

FLIGHT SUMMARY REPORT

Flight #: 91-012
Date: 24 October 1990
Sensor Package: Thematic Mapper Simulator (TMS)
 Wild-Heerbrug RC-10 and Hycon HR-732
Area(s) Covered: Monterey Bay, San Luis Obispo/Santa
 Barbara County, California; Oregon Transect

Investigator(s): Spanner, TGS Technology **Aircraft #:** 706
Flight Request: 90L223D **Julian Date:** 297

SENSOR DATA

Accession #:	----	04154	04155	4156
Sensor ID #:	101	076	034	039
Sensor Type:	TMS	RC-10	RC-10	HR-732
Focal Length:	----	12" 304.89 mm	12" 304.66 mm	24" 609.6 mm
Film Type:	----	High Definition Aerochrome IR SO-131	Aerial Color SO-242	Aerial Color SO-242
Filtration:	----	cc.10B	None	None
Spectral Band:	----	510-900 nm	400-700 nm	400-700 nm
f Stop:	----	4	4	8
Shutter Speed:	----	1/100	1/200	1/75
# of Frames:	----	72	56	60
% Overlap:	----	60	60	60
Quality:	Good	Excellent	Excellent	Good
Remarks:				Emulsion damage throughout roll; shutter malfunction in mid-flight

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, μm</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. 91-012

Accession # 04154

Sensor # 076

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	4638-4644	18:21:35	18:24:18	55000/16754	Clear; Monterey Bay, California
C - D	4645-4646	18:46:28	18:46:57	65000/19800	Clear
O - P	4647-4652	20:31:25	20:33:18	"	Clear
Q - R	4653-4659	21:00:17	21:02:33	"	10% very minor cumulus (frames 4656-4659) (Corvallis, Oregon)
S - T	4660-4665	21:08:19	21:10:35	"	10% minor cirrus (frames 4662-4665) (Scio, Oregon)
U - V	4666-4672	21:18:29	21:21:12	"	10% minor cirrus (haze) (frames 4666-4672) (Santiam Pass)
W - Y	4673-4680	21:26:25	21:29:24	"	10% minor cirrus (haze) (frames 4673-4680) (Black Butte)
Y - Z	4681-4709	21:33:26	21:46:12	"	Clear; Redmond/Bend

CAMERA FLIGHT LINE DATA
FLIGHT NO. 91-012

Accession # 04155

Sensor # 034

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	1299-1305	18:21:40	18:24:18	55000/16754	Clear; Monterey Bay, California
C	1306	18:46:28	18:46:28	65000/19800	Clear
E - F	1317-1329	18:55:35	19:01:23	"	Clear
G - H	1330-1341	19:04:40	19:09:59	"	Clear
I - J	1342-1354	19:14:40	19:20:28	"	Clear
K - L	1355-1356	19:24:20	19:24:49	"	Clear
M - N	1364-1366	19:28:41	19:29:39	"	Clear
O - P	1367-1371	20:31:28	20:33:24	"	Clear; Mt. Shasta

**CAMERA FLIGHT LINE DATA
FLIGHT NO. 91-012**

Accession # 04156

Sensor # 039

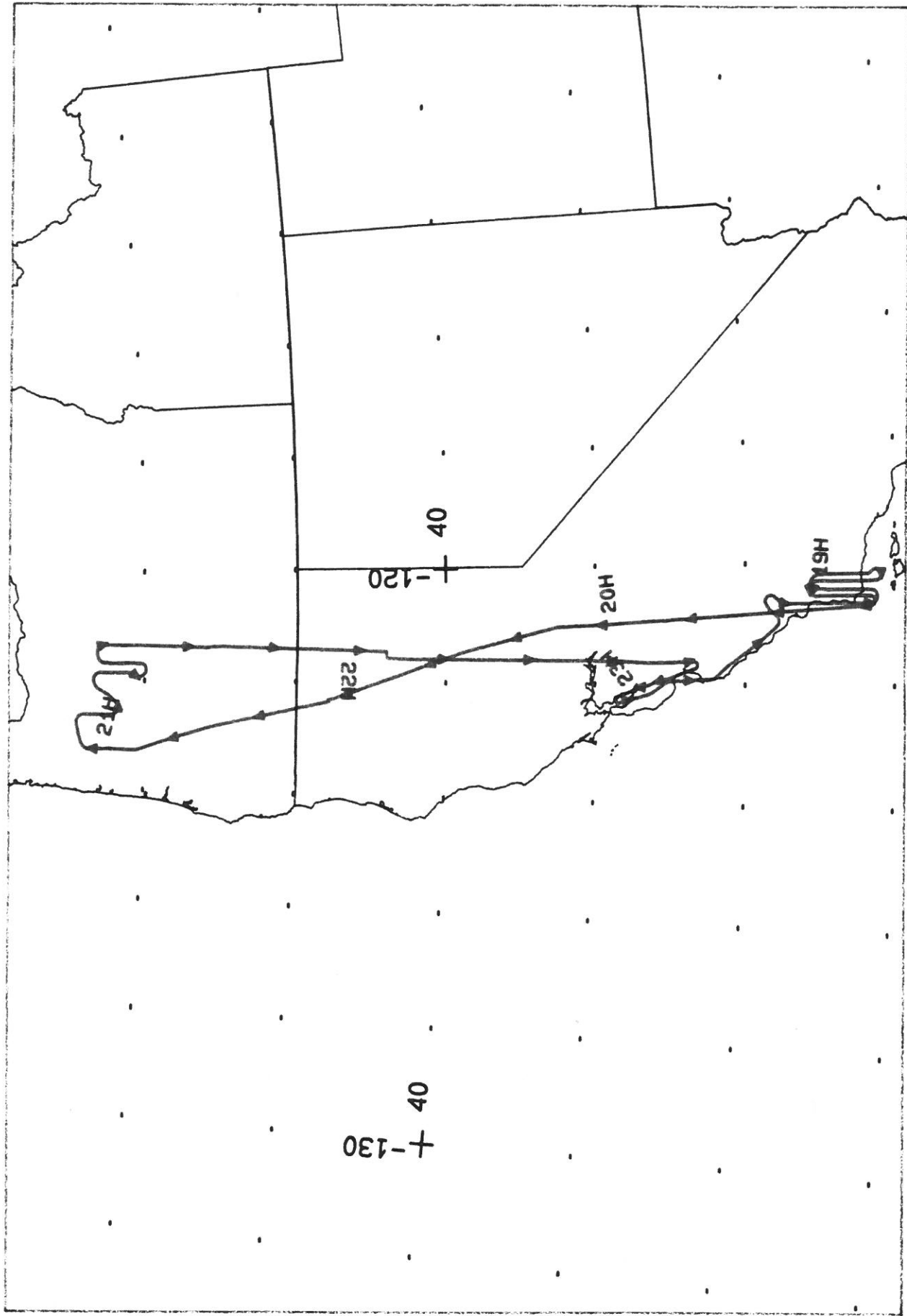
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0012	18:21:07	18:23:51	55000/16754	Clear; Monterey Bay/Carmel emulsion scars throughout
C - D	0013-0015	18:46:04	18:46:33	65000/19800	Clear; emulsion scars
E - F	0034-0057	18:55:02	19:00:39	"	Clear; emulsion scars
G - H	0058-0078	19:04:06	19:08:59	"	Clear; emulsion scars; shutter malfunction (frame 0077)
Remainder of flight experienced shutter malfunction					

SCANNER FLIGHT LINE DATA

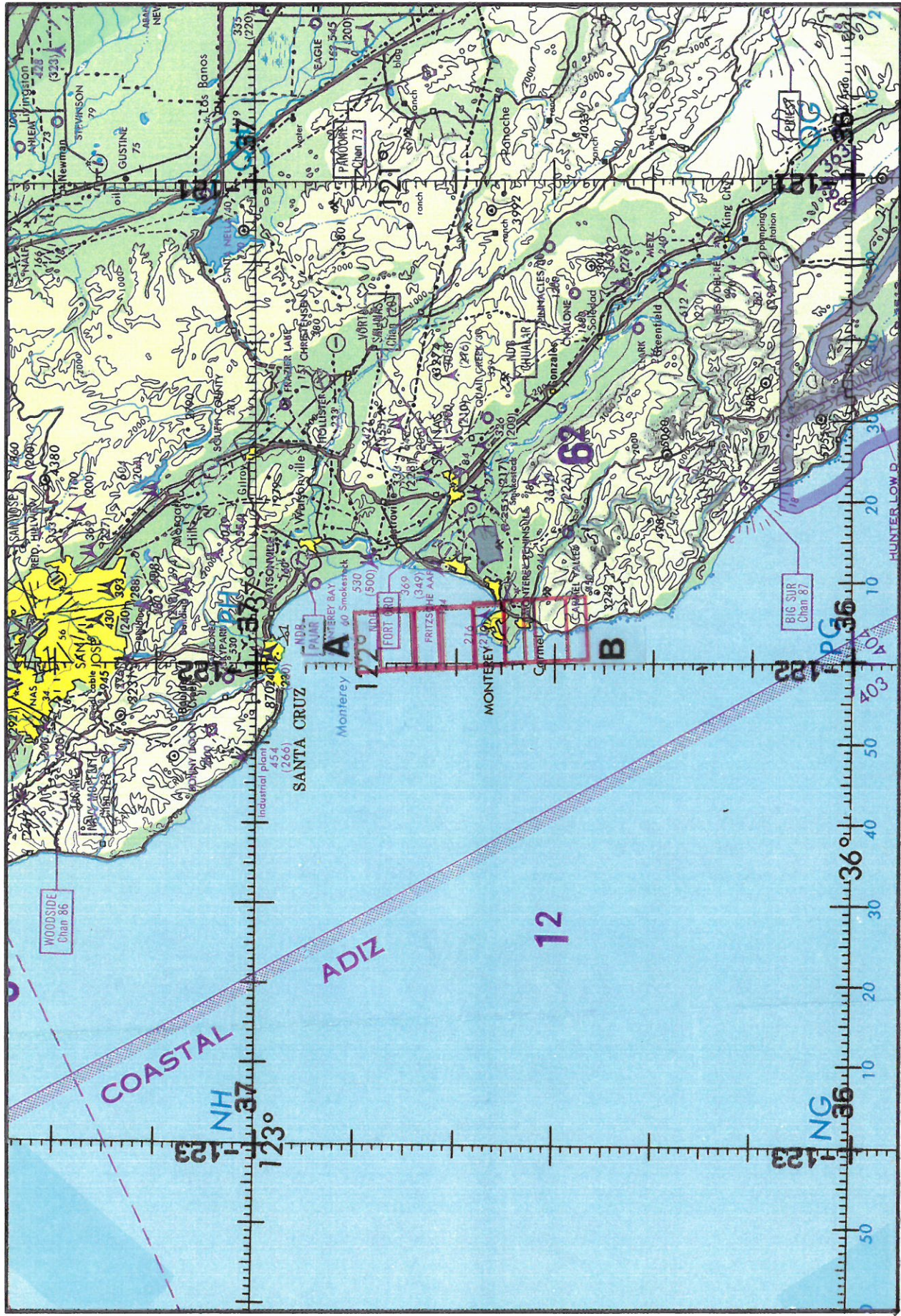
FLIGHT NO. 91-012

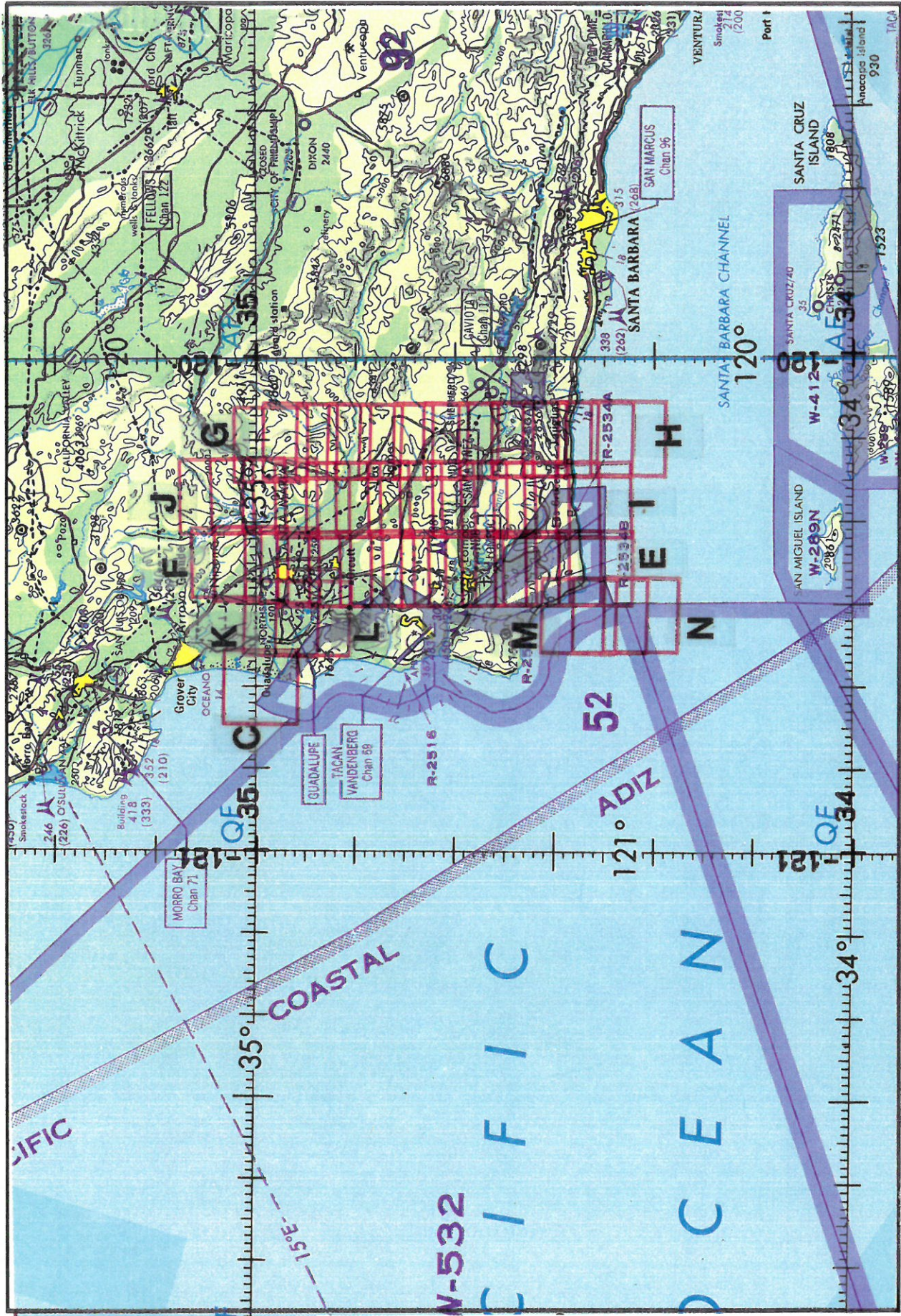
DAEDALUS FLIGHT DATA
FLIGHT NUMBER: 91-012

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	18:21:20.0	18:24:04.0	18423	20115	52000/15849	12.50	1570	3	120
C-D	18:46:01.0	18:47:01.0	33750	34433	65000/19812	12.50	683	0	19
E-F	18:54:59.0	19:00:56.0	39329	43034	65000/19812	12.50	3694	0	12
G-H	19:04:04.0	19:09:05.0	44988	48109	65000/19812	12.50	3120	0	2
I-J	19:14:02.0	19:19:54.0	51191	54847	65000/19812	12.50	3653	0	1
K-L	19:23:36.0	19:24:30.0	57142	57716	65000/19812	12.50	574	0	---
M-N	19:28:41.0	19:29:39.0	59925	60487	65000/19812	12.50	562	0	---
O-P	20:31:01.0	20:33:08.0	99167	100492	65000/19812	12.50	1320	1	5
Q-R	20:59:52.0	21:02:04.0	117158	118532	65000/19812	12.50	1362	0	13
S-T	21:07:54.0	21:10:19.0	122169	123666	65000/19812	12.50	1489	0	9
U-V	21:18:04.0	21:21:01.0	128501	130347	65000/19812	12.50	1717	3	127
W-X	21:26:00.0	21:29:01.0	133446	135332	65000/19812	12.50	1774	0	113
Y-Z	21:33:01.0	21:36:30.0	137829	140000	65000/19812	12.50	2166	0	6

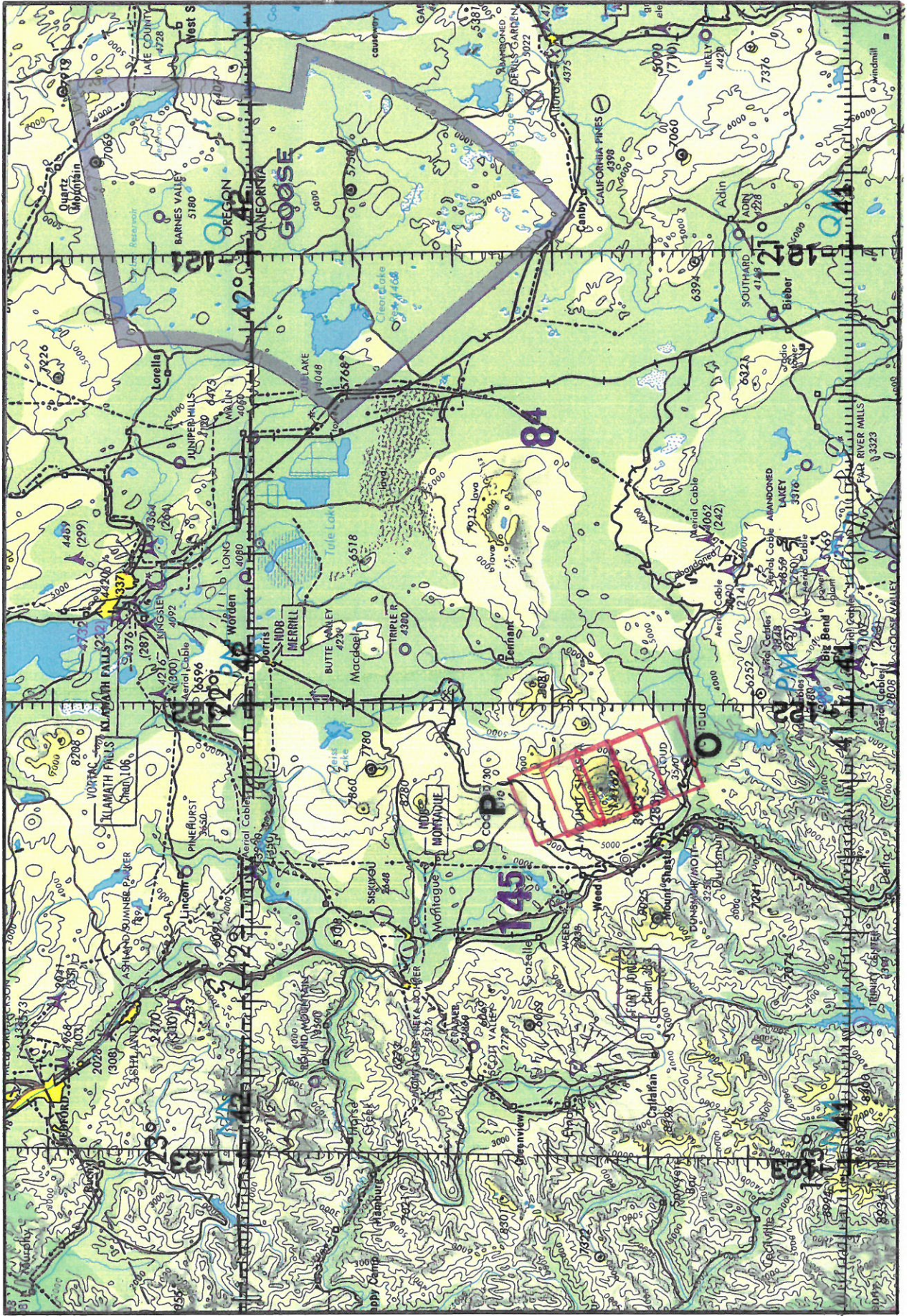


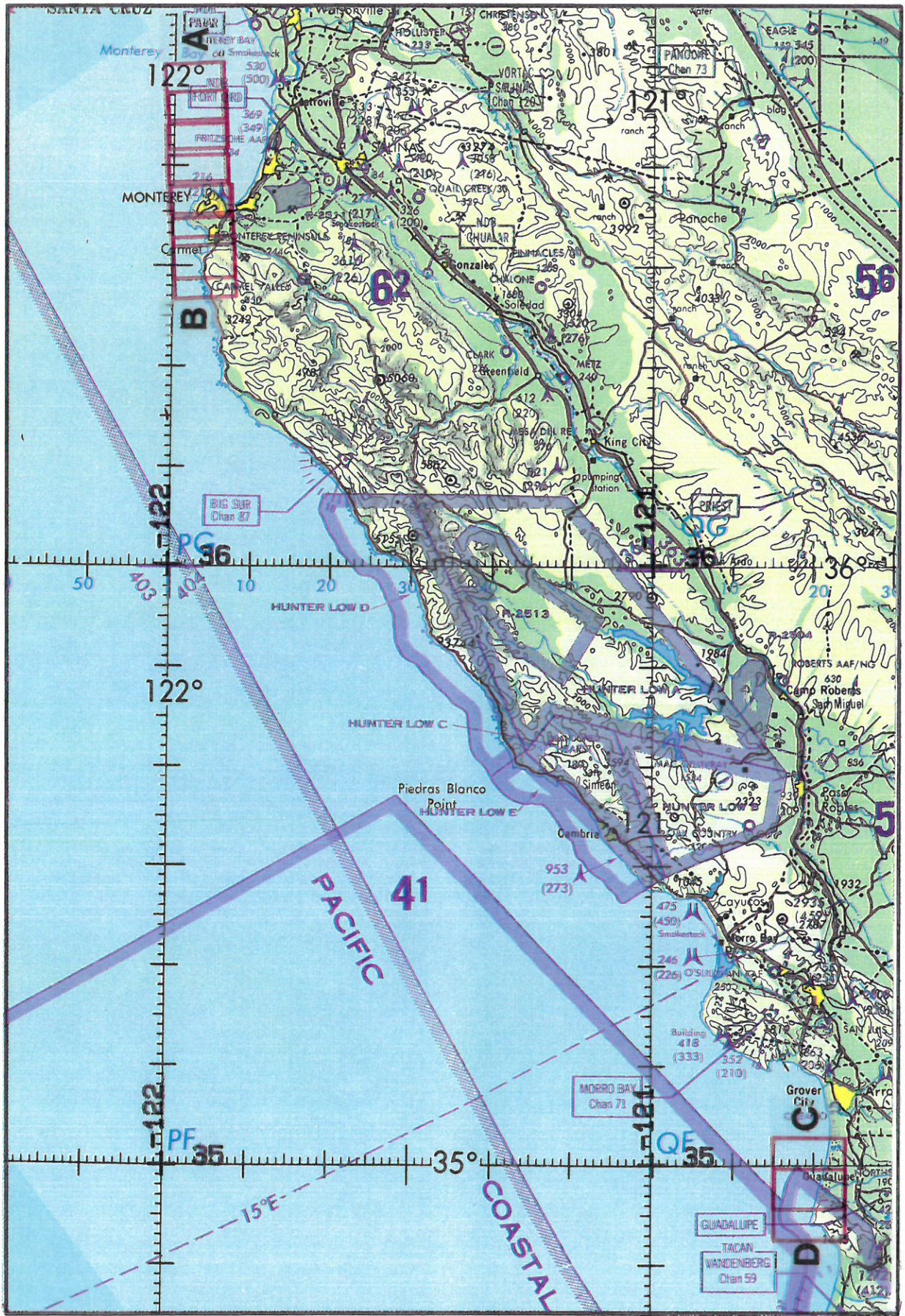
FLIGHT 91-012 24 October 1990 A/C 706 TMS / A-4 / RC-10 Vandenberg AFB & Oregon Transect



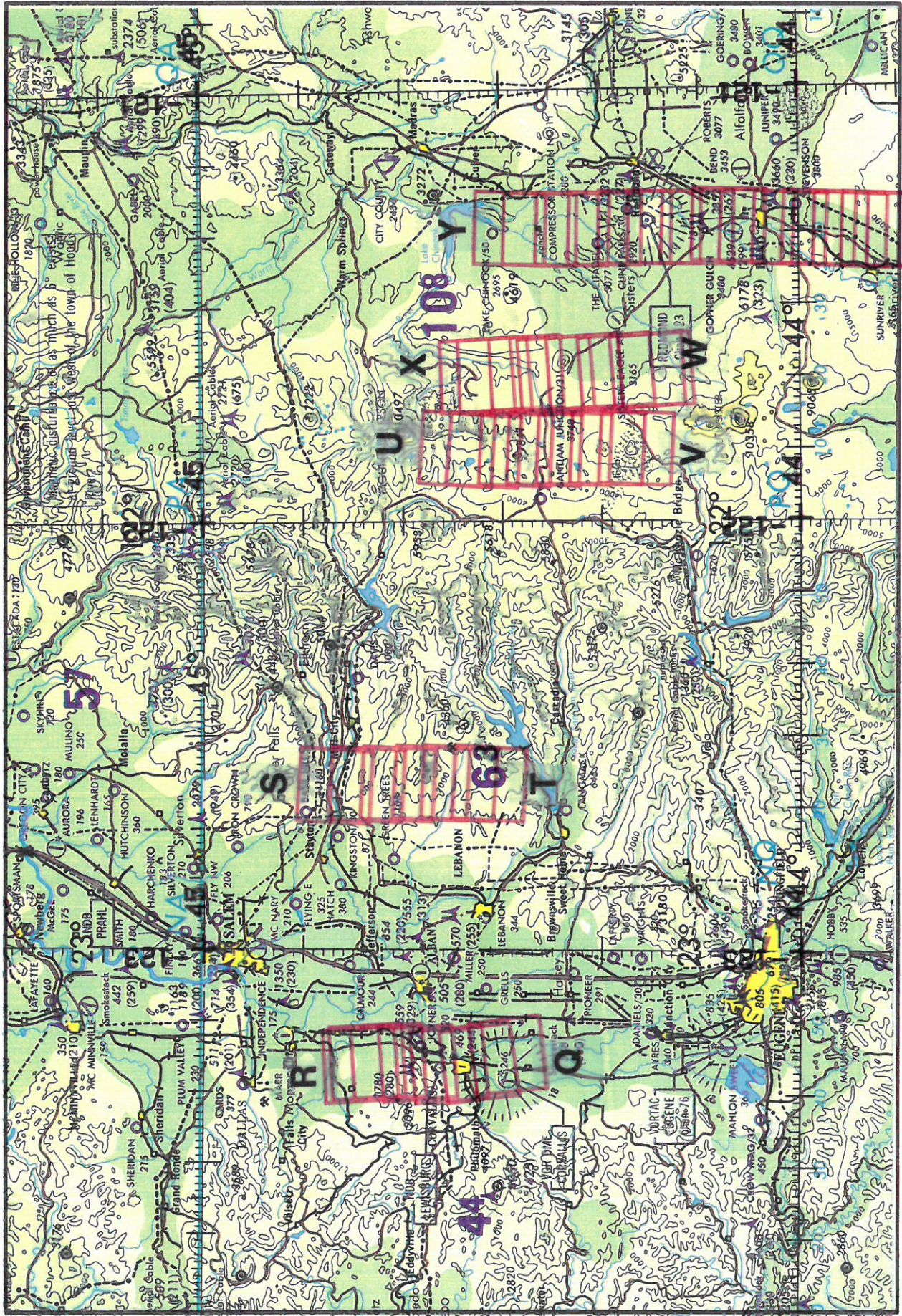


FLIGHT 91-012 24 October 1990 A/C 706 HF-752 / RC-10 Natural Color Accession # 04155 ONC 6-18

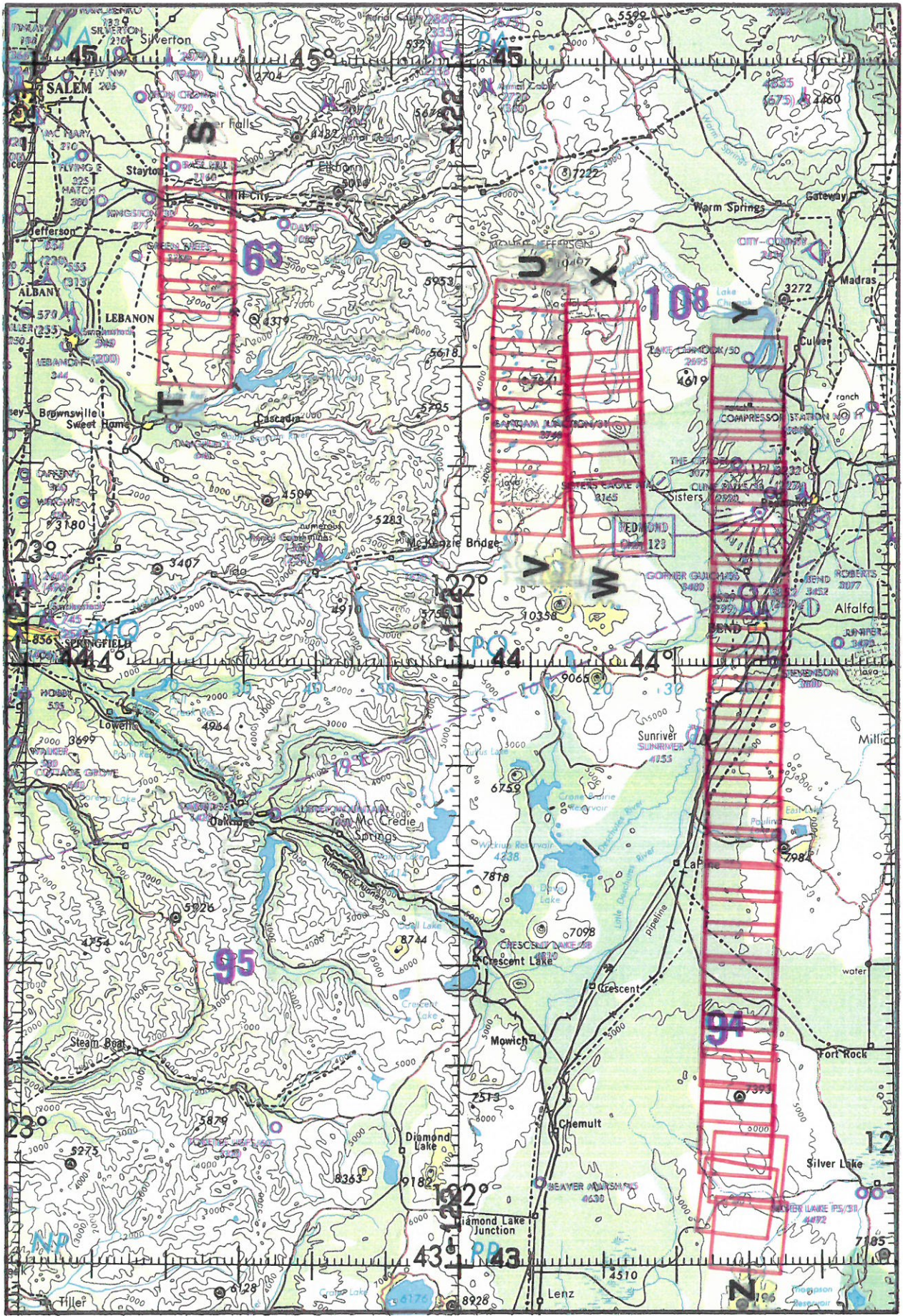




FLIGHT 91-012 24 October 1990 A/C 706 RC-10 Color Infrared Accession # 04154 CNC 6-18



FLIGHT 91-012 24 October 1990 A/C 706 RC-10 Color Infrared Accession # 04154 ONC F-16



FLIGHT 91-012 24 October 1990 A/C 706 RC-10 Color Infrared Accession # 04184 ONC F-16