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Flight Report

Aircraft :	N426NA P-3B Orion
Operating Site(s) From / To :	KWAL/KWAL
Flight Date :	7/11/2011
Flight Number :	1071
Take Off Time :	**Local / GMT** **1326/1726**
Landing Time :	**Local / GMT** **1850/2250**
Flight Time :	**5.5**
Flt Request # / PI:	**11P201 Dr. Jim Crawford (NASA LaRC)** **N/A [ ]**
Purpose of Flight(s) :	**Data [x] Ferry [] Functional Check [] Other []**
Aircraft Status:	**Up [x] Down [ ]**
Sensor Payload :	DISCOVER-AQ mission configuration
Comments :	• Fifth science flight of the DISCOVER-AQ campaign. Flight was successful; please see mission science report for further science updates. Flight take off was delayed due to science instrument repair.

SUBMITTED BY: Rick McKee_____ DATE: __7/11/2011_____

Flight Hours Flown

Flight	Date	Aircraft Flight #	Data Flight#	Duration (hr)	Remaining Hours*
Total Allocated	6/26/2011				*100*
FCF	6/26/2011	1069		.8	100
DISCOVER-AQ ECF	6/26/2011	1069		1.6	98.4
PPF	6/26/2011	1069		1.1	98.4
PCF #1	6/28/2011	1074		2.6	95.8
Media Event Flight	6/28/2011	1074		.8	95.8
ECF #2	6/29/2011	1077		.9	94.9
PCF #2	6/30/2011	1079		2.8	92.1
Science Flight 1	7/01/2011	1080	#1	7.3	84.8
Science Flight 2	7/02/2011	1081	#2	7.7	77.1
Science Flight 3	7/05/2011	1073	#3	8.0	69.1
Science Flight 4	7/10/2011	1083	#4	7.6	61.5
Science Flight 5	7/11/2011	1071	#5	5.5	56.0

Comments: This afternoon flight was anticipated to see code red conditions across northeastern Maryland. During warm-up, NCAR reported a pump failure for the chemiluminescence instrument compromising ozone measurements. A quick repair allowed the flight to occur with a delayed take-off 2.5 hours later than planned. This allowed time for two full circuits to be completed before the planned return of 7pm. Conducting this flight with a delayed takeoff was important for several reasons: the first day of measurements by the NOAA ship, the forecasted code red, and the highest AOD yet observed over the study area. This was the first flight where significant pollution was observed above the boundary layer. HSRL reported an aerosol layer between 13-18 kft that the P-3B was able to probe several times. While there was some speculation that the source of this aerosol layer was from fires in the western US, gas phase measurements did not corroborate this. Specifically, PTR-MS reported no enhancement in acetonitrile, a conservative tracer of biomass burning. The forecasted code red conditions did not materialize, potentially due to unanticipated cloudiness that steadily increased throughout the flight. This cloudiness did not impinge on the Chesapeake Bay where the UC-12 performed five overflights of the NOAA ship. HSRL also performed well in the cloudy environment. Preliminary Pandora data also suggest that the clouds did not pose significant problems for remote sensing from the ground. The flight

ended with a fortunate coincidence with the UC-12 that extended from the northern portion of the Chesapeake Bay extending well south of the Bay Bridge.