



## NOAA Teachers in the Air Barney Peterson and Dana Tomlinson Onboard NOAA Aircraft 42 P-3 Turbo-Prop (“Kermit”) February 17, 2008

**NOAA Teacher in the Air:** Dana Tomlinson and Barney Peterson

**NOAA Aircraft:** 42 P-3 Kermit Turbo-Prop

**Mission:** Winter Storms Reconnaissance

**Date:** Sunday, February 17, 2008

**Geographical Area of Flight:** North Pacific Ocean

### Weather Data

Wind: WNW (290) at 3 knots

Visibility: 10 miles

Sky Conditions: few clouds at 25,000 feet

Temperature: 3° C

Dew Point: 1° C

Relative Humidity: 87%

Barometric Pressure: 30.29 inches (altimeter)



**Project Manager Jack Parrish, the pilots, crew, and TIAs meet for pre-flight work in the officer's lounge Sunday morning.**

airport. We arrived at FlightCraft at PDX and spent about 90 minutes in the pilots' lounge. The two flight directors were going over meteorological data maps.

Flight Director Damiano was gathering information to help determine whether this flight would encounter sufficient turbulence, icing on wings, and/or other conditions to be considered hazardous for the crew. Hazardous conditions warrant a different level

### Science and Technology Log

The mission for this flight was to deploy 20 dropwindsondes which are small meteorological instruments that measure wind speed, temperature, humidity, and surface air pressure. This information is relayed back to receivers on the airplane every two seconds as the sondes fall to the surface of the ocean. Ultimately this data is used in weather prediction models.

We left the hotel at 0700 for the



**Flight Director LTjg Jackie Almeida reviews weather information and route plans prior to departure.**

of pay for the crew. Flight Director LTjg Almeida spent this time rectifying way-point



**Flight Director LTjg Almeida briefs the crew on expected turbulence during the flight.**

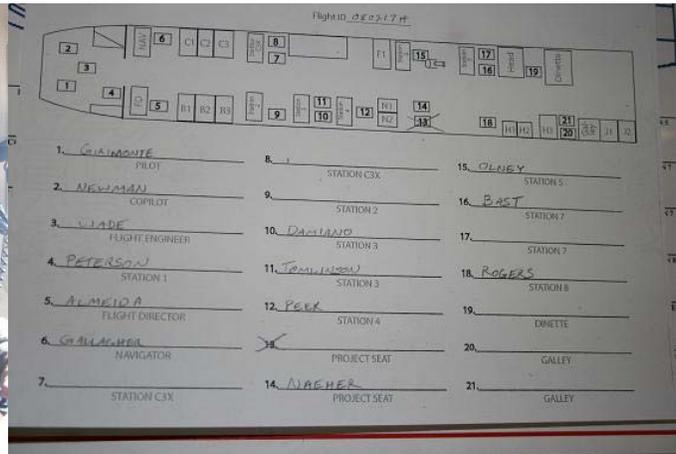
coordinates for our 20 planned drops to reflect that we would be flying the assigned route in the opposite direction of which it had been laid out. The flight directors had determined that our dropsonde route of P61 would be more efficiently flown by doing the southern leg first to fly with lighter head winds during the time the plane was most heavily loaded with fuel. This would mean that the flight would take less time and consume less fuel. The initial route plan is given to the crew by NCEP (National Center for Environmental Prediction), but

needed to be updated to reflect current weather conditions and whether military warning reserved areas are active or not. Once the final route was determined, Project Manager Parrish posted an on-line message to alert other pilots that NOAA would be dropping objects (dropsondes) from our plane to the surface of the ocean during our flight.

About one hour before flight time Pilot LCDR Girimonte requested our presence on the plane for a final safety briefing. He familiarized us both with emergency procedures and equipment: storage areas for survival suits, fire extinguishers, emergency exits and routes, emergency oxygen supplies, signals, and chain of command in emergencies.



**TIA Tomlinson was assigned a seat beside Flight Director Damiano. Here they are going over data displays prior to take off.**



**A chart in the aisle shows the position each person will occupy during the flight.**

Barney was to sit in the extra cockpit seat and Dana was seated beside Flight Director Damiano. In addition to Pilots LCDRs Girimonte and Newman and Flight Directors

Damiano and LTjg Almeida, the crew consisted of Navigator LCDR Tim Gallagher, Flight Engineers Greg Bast and Stevan Wade, and Electrical Technicians Bobby Peek, Dana Naeher, Mark Rogers, and William Olney. Pilot LCDR Girimonte called us all together for the final pre-flight briefing and we were on our way.

Following take off, once we had reached a safe altitude, we were allowed to move around the plane freely. Technicians Naeher and Rogers started getting the dropsondes ready for deployment.

The data gathered by these and the sensors on the plane is the reason for flying the mission so the launch area is where we spent most of our time. We observed the tech prepping the dropsondes by activating the sensors and the battery power, selecting and setting a receiving channel, and loading the sondes into the tube for launch. This technician coordinates with the Flight Director as to when each launch is made and monitors the signals to be sure each deployment has been successful. A back-up sonde is always ready to launch as soon as possible if the signal, or lack of signal, shows that the launch was not successful or if the sonde is dropping too quickly, indicating that the parachute that controls the fall did not deploy properly. After the drop, the technician monitors all signals until they cease, indicating splash-down in the ocean at which point he terminates the signal. That channel can then be used to receive data from a future drop.



**Technician Naeher deploying the first of 20 sondes scheduled to be dropped during our flight.**



**The sondes start sending data back to the plane within a minute of release and continue to send every 2 seconds until they plunge into the ocean.**

In the meantime, Flight Director LTjg Almeida is awaiting the information from the sonde which she can retrieve once the signal has been terminated by the technician. She then executes a software program that does a quality control examination of the data.

After that she archives it and sends pertinent information to NCEP. Post flight the Flight Directors continue to analyze that data searching for anomalies that would need to be rectified (spikes or gaps). They are always concerned about the equipment and its performance. The major way they detect equipment problems is by monitoring the data.

Since the reason we were on this flight was to get first-hand experience with how NOAA



**TIA Peterson preparing a sonde for deployment by setting the frequency for data transmission.**



**TIA Tomlinson deploying a sonde.**

acquires and uses data we were offered the opportunity to prepare and drop some of the sondes. Technician Naehar was very patient in walking us through each step of the procedure to make successful drops.

We also both spent time with other members of the crew to learn about their jobs during the flight. One interesting event occurred as we were about 1200 miles from shore and had just turned north to start our return leg. We were flying at about 24,000 feet in clear

skies when we spotted three large ships below us on the ocean. Given the size of the area over which we flew, it was unusual to even see one ship. The position of this sighting was carefully logged by our navigator. He explained that these would be very important if the plane ran into problems and a rescue was necessary.



**Navigator LCDR Tim Gallagher explains his work station to TIA Peterson. He was responsible for making sure the plane was on course and recording that sondes were deployed at the planned points.**

During the mission Navigator LCDR Gallagher was constantly checking GPS positions against our navigation route. Launching the dropsondes at the correct locations involved a partnership between the navigator, the

flight directors, and the technician at the drop station. Throughout the flight both pilots and one flight engineer were always monitoring the performance of the aircraft from the cockpit. Technician Peek was occupied with monitoring and troubleshooting the radar and Technician Olney was on standby to make any equipment adjustments or repairs during the flight. Technician Rogers was back-up and assisted with the dropsonde preparation and deployment.



**Technicians Rogers and Naeher worked together to be sure all sondes were set up, functioning correctly, and launched on command from Flight Director Almeida.**

After eight and one-half hours of successful flying and data collection we returned safely to PDX. Kermit's mission of helping to support a global weather monitoring network had been successful once again.

### **Personal Log**

Barney and Dana come from different points of reference. Barney's classroom is a



**Our flight crew: (left to right) TIA Tomlinson, Pilot LCDR Newman, Technician Naeher, Navigator LCDR Gallagher, Flight Engineer Bast, Pilot LCDR Girimonte, Technician Rogers, Technician Olney, Flight Director Damiano, Technician Peek, Flight Director LTJg Almeida, and TIA Peterson.**

GLOBE classroom. She has been teaching weather for over fourteen years, and, therefore, has a fair amount of weather knowledge. Dana, on the other hand, has not taught weather frequently as it is not in the California State Standards for the sixth grade that she teaches; however, she was a flight attendant and has a fair amount of aircraft knowledge. Both of us are very thankful to have had the opportunity to grow and stretch both our personal environmental literacy and our content knowledge as teachers.

The crew of NOAA Corps officers and civilian employees were very gracious, patient, and accommodating in treating us like members of the team. We felt well prepared for our mission by the informational briefings of Project Manager Jack Parrish. We appreciated the explanations of scientific data and procedures from the flight directors, navigator, and technicians, and we knew safety was always the primary concern under the expertise of LCDRs Girimonte and Newman. We look forward to taking the information learned from this experience to our students, colleagues, and the community. Thank you, NOAA!