Lead Project Scientist

Flight ID 121025H1 **Storm** Hurr. Sandy **LPS** Rogers

Preflight

- ✓ 1. Participate in general mission briefing.
- ✓ 2. Determine specific mission and flight requirements for assigned aircraft.
- ✓ 3. Determine from AOC flight director/meteorologist whether aircraft has operational fix responsibility and the mission designation.
- ✓ 4. Contact HRD members of crew to:
  a. Assure availability for mission.
  b. Review field program safety checklist
  c. Arrange ground transportation schedule when deployed.
  d. Determine equipment status.
- ✓ 5. Meet with AOC flight director and navigator at least 3 hours before take-off for initial briefing.
- ✓ 5. Meet with AOC flight crew at least 2 hours before take-off for crew briefing. Provide copies of flight requirements and provide a formal briefing for the flight director, navigator, and pilots.
- ✓ 6. Report status of aircraft, systems, necessary on-board supplies and crews to HFP Director.
- ✓ 7. Before take-off, brief the on-board GPS dropsonde operator on times and positions of drop times.
- ✓ 7. Make sure each HRD flight crew member has a life vest.
- ✓ 7. Perform a headset operation check with all HRD flight crew members. Make sure everyone can hear and speak using the headset.

In-Flight

- ____ 1. Confirm from AOC flight director that satellite data link is operative.
- ____ 2. Confirm camera mode of operation.
- ____ 3. Confirm radar recording set-up.
- ____ 4. Confirm data recording rate.
- ____ 5. Complete Lead Project Scientist Form.
- ____ 6. Check in with the flight director to make sure the mission is going as planned (i.e. turns are made when they are supposed to be made).

Post flight

- ____ 1. Debrief scientific crew.
- ____ 2. Gather completed forms for mission and bag separately from other missions. Turn in to data manager at HRD.
- ____ 5. Copy serial flight data, dropsonde files, and radar data onto thumb drive. Turn in with completed forms.
- ____ 6. Report landing time, aircraft, crew, and mission status along with supplies (tapes, *etc.*) remaining aboard the aircraft to HFP Director.
- ____ 7. Determine next mission status, if any, and brief crews as necessary.
- ____ 8. Notify HFP Director as to where you can be contacted and arrange for any further coordination required.
- ____ 9. Prepare written mission summary using **Mission Summary** form.

Lead Project Scientist Check List

Storm or Project Sandy **Experiment name** TDR
Date 10/25/12 **Aircraft** N42RF **Flight ID** 121025H1
Mission ID 07184 - Sandy

A. Participants:

HRD		AOC	
Function	**Participant**	**Function**	**Participant**
Lead Project Scientist	Rogers	Flight Director	Sears
Radar	Gamache	Pilots	Nelson, Sweeny, Martin
Dropwindsonde	Gamache	Navigator	Sloane
Sea-Air	Rogers	Systems Engineer	Peek
Photographer/Observer/ Guests (give affiliation)		Data Technician	Smith
Cloud Physics		Electronics Technician	Lynch
		Other ( )	

B. Take-off and Landing Times and Locations:

Take-Off: 2022 UTC Location: KMCF

Landing: 0413 UTC Location: KMCF

Number of Eye Penetrations: 5

C. Past and Forecast Storm Locations:

Date/Time	Latitude	Longitude	MSLP	Maximum Wind

E. —Equipment Status (Up ↑, Down ↓, Not Available —, Not Used O)

Equipment	Pre-Flight	In-Flight	Post-Flight	Number of Expendables
Radar/LF				
Doppler Radar/TA				
Cloud Physics				
Data System				
GPS sondes				
AXBT/AXCP				
Ozone instrument				
Cameras				
Other ( )				

D. Mission Briefing:

Fly TDR mission into Hurricane Sandy, a cat-2 hurricane that has emerged off north coast of Cuba. Sandy underwent RI prior to hitting Cuba, now is much less organized with a ragged eye at best. Recent recon fix of 969 hPa, ajr from a min of ~954 hPa the previous night. Storm is encountering SW shear in association with an upper-level low to the W of system. Mid/upper level dry air also impacting SW; Good outflow channels on NW and NE side. There was a burst of convect in W eyewall prior to departure.

Mission will be rotating fig-4, IP on W and FP on NE, 8000 ft altitude. Drop sondes at all endpoints, midpoints, and RMW, plus first and last pass. Drop AXBT's at mid and endpoints for first fig.-4, and end- and mid-points on second figure 4.

Lead Project Scientist Event Log

Date 10/25/12 **Flight ID** 121025H1 **LPS** Rogers

Time	Event	Position	Comments
2012	takeoff	KMCF	takeoff from Mobile
2148	pattern, drop1	at IP, 105 nm W of center	FL 14, SF 14 m/s
2150	obs	~100 nm W	eye apparent on LF, appears elliptical, a little further north than what we'd anticipated
2201	drop 2, BT	Mid pt on W side	FL 30, SF 16 m/s NO BT
2207	obs	near RMW on W	eyewall looks completely open on S side
2208	drop 3, BT	RMW W	FL 30, SF 35 m/s, 28.2 SST
2211	obs	eye	complete cirrus coverage, indistinct edge of eyewall visually
2217	drop 4	center, 24°35', 75°42'	extrap SLP 969
2222	drop 5, BT	RMW E	FL 44, SF 32 m/s, 28 SST
2228	drop 6, BT	midpt E	FL 30, SF 28, SST 28.0
2239	obs	near turn point on E	LF image shows a broad elliptical eye, northern portion of eyewall appears to be a feeder band into a new center feature that may be forming in a burst of <-80C evident on IR image
2241	pattern	turn point on E	turn for downwind leg
2242	drop 7	E side	FL 30, SF 22 m/s

24° 37'
75° 39'

968.1
2:56
24° 35'
75° 43'
2256 UTC

Lead Project Scientist Event Log

Date 10/25/12 **Flight ID** 121025H1 **LPS** Rogers

Time	Event	Position	Comments
2307	obs	on downwind leg	entire downwind leg
		N of ctr	in mixed convective/
			stratiform band
2314	drop 8	105 nm N	FL 30 SF 25 m/s, sonde failed
2316	drop 9 (backup)	100 nm N	FL 30, sf 25 m/s,
			sonde also failed,
			late launch detect,
			came in at 1500 ft
2324	drop 10, BT	mid pt N leg	FL 40, sf 28 m/s, SST
			21-22 C, suspect
2333	drop 11, BT	N eyewall	FL 42, sf 35 m/s, SST
			27.5 C, lightning seen
			in & outside eyewall
2349	drop 12, BT	mid pt S of storm	no RAW, so skipped,
			just did mid pt FL 32, sf 23 m/s
			no BT
0005	drop 13, BT	end pt. S of storm,	FL 16, sf 14 m/s,
		set up for 2nd	SST ~ 27.5 °C
		fig 4	
0019	pattern	105 nm SE	beginning 2nd fig 4
0022	drop 14, BT	100 nm SE	FL 25, sf 20 m/s, SST
			27.8 C
0031	drop 15, BT	mid pt SE	FL 38, sf 20 m/s, SST
			28.0 C
0037	drop 16	SE eyewall	FL 36, SF 28 m/s
0043	obs	in eye	vertical x-section of rad. winds
0047	drop 17		FL 30, SF 29 m/s

2339 UTC
24° 47',
75° 48'
340/10

0044
24 52 75 52
325/8

show strong PBL inflow on E side, outflow on W side, circ centers b/w 2+8 km displaced ~30-40 km to N

Lead Project Scientist Event Log

Date 10/25/12 **Flight ID** 121025H1 **LPS** Rogers

Time	Event	Position	Comments
0056	drop 18, BT	mid pt NW	FL 35, sf 27 m/s
0102	obs	near NW end pt	looking at radar analyses
	on W side, clear PBL inflow, much weaker inflow on S, combining		
	with E-W pass, se strong deep inflow on E & W sides, outflow on W side,		
	weak inflow on S side;	X spot of spread in N-S shows tilt of vortex	
0109	drop 19	NW end pt	FL 31, sf 30 m/s
0135	pattern	SW end pt	turn to inbound on SW
0136	drop 20, BT	SW end pt	FL 7, sf 12 m/s,
			SST 28.3 C
0148	drop 21, BT	SW mid pt	FL 17, sf 25 m/s,
			SST 28.0 C
0158	obs	SW eyewall	very flat wind profile, not
			above 20 m/s, highly asymmetric
0202	drop 22,	25°15' 76° 01'	ext SLP 971 hPa
		center drop	
0209	drop 23, BT	Raw NE	FL 40, sf 30 m/s,
			SST —
0220	pattern	75 nm NE	had to shorten NE leg b/c
0223	drop 24, BT	70 nm NE	FL 35, sf 24 m/s, SST 27
0229	drop 25, BT	35 nm NE, mid pt	FL 40, sf 30 m/s, SST 2
0240	drop 26, BT	NW eyewall	FL 50, sf 32 m/s
0304	drop 27, BT	NW end pt	FL 32, sf 27, SST
			25.5 (suspect)
0413	land		

Mission Summary
Storm name
YYMMDDA# Aircraft 4 2RF

Scientific Crew (4 RF)
Lead Project Scientist Rogers
Radar Scientist Dominelle
Dropwindsonde Scientist Dominelle
Sea-Air Scientist Rogers
Cloud Physics Scientist ———
Observers

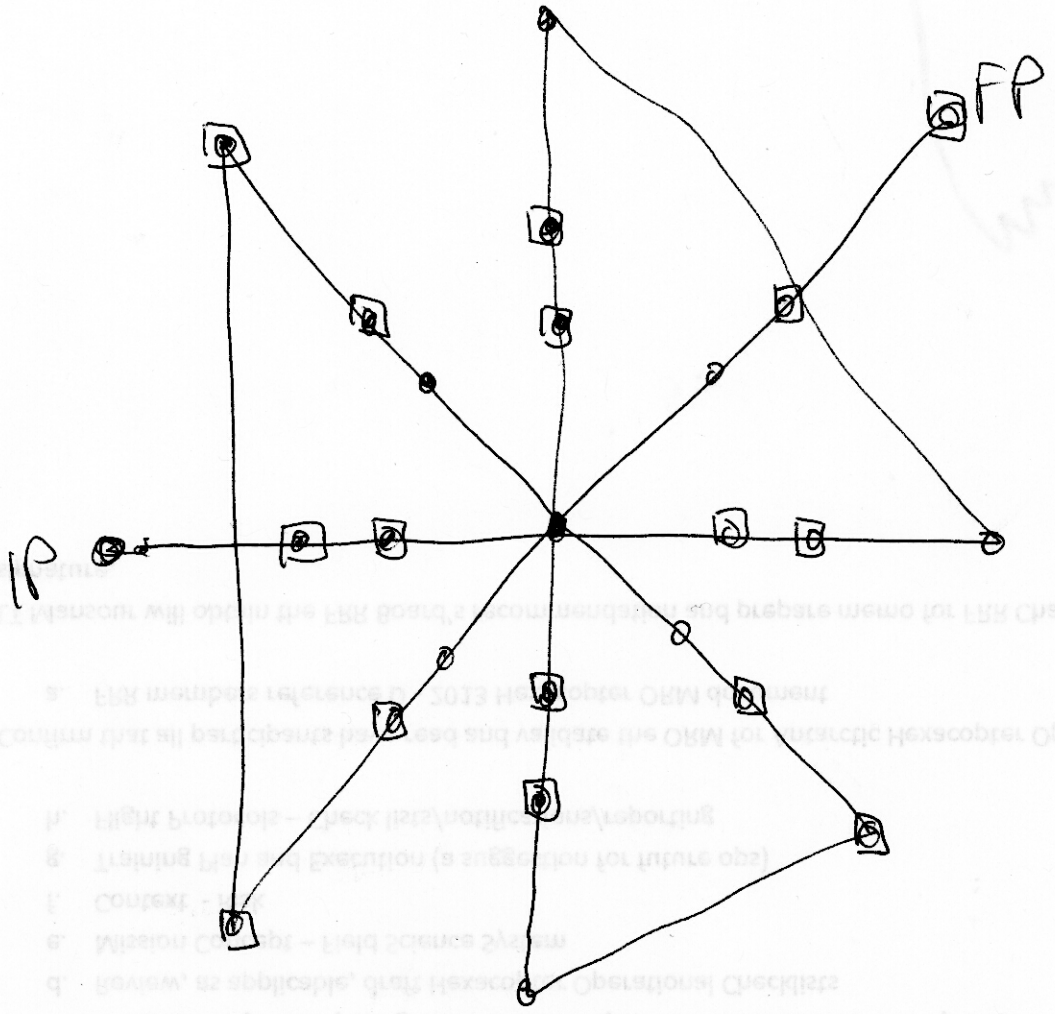
Mission Briefing: (include sketch of proposed flight track or page #)
See previous

Mission Synopsis: (include plot of actual flight track) Flew pattern generally as planned. Had to shorten legon NE side b/c of military activity. Turned around and did a fifth penetration, inbound NE, outbound NW. Storm high complex, indicative of SW shear interaction - strong PBL inflow on E & N side, outflow on W side, weak inflow on S side; vertical X sections of wind speed in N-S plane clearly show vortex tilting toward NW with height. Horiz. X-sects bear this out.

Evaluation: (did the experiment meet the proposed objectives?) Yes it did. Radar generally worked well, decent coverage on N & E sides. Numerous (27) sondes dropped, 18 BT's, all of which were combos. Almost all sondes worked, ~75% of BT's. Interesting case being sampled, one of a TC interacting w/ an upper-level cutoff low, undergoing significant structural evolution.

Problems:(list all problems) no major problems except for some failures in the BT's (~25%)

Expendables used in mission:
GPS sondes : 27
AXBTs : 18
Sonobuoys: ———



● GPS sonde

□ AXBT