FLIGHT SUMMARY REPORT

Flight Number: 95-051

Calendar/Julian Date: 24 January 1995 • 024

Sensor Package: Wild Heerbrugg RC-10
Dual Hycon HR-732
Modis Airborne Simulator (MAS)
Aerosol Particulate Sampler (APS)

Area(s) Covered: Louisiana

Investigator(s): Handley, USFWS;
Menzel, University of Wisconsin

Aircraft #: 706

SENSOR DATA

Accession #:	04863	04864	04865
Sensor ID #:	034	020	039
Sensor Type:	RC-10	HR-732	HR-732
Focal Length:	12" 304.66 mm	24" 609 mm	24" 609 mm
Film Type:	Aerochrome IR SO-060	Aerochrome IR SO-060	Aerochrome IR SO-060
Filtration:	Wratten 12	Wratten 12	Wratten 12
Spectral Band:	510-900 nm	510-900 nm	510-900 nm
f Stop:	8	11	11
Shutter Speed:	1/240	1/250	1/250
# of Frames:	519	462	125
% Overlap:	60	60	60
Quality:	Excellent	Excellent	Excellent

Remarks:

SENSOR DATA continued

Flight Number: 95-051

Accession #:	-----	-----
Sensor ID #:	108	024
Sensor Type:	MAS	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 sensor(s) and camera(s) used for data collection during this flight.

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-Heerbrugg 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

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.

Modis Airborne Simulator

The Modis Airborne Simulator (MAS) is a modified Daedalus multispectral scanner configured to replicate the capabilities of the Moderate-Resolution Imaging Spectrometer (MODIS), an instrument to be orbited on an EOS platform. MODIS is designed for the measurement of biological and physical processes and atmospheric temperature sounding. The Modis Airborne Simulator records fifty 12-bit channels of multispectral data and is configured as follows:

Spectral Channel	Band center (μm)	Bandwidth (μm)	Spectral Range
1	0.549	0.044	0.527-0.571
2	0.658	0.053	0.631-0.684
3	0.704	0.042	0.683-0.725
4	0.745	0.041	0.725-0.766
5	0.786	0.041	0.765-0.807
6	0.827	0.042	0.806-0.848
7	0.869	0.042	0.848-0.891
8	0.909	0.033	0.893-0.926
9	0.947	0.046	0.924-0.970
10	1.608	0.053	1.582-1.635
11	1.670	0.052	1.644-1.695
12	1.723	0.05	1.698-1.748
13	1.775	0.05	1.750-1.800
14	1.825	0.046	1.802-1.849
15	1.88	0.045	1.856-1.901
16	1.93	0.45	1.909-1.954
17	1.98	0.048	1.955-2.003
18	2.03	0.048	2.005-2.053
19	2.08	0.047	2.056-2.103
20	2.128	0.047	2.105-2.152
21	2.177	0.047	2.154-2.201
22	2.227	0.047	2.203-2.250
23	2.276	0.047	2.253-2.300
24	2.326	0.047	2.303-2.350
25	2.375	0.047	2.351-2.398

Spectral Channel	Band center (μm)	Bandwidth (μm)	Spectral Range
26	2.958	0.136	2.889-3.026
27	3.119	0.123	3.058-3.181
28	3.265	0.146	3.192-3.338
29	3.437	0.142	3.366-3.509
30	3.565	0.144	3.493-3.637
31	3.747	0.138	3.668-3.816
32	3.893	0.156	3.815-3.971
33	4.064	0.143	3.992-4.135
34	4.156	0.065	4.124-4.189
35	4.389	0.113	4.332-4.446
36	4.514	0.140	4.444-4.584
37	4.647	0.144	4.575-4.720
38	4.823	0.179	4.734-4.913
39	4.992	0.145	4.919-5.064
40	5.139	0.122	5.078-5.120
41	5.275	0.124	5.214-5.337
42	8.557	0.396	8.359-8.755
43	9.711	0.509	9.457-9.966
44	10.473	0.441	10.252-10.693
45	10.976	0.439	10.757-11.196
46	11.929	0.421	11.719-12.140
47	12.822	0.376	12.634-13.010
48	13.190	0.447	12.966-13.413
49	13.661	0.587	13.368-13.954
50	14.155	0.395	13.957-14.352

Sensor/Aircraft Parameters:

Spectral Bands:	50 (digitized to 16-bit resolution)
IFOV:	2.5 mrad
Ground Resolution:	163 feet (50 meter at 65,000 feet)
Swath Width:	22.9 mi/19.9 nmi (36 km)
Total Scan Angle:	85.92°
Pixels/Scan Line:	716
Scan Rate:	6.25 scans/second
Ground Speed:	400 kts (206 m/second)
Roll Correction:	Plus or minus 3.5 degrees (approx.)

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. 95-051

Accession # 04863

Sensor # 034

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	0541-0580	15:02:15	15:21:06	63212/19267	Clear
C - D	0581-0618	15:25:24	15:42:52	63592/19383	Clear; emulsion defects (frame 0582)
A - B	0619-0657	15:49:48	16:07:45	63772/19438	Clear
C - D	0658-0694	16:11:46	16:28:45	63924/19484	Clear
A - B	0695-0733	16:35:47	16:53:44	63956/19494	Clear
C - D	0734-0770	16:58:00	17:14:59	64073/19529	Clear; emulsion defects (frame 0738)
E - G	0771-0830	17:23:09	17:51:14	64995/19810	Clear
H - I	0831-0871	17:54:43	18:13:37	64617/19695	Smoke obstruction (frames 0858-0861); emulsion defect (frames 0856-0857)
J - K	0872-0907	18:18:35	18:35:05	65211/19876	Clear
L - M	0908-0915	18:39:07	18:42:06	64775/19743	Clear
N - O	0916-0949	18:57:31	19:13:03	65347/19918	Clear; processing residue (frame 0932)

CAMERA FLIGHT LINE DATA
FLIGHT NO. 95-051

Accession # 04863

Sensor # 034

Check Points	Frame Numbers	Time (GMT-hr, min, sec) START	Time (GMT-hr, min, sec) END	Altitude, MSL feet/meters	Cloud Cover/Remarks
P - Q	0950-0990	19:17:11	19:36:06	64510/19663	Clear
R - T	0991-1027	19:39:31	19:56:30	64968/19802	Very minor smoke (frames 1006-1007)
U - V	1028-1059	20:04:24	20:18:58	65316/19908	Thin cirrus (frames 1043-1046 and 1058); emulsion defect (frame 1030)

CAMERA FLIGHT LINE DATA
FLIGHT NO. 95-051

Accession # 04864

Sensor # 020

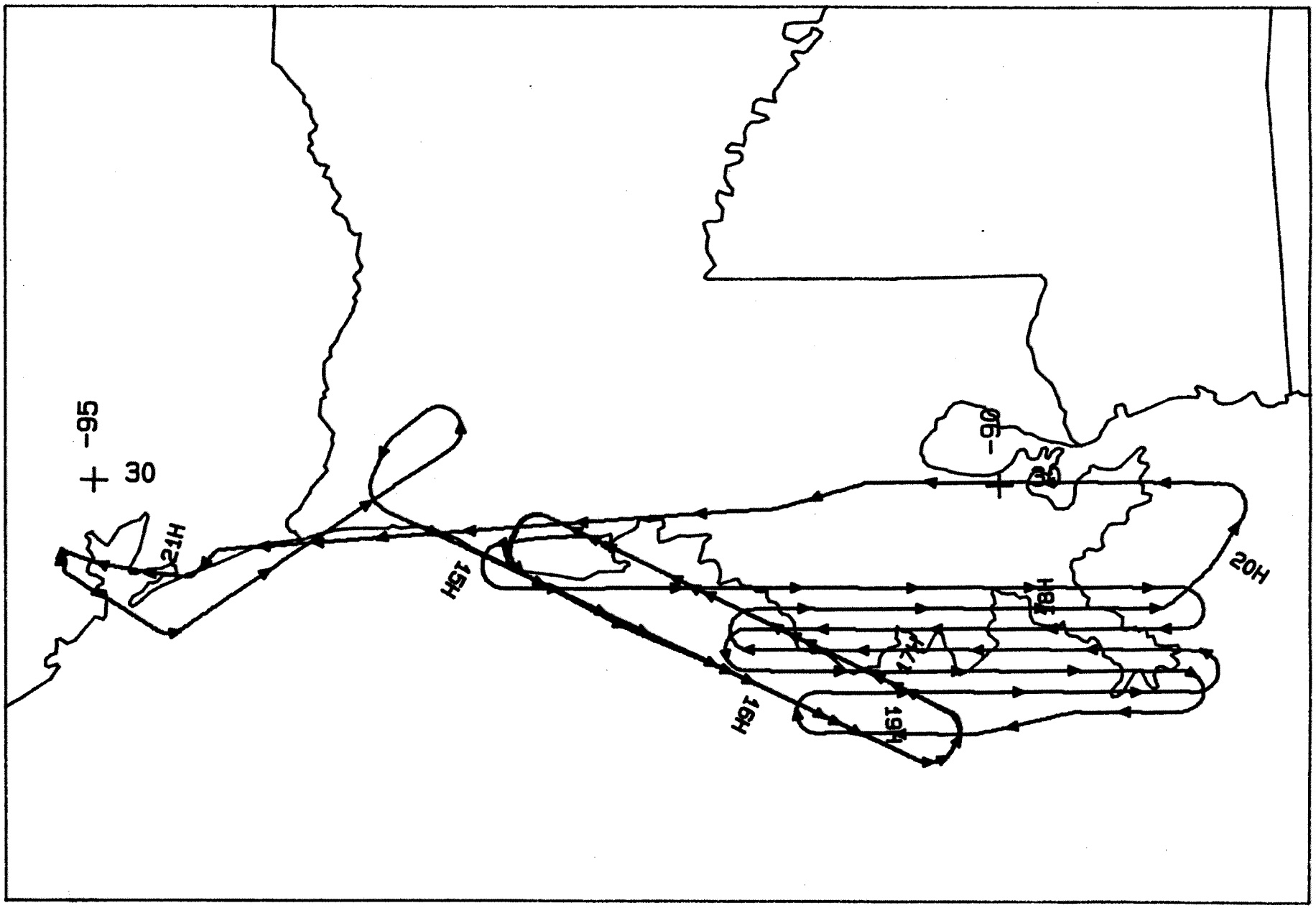
Check Points	Frame Numbers	Time (GMT-hr, min, sec) START	Time (GMT-hr, min, sec) END	Altitude, MSL feet/meters	Cloud Cover/Remarks
E - F	0001-0049	17:22:38	17:33:22	64999/19812	Clear
F - G	0050-0124	17:34:16	17:50:55	64999/19812	Clear
H - I	0125-0209	17:54:13	18:13:07	64620/19696	Smoke obstruction (frames 0182-0185)
J - K	0210-0283	18:18:05	18:34:32	65219/19879	Clear
L - M	0284-0296	18:38:37	18:41:19	64785/19746	Clear
N - O	0297-0366	18:57:01	19:12:32	65374/19926	Clear
P - Q	0367-0451	19:16:41	19:35:37	64506/19661	Clear
R - S	0452-0462	19:39:01	19:41:16	64573/19682	Clear

CAMERA FLIGHT LINE DATA
FLIGHT NO. 95-051

Accession # 04865

Sensor # 039

Check Points	Frame Numbers	Time (GMT-hr, min, sec) START	Time (GMT-hr, min, sec) END	Altitude, MSL feet/meters	Cloud Cover/Remarks
S - T	0001-0059	19:42:39	19:55:43	65059/19830	Clear; light strike (frame 0001); processing marks (frames 0050-0059)
U - V	0060-0125	20:03:55	20:18:33	65323/19910	Thin cirrus (frames 0080-0087, 0090-0097, and 0121-0124); light strike (frame 0060); processing marks (frames 0060-0086)
	NOTE: FAINT INTERMITTENT STATIC DISCHARGES THROUGHOUT DATA				
	APS ON/OFF TIME 14:54:00/20:25:00				



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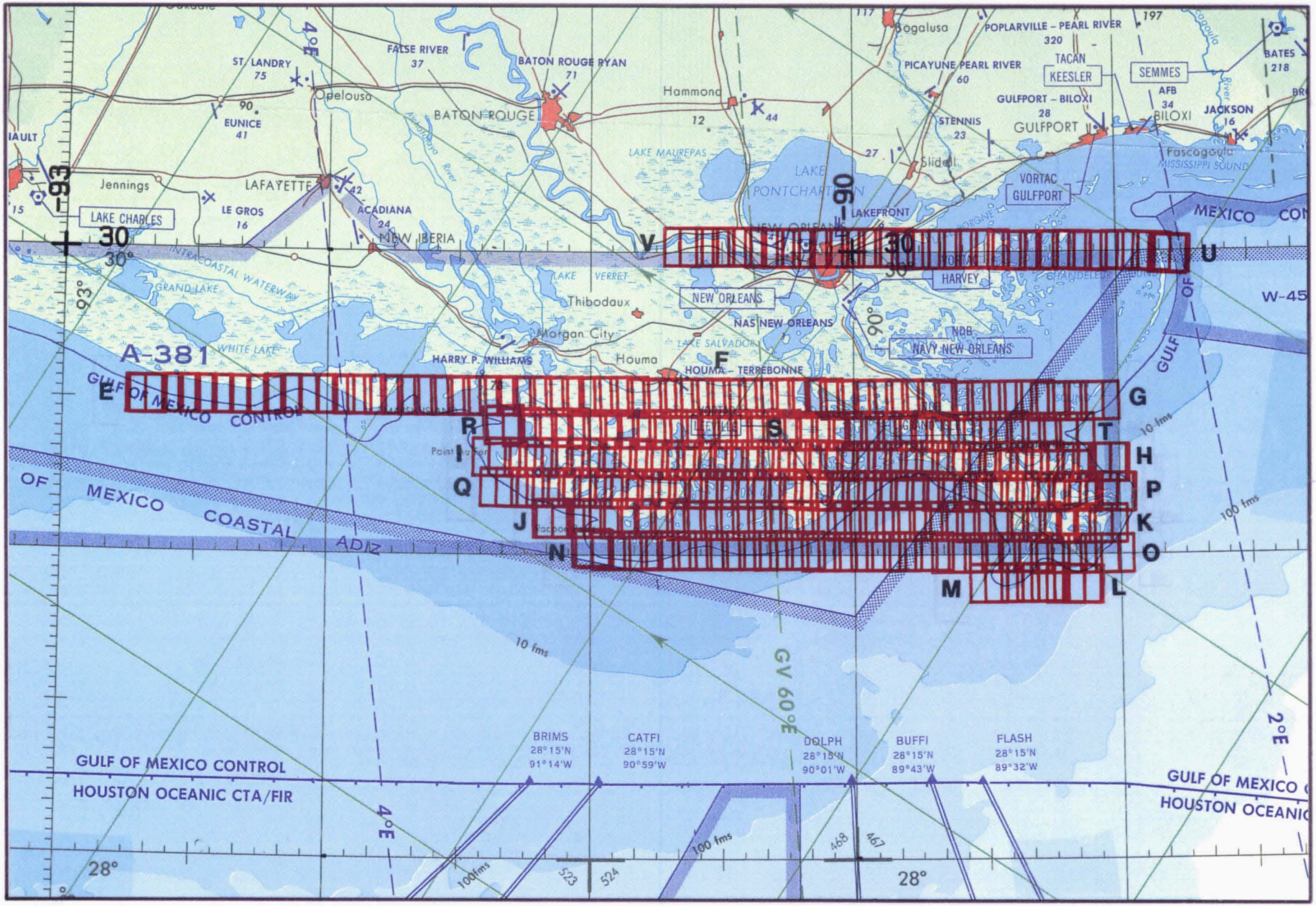

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