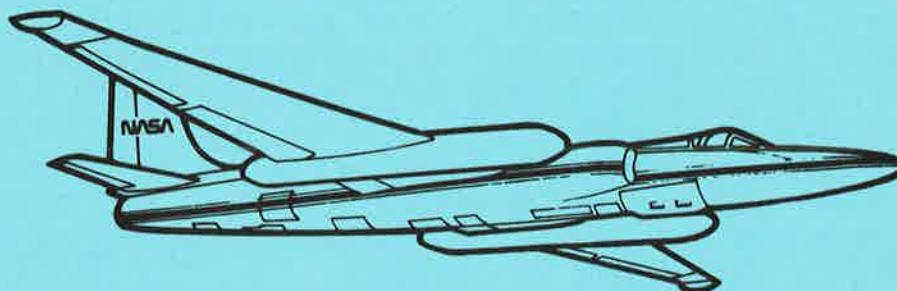


**SCIENCE AND APPLICATIONS AIRCRAFT DIVISION  
AIRBORNE SCIENCE AND APPLICATIONS PROGRAM**

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**ER-2  
FLIGHT SUMMARY REPORT**

**NASA**

National Aeronautics and  
Space Administration

**Ames Research Center**  
Moffett Field, California 94035-1000

**Aircraft Data Facility  
NASA-Ames Research Center  
Mail Stop 240-6  
Moffett Field, California 94035-1000  
(415) 604-6252 • FTS 464-6252**

# FLIGHT SUMMARY REPORT

**Flight #:** 90-098  
**Date:** 16 July 1990  
**Sensor Package:** Wild-Heerbrug RC-10  
Thematic Mapper Simulator (TMS)  
**Area(s) Covered:** Southern California

**Investigator(s):** Yoha, Dept. of Conservation  
**Flight Request:** 90R255

**Aircraft #:** 706  
**Julian Date:** 197

## SENSOR DATA

<b>Accession #:</b>	04054	-----
<b>Sensor ID #:</b>	026	074
<b>Sensor Type:</b>	RC-10	TMS
<b>Focal Length:</b>	12" 304.97 mm	-----
<b>Film Type:</b>	High Definition Aerochrome IR SO-131	-----
<b>Filtration:</b>	cc.10B	-----
<b>Spectral Band:</b>	510-900 nm	-----
<b>f Stop:</b>	4	-----
<b>Shutter Speed:</b>	1/250	-----
<b># of Frames:</b>	219	-----
<b>% Overlap:</b>	60	-----
<b>Quality:</b>	Excellent	Good
<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 sensor used for data collection during this flight.

### Thematic Mapper Simulator

The Daedalus Thematic Mapper Simulator (TMS) is a high altitude 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\text{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:	1.3 mrad
Ground Resolution:	91 feet (28 meters at 70,000 feet)
Total Scan Angle:	43 <sup>o</sup>
Swath Width:	9.0 nmi (16.6 km at 70,000 feet)
Pixels/Scan Line:	716 (750 following rectification)
Scan Rate:	12.5 scans/second
Ground Speed:	400 kts (206 m/second)

**NOTE:** 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 FLIGHT LINE DATA**  
**FLIGHT NO. 90-098**

Accession # 04054

Sensor # 026

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Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	6127-6164	19:22:43	19:39:48	65000/19800	10-30% cumulus (frames 6127-6131); emulsion abrasions (frames 6137, 6161)
C - D	6165-6202	19:43:11	20:00:06	"	Minor-20% strato cumulus (frames 6168 6178); 10% cumulus (frames 6199-6202)
E - F	6203-6225	20:18:40	20:28:31	"	Minor-10% cumulus (frames 6209-6211)
F - G	6226-6231	20:28:56	20:31:16	"	Oblique frames in turn; 10-20% strato cumulus (frames 6226-6227); 20-40% strato cumulus (frames 6230-6231); emulsion abrasions (frames 6226-6230)
G - H	6232-6254	20:31:44	20:42:01	"	
I - J	6255-6278	21:00:42	21:11:02	"	Clear; emulsion abrasions (frames 6262- 6263, 6278)
K - L	6279-6302	21:45:57	21:56:36	"	20-30% strato cumulus (frames 6279-6281); 10-20% cumulus (frames 6300-6302)

**CAMERA FLIGHT LINE DATA  
FLIGHT NO. 90-098**

Accession # 04054

Sensor # 026

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Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
M - N	6303-6323	22:04:01	22:12:59	65000/19800	20-30% cumulus (frames 6303-6305)
O - P	6324-6345	22:16:58	22:26:33	"	Minor-10% strato cumulus (frames 6324-6325); emulsion abrasions (frame 6325)

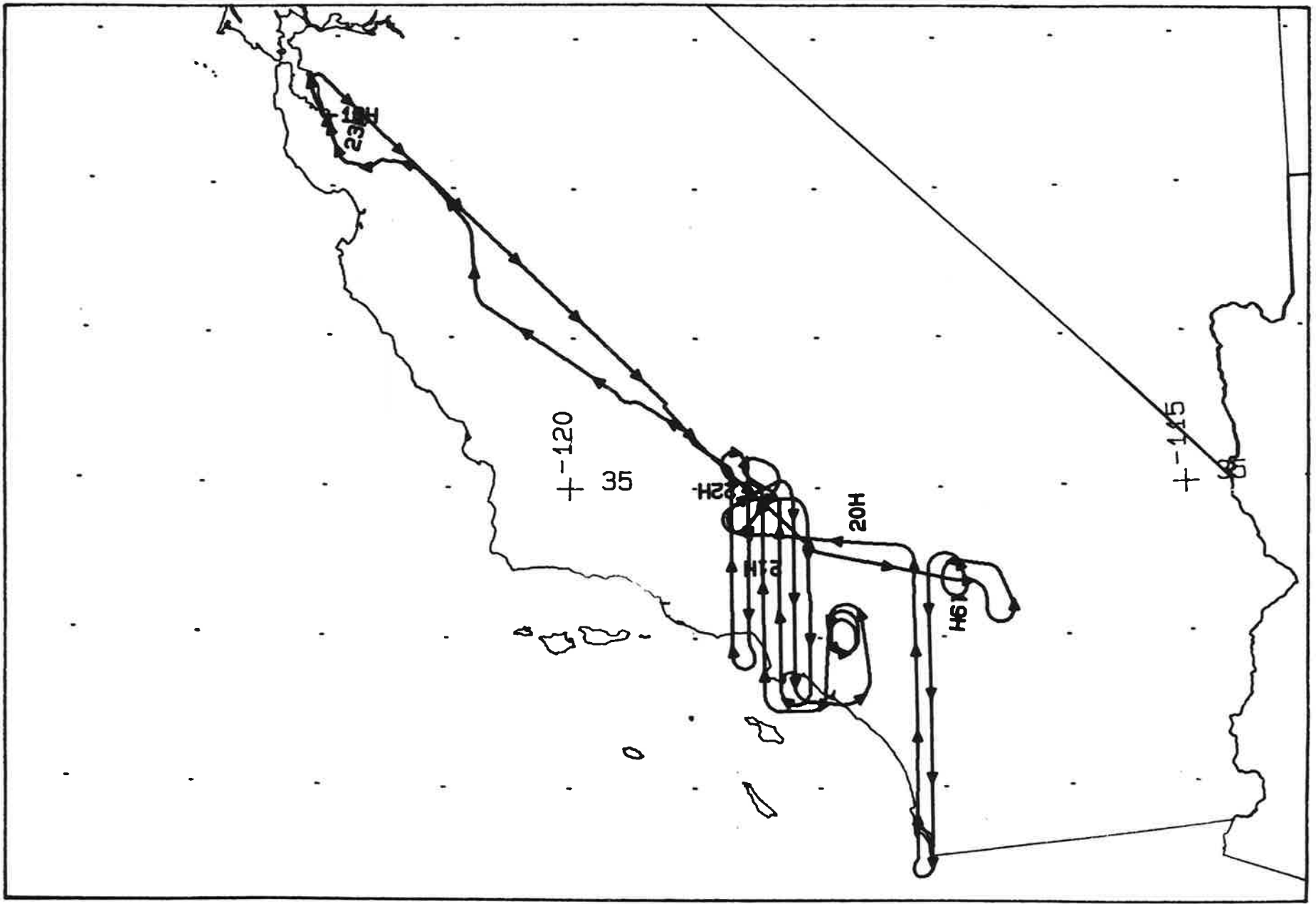
# SCANNER FLIGHT LINE DATA

## FLIGHT NO. 90-098

### DAEDALUS FLIGHT DATA

FLIGHT NUMBER: 90-098

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	19:19:45.0	19:36:52.0	65914	78757	65000/19812	12.50	12792	0	52
C-D	19:40:12.0	19:57:19.0	81252	94099	65000/19812	12.50	12821	0	27
E-F	20:15:41.0	20:25:40.0	107872	115357	65000/19812	12.50	7403	0	83
G-H	20:28:54.0	20:39:21.0	117786	125612	65000/19812	12.50	7762	0	65
I-J	20:57:43.0	21:08:14.0	139395	147283	65000/19812	12.50	7680	0	209
K-L	21:42:58.0	21:53:40.0	173326	181355	65000/19812	12.50	7689	0	341
M-N	22:01:02.0	22:10:10.0	186883	193731	65000/19812	12.50	6552	0	297
O-P	22:13:58.0	22:23:30.0	196577	209527	65000/19812	12.50	11544	0	1407



FLIGHT 90-098

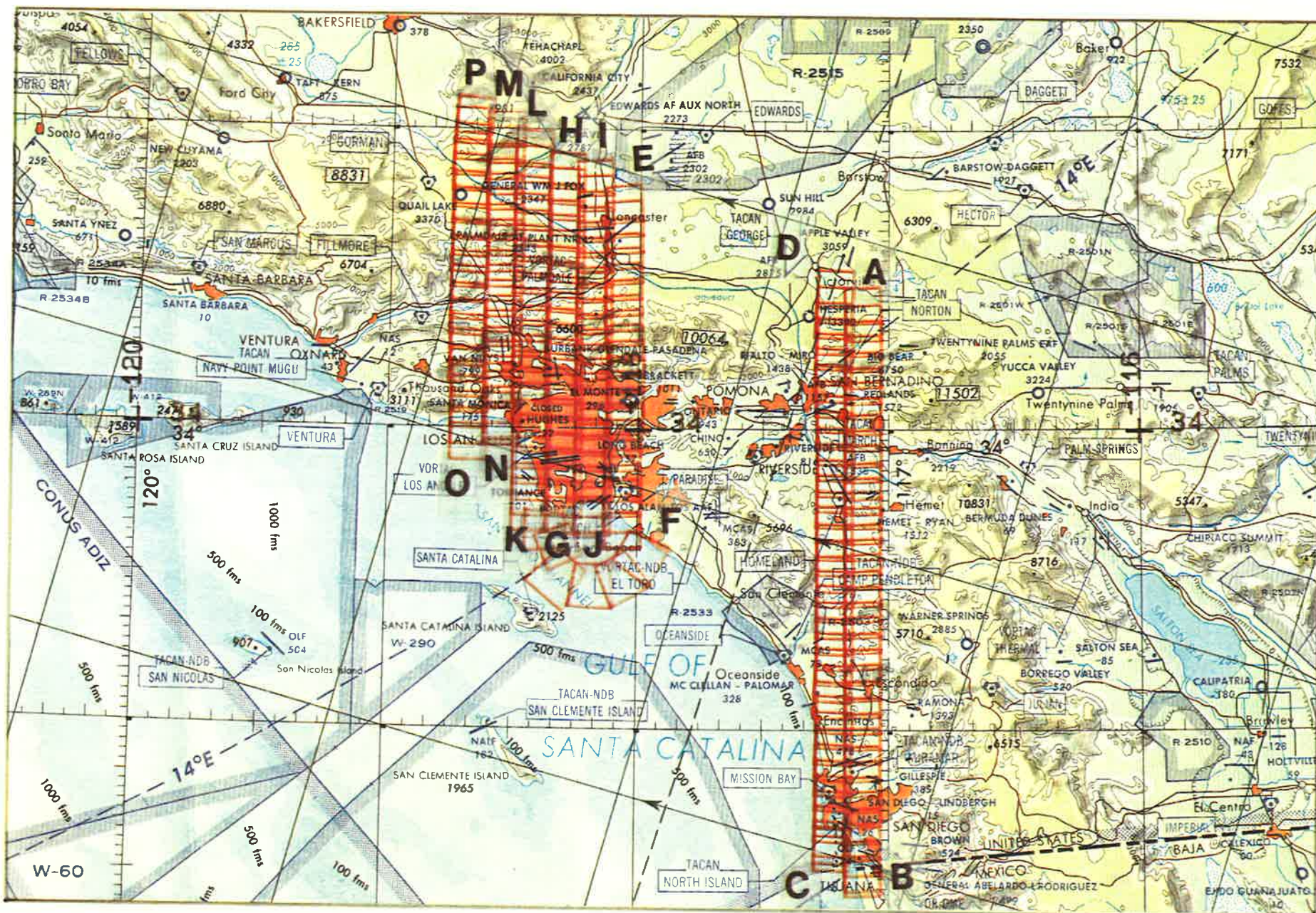
16 July 1990

A/C 706

TMS / RC-10

Southern California





FLIGHT 90-098

16 July 1990

A/C 706

HC-10 / TMS

Accession # 04054

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