

FLIGHT SUMMARY REPORT

Flight Number: 94-039
Calendar/Julian Date: 11 February 1994 • 42
Sensor Package: Wild-Heerbrug RC-10
 Hycon HR-732
 Large Area Collectors (LACs)
 Aerosol Particulate Sampler (APS)
Area(s) Covered: Texas Gulf Coast

Investigator(s): U.S. Fish and Wildlife Service
 Environmental Protection Agency

Aircraft #: 706

SENSOR DATA

Accession #:	04694	04695	-----	-----
Sensor ID #:	076	020	100	024
Sensor Type:	RC-10	HR-732	LACs	APS
Focal Length:	12" 304.89 mm	24" 609.6 mm	-----	-----
Film Type:	Aerochrome IR SO-060	High Definition Aerochrome IR SO-131	-----	-----
Filtration:	Wratten 12	None	-----	-----
Spectral Band:	510-900 nm	510-900	-----	-----
f Stop:	11	8	-----	-----
Shutter Speed:	1/250	1/75	-----	-----
# of Frames:	417	284	-----	-----
% Overlap:	60	60	-----	-----
Quality:	Excellent	Excellent	-----	-----
Remarks:	Camera clock offset 45.9 seconds from navigation data	Camera clock offset 39.8 seconds from navigation data		

Airborne Science and Applications Program

The Airborne Science and Applications Program (ASAP) is supported by three ER-2 high altitude Earth Resources Survey aircraft. These aircraft are operated by the High Altitude Missions Branch at NASA-Ames Research Center, Moffett Field, California. The ER-2s are used as readily deployable high altitude sensor platforms to collect remote sensing and *in situ* data on earth resources, celestial phenomena, atmospheric dynamics, and oceanic processes. Additionally, these aircraft are used for electronic sensor research and development and satellite investigative support.

The ER-2s are flown from various deployment sites in support of scientific research sponsored by NASA and other federal, state, university, and industry investigators. Data are collected from deployment sites in Kansas, Texas, Virginia, Florida, and Alaska. Cooperative international scientific projects have deployed the aircraft to sites in Great Britain, Australia, Chile, and Norway.

Photographic and digital imaging sensors are flown aboard the ER-2s in support of research objectives defined by the sponsoring investigators. High resolution mapping cameras and digital multispectral imaging sensors are utilized in a variety of configurations in the ER-2s' four pressurized experiment compartments. The following provides a description of the digital multispectral sensor(s) and camera(s) used for data collection during this flight.

Aerosol Particulate Sampler

The Aerosol Particulate Sampler (APS) has been developed and is operated by Dr. Guy Ferry of the NASA-Ames Research Experiments Branch. The sampler is a non-imaging sensor designed to gather high altitude dust particles for laboratory research.

Large Area Collectors

The Large Area Collectors (LACs) are flown on NASA high altitude ER-2s in support of the NASA-Johnson Space Center Cosmic Dust Program. The LACs are used to collect comparatively unaltered cosmic dust from the stratosphere at ER-2 flight altitudes of 65,000 feet or higher. Sufficient quantities of extraterrestrial materials are collected to allow chemical and mineralogical compositions of individual particles to be determined. Study of these materials whose sources may be comets, asteroid collisions, planetary impacts, and meteorite ablation provide valuable information about the origin and history of the solar system.

Additional information regarding the Large Area Collectors may be obtained from Michael E. Zolensky, NASA-Johnson Space Center, SN2, Houston, Texas 77058 (Telephone: 713-483-5128).

Camera Systems

Various camera systems and films are used for photographic data collection. Film types include high definition color infrared, natural color, and black and white emulsions. Available photographic systems are as follows:

- Wild-Heerbrug RC-10 metric mapping camera
 - 9 x 9 inch film format
 - 6 inch focal length lens provides area coverage of 16 x 16 nautical miles

- from 65,000 feet
- 12 inch focal length lens provides area coverage of 8 x 8 nautical miles from 65,000 feet
- Hycon HR-732 large scale mapping camera
 - 9 x 18 inch film format
 - 24 inch focal length lens provides area coverage of 4 x 8 nautical miles from 65,000 feet
- IRIS II Panoramic camera
 - 4.5 x 34.7 inch film format
 - 24 inch focal length lens
 - 90 degree field of view provides area coverage of 2 x 21.4 nautical miles from 65,000 feet

The U.S. Geological Survey's EROS Data Center at Sioux Falls, South Dakota serves as the archive and product distribution facility for NASA-Ames aircraft acquired photographic and digital imagery. For information regarding photography and digital data (including areas of coverage, products, and product costs) contact EROS Data Center, Customer Services, Sioux Falls, South Dakota 57198 (Telephone: 605-594-6151).

For specific information regarding flight documentation, sensor parameters, and areas of coverage contact the Aircraft Data Facility, NASA-Ames Research Center, Mail Stop 240-6, Moffett Field, California 94035-1000 (Telephone: 415-604-6252). Additional information regarding ER-2 acquired photographic and digital data is also available through the Aircraft Data Facility.

**CAMERA FLIGHT LINE DATA
FLIGHT NO. 94-039**

Accession # 04694

Sensor # 076

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A	1452-1456	16:42:47	16:44:40	65000/19800	Minor-20% scattered cumulus; oblique (frames 1454-1456)
A - B	1457-1469	16:55:54	17:01:32	"	Minor-10% cumulus (frames 1457-1464); oblique (frame 1469)
B - C	1470-1488	17:02:01	17:10:30	"	10% cumulus (frame 1470)
D - E	1489-1513	17:16:56	17:28:14	"	Minor cumulus (frames 1508-1513); oblique (frame 1513)
E - F	1514-1522	17:28:42	17:32:28	"	Minor-10% cumulus (frames 1514-1519)
G - H	1523-1558	17:44:50	18:01:14	"	Clear
I - J	1559-1591	18:04:50	18:19:50	"	Minor-10% cumulus (frames 1559-1561 and 1586-1589)
K - L	1592-1625	18:24:05	18:39:33	"	10% cirrus (frames 1611 and 1613)
M - N	1626-1658	18:44:34	18:59:34	"	Minor-10% cumulus (frames 1653-1658)

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Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
O - P	1659-1695	19:03:32	19:20:24	65000/19800	Minor-20% cirrus (frames 1688-1693)
Q - R	1696-1724	19:24:34	19:37:40	"	10-20% cirrus (frames 1696-1700)
S - T	1725-1751	19:42:12	19:54:22	"	Minor-10% cumulus (frames 1729-1734); minor-20% cirrus (frames 1747-1751)
U - V	1752-1773	19:58:13	20:08:03	"	Minor-10% cumulus (frames 1767-1772)
W - X	1774-1780	20:12:17	20:15:05	"	Clear
Y - C	1781-1791	20:19:42	20:24:22	"	Minor-10% cumulus (frames 1785-1790)
Z - 1	1792-1803	20:40:02	20:45:09	"	20% cirrus (frame 1792); smoke obstruction (frames 1792-1794)
2 - A	1804-1820	20:51:11	20:58:39	"	Minor cumulus (frames 1819-1820)
3 - 4	1821-1849	21:06:25	21:19:28	"	Smoke obstruction (frames 1824-1825); minor-50% cumulus (frames 1839-1849)

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Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
5 - 1	1850-1868	21:28:35	21:36:58	65000/19800	Clear
APS ON/OFF TIME 16:16:00/21:21:00					

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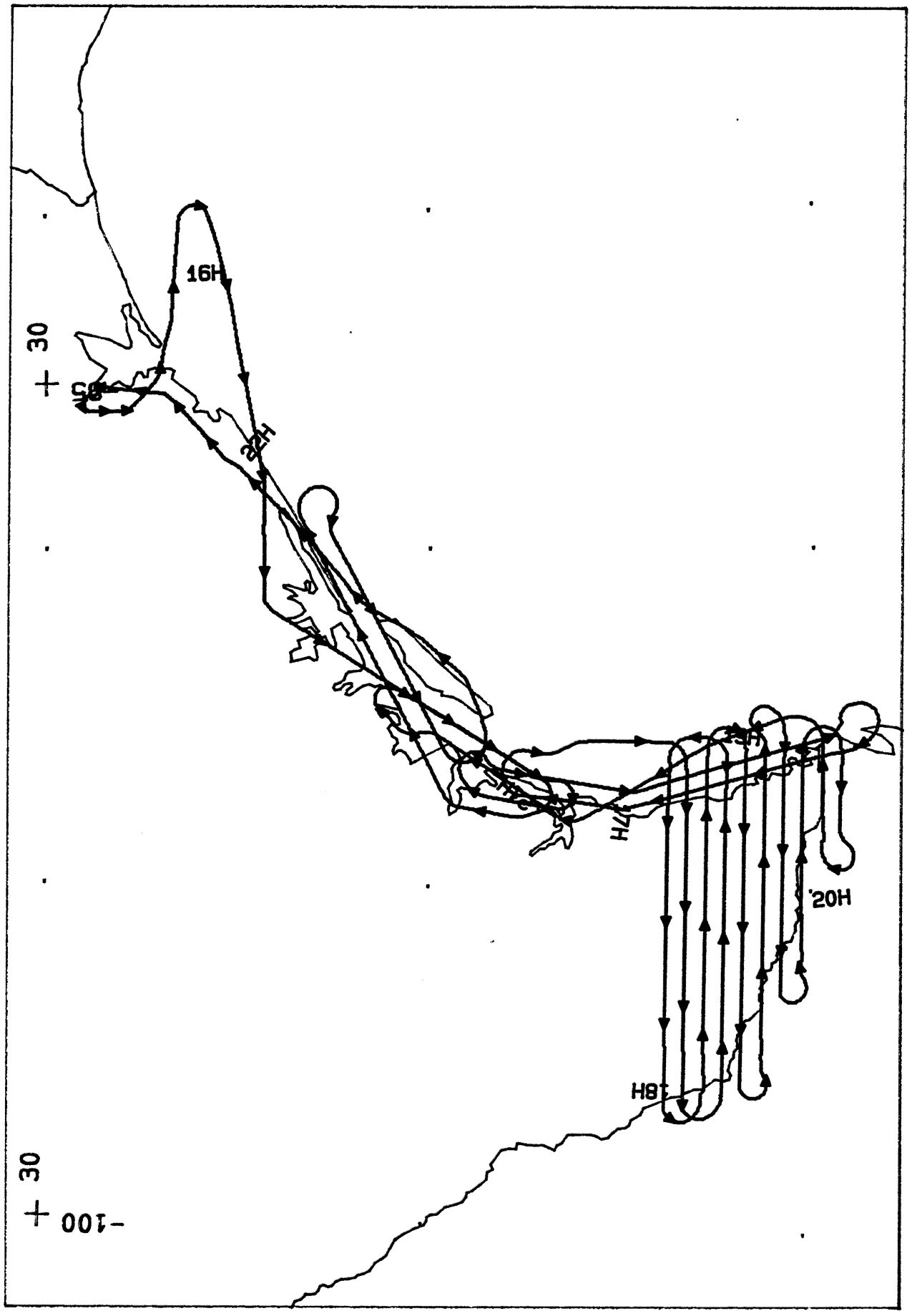
Sensor # 020

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A	0001-0009	16:41:16	16:43:12	65000/19800	Minor-20% scattered cumulus (frames 0001-0004); 10% cumulus (frames 0008-0009); oblique (frames 0005-0009)
A - B	0010-0033	16:54:23	16:59:58	"	Minor-10% cumulus (frames 0010-0024); minor cumulus (frames 0031, 0033); oblique (frame 0033)
B - C	0034-0071	17:00:13	17:09:12	"	Minor cumulus (frame 0034)
D - E	0072-0118	17:15:26	17:26:34	"	Minor cumulus (frames 0109-0118)
E - F	0119-0137	17:26:49	17:31:10	"	Minor-10% cumulus (frames 0119-0129)
Z - 1	0138-0160	20:38:30	20:43:46	"	10-30% cirrus (frames 0138-0139); smoke obstruction (frames 0140-0143)
2 - A	0161-0193	20:49:42	20:57:23	"	Minor-20% cirrus (frames 0187-0193)

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Accession # 04695
Sensor # 020

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
3 - 4	0194-0249	21:04:53	21:18:06	65000/19800	Smoke obstruction (frames 0200-0201); minor-10% cumulus (frames 0227-0237); 10-50% cumulus (frames 0239-0249)
5 - 1	0250-0284	21:27:03	21:35:13	"	Clear



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