

# FLIGHT SUMMARY REPORT

**Flight #:** 92-015  
**Date:** 28 October 1991  
**Sensor Package:** Thematic Mapper Simulator (TMS)  
Wild-Heerbrug RC-10  
Hycon HR-732  
**Area(s) Covered:** Oakland/Berkeley, California

**Investigator(s):** Pilot Proficiency

**Aircraft #:** 706

**Flight Request:** 92X001

**Julian Date:** 301

## SENSOR DATA

<b>Accession #:</b>	----	04364	04365
<b>Sensor ID #:</b>	074	034	009
<b>Sensor Type:</b>	TMS	RC-10	HR-732
<b>Focal Length:</b>	----	12" 304.66 mm	24" 609.6 mm
<b>Film Type:</b>	----	Panatomix-X Aerographic II 2412	High Definition Aerochrome IR SO-131
<b>Filtration:</b>	----	Wratten-12	cc.20B
<b>Spectral Band:</b>	----	510-700 nm	510-900 nm
<b>f Stop:</b>	----	5.6	8
<b>Shutter Speed:</b>	----	1/250	1/75
<b># of Frames:</b>	----	22	21
<b>% Overlap:</b>	----	80	60
<b>Quality:</b>	Very good	Excellent	Excellent
<b>Remarks:</b>			

## 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, <math>\mu m</math></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. 92-015**

Accession # 04364

Sensor # 034

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	4773-4783	19:59:01	20:01:26	65000/19800	Clear
C - D	4784-4794	20:10:02	20:12:26	"	Clear

**CAMERA FLIGHT LINE DATA  
FLIGHT NO. 92-015**

Accession # 04365

Sensor # 009

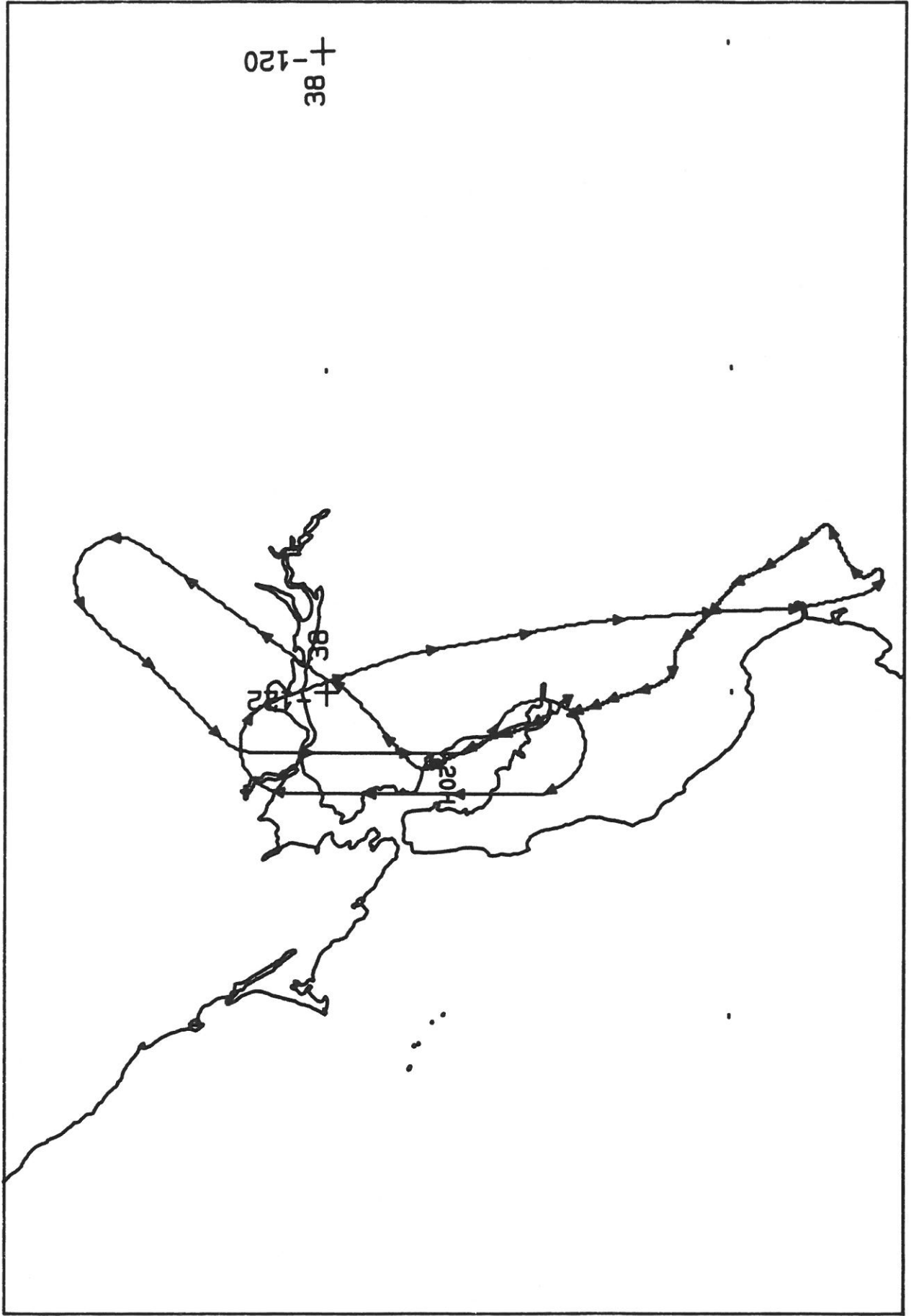
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0010	19:57:52	20:00:04	65000/19800	Clear
C - D	0011-0021	20:08:52	20:11:19	"	Clear

# SCANNER FLIGHT LINE DATA

## FLIGHT NO. 92-015

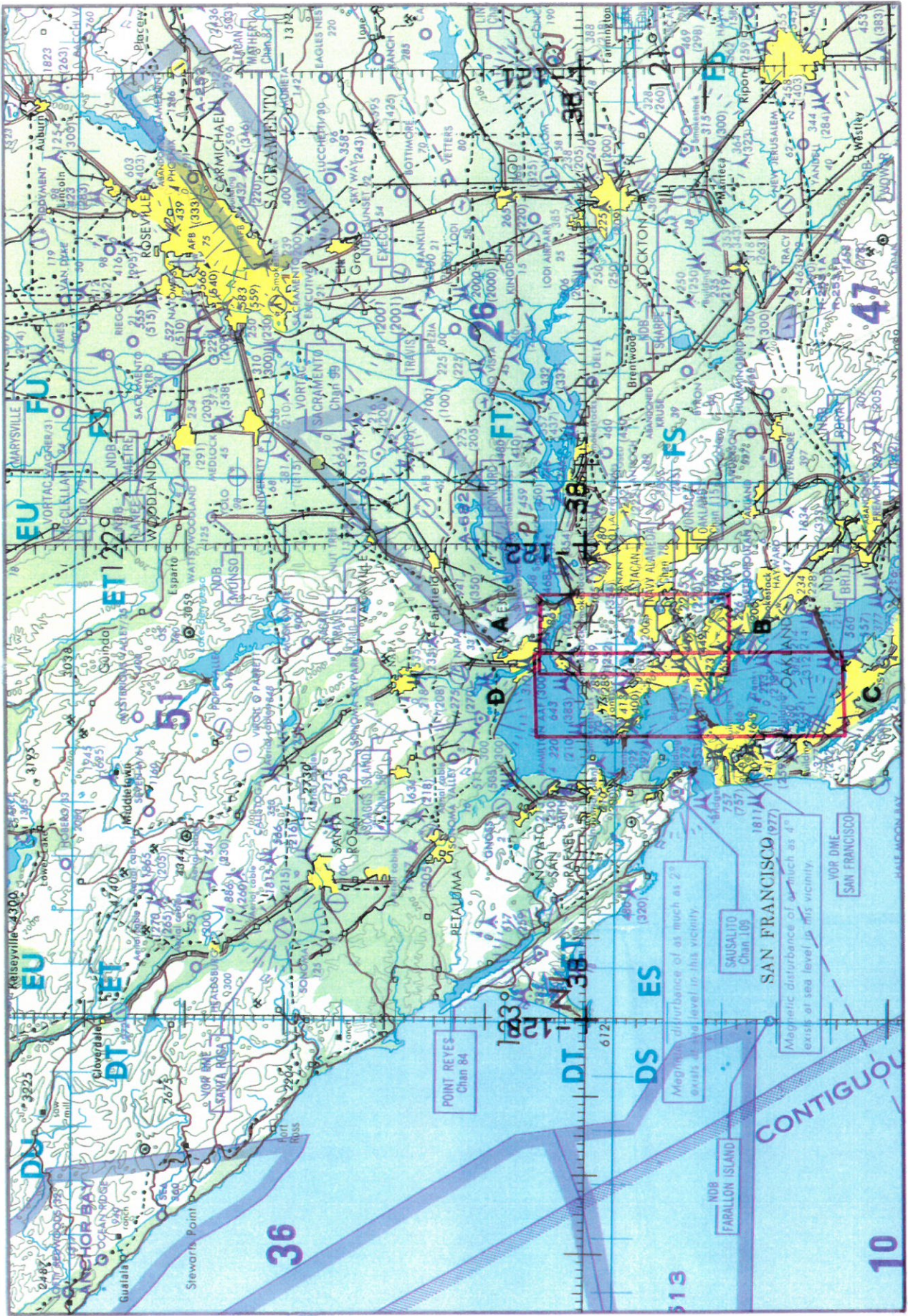
### DAEDALUS FLIGHT DATA FLIGHT NUMBER: 92-015

Check Points	A c t u a l t i m e b e g i n	A c t u a l s c a n l i n e b e g i n	A l t i t u d e f e e t / m e t e r	Scan 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	19:56:59.0 19:59:41.0	26872 28899	65000/19812	12.50	2001	0	27
C-D	20:06:47.0 20:11:27.0	34215 37724	65000/19812	12.50	3501	1	8

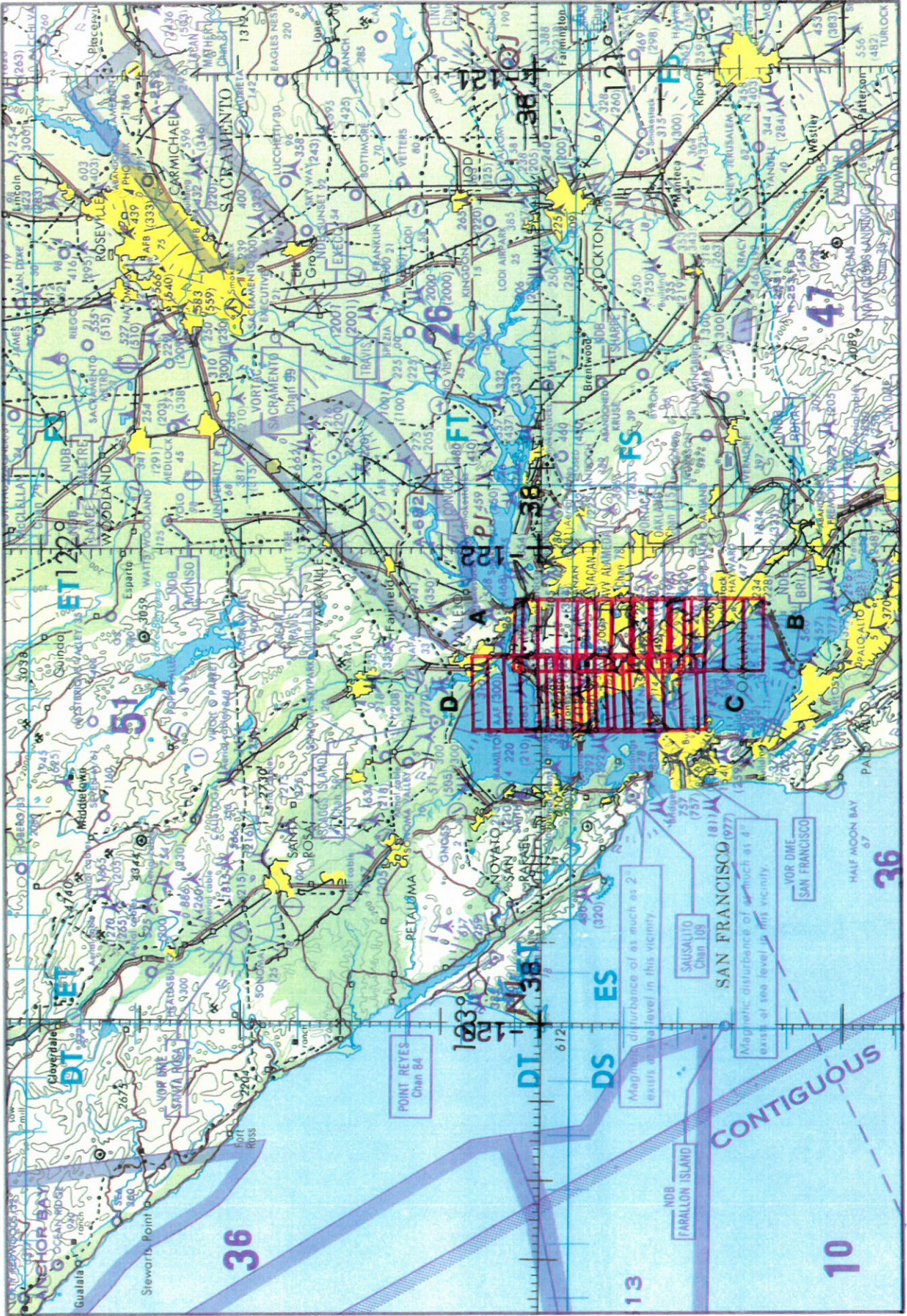


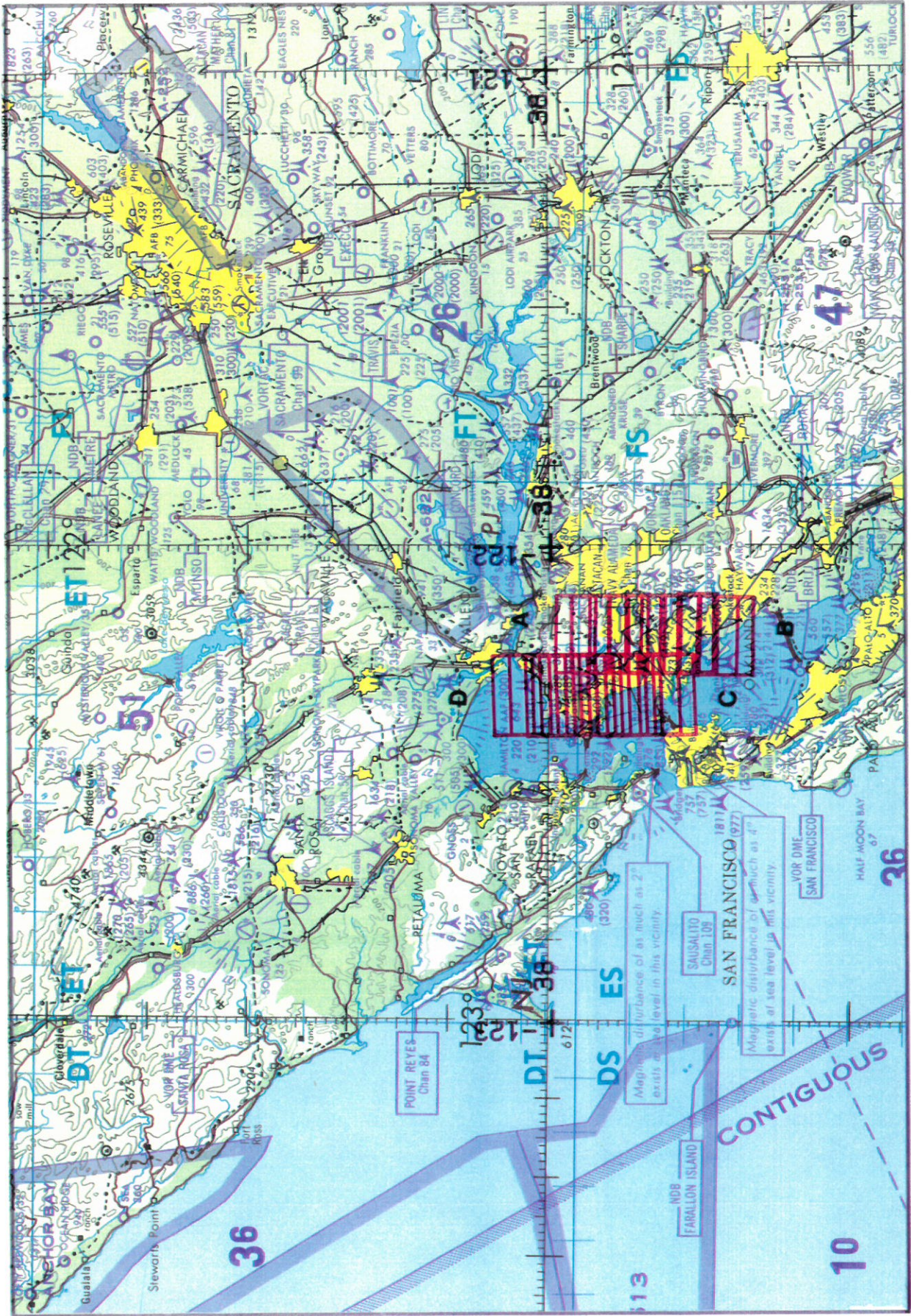
38  
+120

FLIGHT 92-015      28 October 1991      A/C 706      RC-10 / HR-732 / TMS      Oakland/Berkeley Hills









FLIGHT 92-015      28 October 1991      A/C 706      HR-732      (S0-131)      Accession # 04365      ONC 6-18