

FLIGHT SUMMARY REPORT

Flight #: 92-052
Date: 31 January 1992
Sensor Package: Hycon HR-732
Multispectral Atmospheric Mapping Sensor
(MAMS)
Area(s) Covered: Coastal Southern California

Investigator(s): Pilot Proficiency

Aircraft #: 709

Flight Request: 92X001

Julian Date: 031

SENSOR DATA

Accession #:	04373	-----
Sensor ID #:	039	080
Sensor Type:	HR-732	MAMS
Focal Length:	24" 604.9 mm	-----
Film Type:	Aerial Color SO-242	-----
Filtration:	None	-----
Spectral Band:	400-700 nm	-----
f Stop:	8	-----
Shutter Speed:	1/75	-----
# of Frames:	138	-----
% Overlap:	60	-----
Quality:	Excellent	Good
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 sensor and camera(s) used for data collection during this flight.

Multispectral Atmospheric Mapping Sensor

The Multispectral Atmospheric Mapping Sensor (MAMS) is a modified Daedalus Scanner flown aboard the ER-2 aircraft. It is designed to study weather related phenomena including storm system structure, cloud-top temperatures, and upper atmosphere water vapor. The scanner retains the eight silicon-detector channels in the visible/near-infrared region found on the Daedalus Thematic Mapper Simulator, with the addition of four channels in the thermal infrared relating to specific water vapor features. The specific bands are as follows:

<u>Daedalus Channel</u>	<u>Wavelength, μm</u>
1	LSBs for Channels 9-12
2	0.45 - 0.52
3	0.52 - 0.60
4	0.57 - 0.67
5	0.60 - 0.73
6	0.65 - 0.83
7	0.72 - 0.99
8	0.83 - 1.05
9	3.55 - 3.93 low range
10	3.55 - 3.93 high range
11	10.3 - 12.1
12	12.5 - 12.8

Sensor specifications are as follows:

IFOV:	5.0 mrad
Ground Resolution:	325 feet (99 meters) at 65,000 feet
Total Scan Angle:	86°
Swath Width:	20 nmi (37 km) at 65,000 feet
Pixels/Scan Line:	716
Scan Rate:	6.25 scans/second
Ground Speed:	400 kts (206 m/second)

Digitization:

8-bit channels 2-8
10-bit channels 9-12

The data will not be archived at EROS Data Center because this is an experimental system with low spatial resolution and unique spectral characteristics. As all scenes will be primarily cloud-covered there would be little terrestrial application for the data. Further information concerning the data can be obtained from principal investigator, Gregory S. Wilson, Atmospheric Effects Branch, George C. Marshall Space Flight Center, National Aeronautics and Space Administration, Marshall Space Flight Center, Alabama 35812-5001.

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, tape format, logical record format, scanner calibration, 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. 92-052**

Accession # 04373

Sensor # 039

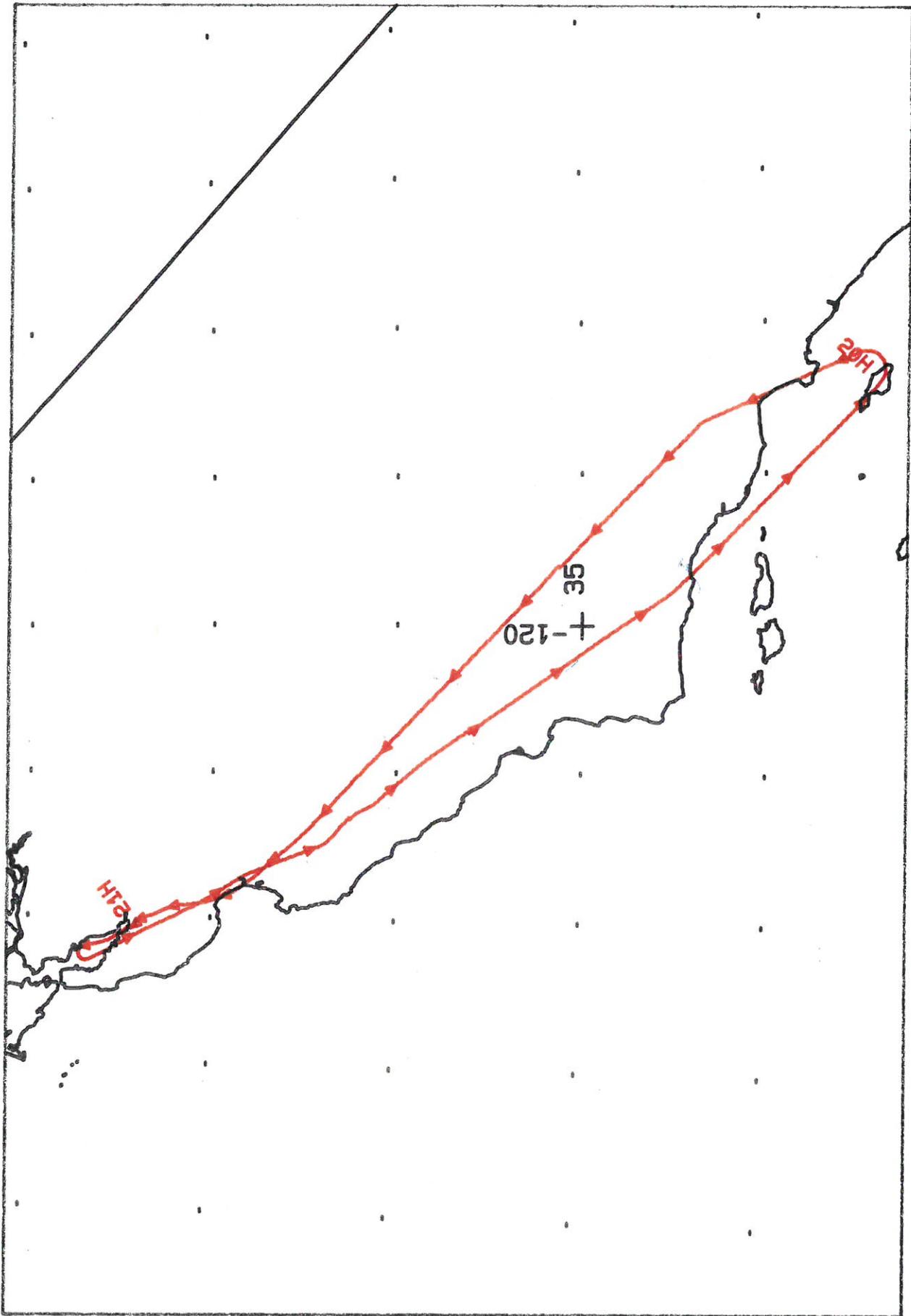
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0055	19:42:13	19:55:15	65000/19800	10-30% cirrus (frames 0001-0006); 10% cirrus (frames 0012-0017)
B - C	0056-0067	19:55:29	19:58:09	"	Clear; oblique frames in turn; 10-30% cirrus
C - D	0068-0102	19:58:23	20:06:36	"	Clear
D - E	0103-0105	20:06:50	20:07:19	"	Clear; oblique frames in turn
E - F	0106-0138	20:07:34	20:15:02	"	10-20% cirrus (frames 0116-0138)

MAMS SCANNER FLIGHT LINE DATA

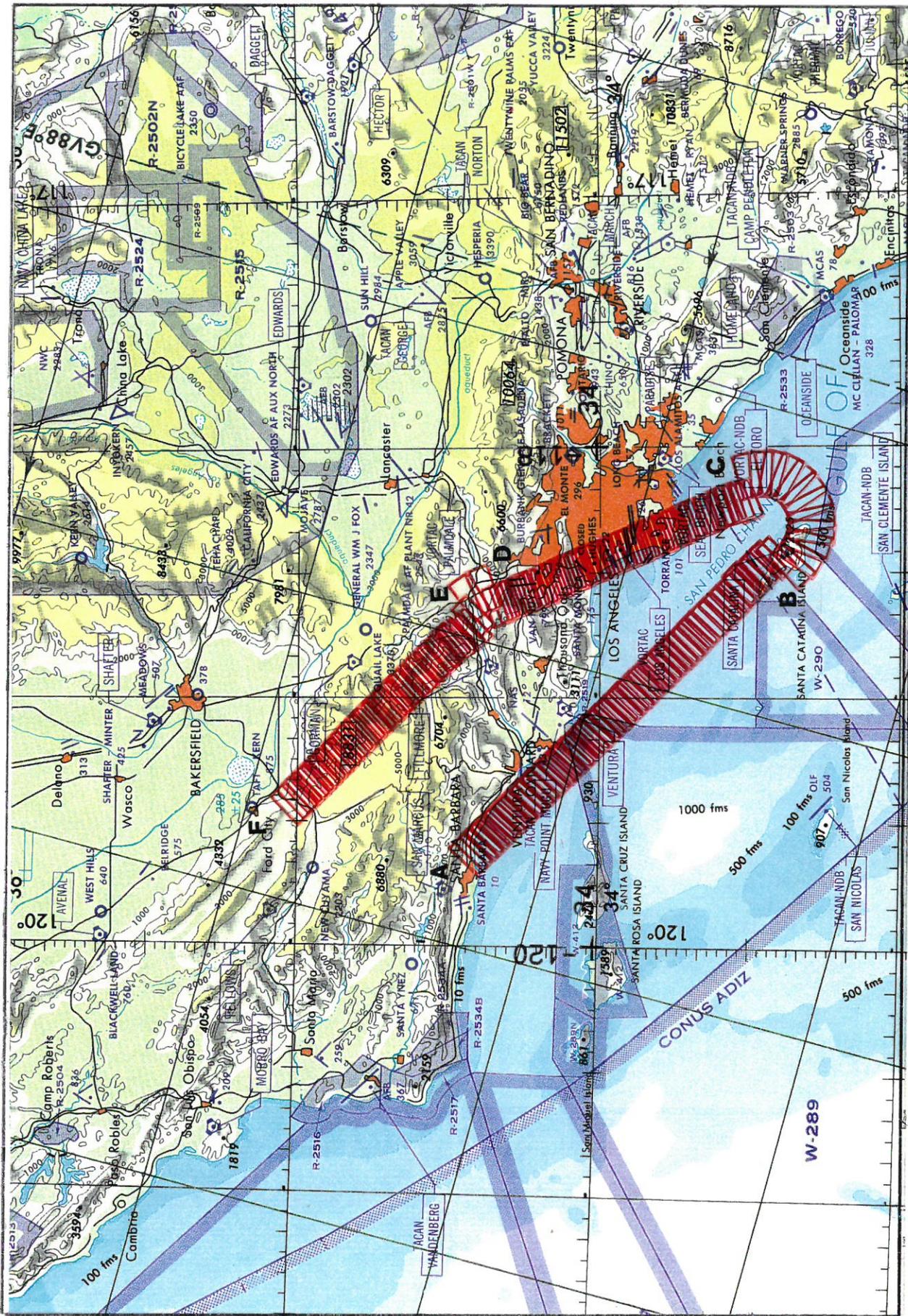
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MAMS FLIGHT DATA
FLIGHT NUMBER: 92-052

Check Points	A c t u a l t i m e (GMT) b e g i n e n d	A c t u a l s c a n l i n e b e g i n e n d	A l t i t u d e f e e t / m e t e r	S c a n S p e e d (r p s)	t o t a l G o o d s c a n l i n e s	t o t a l I n t e r p o l a t e d s c a n l i n e s	t o t a l R e p e a t e d s c a n l i n e s
A-B	19:44: 9.0 19:57:39.0	19551 24612	65000/19812	6.30	5058	0	4
C-D	20:00:40.0 20:08:44.0	25744 28764	65000/19812	6.30	3021	0	0
E-F	20:09:52.0 20:18:37.0	29190 32475	65000/19812	6.30	3282	0	4



FLIGHT 92-052 31 January 1992 A/C 709 MANS / Dual HR-732 / EOC Pilot Proficiency



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