

# FLIGHT SUMMARY REPORT

**Flight Number:** 95-139  
**Calendar/Julian Date:** 19 July 1995 • 200  
**Sensor Package:** Dual Wild Heerbrugg RC-10  
Dual Hycon HR-732  
Thematic Mapper Simulator (TMS)  
**Area(s) Covered:** Toiyabe National Forest

**Investigator(s):** Ishikawa, USFS

**Aircraft #:** 706

## SENSOR DATA

<b>Accession #:</b>	04955	04956	04957
<b>Sensor ID #:</b>	034	026	039
<b>Sensor Type:</b>	RC-10	RC-10	HR-732
<b>Focal Length:</b>	12" 304.66 mm	12" 304.97 mm	24" 609 mm
<b>Film Type:</b>	Aerochrome IR SO-060	Panatomic X Aerographic II 2412	Aerochrome IR SO-134
<b>Filtration:</b>	Wratten 12	Wratten 12	Wratten 12
<b>Spectral Band:</b>	510-900 nm	510-700 nm	510-900 nm
<b>f Stop:</b>	11	8	14.2
<b>Shutter Speed:</b>	1/250	1/225	1/250
<b># of Frames:</b>	11	11	21
<b>% Overlap:</b>	60	60	60
<b>Quality:</b>	Excellent	Excellent	Fair
<b>Remarks:</b>	Camera clock offset 12.4 seconds from navigation data		

## SENSOR DATA continued

Flight Number: 95-139

<b>Accession #:</b>	04958	-----
<b>Sensor ID #:</b>	020	074
<b>Sensor Type:</b>	HR-732	TMS
<b>Focal Length:</b>	24" 609 mm	-----
<b>Film Type:</b>	Aerochrome IR SO-134	-----
<b>Filtration:</b>	Wratten 12	-----
<b>Spectral Band:</b>	510-900 nm	-----
<b>f Stop:</b>	14.2	-----
<b>Shutter Speed:</b>	1/250	-----
<b># of Frames:</b>	21	-----
<b>% Overlap:</b>	60	-----
<b>Quality:</b>	Good	-----
<b>Remarks:</b>	Camera clock offset 4 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\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:	1.25 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. 95-139**

**Accession # 04955**

**Sensor # 034**

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	7829-7837	17:43:52	17:47:40	68467/20869	Clear
C - D	7838-7839	18:13:33	18:14:02	60400/18410	Clear

**CAMERA FLIGHT LINE DATA  
FLIGHT NO. 95-139**

**Accession # 04956**

**Sensor # 026**

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	7345-7353	17:43:52	17:47:36	68467/20869	Clear
C - D	7354-7355	18:13:31	18:13:59	60400/18410	Clear

**CAMERA FLIGHT LINE DATA  
FLIGHT NO. 95-139**

**Accession # 04957**

**Sensor # 039**

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0017	17:43:41	17:47:35	68467/20869	Clear; severe processing abrasions (frames 0001-0010)
C - D	0018-0021	18:13:21	18:14:05	60400/18410	Clear

**CAMERA FLIGHT LINE DATA  
FLIGHT NO. 95-139**

**Accession # 04958**

**Sensor # 020**

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0017	17:43:48	17:47:42	68482/20873	Clear; severe processing abrasion (frames 0015-0016)
C - D	0018-0021	18:13:28	18:14:12	60450/18425	Clear

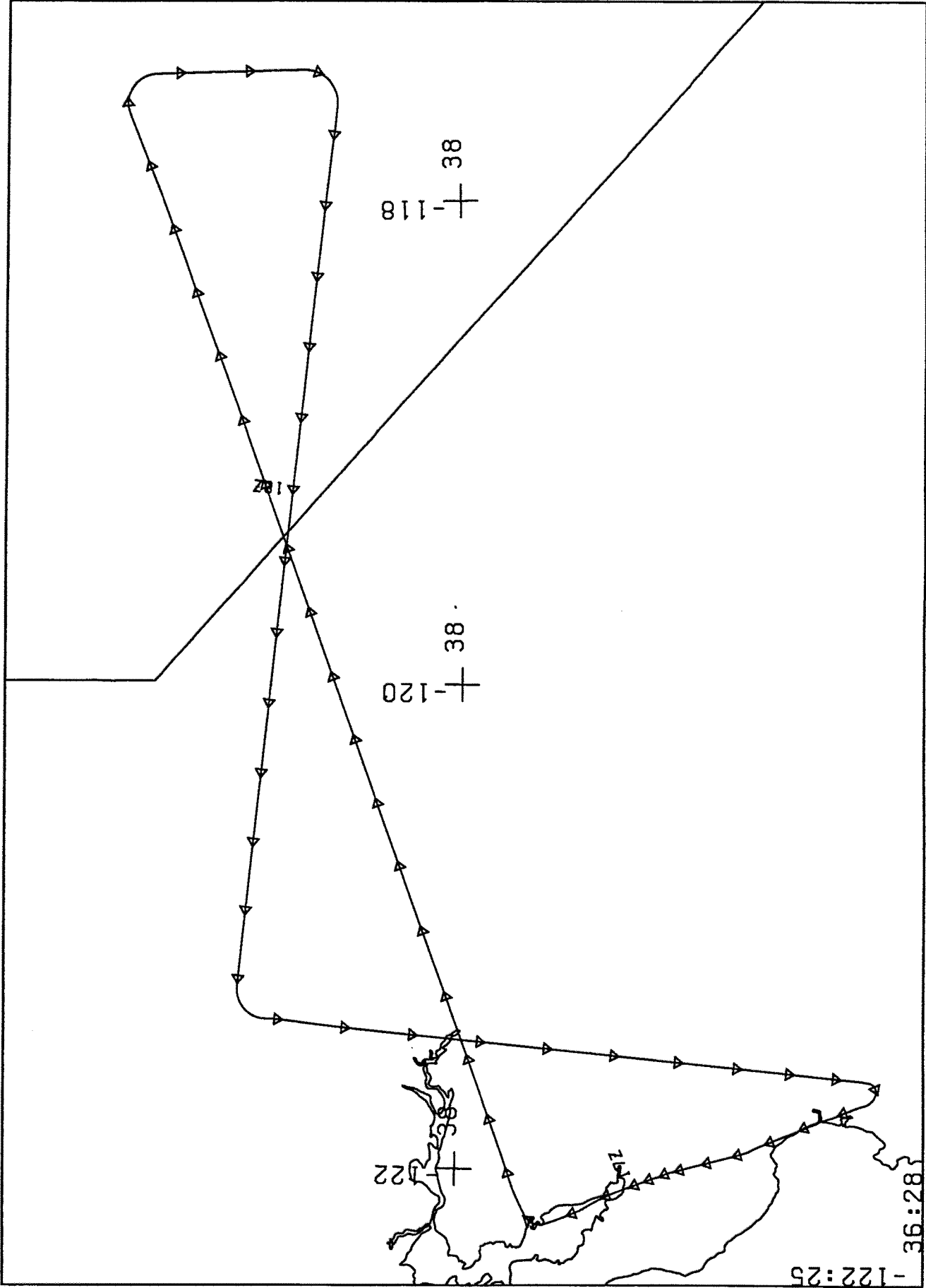


# TMS SCANNER FLIGHT LINE DATA

## FLIGHT NO. 95-139

DELTA LINES FLIGHT DATA  
FLIGHT NUMBER: 95-139

Check Points	A c t u a l t i m e (GMT) b e g i n e n d	A c t u a l s c a n l i n e s 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	Scan S p e e d (rps)	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-0	17:15:55.0 17:17:11.0	10061 45150	65000/17312	12.50	5070	0	0
C-D	18:12:46.0 18:14:13.0	61940 63029	65000/19812	12.50	1690	0	0



FLIGHT 95-139 19 JULY 1995 A/C 706 DUAL RC-10 / DUAL HR-732  
 LAMBERT CONFORMAL PROJECTION: SP1 = 36.2 SP2 = 38.7 CM = -119.8 ROTATED BY 0.0  
 17:00:07 TO 18:54:07 UT SCALE 1:1.93E+06 TIME TICK EVERY 2.00 MINUTES

