FLIGHT SUMMARY REPORT

Flight #: 91-163

Date: 22 August 1991

Sensor Package: Hycon HR-732
Wild-Heerbrug RC-10

Area(s) Covered: Sierra Nevada

Investigator(s): Weber, USDA

Flight Request: 91R104

Aircraft #: 706

Julian Date: 234

SENSOR DATA

Accession #:	04281	04283
Sensor ID #:	018	034
Sensor Type:	HR-732	RC-10
Focal Length:	24" 609.6 mm	12" 304.66 mm
Film Type:	High Definition Aerochrome IR SO131	High Definition Aerochrome IR SO131
Filtration:	cc.10B	cc.20B
Spectral Band:	510-900 nm	510-900 nm
f Stop:	8	4
Shutter Speed:	1/75	1/125
# of Frames:	581	379
% Overlap:	60	60
Quality:	Excellent	Excellent
Remarks:	Film transport malfunction toward end of roll	

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 descriptions of the camera systems flown onboard the ER-2s.

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-Heerbrug 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).

Additional 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: (415) 604-6252).

CAMERA FLIGHT LINE DATA
FLIGHT NO. 91-163

Accession # 04281

Sensor # 018

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0029	18:04:21	18:11:14	65000/19800	Clear
C - D	0030-0068	18:16:44	18:26:03	"	Minor-10% cumulus (frames 0032-0037); very minor cumulus (frames 0039-0040)
E - F	0069-0134	18:29:41	18:45:35	"	10-30% scattered cumulus (frames 0086-0095); 10% cumulus (frames 0097-0098)
G - H	0135-0161	18:51:40	18:58:00	"	Clear
I - J	0162-0198	19:01:04	19:09:51	"	Clear
K - L	0199-0242	19:14:25	19:24:53	"	10-30% scattered cumulus (frames 0218-0229); minor cumulus (frames 0233-0235)
M - N	0243-0265	19:31:19	19:36:39	"	Minor cumulus (frames 0251-0254, 0263-0265)
O - P	0266-0272	19:39:03	19:40:31	"	Minor cumulus (frames 0267-0268)
Q - R	0273-0277	19:49:49	19:50:47	"	Clear

CAMERA FLIGHT LINE DATA
FLIGHT NO. 91-163

Accession # 04281

Sensor # 018

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
S - T	0278-0376	19:56:38	20:20:28	65000/19800	Minor cumulus (frames 0321-0322); 10% cumulus (frames 0331-0333)
U - V	0377-0424	20:23:59	20:35:25	"	10% cumulus (frames 0393-0395, 0399-0400)
W - X	0425-0436	20:43:33	20:46:13	"	Clear; film transport malfunction (frames 0425-0426)
Y - Z	0437-0485	20:48:19	20:59:59	"	Minor-10% cumulus (frames 0454-0456, 0458-0461); film transport malfunction (frames 0450-0451, 0466-0467, 0476-0477)
1 - 2	0486-0532	21:04:14	21:15:25	"	10% cumulus (frames 0510-0514); film transport malfunction (frames 0506-0507, 0521-0522)
3 - 4	0533-0581	21:19:08	21:30:48	"	Clear; film transport malfunction (frames 0539-0540, 0551-0552, 0556-0557, 0565-0566, 0574-0575, 0580-0581)

CAMERA FLIGHT LINE DATA
FLIGHT NO. 91-163

Accession # 04283

Sensor # 034

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	3332-3347	18:06:56	18:14:06	65000/19800	Clear
C - D	3348-3367	18:19:19	18:28:23	"	Minor-10% scattered cumulus (frames 3349-3354)
E - F	3368-3402	18:32:16	18:48:16	"	Minor-30% scattered cumulus (frames 3376-3383)
G - H	3403-3416	18:54:17	19:00:27	"	Clear
I - J	3417-3435	19:03:36	19:12:15	"	Clear
K - L	3436-3458	19:17:00	19:27:29	"	Minor-30% scattered cumulus (frames 3445-3455)
M - N	3459-3470	19:33:53	19:39:06	"	10% cumulus (frames 3459-3470)
O - P	3471-3474	19:41:36	19:43:03	"	Minor cumulus (frames 3471-3472)

CAMERA FLIGHT LINE DATA
FLIGHT NO. 91-163

Accession # 04283

Sensor # 034

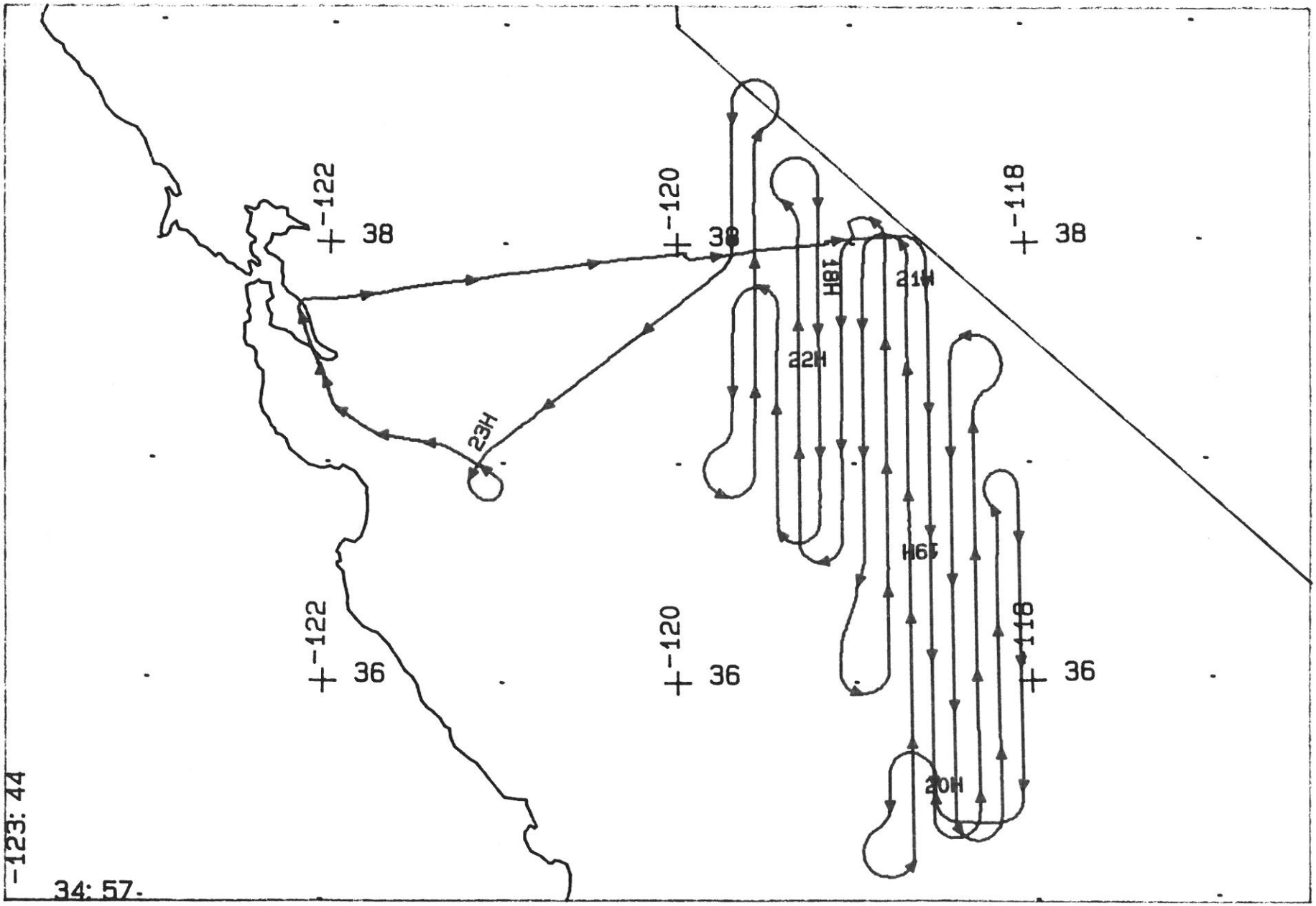
Check Points	Frame Numbers	Time (GMT-hr, min, sec) START	Time (GMT-hr, min, sec) END	Altitude, MSL feet/meters	Cloud Cover/Remarks
Q - R	3475-3477	19:52:23	19:53:23	65000/19800	Clear
S - T	3478-3528	19:59:12	20:23:03	"	10% cumulus (frames 3505-3506)
U - V	3529-3553	20:26:35	20:38:02	"	10% cumulus (frames 3537-3541)
W - X	3554-3559	20:46:08	20:48:30	"	Clear
Y - Z	3560-3584	20:50:54	21:02:21	"	Very minor-10% cumulus (frames 3566-3572)
1 - 2	3585-3608	21:06:56	21:17:43	"	10% scattered cumulus (frames 3597-3599)
3 - 4	3609-3633	21:21:43	21:33:10	"	Clear
5 - 6	3634-3662	21:38:52	21:52:16	"	10% cumulus (frames 3635-3636)
7 - 8	3663-3674	21:57:53	22:02:57	"	Clear

CAMERA FLIGHT LINE DATA
FLIGHT NO. 91-163

Accession # 04283

Sensor # 034

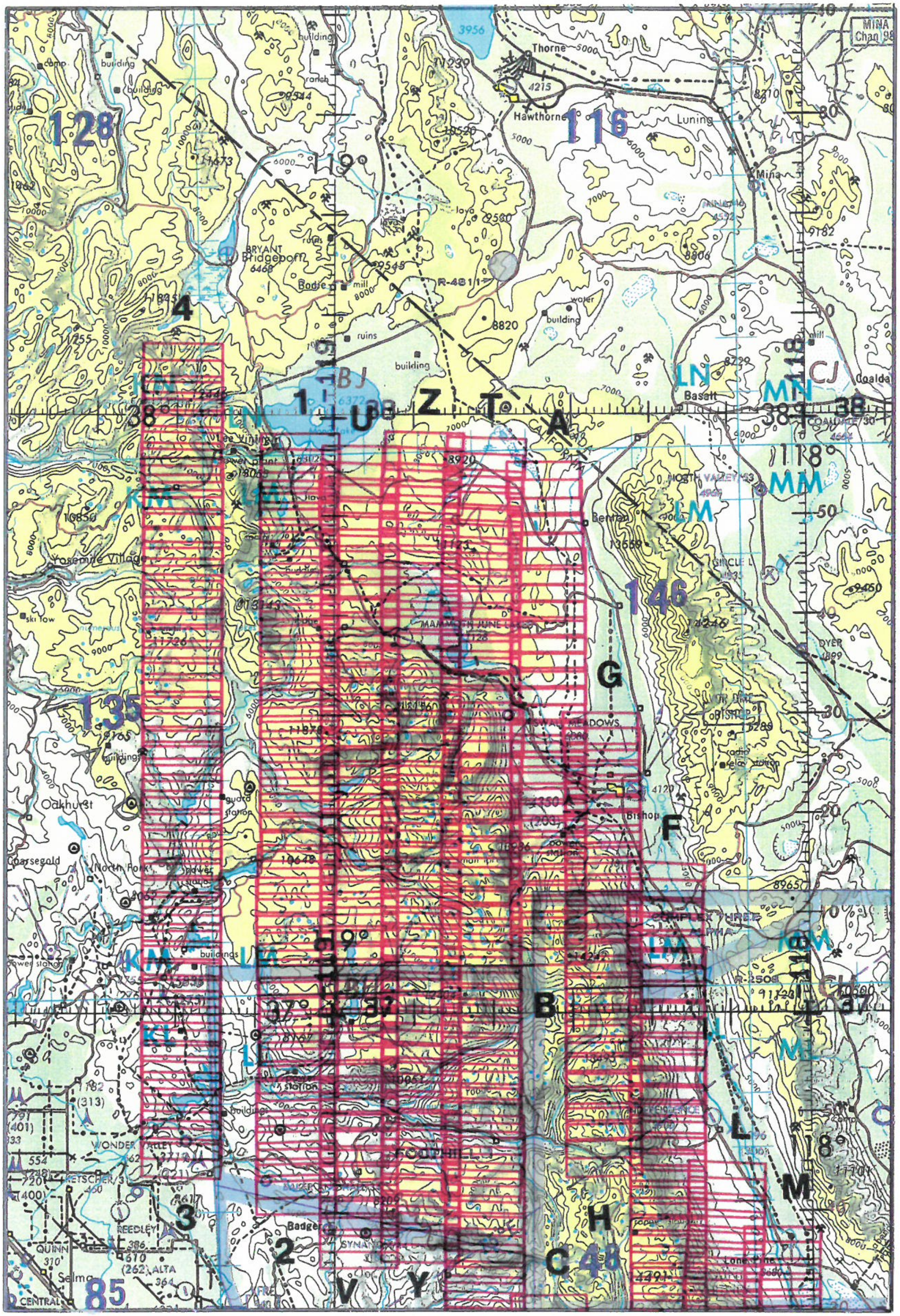
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
9 - 10	3675-3682	22:07:32	22:10:32	65000/19800	Clear
11 - 12	3683-3693	22:17:06	22:21:52	"	Clear
13 - 14	3694-3698	22:26:53	22:28:46	"	Clear
15 - 16	3699-3710	22:34:54	22:39:52	"	Clear



FLIGHT 91-163 22 AUG 91 dual HR-732 / RC-10

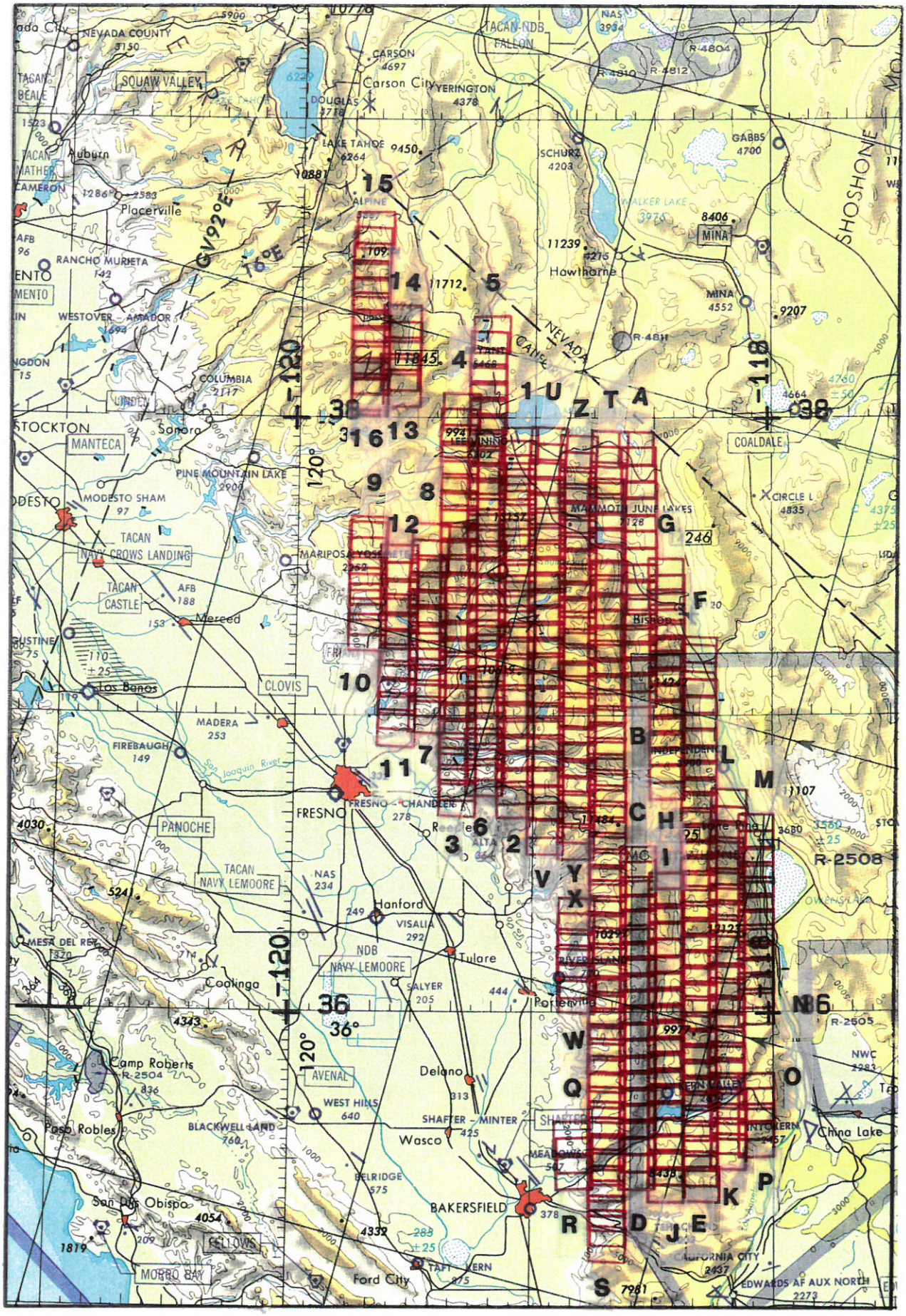
OVERLAY FOR %CWUSA LAMBERT CONFORMAL PROJECTION: SP1 = 34.5 SP2 = 38.1 CM = -120.1 ROTATED BY 0.0

17: 30: 25 TO 23: 21: 00 UT SCALE = 1: 2.74E+06 TIME TICS EVERY 5.00 MINUTES



FLIGHT 81-163   22 August 1981   A/C 706   HR-732   Accession # 04281   ONC G-18

FLIGHT 91-163 22 August 1991 A/C 706 HR-732 ONC 6-18 Accession # 04281



FLIGHT 91-163 22 August 1991 A/C 706 RC-10 Accession # 04283 JNC-43