FLIGHT SUMMARY REPORT

Flight Number: 93-016

Calendar/Julian Date: 14 November 1992 • 319

Sensor Package: Wild-Heerbrug RC-10
Dual Hycon HR-732
Aerosol Particulate Sampler (APS)

Area(s) Covered: Florida's Gulf Coast and Central Mississippi

Investigator(s): Handley, USFWS

Aircraft #: 708

SENSOR DATA

Accession #:	04502	04503	04504
Sensor ID #:	026	038	039
Sensor Type:	RC-10	HR-732	HR-732
Focal Length:	12" 304.97 mm	24" 609.6 mm	24" 609.6 mm
Film Type:	High Definition Aerochrome IR SO-131	High Definition Aerochrome IR SO-131	High Definition Aerochrome IR SO-131
Filtration:	cc.10B	cc.10B	cc.10B
Spectral Band:	510-900 nm	510-900 nm	510-900 nm
f Stop:	4	8	8
Shutter Speed:	1/125	1/75	1/75
# of Frames:	480	109	4
% Overlap:	60	60	60
Quality:	Excellent	Excellent	Excellent
Remarks:	15.5 sec. offset between camera and navigation data	15.1 sec. offset between camera and navigation data	8.4 sec. offset between camera and navigation data

93-016

SENSOR DATA continued

Accession #:	-----
Sensor ID #:	024
Sensor Type:	APS
Focal Length:	-----
Film Type:	-----
Filtration:	-----
Spectral Band:	-----
f Stop:	-----
Shutter Speed:	-----
# of Frames:	-----
% Overlap:	-----
Quality:	-----
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 sensors and camera system(s) used for data collection during this flight.

Aerosol Particulate Sampler

The Aerosol Particulate Sampler (APS) has been developed and is operated by Dr. Guy Ferry of the NASA-Ames Research Experiments Branch. The sampler is a non-imaging sensor designed to gather high altitude dust particles for laboratory research.

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. 93-016

Accession # 04502

Sensor # 026

Check Points	Frame Numbers	Time (GMT-hr, min, sec) START	Time (GMT-hr, min, sec) END	Altitude, MSL feet/meters	Cloud Cover/Remarks
A - B	4038-4043	15:42:22	15:44:46	65000/19800	Minor-30% cirrus; oblique (frame 4043)
C - D	4044-4053	15:48:10	15:52:00	"	10-30% cirrus; oblique (frame 4053)
D - E	4054-4061	15:52:18	15:54:52	"	10-30% cirrus; oblique (frames 4055 and 4061)
E - F	4062-4082	15:55:09	16:04:27	"	Minor-50% cirrus
G - H	4083-4089	16:07:15	16:10:07	"	Minor-20% cirrus
I - J	4090-4177	16:21:24	17:02:11	"	10-50% cirrus (frames 4090-4093); 10-20% cirrus (frames 4166-4168); 10-40% strato-cumulus (frames 4173-4177)
K - L	4178-4263	17:06:27	17:46:38	"	10-30% cirrus (frames 4181-4187); very thin cirrus (frames 4255-4257)
M - N	4264-4293	17:50:07	18:03:49	"	Thin cirrus (frames 4269-4271)

CAMERA FLIGHT LINE DATA
FLIGHT NO. 93-016

Accession # 04502

Sensor # 026

Check Points	Frame Numbers	Time (GMT-hr, min, sec) START	Time (GMT-hr, min, sec) END	Altitude, MSL feet/meters	Cloud Cover/Remarks
O - P	4294-4324	18:07:44	18:21:52	65000/19800	Thin cirrus (frames 4320-4321)
Q - R	4325-4353	18:25:56	18:39:08	"	10-20% cirrus (frames 4327-4328)
S - T	4354-4381	18:42:33	18:55:17	"	Clear
U - V	4382-4411	18:59:08	19:12:23	"	Very minor cirrus (frame 4386)
W - I	4412-4526	19:22:50	19:29:25	"	Clear
X - Y	4427-4513	19:33:11	20:13:40	"	Clear
Z - 1	4514-4517	20:19:03	20:20:27	"	Clear
APS -- Sensor # 024					
	-------	15:48:00	21:00:00	65000/19800	

CAMERA FLIGHT LINE DATA
FLIGHT NO. 93-016

Accession # 04503

Sensor # 038

Check Points	Frame Numbers	Time (GMT-hr, min, sec) START	Time (GMT-hr, min, sec) END	Altitude, MSL feet/meters	Cloud Cover/Remarks
A - B	0001-0012	15:41:45	15:44:16	65000/19800	10% cirrus (frame 0001); 10-30% cirrus (frames 0007-0012); oblique (frames 0011-0012)
C - D	0013-0030	15:47:40	15:51:33	"	10-40% cirrus; oblique (frame 0030)
D - E	0031-0044	15:51:47	15:54:18	"	10-40% cirrus; soft (frames 0032 and 0044) oblique (frame 0044)
E - F	0045-0088	15:54:32	16:04:07	"	Minor-60% cirrus
G - H	0089-0102	16:06:45	16:09:43	"	Minor-30% cirrus (frames 0092-0102)
Z - 1	0103-0109	20:18:45	20:20:07	"	Clear; light struck (frame 0109)

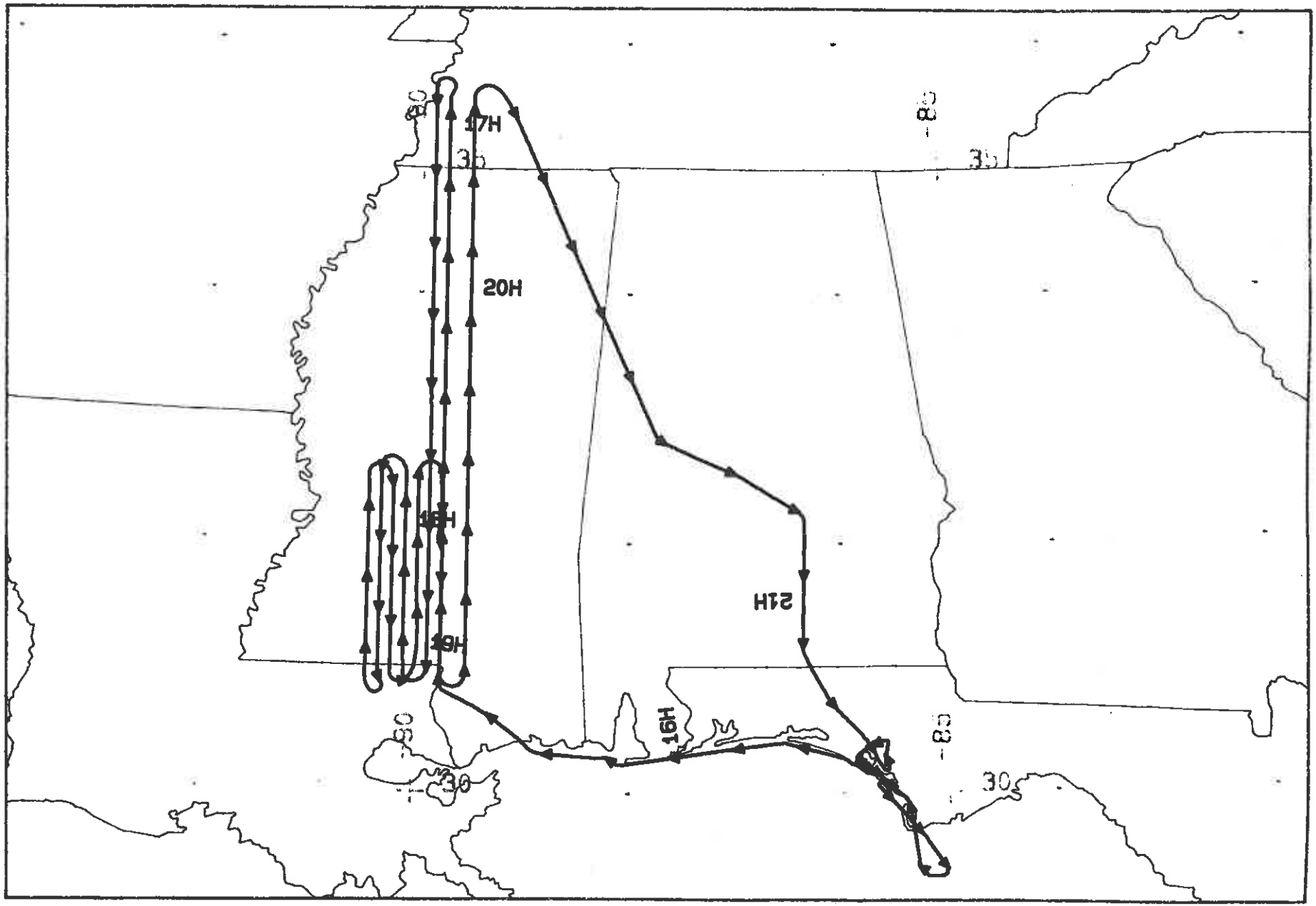
NOTE: 12 HOURS ADDED TO OBTAIN CORRECT GMT

CAMERA FLIGHT LINE DATA
FLIGHT NO. 93-016

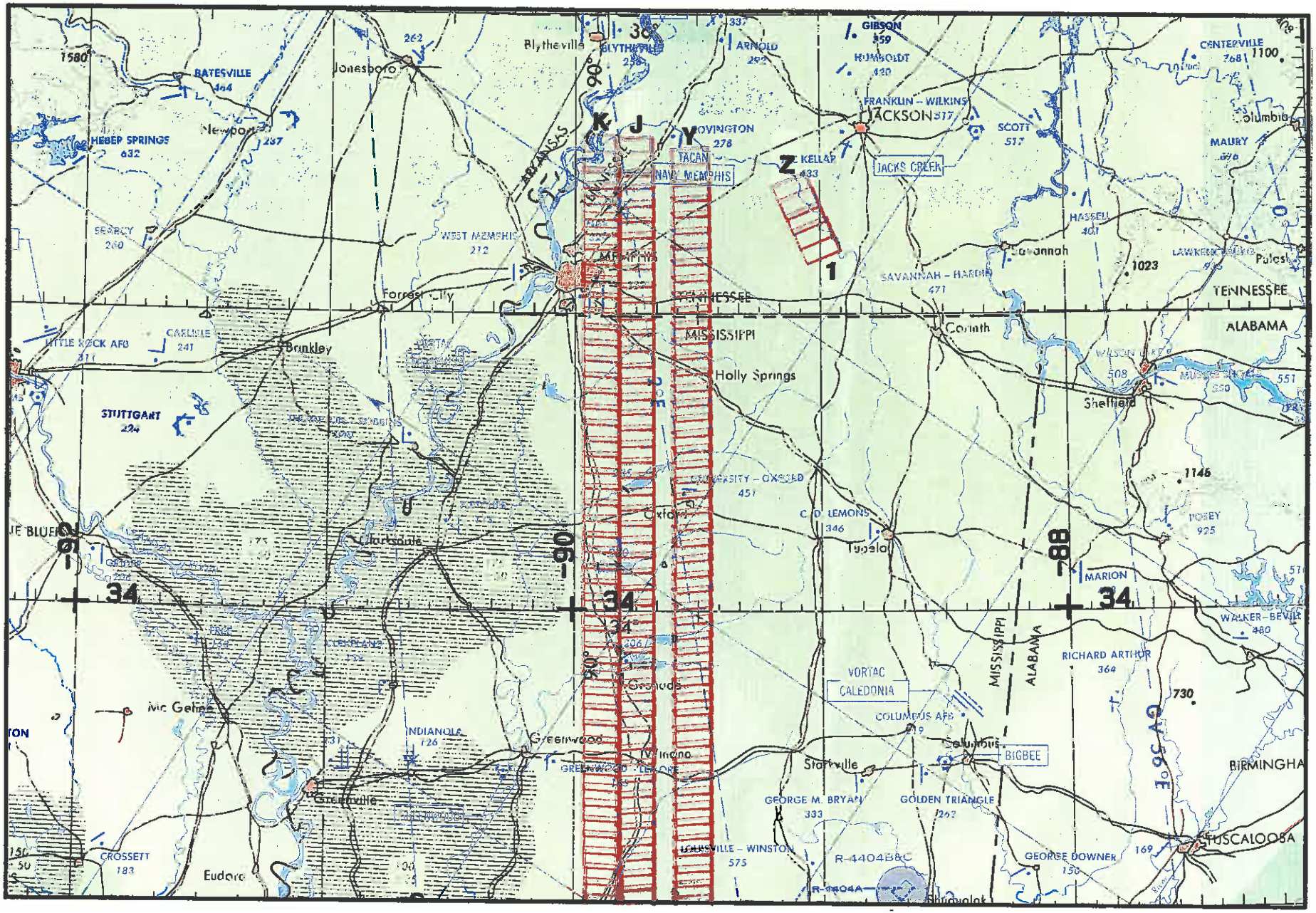
Accession # 04504

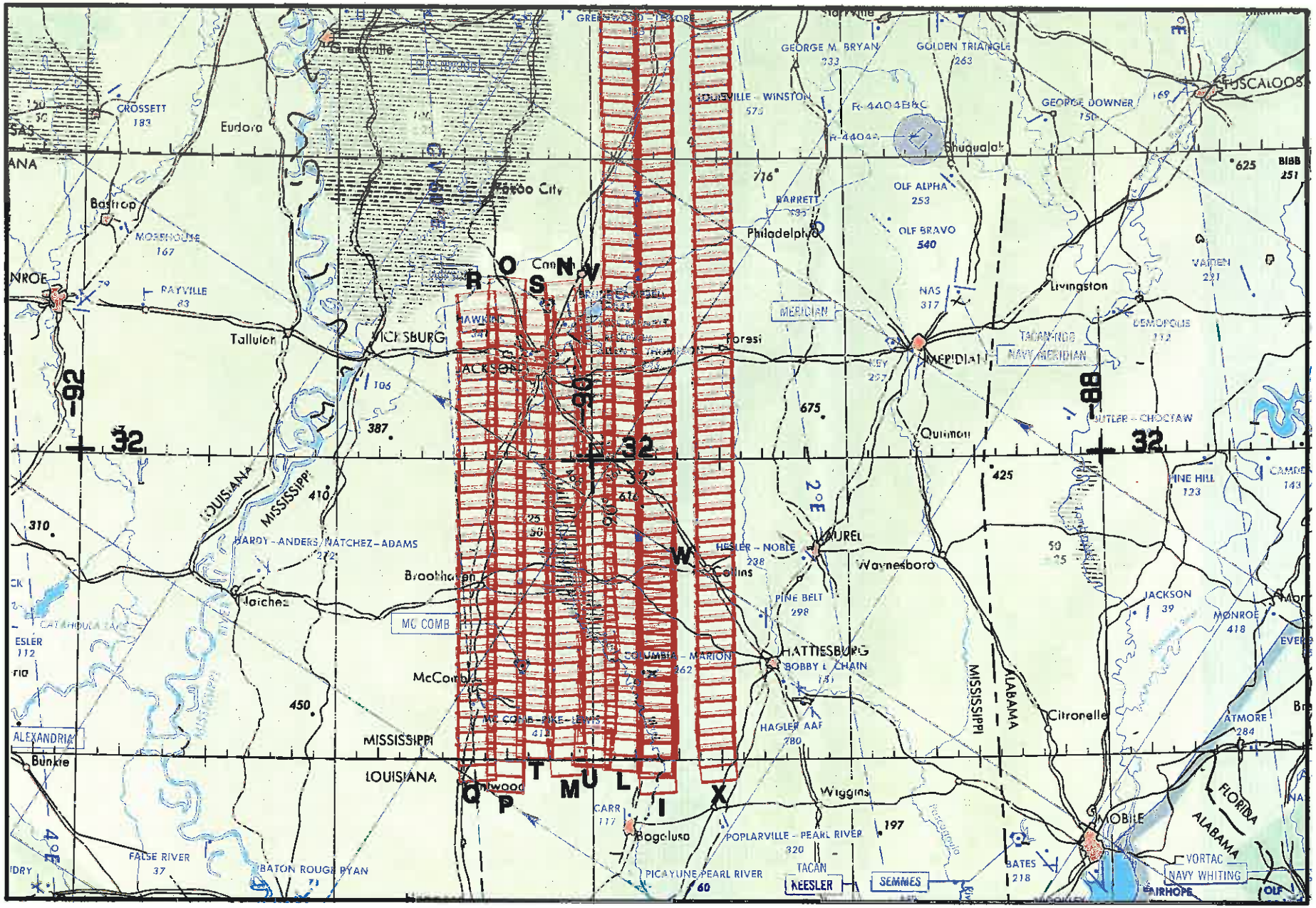
Sensor # 039

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
Z - 1	0001-0004	20:19:36	20:20:16	65000/19800	Clear

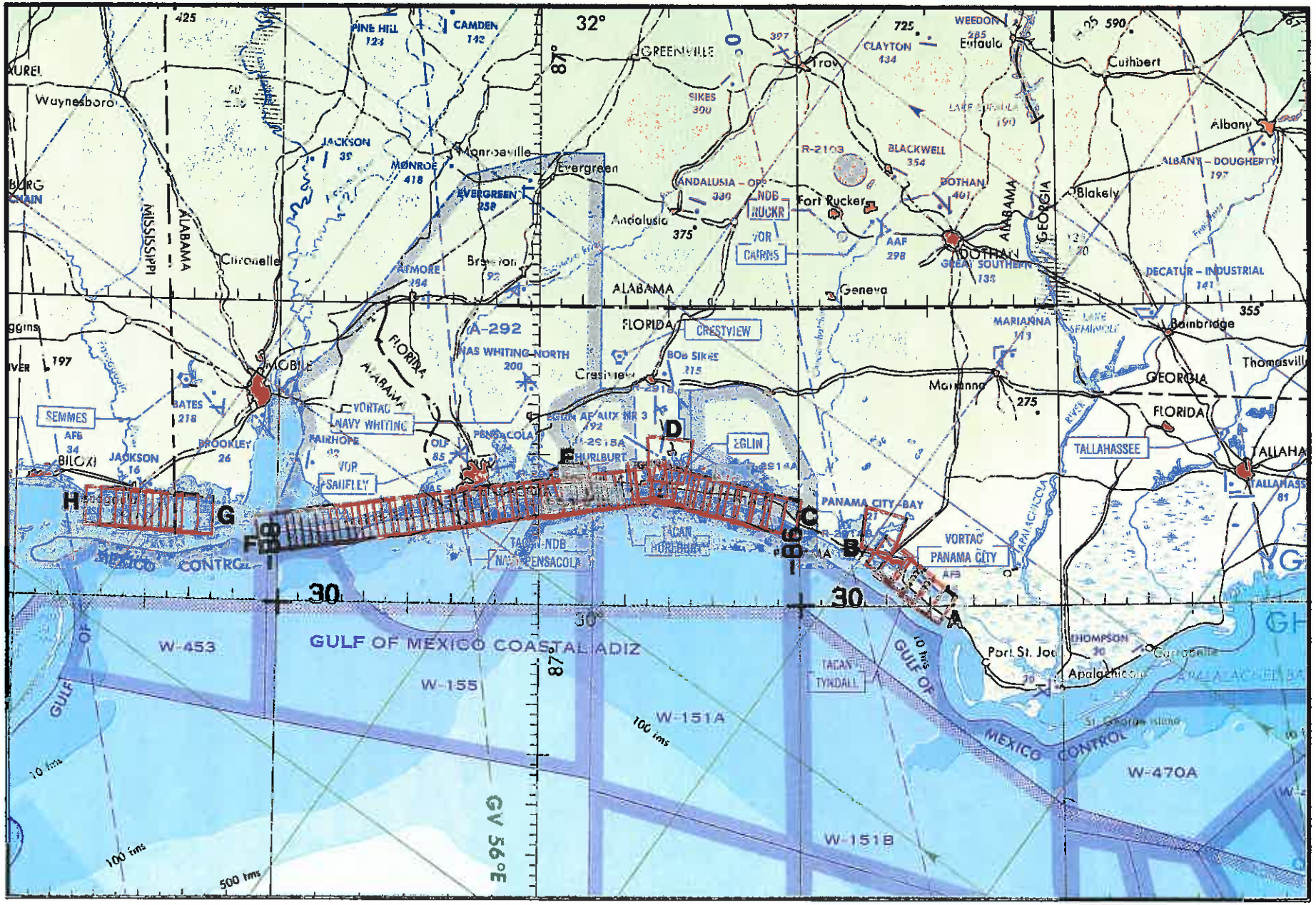


FLIGHT 93-016 14 NOVEMBER 1992 A/C 708 RC-10 / HR-732


Blytheville
Jonesboro
Newport
BATESVILLE
HEBER SPRINGS
632
WEST MEMPHIS
272
MEMPHIS
Forrest City
LITTLE ROCK AFB
CARLISLE
241
Brinkley
STUTTGART
224
Clarksdale
Oxford
Holly Springs
MISSISSIPPI
TENNESSEE
ARKANSAS
Corinth
ALABAMA
Sheffield
Tupelo
C D LEMONS
346
UNIVERSITY - OXFORD
451
Greenwood
Greenville
Mc Gehee
INDIANOLA
126
CROSSETT
183
Eudora
Starkville
COLUMBUS AFB
Columbus
BIGBEE
VORTAC
CALEDONIA
RICHARD ARTHUR
364
MARION
WALKER-BEVILL
480
GEORGE M. BRYAN
333
GOLDEN TRIANGLE
LOUISVILLE - WINSTON
575
R-4404B&C
R-4804A
GEORGE DOWNER
TUSCALOOSA
BIRMINGHA
JACKSON
FRANKLIN - WILKINS
JACKS CREEK
KELLAR
433
TACAN
NAV MEMPHIS
GIBSON
359
HUMBOLDT
420
ARNOLD
CENTEVILLE
7681
SCOTT
517
MAURY
HASSELL
401
SAVANNAH - HARDIN
471
Savannah
Pulask
1023
1146
POSEY
925
730
1100
1580
262
337
508
551
90°
88°
91°
34
K
J
Y
Z
1
3
FLIGHT 93-016
14 NOVEMBER 1992
A/C 708
RC-10 / DUAL HR732
JNC 44



FLIGHT 93-016 14 NOVEMBER 1992 A/C 708 RC-10 / DUAL HR732 JNC 44



FLIGHT 93-016 14 NOVEMBER 1992 A/C 708 RC-10 / DUAL HR732 JNC 44