

FLIGHT SUMMARY REPORT

Flight Number: 97-101
Calendar/Julian Date: 15 May 1997 • 135
Sensor Package: Dual Hycon HR-732
 Wild-Heerbrugg RC-10
 Thematic Mapper Simulator (TMS)
Area(s) Covered: Mojave Desert

Investigator(s): Stine, USGS

Aircraft #: 706

SENSOR DATA

Accession #:	05184	05185	05186	----
Sensor ID #:	020	039	076	074
Sensor Type:	HR-732	HR-732	RC-10	TMS
Focal Length:	24" 609 mm	24" 609 mm	12" 304.89 mm	----
Film Type:	Aerochrome MS2448 II	Aerochrome MS2448 II	Panatomic X Aerographic II EX 2412	----
Filtration:	HF3	HF3	Wratten 12	----
Spectral Band:	420-700 nm	420-700 nm	510-700 nm	----
f Stop:	18	18	11	----
Shutter Speed:	1/250	1/250	1/200	----
# of Frames:	376	365	404	----
% Overlap:	60	60	60	----
Quality:	Excellent	Excellent	Excellent	----
Remarks:	Add 2 seconds for correct GMT	Add 3 seconds for correct GMT	No time offset to navigation data	

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(s) and camera(s) 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, mm</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)

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-Heerbrugg 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).

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: 650-604-6252).

CAMERA FLIGHT LINE DATA
FLIGHT NO. 97-101

Accession # 05184

Sensor # 020

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
B	0001-0002	18:15:04	18:15:19	66000/20117	Clear
A - C	0003-0044	18:26:35	18:36:33	65900/20086	Clear; processing residue (frame 0007)
D - E	0045-0110	18:43:56	18:59:45	66098/20147	Clear
G - H	0111-0188	19:07:24	19:26:09	66126/20155	Clear
I - J	0189-0258	19:29:38	19:46:27	66107/20149	Clear
L - M	0259-0339	19:54:04	20:13:33	65759/20043	Clear
N - O	0340-0376	20:17:19	20:26:05	65859/20074	Clear

CAMERA FLIGHT LINE DATA
FLIGHT NO. 97-101

Accession # 05185

Sensor # 039

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
P - Q	0001-0030	20:27:44	20:34:48	65887/20082	Clear; light leak (frame 0001)
S - T	0031-0116	20:42:28	21:03:09	66081/20141	Clear
U - V	0117-0210	21:08:29	21:31:06	66078/20141	Clear
W - X	0211-0300	21:35:49	21:57:29	65324/19911	Clear
Z - 1	0301-0365	22:05:35	22:21:08	65266/19893	Clear

CAMERA FLIGHT LINE DATA
FLIGHT NO. 97-101

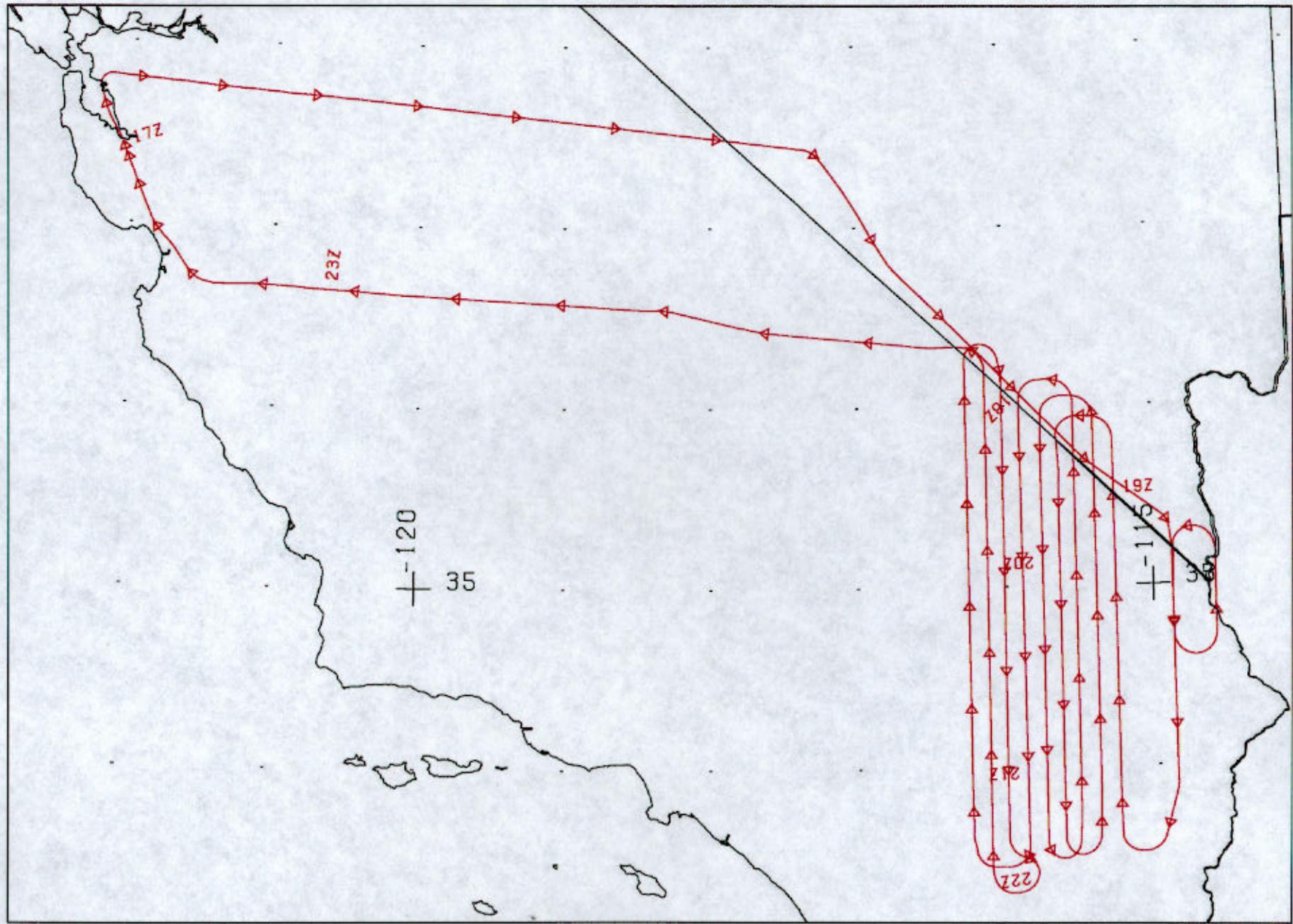
Accession # 05186

Sensor # 076

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	7335-7342	18:11:46	18:15:04	65900/20086	Clear; frame counter "stuck" (#7399); frame count offset by one to compenate
A - C	7343-7364	18:26:37	18:36:35	65895/20085	Clear; frame counter "stuck" (#7399); frame count offset by one to compenate
D - E	7365-7398	18:43:58	18:59:40	66091/20145	Clear; frame counter "stuck" (#7399); frame count offset by one to compenate
G - H	7399-7438	19:07:26	19:26:01	66128/20156	Clear
I - J	7439-7474	19:29:40	19:46:22	66103/20148	Clear
L - M	7475-7516	19:54:07	20:13:39	65757/20043	Clear
N - Q	7517-7553	20:17:21	20:34:31	65903/20087	Clear
S - T	7554-7597	20:42:31	21:03:01	66077/20140	Clear
U - V	7598-7645	21:08:31	21:30:55	66073/20139	Clear
W - X	7646-7691	21:35:52	21:57:17	65326/19911	Clear
Z - 1	7692-7738	22:05:38	22:27:29	65494/19963	Clear; frames 7702-7712 damaged during processing

DAEDALUS FLIGHT DATA
 FLIGHT NUMBER: 97-101

Check	Actual time (GMT)		Actual scanline		Altitude	Scan Speed	total G o o d	total Interpolated	total Repeated
	begin	end	begin	end					
A-B	18:11:18	18:15:18	61439	64439	66000/20117	12.5	3001	0	0
A-C	18:26:30	18:37:42	72839	81239	66000/20117	12.5	8401	0	0
D-F	18:43:34	19:02:30	85639	99839	66000/20117	12.5	14201	0	0
G-H	19:07:18	19:26:14	103439	117639	66000/20117	12.5	14201	0	0
I-K	19:29:26	19:49:11	120039	134839	66000/20117	12.5	14801	0	0
L-M	19:53:11	20:13:59	137839	153439	66000/20117	12.5	15601	0	0
N-R	20:16:55	20:37:43	155639	171239	66000/20117	12.5	15601	0	0
S-T	20:42:15	21:03:51	174639	190839	66000/20117	12.5	16201	0	0
U-V	21:08:55	21:31:03	194639	211239	66000/20117	12.5	16601	0	0
W-X	21:35:03	21:57:27	214239	231039	65000/19812	12.5	16801	0	0
Y-2	22:04:07	22:27:51	236039	253839	65000/19812	12.5	17801	0	0

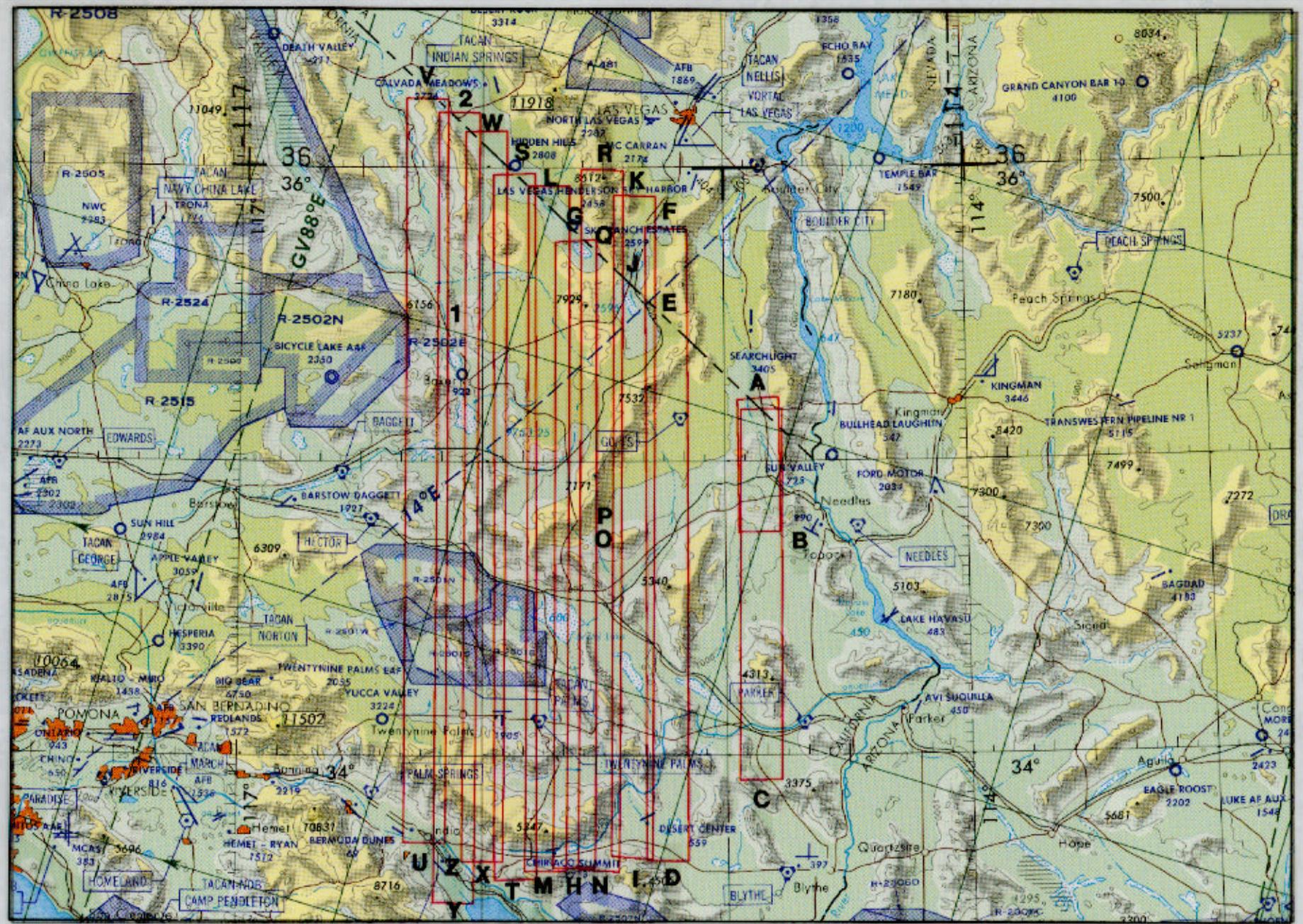


FLIGHT 97-101

15 MAY 1997

R/C 706

DUAL HR-732 / TMS / RC-10



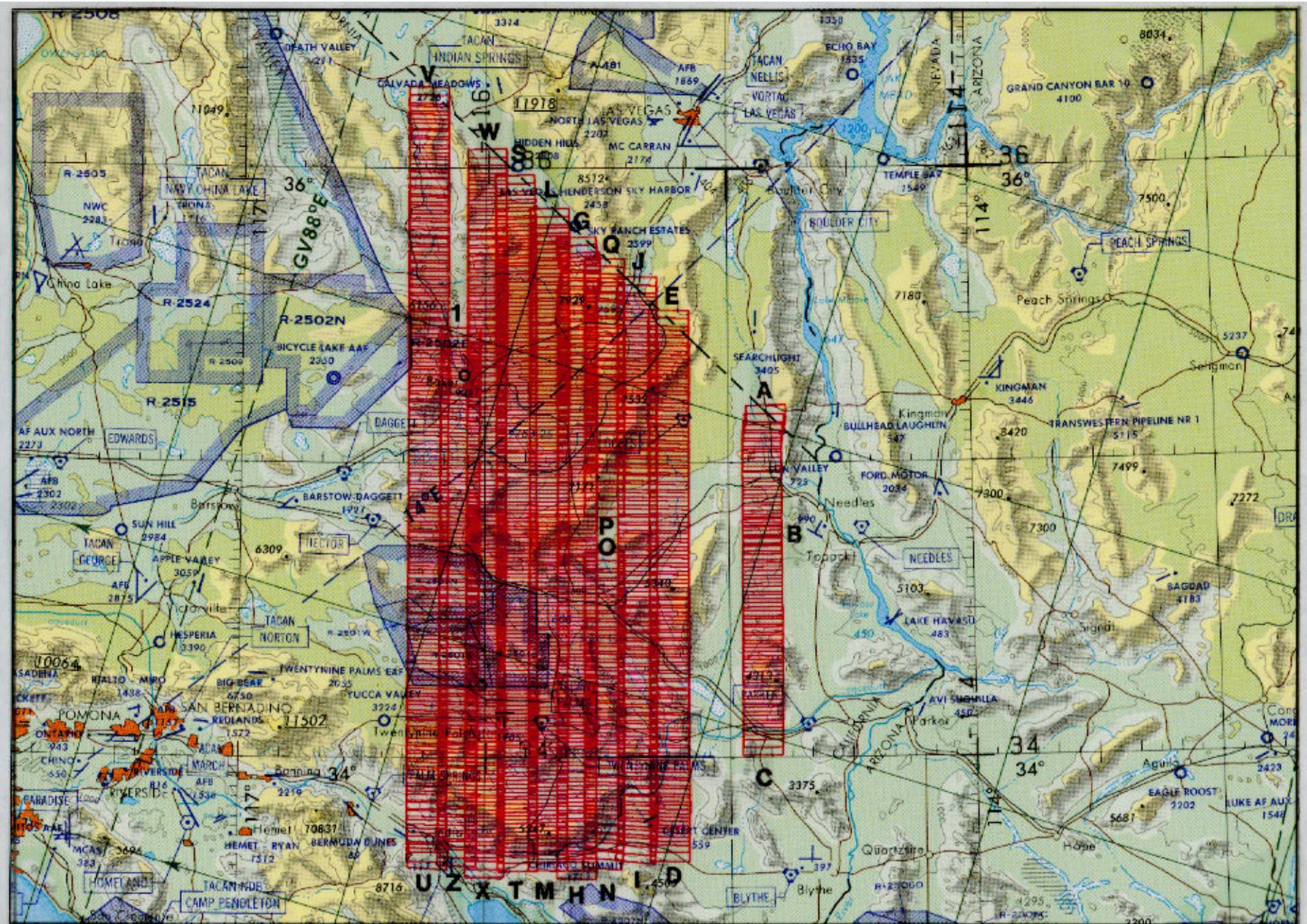
FLIGHT 97-101

15 MAY 1997

A/C 706

TMS / RC-10

JNC 43



FLIGHT 97-101

15 MAY 1997

A/C 706

HR-732

JNC 43