

# FLIGHT SUMMARY REPORT

**Flight #:** 91-023  
**Date:** 08 November 1990  
**Sensor Package:** Wild-Heerbrug RC-10  
Thermal Infrared Multispectral Scanner (TIMS)  
**Area(s) Covered:** Central California Coast

**Investigator(s):** Functional Check Flight  
**Flight Request:** 91X003

**Aircraft #:** 708  
**Julian Date:** 312

## SENSOR DATA

<b>Accession #:</b>	04161	-----
<b>Sensor ID #:</b>	076	086
<b>Sensor Type:</b>	RC-10	TIMS
<b>Focal Length:</b>	12" 304.89 mm	-----
<b>Film Type:</b>	Aerial Color SO-242	-----
<b>Filtration:</b>	None	-----
<b>Spectral Band:</b>	400-700 nm	-----
<b>f Stop:</b>	4	-----
<b>Shutter Speed:</b>	1/200	-----
<b># of Frames:</b>	35	-----
<b>% Overlap:</b>	60	-----
<b>Quality:</b>	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 sensor used for data collection during this flight.

### Thermal Infrared Multispectral Scanner

The Thermal Infrared Multispectral Scanner (TIMS) is a multispectral scanning system using a dispersive grating and a six element mercury cadmium telluride detector array to produce six discrete channels in the 8.2  $\mu\text{m}$  to 12.2  $\mu\text{m}$  region.

<u>Channel</u>	<u>Wavelength, <math>\mu\text{m}</math></u>	<u>NET</u>
1	8.2 - 8.6	< 0.3° C
2	8.6 - 9.0	< 0.3° C
3	9.0 - 9.4	< 0.3° C
4	9.4 - 10.2	< 0.3° C
5	10.2 - 11.2	< 0.3° C
6	11.2 - 12.2	< 0.3° C

Sensor/aircraft parameters are as follows:

IFOV:	2.5 mrad
Ground Resolution:	163 feet (50 meters) at 65,000 feet
Total Scan Angle:	76.56°
Swath Width:	16.9 nmi (31.3 km) at 65,000 feet
Pixels/Scan Line:	638
Scan Rate:	7.3 (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. 91-023**

Accession # 04161

Sensor # 076

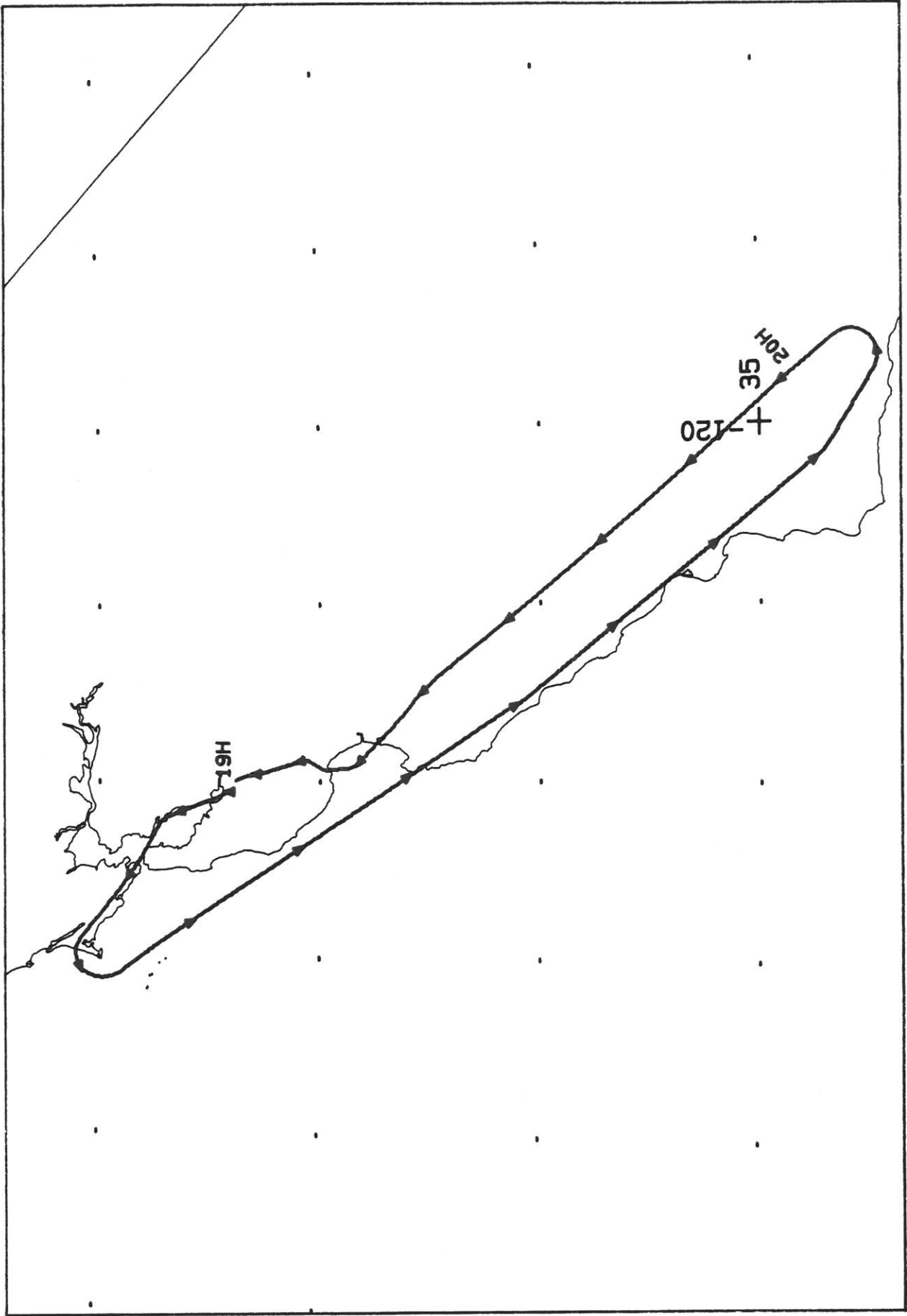
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	4909-4922	19:30:38	19:35:27	65000/19800	Clear
B - C	4923-4943	19:35:55	19:45:21	"	Clear; oblique (frame 4923)

# SCANNER FLIGHT LINE DATA

## FLIGHT NO. 91-023

TIMS FLIGHT DATA  
 FLIGHT NUMBER: 91-023

Check Points	Actual time (GMT) begin	Actual time (GMT) end	Actual scanline begin	Actual scanline end	Altitude feet/meter	Scan Speed (rps)	Total Good scanlines	Total Interpolated scanlines	Total Repeated scanlines
A-C	19:50:00	19:46:00	27147	38669	6500/19812	12.00	11509	0	14



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A/C 708

TIMS Functional Check Flight



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