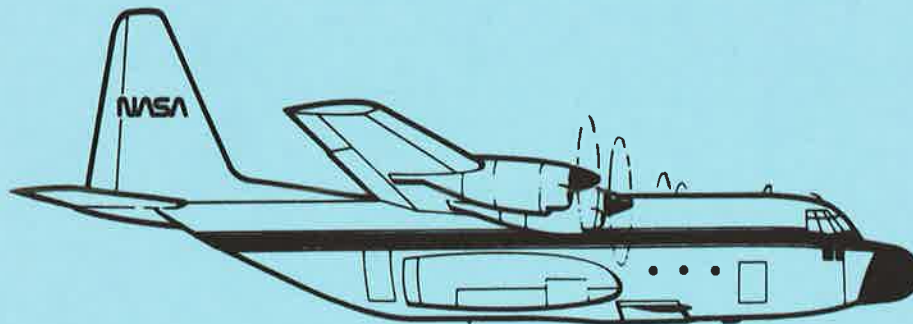


**SCIENCE AND APPLICATIONS AIRCRAFT DIVISION
AIRBORNE SCIENCE AND APPLICATIONS PROGRAM**

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**C-130
FLIGHT SUMMARY REPORT**

NASA

National Aeronautics and
Space Administration

Ames Research Center
Moffett Field, California 94035-1000

**Aircraft Data Facility
NASA-Ames Research Center
Mail Stop 240-6
Moffett Field, California 94035-1000
(415) 604-6252 • FTS 464-6252**

FLIGHT SUMMARY REPORT

Flight Number: 94-095-02
Calendar/Julian Date: 03 November 1993 • 307
Sensor Package: Dual Zeiss Camera
NS001 Multispectral Scanner
Area(s) Covered: Malibu Fires

Investigator(s): P. Riggan, USFS

Aircraft #: 707

SENSOR DATA

Accession #:	04645	04646	-----
Sensor ID #:	087	075	072
Sensor Type:	Zeiss	Zeiss	NS001
Focal Length:	12" (12,000 to 13,100 ft) 305.30 mm	6" 153.16 mm	-----
Film Type:	Aerochrome IR 2443	Aerochrome MS 2448	-----
Filtration:	Wratten 12	Clear	-----
Spectral Band:	510-900 nm	400-700 nm	-----
f Stop:	Unknown	Unknown	-----
Shutter Speed:	Unknown	Unknown	-----
# of Frames:	74	37	-----
% Overlap:	60	60	-----
Quality:	Excellent	Good	-----
Remarks:			

NASA C-130 Earth Resources Aircraft Program

The NASA Earth Resources Aircraft Program at Ames Research Center operates a C-130B aircraft to acquire data for earth science research. The aircraft provides a platform for a variety of sensors that collect data in support of scientific projects sponsored by NASA, as well as federal, state, university, and industry investigators. These data are applied to research in the areas of forestry, agriculture, land use and land cover analysis, hydrology, geology, photogrammetry, oceanography, meteorology, and other earth resource disciplines. Data from operational sensors and newly developed or prototype instruments are used in applications programs examining agricultural biospheres, ozone depletion, tropical rain forest destruction, wildlife habitats, tropical disease vectors, forest wildfires, and geologic remote sensing.

The C-130B is a low and medium altitude, moderate speed aircraft. It is capable of flying up to 25,000 feet above sea level at speeds between 150 and 300 knots. The aircraft and its complement of onboard sensors provide a readily deployable remote sensing platform for support of scientific research throughout the coterminous United States, Alaska, and Hawaii. Additionally, the aircraft has been deployed in support of research in Australia, Bermuda, Puerto Rico, France, Germany, Austria, and Italy.

Photographic and digital imaging sensors are flown aboard the C-130 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 on the C-130. The following provides a description of the digital multispectral sensors used for data collection during this flight.

NS001 Multispectral Scanner

The NS001 Multispectral Scanner (MS) used on the C-130B aircraft contains the seven Landsat-D Thematic Mapper bands plus a band from 1.13 to 1.35 micrometers. The specific bands are as follows:

<u>Band</u>	<u>Spectral bandwidth, <i>mm</i></u>
1	.458 - .519
2	.529 - .603
3	.633 - .697
4	.767 - .910
5	1.13 - 1.35
6	1.57 - 1.71
7	2.10 - 2.38
8	10.9 - 12.3

Sensor specifications are as follows:

IFOV:	2.5 mrad
Ground Resolution:	25 feet (7.6 meters) at 10,000 feet
Total Scan Angle:	100°
Swath Width:	3.9 nmi (7.2 km) at 10,000 feet
Pixels/Scan Line:	699

The format of the flight data consists of 838 eight-bit words per frame (data for one wavelength band throughout a scan line). Of these, 699 are the video information and the remainder are information on Greenwich time, scan line number, calibration lamp voltage and current, blackbody temperatures, etc.

Computer compatible tapes (CCTs) are produced from the flight tapes, and consist of header information followed by scanner video data.

Zeiss Cameras:

The C-130 may accommodate two Zeiss mapping cameras during any data flight. A combination of films and focal lengths may be employed depending on an investigator's requirements. Six and twelve inch focal lenses are available and are selected by investigators based on their resolution and scale requirements. The film emulsions available include color infrared, natural color, and black and white.

Additional information on data tape format, logical record format, and scanner calibration data may be obtained from the NASA-Ames Aircraft Data Facility, M.S. 240-6, Moffett Field, CA 94035-1000, Telephone (415) 604-6252.

CAMERA FLIGHT LINE DATA
FLIGHT NO. 94-095-02

Accession # 04645

Sensor # 087

Site #	Line #	Run #	Frame #	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
				START	END		
405	10	1	0024-0051	22:17:45	22:21:20	13100/3990	Smoke obstruction (frames 0024-0027 and 0033-0038)
405	---	---	0052-0061	22:21:28	22:22:45	12000/3660	Oblique frames in turn
405	15	1	0062-0096	22:22:54	22:27:31	"	Smoke obstruction (frames 0077-0082 and 0086-0096)
405	---	---	0097	22:36:57	-----	12100/3690	Clear

CAMERA FLIGHT LINE DATA
FLIGHT NO. 94-095-02

Accession # 04646

Sensor # 075

Site #	Line #	Run #	Frame #	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
				START	END		
405	10	1	0025-0038	22:18:09	22:21:32	13100/3990	Smoke obstruction (frames 0025-0032); static discharge (frames 0031, 0035, 0037)
405	---	---	0039-0044	22:21:48	22:23:17	12000/3660	Oblique frames in turn
405	15	1	0045-0060	22:23:36	22:27:52	"	Smoke obstruction (frames 0050-0060)
405	---	---	0061	22:37:21	---	12100/3690	Clear; film transport malfunction

NS001 SCANNER FLIGHT DATA
FLIGHT NO. 94-095-02

NS001 FLIGHT DATA
 FLIGHT NUMBER: 94-095-02

Site	Line	Run	Actual Time (GMT)		Actual Scanline		Altitude feet/meter	Scan Speed (rps)	Total Good Scanlines	Total Interpolated Scanlines	Total Repeated Scanlines
			Begin	End	Begin	End					
406	1	1	22:00:42.2	22:03:14.7	9615	11746	12400/3779	14.00	2132	0	0
406	2	1	22:09:05.8	22:12:02.9	16653	19129	8900/2712	14.00	2473	0	4
405	10	1	22:17:41.4	22:20:14.2	23860	25996	13000/3962	14.00	2135	0	2
405	15	1	22:24:22.0	22:27:35.8	29317	31639	12800/3901	12.00	2323	0	0
405	16	1	22:30:33.5	22:34:55.5	33768	36907	12900/3931	12.00	3138	0	2

NS001 CALIBRATION VALUES

FLIGHT NO. 94-095-02

NS001 CALIBRATION VALUES

Calibration File (APR93:DA

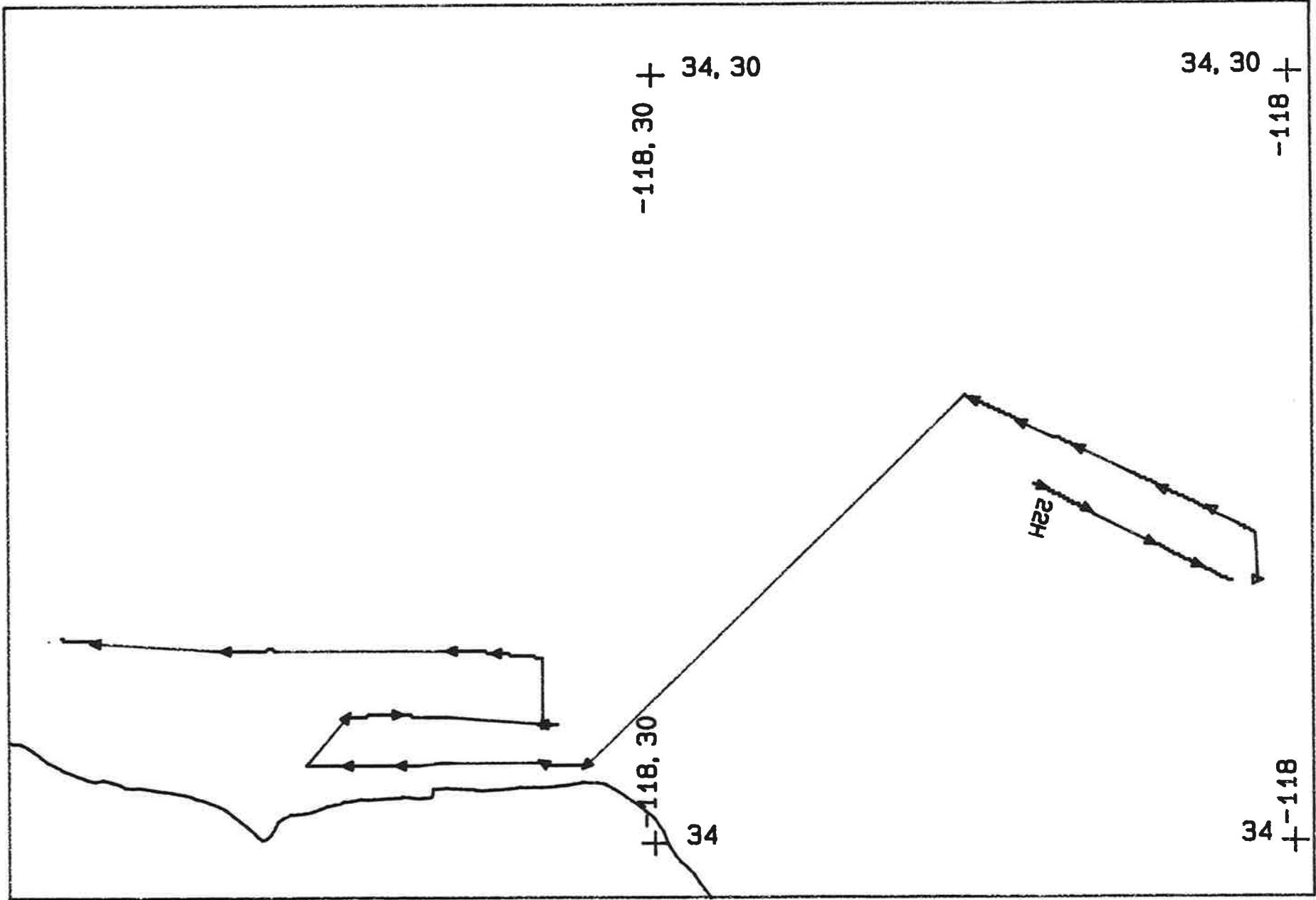
FLIGHT LINE	Channel 1		Channel 2		Channel 3		Channel 4		Channel 5		Channel 6		Channel 7		Channel 8		REF SOURCE (Degrees C)	RESPONSE (Counts)	Degrees per Count
	TARE	CALIB	TARE	CALIB	TARE	CALIB	TARE	CALIB	TARE	CALIB	TARE	CALIB	TARE	CALIB	BB1	BB2			
1	13	31.2	17*	43.7*	20	58.7	6	65.2	91*	101.1	17	13.6	25*	5.43	29.28	58.26	102.7	233.3	.161
2	13	32.2	15	44.8	20	59.7	6	64.4	58*	103.3	17	11.9	22*	5.33	26.74	44.89	65.0	196.2	.138
3	13	32.8	16	45.9	20	60.6	6	63.5	43	104.5*	17	11.7	20*	5.24	24.86	44.91	47.6	200.1	.131
4	12	32.6	16	45.5	20	59.6	6	61.1	36	102.8*	17	11.3	17*	5.00	24.90	44.90	47.4	197.3	.133
5	12	43.4	15	46.1	20	59.9	6	60.5	31	102.9	17	12.6	18*	4.99	24.94	44.91	47.3	195.5	.135

* This value varied excessively over the flightline.

1. TARE value in digital counts.

2. CALIB in (Microwatts/square CM/micron/steradian) per count.

3. Word 19 of each scanline is CALIB times 100.



FLIGHT 94-095-02 A/C 707 NS001

