

AESOP Flight

Flight #7 1990707

<u>Sensor or system</u>	<u>Number or Name</u>
INE	2
Accelerometer	2
Temperature Probe	2
Dew Point Probe	1
Altitude (for vertical wind)	Pressure Altitude
Static Pressure	Rosemount Fuselage
Dynamic Pressure	Rosemount Fuselage
Time Source	Micro 99
Constants File	CO3992.CON

Notes:

The radar altimeter (RA159) had a spike at takeoff and was replaced by RA232 from 1615:01-1642:20. A spike also occurred on landing and RA159 was set to zero from 2355:09-0005:00.

Dewpoint (DW1) had several spikes (overshoots) that were removed and patched (1722:20-1723:20, 1808:30-1809:30, 1850:15-1850:22, 1940:30-1941:05, 2007:55-2008:15, 2041:10-2041:45, 2104:10-2104:40 and 2341:30-2342:00). DW1 was replaced by DW2 due to "maxing out" of DW1 from 1615:01-1751:30 and 2338:00-0005:00. DW1 was replaced by DW2 due to a spike 1850:23-1850:50. Dewpoint appears to be less responsive in such dry conditions 1631:45-1723:00, 2249:00-2252:15 and 2257:15-2342:00.

Static pressure (PSF) had a spike removed and patched (1621:25-1621:50).

	<u>Takeoff</u>	<u>Landing</u>
Aircraft static pressure	1000.6	996.7
Corrected tower pressure	1020.3	1018.3

The aircraft INE positions were renavigated with respect to GPS.

SPECIAL NOTE!!! Locations 80, 81 and 82 of record five on the standard tape contain vertical ground, vertical air and vertical speeds, respectively, computed using Dave Jorgensen's vertical wind algorithm.
It is recommended that these values be used for vertical wind analysis.

Flight Meteorologist: Stan Czyzyk, (813) 828-3310 ext. 3086

U.S. DEPT. COMM. / NOAA / OAO - DATA SECTION WORK FORM NO. 1 OROWF1 FILE

FLT ID: 9907074	FM: KBNA	TO: KBNA
FLT NO: 99-038	DLK IN: 0303Z	ATA: 2355Z
ETD: 1600Z	DLK OUT: 1612Z	RTD: 1622Z
ETE: 0000Z	DLK TIME: 7.51 - 7.9	FLT TIME: 7.33 - 7.6
SPONSOR ORG: NOAA/AL	PROGRAM: AESOP	PURPOSE: INIL M.O.

OAO PERSONNEL

AC KENNEDY, P ✓	SYS ENG HORNBROOK, C ✓
CP OMARA, T ✓	DATA SYS LYNCH, T ✓
NAV NEWMAN, C ✓	RADAR
FE WADE, S	BT/ODW
RADIO	CLD PHYS
FD (2727K, S ✓)	DOPPLER

PARTICIPATING SCIENTIST/VISITORS/OAO

LAST, FIRST NAME	ACTIVITY ON A/C	AFFILIATION
HUBLER, G ✓		
RYERSON, T / HUEY, G ✓		
LEIBROCK, E / PARRISH, D ✓		
JOBSON, T / TRAINER, M ✓		
GOLDON, P ✓		
FLOCKE, F ✓		
LEE, Y ✓		
WISTHALER, A ✓		

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

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

FLT ID: 990707I

TIME OFF: 1622Z

TIME ON: 2355Z

	A/C T/O	WX STN	A/C LAND	WX STN
PRESSURE	996.3	30.05	992.8	29.97

NO DATA DISPOSITION/DATE/QUALITY

1/SEC FLT LVL TAPES	2	
FAST FLT LVL TAPES		
RADAR TAPES	1	
DOPPLER TAPES		
ODW CASSETTES		
HARD COPIES	1	
AXDT		
AXCP		
ODW		

PHOTOGRAPHY

	FWD	LS	RS	VERT
ON				
OFF				
RATE				

REMARKS

990707I

TIME	LOT	CUN	TK	HD	TX	TD	WD	WS	PA	GA	PS	SP	REMARKS
164110	3708	8702	4	5	-1.3	-33.7	357	9.1	4867	5028	530.6	999.0	CLOUDBASE ~2500
170431	3845	8705											LEVEL 16 PA
170850	3802	8709	345	342	-5.3	-39.2	294	21.4	5820	5678	503.7	994.4	CLIMB
171315	3919	8714											LEVEL 18 PA
172430	3958	8733	335	335	22.6	13.3	333	5.5					DESCEND
173400	3956	8711											LEVEL 2 PA
1735													TURN + DESCEND
173900	3951	8731											1500 PA
174110	3948	8727											TURN + CLIMB
174530	3947	8708											LEVEL 2900 PA
174813													TURN + CLIMB
175504	3944	8729	93	92	14.1	10.0	0	7.5	1465	1394	848.9	999.4	LEVEL 45K PA
175925	3944	8708											NEXT LOT.
180024													TURN + CLIMB
180205	3948	8711	270	275	14.9	-12.4	5	19.1	1711	1644	823.7	997.7	LEVEL 5600 PA
180800	3949	8739											CLIMB 5000
181045	3940	8740											DESCEND + TURN
181115	3932	8835											LEVEL 2 PA
184434	3938	8855	260	264	18.9	-13.8	12	14.5	1531	1447	842.2	995.1	CLIMB
184835	3929	8909											LEVEL 5200
185128	3929	8922	270	271	23.2	12.3	16	2.0	544	419	949.6	996.4	DESCEND
185522	3929	8939											LEVEL 2000
185850	3927	8938	91	90	26.5	10.0	34	5.1	284	144	980.2	996.3	TURN + DESCEND
1904													LEVEL 500 AGL
190430	3929	8920											TURN + CLIMB
191110	3923	8956											LEVEL 2 PA
192415	3917	8915											TURN
193535	3920	9002											TURN
194113	3920	9027											TURN
200345	3927	9200											TO 5KPA
200850	3927	9233											LEVEL 2 PA
201130	3929	9244											TO 5KPA
201600	3945	9244											LEVEL 2 K
201940	3943	9244	180	179	27.1	12.8	146	3.5	344	158	972.2	991.0	TURN
202402	3927	9244											TURN + DESCEND
202530	3923	9246											500 AGL 1200 PA
203140	3942	9244											TURN + CLIMB
203425	3944	9244	180	180	21.5	-14.6	53	5.1	1393	1273	856.2	999.7	LEVEL 4800 PA
204015	3922	9244											TURN + CLIMB
204205	3925	9250											LEVEL 2 K
204612	3939	9250											TURN
205215	3924	9256											TURN
210000	3945	9305											TURN + CLIMB
210605	3946	9315	179	179	25.5	12.6	91	1.3	565	418	947.6	993.1	LEVEL 2 KPA
211210	3924	9316											TURN
211800	3907	9333											TURN
212234	3936	9112	89	88	24.4	12.1	4	5.1	565	434	947.1	994.9	PT 4
212735	3800	9110	179	178	25.5	14.0							PT 5 + CLIMB
212850	3741	9018	109	107	1.2	-29.0	341	16.1	4544	4545	573.9	980.4	LEVEL 15 PA

[illegible]

Flight plan : 7 July 1999

Power Plant Study in the Illinois and Missouri
Cayuga, (Coffeen ?) and Thomas Hill Power Plants
Select Power Plants according to 7 July am forecast

default climb rate 1500 ft/min

Access to plane : 7:00 am CDT

Preflight : 8:00 am CDT

Pt 0: Nashville (36 08N, 86 41W)

Doors closed:

Takeoff: 11 CDT

Head to Pt. 1 (39 55N, 87 26W) (427 km, 60 min)

On way to Pt. 1 climb to 15 kft, Calibration at 15 kft,

After calibration climb to max altitude and descend in route arrive at Pt. 1 at 1500 ft AGL

Cayuga Power Plant (39 55N 87 26W) (plume pattern ~75 min)

Fly box (~< 10 km distance) around the power plant to identify plume position.

Intercept the power plant plume at 4-5 additional distances (15 km apart).

(Coffeen Power Plant (39 04N, 89 24W) (15-30 min transit), (plume pattern 60 min)

Head to Pt 2 (39 35N, 89 30W) Close to Pt. 2 use traffic cone pattern to determine PBL height

Fly box (~< 10 km distance) around the power plant to identify plume position.

Intercept the power plant plume at 4-5 additional distances (10-15 km apart, the winds are predicted to be lighter near the Coffeen Plant).

(Kincaid Power Plant (39 35N, 89 30W))

Thomas Hill Power Plant (39 33N, 92 38W) (40 min) (plume pattern ~75 min)

Head to Pt 3 (39 33N, 92 38W) Close to Pt. 3 use traffic cone pattern to determine PBL height

Fly box (~< 10 km distance) around the power plant to identify plume position.

Intercept the power plant plume at 4-5 additional distances (15-20 km apart, the winds are predicted to be higher near the Thomas Hill Plant).

Attempt to intercept the St. Louis urban plume

(End of Thomas Hill plume pattern to Pt. 5: ~ 330 km, 50 min)

Head to Pt. 4 (39 30N, 91 30W)

Head to Pt. 5 (38 00N, 91 30W)

Head to **Nashville Pt. 6 (36 08N, 86 41W)** (Pt. 5 to Pt. 6: 474 km, 1 hr 20 min)

On way to Pt. 1 climb to 15 kft, Calibration at 15 kft,

After calibration climb to max altitude

On return to BNA include low level pass over Cornelia Fort

East-West legs
to South

5 min Lat.

Each leg

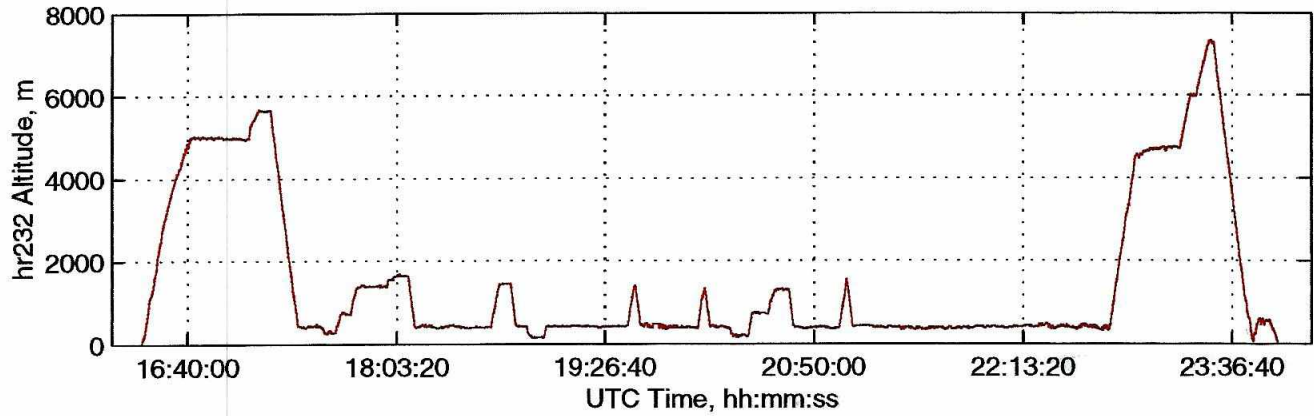
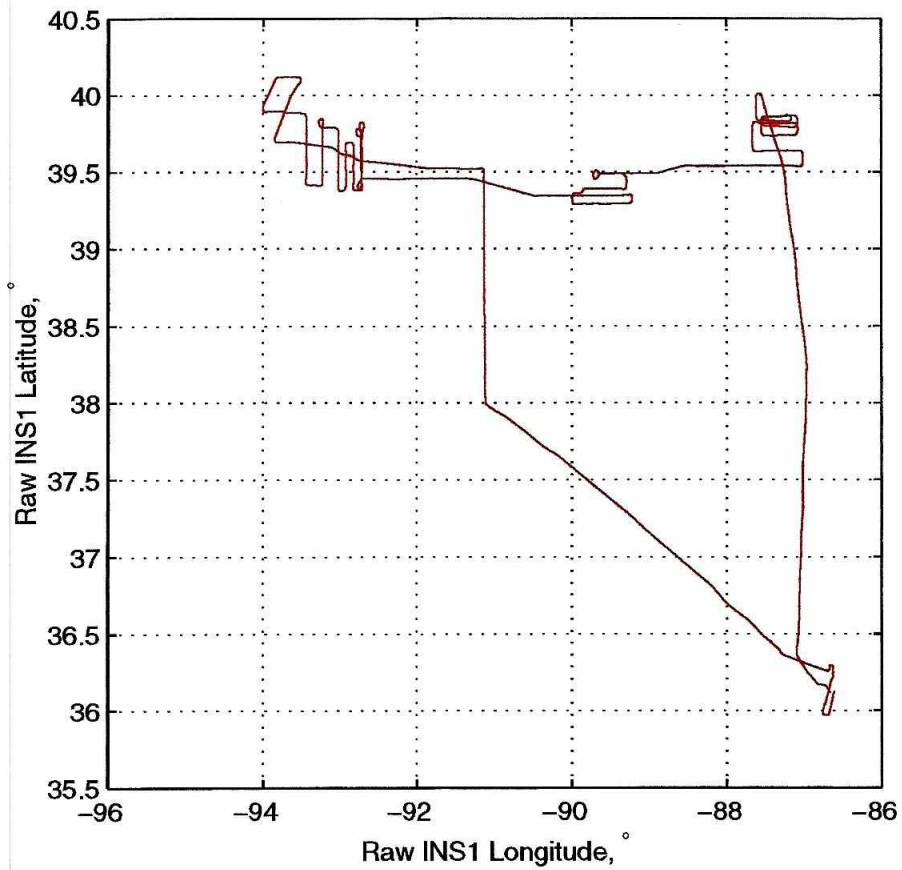
(4 legs)

(3 boundary layer
1 above)

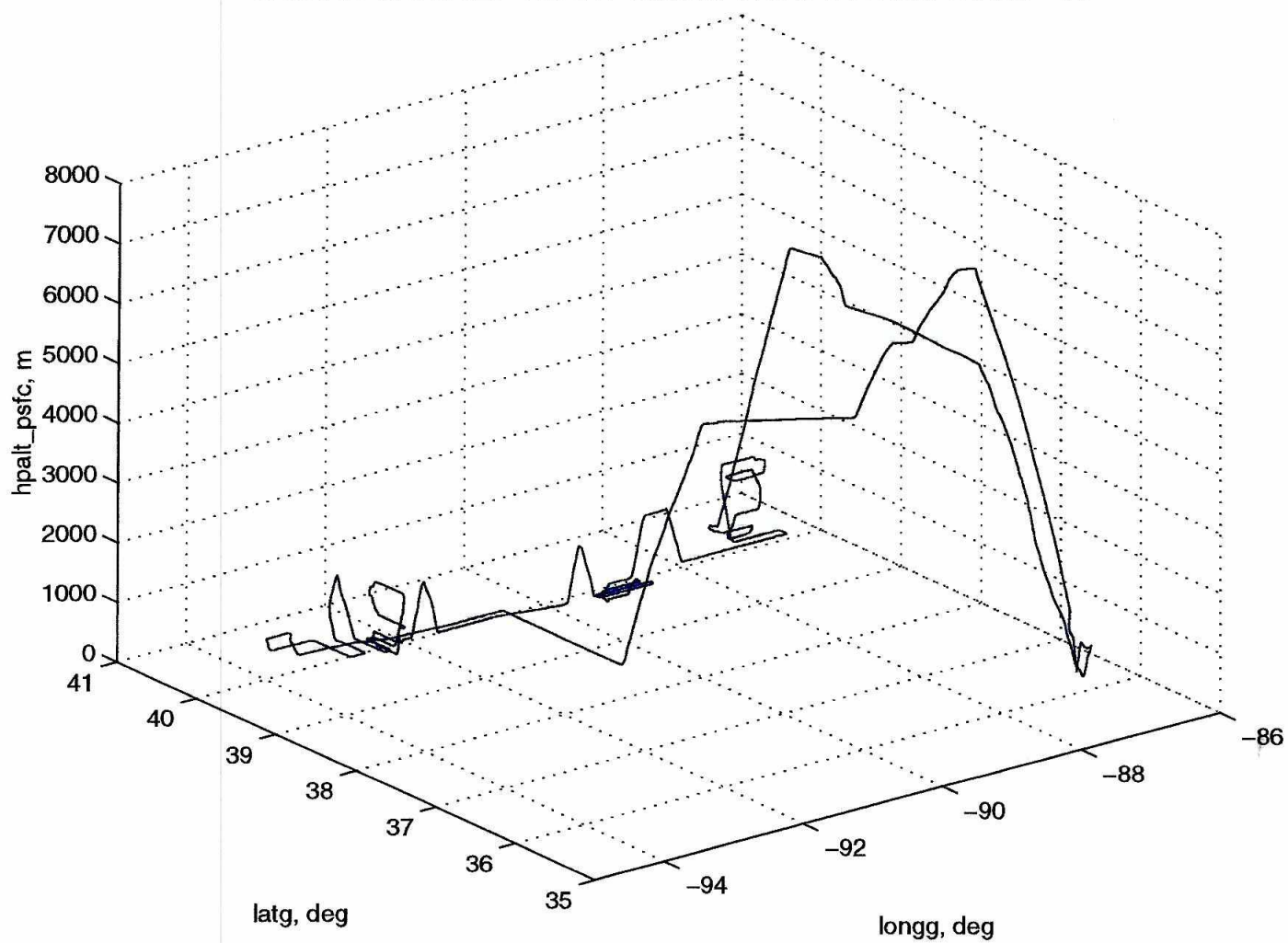
Flight Time is estimated as ~7hrs (for Cayuga and Thomas Hill power plant studies)

The predicted location of the surface High is very close to Kincaid and Coffeen and the winds near these plants are predicted to be very light and rotating. If the updated forecast on Tue morning should show a shift in the location of the high it might be possible to do both Coffeen and Kincaid instead of Thomas Hill (Stay tuned).

N43RF -- OZONE99 -- 07 July 1999 UTC

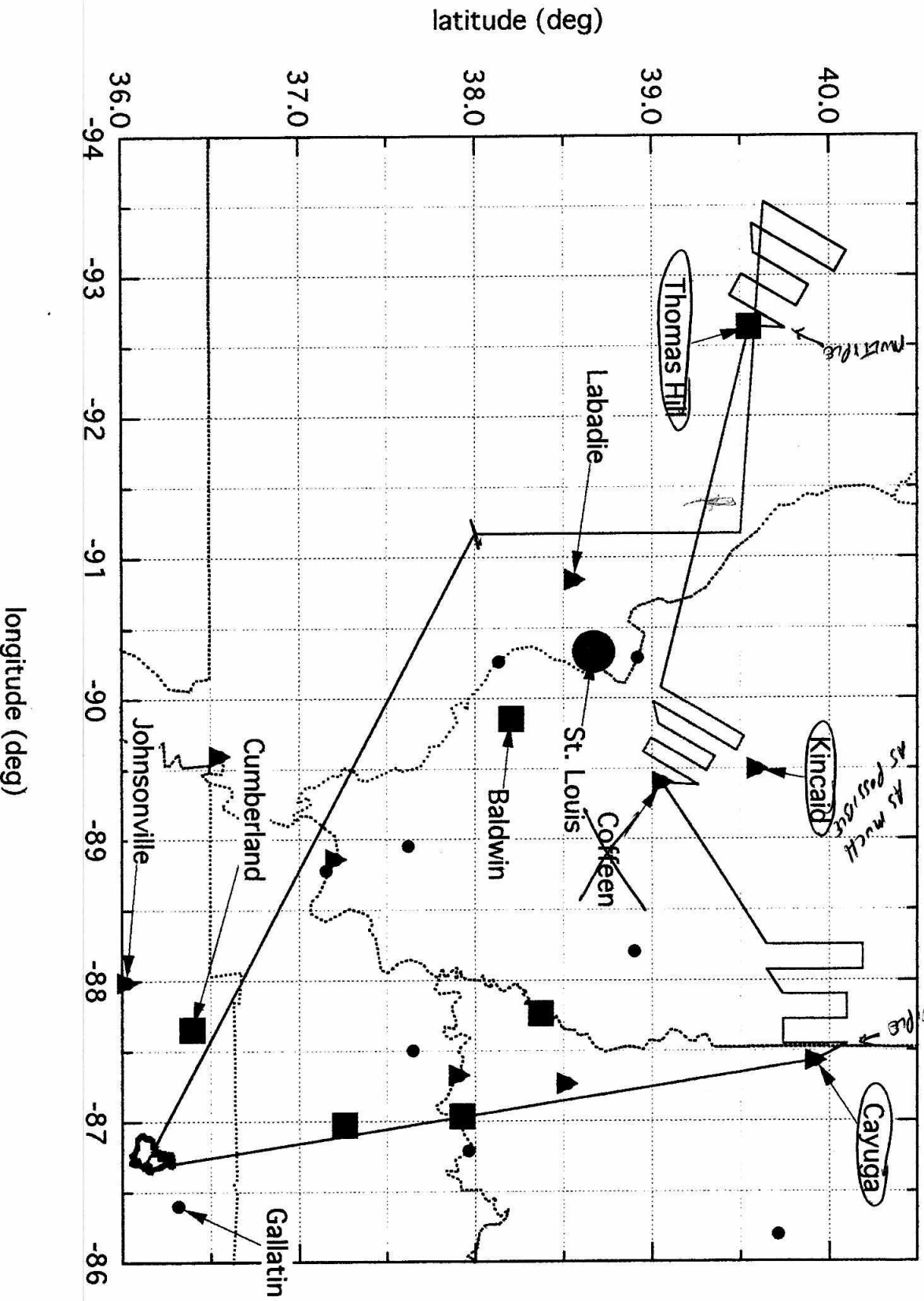


OZONE99 990707ls_P 16:09:41-00:08:30 UTC: 3-D FLIGHT TRACK 1/8



Flight plan : 7 July 1999
 Cayuga, (Coffeen?) and Thomas Hill Power Plant Study

3 legs
 TOTAL



Point	lat_070799	lng_070799	lat_deg_0707	lat_min_0707	lng_deg_0707	lng_min_0707
0	36.12	-86.67	36	7.2	-86	40
1	39.92	-87.43	39	55	-87	26
2	40.1	-87.55	40	6	-87	33
3	39.74	-87.55	39	44	-87	33
4	39.74	-87.72	39	44	-87	43
5	40.1	-87.72	40	6	-87	43
6	40.1	-87.9	40	6	-87	54
7	39.74	-87.9	39	44	-87	54
8	39.65	-88.08	39	39	-88	4.6
9	40.19	-88.08	40	11	-88	4.6
10	40.19	-88.25	40	11	-88	15
11	39.65	-88.25	39	39	-88	15
12	39.06	-89.4	39	3.6	-89	24
13	39.26	-89.38	39	16	-89	23
14	38.95	-89.62	38	57	-89	37
15	38.99	-89.72	38	60	-89	43
16	39.31	-89.48	39	18	-89	29
17	39.35	-89.59	39	21	-89	35
18	39.04	-89.82	39	2.3	-89	49
19	39.01	-89.98	39	0.37	-89	59
20	39.47	-89.63	39	28	-89	38
21	39.52	-89.73	39	31	-89	44
22	39.05	-90.08	39	3.1	-90	4.6
23	39.55	-92.64	39	33	-92	38
24	39.75	-92.62	39	45	-92	37
25	39.44	-92.86	39	26	-92	51
26	39.51	-93.01	39	30	-93	0.59
27	39.82	-92.78	39	49	-92	47
28	39.89	-92.93	39	53	-92	56
29	39.57	-93.16	39	34	-93	9.7
30	39.56	-93.37	39	34	-93	22
31	40.03	-93.02	40	1.9	-93	1.3
32	40.1	-93.17	40	6	-93	10
33	39.63	-93.52	39	38	-93	31

Point	lat_070799	lng_070799	lat_deg_0707	lat_min_0707	lng_deg_0707	lng_min_0707
34	39.5	-91.5	39	30	-91	30
35	38	-91.5	38	0	-91	30
36	36.12	-86.67	36	7.2	-86	40

Flight plan : 7 July 1999
Cayuga, (Coffeen?) and Thomas Hill Power Plant Study

