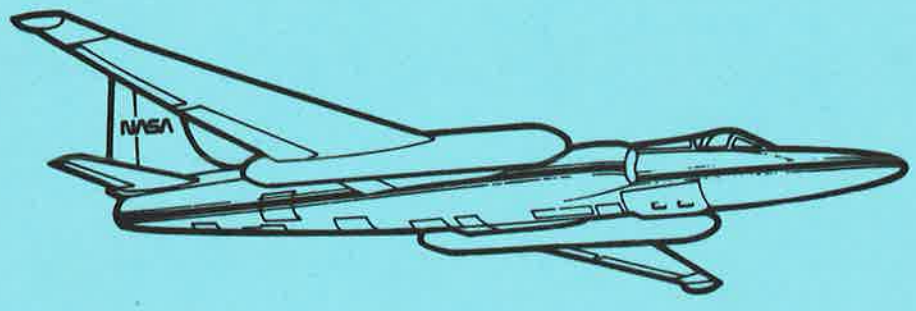
ORDER

SCIENCE AND APPLICATIONS AIRCRAFT DIVISION

AIRBORNE SCIENCE AND APPLICATIONS PROGRAM



ER-2
FLIGHT SUMMARY REPORT

NASA
National Aeronautics and
Space Administration

Ames Research Center
Moffett Field, California 94035-1000

Aircraft Data Facility
NASA-Ames Research Center
Mail Stop 240-6
Moffett Field, California 94035-1000
(415) 604-6252 • FTS 464-6252

FLIGHT SUMMARY REPORT

Flight #: 92-016

Date: 30 October 1991

Sensor Package: Thematic Mapper Simulator (TMS)
A-4 Configuration

Area(s) Covered: L.A. Bight and Channel Islands, California

Investigator(s): Pilot Proficiency

Aircraft #: 706

Flight Request: 92X001

Julian Date: 303

SENSOR DATA

Accession #:	-----	04368	04369
Sensor ID #:	074	034	009
Sensor Type:	TMS	RC-10	HR-732
Focal Length:	-----	12" 304.66 mm	24" 609.6 mm
Film Type:	-----	High Definition Aerochrome IR SO-131	High Definition Aerochrome IR SO-131
Filtration:	-----	None	cc.20B
Spectral Band:	-----	510-900 nm	510-900 nm
f Stop:	-----	4	8
Shutter Speed:	-----	1/200	1/75
# of Frames:	-----	110	207
% Overlap:	-----	60	60
Quality:	Very good	Excellent	Good
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 used for data collection during this flight.

Thematic Mapper Simulator

The Daedalus Thematic Mapper Simulator (TMS) is a multispectral scanner flown aboard the ER-2 aircraft which simulates spatial and spectral characteristics of the seven Landsat-D Thematic Mapper bands. The specific bands are as follows:

Daedalus Channel	TM Band	Wavelength, *µm*
1	A	0.42 - 0.45
2	1	0.45 - 0.52
3	2	0.52 - 0.60
4	B	0.60 - 0.62
5	3	0.63 - 0.69
6	C	0.69 - 0.75
7	4	0.76 - 0.90
8	D	0.91 - 1.05
9	5	1.55 - 1.75
10	7	2.08 - 2.35
11	6	8.5 - 14.0 low gain
12	6	8.5 - 14.0 high gain

Sensor/aircraft parameters are as follows:

IFOV:	1.25 mrad
Ground Resolution:	81 feet (25 meters) at 65,000 feet
Total Scan Angle:	43°
Swath Width:	8.4 nmi (15.6 km) at 65,000 feet
Pixels/Scan Line:	716
Scan Rate:	12.5 scans/second
Ground Speed:	400 kts (206 m/second)

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 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. 92-016

Accession # 04368

Sensor # 034

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	4822-4840	19:51:50	20:00:10	65000/19800	Clear
C - D	4841-4861	20:08:00	20:17:28	"	Clear
E - F	4862-4874	20:29:33	20:35:03	"	Clear
G - H	4875-4898	20:43:46	20:54:11	"	Clear
I - J	4899-4923	21:01:30	21:12:55	"	Clear
K - L	4924-4931	21:30:14	21:33:16	"	Clear

CAMERA FLIGHT LINE DATA
FLIGHT NO. 92-016

Accession # 04369

Sensor # 009

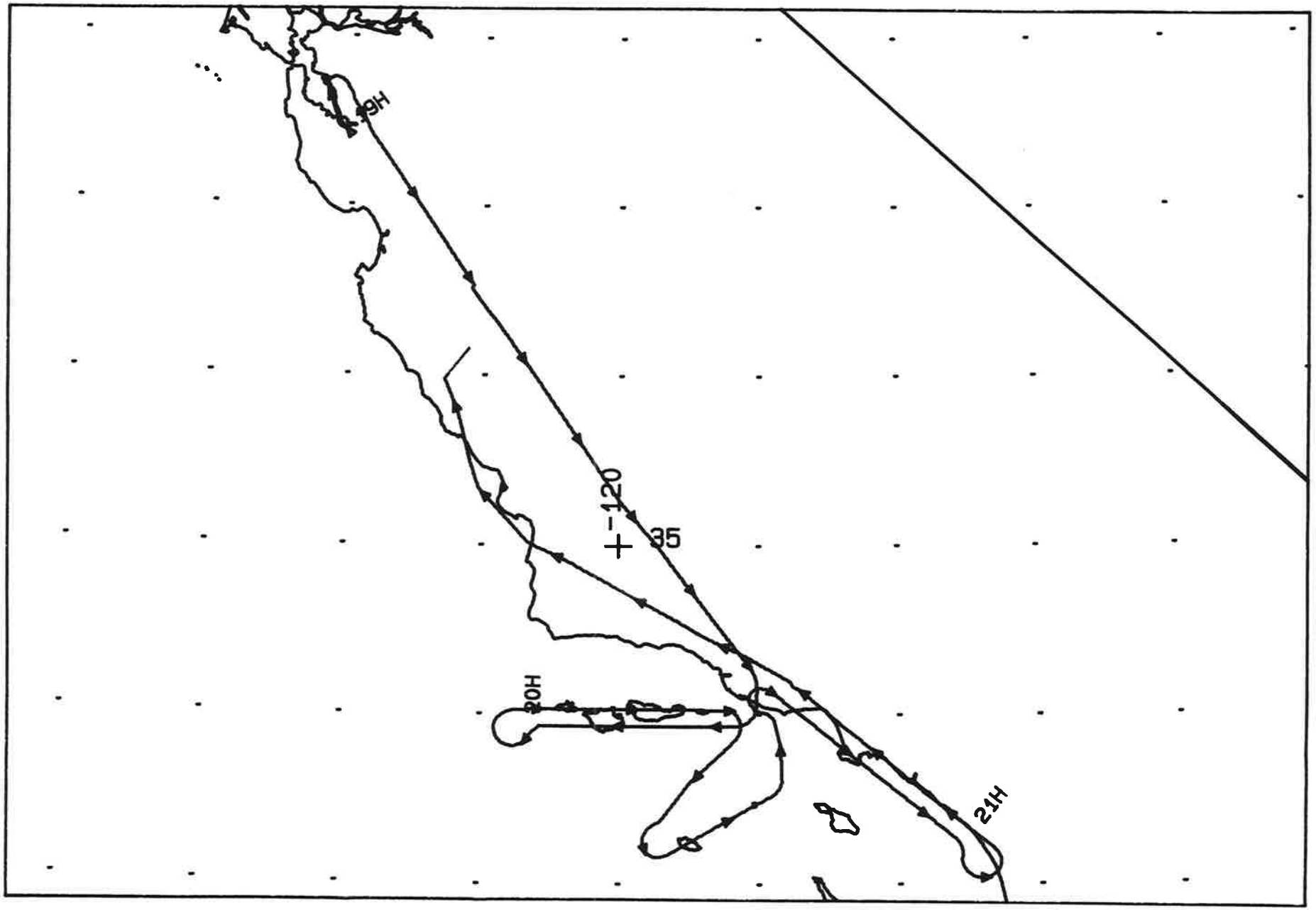
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0038	19:50:39	19:59:27	65000/19800	Clear
C - D	0039-0077	20:06:49	20:16:05	"	Clear
E - F	0078-0100	20:28:22	20:33:43	"	Clear
G - H	0101-0146	20:42:32	20:53:32	"	Clear
I - J	0147-0193	21:00:18	21:11:30	"	Clear
K - L	0194-0207	21:28:02	21:32:11	"	Clear

SCANNER FLIGHT LINE DATA

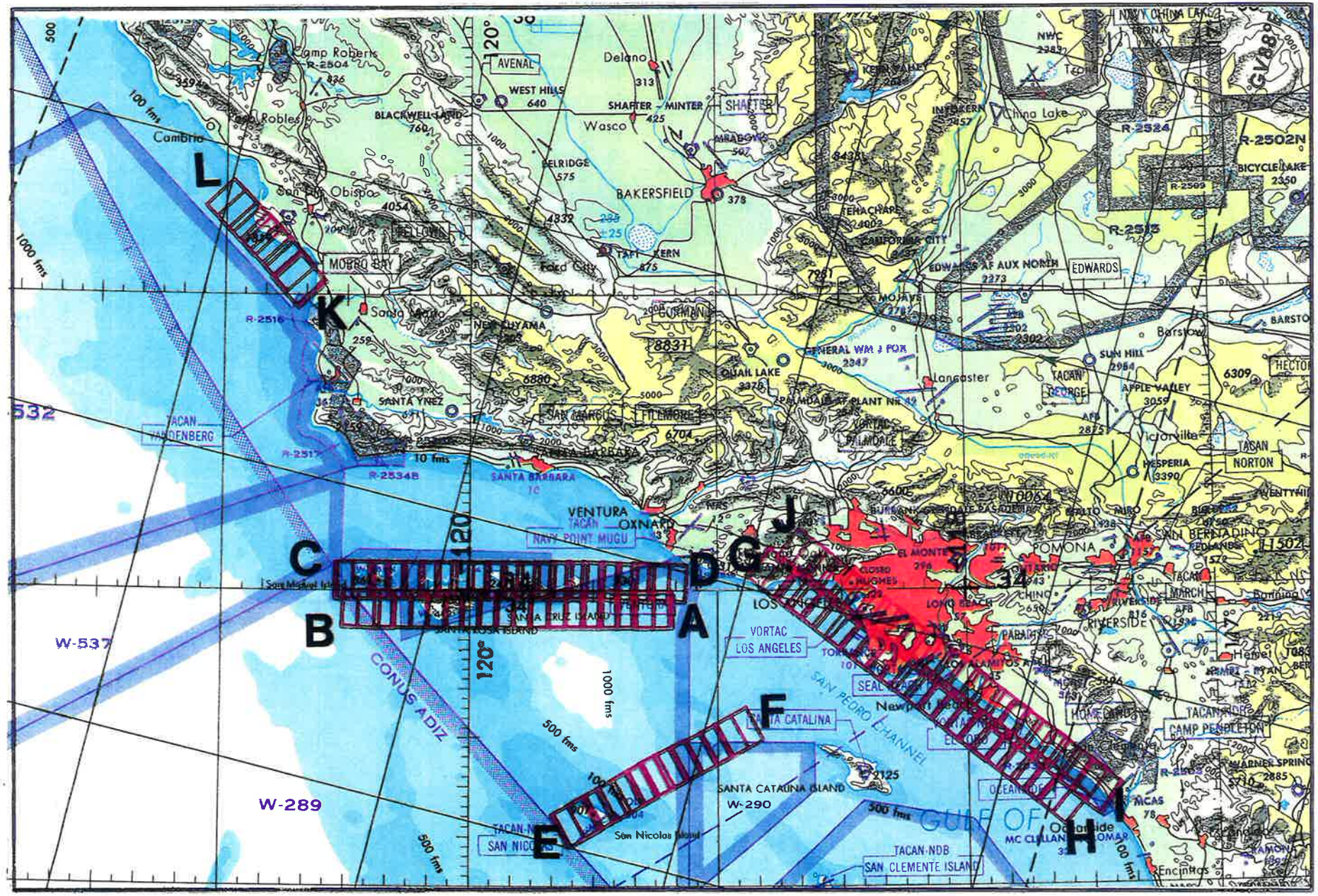
FLIGHT NO. 92-016

DAEDALUS FLIGHT DATA
FLIGHT NUMBER: 92-016

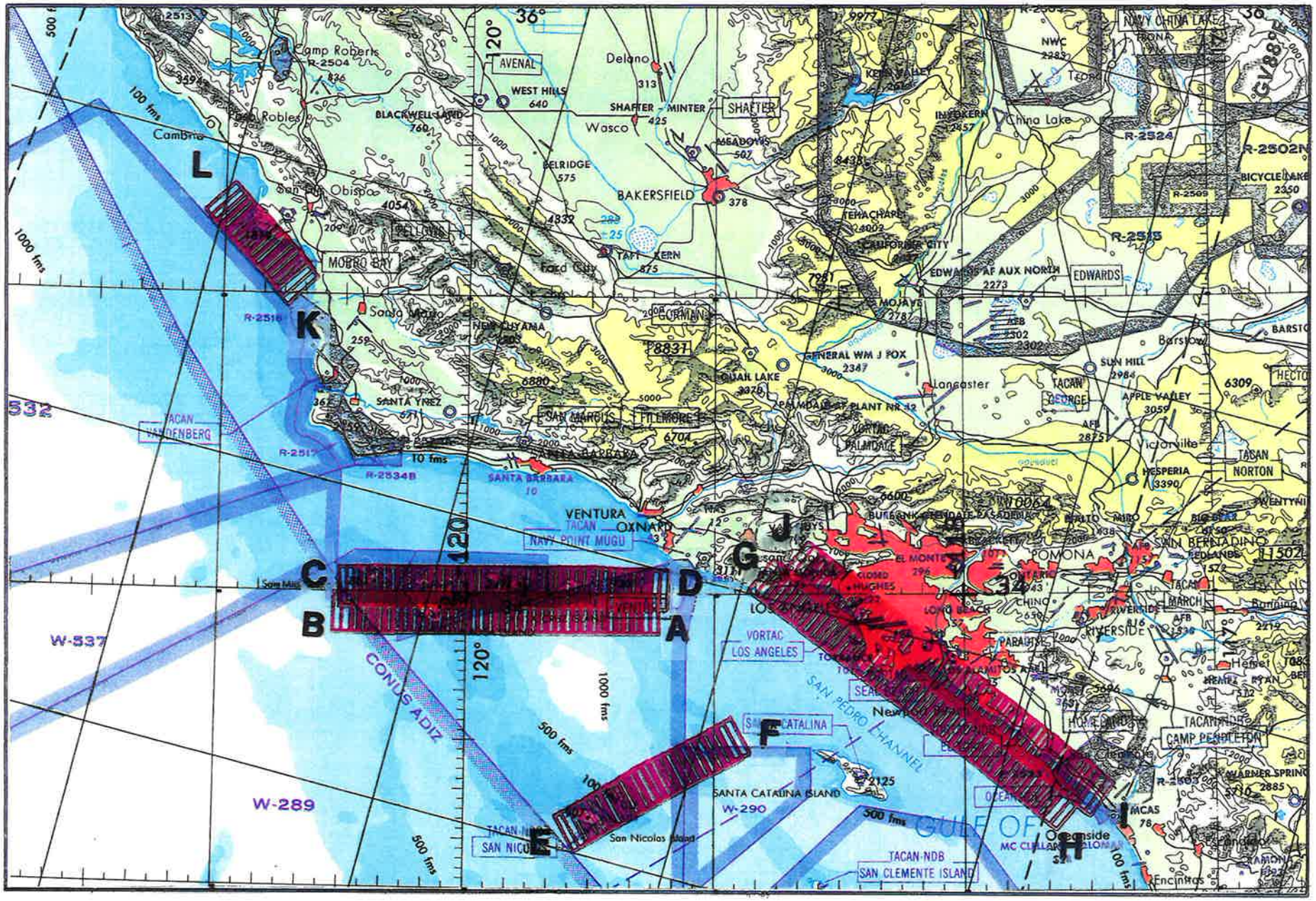
Check Points	Actual time (GMT) begin	end	Actual scanline begin	end	Altitude feet/meter	Scan Speed (rps)	total Good scanlines	total Interpolated scanlines	total Repeated scanlines
A-B	19:50:31.0	19:59:28.0	43731	50436	65000/19812	12.50	6701	0	5
C-D	20:06: 0.0	20:16: 9.0	55338	62952	65000/19812	12.50	7601	0	14
E-F	20:28:34.0	20:33:54.0	72360	76262	65000/19812	12.50	4001	0	2
G-H	20:41:47.0	20:53:40.0	82174	91088	65000/19812	12.50	8901	0	14
I-J	20:59:33.6	21:11:33.0	95497	104505	65000/19812	12.50	9001	0	8
K-L	21:29:23.0	21:32:20.0	117874	120093	65000/19812	12.50	2201	0	19



FLIGHT 92-016 30 October 1991 A/C 706 TMS / RC-10 / HR-732



FLIGHT 92-016 30 OCTOBER 1991 A/C 706 RC-10 ACCESSION # 04368 JNC 43



FLIGHT 92-016 30 October 1991 A/C 706 MR-732 Accession # 04369 JNC 43