

IPEX

Flight 3 I000212

DATA TYPE	SENSOR or OPTION
INE	1
Accelerometer	1
Temperature Probe	1
Altitude (for vertical wind)	Pressure Altitude
Static Pressure	Fuselage
Dynamic Pressure	Fuselage
Dewpoint Probe	2

Notes:

There was one data/time gap: 210831Z - 210900Z

The dynamic attack pressure probe, DAP, iced-up during the time period 182100Z - 183918Z.. The erroneous output from this probe produced unacceptable horizontal and vertical winds during this time. The erroneous dynamic attack pressure data was removed and replaced with values from the following equation,

$$DAP = PQF1 - .4, \text{ where PQF1 represents fuselage dynamic pressure values.}$$

Dewpoint sensor #2, DW2, was balanced from 2215Z - 2220Z. The spikes generated by this action were removed and patched over.

During the spiral ascent beginning at 215940Z, dewpoint temperature was greater than ambient temperature from 220620Z - 221010Z.

The aforementioned time gap generated erroneous vertical wind values between 210800Z - 210930Z.

Downward spikes in radar altimeter values were due to overflying mountain crests.

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 wind speeds, respectively, derived from Dave Jorgensen's vertical wind algorithm. It is recommended that these values be used for vertical wind analysis.

The King liquid water voltage is in location 79 of record five on the standard tape.

	Takeoff	Landing
Aircraft static pressure	859.9 mb	862.1 mb
Corrected tower pressure	N/A	N/A

Flight Director: A. Barry Damiano, (813) 828-3310 ext. 3073

FLT ID: 1000212	FM: KSLC	TO: KSLC
FLT NO: 00-19	BLK IN: 01322	ATA: 0115Z
ETD: 1600Z	BLK OUT: 1606Z	ATD: 1643Z
ETE:	BLK TIME: 9:26	FLT TIME: 8:32
SPONSOR ORG: NSSL	PROGRAM: IPEX	PURPOSE: TOP #3

DAO PERSONNEL

AC TENNESEN ✓	SYS ENG
CP DIMARCA ✓	DATA SYS READAS-BERNES ✓
NAV RATHBUN/ADLER ✓	RADAR BARE ✓
FE WADE ✓	BT/ODW SMITH ✓
RADIO SANS SOUCI ✓	CLD PHYS
FD DAMIANO ✓	DOOPER FLOYD ✓

PARTICIPATING SCIENTIST/VISITORS/DAO

LAST, FIRST NAME	ACTIVITY ON A/C	AFFILIATION
SCHOLTZ ✓	PT	NSSL
SMULL ✓	ASST. PT	NSSL
KINGSMILL ✓	ASST. PT	DRI
COX ✓	PMS	U of U
HOLLAND ✓	OBS	U of U
BOEHNER ✓	OBS	U of U
HENDRICKSON ✓	OBS	U of U
PRIGG / PRIGG ✓	MEDIA	NBC

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

4 29.66 1982 T/O delayed due to long line of aircraft
2 waiting to depart.

Lost scientific power at
1619Z before T/O

BAL DW1 221350Z
-36.0 221600Z

-33.0
BAL DW2 2217
2219

TA out 1753Z back at 1755Z

TA in AFT display disappears

TA set to forward to keep display

TA out during spiral ascent

TA working 2044Z

U.S. DEPT. COMM./NOAA/ORD - DATA SECTION WORK FORM NO.2 OROWF2 FILE

FLT ID: D000212 TIME OFF: 1643Z TIME ON: 0115Z

	A/C T/O	WX STN	A/C LAND	WX STN
PRESSURE	<u>859.9</u>	<u>29.605</u>	<u>862.1</u>	<u>29.74</u>

NO DATA DISPOSITION/DATE/QUALITY

1/SEC FLT LVL TAPES	<u>2</u>	
FAST FLT LVL TAPES		
RADAR TAPES	<u>2</u>	
DOPPLER TAPES		
ODW CASSETTES		
HARD COPIES		
<u>PMS</u>	<u>2</u>	
<u>VIDEO</u>	<u>4</u>	
AXBT		
AXCP		
ODW		

PHOTOGRAPHY

	FWD	LS	RS	VERT
ON				
OFF				
RATE				

REMARKS

I000212

TIME	LAT	LONG	TRK	HD	LWD	WS	TA	TD	PA	GA	SP	PS			PQ
165000	4022	11155	181	187	255	18	-10.0	-12.2	3591	2121	849.9	647.1	RW-		65.4
165600	4006	11138	72	74	242	26	-18.0	-19.7	4680	3159	846.2	663.5	IN CLD		67.8
170200	4016	11113	333	329	240	23	-17.2	-20.5	4682	2235	743.5	583.6	IN CLD		72.7
171400	4103	11139	337	335	252	15	-17.2	-18.9	4673	2460	776.9	584.3	IN CLD		67.7
172300	4139	11150	352	350	224	18	-14.9	-16.4	4352	2874	849.3	588.7	14K		66.3
172830	4147	11207	250	251	254	10	-15.1	-16.4	4348	2920	855.1	588.9	IN CLD		67.7
173300	4133	11211	169	173	243	12	-14.8	-16.0	4348	2960	858.2	589.1	IN CLD		66.5
174100	4101	11204	172	178	254	17	-14.9	-16.2	4343	2974	860.7	589.4	IN CLD		67.7
174700	4053	11221	290	290	264	11	-15.0	-16.3	4341	2968	860.6	589.5	IN CLD		67.4
175200	4059	11246	287	286	222	6	-21.9	-24.2	5284	3892	860.5	519.9	IN CLD		66.6
175900	4104	11259	75	77	234	5	-22.2	-23.6	5281	3497	851.8	520.2	IN CLD		65.8
181000	4114	11155	78	81	232	15	-21.5	-23.5	5276	3673	838.7	520.5	IN CLD		67.3
181800	4117	11128	245	247	260	19	-15.0	-16.5	4355	1965	760.4	588.5	IN CLD		66.9
183000	4107	11229	259	261	285	4	-15.0	-16.7	4351	2982	860.9	588.7	IN CLD		68.1
183230	4105	11242			310	6	-15.0	-16.9							
184000	4102	11256	62	60	296	17	-7.0	-7.6	3129	1654	846.1	689.8	IN CLD		71.5
185100	4114	11209	227	231	252	26	-5.4	-6.0	2818	1443	859.2	717.4	IN CLD		70.9
185900	4104	11243	257	260	281	17	-5.1	-5.6	2820	1454	860.1	717.3	RW-		71.0
190700	4106	11241	74	76	247	8	-15.1	-16.4	4361	2992	860.9	588.0	IN CLD		63.9
191300	4111	11207	76	76	267	11	-15.1	-16.4	4360	2962	859.3	588.1	IN CLD		66.1
192300	4119	11130	252	254	252	26	-11.4	-12.4	3761	1545	773.1	636.1	IN CLD		67.1
192640			LT TURR	OVER	CREST										
193200	4108	11212	263	265	270	16	-11.2	-11.7	3760	2381	859.5	636.0	IN CLD		71.6
193630	4105	11235	259	262	305	11	-11.0	-12.3							
194500	4100	11257	65	63	299	18	-7.2	-8.1	5131	1673	848.3	689.5	IN CLD		67.4
195200	4109	11221	77	75	285	20	-7.3	-7.6	3131	1642	859.8	689.5	IN CLD		68.2
200200	4106	11233	262	267	295	18	-5.1	-6.1	2814	1447	860.2	717.9	IN CLD		66.5
201100	4102	11257	70	69	292	18	-5.2	-5.8	2810	1231	832.5	718.1	RW-		63.0
201740	spiral ascent to 20K start				246	14	-24.2	-25.7				580			
203100	4105	11236	255	255	238	15	-28.8	-30.8	6127	4737	865.0	463.6	done spiral		63.9
204500	4103	11248	71	68	293	24	-5.6	-6.0	2832	1470	860.4	716.3	RW-		68.6
205700	4110	11215	241	246	290	22	-7.3	-7.8	3135	1763	859.9	689.3	RW-		69.9
210500	4102	11251	251	257	286	34	-7.2	-8.9	3134	1747	858.3	689.2	IN CLD		65.5
211400	4104	11245	80	79	285	17	-11.0	-12.8	2745	2371	860.3	637.1	IN CLD		67.4
212300	4112	11156	79	77	289	20	-11.4	-11.7	3744	1511	765.1	637.1	RW-		64.9
213200	4116	11128	253	256	278	22	-15.2	-16.5	4365	2052	773.7	587.6	IN CLD		66.9
214700	4104	11243	258	261	281	18	-15.5	-17.0	4367	2994	860.9	587.7	IN CLD		68.3
215940	start spiral ascent to 22K												STOP ASCENT		
221400	4103	11233	281	280	243	18	-34.3	-34.6	6745	5345	868.5	425.5	CLR		64.8
222700	4057	11256	58	53	294	30	-6.1	-7.3	2831	1427	856.4	716.1	IN CLD		76.0
223900	4110	11212	225	231	278	24	-7.5	-8.6	3144	1781	860.9	688.5	IN CLD		70.2
224800	4102	11252	253	260	293	36	-8.2	-10.7	3144	1639	845.3	688.3	IN CLD		65.4
225500	4103	11250	77	76	286	27	-11.4	-13.8	3757	2390		636.2	IN CLD		
230400	4111	11201	78	78	279	19	-11.6	-12.1	3757	2325		636.2	IN CLD		67.9
231400	4115	11130	257	260	287	20	-15.3	-17.4	4372	1908		587.0	IN CLD		65.9
232900	4102	11248	261	263	283	19	-15.5	-18.5	4374	2997		586.9	TURB		79.3
233400	4113	11250	38	35	271	18	-15.7	-18.0	4375	3009		586.9	CLD		80.7
234400	4142	11210	165	169	286	17	-15.7	-17.0	4375	2968		587.0	RW		77.0
000400	4020	11155	181	186	298	21	-15.8	-17.8	4357	2318		588.2	CLD		83.2
001000	4011	11142	341	338	277	20	-15.9	-16.3	4356	2915		588.3	RW-		79.9
001600	4037	11151	347	344	288	23	-16.1	-17.1	4354	2933		588.4	CLD		83.1
002700	4124	11205	347	345	287	16	-15.8	-16.4	4356	2972		588.3	RW-		85.4
003500	4143	11214	165	170	304	22	-15.8	-17.4	4347	2945		589.1	CLD		60.8

1600, 1642

12 FEB 80

71-910091

200-12

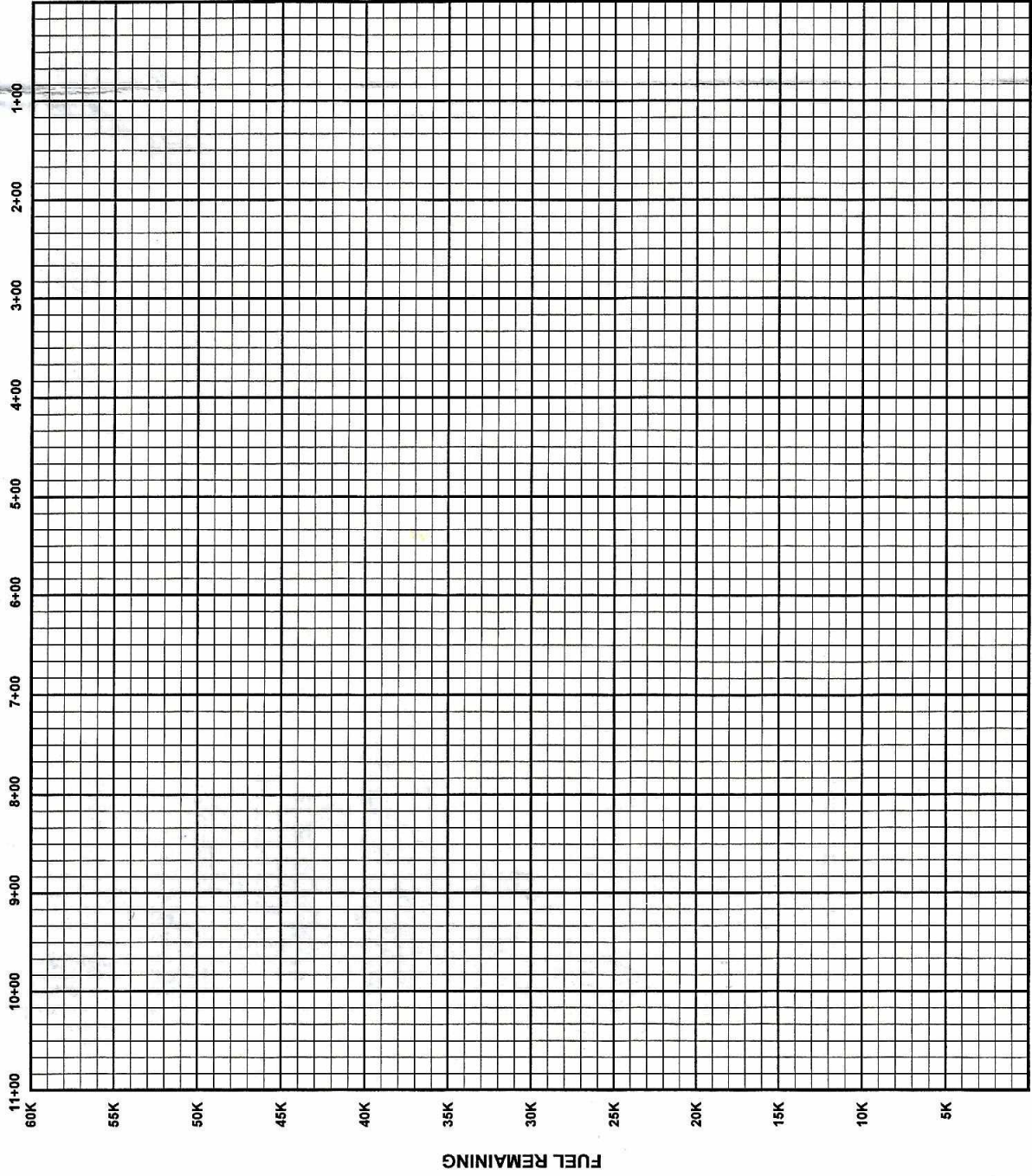
1950B

[illegible][illegible]A vertical strip of a black and white checkerboard pattern. The pattern consists of alternating black and white squares arranged in a grid. The strip is oriented vertically, showing a portion of the grid. The squares are of equal size and are separated by thin white lines. The overall effect is a high-contrast, repeating geometric pattern.

18002 44K 4.5K

RANGE CONTROL GRAPH

TIME REMAINING



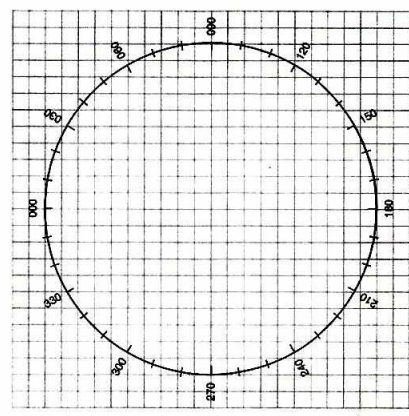
ENROUTE FUEL	
ENROUTE TIME	
ENROUTE FUEL (6K SK/4.5K RULE)	
RESERVE AT DESTINATION	
REQUIRED RAMP	
ACTUAL RAMP FUEL	

TACTICAL (OFFSTA TO DESTINATION)	
	4 ENG 3 ENG
DISTANCE (OFFSTA TO DEST)	
ENROUTE TIME (OFFSTA TO DEST)	
BURN RATE (LBS/HR)	4500 5500
ENROUTE FUEL REQUIRED	
RESERVE AT DESTINATION	
FUEL AT OFFSTA	

POINT OF SAFE RETURN	
	4 ENG 3 ENG
ETP DISTANCE (TO DEPARTURE)	
ENROUTE TIME (TO DEPARTURE)	
BURN RATE (LBS/HR)	4500 5500
FUEL REQUIRED	
RESERVE AT DEPARTURE	
PSR FUEL	

CEX - TRUE BEARING METHOD				CEX SIGHT	
COMPASS TYPE	INS1	INS2	WET	GMT	
MCH (READING)				GHA	
- MTH (SEXTANT)				CORR	
CE				GHA	
-VAR				LONG +W -E	
DEV				EXACT LHA	
				LAT	
				BOBY	
				DEC	
				HC/D	
				CORR	
				HC	
				Z	
				ZN	

CEX - ERB METHOD			
COMPASS TYPE	INS1	INS2	WET
MERB (DIAL 000)			
+ZN			
= MTH			
MCH (READING)			
CE			
-VAR			
= DEV			



WIND FACTOR		
WINDSPEED	HEADWIND	TAILWIND
10	1.03	.97
20	1.06	.94
30	1.10	.92
40	1.14	.89
50	1.18	.87
60	1.22	.85

PRESS ALT		200	250	300	350
10,000	1.0	1.0	.99	.99	.99
20,000	.99	.98	.97	.97	.97
30,000	.97	.96	.95	.94	.94
40,000	.96	.94	.92	.90	

TRUE AIRSPEED CROSS-CHECK						
TIME	IAS	PRESS ALT	"I" FACTOR	EAS	OAT	TAS
1653	146	135	/	/	-11.2	226
						231

ETP = .5(TOTAL DISTANCE x OUTBOUND WIND FACTOR)

4120
11205

11/12/14
21012

44K

292/27 SPECIAL

10K
81K

347

030-1045 BRON CAROL

0500N

25K

CLEARANCES			
FREQ	ALT	HDG	OTHER
			13K 15K
			4005 111 40 WPT 3
			41 47 112 10 WPT 4
			LOGAN 240/14
			1412
			233/5
			210

MISSION LOG

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

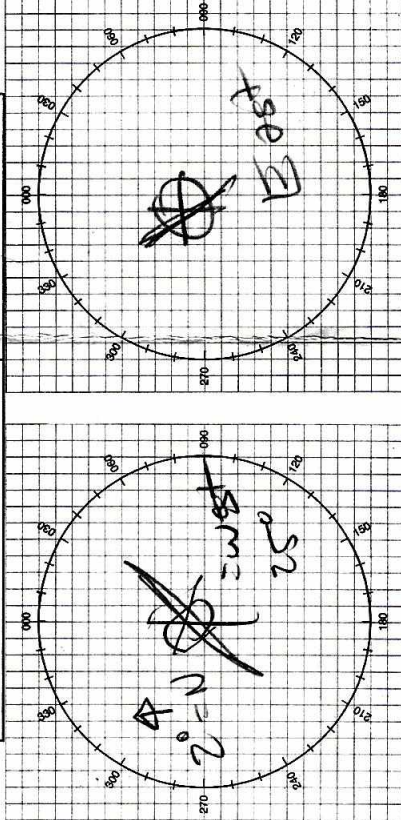
WE ARE A P-3 AIRCRAFT WITH SOULS ON BOARD

NATURE OF EMERGENCY

ASSISTANCE DESIRED

PILOT INTENTIONS

WE HAVE ENDURANCE REMAINING 11-30



TIME	FIX TYPE	POSITION	INS 1 POSITION	K ERR	INS 2 POSITION	K ERR	VAR	TH	DR	TRK	GS	WD	WS	ALT	TAS	NEXT PT	DIST	TIME	ETA	REMARKS
1600	ZNG	40 40.1	40 39.8																	
1606	TAXI	111 57.3	111 57.7																	
1606	BLACK																			
1612	110																			
1615	X	40 40.1	40 39.8	+3	40 39.2	+4.1	158	173	41	169	223	240	20	900	228	FFU	#1			357/24
1704	Δ	40 40.1	40 39.8	+3	40 39.2	+4.1	158	173	41	169	223	240	20	900	228	FFU	#1			357/24
1736	Δ	41 23.1	41 22.6	+5	41 21.9	+1.2	160	175	51	170	247	265	20	140	241	SLC				241-282-77
1825	Δ	41 10.9	41 11.0	-1	41 09.6	+1.3	242	152	257	255	238	235	16	140	241	#6				14K
1853		41 09.9	41 09.9	0	41 08.7	+1.2		255	0	255	205	258	24	91K	225					39, 3 K FUEL
1935		41 06.8	41 07.2	-4	41 05.8	+1.8		261	0	258	238	373	13	121K	238					32K FUEL
2030		41 06.6	41 06.6	-16	41 03.7	+2.3		256	0	256	248	261	10	F1200	254					32K FUEL
2115	Δ	41 04.6	41 05.5	-9	41 01.8	+2.6	064	079	1R	080	254	270	20	120	230	#7				365K 222K 81K
2155	Δ	41 02.3	41 03.9	-16	41 00.0	+2.3	057	072	3R	075	287	280	35	9000	228					22K
2232	Δ	41 05.8	41 07.4	-16	41 02.4	+3.4	061	076	3R	079	267	275	35	900	228	#7				22K
2315		41 14.4	41 15.5	-15	41 10.6	+3.4		260	3L	257	224	295	19	141K	239					22K
0018	Δ	40 44.7	40 47.0	-2.7	40 41.9	+2.8	329	152	344	347	262	275	15	140	264					22K
0115	Δ	111 52.8	111 52.4	+1.4	111 55.1	-2.3														22K
0132	BLACK	111 59.7	111 57.9	+0.2	112 01.9	-0.2														22K
0155	Δ	LAND																		22K
0132	BLACK	111 59.7	111 57.9	+0.2	112 01.9	-0.2														22K

1350

PRE-1-3-4

240/014

1171

Aircraft Flight Track Plan

Location of Airport: 40.78 -111.97 Take off time: 1200 UTC

Way Point # 1 Lat: 40 5.0 Lon: -111 48.8
Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
Dist to Way point: 42.6 nm Leg duration: 10.3 mins Arrival Time: 1210 UTC
Ground Speed: 249.1 kts Track: 170.3 degrees

Way Point # 2 Lat: 40 8.8 Lon: -111 11.2
Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
Dist to Way point: 29.0 nm Leg duration: 6.4 mins Arrival Time: 1216 UTC
Ground Speed: 270.0 kts Track: 82.2 degrees

Way Point # 3 Lat: 41 13.6 Lon: -111 44.8
Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
Dist to Way point: 69.5 nm Leg duration: 17.0 mins Arrival Time: 1233 UTC
Ground Speed: 245.3 kts Track: 338.8 degrees

Way Point # 4 Lat: 41 49.4 Lon: -111 56.5
Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
Dist to Way point: 36.9 nm Leg duration: 8.9 mins Arrival Time: 1242 UTC
Ground Speed: 248.0 kts Track: 346.5 degrees

Way Point # 5 Lat: 41 45.2 Lon: -112 15.0
Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
Dist to Way point: 14.4 nm Leg duration: 3.8 mins Arrival Time: 1246 UTC
Ground Speed: 230.1 kts Track: 253.2 degrees

Dist to base: 59.6 nm Leg duration: 14.3 mins Landing time: 1300 UTC
Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
Ground Speed: 250.0 kts Track: 167.6 degrees

Total mission duration: 1.0 hrs

N of Track 257
DB

10.30-10.45

5 continue #1

18K

3 hrs for 13

18K

14K

10K

8K

Aircraft Flight Track Plan

Location of Airport: 40.78 -111.97 Take off time: 1200 UTC

Way Point # 1 Lat: 41 2.5 Lon: -112 58.6 ^P
 Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
 Dist to Way point: 48.3 nm Leg duration: 12.5 mins Arrival Time: 1212 UTC
 Ground Speed: 232.3 kts Track: 289.0 degrees

Way Point # 2 Lat: 41 22.0 Lon: -111 1.3 ^Q
 Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
 Dist to Way point: 90.4 nm Leg duration: 20.1 mins Arrival Time: 1232 UTC
 Ground Speed: 270.0 kts Track: 76.9 degrees

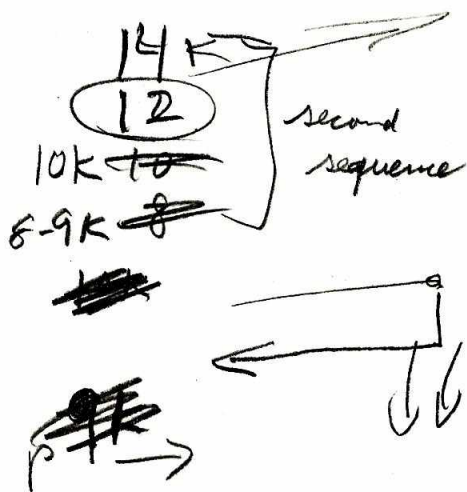
Dist to base: 55.2 nm Leg duration: 14.3 mins Landing time: 1246 UTC
 Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
 Ground Speed: 232.3 kts Track: 231.0 degrees

Total mission duration: .8 hrs

18K MSL TOPS

lots of snow 17432
 at crest level

17442 EFM launched



41° 17' = Q'
 111° 30'

14

41° 12'
 112° 05' OGDEN VOR

182 SLCC SOUNDING

(22) 9-14 W
 ↓ 9 K

0455

41° 05'
 112° 50'

113° 30' →

back to Pat 20K → 9K → OGDEN

LOGAN
 WENDOVER
 Spent recent

20K

Height

1-1.5 hr snow rate

Along #5

West Side Ridge

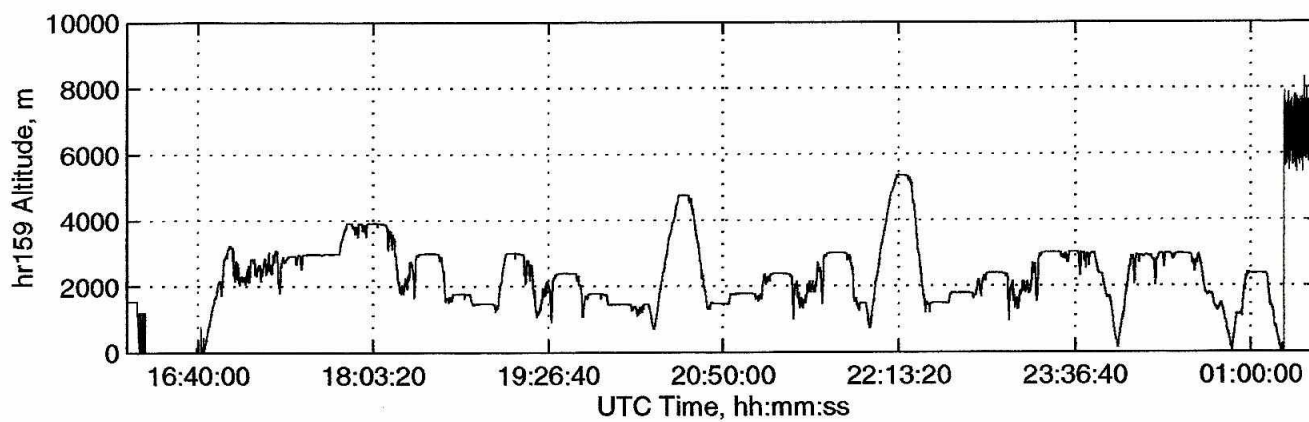
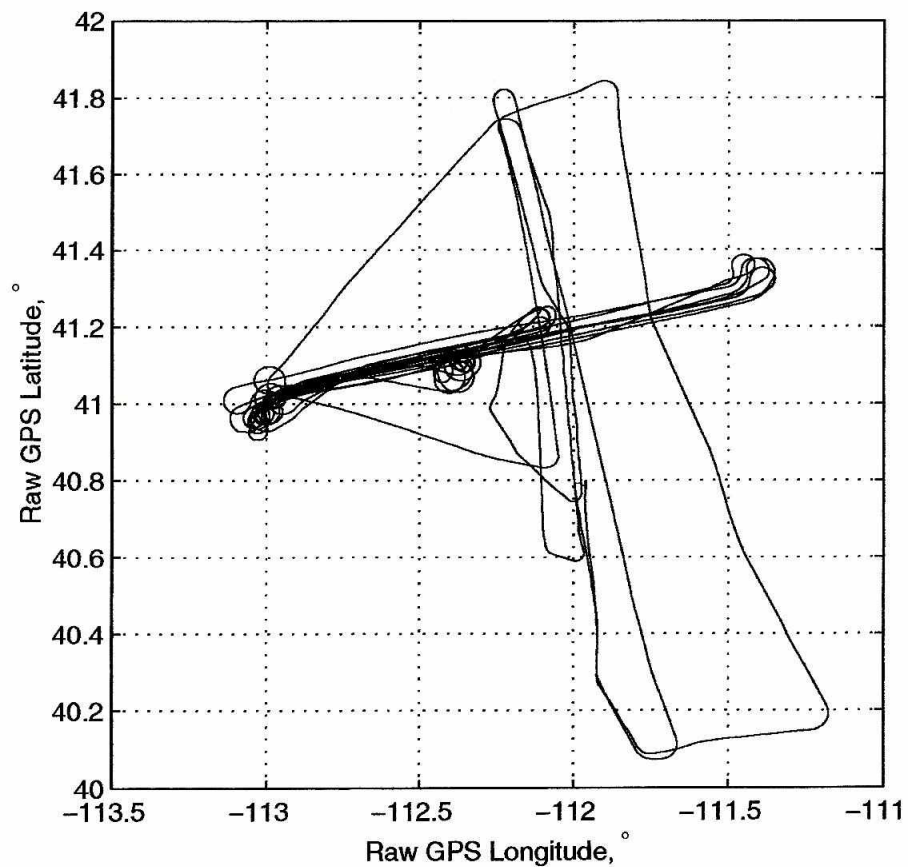
25 DAY

10 Salt

of P

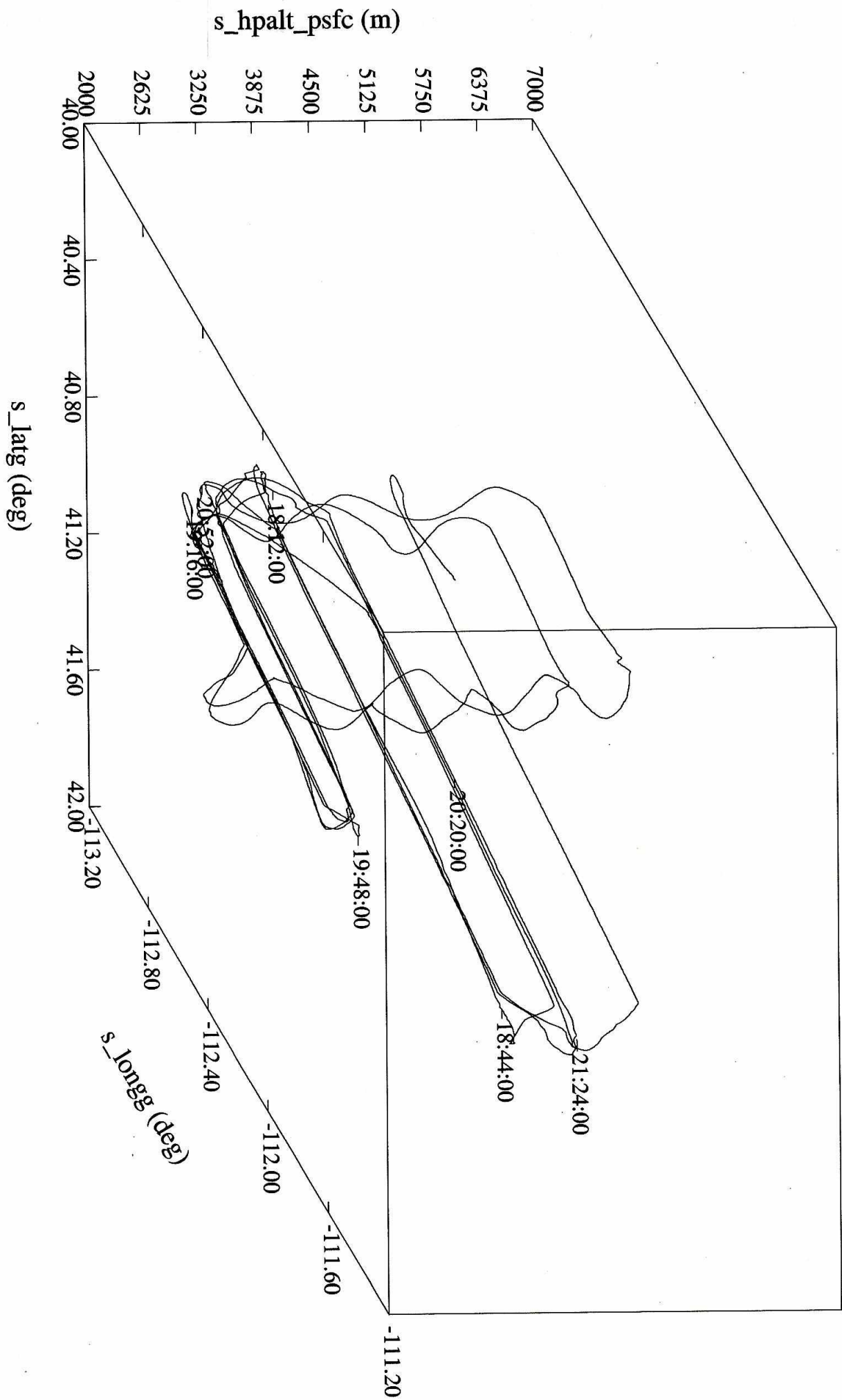
112 27

N43RF -- IPEX -- 12 February 2000 UTC

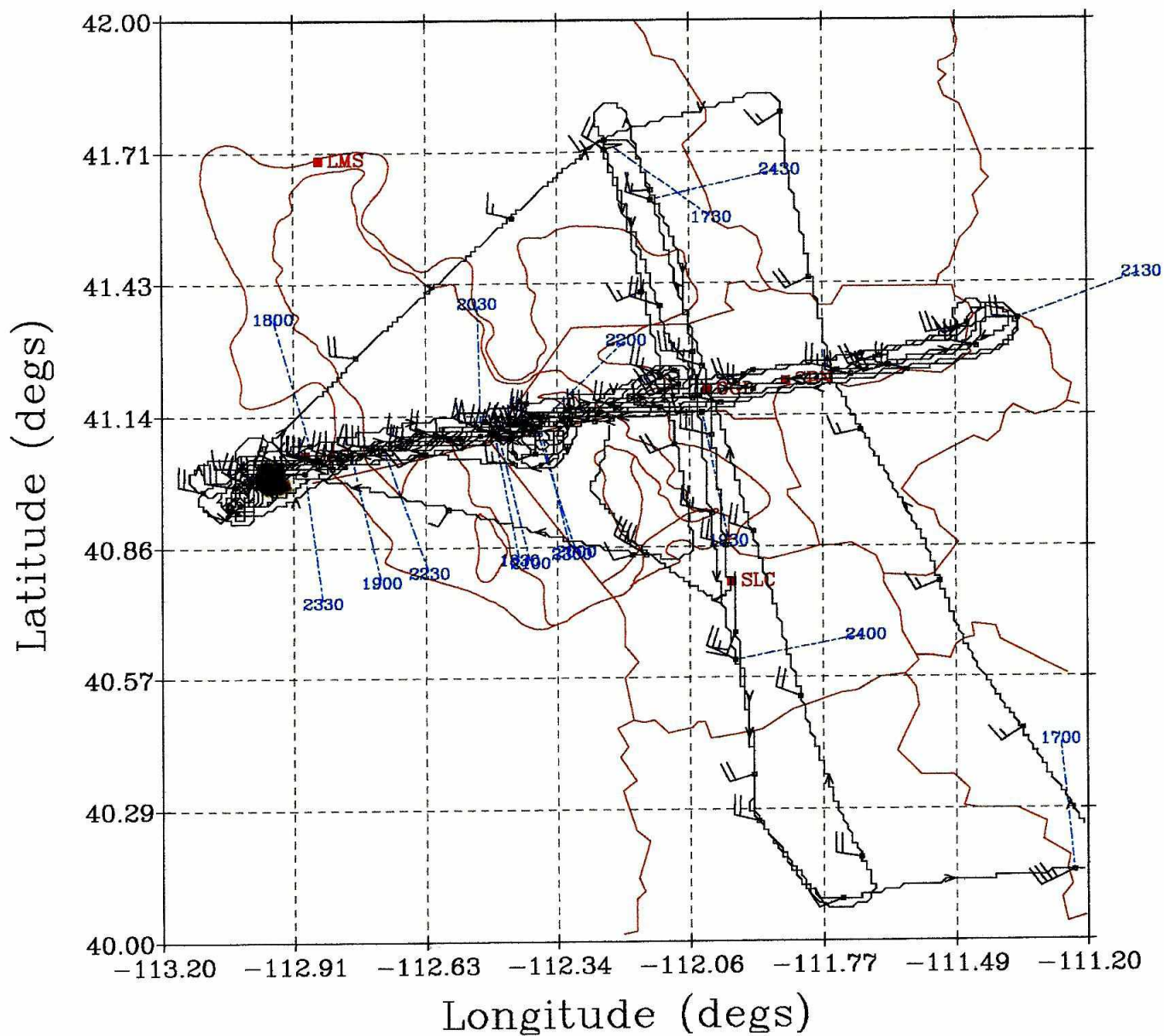


IPEX

000212Is_P, 17:40:00-23:00:00

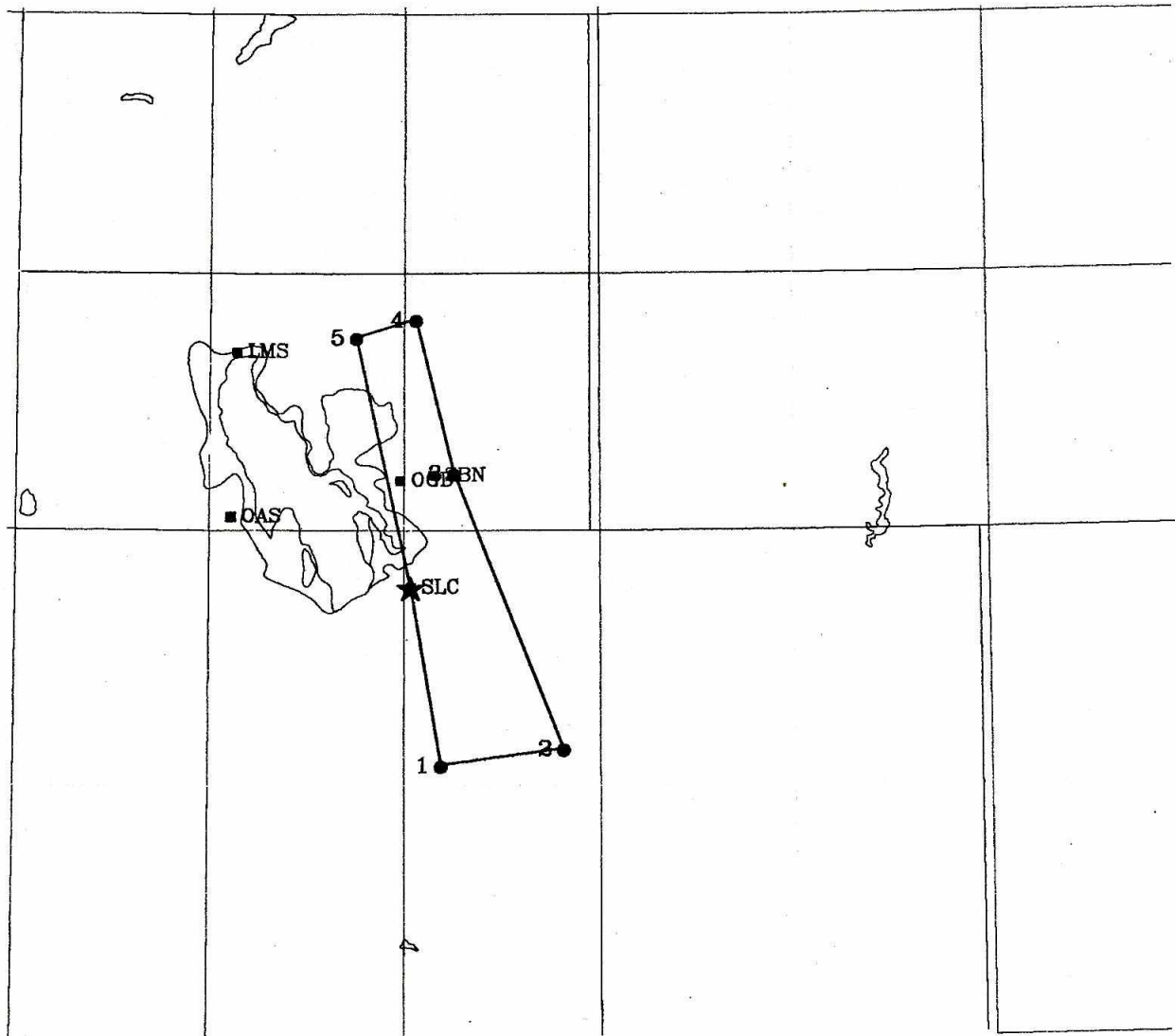


Flight= 000212I IPEX IOP 4
Time Interval=164200-011500 UTC



Aircraft Flight Track Plan

(43.0,-108.0)

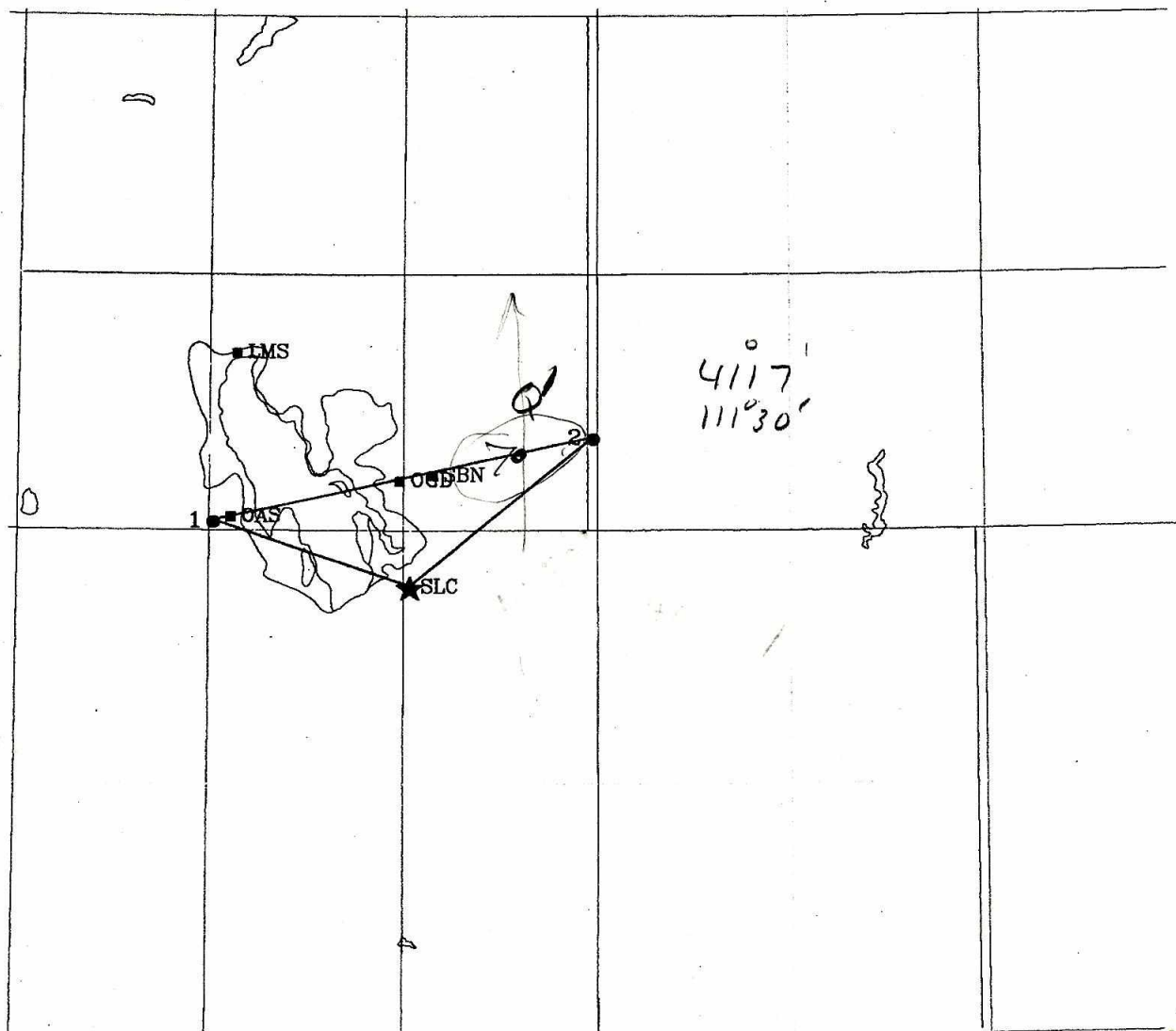


(39.0,-114.0)

NOAA/NSSL Lambert Conformal (41.0,-111.5)

Aircraft Flight Track Plan

(43.0,-108.0)



(39.0,-114.0)

NOAA/NSSL Lambert Conformal (41.0,-111.5)