

# FLIGHT SUMMARY REPORT

**Flight Number:** 93-041  
**Calendar/Julian Date:** 12 December 1992 • 347  
**Sensor Package:** Wild-Heerbrug RC-10  
Dual Hycon HR-732  
Large Area Collectors (LACs)  
Aerosol Particulate Sampler (APS)  
**Area(s) Covered:** Gulf Coast

**Investigator(s):** Handley, USFWS; Zolensky, NASA-JSC **Aircraft #:** 708

## SENSOR DATA

<b>Accession #:</b>	04533	04534	04535
<b>Sensor ID #:</b>	026	038	039
<b>Sensor Type:</b>	RC-10	HR-732	HR-732
<b>Focal Length:</b>	12" 304.97 mm	24" 609.6 mm	24" 609.6 mm
<b>Film Type:</b>	High Definition Aerochrome IR SO-131	High Definition Aerochrome IR SO-131	High Definition Aerochrome IR SO-131
<b>Filtration:</b>	cc.10B	cc.10B	cc.10B
<b>Spectral Band:</b>	510-900 nm	510-900 nm	510-900 nm
<b>f Stop:</b>	4	8	8
<b>Shutter Speed:</b>	1/125	1/75	1/75
<b># of Frames:</b>	103	130	52
<b>% Overlap:</b>	60	60	60
<b>Quality:</b>	Excellent	Excellent	Excellent
<b>Remarks:</b>	17.7 sec. offset between camera and navigation data	36.2 sec. offset between camera and navigation data	1.3 sec. offset between camera and navigation data

93-041

SENSOR DATA continued

Accession #:	----	----
Sensor ID #:	100	024
Sensor Type:	LACs	APS
Focal Length:	----	----
Film Type:	----	----
Filtration:	----	----
Spectral Band:	----	----
f Stop:	----	----
Shutter Speed:	----	----
# of Frames:	----	----
% Overlap:	----	----
Quality:	----	----
Remarks:		

## 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 sensors and camera system(s) used for data collection during this flight.

### 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.

### 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.

### 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).

Additional information regarding ER-2 acquired photographic and digital data is available through the Aircraft Data Facility at Ames Research Center. 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).

**CAMERA FLIGHT LINE DATA**  
**FLIGHT NO. 93-041**

Accession # 04533

Sensor # 026

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	7177-7185	15:30:14	15:33:58	65000/19800	Clear
B - C	7186-7199	15:40:20	15:46:04	"	Clear
D - E	7200-7215	15:52:45	15:59:30	"	Clear
E - F	7216-7224	16:05:09	16:08:29	"	Clear
G - H	7225-7229	16:13:58	16:15:37	"	Clear
H - I	7230-7240	16:21:20	16:25:59	"	Clear
J - K	7241-7249	16:31:56	16:35:11	"	Clear
L - M	7250-7256	16:40:06	16:42:34	"	Clear
N - O	7257-7267	16:47:56	16:52:35	"	Clear
P - Q	7268-7279	17:18:08	17:22:46	"	10-90% stratus (frames 7268-7275); 10% cirrus (frames 7278-7279)

**CAMERA FLIGHT LINE DATA  
FLIGHT NO. 93-041**

Accession # 04534

Sensor # 038

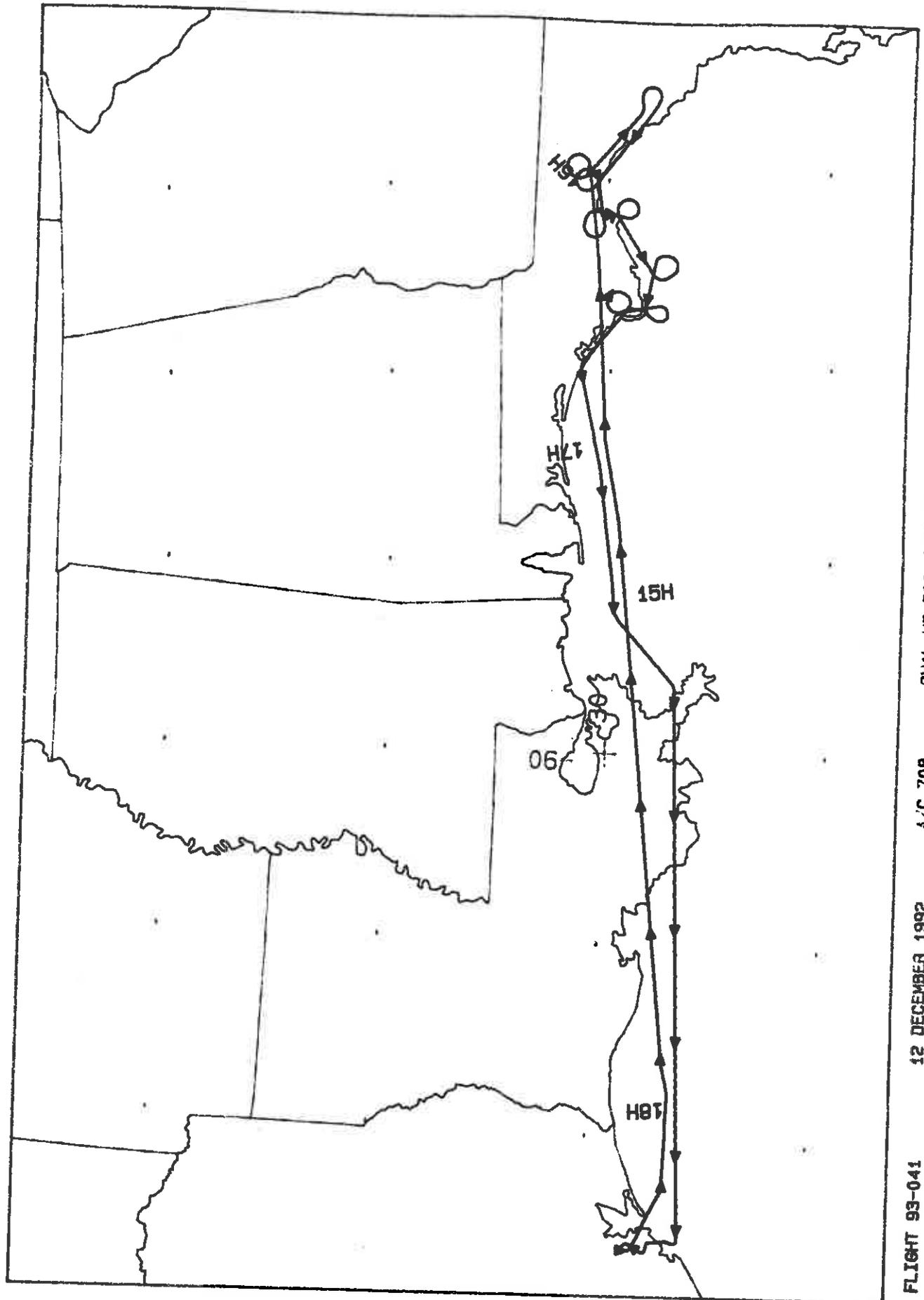
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0017	15:29:22	15:33:11	65000/19800	Clear
B - C	0018-0043	15:39:27	15:45:25	"	Clear
D - E	0044-0072	15:51:49	15:58:31	"	Clear
E - F	0073-0086	16:04:13	16:07:20	"	Clear
G - H	0087-0095	16:13:02	16:14:57	"	Clear
H - I	0096-0116	16:20:27	16:25:13	"	Clear
J - K	0117-0130	16:31:00	16:34:06	"	Clear

**CAMERA FLIGHT LINE DATA**  
**FLIGHT NO. 93-041**

Accession # 04535

Sensor # 039

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
L - M	0001-0011	16:39:48	16:42:13	65000/19800	Clear
N - O	0012-0031	16:47:38	16:52:10	"	Clear
P - Q	0032-0052	17:17:49	17:22:35	"	10-90% strato-cumulus (frames 0032-0043); thin cirrus (frames 0045-0046 and 0051); 20% cirrus (frame 0052)

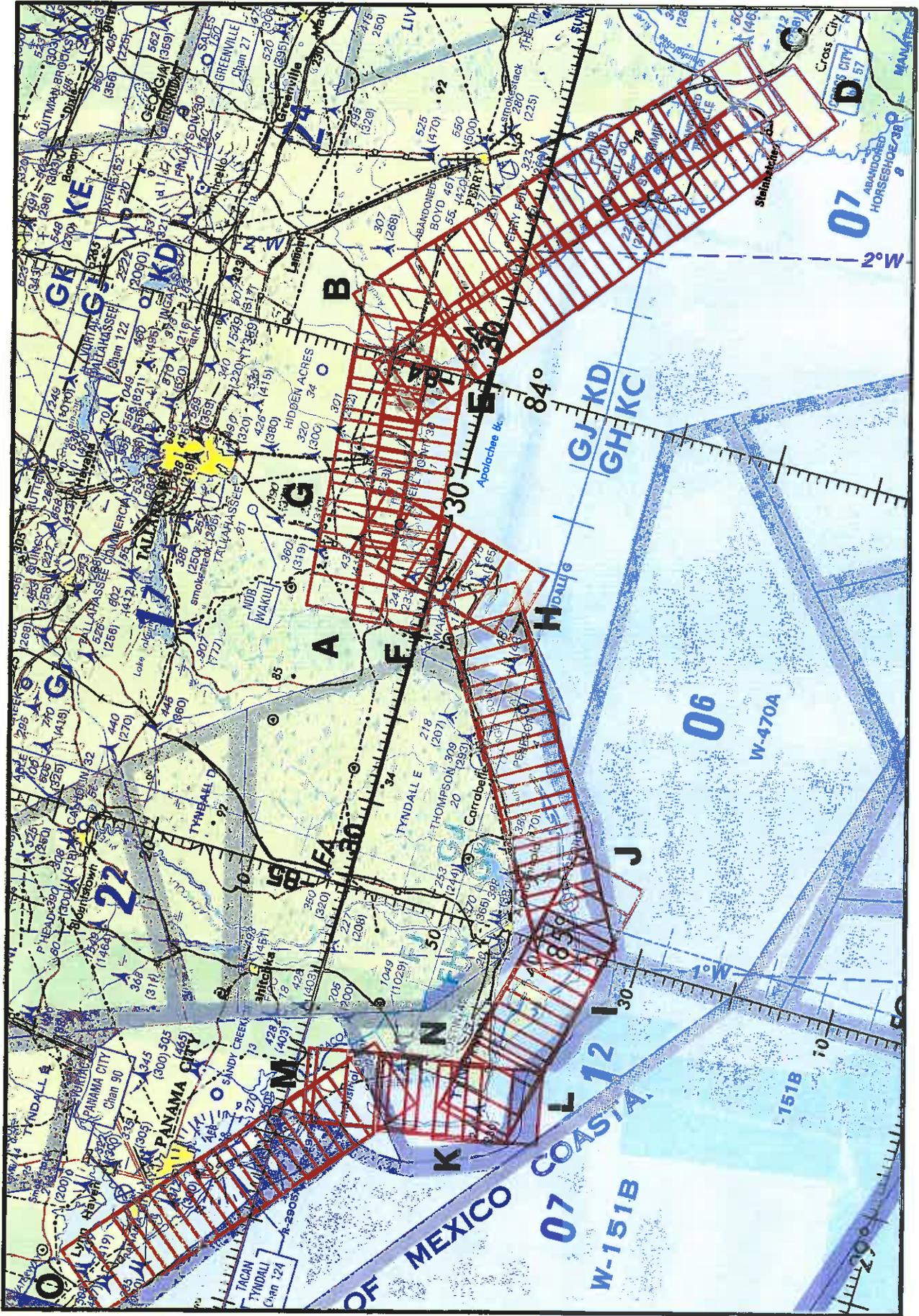


FLIGHT 93-041

12 DECEMBER 1992

A/C 708

DUAL HR 732 / RC-10



FLIGHT 89-041

12 DECEMBER 1992

A/C 706

FC-10 / HI 792

ONC H-20

