

FLIGHT SUMMARY REPORT

Flight Number: 93-023
Calendar/Julian Date: 27 November 1992 • 332
Sensor Package: Wild-Heerbrug RC-10
Hycon HR-732
Large Area Collectors (LACs)
Area(s) Covered: Texas

Investigator(s): Hagenbuck, USFWS; Silvey, USFS; Zolensky, NASA-JSC
Aircraft #: 708

SENSOR DATA

Accession #:	04512	04513	-----
Sensor ID #:	026	038	100
Sensor Type:	RC-10	HR-732	LACs
Focal Length:	12" 304.97 mm	24" 609.6 mm	-----
Film Type:	High Definition Aerochrome IR SO-131	High Definition Aerochrome IR SO-131	-----
Filtration:	cc.10B	cc.10B	-----
Spectral Band:	510-900 nm	510-900 nm	-----
f Stop:	4	8	-----
Shutter Speed:	1/125	1/75	-----
# of Frames:	111	204	-----
% Overlap:	60	60	-----
Quality:	Excellent	Excellent	-----
Remarks:	17.5 sec. offset between camera and navigation data	22.7 sec offset between camera and 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 camera system(s) used for data collection during this flight.

Large Area Collectors

The Large Area Collectors (LACs) are flown on NASA high altitude ER-2s in support of the NASA-Johnson Space Center Cosmic Dust Program. The LACs are used to collect comparatively unaltered cosmic dust from the stratosphere at ER-2 flight altitudes of 65,000 feet or higher. Sufficient quantities of extraterrestrial materials are collected to allow chemical and mineralogical compositions of individual particles to be determined. Study of these materials whose sources may be comets, asteroid collisions, planetary impacts, and meteorite ablation provide valuable information about the origin and history of the solar system.

Additional information regarding the Large Area Collectors may be obtained from Michael E. Zolensky, NASA-Johnson Space Center, SN2, Houston, Texas 77058 (Telephone (713) 483-5128).

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. 93-023

Accession # 04512

Sensor # 026

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	5038-5053	17:04:23	17:11:31	65000/19800	10-80% scattered cumulus (frames 5038-5042)
C - D	5054-5067	17:15:42	17:21:45	"	Minor-70% scattered cumulus (frames 5063-5067)
E - F	5068-5080	17:26:36	17:32:18	"	10-50% scattered cumulus (frames 5068-5072); minor cumulus (frames 5073-5080)
G - H	5081-5095	17:38:04	17:44:41	"	10-50% scattered cumulus (frames 5092-5095)
I - J	5096-5111	17:48:52	17:55:58	"	10-50% scattered cumulus (frames 5096-5099)
K - L	5112-5115	18:20:36	18:22:00	"	Clear
M - N	5116-5119	18:24:20	18:25:25	"	Clear

CAMERA FLIGHT LINE DATA
FLIGHT NO. 93-023

Accession # 04512

Sensor # 026

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
O - P	5120-5123	18:29:20	18:30:41	65000/19800	Clear
L - Q	5124-5128	18:37:28	18:39:02	"	Clear
R - S	5129-5134	18:58:35	19:00:54	"	10-20% cirrus (frames 5129-5131)
T - U	5135-5140	19:04:31	19:06:51	"	10-20% cirro-cumulus (frames 5139-5140)
V - W	5141-5146	19:13:06	19:15:26	"	10-30% cirro-cumulus (frames 5141-5143)
X	5147-5148	19:40:17	19:40:45	"	Clear

**CAMERA FLIGHT LINE DATA
FLIGHT NO. 93-023**

Accession # 04513

Sensor # 038

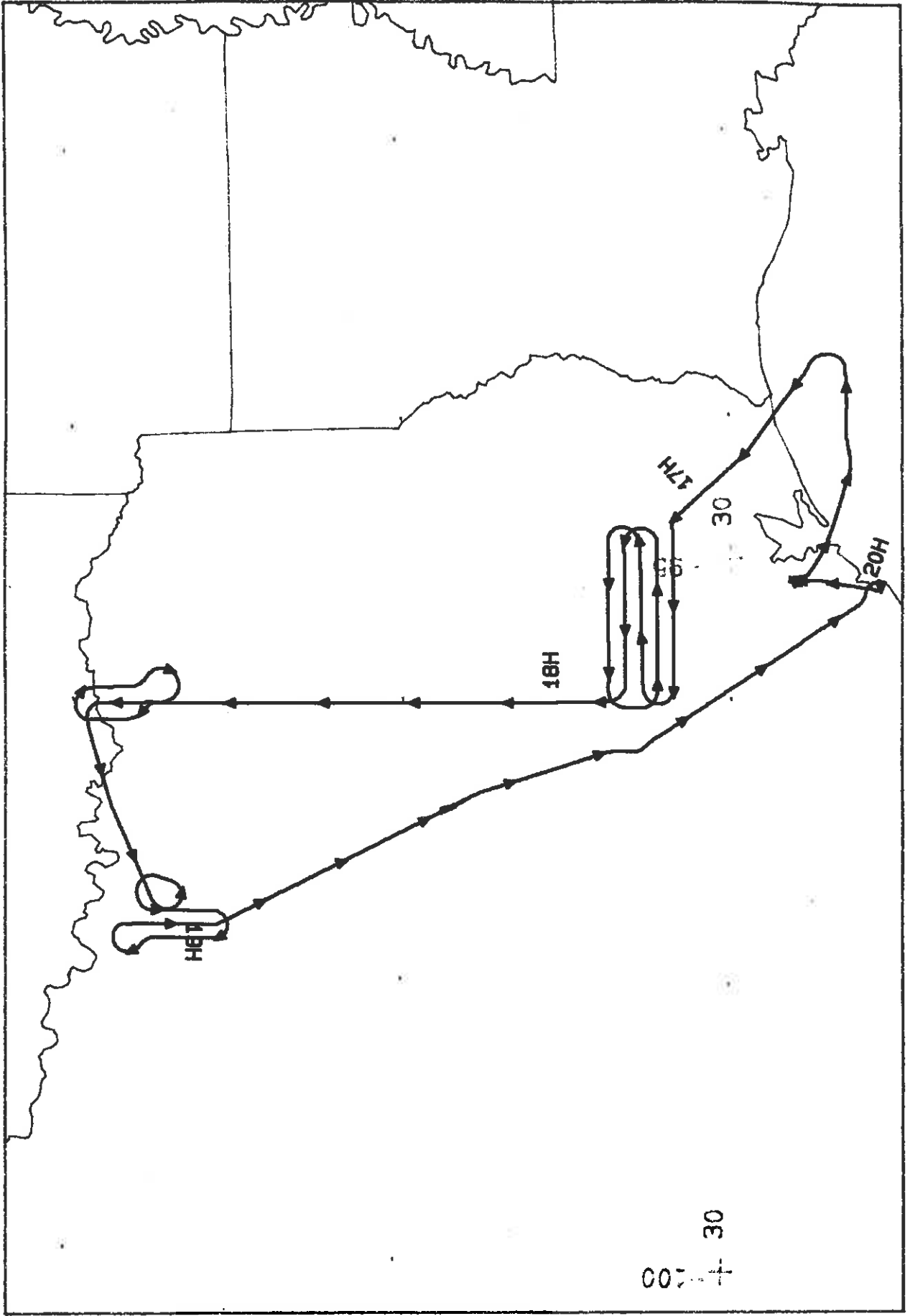
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0032	17:03:40	17:10:43	65000/19800	10-80% scattered cumulus (frames 0001-0010)
C - D	0033-0059	17:15:02	17:20:56	"	10-70% cumulus (frames 0053-0059)
E - F	0060-0085	17:25:54	17:31:34	"	10-40% scattered cumulus (frames 0060-0069); minor cumulus (frames 0071-0078 and 0083-0085)
G - H	0086-0115	17:37:23	17:43:57	"	Minor-50% scattered cumulus (frames 0109-0115)
I - J	0116-0147	17:48:11	17:55:11	"	10-40% scattered cumulus (frames 0116-0122)
K - L	0148-0154	18:19:59	18:21:19	"	Clear
M - N	0155-0158	18:24:05	18:24:45	"	Clear

**CAMERA FLIGHT LINE DATA
FLIGHT NO. 93-023**

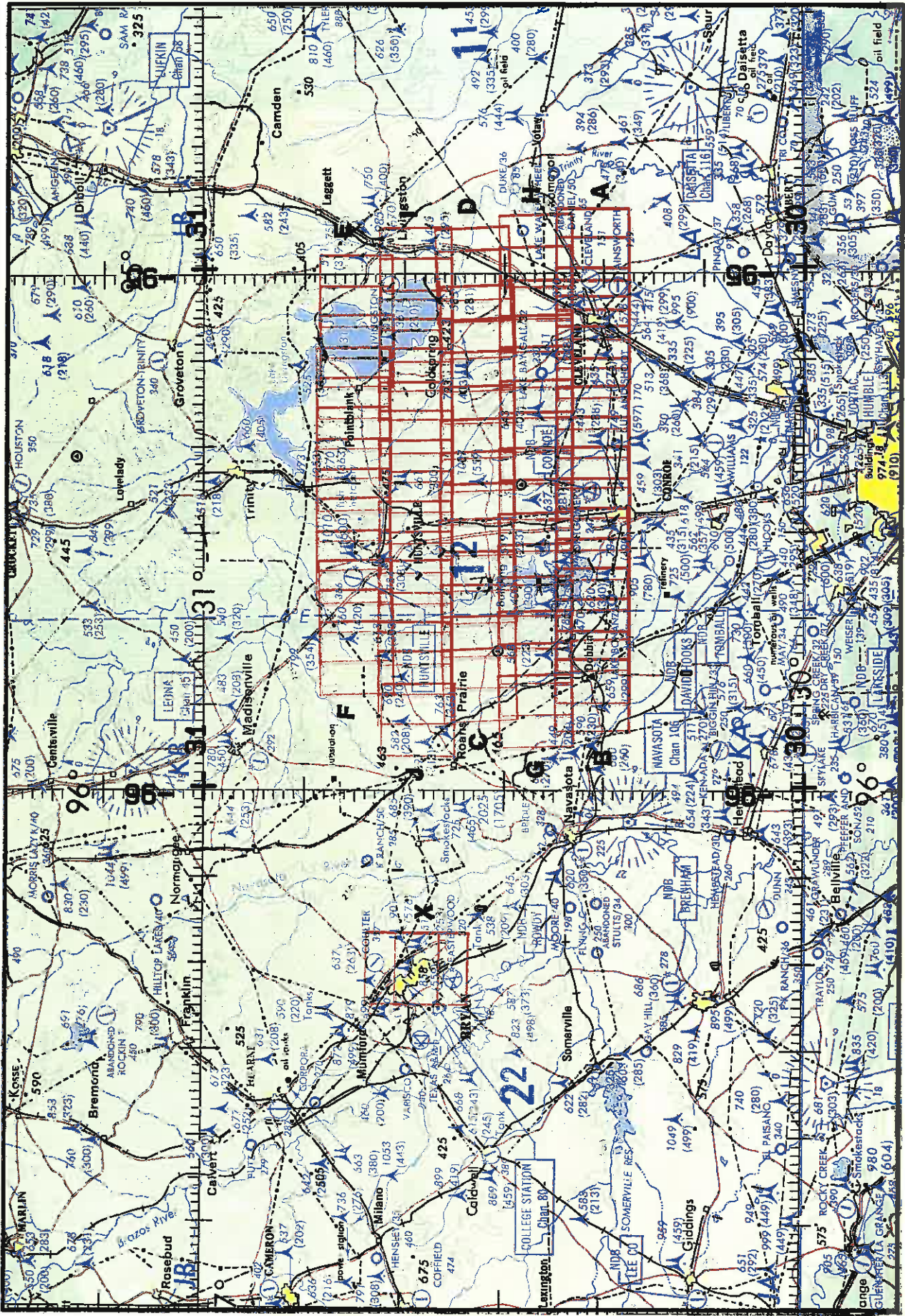
Accession # 04513

Sensor # 038

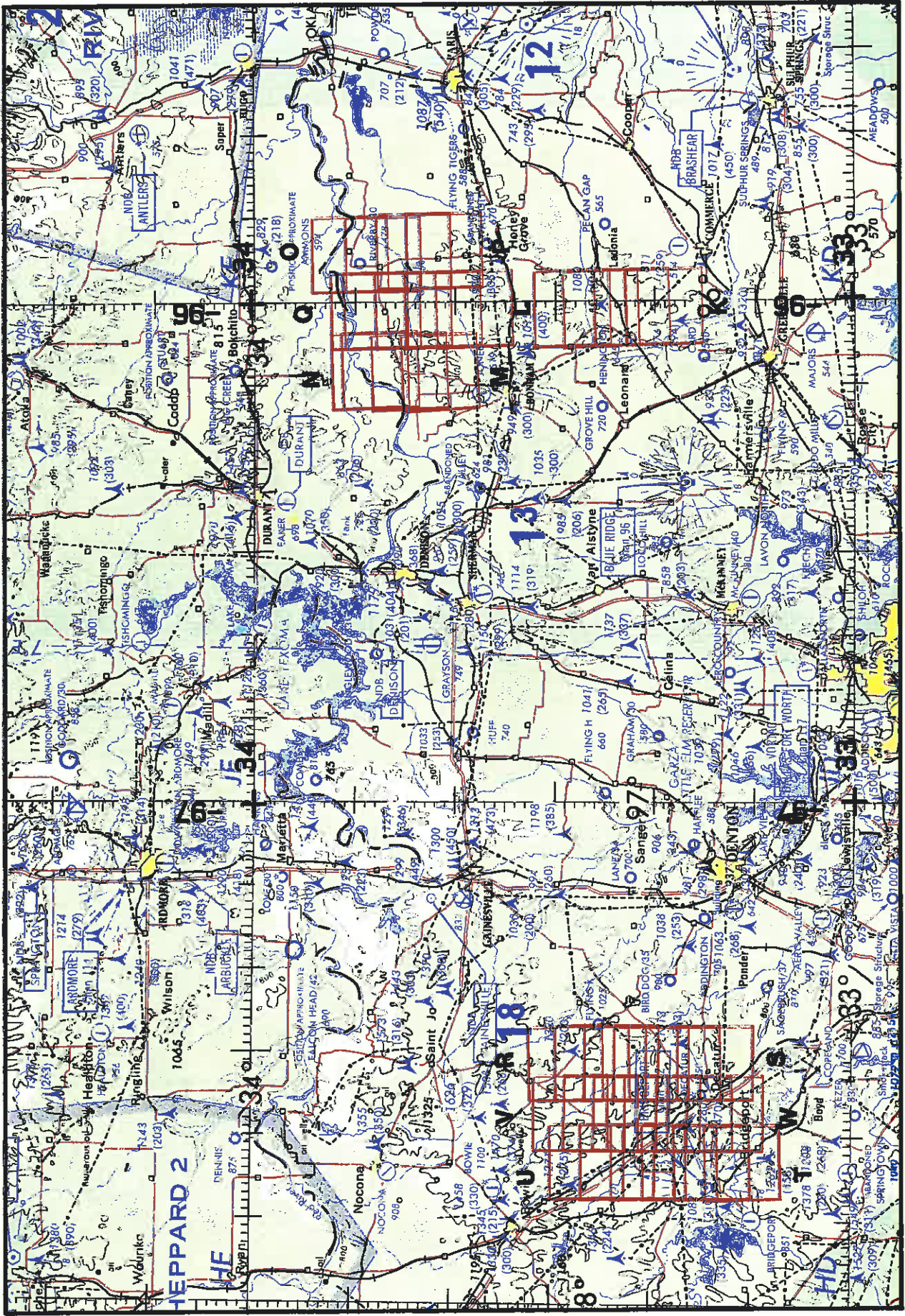
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
O - P	0159-0162	18:29:06	18:29:47	65000/19800	Clear
L - Q	0163-0168	18:37:18	18:38:25	"	Clear
R - S	0169-0179	18:57:54	19:00:08	"	10-30% cirrus (frames 0169-0174)
T - U	0180-0191	19:03:50	19:06:18	"	10-20% cirro-cumulus (frame 0188)
V - W	0192-0200	19:12:56	19:14:43	"	10-20% cirro-cumulus (frames 0192-0194)
X	0201-0204	19:39:40	19:40:09	"	Clear; light struck (frame 0204)



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A/C 708

RC-10 / HR 752

ONC 8-20