

FLIGHT SUMMARY REPORT

Flight #: 91-065
Date: 13 March 1991
Sensor Package: Multispectral Atmospheric Mapping Sensor
(MAMS)
Wild-Heerbrug RC-10
Area(s) Covered: Central California Coast

Investigator(s): Westerman, Lockheed

Aircraft #: 706

Flight Request: 90R256

Julian Date: 072

SENSOR DATA

Accession #:	-----	04195
Sensor ID #:	080	076
Sensor Type:	MAMS	RC-10
Focal Length:	-----	12" 304.89 mm
Film Type:	-----	High Definition Aerochrome Infrared SO-131
Filtration:	-----	cc.10B
Spectral Band:	-----	510-900 nm
f Stop:	-----	4
Shutter Speed:	-----	1/250
# of Frames:	-----	166
% Overlap:	-----	60
Quality:	Poor	Fair
Remarks:		Processing stains and emulsion damage. Exposed for cloud definition.

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, μm</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

Sensor specifications are as follows:

IFOV:	5.0 mrad
Ground Resolution:	325 feet (99 meters) at 65,000 feet
Total Scan Angle:	86°
Swath Width:	20 nmi (37 km) at 65,000 feet
Pixels/Scan Line:	716
Scan Rate:	6.25 scans/second
Ground Speed:	400 kts (206 m/second)
Digitization:	8-bit channels 2-8 10-bit channels 9-12

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.

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. 91-065**

Accession # 04195

Sensor # 076

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	4745-4773	20:29:56	20:43:00	65000/19800	10-100% cumulus (frames 4751-4773)
B - C	4774-4781	20:43:28	20:46:44	"	100% cumulus; oblique frames in turn
C - D	4782-4802	20:47:12	20:56:32	"	30-90% cumulus
D - E	4803-4805	20:57:00	20:57:56	"	20% cumulus; oblique frames in turn
E - F	4806-4809	20:58:24	20:59:48	"	20-60% cumulus
F - G	4810-4814	21:00:16	21:02:08	"	80-100% cumulus; oblique frames in turn
G - H	4815-4831	21:02:36	21:10:04	"	40-80% cumulus
---	4832-4835	21:10:32	21:11:56	"	80-90% cumulus; oblique frames in turn
H - I	4836-4841	21:12:24	21:14:44	"	70-80% cumulus
---	4842-4843	21:15:12	21:15:40	"	60-70% cumulus; oblique frames in turn
I - J	4844-4852	21:16:08	21:19:52	"	50-70% cumulus

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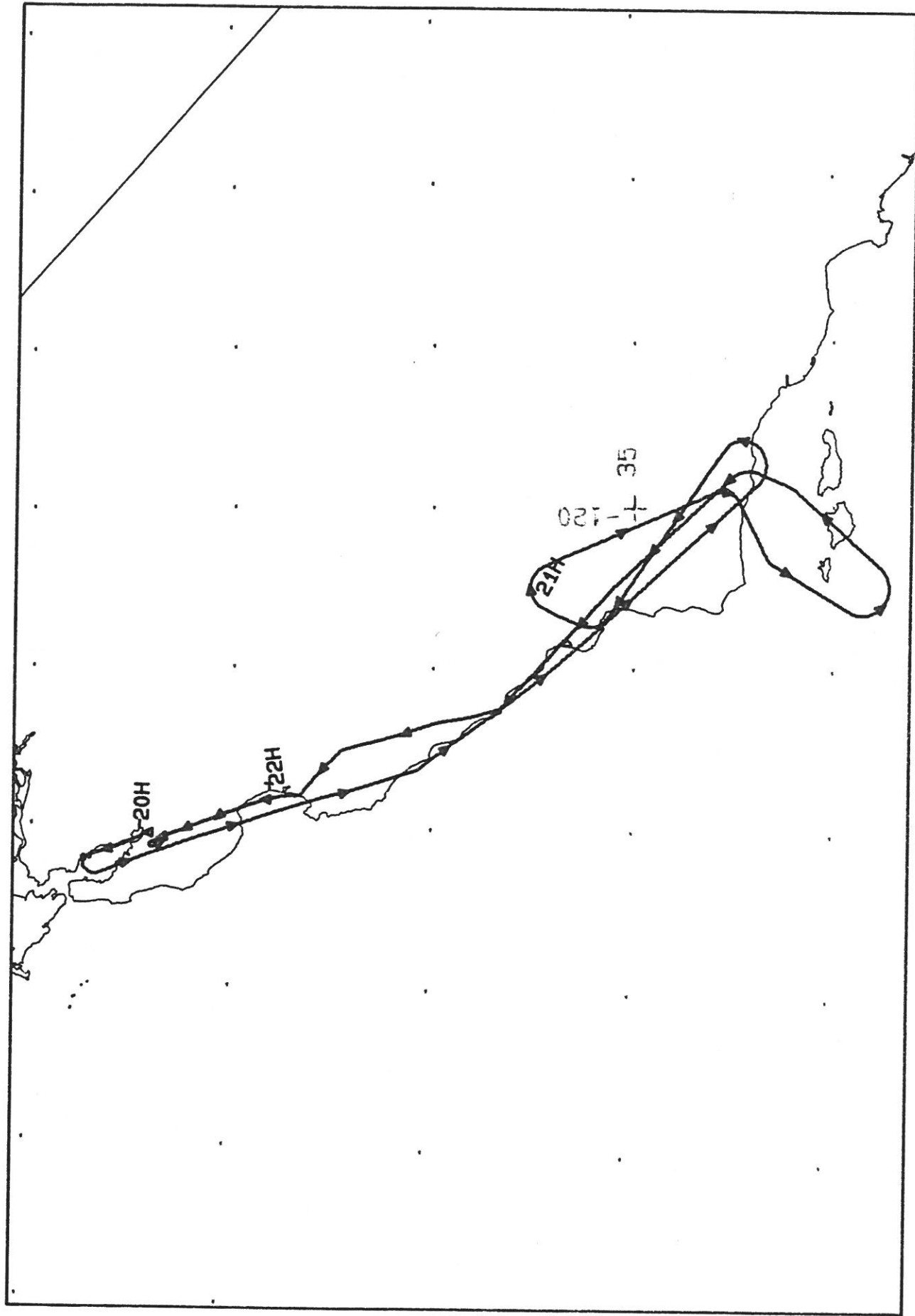
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
J - K	4853-4859	21:20:20	21:23:08	65000/19800	20-90% cumulus; oblique frames in turn
K - L	4860-4869	21:23:36	21:27:48	"	80-100% cumulus
---	4870	21:28:16	-----	"	100% cumulus; oblique frame in turn
L - M	4871-4873	21:28:44	21:29:40	"	90-100% cumulus
---	4874-4876	21:30:08	21:31:04	"	90% cumulus; oblique frames in turn
M - A	4877-4910	21:31:32	21:46:56	"	10-90% cumulus

SCANNER FLIGHT LINE DATA

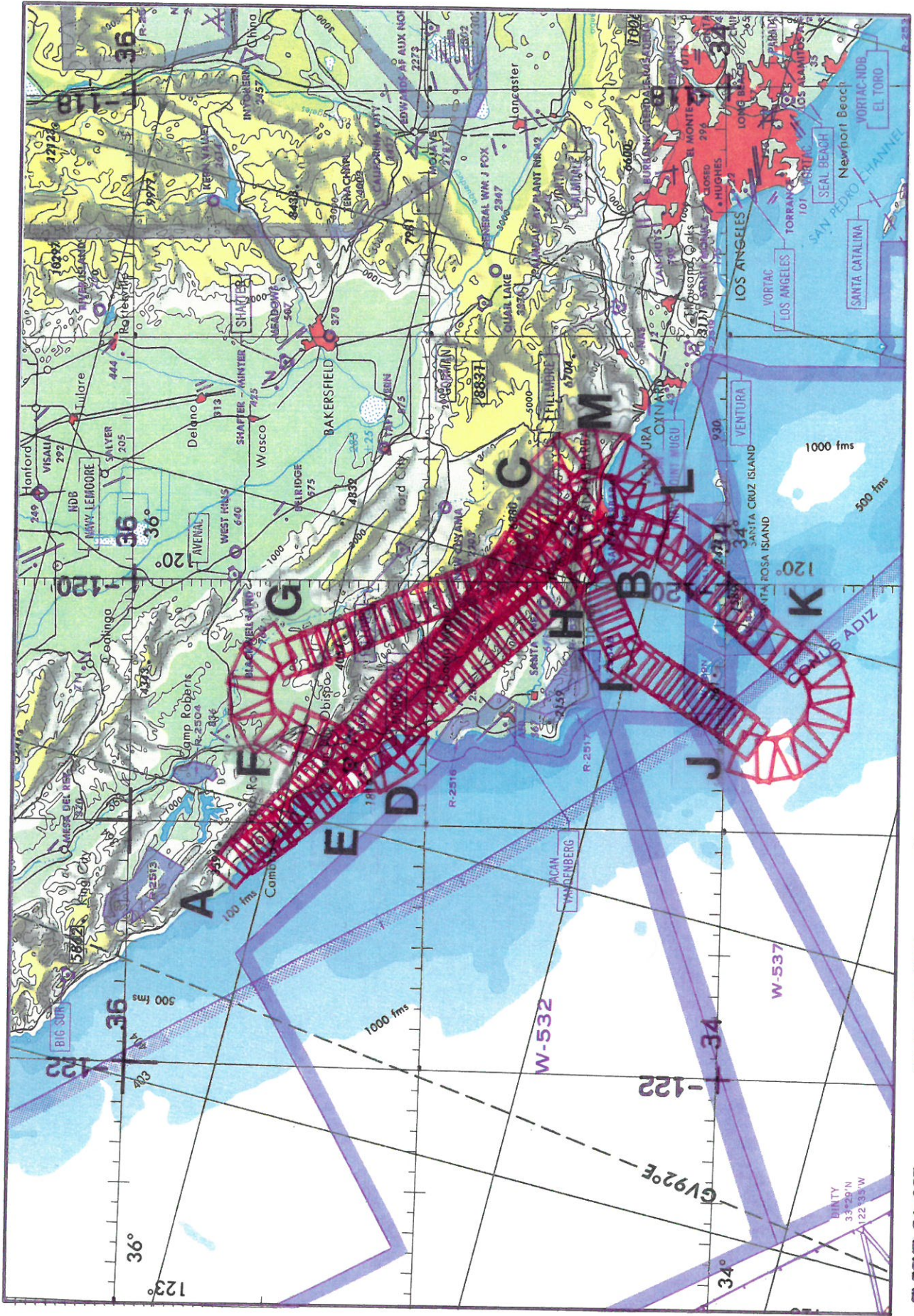
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FLIGHT DATA
FLIGHT NUMBER: 91-065

Check Points	A c t u a l t i m e (GMT) b e g i n e n d	A c t u a l s c a n l i n e b e g i n e n d	A l t i t u d e f e e t / m e t e r	S c a n S p e e d (r p s)	t o t a l G o o d s c a n l i n e s	t o t a l I n t e r p o l a t e d s c a n l i n e s	t o t a l R e p e a t e d s c a n l i n e s
A-B	19:57:33.0 20:06:41.0	2291 5717	65000/19812	6.30	3401	0	26
C-D	20:09:21.0 20:23:40.0	6718 12082	65000/19812	6.30	5301	0	64
E-F	20:24:44.0 20:43:9.0	12482 19393	65000/19812	6.30	6901	0	11
G-H	20:46:54.0 20:56:33.0	20797 24416	65000/19812	6.30	3601	0	19
I-J	20:58:26.0 20:59:47.0	25124 25628	65000/19812	6.30	501	0	4
K-L	21:02:59.0 21:10:0.0	26828 29456	65000/19812	6.30	2601	0	28
M-N	21:12:8.0 21:14:48.0	30256 31260	65000/19812	6.30	1001	0	4
O-P	21:15:52.0 21:19:37.0	31660 33064	65000/19812	6.30	1401	0	4
Q-R	21:23:6.0 21:28:46.0	34372 36498	65000/19812	6.30	2101	1	25
S-T	21:31:27.0 21:46:26.0	37502 43118	65000/19812	6.30	5601	0	16



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