

FLIGHT SUMMARY REPORT

Flight Number: 10-922
Calendar/Julian Date: 20 May 2010 (140)
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

Accession #:	05955	—
Sensor ID #:	165	099
Sensor Type:	DCS	AVIRIS
Focal Length:	50mm	—
Film Type:	—	—
Filtration:	Wratten 12	—
Spectral Band:	510-990nm	—
f-Stop:	11	—
Shutter Speed:	1/500	—
# of Frames:	327	—
% Overlap:	60%	—
Quality:	Excellent	
Remarks:		

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 μm).

AVIRIS parameters are as follows:

IFOV:	1 mrad
Ground Resolution:	66 feet (20 meters) at 65,000 feet
Total Scan Angle:	34 ^o
Swath Width:	5.9 nautical mile (11 km) at 65,000 feet
Spectral Coverage:	0.41-2.45 μm
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 μm	31	9.4 nm
2	0.68 - 1.27 μm	63	9.4 nm
3	1.25 - 1.86 μm	63	9.7 nm
4	1.84 - 2.45 μm	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.

Lens	Array Size	Array Width	Field of View (FOV)	Altitude (feet)	Ground Coverage	Nominal Resolution
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. 10-922**

Accession # 05955

Sensor # 165

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Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	True Heading / Line
		START	END		
A - B	4356-4376	17:33:22	17:42:40	63400/19330	91° / Oil 1
C - D	4377-4389	17:50:11	17:55:47	65200/19880	144° / Oil 2
E - F	4390-4397	18:14:23	18:17:40	64400/19630	95° / Stennis-Gulfport Cal
G - H	4398-4403	18:31:53	18:34:13	64700/19730	87° / Oil 4
I - J	4404-4454	18:41:32	19:05:23	64800/19760	257° / Oil 5
K - L	4455-4508	19:09:16	19:34:02	65200/19880	77° / Oil 6
M - N	4509-4553	19:39:20	19:59:53	65500/19970	255° / Oil 7
O - P	4554-4558	20:04:39	20:06:32	65500/19970	115° / Pilot Oil 1
Q - R	4559-4578	20:09:05	20:17:58	65900/20090	81° / Pilot Oil 2
S	4579-4581	20:26:29	20:27:25	64300/19600	268° / Pilot Oil 3
T - U	4582-4591	20:36:00	20:40:13	63500/19360	89° / Pilot Oil 4

**CAMERA FLIGHT LINE DATA
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Accession # 05955

Sensor # 165

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Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	True Heading / Line ID
		START	END		
V - W	4592-4598	20:46:43	20:49:31	62900/19180	87° / Pilot Oil 5
X - Y	4599-4613	20:55:25	21:01:57	62700/19110	283° / Pilot Oil 6
Y - Z	4614-4624	21:02:25	21:07:06	62800/19140	309° / Pilot Oil 7
Z - 1	4625-4649	21:07:34	21:18:47	62800/19140	296° / Pilot Oil 8
1 - 2	4650-4659	21:19:15	21:23:27	63000/19200	0° / Pilot Oil 9
2 - 3	4660-4682	21:23:55	21:34:12	63200/19260	271° / Pilot Oil 10



