

FLIGHT SUMMARY REPORT

Flight #: 90-030
Date: 10 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: 344

SENSOR DATA

Accession #:	03981	-----
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:	408	-----
% 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. 90-030**

Accession No. 03981

Sensor # 076

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Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	4012-4014	15:29:15	15:30:03	65000/19800	Clear
C - D	4015-4026	15:37:46	15:42:32	"	10-30% strato cumulus (frames 4018-4020); no image, film transported without shutter function (frame 4025)
E - F	4027-4078	15:46:19	16:10:33	"	10% cirrus (frames 4037-4039); 10-40% strato cumulus (frames 4067-4073)
G - H	4079-4144	16:14:02	16:44:38	"	10-20% cirrus (frames 4094-4098); 10-20% cumulus (frames 4106-4117); 10% cumulus (frames 4125-4127); 10-80% cumulus and strato cumulus (frames 4131-4144)
I - J	4145-4215	16:58:46	17:32:29	"	10-30% cumulus (frames 4145-4148); 10-40% cumulus (frames 4150-4185)
K - L	4216-4241	17:37:44	17:49:19	"	10-40% cumulus (frames 4230-4235, 4238-4241)

CAMERA FLIGHT LINE DATA
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Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
M - N	4242-4275	17:54:00	18:09:55	65,000/19,800	10-40% cumulus (frames 4242-4253); 10-60% cloud shadow (frames 4271-4275)
O - P	4276-4336	18:14:21	18:42:38	"	10-20% cumulus (frames 4296-4315); 10-40% cumulus (frames 4325-4336)
Q - R	4337-4362	18:47:18	18:58:40	"	10-30% cumulus (frames 4337-4340)
S - T	4363-4380	19:02:49	19:10:09	"	Clear
U - V	4381-4383	19:24:18	19:25:14	"	Clear
W - X	4384-4420	19:36:08	19:49:09	"	10% cumulus (frames 4384-4386); oblique (frames 4388, 4396, 4404)

SCANNER FLIGHT LINE DATA

FLIGHT NO. 90-030

DAEDALUS FLIGHT DATA
FLIGHT NUMBER: 90-030

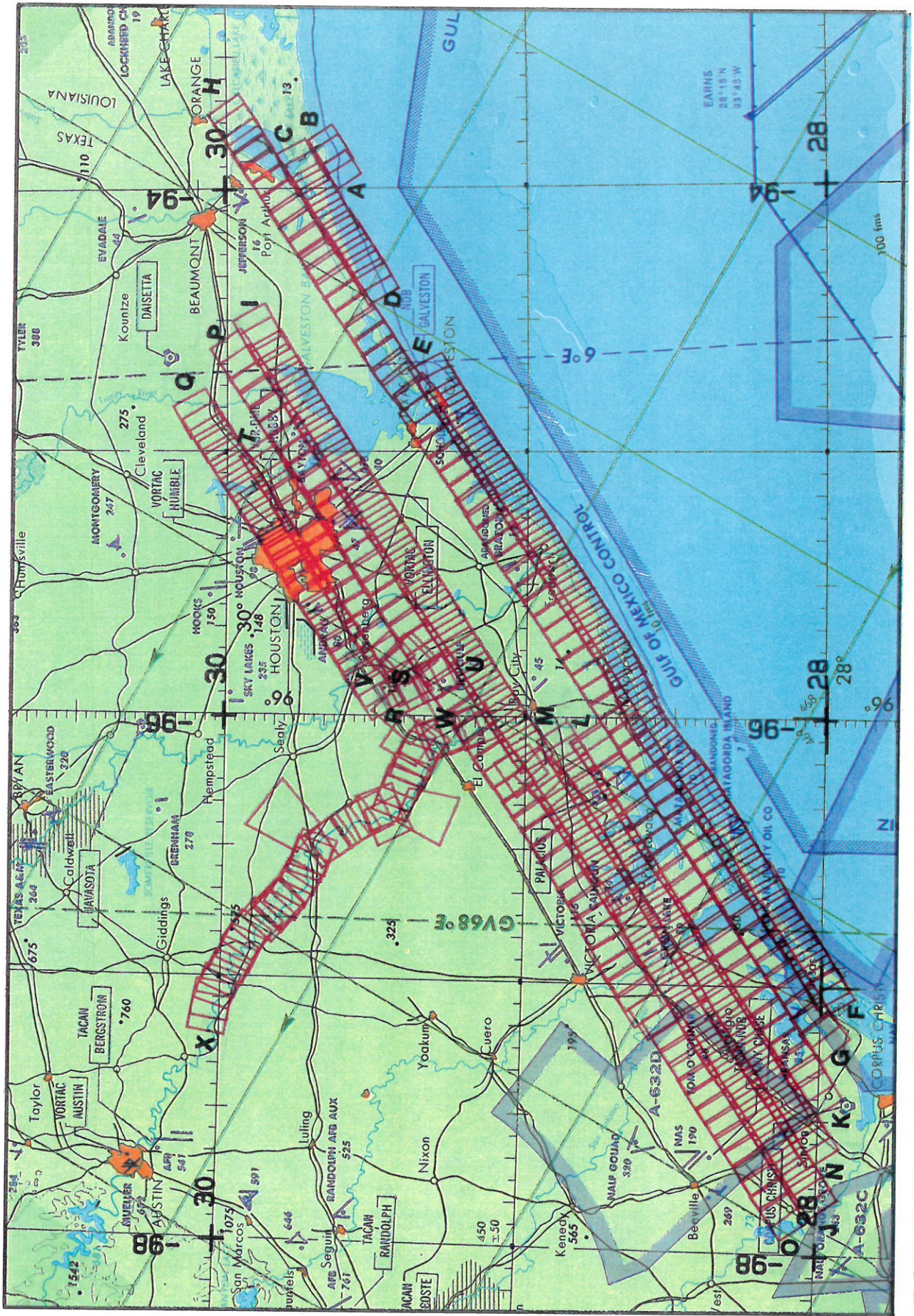
Check Points	A c t u a l t i m e b e g i n	A c t u a l s c a n l i n e b e g i n	A l t i t u d e f e e t / m e t e r	S c a n S p e e d (r p s)	t o t a l G o o d s c a n l i n e s	t o t a l I n t e r p o l a t e d s c a n l i n e s	t o t a l R e p e a t e d s c a n l i n e s
A-B	15:29: 7.0 15:29:55.0	15052 15652	65000/19812	12.50	599	0	2
C-D	15:37:36.0 15:42:29.0	21413 25086	65000/19812	12.50	3661	0	13
E-F	15:46: 9.0 16:10:30.0	27831 46089	65000/19812	12.50	17716	0	543
G-H (Part 1)	16:13:52.0 16:43: 1.0	48614 70478	65000/19812	12.50	21691	1	173
G-H (Part 2)	16:43: 1.0 16:44:31.0	70479 71609	65000/19812	12.50	1131	0	0
I-J (Part 1)	16:58:33.0 17:27:42.0	82132 103996	65000/19812	12.50	21572	0	293
I-J (Part 2)	17:27:42.0 17:32:29.0	103997 107585	65000/19812	12.50	3580	1	8
K-L	17:37:35.0 17:49:11.0	111410 120103	65000/19812	12.50	8685	0	9
M-N	17:53:49.0 18:09:49.0	123584 135585	65000/19812	12.50	11990	0	12
O-P	18:14:10.0 18:42:33.0	138838 160129	65000/19812	12.50	21276	0	16
Q-R	18:47:10.0 18:58:40.0	163593 172217	65000/19812	12.50	8617	0	8
S-T	19:02:39.0 19:10: 4.0	175203 180772	65000/19812	12.50	5564	0	6
U-V	19:24: 8.0 19:25:15.0	191316 192159	65000/19812	12.50	844	0	0
W-1	19:35:59.0 19:49:28.0	200199 210313	65000/19812	12.50	10005	0	110

SCANNER FLIGHT LINE DATA

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DAEDALUS FLIGHT DATA
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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	S c a n S p e e d (r p s)	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
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W-1	19:35:59.0 19:49:28.0	200199 210313	65000/19812	12.50	10005	0	110



FLIGHT 90-030

10 December 1989

A/C 709

RC-10

80-131

Accession # 03081

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