

# FLIGHT SUMMARY REPORT

**Flight #:** 90-131  
**Date:** 14 August 1990  
**Sensor Package:** Wild-Heerbrug RC-10  
Thematic Mapper Simulator (TMS)  
**Area(s) Covered:** Northern California (fires)/Oregon

**Investigator(s):** Spanner, TGS Technology, Inc.      **Aircraft #:** 706  
Brass, NASA-ARC  
**Flight Request:** 90L223D and 89B201C      **Julian Date:** 226

## SENSOR DATA

<b>Accession #:</b>	04095	----
<b>Sensor ID #:</b>	076	101
<b>Sensor Type:</b>	RC-10	TMS
<b>Focal Length:</b>	12" 304.89 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>	1/200	----
<b># of Frames:</b>	177	----
<b>% Overlap:</b>	60	----
<b>Quality:</b>	Excellent	----
<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.

### 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:

<u>Daedalus Channel</u>	<u>TM Band</u>	<u>Wavelength, <math>\mu\text{m}</math></u>
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)

**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. 90-131**

Accession # 04095

Sensor # 076

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	6675-6682	18:24:29	18:27:51	65000/19800	Data severely obscured by smoke (frames 6676-6682)
C - D	6683-6691	18:32:56	18:36:22	"	Smoke obstruction (frames 6683-6686)
E - F	6692-6699	18:56:19	18:59:14	"	10-80% strato cumulus (frames 6692-6697)
G - H	6700-6707	19:04:54	19:07:48	"	10-100% cumulus (frames 6702-6707)
I - J	6708-6719	19:48:24	19:53:07	"	30% cirrus (frames 6708-6709); smoke obstruction (frames 6710-6719)
K - L	6720-6727	19:57:51	20:00:43	"	Severe smoke (frames 6720-6725)
M - N	6728-6736	20:06:51	20:10:10	"	Severe smoke (frames 6728-6731); minor smoke (frames 6734-6735)
O - P	6737-6745	20:14:58	20:18:17	"	Minor smoke obstruction (frames 6737-6741); moderate smoke obstruction (frames 6744-6745)

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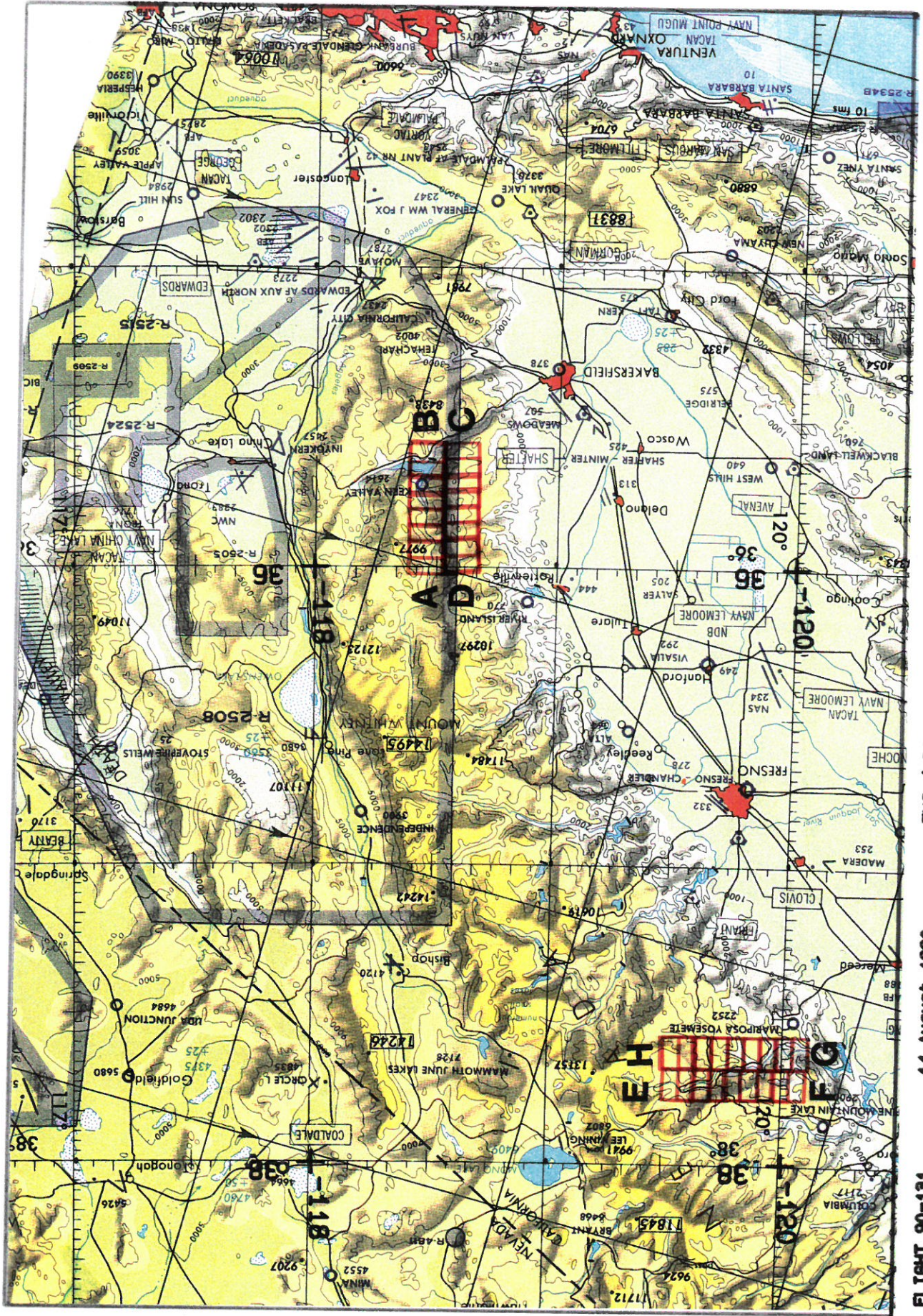
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
Q - R	6746-6754	20:24:34	20:27:54	65000/19800	Minor smoke (frames 6746-6750); severe smoke (frames 6751-6754)
S - T	6755-6770	20:33:45	20:40:18	"	Moderate smoke (frames 6755-6758); 10-20% cirrus (frames 6759-6760)
U - V	6771-6785	20:43:36	20:49:42	"	10-90% cirro cumulus (frames 6781-6785)
W - X	6786-6790	21:19:31	21:20:59	"	Clear
Y - Z	6791-6795	21:26:58	21:28:26	"	10% strato cumulus (frame 6795)
1 - 2	6796-6800	21:39:07	21:40:35	"	Minor cirrus (frames 6798-6799)
3 - 4	6801-6816	22:12:40	22:19:11	"	10-100% mixed cirrus and smoke
5 - 6	6817-6829	22:29:31	22:34:40	"	30-90% mixed cirrus and smoke
7 - 8	6830-6840	22:44:46	22:48:59	"	10-100% mixed cumulus and smoke
9 - 10	6841-6851	22:52:14	22:56:27	"	10-80% mixed strato cumulus and smoke

# SCANNER FLIGHT LINE DATA

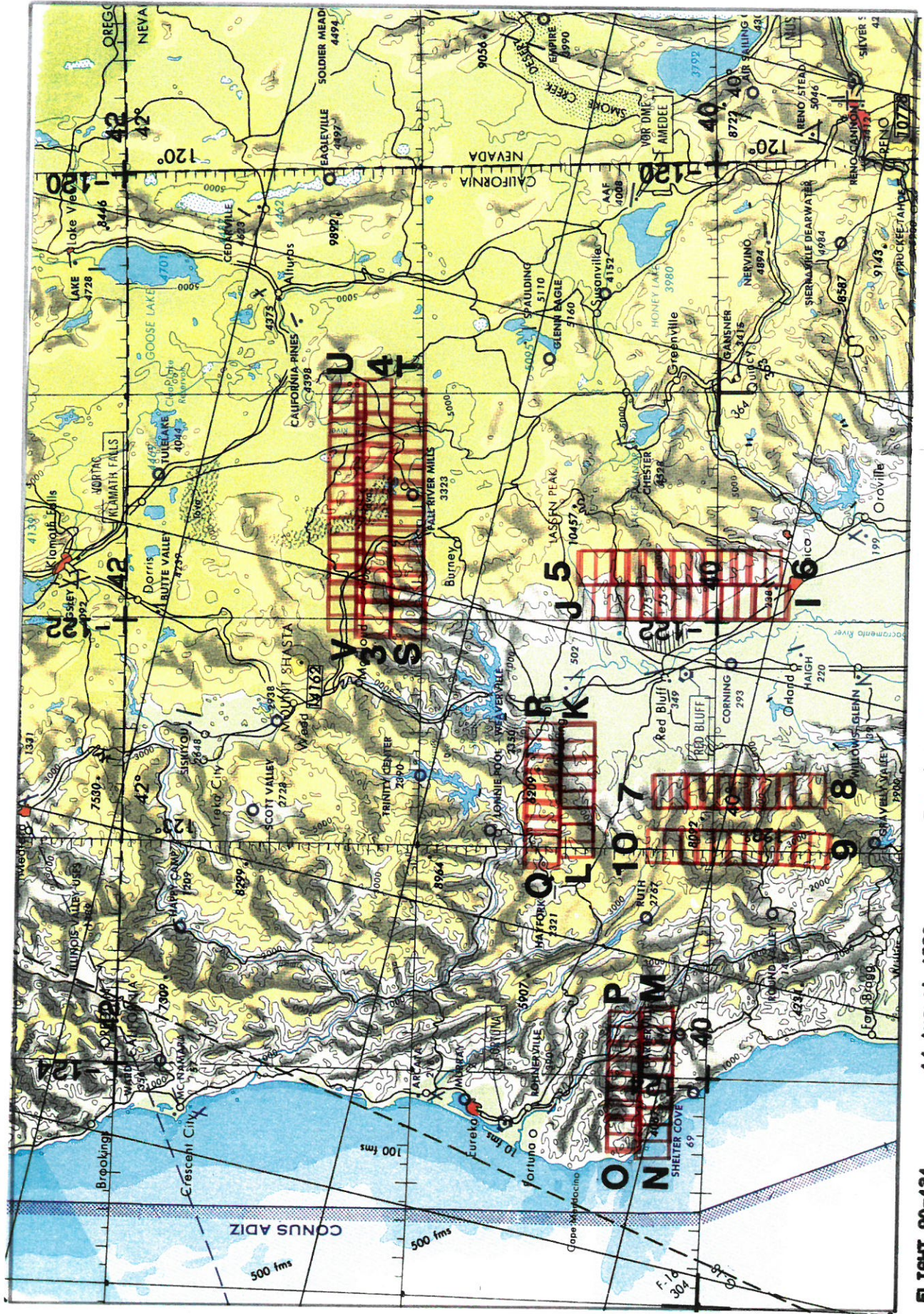
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DAEDALUS FLIGHT DATA  
FLIGHT NUMBER: 90-131

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	18:24:18.0	18:27:54.0	37940	40146	65000/19812	12.50	2203	0	4
C-D	18:32:49.0	18:36:15.0	43161	45261	65000/19812	12.50	2097	0	4
E-F	18:56:12.0	18:59:13.0	57508	59357	65000/19812	12.50	1848	0	2
G-H	19:04:47.0	19:07:43.0	62781	64853	65000/19812	12.50	1801	0	2
I-J	19:48:17.0	19:53:16.0	89513	92575	65000/19812	12.50	3061	0	2
K-L	19:57:44.0	20:00:55.0	95324	97277	65000/19812	12.50	1946	0	8
M-N	20:06:44.0	20:09:59.0	100857	102857	65000/19812	12.50	1997	0	4
O-P	20:14:50.0	20:18:20.0	105834	107991	65000/19812	12.50	2152	0	6
Q-R	20:24:27.0	20:27:53.0	111753	113862	65000/19812	12.50	2106	0	4
S-T	20:33:37.0	20:40:25.0	117393	121570	65000/19812	12.50	4168	0	10
U-V	20:43:28.0	20:49:50.0	123442	127362	65000/19812	12.50	3919	0	2
W-X	21:19:24.0	21:20:51.0	145544	146436	65000/19812	12.50	893	0	0
Y-Z	21:26:51.0	21:28:18.0	150120	151018	65000/19812	12.50	891	0	8
1-2	21:39:00.0	21:40:28.0	157595	158497	65000/19812	12.50	903	0	0
3-4	22:12:33.0	22:19:08.0	178230	182285	65000/19812	12.50	4052	0	4
5-6	22:29:24.0	22:34:36.0	188594	191789	65000/19812	12.50	3194	0	2
7-8	22:44:39.0	22:48:53.0	197969	200571	65000/19812	12.50	2599	0	4



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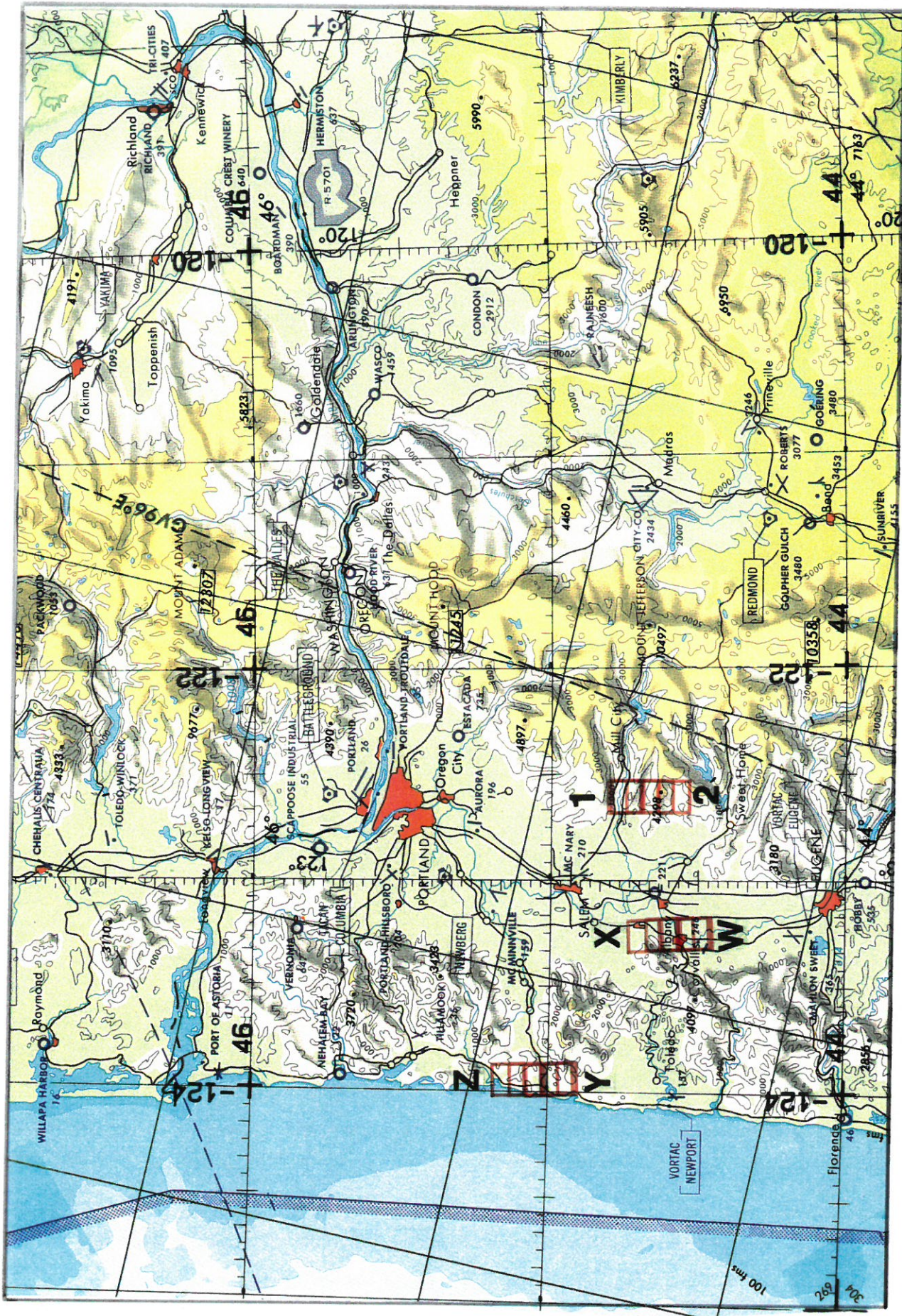
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