

FLIGHT SUMMARY REPORT

Flight #: 90-029A
Date: 9 December 1989
Sensor Package: Wild Heerbrug RC-10
Thematic Mapper Simulator (TMS)
Area(s) Covered: Texas

Investigator(s): Handley, U.S. Fish and Wildlife
Flight Request: 90R254

Aircraft #: 709
Julian Date: 343

SENSOR DATA

Accession #:	03980	-----
Sensor ID #:	076	074
Sensor Type:	RC-10	TMS
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:	249	-----
% Overlap:	60	-----
Quality:	Excellent	-----
Remarks:	-----	See write up

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.

Thematic Mapper Simulator

The Daedalus Thematic Mapper Simulator (TMS) is a high altitude 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:	1.3 mr
Ground Resolution:	91 feet (28 meters at 70,000 feet)
Total Scan Angle:	43 ^o
Swath Width:	9.0 nmi (16.6 km at 70,000 feet)
Pixels/Scan Line:	716 (750 following rectification)
Scan Rate:	12.5 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. 90-029A**

Accession No. 03980

Sensor # 076

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	3540-3583	15:49:59	16:09:58	65000/19800	Clear; no image, film transported without shutter function (frame 3562)
C - D	3743-3745	17:44:48	17:45:45	"	Clear
D - E	3746-3751	17:46:13	17:48:32	"	Clear; oblique frames in turn
E - F	3752-3758	17:49:00	17:51:47	"	Clear
G - H	3793-3803	18:12:07	18:16:44	"	Clear
I - J	3804-3813	18:20:10	18:24:18	"	Clear
K - L	3832-3849	18:38:24	18:45:32	"	Clear; no image, film transported without shutter function (frame 3835)
-----	3850-3851	18:45:45	18:46:13	"	Clear; oblique frames in turn
M - N	3852-3886	18:56:33	19:12:08	"	Clear
O - P	3887-3926	19:17:03	19:34:42	"	Clear

**CAMERA FLIGHT LINE DATA
FLIGHT NO. 90-029A**

Accession No. 03980

Sensor # 076

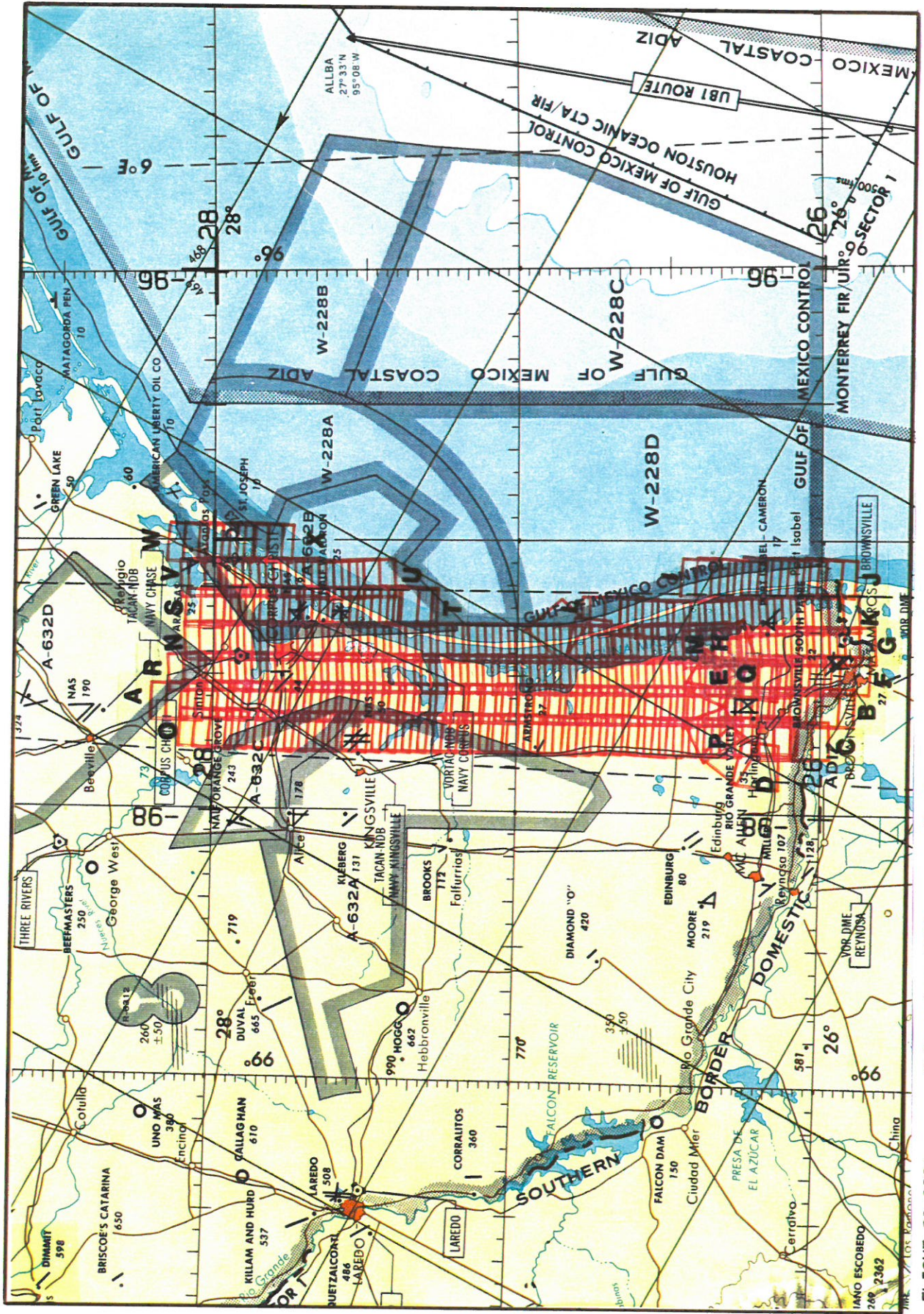
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
Q - R	3927-3965	19:38:31	19:55:55	65000/19800	Clear
S - T	3966-3981	19:59:22	20:05:55	"	Clear
U - V	3982-3994	20:09:15	20:14:33	"	Clear
W - X	3995-4001	20:18:09	20:20:45	"	Clear

SCANNER FLIGHT LINE DATA

FLIGHT NO. 90-029A

DAEDALUS FLIGHT DATA
FLIGHT NUMBER: 90-029A

Check Points	A c t u a l t i m e b e g i n e n d (GMT)	A c t u a l s c a n l i n e 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-B	15:50:12.0 16:10:26.0	28772 43952	65000/19812	12.50	15128	0	53
C-D	17:43:50.0 17:45:48.0	114000 115476	65000/19812	12.50	1475	0	2
E-F	17:49: 9.0 17:52:50.0	117980 120751	65000/19812	12.50	2547	0	225
G-H	18:11: 2.0 18:16:45.0	134400 138686	65000/19812	12.50	4278	0	9
I-J	18:19:57.0 18:25:10.0	141086 145000	65000/19812	12.50	3913	0	2
K-L	18:37:10.0 18:45:32.0	154000 160266	65000/19812	12.50	6265	0	2
M-N	18:56:23.0 19:12:10.0	168407 180240	65000/19812	12.50	11821	0	13
O-P	19:16:53.0 19:34:33.0	183779 197029	65000/19812	12.50	13236	0	15
Q-R	19:38:21.0 19:55:56.0	199887 213069	65000/19812	12.50	13156	0	27
S-T	19:59:12.0 20:05:56.0	215514 220564	65000/19812	12.50	5042	0	9
U-V	20:00: 7.0 20:14:33.0	222958 227029	65000/19812	12.50	4070	0	2
W-X	20:18: 4.0 20:18:17.0	229670 229835	65000/19812	12.50	166	0	0



FLIGHT 90-029A 9 December 1989 A/C 709 RC-10 / TMS Texas Accession # 03980 JNC 44