

# FLIGHT SUMMARY REPORT

**Flight #:** 90-114  
**Date:** 23 July 1990  
**Sensor Package:** Wild-Heerbrug RC-10  
Multispectral Atmospheric Mapping  
Sensor (MAMS)  
**Area(s) Covered:** California, Nevada, Idaho, and Oregon

**Investigator(s):** Ledbetter, Lockheed  
**Flight Request:** 90R256

**Aircraft #:** 706  
**Julian Date:** 204

## SENSOR DATA

<b>Accession #:</b>	04074	----
<b>Sensor ID #:</b>	033	080
<b>Sensor Type:</b>	RC-10	MAMS
<b>Focal Length:</b>	6" 153.17 mm	----
<b>Film Type:</b>	High Definition Aerochrome IR SO-131	----
<b>Filtration:</b>	cc.30B	----
<b>Spectral Band:</b>	510-900 nm	----
<b>f Stop:</b>	4	----
<b>Shutter Speed:</b>	1/150	----
<b># of Frames:</b>	259	----
<b>% Overlap:</b>	60	----
<b>Quality:</b>	Excellent	Good
<b>Remarks:</b>		

## 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 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

Sensor specifications are as follows:

IFOV:	5.0 mrad
Pixel/Scan Line:	716
Total Scan Angle:	86°
Scan Rate:	6.25 scans/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. 90-114**

Accession # 04074

Sensor # 033

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	2517-2523	19:29:43	19:35:30	65000/19800	Clear
C - D	2524-2533	19:50:51	19:58:32	"	10-70% cirro cumulus (frames 2527-2533)
D - E	2534-2542	20:00:37	20:07:21	"	20-90% cirro cumulus
E - D	2543-2552	20:14:38	20:22:16	"	20-80% cumulus
D - F	2553-2584	20:25:12	20:53:29	"	20-90% cirro cumulus
F - G	2585-2621	20:56:17	21:29:05	"	10-100% cirro cumulus
H - I	2622-2661	21:34:05	22:09:35	"	10-70% cirro cumulus (frames 2622-2643); 10-90% cirro cumulus (frames 2648-2661); oblique (frames 2625-2627)
J - K	2662-2713	22:13:13	22:59:49	"	20-90% cirro cumulus
L - M	2714-2762	23:02:25	23:45:17	"	10-100% strato cumulus (frames 2714-2733); 10-20% strato cumulus (frames 2754-2757)
N - O	2763-2775	24:02:43	24:12:20	"	20% strato cumulus (frames 2763-2765); 10-50% strato cumulus (frames 2767-2772)

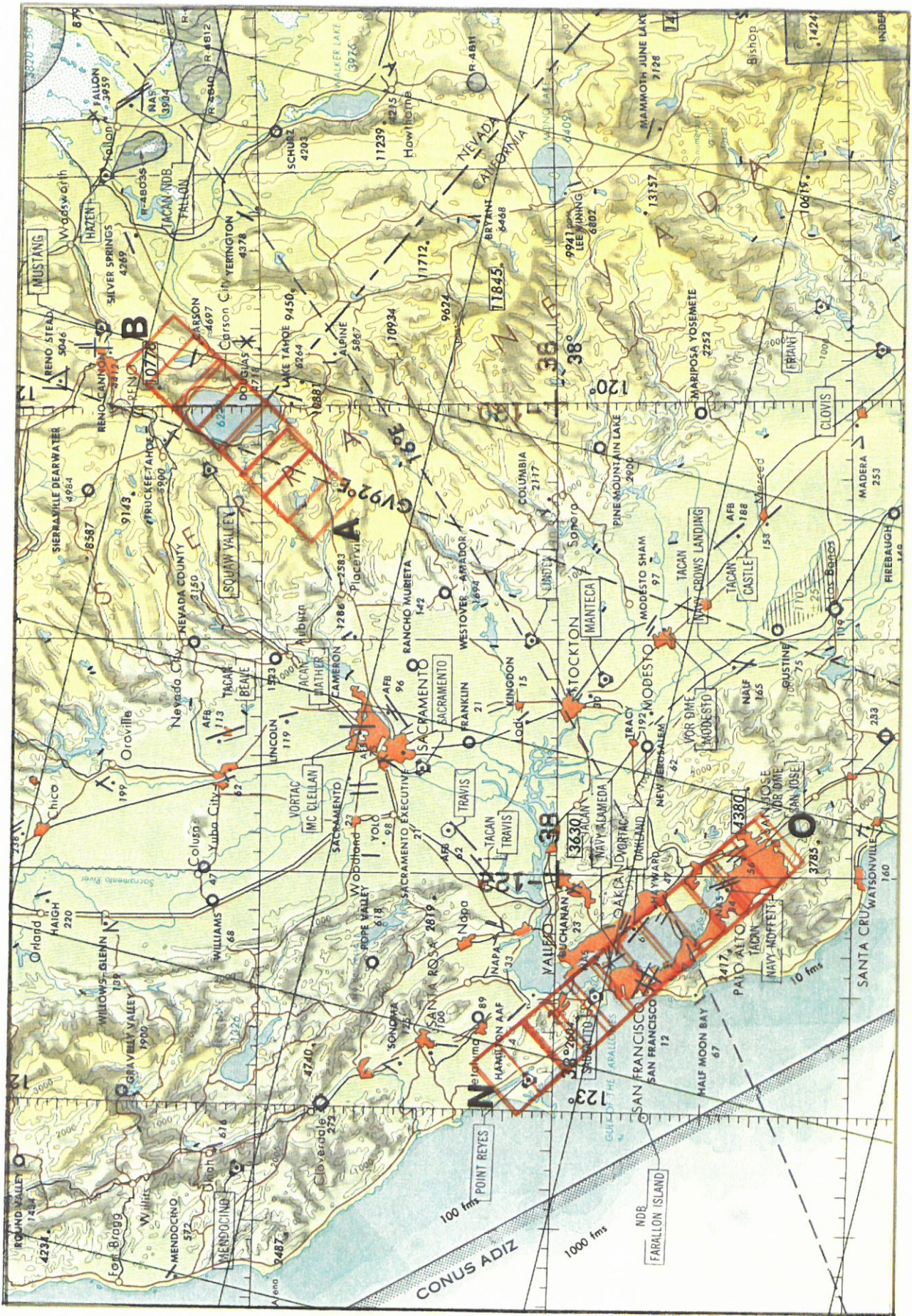
# SCANNER FLIGHT LINE DATA

## FLIGHT NO. 90-114

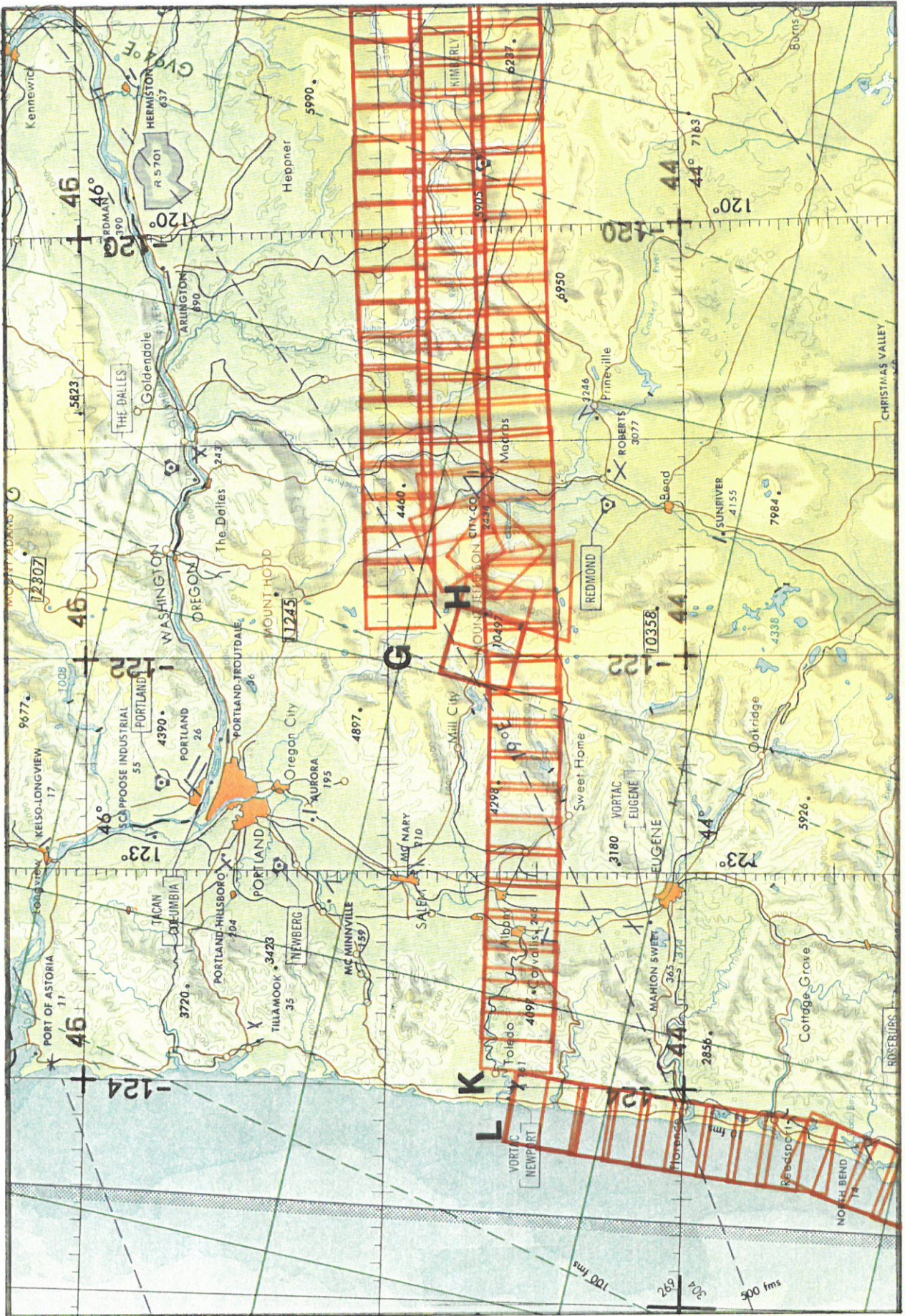
DAEDALUS FLIGHT DATA  
FLIGHT NUMBER: 90-114

Check Points	Actual Time (GMT)		Actual Scanline		Altitude feet/meter	Scan Speed (rps)	Total Good Scanlines	Total Interpolated Scanlines	Total Repeated Scanlines
	Begin	End	Begin	End					
A-B	19:29:43.0	19:35:30.0	27186	28696	65000/19812	6.30	1501	0	10
C-D	19:50:51.0	19:58:32.0	35096	38220	65000/19812	6.30	3101	0	24
D-E	20:00:37.0	20:07:21.0	38785	41501	65000/19812	6.30	2701	0	16
E-D	20:14:38.0	20:22:16.0	44046	47142	65000/19812	6.30	3085	0	12
D-F	20:25:12.0	20:53:29.0	47931	58740	65000/19812	6.30	10770	0	40
F-G	20:56:17.0	21:29:05.0	59603	72252	65000/19812	6.30	12640	0	10
H-I	21:34:05.0	22:09:35.0	162	13517	65000/19812	6.30	13343	0	13
J-K	22:13:13.0	22:59:49.0	14766	23692	65000/19812	6.30	8919	0	8
J-K	22:13:13.0	22:59:49.0	24593	32618	65000/19812	6.30	8024	0	2
L-M	23:02:25.0	23:45:17.0	33271	39961	65000/19812	6.30	6680	0	11
L-M	23:02:25.0	23:45:17.0	39962	49588	65000/19812	6.30	9336	0	291
N-O	24:02:43.0	24:12:20.0	55932	59499	65000/19812	6.30	3364	0	4

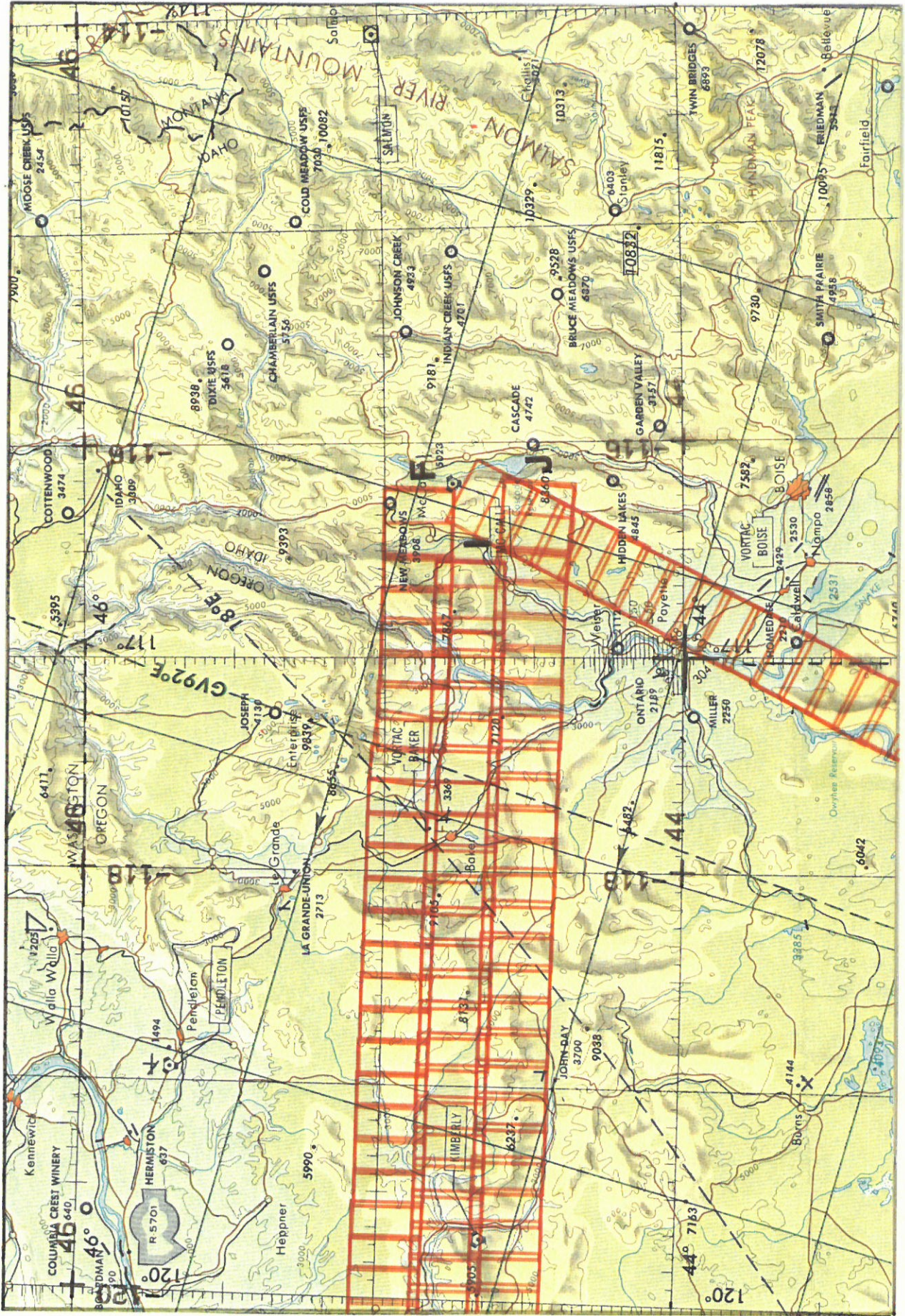




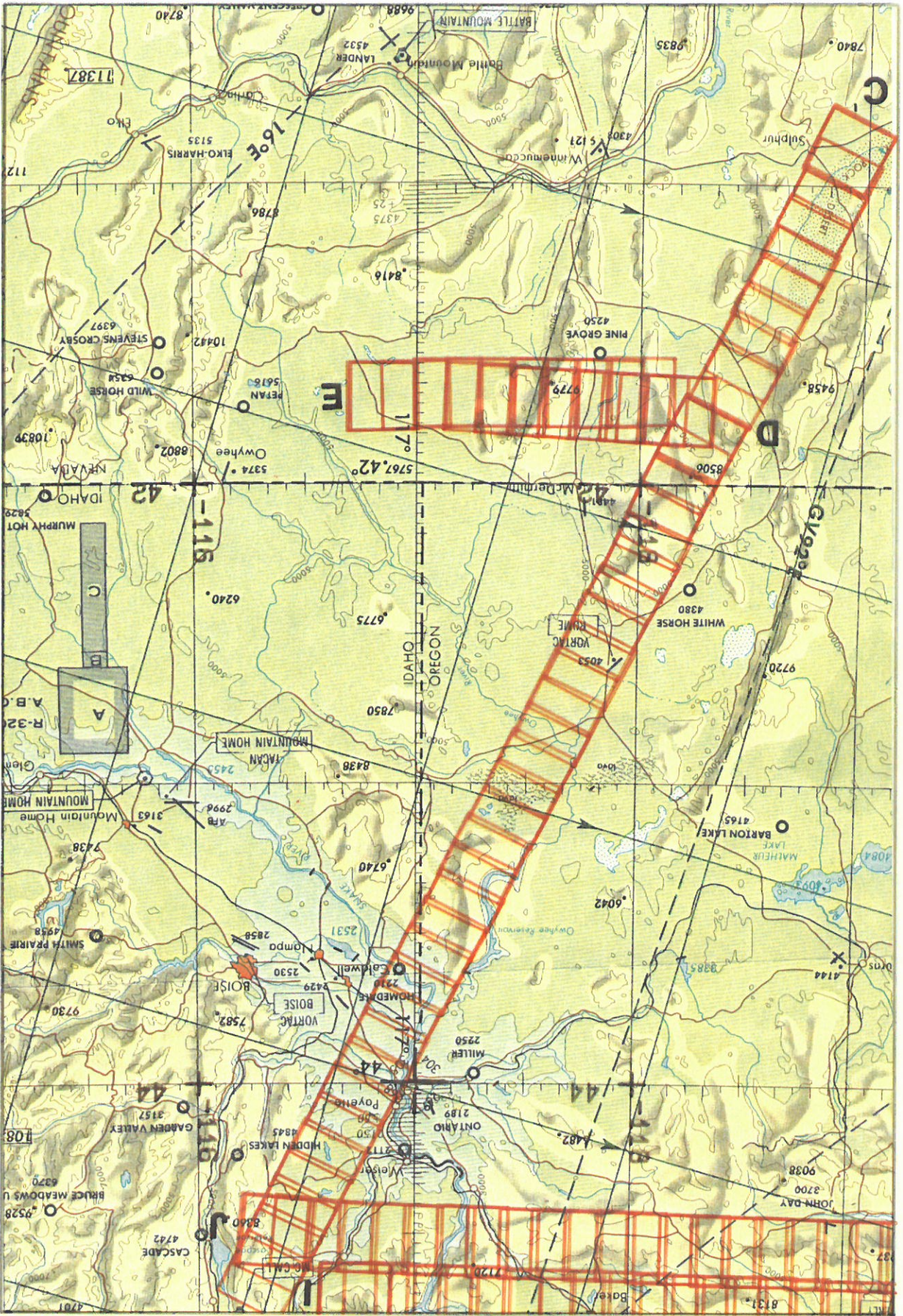
FLIGHT 90-114      25 JULY 1990      A/C 706      MANS /RC-10      ACCESSION #4074      JNC 45



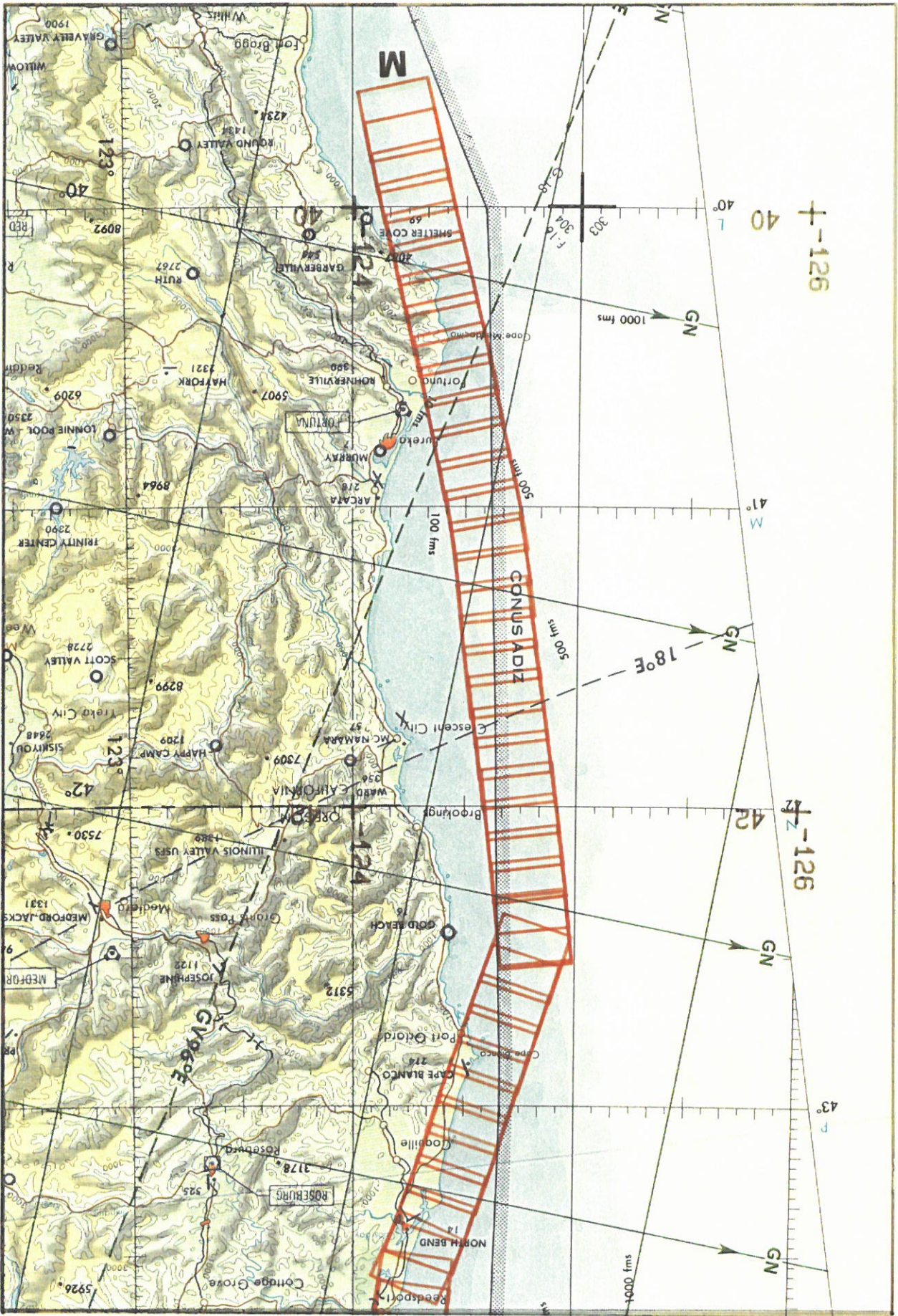




FLIGHT 90-114      23 JULY 1990      A/C 706      NAMS /RC-10      ACCESSION #4074      JNC 43



FLIGHT 90-114 23 JULY 1990 A/C 706 NAMS /HC-10 ACCESSION #4074 JNC 43



JNC 43

ACCESSION #4074

MAVS /FC/ 10

A/C 706

23 JULY 1990

FLIGHT 90-114

40  
+--126

42  
+--126

40°

41°

42°

43°

GN

GN

GN

GN

1000 fms

500 fms

500 fms

500 fms

180E

M