

FLIGHT SUMMARY REPORT

Flight #: 92-012
Date: 15 October 1991
Sensor Package: Thematic Mapper Simulator (TMS)
Wild-Heerbrug RC-10
Hycon HR-732
Area(s) Covered: Central California

Investigator(s): Pilot Proficiency

Aircraft #: 706

Flight Request: 92X001

Julian Date: 288

SENSOR DATA

Accession #:	-----	04358	04359	04360
Sensor ID #:	074	026	018	019
Sensor Type:	TMS	RC-10	HR-732	HR-732
Focal Length:	-----	12" 304.97 mm	24" 609.6 mm	24" 609.6 mm
Film Type:	-----	High Definition Aerochrome IR SO-131	High Definition Aerochrome IR SO-131	Aerial Color SO-242
Filtration:	-----	cc.10B	cc.20B	None
Spectral Band:	-----	510-900 nm	510-900 nm	400-700 nm
f Stop:	-----	4	8	8
Shutter Speed:	-----	1/125	1/75	1/75
# of Frames:	-----	137	39	39
% Overlap:	-----	60	60	60
Quality:	Very good	Excellent	Excellent	Excellent
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 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 nmi (15.6 km) at 65,000 feet
Pixels/Scan Line:	716
Scan Rate:	12.5 scans/second
Ground Speed:	400 kts (206 m/second)

Information on data tape format, logical record format, and scanner calibration data may be obtained from the NASA-Ames Aircraft Data Facility at (415) 604-6252 or FTS 464-6252.

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. 92-012

Accession # 04358

Sensor # 026

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	9321-9344	18:30:00	18:41:01	65000/19800	Clear
C - D	9345-9375	18:44:49	18:59:03	"	20-40% coastal stratus (frames 9345-9346)
E - F	9376-9405	19:04:42	19:18:19	"	10-30% coastal stratus (frames 9404-9405)
G - H	9406-9435	19:22:18	19:35:51	"	10-70% coastal stratus (frames 9406-9411)
I - J	9436-9457	19:40:54	19:50:16	"	10-70% coastal stratus (frames 9443-9449 and 9454-9457)

CAMERA FLIGHT LINE DATA

FLIGHT NO. 92-012

Accession # 04359

Sensor # 018

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
I - J	0001-0039	19:39:25	19:48:36	65000/19800	10-70% coastal stratus (frames 0013-0024); 10-60% coastal stratus (frames 0035-0039)

**CAMERA FLIGHT LINE DATA
FLIGHT NO. 92-012**

Accession # 04360

Sensor # 019

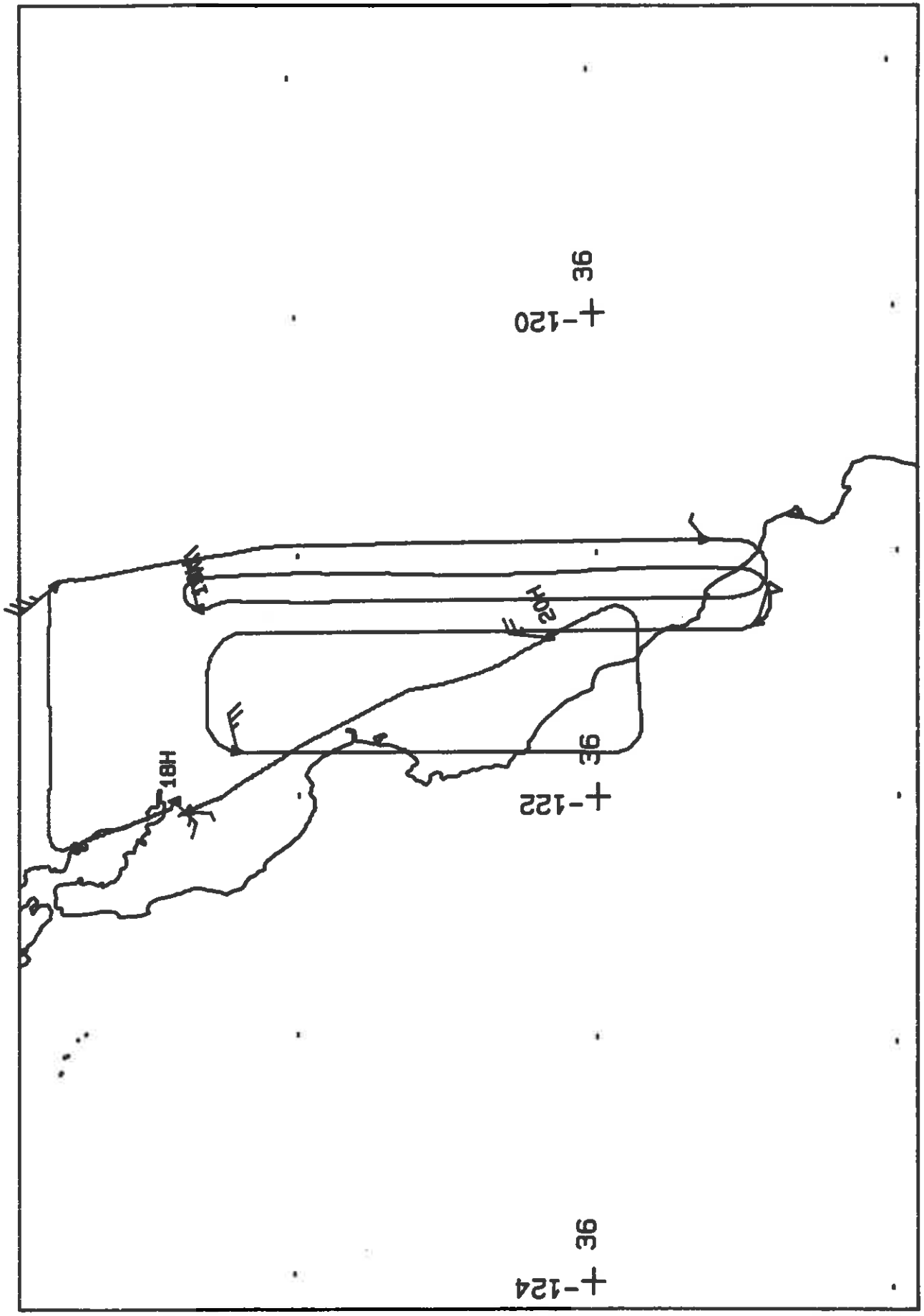
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
I - J	0001-0039	19:40:23	19:49:35	65000/19800	10-70% coastal stratus (frames 0013-0024); 10-60% coastal stratus (frames 0035-0039)

SCANNER FLIGHT LINE DATA

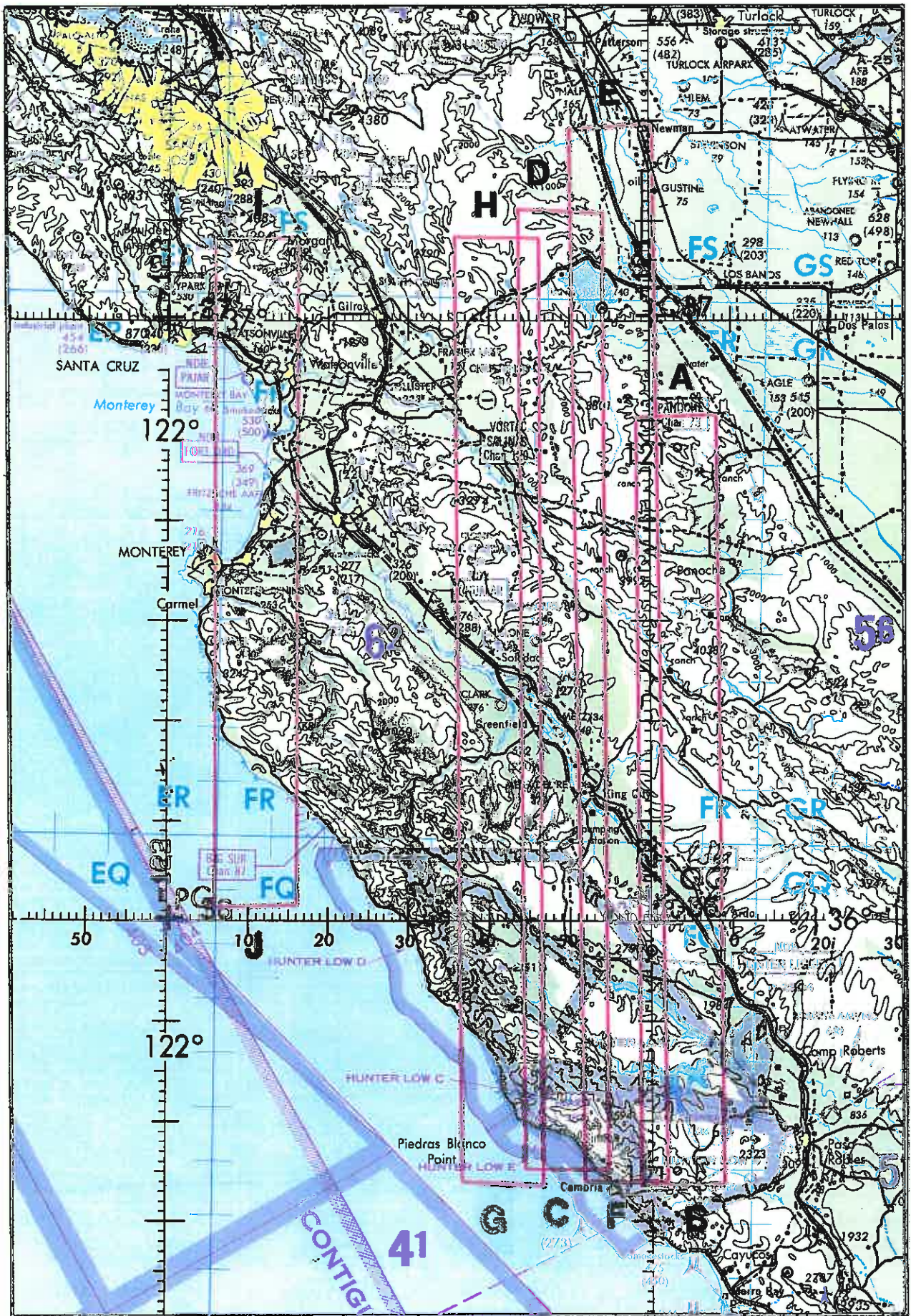
FLIGHT NO. 92-012

DAEDALUS FLIGHT DATA
FLIGHT NUMBER: 92-012

Check Points	Actual Time (GMT)		Actual Scanline		Altitude feet/meter	Scan Speed (rps)	Total Good Scanlines	Total Interpolated Scanlines	Total Repeated Scanlines
	Begin	End	Begin	End					
A-B	18:29:40	18:41:10	29536	38055	65000/19812	12.50	8501	0	19
C-D	18:44:30	18:59:05	40760	51392	65000/19812	12.50	10601	0	32
E-F	19:02:00	19:18:00	53697	65832	65000/19812	12.50	12101	0	35
G-H	19:21:35	19:35:35	68440	78960	65000/19812	12.50	10501	1	19
I-J	19:41:15	19:51:25	83464	90872	65000/19812	12.50	7401	0	8



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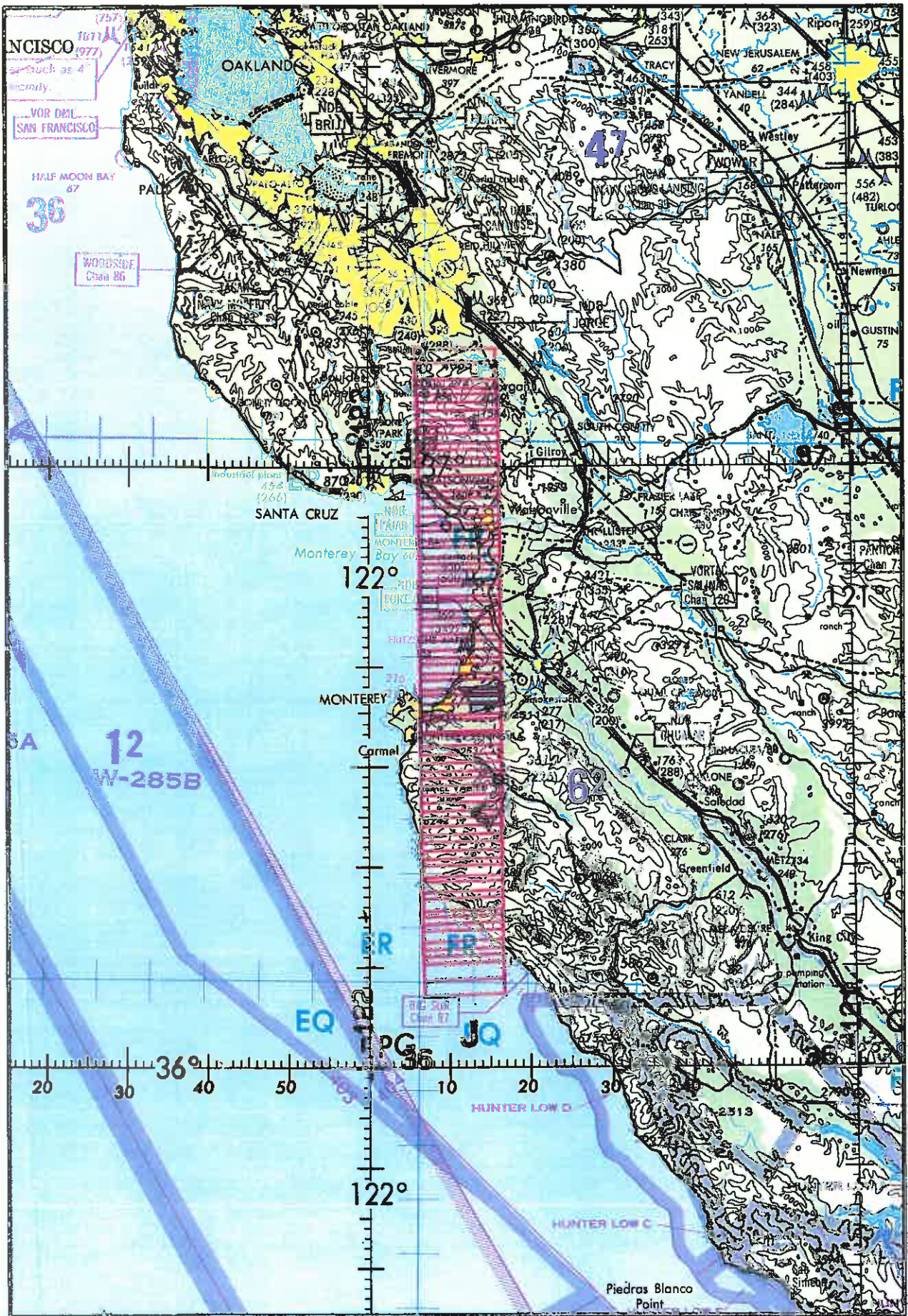


CNC 6-18

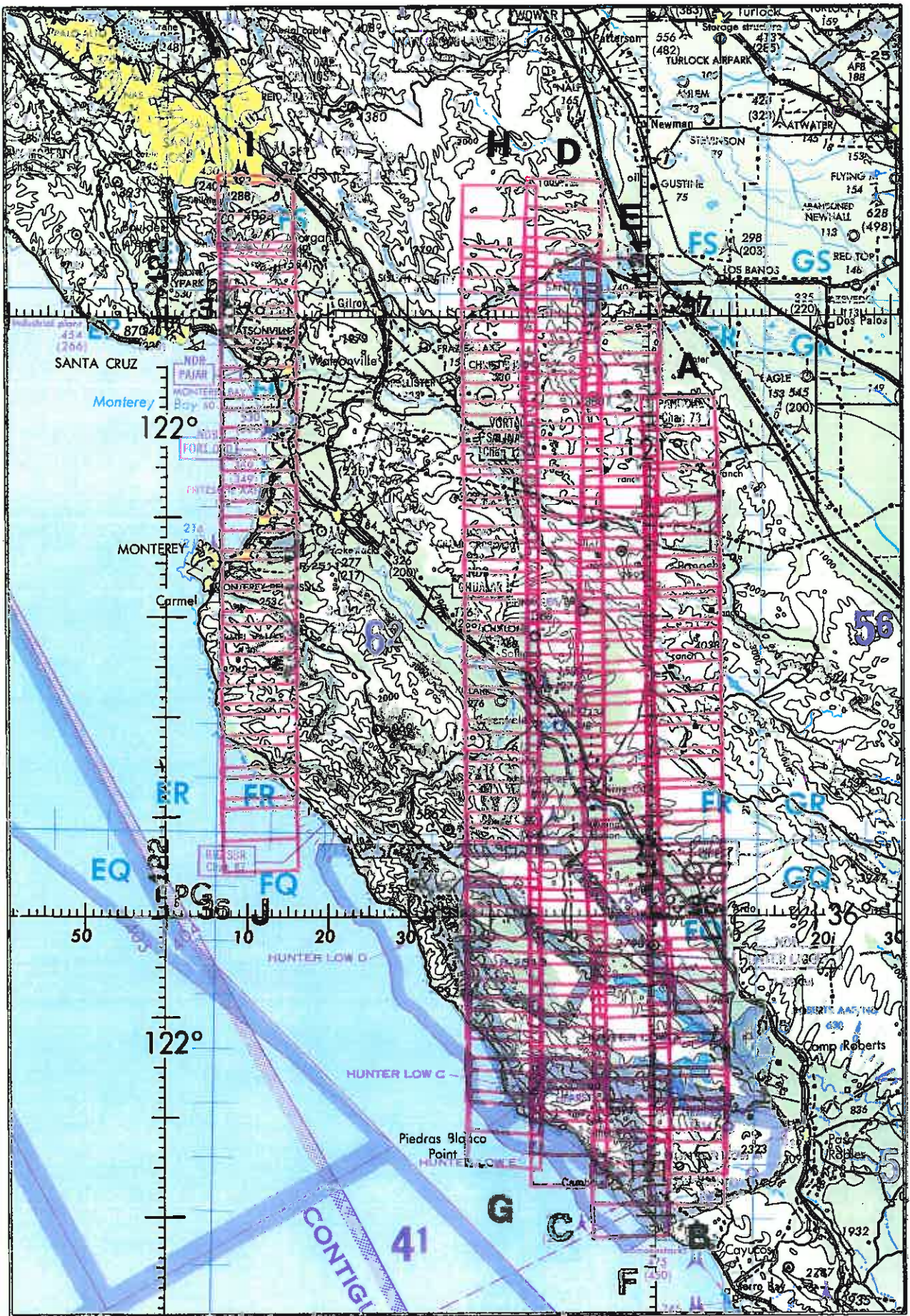
Thematic Mapper Simulator (TMS)

10 October 1993

FLIGHT 92-012



FLIGHT 92-012
 15 October 1991
 A/C 706
 Dual HR-732
 Accession 04359 & 04360
 CNC 6-16



CNC 6-18

FC-10 Accession # 04358

A/C 706

15 October 1991

FLIGHT 82-012