# Lead Project Scientist

**Storm or Project** Plum. Dong **Experiment type** TDR
**Flight ID** 170904H1 **Mission ID** _____

## 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.
- ____ 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 **Experiment name** TDR

**Flight ID** 170904H1 **Mission ID** _____

**A. Participants:**

| HRD | | AOC | |
|---|---|---|---|
| **Function** | **Participant** | **Function** | **Participant** |
| Lead Project Scientist | Rogers | Flight Director | Holmes |
| Radar/Workstation | Aberson | Pilots | Kibbey, Kahn, Ruckman |
| | | Navigator | Freeman |
| Cloud Physics | | Systems Engineer | Naeher |
| | | Data Technician | Richards |
| Dropwindsonde | Sellwood | Electronics Technician | |
| AXBT/AXCP | Sellwood | Other | |
| Photographer/Observers/Guests | | | |

**B. Take-off and Landing Times and Locations:**

Take-Off: 0650 UTC Location: Barbados

Landing: _____ UTC Location: _____

Number of Eye Penetrations: _____

**C. Past and Forecast Storm Locations:**

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

**D. Mission Briefing:** Perform TDR mission into Hurricane Irma, a 100-kt Hurricane approaching the northern Leeward islands. Storm has maintained a relatively steady intensity for past 48 h, in presence of light to moderate northerly shear and some dry air in the vicinity. Forecast to continue tracking south of west, slowly intensifying.

Fly rotated figure 4, 105 nm legs, 1 pass SE, 1 pass W side. Drop sondes at all turn points and center fixes. Drop sonde/BT combos at max wind on SE, NW, SW, NE legs. Pattern has been rotated 45 degrees counterclockwise to align first SE-NW pass with CYGNSS overpass. 10,000 ft.

**Storm or Project** Irma **Experiment name** TDR

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**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** 9/4/17 **Flight ID** 170904H1 **LPS** Rogers

| Time | Event | Position | Comments |
|---|---|---|---|
| 0650 | takeoff | TBPB | |
| 0825 | obs | Near IP on SE side | approaching IP on SE |
| | | side; | appreciable precip on this |
| | | side; | LF shows eye well, IR sat |
| | | shows | eye warming |
| 0836 | obs | near IP | center looks to be a |
| | | little further south & west | |
| | | than what was predicted | |
| 0839 | pattern | at IP | turn to track 315 |
| 0840 | drop 1 (HFIP) | 105 nm SE | FL 350 SF 30 kt |
| 0848 | obs | ~85 nm SE | coming upon broad |
| | | precip shield; appears most | |
| | | storms on LF & nose radar, | |
| | | TA supports that to | |
| 0902 | drop 2, BT | SE eyewall | FL 110, SF 100 kt, |
| | | | closed eyewall |
| 0904 | drop 3, center | 16° 47' 52° 06' | extrap 949 mb |
| 0907 | drop 4, BT | NW eyewall | FL 110, SF 90 kt, |
| | | | fast fall |
| 0914 | obs | NW of center | neither BT worked |
| 0916 | obs | NW of center | see indications of local |
| | | outer wind maxima on both | |
| | | SE + NW sides, stronger | |
| | | outer-core wind field on NW | |
| | | side | |
| 0929 | drop 5 | 105 nm NW | SF 80 kt, FL 50 kt |
| 0946 | obs | downwind legon W side | passed to west of outer |

band, LF shows clear banding, possible concentric eyewalls. Inner eyewall open to west

**Lead Project Scientist Event Log**

**Date** 9/4/17 **Flight ID** 170904H **LPS** Rogers

| Time | Event | Position | Comments |
|---|---|---|---|
| 1003 | drop 6 | 105 nm SW | FL 40, SF 20 kt |
| 1015 | mission | 150 nm SW | having networking issues, issues with seb.noaa.gov |
| 1025 | drop 7, BT | SW eyewall | FL 100, SF 90, 27°C |
| 1027 | drop 8 | center | 16°47' 52°21' |
| 1029 | drop 9, BT | NE eyewall | 110 kt FL, SF 90, BT failed |
| | | | no aircraft data, fast fall |
| 1052 | pattern | 105 nm NE | extending leg to NE, |
| | | | extensive precip everywhere |
| | | | on NE side |
| 1054 | drop 10 | 105 nm NE | FL 50, SF 25 kt |
| 1015 | drop 11 | 105 nm N | FL 50, SF 25 kt |
| 1129 | obs | ~55 nm N | LF shows nice spiral |
| | | | band, connects to primary |
| | | | eyewall on east side, looks |
| | | | like most active convection on |
| | | | upwind side, on N side (upshear) |
| 1135 | obs | ~40 nm N | passed through another |
| | | | convective portion of band, |
| | | | local max in FL winds |
| 1141 | obs | N eyewall | peak FL 115, SF 100 kt |
| 1143 | center | 16°46' 52°35' | |
| 1157 | obs | 60 nm S of center | extensive shield of |
| | | | precip on S side, |
| | | another local maximum in precip | |
| 1209 | drop 12 | 105 nm S | FL 25, SF 20 |
| | | | |

**Mission Summary**
**Storm name**
YYMMDDA# Aircraft 42RF

Scientific Crew (47RF)
Lead Project Scientist Rogers
Radar Scientist Aberson
Cloud Physics Scientist —
Dropwindsonde Scientist Sellwood
Boundary-Layer Scientist Sellwood
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 - storm fixes showed Irma tracked due west. Inner core was almost perfectly aligned, though there was a pronounced asymmetry in outer-core precipitation to the south side. Pretty clear it was undergoing an eyewall replacement cycle, inner radius 15 nm, outer radius 35 nm, inner eyewall decayed during flight. Strongest winds were on N side at both FL + surface. Radar analysis surveyed outer wall more especially on N side. 14 sondes dropped, all but two worked; only 1 of 4 BT's worked, and that was questionable.

*Evaluation: (did the experiment meet the proposed objectives?)* Mission did succeed. Four analyses created and transmitted. Aligned first pass with CYGNSS overpass. Only real failure was BT's; did not get SST or ocean profiles in 3 of 4 quadrants.

*Problems:(list all problems)*
No real problems, except for some networking issues early in the flight that were resolved. And 75% BT failure rate.

*Expendables used in mission:*
GPS sondes : 14
AXBTs : 4

Sonobuoys: _____