

April 5, 2011 – Science Flight

Takeoff: 1553 UT, Landing: 1905 UT

Fuel was still present in the wing after the previous flight; therefore, this flight was still flown without the four instruments outboard of the super/spear pod (ULH, DLH, CLH, and ALIAS). Given this limitation and the lack of cirrus within range, the decision was made to have a relatively short flight (≈ 3 hours) to make sure the fuel leak in the wing was fully resolved as well as to sample stratospheric water vapor.

The aircraft flew southwest over the Gulf 200 nm climbing in stair steps, with level legs of a few min each at 5, 10, 15, 23, 25, 30, 35, and 40 Kft. After performing MMS maneuvers at 45 Kft, the aircraft stair step climbed, leveling for ≈ 5 minutes each at 49 and 53 Kft. The aircraft then cruise climbed to a maximum altitude of 58.5 Kft. After descending to 55 Kft, three plume-sampling maneuvers (turning back onto the reverse heading) were performed. However, it appears from the particle and navigation data that the descents in the turns were insufficient to intercept the descending aircraft plume.

Post-flight inspection of the wing indicated that the fuel problem has been resolved, permitting a full payload on the next flight.

Table 1: Instrument performance

SID3	Worked well
VIPS	Worked well
2DS	Worked, but noisy
CDP	Worked well
HVPS	Worked well
CIN	Not flown failure
NMASS	Not flown
FCAS	Worked well
PALMS	Engineering data only
MMS	Worked well
ALIAS	Not flown
CLH	Not flown
JLH	Worked well
ULH	Not flown
DLH	Not flown
Harvard Water Vapor	Worked reasonably well
HHH	Not flown
Harvard Total Water	Not flown
Harvard Halogens	Worked well
FISH	Worked well
CIMS	Collected data, limited sensitivity
O3	Worked well
O3Lite	Worked well