Rogers
050923I

Lead Project Scientist

Preflight

___ 1. Participate in general mission briefing.

___ 2. Determine specific mission and flight requirements for assigned aircraft.

___ 3. Determine from field program director whether aircraft has operational fix responsibility and discuss with AOC flight director/meteorologist unless briefed otherwise by field program director.

___ 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 appropriate HRD operations center (MGOC in Miami).

___ 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 members have life vests

___ 7. Perform a headset operation check with all HRD flight crew members. Make sure everyone can hear and speak using the headset.

___ 8. Collect "mess" fee ($2.00) from all on-board HRD flight crew members.

In-Flight

___ 1. Confirm from AOC flight director that satellite data link is operative (information).

___ ?. Confirm camera mode of operation.

___ 3. Confirm data recording rate.

___ 4. Complete Lead Project Scientist Form.

5. 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. Report landing time, aircraft, crew, and mission status along with supplies (tapes, *etc.*) remaining aboard the aircraft to MGOC.

___ 3. Gather completed forms for mission and turn in at the appropriate operations center. [Note: all data removed from the aircraft by HRD personnel should be cleared with the AOC flight director.]

___ 4. Obtain a copy of the 10-s flight listing from the AOC flight director. Turn in with completed forms.

___ 5. Obtain a copy of the radar DAT tapes. Turn in with completed forms.

___ 6. Obtain a copy of the all VHS videos form aircraft cameras (3-4 approx.). Turn in with completed forms.

___ 7. Obtain a copy of CD with all flight data. Turn in with completed forms.

___ 8. Determine next mission status, if any, and brief crews as necessary.

___ 9. Notify MGOC as to where you can be contacted and arrange for any further coordination required.

___ 10. Prepare written mission summary using **Mission Summary** form (due to Field Program Director a week after the flight).

Lead Project Scientist Check List

Storm or Project Rita **Experiment name** NHC/Ocean model/RAINEX
Date 9/23/05 **Aircraft** N43RF **Flight ID** 050923I1

A. Participants:

HRD		AOC	
Function	**Participant**	**Function**	**Participant**
Lead Project Scientist	Rogers	Flight Director	Mayeaux
Radar	Jorgensen-NSSL	Pilots	Tebeest, Nelson
Workstation	Dunion	Navigator	Siegel
Cloud Physics	—	Systems Engineer	Blair
Photographer/Observer /Guests	Smull, Marchok	Data Technician	San Souci, Tong
Dropwindsonde	Dunion	Electronics Technician	Tong
AXBT/AXCP	UMiami / WalshCSRA	Other	

B. Take-off and Landing Times and Locations:

Take-Off: 1535 UTC Location: MacDill AFB

Landing: 0114 UTC Location: MacDill AFB

Number of Eye Penetrations: 5

C. Past and Forecast Storm Locations:

Date/Time	Latitude	Longitude	MSLP	Maximum Wind

D. Mission Briefing: NHC-tasked SFMR/flt mission into Hurricane Rita, fix times 18, 21, 00 UTC. 105 nm legs, IP on NE side. NHC drops at sfc wind max on NE and NW sides, plus center drop. RAINEX drops at FL wind max in inner eyewall and in moat region and inside outer eyewall, if they exist. Drop HRD drop/BT combos in SW and SE quads on first figure-4, these correspond to drop locations from previous day's drops and partially cover the buoy grid laid out by AF 2 days ago.

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

Equipment	Pre-Flight	In-Flight	Post-Flight	# DATs / Cds /Expendables/ Printouts
Radar/LF	↑	↑	↑	
Doppler Radar/TA	↑	↑	↑	
Cloud Physics	↑	↑	↑	
Data System	↑	↑	↑	-
GPS sondes	↑	↑	↑	
AXBT/AXCP	↑	↑	↑	
Ozone instrument	—	—	—	
Workstation	↑	↑	↑	
Videography	↑	↑	↑	

REMARKS:

Lead Project Scientist Event Log

Date 9/23/05 **Flight** 050923I1 **LPS** Rogers

18Z
27.6
92.2

	Time	Event	Position	Comments
	1535	takeoff	MacD. UHFB	takeoff from MacD, H
	1624	radar	254 nm from IP	going through light band far from center, 15-20 kft,
				max dBZ only 40; nice
				anvil that is being sheared
			off	indicative of SW shear (band is
			to our left now)	
	1701	radar	172 nm from IP	inner eyewall open on S side,
				outer eyewall may be open too,
				but can't say yet
	1710	descent	46 nm from IP	descend to 10kft press
	1717	obs	10 nm from IP	near LA coast, impressive
				sea state, large breaking waves,
				shoaling leading (possibly)
				to anomalously high SF winds
	1727	winds	70 nm out	FL 90 kt, SF 60 kt
		radar		
R	1731	drop 1	inside remnants outer eyewall	FL 100 kt, SF 70 kt
R	1734	drop 2	in neat region	FL 90 kt, SF 70 kt, no LO
R	1740	drop 3	NE eyewall FL max	FL 120, SF 85 kt, GPS
N	1742	drop 4	NE eyewall SF max	FL
N	1747	drop 5, fix	27° 45' 82° 15'	ext drop 926 mb, 930 mb
	1748	winds		peak FL 130 kt, SF 90 kt on
				NE side
R	1749	drop 6	inner SW eyewall	FL 100 kt, SF 85 kt
R	1750	drop 7	mid-SW eyewall	
	1751	winds	outside SW inner eyewall	peak FL 100 kt, SF 85 kt on SW side

Lead Project Scientist Event Log

Date 9/23/03 **Flight** 050923I **LPS** Rogers

	Time	Event	Position	Comments
R	1754	drop 8, BT 1	moat region in	FL 65kt, SF 50kt, SST 29.0C
			SW eyewall	
	1757	radar	moat region in SW	inner eyewall open, outer
			blw inner + outer	eyewall much clearer on
			eyewall	S side (based on ref.)
R	1800	drop 9, BT 2	outer eyewall on SW	in outer eyewall on SW side,
			side	FL 70kt, SF 60kt, SST 28.8C
H	1807	drop 10, BT 3	75 nm SW of eye	FL 65kt, SF 45kt, SST [illegible]
H	1814	drop 11, BT 4	105 nm SW of eye	FL 60kt, SF 40kt, SST 29.3C
H	1820	drop 12, BT 5	2nd of downwind leg	FL 60kt, SF 45kt, SST 29.0
H	1825	drop 13, BT 6	3rd of downwind leg	FL 65kt, SF 45kt, SST 29.0
H	1832	drop 14, BT 7	4th of downwind leg	FL 65kt, SF 45kt, SST 28.9
H	1838	drop 15, BT 8	5th of downwind leg	FL 70kt, SF 40kt, SST 28.6
H	1845	drop 16, BT 9	6th of downwind	FL 75kt, SF 40kt, SST 27.9
	1849	obs	80 nm SE of center	lines of thin bands on SE side, outer eyewall about 50 nm from ctr
H	1850	drop 17, BT 10	75 nm SE of eye	FL 70kt, SF 40kt, SST more
R	1857	drop 18, BT 11	40 nm SE of eye	FL 77kt, SF 50kt, SST more
R	1900	drop 19	37 nm SE of eye, in outer eyew.	backup to 18.
	1901	obs	22 nm SE	outer eyewall weaker, inner eyewall still
R	1903	drop 20	21 nm SE of center,	FL 85kt, SF 50kt open on SE side
			in moat region	
R	1906	drop 21	SE inner eyewall	eyewall open here
	1911	winds	eye	peak FL 110kt, SF 85kt on
				SE side
N	1912	drop 22, fix	27°57' 92°28'	eye drop 927 mb, GPS
N	1916	drop 23	NW eyewall	FL 70kt, SF 95kt
R	1916	drop 24	NW eyewall	

29°57' 30°04'
94°01' 93°48' towers

2912 9353

Lead Project Scientist Event Log

Date 9/23/05 **Flight** 050923I **LPS** Rogers

	Time	Event	Position	Comments
	1918	winds, obs	outside NW eyewall	peak FL 115 kt, SF 95 kt on NW eyewall; outer eyewall appears to have dissipated, replaced by a band spiraling in
	1934	obs	85 nm NW of eye	bidespread bands up on NW side
	1935	BT 12	80 nm NW of eye	SST 29.5 °C
H	1936	drop 25	85 nm NW of eye	FL 70 kt, SF 50 kt
	1938	turn	105 nm NW of ctr	FL 70 kt, SF 50 kt
	2011	obs	77 nm SW of eye	on inbound leg now, approaching band of high reflectivity
R	2018	drop 26	inside outer SW eyewall	FL 70 kt, SF 65 kt, peak in FL winds of 70 kt turn outer eyewall
R	2020	drop 27	moat region	
	2024	obs	SW of inner eyewall	open eyewall on N side, spiral bands on W and NW side
R	2028	drop 28	SW eyewall	FL 90 kt, SF 75 kt, peak values
N	2031	drop 29, fix	28° 09' 92° 37'	extrap 929 mb
N	2037	drop 30	NE eyewall	
R	2038	drop 31	NE eyewall	peak FL 120 kt, SF 90 kt on NE side
R	2040	drop 32	moat region	FL 105 kt, SF 75 kt
R	2043	drop 33	NE outer eyewall	FL 100 kt, SF 70 kt
	2054	obs	95 nm NE of eye	SF winds much lower than FL winds in this outer quadrant,

Lead Project Scientist Event Log

Date 9/23/05 **Flight** 050923I **LPS** Rogers

	Time	Event	Position	Comments
	2100	obs	downwind leg NE of eye	
H	2106	drop 34	downwind leg, near coast, S of rainband along coast	FL 100kt, SF 70kt
H	2112	drop 35	2nd drop on coastal leg	FL 90kt, SF 60kt
H	2113	drop 36	3rd drop, backup	FL 85kt, SF 60kt
H	2120	drop 37	upstream of towers on LA coast	no wind S, no late winds
H	2122	drop 38	near NW point	FL 75kt, SF 50kt
H	2125	drop 39	turn point on NW	FL 75kt, SF 55kt
R	2135	drop 40	outer eyewall on NW side	FL 105kt, SF 75kt, bumpy here,
R	2141	drop 41	moat region	FL 80kt, SF 70kt
R	2145	drop 42	NW eyewall	
N	2146	drop 43	NW eyewall	peak FL 100kt, SF 90kt on NW side
R	2152	drop 44	SE eyewall	
R	2155	drop 45	moat region	FL 85kt, SF 50kt
R	2204	drop 46	outer eyewall on SE side	FL 80kt, SF 60kt;
	2218	obs	downwind leg	blw two sharply-defined bands separated by 50-60nm, highest reflect of about 40-45dbZ
	2247	obs	45 nm NE of center	3 clear bands on NE side, separated by about 40 nm; inner eyewall now just confined to NE side
	2255	obs	30 nm from outer	broad FL wind max in ENE quad outer eyewall, peak FL 110kt 50 nm from eye
N	2257	drop 47	ENE eyewall 28°28' 92°52'	peak FL 120kt, SF 90kt on ENE eyewall
N	2303	fix, drop 48		extrap 927mb; GPS
N	2304	drop 49	Eyewall	peak FL 100kt, SF 80kt on E side

still pending

Mission Summary

Storm name

YYMMDDA# Aircraft 43RF

Scientific Crew (43RF)

Lead Project Scientist Rogers
Radar Scientist Jorgensen
Cloud Physics Scientist —
Dropwindsonde Scientist Dunion
Boundary-Layer Scientist Uhlhorn, Walsh
Workstation Scientist Dunion
Observers Small, Marchok

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

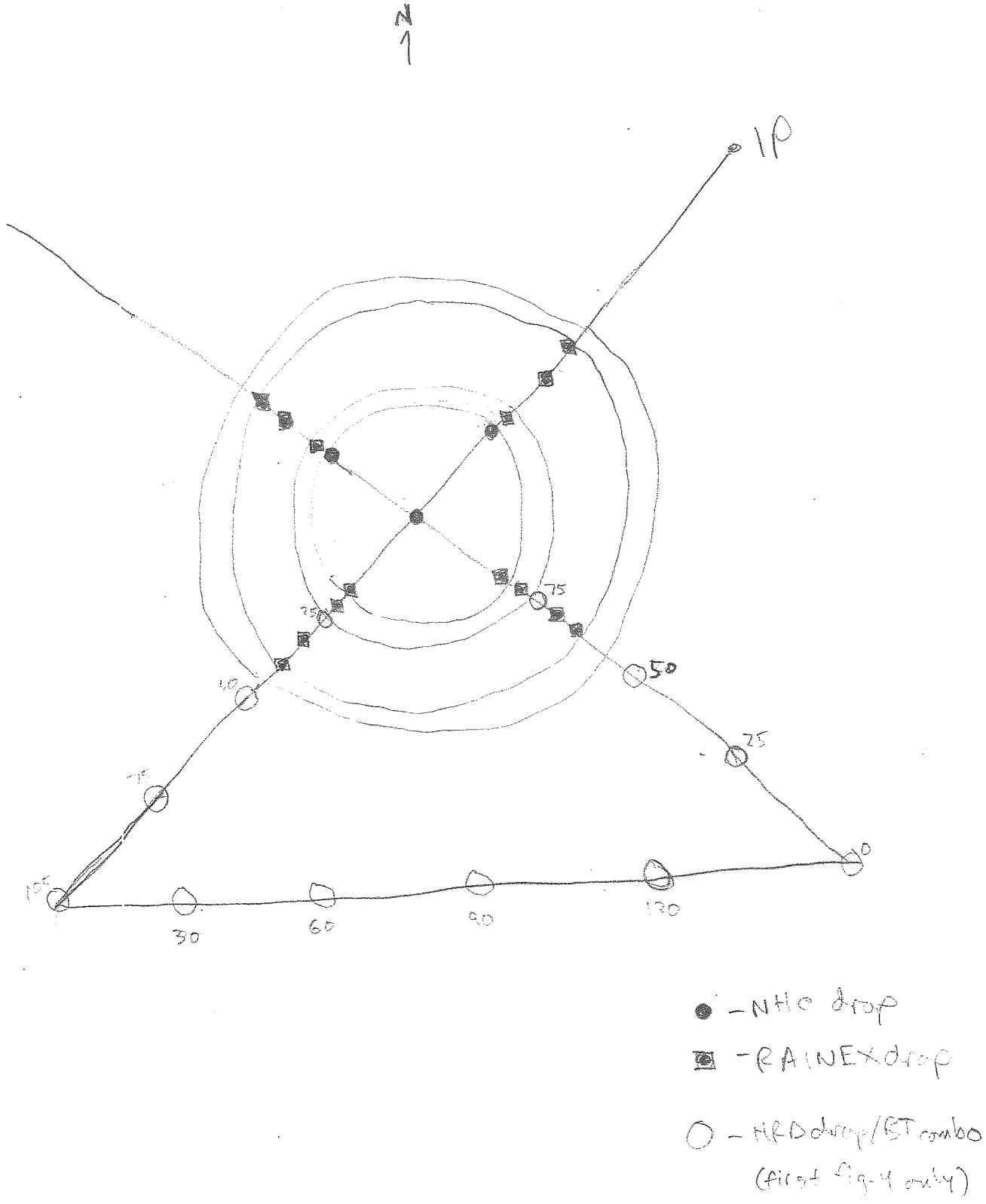
See previous

Mission Synopsis: (include plot of actual flight track) Flew NHC-tasked mission into Rita. Started on NE side, ended 1st figure-4 on NW side. Then turned downwind to SW side, looked inbound for next fig.-4, did coastal run on next downwind leg, ended on SE side. Then did downwind leg to a point ENE of center, came in for a final fix and then RTB'ed. Dropped 49 sondes (24 Rainex, 10 NHC, 15 HRD), Rainex sondes dropped across inner eyewall, in moat region btw inner + outer eyewall, and along outer eyewall. Dropped HRD sondes/BT combos at predetermined points in previously-laid grid, plus 1 point thru center of storm. Dropped 4 HRD sondes along coastal run for landfall work.

Evaluation: (did the experiment meet the proposed objectives?) mission was a success. It combined a tasked operational mission with 3 research objectives: RAINEX, air/sea Ocean module, and landfall. Storm underwent significant changes from previous 2 days: MSLP had risen to about 930 mb. Concentric eyewalls still seemed to be prevalent, but marked asymmetries developed as the storm encountered 15-20 kt of southerly shear. This asymmetry was reflected in the reflectivity in the inner core, the rainfall distribution outside the core, the relationship btw flt-lvl peaks in the different quads, and the difference btw flt-lvl magnitudes in diff. quads. All in all these flights will mark a remarkable shift from a very strong, symmetric Cat-5 to a still-strong asymmetric Cat-4 with concentric eyewalls to a Cat 2-3 developing asymmetries possibly in response to shear and/or dry air intrusions. SSTs are still warm, between 28 and 29C.

Problems:(list all problems) none. 2 RAINEX sondes had no launch detects and 2 BTs failed.

Expendables used in mission:
GPS sondes : 49 (24 Rainex, 10 NHC, 15 HRD)
AXBTs : 12
Sonobuoys: 0


N
1
1P
75
25
50
100
75
25
0
105
30
60
90
120
● - Nitc drop
■ - RAINEX drop
○ - HRD drop/ST combo
(first flight only)

Hurricane Rita 050923i