

AUG 10 1991

19910810II-CLDPHY

E.3 Cloud Physics Scientist (On-Board)

R.A. BLACK

The on-board cloud physics scientist (CPS) is responsible for cloud physics data collection on his/her assigned aircraft. Detailed operational procedures are contained in the cloud physics kit supplied for each aircraft. General procedures follow. (Check off and initial).

E.3.1 Preflight

- ☒ 1. Determine status of cloud physics instrumentation systems and report to the on-board lead project scientist (LPS).
- ☒ 2. Confirm mission and pattern selection from the on-board LPS.
- ☒ 3. Select mode of instrument operation.
- ☒ 4. Complete appropriate instrumentation preflight check lists as supplied in the cloud physics operator's kit.

E.3.2 In-Flight

- ☒ 1. Operate instruments as specified in the cloud physics operator's kit and as directed by the on-board LPS.

E.3.3 Postflight

- ☒ 1. Complete summary check list forms and all other appropriate forms.
- ☒ 2. Brief the on-board LPS on equipment status and turn in completed check sheets to the LPS.
- ☒ 3. Take cloud physics data tapes and other data forms and turn these data sets in as follows:
 - a. Outside of Miami - to the HRD operations center (FGOC).
 - b. In Miami - to AOML/HRD. [Note: all data removed from the aircraft by HRD personnel should be cleared with the AOC flight director.]
- ☒ 4. Debrief as necessary at the appropriate operations center (i.e., FGOC or MGOC).
- ☒ 5. Determine the status of future missions and notify the appropriate operations center (FGOC or MGOC) as to where you can be contacted.

Cloud Physics Project Scientist Operational Check List

Date AUG 10 1991 Aircraft 43 Flight ID 910810I

A. Instrument Status and Performance:

System	Pre-Flight	In-Flight	Downtime	# of Tapes
Johnson-Williams	✓			
PMS probes:				2
2D-P	✓			
2D-C	✓			
FSSP	✓			
Data System	✓			
Recorder	✓			
Formvar	✓			1
DRI Charge Probe	✓			
DRI Field Mills	✓			
King Probe	✓			

B. Remarks:

ITS A WONDER THAT THE PMS SYSTEM WORKS AT ALL
1 videotape also.

Formvar Log

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Date _____

Flight

Flight 910810I

Operator R. A. BLACK

[illegible]

2-D Knollenberg Data Tape Log

AUG 10 1991

Date_____

Flight

Flight 910810 I

Operator

Operator R. A. BLACK

[illegible]

910810I CAPE-4 CLOUD PHYSICS

PMS NOTES PREFACED BY "2D" R. A. BLACK

2D TIME OFFSET +1.0 sec. (ALL TIMES ARE FROM PMS CLOCK)

takeoff 155400 Charge system test 161200

165502 Nothing happening. All activity is ~ 60 mins west of us.
We continue to loiter. John Wallett is charging the A/C
to neutralize the + charge pickup.

170959 2D on, replicator on spd 1

171045 3 events: pass #1 small cu.

171200 auto off.

171330 spd 1 on 3 miles pass #2

171445 auto off

171815 3400 auto on spd 1 pass #3

171915 2 miles

171950 auto off

172120 very dry cloud.

FV video off at 173808.

180210 FV video on

frame count 5260 at auto on for cloud pass #4

182420 on

5500 182435 spd 2 weak cloud, no data burst.

182521 auto off 2 miles.

next pass FC = 7099

182800 auto on spd 1 missed cloud. it died too fast.

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P.2

182539 auto off
8550 2 mko.

183200 auto on spd 2 cloud pass attempt 5

9200 2 mko

auto off spd 1 183300

10,400 attempt auto on 2D looks good 183546.

183630 auto on spd 1 cloud pass 6

spd. 4 4 mko 183803

183830 auto off 5c water

13,384 auto on spd 1 184004

184019 spd 4 4 mko pass 7

14,700 spd 6 just before end

184105 auto off

184130 2D #1 off

184316 2D on FU auto off 184340 missed it on FU.
pass 8

184530 on spd 1 2D #2 on FC

184550 spd 6 5 mko FC 19000 184620

Auto off 184650

Pass 9 T-50 FC at ant on 2D, 855 cloud died.

170255 we're going back.

171430 PMS 2D #2 off

Gird null
Reflica
Charge

910810 I

Hall

56
57
10

Start 10 Aug 91

flow situation as of late -
chr water
and East
low water.

Big Air to S of Florida.

planned T.O. 11:00 L.

T.O. 1554.

now $\pm 1/2$ V. Ref on 0.5 V / DIV

CRO

Photo: none | LP | HP | Both | 1 ms

on climb out.

Step	Volts		@ 1KV / 1ms
11	01	16-12	
12	02	8KV - off beam	2ms
		16	16
		17	21
13	03	18	28
14	08	19	34
15	12	19.9	40
		4800m PM	9.5KV

backst.

Change of current to backst. opt
→ close is 1mAmp @ 10KV;

59
10

Current in canopy rapidly @ 13/KV.
- ? ionization at outer aft points!

best back off (2 subs, bottom)
9.7 KV @ 4805 m.

(14 - KV / 5 μ a. 3913 m) end

12.5 KV / 2 μ a } bottom
13 - 6 / 4 μ a }

~17 10

17 15

3900 + 300

17 18 1/2

NOTE in this too

Parabola too

Two V bumps
just comes to
aft leg.

splashes

at @ 12 1/2 KV.

Wor
Patrick

small
Kahlo ~5 Db.

Relax
shad L

cloud also

④

18-24

small cloud.

3497m / -6°C

soft cloud.

S/C rain

~~Effect~~ to + $\frac{1}{20}$ scale.8kV / 2m $\frac{3}{4}$ 9m?2nd look at 18.28

4/2

18.22
3!

small drops;

no Q in cloud, but Q chase
after exit. for 2 mins.~~2/3~~15/1 18/3 B.
38.

(soft rain)

all water no drops / noise

at Q off exit

 $\frac{1}{2}$ 9m⁻³ 7ms⁻¹

5/2

18/40

rept.

none & feel

some ice.

1-2m?

These clouds going to get.
hard and rapidly
dissipating.(7. lighter
sheet)

look at

this

detail.

5/3 18-43

moderate E fold

moderate E fold.

heavy K at CP2 ~ 6.30 local ~~18-43~~

6/1

18 52

Top only

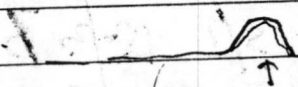
on top.

no E fold.

break

in small clouds the way
no E fold, ~~top~~ and no
departure of ~~cloud~~ left alone,

except on exit

which is 
off at cloud.

land. 19 46 52

(Heavy K at Miami Airport)

summary Instructions - all OK

mission:

Part 1 clouds just at 30C hel,
no ice/E fold; some rain
1710 / 1715 / 1715 1/2

Part 2 clouds to - 6 hel; 18 24
at no ice; no E fold? 18 22

Part 3 some hel; 1 cloud L 41K

Comment

07
10

Vsfl for beginning cassette closed to
submerged regions with no I₀ and E fold
transitions to E₀ and E fold after a minute.

07:40 80

07:41 80

E fold

07:42 80

07:43 80

07:44 80

E fold

07:45 80
(K₀ on)

07:46 80
Squid place

07:47 80

07:48 80

07:49 80

New Area C12 184238 ON 2 passes
184725 OFF +3°C
3950 m

~~New C13 185933 ON
190000 OFF~~

New C13 191017 ON Tz +8.6°C
191810 Tape out

Tape 2) C14 192420 New Tape (2) +9°C
Side 1 192633 OFF

New System 211315 ON +2°C
212722 Voice record

~~Cloud 1 2000'
C15 -9°C 213400 ON WWV, then plot
Small Ice 214252 OFF
-9.3°C 214630 ON
Thru Top 214955 OFF
Ice~~

Sounds

Flight 3 Sat August 10 1991

Q as yesterday T/O 155:
Left = CR Right = WWV/AC

Set to 135/3/4/3 Tape 2 Side 2

Cloud 1 +3°C	171020 / 171030	Cloud Type
3900 m	ON OFF	
C1 Pass 2 3°C	171256 / 171435	"
C1 P3 3°C	171750 / 171947	"

Number of questions only to
be written in this column

Arg 10 cont. 182404 ON
-6.3°C 182579 OFF
C2 P1 5490m Raindrops. TAS 273

C2 P2 182752 ON OVER TOPS
182913 OFF No cloud

C3 P1 -6°C 183021 ON Small ice in tops.
18000' 183236 OFF

C4 P1 -5.3°C 183615 ON water
183827 OFF

C4 P2 183957 ON
After pass, many spurious changes due
to increased noise level to 2.5Vp/p
C4 P3 TR still ON
184423 OFF

C4 P4 184538 ON
184643 OFF

Rest Q probe $2.5 \times 91 = 225$ /3/4/3

~~C5 P1~~ -6 185031 ON No cloud
5490m 185221 OFF

Noise dropped back to 1.5V p/p
Rest Q probe 135 /3/4/3