

FLIGHT SUMMARY REPORT

Flight #: 90-027
Date: 4 December 1989
Sensor Package: Wild-Heerbrug RC-10
Dual Hycon HR-732
Thematic Mapper Simulator (TMS)
Area(s) Covered: Texas

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

Aircraft #: 709
Julian Date: 338

SENSOR DATA

Accession #:	03976	03977	03978	-----
Sensor ID #:	076	018	019	074
Sensor Type:	RC-10	HR-732	HR-732	TMS
Focal Length:	12" 304.89 mm	24" 609.6 mm	24" 609.6 mm	-----
Film Type:	High Definition Aerochrome IR SO-131	Aerial Color SO-242	Panatomic-X Aerographic EK 3400	-----
Filtration:	cc .10B	None	Wratten 12	-----
Spectral Band:	510-900 nm	400-700 nm	510-700 nm	-----
f Stop:	4	8	8	-----
Shutter Speed:	1/150	1/75	1/75	-----
# of Frames:	223	173	173	-----
% Overlap:	60	60	60	-----
Quality:	Excellent	Excellent	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. 90-027**

Accession No. 03976

Sensor # 076

Page 1/2

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	3105-3109	16:36:44	16:38:20	65000/19800	Clear
C - D	3110-3128	16:55:16	17:03:51	"	Clear
E - F	3129-3146	17:07:39	17:15:32	"	Clear
G - H	3147-3168	17:21:10	17:30:44	"	Clear
I - J	3169-3172	17:41:09	17:42:35	"	Clear
K - L	3173-3179	17:50:11	17:53:03	"	Clear
M - N	3180-3188	17:58:08	18:01:37	"	Clear
O - P	3189-3199	18:22:13	18:26:50	"	Clear

CAMERA FLIGHT LINE DATA
FLIGHT NO. 90-027

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Sensor # 076

Page 2/2

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
Q - R	3200-3203	18:32:56	18:34:05	65,000/19800	Clear
S - T	3204-3208	18:39:05	18:41:00	"	Clear
U - V	3209-3219	18:48:12	18:52:59	"	Clear
W - X	3220-3233	18:57:58	19:03:42	"	Clear
Y - Z	3234-3241	19:10:49	19:14:00	"	Clear
1 - 2	3242-3248	19:19:06	19:21:29	"	Thin cirrus (frames 3247-3248)
2 - 3	3249-3254	19:26:58	19:29:22	"	Clear
4 - 5	3255-3262	19:40:07	19:43:27	"	Clear
6 - 7	3263-3267	19:48:26	19:50:05	"	Clear
8 - 9	3268-3275	19:58:30	20:01:51	"	Clear
9 - 10	3276-3327	20:07:24	20:31:50	"	Smoke obscuration (frames 3296-3301, 3314-3320)

CAMERA FLIGHT LINE DATA
FLIGHT NO. 90-027

Accession No. 03977

Sensor # 018

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0007	16:36:39	16:38:07	65000/19800	Clear
C - D	0008-0044	16:55:11	17:03:55	"	Clear
E - F	0045-0077	17:07:35	17:15:21	"	Clear
G - H	0078-0117	17:21:05	17:30:32	"	Clear
I - J	0118-0124	17:41:03	17:42:30	"	Clear
K - L	0125-0137	17:50:05	17:52:59	"	Clear
M - N	0138-0152	17:58:04	18:01:26	"	Clear
O - P	0153-0173	18:22:07	18:26:44	"	Clear

**CAMERA FLIGHT LINE DATA
FLIGHT NO. 90-027**

Accession No. 03978

Sensor # 019

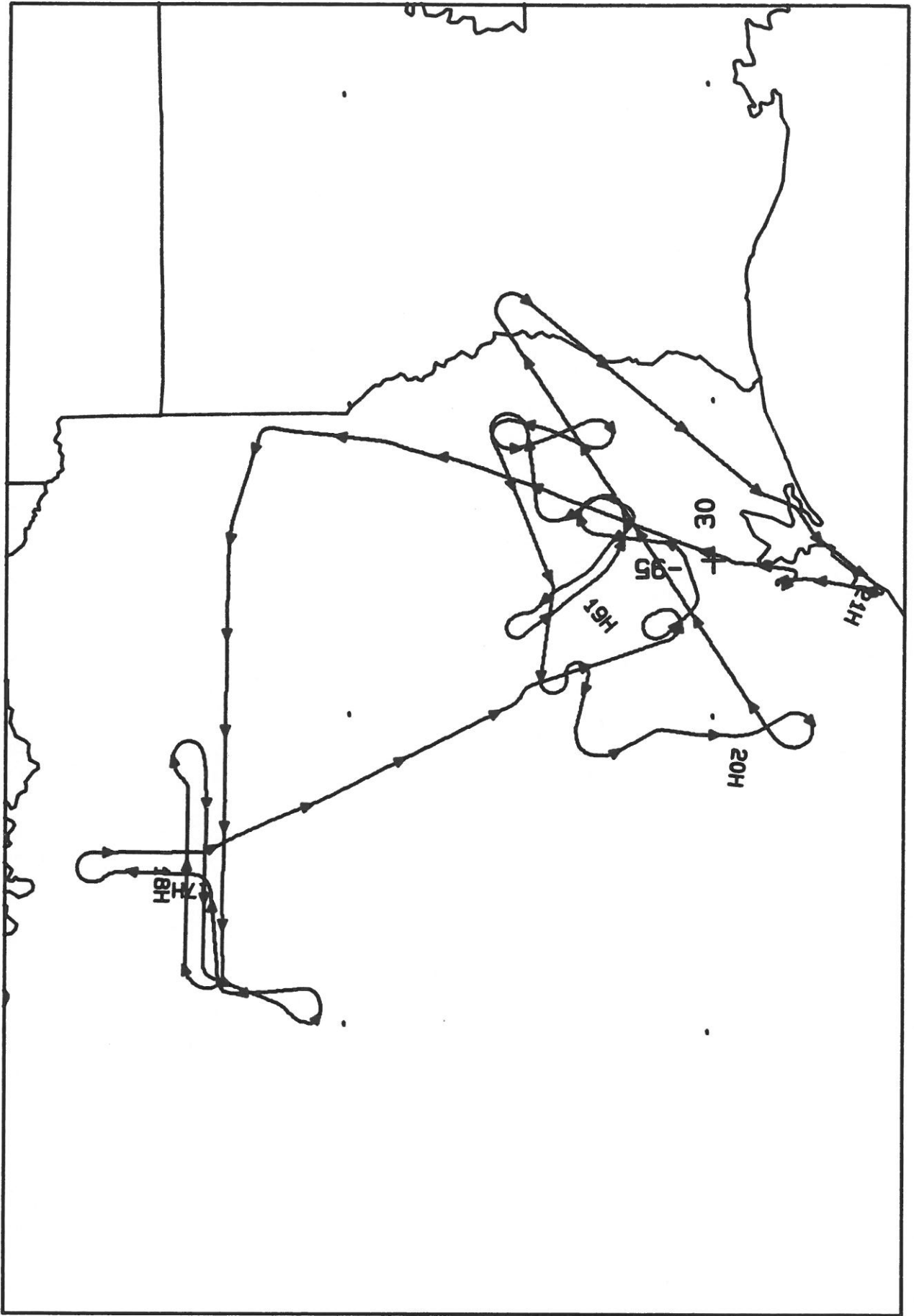
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0007	16:36:39	16:38:07	65000/19800	Clear
C - D	0008-0044	16:55:11	17:03:55	"	Clear
E - F	0045-0077	17:07:35	17:15:21	"	Clear
G - H	0078-0117	17:21:05	17:30:32	"	Clear
I - J	0118-0124	17:41:03	17:42:30	"	Clear
K - L	0125-0137	17:50:05	17:52:59	"	Clear
M - N	0138-0152	17:58:04	18:01:26	"	Clear
O - P	0153-0173	18:22:07	18:26:44	"	Clear

SCANNER FLIGHT LINE DATA

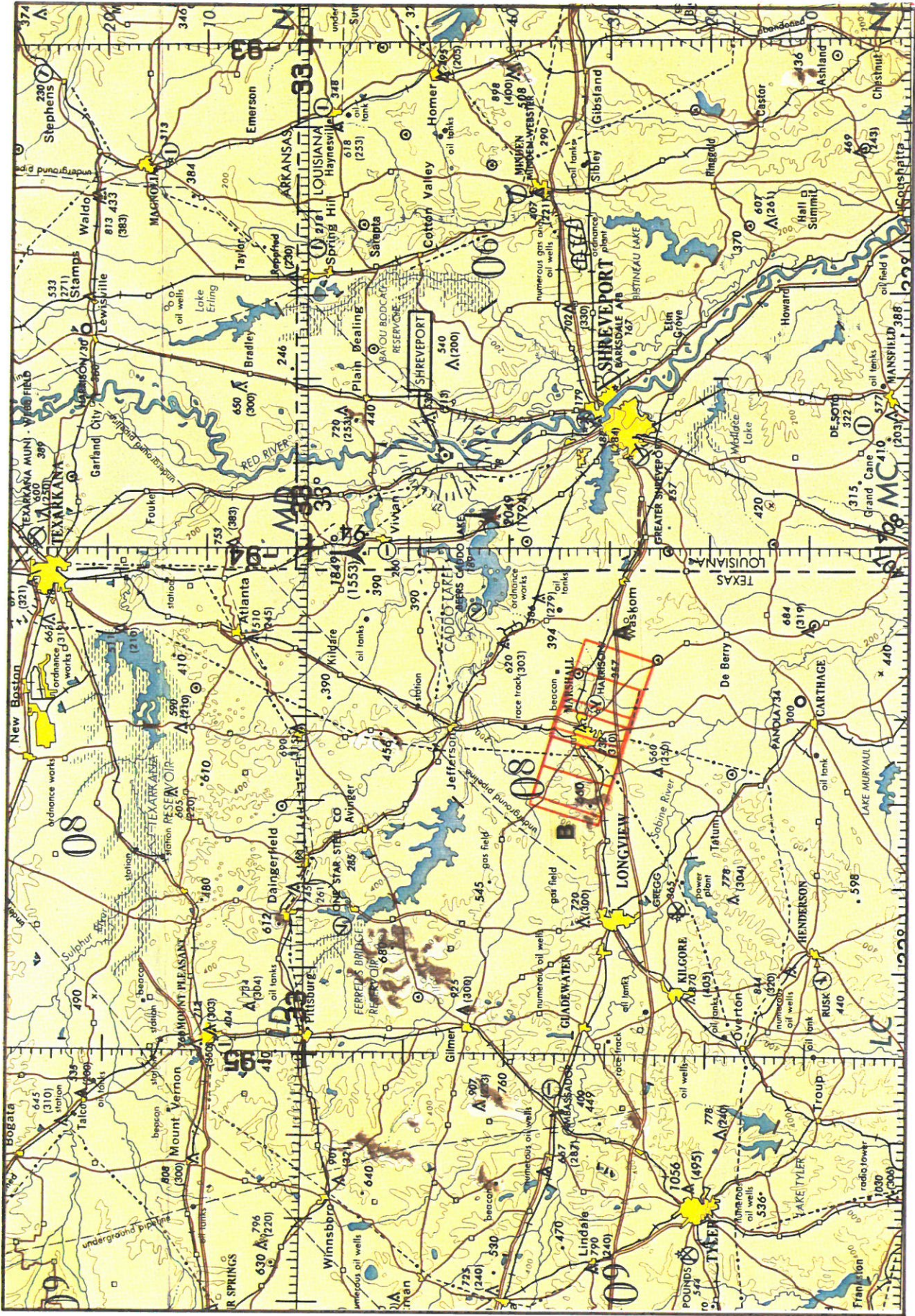
FLIGHT NO. 90-027

DAEDALUS FLIGHT DATA
FLIGHT NUMBER: 90-027

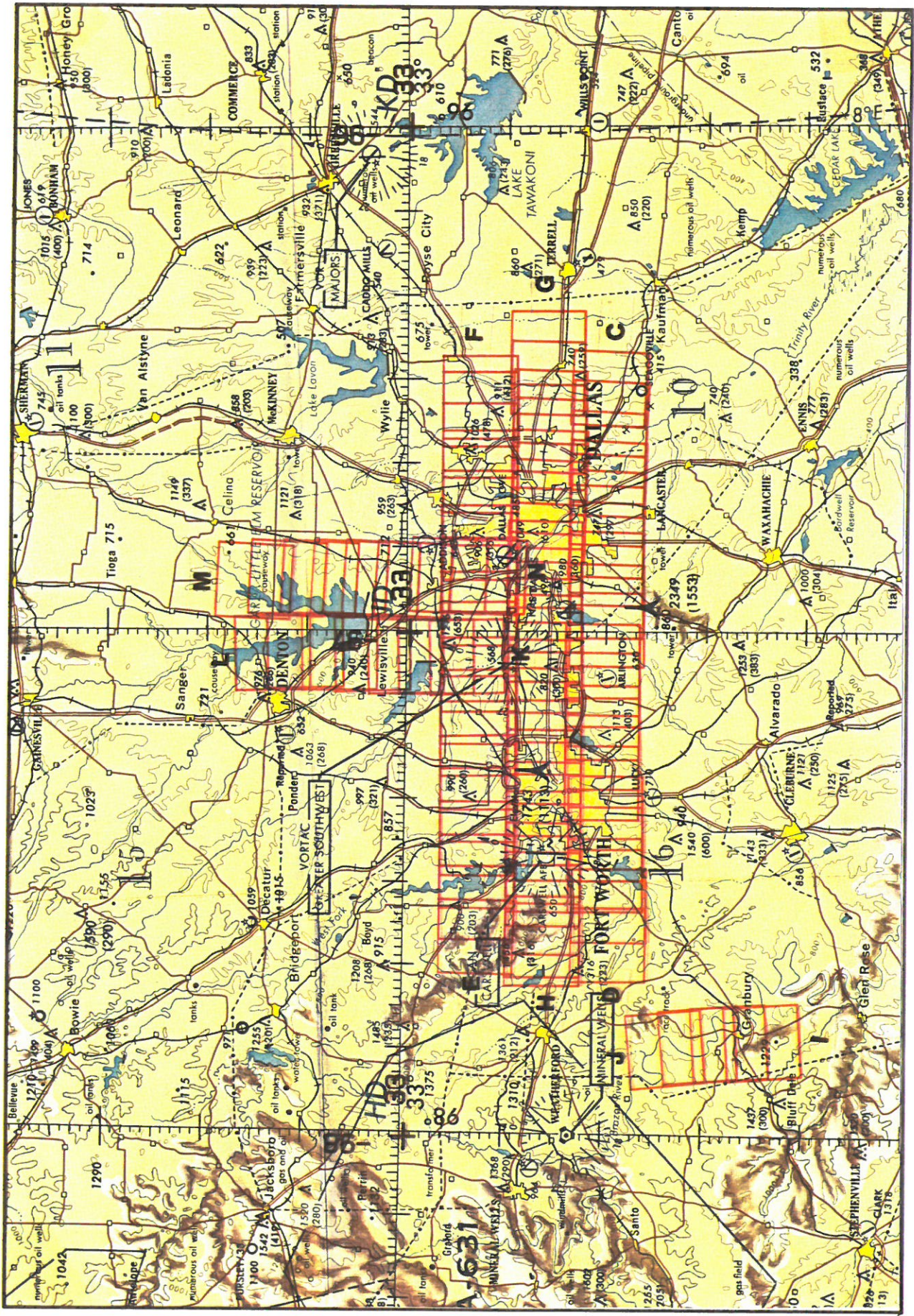
Check Points	A c t u a l t i m e b e g i n e n d (GMT)	A c t u a l s c a n l i n e b e g i n e n d	A l t i t u d e f e e t / m e t e r	S c a n S p e e d (r p s)	t o t a l G o o d s c a n l i n e s	t o t a l I n t e r p o l a t e d s c a n l i n e s	t o t a l R e p e a t e d s c a n l i n e s
A-B	16:36:40.0 16:38:13.0	33445 34605	65000/19812	12.50	1159	0	2
C-D	16:55: 7.0 17:03:55.0	47276 53879	65000/19812	12.50	6596	0	8
E-F	17:07:32.0 17:15:34.0	56590 62619	65000/19812	12.50	6018	0	12
G-H	17:21: 2.0 17:30:31.0	66712 73828	65000/19812	12.50	7091	0	26
I-J	17:41: 0.0 17:42:29.0	81693 82804	65000/19812	12.50	1112	0	0
K-L	17:50: 2.0 17:53: 8.0	88462 90796	65000/19812	12.50	2331	0	4
M-N	17:58: 1.0 18:01:34.0	94456 97117	65000/19812	12.50	2660	0	2
O-P	18:22: 4.0 18:26:47.0	112493 116028	65000/19812	12.50	3530	0	6
Q-R	18:32:55.0 18:34: 7.0	120628 121528	65000/19812	12.50	901	0	0
S-T	18:39: 4.0 18:41: 4.0	125237 126737	65000/19812	12.50	1501	0	0
U-V	18:48:16.0 18:52:56.0	132139 135639	65000/19812	12.50	3501	0	0
W-X	18:59:36.0 19:03:46.0	140645 143764	65000/19812	12.50	3112	0	8
Y-Z	19:10:50.0 19:14: 3.0	149069 151474	65000/19812	12.50	2401	0	5
1-2	19:19: 7.0 19:21:23.0	155276 156976	65000/19812	12.50	1701	0	0
2-3	19:26:53.0 19:29:26.0	161098 163012	65000/19812	12.50	1899	0	16
4-5	19:40:14.0 19:43:26.0	171115 173515	65000/19812	12.50	2401	0	0
6-7	19:48:22.0 19:50: 7.0	177219 178521	65000/19812	12.50	1301	0	2
8-9	19:58:31.0 20:01:51.0	184825 187325	65000/19812	12.50	2501	0	0
9-10	20:07:20.0 20:31:54.0	191440 209858	65000/19812	12.50	18401	0	18

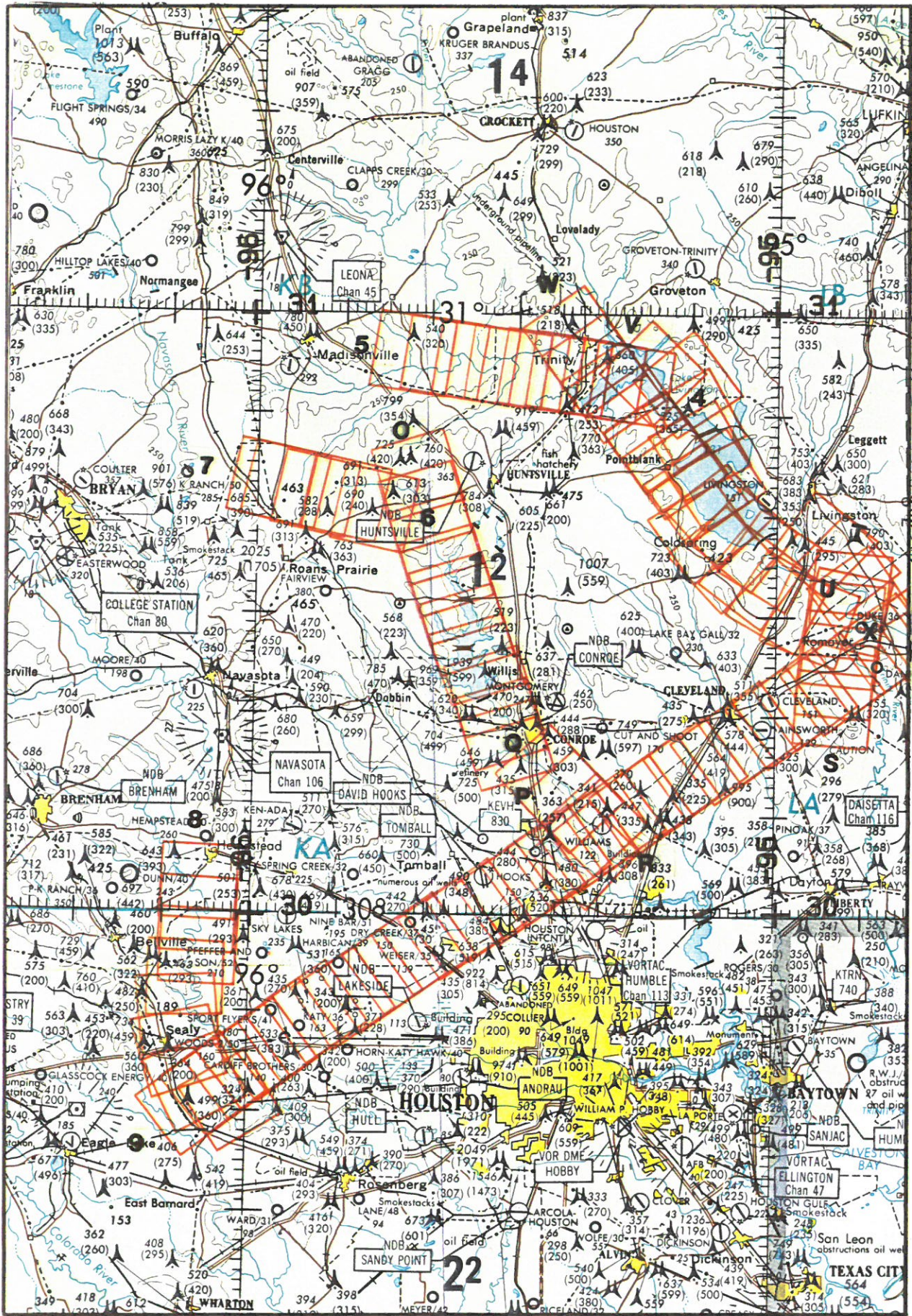


FLIGHT 90-027 4 December 1969 A/C 709 Due1 HR-732 / RC-10 / TMS



FLIGHT 90-027 4 December 1989 A/C 709 RC-10 Accession # 03976 ONC 6-20





CNC H-24

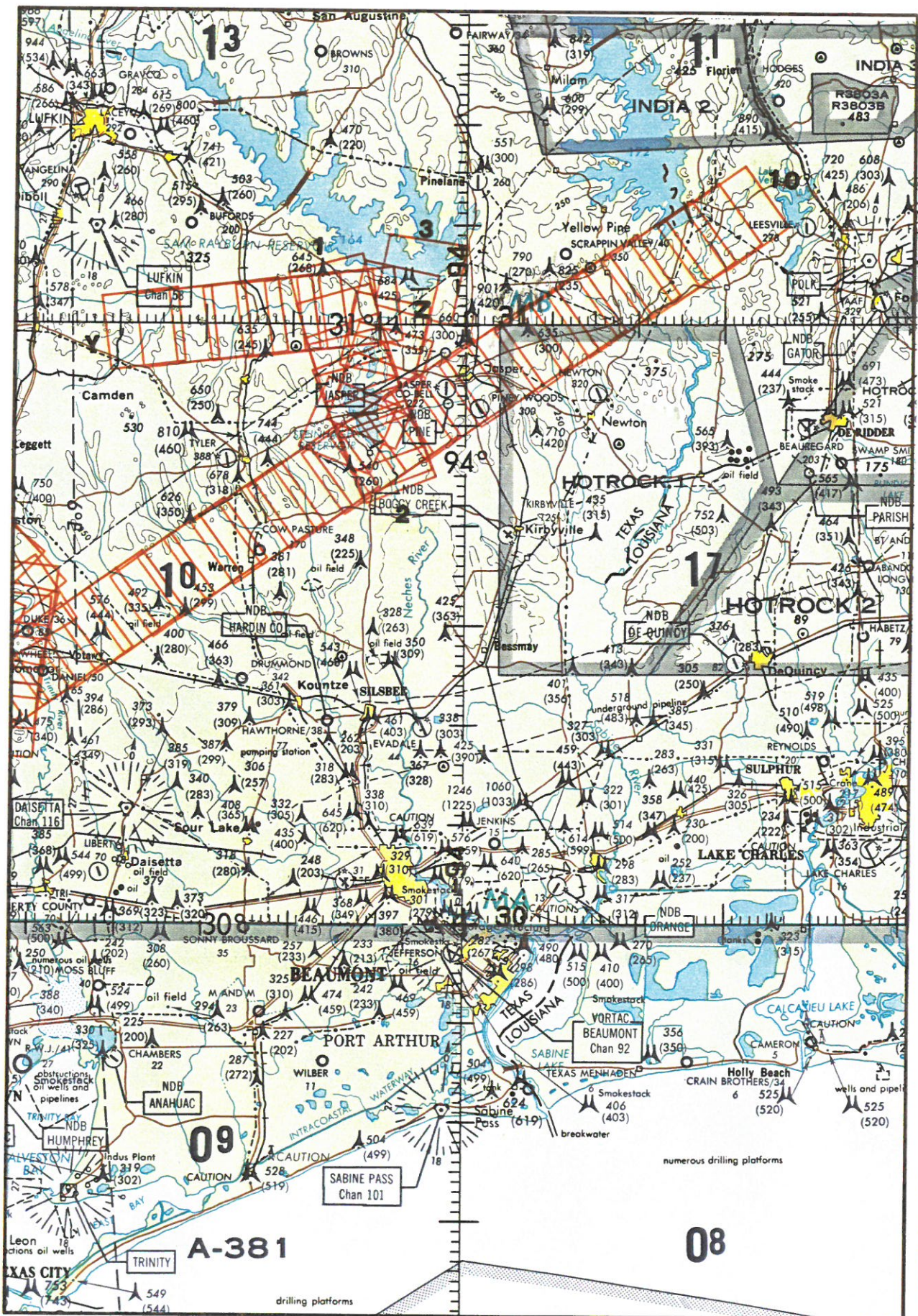
Accession # 03976

RC-10

A/C 709

4 December 1969

FLIGHT 90-027



CNC H-24

Accession # 03976

RC-10

A/C 709

4 December 1989

FLIGHT 90-027