

## FLIGHT SUMMARY REPORT

**Flight Number:** 10-918  
**Calendar/Julian Date:** 13 May 2010 (133)  
**Sensor Package:** Cirrus Digital Camera System (DCS)  
Airborne Visible and Infrared Imaging Spectrometer (AVIRIS)  
**Area(s) Covered:** Gulf Coast Oil Spill  
**Investigator(s):** Leifer (UCSB) **Aircraft:** ER-2 #809

### SENSOR DATA

<b>Accession #:</b>	05951	_____
<b>Sensor ID #:</b>	148	099
<b>Sensor Type:</b>	DCS	AVIRIS
<b>Focal Length:</b>	50mm	_____
<b>Film Type:</b>	_____	_____
<b>Filtration:</b>	Wratten 12	_____
<b>Spectral Band:</b>	510-990nm	_____
<b>f-Stop:</b>	11	_____
<b>Shutter Speed:</b>	1/500	_____
<b># of Frames:</b>	81	_____
<b>% Overlap:</b>	60%	_____
<b>Quality:</b>	Excellent	
<b>Remarks:</b>		

## **NASA Suborbital Science Program**

The National Aeronautics and Space Administration maintains a variety of aircraft and sensor systems dedicated to the support of remote sensing research. Two Lockheed ER-2s (S-model U-2); two WB-57 high altitude aircraft; a DC-8; a Lockheed Orion P-3B; and the Altair unmanned aerial vehicle (supported by General Atomics) provide multi-level platforms for both NASA and investigator-owned sensors. Data are collected for the atmospheric, land, and ocean processes in support of the NASA Earth Science program, as well as for universities and other government agencies.

Additionally contracted aircraft from Department of Energy, and Twin Otter International provide remote sensing platforms for the program.

The NASA aircraft, located at Dryden Flight Research Center and Johnson Space Center, are used as test-beds for advanced sensor design and satellite simulation, as well as to support scientific and operational data collection campaigns. Numerous sensor systems are in use and under development by NASA, including multispectral imaging devices, a SAR system, and a suite of large-format metric cameras. All instruments are spectrally, spatially, and radiometrically calibrated on a routine basis. The aircraft themselves are equipped with navigation systems that continuously record GPS location and platform attitude data.

## **Airborne Visible and Infrared Imaging Spectrometer**

The Airborne Visible and Infrared Imaging Spectrometer (AVIRIS) is the second in the series of imaging spectrometer instruments developed at the Jet Propulsion Laboratory (JPL) for earth remote sensing. This instrument uses scanning optics and four spectrometers to image a 614-pixel swath simultaneously in 224 contiguous spectral bands (0.4-2.4  $\mu\text{m}$ ).

AVIRIS parameters are as follows:

IFOV:	1 mrad
Ground Resolution:	66 feet (20 meters) at 65,000 feet
Total Scan Angle:	34°
Swath Width:	5.9 nautical mile (11 km) at 65,000 feet
Spectral Coverage:	0.41-2.45 $\mu\text{m}$
Pixels/Scan Line:	677
Number of Spectral Bands:	224
Digitization:	12-bits
Data Rate:	20.4 MBPS

<u>Spectrometer</u>	<u>Wavelength Range</u>	<u>Number of Bands</u>	<u>Sampling Interval</u>
1	0.41 - 0.70 $\mu\text{m}$	31	9.4 nm
2	0.68 - 1.27 $\mu\text{m}$	63	9.4 nm
3	1.25 - 1.86 $\mu\text{m}$	63	9.7 nm
4	1.84 - 2.45 $\mu\text{m}$	63	9.7 nm

All AVIRIS data is processed and archived at JPL. For further information contact Rob Green at Jet Propulsion Laboratory, 4800 Oak Grove Drive, Mail Stop 183-501, Pasadena, California 91109-8099. <http://aviris.jpl.nasa.gov/>

### **Cirrus Digital Camera System (DCS)**

Cirrus Digital Systems provides the digital camera. It consists of a Hasselblad camera body with a Kodak camera back and CCD array. It can be configured to acquire either false color infrared or natural color imagery.

<b>Lens</b>	<b>Array Size</b>	<b>Array Width</b>	<b>Field of View (FOV)</b>	<b>Altitude (feet)</b>	<b>Ground Coverage</b>	<b>Nominal Resolution</b>
50mm	4072 x 4072 (pixels)	36.72mm	40.3°	65000	7.9nm	3.5m
50mm	4072 x 4072 (pixels)	36.72mm	40.3°	45000	5.4nm	2.5m
50mm	4072 x 4072 (pixels)	36.72mm	40.3°	28000	3.4nm	1.5m

Note: Nominal resolution references the smallest target that can be imaged.

### **Airborne Sensor Facility**

The Airborne Sensor Facility at NASA Ames Research Center web site:

<http://asapdata.arc.nasa.gov/>

Additional information regarding flight documentation to include archive searches may be obtained from the following:

Airborne Sensor Facility  
MS 244-15  
NASA Ames Research Center  
Moffett Field, CA 94035  
Telephone: (650)604-6252 (FAX 4987)

# CAMERA FLIGHT LINE DATA

## FLIGHT NO. 10-918

**Accession #**     05951

**Sensor #**        148

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Heading / Line ID
		START	END		
A - B	5299-5310	15:40:07	15:45:25	65200/19880	95° / CAL-2-D4
C - D	5311-5336	15:55:32	16:06:33	65000/19820	86° / Line A
E - F	5337-5359	16:17:15	16:26:57	65500/19970	111° / Line B
G - H	5360-5379	16:36:33	16:44:56	65200/19880	140° / Line C





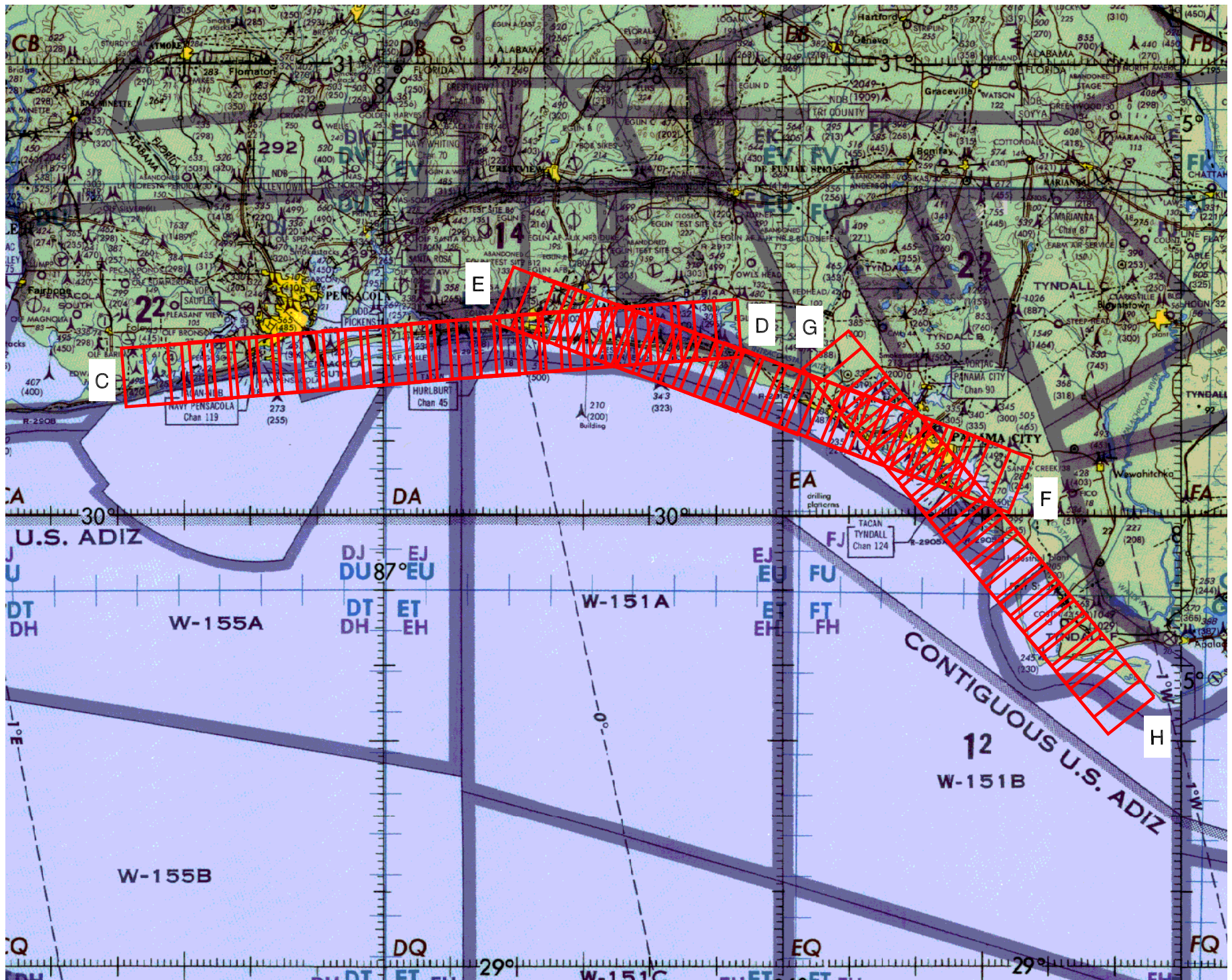
FLIGHT 10-918

13 MAY 2010

A/C 809

DCS





FLIGHT 10-918

13 MAY 2010

A/C 809 (ER-2)

DCS