

Preliminary Squawk List for flight 1889,
Flown on Friday, 16 November 2001,
Pre-IMPROVE II test flight 3.

Instruments not mentioned as having a problem are believed to have worked satisfactorily.

OVERALL LOOK

Moist southwesterly flow with multi-layered low clouds characterized this flight which took place over the St. of Juan de Fuca northwest of Port Townsend. Very light rain or sprinkles reached the ground from decaying maritime small cumulonimbus clouds with tops 8-9 kft ASL. Layers of stratocumulus clouds were also present. No significant convection was present in the research area and the test of LWC probes was not as robust as hoped; only low ($<0.25 \text{ g m}^{-3}$) liquid water clouds were found.

No progress over problems of the previous flight except that the HVPS did not have an outage and the CPI was installed although it did not work. All other problems noted on the previous flight remain unfortunately (e.g., lack of winds, no hot wire probes operative, human error caused PVM-100 not to record data)

1. AIRCRAFT PARAMETERS

Tans-vector system: True heading (“tans-azimuth”) not available because the tans-vector is in need of a 24 h period of calibration.

Winds: No wind direction or velocity data were available due to the missing true heading information.

2. STATE PARAMETERS

Rosemount static temperature: Tstat tracked the tstatr values well and were virtually identical. The Rosemount temperature sensor is now considered fixed.

Rosemount pressure transducer: Continues to exhibit spurious changes in pressure of up to several mb in per second. These, in turn, can, cause spurious pressure altitude changes of up to 30-50 m in one second. Sensor may be wearing out. It has been acting this way since the SAFARI project. We are in contact with the Rosemount Engineering group about this problem. They have indicated (this a.m.) that they are not able to fix this old analog sensor, but are sending literature on their new line of digital pressure sensors.

3. Cloud Microstructure Probes

DMT Hot wire device: Did not work.

JW Hot wire device: Did not work, not installed.

FSSP-100: Integrated LWCs and droplet concentrations thought to be low, but enough doubt present to take a wait and see attitude until the next test flight when more robust clouds can be sampled.

PVM-100: No data recovered due to leaving the protective duct tape over the orifice from where the laser is emitted. Missed in pre-flight checks.

PMS 2-D cloud probe: Worked with the exception of a brief minute or two period early in the flight.

PMS 1-D cloud probe: No reliable data recorded. The probe was impacted by noise of undetermined origin that caused huge counts in clear air and thus recovering cloud data is impossible. It did, however, respond to a number of cloud penetrations by having giant spikes as well. The noise was sporadic, however. Alignment problems usually do not cause the vast spurious counts that we saw so this is a mystery at this point. Maybe the dump spot fell off...?

SPEC HVPS: No malfunctions noted

SPEC CPI: Could not get to operate properly. Two error messages: Low background intensity; low image intensity. Settings seemed to be "in-spec." Also, "background valid" message. Only black images appeared in output windows instead of particles. Live video mode showed barely visible striations in black background.

4. AEROSOLS

No problems noted