

FLIGHT SUMMARY REPORT

Flight #: 90-041
Date: 17 January 1990
Sensor Package: Wild-Heerbrug RC-10
 Dual Hycon HR-732
 Thematic Mapper Simulator (TMS)
Area(s) Covered: Eastern seaboard
 Florida to Virginia

Investigator(s): Patterson, University of Virginia **Aircraft #:** 709
Flight Request: 89R247 **Julian Date:** 017

SENSOR DATA

Accession #:	03989	03990	03991	----
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	High Definition Aerochrome IR SO-131	Panatomic-X Aerographic EK 3400	----
Filtration:	cc .10B	cc .30B	Wratten-12	----
Spectral Band:	510-900 nm	510-900 nm	510-700 nm	----
f Stop:	4	8	8	----
Shutter Speed:	1/150	1/75	1/75	----
# of Frames:	183	333	241	----
% Overlap:	60	60	60	----
Quality:	Excellent	Good	Excellent	----
Remarks:		1/2 stop under- exposed	Ran out of film	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. 90-041

Accession # 03989

Sensor # 076

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	1476-1487	15:51:55	15:57:11	65000/19800	Clear
C - D	1488-1500	16:04:59	16:10:34	"	Minor cumulus (frames 1499-1500)
E - F	1501-1537	16:31:29	16:47:18	"	10-20% cirro cumulus (frames 1501-1502); 10-70% cirro cumulus (frames 1506-1514)
G - H	1538-1543	16:56:28	16:58:52	"	Clear
I - J	1544-1553	17:05:19	17:09:09	"	Clear
K - L	1554-1558	17:19:16	17:21:10	"	Clear
M - N	1559-1581	17:27:51	17:37:54	"	Clear
O - P	1582-1620	17:44:34	18:00:36	"	Clear; film transported without exposure (frame 1608); smoke obscuration (frames 1612-1614)
Q - R	1621-1625	18:04:51	18:06:45	"	Clear

CAMERA FLIGHT LINE DATA
FLIGHT NO. 90-041

Accession # 03989

Sensor # 076

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
S - T	1626-1644	18:22:11	18:30:49	65000/19800	Clear
U - V	1645-1659	18:41:41	18:47:55	"	Clear

CAMERA FLIGHT LINE DATA
FLIGHT NO. 90-041

Accession No. 03990

Sensor # 018

Page 1/2

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0004	15:50:51	15:51:35	65000/19800	Clear; exposed -- inadequate film transport (frames 0005-0008)
C - D	0009-0032	16:04:11	16:09:34	"	Clear
E - F	0033-0102	16:30:26	16:46:28	"	10% cirro cumulus (frames 0033-0035); 10-90% cirro cumulus (frames 0043-0058)
G - H	0103-0114	16:55:25	16:58:05	"	Clear
I - J	0115-0133	17:04:16	17:08:23	"	Clear
K - L	0134-0143	17:18:13	17:20:23	"	Clear
M - N	0144-0189	17:26:48	17:36:57	"	Clear
O - P	0190-0258	17:43:31	17:59:30	"	Clear
Q - R	0259-0268	18:03:47	18:05:58	"	Clear

CAMERA FLIGHT LINE DATA
FLIGHT NO. 90-041

Accession # 03990

Sensor # 018

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
S - T	0269-0305	18:21:08	18:29:50	65000/19800	Clear
U - V	0306-0333	18:40:38	18:46:59	"	Clear

CAMERA FLIGHT LINE DATA
FLIGHT NO. 90-041

Accession No. 03991

Sensor # 019

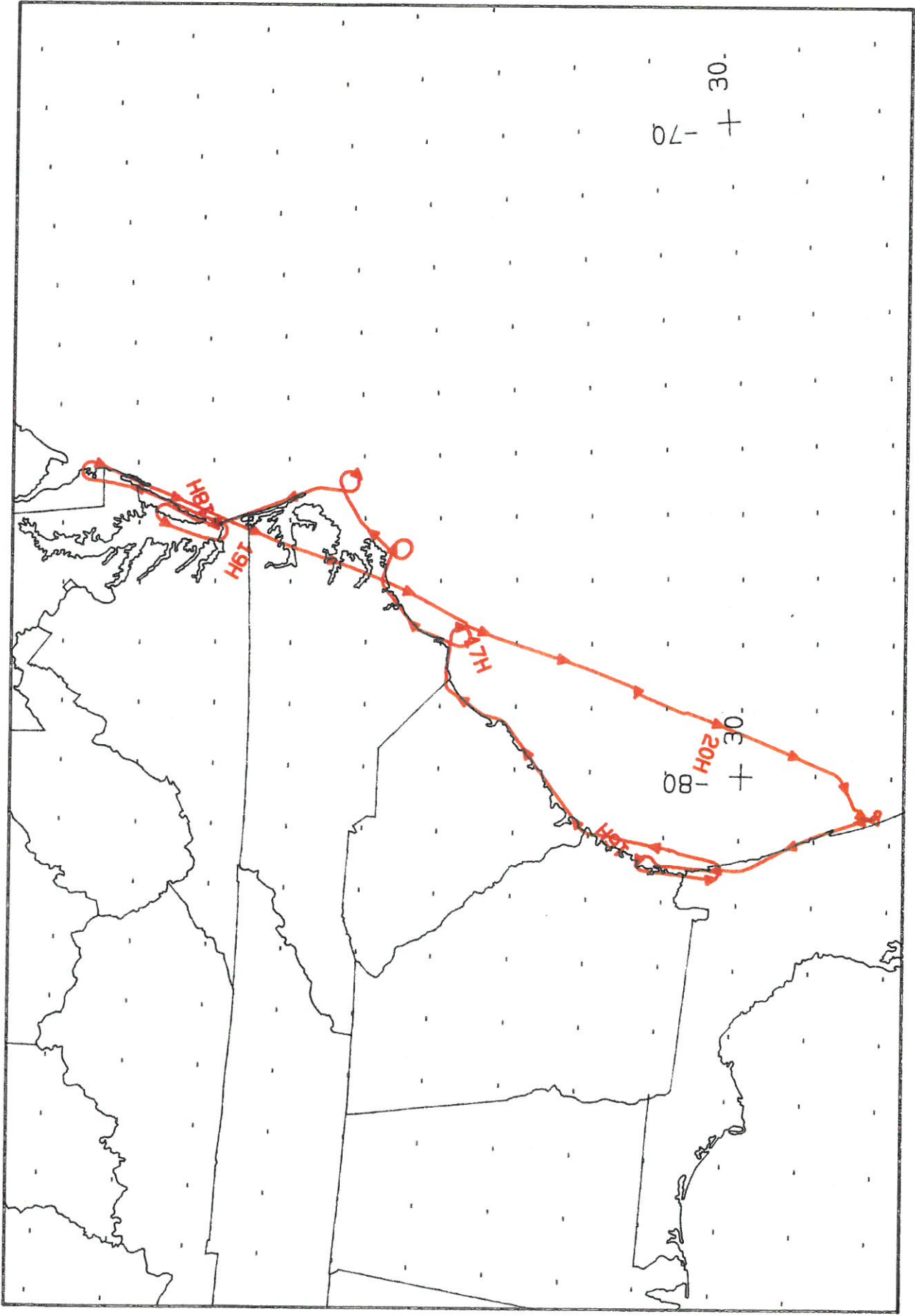
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0023	15:51:12	15:56:38	65000/19800	Clear
C - D	0024-0048	16:04:18	16:09:55	"	10% minor cumulus (frame 0048)
E - F	0049-0118	16:30:47	16:46:49	"	10% cirro cumulus (frames 0049-0052); 10-100% cirro cumulus (frames 0059-0074)
G - H	0119-0130	16:55:47	16:58:27	"	Clear
I - J	0131-0149	17:04:30	17:08:44	"	Clear
K - L	0150-0159	17:18:39	17:20:45	"	Clear
M - N	0160-0205	17:27:09	17:37:19	"	Clear
O - P	0206-0241	17:43:52	17:51:51	"	Clear

SCANNER FLIGHT LINE DATA

FLIGHT NO. 90-041

DAEDALUS FLIGHT DATA
FLIGHT NUMBER: 90-041

Check Points	Act u a l t i m e b e g i n	(GMT) e n d	A c t u a l s c a n l i n e b e g i n	e n d	Altitude feet/meter	Scan Speed (rps)	total G o o d s c a n l i n e s	total I n t e r p o l a t e d s c a n l i n e s	total R e p e a t e d s c a n l i n e s
A-B	15:51:1.0	15:56:38.0	29019	33231	65000/19812	12.50	4203	0	10
C-D	16:04:7.0	16:09:53.0	38049	43172	65000/19812	12.50	4308	0	16
E-F	16:30:37.0	16:46:52.0	58726	70906	65000/19812	12.50	12126	0	55
G-H	16:15:37.0	16:18:29.0	77473	79620	65000/19812	12.50	2145	0	3
I-J	16:24:20.0	16:28:42.0	84107	87202	65000/19812	12.50	3166	0	10
K-L	16:30:25.0	16:40:40.0	94570	96356	65000/19812	12.50	1779	0	8
M-N	16:47:0.0	16:57:15.0	101007	108703	65000/19812	12.50	7675	0	22
O-P	17:03:43.0	17:19:58.0	113544	125739	65000/19812	12.50	12133	0	63
Q-R	17:24:0.0	17:26:20.0	120754	130514	65000/19812	12.50	1755	0	6
S-T	17:41:20.0	17:50:13.0	141755	148416	65000/19812	12.50	6640	0	14
U-V	18:00:50.0	18:01:58.0	156382	157236	65000/19812	12.50	846	0	9
W-X	18:03:27.0	18:07:06.0	158351	161080	65000/19812	12.50	2724	0	6

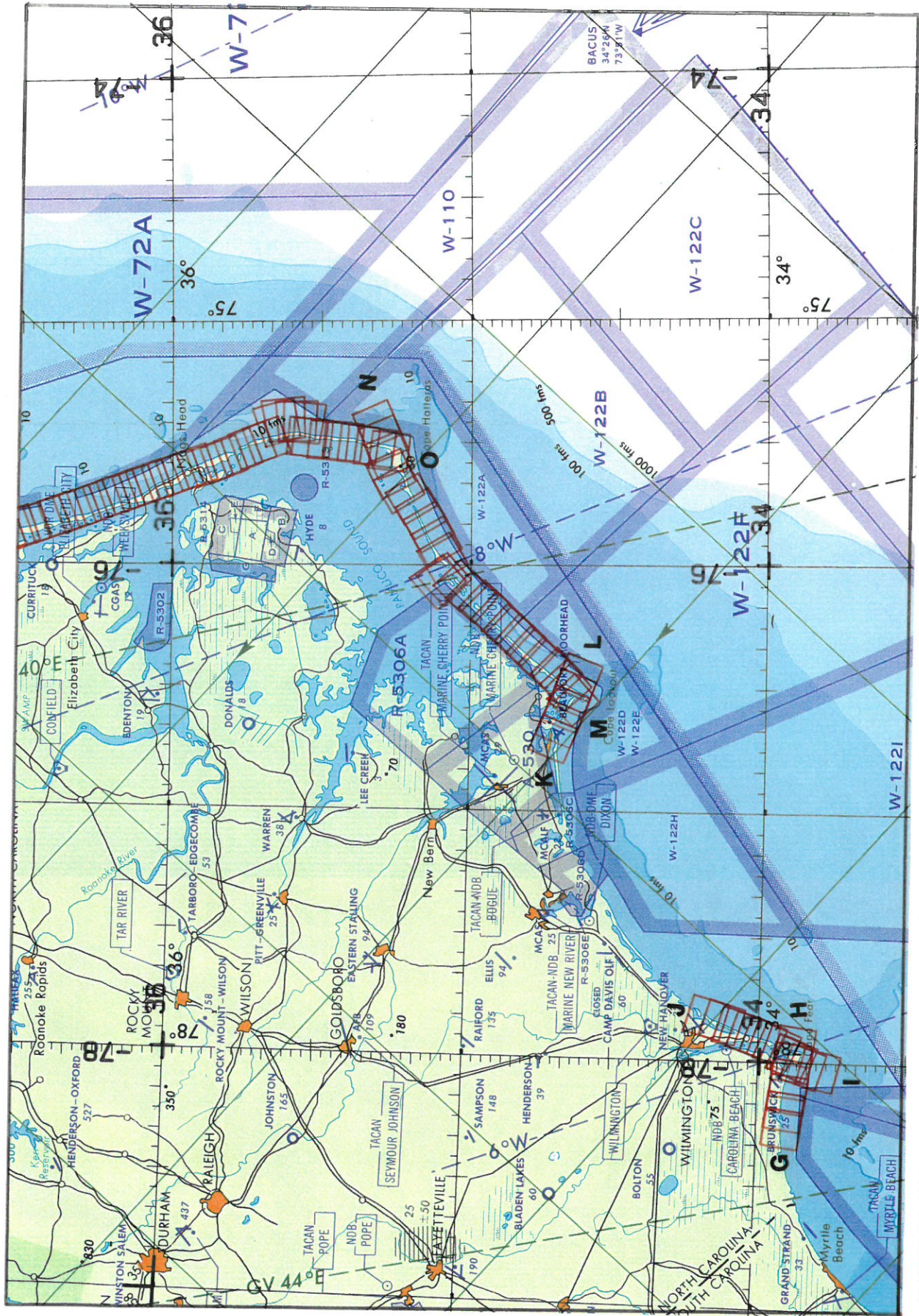


FLIGHT 90-041

17 January 1990

A/C 709

RC-10 / Dual HR-732 / TMS



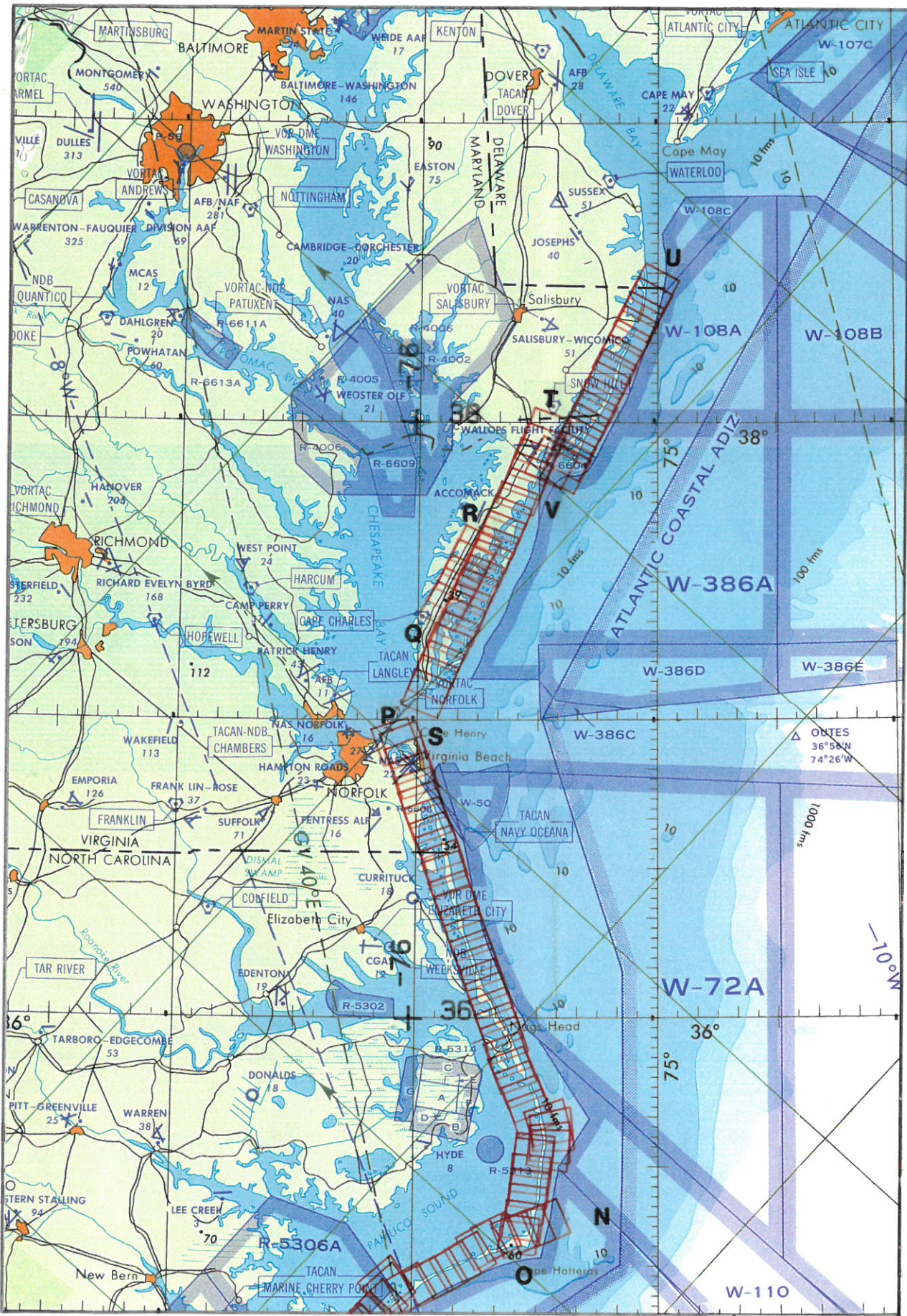
FLIGHT 90-041

17 January 1990

A/C 709

RC-10 / DUAL HR-792 / TMS

JNC 45



JNC 45

RC-10 / DUAL HR-752 / TMS

A/C 709

17 January 1990

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