

IPEX

Flight 4 I000217

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

Notes:

There were no data/time gaps.

The dynamic attack pressure probe, DAP, iced-up shortly after take-off during the time period 1624Z - 1632Z. 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 using data editing techniques (least squares method) with respect to PQF1, fuselage dynamic pressure.

The differential attack pressure probe, AP, also experienced some data problems during the aforementioned time frame. The erroneous data was not fixed resulting in unacceptable values for vertical winds.

Dewpoint sensor #2, DW2, experienced some problems during a spiral ascent from 2043Z - 2052Z. The erroneous dewpoint sensor #2 data was removed and replaced using data editing techniques.

The Johnson-Williams liquid water sensor iced-up (visual observation) from 2032Z - 2147Z. Although the sensor continued to be responsive, there is a positive offset to the values.

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	861.6 mb	868.7 mb
Corrected tower pressure	N/A	N/A

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

FLT ID: 1000217	FM: KSLC	TO: KSLC
FLT NO: 00-20	BLK IN: 0030Z	ATA: 0024Z
ETD: 1600Z	BLK OUT: 1554Z	ATD: 1606Z
ETE:	BLK TIME: 8:36	FLT TIME: 8:18
SPONSOR ORG: NSSL	PROGRAM: IPEX	PURPOSE: IDP#4

QAO PERSONNEL

AC TENNESEN ✓	SYS ENG
CP O'MARA ✓	DATA SYS SMITH ✓
NAV RATIBUN / ADLER ✓	RADAR BARR ✓
FE BAST	BT/ODW
RADIO SANS SOUET	CLD PHYS
FD DAMIANO	BOYER YOUNG ✓

PARTICIPATING SCIENTIST/VISITORS/QAO

LAST, FIRST NAME	ACTIVITY ON A/C	AFFILIATION
SCHULTZ	PI	NSSL
SMULL	ASST PI	NSSL
KINGSMILL	ASST PI	DRI
COX	PM'S	U&U
CHENG	OBS	U&U
SIFFERT	OBS	U&U
RACY	OBS	SPC

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

1509Z
280/6
-3 29.70
2

BAL DWI - 17.0
161735

Both radars down 201750Z - up at 202100Z

2009Z
JW / KCW
ICING

2047Z
DWI better

1626Z DAP drained
1631Z

U.S. DEPT. COMM./NOAA/OAO - DATA SECTION WORK FORM NO.2 OAOWFZ FILE

FLT ID: *I000217* TIME OFF: *1606Z* TIME ON: *0024Z*

	A/C T/O	WX STN	A/C LAND	WX STN
PRESSURE	<i>861.6</i>	<i>29.72</i>	<i>868.7</i>	<i>29.95</i>

NO DATA DISPOSITION/DATE/QUALITY

1/SEC FLT LVL TAPES

2

FAST FLT LVL TAPES

RADAR TAPES

2

DOPPLER TAPES

ODW CASSETTES

HARD COPIES

PMS

2

VIDEO

4

AXBT

AXCP

ODW

PHOTOGRAPHY

	FWD	LS	RS	VERT
ON				
OFF				
RATE				

REMARKS

1556Z

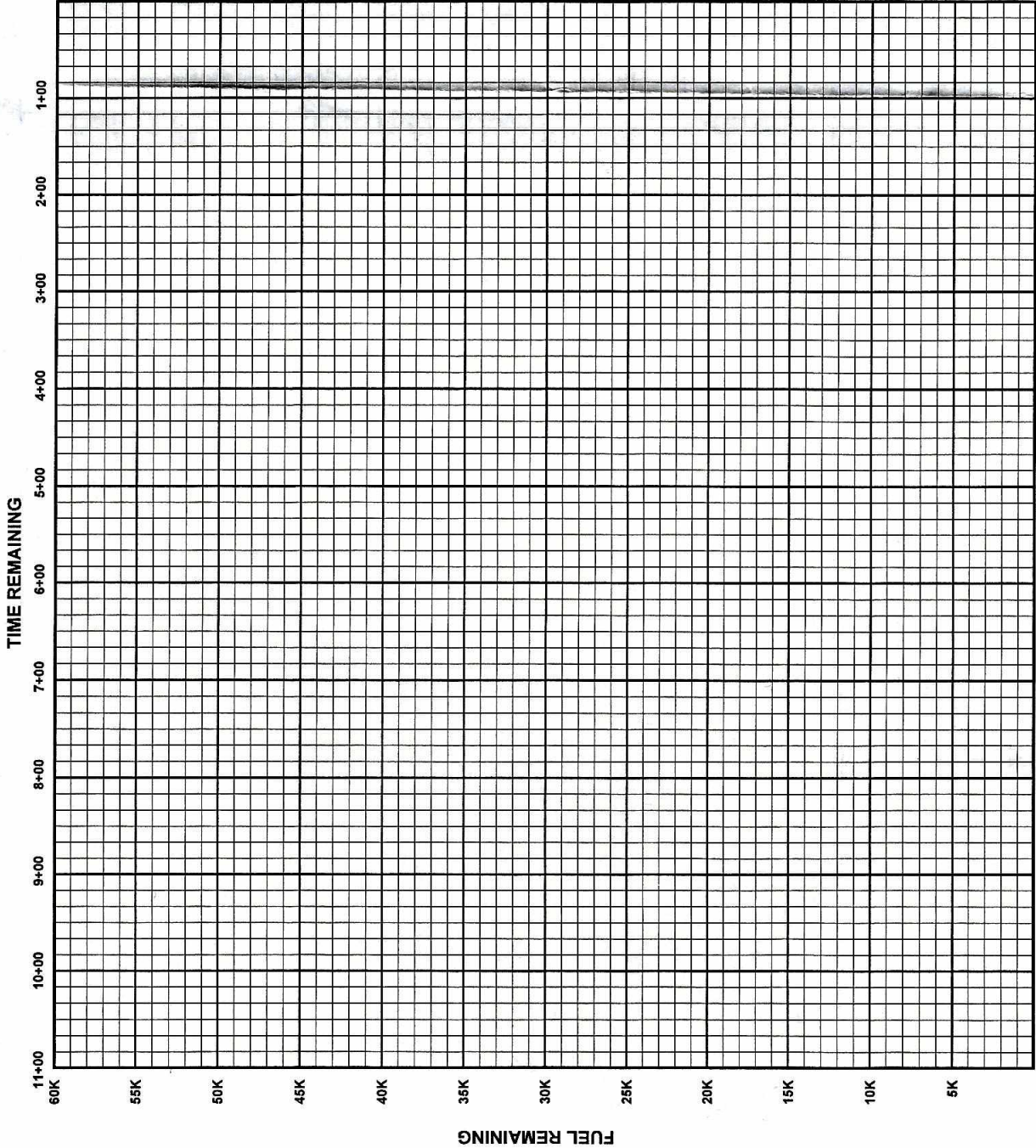
4 29.72

2

Z000217

TIME	LAT	LONG	TRK	HD	WD	WS	TA	TD	PA	GA	SP	PS		PL
161400	4110	11157	156	155	37	8	-12.8	-17.4	4206	2769	849.6	594.7	BTN CLD	63.0
162000	4047	11143	146	144	185	2	-16.8	-17.7	4649	2699	800.1	565.7	BTN CLD	65.7
163100	4024	11048	116	118	246	5	-16.2	-17.2	4643	2360	769.0	566.5	THN CLD	63.5
164100	4003	11009	202	206	268	13	-15.9	-18.9	4636	2713	801.9	567.1	BTN CLD	66.1
164500	3947	11018	204	205	154	4	-15.9	-19.5				567.2	BTN CLD	
164700	3946	11026	294	296	69	2	-15.9	-18.2	4630	2517	782.0	567.4	BTN CLD	66.4
165500	4000	11105	296	297	117	4	-15.8	-18.4	4624	1729	711.5	567.9	ABV CLD	69.1
171800	4036	11240	286	296	23	10	-16.9	-19.4	4635	3252	860.2	567.1	IN CLD	71.7
173500	4052	11311	93	89	330	19	-5.5	-8.0	2784	1420	860.5	720.3	THN CLD	72.6
174100	4051	11239	89	89	0	7	-4.9	-6.1	2785	1431	862.5	720.4	IN CLD	65.5
174500		end east leg at 9K												
174900	4050	11232	277	280	2	7	-6.3	-6.9	3102	1753	861.8	692.0	IN CLD	67.4
175400	4051	11257	271	276	339	18	-7.1	-8.0	3102	1669	852.6	691.9	RW -	70.2
180030		end west leg at 10K												
180400	4051	11330	87	86	3035	11	-12.3	-12.6	31705	2344	862.6	640.6	IN CLD	68.0
181200	4054	11248	85	84	351	10	-10.8	-10.9	3700	2340	861.6	640.9	IN CLD	62.7
181900	4053	11211	97	97	80	8	-10.3	-10.8	3696	2348	862.3	641.2	RW -	65.2
182100		end east leg at 12K												
182400	4049	11207	287	291	27	10	-14.4	-15.6	4317	2978	863.4	591.4	IN CLD	68.2
183100	4051	11245	272	273	10	5	-14.7	-16.1	4316	2772	837.5	591.4	THN CLD	66.5
183900	4051	11329	270	270	30	6	-15.9	-16.0	4314					
184300	4052	11332	87	87	293	7	-5.9	-9.2	2750	1417	865.5	723.5	THN CLD	66.7
184800	4052	11306	91	87	331	24	-7.1	-8.5	2751	1346	856.5	723.8	THN CLD	66.5
185600	4051	11225	89	90	304	2	-5.1	-5.7	2792	1466	864.5	719.8	RW	65.2
185700	4051	11219			223	5			6GT/ VAR	WINDS				
190300	4049	11208	281	283	14	6	-7.0	-7.2	3098	1768	864.2	692.4	CLD	67.9
190900	4051	11238	268	274	328	21	-7.6	-8.2	3098	1756	863.3	692.5	CLD	65.4
191800	4051	11322	273	276	327	11	-8.5	-9.9	3097	1760	864.8	692.4	CLR	72.5
192400	4052	11327	93	92	358	12	-11.2	-13.0	3686	2340	863.5	642.2	BTN CLD	68.1
193900	4052	11207	89	89	52	4	-10.4	-11.4	3681	2336	862.6	642.5	BTN CLD	65.6
194310	4054	11211	253	255	14	7	-14.5	-15.6	4324	2995	864.9	590.8	RW -	66.2
195100	4051	11253	270	272	11	5	-14.8	-16.2	4323	2927	859.0	590.9	BTN CLD	65.6
195700	4052	11302	90	87	332	21	-6.5	-9.4	2780	1312	853.6	720.6	BTN CLD	68.5
200500	4104	11238	350	351	352	9	-5.5	-5.7	2782	1464		720.8	IN CLD	72.8
201100	4105	11237	169	171	319	8	-13.2	-13.8	4020	2701	866.4	614.6	BTN CLD	62.0
201700	4040	11232	171	173	338	12	-12.4	-14.1	4018	2639	856.5	615.0	IN CLD	66.1
202300	4014	11226	172	174	330	14	-12.8	-13.9	4017	2357	830.4	615.0	RW	68.2
202800	4010	11227	346	348	354	8	-17.0	-17.6	4630	2919	825.4	567.5	BTN CLD	65.7
203900	4054	11237	350	351	302	7	-17.2	-18.6						
204245		start spiral ascent to 20K												
204830		stop ascent												
205500		end spiral descent												
205600	4109	11243	144	141	356	14	-5.5	-6.6	2776	1459	866.2	721.2	RW	63.5
210300	4113	11210	79	79	34	12	-5.4	-6.6	2779	1448		720.9	RW	68.0
210900	4052	11159	167	169	323	8	-17.1	-17.2	4616	3269		568.6	CLD	66.0
212400	3947	11153	178	181	327	13	-17.1	-16.9	4613	3055		568.7	CLD	66.0
212930	3937	11135	85	84	303	11	-16.9	-17.9	4615	2326		568.7	BTN CLD	67.3
214100	4020	11130	2	1	313	10	-16.4	-18.5	4615	2141		568.8	BTN CLD	64.4
215000	4056	11141	345	345	255	5	-16.7	-17.2	4613	2914		568.6	BTN CLD	67.6
220200	4104	11224	132	133	328	14	-11.0	-11.4	3682	2364		642.3	RW -	70.4
221200	4101	11215	305	307	324	8	-13.0	-13.7	4016	2702		615.1	CLD	66.9
221800	4059	11216	133	133	324	9	-14.9	-15.6	4292	2735		593.3	CLD	65.8
222800	4030	11135	133	133	312	6	-14.7	-15.3	4289	2159		593.6	THN CLD	68.0
223500	4026	11133	324	325	353	9	-18.8	-21.1	4920	2684		546.1	THN CLD	65.7
225100	4101	11221	132	132	326	9	-14.7	-16.1	4284	2969		593.9	CLD	65.3
231100	4034	11140	313	313	306	4	-19.3	-19.6	4920	1658		546.0	BTN CLD	67.1
233230		complete spiral ascent												

RANGE CONTROL GRAPH



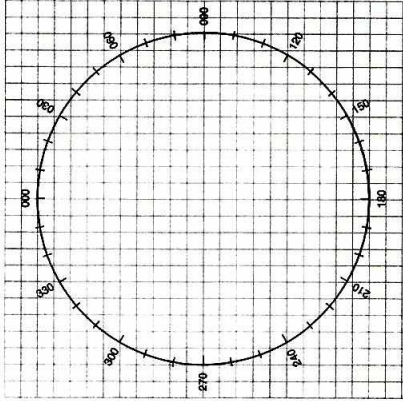
ENROUTE FUEL	
ENROUTE TIME	
ENROUTE FUEL (6K/3K/4.5K RULE)	
RESERVE AT DESTINATION	
REQUIRED RAMP	
ACTUAL RAMP FUEL	

TACTICAL (OFFSTA TO DESTINATION)	
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	
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	
				BODY	
				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

DISTANCE REMAINING

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

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

TRUE AIRSPEED CROSS-CHECK						
TIME	IAS	PRESS ALT	"F" FACTOR	EAS	OAT	ITAS
1621	200	15K	/	-16	241	249

SPIN 246

SCHEDULED / ACTUAL TAKEOFF Z	DATE OF TAKEOFF
1600 / 1605	17 FEB 00

17 StB

INS PERFORMANCE		INS 1	INS 2
BEGIN ALIGN TIME		1430	1430
ALIGN STATUS (0-5)		0	0
END NAV TIME		0025	0025
START NAV TIME		1542	1542
DELTA T		8443	8443

TERMINAL ERRORS		
	INS 1	INS 2
DELTA LAT	-2.6	-4.1
DELTA LON	-2.0	+3.6
RGS	3	3
RADIAL ERROR	3	5.

[illegible][illegible]

Aircraft Flight Track Plan

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

Way Point # 1 Lat: 40 8.1 Lon: -110 6.6
 Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
 Dist to Way point: 93.3 nm Leg duration: 21.0 mins Arrival Time: 1221 UTC
 Ground Speed: 266.3 kts Track: 114.0 degrees

Way Point # 2 Lat: 39 45.5 Lon: -110 21.9
 Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
 Dist to Way point: 25.5 nm Leg duration: 6.5 mins Arrival Time: 1227 UTC
 Ground Speed: 237.3 kts Track: 207.6 degrees

Way Point # 3 Lat: 40 50.6 Lon: -113 26.6
 Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
 Dist to Way point: 155.2 nm Leg duration: 39.9 mins Arrival Time: 1307 UTC
 Ground Speed: 233.5 kts Track: 295.8 degrees

Way Point # 4 Lat: 41 9.7 Lon: -113 10.2
 Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
 Dist to Way point: 22.8 nm Leg duration: 5.2 mins Arrival Time: 1312 UTC
 Ground Speed: 263.1 kts Track: 32.7 degrees

Dist to base: 59.1 nm Leg duration: 13.3 mins Landing time: 1325 UTC
 Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
 Ground Speed: 266.7 kts Track: 112.3 degrees

Total mission duration: 1.4 hrs

700 mi 2 kts
 187 SLE Sunday

PT R

40° 50'

112 10'

41 40

↑ 11

↑ 20K U

41 20' E
 most snow 46 00
 SLE

9K -

10K

12K

14K

15

⑨

OLD ↑ 15K

112 20' west

→ 41 10
 N 112 38'

2K + lowest

40 35' N

end 113' → 9K
 14K by

40 10'
 112 25'

112 20' W

Aircraft Flight Track Plan

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

Way Point # 1 Lat: 41 13.6 Lon: -111 50.3
Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
Dist to Way point: 27.2 nm Leg duration: 6.4 mins Arrival Time: 1206 UTC
Ground Speed: 256.9 kts Track: 12.4 degrees

Way Point # 2 Lat: 40 35.6 Lon: -111 23.6
Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
Dist to Way point: 43.0 nm Leg duration: 10.1 mins Arrival Time: 1216 UTC
Ground Speed: 255.5 kts Track: 151.8 degrees

Way Point # 3 Lat: 40 1.9 Lon: -111 23.6
Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
Dist to Way point: 33.8 nm Leg duration: 8.3 mins Arrival Time: 1224 UTC
Ground Speed: 245.6 kts Track: 180.4 degrees

Way Point # 4 Lat: 39 42.7 Lon: -111 30.0
Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
Dist to Way point: 19.8 nm Leg duration: 4.9 mins Arrival Time: 1229 UTC
Ground Speed: 241.0 kts Track: 194.8 degrees

Way Point # 5 Lat: 39 43.4 Lon: -111 59.2
Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
Dist to Way point: 22.5 nm Leg duration: 5.9 mins Arrival Time: 1235 UTC
Ground Speed: 230.4 kts Track: 271.8 degrees

Way Point # 6 Lat: 40 9.2 Lon: -111 43.7
Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
Dist to Way point: 28.4 nm Leg duration: 6.5 mins Arrival Time: 1242 UTC
Ground Speed: 260.8 kts Track: 24.6 degrees

Dist to base: 39.3 nm Leg duration: 9.5 mins Landing time: 1251 UTC
Wind Dir: 260.0 Wind Spd: 20.0 kts TAS: 250.0 kts Alt: 15000 ft
Ground Speed: 247.1 kts Track: 344.0 degrees

Total mission duration: .9 hrs

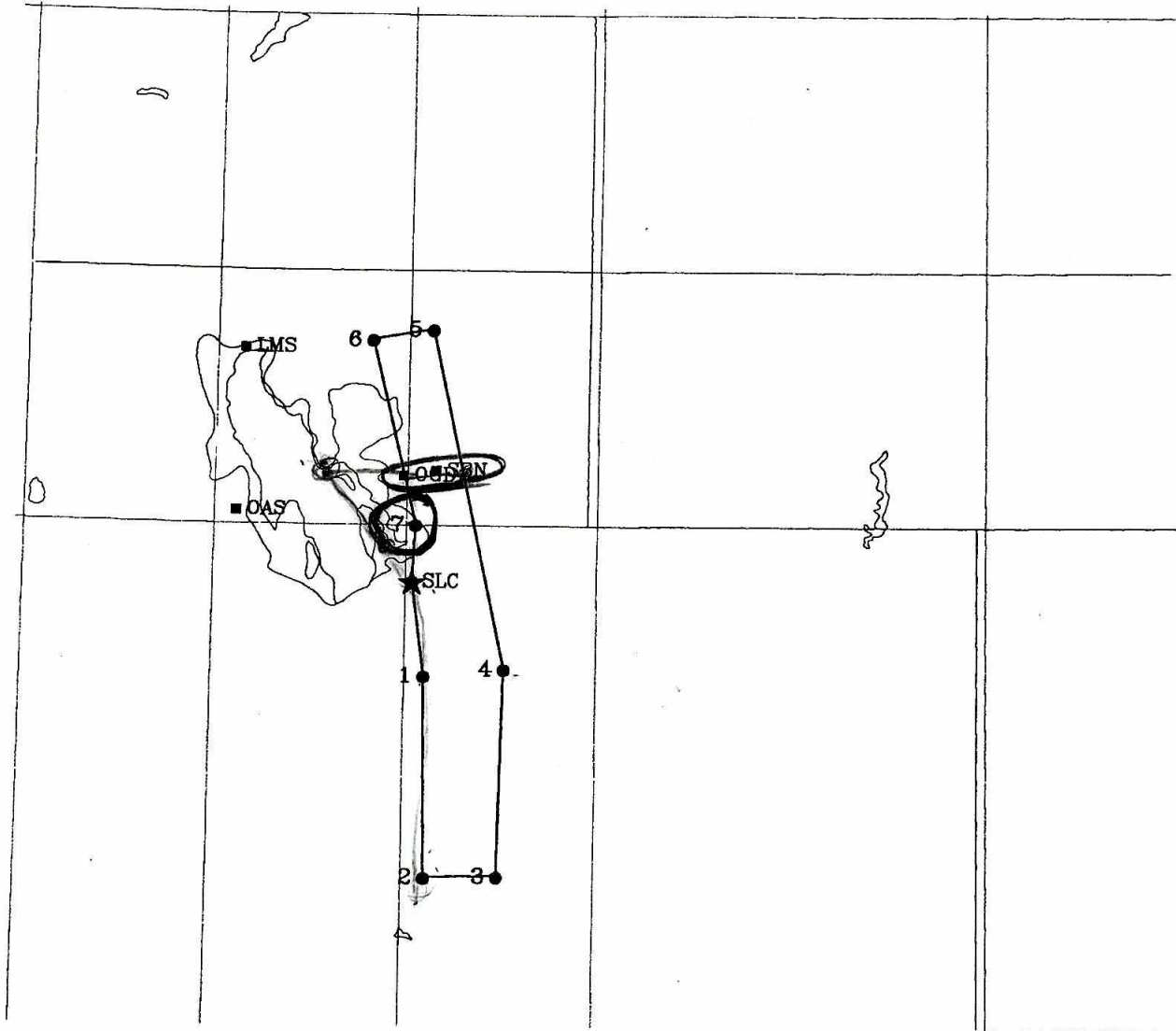
Barry,

KM 400

Initial Survey Box

Aircraft Flight Track Plan

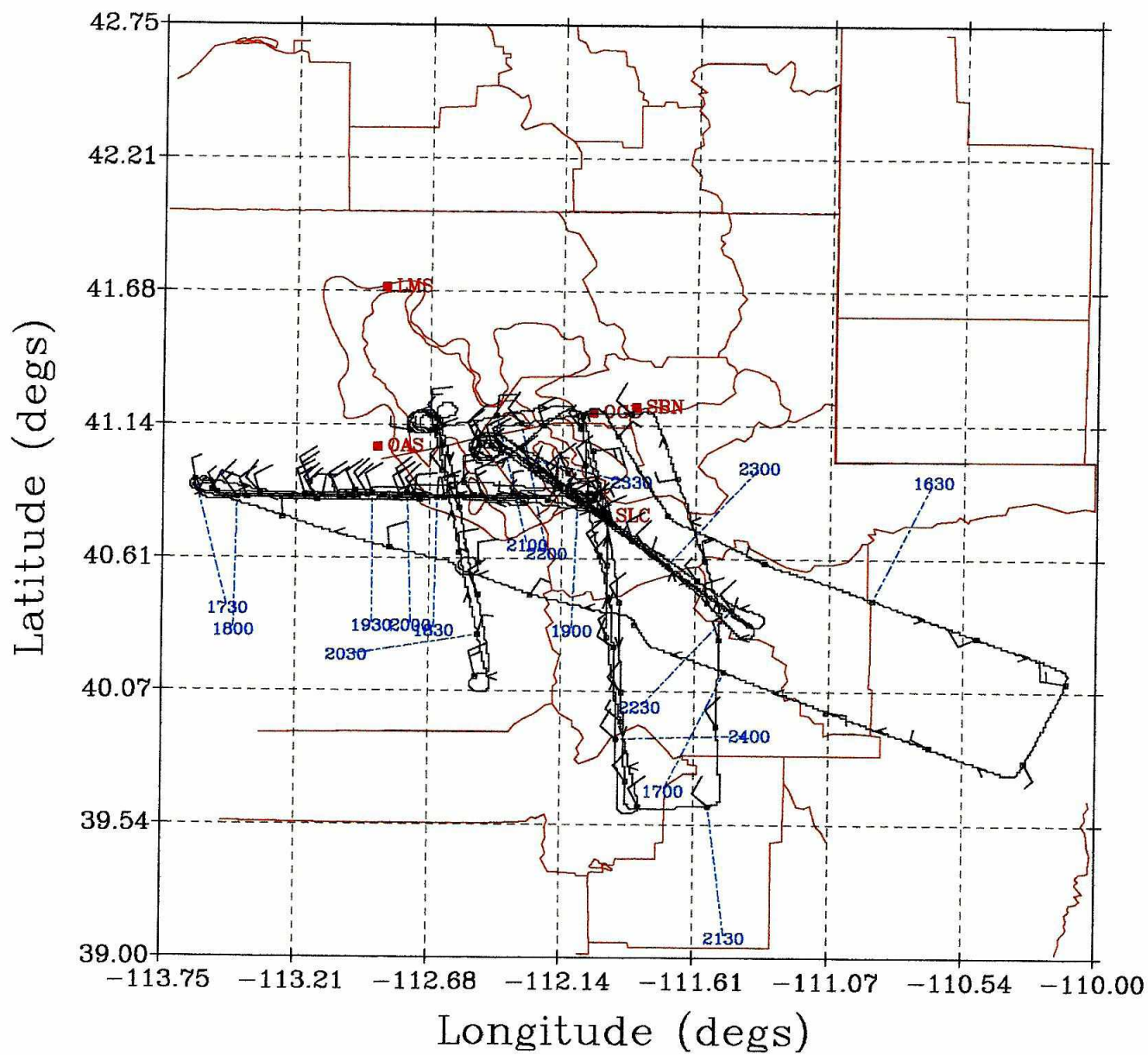
(43.0,-108.0)



(39.0,-114.0)

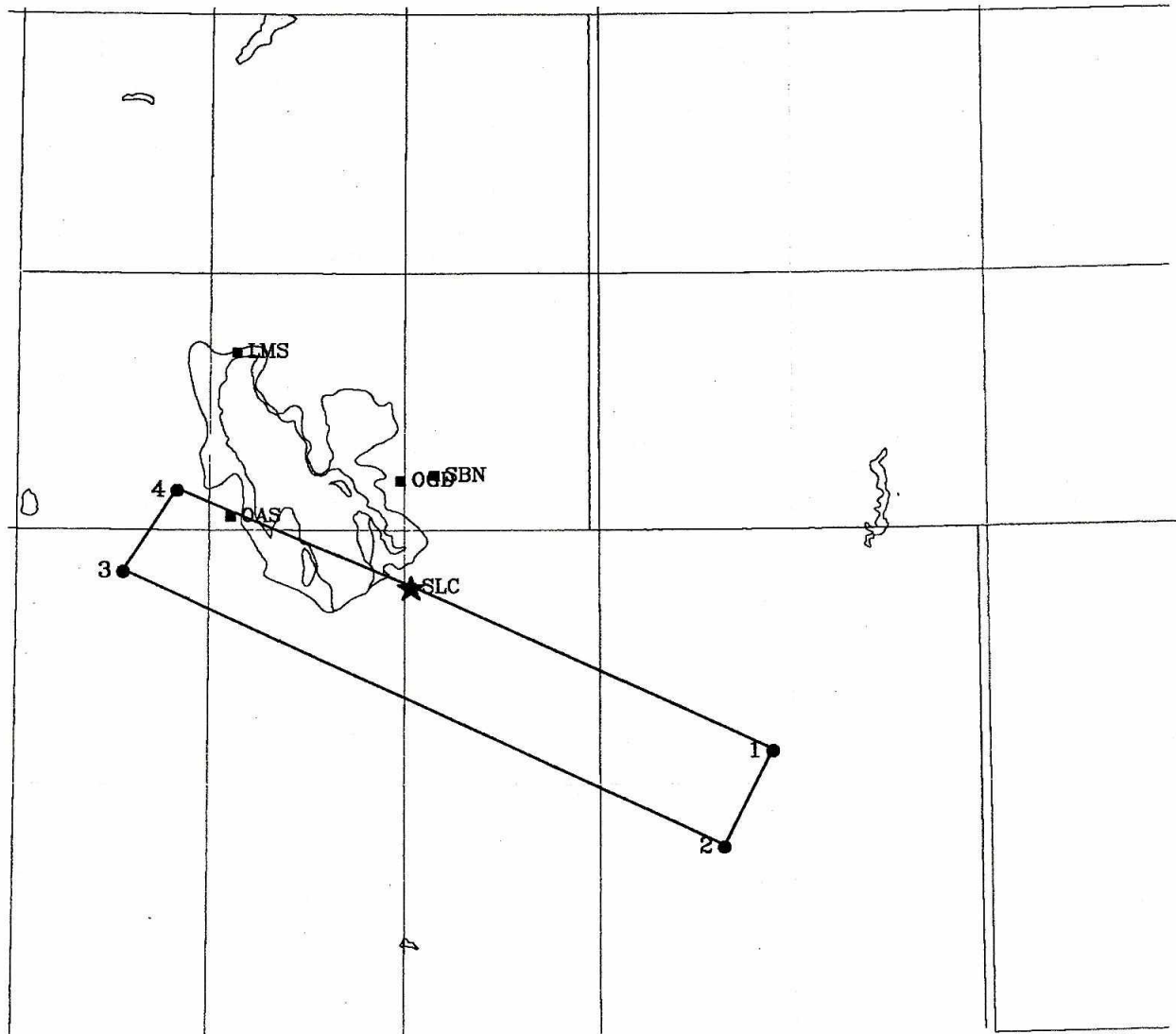
NOAA/NSSL Lambert Conformal (41.0,-111.5)

Flight= 000217I IPEX IOP 5
Time Interval=160500-002500 UTC



Aircraft Flight Track Plan

(43.0,-108.0)

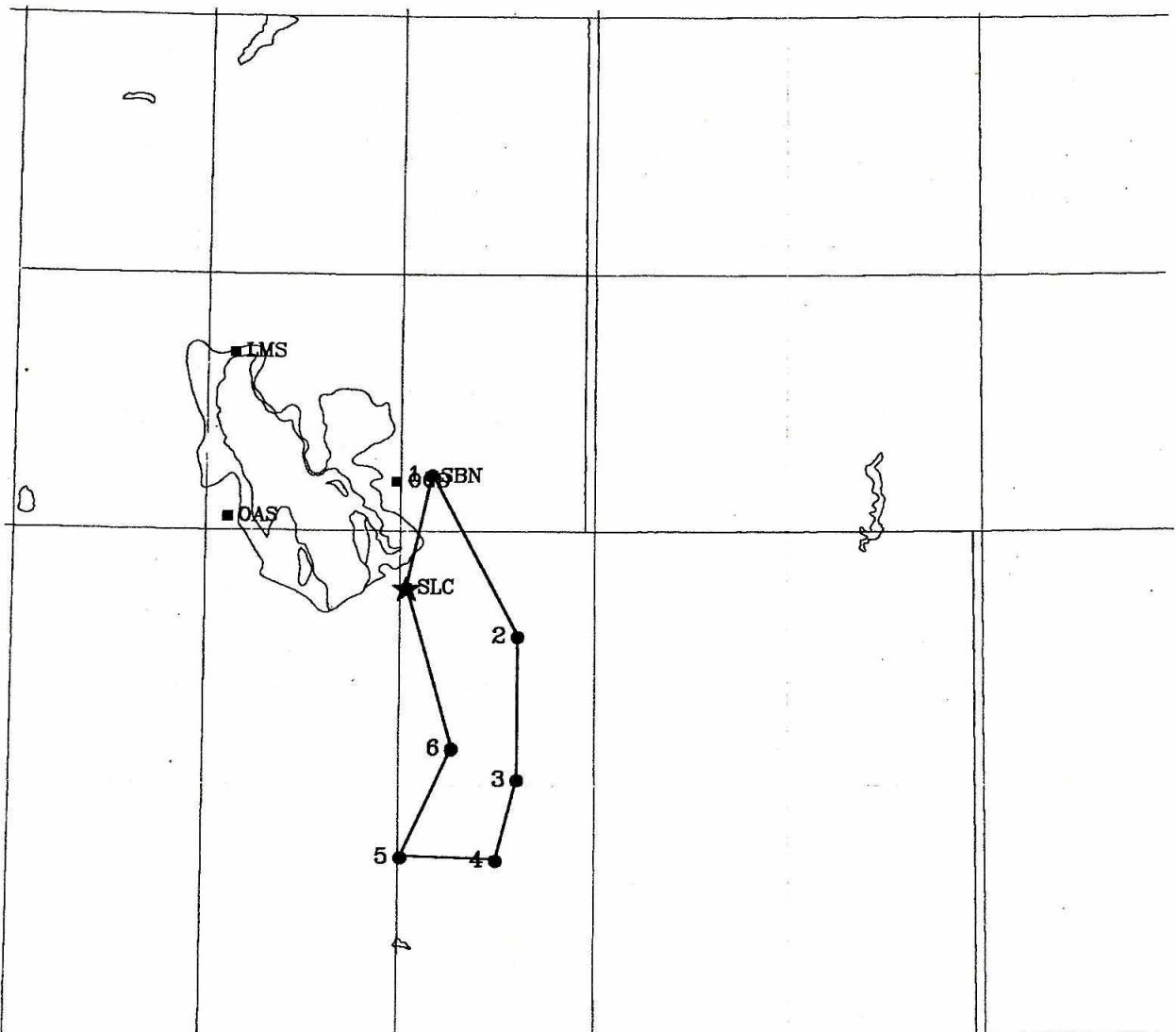


(39.0,-114.0)

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)