

# FLIGHT SUMMARY REPORT

**Flight Number:** 94-108  
**Calendar/Julian Date:** 13 July 1994 • 194  
**Sensor Package:** Wild-Heerbrug RC-10  
Dual Hycon HR-732  
Airborne Ocean Color Imager (AOCI)  
**Area(s) Covered:** Lake Tahoe

**Investigator(s):** Functional Sensor Flight

**Aircraft #:** 708

## SENSOR DATA

<b>Accession #:</b>	04763	04764	04765
<b>Sensor ID #:</b>	076	039	020
<b>Sensor Type:</b>	RC-10	HR-732	HR-732
<b>Focal Length:</b>	12" 304.89 mm	24" 609 mm	24" 609 mm
<b>Film Type:</b>	Aerochrome IR SO-060	Aerochrome IR SO-060	Aerochrome IR SO-060
<b>Filtration:</b>	Wratten 12	Wratten 12	Wratten 12
<b>Spectral Band:</b>	510-900 nm	510-900 nm	510-900 nm
<b>f Stop:</b>	11	14.2	14.2
<b>Shutter Speed:</b>	1/200	1/390	1/330
<b># of Frames:</b>	35	67	67
<b>% Overlap:</b>	60	60	60
<b>Quality:</b>	Excellent	Good	Excellent
<b>Remarks:</b>	Camera clock offset 3 seconds from navigation data	Camera clock offset 2.5 seconds from navigation data; processing marks throughout roll	Camera clock offset 3.1 seconds from navigation data

**94-108**

**SENSOR DATA continued**

<b>Accession #:</b>	----
<b>Sensor ID #:</b>	090
<b>Sensor Type:</b>	AOCI
<b>Focal Length:</b>	----
<b>Film Type:</b>	----
<b>Filtration:</b>	----
<b>Spectral Band:</b>	----
<b>f Stop:</b>	----
<b>Shutter Speed:</b>	----
<b># of Frames:</b>	----
<b>% Overlap:</b>	----
<b>Quality:</b>	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(s) and camera(s) used for data collection during this flight.

### Airborne Ocean Color Imager

The Airborne Ocean Color Imager (AOCI) is a high altitude multispectral scanner designed for oceanographic remote sensing. It provides 10-bit digitization of eight bands in the visible/near-infrared region of the spectrum, plus two 8-bit bands in the near and thermal infrared. The bandwidths are as follows:

<u>Channel</u>	<u>Wavelength, <math>\mu\text{m}</math></u>
1	0.436 - 0.455
2	0.481 - 0.501
3	0.511 - 0.531
4	0.554 - 0.575
5	0.610 - 0.631
6	0.655 - 0.676
7	0.741 - 0.800
8	0.831 - 0.897
9	0.989 - 1.054
10	8.423 - 12.279

Sensor/aircraft parameters are as follows:

IFOV:	2.5 mrad
Ground Resolution:	163 feet (50 meters) at 65,000 feet
Total Scan Angle:	85°
Swath Width:	19.6 nmi (36.3 km) at 65,000 feet
Pixels/Scan Line:	716
Scan Rate:	6.25 scans/second
Ground Speed:	400 kts (206 m/second)
Digitization:	8-bit channels 9-10 10-bit channels 1-8

## **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. 94-108**

**Accession # 04763**

**Sensor # 076**

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	4576-4591	16:54:07	17:01:18	65000/19800	Clear
C - A	4592-4610	17:08:29	17:17:04	"	Thin cirrus (frames 4592 and 4610)

**CAMERA FLIGHT LINE DATA  
FLIGHT NO. 94-108**

**Accession # 04764**

**Sensor # 039**

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0030	16:54:12	17:01:20	65000/19800	Clear
C - A	0031-0067	17:08:33	17:17:21	"	Thin cirrus (frames 0031-0032); 10% cirrus (frames 0066-0067)

**CAMERA FLIGHT LINE DATA  
FLIGHT NO. 94-108**

**Accession # 04765**

**Sensor # 020**

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0030	16:54:13	17:01:20	65000/19800	Clear; light leak (frame 0001)
C - A	0031-0067	17:08:34	17:17:21	"	Thin cirrus (frames 0031-0032); light leak (frame 0031); 10% cirrus (frames 0066-0067)

# AOCI SCANNER FLIGHT LINE DATA

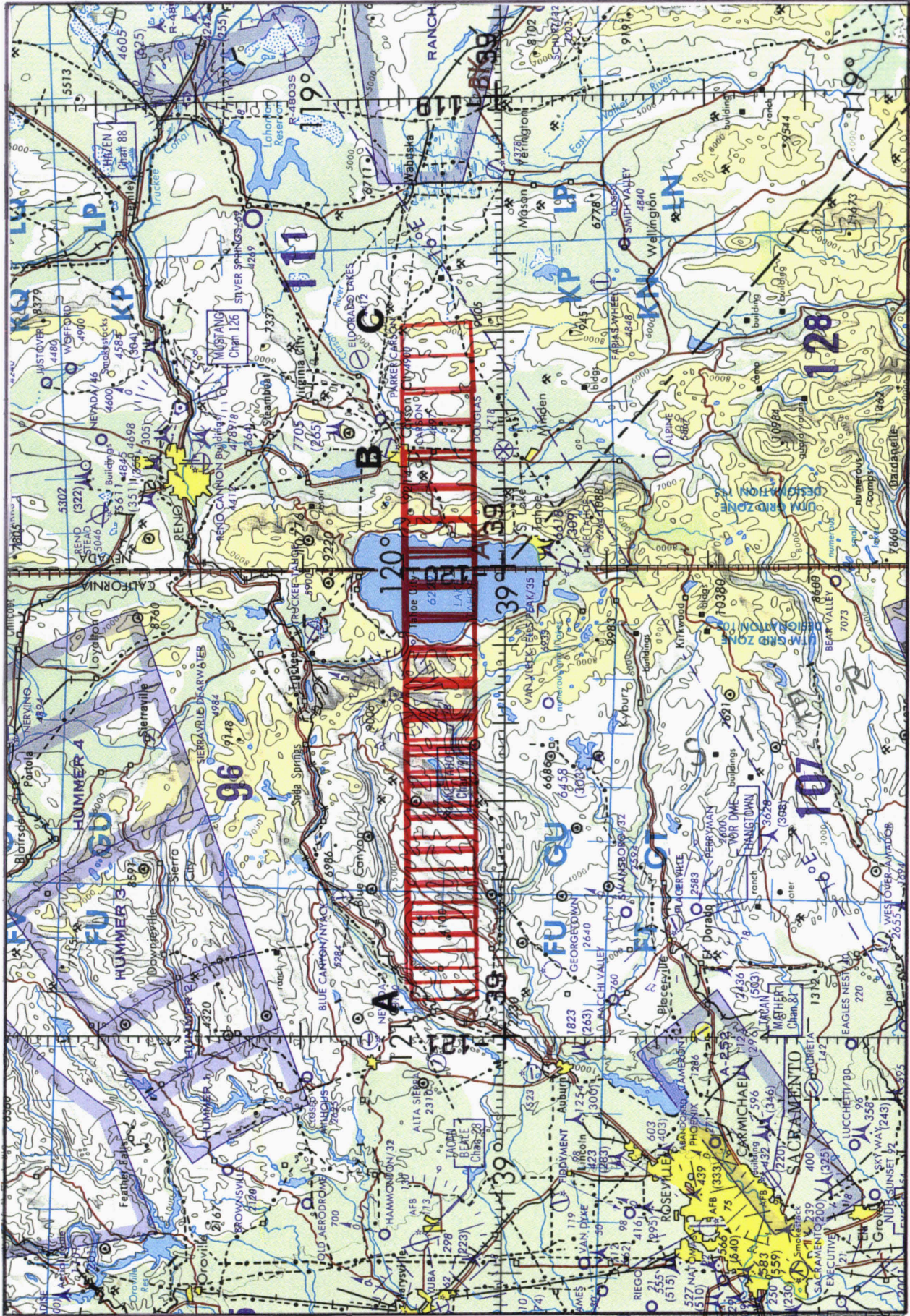
## FLIGHT NO. 94-108

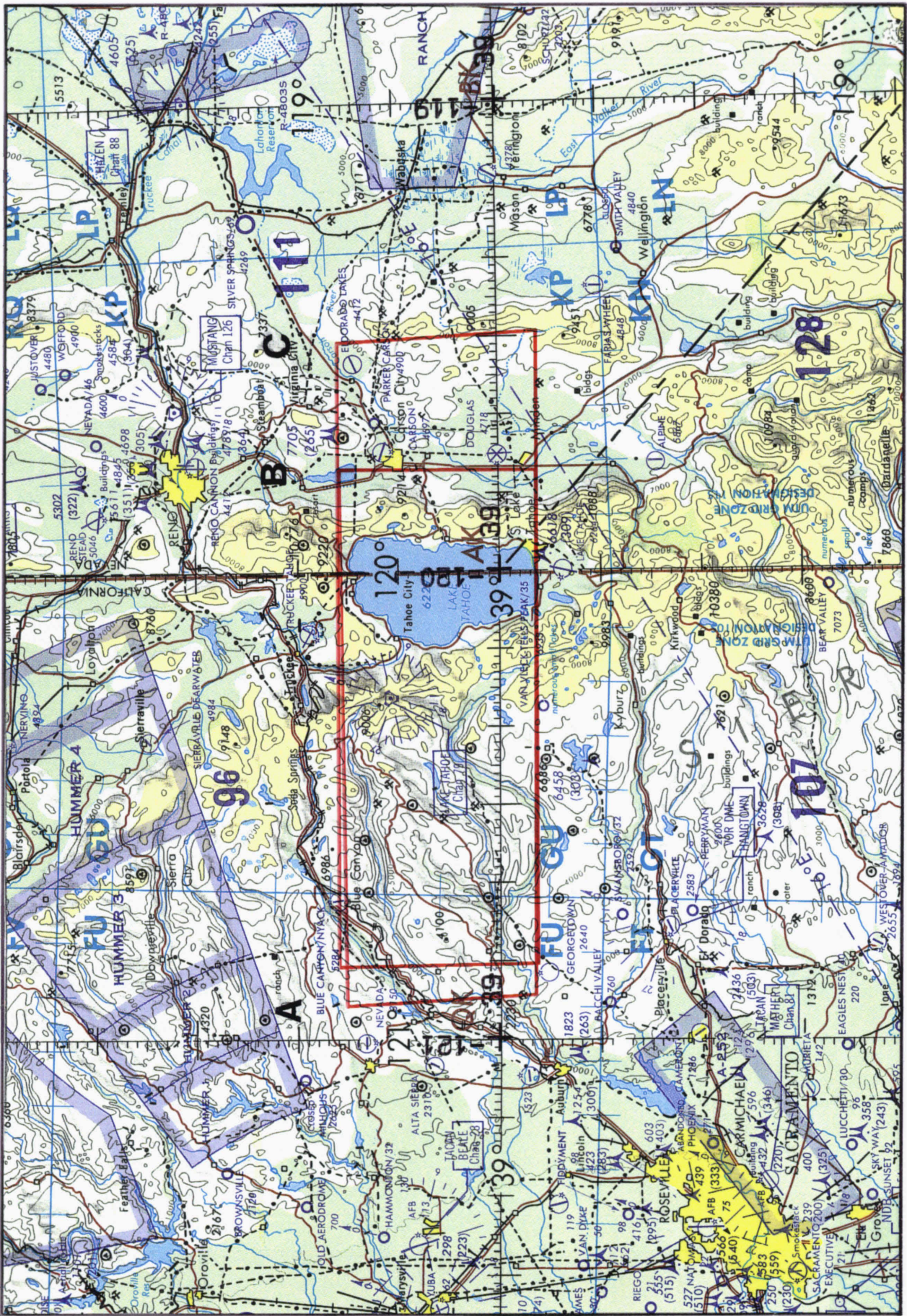
DALLAS FLIGHT DATA  
FLIGHT NUMBER: 94-108

Check Points	Actual		Actual		Scan Speed (fps)	Total		Total	
	Time begin	Time end	Scanline begin	Scanline end		Good scanlines	Interpolated scanlines	Repeated scanlines	
A-B	16:53:35.0	17:01:00.0	11911	11731	6.25	2911	0	0	0
C - A	17:08:5.0	17:17:15.0	17173	20330	6.25	3378	0	0	0









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