Lead Project Scientist

Date 8/20/19 **Flight ID** 20190820H1

Storm or Project EP95 **Experiment name** GENESIS STAGE (PM DOE / POUCH)

Mission ID WDWXE GENESIS

Pre-flight

- ☐ 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 Field Program Director.
- ☐ 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 Field Program Director
- ☐ 7 Determine next mission status, if any, and brief crews as necessary.
- ☐ 8. Notify Field Program 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 EP95 **Experiment name** GENESIS STAGE (PMODE/POUCH)

Flight ID 20190820H1 **~~Mission ID~~** WDNXE GENESIS

A. Participants:

Function	Participant	Function	Participant
Lead Project Scientist	ZAWISLAK	Flight Director	LUNDRY/HOLMES
Radar	BUCCI	Pilot	DIDIER
Workstation		Pilot	ABITBOL/MITCHELL
Cloud Physics		Navigator	RICHARDS (B)
Dropsonde	DUMON	Systems Engineer	DELGADO (AVAPS)
Dropsonde	PALTZ	Data Technician	PASCARO
AXBT/AXCP		Electronics Technicians	
Observer/Guest			
Observer/Guest		Flight Engineer	HEYSTEK/LALONDE

B. Take-off and Landing Times and Locations:

Take-Off: 1228 UTC Location: LIBERIA, C.R

Landing: _____ UTC Location: LIBERIA, C.R

Number of Eye Penetrations: _____

C. Past and Forecast Storm Locations:

Date/Time	Latitude	Longitude	MSLP	Maximum Wind
/				
/				
/				
/				
/				

D. Mission Briefing:

BUTTERFLY PATTERN.. 90, 270, 210, 30, 330, 150 LEGS IN/OUT. INITIALLY 10 KFT TO FIND A CENTER AT FLIGHT ALTITUDE, THEN CLIMB HIGHER TO GET THE DEEPER DROPS. SONDES AT ENDS, MIDS, CTR (1ST ONLY) THEN IN MID OF DOWNWIND, IF NEEDED. TIME IS WORKING AGAINST US, LONG FERRY, BUT WILL TRY TO MAKE A COUPLE POINTS ON W/NW SIDE IF IT LOOKS INTERESTING.

CERTAINLY LOOKS LIKE AN ELONGATED TROUGH AT THE SFC, AND WILL LIKELY BE HITTING THE EAST SIDE, BUT THEN THAT IS WHERE GENESIS IS MOST LIKELY. CONVECTION NOT AN ISSUE. HOPING FOR BETTER RETURNS TODAY.

Storm or Project EP05 **Experiment name** GENESIS STAGE (PMODE/POUCH)

Flight ID 20190820 H1 **Mission ID** NOWXE GENESIS

E. —Equipment Status (Up **U**, Down **D**, 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:

LIKELY WILL NEED TO PUSH THE FILES OVER MANUALLY

↳ FIXED BY MIKE CRESCARO DURING THE MISSION, WHILE IN PATTERN.

Lead Project Scientist Event

Date 8/20/19 **Flight ID** 20190820 H1 **LPS** ZAWISLAK

Time	Event	Position	Comments
1228 Z	TAKEOFF FROM LIR		ON OUR WAY OUT, LOOKS LIKE A CHALLENGING
			BUT INTERESTING SETUP. BIG MCS TO THE WEST OF IR,
	ADDED A BIT MORE ONTO THE FIRST INBOUND FROM		BUT THAT COULD BE SOMEWHAT NEBULOUS - BIG BROAD
	THE EAST A DEGREE TO CAPTURE MORE OF OUR WAY IN AT 10KFT		ELONGATED TROUGH BELOW THAT WILL HOPEFULLY EXTEND
			TO EAST ENOUGH FOR US TO HIT IT. VORTICITY WISE, ONE WOULD THINK
			THAT IS WHERE IT WOULD SPIN UP
1318 Z	DECIDED TO PUSH WEST ON FIRST		NHC HAS THE INVEST CTR
	LEG TO 125 nmi → HOPING TO SEE THAT MIDLEVEL CENTER IF ENOUGH PRECIP		AT 12Z AT 13.7N/99.6W MOVING 275/12
	FROM THE RADAR ALSO MOVED NW AT	OUT TO 125 nmi	WE'LL COME IN ON 13.5N - HELD TO BE A BIT SOUTH
	THINK THE MCS TO THE NW IS MORE		SMALL LINE LIKE. NOT REALLY
	THE FOCAL PT FOR STORM FORMATION ORE IN LL BUT IT'S A PRETTY BROAD	WE MAY NOT CLOSE ANYTHING	CIRCULATING AREA
1417 Z	GETTING CLOSER TO	THE IR. NOT MUCH CHANGE. CONVECTION	DEVELOPING NEW IN THE PATTERN
		STILL LOOKS LIKE SHEAR IS PREVENTING	NORTHERLY/NORTHEASTERLY THIS. WE'LL SEE HOW THE
		THERMO LOOKS WHEN EAST OF THAT MCS	WE GET THERE IN POSITION,
1440 Z	NEARING IP	13°12'N / 96°34'	GOING INTO SOME NEW DEEP CONVECTIVE GROWTH WELL TO THE EAST
1456	"IP" DROPPED SONDE #1	13°31'N / 97°42'	A LOT OF CONVECTIVE BANDING NEAR THE IP. DROPPING WEST OF THAT
1503 Z	PICKED UP 30 KT SE	IN FIRST SONDE	SFMR SUGGESTS WE'RE AT 30 KT SE TO EAST
1509 Z	"MP" DROPPED SONDE #2		MOSTLY CLEAR CONDITIONS BELOW, CIRRUS ABOVE. POPPING CONVECTION
			OUT THERE, BUT NOT SOLID.
			MOSTLY SOUTHEASTERLIES AT OUR ALTITUDE
1526 Z		13°13' / 99° 49'	WENT SOUTH TO HELP BUT W/ PRECIP, KEEP IT MORE STRAIGHT → PROBABLY CTR DOWN
1530	"CTR 1" SONDE #3	13°20' / 100°4'	"CENTER" SONDE
1532	BACKUP SONDE #4	13°22' / 100°12'	BACKUP TO CTR SONDE
1544 Z	"MP" SONDE #5 HEADED WEST	13°22' / 101°4'	SONDE AT MP OUTBOUND LOTS OF PRECIP.
1547 Z	BACKUP SONDE #6	13°21' / 101°21'	
1602 Z	EP OF FIRST PASS SONDE #7	13°48 / 102.40'	ENDPOINT. LOTS OF PRECIP AND CONVECTION

TRIED SEARCHING 3 MIN TO GET A WIND SHIFT AT FL BUT DIDN'T GET IT - MOSTLY EAST, JUST OFF SOUTHEASTERLY

1007 mb EXTRAP PRESSURE ON THAT PASS, CTR OF THE 2 KM ← DEFINITELY A SFC TROUGH AT LEAST W/ MORE COHERENT CIRCULATION AT 850 mb THAN ML CIRCULATION TO THE SOUTH

MAX SFMR WAS 38 KT → SOME RAIN MORE CONSISTENTLY 30 KT

Lead Project Scientist Event

Date 8/20/19 **Flight ID** 20190820H1 **LPS** ZAWISLAK

Time	Event	Position	Comments
1615Z			WILL NEED TO SHORTEN THE PATTERN SINCE WE'RE AT 10 KFT
			NOW DOWNWIND, LOTS OF PRECIP OUT THERE, STILL
			OKAY GO RENEW)
1629Z			STILL WORKING ADJUSTMENTS
1631Z		NEW PLAN, INTERCEPT OUR NEXT INBOUND ON 120° WHICH CUTS OFF ABOVE 20-25 NM	
	SONDE #9 AT 00	THEN HEAD NORTHBOUND OUT 75 NM THEN 300 DEG AT 75 NM → HOPING TO	
	NEW SHORTER INBOUND LEG	CAPTURE MORE RAIN AND MORE OF THE NW SIDE THEN OUT	
1640Z		100°22'/13°51'N	STILL A LOT OF STRATIFORM RAIN GOING ACROSS SURFACE, SO RADAR SHOULD BE GOOD HERE.
1642Z	SONDE #9 AT MP OF INBOUND TO BE BACK TO CTR #2	100°13'/13°31'	SOLID STRATIFORM IN OUR AREA TO THE EAST OF OUR
		(THAT'S NOT THE SONDE POINT)	POSITION
			I THINK WE'LL GET MORE OF THE CIRCULATION TO THE NW,
			WHICH IS PREFERRED OVER THE NE SIDE.
			(→ 850 MB WIND SHOWS
			THE SHIFT AROUND 10KTS ON OUR 1ST PASS.
			SO THEN WE HAVE THE CIRCULATION OUT THERE
1652Z	NEAR ORIGINAL CTR AT	99°56'/13°36'	GOOD BANDING SHOWING UP
			TO NW OF US NEAR WHERE WE SAW THE CIR IN 850MB
1654Z	NOW HEAD NW NORTHBOUND		IMPORTANT TO GET NORTH AND NORTHWEST)
1701Z	MP OUTBOUND TO N WILL UNDER RF	99°55'/14°14'	STILL LOTS OF STRATIFORM RETURNS OUT HERE TO THE NORTH
	ABOVE 22 KM FROM "CTR" SONDE #10		OR NORTHEAST OF THE LLC WE SAW
			THAT MCS IS GOING TO THE NW NOW CONVECTION !!
			RECONNAISSANCE FOCUSED IN AROUND 950 CIRCULATION AND BEYOND
1708Z	ENDPOINT TO NORTH 75 NM OF SONDE #11	99°58'/14°47'	MUCH CLEARER OUT HERE TO THE NORTH
			CONVECTION NEAR OUR POINT INBOUND NW ON 300°

SO BEING AT 10 KFT 20 KFT MAKES A DECENT DIFFERENCE

↓ THEY'RE CUTTING OUR LINE DOWN WITH THIS DEVIATION AROUND WHAT MAKE SUCCESSFUL AS CONVECTION

STILL SOME DECENT ECHO

Lead Project Scientist Event

Date 8/20/19 Flight ID 20190820H1 LPS ZAWISLAK

Time	Event	Position	Comments
1727 Z	REACHED POINT INBOUND ON 30?	100°48' / 13°56'	LOTS OF STRATIFORM AND EMBEDDED CONVECTION ON
	SONDE # 12		THE NW SIDE OF OUR PATTERN
			DEVIATION HURT SOME ON THE LEG LENGTH
			HOPEFULLY THE RADAR WILL HELP FILL THE GAP
1735 Z	MP SONDE SONDE #13	100°20' / 13°41'	LOTS OF STRATIFORM RAIN HERE
		STILL GETTING LOTS OF PRECIP	PRESUMABLY ?? OF E/SE CTR
			WE SAW IN LOW-LEVELS
1745 Z			CLIMBING UP FOR FINAL 2 POINTS.
			CONDITIONS MUCH BETTER OVER HERE
1751 Z	SONDE #14	99°23' / 13°8'	MP SONDE ON OUTBOUND OF 120°. MOSTLY CLEARER
			CONDITIONS. SOME STRONG DECKS,
			NOT A WHOLE ON TDR
1758 Z	SONDE #15	98°52' / 12°52'	END POINT OF OUTBOUND ON 120° RADIAL. LAST DROP
			AND NOW DONE W/ SCIENCE.

RIGHT AROUND TO NW POINT INBOUND EXTRAP GOT TO ? 1007mb AGAIN, SO DISTINCT SFC TROUGH THERE NEAR 101W IT APPEARS

LOOKS LIKE MIDLEVEL CENTER TO THE SW OF THE LLC.

Mission Summary

Scientific Crew (42RF)
Lead Project Scientist ZAWISLAK
Radar Scientist BUCCI
Cloud Physics Scientist
Dropwindsonde Scientist PALTZ (DUNION
Boundary-Layer Scientist
Workstation Scientist
Observers (affiliation)

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

PLAN IS FOR A BUTTERFLY PATTERN AROUND THE APPARENT CIRCULATION OF EAST SOMEWHERE B/W 99 AND 102W, DEPENDING ON WHICH LEVEL PERHAPS. LEGS COULD BE EXTENDED OR SHORTENED, DEPENDING ON WX AND FUEL. WOULD LIKE MOST OF THE PATTERN TO BE AT 20KFT, BUT WX COULD RESTRICT US TO 10 KFT.

ORIGINAL PLAN WAS 105NM LEGS. EXTENDED NW AND W POINTS ANOTHER 20 BUT FERRY (SO 125NM) BUT HAD TO CUT NW SHORT DURING PATTERN TO ACCOUNT FOR FUEL.

Mission Synopsis: (include plot of actual flight track)

WE ATTEMPTED TO HUNT THE CTR AT FLIGHT LEVEL ON THE FIRST PASS, BUT NEVER GOT THE WIND SHIFT. HOWEVER, THE DROPS ACROSS THE LEG SHOWED A CIRCULATION (OR AT LEAST WIND SHIFT NEAR 101 W ON 13.25N. EVEN DOWN TO THE SURFACE. THAT LEG WAS EXTENDED OUT TO 128 NM ENROUTE, THEN ANOTHER 3-4 nm WHEN WE GOT THERE. WE THEN HAD TO SHORTEN DUE TO TIME → SIGNIFICANTLY TOO. SO DECIDED TO SHORTEN AND MOVE NE LEG TO NORTH FOR 75 NM THEN MOVE NW LEG TO 300 DEG AND SHORTEN

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

TOUGH TO FLY GIVEN THE LACK OF ORGANIZATION TIME, BUT MADE IT WORK WHEN WE HAD TO CUT. DISTURBANCE WAS BROADER AND HARD DIDN'T HUNT MUCH ON FIRST PASS. SO GREAT MISSION DESPITE THE CONSTRAINTS. OTHER HOTS FOUND A TO

WX SHORTENED OUR INBOUND FROM THE SE, SO THAT WAS ALSO ABOUT 7... PRECIP REGIONS FILLED IN ON THE WEST SIDE AND TO SOME EXTENT ON THE EAST. TDR SHOWED 2 km CIRCULATION, MAYBE WEAKER W MIDLEVEL TO THE SW. OVERALL GREAT TDR COVERAGE

EXTRA P AND GOT LOOSE TO GOOD SFC TROUGH IN THERE. 30 KT SFMR, 35 KT RADAR TO NORTH LOOKS LIKE A ST

Problems: (list all problems)

A COUPLE OF BAD SONDES THAT REQUIRED BACKUP, BUT FORTUNATELY THE AUTOMATIC PUSH OF RAYL WAS WORKING AFTER A MANUAL FIX.

DEVIATIONS WERE TOUGH ON THE SW AND NW POINTS INBOUND

AS WE'RE LEAVING, SATELLITE SHOWS MORE CONVECTION DEVELOPING NEAR THE CTR.

Expendables used in mission:

	Deployed	Good	Bad
GPS sondes :	15	13	2
AXBTs :	–	–	–
Sonobuoys:			
UAVs			

ECHO TOPS WEREN'T ALWAYS IMPRESSIVE, BUT A LOT OF COVERAGE. SATELLITE WASN'T IMPRESSIVE BUT GOOD ENDING IN THE END.

COMPLEX CIRCULATIONS, SURFACE TROUGH, APPARENT CIRCULATION TO MIDLEVELS, WHICH WAS SW CIRCULATION AT L PRETTY COHERENT. DOESN'T LOOK LIKE A FISH IN THE PAN. SO GOOD ENDING TO THE SEQUENCE.