

# FLIGHT SUMMARY REPORT

**Flight #:** 90-032  
**Date:** 13 December 1989  
**Sensor Package:** Wild-Heerbrug RC-10  
Multispectral Atmospheric Mapping  
Sensor (MAMS)  
**Area(s) Covered:** Louisiana/Texas

**Investigator(s):** Menzel, University of Wisconsin  
**Flight Request:** 90T232

**Aircraft #:** 709  
**Julian Date:** 347

## SENSOR DATA

<b>Accession #:</b>	03983	-----
<b>Sensor ID #:</b>	076	080
<b>Sensor Type:</b>	RC-10	MAMS
<b>Focal Length:</b>	12" 304.89 mm	-----
<b>Film Type:</b>	High Definition Aerochrome IR SO-131	-----
<b>Filtration:</b>	cc .10B	-----
<b>Spectral Band:</b>	510-900 nm	
<b>f Stop:</b>	4	-----
<b>Shutter Speed:</b>	1/125	-----
<b># of Frames:</b>	346	-----
<b>% Overlap:</b>	60	-----
<b>Quality:</b>	Excellent	-----
<b>Remarks:</b>	-----	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.

### Multispectral Atmospheric Mapping Sensor

The Multispectral Atmospheric Mapping Sensor (MAMS) is a modified Daedalus Scanner flown aboard the ER-2 aircraft. It is designed to study weather related phenomena including storm system structure, cloud-top temperatures, and upper atmosphere water vapor. The scanner retains the eight silicon-detector channels in the visible/near-infrared region found on the Daedalus Thematic Mapper Simulator, with the addition of four channels in the thermal infrared relating to specific water vapor features. The specific bands are as follows:

<u>Daedalus Channel</u>	<u>Wavelength, <math>\mu\text{m}</math></u>
1	LSBs for Channels 9-12
2	0.45 - 0.52
3	0.52 - 0.60
4	0.57 - 0.67
5	0.60 - 0.73
6	0.65 - 0.83
7	0.72 - 0.99
8	0.83 - 1.05
9	3.55 - 3.93 low range
10	3.55 - 3.93 high range
11	10.3 - 12.1
12	12.5 - 12.8

The data will not be archived at EROS Data Center because this is an experimental system with low spatial resolution and unique spectral characteristics. As all scenes will be primarily cloud-covered there would be little terrestrial application for the data. Further information concerning the data can be obtained from principal investigator, Gregory S. Wilson, Atmospheric Effects Branch, George C. Marshall Space Flight Center, National Aeronautics and Space Administration, Marshall Space Flight Center, Alabama 35812-5001.

Sensor specifications are as follows:

IFOV:	5.0 mrad
Pixel/Scan Line:	716
Total Scan Angle:	86 <sup>o</sup>
Scan Rate:	6.25 scans/second
Digitization:	8-bit Channels 2-8 10-bit Channels 9-12

**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. 90-032**

Accession No. 03983

Sensor # 076

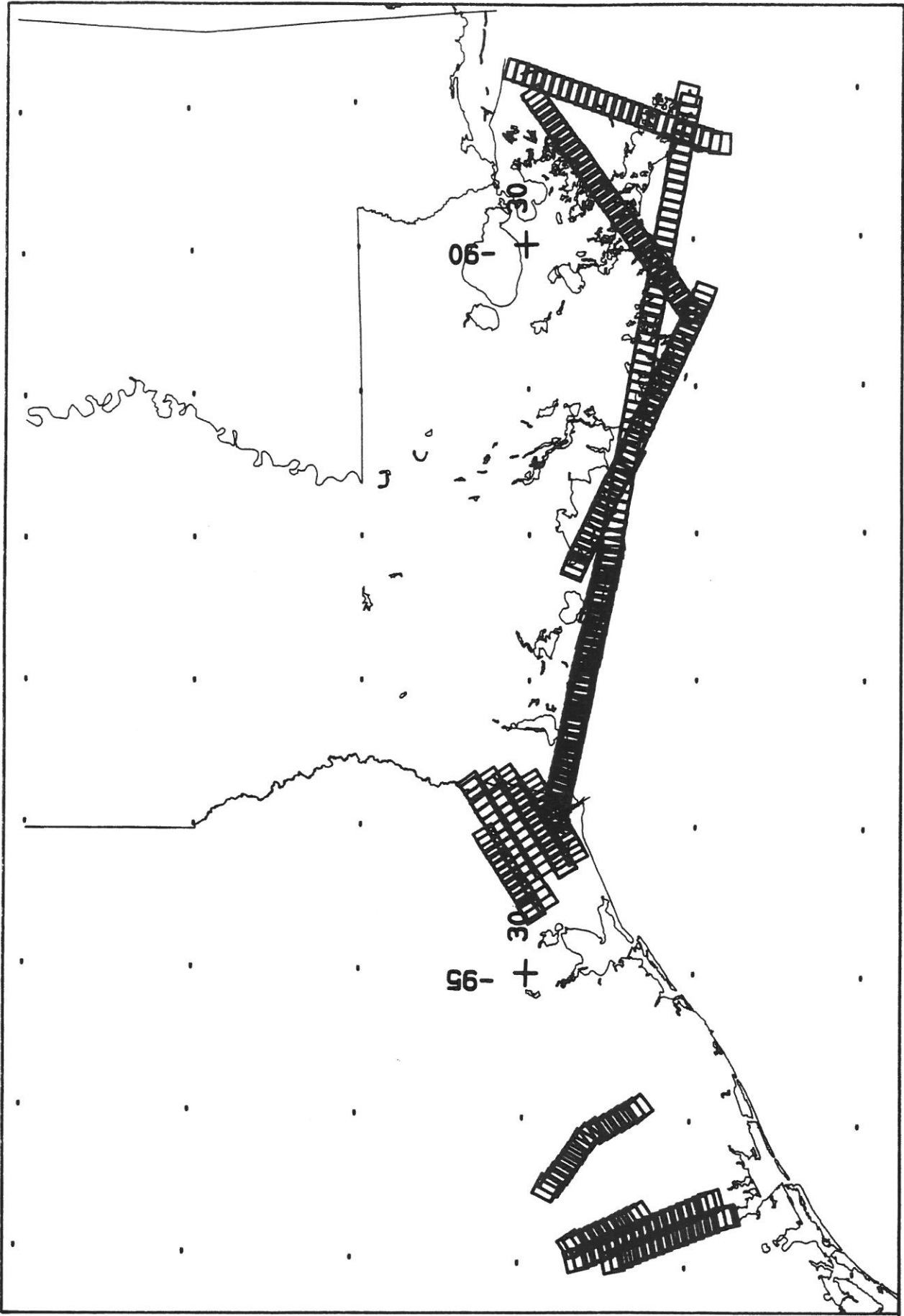
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	4438-4515	14:56:25	15:32:28	65000/19800	Clear; no image, film transported without shutter function (frame 4463)
C - D	4516-4540	15:40:02	15:50:54	"	Clear
E - F	4541-4576	15:57:09	16:13:12	"	Clear
G - H	4577-4616	16:19:27	16:37:30	"	Clear
I - A	4617-4653	16:45:28	17:02:26	"	Clear
J - K	4654-4666	17:09:02	17:14:26	"	Clear
L - M	4667-4677	17:18:50	17:23:24	"	Clear
N - O	4678-4689	17:28:28	17:33:38	"	Clear
P - Q	4690-4704	17:39:21	17:45:39	"	Clear
R - S	4705-4721	17:54:39	18:01:14	"	Clear

**CAMERA FLIGHT LINE DATA**  
**FLIGHT NO. 90-032**

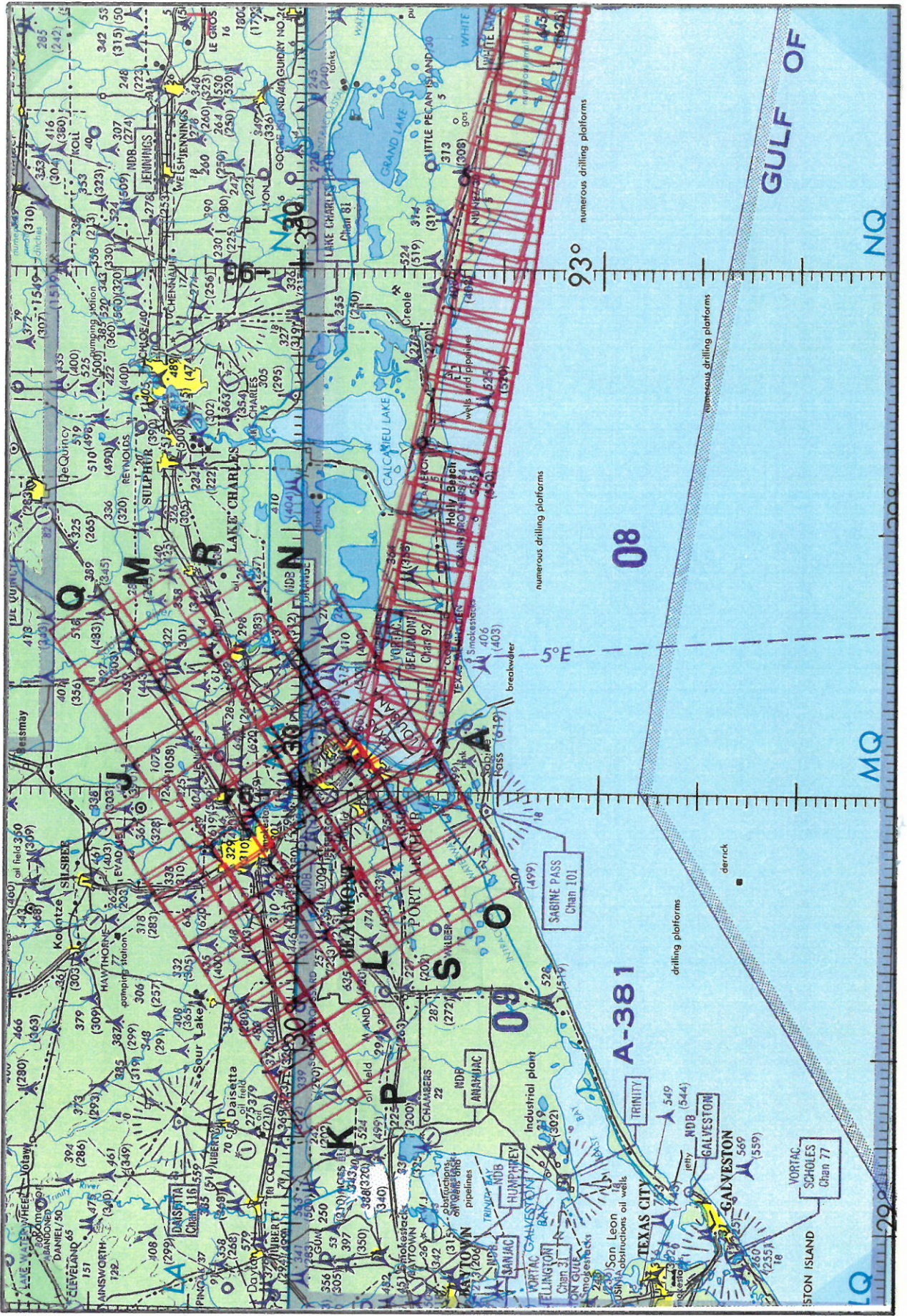
Accession No. 03983

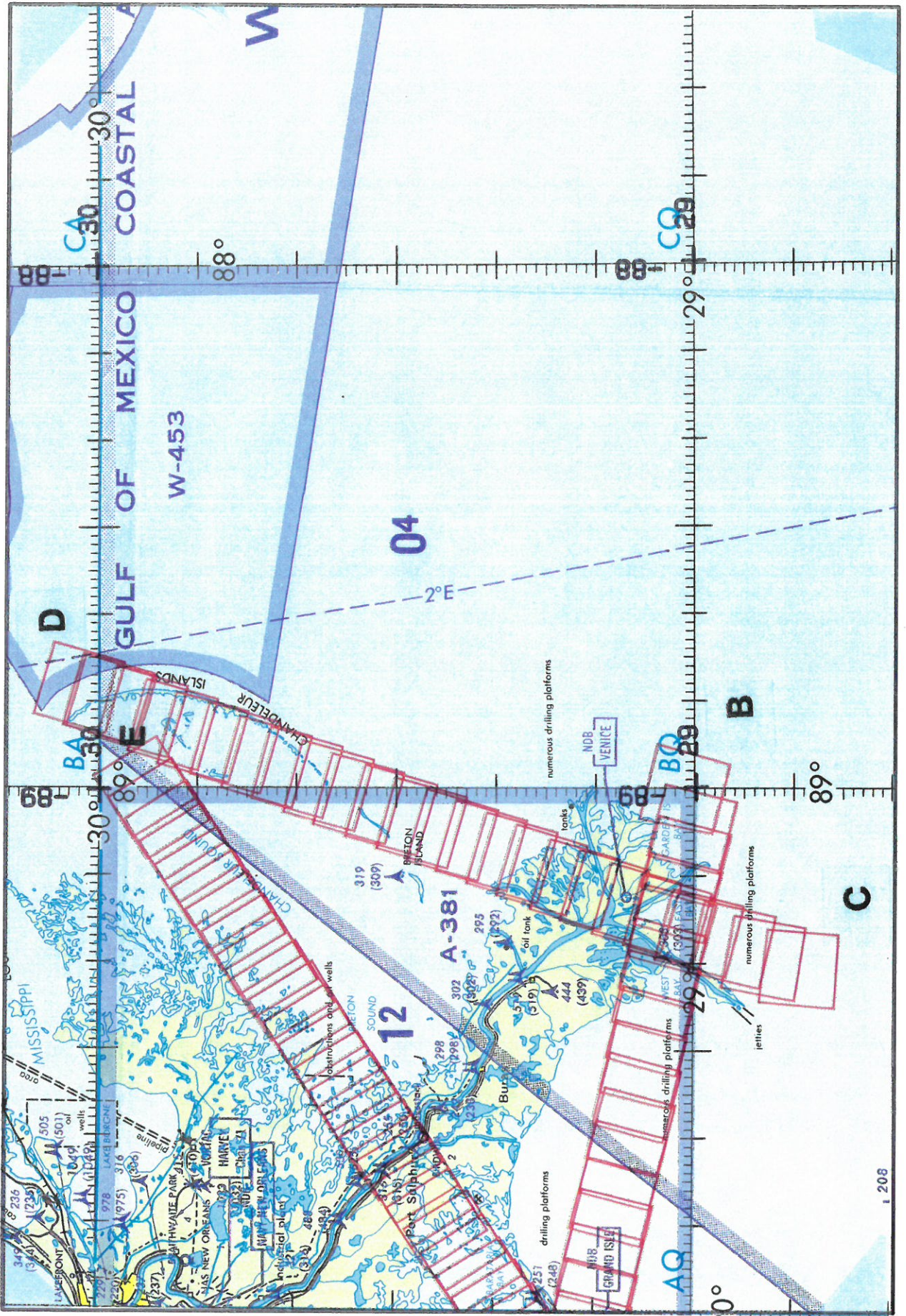
Sensor # 076

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
T - U	4722-4739	18:18:34	18:26:05	65,000/19,800	Clear
V - W	4740-4757	18:33:00	18:40:50	"	Clear
X - Y	4758-4767	18:47:22	18:51:25	"	Clear
Z - 1	4768-4784	18:56:00	19:02:51	"	Clear

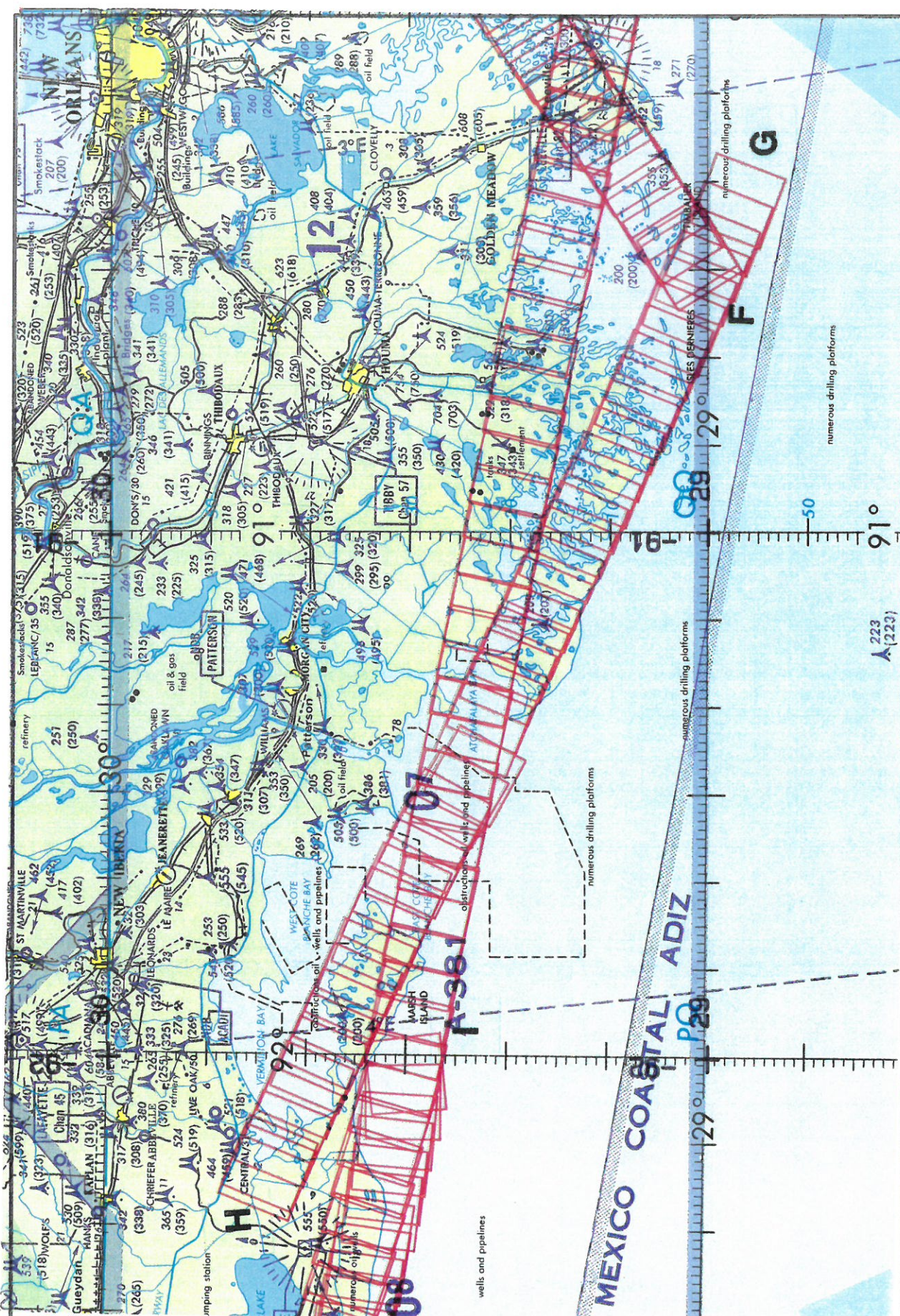


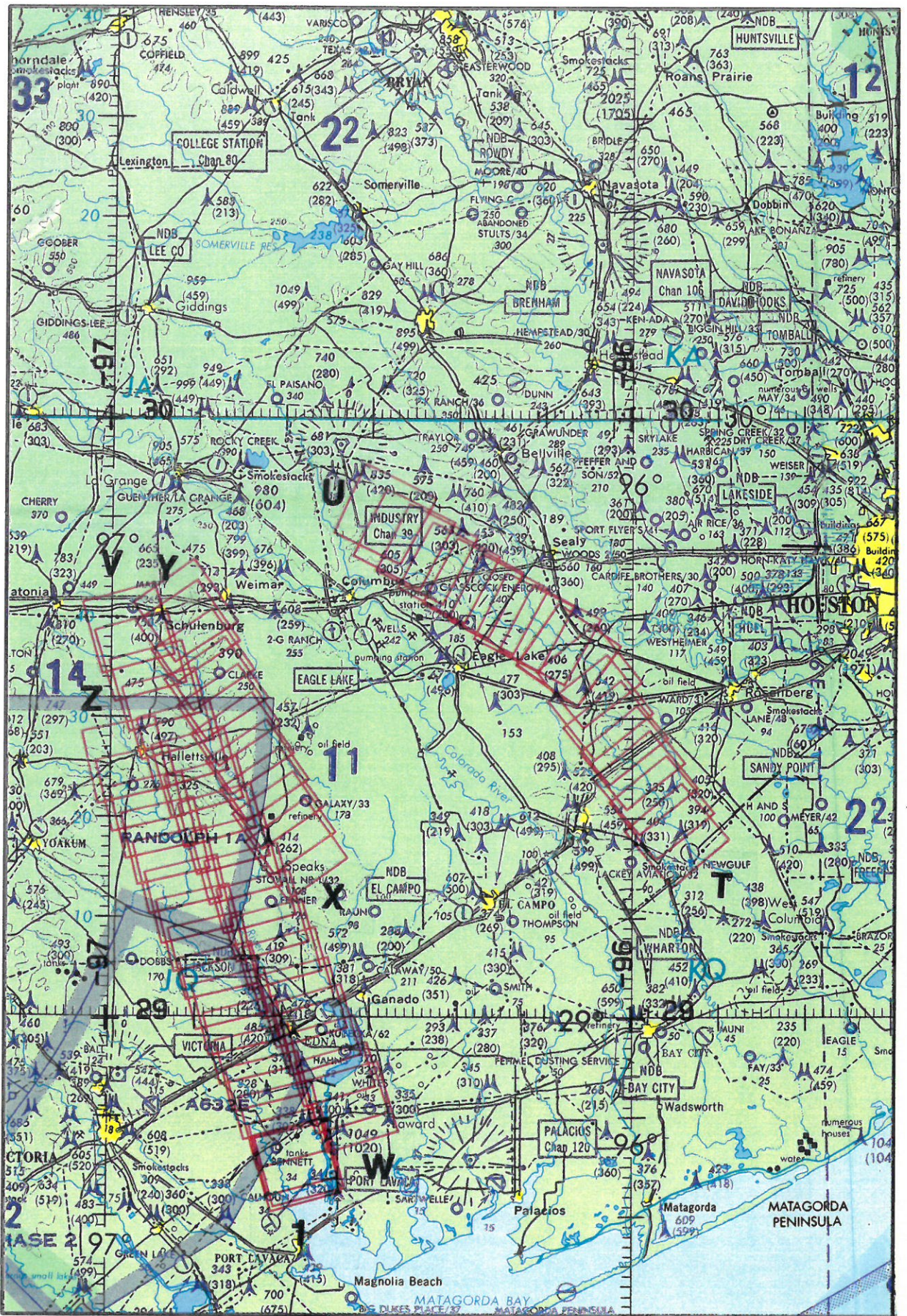
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