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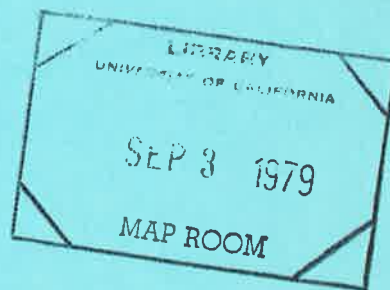
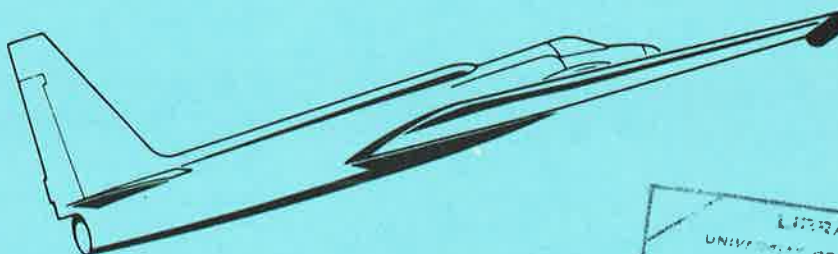
# Airborne Instrumentation Research Project

## Flight Summary Report

Flight No. 79-072

Date 8 June 1979

FSR- 1278



# NASA

National Aeronautics and  
Space Administration

**Ames Research Center**  
Moffett Field, California 94035

**Airborne Missions and Applications Division**

# FLIGHT SUMMARY REPORT

Flight No: 79-072

Date: 8 June 1979

FSR No: 1278

Julian Date: 159

Sensor Package: Dual RC-10  
Quartz Crystal Microbalance (QCM)

Aircraft No: 5

Purpose of Flight: #0666R Support  
Requestor: Lumb/Bauer  
#0742 Support  
Requestor: Page/Pollack

Area(s) Covered: Southern California

## SENSOR DATA

Accession No:	02767	02768	---
Sensor ID No:	031	033	061
Sensor Type:	RC-10	RC-10	QCM
Focal Length:	6" 153.05mm	6" 153.17mm	---
Film Type:	Panatomic-X, 3400	High Definition Aerochrome Infrared, S0-127	---
Filtration:	Wratten 12 + 2.2AV	CC .10B + 2.2AV	---
Spectral Band:	510-700nm	510-900nm	---
f Stop:	5.6	4.0	---
Shutter Speed:	1/225	1/150	---
No. of Frames:	198	198	---
% Overlap:	60	60	---
Quality:	Excellent	Excellent	---
Remarks:	---	---	Non-imaging sensor

## FLIGHT SUMMARY

79-072

This flight was flown in support of Flight Requests #0666R (Lumb/Bauer, NASA/ARC) and #0742 (Page/Pollack, NASA/ARC) under the FY 1979 Airborne Instrumentation Research Program (AIRP) plan. Photography was acquired over the agricultural areas of southern California (see Track Map). Quartz Crystal Microbalance (QCM) data was collected throughout the flight but not indicated on the track map.

The flight was generally clear except for some very minor cirrus and cumulus clouds. The photography acquired is of excellent quality with no camera or processing malfunctions noted.

The Quartz Crystal Microbalance Cascade Impactor (QCM) is a multistage impactor which senses the mass of suspended particulates as a function of particle size. The particles are drawn into the sensor and separated aerodynamically into ten size intervals covering a range from 0.05 micrometers to 25 micrometers in diameter (assuming spherical particles of mass density  $2 \text{ gm / cm}^3$ ). The air velocity increases as it flows from one stage of the cascade to the next because of the decreasing diameters of the entrance jets. Thus, the larger particles impact in the upper stages and the smaller ones are carried with the flow to the lower stages. Each impactor stage contains a piezoelectric crystal microbalance which senses the mass of the particles collected by a change in oscillator frequency between a reference crystal and the sensing crystal. Laboratory analysis (scanning electron microscopy) may be performed on the samples for elemental composition and morphology.

## FLIGHT LINE DATA

FLIGHT NO. 79-072

Check Points	Frame Numbers	Time (GMT— hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks	
		START	END			
RC-10 #031	A-B	0580-0615	16:47:54	17:21:50	65,000/19800	Thin cirrus, frs. 0596-0599
	B-C	0616-0625	17:23:43	17:32:06	"	Minor cumulus, frs. 0619-0621
	C-D	0626-0629	17:33:49	17:36:29	"	Clear
	D-E	0630-0644	17:37:56	17:50:46	"	"
	F-G	0645-0659	17:54:59	18:07:52	"	"
	H-I	0660-0671	18:11:22	18:21:59	"	"
	J-K	0672-0686	18:22:11	18:40:46	"	"
	L-M	0687-0698	18:44:51	18:55:00	"	"
	N-O	0699-0710	18:59:12	19:08:53	"	Clear; camera left on during turn
	P-Q	0711-0714	19:11:39	19:13:46	"	Clear
	R-S	0715-0725	19:17:11	19:26:06	"	"
	T-U	0726-0736	19:29:44	19:38:44	"	"
	V-W	0737-0740	19:49:00	19:51:44	"	"
	W-X	0741-0748	19:52:37	19:58:55	"	"
	Y-Z	0749-0754	20:02:21	20:06:49	"	"
	a-b	0755-0766	20:10:14	20:20:53	"	Thin cirrus, frs. 0763-0766
	b-c	0767-0777	20:22:15	20:31:00	"	Clear

## FLIGHT LINE DATA

### FLIGHT NO. 79-072

 RC-10  
#033

Check Points	Frame Numbers	Time (GMT— hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A-B	5921-5956	16:47:40	17:21:35	65,000/19800	Thin cirrus, frs. 5937-5942
B-C	5957-5966	17:23:29	17:31:52	"	Minor cumulus, frs. 5960-5962
C-D	5967-5970	17:33:34	17:36:15	"	Clear
D-E	5971-5985	17:37:42	17:50:32	"	"
F-G	5986-6000	17:54:45	18:07:37	"	"
H-I	6001-6012	18:11:06	18:21:44	"	"
J-K	6013-6027	18:21:56	18:40:31	"	"
L-M	6028-6039	18:44:34	18:54:44	"	"
N-O	6040-6051	18:58:56	19:08:38	"	Clear; camera left on during turn
P-Q	6052-6055	19:11:23	19:13:31	"	Clear
R-S	6056-6066	19:16:56	19:25:50	"	"
T-U	6067-6077	19:29:27	19:38:23	"	"
V-W	6078-6081	19:52:44	19:51:28	"	"
W-X	6082-6089	19:52:21	19:58:38	"	"
Y-Z	6090-6095	20:02:04	20:06:33	"	"
a-b	6096-6107	20:09:57	20:20:37	"	Thin cirrus, frs. 6104-6107
b-c	6108-6118	20:21:58	20:30:44	"	Clear

**FLIGHT LINE DATA****FLIGHT NO.** 79-072

Check Points	Frame Numbers	Time (GMT—hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
QCM ---	-----	16:22:00	-----	-----	Switch to Standby - on the ground
---	-----	16:30:00	-----	-----	Take-off
---	-----	17:12:00	-----	65,000/19800	Switch on over Los Angeles
---	-----	20:30:00	-----	65,000/19800	Switch off at checkpoint "c"; begin descent

FLIGHT 79-072

8 JUNE 1979

DATA RUN

DUAL RC-10

JNC-43N

