

FLIGHT SUMMARY REPORT

Flight #: 92-157
Date: 16 September 1992
Sensor Package: Dual Wild-Heerbrug RC-10
 Hycon HR-732
 Thematic Mapper Simulator (TMS)
Area(s) Covered: Kauai, Hawaii

Investigator(s): Masumoto, State of Hawaii

Aircraft #: 708

Flight Request: 2XZ2040

Julian Date: 260

SENSOR DATA

Accession #:	04455	04456	04457	----
Sensor ID #:	034	026	038	101
Sensor Type:	RC-10	RC-10	HR-732	TMS
Focal Length:	12" 304.66 mm	12" 304.97 mm	24" 609.6 mm	----
Film Type:	High Definition Aerochrome IR SO-131	Aerial Color SO-242	Panatomic-X Aerographic II 2412	----
Filtration: -	cc.10B	None	Wratten-12	----
Spectral Band:	510-900 nm	400-700 nm	510-700 nm	----
f Stop:	4	4	14.2	----
Shutter Speed:	1/150	1/200	1/75	----
# of Frames:	14	14	24	----
% Overlap:	60	60	60	----
Quality:	Excellent	Excellent	Excellent	----
Remarks:	26.85 sec. off- set between clock and nav data	4.25 sec. off- set between clock and nav data	10.92 sec. off- set between clock and nav data	

Hurricane Iniki

On September 11, 1992 Hurricane Iniki swept through the Hawaiian Islands causing extensive damage to residential and commercial structures, agricultural crops, and natural vegetation. In response to this disaster, NASA deployed a high altitude ER-2 aircraft to Barbers Point NAS on the island of Oahu. From that operational base the ER-2 flew nine missions from September 16 to October 1 for purposes of acquiring high resolution photography and digital imaging of the devastated areas. These disaster assessment flights are summarized in this volume.

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 and camera system(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, μm</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)

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.

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. 92-157**

Accession # 04455

Sensor # 034

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	6442-6448	18:59:43	19:02:32	65000/19800	40-70% scattered cumulus
C - D	6449-6453	19:08:26	19:10:15	"	20-40% cirro-cumulus
E - F	6454-6455	19:20:15	19:20:45	64000/19500	20% scattered cumulus

**CAMERA FLIGHT LINE DATA
FLIGHT NO. 92-157**

Accession # 04456

Sensor # 026

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	1776-1782	18:59:21	19:02:05	65000/19800	40-70% scattered cumulus
C - D	1783-1787	19:08:02	19:09:53	"	20-40% cirro-cumulus
E - F	1788-1789	19:19:52	19:20:19	64000/19500	20% cumulus

**CAMERA FLIGHT LINE DATA
FLIGHT NO. 92-157**

Accession # 04457

Sensor # 038

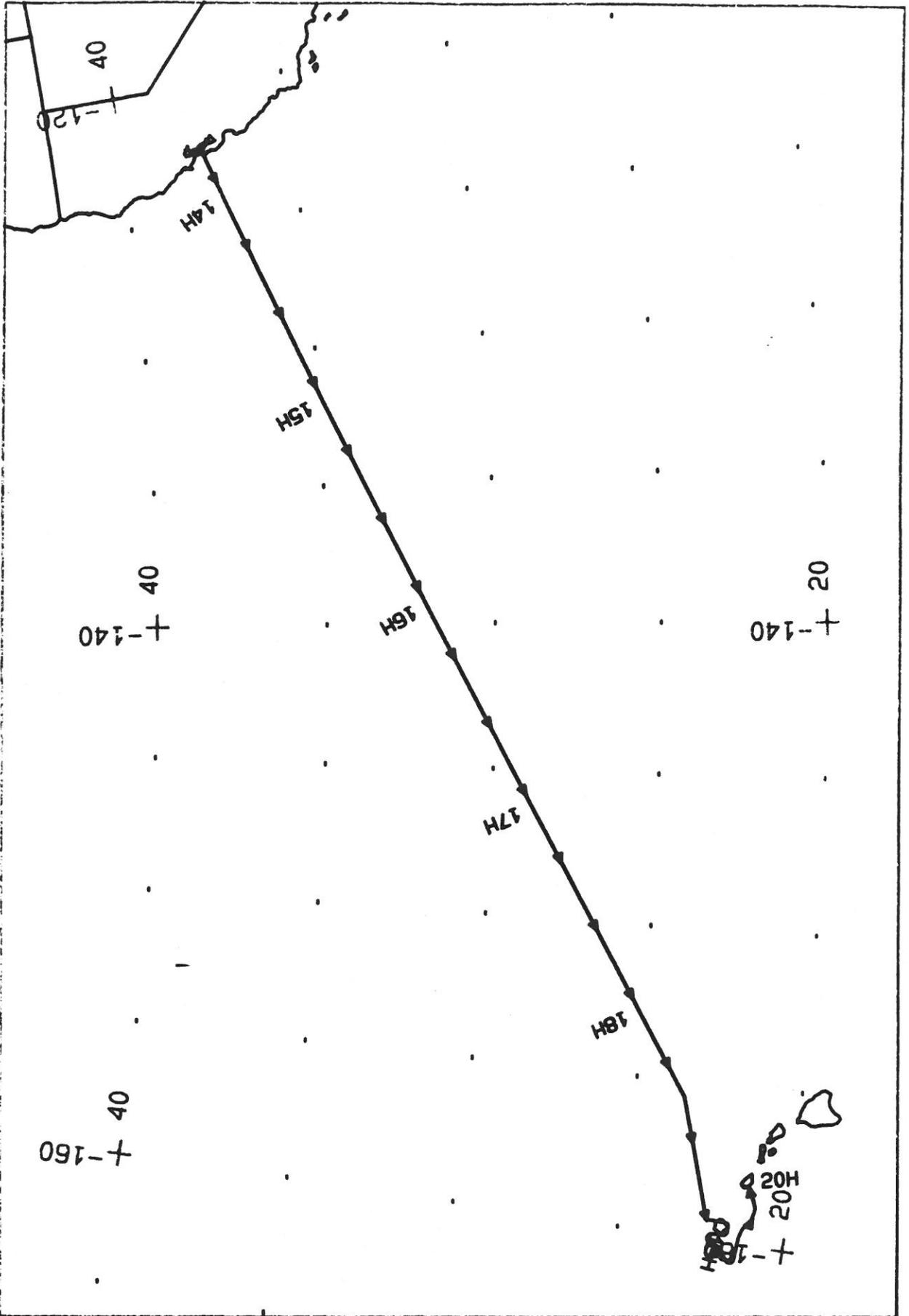
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0012	18:59:32	19:02:00	65000/19800	30-60% scattered cumulus
C - D	0013-0021	19:08:11	19:09:59	"	20-70% cirro-cumulus
E - F	0022-0024	19:20:00	19:20:27	64000/19500	10-20% cumulus

TMS SCANNER FLIGHT LINE DATA

FLIGHT NO. 92-157

DATE: DALUS FLIGHT DATA
 FLIGHT NUMBER: 92-157

Check Points	Actual Time (GMT)	Actual Scanline begin end	Altitude feet/meter	Scan Speed (fps)	Good scanlines	total Interpolated scanlines	total Repeated scanlines
A-B	19:02:44.0	247049 247750	65000/19812	12.50	2701	1	0
C-D	19:07:17.0	253364 253572	65000/19812	12.50	2701	0	8
E-F	19:19:21.0	262110 263250	64000/19512	12.50	324	0	17

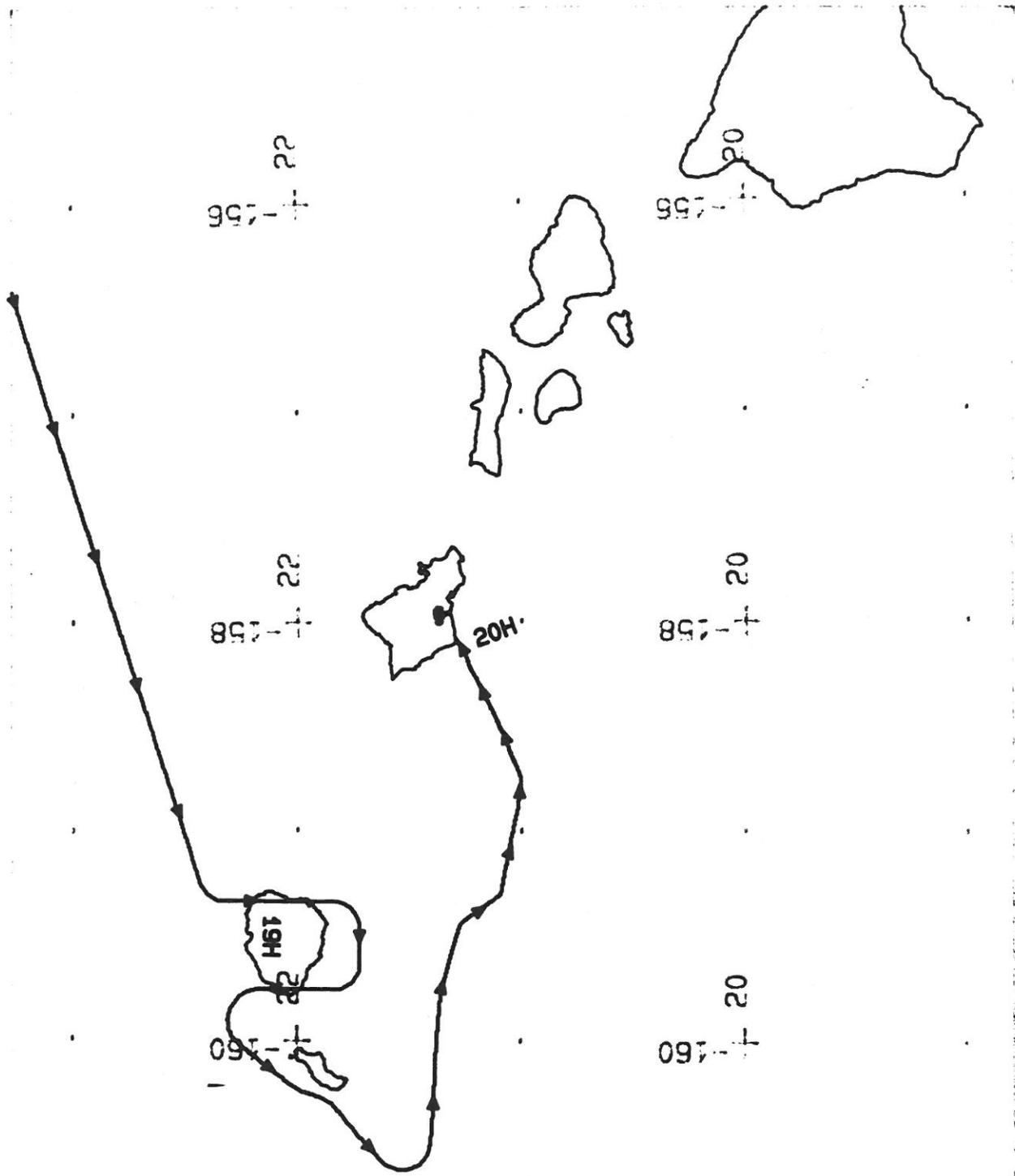


FLIGHT 92-157

16 September 1992

A/C 708

Ferry to Hawaii



FLIGHT 92-157 16 September 1992 A/C 708 Dual PR-732 / Dual RC-10 / TMS

