

19780901 HI. CWPAY

Form I-2 Cloud Physics Project Scientist Operational CHECKLIST

DATE Sept. 1, 1978 Vernon Keller - Hurricane Ella
 AIRCRAFT RF42 (P-3) FLIGHT 1:00 PM from Miami

A. INSTRUMENT STATUS AND PERFORMANCE

	PreFlight	InFlight	PostFlight	Remarks	Data Units Collected
Johnson Williams	OK	(Wire broke three-fourths the way through the flight)			
Nimbiometer	Not available				
Lyman Alpha	Not available				
U. V. dewpoint	OK	OK	OK		
Foil Impactor	OK	Foil broke before first penetration			None
Formvar	OK	Heater coil stripped away in flight		(data collected looks good)	3 small reels
Knollenberg					(21 rolls of tape)
Raindrop	OK	Lost lens protector cap in flight			
Cloud Droplet	OK	OK		25-800um probe	
FSSP	OK	OK	OK		
Data System	OK	OK	OK		
& Displays					
Ice Particle Counter					
Mee	OK	OK			
ERT	OK	OK			
CO ₂ Radiometer					
Microwave Radiometer					
Aerosol					
Filters					
Bulk Water					
INC					
CCN					

B.

REMARKS

The first pass through the rainbands and eyewall into the eye has some good data from ^{all} the JW, Formvar, and Knollenberg probes. Early part of flight at about 20,000 ft, then to 18,000 ft, and finally to 17,000 ft. Temperature as measured by thermistors in both the ~~top~~ formvar replicator arm and ~~body~~ ^{chassis} were recorded.

Form Var V. Keller		Aircraft		REF 42 (P-3)		ELL A		FOIL	
Time GMT	Frame	Speed	Event	Comments		Foil (inches)		Time on (GMT)	Time off (GMT)
18:51:30	0000	1		thickness initially 45% Airn 1 1/2					
18:51:50	550	4	✓①	Knollenberg on Rainband. Heater on 18:52:50					
18:57:00	12360	1		event off about 18:54:30 heater off then on again		Velocity reject on channel (4)			
18:57:20				Knollenberg off		SW 300 knots (mot)			
19:01:50				Knollenberg on					
19:02~	14000	4	✓①	in eye wall					
19:04:00				Knollenberg on					
19:04:50	174500	4	✓①	replica does not look very good					
				manual flush thickness to 100% then back to 45%					
				End of Knollenberg tape ~ 19:07					
19:07:15	24000	1		auto off 19:08					
	24700			changed Knollenberg tapes					
	25511			auto off complete					
times agree 19:13:00				Knollenberg did manual flush and thickness to 100% then 45%		heater off			
	25697			going to run through eye from North to South (north side is open)					
19:39:30 both times agree				heater on					
19:40:00				Knollenberg on					
19:40:20		4	✓①	auto on 19:40:05		a little of north side of eye wall			
19:41:36	27100	4	✓①	heater on					
19:41:43				replica stopped					
19:42:45	30000	6	✓①	turned it off at ~ 19:44					
19:46:00				Knollenberg off end roll #2 changed Formvar foil					

Time GMT	Frame	Speed	Event	Comments	Foil (inches)	Time on (GMT)	Time off (GMT)
20:12:20	both times agree			Roll #2 heater fuse blew out & I replaced it heater on this time we are going to make a pass from the SE	1 1/2 1/2		
20:18:23	auto on			start Knollberg			
20:18:40							
20:19:15	600	4	(1)				
20:22:33	8800	1		not much on replica			
	10260			auto off			
	11062			replica heater burned out probably burned out at end of 1st reel into eyewall			
20:30:45							
20:33:56				Begin Knollberg Roll #4 1st through eyewall			
20:39:31	Knollberg			Tape #4 ran out and auto rewind			
21:08:00				Begin Knollberg tape #5 going through eyewall into eye then through East eyewall lots of water and JW up to 3.5 g/m ³ through eyewall on left of eye			
21:17:05				end tape #5 auto rewind			
21:26:00				Begin Knollberg tape #6 down a rainband			
21:31:25				end tape #6			
21:37:45				Begin Knollberg tape #7 along a rainband			
21:41:45				Stopped Knollberg tape tape not quite finished but rewinding anyway			
				going down to 18000 ft. from 20,000 ft.			
21:56:35				Begin Knollberg tape #8 down a rainband (very messy) (spotted) very large irregular particles SSW of center			
22:02:15				end tape #8			

Pray probe looks bad 21:26
probe gone.

Time GMT	Frame	Speed	Event	Comments	Foil (inches)	Time on (GMT)	Time off (GMT)
22:05:05			Begin Knollenberg tape #9	still in Railband we still are at -9.5° ~ 20,000 ft.			
22:09:00			at 22:08:38 both clocks agree				
22:10:38			we are now going down to 18,000 ft				
			end tape #9 auto rewind				
22:13:30			Begin Knollenberg tape #10	see some columns	$T_a = -5.2^{\circ}$		
22:19:10			end tape #10 auto rewind				
22:22:15			Begin Knollenberg tape #11	still in Railband orbiting inward now on NW side			
22:27:58			end tape #11				
22:31:00			Begin Knollenberg tape #12	we had a JW of at least 0.79/m ³ we are still following a rainband around at 18,000 ft.			
22:36:37			end tape #12 no auto rewind				
22:40:10			Begin Knollenberg tape #13	lots of columns on 2D cloud prob. orbiting in toward the eye should go through eyewall on VNE side			
22:45:50			end tape #13 auto rewind	tape ran out just before we got to the eyewall			
22:50:15			Begin Knollenberg tape #14	tape ran away through opposite eyewall from inside the eye			
22:56:35			Begin Knollenberg tape #14		$T_a = -5.6^{\circ}$	22:58:14	
22:57:25			Stop Knollenberg	~23:00 We lost the JW apparently wire broke due to ice			
			2D- PMS - Precip probe started working again.				
			Cannot get clearance to 10,000 ft so we are going to 17,000 ft. & do pattern here				

Form Var 19.4

Sept 1, 1978
Aircraft RF42 (P3)

FOIL

Time GMT	Frame	Speed	Event	Comments	Foil (inches)	Time on (GMT)	Time off (GMT)
23:50:15				Start again tape #14			
23:54:10				lots of columns stop. Rewind end tape #14 $\frac{3}{4}$	$T_a = -3.5^\circ\text{C}$		
23:56:55				Begin Knollenberg tape #15	$T_a = -2.7^\circ\text{C}$		
				going through eyewall into eye from open side then through opposite (more interior) eyewall			nose radar went out
24:04:39				end tape #15			
24:07:00				Begin Knollenberg tape #16	$T_a = -3.9^\circ\text{C}$		
24:12:38				end tape #16			
24:22:50				Begin Knollenberg tape #17	$T_a = -4.1$		
				will cross a rainband big stuff even on precip probe down 2nd rainband one the one nearest the eye 24:30:10	NW rainband		eye is open
24:30:45				stop end 24:30:1			
24:32:35				Begin Knollenberg tape #18			
24:41:17				into eyewall good updrafts and downdrafts then into eye and through the other eyewall big particles here $+12\text{ m/sec}$			
24:43:30				end tape #18			
24:49:00				Begin Knollenberg tape #19			
24:50:58				end tape #19			
24:58:10				Begin Knollenberg tape #20			
25:01:00				going down a rainband			
25:38:40				end tape #20			
				Begin Knollenberg tape #21	$T_a = -6.0^\circ\text{C}$		
				end tape #21			
				stop going home			

Black Lead
Arm

Replicator Temperature
Red Lead
Chassis
Ambient Temperature
Keller
Time

Sept 1 1978
Aircraft REC-42 (P-3)
Hurricane Ella

R(KΩ)	°C	R(KΩ)	°C	°C	GMT	Comments
1.76	+30.5	10.0	+25.1	~30°C	16:53:16	on Runway
5.83	+4.8	12.91	+18.5	~-9°C	17:53:42	replicator + air off
6.24	+3.5	13.40	+17.5	-8.7	18:01:21	
6.46	+2.5	13.89	+17	-8.3	18:07:05	
6.56	+2.5	14.32	+16.5	-8.3	18:13:50	
6.65	+2.0	14.8	+15.5	-8.4	18:23:54	
6.58	+2.5	14.48	+16	-8.4	18:25:20	air on 18:24:30 replicator off
6.4	+2.6	14.9	+15.4	-8.4	18:27:53	
6.3	+2.7	15.3	+14.8	-8.4	18:29:20	air off 18:31:00
6.49	+2.5	16.17	+13.5		18:43:40	air on 18:43
5.35	+6.3	15.77	+14.0	? ~ -8	18:59:00	replicator on 18:48 later
4.9	+8.0	13.13	+18.3	-1.0	19:13:27	heater on
5.6	+5.5	14.5	+16.0	-10.0	19:34	heater on
5.4	+6.0	14.6	+16.2	-12.2	20:13:20	