

DC-8 08/16/13

Aircraft: [DC-8 - AFRC](#) (See full schedule)

Flight Number: 130608

Payload Configuration: SEAC4RS2013

Nav Data Collected: Yes

Total Flight Time: 8.4 hours

Submitted by: Frank Cutler on 08/17/13

Flight Segments:

From:	KEFD	To:	KEFD
Start:	08/16/13 14:34 Z	Finish:	08/16/13 22:58 Z
Flight Time:	8.4 hours		
Log Number:	138301	PI:	Kent Shiffer
Funding Source:	Hal Maring - NASA - SMD - ESD Radiation Science Program		
Purpose of Flight:	Science		
Comments:	<p>Purpose of Flight Science flight (monsoon & Idaho wildfire smoke plume) Aircraft Status Airworthy Sensor Status SEAC4RS instrument payload; all instruments operated. DACOM worked well on second half of flight; PALMS lost data early in flight due to valve issue; DLH lost data due to operator error. Significant Issues None Accomplishments Round robin flight out of Ellington Airport, TX. Initial climb to FL250 to transit west. In cooperation with ER2 Climb to FL340 at 1515Z, descend to FL240 at 1534Z, climb to FL360 descent to L240 at 1620Z, climb to FL360 at 1644Z, descent to FL240 at 1709. Overfly Thermal, CA waypoint at 1725Z. Climb to FL370 at 1737Z. Start descent west of AZ/NM border to arrive at Farmington, NM at 1500ft AGL to circle power plant. Climb to FL370 at 1903Z then start descending spiral at waypoint P2 (southeast Pueblo, CO) at 1907Z. Cooperative with ER2 perform holding pattern at this same location at 7000ft MSL, 8000ft MSL, descend to 1500ft AGL, climb to 10,000ft MSL, climb to 16,000ft MSL, climb to FL220. Deviate from course to fly more directly to Houston at various altitudes: 16,000ft MSL at 2028Z, 9000ft MSL, 12,000ft MSL. Climb to FL230 at 2110Z. Descend for low approach at Fort Worth Alliance Airport (KAFW) and cross airfield at 2139Z at 500ft AGL. Climb to fly at various altitudes up to FL200 on track to Houston. Descend and land at Ellington Airport, Houston. Takeoff time: 228 14 34 00 Landing time: 228 22 58 35</p>		

Flight Hour Summary:

	138301
Flight Hours Approved in SOFRS	187
Total Used	180.6
Total Remaining	6.4

138301 Flight Reports

Date	Flt #	Purpose of Flight	Duration	Running Total	Hours Remaining	Miles Flown
08/01/13	130601	Check	1.8	1.8	185.2	
08/02/13 - 08/03/13	130602	Check	4.1	5.9	181.1	
08/05/13	130603	Check	5	10.9	176.1	
08/06/13 - 08/07/13	130604	Science	8.7	19.6	167.4	
08/08/13 - 08/09/13	130605	Science	7.8	27.4	159.6	
08/12/13	130606	Science	8.2	35.6	151.4	
08/14/13	130607	Science	7.3	42.9	144.1	
08/16/13	130608	Science	8.4	51.3	135.7	
08/19/13	130609	Science	8.5	59.8	127.2	
08/21/13	130610	Science	7.7	67.5	119.5	
08/23/13	130611	Science	7.4	74.9	112.1	

08/26/13 - 08/27/13	130612	Science	7.7	82.6	104.4
08/27/13 - 08/28/13	130613	Science	8.7	91.3	95.7
08/30/13 - 08/31/13	130614	Science	7.9	99.2	87.8
09/02/13	130615	Science	8.7	107.9	79.1
09/04/13	130616	Science	8.3	116.2	70.8
09/06/13	130617	Science	8.5	124.7	62.3
09/09/13	130618	Science	6.7	131.4	55.6
09/11/13	130619	Science	8.8	140.2	46.8
09/13/13	130620	Science	8.1	148.3	38.7
09/16/13	130621	Science	8.1	156.4	30.6
09/18/13	130622	Science	7.6	164	23
09/21/13 - 09/22/13	130623	Science	9.1	173.1	13.9
09/23/13 - 09/24/13	130624	Transit	7.5	180.6	6.4

Flight Reports began being entered into this system as of 2012 flights. If there were flights flown under an earlier log number the flight reports are not available online.

Related Science Report:

SEAC4RS - DC-8 08/16/13 Science Report

Mission: SEAC4RS

Mission Summary:

The Aug. 16 DC-8/ER-2 flight was primarily devoted to North American Monsoon influences with the DC-8 sampling the UT under the ER-2. Additional DC-8 objectives included studying the anticyclone pollution accumulation, background ozone, four corners power plant plume, and an aged fire plume over Colorado. From take off to the fire plume DC-8 and ER-2 remained in close spatial coordination. Changes were made to the flight plan after the fire plume investigation that included boundary layer sampling of anthropogenic pollution including a missed approach over Dallas.

From Ellington the DC-8 headed west sampling the air between 25Kft and the DC-8 ceiling of 34-38 Kft. The DC-8 upper levels were kept coincident with the ER-2 dips. Atmospheric composition was at moderate levels with typical clean conditions (O3-35 ppb; HCHO-0.5 ppb). Towards the western end of the southern leg evidence of pollution was encountered likely associated with aged pollution within the anticyclone. Ozone levels in the UT region were 70-90 ppb about 15-20 ppb higher than at previous locations with formaldehyde and PANs elevated. There was little enhancement in SO2 and the reasons were not obvious. On the northeasterly leg of the flight track we did a deep descent from nearly 37Kft to the surface to characterize the troposphere at the Arizona-New Mexico northern boundary. The mountainous area is known for high surface background levels of O3 and we measured these to be about 45 ppb (2 ppb HCHO; 3 ppb NO2; isoprene- 1ppb; PANs-1ppb). Moving on the northeast track the DC-8 intersected the four corners power plant plume where fresh NOx concentrations in excess of 200 ppb were measured (CO2-450 ppb). At the northern most point the DC-8 did a spiral down to the surface to characterize the smoke plume and then did an ascent with short level legs below, in, and above the smoke plume to support remote sensing instruments on the ER-2. Smoke plume had CO of about 250 ppb and AOD of 0.4. Subsequent plans to investigate a stratospheric intrusion and BL chemistry were changed to investigate low level urban pollution that also included a missed approach over Dallas. The DC-8 returned to Ellington under ATC control and landed after substantial delay due to weather.

This was a successful flight and all major objectives were met. Nearly all instruments performed well and collected data. There were several adjustments made to the flight plan in real time after the NAM portion of the flight. Interesting data were collected throughout the flight.

Instrument status:

All instruments were up and running and collected data. DACOM and PALMS lost some data in the first half of the flight. Other DACOM channels are still not operational. LARGE CO instrument has been fully installed and functioned normally..

Prepared by HBS

File:

 [Hanwant SEAC4RS_Aug 16 DC8.pdf](#)

Submitted by: Hanwant Singh on 08/18/13

Page Last Updated: April 22, 2017

Page Editor: Brad Bulger

NASA Official: Marilyn Vasques

Source URL: https://espo.nasa.gov/hs3/flight_reports/DC-8_08_16_13#comment-0