

# FLIGHT SUMMARY REPORT

**Flight Number:** 95-141  
**Calendar/Julian Date:** 11 July 1995 • 192  
**Sensor Package:** Wild-Heerbrugg RC-10  
Thematic Mapper Simulator (TMS)  
**Area(s) Covered:** Central Valley, CA

**Investigator(s):** Penberth, California Dept. of Conservation **Aircraft #:** 706

## SENSOR DATA

<b>Accession #:</b>	04944	-----
<b>Sensor ID #:</b>	031	101
<b>Sensor Type:</b>	RC-10	TMS
<b>Focal Length:</b>	6" 153.05 mm	-----
<b>Film Type:</b>	Aerochrome IR SO-060	-----
<b>Filtration:</b>	Wratten 12 + 2.2 AV	-----
<b>Spectral Band:</b>	510-900 nm	-----
<b>f Stop:</b>	8	-----
<b>Shutter Speed:</b>	1/225	-----
<b># of Frames:</b>	161	-----
<b>% Overlap:</b>	60	-----
<b>Quality:</b>	Excellent	Poor
<b>Remarks:</b>	Camera clock offset 10.2 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, <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)

## 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. 95-141**

Accession # 04944

Sensor # 031

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	7307-7326	17:44:08	18:02:16	63130/19242	Clear
C - D	7327-7344	18:06:37	18:22:07	62978/19196	Clear
E - F	7345-7360	18:28:58	18:43:08	63131/19242	Clear
G - H	7361-7366	18:47:18	18:51:29	63067/19223	Clear
I - J	7367-7384	19:00:58	19:16:57	63250/19279	Very minor cumulus (frame 7384)
K - L	7385-7401	19:20:59	19:36:01	63353/19310	Clear
M - N	7402-7417	19:39:19	19:53:04	63169/19254	Clear
O - P	7418-7431	20:00:12	20:11:45	63414/19329	Clear
Q - R	7432-7451	20:16:35	20:34:22	63330/19303	10% cumulus (frames 7445-7446); 10-30% cumulus (frames 7448-7451)
S - T	7452-7467	20:50:15	21:04:14	63000/19202	Thin cirrus (frames 7452-7453); contrail (frame 7454)

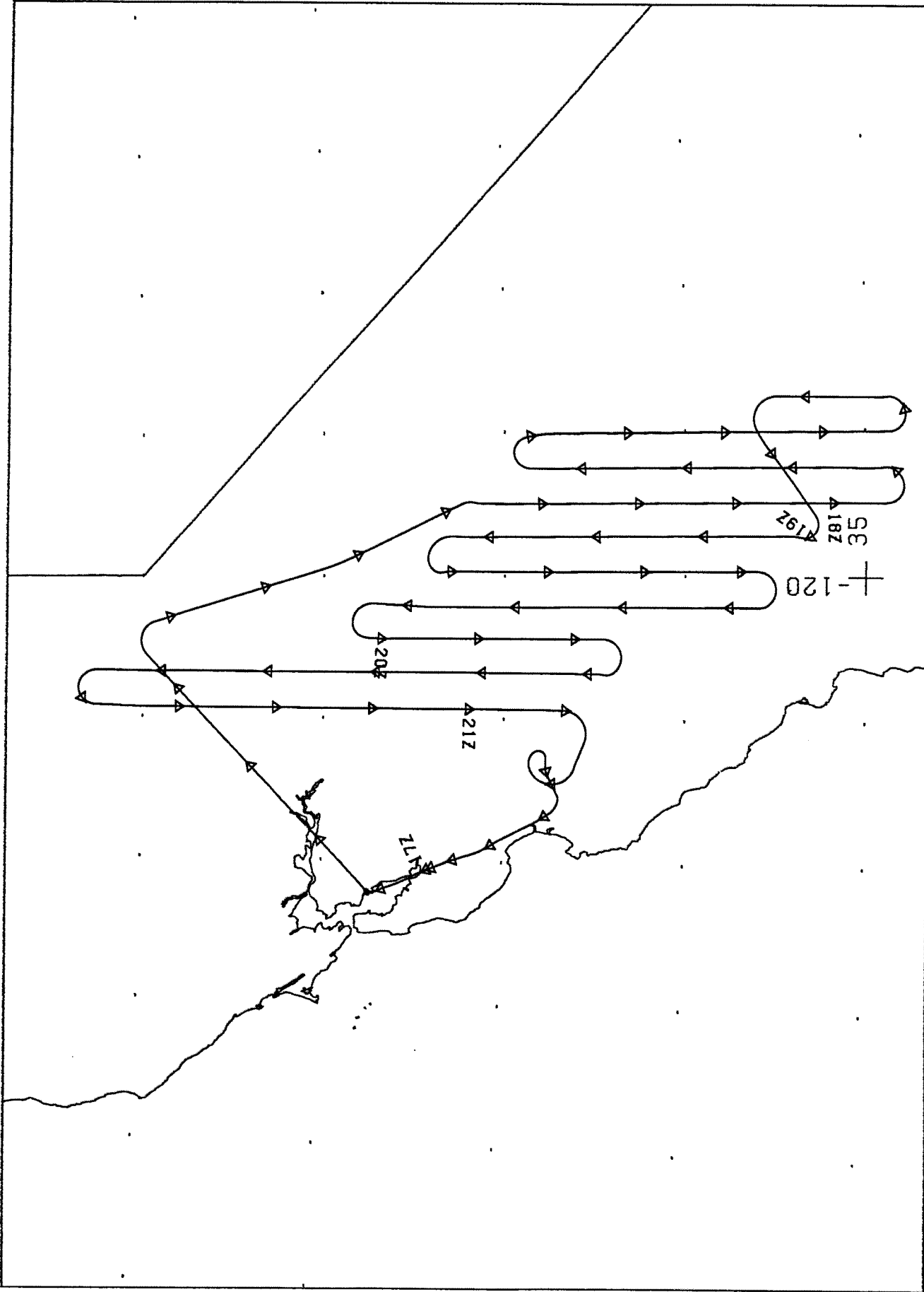
# TMS SCANNER FLIGHT LINE DATA

## FLIGHT NO. 95-141

DATA VALUE FLIGHT DATA  
 FLIGHT NUMBER: 95-141

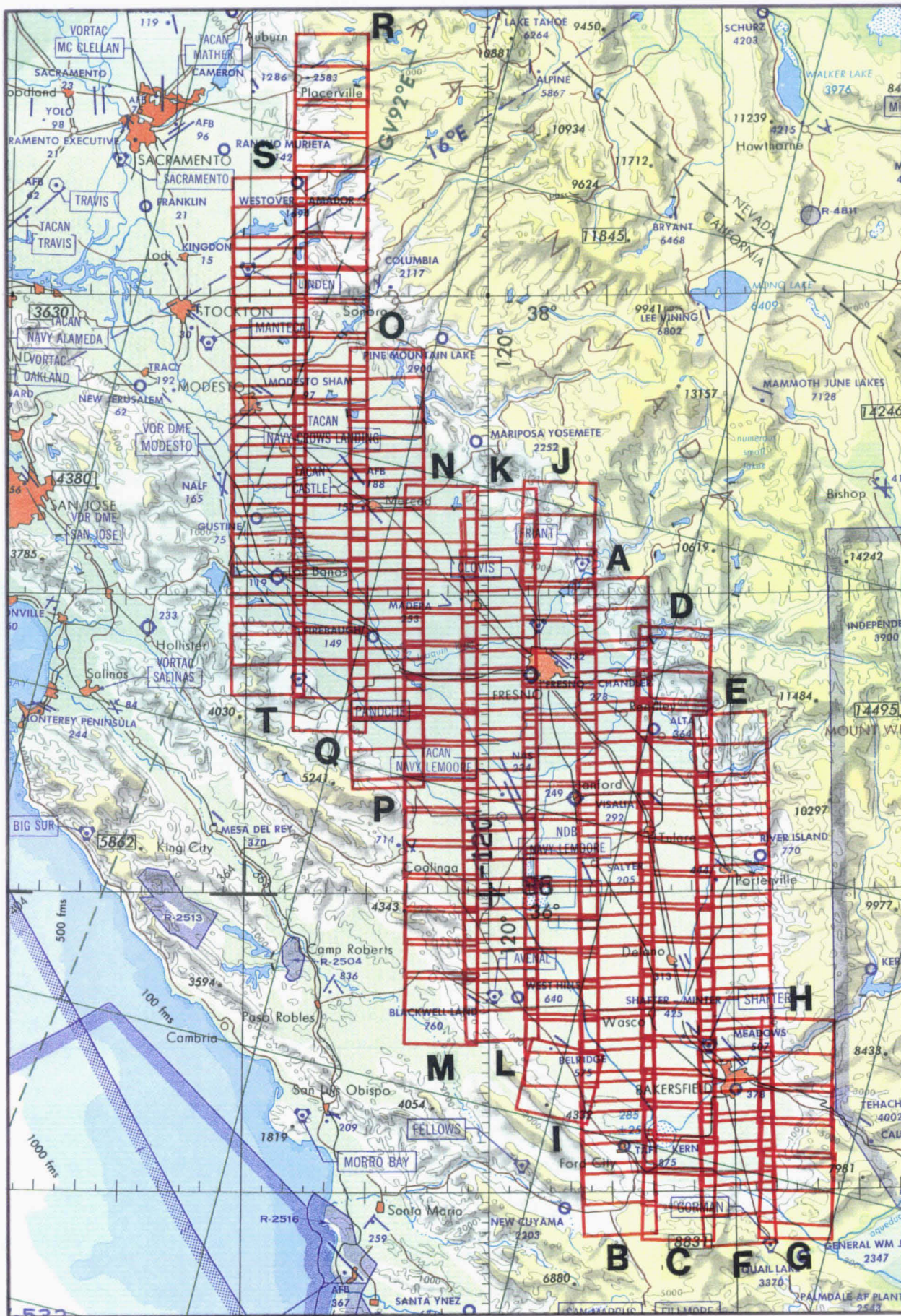
Check Points	A c t i o n b e g i n e n d	A c t u a l s c a n l i n e b e g i n e n d	A l t i t u d e f e e t / m e t e r	S c a n S p e e d ( i p s )	t o t a l D o u b l e s c a n l i n e s	t o t a l I n t e r p o l a t e d s c a n l i n e s	t o t a l R e p e a t e d s c a n l i n e s
A-B	00:00: 0.0 00:00: 0.0	59117 53472	65000/19812	12.50	1356	0	0
C-D	00:00: 0.0 00:00: 0.0	56442 68775	65000/19812	12.50	1782	0	0
E-F	00:00: 0.0 00:00: 0.0	71094 80564	65000/19812	12.50	12870	1	0
G-H	00:00: 0.0 00:00: 0.0	86346 89904	65000/19812	12.50	3565	0	0
I-J	00:00: 0.0 00:00: 0.0	97423 107011	65000/19812	12.50	11584	0	0
K-L	00:00: 0.0 00:00: 0.0	111862 123366	65000/19812	12.50	11484	1	0
M-N	00:00: 0.0 00:00: 0.0	123544 135731	65000/19812	12.50	11187	1	0
O-P	00:00: 0.0 00:00: 0.0	141788 149997	65000/19812	12.50	6717	1	0
<b>Q-R</b>	00:00: 0.0 00:00: 0.0	152769 167895	65000/19812	12.50	17127	1	0
<b>S-T</b>	00:00: 0.0 00:00: 0.0	173955 188766	65000/19812	12.50	14731	1	0

TMS CLOCK FAILURE BEFORE DATA COLLECTION BEGAN.



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