Lead Project Scientist

Storm or Project Hurr. Ingrid **Experiment name** RAPX / TC Shear
Flight ID 13091SHI **Mission ID** _____

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.
- ✓ 6. 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.
- ✓ 7. Report status of aircraft, systems, necessary on-board supplies and crews to MGOC in Miami.
- ✓ 8. Before take-off, brief the on-board GPS dropsonde operator on times and positions of drop times.
- ✓ 9. Make sure each HRD flight crew member has a life vest.
- ✓ 10. 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 (information).
- ✓ 2. 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. Gather completed forms for mission and turn in to data manager at HRD.
- ✓ 3. Obtain a copy of the 10-s flight listing from the AOC flight director. Turn in with completed forms.
- ✓ 4. Obtain a copy of the radar DAT tapes. Turn in with completed forms.
- ✓ 5. Obtain a copy of serial flight data on thumb drive. Turn in with completed forms.

[**Note**: all data removed from the aircraft by HRD personnel should be cleared with the AOC flight director.]

- ✓ 6. Report landing time, aircraft, crew, and mission status along with supplies (tapes, *etc.*) remaining aboard the aircraft to MGOC.
- ✓ 7. Determine next mission status, if any, and brief crews as necessary.
- ✓ 8. Notify MGOC 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 Ingrid **Experiment name** RAPX / [redacted]

Flight ID 130915H1 **Mission ID** _____

A. Participants:

HRD		AOC	
Function	**Participant**	**Function**	**Participant**
Lead Project Scientist	Rogers	Flight Director	Sears
Radar/Workstation	Chen	Pilots	Halverson, Kibbey
		Navigator	Gallagher
Cloud Physics	—	Systems Engineer	Bosko
		Data Technician	Smith
Dropwindsonde	Zhang	Electronics Technician	Lynch
AXBT/AXCP	Zhang	Other	
Photographer/Observers/Guests			

B. Take-off and Landing Times and Locations:

Take-Off: 0559 UTC Location: KMCF

Landing: 1350 UTC Location: KMCF

Number of Eye Penetrations: 3

C. Past and Forecast Storm Locations:

Date/Time	Latitude	Longitude	MSLP	Maximum Wind

D. Mission Briefing: Conduct RAPX mission into Hurricane Ingrid. Single figure-4, 100 nm legs, IP on NE. Upon completion of second pass on NW side, turn 180 and head back into storm, trade outbound leg and RTB. Drop combo sonde/AXBT at all turn, midpoints, and center passes. Possibly drop sondes at RMW locations, if NHC requests. Fly 8000 ft. Storm has intensified ~25 kt in last 24 h, despite presence of fairly substantial W/NW shear. Areas of deep convection that are persistent (-80C) evident near and N/NW of center. Could continue to intensify, unless shear increases worked up.

Storm or Project Ingrid **Experiment name** RAPX

Flight ID 13091541 **Mission ID** _____

E. —Equipment Status (Up ↑, Down ↓, Not Available **N/A**, 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	—			
Cameras	—			

REMARKS:

Lead Project Scientist Event Log

Date 9/15/13 **Flight ID** 13090 5HI **LPS** Rogers

Time	Event	Position	Comments
0559	takeoff	KMCF	takeoff
0816	pattern	IP, 100 nm NE	begin RLeg 1; FL 16, SF 16 m/s; 29.1 SST
0825	obs	inbound leg, ~60 nm from center	partial eyewall visible on LF; lightning visible off nose
0828	pattern	50 nm NE	FL 20, SF 20 m/s;
0840	pattern	NE eyewall	FL 32, SF 35 m/s
0843	center	22° 16′ 95° 24′	center fix, 29.0 SST
0845	obs	20 nm SW of center	LF shows spiral banded structure, no echoes on SW side; NE eyewall showed strong convection, 18-19 km echo tops
0853	obs	~50 nm SW of center	clear asymmetry in FL, SF winds across eyewall; ~70 kt SF on NE, 40 kt on SW
0856	pattern	~50 nm SW of center	FL 12, SF 9 m/s
0907	pattern	100 nm SW	end outbound leg, turn downwind
0909	drop	100 nm SW	FL 8, SF 5 m/s
0935	obs	downwind leg	going through some convection, at upwind end of spiral band
0940	pattern	100 nm SW	end downwind leg

RL1 drop1, BT

drop2, BT
drop3
drop4, BT

drop 5, BT
End OB

drop6, BT

end Downwind
drop7, BT
Start inbound RL2

Start 0940 > RL2
end 1036

315/4 - motion from 1st 2 fixes

Lead Project Scientist Event Log

Date 9/15/13 **Flight ID** 130915H1 **LPS** Rogers

Time	Event	Position	Comments
0953	pattern	midpt. on SE	FL 12, SF 20 m/s
1011	center	22°19' 95°28'	
1013	pattern	N eyewall	SF 33 m/s, FL 30 m/s
1026	pattern	50 nm NW	FL 18, SF 10 m/s
1031	055	NW outbound leg	system has an open eyewall on S side, really just reflectivity on N side; then spiral band along NE, E, SE sides
1036	pattern		end outbound, turn around
1038	drop	10 nm NW of eyewall	FL 13, SF 7 m/s
1052	drop	40 nm NW	FL 24, SF 20 m/s
1056	drop	NW eyewall	FL 24, SF 23
1058	drop	center, 22°20' 95°33'	
1058	pattern	center	end inbound leg, beg. outbound leg to 045
1112	drop	midpt outbound NF	FL 28, SF 26 m/s
1124	drop	100 nm NE	end of leg 3, FL 14 SF 15 m/s
1350	landing	KHCF	

drop 8, BT
drop 9, BT
drop 10
drop 11, BT

22 19
95 28 1011

drop 12, BT
drop 13
drop 14
drop 15

22° 20'
95° 33'
1058

277/7

drop 16

drop 17

1036 start 22° 20' 95° 33' 1058 center
1123 end motion 277/7 3rd analysis

Mission Summary

Storm name

YYMMDDA# Aircraft 4 ~~3~~RF

Scientific Crew (~~4~~RF)

Lead Project Scientist Rogers

Radar Scientist Chen

Cloud Physics Scientist —

Dropwindsonde Scientist J. Zhang

Boundary-Layer Scientist —

Workstation Scientist —

Observers (affiliation) —

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

See previous

Mission Synopsis: (include plot of actual flight track) Flew mission as planned. Only change was to head outbound to track 0 instead of track 315 from the center for training purposes. storm is showing classic shear structure → precip concentrated on one side, open eyewall on right of shear side, spiral band wrapping through downshear side. Vigorous convection really only in upwind portion of spiral band (on SE side). Also some in northern eyewall. Peak surface winds of ~ 70 kt seen on NE side; strong asymmetry across storm. Radar shows tilt of ~ 30–40 km toward NE blw 14 km

Evaluation: (did the experiment meet the proposed objectives?)

Yes; met objectives. Pattern flown successfully, sampled storm undergoing significant shear and halting its intensification. All drops worked, 3 BTs were corroded and failed. Those were all dropped on S side.

Problems:(list all problems)

3 BT's corroded and failed.

Expendables used in mission:

GPS sondes : 17

AXBTs : 10

Sonobuoys: —