FLIGHT SUMMARY REPORT

Flight Number: 10-924

Calendar/Julian Date: 23 May 2010 (143)

Sensor Package: Cirrus Digital Camera System (DCS)
Airborne Visible and Infrared Imaging Spectrometer (AVIRIS)

Area(s) Covered: Gulf Coast Oil Spill

Investigator(s): Leifer (UCSB) **Aircraft:** ER-2 #809

SENSOR DATA

Accession #:	05957	___
Sensor ID #:	165	099
Sensor Type:	DCS	AVIRIS
Focal Length:	50mm	___
Film Type:	___	___
Filtration:	Wratten 12	___
Spectral Band:	510-990nm	___
f-Stop:	11	___
Shutter Speed:	1/500	___
# of Frames:	441	___
% Overlap:	60%	___
Quality:	Excellent	
Remarks:		

NASA Suborbital Science Program

The National Aeronautics and Space Administration maintains a variety of aircraft and sensor systems dedicated to the support of remote sensing research. Two Lockheed ER-2s (S-model U-2); two WB-57 high altitude aircraft; a DC-8; a Lockheed Orion P-3B; and the Altair unmanned aerial vehicle (supported by General Atomics) provide multi-level platforms for both NASA and investigator-owned sensors. Data are collected for the atmospheric, land, and ocean processes in support of the NASA Earth Science program, as well as for universities and other government agencies.

Additionally contracted aircraft from Department of Energy, and Twin Otter International provide remote sensing platforms for the program.

The NASA aircraft, located at Dryden Flight Research Center and Johnson Space Center, are used as test-beds for advanced sensor design and satellite simulation, as well as to support scientific and operational data collection campaigns. Numerous sensor systems are in use and under development by NASA, including multispectral imaging devices, a SAR system, and a suite of large-format metric cameras. All instruments are spectrally, spatially, and radiometrically calibrated on a routine basis. The aircraft themselves are equipped with navigation systems that continuously record GPS location and platform attitude data.

Airborne Visible and Infrared Imaging Spectrometer

The Airborne Visible and Infrared Imaging Spectrometer (AVIRIS) is the second in the series of imaging spectrometer instruments developed at the Jet Propulsion Laboratory (JPL) for earth remote sensing. This instrument uses scanning optics and four spectrometers to image a 614-pixel swath simultaneously in 224 contiguous spectral bands (0.4-2.4 μm).

AVIRIS parameters are as follows:

IFOV:	1 mrad
Ground Resolution:	66 feet (20 meters) at 65,000 feet
Total Scan Angle:	34^{o}
Swath Width:	5.9 nautical mile (11 km) at 65,000 feet
Spectral Coverage:	0.41-2.45 μm
Pixels/Scan Line:	677
Number of Spectral Bands:	224
Digitization:	12-bits
Data Rate:	20.4 MBPS

Spectrometer	Wavelength Range	Number of Bands	Sampling Interval
1	0.41 - 0.70 μm	31	9.4 nm
2	0.68 - 1.27 μm	63	9.4 nm
3	1.25 - 1.86 μm	63	9.7 nm
4	1.84 - 2.45 μm	63	9.7 nm

All AVIRIS data is processed and archived at JPL. For further information contact Rob Green at Jet Propulsion Laboratory, 4800 Oak Grove Drive, Mail Stop 183-501, Pasadena, California 91109-8099. http://aviris.jpl.nasa.gov/

Cirrus Digital Camera System (DCS)

Cirrus Digital Systems provides the digital camera. It consists of a Hasselblad camera body with a Kodak camera back and CCD array. It can be configured to acquire either false color infrared or natural color imagery.

Lens	Array Size	Array Width	Field of View (FOV)	Altitude (feet)	Ground Coverage	Nominal Resolution
50mm	4072 x 4072 (pixels)	36.72mm	40.3°	65000	7.9nm	3.5m
50mm	4072 x 4072 (pixels)	36.72mm	40.3°	45000	5.4nm	2.5m
50mm	4072 x 4072 (pixels)	36.72mm	40.3°	28000	3.4nm	1.5m

Note: Nominal resolution references the smallest target that can be imaged.

Airborne Sensor Facility

The Airborne Sensor Facility at NASA Ames Research Center web site:

http://asapdata.arc.nasa.gov/

Additional information regarding flight documentation to include archive searches may be obtained from the following:

Airborne Sensor Facility
MS 244-15
NASA Ames Research Center
Moffett Field, CA 94035
Telephone: (650)604-6252 (FAX 4987)

CAMERA FLIGHT LINE DATA
FLIGHT NO. 10-924

Accession # 05957

Sensor # 165

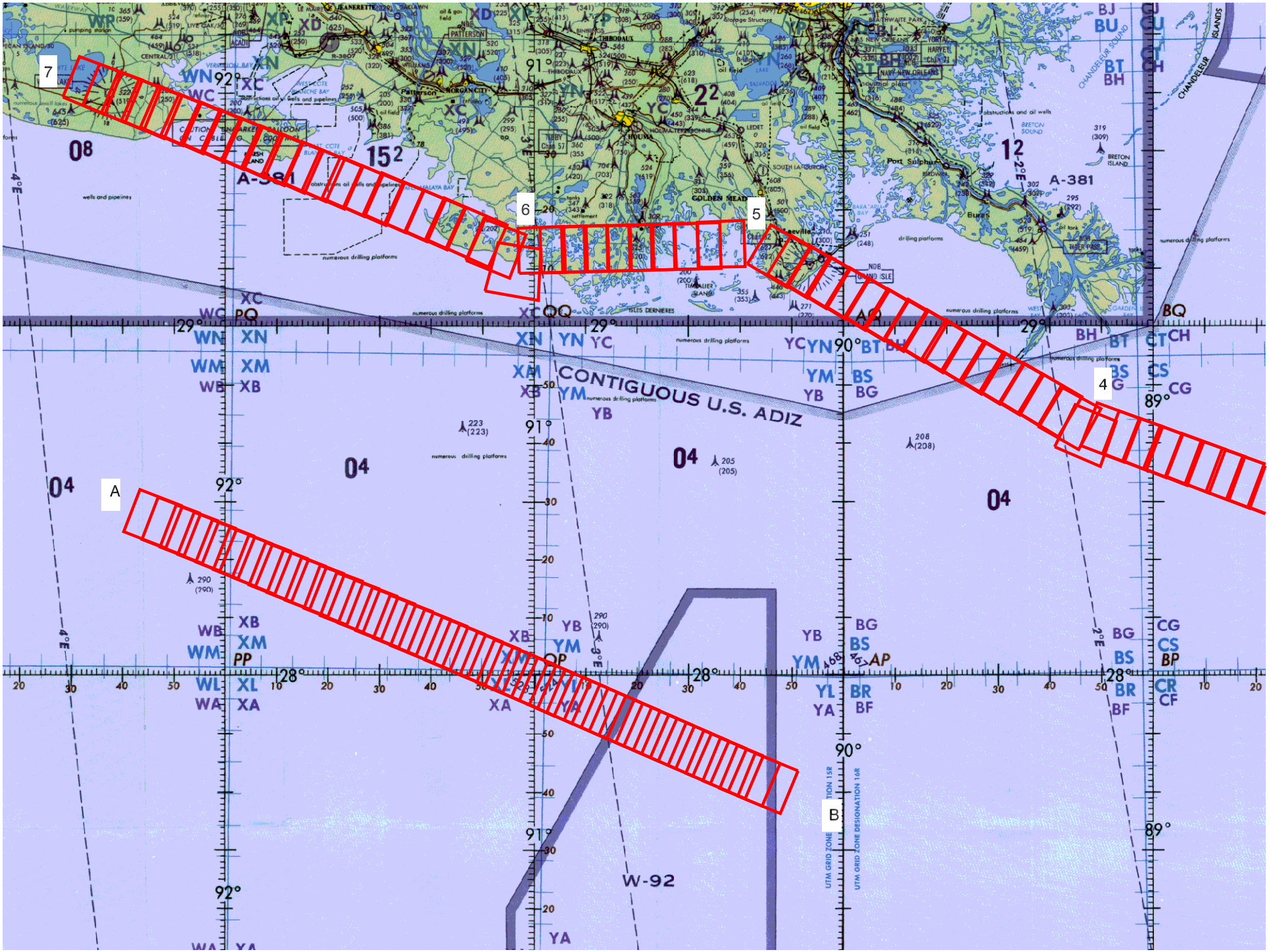
Check Points	Frame Numbers	Time (GMT-hr, min, sec) START	Time (GMT-hr, min, sec) END	Altitude, MSL feet/meters	True Heading / Line ID
A - B	4856-4891	12:46:52	13:05:45	66000/20120	114° / Gulf Oil Spill
C - D	4892-4906	13:26:17	13:33:51	65100/19850	84° / Gulf Oil Spill
D - E	4907-4933	13:36:00	13:50:02	65400/19940	132° / Gulf Oil Spill
F - G	4934-4946	14:17:07	14:23:37	64800/19760	91° / Dry Tortugas
H - I	4947-4959	14:27:25	14:33:54	65000/19820	86° / Florida Keyes
I - J	4960-4972	14:34:26	14:40:55	65000/19820	71° / Florida Keyes
J - K	4973-4982	14:41:27	14:46:19	65000/19820	40° / Florida Keyes
L - M	4983-4995	14:51:18	14:57:47	64800/19760	217° / Florida Keyes
M - N	4996-5010	14:58:19	15:05:53	65100/19850	255° / Florida Keyes
O - P	5011-5028	15:09:40	15:18:51	65100/19850	73° / Florida Keys
Q - R	5029-5045	15:25:00	15:33:38	64600/19700	342° / Everglades 1
S - P	5046-5061	15:37:12	15:45:18	64600/19700	156° / Everglades 3

CAMERA FLIGHT LINE DATA
FLIGHT NO. 10-924

Accession # 05957

Sensor # 165

Check Points	Frame Numbers	Time (GMT-hr, min, sec) START	Time (GMT-hr, min, sec) END	Altitude, MSL feet/meters	True Heading / Line ID
M - U	5062-5077	15:50:32	15:58:38	64700/19730	342° / Everglades 2
V - W	5078-5085	16:05:05	16:08:52	64400/19630	302° / Everglade City (Ten Thousand Island) FL
W - X	5086-5098	16:15:56	16:22:24	64200/19570	2° / Naples-> Myers Beach FL
Y - Z	5099-5126	16:30:28	16:45:02	64700/19730	336° / St Petersburg FL
1 - 2	5127-5143	17:01:26	17:10:05	65600/20000	294° / Gulf Oil Spill
2 - 3	5144-5183	17:10:37	17:31:40	66000/20120	303° / Gulf Oil Spill
3 - 4	5184-5201	17:32:12	17:41:22	66100/20150	290° / Gulf Oil Spill
4 - 5	5202-5217	17:41:54	17:50:00	65500/19970	301° / Grand Isle eddy currents
5 - 6	5218-5227	17:51:30	17:56:22	65100/19850	268° / Terrebonne Bay LA
6 - 7	5228-5248	17:56:54	18:07:41	65000/19820	293° / Marsh Island LA
7 - 8	5249-5258	18:10:45	18:15:36	54100/16490	On Descent, Gulf Coast
8 - 9	5259-5296	18:16:09	18:36:06	19900/6070	On Descent, Gulf Coast / Galveston Bay


7
6
5
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A
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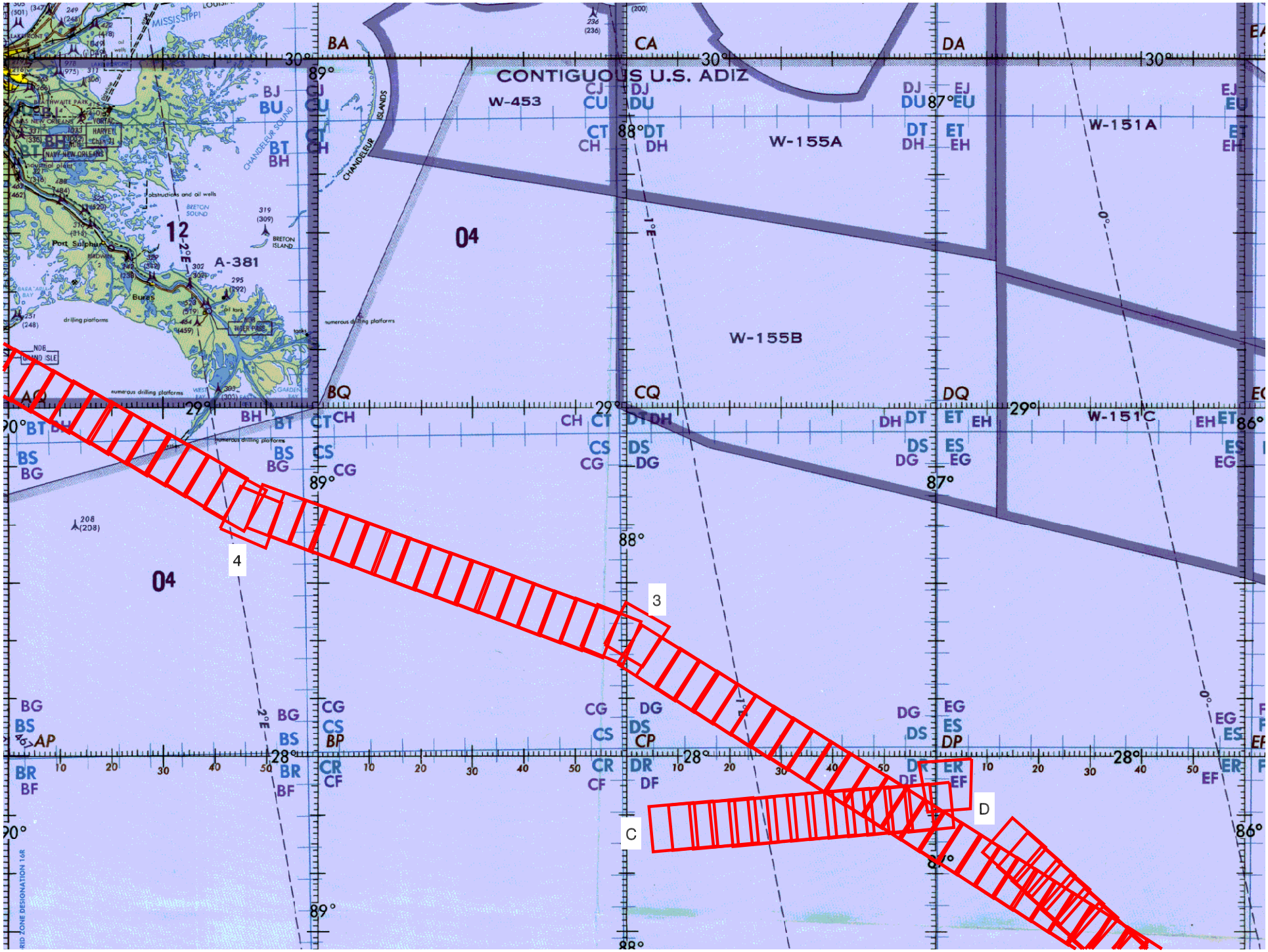
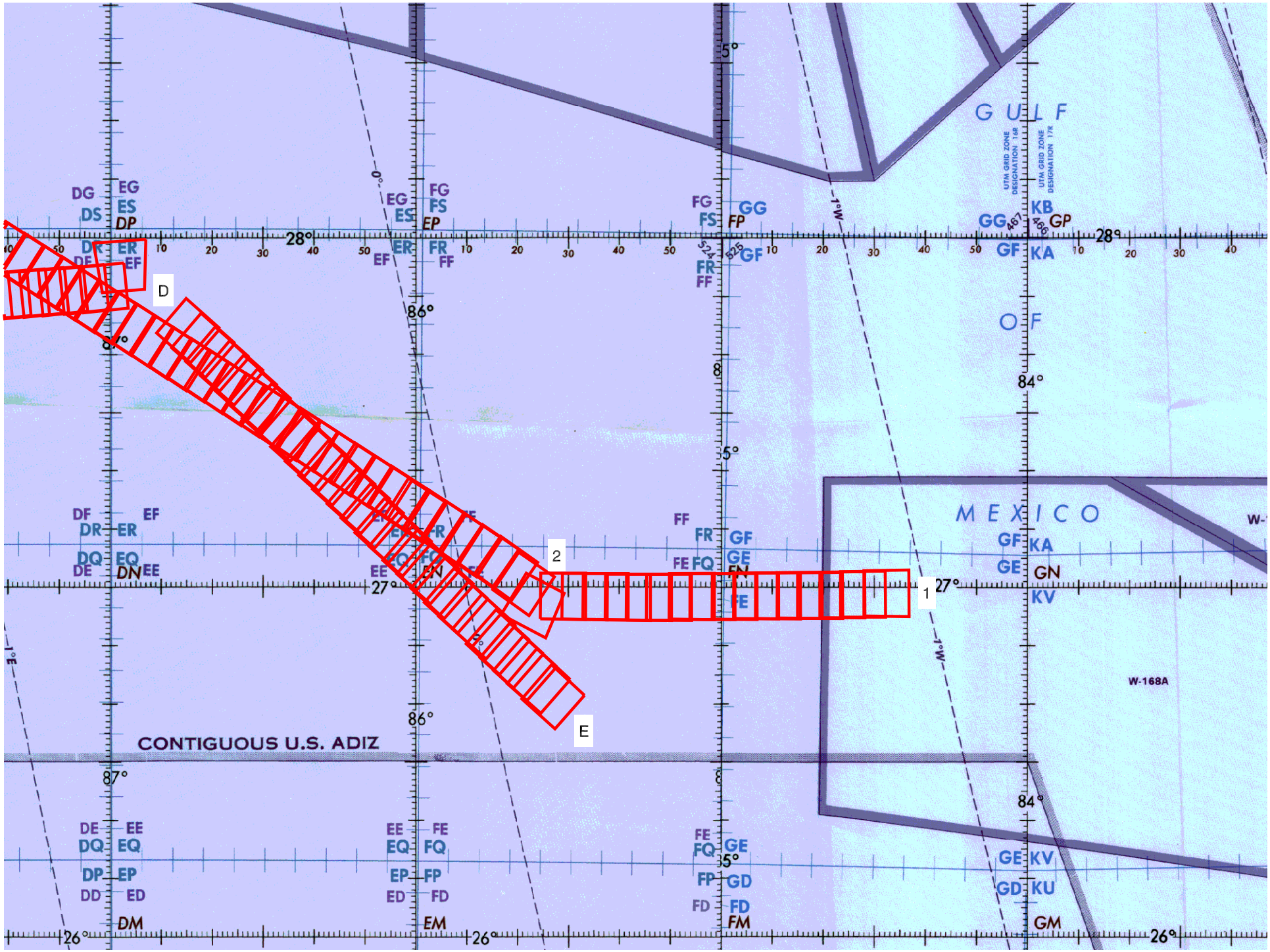
CONTIGUOUS U.S. ADIZ
W-92
A-381
FLIGHT 10-924
23 MAY 2010
A/C 809
DCS



FLIGHT 10-924 23 MAY 2010 A/C 809 DCS



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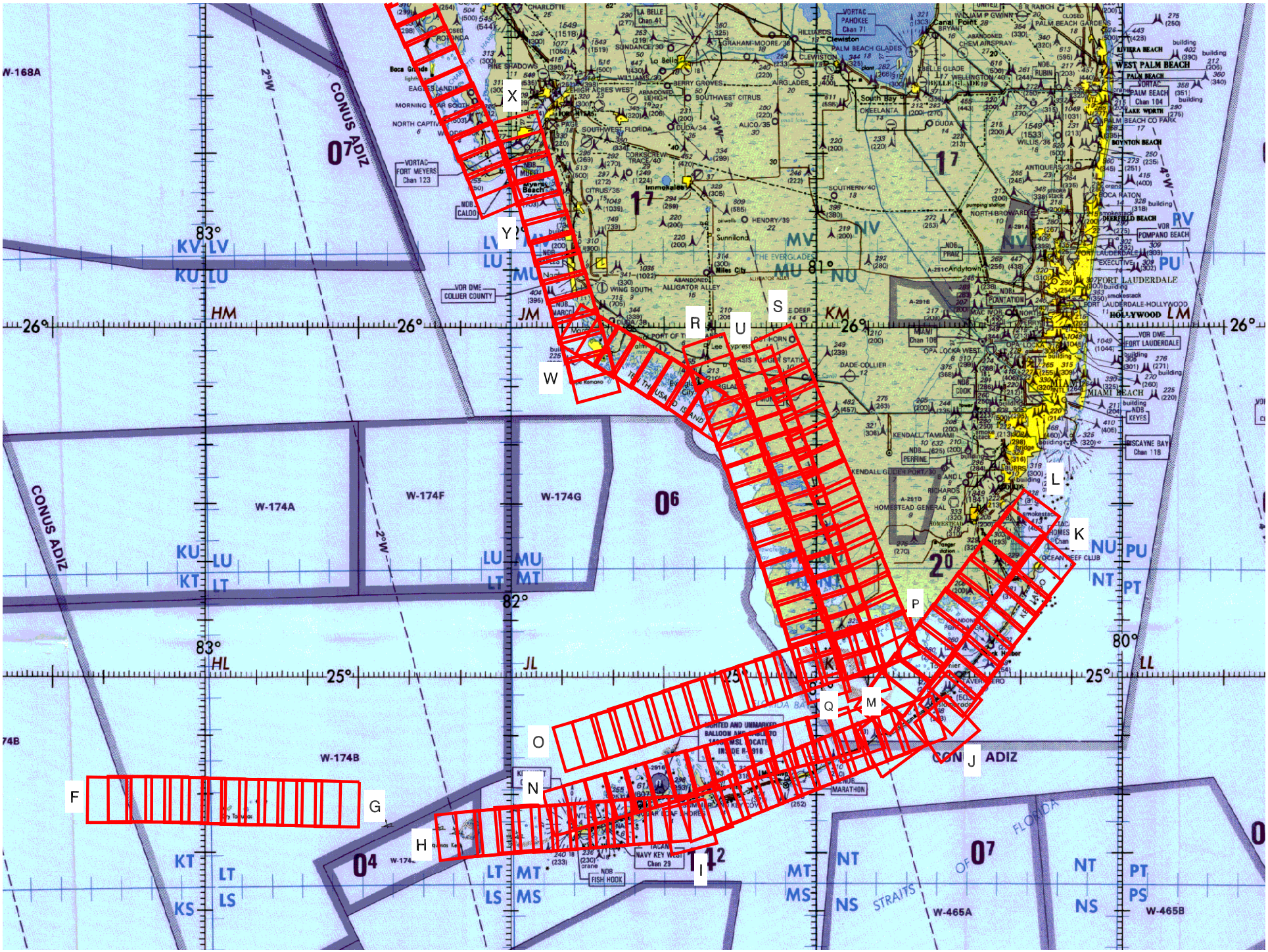
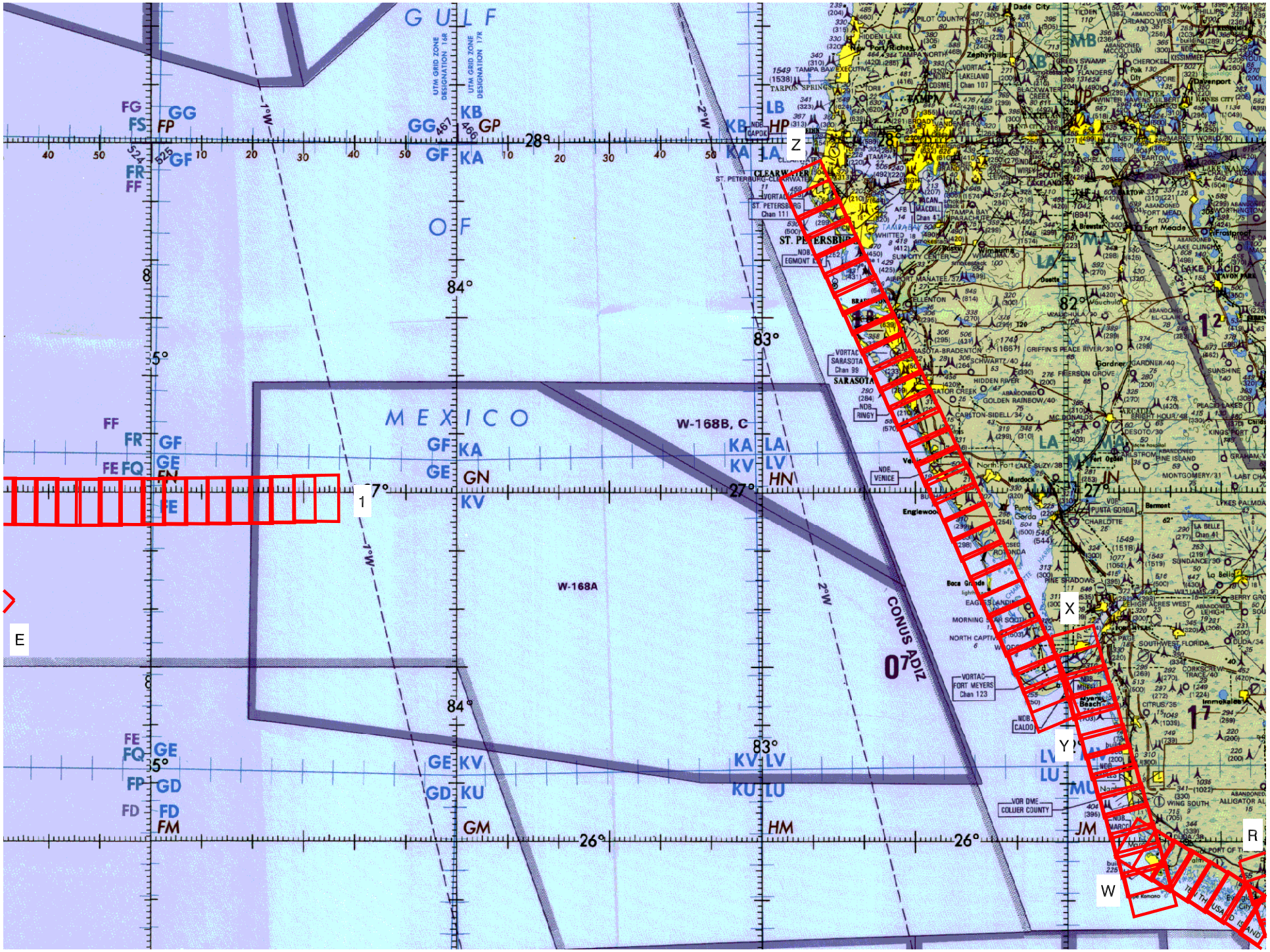
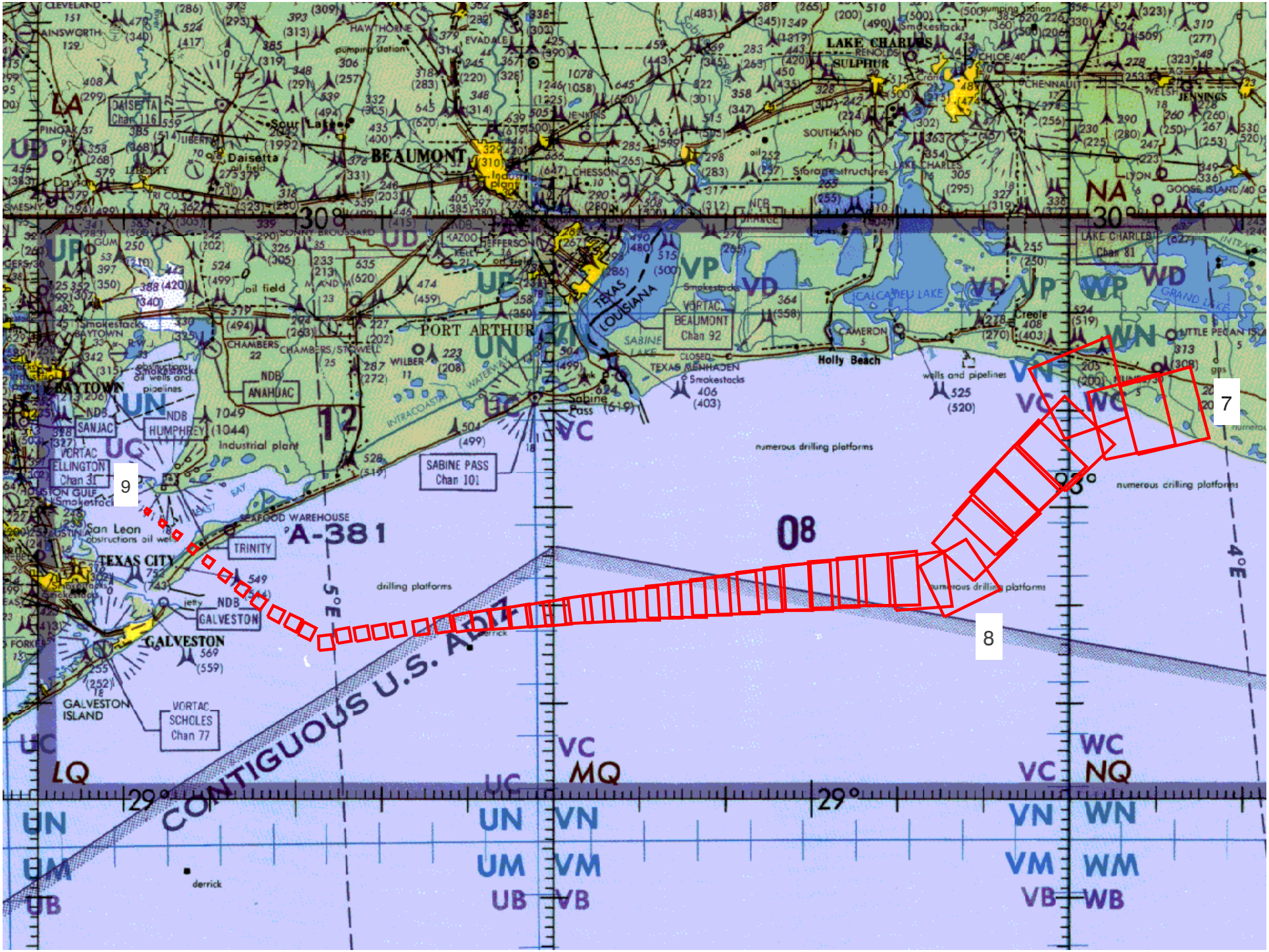


FLIGHT 10-924 23 MAY 2010 A/C 809 DCS



FLIGHT 10-924 23 MAY 2010 A/C 809 DCS



FLIGHT 10-924 23 MAY 2010 A/C 809 DCS