

FLIGHT SUMMARY REPORT

Flight Number: 96-052
Calendar/Julian Date: 14 December 1995 • 348
Sensor Package: Wild-Heerbrugg RC-10
Thematic Mapper Simulator (TMS)
Large Area Collectors (LACs)
Area(s) Covered: San Francisco Bay Area

Investigator(s): Peters, USFWS

Aircraft #: 706

SENSOR DATA

Accession #:	05043	-----	-----
Sensor ID #:	034	074	100
Sensor Type:	RC-10	TMS	LACs
Focal Length:	12" 304.66 mm	-----	-----
Film Type:	Aerochrome IR SO-060	-----	-----
Filtration:	Wratten 12	-----	-----
Spectral Band:	510-900 nm	-----	-----
f Stop:	8	-----	-----
Shutter Speed:	1/175	-----	-----
# of Frames:	192	-----	-----
% Overlap:	60	-----	-----
Quality:	Good	-----	-----
Remarks:	Camera clock offset 42.5 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.

Thematic Mapper Simulator

The Daedalus Thematic Mapper Simulator (TMS) is a multispectral scanner flown aboard the ER-2 aircraft which simulates spatial and spectral characteristics of the seven Landsat-D Thematic Mapper bands. The specific bands are as follows:

<u>Daedalus Channel</u>	<u>TM Band</u>	<u>Wavelength, μm</u>
1	A	0.42 - 0.45
2	1	0.45 - 0.52
3	2	0.52 - 0.60
4	B	0.60 - 0.62
5	3	0.63 - 0.69
6	C	0.69 - 0.75
7	4	0.76 - 0.90
8	D	0.91 - 1.05
9	5	1.55 - 1.75
10	7	2.08 - 2.35
11	6	8.5 - 14.0 low gain
12	6	8.5 - 14.0 high gain

Sensor/aircraft parameters are as follows:

IFOV:	1.25 mrad
Ground Resolution:	81 feet (25 meters) at 65,000 feet
Total Scan Angle:	43°
Swath Width:	8.4 nm (15.6 km) at 65,000 feet
Pixels/Scan Line:	716
Scan Rate:	12.5 scans/second
Ground Speed:	400 kts (206 m/second)

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-Heerbrugg 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. 96-052**

Accession # 05043

Sensor # 034

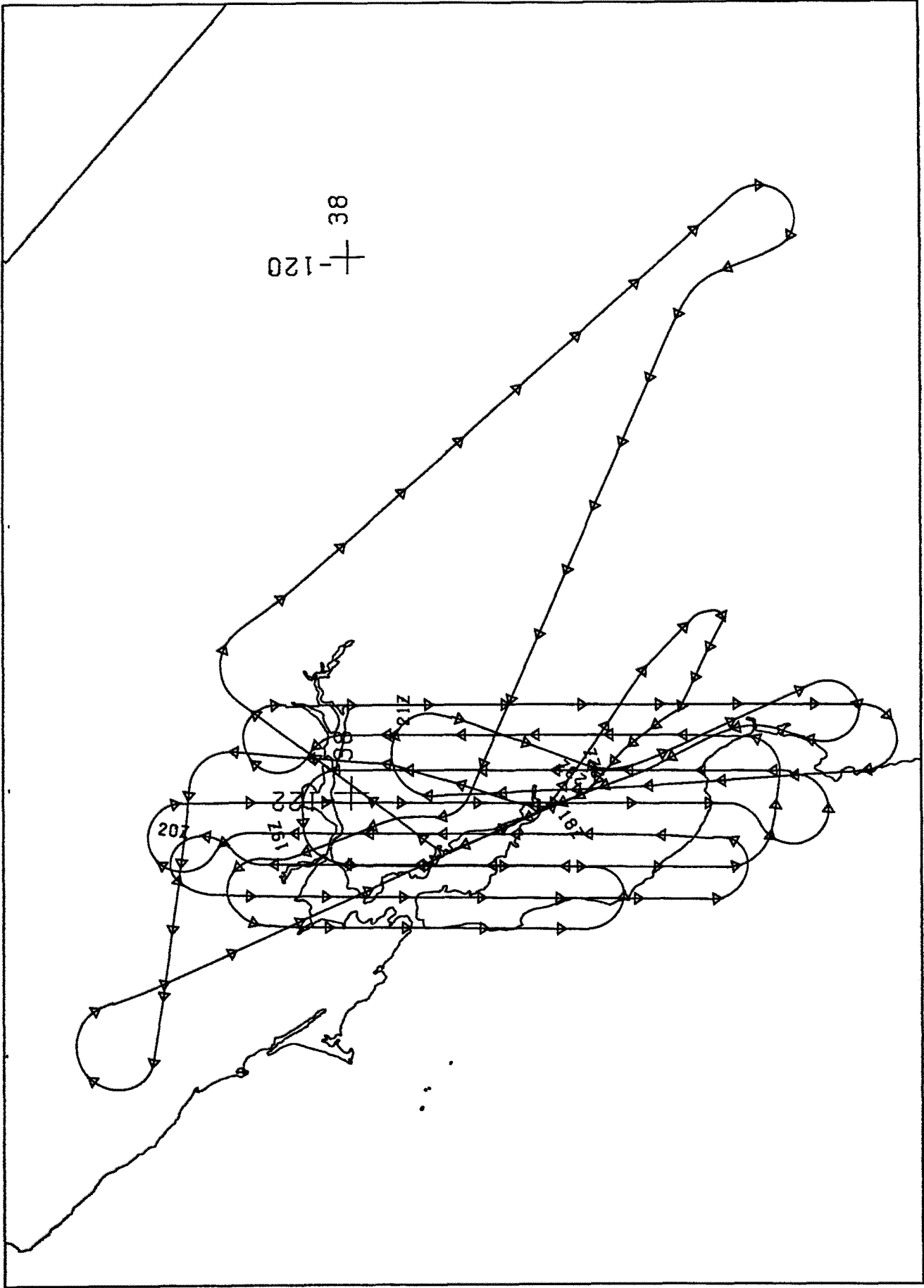
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	9722-9736	19 05 51	19 12 29	65000/19812	10-20% cumulus (frames 9722-9725), 10% cirrus (frames 9729-9731)
C - D	9737-9755	19:15 47	19 24 20	65000/19812	Minor-10% cirrus (frames 9739-9745), 10-20% cumulus (frames 9753-9755)
E - F	9756-9776	19 31:16	19 40 44	65000/19812	10-60% cumulus (frames 9756-9759), 10% cirrus (frames 9762 and 9772-9776)
G - H	9777-9801	19 44 57	19 56 17	65000/19812	10-20% cirrus (frames 9777-9778 and 9797-9801)
I - J	9802-9828	20 03:43	20 15 59	65000/19812	10-70% cirrus (frames 9802-9808)
K - L	9829-9852	20:22 08	20:32 57	65000/19812	Minor cirrus (frames 9834-9836), 10-40% cirro-cumulus (frames 9850-9852)
M - N	9853-9866	20 40:32	20 46 38	65000/19812	Minor-10% cirro-cumulus (frames 9853-9866)

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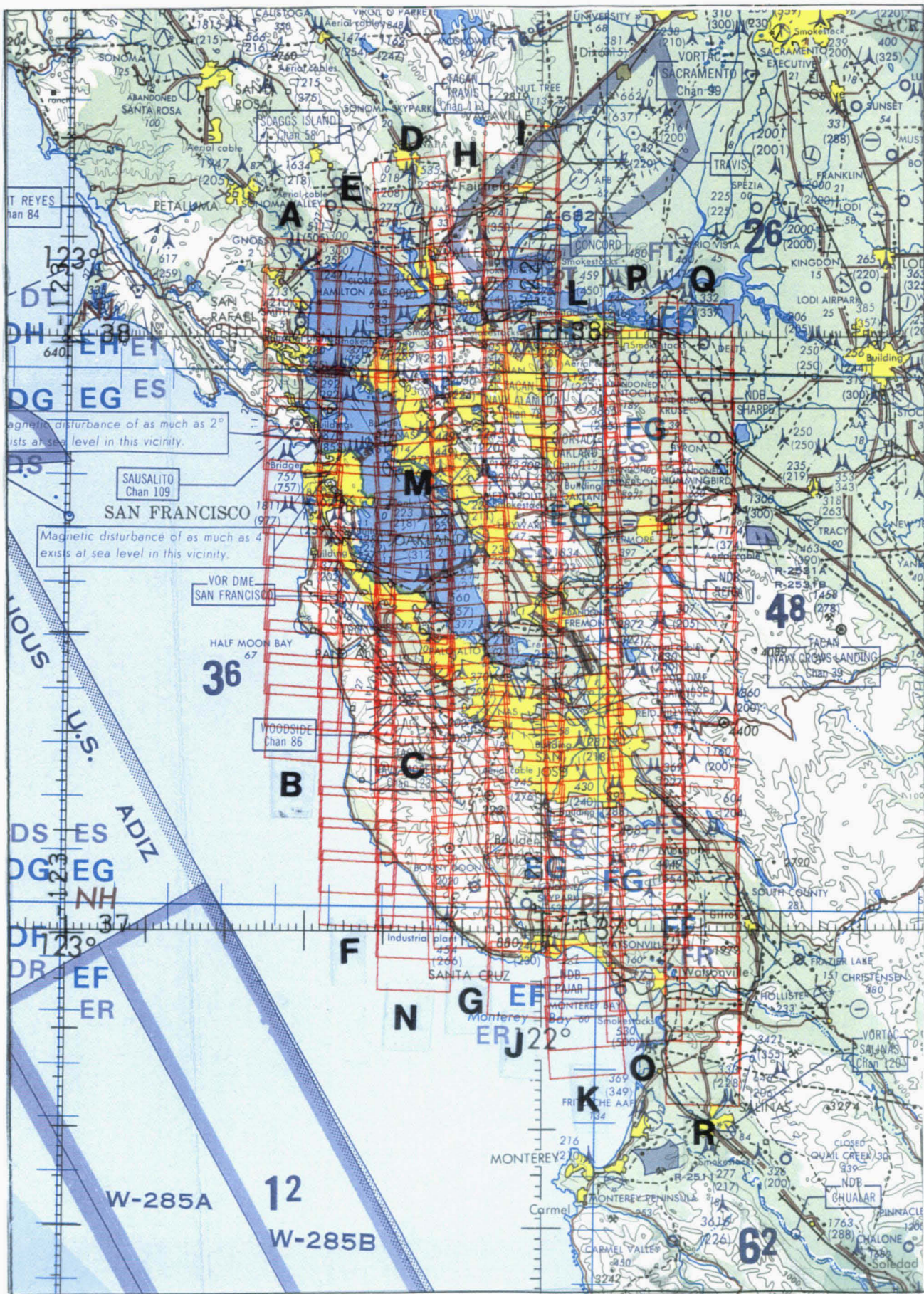
Accession # 05043

Sensor # 034

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
O - P	9867-9889	20 51 59	21 02 19	65000/19812	Minor cirrus (frames 9877-9879), 10-20% cirrus (frames 9887-9889)
Q - R	9890-9913	21 09 17	21 20 04	65000/19812	10-20% cirrus (frames 9890-9892), 10% cirrus (frames 9904-9908)



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