

MAYDAY, MAYDAY, MAYDAY
THIS IS NOAA, NOAA, NOAA

- POSITION _____ N/S
E/W AT _____ Z

- HEADING _____ TRUE/MAG

- AT _____ KTS TRUE/INDICATED

- FLIGHT LEVEL OR ALTITUDE _____

- WE ARE A P-3 AIRCRAFT WITH _____ SOULS ON BOARD

- NATURE OF EMERGENCY _____

- ASSISTANCE DESIRED _____

- PILOT INTENTIONS _____

- WE HAVE _____ ENDURANCE REMAINING

TIME	FIX TYPE	N	POSITION	INS 1 POSITION	KERR	INS 2 POSITION	KERR	VAR	TH	DR	TRK	GS	WD	WS	ALT	TAS	NEXT PT	DIST	TIME	ETA	REMARKS
1155	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
1215	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
1315	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
1415	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
1515	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
1615	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
1715	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
1815	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
1915	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
2015	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
2115	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
2215	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
2315	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
2415	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
2515	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
2615	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
2715	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
2815	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
2915	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
3015	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
3115	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
3215	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
3315	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
3415	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
3515	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
3615	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
3715	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
3815	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
3915	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
4015	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
4115	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
4215	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
4315	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
4415	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
4515	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
4615	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
4715	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
4815	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
4915	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
5015	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
5115	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
5215	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
5315	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
5415	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
5515	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
5615	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
5715	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
5815	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
5915	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
6015	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
6115	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
6215	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
6315	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
6415	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
6515	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	335	-	335	265	146	15	1500	236	2400	25	+05	1220	
6615	A	28-19.5	082-48.7	28-19.5	082-48.7	28-19.5	082-48.7	SW	3												