| **MISSION PLAN** | | | |
| --- | --- | --- | --- |
| **FLIGHT ID** | 20240701H1 | **STORM** | AL02 / BERYL |
| **MISSION ID** | 0702A (Ex. 0305A) | **TAIL NUMBER** | NOAA-42 |
| **TASKING** | EMC/NHC FIX/TDR | **PLANNED PATTERN** | Alpha |
| **MISSION SUMMARY** | | | |
| **TAKEOFF [UTC]** | 2204 | **LANDING [UTC]** |  |
| **TAKEOFF LOCATION** | STX | **LANDING LOCATION** | STX |
| **FLIGHT TIME** | Fractional hr, Takeoff to Landing Time | **BLOCK TIME** | Get from onboard LPS or Flight Director |
| **TOTAL REAL-TIME RADAR ANALYSES**  **(Transmitted)** | 6 (5) | **TOTAL DROPSONDES Deployed (Transmitted)** | 37 (36) |
| **OCEAN EXPENDABLES (Type)** |  | **sUAS (Type)** |  |
| **APHEX EXPERIMENTS / MODULES** | None | | |
| **HRD CREW MANIFEST** | | | |
| **LPS ONBOARD** | Aberson | **LPS GROUND** | Alaka/Sippel |
| **TDR ONBOARD** |  | **TDR GROUND** | Alvey |
| **ASPEN ONBOARD** | N/A | **ASPEN GROUND** | Hazelton/Dahl |
| **NESDIS SCIENTISTS** |  | | |
| **GUESTS (Affiliation)** |  | | |
| **AOC CREW MANIFEST** | | | |
| **PILOTS** | Copare, Palmer, Ellis | | |
| **NAVIGATOR** | Utama | | |
| **FLIGHT ENGINEERS** | Stokes, Dittoe | | |
| **FLIGHT DIRECTOR** | Zawislak | | |
| **DATA TECHNICIAN** | McCalister | | |
| **AVAPS** | Lynch | | |

| **PRE-FLIGHT** | |
| --- | --- |
| **Flight Plan** | *Pattern: Fly repeated Alpha pattern with 90 NM legs* |
| **Expendable Distribution** | * *Load 30 dropsondes*   + *Release at endpoints, midpoints, centers, RMWs (if requested by NHC) >> charged to NWS*   + *All dropsondes transmitted to the GTS* * *AXBTs: none* |
| **Preflight Weather Briefing** | *Beryl has maintained intensity as a high-end Category-4 hurricane this afternoon. From NHC:  “Beryl has maintained a very impressive satellite appearance this*  *afternoon. The well-defined, symmetric eye is surrounded by a ring*  *of infrared cloud tops colder than -70 deg C. The central pressure*  *of the hurricane was falling throughout the day while the Hurricane*  *Hunters sampled the storm, with the last aircraft pass showing the*  *central pressure had fallen to around 946 mb. The latest objective*  *(ADT/AiDT) and subjective (TAFB/SAB) satellite intensity estimates*  *still support an intensity between 125 to 130 kt, which lies in*  *between the earlier reduced flight-level winds and SFMR retrievals*  *from the aircraft. Thus, the initial intensity of Beryl is held at*  *130 kt for this advisory.”* |
| **Instrument Notes** | *No problems of note* |

| **IN-FLIGHT** | |
| --- | --- |
| **Time [UTC]** | **Event** |
| 2204 | Take-off from STX |
| 2240 |  |
| 2304 | NE IP |
| 2305 | Sonde 1 - End-point NE launched, splashed 2312 |
| 2316 | Sonde 2 - Mid-point NE launched, splashed 2321 |
| 2323 | Continued problems with SFMR |
| 2328 |  |
| 2329 | Aberson: lightning, but low reflectivity in eyewall, graupel on inboud |
|  |  |
|  |  |
| 2326 | Sonde 3, NE RMW1 launched, landed in eye |
| 2326 | Sonde 4, NE RMW 2 launched, landed in eye |
| 2326 | Sonde 5, NE RMW 3 launched, 140 kt at surface |
| 2330 | Sonde 6 Center launched |
| 2340 | Sonde 7 - SW RMW lost all data at launch |
| 2341 | Sonde 8 - SW mid point, splashed 2347 |
|  |  |
| 2351 | Sonde 9 - SW end point launched, splashed 2357 |
|  |  |
| 0004 | Aberson: reset radar twice Aft not scanning, hard reset at 0005 |
| 0016 | Sonde 10 - SE end point |
| 0015 | RMW appears to be shrinking a bit in IR |
| 0027 | Sonde 11, SE Mid Point |
|  |  |
| 0030 | Abserson notes lightning in eye |
| 0031 | Sonde 12, SE RMW |
| 0034 | Sonde 13, Center |
| 0036 | Sonde 14, NW RMW |
| 0044 | Note: graupel reported on the first inbound leg (NE->SW) |
| 0046 | Sonde 15 NW Mid point |
| 0057 | Sonde 16 NW End point |
|  |  |
| 0059 | SFMR HDOB generation not working correctly. NHC has agreed to not send SFMR data for this mission. Similar issue with 0 kt reports in HDOBs as 20240630H1. 1-second data look ok, although the calibration appears to have issues. There is something happening with the generation of the HDOBs leading to these 0 kt reports. AOC is troubleshooting. |
| 0122 |  |
| 0131 | Sonde 17 SW End Point (turn inbound) |
| 0132 | 2nd TDR analysis is now up on RT: https://www.aoml.noaa.gov/ftp/pub/hrd/data/RTradar/2024/20240701H1/composites/240701H1\_BERYL\_2245\_2458\_ws\_nhc\_planview.png |
| 0140 | Sonde 18 SW Mid Point |
| 0150 | Sonde 19 SW RMW (not sent) |
| 0150 | Sonde 20 Center |
| 0153 | Sonde 21 NE RMW (processed and sent off plane by Aberson) |
| 0203 | Sonde 22 mid point NE (processed and sent off plane by Aberson) |
|  |  |
| 0215 | Sonde 23, End-point NE launched (processed and sent by Aberson) |
|  |  |
| 0221 | Hazelton brings up problem that RMW sonde not showing up on NHC website but had been processed in TAG. Same for mid-point. |
| 0238 | Hazelton notes they show up in the TAG history but aren’t showing up at NHC. Discussion with JZ and Aberson followed. **Solution is for Sim to process the sondes and Dahl/Hazelton to log it** |
| 0247 | 3rd TDR analysis should be up in AWIPS and in RT graphics shortly:  <https://www.aoml.noaa.gov/ftp/pub/hrd/data/RTradar/2024/20240701H1/composites/240701H1_BERYL_2245_2615_ws_nhc_planview.png> |
| 0257 | Evidence of westerly shear to the WNW of Beryl. Seems to be associated with a PV streamer associated with an ULL to the north. This could impart a more hostile environment in the next ~24h. NHC notes this in their 11pm discussion |
| 0259 | NHC upgrades Beryl to Category 5. Below is a discussion written by Forecaster Papin |
| 0254 | Sonde 24 launched - NW EP |
| 0305 | Sonde 25 launched - NW MP |
| 0305 |  |
| 0316 | Sonde 26 launched - NW RMW |
| 0318 | Sonde 27 launched - CTR |
| 0320 | Sonde 28 launched - SE RMW |
| 0321 | FL winds on the NW side keep going up - about 10 kt from last pass |
| 0341 | Aberson: mmr trouble, loitering |
| 0344 | Sonde 30 - SE End point |
| 0348 | mmr can't be fixed. Orientation wrong, so can't look at track versus heading |
| 0355 | Mmr back online after a hard reset |
| 0410 | NHC changed plans - go to point 9 (NE), to center, then out NW, then home |
| 0414 |  |
| 0433 | Sonde 31 - NE endpoint launch |
| 0443 | Sonde 32 - NE midpoint launch |
| 0456 | Sonde 33 - NE RMW launch |
| 0458 | Sonde 34 - Center launch |
| 0500 | Sonde 35 - NW RMW |
|  |  |
| 0510 | Sonde 36 - NW midpoint |
| 0522 | Sonde 37 - NW endpoint |
|  |  |
|  |  |
|  | << INSERT ADDITIONAL ROW AS NEEDED >> |
|  |  |

| **POST-FLIGHT** | |
| --- | --- |
| **Mission Summary** | *Mission met objectives of collecting/assimilating TDR data into the 00Z forecast cycle at EMC. Also, TDR analyses transmitted successfully to NHC AWIPS and assisted in upgrading Beryl to category 5.* |
| **Actual Standard Pattern Flown** | *Alpha pattern* |
| **APHEX Experiments / Modules Flown** | *N/A* |
| **Plain Language Summary** | *We flew a mission into Hurricane Beryl as it intensified to a Category-5 hurricane in the Caribbean. The mission collected data for NHC forecasts and model assimilation. The storm intensified from 130 to 140 kt during the mission.* |
| **Instrument Notes** | *SFMR was bad during this mission - same issue as previous mission.*  *Problem with TAG arose on third pass with outbound RMW sonde - things seemed to get stuck. Solution was to take processing back to plane with onboard LPS.*  *Earlier in the mission, TDR has antennae alerts (including “losing all AC data”). SSA rebooted the TDR and it came back online OK.*  *Could be some calibration issues with HBOBs?* |
| **Final Mission Track** |  |