

FLIGHT SUMMARY REPORT

Flight #: 92-124
Date: 18 June 1992
Sensor Package: Thematic Mapper Simulator (TMS)
Dual HR-732
Area(s) Covered: Eastern Seaboard

Investigator(s): Handley, USFWS

Aircraft #: 708

Flight Request: 2RZ2037

Julian Date: 170

SENSOR DATA

Accession #:	-----	04408	04409
Sensor ID #:	074	018	019
Sensor Type:	TMS	HR-732	HR-732
Focal Length:	-----	24" 609.6 mm	24" 609.6 mm
Film Type:	-----	High Definition Aerochrome IR SO-131	High Definition Aerochrome IR SO-131
Filtration:	-----	cc.20B	cc.20B
Spectral Band:	-----	510-900 nm	510-900 nm
f Stop:	-----	8	8
Shutter Speed:	-----	1/75	1/75
# of Frames:	-----	369	184
% Overlap:	-----	60	60
Quality:	Excellent	Excellent	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 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 or FTS 464-6252.

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. 92-124

Accession # 04408

Sensor # 018

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0012	15:16:41	15:19:13	65000/19800	Clear
C - D	0013-0051	15:23:28	15:32:11	"	10% minor cumulus (frames 0013-0014)
E - F	0052-0065	15:36:55	15:39:53	"	Clear
G - H	0066-0089	15:46:27	15:51:41	"	Clear
I - D	0090-0103	16:18:08	16:21:04	"	10% minor cumulus (frames 0090-0093)
C - B	0104-0120	16:30:52	16:34:29	"	10% minor cumulus (frames 0104-0105)
J - K	0121-0145	16:39:14	16:44:40	"	10% cumulus (frames 0123-0137, 0141-0145)
L - M	0146-0154	16:47:53	16:49:42	"	Clear
N - O	0155-0162	16:56:02	16:57:37	"	10-20% cumulus (frames 0155-0158)
P - Q	0163-0187	17:00:08	17:05:34	"	10% thin cirrus (frames 0165-0176)

**CAMERA FLIGHT LINE DATA
FLIGHT NO. 92-124**

Accession # 04408

Sensor # 018

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
R - S	0188-0205	17:19:07	17:22:58	65000/19800	Clear
T - U	0206-0225	17:26:26	17:30:44	"	Clear
V - W	0226-0248	17:33:54	17:38:53	"	Clear; smeared due to turbulence (frame 0215)
X - Y	0249-0264	17:46:51	17:50:15	"	Clear
Z - 1	0265-0284	17:52:02	17:56:20	"	Clear
2 - 3	0285-0290	18:00:22	18:01:30	"	10% thin cirrus (frames 0285-0290)
1	0291	18:07:05	-----	"	10% thin cirrus
4 - 5	0292-0303	18:08:16	18:10:46	"	10% thin cirrus (frames 0292-0294)
6 - 7	0304-0323	18:12:33	18:16:51	"	Clear
8 - 9	0324-0353	18:20:16	18:26:51	"	Clear
10 - 11	0354-0369	18:30:29	18:33:53	"	Clear; step wedge overprinted (frames 0367-0368; short due to end of film (frame 0369))

CAMERA FLIGHT LINE DATA
FLIGHT NO. 92-124

Accession # 04409

Sensor # 019

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
11 - 12	0001-0014	18:39:06	18:42:03	65000/19800	Clear
13 - 14	0015-0022	18:45:20	18:46:55	"	Clear
15 - 16	0023-0026	18:47:58	18:48:39	"	Clear
17 - 18	0027-0065	18:52:02	19:00:39	"	Clear; oblique (frame 0048)
18 - 19	0066-0104	19:02:03	19:10:40	"	Clear; blurred due to roll during exposure (frame 0082)
20 - 21	0105-0111	19:19:30	19:20:51	"	Clear
22 - 23	0112-0117	19:25:26	19:26:33	"	Clear
24 - 25	0118-0141	19:30:20	19:35:32	"	10-20% cumulus (frames 0118-0125; 10% cumulus (frames 0127-0131)
17 - 26	0412-0179	19:43:55	19:52:17	"	Clear
26 - N	0180-0184	19:53:58	19:54:54	"	Clear; step wedge overprinted (frame 0184)

TMS SCANNER FLIGHT LINE DATA

FLIGHT NO. 92-124

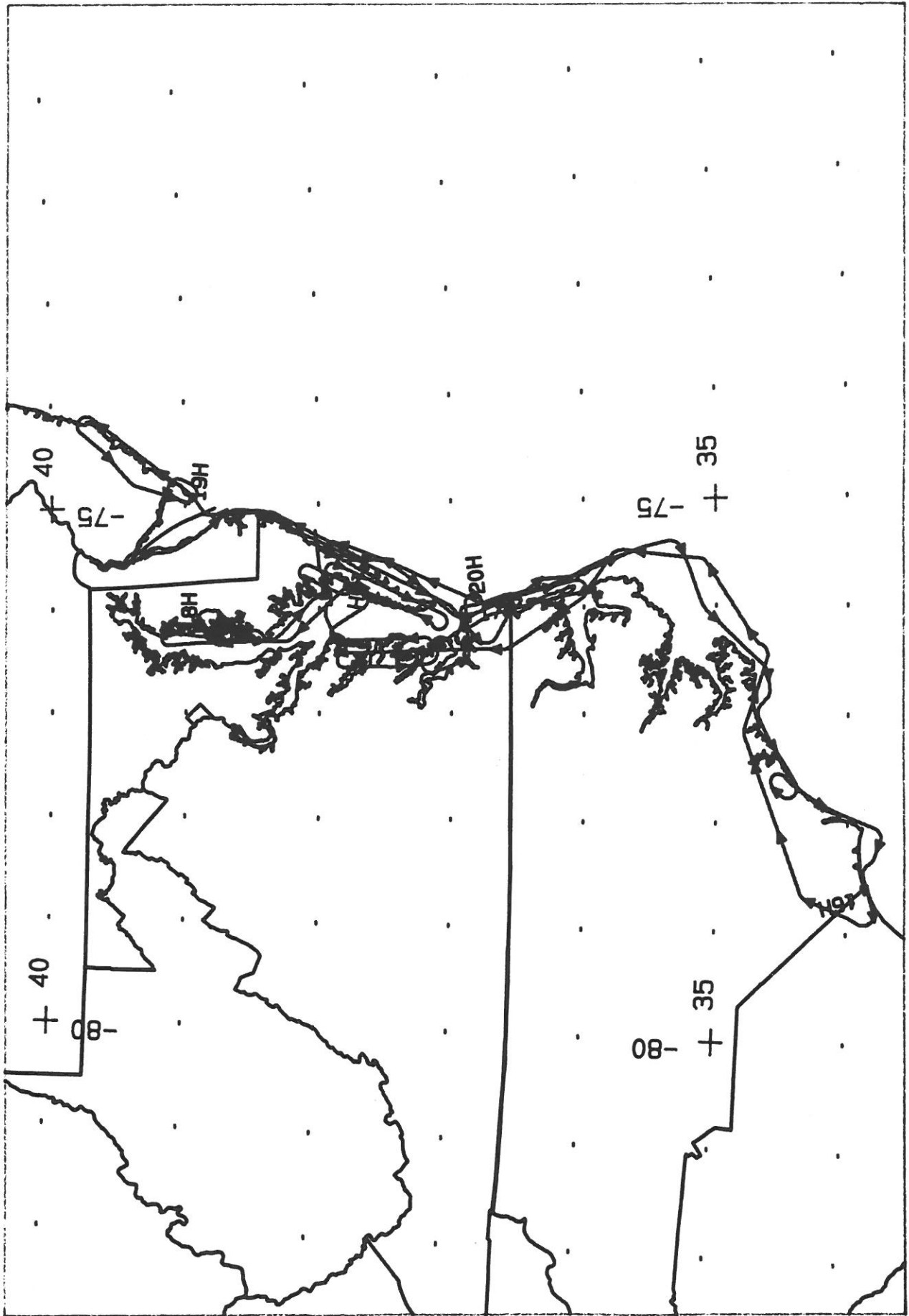
DAEDALUS FLIGHT DATA
FLIGHT NUMBER: 92-124

Check Points	Actual time (GMT) begin	Actual scanline begin	Altitude feet/meter	Scan Speed (fps)	total Good scanlines	total Interpolated scanlines	total Repeated scanlines
A-B	15:20:19.0	24368	65000/19812	12.50	1957	1	3
C-D	15:26:57.0	29476	65000/19812	12.50	6533	0	9
E-F	15:40:24.0	39565	65000/19812	12.50	2341	0	0
G-H	15:49:56.0	46712	65000/19812	12.50	3457	0	2
I-D	16:21:38.0	70481	65000/19812	12.50	2014	0	6
C-B	16:34:22.0	80037	65000/19812	12.50	2624	0	7
J-K	16:42:44.0	86310	65000/19812	12.50	4028	0	7
L-M	16:51:23.0	92793	65000/19812	12.50	1277	0	0
N-O	16:57:32.0	93911	65000/19812	12.50	1255	0	0
P-Q	17:03:38.0	101982	65000/19812	12.50	3750	0	0
R-S	17:22:49.0	116227	65000/19812	12.50	2735	0	2
T-U	17:29:56.0	121705	65000/19812	12.50	3185	0	7
V-W	17:37:24.0	127305	65000/19812	12.50	5532	0	9
X-Y	17:50:21.0	137019	65000/19812	12.50	2476	0	6

TMS SCANNER FLIGHT LINE DATA
FLIGHT NO. 92-124 continued

DAEDALUS FLIGHT DATA
 FLIGHT NUMBLK: 92-124

Check Points	A c t u a l t i m e (GH)	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 (rps)	t o t a l G 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
Z-1	17:55:33.0	17:59:44.0 140917 144052	65000/19812	12.50	5134	0	2
2-3	18:03:52.0	18:04:48.0 147151 147855	65000/19812	12.50	705	0	0
4-5	18:11:47.0	18:14:10.0 153086 154384	65000/19812	12.50	1790	0	9
6-7	18:16:2.0	18:20:21.0 156264 159516	65000/19812	12.50	3253	0	0
8-9	18:23:47.0	18:30:12.0 162094 166905	65000/19812	12.50	4807	0	5
10-12	18:34:0.0	18:40:47.0 169748 174846	65000/19812	12.50	5067	0	12
13-14	18:44:4.0	18:45:56.0 177307 178431	65000/19812	12.50	1145	0	0
17-18	18:50:47.0	18:59:26.0 182340 188630	65000/19812	12.50	6480	0	11
18-19	19:00:47.0	19:09:9.0 189846 196112	65000/19812	12.50	6248	0	19
20-21	19:18:14.0	19:19:33.0 202932 203919	65000/19812	12.50	963	0	5
22-23	19:24:10.0	19:25:11.0 207377 208144	65000/19812	12.50	765	0	3
24-25	19:29:5.0	19:34:0.0 211061 214753	65000/19812	12.50	3693	0	0
17-26	19:42:39.0	19:50:5.0 221239 226735	65000/19812	12.50	5545	0	2

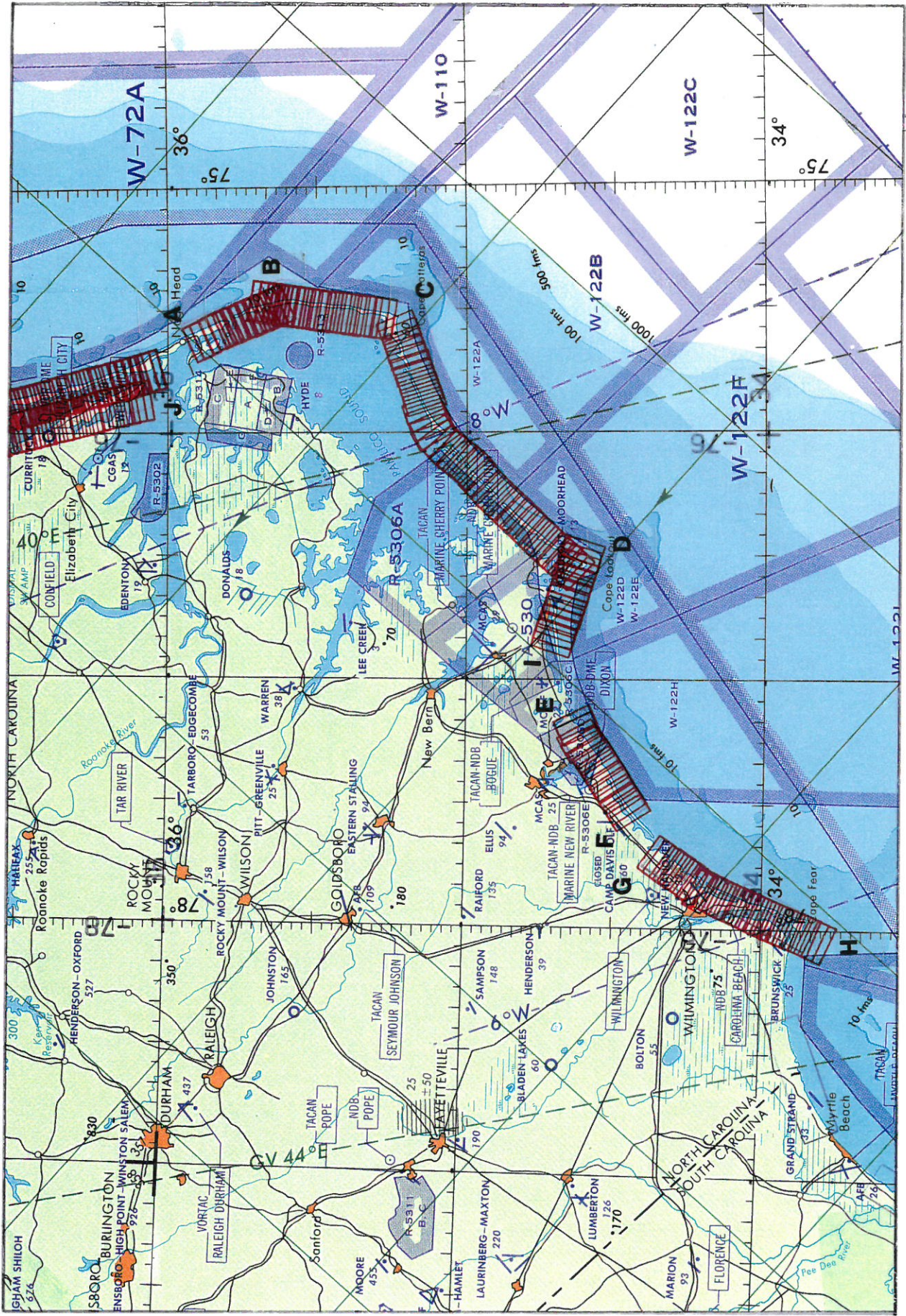


FLIGHT 92-124

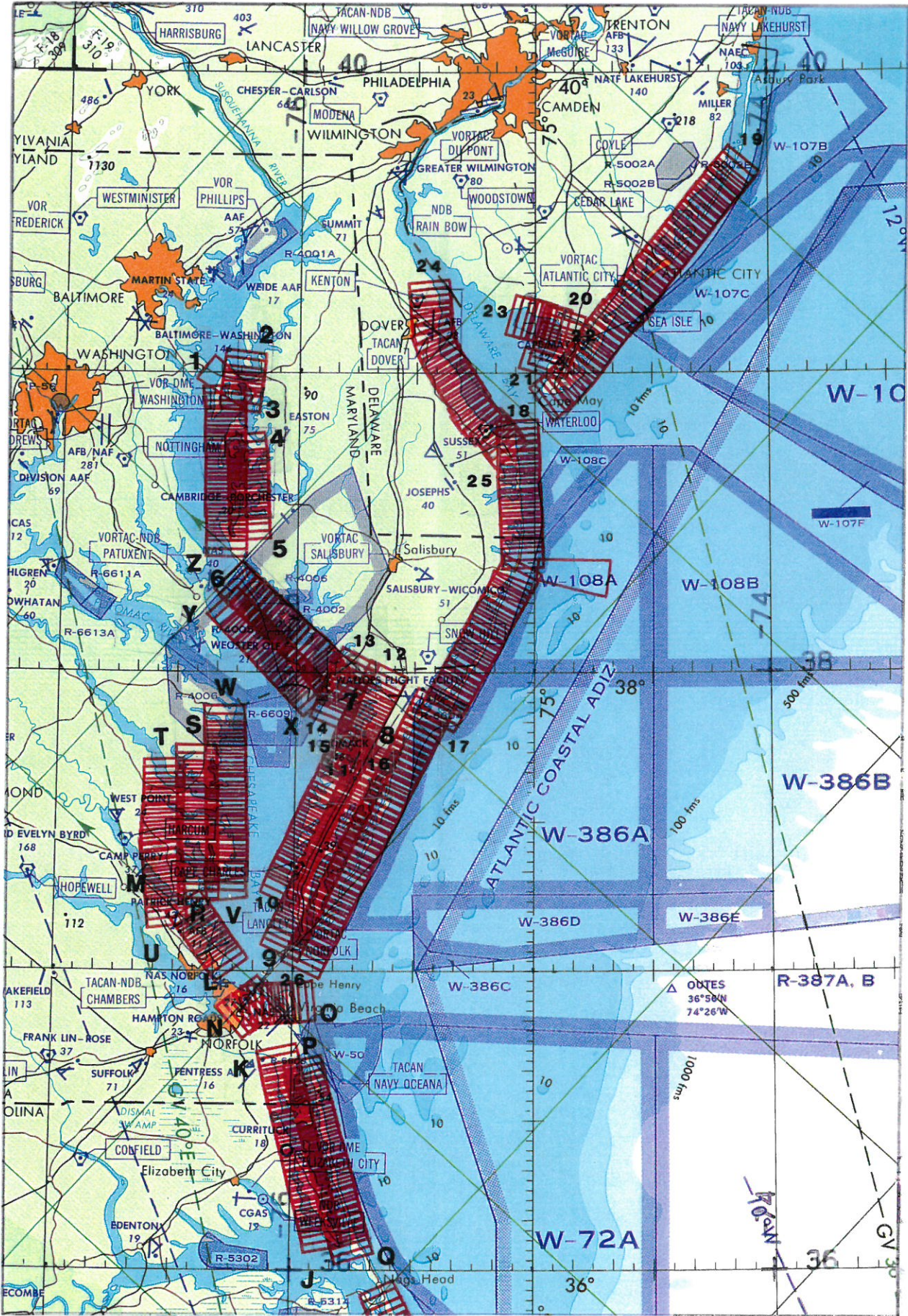
18 June 1992

A/C 708

Dua1 HR-732 / TMS



FLIGHT 92-124 18 June 1992 A/C 708 Dual HF-732 Accession # 04408 & 04409 JNC 45



F. 5417 32-124
 18 June 1965
 A/C 708
 Dual #4-752
 Accession # 04408 & 04409
 JNC 45