Lead Project Scientist

Storm or Project IRMA (ALL) **Experiment type** TDR
Flight ID 20170904H2 **Mission ID** 05 11A

Preflight

____ 1. Participate in general mission briefing.

____ 2. Determine specific mission and flight requirements for assigned aircraft from the Field Program Director.

____ 3. 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.

____ 4. Meet with AOC flight director and navigator at least 3 hours before take-off for initial briefing.

____ 5. Determine from AOC flight director the mission designation and whether aircraft has operational fix responsibility.

____ 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 Field Program Director.

____ 8. Before take-off, brief the on-board GPS dropsonde operator on times and positions of drops.

____ 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. Request AOC flight director to leave radar in non-sector mode for initial Figure 4.

____ 5. Once at IP, request AOC flight director adjust radar tilt to minimize sea clutter.

____ 6. Complete Lead Project Scientist Form.

____ 7. Check in occasionaly 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 Dropsonde raw and processed files from the AVAPS operator on thumb drive.

____ 4. Obtain a copy of the radar LF files from the radar technician on thumb drive.

____ 5. Obtain a copy of the tar'ed radar TA files from the radar scientist on thumb drive.

✓ 6. Obtain a copy of serial flight data and raw NetCDF file on thumb drive from the data technician.

✓ 7. Obtain a copy of SFMR data on thumb drive from the data technician.

✓ 8. Obtain a copy of DMT data on thumb drive from the data technician.

AXBT ✓

____ 9. Report landing time, aircraft, crew, and mission status to the Field Program Director.

____ 10. Determine next mission status, if any, and brief crews as necessary.

____ 11. Prepare written mission summary using **Mission Summary** form.

Lead Project Scientist Check List

Storm or Project IRMA (AL11) **Experiment name** TDR

Flight ID 20170904H2 **Mission ID** 0511A

A. Participants:

HRD		AOC	
Function	**Participant**	**Function**	**Participant**
Lead Project Scientist	ZAWISLAK	Flight Director	BELSON / PARRISH
Radar/Workstation	ZHANG	Pilots	
		Navigator	
Cloud Physics		Systems Engineer	
		Data Technician	
Dropwindsonde	ZAWISLAK	Electronics Technician	
AXBT/AXCP		Other	
Photographer/Observers/Guests			

B. Take-off and Landing Times and Locations:

Take-Off: 2009 UTC Location: BPB (BARBADOS)

Landing: 0321 UTC Location: BPB (BARBADOS)

Number of Eye Penetrations: 4

SHIPS SHEAR 12Z: 356°/6 KT

MOTION: 255°/12 KT

C. Past and Forecast Storm Locations:

Date/Time	Latitude	Longitude	MSLP	Maximum Wind
NHC 1800Z	16.7 N	53.8 W	944 mb	105 KT
AF Fix 1836Z	16.7 16°43' N	54.01 54°1' W	944 MB	
NHC 2100Z	16.7 N	54.4 W	944 mb	115 KT

MAX FL WIND 054 121 KT 115 KT

D. Mission Briefing:

CONDUCT A ROTATED FIG 4 IN IRMA, STARTING FROM THE SOUTH, ENDING NW. PLAN IS FOR 10KFT, ALTHOUGH WE MAY AT SOME POINT GO TO 8KFT FOR DECONFLICTION W/ USAF FRAL MISSION. WE'LL DO DROPS AT EACH TURNPOINT (8), PLUS ONE EACH CTR (4). 2 AXBTS ARE LOADED. PLAN IS FOR 1 AT WP #5 (COMBO W/ SUNDAY), AND ANOTHER COMBO CENTER ON THAT INBOUND AT THE MOMENT, APPEARS EYE HAS OCCURRED (PREVIOUS MISSION) → APPARENT IN VIS/IR IMAGERY. WE'LL SEE IF IT COMPLETES. INTENSITY MAY BE 115 AT 00Z ACCORDING TO FORECAST SO SOME INTENSITY CHANGE MAY OCCUR.

Storm or Project IRMA **Experiment name** TDR

Flight ID 20A0904H2 **Mission ID** 05UIA

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:

ISSUE W/ GETTING SFMR UP PRIOR TO TAKEOFF. WORK IT AFTER TAKE OFF.

TDR MASTER / SLAVE SHOWING dBZ AND V.

Lead Project Scientist Event Log

Date 9/4/17 **Flight ID** 20170904H2 **LPS** ZAWISLAK

180°/105
000°/105
270°/105 D
090°/105
045°/105 D
225°/105
135°/105
315°/105

Time	Event	Position	Comments
2009Z	T/O BPB		
2018Z	OUTBOUND TO IP		SFMR IS STILL BEING WORKED ON MIKE. WE'LL PROCEED
			OUTBOUND. IR INDICATES THAT THE
			SECONDARY EYEWALL MAY NOT BE DOMINANT YET.
			INNER EYEWALL TO THE EAST IS STILL PRODUCING DEEP
			CONVECTION. BOTH ARE. OUTER COLD CLOUD HOTTOWERS
			AROUND TO THE SOUTH AND SW. EYE IS STILL SOMEWHAT
			OPEN ABOVE. TDR BOTH SLAVE & MASTER
			DUP.
2036Z	OUTBOUND TO IP		VISIBLE GOES IMAGERY INDICATES PRETTY SIMPLE CONVECTION
			OVERSHOOTING THE CDO ON THE EAST (LEFT OF SHEAR SIDE)
			KIND OF MERGED W INNER CONVECTION SEEN EARLIER.
2102Z	NEARING IP	14°28'/55°29'W	MID CONVECTIVE UNDERNEATH OVERCAST.
2109Z	DESCENT TO IP	14°43'/54°56'W	DEEPER CONVECTION
			COLDEST CLOUD READING USC. STRANGEST? SOME CLOSER IN
			ARE.
2114Z	IP SONDE	14°59'/54°33'	SOME DEEP CONVECTION AROUND MOSTLY CLEAR BELOW
2120Z	INBOUND CTR 180°	15°18'/54°35'	80nm INBOUND, ONLY SHALLOW CLOUD
			TRACES OF INNER EYE ON THE HIT GOOD OF CONVECTION
			~50 nm OUT TO SOUTH.
			LOOKS LIKE SPIRAL BAND IN FROM SOUTH
			ANOTHER OUTER 40 nm:
2140	CTR #1	16°41'/54°35'	
			DECENT dD LF ON OUTBOUND
			INTO NEW EYEWALL

SONDE # (right margin, beside 2114Z)

SONDE (right margin, beside 2140)
944.3
130°/10

130 KT FL WIND ON OUTBOUND TO NORTH IN (TO NORTH OUT) NEW EYEWALL REGION

HAD 116KT OUTBOUND SFMR. (HIGH RAIN)

942mb EXTRAP.

Lead Project Scientist Event Log

Date ______________ **Flight ID** ______________ **LPS** ____________________

Time	Event	Position	Comments	
2156Z	OUTBOUND TO WP #2	17° 48' / 54° 35'	ASYMMETRY IN WIND FIELD.	
			EVIDENCE ON RADAR OF SE SECONDARY EYE BECOMING	INFO ON 1st POST.
			DOMINANT AND INNER EYE DEGRADING BUT NO SECOND	
			WIND PEAK. PEAK SFMR OUT 58 m/s ~ 116 KT	
			FL. 69 m/s ~ 138 KT	EXDROP PSFC 942
2205Z	WP #2 / DROP	18° 28' / 54° 35'	AT WP #2 TURNING DOWNWIND	SONDE 2
2211Z	LOWER ALTITUDE NOW DOWNWIND		GOING DOWN TO 8 KFT	
			FOR AVOIDANCE OF TEDL.	
2221Z	ONWARD TO WP #3	17° 45' / 55° 39'	NOT MUCH PRECIP / PRETTY CLEAN BUT LITTLE TURBULENCE	
2231Z			GOT SOME PRETTY GOOD BUMPS UNDER ANVIL ON DOWNWIND	
2239Z	WP #3 / DROP	16° 43' / 56° 40'	NO LAUNCH DETECT ON THAT SONDE.	SONDE #3
2300Z			NICE EYEWALL NOW ON W → E PASS	
			NO EVIDENCE OF ORIGINAL. 100 KT FL AT 20 nmi	PASS #2
			SFMR ~100 KT, 98 KT INBOUND EYEWALL	
2307Z	CTR #2	16° 41' / 54° 51'	CENTER FIX.	SONDE
2325Z	OUTBOUND TO WP #4	16° 38' / 53° 45'	OUTBOUND TO EAST OF CTR, GOT HEAVIER PRECIP [illegible], MOD.	
			TURBULENCE. WIND LITTLE MORE SYMMETRIC	INFO ON 2nd PASS
			ON THIS SIDE. ~55 KT SFMR OUTBOUND, ~56 KT FL	
			JUST HIT SOME CELLULAR OUTER BANDS.	
2333Z	WP #4	16° 40' / 53° 8'	TURNING DOWNWIND TO WP #5	SONDE #4
2354Z	WP #5 / SONDE	17° 55' / 53° 52'	INBOUND ~~[illegible]°~~ 045° RADIAL	SONDE #5 28.03C GOOD BT
			AF ON THIS VERY LEG REPORTED 135 KT FL WINDS (NE QUAD)	
0016Z			WENT THROUGH CELLULAR BAND ~40 nm.	
			SFMR GUST 62.8 m/s, 137 KT FL GUST	PASS 3
			GOOD TURBULENCE, SOLID REFLEC. NOT DEEP THOUGH	
0020Z	CTR #3	16° 41' / 55° 9'	CTR DROP / BT	SONDE BT #2 1[illegible] 27°C 24.5?

944.6 EXDROP

Lead Project Scientist Event Log

Date _____ **Flight ID**_____ **LPS** _____

Time	Event	Position	Comments
0037Z	OUTBOUND 225° TO WP6	15°53' / 56°1'	SO ON PASS #3 WE HAD 125 KT SFMR SFC, ALSO IT
			RAINING HEAVY. IN NE EYEWALL ALMOST 140 KT FL WIND IN
			NE EYEWALL. DEFINITELY ASYMMETRIC. 57 KTS PK
			ON OUTBOUND TO SW. 50 KTS SFMR SO 100 KT SFC, 114 KT FL
			GOOD KICKS ON INBOUND.
0055Z	DOWNWIND TO WP#7	15°21' / 55°46'	SO WE'VE STILL BEEN
0047Z	WP#6 / SONDE.		WORKING AN ISSUE W/ TDR SOFTWARE, HARDWARE OR THE
			RADAR SEEMS FINE. SO NO ANOMALIES SENT YET TO EMC
			FLIGHT DIRECTOR MADE AWARE TWICE
			TURNED DOWNWIND A WHILE AG
0101Z		15°24' / 55°17'	TDR BEING RESTARTED
			TRY TO FIX THE ISSUE 15 MIN UNTIL NEXT FIX #7
			NOT SO MUCH PRECIP ON THE DOWNWIND RUNWAY
0116Z	WP#7 / SONDE	15°26' / 54°7'	GOING INTO HOLD WHILE TDR BROUGHT BACK UP
0122Z	OUT OF HOLD AT WP#7	15°37' / 54°15'	TDR UP AGAIN. dBZ, V LOOK GOOD TH 9TS
			NOW INBOUND ON 135° TO CTR #4
0149Z	CTR #4	16°40' / 56°30'	
0214Z	WP#8 / SONDE	17°52' / 56°44'	
	ON OUR WAY HOME		

PASS 3 INFO

BT IPF DATA ENTRA 942 A

TO SE 944.6 SONE

SONDE

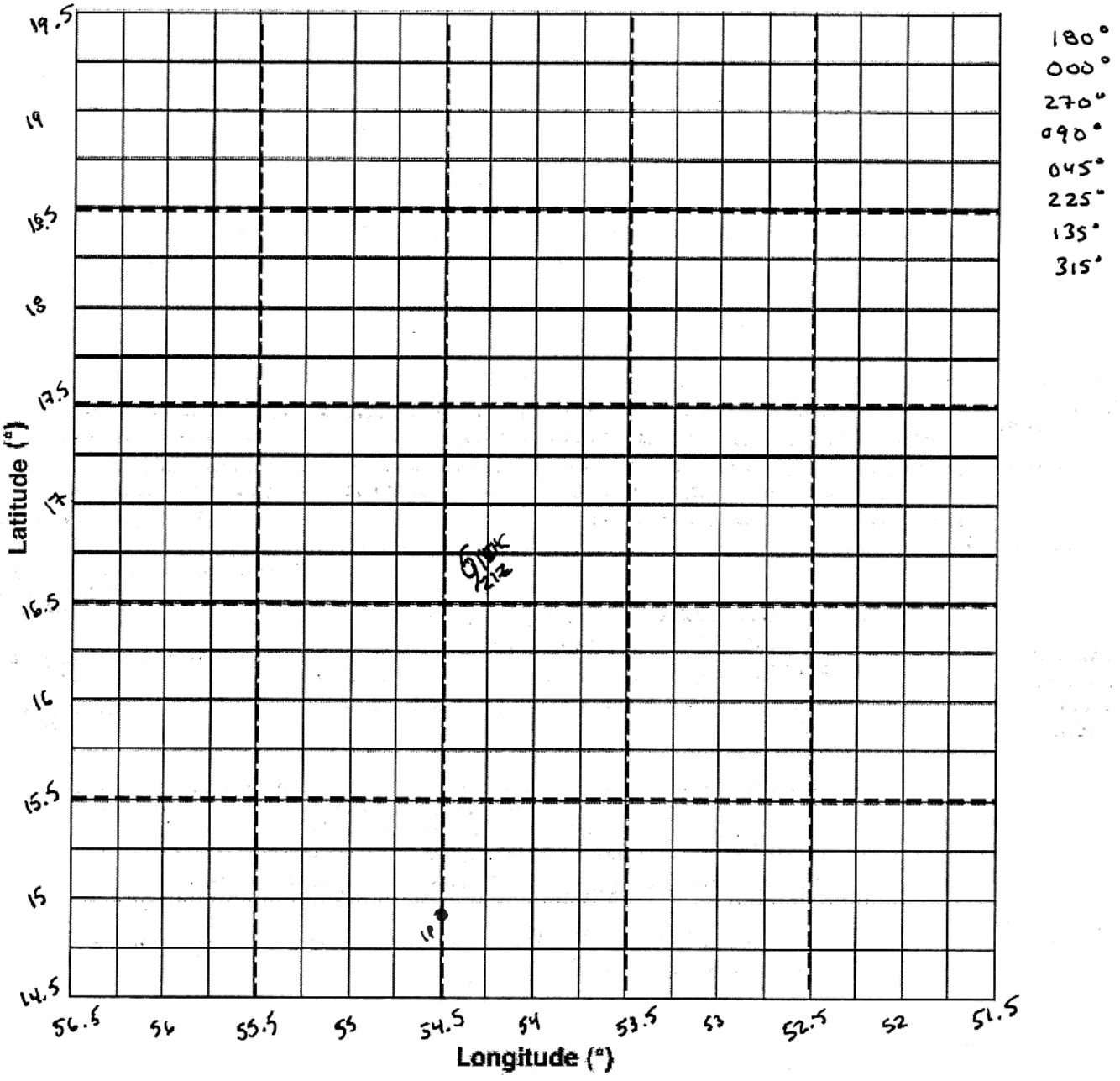
SONDE

SONDE 1

SONDE

Observer's Flight Track Worksheet

Date _____ Flight _____ Observer _____



Mission Summary
Storm name
YYMMDDA# Aircraft 42 RF

Scientific Crew (4 RF)

Lead Project Scientist ZAWISLAK
Radar Scientist ZHANG
Cloud Physics Scientist
Dropwindsonde Scientist ZAWISLAK
Boundary-Layer Scientist
Workstation Scientist
Observers (affiliation)

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

PLAN IS FOR A ROTATED FIG 4, FLT. 10 KFT, POSSIBLY DROP TO 8 KFT IF TRAIL IN. DROPS AT TURNPOINTS, EACH CENTER, SO 12 DROPS TOTAL. 2 AXBT. NW ENDPOINT AT WP # 5, FOLLOWED BY CENTER.

NHC UPGRADE TO 115KT/CAT 4 WHEN UP STATION.

Mission Synopsis: (include plot of actual flight track)

PASS #1: NOT MUCH EVIDENCE OF CLEAR IN WINDS OF [illegible] INITIAL EYEWALL, JUST A WEAK RING OF dBZ ON LF. OTHERWISE SHARP GRADIENT IN NEW EYEWALL. 944 (DROP), 946 SFMR, 938 944 EXTRAP.

PASS #2: STRATIFORM PRIMARILY INBOUND. NO REMNANT INNER EYE ON LF. HIGHEST dBZ TO EAST EYEWALL (WEST OF SHEAR), GOOD TURBULENCE. ~85 KT SFMR PEAK, 943 hPa EXTRAP, 944 SONDE → NOW THAT ERC COMPLETE, EYE OPENING UP AGAIN → EAST, ~57 KTS WEST TO 8K FL.

PASS #3: CONCENTRIC EYEWALL, 2ND DROP TAKEN OVER. ALMOST 140 KT FL TO NE, 120 KT SFMR (THOUGH RAIN). GOOD TURBULENCE TOO TO NE. HEAVIEST PRECIP STILL TIGHT TO EAST (LEFT OF SHEAR)

PASS #4: 120 KT, SE EYEWALL INBOUND, PEAK AT FL 140 KT PEAK NW EYEWALL EXTRAP 948.1

* IRMA WENT UP TO 120 KT IN FLIGHT 943 mb

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

EMC ANOMALIES WERE NOT SENT DUE TO ISSUE W/ ALTITUDE IN SWEEPS; SO NOT MEET OBJECTIVES. 11/12 SONDES WERE GOOD DATA. 1 ENDPOINT SONDE WAS NOT. 1/2 BT, 1 WAS

Problems:(list all problems)

ISSUE W/TDR SOFTWARE. TDR SHUTDOWN AT 0101Z BEING RESTARTED FOR LOST POSS. HOLD AT WP #7 WHILE BROUGHT BACK UP. TDR BACK UP 0122Z OR SO

LOOKS LIKE SAME PROBLEM W/ THE AUTOMATIC OF SWEEPS → ISSUE W/ ALTITUDE IN SWEEPS

- ONE SONDE, FAST FALL, EARLY LAUNCH

Expendables used in mission:

GPS sondes : 12 (4 NHC, 8 HRD) - 1 BAD / EARLY LAUNCH, FAST FALL
AXBTs : 2 (1 GOOD, 1 BAD)

Sonobuoys: