

FLIGHT SUMMARY REPORT

Flight Number: 10-004-04

Calendar/Julian Date: 1 July 2010 (182)

Sensor Package: Cirrus Digital Camera System (DCS)
MODIS/ASTER Airborne Simulator (MASTER)

Area(s) Covered: Central California

Investigator(s): Kudella (UCSB) / Ustin (UCD) **Aircraft:** DC-8 #817

SENSOR DATA

Accession #:	05961	_____
Sensor ID #:	165	124
Sensor Type:	DCS	MASTER
Focal Length:	50mm	_____
Film Type:	_____	_____
Filtration:	Wratten 12	_____
Spectral Band:	510-990nm	_____
f-Stop:	11	_____
Shutter Speed:	1/500	_____
# of Frames:	223	_____
% Overlap:	40%	_____
Quality:	Good	Good
Remarks:		

NASA Airborne 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; Global Hawk 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 medium-format digital 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.

MASTER (MODIS/ASTER Airborne Simulator)

The MODIS/ASTER Airborne Simulator (MASTER) is designed to closely match NASA's EOS ASTER (Advanced Spaceborne Thermal Emission and Reflection Radiometer). It is intended primarily to study geologic and other Earth surface properties. It has a variable scan speed which allows data to be acquired on both high and low altitude aircraft. Its fifty spectral bands are configured below:

Band	Bandwidth	Resolution	Band	Bandwidth	Resolution
1	0.438-0.482	5-50m	26	3.075-3.231	5-50m
2	0.479-0.522	5-50m	27	3.231-3.377	5-50m
3	0.521-0.564	5-50m	28	3.385-3.535	5-50m
4	0.562-0.603	5-50m	29	3.538-3.694	5-50m
5	0.633-0.692	5-50m	30	3.692-3.826	5-50m
6	0.692-0.734	5-50m	31	3.846-3.999	5-50m
7	0.731-0.773	5-50m	32	3.999-4.154	5-50m
8	0.781-0.823	5-50m	33	4.157-4.310	5-50m
9	0.848-0.889	5-50m	34	4.307-4.460	5-50m
10	0.886-0.927	5-50m	35	4.456-4.603	5-50m
11	0.927-0.966	5-50m	36	4.597-4.760	5-50m
12	1.582-1.636	5-50m	37	4.753-4.911	5-50m
13	1.638-1.691	5-50m	38	4.906-5.054	5-50m
14	1.694-1.745	5-50m	39	5.044-5.205	5-50m
15	1.749-1.801	5-50m	40	5.203-5.342	5-50m
16	1.803-1.853	5-50m	41	7.587-7.943	5-50m
17	1.852-1.898	5-50m	42	7.950-8.398	5-50m
18	1.896-1.953	5-50m	43	8.447-8.806	5-50m
19	1.956-2.006	5-50m	44	8.882-9.307	5-50m
20	2.057-2.105	5-50m	45	9.503-9.902	5-50m
21	2.134-2.185	5-50m	46	9.912-10.327	5-50m
22	2.185-2.236	5-50m	47	10.338-10.922	5-50m
23	2.233-2.284	5-50m	48	10.977-11.652	5-50m
24	2.294-2.363	5-50m	49	11.864-12.364	5-50m
25	2.362-2.426	5-50m	50	12.638-13.119	5-50m

Sensor/Aircraft Parameters:

Spectral Bands: 50 (16-bit resolution)
IFOV: 2.5mrad
Swath width: 19.9nm (36km) at 65,000ft
Ground Resolution 5-50m (variable w/ altitude)
Total FOV: 85.92 degrees
Pixels/Scanline: 716
Scan Rate: 6.25 – 25 Hz
URL Reference: <http://masterweb.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
50mm	4072 x 4072 (pixels)	36.72mm	40.3°	13000	1.6nm	0.7m

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)

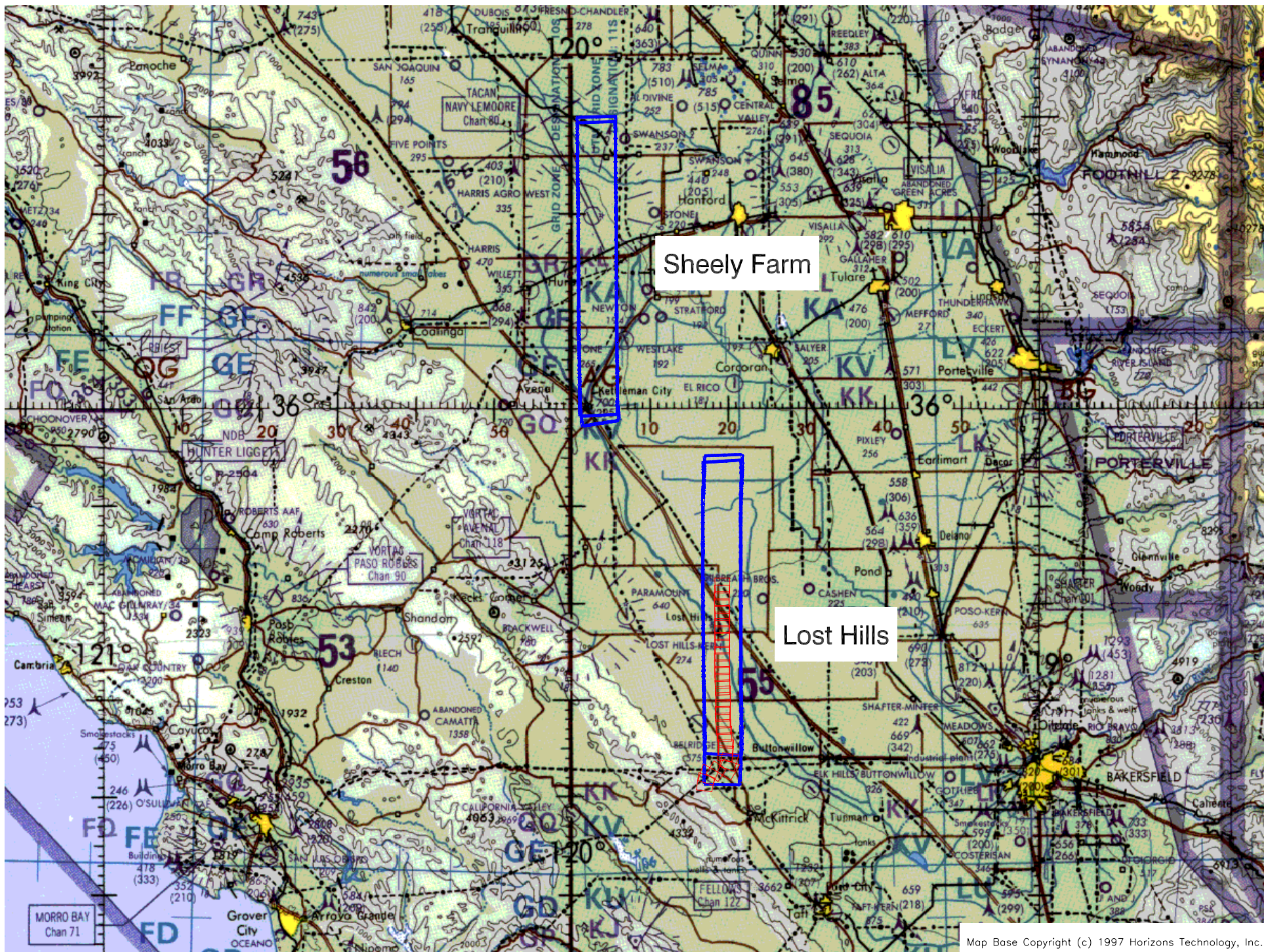
CAMERA FLIGHT LINE DATA

FLIGHT NO. 10-004-04

Accession # 05961

Sensor # 165

Site #	Line #	Run #	Frame #	Time (GMT-hr, min, sec)		Altitude feet/meters	Cloud Cover/Remarks
				START	END		
CV2	1	1	6578-6608	18:59:47	19:04:14	13000/3970	Clear; Lost Hills
MB1	1	1	6612-6663	22:15:06	22:22:48	11000/3360	10-20% strato-cumulus frames 6623-6637
MB1	2	1	6664-6685	22:24:17	22:27:24	10700/3270	Clear
MB1	3	1	6686-6705	22:34:11	22:36:59	10700/3270	minor - 30% strato-cumulus frames 6670-6701
SB1	1	1	6706-6747	23:09:36	23:15:40	10800/3300	Clear
SB1	2	1	6748-6796	23:21:28	23:28:34	10900/3330	Clear
SB1	4	1	6797-6801	23:41:05	23:41:40	12000/3660	Clear



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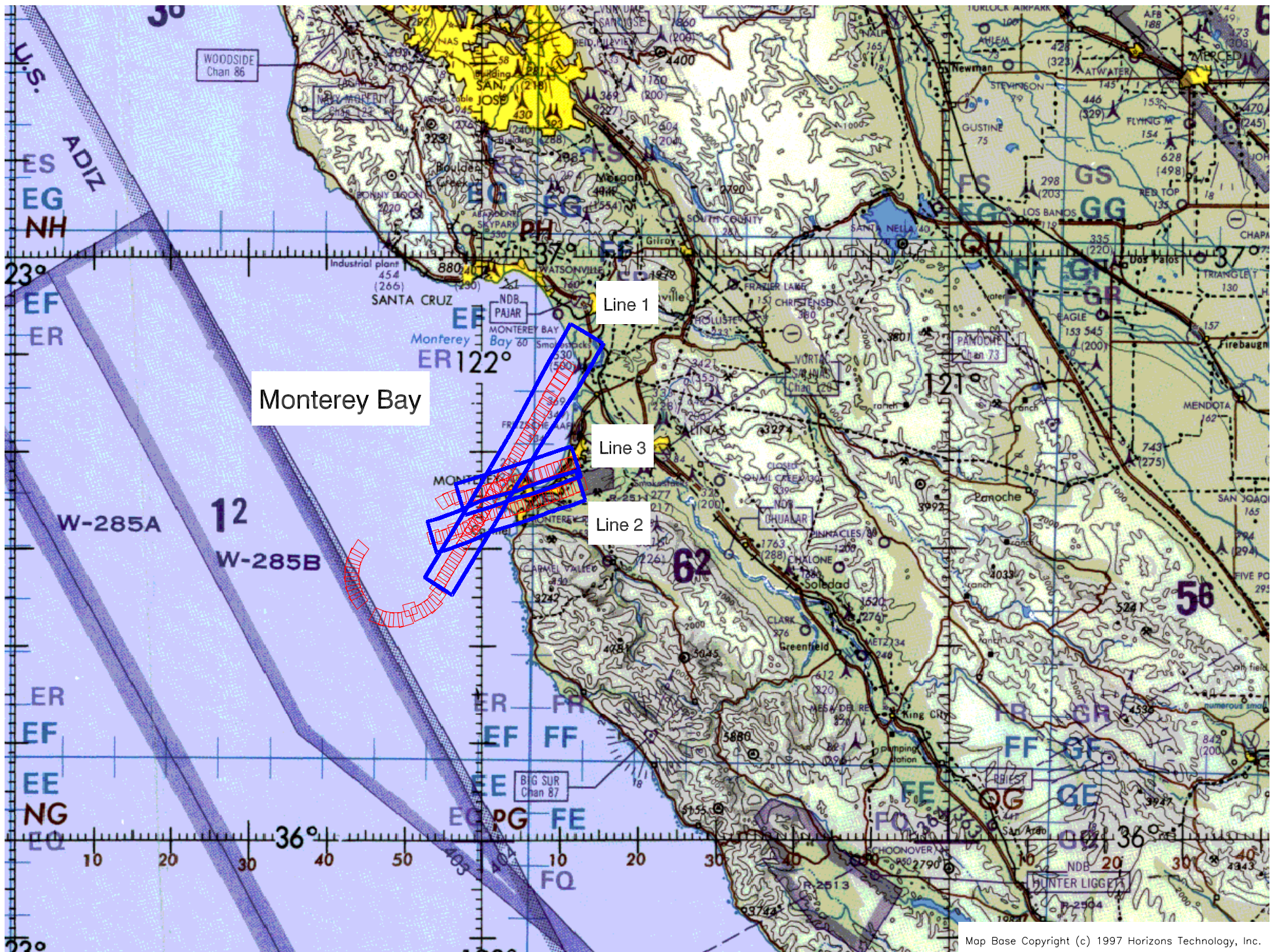
FLIGHT 10-004-04

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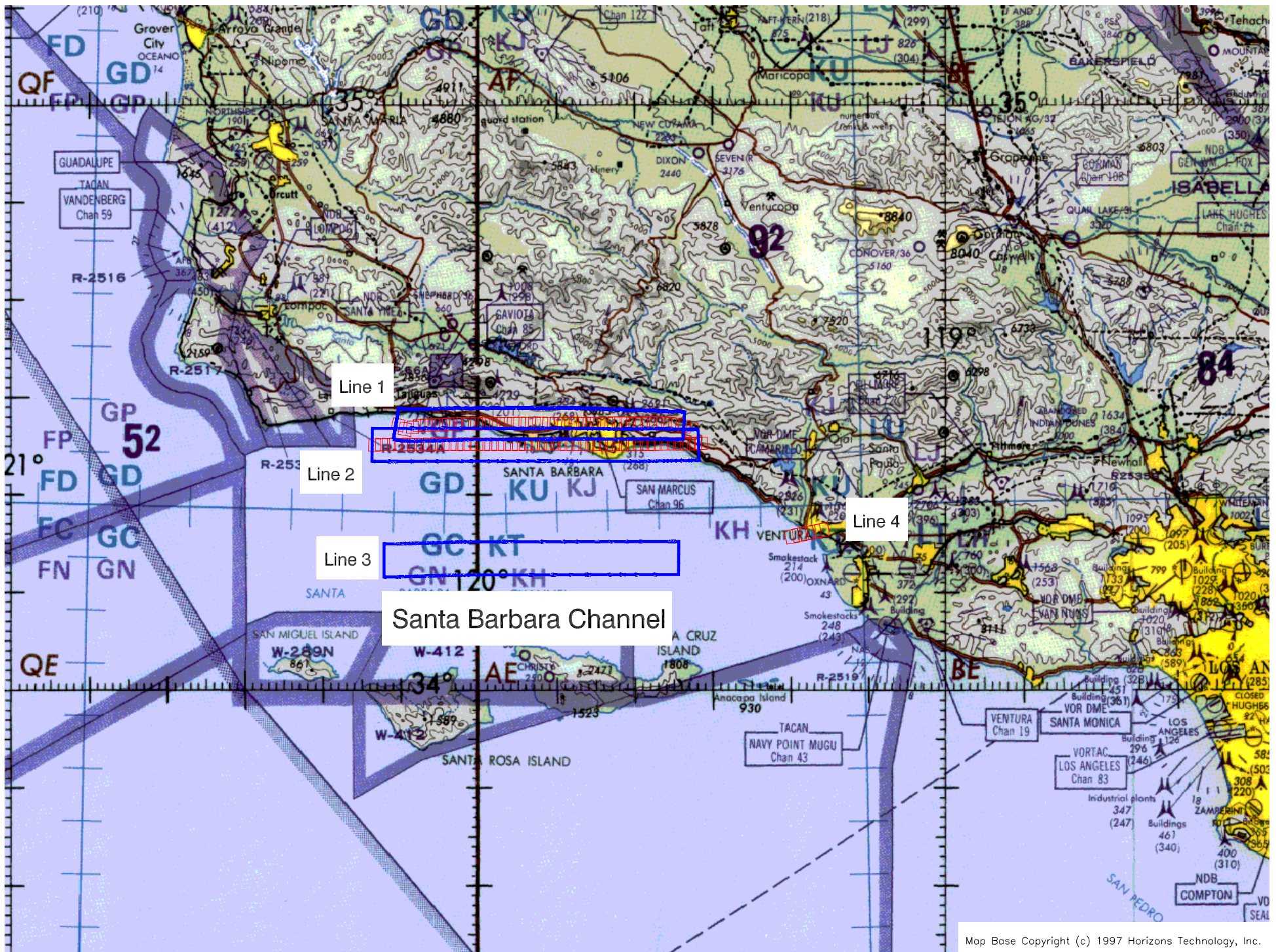
A/C 817

DCS

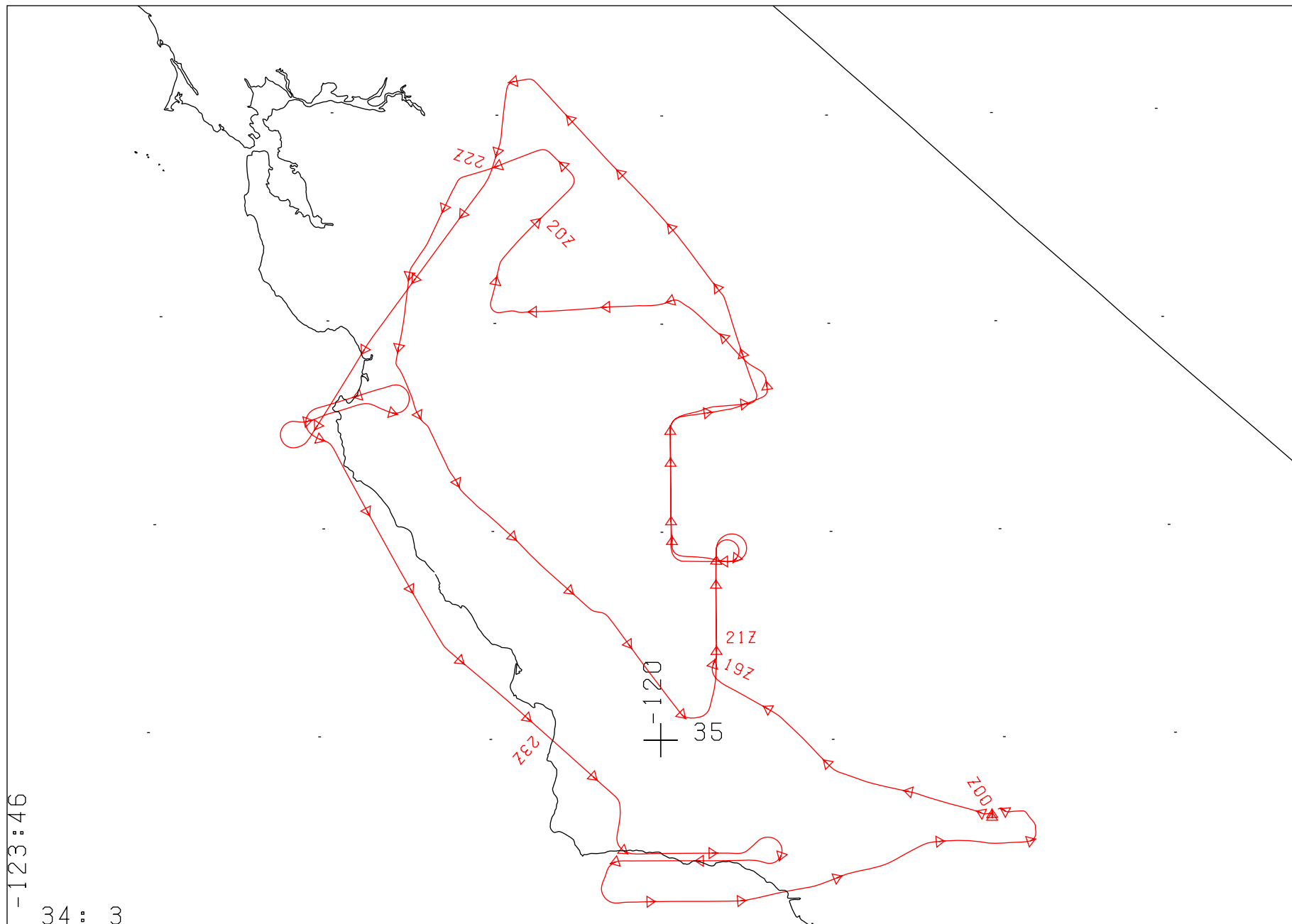
MASTER



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FLIGHT 10-004-04 1 JULY 2010 A/C 817 SARP 2010 MASTER / DCS
 LAMBERT CONFORMAL PROJECTION: SP1 = 33.6 SP2 = 37.5 CM = -120.0 ROTATED BY 0.0
 18:30:00 TO 0:00:00 UT SCALE 1:2.86E+06 TIME TICK EVERY 5.00 MINUTES