



NOAA Teacher in the Air
Todd Toth
Onboard NOAA Plane G-IV ("Gonzo")
March 9 - 15, 2006

Day 1

3/9/06

Flight One Log

Honolulu, Hawaii

Todd Toth

Aboard "Gonzo" NOAA Gulfstream IV

Weather Conditions

Overcast, 100% humidity

75°F

Light rain

Air pressure of 1032 mb



Aloha,

8:30 am

The day started with a crew briefing and introductions of the scientist aboard (Eric Ray) and myself. Eric then discussed our flight path and the dropsonde locations. Dropsondes are a package of scientific equipment that measure, temperature, relative humidity, pressure, wind speed, and wind direction. The dropsonde also includes a GPS device that



allows the dropsonde to be tracked from the time it's launched to the time it "splashes" (a term the crew uses to terminate the dropsonde launch) into the ocean. Eric stated there would be three dropsondes dropped into the jet stream between 38,000 feet and 45,000 feet. In addition, he would be performing tests on the ozone concentrations found at these heights. Aircraft Commander Michele Finn stated the approximate length of the flight to be 5 hours and 50 minutes. Then safety officer and meteorologist Marty Mayeaux ran Eric and I through a detailed safety training session. We both learned how to put on a safety suit (see **picture to left**) in case of a plane crash over water. The

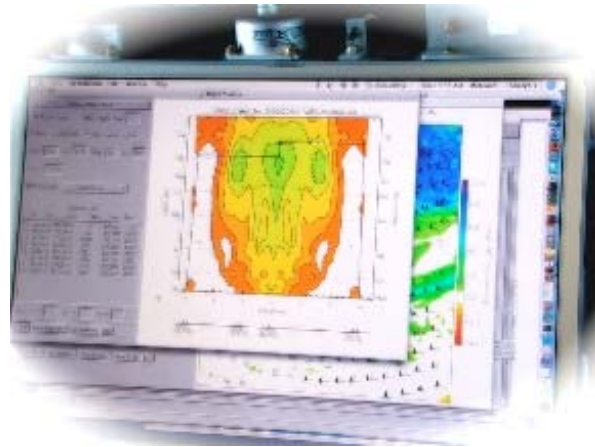
safety suit would keep you from freezing in cold water. Aboard the plane, Marty demonstrated another type of life vest that would provide oxygen if needed and pointed out where first aid kits were stored. Eric and I were then shown the fire safety equipment and the operation of the planes five point seatbelts.

9:30 am

Aircraft commander, Michele Finn, then ordered the crew to start pre-flight checks and activities. At this time, crew member Dave Brogan set-up a work station aboard the plane for me to view the on-going location of the plane throughout the flight using a computer program and GPS satellites. At this station I was able to constantly monitor our latitude, longitude, course bearing, speed, and altitude. I could also check land-based features, but we were out over the Pacific Ocean the entire time.

We took off at 10:00 am heading toward the big island of Hawaii but then quickly turned westward passing over Kauai and the small towns of Omao and Waimea, the Kaulakahi Channel and the island of Niihau. Following is an example of the data available at my workstation:

- As we passed over the last of the Hawaiian Islands we were cruising at 483 mph at an altitude of 33,345 feet.
- The next location I could mark was over a general area called Polynesia cruising at 501 mph at 37,341 feet.
- The next location mark was at 22°N and 161°W cruising at 538 mph at an altitude of 41,016 feet.



As I was talking with Eric he mentioned that we would be flying into the core of the jet stream checking its composition (chemistry) and varying wind speed. (See picture of jet stream cross-section above)

It was now 12 noon Hawaiian time and my map indicated that we were about halfway between Los Angeles and Tokyo, Japan – about 1194 miles. This means I was approximately 6,044 miles from Waynesboro High School. Crewmember Bill Olney



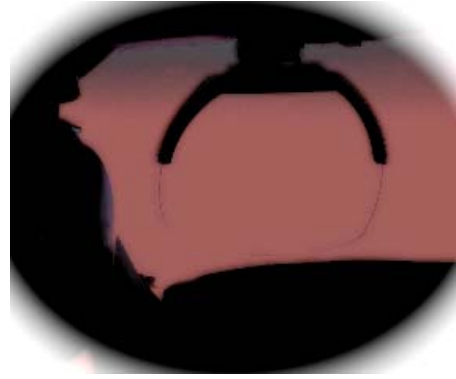
mentioned that the relative humidity around this altitude was 7% so hands, lips – any exposed skin areas – dry out pretty quickly. The plane was now cruising at 40,000 feet at a speed of 604 mph according to my workstation using the computer map program. At this point I was asked up to the cockpit of the plane where the pilots (Will Odell and John Longenecker) explained all the instrumentation (see left) and continued to answer all my questions. It was at this

point where I noticed a difference in plane speed and altitude as compared with my workstation. Will stated that the difference was that my map program was based on ground speed and we were flying through the air. To make matters a little more difficult,

as we flew at higher and higher altitudes through thinner and thinner air, the aircraft speed would continue to increase. Not much friction between plane and air molecules when there is very little air left at 40 to 45 thousand feet. John mentioned that we were currently traveling at mach .8. On our next flight I have some questions to ask on the point.

So, what is “**mach**” and what speed (land speed equivalent) were we traveling?

Will had me look at the pilot’s heads-up display. (See picture to right) From my angle it looked like clear glass but he had me lean over his shoulder and all the important flight information just seemed to appear on this little glass visor – this was really neat!



Learning about the dropsondes was very interesting – crewmembers Mark Rogers and Bill Olney explained how the dropsondes are calibrated, (see pictures below) how they work and are tracked from launch to splash down. Due to some problems with one of the dropsondes (a dropsonde did a "fastfall" – which means after it was launched the



parachute did not open and fell straight down through the atmosphere into the ocean) I

was able to see what’s inside a dropsonde and how to repack the parachute and wrap the ribbon tail.

(See picture to left) They also explained what the ribbon tail is for – after the dropsonde clears the plane wind resistance pulls on the ribbon to open the back end of the



dropsonde and eject the parachute.



The dropsonde is launched down a tube and out the bottom of the plane. (See picture to right) A small cap is place over the top of the tube so that when the dropsonde is launched air is not sucked out of the plane. Marty described the difference between a radiosonde and a dropsonde, two similar pieces of equipment that take the pretty much the same

measurements. A radiosonde is launched at or near ground level with a balloon and rises up into the atmosphere. The dropsonde is released from high in the atmosphere and falls to the surface.

On the home leg of the flight I was able to do some short interviews of the crew. I will share those interviews in my flight two log, which I'm really looking forward to. So far, this has been a great experience and I have lots to tell upon returning to Waynesboro.

Stay tuned for more on my flight.

Kipa hou mai,

Mahalo

