

FLIGHT SUMMARY REPORT

Flight #: 90-058
Date: 09 March 1990
Sensor Package: Wild-Heerbrug RC-10
Airborne Visible and Infrared Imaging
Spectrometer (AVIRIS)
Thermal Infrared Multispectral Scanner (TIMS)
Area(s) Covered: Mexico

Investigator(s): P. Sebesta, NASA-Ames
B. Wood, TGS Technology, Inc.

Aircraft #: 709

Flight Request: 90B202D

Julian Date: 068

SENSOR DATA

Accession #:	04001	----	----
Sensor ID #:	076	099	086
Sensor Type:	RC-10	AVIRIS	TIMS
Focal Length:	12" 304.89 mm	----	----
Film Type:	High Definition Aerochrome IR SO-131	----	----
Filtration:	cc .10B	----	----
Spectral Band:	510-900 nm	----	----
f Stop:	4	----	----
Shutter Speed:	1/150	----	----
# of Frames:	59	----	----
% Overlap:	60	----	----
Quality:	Excellent	----	----
Remarks:			

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.

Airborne Visible and Infrared Imaging Spectrometer

The Airborne Visible and Infrared Imaging Spectrometer (AVIRIS) is the second in the series of imaging spectrometer instruments developed at the Jet Propulsion Laboratory (JPL) for earth remote sensing. This instrument uses scanning optics and a four-line arrays of detectors to image a 614 pixel swath simultaneously in 224 contiguous spectral bands (0.4-2.4 μm).

AVIRIS parameters are as follows:

IFOV:	1 mrad
GIFOV (at 20 km):	20 m
FOV:	30°
GFOV (at 20 km):	11 km
Spectral Coverage:	0.41 - 2.45 μm
Number of Spectral Bands:	224
Digitization:	10 Bits
Data Rate:	17 MBPS

<u>Spectrometer</u>	<u>Wavelength Range</u>	<u>Number of Bands</u>	<u>Sampling Interval</u>
1	0.41 - 0.70 μm	31	9.4 nm
2	0.68 - 1.27 μm	63	9.4 nm
3	1.25 - 1.86 μm	63	9.7 nm
4	1.84 - 2.45 μm	63	9.7 nm

All AVIRIS data is decommutated and archived at JPL and not currently available for public distribution. For further information contact Rob Greene at Jet Propulsion Laboratory, 4800 Oak Grove Drive, Mail Stop 11-116, Pasadena, California 91109-8099.

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 μm to 12.2 μm region.

<u>Channel</u>	<u>Wavelength. μm</u>	<u>NET</u>
1	8.2 - 8.6	$< 0.3^{\circ}\text{C}$
2	8.6 - 9.0	$< 0.3^{\circ}\text{C}$
3	9.0 - 9.4	$< 0.3^{\circ}\text{C}$
4	9.4 - 10.2	$< 0.3^{\circ}\text{C}$
5	10.2 - 11.2	$< 0.3^{\circ}\text{C}$
6	11.2 - 12.2	$< 0.3^{\circ}\text{C}$

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)
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. 90-058**

Accession # 04001

Sensor # 076

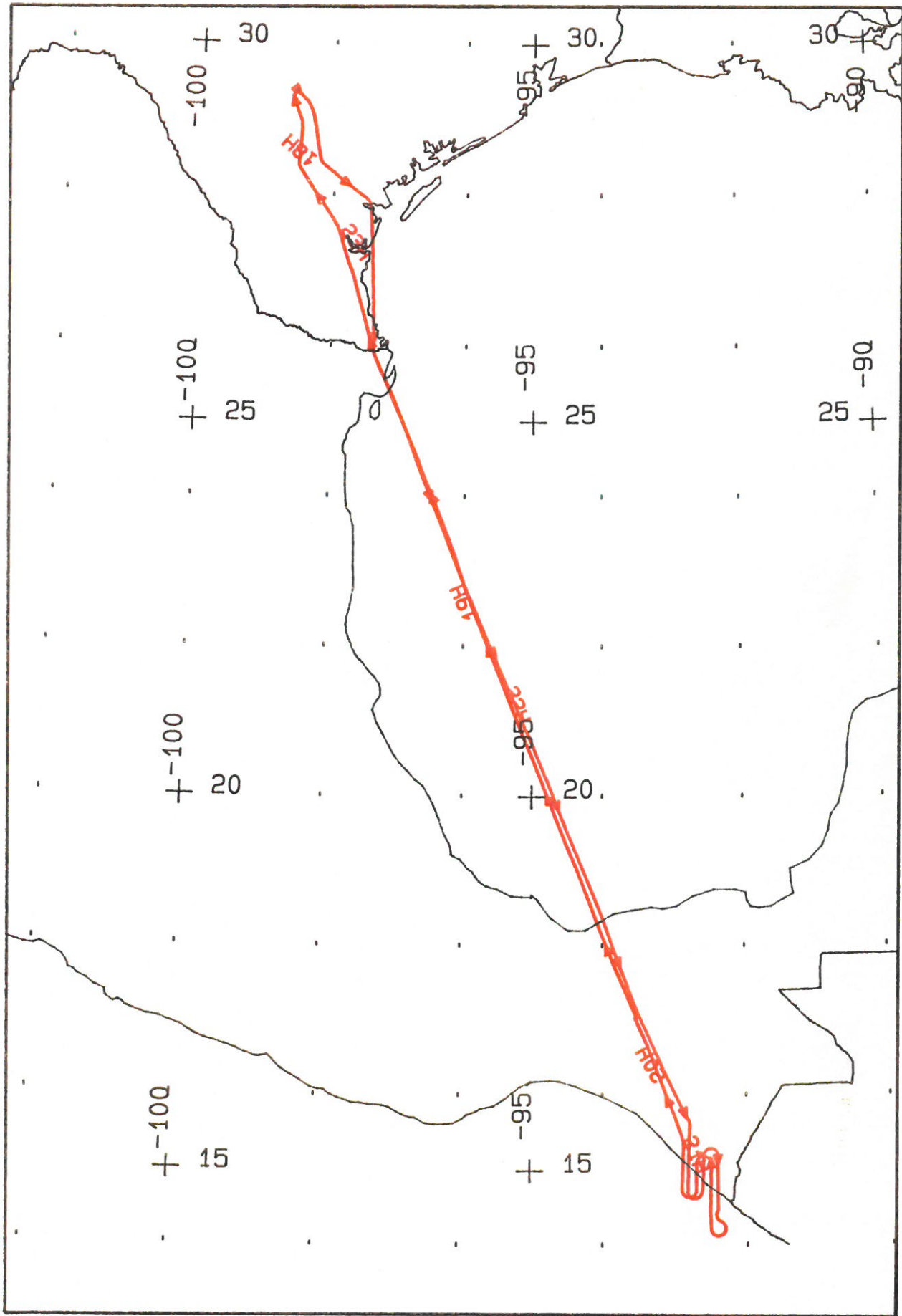
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0503-0512	20:08:37	20:12:05	65000/19800	10-40% cumulus (frames 0503-0505)
C - D	0513-0521	20:17:31	20:20:46	"	10-60% cumulus (frames 0513-0521)
E - F	0522-0533	20:26:09	20:30:18	"	10-80% cumulus (frames 0522-0533)
G - H	0534-0544	20:39:18	20:43:26	"	10% cumulus (frames 0534-0539) 20-30% cumulus (frames 0541-0544)
I - J	0545-0552	20:47:31	20:50:18	"	10-40% cumulus (frames 0545-0548)
K - L	0553-0561	20:56:12	20:59:04	"	10-40% cumulus (frames 0557-0561)

TIMS SCANNER FLIGHT LINE DATA

FLIGHT NO. 90-058

TIMS FLIGHT DATA
FLIGHT NUMBER: 90-058

Check Points	Actual time begin	Actual time end	Actual scanline begin	Actual scanline end	Altitude feet/meter	Scan Speed (rps)	total Ground scanlines	total Interpolated scanlines	total Repeated scanlines
A-B	20:07:28.0	20:10:59.0	68631	70175	65000/19812	7.30	1542	1	2
C-D	20:16:20.0	20:19:41.0	72515	73985	65000/19812	7.30	1471	0	0
E-F	20:24:57.0	20:29:09.0	76298	78137	65000/19812	7.30	1833	0	7
G-H	20:38:06.0	20:42:22.0	82060	83930	65000/19812	7.30	1869	0	2



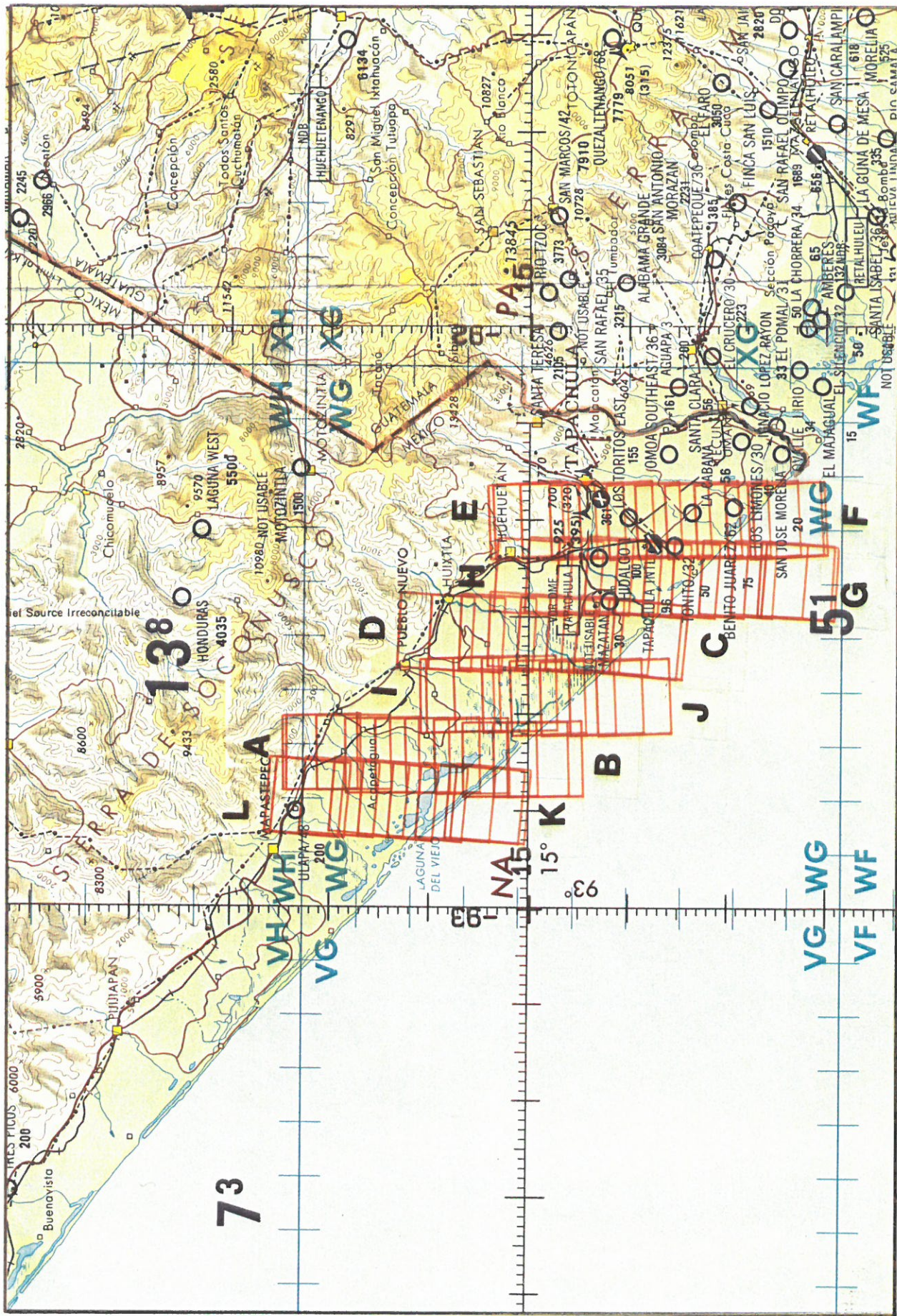
FLIGHT 90-058

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A/C 709

TMS / TIMS / RC-10

Mexico



FLIGHT 90-058 9 March 1990 A/C 709 AVIRIS / TMS / TMS / TMS / FC-10 Accession # 04001 ONC K-25