U.S. DEPT. COMM./NOAA/OAO - DATA SECTION WORK FORM NO.1 OADWF1 FILE

FLT ID: 960617H	FM: BKF	TO: BKF
FLT NO: 96-028	BLK IN: 0422	ATA: 0414
ETD: 1900	BLK OUT: 2058	ATD: 2107
ETE: 7+00	BLK TIME: 17.4	FLT TIME:
SPONSOR ORG: NOAA	PROGRAM: STERAO-A	PURPOSE:

OAO PERSONNEL

AC	KENNEDY ✓	SYS ENG	ROLES ✓
CP	KENUL ✓	DATA SYS	MC MICCAN ✓
NAV	KOZAK ✓	RADAR	
FE	WADE	BT/ODW	
RADIO		CLD PHYS	
FD	COHITE / PARRISH ✓	DOPPLER	

PARTICIPATING SCIENTIST/VISITORS/OAO

LAST, FIRST NAME	ACTIVITY ON A/C	AFFILIATION
MCFADDEN, JIM ✓		NOAA/AOC
HUBLER, G. ° BUHR, M.	STERAO	NOAA/AC/CIRES
KUSTER, W. ° HOCCOWAY, J.	"	NOAA/AC
JOBSON, T. ° WILLIAMS, J.	"	NOAA/AC/NRC
SHERIDAN, P ✓	"	NOAA/CMDL/CIRES
WERT, B ✓	"	NCAR/CU
~~JORGENSEN, B~~ BARTELS	"	NOAA
MATEJKA, T	"	NOAA

PROPOSED/ACTUAL MISSION/REMARKS (RECCO, FIXES, STORM, PENET, NHOP #)

30.11" ≈ 1019.7
30.05" ≈ 1018.5

1st NAV no INE's
2nd SYS ENG fail 2100Z/backup @ 2104Z

SQUAK = ~~5104~~ ~~5115~~ ~~1412~~ 5265

~~32° 14.9 MSL~~ TW2 steady readings

30.04" ≈ 1018.0

U.S. DEPT. COMM./NOAA/OAO - DATA SECTION WORK FORM NO.2 OAOWF2 FIL

FLT ID: 960617H TIME OFF: TIME ON:

	A/C T/O	WX STN	A/C LAND	WX STN
PRESSURE		1018.5		1015.0

	NO	DATA DISPOSITION/DATE/QUALITY
1/SEC FLT LVL TAPES	Y	
FAST FLT LVL TAPES	Y	
RADAR TAPES	Y	
DOPPLER TAPES	Y	
ODW CASSETTES	N	
HARD COPIES	Y	
AXBT	N	
AXCP	N	
ODW	N	

PHOTOGRAPHY

	FWD	LS	RS	VERT	
ON	✓	✓	✓	✓	
OFF					
RATE					

REMARKS

NOAA FORM 59–4
(2–72)

Time	CA	LO	TA	TD	WD	WS	SP	Remarks
2107								T/O
2110			—	—				DW#2 stuck on 13.1
								climb
2125			-1.2	-10.3	271	20.5	573	level
2212			23.6	2.0	164	3.3	774	PBL legs rpt @ 2230
								Big Chief has no tryt's
								good DW#2
2220					175	7.0	774	DW#2 4°C higher
2300								Chief says outflow at
								40°58' @ 5000' AGL
								invest at BKMJC
								1500' AGL 500' AGL
0034			17.6	1.0	121	8kt		No tryt's start
								E-W sample, Alt I

Flightplan Thunderstorm Study (Scenario 3)
Colorado
boundary-layer to free troposphere exchange

Doors closed: 13:50
Takeoff: 14:00
Point A, Buckley National Guard Field 39 42 N, 104 45W

Calibration at constant altitude, Observer calls
Head direction of **Pt. B (41 00N, 104 25W) at 15 kft MSL**

Pt. A to Pt. B 150 km, ~ 19 min, (Climb < 10 min)

Stay at constant altitude for calibration, observer calls
14:00-14:25

2147

Before the Storm
After Calibration descend to 1500 ft AGL along the way to Pt. C

Horizontal Survey within the PBL 2221 ≈ 2230 = 2232
Pt. B to Pt. C (40 10N, 105 00W), to Pt. D (40 10N, 103 30W), to Pt. E (40 30N, 104 10W)
14:25-15:10

Racetrack Profile up to 21 kft near Pt. E
==> Take first set of HC can samples at 1500 ft AGL, 13 kft, 17 kft, 21 kft MSL
head east for 1 min 50 sec and climb at 1500 ft/min, reverse direction, head west for 1 min 50 sec, and continue climb etc up to 21 kft MSL)
15:10-15:20

Head direction of Pt. F (40 10N, 104 25W)
Pt. E to Pt. F 60 km, 9 min
15:20-15:30

2300

Hydrocarbon Profile between Pt. F and Pt. G 2300 2315 2338 2355 0009
At 15:35 head direction of Pt. G (41 00N, 104 25W)
Hydrocarbon profile between Pt. F and Pt. G at 21 kft, 17 kft, 13 kft MSL, and 1500 ft AGL 500' AGL
Start HC-leg at : 05, :20, :35, :50 so that the HC sample will be centered along this leg. Change altitude approximately 3 min after HC sample ends (**Observer calls**)
15:35-16:35

10k MSL
0024

If at any point during this leg the **Observation Center** at the CHILL Radar site should indentify a target storm, switch to the **Active Storm Phase.**

During the Active Storm Phase 0105

Characterize Airflow with Radar and Characterize In-Flow Region of Cloud

Cloud identification and flight coordinates will be given by CHILL Radar.

Radar Legs:
Straight lines parallel to and S to SW of the storm approximately 12 km away from the perimeter of the

storm, orientation parallel to storm track at 7kft MSL (within the PBL, this should also be the inflow region of the storm)
until dissipation of storm.

Alternatives: I) Straight leg parallel to the storm track.
II) Fly L-pattern (south and west side of the storm).
II) Repeat radar flight pattern at different altitude.
(7kft, 16 kft, and > 22 kft MSL).

16:35-18:35

After Dissipation of the Storm:

Characterization of PBL after Storm Dissipation:
Cross below location of the latest radar echo for 15 min (~100 km)
18:35-18:50

Characterization of Vertical Profile after Storm Dissipation
Race track Profile at location of the latest radar echo of the storm, descend to 500 ft AGL and then climb to max altitude at 1500 ft/min
==> Take second set of HC can samples at 1500 ft AGL, 13 kft, 17 kft, 21 kft MSL , 25 K MSL
18:50-19:20

HC profile after the storm
North-South leg across the center of the last radar echo, the length of the HC-leg is approximately 100 km (not quite 1 deg latitude)
Hydrocarbon profile at 25 kft (or max altitude), ~~21~~ kft, ~~17~~ kft, 13 kft MSL, and 1500 ft AGL
Start HC-leg at :05, :20, :35, :50 so that the HC sample will be centered along this leg. Change altitude approximately 3 min after HC sample ends (**Observer calls**)
19:20-20:35

Climb to 12 kft MSL for calibration
(Start NOy calibration, and stay at altitude for calibration 20:35-20:50, Observer calls)

Head direction of Buckley (39 42N, 104 45W) **Pt. A**
~ 20 min

Return to Buckley at ~21:00

Pt. A (39 42N, 104 45W)
Pt. B (41 00N, 104 25W)
Pt. C (40 10N, 105 00W)
Pt. D (40 10N, 103 30W)
Pt. E (40 30N, 104 10W)
Pt. F (40 10N, 104 25W)
Pt. G (41 00N, 104 25W)
other points will be determined during the flight.....

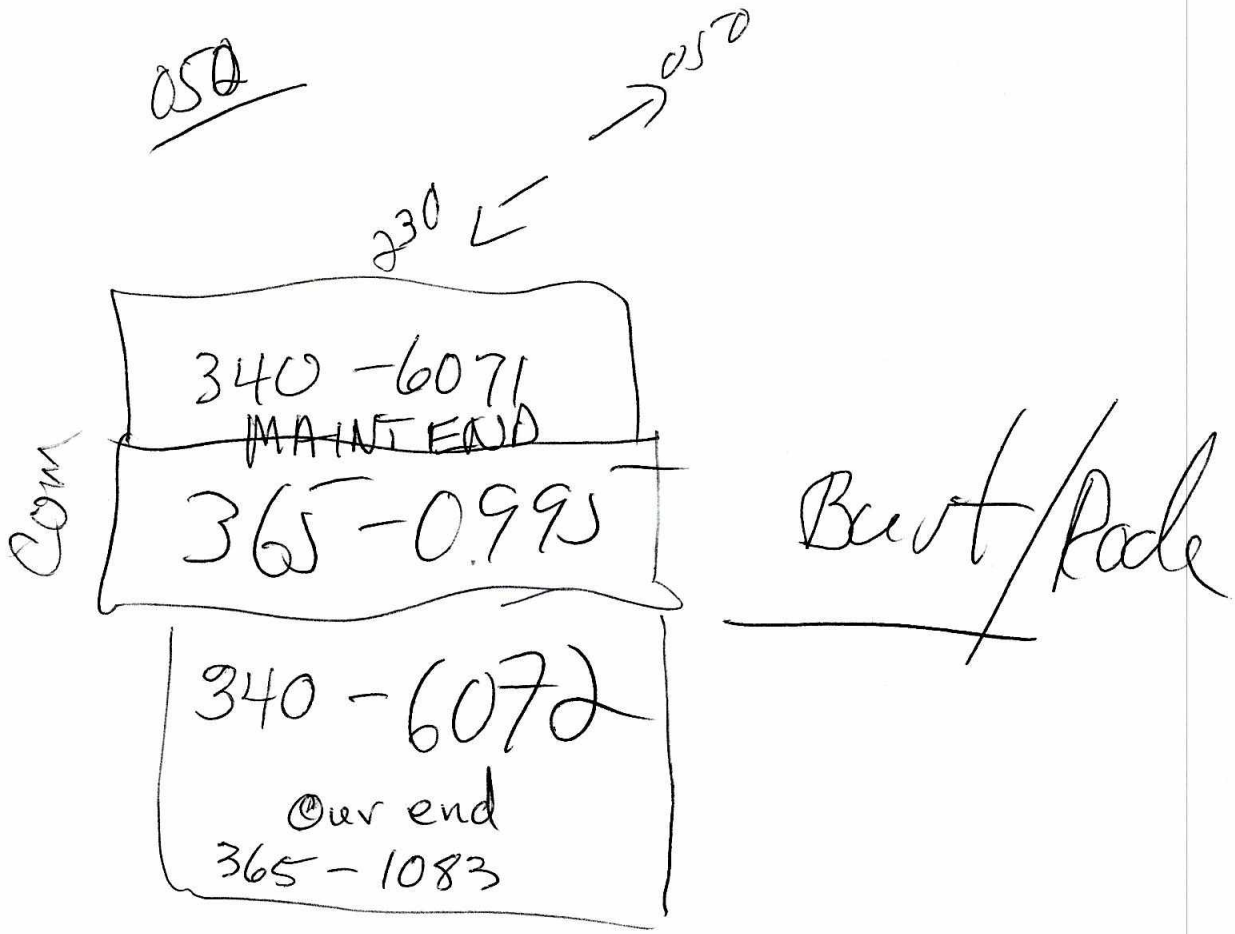
Alternatives:

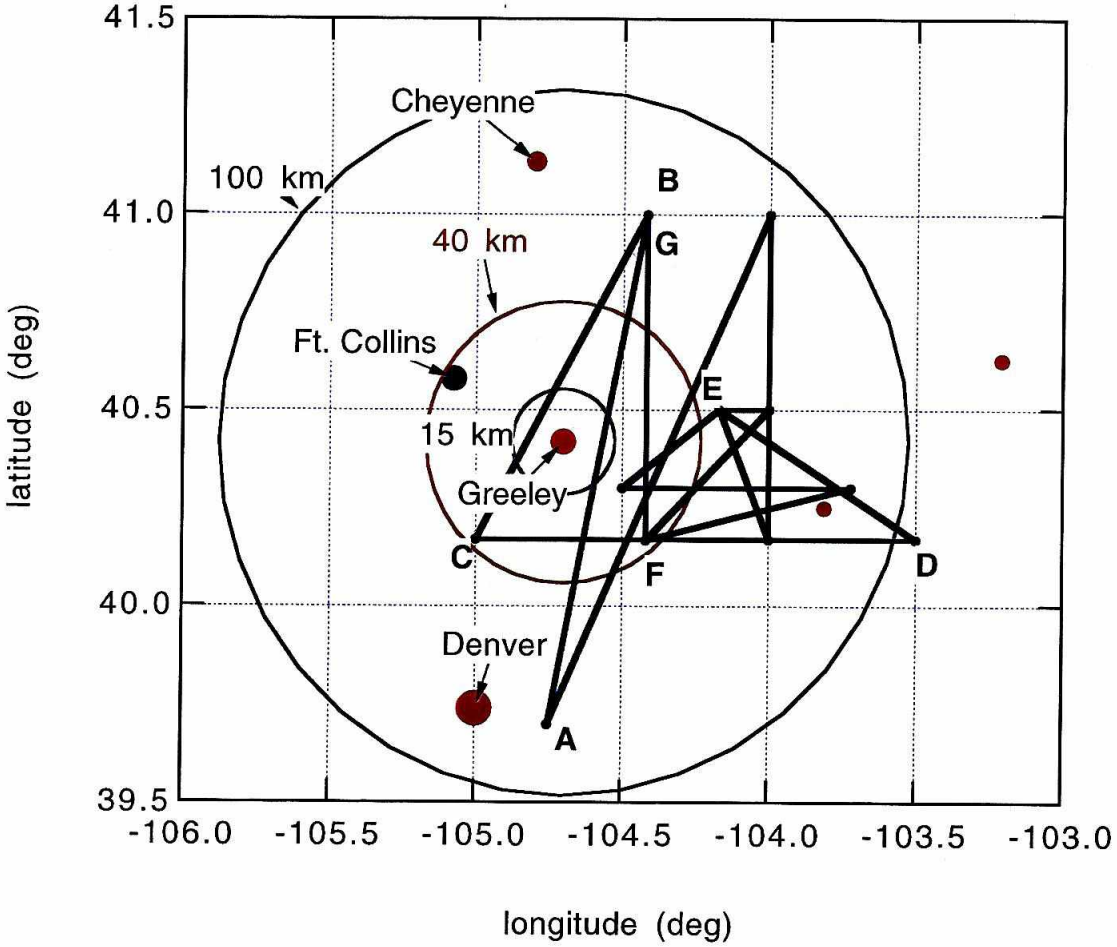
I) 16:35-17:50: If there is no appropriate storm identified in the study area,
start HC profile between Pt. F (40 10N, 104 25W), and Pt. AH (40 10N, 103 25 W)
at 1500 ft AGL, 13 kft MSL, 17 kft MSL, 21 kft MSL, 25 kft MSL.
~0030 0054
II) 17:50-19:05: start HC profile between Pt. AH (40 10N, 103 25W) and AI (41 00N, 103 25W)
at 25 kft MSL, 21 kft MSL, 17 kft MSL, 13 kft MSL, 1500 ft AGL

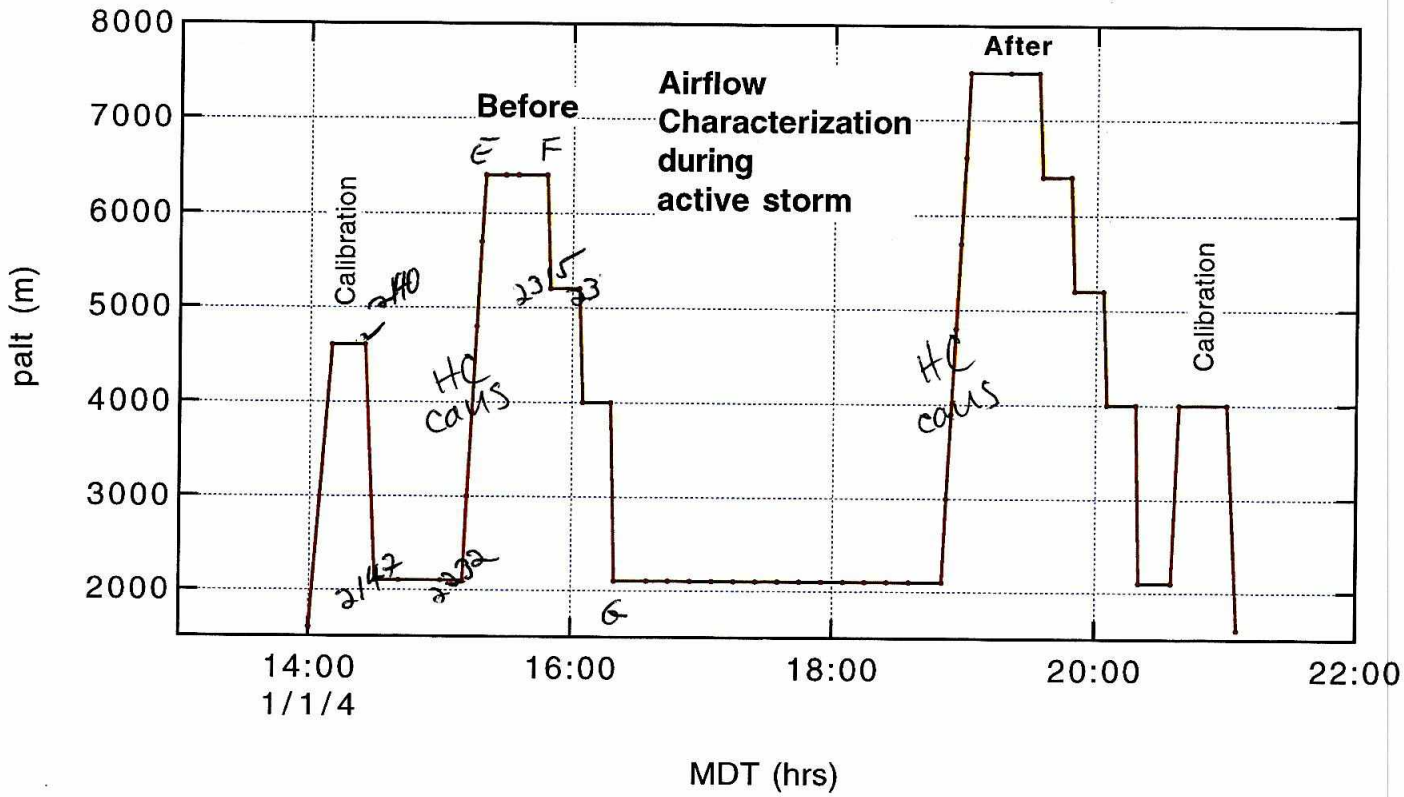
Climb to 12 kft MSL for calibration, 30 min

Return to Buckley

The detailed characterization of the 1 deg lat by 1 deg long box will hopefully help to pick the most appropriate orientation for the HC profiles for subsequent flights. It also allows to fall back into the thunderstorm mode at any time if appropriate storms should develop later on.




41.5
41.0
40.5
40.0
39.5
latitude (deg)
Cheyenne
100 km
40 km
Ft. Collins
15 km
Greeley
Denver
A
B
C
D
E
F
G
-106.0
-105.5
-105.0
-104.5
-104.0
-103.5
-103.0
longitude (deg)


8000
7000
6000
5000
4000
3000
2000
palt (m)
Before
Airflow
Characterization
during
active storm
After
Calibration
Calibration
E
F
G
HC
calls
HC
calls
14:00
1/1/4
16:00
18:00
20:00
22:00
MDT (hrs)

Flight on June 17, 1996

HÜBBE, GERHARD	NOAA - AL / CIRES
BUHR, MARTIN	NOAA - AL / CIRES
SHERIDAN, PATRIK	NOAA - CMDL / CIRES
KUSTER, WILLIAM	NOAA - AL
WERT, BRYAN	NCAR / CU
HOLLOWAY, JOHN	NOAA - AL
JOBSON, TOM	NOAA - AL / NRC
MATEJKA, THOMAS	NOAA
JORGENSEN, DAVID	NOAA
~~ROBERTS~~, ~~JAMES~~	NOAA - AL
WILLIAMS, JONATHAN	NOAA - AL/NRC

341°/27 Qkm

170°/23 kms

47°/33 kms

1+8 +19 37 +11 2143

MISSION LOG

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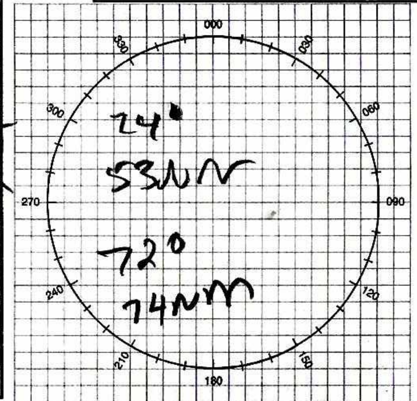
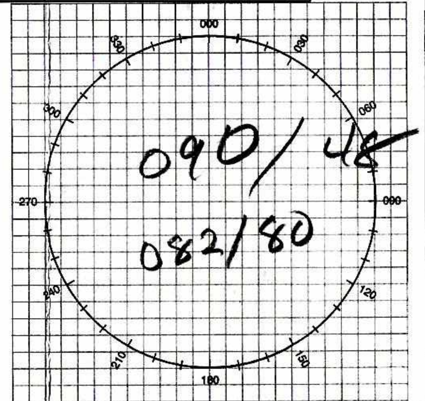
CLEARANCES

FREQ	ALT	HDG	OTHER
			Chy 115/20
			Vtell 1 Cheyenne
			8000 15000 10m
			128.45
			SQ 5104
			341°/27NM
			270/23 @10MSL
			270/33 TU





POSITION REPORT

1. POSITION
2. TIME
3. ALTITUDE
4. NEXT POSITION
5. ETA
6. NEXT POSITION

EMERGENCY MESSAGE

TRANSMIT THE FOLLOWING MESSAGE TO ANY AGENCY ON THE AIR-GROUND FREQUENCY IN USE. IF UNABLE TO ESTABLISH COMMS, ATTEMPT CONTACT ON ANY OF THE FOLLOWING EMERGENCY FREQUENCIES:

UHF/VOICE	VHF/VOICE	MF/VOICE	HF/CW	MF/CW
243.0	121.5	2182 KHZ	8364 KHZ	500 KHZ

MAYDAY, MAYDAY, MAYDAY
THIS IS NOAA ______, NOAA ______, NOAA ______

- POSITION ______________ N/S ______________ E/W AT ________Z
- HEADING ______ TRUE/MAG
- AT ______ KTS TRUE/INDICATED
- FLIGHT LEVEL OR ALTITUDE ________
- WE ARE A P-3 AIRCRAFT WITH ________ SOULS ON BOARD
- NATURE OF EMERGENCY
- ASSISTANCE DESIRED
- PILOT INTENTIONS
- WE HAVE ________ ENDURANCE REMAINING

TIME	FIX TYPE	POSITION	INS 1 POSITION	K ERR	INS 2 POSITION	K ERR	MH	VAR +E==>	TH	DR +R==>	TRK	GS	WD	WS	ALT	TAS	NEXT PT	DIST	TIME	ETA	REMARKS
2005	VIS	3942.3N 10445.0W	✓ ✓		✓ ✓																Chculs Eng Start
2020	Failed to select Nav on Taxi had to Realign INS's																				
2048	VIS	3942.3N 10445.0W	✓ ✓		✓ ✓																Eng Start
2055																					Taxi Rwy 14
2106																					T off [illegible]
2144	PT B Tracking 200 T																				
2232	PT E Begin Spiral climb to FL 210																				
2251	Reach FL 210																				
2300	PT F Turning North																				
2314	Arrival PT 6 the first time																				
2330	PT F Begin turnaround																				
2350	Heading South from 6 to F ↓ 1,500 @ 6L																				
0020	At PT 6 Turning South ↗ 9,500 MSL																				
0050	Switching to convection																				
0127	End of Line				4109N 10201W																
0210	GPS	4054N 10158W	Descending																		

33 twr
48 twr

1417 5265 1405 0115Z 4044N 10246W

MISSION LOG	PAGE ___ OF ___

FIX TYPES
(G) - GPS (I) - INS (R) - RADIO (V) - VISUAL (C) - CELESTIAL (D) - DR

TIME	FIX TYPE	POSITION	INS 1 POSITION	K ERR	INS 2 POSITION	K ERR	MH	VAR +E==>	TH	DR +R==>	TRK	GS	WD	WS	ALT	TAS	NEXT PT	DIST	TIME	ETA	REMARKS
0415																					Land Buckly
	VIS	3942.3N 10445.0W	3940.6N 10444.3W	+1.7 +.7	3924.4N 10453.1W	+17.9 -8.1															Chaolls
																					Buckle