LIBRARY - AIR RESOURCES BOARD

OBSERVATIONAL PROGRAM

FOR

AIR POLLUTION MODELS

(Data Supplement)

Peter F. Lester

Report to the California
State Air Resources
Board

prepared under contract
A7-180-30

Department of Meteorology
San Jose State University
San Jose, California
95192

April, 1979

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890
L47747
1979

DATA DESCRIPTION

The data are presented in the following order:

1. Newark PIBAL data
2. San Jose State University PIBAL data
3. Morgan Hill PIBAL data
4. Salinas PIBAL data
5. South Bay Aircraft data
6. North Bay Aircraft data

Within each section the data are listed chronologically. Although, for the most part, the tables are self-explanatory, the following notes are added for further clarification.

PIBAL DATA

The ascent number at the top of each page was for bookkeeping purposes during data reduction and should be disregarded. The date and time (PDT) alone should be used to identify each PIBAL Sounding. Note that in addition to the raw data, range, altitude above mean sea level (MSL), wind direction and speed are given in both English and metric units. Direction 'class' refers to the octant of the compass from which the wind was blowing (0:North).

South Bay Aircraft Data

Zeroes in the dry bulb temperature (T) and wet bulb temperature (T_W) columns indicate missing data. Any temperature values which have been lined out are obviously erroneous. Occasionally flights reached higher than 8500 ft. MSL. Dry bulb and wet bulb data in these cases will be found in the remarks section.

The word "oxidant" is abbreviated "03" in all tables. All oxidant values which equal or exceed 0.250 PPM have been lined out as highly suspect (see main report). Note that this cutoff value was selected arbitrarily.

S U M M A R Y F O R A S C E N T # 1

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 31 JULY 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 11:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	55.0	126.2	76	0.05	114	374	7	316	2.6	5.1	3.6	-3.6
1.00	54.0	135.6	157	0.10	222	729	7	323	2.3	4.5	2.7	-3.6
1.50	56.0	137.2	212	0.13	321	1053	7	295	1.1	2.1	3.0	-0.9
2.00	62.0	129.4	220	0.14	420	1378	7	301	0.1	0.2	0.2	-0.1
2.50	67.0	136.8	218	0.14	519	1703	1	53	1.4	3.3	-2.6	-2.0
3.00	70.2	156.3	220	0.14	618	2028	1	57	3.6	6.7	-5.6	-3.7
3.50	68.9	185.0	273	0.17	713	2338	1	50	4.2	8.3	-6.3	-5.3
4.00	64.6	196.4	380	0.24	807	2648	1	44	3.9	7.6	-5.3	-5.4
4.50	61.9	203.1	478	0.30	902	2958	1	48	3.8	7.5	-5.5	-5.0
5.00	59.2	208.1	590	0.37	996	3268	1	43	4.1	8.0	-5.6	-5.8
5.50	56.5	209.8	715	0.44	1086	3563	1	36	4.1	7.9	-4.7	-6.3
6.00	56.8	210.5	831	0.52	1176	3859	1	37	4.5	8.7	-5.2	-6.9
6.50	52.1	211.7	981	0.61	1266	4154	1	36	4.6	8.8	-5.1	-7.1
7.00	50.6	211.8	1101	0.68	1356	4449	1	43	4.4	8.5	-5.7	-6.2
7.50	49.3	214.0	1239	0.77	1446	4744	1	48	4.8	9.2	-6.9	-6.2
8.00	48.0	215.1	1378	0.86	1536	5040	1	49	4.7	9.1	-6.8	-6.0
8.50	47.0	216.7	1511	0.94	1626	5335	1	38	4.6	8.9	-5.5	-7.0
9.00	46.0	215.6	1651	1.03	1716	5630	0	22	5.7	11.1	-4.1	-10.4
9.50	44.3	213.9	1845	1.15	1806	5926	0	18	6.3	12.2	-3.7	-11.6
10.00	43.2	212.3	2013	1.25	1896	6221	0	12	5.9	11.4	-2.4	-11.1
10.50	42.3	210.5	2176	1.35	1986	6516	0	2	3.5	6.8	-0.2	-6.8
11.00	42.3	209.5	2197	1.36	2076	6811	7	336	3.8	7.4	3.0	-6.8
11.50	43.0	205.9	2316	1.44	2166	7107	7	334	5.0	9.6	4.2	-8.7
12.00	43.4	203.6	2379	1.48	2256	7402	0	340	3.5	6.8	2.3	-6.3
12.50	43.5	202.4	2466	1.53	2346	7697	0	356	3.2	6.2	0.4	-6.2
13.00	43.6	201.6	2552	1.59	2436	7992	0	15	3.8	7.4	-2.0	-7.1
13.50	43.1	201.8	2693	1.67	2526	8288	0	5	4.5	8.7	-0.7	-8.6
14.00	42.9	200.0	2809	1.75	2616	8583	0	342	4.7	9.2	2.9	-8.7
14.50	42.8	198.2	2916	1.81	2706	8878	0	340	3.7	7.1	2.4	-6.7
15.00	43.1	197.3	2981	1.85	2796	9174	7	320	4.2	8.1	5.2	-6.2
15.50	43.3	194.2	3056	1.90	2886	9469	7	305	4.5	8.8	7.2	-5.1
16.00	44.0	192.5	3076	1.91	2976	9764	6	284	2.5	4.8	4.7	-1.2
16.50	45.0	191.4	3060	1.90	3066	10059	6	262	2.3	4.4	4.3	0.6
17.00	46.1	190.1	3031	1.88	3156	10355	6	261	3.1	6.0	5.9	0.9
17.50	47.2	188.1	3000	1.86	3246	10650	5	232	1.9	3.7	2.9	2.3
18.00	48.5	188.6	2946	1.83	3336	10945	5	222	2.7	5.2	3.5	3.8
18.50	50.0	186.3	2870	1.78	3426	11241	5	242	4.0	7.7	6.8	3.6
19.00	51.3	184.7	2812	1.75	3516	11536	5	245	2.9	5.7	5.2	2.4
19.50	52.3	183.2	2782	1.73	3606	11831	6	256	3.5	6.9	6.7	1.7
20.00	53.3	180.5	2750	1.71	3696	12126	6	258	4.5	8.7	8.5	1.8

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 2

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 31 JULY 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 12:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	29.8	137.2	189	0.12	114	374	7	315	6.7	13.0	9.2	-9.3
1.00	28.2	135.4	403	0.25	222	729	7	310	6.8	13.3	10.1	-8.6
1.50	27.8	133.4	597	0.37	321	1053	7	307	6.9	13.3	10.6	-8.1
2.00	27.0	131.3	813	0.50	420	1378	7	307	5.9	11.4	9.1	-6.8
2.50	28.4	130.3	949	0.59	519	1703	7	302	4.5	8.8	7.5	-4.6
3.00	29.5	128.9	1082	0.67	618	2028	7	303	4.2	8.2	6.9	-4.4
3.50	30.5	128.7	1199	0.75	713	2338	7	307	3.4	6.6	5.3	-4.0
4.00	31.9	128.6	1287	0.80	807	2648	6	291	3.6	7.0	6.5	-2.5
4.50	32.5	126.0	1406	0.87	902	2958	6	276	3.6	7.0	6.9	-0.7
5.00	33.9	124.1	1473	0.92	996	3268	6	279	3.1	6.0	5.9	-0.9
5.50	34.5	123.9	1571	0.98	1086	3563	6	286	2.7	5.3	5.1	-1.4
6.00	35.7	122.3	1628	1.01	1176	3859	7	297	2.4	4.7	4.2	-2.1
6.50	36.3	122.4	1715	1.07	1266	4154	7	307	2.9	5.7	4.6	-3.5
7.00	36.8	122.8	1805	1.12	1356	4449	7	317	3.8	7.5	5.1	-5.4
7.50	36.6	124.1	1939	1.20	1446	4744	7	329	4.0	9.3	4.8	-8.0
8.00	36.5	126.3	2068	1.28	1536	5040	0	343	4.5	8.8	2.6	-8.4
8.50	36.9	128.6	2158	1.34	1626	5335	0	350	4.5	8.7	1.5	-8.6
9.00	37.0	131.0	2269	1.41	1716	5630	0	352	4.9	9.5	1.4	-9.4
9.50	37.1	133.4	2380	1.48	1806	5926	0	6	5.2	10.2	-1.1	-10.1
10.00	37.5	137.0	2463	1.53	1896	6221	0	15	5.0	9.7	-2.6	-9.4
10.50	38.0	139.4	2534	1.57	1996	6516	0	21	5.1	10.0	-3.3	-9.3
11.00	38.4	143.1	2612	1.62	2076	6811	1	26	4.9	9.5	-4.1	-8.6
11.50	39.0	145.2	2667	1.66	2166	7107	1	34	3.3	6.4	-3.6	-5.3
12.00	40.0	147.1	2681	1.67	2256	7402	1	50	2.1	4.1	-3.1	-2.7
12.50	41.1	147.5	2682	1.67	2346	7697	5	219	0.1	0.2	0.1	0.1
13.00	42.2	147.0	2680	1.67	2436	7992	5	226	0.7	1.4	1.0	1.0
13.50	43.3	147.0	2670	1.66	2526	8288	1	41	0.2	0.5	-0.3	-0.4
14.00	44.2	147.3	2684	1.67	2616	8583	0	1	0.7	1.4	0.0	-1.4
14.50	44.9	147.5	2709	1.68	2706	8878	0	338	1.8	3.5	1.3	-3.2
15.00	45.0	147.7	2790	1.73	2796	9174	7	329	2.8	5.5	2.8	-4.7
15.50	45.0	147.5	2880	1.79	2886	9469	7	316	3.1	5.9	4.1	-4.3
16.00	45.0	147.0	2970	1.85	2976	9764	7	302	3.3	6.4	5.4	-3.4
16.50	45.0	146.0	3060	1.90	3066	10059	7	294	3.5	6.9	6.3	-2.8
17.00	45.0	144.9	3150	1.96	3156	10355	6	285	3.2	6.1	5.9	-1.6
17.50	45.3	143.8	3206	1.99	3246	10650	6	277	3.0	5.8	5.7	-0.7
18.00	45.5	142.6	3272	2.03	3336	10945	6	261	3.3	6.5	6.4	1.0
18.50	46.0	140.7	3363	2.05	3426	11241	6	250	5.1	9.8	9.2	3.3
19.00	46.1	137.7	3378	2.10	3516	11536	5	247	6.2	12.1	11.2	4.7
19.50	44.4	134.7	3505	2.13	3606	11831	7	293	14.6	28.3	26.1	-10.8
20.00	41.4	132.6	4185	2.60	3696	12126	7	303	25.7	49.9	41.7	-27.3

* CALCULATIONS ON BOTH SIDES OF THIS POINT WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 3

LOCATION: NEWARK CALIFORNIA

SPECIFICS: BALLOON LOST AFTER 2 MINS.

DATE OF LAUNCH: 31 JULY 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 23:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL (SPEED)	VELOCITY MILES PER HOUR (U)	VELOCITY MILES PER HOUR (V)
0.50	40.0	149.5	129	0.08	114	374	7	331	4.1	7.9	3.9	-6.9
1.00	41.5	150.5	244	0.15	222	729	0	4	1.0	1.9	-0.1	-1.9
1.50	60.1	160.2	181	0.11	321	1053	5	208	4.0	7.8	3.7	6.9
2.00	60.5	90.0	234	0.15	420	1378	5	225	8.1	15.7	11.3	11.0

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 4

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 1 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL (SPEED)	VELOCITY MILES PER HOUR (U)	VELOCITY MILES PER HOUR (V)
0.50	45.4	162.5	107	0.07	114	374	7	333	3.2	6.1	3.9	-5.6
1.00	48.0	153.0	194	0.12	222	729	4	165	1.4	2.8	-0.7	2.7
1.50	86.0	151.0	22	0.01	321	1053	3	131	2.8	5.5	-4.1	3.6
2.00	80.0	212.0	73	0.05	420	1378	2	89	2.6	5.1	-5.0	-0.1
2.50	74.0	261.0	147	0.09	519	1703	2	99	2.9	5.6	-5.5	0.9
3.00	71.0	260.8	211	0.13	618	2028	2	72	0.9	1.8	-1.7	-0.6
3.50	74.0	258.5	203	0.13	713	2338	7	305	0.4	0.8	0.6	-0.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 5

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 1 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 11:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	48.4	136.5	96	0.06	114	374	7	320	3.0	5.8	3.7	-4.4
1.00	50.3	140.0	179	0.11	222	729	7	321	2.0	4.0	2.5	-3.1
1.50	55.3	139.2	218	0.14	321	1053	3	156	5.2	10.1	-4.1	9.2
2.00	70.3	356.0	148	0.09	420	1378	3	152	6.0	11.6	-5.4	10.2
2.50	73.4	351.2	153	0.10	519	1703	4	179	4.9	9.6	-0.2	9.6
3.00	54.0	357.7	445	0.28	618	2028	4	179	7.6	14.8	-0.3	14.8
3.50	49.2	357.0	610	0.38	713	2338	4	179	5.7	11.0	-0.1	11.0
4.00	45.6	358.4	784	0.49	807	2648	4	183	5.0	9.8	0.6	9.8
4.50	44.5	359.1	911	0.57	902	2958	4	190	4.6	9.0	1.5	8.9
5.00	43.1	1.4	1058	0.66	996	3268	4	189	4.2	8.1	1.3	8.0
5.50	43.0	1.3	1158	0.72	1086	3563	4	179	4.0	7.7	-0.1	7.7
6.00	42.1	1.0	1295	0.80	1176	3859	4	177	4.4	8.6	-0.4	8.6
6.50	41.5	0.5	1424	0.88	1266	4154	4	158	4.5	8.8	-3.4	8.1
7.00	41.1	357.0	1548	0.96	1356	4449	3	135	4.9	9.5	-6.7	6.8
7.50	41.2	353.2	1645	1.02	1446	4744	3	116	4.6	8.9	-8.0	4.0
8.00	42.0	348.9	1699	1.06	1536	5040	2	101	4.4	8.6	-8.5	1.6
8.50	42.9	344.8	1743	1.08	1626	5335	2	97	4.5	8.8	-8.7	1.1
9.00	43.5	340.7	1802	1.12	1716	5630	2	91	4.6	8.9	-8.9	0.1
9.50	44.4	336.5	1838	1.14	1806	5926	2	73	4.3	8.3	-7.9	-2.4
10.00	45.9	332.7	1832	1.14	1896	6221	1	66	3.2	6.2	-5.7	-2.5
10.50	47.0	330.5	1846	1.15	1986	6516	2	95	2.0	3.8	-3.8	0.3
11.00	47.5	329.7	1897	1.18	2076	6811	2	90	2.9	5.7	-5.7	0.0
11.50	48.1	326.0	1938	1.20	2165	7107	2	81	4.0	7.8	-7.7	-1.0
12.00	48.4	323.3	1958	1.24	2256	7402	2	69	3.0	5.7	-5.3	-2.1
12.50	49.7	321.0	1984	1.23	2346	7697	1	56	2.3	4.6	-3.8	-2.5
13.00	50.4	319.3	2010	1.25	2436	7992	2	85	1.4	2.8	-2.8	-0.2
13.50	51.1	319.0	2033	1.26	2526	8288	5	242	0.6	1.2	1.0	0.5
14.00	52.5	320.3	2003	1.24	2616	8583	7	296	1.3	2.5	2.3	-1.1
14.50	54.0	319.9	1962	1.22	2706	8878	7	313	2.0	4.0	2.9	-2.7
15.00	56.0	320.8	1882	1.17	2796	9174	6	283	2.6	5.0	4.9	-1.1
15.50	57.4	322.8	1842	1.14	2886	9469	6	276	2.4	4.6	4.5	-0.5
16.00	59.0	324.0	1785	1.11	2976	9764	6	282	1.7	3.2	3.2	-0.7
16.50	60.0	324.9	1767	1.10	3066	10059	6	271	1.5	2.9	2.9	0.0
17.00	61.2	326.4	1732	1.08	3156	10355	6	265	1.5	2.9	2.9	0.2
17.50	63.0	327.5	1723	1.07	3246	10650	5	226	1.9	3.7	2.7	2.6
18.00	62.2	330.1	1756	1.09	3336	10945	5	208	2.1	4.1	1.9	3.6
18.50	62.4	331.0	1788	1.11	3426	11241	4	183	1.3	2.4	0.1	2.4
19.00	62.8	331.4	1819	1.13	3516	11536	4	185	0.8	1.5	0.1	1.5
19.50	63.1	331.8	1824	1.13	3606	11831	6	258	0.7	1.4	1.4	0.3
20.00	63.9	332.7	1808	1.12	3696	12126	6	275	1.1	2.2	2.2	-0.2

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 6

LOCATION: NEWARK CALIFORNIA

SPECIFICS: GUSTY WINDS (SEEM TO BE AT 20-25 MPH)

DATE OF LAUNCH: 1 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	17.9	151.1	334	0.21	114	374	7	332	9.9	19.2	9.0	-16.9
1.00	20.0	151.9	593	0.37	222	729	7	327	6.5	12.6	6.9	-10.6
1.50	23.5	148.8	724	0.45	321	1053	6	286	3.2	6.3	6.0	-1.7
2.00	29.2	141.1	741	0.46	420	1378	5	235	2.9	5.7	4.7	3.2
2.50	34.9	135.0	735	0.46	519	1703	5	222	2.5	5.0	3.0	3.7
3.00	39.9	129.2	732	0.45	618	2028	4	196	4.1	7.9	2.1	7.6
3.50	47.3	116.0	652	0.41	713	2338	4	181	6.7	13.0	0.2	13.0
4.00	54.2	96.1	578	0.36	807	2648	4	180	7.2	13.9	0.1	13.9
4.50	55.9	76.2	606	0.38	902	2958	4	183	6.6	12.8	0.7	12.7
5.00	55.4	60.9	683	0.42	996	3268	4	183	5.3	10.2	0.6	10.2
5.50	54.6	52.8	762	0.47	1086	3563	4	191	4.0	7.8	1.6	7.6
6.00	53.7	44.6	859	0.53	1176	3859	4	201	3.4	6.6	0.4	6.2
6.50	53.2	46.2	943	0.59	1266	4154	4	184	2.4	4.6	0.3	4.6
7.00	54.4	42.6	967	0.60	1356	4449	3	144	2.2	4.4	-3.5	3.6
7.50	56.0	38.3	971	0.60	1446	4744	3	123	2.7	5.3	-4.4	2.9
8.00	58.1	32.9	952	0.59	1536	5040	2	110	2.8	5.5	-5.2	1.9
8.50	60.1	28.3	932	0.58	1626	5335	3	114	3.5	6.8	-6.2	2.8
9.00	61.1	20.2	944	0.59	1716	5630	3	121	4.4	8.5	-7.3	4.4
9.50	61.4	12.8	981	0.61	1806	5926	3	146	2.2	4.3	-2.4	3.5
10.00	61.5	14.2	1026	0.64	1896	6221	3	134	1.9	3.6	-2.6	2.5
10.50	62.2	7.5	1044	0.65	1986	6516	2	102	2.7	5.2	-5.1	1.1
11.00	63.5	5.3	1032	0.64	2076	6811	2	73	1.8	3.6	-3.4	-1.1
11.50	65.1	1.8	1003	0.62	2166	7107	1	24	5.0	9.6	-4.0	-8.8
12.00	71.4	357.9	757	0.47	2256	7402	1	52	2.4	4.6	-3.6	-2.9
12.50	68.6	355.0	917	0.57	2346	7697	3	137	2.7	5.2	-3.6	3.8
13.00	70.0	351.0	884	0.55	2436	7992	1	53	2.2	4.3	-3.4	-2.6
13.50	71.3	347.4	853	0.53	2526	8288	1	30	2.9	5.6	-2.8	-4.8
14.00	73.6	342.8	758	0.47	2616	8583	0	16	2.6	5.1	-1.4	-4.9
14.50	75.1	341.3	718	0.45	2706	8878	0	8	2.0	4.0	-0.5	-3.9
15.00	76.9	338.2	649	0.40	2796	9174	3	140	3.1	6.1	-3.9	4.7
15.50	72.7	337.0	897	0.56	2886	9469	0	5	1.1	2.1	-0.2	-2.0
16.00	78.7	335.4	593	0.37	2976	9764	0	340	6.0	11.6	3.9	-10.9
16.50	80.0	334.9	540	0.34	3066	10059	7	332	1.1	2.2	1.0	-1.9
17.00	80.5	335.8	527	0.33	3156	10355	0	342	2.4	4.6	1.5	-4.4
17.50	83.0	332.5	398	0.25	3246	10650	0	358	2.4	4.7	0.2	-4.7
18.00	83.2	328.1	397	0.25	3336	10945	1	26	1.2	2.4	-1.0	-2.1
18.50	84.0	323.1	359	0.22	3426	11241	0	15	1.6	3.1	-0.8	-3.0
19.00	84.5	316.0	338	0.21	3516	11536	0	20	1.4	2.7	-0.9	-2.6
19.50	84.9	310.4	321	0.20	3606	11831	1	25	0.9	1.7	-0.7	-1.5
20.00	85.0	307.5	323	0.20	3696	12126	1	44	0.5	1.1	-0.7	-0.8

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 7

LOCATION: NEWARK CALIFORNIA

SPECIFICS: CROSSHAIRS READ WITH BACKGROUND LIGHT

DATE OF LAUNCH: 1 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 23:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	26.4	161.2	218	0.14	114	374	7	336	7.1	13.8	5.5	-12.7
1.00	26.8	156.4	429	0.27	222	729	7	325	4.4	8.5	4.8	-7.0
1.50	33.5	152.6	476	0.30	321	1053	5	208	1.5	2.9	1.4	2.6
2.00	47.6	145.7	378	0.23	420	1378	4	166	4.8	9.4	-2.2	9.1
2.50	68.2	133.1	205	0.13	519	1703	3	157	7.0	13.7	-5.4	12.6
3.00	81.7	31.2	89	0.06	618	2028	3	156	4.7	9.1	-3.7	8.3
3.50	80.2	16.4	122	0.08	713	2338	4	201	5.1	9.9	3.5	9.3
4.00	63.8	23.2	394	0.24	807	2648	5	217	7.3	14.1	8.4	11.4
4.50	58.3	32.2	553	0.34	902	2958	7	301	2.4	4.7	4.0	-2.4
5.00	67.9	44.1	402	0.25	996	3268	7	303	2.7	5.2	4.4	-2.8
5.50	62.0	48.4	574	0.36	1086	3563	6	252	3.8	7.3	7.0	2.3
6.00	62.4	54.0	612	0.38	1176	3859	6	262	1.9	3.8	3.7	-0.8
6.50	62.7	56.7	650	0.40	1266	4154	6	286	1.5	3.0	2.9	-0.8
7.00	63.5	60.2	673	0.42	1356	4449	7	314	2.3	4.4	3.2	-3.1
7.50	64.3	67.8	693	0.43	1446	4744	7	327	3.5	6.8	3.7	-5.7
8.00	64.9	77.2	717	0.45	1536	5040	7	327	3.3	6.4	3.5	-5.4
8.50	65.0	82.8	755	0.47	1626	5335	7	331	2.3	4.4	2.1	-3.8
9.00	65.9	87.0	765	0.48	1716	5630	0	359	2.0	4.0	0.1	-4.0
9.50	67.3	92.1	753	0.47	1806	5926	0	18	2.4	4.6	-1.4	-4.4
10.00	69.0	97.5	726	0.45	1896	6221	1	31	3.4	6.5	-3.4	-5.6
10.50	71.1	107.1	678	0.42	1986	6516	1	54	1.6	3.0	-2.5	-1.8
11.00	72.3	103.3	651	0.41	2076	6811	1	47	2.4	4.7	-3.4	-3.2
11.50	74.0	118.9	619	0.38	2166	7107	1	37	4.1	8.0	-4.8	-6.3
12.00	75.0	125.0	603	0.37	2256	7402	1	50	3.1	6.0	-4.6	-3.8
12.50	75.1	136.2	579	0.36	2346	7697	1	56	2.6	5.1	-4.2	-2.8
13.00	76.9	140.1	565	0.35	2436	7992	2	76	0.4	0.7	-0.7	-0.2
13.50	77.3	138.2	568	0.35	2526	8288	5	222	1.1	2.0	1.0	1.5
14.00	77.9	133.7	560	0.35	2616	8583	5	229	1.2	2.3	1.7	1.5
14.50	78.0	131.1	574	0.36	2706	8878	6	257	0.8	1.6	1.5	0.4
15.00	78.1	129.7	588	0.37	2796	9174	4	160	0.5	0.9	-0.3	0.9
15.50	79.2	129.7	549	0.34	2886	9469	3	119	1.8	3.5	-3.1	1.7
16.00	80.8	132.2	481	0.30	2976	9764	2	89	2.3	4.5	-4.5	-0.1
16.50	81.6	141.3	452	0.28	3066	10059	1	67	2.6	5.5	-5.1	-2.1
17.00	82.1	152.8	437	0.27	3156	10355	2	71	2.8	5.4	-5.1	-1.8
17.50	82.5	162.9	427	0.27	3246	10650	1	60	2.4	4.7	-4.1	-2.4
18.00	82.0	170.9	468	0.29	3336	10945	2	73	2.1	4.1	-4.0	-1.2
18.50	82.4	179.6	444	0.29	3426	11241	2	105	2.4	4.7	-4.5	1.2
19.00	83.0	188.7	431	0.27	3516	11536	2	107	2.5	4.8	-4.6	1.5
19.50	83.3	199.2	423	0.26	3606	11831	2	106	2.0	4.0	-3.8	1.1
20.00	83.3	205.0	433	0.27	3696	12126	2	98	1.5	2.9	-2.9	0.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 8

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 2 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH. 11:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (U)	VELOCITY NAUTICAL MILES PER HOUR (V)
0.50	27.1	158.0	211	0.13	114	374	7	335	6.7	13.0	5.4	-11.9
1.00	28.2	155.4	403	0.25	222	729	7	326	4.4	8.5	4.7	-7.1
1.50	33.8	151.6	471	0.29	321	1053	5	237	1.6	3.1	2.6	1.7
2.00	46.9	141.8	400	0.25	420	1378	4	177	4.9	9.6	-0.4	9.6
2.50	64.8	119.2	241	0.15	519	1703	4	164	6.8	13.2	-3.6	12.8
3.00	75.4	59.3	159	0.10	618	2028	4	171	5.5	10.7	-1.6	10.6
3.50	69.6	37.5	263	0.16	713	2338	5	215	4.8	9.3	5.4	7.6
4.00	61.3	43.7	439	0.27	807	2648	6	249	6.0	11.6	10.9	4.2
4.50	56.2	55.7	599	0.37	902	2958	6	262	5.6	10.9	10.8	1.5
5.00	53.5	60.2	733	0.46	996	3268	6	256	4.8	9.3	9.1	2.2
5.50	51.0	62.4	875	0.54	1086	3563	6	261	4.4	8.6	8.6	1.3
6.00	49.9	65.8	985	0.61	1176	3859	6	270	3.8	7.3	7.3	0.0
6.50	49.4	67.9	1060	0.67	1266	4154	6	264	3.3	6.4	6.3	0.7
7.00	49.0	68.8	1174	0.73	1358	4449	6	253	3.2	6.3	6.0	1.0
7.50	48.5	68.7	1274	0.79	1446	4744	5	236	2.5	4.9	4.0	2.8
8.00	49.2	67.3	1321	0.82	1536	5040	5	205	1.8	3.5	1.5	3.2
8.50	50.1	65.5	1355	0.84	1626	5335	4	192	1.4	2.7	0.6	2.7
9.00	51.3	64.4	1370	0.85	1716	5630	5	203	0.7	1.4	0.5	1.3
9.50	52.4	64.3	1386	0.86	1806	5926	3	140	0.1	0.2	-0.2	0.2
10.00	54.1	64.1	1368	0.85	1896	6221	2	85	0.5	0.9	-0.9	-0.1
10.50	55.5	63.9	1361	0.85	1986	6516	3	148	0.5	1.0	-0.5	0.9
11.00	56.6	62.8	1365	0.85	2076	6811	4	174	1.6	3.1	-0.3	3.1
11.50	57.1	60.2	1397	0.87	2166	7107	4	171	1.9	3.8	-0.6	3.7
12.00	58.0	58.3	1406	0.87	2256	7402	4	183	1.8	3.4	0.2	3.4
12.50	58.1	56.7	1457	0.91	2346	7697	4	194	3.2	6.2	1.5	6.0
13.00	57.5	53.3	1548	0.96	2436	7992	4	197	3.8	7.3	2.1	7.0
13.50	57.0	51.6	1637	1.02	2526	8288	4	194	3.9	7.5	1.9	7.2
14.00	56.4	48.5	1734	1.08	2616	8583	4	191	4.0	7.8	1.6	7.7
14.50	55.9	46.7	1828	1.14	2706	8878	4	197	4.1	7.9	2.4	7.5
15.00	55.1	44.8	1946	1.21	2796	9174	4	196	3.9	7.5	2.1	7.2
15.50	54.8	43.4	2032	1.26	2886	9469	5	205	3.9	7.5	3.1	6.8
16.00	53.9	42.7	2166	1.35	2976	9764	5	206	4.0	7.8	3.5	7.0
16.50	53.5	41.6	2264	1.41	3066	10059	4	192	3.6	7.1	1.5	6.9
17.00	53.2	40.0	2357	1.46	3156	10355	4	182	3.6	6.9	0.3	6.9
17.50	53.1	38.4	2433	1.51	3246	10650	4	180	3.3	6.4	0.0	6.4
18.00	53.0	37.1	2509	1.56	3336	10945	4	178	3.7	7.2	-0.3	7.2
18.50	52.7	35.2	2605	1.62	3426	11241	4	173	4.3	8.4	-1.0	8.3
19.00	52.4	33.3	2703	1.68	3516	11536	4	172	4.6	8.9	-1.2	8.8
19.50	52.0	31.4	2813	1.75	3606	11831	4	174	4.0	7.8	-0.8	7.7
20.00	51.9	30.3	2893	1.80	3696	12126	4	177	3.3	6.3	-0.4	6.3

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 9

LOCATION: NEWARK CALIFORNIA

SPECIFICS: GUSTY WINDS

DATE OF LAUNCH: 2 AUGUST 1976

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	20.3	147.0	292	0.18	114	374	7	330	10.4	20.2	10.2	-17.4
1.00	19.1	149.5	624	0.39	222	729	7	330	8.6	16.7	8.3	-14.5
1.50	21.3	149.0	808	0.50	321	1053	7	335	7.0	13.5	5.7	-12.3
2.00	21.7	151.8	1040	0.65	420	1378	5	227	2.9	5.7	4.2	3.9
2.50	33.0	136.4	790	0.49	519	1703	4	193	6.6	12.7	2.8	12.4
3.00	37.9	132.7	786	0.49	618	2028	5	216	2.5	4.9	2.9	4.0
3.50	42.3	125.3	776	0.48	713	2338	5	210	3.7	7.1	3.6	6.2
4.00	46.2	116.5	768	0.48	807	2648	5	216	4.6	8.9	5.2	7.2
4.50	47.3	105.8	826	0.51	902	2958	5	227	4.3	8.3	6.1	5.6
5.00	48.0	100.9	891	0.55	996	3268	5	239	3.1	6.0	5.1	3.1
5.50	48.3	97.7	962	0.60	1086	3563	5	245	2.6	5.0	4.5	2.1
6.00	48.9	95.8	1021	0.63	1176	3859	6	249	2.5	5.0	4.6	1.8
6.50	48.9	93.9	1099	0.68	1266	4154	5	235	3.0	5.9	4.9	3.3
7.00	49.2	90.0	1165	0.72	1356	4449	5	216	3.1	6.1	3.5	4.9
7.50	50.0	86.3	1208	0.75	1446	4744	4	201	2.9	5.7	2.0	5.3
8.00	51.0	82.4	1239	0.77	1536	5040	4	179	2.5	4.9	-0.1	4.9
8.50	52.9	79.2	1225	0.76	1626	5335	3	152	2.4	4.6	-2.1	4.1
9.00	55.0	76.0	1197	0.74	1716	5630	3	152	1.9	3.7	-1.7	3.2
9.50	56.1	74.0	1196	0.74	1806	5926	4	183	1.7	3.4	0.2	3.3
10.00	56.9	71.4	1232	0.77	1896	6221	4	158	1.7	3.3	-1.2	3.1
10.50	59.0	69.1	1190	0.74	1986	6516	3	137	1.4	2.7	-1.8	2.0
11.00	59.9	67.8	1200	0.75	2076	6811	3	146	1.0	1.9	-1.1	1.6
11.50	60.4	66.3	1178	0.73	2166	7107	4	197	1.2	2.3	0.7	2.3
12.00	61.0	65.2	1247	0.77	2256	7402	5	215	2.0	3.9	2.2	3.2
12.50	61.3	63.5	1281	0.80	2346	7697	4	191	2.0	3.8	0.7	3.8
13.00	61.5	61.0	1319	0.82	2436	7992	4	186	2.0	4.0	0.4	4.0
13.50	61.9	59.1	1351	0.84	2526	8288	4	196	1.6	3.1	0.8	3.0
14.00	62.0	58.2	1388	0.86	2616	8583	5	218	1.3	2.5	1.5	2.0
14.50	62.2	58.0	1424	0.88	2706	8878	5	233	1.4	2.7	2.2	1.6
15.00	62.2	57.9	1471	0.91	2796	9174	5	244	2.3	4.6	4.1	2.0
15.50	61.5	58.5	1564	0.97	2886	9469	5	247	3.3	6.4	5.9	2.5
16.00	60.7	59.0	1667	1.04	2976	9764	5	243	3.6	7.0	6.3	3.2
16.50	59.8	59.0	1781	1.11	3066	10059	5	237	3.6	7.1	6.0	3.8
17.00	59.1	58.8	1885	1.17	3156	10355	5	241	3.4	6.6	5.8	3.2
17.50	58.5	59.2	1985	1.23	3246	10650	5	239	3.0	5.8	5.0	3.0
18.00	58.2	58.8	2065	1.28	3336	10945	5	239	3.9	7.6	6.5	3.9
18.50	57.0	59.2	2221	1.38	3426	11241	5	247	2.2	4.2	3.9	1.6
19.00	58.0	59.3	2193	1.36	3516	11536	4	200	0.6	1.2	0.4	1.1
19.50	58.0	58.6	2250	1.40	3606	11831	5	212	1.9	3.7	2.0	3.2
20.00	58.1	58.0	2297	1.43	3696	12126	5	212	1.8	3.4	1.8	2.9

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 10

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 2 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 22:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	40.0	146.9	129	0.08	114	374	7	327	4.5	8.7	4.8	-7.2
1.00	38.9	146.7	268	0.17	222	729	7	321	3.9	7.6	4.8	-5.9
1.50	40.9	142.6	364	0.23	321	1053	7	316	0.9	1.7	1.2	-1.2
2.00	52.3	144.9	320	0.20	420	1378	3	152	3.6	6.9	-3.3	6.1
2.50	73.1	130.4	156	0.10	519	1703	4	160	5.9	11.6	-3.9	10.9
3.00	81.0	40.3	97	0.06	618	2028	4	181	4.1	7.9	0.1	7.9
3.50	75.1	40.2	188	0.12	713	2338	5	212	2.8	5.4	2.9	4.6
4.00	71.0	35.1	263	0.16	807	2648	5	203	2.8	5.3	2.1	5.0
4.50	68.6	32.3	351	0.22	902	2958	5	207	4.1	8.0	3.7	7.1
5.00	62.8	31.3	509	0.32	996	3268	5	212	5.9	11.4	6.0	9.7
5.50	56.9	32.0	704	0.44	1086	3563	5	210	5.7	11.2	5.6	9.6
6.00	53.9	30.9	853	0.53	1176	3859	4	198	4.4	8.0	2.7	8.1
6.50	52.6	28.3	963	0.60	1266	4154	4	182	4.2	8.3	0.2	8.1
7.00	51.4	24.4	1078	0.67	1356	4449	3	175	3.9	7.6	-0.7	7.6
7.50	51.0	21.9	1166	0.72	1446	4744	3	164	2.5	4.8	-1.3	4.6
8.00	52.0	19.8	1195	0.74	1536	5040	3	131	2.0	4.0	-3.0	2.6
8.50	53.2	16.4	1212	0.75	1626	5335	3	116	2.4	4.7	-4.2	2.1
9.00	54.5	13.0	1220	0.76	1716	5630	3	115	2.7	5.2	-4.7	2.2
9.50	55.3	9.1	1246	0.77	1806	5926	3	113	3.8	7.3	-6.7	2.9
10.00	55.9	3.0	1280	0.80	1896	6221	3	118	3.5	6.9	-6.1	3.2
10.50	56.1	0.4	1331	0.83	1986	6516	3	130	2.9	5.6	-4.3	3.6
11.00	56.1	357.3	1391	0.86	2076	6811	3	126	3.1	5.9	-4.8	3.5
11.50	56.2	354.5	1446	0.90	2166	7107	3	136	1.8	3.4	-2.4	2.5
12.00	56.8	354.6	1472	0.91	2256	7402	5	205	2.1	4.0	1.7	3.7
12.50	56.4	356.8	1555	0.97	2346	7697	5	214	2.4	4.6	2.5	3.8
13.00	56.9	357.9	1584	0.98	2436	7992	5	215	1.7	3.3	1.9	2.7
13.50	57.0	359.0	1637	1.02	2526	8288	5	243	3.9	7.6	6.8	3.4
14.00	57.0	6.1	1695	1.05	2616	8583	5	218	2.4	4.0	2.9	3.0
14.50	57.0	2.0	1753	1.09	2706	8878	3	147	2.4	4.7	-2.5	4.0
15.00	57.0	2.3	1812	1.13	2796	9174	4	198	2.0	3.9	1.2	3.7
15.50	57.0	3.0	1870	1.16	2886	9469	5	210	2.2	4.2	2.1	3.7
16.00	57.0	4.1	1929	1.20	2976	9764	5	224	2.5	4.8	3.4	3.5
16.50	57.0	5.9	1987	1.23	3066	10059	5	225	2.7	5.3	3.8	3.7
17.00	56.9	7.1	2053	1.28	3156	10355	5	230	2.5	4.8	3.7	3.1
17.50	57.1	8.7	2096	1.30	3246	10650	5	243	2.6	5.1	4.6	2.3
18.00	57.2	10.6	2146	1.33	3336	10945	5	230	3.3	6.3	4.9	4.1
18.50	56.7	12.0	2247	1.40	3426	11241	5	227	3.8	7.3	5.4	5.0
19.00	56.4	13.9	2332	1.45	3516	11536	5	233	3.7	7.2	5.8	4.3
19.50	56.1	15.5	2419	1.50	3606	11831	5	235	3.4	6.6	5.4	3.8
20.00	56.0	17.0	2489	1.55	3696	12126	5	239	3.2	6.1	5.3	3.2

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 11

LOCATION: NEWARK CALIFORNIA

SPECIFICS: OVC TO CLR IN 1 HOUR

DATE OF LAUNCH: 3 AUGUST 1978

ELEVATION OF LAUNCH SITE: 30 FEET

TIME OF LAUNCH: 11:00 P.D.T.

TIME MINUTES	ELEV. D E G R E E S	AZIMUTH D E G R E E S	R A N G E METERS	R A N G E MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	D I R E C T I O N CLASS 0- 7	D I R E C T I O N DEGREES	V E L O C I T Y METERS/SEC (SPEED)	V E L O C I T Y NAUTICAL MILES PER HOUR (SPEED)	V E L O C I T Y MILES PER HOUR (U)	V E L O C I T Y MILES PER HOUR (V)
0.50	61.7	137.3	85	0.05	114	374	7	333	2.5	4.9	2.9	-3.0
1.00	55.1	142.8	151	0.09	222	729	7	319	1.5	2.9	1.9	-2.2
1.50	60.9	138.1	175	0.11	321	1053	4	202	2.0	3.9	1.5	3.6
2.00	71.6	93.2	138	0.09	420	1378	4	174	3.2	6.1	-0.6	6.1
2.50	77.5	59.3	114	0.07	519	1703	5	203	3.0	5.8	2.3	5.3
3.00	67.0	53.1	260	0.16	618	2028	5	228	4.5	8.7	6.5	5.8
3.50	61.7	51.3	380	0.24	713	2338	5	226	3.4	6.6	4.7	4.6
4.00	60.0	50.0	462	0.29	807	2648	5	221	3.3	6.4	4.2	4.9
4.50	57.2	47.7	577	0.36	902	2958	5	219	5.8	11.2	7.0	8.7
5.00	50.9	45.3	805	0.50	996	3268	5	212	5.2	10.1	5.3	8.6
5.50	50.8	42.1	881	0.55	1086	3563	4	188	3.3	6.5	0.9	6.4
6.00	50.3	38.2	971	0.60	1176	3859	4	189	4.2	8.1	1.3	8.0
6.50	48.9	35.0	1090	0.68	1266	4154	4	193	5.2	10.1	2.2	9.8
7.00	47.0	32.1	1259	0.78	1356	4449	4	196	5.1	9.9	2.6	9.5
7.50	46.0	30.8	1391	0.86	1446	4744	4	176	4.2	8.2	-0.5	8.2
8.00	46.1	26.3	1472	0.91	1536	5040	3	154	4.4	8.6	-3.7	7.8
8.50	46.2	22.6	1554	0.97	1626	5335	3	154	4.3	8.3	-3.7	7.4
9.00	46.2	19.2	1640	1.02	1716	5630	3	152	3.8	7.5	-3.5	6.6
9.50	46.5	16.6	1708	1.06	1806	5926	3	156	3.3	6.3	-2.6	5.8
10.00	46.6	14.9	1787	1.11	1896	6221	4	167	2.6	5.1	-1.1	5.0
10.50	47.0	14.2	1846	1.15	1986	6516	4	136	1.8	3.6	0.4	3.6
11.00	47.5	14.4	1897	1.18	2076	6811	5	225	1.9	3.7	2.6	2.6
11.50	48.0	15.9	1945	1.21	2166	7107	5	242	2.8	5.4	4.7	2.5
12.00	48.2	17.9	2012	1.25	2256	7402	6	250	3.2	6.2	5.8	2.1
12.50	48.6	20.2	2063	1.28	2346	7697	6	251	2.7	5.2	4.9	1.7
13.00	49.0	21.4	2112	1.31	2436	7992	3	149	2.7	5.2	-2.7	4.5
13.50	49.3	16.9	2168	1.35	2526	8288	5	219	2.2	4.2	2.6	3.3
14.00	49.4	22.4	2237	1.39	2616	8583	6	248	4.2	8.1	7.5	3.0
14.50	49.2	21.7	2331	1.45	2706	8878	4	174	3.1	5.9	-0.6	5.9
15.00	49.3	20.3	2400	1.49	2796	9174	4	170	3.0	5.9	-1.0	5.8
15.50	49.2	19.5	2486	1.54	2886	9469	4	176	3.1	6.1	-0.4	6.1
16.00	49.1	18.6	2573	1.60	2976	9764	4	175	3.0	5.8	-0.5	5.8
16.50	49.1	17.9	2651	1.65	3066	10059	4	167	2.3	4.4	-1.0	4.3
17.00	49.5	17.1	2690	1.67	3156	10355	4	158	1.9	3.6	-1.3	3.4
17.50	49.8	16.4	2738	1.70	3246	10650	4	164	2.1	4.0	-1.1	3.8
18.00	50.0	15.7	2794	1.74	3336	10945	4	163	2.6	5.0	-1.5	4.8
18.50	50.0	14.7	2870	1.78	3426	11241	3	155	3.5	6.7	-2.8	6.1
19.00	49.9	13.1	2956	1.84	3516	11536	3	157	4.4	8.6	-3.3	8.0
19.50	49.4	11.7	3086	1.92	3606	11831	4	160	5.8	11.3	-3.9	10.6
20.00	48.6	9.7	3253	2.02	3696	12126	3	157	6.7	13.0	-5.0	12.0

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 12

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 3 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	ALTITUDE M.S.L. METERS	ALTITUDE M.S.L. FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	WIND VELOCITY METERS/SEC (SPEED)	WIND VELOCITY NAUTICAL MILES PER HOUR (SPEED)	WIND VELOCITY NAUTICAL MILES PER HOUR (U)	WIND VELOCITY NAUTICAL MILES PER HOUR (V)
0.50	21.3	141.0	277	0.17	114	374	7	320	9.3	16.1	11.7	-13.9
1.00	21.1	139.9	560	0.35	222	729	7	319	4.8	9.6	6.3	-7.3
1.50	28.8	140.1	573	0.36	321	1053	7	296	1.3	2.5	2.2	-1.1
2.00	33.3	137.1	630	0.39	420	1378	5	247	2.5	4.9	4.5	1.9
2.50	39.0	126.9	634	0.39	519	1703	5	224	3.2	6.2	4.3	4.4
3.00	43.3	120.1	649	0.40	618	2028	5	224	3.7	7.2	5.0	5.3
3.50	45.4	108.2	697	0.43	713	2339	5	227	5.7	11.1	8.1	7.6
4.00	44.4	96.4	818	0.51	807	2648	5	233	6.9	13.3	10.6	8.1
4.50	42.1	88.2	991	0.62	902	2958	5	238	6.5	12.7	10.7	6.8
5.00	40.7	84.1	1151	0.72	996	3268	5	242	5.1	10.0	8.8	4.7
5.50	40.3	82.0	1273	0.79	1086	3563	5	242	4.1	7.9	6.9	3.8
6.00	40.3	80.2	1380	0.86	1176	3859	5	242	3.4	6.7	5.9	3.1
6.50	40.6	79.3	1470	0.91	1266	4154	5	234	2.8	5.4	4.4	3.2
7.00	41.4	77.4	1531	0.95	1356	4449	7	307	3.2	6.2	4.9	-3.7
7.50	41.9	74.3	1605	1.00	1446	4744	5	210	3.4	6.6	3.3	5.8
8.00	42.4	72.2	1676	1.04	1536	5040	4	193	7.7	15.0	3.3	14.6
8.50	41.9	70.2	1806	1.12	1626	5335	5	231	4.6	8.9	6.8	5.6
9.00	41.5	69.2	1933	1.20	1716	5630	5	235	2.4	4.6	3.8	2.6
9.50	42.8	69.1	1944	1.21	1806	5926	6	273	1.4	2.8	2.8	-0.1
10.00	43.2	70.2	2013	1.25	1896	6221	6	274	2.6	5.1	5.0	-0.3
10.50	43.5	70.9	2086	1.30	1986	6516	6	280	2.4	4.6	4.5	-0.8
11.00	44.1	72.1	2136	1.33	2076	6811	6	287	2.3	4.4	4.2	-1.3
11.50	44.5	73.0	2198	1.37	2166	7107	6	284	2.2	4.3	4.2	-1.1
12.00	45.0	73.9	2250	1.40	2256	7402	6	287	2.0	3.9	3.8	-1.2
12.50	45.5	74.7	2300	1.43	2346	7697	6	278	2.4	4.6	4.5	-0.7
13.00	45.6	75.3	2380	1.48	2436	7992	6	274	2.4	4.6	4.6	-0.3
13.50	46.0	75.8	2434	1.51	2526	8288	6	271	1.8	3.6	3.6	-0.1
14.00	46.4	76.0	2485	1.54	2616	8583	6	274	2.4	4.7	4.7	-0.3
14.50	46.4	76.8	2571	1.60	2706	8878	6	271	3.0	5.7	5.7	-0.1
15.00	46.4	77.0	2657	1.65	2796	9174	6	265	2.7	5.3	5.3	0.4
15.50	46.5	77.3	2733	1.70	2886	9469	6	262	2.0	4.0	3.9	0.6
16.00	46.9	77.2	2779	1.73	2976	9764	5	247	1.9	3.6	3.3	1.4
16.50	47.1	76.9	2844	1.77	3066	10059	5	234	1.9	3.8	3.0	2.2
17.00	47.5	76.3	2886	1.79	3156	10355	5	208	1.6	3.1	1.5	2.7
17.50	48.1	75.5	2907	1.81	3246	10650	5	225	3.4	6.6	4.6	4.7
18.00	47.4	74.3	3062	1.90	3336	10945	5	213	2.6	5.1	2.8	4.3
18.50	48.5	73.5	3026	1.88	3426	11241	7	315	1.4	2.8	2.0	-2.0
19.00	48.5	75.7	3105	1.93	3516	11536	4	199	5.8	11.3	3.7	10.6
19.50	48.0	68.5	3241	2.01	3606	11831	4	191	10.0	19.5	3.7	19.1
20.00	47.3	66.5	3405	2.12	3696	12126	5	212	6.7	13.0	6.9	11.0

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 13

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 3 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 23:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	36.5	155.5	146	0.09	114	374	7	336	7.0	13.6	5.5	-12.4
1.00	27.2	156.0	420	0.26	222	729	7	333	6.8	13.3	6.1	-11.8
1.50	29.5	153.4	557	0.35	321	1053	7	323	2.1	4.0	2.4	-3.2
2.00	37.4	153.0	541	0.34	420	1378	4	175	2.1	4.1	-0.3	4.1
2.50	49.2	147.3	443	0.28	519	1703	4	192	3.6	7.0	1.5	6.8
3.00	56.9	133.1	399	0.25	618	2028	5	209	3.5	6.8	3.3	5.9
3.50	61.0	119.1	392	0.24	713	2338	5	230	2.5	4.9	3.8	3.1
4.00	61.0	113.3	444	0.28	807	2648	6	263	2.3	4.4	4.3	0.6
4.50	60.5	110.0	507	0.31	902	2958	6	278	2.0	3.9	3.9	-0.5
5.00	60.4	110.0	562	0.35	996	3268	6	279	2.0	3.9	3.9	-0.6
5.50	59.9	107.8	626	0.39	1086	3563	6	277	2.5	4.9	4.9	-0.6
6.00	58.7	107.2	711	0.44	1176	3859	7	297	3.2	6.2	5.5	-2.8
6.50	57.1	110.0	815	0.51	1266	4154	7	304	2.3	4.4	3.7	-2.5
7.00	58.0	109.9	844	0.52	1356	4449	6	286	0.7	1.3	1.2	-0.4
7.50	59.3	109.8	855	0.53	1446	4744	6	257	0.9	1.8	1.7	0.4
8.00	59.8	108.0	890	0.55	1536	5040	5	242	1.2	2.3	2.1	1.1
8.50	60.8	106.4	905	0.56	1626	5335	5	245	0.4	0.8	0.7	0.4
9.00	62.0	106.9	909	0.56	1716	5630	7	329	1.1	2.1	1.1	-1.8
9.50	62.1	109.0	953	0.59	1806	5926	7	317	2.2	4.3	2.9	-3.1
10.00	61.5	110.6	1026	0.64	1896	6221	7	304	2.9	5.6	4.6	-3.1
10.50	60.5	111.3	1120	0.70	1986	6516	[illegible]	289	3.[illegible]	6.7	6.4	-2.2
11.00	59.2	110.3	1234	0.77	2076	6811	6	287	3.7	7.3	7.0	-2.1
11.50	58.1	110.5	1344	0.84	2166	7107	6	292	3.7	7.2	6.7	-2.6
12.00	57.1	110.5	1456	0.90	2256	7402	6	290	2.9	5.7	5.3	-1.9
12.50	57.0	110.[illegible]	1520	0.94	2346	7697	6	291	2.8	5.3	5.0	-2.0
13.00	56.3	110.6	1621	1.01	2436	7992	6	288	3.5	6.9	6.5	-2.1
13.50	55.5	110.1	1732	1.08	2526	8288	6	284	3.5	6.7	6.5	-1.7
14.00	55.0	109.9	1828	1.14	2616	8583	6	282	3.0	5.9	5.8	-1.2
14.50	54.7	109.3	1912	1.19	2706	8878	6	278	4.0	7.8	7.8	-1.1
15.00	53.5	108.5	2064	1.28	2796	9174	6	284	3.5	6.9	6.7	-1.7
15.50	53.6	108.8	2123	1.32	2886	9469	6	292	2.1	4.1	3.8	-1.5
16.00	53.6	108.7	2190	1.36	2976	9764	6	286	2.4	4.6	4.4	-1.2
16.50	53.5	108.6	2264	1.41	3066	10059	6	279	2.4	4.6	4.6	-0.7
17.00	53.5	108.1	2331	1.45	3156	10355	5	265	2.3	4.4	4.4	0.4
17.50	53.6	107.3	2389	1.48	3246	10650	6	255	2.6	5.1	4.9	1.3
18.00	53.5	106.1	2464	1.53	3336	10945	5	224	3.1	5.9	4.1	4.3
18.50	54.1	103.5	2476	1.54	3426	11241	5	204	3.0	5.8	2.3	5.3
19.00	54.8	102.0	2494	1.55	3516	11536	5	205	3.1	6.1	2.6	5.5
19.50	55.0	99.3	2521	1.57	3606	11831	4	177	4.8	9.5	-0.6	9.5
20.00	56.6	95.3	2433	1.51	3696	12126	4	160	6.5	12.5	-4.2	11.8

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 14

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 4 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	42.4	146.8	118	0.07	114	374	7	325	3.5	6.7	3.9	-5.5
1.00	46.1	145.0	208	0.13	222	729	7	312	2.8	5.6	4.2	-3.7
1.50	47.5	138.0	289	0.18	321	1053	4	184	2.1	4.0	0.2	4.0
2.00	71.8	110.3	135	0.09	420	1378	3	147	5.6	10.8	-5.9	0.1
2.50	82.4	9.3	68	0.04	519	1703	3	146	3.1	6.0	-3.2	5.1
3.00	79.5	14.4	113	0.07	618	2028	5	235	3.0	5.9	2.8	3.4
3.50	71.6	42.8	235	0.15	713	2338	5	279	2.5	5.5	5.4	-0.8
4.00	75.1	66.5	213	0.13	807	2648	7	325	3.2	6.2	3.6	-5.1
4.50	73.1	86.9	272	0.17	902	2958	7	304	3.7	7.1	5.9	-4.0
5.00	69.0	96.0	380	0.24	996	3268	1	25	1.2	2.4	-1.0	-2.2
5.50	77.2	102.4	245	0.15	1086	3563	7	300	2.2	4.4	3.4	-2.7
6.00	66.9	104.3	489	0.31	1176	3859	5	290	4.9	9.6	9.0	-3.3
6.50	66.8	106.5	540	0.34	1266	4154	7	301	1.4	2.7	2.3	-1.4
7.00	66.8	106.6	579	0.36	1356	4449	7	309	1.3	2.5	1.9	-1.6
7.50	67.0	109.3	611	0.38	1446	4744	7	322	2.0	3.9	2.4	-3.1
8.00	66.0	112.5	681	0.42	1536	5040	7	304	5.2	10.1	8.4	-5.6
8.50	60.5	114.2	917	0.57	1626	5335	7	293	4.8	9.3	8.5	-3.6
9.00	60.5	112.6	967	0.60	1716	5630	3	152	1.6	3.1	-1.4	2.7
9.50	64.9	110.2	843	0.52	1806	5926	4	171	1.6	3.0	-0.5	3.0
10.00	64.0	107.6	932	0.57	1896	6221	5	252	3.8	7.3	7.0	2.2
10.50	62.5	102.5	1031	0.64	1986	6516	6	256	3.6	6.9	6.7	1.6
11.00	61.8	101.9	1110	0.69	2076	6811	6	268	3.3	6.4	6.4	0.2
11.50	60.5	100.2	1222	0.76	2166	7107	6	260	3.7	7.3	7.1	1.3
12.00	59.6	98.2	1320	0.82	2256	7402	6	253	3.8	7.3	7.0	2.1
12.50	58.6	96.1	1428	0.89	2346	7697	6	250	4.0	7.8	7.3	2.6
13.00	57.7	94.0	1536	0.95	2436	7992	5	242	3.3	6.5	5.8	3.0
13.50	57.6	92.1	1599	0.99	2526	8288	6	283	1.9	3.7	3.6	-0.8
14.00	57.7	94.6	1650	1.03	2616	8583	5	233	1.7	3.3	2.7	2.0
14.50	58.1	89.9	1681	1.04	2706	8878	4	194	2.6	5.0	1.2	4.9
15.00	58.9	89.4	1683	1.05	2796	9174	5	225	1.1	2.2	1.6	1.6
15.50	59.0	88.3	1730	1.08	2886	9469	5	204	1.2	2.3	1.0	2.1
16.00	60.0	87.2	1715	1.07	2976	9764	3	148	1.4	2.8	-1.5	2.3
16.50	61.1	85.8	1689	1.05	3066	10059	3	147	1.4	2.6	-1.4	2.2
17.00	62.0	84.8	1675	1.04	3156	10355	3	127	1.0	2.0	-1.6	1.2
17.50	63.1	84.4	1644	1.02	3246	10650	3	150	0.6	1.1	-0.6	1.0
18.00	63.5	83.7	1660	1.03	3336	10945	5	213	0.9	1.7	0.9	1.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 15

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 4 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 11:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	52.1	160.5	94	0.05	114	374	7	333	2.8	5.5	2.5	-4.9
1.00	51.7	153.2	171	0.11	222	729	6	280	0.7	1.4	1.4	-0.3
1.50	70.4	140.9	112	0.07	321	1053	4	172	2.8	5.4	-0.8	5.3
2.00	82.5	77.1	56	0.03	420	1378	4	185	2.1	4.2	0.4	4.1
2.50	79.8	63.7	93	0.06	519	1703	5	247	1.4	2.7	2.5	1.1
3.00	77.4	70.8	137	0.09	618	2028	6	258	1.2	2.3	2.2	0.5
3.50	77.1	70.0	162	0.10	713	2338	5	242	1.1	2.1	1.8	1.0
4.00	76.0	68.1	200	0.12	807	2648	5	234	1.2	2.3	1.9	1.4
4.50	75.5	65.2	232	0.14	902	2958	5	232	0.7	1.3	1.1	0.8
5.00	76.4	65.4	240	0.15	996	3268	6	262	0.5	0.9	0.9	0.1
5.50	76.5	67.0	259	0.16	1086	3563	4	188	0.1	0.2	0.0	0.2
6.00	78.3	64.4	242	0.15	1176	3859	4	181	0.2	0.5	0.0	0.5
6.50	78.1	64.1	266	0.16	1266	4154	6	269	0.8	1.6	1.6	0.0
7.00	78.0	68.5	297	0.18	1356	4449	6	283	1.2	2.3	2.3	-0.5
7.50	77.3	72.0	325	0.20	1446	4744	6	281	1.0	1.9	1.9	-0.4
8.00	77.5	73.9	339	0.21	1536	5040	0	347	0.2	0.3	0.1	-0.3
8.50	78.7	73.4	324	0.20	1626	5335	6	249	0.8	1.5	1.4	0.5
9.00	77.3	73.3	385	0.24	1716	5630	6	250	1.9	3.6	3.4	1.2
9.50	76.4	73.0	435	0.27	1806	5926	6	252	1.5	3.0	2.9	0.9
10.00	75.8	73.1	478	0.30	1896	6221	6	267	1.0	1.9	1.9	0.1
10.50	76.0	74.7	494	0.31	1986	6516	7	304	0.6	1.1	0.9	-0.6
11.00	76.4	76.2	501	0.31	2076	6811	7	329	0.7	1.3	0.7	-1.1
11.50	76.8	79.2	507	0.31	2166	7107	7	334	1.3	2.6	1.1	-2.4
12.00	76.9	84.9	524	0.33	2256	7402	7	325	2.1	4.1	2.4	-3.3
12.50	76.3	90.8	570	0.35	2346	7697	7	306	2.1	4.1	3.3	-2.4
13.00	75.6	92.4	624	0.39	2436	7992	6	284	2.2	4.3	4.1	-1.0
13.50	74.5	93.3	699	0.43	2526	8288	6	279	2.4	4.7	4.6	-0.7
14.00	73.6	93.6	768	0.48	2616	8583	6	271	2.5	4.9	4.9	-0.1
14.50	72.5	92.9	851	0.53	2706	8878	6	253	2.5	4.9	4.7	1.5
15.00	71.9	90.2	912	0.57	2796	9174	5	236	2.8	5.5	4.5	3.1
15.50	71.0	87.0	992	0.62	2886	9469	5	221	2.7	5.2	3.4	3.9
16.00	71.0	83.4	1023	0.64	2976	9764	5	224	3.4	6.6	4.6	4.7
16.50	69.4	80.1	1150	0.71	3066	10059	5	226	3.1	6.1	4.4	4.2
17.00	69.5	77.9	1178	0.73	3156	10355	4	191	1.7	3.4	0.7	3.3
17.50	69.8	75.4	1192	0.74	3246	10650	3	134	1.6	3.1	-2.2	2.2
18.00	71.3	73.8	1127	0.70	3336	10945	3	154	1.5	2.9	-1.3	2.6
18.50	71.0	71.2	1170	0.73	3426	11241	4	171	2.0	3.8	-0.6	3.8
19.00	71.9	67.9	1147	0.71	3516	11536	3	141	2.0	3.9	-2.4	3.0
19.50	72.4	65.5	1142	0.71	3606	11831	3	131	2.6	5.0	-3.8	3.3
20.00	73.8	60.6	1086	0.67	3696	12126	3	123	3.7	7.2	-6.0	3.9

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 16

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 4 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL (SPEED)	VELOCITY MILES PER HOUR (U)	VELOCITY MILES PER HOUR (V)
0.50	37.8	113.1	139	0.09	114	374	7	298	5.4	10.6	9.4	-4.9
1.00	33.5	117.6	326	0.20	222	729	7	298	6.7	13.1	11.6	-6.2
1.50	30.1	116.8	543	0.34	321	1053	7	299	6.8	13.2	11.5	-6.4
2.00	29.5	118.5	732	0.45	420	1378	6	284	6.5	12.6	12.2	-3.0
2.50	29.0	111.4	925	0.58	519	1703	7	316	5.2	10.1	7.1	-7.3
3.00	30.6	123.7	1035	0.64	618	2028	0	355	5.0	9.8	0.8	-9.7
3.50	32.9	125.8	1092	0.68	713	2338	7	326	2.6	5.1	2.9	-4.2
4.00	34.1	126.6	1183	0.74	807	2648	7	300	3.0	5.8	5.0	-2.9
4.50	35.2	125.0	1269	0.79	902	2958	6	273	2.6	5.0	5.0	-0.3
5.00	37.0	123.9	1314	0.82	996	3268	6	255	2.0	4.0	3.8	0.9
5.50	38.6	121.1	1353	0.84	1086	3563	6	258	1.4	2.7	2.7	0.6
6.00	40.4	120.4	1375	0.85	1176	3859	7	316	0.5	0.9	0.6	-0.7
6.50	42.4	121.4	1380	0.86	1266	4154	1	33	0.5	0.9	-0.5	-0.8
7.00	44.5	121.6	1374	0.85	1356	4449	2	104	0.6	1.2	-1.2	0.3
7.50	47.0	121.9	1343	0.83	1446	4744	1	55	0.9	1.8	-1.8	-1.0
8.00	48.5	123.7	1354	0.84	1536	5040	0	349	2.1	4.2	0.8	-4.1
8.50	48.5	125.7	1433	0.89	1626	5335	7	322	4.2	8.1	5.0	-6.4
9.00	47.0	126.5	1595	0.99	1716	5630	7	311	4.2	8.2	0.2	-5.4
9.50	46.9	126.5	1684	1.05	1806	5926	7	309	2.2	4.3	3.3	-2.7
10.00	47.6	126.7	1726	1.07	1896	6221	7	307	1.7	3.4	2.7	-2.0
10.50	47.9	126.5	1789	1.11	1986	6516	7	296	3.3	6.5	5.8	-2.9
11.00	47.1	125.6	1924	1.20	2076	6811	6	276	2.2	4.3	3.2	-0.5
11.50	48.6	124.5	1904	1.18	2166	7107	5	234	1.6	3.0	2.5	1.8
12.00	49.0	123.0	1956	1.22	2256	7402	6	257	2.9	5.6	5.5	1.2
12.50	49.1	120.9	2027	1.26	2346	7697	6	255	2.9	5.6	5.4	1.5
13.00	49.5	119.4	2075	1.29	2436	7992	6	253	2.1	4.2	4.0	1.2
13.50	50.0	118.3	2115	1.31	2526	8288	6	258	1.8	3.5	3.5	0.7
14.00	50.4	117.5	2159	1.34	2616	8583	6	281	1.5	3.0	2.9	-0.6
14.50	50.8	117.6	2202	1.37	2706	8878	7	311	1.4	2.8	2.1	-1.8
15.00	51.2	118.0	2243	1.39	2796	9174	7	309	2.9	5.7	4.4	-3.5
15.50	50.5	118.4	2374	1.48	2886	9469	7	309	3.3	6.5	5.0	-4.1
16.00	50.6	118.9	2440	1.52	2976	9764	7	309	1.9	3.7	2.9	-2.4
16.50	50.9	118.9	2487	1.55	3066	10059	0	344	0.3	0.6	0.2	-0.6
17.00	52.1	119.2	2452	1.52	3156	10355	2	102	0.5	0.9	-0.9	0.2
17.50	52.8	119.1	2459	1.53	3246	10650	7	314	2.1	4.1	2.9	-2.8
18.00	52.3	119.9	2574	1.60	3336	10945	7	333	3.1	6.0	2.7	-5.4
18.50	52.6	121.4	2615	1.62	3426	11241	0	2	2.1	4.1	-0.1	-4.1
19.00	53.1	122.3	2635	1.64	3516	11536	0	10	2.2	4.2	-0.8	-4.1
19.50	53.5	124.0	2664	1.66	3606	11831	1	28	2.6	5.0	-2.3	-4.4
20.00	54.3	125.6	2652	1.65	3696	12126	1	44	2.5	4.9	-3.4	-3.5

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 17

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 4 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 23:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	31.1	147.4	179	0.11	114	374	0	343	3.0	5.9	1.7	-5.6
1.00	49.9	163.2	182	0.11	222	729	2	104	1.3	2.5	-2.4	0.6
1.50	66.9	170.8	134	0.08	321	1053	5	239	2.3	4.6	3.9	2.3
2.00	64.1	120.4	201	0.12	420	1378	4	162	3.7	7.1	-2.1	6.8
2.50	80.2	329.8	89	0.06	519	1703	3	142	4.1	8.1	-5.0	6.4
3.00	81.0	12.2	97	0.06	618	2028	6	292	2.5	4.8	4.4	-1.8
3.50	82.4	76.0	94	0.06	713	2338	7	321	3.5	6.9	4.3	-5.4
4.00	78.1	115.0	169	0.10	807	2648	7	323	5.2	10.1	6.1	-8.0
4.50	68.1	128.9	360	0.22	902	2958	7	317	5.5	10.7	7.3	-7.9
5.00	63.6	129.8	491	0.31	996	3268	7	319	4.0	7.7	5.1	-5.8
5.50	61.1	132.8	596	0.37	1096	3563	7	321	4.8	9.3	4.6	-8.1
6.00	56.8	137.4	766	0.48	1176	3859	7	328	4.9	9.5	5.0	-8.1
6.50	55.0	137.9	882	0.55	1266	4154	7	318	4.0	7.8	5.2	-5.8
7.00	53.3	137.5	1006	0.63	1356	4449	7	318	3.6	7.1	4.7	-5.3
7.50	52.6	137.9	1101	0.68	1446	4744	7	321	2.6	5.0	3.1	-3.9
8.00	52.8	138.0	1161	0.72	1536	5040	7	335	2.1	4.0	1.7	-3.7
8.50	53.0	139.6	1221	0.76	1626	5335	0	353	2.4	4.8	0.5	-4.7
9.00	53.1	141.8	1284	0.80	1716	5630	0	4	2.8	5.5	-0.4	-5.5
9.50	53.2	144.7	1347	0.84	1806	5926	0	13	3.2	6.3	-1.4	-6.1
10.00	53.2	147.9	1414	0.88	1896	6221	0	20	3.5	5.7	-2.2	-6.3
10.50	53.3	151.3	1476	0.92	1986	6516	1	34	3.5	6.8	-3.8	-5.6
11.00	53.9	155.2	1509	0.94	2076	6811	1	45	3.4	6.6	-4.6	-4.7
11.50	54.4	158.8	1546	0.96	2166	7107	1	36	3.2	6.1	-3.6	-5.0
12.00	54.4	161.1	1611	1.00	2256	7402	1	44	3.1	6.0	[illegible]	-4.3
12.50	55.1	164.4	1632	1.01	2346	7697	1	64	3.2	6.2	-5.5	-2.7
13.00	55.9	167.7	1645	1.02	2436	7992	2	74	3.6	7.0	-6.7	-2.0
13.50	56.8	171.9	1649	1.02	2526	8288	2	72	4.7	9.2	-8.8	-2.8
14.00	57.0	177.3	1695	1.05	2616	8583	2	71	4.6	8.9	-8.4	-2.8
14.50	57.5	180.9	1720	1.07	2706	8878	1	66	2.8	5.5	-5.0	-2.2
15.00	57.7	182.4	1764	1.10	2796	9174	1	51	2.0	3.9	-3.0	-2.5
15.50	58.0	183.8	1800	1.12	2886	9469	1	66	2.2	4.4	-4.0	-1.8
16.00	58.4	186.2	1827	1.14	2976	9764	2	76	2.3	4.4	-4.2	-1.1
16.50	58.9	187.8	1846	1.15	3066	10059	2	84	2.4	4.6	-4.6	-0.5
17.00	59.4	190.5	1863	1.16	3156	10355	2	82	1.4	2.7	-2.7	-0.4
17.50	60.0	190.3	1871	1.16	3246	10650	2	79	0.9	1.8	-1.8	-0.3
18.00	60.5	192.1	1884	1.17	3336	10945	2	101	1.6	3.1	-3.0	0.6
18.50	61.3	193.2	1872	1.16	3426	11241	3	125	1.5	2.9	-2.4	1.7
19.00	62.2	194.7	1851	1.15	3516	11536	3	125	1.8	3.6	-2.9	2.0
19.50	63.0	196.4	1834	1.14	3606	11831	3	140	3.2	6.3	-4.0	4.9
20.00	64.7	199.9	1744	1.08	3696	12126	3	148	4.7	9.2	-4.9	7.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 19

LOCATION: NEWARK CALIFORNIA

SPECIFICS: CLOUD COVER INCREASED AT END OF READING

DATE OF LAUNCH: 7 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	44.9	158.0	108	0.07	114	374	0	341	3.6	6.9	2.3	-6.5
1.00	45.3	160.8	214	0.13	222	729	1	20	1.1	2.1	-1.0	-1.9
1.50	63.2	176.7	159	0.10	321	1053	3	144	3.7	7.1	-4.1	5.8
2.00	81.4	247.6	63	0.04	420	1378	4	167	3.1	6.0	-1.4	5.9
2.50	85.5	303.8	40	0.03	519	1703	5	233	1.4	2.8	2.2	1.7
3.00	87.2	20.6	30	0.02	618	2028	7	295	4.9	9.4	8.6	-3.9
3.50	70.4	113.2	252	0.16	713	2338	7	312	8.8	17.0	12.6	-11.5
4.00	57.2	129.4	516	0.32	807	2648	7	327	9.3	17.8	9.6	-14.9
4.50	49.3	136.7	770	0.48	902	2958	7	330	9.1	17.6	8.7	-15.3
5.00	43.5	140.2	1043	0.65	996	3268	7	331	9.3	18.1	8.7	-15.9
5.50	39.3	142.9	1320	0.82	1086	3563	7	333	9.6	18.6	8.6	-16.5
6.00	36.0	144.6	1610	1.00	1176	3859	7	330	8.8	17.2	8.6	-14.9
6.50	34.3	144.9	1847	1.15	1266	4154	7	327	7.2	13.9	7.7	-11.6
7.00	33.5	145.0	2040	1.27	1356	4449	7	328	6.0	11.7	6.2	-9.9
7.50	33.1	145.4	2209	1.37	1446	4744	7	334	4.4	8.6	3.8	-7.7
8.00	33.6	146.0	2303	1.43	1536	5040	0	339	5.2	10.1	3.6	-9.5
8.50	32.8	147.1	2514	1.56	1626	5335	0	346	6.0	11.6	2.8	-11.3
9.00	32.9	148.7	2643	1.64	1716	5630	0	356	4.5	8.7	0.6	-8.6
9.50	33.2	149.8	2751	1.71	1806	5926	0	358	3.0	5.8	0.2	-5.8
10.00	34.0	150.5	2803	1.74	1896	6221	0	12	2.0	3.8	-0.8	-3.7
10.50	34.9	151.4	2838	1.76	1986	6516	0	13	2.2	4.3	-1.0	-4.2
11.00	35.5	152.3	2902	1.80	2076	6811	1	51	5.5	10.7	-8.3	-6.8
11.50	36.5	157.8	2919	1.81	2166	7107	1	51	5.0	9.8	-7.6	-6.1
12.00	37.1	158.0	2975	1.85	2256	7402	6	276	4.3	8.4	8.3	-0.9
12.50	37.5	153.5	3050	1.89	2346	7697	5	225	3.7	7.1	5.0	5.0
13.00	40.0	154.0	2896	1.80	2436	7992	3	135	2.7	5.2	-3.6	3.6
13.50	41.0	154.5	2899	1.80	2526	8288	3	127	2.0	3.9	-3.1	2.4
14.00	43.1	155.1	2769	1.73	2616	8583	3	119	3.2	6.1	-5.4	3.0
14.50	44.5	156.8	2748	1.71	2706	8878	1	25	4.5	8.8	-3.7	-8.0
15.00	43.2	159.1	2971	1.85	2796	9174	2	111	5.0	9.8	-9.1	3.4
15.50	48.5	161.7	2548	1.58	2886	9469	3	139	8.9	17.4	-11.4	13.1
16.00	50.2	163.4	2475	1.54	2976	9764	3	117	3.4	6.6	-5.9	3.0
16.50	51.8	165.1	2408	1.50	3066	10059	5	222	4.3	8.4	5.6	6.3
17.00	53.3	158.0	2348	1.46	3156	10355	2	89	14.6	28.3	-28.3	-0.7
17.50	53.9	186.2	2363	1.47	3246	10650	2	81	20.4	39.7	-39.2	-6.5
18.00	54.2	187.9	2402	1.49	3336	10945	2	68	2.7	5.2	-4.9	-1.9

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

SUMMARY FOR ASCENT # 19

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 7 AUGUST 1978

ELEVATION OF LAUNCH SITE: 30 FEET

TIME OF LAUNCH: 11:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	40.5	128.1	126	0.08	114	374	7	321	2.8	5.5	3.5	-4.2
1.00	51.9	140.8	169	0.11	222	729	0	354	0.9	1.7	0.2	-1.7
1.50	62.0	141.1	167	0.10	321	1053	5	218	0.2	0.3	0.2	0.3
2.00	68.0	137.3	167	0.10	420	1378	6	280	2.2	4.2	4.1	-0.7
2.50	61.5	123.4	279	0.17	519	1703	6	288	3.3	6.5	6.2	-2.0
3.00	59.9	121.2	355	0.22	618	2028	7	328	2.9	5.6	3.0	-4.7
3.50	58.0	132.8	441	0.27	713	2338	0	355	3.9	7.5	0.6	-7.5
4.00	56.7	142.1	526	0.33	807	2648	0	354	3.9	7.6	0.8	-7.5
4.50	54.6	146.7	636	0.40	902	2958	0	350	3.7	7.3	1.3	-7.1
5.00	53.5	150.2	733	0.46	996	3268	0	5	3.5	6.9	-0.6	-6.8
5.50	53.0	155.9	814	0.51	1086	3563	0	21	4.0	7.8	-2.7	-7.3
6.00	52.3	162.0	904	0.56	1176	3859	0	18	4.0	7.8	-2.4	-7.4
6.50	51.4	165.1	1006	0.63	1266	4154	0	9	3.9	7.7	-1.1	-7.6
7.00	50.3	167.4	1121	0.70	1356	4449	0	11	3.9	7.6	-1.5	-7.5
7.50	49.7	170.0	1221	0.76	1446	4744	0	18	3.9	7.7	-2.4	-7.3
8.00	49.0	172.6	1330	0.83	1536	5040	0	19	4.3	8.4	-2.8	-7.9
8.50	48.1	175.0	1454	0.90	1626	5335	0	17	4.8	9.2	-2.7	-8.8
9.00	47.0	176.8	1595	0.99	1716	5630	0	8	5.3	10.2	-1.5	-10.1
9.50	45.6	177.4	1763	1.10	1806	5926	0	4	5.3	10.3	-0.7	-10.3
10.00	44.7	178.0	1910	1.19	1896	6221	0	7	4.8	9.4	-1.1	-9.4
10.50	44.0	178.7	2050	1.27	1986	6516	0	13	4.5	8.8	-1.9	-8.6
11.00	43.6	179.8	2174	1.35	2076	6811	0	20	4.0	7.8	-2.7	-7.3
11.50	43.5	180.9	2276	1.41	2166	7107	0	18	4.3	8.4	-2.6	-8.0
12.00	42.9	181.7	2421	1.50	2256	7402	0	18	3.7	7.3	-2.2	-6.9
12.50	43.2	182.2	2494	1.55	2346	7697	2	45	1.2	2.3	-1.6	-1.6
13.00	44.5	182.8	2473	1.54	2436	7992	1	29	1.2	2.3	-1.1	-2.0
13.50	44.6	183.1	2555	1.59	2526	8288	0	14	2.3	4.5	-1.1	-4.4
14.00	45.0	183.4	2610	1.62	2616	8583	0	11	2.4	4.7	-0.9	-4.6
14.50	45.0	183.5	2700	1.68	2706	8878	0	8	2.8	5.5	-0.8	-5.5
15.00	45.1	183.7	2780	1.73	2796	9174	0	12	2.7	5.2	-1.1	-5.1
15.50	45.2	184.0	2860	1.78	2886	9469	0	17	2.5	4.9	-1.5	-4.7
16.00	45.4	184.4	2929	1.82	2976	9764	0	22	2.6	5.0	-1.9	-4.6
16.50	45.5	184.9	3007	1.87	3066	10059	1	27	2.0	4.0	-1.8	-3.5
17.00	46.0	185.3	3042	1.89	3156	10355	1	54	1.2	2.3	-1.8	-1.3
17.50	46.7	185.9	3053	1.90	3246	10650	2	87	1.0	1.9	-1.9	-0.1
18.00	47.5	186.4	3051	1.90	3336	10945	3	132	1.1	2.1	-1.6	1.4
18.50	48.6	186.9	3015	1.87	3426	11241	4	173	2.5	4.9	-0.6	4.9
19.00	50.4	187.1	2904	1.80	3516	11536	4	169	2.5	4.8	-0.9	4.7
19.50	51.4	187.8	2874	1.79	3606	11831	3	146	2.1	4.1	-2.3	3.4
20.00	52.7	188.8	2811	1.75	3696	12126	3	150	2.7	5.2	-2.6	4.5

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 20

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 7 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	35.3	142.9	153	0.09	114	374	7	313	5.2	10.1	7.4	-6.9
1.00	34.6	133.0	313	0.19	222	729	7	294	7.2	13.9	12.7	-5.8
1.50	29.0	121.8	568	0.35	321	1053	6	291	9.6	18.7	17.4	-6.8
2.00	25.3	118.9	876	0.54	420	1378	7	290	9.0	17.4	15.4	-8.2
2.50	24.9	120.0	1105	0.69	519	1703	7	304	8.3	16.2	13.4	-9.2
3.00	24.0	120.9	1375	0.85	618	2028	7	304	9.7	18.9	15.6	-10.7
3.50	22.7	121.5	1689	1.05	713	2338	7	301	9.8	19.0	16.4	-9.7
4.00	22.2	120.8	1963	1.22	807	2648	7	294	6.9	13.4	12.2	-5.4
4.50	23.1	120.0	2099	1.30	902	2958	6	288	3.6	7.0	6.6	-2.1
5.00	24.5	119.5	2172	1.35	996	3268	6	281	2.0	3.9	3.8	-0.8
5.50	26.0	119.0	2214	1.38	1086	3563	7	304	1.7	3.4	2.8	-1.9
6.00	27.2	119.7	2277	1.41	1176	3859	7	325	3.2	6.2	3.5	-5.1
6.50	27.8	121.0	2390	1.48	1266	4154	7	332	4.1	7.9	3.7	-7.0
7.00	28.5	122.1	2486	1.54	1356	4449	7	324	3.7	7.2	4.3	-5.8
7.50	29.0	122.9	2598	1.61	1446	4744	7	330	4.1	7.9	3.9	-6.9
8.00	29.5	125.1	2704	1.68	1536	5040	0	342	4.6	8.9	3.8	-8.4
8.50	29.9	126.4	2817	1.75	1626	5335	7	335	5.3	10.4	4.3	-9.4
9.00	29.8	128.2	2986	1.86	1716	5630	7	303	6.1	11.8	9.0	-6.4
9.50	29.5	126.0	3181	1.98	1806	5926	0	347	7.9	15.3	3.5	-14.9
10.00	29.3	133.2	3368	2.09	1896	6221	0	9	11.4	22.1	-3.5	-21.8
10.50	29.2	135.9	3543	2.20	1986	6516	0	354	7.8	15.1	1.6	-15.1
11.00	29.0	137.9	3734	2.32	2076	6811	0	358	7.4	14.3	0.6	-14.3
11.50	29.1	140.3	3881	2.41	2166	7107	0	346	5.8	11.2	2.7	-10.8
12.00	29.1	140.2	4042	2.51	2256	7402	7	330	4.3	8.4	4.2	-7.2
12.50	29.5	140.9	4136	2.57	2346	7697	0	341	3.6	6.9	2.3	-6.5
13.00	29.8	141.2	4243	2.64	2436	7992	0	338	4.0	7.7	2.9	-7.1
13.50	30.0	141.8	4365	2.71	2526	8288	0	346	4.1	7.9	2.0	-7.7
14.00	30.3	142.5	4466	2.78	2616	8583	0	359	3.8	7.3	0.2	-7.3
14.50	30.7	143.5	4547	2.83	2706	8878	0	13	3.6	7.0	-1.6	-6.9
15.00	31.2	144.6	4607	2.86	2796	9174	0	19	3.3	6.4	-2.1	-6.1
15.50	31.7	145.5	4663	2.90	2886	9469	0	18	3.5	6.7	-2.0	-6.4
16.00	32.1	146.6	4735	2.94	2976	9764	1	24	3.2	6.3	-2.6	-5.7
16.50	32.7	147.5	4766	2.96	3066	10059	0	359	5.2	10.1	0.2	-10.1
17.00	32.2	148.5	5002	3.11	3156	10355	0	13	3.4	6.7	-1.5	-6.5
17.50	33.4	149.2	4914	3.05	3246	10650	2	92	2.6	5.0	-5.0	0.2
18.00	34.1	150.0	4918	3.06	3336	10945	1	40	2.1	4.2	-2.7	-3.2
18.50	34.6	150.6	4958	3.08	3426	11241	1	59	1.4	2.8	-2.4	-1.4
19.00	35.5	151.0	4921	3.06	3516	11536	2	80	1.1	2.1	-2.0	-0.4
19.50	36.1	151.3	4937	3.07	3606	11831	1	67	1.0	2.0	-1.8	-0.8
20.00	36.9	151.7	4915	3.05	3696	12126	2	94	1.4	2.7	-2.6	0.2

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 21

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 7 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 23:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	37.9	143.5	139	0.09	114	374	7	323	4.1	8.0	4.9	-6.4
1.00	41.0	142.9	248	0.15	222	729	7	299	1.8	3.4	3.0	-1.7
1.50	52.8	133.1	339	0.15	321	1053	5	228	1.9	3.6	2.7	2.4
2.00	57.5	117.7	264	0.16	420	1378	6	248	2.5	4.9	4.6	1.8
2.50	57.0	108.6	333	0.21	519	1703	7	300	3.4	6.6	5.7	-3.3
3.00	52.6	118.8	468	0.29	618	2028	7	304	7.6	14.9	12.3	-8.4
3.50	42.0	117.7	785	0.49	713	2338	7	320	9.9	19.2	12.4	-14.7
4.00	37.5	130.5	1044	0.65	807	2648	7	333	8.8	17.2	7.8	-15.3
4.50	35.6	131.9	1255	0.78	902	2958	7	316	6.1	11.8	8.3	-8.4
5.00	35.1	131.8	1409	0.88	996	3268	7	311	4.4	8.6	6.5	-5.6
5.50	35.4	131.7	1520	0.94	1086	3563	7	313	3.9	7.5	5.5	-5.1
6.00	35.5	131.9	1640	1.02	1176	3859	7	314	3.6	7.0	5.0	-4.8
6.50	36.0	132.0	1734	1.08	1266	4154	7	313	3.5	6.8	5.0	-4.6
7.00	36.1	132.0	1851	1.15	1356	4449	7	316	3.7	7.1	4.9	-5.2
7.50	36.4	132.5	1953	1.21	1446	4744	7	330	3.9	7.6	3.8	-6.6
8.00	36.4	134.0	2075	1.29	1536	5040	0	338	4.2	8.1	3.1	-7.5
8.50	36.6	135.3	2181	1.36	1626	5335	0	344	3.7	7.2	2.0	-6.9
9.00	37.0	136.8	2269	1.41	1716	5630	0	356	3.9	7.6	0.5	-7.5
9.50	37.3	139.0	2363	1.47	1806	5926	0	9	3.9	7.6	-1.2	-7.5
10.00	38.0	141.2	2419	1.50	1896	6221	0	20	4.0	7.9	-2.7	-7.4
10.50	38.5	143.9	2489	1.55	1986	6516	1	25	5.2	10.3	-4.4	-7.3
11.00	38.8	147.6	2575	1.60	2076	6811	1	25	5.6	10.8	-4.6	-9.0
11.50	39.0	150.2	2667	1.66	2166	7107	1	26	5.7	11.0	-4.8	-9.9
12.00	39.1	153.6	2769	1.72	2256	7402	1	32	5.8	11.3	-6.0	-9.6
12.50	39.4	156.4	2849	1.77	2346	7697	1	3[illegible]	4.9	9.5	-4.8	-8.1
13.00	39.6	158.4	2937	1.83	2436	7992	1	31	4.3	8.3	-4.3	-7.1
13.50	40.0	160.0	3003	1.87	2526	8288	1	43	4.2	8.2	-5.6	-6.0
14.00	40.5	162.7	3056	1.90	2616	8583	1	48	4.2	8.1	-6.1	-5.4
14.50	41.0	164.7	3106	1.93	2706	8878	1	48	4.0	7.9	-5.9	-5.2
15.00	41.4	166.7	3165	1.97	2796	9174	1	46	4.2	8.1	-5.8	-5.6
15.50	41.7	168.6	3232	2.01	2886	9469	1	53	4.3	8.3	-6.6	-5.0
16.00	42.2	170.8	3275	2.04	2976	9764	1	66	4.5	8.8	-8.0	-3.6
16.50	42.8	173.2	3305	2.05	3066	10059	1	67	4.1	8.0	-7.3	-3.1
17.00	43.3	174.9	3343	2.08	3156	10355	1	61	3.5	6.8	-6.0	-3.3
17.50	43.7	176.5	3390	2.11	3246	10650	1	64	4.0	7.7	-6.9	-3.4
18.00	44.1	178.6	3436	2.14	3336	10945	1	64	3.6	7.0	-6.3	-3.1
18.50	44.5	179.8	3480	2.16	3426	11241	1	56	2.9	5.7	-4.7	-3.2
19.00	44.6	181.0	3535	2.20	3516	11536	1	52	3.2	6.2	-4.9	-3.8
19.50	45.0	182.2	3600	2.24	3606	11831	1	54	3.9	7.5	-6.1	-4.4
20.00	45.1	183.9	3677	2.28	3696	12126	1	58	4.4	8.6	-7.2	-4.6

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 1

LOCATION: NEWARK CALIFORNIA

SPECIFICS: LOST IN LIGHT SCATTERED FROM VERY LIGHT OVERCAST

DATE OF LAUNCH: 8 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	52.4	156.5	83	0.05	114	374	7	321	2.3	4.5	2.8	-3.5
1.00	57.2	141.4	139	0.09	229	749	5	227	0.4	0.9	0.6	-0.6
1.50	76.0	137.9	79	0.05	321	1053	6	289	0.2	0.4	0.3	-0.1
2.00	70.1	138.8	150	0.09	420	1378	7	305	0.9	1.7	1.4	-0.9
2.50	75.9	132.6	129	0.08	519	1703	7	335	0.9	1.7	0.7	-1.5
3.00	71.9	142.9	200	0.12	618	2028	0	354	3.8	7.4	0.7	-7.4
3.50	64.5	159.7	337	0.21	713	2338	0	359	5.1	9.9	0.2	-9.9
4.00	59.0	164.8	481	0.30	807	2648	0	6	4.7	9.2	-0.9	-9.1
4.50	56.0	171.5	604	0.38	902	2958	0	14	4.5	8.7	-2.2	-8.4
5.00	53.7	175.3	727	0.45	996	3268	0	17	4.5	8.8	-2.6	-8.4
5.50	51.6	179.4	856	0.53	1086	3563	0	18	4.4	8.6	-2.6	-8.2
6.00	50.1	181.3	978	0.61	1176	3859	0	11	3.7	7.1	-1.4	-7.0
6.50	49.6	181.8	1072	0.67	1266	4154	0	1	3.3	6.3	-0.1	-6.3
7.00	49.0	181.2	1174	0.73	1356	4449	0	354	4.3	8.4	0.9	-8.3
7.50	47.3	180.2	1329	0.83	1446	4744	0	354	4.2	8.2	0.8	-8.2
8.00	47.0	180.0	1427	0.89	1536	5040	0	350	4.2	8.1	1.4	-8.0
8.50	45.5	178.6	1575	0.98	1626	5335	0	347	4.9	9.6	2.2	-9.3
9.00	44.9	177.7	1716	1.07	1716	5630	0	346	4.9	9.5	2.3	-9.3
9.50	44.0	176.6	1864	1.16	1806	5926	0	347	4.9	9.5	2.1	-9.3
10.00	43.3	176.2	2006	1.25	1896	6221	0	350	4.2	8.2	1.4	-8.1
10.50	43.1	175.8	2116	1.31	1986	6516	0	349	3.0	5.7	1.1	-5.6
11.00	43.5	175.6	2181	1.36	2076	6811	0	346	1.5	2.9	0.7	-2.9
11.50	44.4	175.4	2206	1.37	2166	7107	0	359	1.1	2.2	0.0	-2.2
12.00	45.0	175.7	2250	1.40	2256	7402	1	60	0.9	1.7	-1.4	-0.8
12.50	46.4	176.6	2228	1.38	2346	7697	4	194	0.4	0.8	0.2	0.8
13.00	47.5	175.5	2227	1.38	2436	7992	7	330	1.2	2.3	1.2	-2.0
13.50	47.7	175.8	2293	1.42	2526	8288	0	6	2.2	4.4	-0.4	-4.3

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 2

LOCATION: NEWARK CALIFORNIA

SPECIFICS: CHANGE IN WIND DIRECTION

DATE OF LAUNCH: 8 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 11:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	46.8	112.2	101	0.06	114	374	7	299	2.6	5.1	4.4	-2.5
1.00	54.0	119.1	157	0.10	222	729	7	312	2.0	4.0	2.9	-2.6
1.50	55.0	123.0	221	0.14	321	1053	5	247	0.3	0.5	0.5	0.2
2.00	68.0	114.8	167	0.10	420	1378	7	320	0.0	0.1	0.1	-0.1
2.50	66.5	123.2	223	0.14	519	1703	0	357	1.5	3.0	0.2	-3.0
3.00	69.8	135.8	225	0.14	618	2028	1	51	2.6	5.1	-3.9	-3.2
3.50	72.0	163.5	230	0.14	713	2338	1	59	4.4	8.5	-7.3	-4.4
4.00	69.1	192.8	306	0.19	807	2648	1	57	4.8	9.4	-7.9	-5.0
4.50	65.1	205.9	416	0.26	902	2958	1	47	3.9	7.7	-5.6	-5.3
5.00	62.3	207.5	520	0.32	996	3268	1	58	4.1	7.9	-6.7	-4.2
5.50	59.5	217.3	636	0.40	1086	3563	1	60	4.6	8.9	-7.7	-4.4
6.00	56.8	218.6	766	0.48	1176	3859	1	47	4.4	8.6	-6.3	-5.9
6.50	54.5	220.1	899	0.56	1266	4154	1	43	3.8	7.5	-5.1	-5.4
7.00	53.6	219.7	995	0.62	1356	4449	1	36	2.8	5.5	-3.3	-4.5
7.50	53.4	219.5	1069	0.66	1446	4744	1	53	2.3	4.5	-3.6	-2.7
8.00	53.5	221.3	1132	0.70	1536	5040	2	85	2.1	4.2	-4.2	-0.4
8.50	54.3	224.0	1164	0.72	1626	5335	2	109	2.2	4.3	-4.0	1.4
9.00	55.2	227.2	1188	0.74	1716	5630	2	112	2.5	4.8	-4.5	1.8
9.50	55.7	230.4	1228	0.76	1806	5926	2	100	2.5	4.8	-4.8	0.8
10.00	55.8	232.5	1284	0.80	1896	6221	2	93	2.7	5.2	-5.2	0.3
10.50	55.7	235.0	1351	0.84	1986	6516	2	92	3.0	5.8	-5.8	0.2
11.00	55.4	237.1	1428	0.89	2076	6811	2	87	3.3	6.5	-6.5	-0.3
11.50	54.8	239.0	1524	0.95	2166	7107	2	79	4.5	8.8	-8.6	-1.7
12.00	53.2	240.5	1683	1.05	2256	7402	2	77	3.[illegible]	6.0	-5.8	-1.4
12.50	51.0	240.9	1702	1.06	2346	7697	1	61	1.4	2.7	-2.3	-1.3
13.00	54.0	240.5	1766	1.10	2436	7992	1	54	2.2	4.3	-3.4	-2.5
13.50	54.0	240.4	1831	1.14	2526	8288	1	48	2.0	3.9	-2.9	-2.6
14.00	54.2	239.7	1882	1.17	2616	8583	0	13	2.0	3.8	-0.8	-3.7
14.50	54.7	237.8	1912	1.19	2706	8878	0	355	2.4	4.6	0.4	-4.6
15.00	55.1	235.9	1946	1.21	2796	9174	0	342	2.3	4.5	1.4	-4.3
15.50	55.9	233.8	1950	1.21	2886	9469	7	319	2.2	4.2	2.7	-3.2
16.00	56.9	232.1	1936	1.20	2976	9764	7	302	1.8	3.5	3.0	-1.8
16.50	58.0	230.8	1912	1.19	3066	10059	7	294	1.6	3.1	2.9	-1.3
17.00	59.0	229.5	1893	1.18	3156	10355	7	296	1.4	2.7	2.4	-1.2
17.50	59.9	228.5	1878	1.17	3246	10650	7	296	1.1	2.1	1.8	-0.9
18.00	60.7	227.1	1869	1.16	3336	10945	6	282	1.1	2.1	2.0	-0.4
18.50	61.7	225.9	1841	1.14	3426	11241	6	261	1.6	3.1	3.1	0.5
19.00	63.0	226.0	1788	1.11	3516	11536	6	259	1.7	3.3	3.3	0.6
19.50	64.0	225.1	1756	1.09	3606	11831	6	267	1.5	3.0	3.0	0.1
20.00	65.0	224.0	1721	1.07	3696	12126	6	268	1.6	3.1	3.1	0.1

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 3

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 8 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	36.9	141.8	134	0.08	114	374	7	325	5.1	10.0	5.7	*8.2
1.00	35.0	144.9	308	0.19	222	729	7	331	4.9	9.5	4.6	*8.3
1.50	36.5	148.3	426	0.26	321	1053	7	330	3.3	6.3	3.1	*5.5
2.00	39.4	147.0	504	0.31	420	1378	6	289	2.9	5.6	5.3	*1.8
2.50	42.0	137.1	570	0.35	519	1703	6	270	3.6	7.0	7.0	0.0
3.00	43.4	130.7	647	0.40	618	2028	6	282	4.4	8.5	8.3	*1.8
3.50	41.5	126.3	799	0.50	713	2338	6	291	5.5	10.6	9.9	*3.7
4.00	39.8	124.0	961	0.60	807	2648	6	291	5.7	11.0	10.3	*4.0
4.50	38.4	121.8	1130	0.70	902	2958	6	291	4.8	9.4	8.7	*3.3
5.00	38.5	121.0	1245	0.77	996	3268	7	295	4.1	7.9	7.2	*3.3
5.50	38.2	120.6	1372	0.85	1086	3563	7	295	4.7	9.1	8.3	*3.9
6.00	37.5	119.9	1525	0.95	1176	3859	6	287	4.9	9.5	9.1	*2.8
6.50	37.2	118.2	1660	1.03	1266	4154	6	282	4.4	8.6	8.4	*1.8
7.00	37.2	117.3	1779	1.11	1356	4449	7	293	4.0	7.7	7.1	*3.0
7.50	37.2	117.5	1897	1.18	1446	4744	7	299	4.0	7.7	6.7	*3.7
8.00	37.2	117.5	2016	1.25	1536	5040	7	300	4.0	7.7	6.6	*3.9
8.50	37.2	117.8	2134	1.33	1626	5335	7	312	4.1	7.9	5.8	*5.3
9.00	37.2	119.1	2253	1.40	1716	5630	7	327	4.5	8.7	4.7	*7.3
9.50	37.2	121.0	2371	1.47	1806	5926	7	336	4.8	9.4	3.8	*8.6
10.00	37.2	123.1	2490	1.55	1896	6221	0	343	4.5	8.8	2.6	*8.4
10.50	37.5	125.0	2580	1.60	1986	6516	0	345	4.5	8.8	2.2	*8.5
11.00	37.5	127.0	2698	1.68	2076	6811	0	345	5.1	10.0	2.6	*9.6
11.50	37.4	129.0	2825	1.76	2166	7107	0	340	5.4	10.5	3.6	*9.9
12.00	37.1	130.4	2975	1.85	2256	7402	0	340	5.3	10.4	3.6	*9.7
12.50	37.0	132.0	3105	1.93	2346	7697	7	305	5.6	10.8	8.8	*6.3
13.00	36.3	129.9	3308	2.06	2436	7992	0	346	6.2	12.0	2.9	*11.7
13.50	36.4	135.5	3418	2.12	2526	8288	0	14	8.2	15.9	*3.7	*15.4
14.00	36.3	137.0	3553	2.21	2616	8583	0	347	5.2	10.1	2.4	*9.8
14.50	36.2	138.0	3689	2.29	2706	8878	0	349	5.0	9.8	1.9	*9.6
15.00	36.2	139.4	3812	2.37	2796	9174	0	350	5.0	9.8	1.8	*9.6
15.50	36.1	140.3	3949	2.45	2886	9469	0	342	5.0	9.6	3.0	*9.1
16.00	36.0	141.0	4088	2.54	2976	9764	0	339	6.0	11.6	4.2	*10.8
16.50	35.5	141.8	4290	2.67	3066	10059	0	16	9.3	18.0	*4.9	*17.4
17.00	35.4	146.9	4432	2.75	3156	10355	0	338	5.8	11.3	4.3	*10.5
17.50	35.0	143.0	4627	2.88	3246	10650	6	287	6.9	13.4	12.8	*3.9
18.00	35.0	143.7	4756	2.96	3336	10945	0	348	4.7	9.1	1.9	*8.9
18.50	35.0	144.4	4884	3.03	3426	11241	0	348	4.7	9.1	1.9	*8.9
19.00	35.0	145.0	5013	3.11	3516	11536	0	354	4.9	9.5	1.0	*9.4
19.50	35.0	146.0	5141	3.19	3606	11831	0	357	5.0	9.7	0.6	*9.7
20.00	35.0	146.7	5270	3.27	3696	12126	0	353	4.8	9.3	1.2	*9.2

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 4

LOCATION: NEWARK CALIFORNIA

SPECIFICS: LOST IN BACKGROUND LIGHTS

DATE OF LAUNCH: 8 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 23:00 P.D.T.

TIME MINUTES	ELEV. D E G R E E S	AZIMUTH D E G R E E S	R A N G E METERS	R A N G E MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	D I R E C T I O N CLASS 0- 7	D I R E C T I O N DEGREES	-----V E L O C I T Y----- METERS/SEC (SPEED)	NAUTICAL MILES PER HOUR (SPEED)	(U)	(V)
0.50	51.5	153.3	86	0.05	114	374	7	328	4.4	8.5	4.5	-7.2
1.00	39.6	147.9	261	0.16	222	729	7	330	3.1	6.0	3.0	-5.2
1.50	49.3	151.3	271	0.17	321	1053	4	167	1.2	2.4	-0.5	2.3
2.00	65.0	140.8	193	0.12	420	1378	4	190	3.0	5.9	1.1	5.8
2.50	71.3	110.1	174	0.11	519	1703	6	250	2.6	5.0	4.7	1.7
3.00	65.2	110.0	253	0.18	618	2028	7	309	5.3	10.3	8.0	-6.4
3.50	55.5	122.2	486	0.30	713	2338	7	316	7.2	14.1	9.7	-10.2
4.00	48.9	126.0	699	0.43	807	2648	7	315	6.2	12.1	8.5	-8.5
4.50	46.4	127.8	853	0.53	902	2958	7	318	5.1	9.9	6.6	-7.4
5.00	44.7	129.8	1000	0.62	996	3268	7	323	6.3	12.2	7.4	-9.7
5.50	41.5	132.4	1221	0.76	1086	3563	7	323	7.6	14.7	8.8	-11.8
6.00	39.0	134.0	1445	0.90	1176	3859	7	328	6.3	12.3	6.4	-10.5
6.50	38.4	136.2	1590	0.99	1266	4154	0	342	5.3	10.4	3.2	-9.9
7.00	37.9	139.0	1734	1.08	1356	4449	0	346	5.6	10.9	2.6	-10.6
7.50	37.3	141.3	1890	1.17	1446	4744	0	346	5.4	10.5	2.6	-10.2
8.00	37.0	143.1	2030	1.26	1536	5040	0	352	4.2	8.2	1.1	-8.1
8.50	37.5	144.8	2111	1.31	1626	5335	0	8	3.4	6.6	-0.9	-6.6
9.00	38.1	146.9	2181	1.36	1716	5630	0	10	4.2	8.2	-1.5	-8.1
9.50	38.1	149.3	2296	1.43	1806	5926	0	10	5.2	10.2	-1.8	-10.0
10.00	38.0	152.0	2419	1.50	1896	6221	0	12	6.2	12.0	-2.5	-11.7
10.50	37.5	154.9	2580	1.60	1986	6516	0	10	6.5	12.7	-2.3	-12.5
11.00	37.1	157.1	2737	1.70	2076	6811	0	16	6.3	12.3	-3.4	-11.8
11.50	36.9	159.9	2877	1.79	2166	7107	0	14	6.6	12.8	-3.0	-12.4
12.00	36.3	161.5	3063	1.90	2256	7402	0	12	6.6	12.8	-2.6	-12.6
12.50	36.0	163.6	3221	2.00	2346	7697	1	24	6.4	12.4	-5.0	-11.4
13.00	35.8	165.9	3367	2.09	2436	7993	1	24	6.6	12.9	-5.3	-11.8
13.50	35.5	167.8	3533	2.20	2526	8288	1	31	7.1	13.8	-7.1	-11.9
14.00	35.4	170.6	3673	2.28	2616	8583	1	35	7.9	15.4	-8.9	-12.6
14.50	34.9	173.0	3870	2.40	2706	8878	1	30	11.3	21.9	-11.1	-18.9
15.00	33.6	176.5	4315	2.68	2796	9174	0	17	10.5	20.4	-6.0	-19.5
15.50	32.9	176.3	4452	2.77	2886	9469	0	353	7.9	15.3	1.9	-15.2

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 5

LOCATION: PEARB CALIFORNIA

SPECIFICS: 1001 BALLOON --- LIGHT NOT BRIGHT ENOUGH

DATE OF LAUNCH: 9 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	N.S.L. ALTITUDE METERS	N.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	64.2	146.5	52	0.03	114	374	7	315	0.9	1.8	1.3	-1.3
1.00	75.5	134.9	56	0.03	222	729	4	181	1.3	2.5	0.0	2.5
1.50	81.8	40.8	45	0.03	321	1053	4	164	3.4	6.5	-1.8	6.3
2.00	69.4	154.2	156	0.10	420	1378	2	72	3.2	6.2	-5.9	-1.9
2.50	73.2	260.8	155	0.10	519	1703	0	12	1.1	2.1	-0.4	-2.1
3.00	81.1	342.1	96	0.06	618	2028	0	0	6.0	11.7	0.0	-11.7
3.50	59.6	201.7	415	0.26	713	2338	0	10	7.3	14.3	-3.5	-14.0
4.00	55.9	197.2	358	0.22	807	2648	0	10	3.2	6.3	-1.1	-6.2
4.50	55.9	198.0	606	0.38	902	2958	0	20	7.9	15.3	-5.3	-14.4
5.00	50.0	198.9	831	0.52	996	3268	0	16	7.6	14.9	-4.0	-14.3
5.50	45.4	197.0	1065	0.66	1086	3563	0	356	4.7	9.1	0.6	-9.1
6.00	46.9	193.2	1095	0.68	1176	3859	0	0	7.8	15.1	-0.3	-15.1
6.50	39.7	191.9	1518	0.94	1266	4154	0	9	10.6	20.5	-3.1	-20.3
7.00	38.6	191.5	1728	1.07	1356	4449	0	7	6.0	11.7	-1.5	-11.6
7.50	37.5	191.0	1877	1.17	1446	4744	0	7	7.1	13.8	-1.7	-13.7
8.00	35.4	190.6	2153	1.34	1536	5040	0	11	8.9	17.3	-3.3	-17.0
8.50	33.9	191.0	2411	1.50	1626	5335	0	13	8.2	15.9	-3.5	-15.5
9.00	32.9	191.0	2643	1.64	1716	5630	0	10	7.8	15.2	-2.6	-15.0
9.50	32.0	190.8	2881	1.79	1806	5926	0	4	8.4	16.4	-1.2	-16.3
10.00	31.0	189.9	3145	1.95	1896	6221	0	354	7.0	13.5	1.4	-13.4
10.50	31.1	188.7	3282	2.04	1986	6516	0	349	6.3	12.2	2.3	-12.0
11.00	30.6	187.7	3500	2.17	2076	6811	0	352	6.9	13.5	2.0	-13.3
11.50	30.4	186.8	3682	2.29	2166	7107	0	350	6.9	13.4	2.4	-13.2
12.00	30.0	185.8	3897	2.42	2256	7402	0	351	8.1	15.8	2.4	-15.6
12.50	29.4	185.6	4153	2.58	2346	7697	0	355	8.2	16.0	1.4	-15.9
13.00	29.0	184.6	4384	2.72	2436	7992	0	355	7.0	13.5	1.2	-13.5
13.50	28.9	184.1	4565	2.84	2526	8288	0	347	7.4	14.3	3.2	-13.9
14.00	28.5	183.0	4807	2.99	2616	8583	0	2	8.6	16.6	-0.6	-16.6
14.50	28.0	183.9	5078	3.16	2706	8878	0	9	6.3	12.2	-1.8	-12.0
15.00	28.3	183.4	5182	3.22	2796	9174	7	333	5.2	10.1	4.5	-9.0
15.50	28.3	182.2	5349	3.32	2886	9469	0	346	7.0	13.7	3.9	-13.3
16.00	26.0	182.1	5586	3.47	2976	9764	0	354	8.5	16.5	1.7	-16.4
16.50	27.6	181.5	5853	3.64	3066	10059	0	356	7.8	15.2	1.2	-15.1
17.00	27.5	181.6	6051	3.76	3156	10355	0	3	6.6	12.9	-0.7	-12.9
17.50	27.4	181.6	6251	3.88	3246	10650	0	2	6.6	12.9	-0.4	-12.9

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 6

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 9 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 09:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	88.1	181.0	4	0.00	114	374	3	135	0.4	0.7	-0.5	0.5
1.00	84.3	315.4	22	0.01	222	729	3	139	1.1	2.0	-1.3	1.5
1.50	79.1	316.9	61	0.04	321	1053	3	150	1.7	3.2	-1.6	2.8
2.00	73.8	327.4	120	0.07	420	1378	4	161	1.7	3.3	-1.1	3.1
2.50	72.9	331.8	158	0.10	519	1703	0	12	1.2	2.2	-0.5	-2.2
3.00	82.0	293.1	86	0.05	618	2028	0	4	3.8	7.3	-0.4	-7.3
3.50	80.1	225.8	123	0.08	713	2338	0	3	4.5	8.7	-0.4	-8.7
4.00	72.5	201.2	253	0.16	807	2648	0	359	5.4	10.5	0.2	-10.5
4.50	65.0	191.2	418	0.26	902	2958	0	3	6.0	11.7	-0.7	-11.7
5.00	58.5	190.7	607	0.38	996	3268	0	12	6.6	12.8	-2.8	-12.5
5.50	53.0	191.8	814	0.51	1086	3563	0	20	4.2	8.2	-2.8	-7.7
6.00	53.8	193.4	856	0.53	1176	3859	0	15	8.2	15.9	-4.1	-15.4
6.50	44.0	193.0	1305	0.81	1266	4154	0	6	10.9	21.1	-2.3	-21.0
7.00	41.9	190.3	1505	0.93	1356	4449	0	355	9.2	17.8	1.5	-17.8
7.50	38.1	187.7	1837	1.14	1446	4744	0	357	17.1	33.3	1.5	-33.2
8.00	31.3	185.1	2516	1.56	1536	5040	0	346	8.6	16.6	3.9	-16.2
8.50	34.9	183.1	2322	1.44	1626	5335	6	285	2.3	4.5	4.4	-1.2
9.00	33.9	182.0	2545	1.58	1716	5630	0	354	9.2	17.9	2.0	-17.8
9.50	32.1	181.3	2869	1.78	1806	5926	0	354	6.7	13.0	1.4	-13.0
10.00	32.7	180.9	2944	1.83	1896	6221	0	352	4.6	9.0	1.2	-8.9
10.50	32.2	180.5	3144	1.95	1986	6516	0	353	6.2	12.0	1.5	-11.9
11.00	32.1	180.2	3313	2.06	2076	6811	0	356	6.4	12.4	0.9	-12.3
11.50	31.5	180.0	3525	2.19	2166	7107	0	1	6.7	13.0	-0.2	-13.0
12.00	31.2	180.1	3715	2.31	2256	7402	0	7	5.9	11.5	-1.3	-11.5
12.50	31.1	180.6	3879	2.41	2346	7697	0	1[illegible]	5.8	11.3	-2.[illegible]	11.2
13.00	30.9	181.0	4060	2.52	2436	7992	0	10	6.7	13.1	-2.3	-12.9
13.50	30.5	181.5	4278	2.66	2526	8288	0	14	7.8	15.2	-3.6	-14.8
14.00	30.0	182.3	4521	2.81	2616	8583	0	20	7.0	13.5	-4.6	-12.7
14.50	30.0	183.1	4677	2.91	2706	8878	0	22	5.5	10.7	-4.0	-9.9
15.00	30.0	183.6	4832	3.00	2796	9174	0	15	6.3	12.3	-3.2	-11.9
15.50	29.7	184.0	5049	3.14	2886	9469	0	11	7.0	13.6	-2.6	-13.4
16.00	29.5	184.2	5249	3.26	2976	9764	0	7	6.7	13.1	-1.5	-13.0
16.50	29.3	184.2	5453	3.39	3066	10059	0	358	5.7	11.1	0.5	-11.1
17.00	29.4	183.8	5680	3.47	3156	10355	0	346	6.0	11.7	2.0	-11.4
17.50	29.2	183.1	5797	3.60	3246	10650	0	341	6.6	12.9	4.3	-12.2
18.00	29.2	182.3	5958	3.70	3336	10945	7	332	6.7	12.9	6.0	-11.5
18.50	29.1	181.2	6145	3.82	3426	11241	7	328	6.9	13.4	7.0	-11.4
19.00	29.1	180.2	6306	3.92	3516	11536	7	320	5.9	11.5	7.4	-8.8
19.50	29.3	179.1	6415	3.99	3606	11831	7	309	5.6	10.9	8.5	-6.8
20.00	29.5	177.9	6522	4.05	3696	12126	7	307	5.8	11.2	9.0	-6.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 7

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 9 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 13:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	46.3	131.0	103	0.06	114	374	7	313	3.0	5.9	4.3	-4.0
1.00	50.0	133.1	181	0.11	222	729	6	284	1.3	2.5	2.5	-0.6
1.50	60.7	119.3	177	0.11	321	1053	6	253	1.3	2.5	2.3	0.7
2.00	61.1	116.4	229	0.14	420	1378	7	302	1.9	3.7	3.1	-1.9
2.50	60.5	120.3	290	0.18	519	1703	7	334	2.3	4.6	2.0	-4.1
3.00	60.2	130.7	350	0.22	618	2028	7	334	2.1	4.0	1.8	-3.6
3.50	60.5	130.2	400	0.25	713	2338	7	312	1.9	3.6	2.7	-2.4
4.00	60.0	130.9	462	0.29	807	2648	0	18	5.9	11.4	-3.5	-10.8
4.50	55.1	161.7	625	0.39	902	2958	0	13	8.7	16.9	-3.8	-16.4
5.00	49.6	164.1	843	0.52	996	3268	0	355	8.9	17.3	1.5	-17.2
5.50	43.2	167.9	1150	0.71	1086	3563	0	0	10.8	21.0	0.0	-21.0
6.00	38.4	171.0	1476	0.92	1176	3859	0	3	10.6	20.6	-0.9	-20.6
6.50	35.4	173.1	1773	1.10	1266	4154	0	2	10.4	20.3	-0.7	-20.3
7.00	32.8	174.3	2095	1.30	1356	4449	0	1	10.5	20.3	-0.0	-20.3
7.50	31.0	175.1	2397	1.49	1446	4744	0	4	10.8	21.1	-1.6	-21.0
8.00	29.2	176.7	2738	1.70	1536	5040	0	4	10.7	20.8	-1.3	-20.8
8.50	28.1	176.9	3034	1.89	1626	5335	0	358	10.1	19.6	0.6	-19.6
9.00	27.1	177.0	3342	2.08	1716	5630	0	358	10.7	20.7	0.7	-20.7
9.50	26.1	177.1	3674	2.28	1806	5926	0	358	11.2	21.8	0.9	-21.8
10.00	25.2	177.1	4016	2.50	1896	6221	0	0	11.2	21.7	0.9	-21.7
10.50	24.5	177.2	4345	2.70	1986	6516	0	2	10.2	19.8	0.0	-19.8
11.00	24.1	177.5	4628	2.88	2076	6811	0	0	10.0	19.5	-0.7	-19.5
11.50	23.6	177.8	4944	3.07	2166	7107	0	359	10.0	19.3	0.0	-19.3
12.00	23.3	177.9	5224	3.25	2256	7402	0	2	9.5	18.4	0.4	-18.4
12.50	23.0	177.9	5513	3.43	2346	7697	0	3	4.3	8.4	-0.3	-8.4
13.00	23.9	178.0	5484	3.41	2436	7992	0	2	8.6	16.6	-0.8	-16.6
13.50	22.7	178.3	6024	3.74	2526	8288	0	5	14.7	28.5	-0.8	-28.5
14.00	22.3	178.5	6364	3.95	2616	8583	0	9	10.5	20.3	-1.7	-20.3
14.50	22.1	178.9	6649	4.13	2706	8878	0	17	8.6	16.7	-2.7	-16.5
15.00	22.1	179.3	6871	4.27	2796	9174	0	22	7.1	13.9	-4.1	-13.2
15.50	22.2	180.0	7057	4.39	2886	9469	0	21	6.7	12.9	-4.8	-12.0
16.00	22.3	180.5	7242	4.50	2976	9764	0	21	5.9	11.4	-4.2	-10.7
16.50	22.5	181.0	7387	4.59	3066	10059	0	11	5.1	9.9	-3.5	-9.3
17.00	22.7	181.3	7530	4.68	3156	10355	0	1	5.4	10.5	-1.9	-10.3
17.50	22.8	181.3	7708	4.79	3248	10650	0	354	5.2	10.2	-0.2	-10.2
18.00	23.0	181.3	7845	4.87	3336	10945	0	343	5.2	10.1	1.1	-10.1
18.50	23.1	181.1	8018	4.98	3426	11241	0	330	6.0	11.7	3.4	-11.2
19.00	23.2	180.5	8189	5.09	3516	11536	7	326	5.1	9.9	5.0	-8.5
19.50	23.5	180.0	8279	5.14	3606	11831	7	328	5.2	10.0	5.7	-8.3
20.00	23.6	179.3	8446	5.25	3696	12126	7		6.5	12.7	6.7	-10.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 8

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 9 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	22.5	149.1	261	0.16	114	374	7	329	7.4	14.3	7.3	-12.3
1.00	26.0	149.2	443	0.28	222	729	7	321	4.1	8.1	5.1	-6.2
1.50	31.8	145.0	508	0.32	321	1053	6	274	2.5	4.9	4.9	-0.3
2.00	37.3	136.0	543	0.34	420	1378	6	253	3.0	5.8	5.6	1.8
2.50	41.1	128.0	568	0.37	519	1703	6	263	3.1	6.0	5.9	0.8
3.00	42.4	123.2	670	0.42	618	2028	6	283	3.8	7.3	7.2	-1.6
3.50	41.5	121.0	799	0.50	713	2338	7	310	5.1	9.9	7.6	-6.4
4.00	39.4	125.3	975	0.61	807	2648	7	306	6.7	12.9	10.5	-7.6
4.50	36.8	122.6	1197	0.74	902	2958	7	309	10.1	19.6	15.1	-12.4
5.00	32.1	126.8	1578	0.98	996	3268	7	323	13.2	25.6	15.3	-20.5
5.50	28.9	130.8	1956	1.22	1086	3563	7	328	13.4	26.1	13.6	-22.3
6.00	26.5	134.1	2347	1.46	1176	3859	7	331	12.8	24.9	12.0	-21.8
6.50	25.1	136.5	2690	1.67	1266	4154	0	339	12.0	23.4	8.5	-21.8
7.00	24.1	139.8	3018	1.88	1356	4449	7	336	11.7	22.7	9.4	-20.6
7.50	23.2	140.4	3360	2.09	1446	4744	7	331	9.9	19.3	9.4	-16.8
8.00	23.0	141.6	3604	2.24	1536	5040	7	336	9.5	18.4	7.6	-16.8
8.50	22.5	142.6	3911	2.43	1626	5335	7	337	9.4	18.2	7.0	-16.8
9.00	22.4	143.7	4149	2.58	1716	5630	7	337	7.5	14.5	5.6	-13.4
9.50	22.5	144.1	4346	2.70	1806	5926	0	350	6.0	11.6	2.1	-11.4
10.00	22.9	145.2	4474	2.78	1896	6221	0	356	7.0	13.7	1.0	-13.6
10.50	22.8	146.8	4710	2.93	1986	6516	0	347	9.3	18.0	4.1	-17.5
11.00	22.5	148.0	4997	3.11	2076	6811	0	341	8.6	16.8	5.5	-15.9
11.50	22.5	148.2	5215	3.24	2166	7107	0	353	7.9	15.4	1.9	-15.2
12.00	22.5	150.1	5132	3.38	2256	7402	0	0	8.4	16.3	0.0	-16.3
12.50	22.5	150.9	5649	3.51	2346	7697	0	347	8.5	16.6	3.9	-16.1
13.00	22.3	151.5	5925	3.68	2436	7992	0	346	7.0	13.5	3.4	-13.1
13.50	22.6	151.9	6054	3.76	2526	8288	0	348	6.5	12.7	2.7	-12.4
14.00	22.5	152.5	6301	3.92	2616	8583	0	349	6.4	12.5	2.4	-12.2
14.50	22.8	152.9	6423	3.99	2706	8878	0	353	5.4	10.5	1.2	-10.4
15.00	22.9	153.5	6605	4.10	2796	9174	0	353	6.4	12.4	1.6	-12.3
15.50	23.0	154.0	6785	4.22	2886	9469	7	334	4.3	8.4	3.7	-7.5
16.00	23.4	153.5	6863	4.26	2976	9764	0	353	4.4	8.6	1.1	-8.6
16.50	23.5	154.7	7038	4.37	3066	10059	0	6	4.2	8.1	-0.9	-8.1
17.00	24.0	154.6	7075	4.40	3156	10355	7	330	2.3	4.5	2.3	-3.9
17.50	24.3	154.6	7176	4.46	3246	10650	7	325	3.9	7.6	4.3	-6.3
18.00	24.5	154.3	7307	4.54	3336	10945	7	320	5.1	9.8	6.4	-7.5
18.50	24.8	154.0	7470	4.64	3426	11241	7	323	5.5	10.7	6.5	-8.5
19.00	24.7	153.8	7631	4.74	3516	11536	7	318	4.9	9.6	6.4	-7.1
19.50	24.9	153.4	7756	4.82	3606	11831	7	319	5.5	10.6	7.0	-8.0
20.00	24.9	153.2	7949	4.94	3696	12126	7	325	6.5	12.7	7.2	-10.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 9

LOCATION: NEWARK CALIFORNIA

SPECIFICS: BALLOON LOST IN MOONLIGHT AND BACKGROUND

DATE OF LAUNCH: 9 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 21:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	31.4	151.2	177	0.11	114	374	7	331	5.7	11.0	5.4	-9.6
1.00	32.5	150.8	339	0.21	222	729	7	331	2.9	5.6	2.7	-4.9
1.50	42.1	151.2	349	0.22	321	1053	3	139	0.5	0.9	-0.6	0.7
2.00	53.1	151.9	311	0.19	420	1378	4	187	1.5	3.0	0.4	2.9
2.50	61.4	140.1	280	0.17	519	1703	6	253	3.1	6.0	5.8	1.8
3.00	57.4	124.0	391	0.24	618	2028	6	284	5.6	10.9	10.6	-2.6
3.50	50.3	120.2	587	0.36	713	2338	7	305	7.1	13.7	11.2	-7.9
4.00	44.5	124.7	815	0.51	807	2648	7	319	11.6	22.5	14.8	-16.9
4.50	35.3	130.3	1265	0.79	902	2958	7	323	14.1	27.5	16.4	-22.0
5.00	31.1	134.2	1641	1.02	996	3268	7	327	13.3	25.8	14.0	-21.7
5.50	27.9	136.8	2040	1.27	1086	3563	7	334	11.4	22.1	9.7	-19.9
6.00	27.0	140.0	2296	1.43	1176	3859	0	340	9.5	18.5	6.2	-17.4
6.50	26.1	141.9	2572	1.60	1266	4154	0	343	10.4	20.3	5.9	-19.4
7.00	25.1	144.9	2882	1.79	1356	4449	5	236	1.0	1.9	1.6	1.1
7.50	29.2	140.6	2577	1.60	1446	4744	0	339	10.3	20.0	7.1	-18.7
8.00	23.7	147.4	3485	2.17	1536	5040	0	345	21.9	42.6	11.2	-41.1
8.50	23.0	148.7	3816	2.37	1626	5335	0	338	10.9	21.1	6.0	-19.5
9.00	22.5	149.0	4128	2.57	1716	5630	7	337	9.6	18.7	7.3	-17.2
9.50	22.3	149.8	4389	2.73	1806	5926	6	275	13.5	26.3	26.2	-2.4
10.00	22.1	140.9	4655	2.89	1896	6221	0	341	7.9	15.3	4.9	-14.4
10.50	22.2	150.9	4852	3.01	1986	6516	1	43	28.4	55.1	-37.3	-40.6

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 10

LOCATION: NEWARK CALIF

SPECIFICS:

DATE OF LAUNCH: 10 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 01:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL (SPEED)	VELOCITY MILES PER HOUR (U)	VELOCITY MILES PER HOUR (V)
0.50	36.2	159.4	148	0.09	114	374	2	335	4.9	9.5	4.0	-8.6
1.00	36.5	154.9	292	0.18	222	729	7	329	3.1	6.0	3.1	-5.2
1.50	43.5	153.8	332	0.21	321	1053	3	157	3.0	5.8	-2.3	5.4
2.00	74.8	151.2	112	0.07	420	1378	4	161	5.6	10.9	-3.5	10.3
2.50	85.0	61.4	45	0.03	519	1703	4	193	2.8	5.4	1.2	5.2
3.00	79.8	54.9	110	0.07	618	2028	6	272	3.1	6.1	6.1	-0.3
3.50	72.2	86.6	227	0.14	713	2338	7	304	6.3	12.3	10.2	-6.9
4.00	61.7	110.2	431	0.27	807	2648	7	310	9.0	17.5	13.3	-11.4
4.50	51.1	117.9	723	0.45	902	2958	7	308	11.0	21.4	16.9	-13.1
5.00	42.5	120.9	1080	0.67	996	3268	7	306	10.2	19.9	16.1	-11.6
5.50	39.0	121.5	1334	0.83	1086	3563	7	307	6.6	12.9	10.2	-7.8
6.00	38.4	122.6	1476	0.92	1176	3859	7	327	4.8	9.3	5.0	-7.8
6.50	38.3	126.0	1595	0.99	1266	4154	0	343	5.4	10.5	3.0	-10.0
7.00	37.9	129.6	1734	1.08	1356	4449	0	338	6.1	11.9	4.5	-11.0
7.50	36.9	131.8	1918	1.19	1446	4744	7	329	7.2	13.9	7.2	-11.9
8.00	35.5	133.4	2145	1.33	1536	5040	7	326	7.7	14.9	8.3	-12.3
8.50	34.4	134.5	2366	1.47	1626	5335	7	324	7.7	15.1	8.8	-12.2
9.00	33.1	135.3	2603	1.62	1716	5630	7	320	7.7	14.9	9.6	-11.4
9.50	32.5	135.4	2825	1.76	1806	5926	7	314	6.3	12.1	8.8	-8.4
10.00	32.4	135.1	2978	1.85	1896	6221	7	310	4.7	9.2	7.0	-5.9
10.50	32.5	134.9	3108	1.93	1986	6516	7	311	3.5	6.8	5.2	-4.4
11.00	32.8	134.8	3188	1.98	2076	6811	7	311	2.6	5.0	3.8	-3.3
11.50	33.3	134.7	3263	2.03	2166	7107	7	313	2.5	4.8	3.5	-3.2
12.00	34.0	134.7	3336	2.07	2256	7402	0	14	0.6	1.1	-0.3	-1.0
12.50	35.5	135.2	3291	2.04	2346	7697	2	93	1.2	2.2	-2.2	0.1
13.00	36.5	135.5	3284	2.04	2436	7992	2	76	0.7	1.3	-1.2	-0.3
13.50	37.7	135.8	3261	2.03	2526	8288	1	59	0.2	0.4	-0.3	-0.2
14.00	38.5	135.7	3281	2.04	2616	8583	6	292	0.5	0.9	0.9	-0.4
14.50	39.4	135.6	3287	2.04	2706	8878	7	306	1.1	2.2	1.8	-1.3
15.00	39.8	135.5	3349	2.08	2796	9174	7	309	2.4	4.7	3.7	-3.0
15.50	40.0	135.3	3432	2.13	2886	9469	7	302	2.2	4.3	3.6	-2.3
16.00	40.5	135.0	3477	2.16	2976	9764	6	292	1.6	3.1	2.8	-1.2
16.50	41.0	134.7	3520	2.19	3066	10059	6	282	1.9	3.7	3.6	-0.7
17.00	41.4	134.0	3573	2.22	3156	10355	6	271	3.2	6.3	6.3	-0.1
17.50	41.5	132.6	3662	2.28	3246	10650	6	268	4.4	8.6	8.6	0.2
18.00	41.5	131.1	3764	2.34	3336	10945	6	272	5.2	10.2	10.2	-0.4
18.50	41.2	129.6	3907	2.43	3426	11241	6	277	5.4	10.6	10.5	-1.3
19.00	41.0	128.5	4038	2.51	3516	11536	6	278	5.9	11.5	11.4	-1.7
19.50	40.5	127.1	4215	2.62	3606	11831	6	280	6.2	12.0	11.8	-2.1
20.00	40.2	126.2	4367	2.71	3696	12126	6	283	5.5	10.7	10.5	-2.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 11

LOCATION: NEWARK CALIFORNIA

SPECIFICS: BALLOON LOST IN LONELY CLOUD

DATE OF LAUNCH: 10 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 10:15 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	61.0	133.8	60	0.04	114	374	7	320	1.9	3.6	2.3	-2.8
1.00	62.5	139.9	112	0.07	222	729	7	332	1.7	3.4	1.6	-3.0
1.50	62.7	145.4	163	0.10	321	1053	7	337	1.7	3.4	1.3	-3.1

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 12

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 10 AUGUST 1970

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 13:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	50.0	138.4	91	0.06	114	374	7	316	2.4	4.6	3.2	-3.3
1.00	56.7	135.9	142	0.09	222	729	6	272	1.4	2.7	2.7	-0.1
1.50	63.0	116.4	161	0.10	321	1053	6	259	2.1	4.1	4.1	0.8
2.00	60.2	109.0	237	0.15	420	1378	6	273	3.3	6.5	6.5	-0.3
2.50	55.5	103.3	353	0.22	519	1703	6	263	2.3	4.5	4.5	0.6
3.00	59.0	99.3	368	0.23	618	2028	6	281	3.2	6.1	6.0	-1.2
3.50	52.5	102.6	542	0.34	713	2338	7	296	5.1	9.9	8.9	-4.4
4.00	50.2	107.0	667	0.41	807	2648	7	312	4.6	8.8	6.6	-5.9
4.50	48.5	112.2	792	0.49	902	2958	7	321	4.7	9.1	5.7	-7.1
5.00	47.3	116.9	914	0.57	996	3268	7	328	4.6	8.9	4.7	-7.6
5.50	46.4	121.4	1028	0.64	1086	3563	7	337	5.0	9.7	3.8	-8.9
6.00	45.3	126.5	1158	0.72	1176	3859	0	345	5.1	9.8	2.5	-9.5
6.50	44.9	130.9	1264	0.79	1266	4154	0	346	4.8	9.4	2.2	-9.1
7.00	44.1	134.2	1393	0.87	1356	4449	0	342	5.3	10.2	3.2	-9.7
7.50	43.0	136.9	1544	0.96	1446	4744	7	329	5.9	11.4	5.0	-9.8
8.00	41.4	137.2	1735	1.08	1536	5040	7	310	6.4	12.4	9.5	-7.9
8.50	40.1	135.5	1924	1.20	1626	5335	6	292	6.5	12.7	11.8	-4.7
9.00	39.2	132.6	2097	1.30	1716	5630	6	284	6.4	12.5	12.1	-3.1
9.50	38.5	130.4	2263	1.41	1806	5926	6	288	5.8	11.3	10.8	-3.4
10.00	38.0	129.1	2419	1.50	1896	6221	7	295	5.5	10.6	9.6	-4.5
10.50	37.5	128.5	2580	1.60	1986	6516	7	225	5.6	10.9	9.8	-4.7
11.00	37.0	127.5	2747	1.71	2076	6811	6	288	5.8	11.3	10.7	-3.5
11.50	36.5	126.1	2908	1.81	2166	7107	6	280	5.8	11.4	11.0	-2.0
12.00	36.3	124.5	3063	1.90	2256	7402	6	279	5.8	11.2	11.1	-1.8
12.50	36.0	123.3	3221	2.00	2346	7697	6	278	6.1	11.9	11.8	-1.6
13.00	35.6	121.7	3394	2.11	2436	7992	6	287	6.1	11.8	11.2	-3.5
13.50	35.2	121.7	3572	2.22	2526	8288	6	291	5.9	11.4	10.7	-4.1
14.00	34.9	120.7	3741	2.32	2616	8583	6	281	6.3	12.3	12.1	-2.2
14.50	34.5	119.7	3929	2.44	2706	8878	6	278	6.2	12.1	12.0	-1.7
15.00	34.3	118.7	4090	2.54	2796	9174	6	277	6.1	11.9	11.8	-1.5
15.50	34.0	117.8	4270	2.65	2886	9469	6	274	5.7	11.1	11.1	-0.7
16.00	34.0	116.5	4403	2.74	2976	9764	6	272	5.8	11.4	11.3	-0.4
16.50	33.7	115.9	4568	2.85	3066	10059	6	273	6.4	12.5	12.5	-0.6
17.00	33.5	114.9	4759	2.96	3156	10355	6	263	7.8	15.2	15.1	1.8
17.50	33.0	113.0	4989	3.10	3246	10650	6	276	7.5	14.6	14.5	-1.6
18.00	32.7	113.3	5187	3.22	3336	10945	6	288	7.4	14.3	13.6	-4.5
18.50	32.2	112.0	5431	3.37	3426	11241	6	277	7.8	15.2	15.0	-2.0
19.00	31.9	112.0	5639	3.50	3516	11536	6	278	7.6	14.8	14.6	-2.1
19.50	31.5	111.5	5875	3.65	3606	11831	6	278	6.6	12.7	12.6	-1.8
20.00	31.5	111.1	6022	3.74	3696	12126	6	276	5.1	9.9	9.8	-0.9

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 13

LOCATION: NEWARK CALIFORNIA

SPECIFICS: GUSTY WINDS

DATE OF LAUNCH: 10 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	25.7	145.9	224	0.14	114	374	7	328	7.5	14.5	7.6	-12.4
1.00	25.7	148.3	449	0.28	222	729	7	323	5.4	10.4	6.3	-8.3
1.50	30.0	143.9	546	0.34	321	1053	6	288	2.9	5.6	5.3	-1.7
2.00	35.0	137.3	591	0.37	420	1378	6	260	3.6	7.0	6.9	1.2
2.50	37.4	127.1	671	0.42	519	1703	6	264	5.0	9.7	9.6	1.0
3.00	37.2	120.0	806	0.50	618	2028	6	276	5.6	10.8	10.8	-1.0
3.50	36.0	116.7	972	0.60	713	2338	6	287	5.4	10.4	10.0	-3.1
4.00	35.5	116.4	1123	0.70	807	2648	7	299	5.1	9.9	8.7	-4.8
4.50	35.0	117.2	1279	0.79	902	2958	7	309	6.1	11.9	9.3	-7.5
5.00	33.7	119.5	1484	0.92	996	3268	7	314	7.6	14.8	10.7	-10.2
5.50	32.1	121.5	1722	1.07	1086	3563	7	313	7.9	15.3	11.2	-10.4
6.00	31.0	122.7	1947	1.21	1176	3859	7	311	7.5	14.5	11.0	-9.5
6.50	30.2	123.4	2165	1.35	1266	4154	7	307	6.7	13.0	10.4	-7.9
7.00	29.9	123.4	2348	1.46	1356	4449	7	303	6.3	12.3	10.3	-6.8
7.50	29.5	123.4	2545	1.58	1446	4744	7	305	6.3	12.3	10.1	-7.0
8.00	29.3	123.6	2726	1.69	1536	5040	7	308	6.3	12.3	9.6	-7.5
8.50	29.0	123.0	2923	1.82	1626	5335	7	312	6.7	13.0	9.6	-8.7
9.00	28.7	124.7	3123	1.94	1716	5630	7	308	7.0	13.6	10.8	-8.4
9.50	28.3	124.5	3343	2.08	1806	5926	7	295	7.3	14.1	12.8	-6.0
10.00	28.0	123.5	3555	2.21	1896	6221	6	284	6.7	13.1	12.7	-3.1
10.50	28.0	122.3	3724	2.31	1986	6516	6	274	5.8	11.2	11.2	-0.9
11.00	28.2	121.0	3861	2.40	2076	6811	6	270	5.0	9.6	9.6	0.0
11.50	28.5	120.0	3978	2.47	2166	7107	6	277	5.1	9.9	9.9	-1.3
12.00	28.5	119.3	4144	2.57	2256	7402	6	287	5.7	11.0	10.5	-3.2
12.50	28.5	119.0	4310	2.68	2346	7697	7	293	5.6	10.8	10.0	-4.1
13.00	28.5	118.8	4476	2.78	2436	7992	7	296	5.9	11.4	10.2	-5.0
13.50	28.4	118.8	4661	2.90	2526	8288	7	297	6.2	12.0	10.7	-5.6
14.00	28.3	118.7	4847	3.01	2616	8583	7	293	6.3	12.2	11.2	-4.8
14.50	28.2	118.4	5035	3.13	2706	8878	6	289	6.4	12.4	11.7	-4.1
15.00	28.1	118.0	5225	3.25	2796	9174	6	286	6.5	12.6	12.1	-3.4
15.50	28.0	117.5	5416	3.37	2886	9469	6	284	6.6	12.8	12.4	-3.0
16.00	27.9	117.0	5609	3.49	2976	9764	6	282	7.5	14.6	14.3	-3.0
16.50	27.6	116.3	5853	3.64	3066	10059	6	282	7.6	14.8	14.4	-3.1
17.00	27.5	115.9	6051	3.76	3156	10355	6	279	6.9	13.4	13.2	-2.2
17.50	27.4	115.2	6251	3.88	3246	10650	6	276	6.6	12.8	12.7	-1.3
18.00	27.4	114.7	6424	3.99	3336	10945	6	281	6.9	13.5	13.3	-2.5
18.50	27.2	114.3	6655	4.13	3426	11241	6	282	7.9	15.4	15.1	-3.1
19.00	27.0	113.8	6889	4.28	3516	11536	6	276	7.7	15.0	15.0	-1.5
19.50	26.9	113.1	7096	4.41	3606	11831	6	274	9.0	17.5	17.5	-1.3
20.00	26.5	112.4	7401	4.60	3696	12126	6	277	10.6	20.6	20.4	-2.3

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 14

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 10 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 21:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	ALTITUDE M.S.L. METERS	ALTITUDE M.S.L. FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	30.3	158.0	185	0.11	114	374	7	334	6.7	12.9	5.7	-11.6
1.00	28.4	153.9	399	0.25	222	729	7	326	4.5	8.7	4.9	-7.2
1.50	35.0	150.8	450	0.28	321	1053	5	239	1.2	2.3	2.0	1.2
2.00	46.0	143.5	400	0.25	420	1378	4	181	4.2	8.1	0.1	8.1
2.50	62.7	122.7	265	0.16	519	1703	4	201	3.9	7.5	2.7	7.0
3.00	61.1	107.9	338	0.21	618	2028	6	283	4.8	9.3	9.0	-2.2
3.50	52.4	112.7	544	0.34	713	2338	7	305	9.9	19.2	15.7	-11.1
4.00	41.0	118.9	921	0.57	807	2648	7	309	13.0	25.3	19.7	-15.9
4.50	34.3	122.2	1313	0.82	902	2958	7	308	11.9	23.0	18.2	-14.1
5.00	31.3	122.8	1628	1.01	996	3268	7	305	9.4	18.3	15.1	-10.4
5.50	29.9	122.9	1878	1.17	1086	3563	7	302	8.8	17.1	14.5	-8.9
6.00	28.5	122.5	2155	1.34	1176	3859	7	301	9.9	19.3	16.5	-10.0
6.50	27.0	122.5	2473	1.54	1266	4154	7	303	8.8	17.1	14.4	-9.3
7.00	26.7	122.6	2684	1.67	1356	4449	7	303	4.9	9.5	8.0	-5.1
7.50	27.5	122.5	2766	1.72	1446	4744	7	307	4.7	9.1	7.3	-5.4
8.00	27.3	123.0	2964	1.84	1536	5040	7	310	5.8	11.3	8.7	-7.2
8.50	27.5	123.3	3112	1.93	1626	5335	7	299	6.1	11.8	10.3	-5.8
9.00	27.3	122.6	3327	2.07	1716	5630	6	290	7.4	14.4	13.5	-5.0
9.50	26.9	121.7	3548	2.20	1806	5926	6	285	7.2	14.0	13.5	-3.6
10.00	26.8	120.6	3742	2.32	1896	6221	6	280	6.6	12.8	12.6	-2.3
10.50	26.8	119.6	3920	2.44	1986	6516	6	279	6.0	11.7	11.6	-1.8
11.00	26.8	118.7	4080	2.54	2076	6811	6	273	5.9	11.4	11.4	-0.7
11.50	27.0	117.5	4239	2.63	2166	7107	6	272	6.2	12.1	12.1	-0.4
12.00	27.0	116.5	4416	2.74	2256	7402	6	275	5.6	10.9	10.9	-1.0
12.50	27.2	115.9	4553	2.83	2346	7697	6	279	5.1	9.9	9.7	-1.6
13.00	27.3	115.4	4708	2.93	2436	7992	6	276	3.6	7.1	7.0	-0.7
13.50	27.9	115.0	4759	2.96	2526	8288	6	277	3.2	6.1	6.1	-0.7
14.00	28.1	114.7	4836	3.04	2616	8583	6	278	4.1	7.9	7.8	-1.2
14.50	28.4	114.2	4994	3.10	2706	8878	6	276	5.1	10.0	10.0	-1.0
15.00	28.2	113.6	5182	3.22	2796	9174	6	274	6.7	13.0	13.0	-0.8
15.50	28.2	112.7	5371	3.34	2886	9469	6	271	6.4	12.4	12.4	-0.3
16.00	28.2	112.1	5539	3.44	2976	9764	6	272	6.0	11.6	11.6	-0.3
16.50	28.2	111.4	5707	3.55	3066	10059	6	270	6.4	12.5	12.5	0.0
17.00	28.1	110.7	5899	3.67	3156	10355	6	273	6.8	13.1	13.1	-0.7
17.50	28.0	110.2	6094	3.79	3246	10650	6	272	6.4	12.4	12.3	-0.5
18.00	28.0	109.6	6263	3.89	3336	10945	6	271	6.9	13.4	13.4	-0.3
18.50	27.8	109.0	6487	4.03	3426	11241	6	273	8.3	16.1	16.1	-0.9
19.00	27.5	108.4	6743	4.19	3516	11536	6	270	8.1	15.6	15.6	0.0
19.50	27.4	107.7	6945	4.32	3606	11831	6	264	7.4	14.4	14.3	1.6
20.00	27.3	106.9	7149	4.44	3696	12126	6	262	7.6	14.7	14.5	2.2

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 15

LOCATION: BERKER CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 11 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 01:00 L.D.T.

TIME	ELEV.	AZIMUTH	R A N G E		M.S.L. ALTITUDE		D I R E C T I O N		V E L O C I T Y METERS/SEC	NAUTICAL MILES PER HOUR		
MINUTES	D E G R E E S		METERS	MILES	METERS	FEET	CLASS 0- 7	DEGREES	(SPEED)	(SPEED)	(U)	(V)
0.50	33.3	172.2	164	0.10	114	374	0	344	5.1	10.0	2.8	-9.6
1.00	35.0	163.5	308	0.19	222	729	4	194	1.5	2.9	0.7	2.8
1.50	74.4	150.7	88	0.05	321	1053	4	164	6.8	13.3	-3.7	12.8
2.00	76.2	345.0	102	0.06	420	1378	4	163	5.7	11.1	-3.2	10.6
2.50	63.4	347.5	257	0.16	519	1703	4	201	3.3	6.8	2.4	6.4
3.00	64.0	9.2	298	0.19	618	2028	7	299	5.0	9.8	8.6	-4.7
3.50	71.7	63.5	234	0.15	713	2338	7	314	9.4	18.3	13.1	-12.7
4.00	59.9	102.2	464	0.29	807	2648	7	306	9.7	18.8	15.1	-11.2
4.50	51.4	109.6	717	0.45	902	2958	7	298	8.9	17.3	15.3	-8.0
5.00	45.0	110.5	990	0.62	996	3268	6	290	7.7	14.9	14.0	-5.2
5.50	42.5	109.4	1179	0.73	1086	3563	6	285	7.6	14.8	14.2	-3.9
6.00	39.0	108.9	1445	0.90	1176	3859	6	285	8.1	15.8	15.3	-4.0
6.50	37.1	108.4	1666	1.04	1266	4154	6	284	7.7	15.0	14.5	-3.7
7.00	35.3	107.8	1907	1.18	1356	4449	6	283	7.6	14.7	14.3	-3.4
7.50	34.2	107.3	2119	1.32	1446	4744	6	281	7.2	14.1	13.8	-2.6
8.00	33.2	106.5	2338	1.45	1536	5040	6	276	6.5	12.7	12.6	-1.4
8.50	32.9	105.6	2504	1.56	1626	5335	6	273	6.6	12.9	12.9	-0.6
9.00	32.1	104.5	2726	1.69	1716	5630	6	266	7.4	14.4	14.3	1.0
9.50	31.8	102.7	2926	1.82	1806	5926	6	254	6.8	13.2	12.7	3.7
10.00	31.5	100.6	3084	1.92	1896	6221	5	241	7.3	14.3	12.5	6.8
10.50	31.2	97.6	3269	2.03	1986	6516	5	239	6.6	12.9	11.0	6.7
11.00	31.4	96.1	3391	2.11	2076	6811	5	244	5.0	9.8	8.8	4.3
11.50	31.5	94.9	3525	2.19	2166	7107	5	246	5.6	10.9	9.9	4.8
12.00	31.4	93.5	3686	2.29	2256	7402	5	242	5.7	11.1	9.8	5.2
12.50	31.5	92.1	3819	2.37	2346	7697	5	238	5.3	10.3	8.8	5.5
13.00	31.8	90.8	3950	2.45	2436	7992	5	230	5.4	10.5	8.0	6.8
13.50	31.8	89.0	4064	2.53	2526	8288	5	228	6.5	12.6	9.3	9.5
14.00	31.6	87.2	4242	2.64	2616	8583	5	240	6.4	12.5	10.8	6.2
14.50	31.5	86.6	4406	2.74	2706	8878	5	243	6.3	12.2	10.9	5.5
15.00	31.3	85.3	4589	2.85	2796	9174	5	239	7.2	14.0	12.0	7.2
15.50	31.0	84.2	4793	2.98	2886	9469	5	240	6.8	13.2	11.5	6.6
16.00	30.9	83.3	4963	3.08	2976	9764	5	247	7.0	13.6	12.5	5.4
16.50	30.5	82.8	5195	3.23	3066	10059	6	248	8.5	16.5	15.3	6.1
17.00	30.0	81.9	5456	3.39	3156	10355	5	242	7.4	14.4	12.7	6.7
17.50	30.0	81.2	5612	3.49	3246	10650	5	243	7.5	14.6	13.1	6.6
18.00	29.5	80.5	5886	3.66	3336	10945	5	246	8.3	16.1	14.8	6.5
18.50	29.3	80.0	6094	3.79	3426	11241	5	245	7.7	14.9	13.6	6.3
19.00	29.0	79.4	6332	3.93	3516	11536	6	248	9.1	17.7	16.4	6.7
19.50	28.5	79.0	6630	4.12	3606	11831	6	249	10.3	20.0	18.7	7.1
20.00	28.0	78.5	6940	4.31	3696	12126	6	248	10.5	20.4	18.9	7.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 16

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 11 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 11:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	69.1	108.8	41	0.03	114	374	7	307	1.2	2.4	1.9	-1.4
1.00	71.4	127.2	73	0.05	222	729	7	324	0.4	0.9	0.5	-0.7
1.50	78.4	122.4	65	0.04	321	1053	5	235	1.4	2.8	2.3	1.6
2.00	72.8	87.9	128	0.08	420	1378	6	253	3.2	6.2	5.9	1.8
2.50	65.0	85.0	239	0.15	519	1703	6	280	4.5	8.7	8.6	-1.4
3.00	57.2	95.8	394	0.25	618	2028	6	290	7.1	13.8	13.0	-4.7
3.50	47.3	101.1	652	0.41	713	2338	6	288	7.3	14.1	13.5	-4.3
4.00	44.1	102.0	827	0.51	807	2648	6	289	6.2	12.0	11.3	-3.9
4.50	41.3	103.9	1019	0.63	902	2958	7	295	8.3	16.0	14.5	-6.8
5.00	37.0	106.9	1314	0.82	996	3268	7	296	8.9	17.2	15.4	-7.7
5.50	35.0	108.2	1542	0.96	1086	3563	7	297	8.0	15.5	13.8	-7.1
6.00	33.2	109.7	1788	1.11	1176	3859	7	299	7.9	15.3	13.4	-7.4
6.50	32.1	110.7	2009	1.25	1266	4154	7	301	7.2	13.9	12.0	-7.1
7.00	31.4	111.8	2212	1.37	1356	4449	7	302	6.1	11.9	10.0	-6.4
7.50	31.3	112.5	2368	1.47	1446	4744	7	297	4.9	9.6	8.5	-4.3
8.00	31.4	112.8	2507	1.56	1536	5040	6	286	3.8	7.3	7.0	-2.0
8.50	32.0	111.9	2593	1.61	1626	5335	6	263	3.2	6.2	6.1	0.7
9.00	32.6	110.4	2674	1.66	1716	5630	6	260	3.7	7.1	7.0	1.2
9.50	32.9	109.5	2782	1.73	1806	5926	6	262	4.0	7.8	7.7	1.1
10.00	33.2	108.1	2888	1.79	1896	6221	6	255	4.2	8.1	7.8	2.1
10.50	33.5	106.8	2991	1.86	1986	6516	6	253	4.8	9.3	8.9	2.7
11.00	33.5	105.1	3127	1.94	2076	6811	6	256	6.4	12.4	12.0	3.0
11.50	33.0	103.4	3326	2.07	2166	7107	6	256	7.8	15.2	14.8	3.7
12.00	32.0	101.3	3545	2.20	2256	7402	6	255	9.[illegible]	17.6	17.1	4.1
12.50	31.5	99.7	3819	2.37	2346	7697	6	259	11.8	22.9	22.5	4.4
13.00	30.0	97.7	4209	2.62	2436	7992	6	257	14.0	27.2	26.4	6.3
13.50	28.7	95.6	4603	2.86	2526	8288	6	250	12.9	25.1	23.6	8.6
14.00	28.0	93.5	4909	3.05	2616	8583	6	250	12.7	24.7	23.1	8.6
14.50	27.6	92.0	5299	3.29	2706	8878	6	254	14.2	27.7	26.6	7.8
15.00	26.0	90.6	5720	3.55	2796	9174	6	254	13.4	26.0	24.9	7.4
15.50	25.3	89.6	6063	3.77	2886	9469	6	254	13.8	26.8	25.7	7.5
16.00	24.5	88.5	6517	4.05	2976	9764	6	251	13.6	26.4	24.9	8.7
16.50	24.1	87.8	6841	4.25	3066	10059	6	248	11.7	22.7	21.0	8.7
17.00	23.7	86.5	7176	4.46	3156	10355	6	254	18.8	36.4	35.0	10.1
17.50	22.2	85.5	7939	4.93	3246	10650	5	247	13.1	25.5	23.4	10.0
18.00	22.8	84.6	7922	4.92	3336	10945	5	242	8.7	16.9	15.0	7.9
18.50	22.1	84.1	8422	5.23	3426	11241	6	254	12.9	25.1	24.2	6.7
19.00	22.0	83.7	8688	5.40	3516	11536	6	252	12.2	23.7	22.5	7.5
19.50	21.5	83.1	9139	5.68	3606	11831	6	251	12.4	24.1	22.8	7.9
20.00	21.3	82.7	9416	5.85	3696	12126	6	250	9.5	18.4	17.3	6.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 17

LOCATION: BAKER CALIFORNIA

SPECIFICS: BLOWING DUST IN GUSTY WINDS

DATE OF LAUNCH: 11 AUGUST 1970

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	21.0	141.3	281	0.17	114	374	7	325	9.7	18.9	10.8	-15.5
1.00	20.3	145.1	584	0.36	222	729	7	303	7.6	14.7	12.3	-8.1
1.50	23.4	130.1	728	0.45	321	1053	6	274	7.4	14.4	14.4	-0.9
2.00	24.0	123.1	930	0.58	420	1378	6	274	7.6	14.7	14.6	-1.0
2.50	24.5	116.3	1126	0.70	519	1703	6	267	7.4	14.3	14.3	0.7
3.00	25.0	111.7	1312	0.82	618	2028	6	266	7.2	14.0	14.0	1.1
3.50	25.0	107.9	1515	0.94	713	2338	6	263	7.6	14.7	14.6	1.8
4.00	24.9	104.4	1726	1.07	807	2648	6	271	7.5	14.5	14.5	-0.2
4.50	24.7	104.0	1947	1.21	902	2958	6	270	8.0	15.5	15.5	0.1
5.00	24.3	101.2	2193	1.36	996	3268	6	262	7.3	14.2	14.0	2.0
5.50	24.*	100.0	2359	1.47	1086	3563	6	258	5.7	11.0	10.8	2.3
6.00	25.0	98.1	2509	1.56	1176	3859	5	241	5.4	10.4	9.1	5.0
6.50	25.7	95.6	2618	1.63	1266	4154	5	224	5.0	9.8	6.7	6.8
7.00	26.6	93.0	2696	1.68	1356	4449	5	217	4.4	8.6	5.2	6.9
7.50	27.5	90.9	2766	1.72	1446	4744	5	225	4.4	8.5	6.0	6.0
8.00	28.0	89.1	2878	1.79	1536	5040	5	237	5.5	10.7	9.0	5.9
8.50	28.0	87.4	3047	1.89	1626	5335	5	246	6.1	11.8	10.8	4.9
9.00	28.0	86.5	3216	2.00	1716	5630	6	255	6.7	13.1	12.7	3.3
9.50	27.6	86.0	3443	2.14	1806	5926	6	257	8.0	15.6	15.2	3.4
10.00	27.1	85.3	3693	2.29	1896	6221	6	258	7.7	15.0	14.7	3.2
10.50	26.4	85.0	3903	2.43	1986	6516	6	262	8.3	16.0	15.9	2.3
11.00	26.3	84.9	4188	2.60	2076	6811	6	263	8.8	17.0	16.9	2.0
11.50	26.0	84.8	4429	2.75	2166	7107	6	264	8.8	17.1	17.0	1.8
12.00	25.5	84.8	4717	2.93	2256	7402	6	270	8.7	16.9	16.9	0.1
12.50	25.3	85.3	4950	3.08	2346	7697	6	272	7.5	14.6	14.6	-0.4
13.00	25.2	85.4	5169	3.21	2436	7992	6	270	8.0	15.5	15.5	0.0
13.50	24.*	85.7	5429	3.37	2526	8288	6	271	10.3	20.0	20.0	-0.4
14.00	24.3	86.0	5781	3.59	2616	8583	6	269	12.5	24.4	24.4	0.4
14.50	24.2	85.1	6180	3.84	2706	8878	6	266	13.2	25.7	25.6	1.8
15.00	23.0	86.0	6573	4.08	2796	9174	6	262	12.9	25.1	24.8	3.7
15.50	22.5	85.6	6953	4.32	2886	9469	6	249	13.5	26.3	24.5	9.6
16.00	22.0	84.1	7351	4.57	2976	9764	6	257	13.7	26.7	26.0	6.0
16.50	21.5	84.7	7768	4.83	3066	10059	6	268	11.5	22.3	22.3	0.9
17.00	21.4	84.4	8038	4.99	3156	10355	6	255	10.6	20.6	19.9	5.2
17.50	21.1	84.0	8397	5.22	3246	10650	6	254	11.5	22.4	21.6	6.1
18.00	20.*	83.6	8720	5.42	3336	10945	6	252	11.9	23.2	22.1	7.0
18.50	20.6	83.1	9099	5.65	3426	11241	6	251	13.1	25.4	24.1	8.1
19.00	20.3	82.6	9489	5.90	3516	11536	6	250	13.5	26.3	24.7	9.2
19.50	20.0	82.0	9891	6.15	3606	11831	6	248	13.1	25.4	23.5	9.5
20.00	19.*	81.5	10249	6.37	3696	12126	6	248	12.3	23.9	22.2	9.0

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 18

LOCATION: MERCED CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 11 AUGUST

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 23:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	ALTITUDE M.S.L. METERS	ALTITUDE M.S.L. FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	68.1	149.2	43	0.03	114	374	7	302	2.1	4.0	3.4	-2.2
1.00	60.1	122.4	124	0.08	222	729	6	278	3.3	6.5	6.4	-0.8
1.50	54.6	106.1	229	0.14	321	1053	6	270	3.8	7.3	7.3	0.0
2.00	50.8	101.2	338	0.21	420	1378	6	263	4.6	9.0	8.9	1.1
2.50	45.9	93.4	497	0.31	519	1703	6	269	5.8	11.2	11.2	0.2
3.00	42.0	94.9	680	0.42	618	2028	6	281	7.2	14.0	13.7	-2.7
3.50	37.3	96.9	927	0.58	713	2338	6	279	9.6	18.7	18.5	-2.8
4.00	32.5	96.6	1257	0.78	807	2648	6	281	11.0	21.5	21.1	-4.0
4.50	29.4	98.5	1589	0.99	902	2958	6	282	10.1	19.6	19.2	-4.0
5.00	28.6	98.3	1862	1.16	996	3268	6	276	8.7	16.9	16.8	-1.9
5.50	27.1	98.0	2111	1.31	1086	3563	6	270	7.0	13.5	13.5	0.0
6.00	27.2	96.8	2277	1.41	1176	3859	6	252	6.1	11.8	11.2	3.7
6.50	27.3	94.2	2441	1.52	1266	4154	5	239	5.8	11.3	9.7	5.8
7.00	27.8	92.0	2561	1.59	1356	4449	6	253	6.2	12.0	11.5	3.6
7.50	27.3	91.4	2790	1.73	1446	4744	6	265	7.4	14.4	14.4	1.4
8.00	27.0	90.9	3003	1.87	1536	5040	6	263	7.7	15.0	14.9	1.8
8.50	26.5	90.2	3249	2.02	1626	5335	6	258	7.3	14.1	13.8	2.9
9.00	26.5	89.3	3430	2.13	1716	5630	6	256	6.2	12.0	11.7	2.8
9.50	26.5	88.8	3610	2.24	1806	5926	6	260	6.1	11.8	11.6	2.1
10.00	26.5	88.4	3791	2.36	1896	6221	6	264	6.0	11.7	11.7	1.1
10.50	26.5	88.4	3971	2.47	1986	6516	6	256	6.1	11.9	11.6	2.0
11.00	26.5	87.3	4152	2.58	2076	[illegible]	5	247	6.4	12.5	11.[illegible]	5.0
11.50	26.5	86.5	4332	2.69	2166	7107	5	247	6.4	12.4	11.4	4.9
12.00	26.5	85.6	4513	2.80	2256	7402	5	239	7.5	14.5	12.4	7.5
12.50	26.3	84.6	4735	2.94	2346	7697	5	230	8.1	15.8	12.1	10.1
13.00	26.3	82.3	4917	3.06	2436	7992	5	226	7.1	13.8	9.9	9.7
13.50	26.4	81.0	5077	3.15	2526	8288	5	231	8.8	17.1	13.3	10.7
14.00	25.9	79.4	5375	3.34	2616	8583	5	235	10.7	20.9	17.0	12.1
14.50	25.5	78.1	5661	3.52	2706	8878	5	234	11.1	21.5	17.5	12.6
15.00	25.0	76.7	5923	3.72	2796	9174	5	235	11.8	22.9	18.8	13.1
15.50	24.5	75.6	6320	3.93	2886	9469	5	234	12.3	24.0	19.3	14.2
16.00	24.0	74.2	6671	4.15	2976	9764	5	237	12.6	24.4	20.4	13.4
16.50	23.5	73.6	7038	4.37	3066	10059	5	243	9.7	18.9	16.8	8.6
17.00	23.0	73.3	7245	4.50	3156	10355	5	239	10.2	19.9	17.0	10.4
17.50	23.0	72.4	7633	4.74	3246	10650	5	236	13.8	26.9	22.2	15.2
18.00	22.5	71.5	8039	5.00	3336	10945	5	235	11.5	22.4	18.4	12.7
18.50	22.4	71.0	8298	5.16	3426	11241	5	240	11.0	21.4	18.5	10.8
19.00	22.0	70.0	8680	5.40	3516	11536	5	240	10.4	20.2	17.4	10.3
19.50	22.0	70.2	8910	5.54	3606	11831	5	240	8.3	16.2	14.0	8.2
20.00	21.9	70.0	9179	5.70	3696	12126	5	243	9.0	17.5	15.7	7.8

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 19

LOCATION: BELANE CALIFORNIA

SPECIFICS: CLOUD COVER INCREASED TO 8/10 DURING OBSERVATION (FROM 3/10)

DATE OF LAUNCH: 13 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. D E G R E E S	AZIMUTH D E G R E E S	R A N G E METERS	R A N G E MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	D I R E C T I O N CLASS 0- 7	D I R E C T I O N DEGREES	V E L O C I T Y METERS/SEC (SPEED)	V E L O C I T Y NAUTICAL MILES PER HOUR (SPEED)	V E L O C I T Y (U)	V E L O C I T Y (V)
0.50	79.2	59.5	21	0.01	114	374	5	241	1.2	2.3	2.0	1.1
1.00	71.7	60.9	71	0.04	222	729	5	240	2.2	4.4	3.8	2.2
1.50	63.8	60.2	155	0.10	321	1053	5	237	3.1	6.1	5.1	3.3
2.00	58.0	57.8	259	0.16	420	1378	5	231	2.8	5.4	4.2	3.5
2.50	57.9	55.2	322	0.20	519	1703	5	243	4.3	8.4	7.6	3.8
3.00	49.7	60.6	519	0.32	618	2028	6	267	6.5	12.6	12.6	0.7
3.50	45.9	72.6	685	0.43	713	2338	6	287	6.4	12.5	12.0	-3.6
4.00	43.8	80.1	835	0.52	807	2648	6	291	6.2	12.1	11.3	-4.4
4.50	41.7	86.0	1005	0.62	902	2958	6	291	6.4	12.5	11.7	-4.4
5.00	39.9	89.7	1184	0.74	996	3268	7	293	8.1	15.7	14.5	-6.2
5.50	36.6	94.8	1454	0.90	1086	3563	7	300	8.9	17.4	15.1	-8.6
6.00	35.0	98.9	1671	1.04	1176	3859	7	302	7.3	14.1	12.0	-7.4
6.50	34.2	100.9	1854	1.15	1266	4154	7	305	6.7	13.0	10.7	-7.4
7.00	33.5	103.8	2040	1.27	1356	4449	7	308	6.7	13.0	10.2	-8.1
7.50	33.0	105.7	2217	1.38	1446	4744	7	309	5.8	11.2	8.5	-7.1
8.00	33.0	107.4	2356	1.46	1536	5040	7	312	5.1	9.9	7.3	-6.6
8.50	33.0	108.8	2495	1.55	1626	5335	7	307	5.2	10.2	6.1	-8.1
9.00	32.8	109.7	2653	1.65	1716	5630	7	302	5.7	11.0	9.3	-5.9
9.50	32.5	110.4	2825	1.76	1606	5926	7	302	5.1	10.0	8.4	-5.3
10.00	32.5	111.0	2955	1.84	1896	6221	7	309	4.9	9.6	7.5	-6.0
10.50	32.5	112.1	3108	1.93	1986	6516	7	311	6.1	11.8	8.9	-7.8
11.00	32.1	113.2	3300	2.05	2076	6811	7	309	6.0	11.7	9.2	-7.3
11.50	32.0	113.8	3457	2.15	2166	7107	7	301	6.0	11.7	10.0	-6.1
12.00	31.6	114.0	3657	2.27	2256	7402	6	288	6.3	12.3	11.7	-3.7
12.50	31.4	113.2	3834	2.38	2346	7697	6	274	6.8	13.3	13.2	-0.9
13.00	31.0	112.0	4044	2.51	2436	7992	6	274	6.9	13.5	13.4	-0.8
13.50	30.8	111.3	4227	2.63	2526	8288	6	280	6.3	12.2	12.0	-2.2
14.00	30.6	111.0	4413	2.74	2616	8583	6	287	6.0	11.6	11.0	-3.5
14.50	30.5	111.0	4584	2.85	2706	8878	6	284	6.1	11.8	11.4	-2.9
15.00	30.3	110.5	4775	2.97	2796	9174	6	273	7.1	13.7	13.7	-0.7
15.50	30.0	109.5	4988	3.10	2886	9469	6	280	5.6	10.8	10.7	-1.8
16.00	30.2	109.8	5103	3.17	2976	9764	6	265	5.7	11.0	11.0	0.9
16.50	30.0	108.0	5300	3.29	3066	10059	6	252	7.3	14.2	13.5	4.3
17.00	30.0	107.0	5456	3.39	3156	10355	6	266	6.0	11.7	11.6	0.9
17.50	29.9	106.6	5635	3.50	3246	10650	6	279	6.0	11.7	11.6	-1.8
18.00	29.6	106.5	5815	3.61	3336	10945	6	290	6.8	13.3	12.5	-4.4
18.50	29.5	106.8	6045	3.76	3426	11241	6	269	5.9	11.5	11.5	0.2
19.00	29.7	105.5	6154	3.82	3516	11536	5	242	4.9	9.6	8.5	4.4
19.50	29.9	104.9	6281	3.89	3606	11831	6	265	8.9	17.3	17.2	1.5
20.00	29.0	103.9	6657	4.14	3696	12126	6	269	13.7	26.7	26.7	0.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 2

LOCATION: NEWARK CALIFORNIA

SPECIFICS: WIND CHANGED TO SOUTHEAST

DATE OF LAUNCH: 14 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 09:00 P.D.T.

TIME MINUTES	ELEV. D E G R E E S	AZIMUTH D E G R E E S	R A N G E METERS	R A N G E MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	D I R E C T I O N CLASS 0-7	D I R E C T I O N DEGREES	V E L O C I T Y METERS/SEC (SPEED)	V E L O C I T Y NAUTICAL MILES PER HOUR (SPEED)	V E L O C I T Y (U)	V E L O C I T Y (V)
0.50	67.1	355.0	46	0.03	114	374	4	167	2.0	3.9	-0.9	3.8
1.00	60.8	347.2	121	0.08	222	729	4	160	2.5	4.9	-1.7	4.6
1.50	58.2	343.1	195	0.12	321	1053	4	135	2.0	3.9	-2.8	2.8
2.00	60.7	330.9	232	0.14	420	1378	2	84	3.6	6.9	-6.9	-0.8
2.50	58.5	301.3	314	0.20	519	1703	2	71	5.3	10.4	-9.8	-3.3
3.00	55.0	283.5	429	0.27	618	2028	1	57	5.3	10.2	-8.5	-5.6
3.50	53.0	268.8	532	0.33	713	2338	1	41	5.6	11.0	-7.2	-8.2
4.00	50.6	256.4	658	0.41	807	2648	1	27	6.7	13.1	-6.0	-11.6
4.50	48.0	242.7	806	0.50	902	2958	0	21	8.0	15.6	-5.7	-14.6
5.00	44.3	233.4	1014	0.63	996	3268	1	29	8.1	15.8	-7.8	-13.7
5.50	41.8	230.3	1242	0.77	1086	3563	1	44	7.2	14.1	-9.7	-10.2
6.00	39.0	230.5	1445	0.90	1176	3859	1	50	7.3	14.1	-10.8	-9.1
6.50	36.9	230.2	1678	1.04	1266	4154	1	49	8.1	15.6	-11.8	-10.3
7.00	35.0	230.1	1928	1.20	1356	4449	1	51	9.1	17.7	-13.8	-11.2
7.50	32.8	230.4	2226	1.38	1446	4744	1	49	8.8	17.2	-13.0	-11.2
8.00	31.9	229.9	2458	1.53	1536	5040	1	42	6.2	12.0	-8.0	-8.9
8.50	32.0	229.2	2593	1.61	1626	5335	1	40	3.3	6.4	-4.2	-4.9
9.00	32.8	229.2	2653	1.65	1716	5630	1	64	2.2	4.2	-3.8	-1.9
9.50	33.5	229.8	2720	1.69	1806	5926	2	74	2.1	4.2	-4.0	-1.2
10.00	34.3	230.3	2771	1.72	1896	6221	2	77	2.0	3.9	-3.8	-0.9
10.50	35.0	231.0	2828	1.76	1986	6516	2	98	1.9	3.7	-3.7	0.5
11.00	36.0	232.0	2849	1.77	2076	6811	2	86	2.1	4.[illegible]	-4.0	-0.3
11.50	36.4	232.4	2930	1.82	[illegible]	7107	1	5[illegible]	2.3	4.4	-3.4	-2.9
12.00	37.0	231.9	2986	1.86	2256	7402	0	16	2.7	5.2	-1.4	-5.0
12.50	37.4	230.6	3061	1.90	2346	7697	0	16	4.8	9.4	-2.6	[illegible]
13.00	37.0	228.9	3225	2.00	2436	7992	0	349	3.6	6.9	1.3	-6.8
13.50	38.5	227.2	3168	1.97	2526	8288	0	339	4.0	7.8	2.7	-7.3
14.00	38.2	225.0	3317	2.06	2616	8583	0	8	6.3	12.2	-1.8	-12.0
14.50	37.9	223.3	3468	2.16	2706	8878	0	11	6.3	12.2	-2.4	-12.0
15.00	37.5	221.7	3636	2.26	2796	9174	0	4	6.3	12.1	-0.9	-12.1
15.50	37.4	219.7	3767	2.34	2886	9469	0	346	5.1	9.9	2.4	-9.6
16.00	37.9	217.9	3815	2.37	2976	9764	7	323	3.5	6.9	4.2	-5.4
16.50	38.7	216.6	3820	2.37	3066	10059	7	310	2.2	4.3	3.3	-2.7
17.00	39.5	215.9	3821	2.37	3156	10355	7	294	1.0	2.0	1.8	-0.8
17.50	40.4	215.7	3807	2.37	3246	10650	5	339	0.6	1.1	0.9	0.6
18.00	41.3	215.7	3790	2.36	3336	10945	4	178	0.2	0.4	0.0	0.4
18.50	42.0	215.8	3798	2.36	3426	11241	1	52	1.2	2.3	-1.8	-1.4
19.00	42.3	216.0	3857	2.40	3516	11536	2	83	2.5	4.8	-4.8	-0.6
19.50	42.7	217.8	3901	2.43	3606	11831	1	52	2.9	5.7	-4.5	-3.5
20.00	42.5	216.7	4027	2.50	3696	12126	0	16	4.5	8.7	-2.4	-8.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 3

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 14 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 13:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	48.0	81.2	97	0.06	114	374	6	278	2.9	5.7	5.7	-0.8
1.00	50.7	97.7	177	0.11	222	729	7	333	2.1	4.1	1.9	-3.7
1.50	59.8	122.6	183	0.11	321	1053	0	8	2.3	4.5	-0.6	-4.4
2.00	61.6	115.9	224	0.14	420	1378	1	23	2.6	5.1	-2.0	-0.6
2.50	63.2	159.1	259	0.16	519	1703	1	49	3.5	6.9	-2.3	-4.8
3.00	63.9	180.9	300	0.19	618	2028	1	62	2.5	4.9	-4.3	-2.3
3.50	65.9	187.5	316	0.20	713	2338	1	39	2.0	3.9	-2.4	-1.0
4.00	63.5	191.4	399	0.25	807	2648	2	110	1.1	2.2	-2.0	0.8
4.50	71.0	199.8	308	0.19	902	2958	3	155	2.4	4.7	-2.0	4.3
5.00	73.4	208.2	295	0.18	996	3268	3	127	1.8	3.5	-2.8	2.1
5.50	74.7	220.4	295	0.18	1086	3563	3	127	1.9	3.7	-3.0	2.2
6.00	75.6	230.5	400	0.19	1176	3859	3	131	1.4	2.8	-2.1	1.9
6.50	76.3	236.5	307	0.19	1266	4154	2	99	0.6	1.2	-1.2	0.2
7.00	76.4	235.4	327	0.20	1356	4449	1	33	1.3	2.4	-1.3	-2.0
7.50	75.3	232.0	370	0.23	1446	4744	1	35	2.4	4.7	-1.2	-4.2
8.00	73.4	226.1	456	0.30	1536	5040	0	18	3.1	6.0	-2.0	-6.3
8.50	71.0	220.2	558	0.35	1626	5335	0	11	4.1	8.0	-1.6	-7.8
9.00	68.5	214.0	674	0.42	1716	5630	0	13	4.7	9.2	-2.1	-8.9
9.50	65.5	211.1	820	0.51	1806	5926	0	19	4.2	8.3	-2.6	-7.8
10.00	64.0	209.8	922	0.57	1896	6221	1	23	3.2	6.3	-2.5	-5.9
10.50	62.9	209.6	1013	0.63	1986	6516	1	30	3.1	6.9	-3.0	-5.1
11.00	61.9	209.9	1105	0.69	2076	6811	1	32	3.9	7.6	-4.0	-6.4
11.50	60.0	210.1	1247	0.77	2166	7107	1	34	5.9	11.5	-6.5	-9.5
12.00	57.0	211.0	1461	0.91	2256	7402	1	45	5.0	9.7	-6.9	-6.8
12.50	56.7	213.0	1537	0.96	2346	7697	1	66	4.1	8.0	-7.3	-3.3
13.00	55.5	215.8	1670	1.04	2436	7992	2	76	4.9	9.5	-9.2	-2.3
13.50	55.0	219.5	1765	1.10	2526	8288	2	80	4.4	8.6	-8.5	-1.5
14.00	54.4	221.5	1869	1.16	2616	8583	1	64	4.0	7.7	-7.0	-3.3
14.50	53.7	222.4	1983	1.23	2706	8878	1	44	4.3	8.3	-5.8	-6.0
15.00	52.7	221.8	2125	1.32	2796	9174	1	31	4.5	8.8	-4.5	-7.6
15.50	52.0	221.0	2250	1.40	2886	9469	0	16	3.6	6.9	-1.9	-6.7
16.00	52.0	219.5	2320	1.44	2976	9764	0	348	3.1	6.0	1.3	-5.8
16.50	52.3	217.4	2365	1.47	3066	10059	7	331	2.6	5.1	2.4	-4.4
17.00	52.9	216.0	2382	1.48	3156	10355	7	333	1.9	3.6	1.7	-3.2
17.50	53.3	215.0	2415	1.50	3246	10650	7	336	1.2	2.4	1.0	-2.2
18.00	54.0	214.5	2419	1.50	3336	10945	4	176	0.4	0.9	-0.1	0.9
18.50	55.0	215.4	2395	1.49	3426	11241	4	159	2.4	4.7	-1.7	4.3
19.00	56.3	217.4	2341	1.45	3516	11536	2	76	5.3	10.3	-10.0	-2.5
19.50	53.7	219.9	2644	1.64	3606	11831	3	153	3.3	6.4	-2.9	5.7
20.00	58.5	221.9	2261	1.41	3696	12126	6	208	13.1	25.4	12.1	22.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 4

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 14 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	24.6	139.4	236	0.15	114	374	7	321	9.1	17.8	11.3	-13.7
1.00	21.5	140.5	548	0.34	222	729	7	320	10.5	20.4	13.2	-15.6
1.50	20.0	139.7	865	0.54	321	1053	7	314	9.6	18.7	13.5	-13.0
2.00	20.2	137.2	1125	0.70	420	1378	7	307	8.0	15.5	12.4	-9.3
2.50	21.0	135.1	1336	0.83	519	1703	7	302	6.4	12.4	10.5	-6.6
3.00	22.2	133.4	1500	0.93	618	2028	7	306	4.9	9.4	7.6	-5.6
3.50	23.5	133.5	1625	1.01	713	2338	7	324	4.4	8.5	5.0	-6.9
4.00	24.5	135.0	1758	1.09	807	2648	0	340	4.5	8.7	3.0	-8.2
4.50	25.6	137.2	1869	1.16	902	2958	0	355	3.9	7.6	0.6	-7.6
5.00	27.0	139.5	1943	1.21	996	3268	0	6	3.1	6.1	-0.7	-6.1
5.50	28.4	141.3	1997	1.24	1086	3563	0	7	2.0	3.9	-0.5	-3.9
6.00	30.0	142.0	2027	1.26	1176	3859	1	28	1.4	2.7	-1.3	-2.4
6.50	31.8	143.5	2032	1.26	1266	4154	1	47	2.0	3.8	-2.8	-2.6
7.00	33.5	145.3	2040	1.27	1356	4449	1	46	2.4	4.6	-3.3	-3.2
7.50	35.0	147.4	2057	1.28	1446	4744	1	43	2.5	4.8	-3.3	-3.5
8.00	36.4	149.3	2075	1.29	1536	5040	1	51	2.1	4.1	-3.2	-2.6
8.50	38.0	150.9	2074	1.28	1626	5335	1	48	1.6	3.1	-2.3	-2.1
9.00	39.2	151.9	2097	1.30	1716	5630	1	42	1.7	3.3	-2.2	-2.4
9.50	40.5	153.5	2108	1.31	1806	5926	1	49	0.7	1.3	-1.0	-0.9
10.00	41.9	153.0	2106	1.31	1896	6221	2	92	1.0	2.0	-2.0	0.1
10.50	43.6	158.0	2079	1.29	1966	6515	0	5	5.3	10.3	-1.0	-10.3
11.00	41.0	157.[illegible]	2381	1.48	2075	6811	3	117	4.4	8.5	-7.6	3.9
11.50	49.[illegible]	159.9	1878	1.17	2166	7107	3	142	12.0	23.3	-14.2	18.4
12.00	53.0	163.3	1696	1.05	2256	7402	3	125	7.6	14.8	-12.1	8.5
12.50	56.9	168.7	1525	0.95	2346	7697	3	113	5.[illegible]	9.8	-9.0	[illegible]
13.00	58.0	172.1	1518	0.94	2436	7992	2	106	2.9	5.7	-5.5	1.6
13.50	60.0	175.9	1455	0.90	2526	8288	2	104	4.1	7.9	-7.7	1.9
14.00	61.0	181.1	1447	0.90	2616	8583	2	81	4.5	8.7	-8.6	-1.4
14.50	60.9	186.2	1503	0.93	2706	8878	1	60	5.1	10.0	-9.0	-4.4
15.00	60.0	190.9	1611	1.00	2796	9174	1	60	6.0	11.6	-10.1	-5.8
15.50	58.9	195.8	1737	1.08	2886	9469	1	61	6.2	12.0	-10.6	-5.8
16.00	57.8	199.7	1870	1.16	2976	9764	1	47	5.8	11.2	-8.3	-7.6
16.50	56.3	200.9	2041	1.27	3066	10059	1	39	5.2	10.0	-6.3	-7.8
17.00	55.5	202.4	2165	1.35	3156	10355	1	40	4.0	7.8	-5.0	-5.9
17.50	55.0	202.9	2269	1.41	3246	10650	2	68	4.4	8.6	-7.9	-3.2
18.00	54.7	207.0	2358	1.47	3336	10945	0	338	2.9	5.6	2.1	-5.2
18.50	55.0	200.0	2395	1.49	3426	11241	7	298	6.4	12.4	11.0	-5.8
19.00	55.7	197.8	2394	1.49	3516	11536	6	290	2.7	5.3	8.0	-1.8
19.50	56.3	196.1	2401	1.49	3606	11831	7	293	1.6	3.1	2.9	-1.2
20.00	56.9	195.5	2405	1.49	3696	12126	7	296	0.9	1.7	1.5	-0.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 5

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 14 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 21:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	35.0	138.5	154	0.10	114	374	7	313	5.7	11.1	8.1	-7.5
1.00	32.3	132.3	342	0.21	222	729	7	309	7.2	14.1	11.0	-8.8
1.50	28.2	131.2	587	0.37	321	1053	7	310	8.8	17.0	13.0	-11.0
2.00	25.5	131.2	868	0.54	420	1378	7	312	8.5	16.6	12.4	-11.1
2.50	25.0	131.5	1100	0.68	519	1703	7	318	7.4	14.5	9.7	-10.7
3.00	25.0	131.4	1312	0.82	618	2028	7	323	7.0	13.6	9.9	-10.0
3.50	25.0	134.7	1515	0.94	713	2338	7	321	6.3	12.2	7.7	-9.4
4.00	25.4	135.0	1687	1.05	807	2648	7	323	5.5	10.7	6.5	-8.5
4.50	25.9	136.1	1844	1.15	902	2958	0	339	4.6	8.9	3.3	-8.3
5.00	27.0	138.2	1943	1.21	996	3268	0	6	4.5	7.0	-0.8	-7.0
5.50	28.5	140.9	1989	1.24	1086	3563	1	33	3.7	6.1	-3.3	-5.1
6.00	30.3	143.4	2002	1.24	1176	3859	1	45	3.0	5.1	-4.1	-4.1
6.50	32.0	146.0	2016	1.25	1266	4154	1	37	3.5	6.2	-4.1	-5.4
7.00	33.1	149.0	2071	1.29	1356	4449	1	39	4.3	7.5	-4.8	-5.8
7.50	34.5	152.1	2095	1.30	1446	4744	1	41	4.0	7.3	-4.9	-5.6
8.00	35.4	154.8	2153	1.34	1536	5040	1	26	3.4	6.2	-3.9	-6.0
8.50	36.1	156.4	2222	1.38	1626	5335	0	20	3.3	6.0	-1.7	-4.6
9.00	37.1	157.5	2361	1.40	1716	5630	1	44	1.1	2.1	-1.4	-1.5
9.50	38.7	157.9	2247	1.40	1806	5926	3	155	1.3	2.6	-1.1	2.3
10.00	40.9	157.6	2182	1.36	1896	6221	4	196	1.5	3.0	0.8	2.8
10.50	42.3	156.4	2176	1.35	1986	6516	6	272	1.5	2.9	2.9	-0.1
11.00	43.0	155.5	2220	1.38	2076	6811	7	295	1.7	3.3	3.0	-1.4
11.50	43.8	154.7	2252	1.40	2166	7107	7	311	1.3	2.6	1.9	-1.6
12.00	44.5	154.7	2290	1.42	2256	7402	0	9	1.4	2.8	-0.4	-2.7
12.50	45.2	155.9	2324	1.44	2346	7697	1	46	2.4	4.5	-3.3	-3.2
13.00	46.1	158.0	2338	1.45	2436	7992	2	76	4.0	7.8	-7.5	-1.9
13.50	47.7	161.8	2293	1.42	2526	8288	2	86	4.8	9.3	-9.2	-0.7
14.00	49.0	164.2	2269	1.41	2616	8583	2	89	4.5	8.8	-8.9	-0.1
14.50	50.5	168.5	2226	1.38	2706	8878	2	100	5.0	9.7	-9.5	1.8
15.00	52.3	172.1	2156	1.34	2796	9174	2	107	5.2	10.1	-9.6	3.0
15.50	54.0	176.0	2092	1.30	2886	9469	3	113	5.4	10.4	-9.6	4.0
16.00	55.9	180.0	2011	1.25	2976	9764	2	110	5.1	9.8	-9.3	3.4
16.50	57.0	184.1	1987	1.23	3066	10059	3	89	5.2	10.1	-10.1	-0.1
17.00	57.1	188.0	2038	1.27	3156	10355	2	74	4.8	9.2	-8.9	-2.6
17.50	57.0	191.4	2104	1.31	3246	10650	1	53	3.9	7.6	-6.0	-4.6
18.00	56.4	193.0	2212	1.37	3336	10945	1	30	4.2	8.1	-4.1	-7.0
18.50	55.6	193.4	2342	1.46	3426	11241	0	20	4.0	7.7	-2.7	-7.2
19.00	55.1	193.7	2449	1.52	3516	11536	0	21	3.5	6.8	-2.4	-6.3
19.50	54.7	194.0	2549	1.58	3606	11831	1	26	3.1	6.1	-2.7	-5.4
20.00	54.5	194.6	2632	1.64	3696	12126	1	32	2.9	5.7	-3.0	-4.8

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 6

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 15 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 01:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	42.3	150.3	119	0.07	114	374	7	330	2.7	5.3	2.7	-4.6
1.00	52.8	149.9	164	0.10	222	729	2	93	0.1	0.2	-0.2	0.0
1.50	69.9	153.0	115	0.07	321	1053	4	160	2.3	4.4	-1.6	4.1
2.00	84.9	111.7	37	0.02	420	1378	4	179	3.5	6.7	-0.3	6.7
2.50	77.5	22.8	114	0.07	519	1703	8	204	1.7	3.4	1.4	3.1
3.00	79.6	43.1	112	0.07	618	2028	7	308	1.5	2.9	2.3	-1.7
3.50	80.0	65.9	125	0.08	713	2338	7	315	2.3	4.5	3.2	-3.2
4.00	77.6	95.8	176	0.11	807	2648	7	316	3.4	6.6	4.6	-4.7
4.50	73.0	110.4	274	0.17	902	2958	7	305	4.2	8.1	6.7	-4.6
5.00	67.3	112.9	414	0.26	996	3268	7	294	4.0	7.8	7.2	-3.1
5.50	64.5	111.8	515	0.32	1086	3563	7	298	2.7	5.2	4.6	-2.4
6.00	63.9	114.2	573	0.36	1176	3859	7	316	1.8	3.5	2.4	-2.5
6.50	64.0	116.0	615	0.38	1266	4154	7	306	1.0	1.9	1.5	-1.1
7.00	65.0	115.3	630	0.39	1356	4449	6	255	0.7	1.4	1.3	0.4
7.50	65.8	113.5	647	0.40	1446	4744	5	247	0.9	1.8	1.7	0.7
8.00	66.4	111.7	668	0.42	1536	5040	6	275	0.9	1.8	1.8	-0.1
8.50	66.6	112.0	701	0.44	1626	5335	7	299	1.4	2.7	2.3	-1.3
9.00	66.3	112.5	751	0.47	1716	5630	7	302	1.7	3.3	2.8	-1.7
9.50	66.0	113.2	801	0.50	1806	5926	7	306	1.6	3.0	2.4	-1.8
10.00	66.0	114.0	841	0.52	1896	6221	1	28	0.4	0.7	-0.3	-0.6
10.50	68.0	115.7	800	0.50	1986	6516	2	67	1.5	3.0	-3.0	0.4
11.00	70.0	116.0	753	0.47	2076	6811	1	55	1.1	2.1	-1.7	-1.2
11.50	70.4	119.9	769	0.48	2166	7107	0	359	2.1	4.1	0.1	-4.3
12.00	70.0	124.0	819	0.51	2256	7402	0	2	1.9	3.8	-0.1	-3.8
12.50	70.5	126.1	829	0.51	2346	7697	0	12	0.8	1.5	-0.3	-1.4
13.00	71.0	126.9	837	0.52	2436	7992	0	1	0.5	1.1	0.0	-1.1
13.50	71.4	127.8	848	0.53	2526	8288	1	55	0.5	1.0	-0.8	-0.6
14.00	72.4	128.9	828	0.51	2616	8583	2	107	0.9	1.7	-1.6	0.5
14.50	73.5	129.2	800	0.50	2706	8878	3	136	0.9	1.8	-1.2	1.3
15.00	74.5	128.4	774	0.48	2796	9174	3	116	0.7	1.3	-1.2	0.6
15.50	75.2	129.9	761	0.47	2886	9469	1	40	0.9	1.7	-1.1	-1.3
16.00	75.4	132.2	774	0.48	2976	9764	0	4	1.6	3.0	-0.2	-3.0
16.50	75.0	135.2	820	0.51	3066	10059	0	349	2.3	4.4	0.8	-4.3
17.00	74.3	137.5	885	0.55	3156	10355	0	346	2.1	4.0	1.0	-3.9
17.50	74.0	139.1	929	0.58	3246	10650	0	356	1.6	3.1	0.2	-3.0
18.00	73.9	141.0	961	0.60	3336	10945	0	8	1.3	2.5	-0.4	-2.5
18.50	74.0	142.5	981	0.61	3426	11241	0	359	0.9	1.8	0.0	-1.8
19.00	74.0	143.0	1006	0.63	3516	11536	7	320	0.6	1.2	0.8	-0.9
19.50	74.3	142.4	1019	0.63	3606	11831	6	258	1.4	2.7	2.7	0.6
20.00	74.2	148.6	1044	0.65	3696	12126	6	252	2.3	4.5	4.3	1.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 7

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 15 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	51.7	129.5	85	0.05	114	374	7	301	1.7	3.2	2.8	-1.7
1.00	65.3	120.9	99	0.06	222	729	4	178	0.5	1.1	0.0	1.1
1.50	77.8	108.6	68	0.04	321	1053	3	156	3.3	4.5	-1.8	4.1
2.00	79.1	21.1	80	0.05	420	1378	4	197	2.1	4.1	1.2	3.9
2.50	74.5	46.0	142	0.09	519	1703	6	268	2.7	5.3	5.3	0.2
3.00	71.2	67.5	208	0.13	618	2028	7	301	4.5	8.8	7.5	-4.5
3.50	64.5	96.9	337	0.21	713	2338	7	310	6.4	12.5	9.5	-8.0
4.00	57.1	108.8	518	0.32	807	2648	7	310	6.4	12.4	9.5	-7.9
4.50	52.4	114.4	690	0.43	902	2958	7	311	4.8	9.3	7.1	-6.1
5.00	51.3	116.6	793	0.49	996	3268	7	310	4.5	8.8	5.3	-4.4
5.50	50.3	119.0	897	0.56	1086	3563	7	298	2.7	5.3	4.6	-2.5
6.00	50.8	116.9	954	0.59	1176	3858	5	255	1.3	2.5	2.5	0.7
6.50	52.8	114.7	956	0.59	1266	4154	3	149	0.5	0.9	-0.8	0.8
7.00	55.4	116.0	931	0.58	1356	4449	2	70	1.3	2.6	-2.4	-0.9
7.50	57.9	118.2	903	0.56	1446	4744	2	79	2.7	5.3	-5.1	-1.0
8.00	62.1	122.8	810	0.50	1536	5040	2	75	2.8	5.5	-5.4	-1.4
8.50	64.1	128.7	787	0.49	1626	5336	1	61	2.8	5.3	-2.7	-2.6
9.00	66.4	134.1	747	0.46	1716	5630	1	51	3.6	6.9	-5.4	-4.4
9.50	67.0	142.5	764	0.47	1806	5926	1	33	3.3	6.4	-3.4	-5.4
10.00	66.8	147.9	810	0.50	1896	6221	0	15	3.0	5.9	-1.5	-5.5
10.50	65.9	151.8	886	0.55	1986	6516	0	2	3.0	5.9	-0.2	-5.8
11.00	65.0	153.9	965	0.60	2076	6811	0	8	3.2	6.3	-0.8	-6.2
11.50	64.1	156.0	1049	0.65	2166	7107	0	18	3.3	6.5	-2.0	-6.1
12.00	63.6	161.1	1112	0.69	2256	7402	1	42	2.4	4.7	-3.1	-3.5
12.50	64.4	164.7	1121	0.70	2346	7697	1	64	1.7	3.3	-3.0	-1.4
13.00	65.0	166.2	1133	0.70	2436	7992	3	122	0.8	1.6	-1.4	0.8
13.50	66.7	166.5	1085	0.67	2526	8288	4	166	1.0	2.0	-0.5	2.0
14.00	67.7	168.2	1070	0.67	2616	8583	4	159	1.2	2.3	-0.8	2.2
14.50	69.4	167.0	1015	0.63	2706	8878	3	135	2.3	4.5	-3.2	3.2
15.00	71.1	170.5	955	0.59	2796	9174	3	126	3.1	6.1	-4.9	3.6
15.50	73.0	175.0	881	0.55	2886	9469	3	140	2.9	5.7	-3.6	4.4
16.00	74.8	176.5	807	0.50	2976	9764	4	165	2.6	5.0	-1.2	4.8
16.50	76.6	177.0	729	0.45	3066	10059	4	170	2.7	5.2	-0.9	5.2
17.00	78.4	178.5	647	0.40	3156	10355	4	160	3.2	6.2	-2.1	5.9
17.50	80.4	182.9	548	0.34	3246	10650	3	150	4.3	8.4	-4.2	7.2
18.00	82.5	195.1	438	0.27	3336	10945	3	145	5.1	9.9	-5.6	8.1
18.50	84.0	214.2	359	0.22	3426	11241	3	138	4.4	8.5	-5.7	6.3
19.00	84.0	231.9	369	0.23	3516	11536	3	117	3.6	7.0	-6.2	3.1
19.50	83.0	243.0	442	0.27	3606	11831	2	87	3.5	6.7	-6.7	-0.3
20.00	81.5	244.5	551	0.34	3696	12126	2	71	3.7	7.1	-6.7	-2.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 8

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 15 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 09:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	58.9	163.2	65	0.04	114	374	7	324	2.3	4.5	2.7	-3.7
1.00	57.0	144.1	140	0.09	222	729	6	280	0.7	1.4	1.3	*0.2
1.50	73.7	139.2	92	0.06	321	1053	3	147	2.5	4.9	-2.6	4.1
2.00	88.1	3.5	14	0.01	420	1378	4	168	3.5	6.8	-1.4	6.7
2.50	75.0	7.3	137	0.09	519	1703	5	203	2.9	5.7	2.2	5.3
3.00	72.8	21.4	189	0.12	618	2028	5	226	3.1	5.9	4.3	4.1
3.50	66.8	29.7	303	0.19	713	2338	5	234	3.6	7.0	5.7	4.1
4.00	64.0	38.9	391	0.24	807	2648	6	260	3.3	6.3	6.2	1.1
4.50	63.2	49.2	452	0.28	902	2958	6	282	3.5	6.7	6.6	-1.4
5.00	62.3	59.7	520	0.32	996	3268	6	291	3.4	6.6	6.2	-2.3
5.50	61.8	67.3	579	0.36	1086	3563	7	295	3.2	6.2	5.6	-2.6
6.00	61.0	73.7	649	0.40	1176	3859	7	299	3.6	7.0	6.1	-3.4
6.50	59.8	80.9	733	0.46	1266	4154	7	297	4.1	7.9	7.1	-3.6
7.00	58.0	85.1	844	0.52	1356	4449	7	293	3.5	6.8	6.2	-2.7
7.50	57.5	87.9	917	0.57	1446	4744	7	295	2.8	5.5	5.0	-2.3
8.00	57.0	90.0	994	0.62	1536	5040	6	292	2.5	4.9	4.5	-1.8
8.50	56.9	91.2	1056	0.66	1626	5335	6	281	2.5	4.8	4.7	-0.9
9.00	56.3	91.4	1140	0.71	1716	5630	6	269	1.9	3.7	3.7	0.1
9.50	57.0	91.0	1169	0.73	1806	5926	6	261	0.8	1.5	1.5	0.2
10.00	57.9	91.0	1186	0.74	1896	6221	6	282	0.8	1.5	1.4	-0.3
10.50	58.5	91.4	1211	0.75	1986	6516	6	250	1.0	2.0	1.9	0.7
11.00	59.0	90.0	1242	0.77	2076	6811	5	217	1.7	3.4	2.0	2.7
11.50	59.4	87.6	1277	0.79	2166	7107	5	204	2.0	3.9	1.6	3.6
12.00	60.0	85.1	1299	0.81	2256	7402	4	174	1.7	3.3	-0.3	3.3
12.50	61.4	83.0	1276	0.79	2346	7697	2	103	5.5	10.6	-10.3	2.3
13.00	67.0	75.4	992	0.62	2436	7992	3	140	3.1	6.0	-3.8	4.6
13.50	64.8	75.4	1186	0.74	2526	8288	5	227	4.3	8.3	6.1	5.6
14.00	65.0	73.0	1217	0.76	2616	8583	5	226	1.9	3.7	2.7	2.6
14.50	64.5	72.9	1288	0.80	2706	8878	6	291	0.5	1.0	1.0	-0.4
15.00	66.0	73.9	1242	0.77	2796	9174	0	14	1.0	1.9	-0.5	-1.9
15.50	66.4	75.2	1258	0.78	2886	9469	0	357	1.0	1.9	0.1	-1.9
16.00	67.5	76.5	1230	0.76	2976	9764	1	36	1.3	2.5	-1.5	-2.0
16.50	68.6	77.5	1199	0.75	3066	10059	1	27	1.4	2.7	-1.2	-2.4
17.00	69.5	79.6	1178	0.73	3156	10355	1	35	1.0	2.0	-1.2	-1.7
17.50	70.4	79.6	1154	0.72	3246	10650	1	47	0.6	1.2	-0.9	-0.8
18.00	71.0	80.6	1147	0.71	3336	10945	0	5	1.1	2.1	-0.2	-2.1
18.50	71.6	83.0	1138	0.71	3426	11241	0	349	2.6	5.0	0.9	-4.9
19.00	71.7	88.2	1161	0.72	3516	11536	7	333	3.9	7.7	3.5	-6.8
19.50	71.0	93.1	1240	0.77	3606	11831	7	319	3.6	6.9	4.5	-5.2
20.00	70.5	95.5	1307	0.81	3696	12126	7	313	2.9	5.5	4.1	-3.8

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 9

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 15 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 13:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	GEOSTROPHIC WIND METERS/SEC (SPEED)	GEOSTROPHIC WIND NAUTICAL MILES PER HOUR (SPEED)	GEOSTROPHIC WIND (U)	GEOSTROPHIC WIND (V)
0.50	48.4	137.0	96	0.06	114	374	7	325	4.4	8.9	4.8	-7.1
1.00	39.0	145.1	267	0.17	222	728	7	334	4.5	8.7	3.9	-7.8
1.50	41.0	149.2	362	0.23	321	1053	7	337	2.3	4.4	1.7	-4.1
2.00	45.9	149.2	401	0.25	420	1378	6	255	1.6	3.2	3.1	0.8
2.50	52.0	135.6	401	0.25	519	1703	5	235	3.2	6.3	5.1	3.6
3.00	54.8	127.6	432	0.27	618	2028	5	229	3.2	6.1	4.6	2.0
3.50	57.3	111.0	454	0.28	713	2338	5	244	5.2	10.3	9.1	4.5
4.00	50.9	98.3	651	0.40	807	2648	5	237	4.6	8.9	7.8	4.9
4.50	53.9	91.1	653	0.41	902	2958	5	216	3.6	7.1	4.1	3.7
5.00	51.9	83.9	776	0.48	996	3268	5	229	5.2	10.0	1.5	8.6
5.50	50.0	77.8	906	0.56	1086	3563	5	223	5.0	9.8	6.7	7.2
6.00	48.8	72.7	1024	0.64	1176	3859	5	224	4.4	8.5	5.0	6.1
6.50	48.0	70.5	1135	0.70	1266	4154	5	229	3.9	7.6	5.0	3.9
7.00	47.9	68.1	1220	0.76	1356	4449	5	229	3.4	6.7	4.5	2.0
7.50	47.5	66.2	1320	0.82	1446	4744	5	219	3.4	6.6	4.2	5.1
8.00	47.5	64.1	1402	0.87	1536	5040	5	219	2.9	5.7	3.6	4.4
8.50	47.6	63.1	1479	0.92	1626	5335	5	231	2.3	4.5	3.5	2.9
9.00	48.0	62.9	1540	0.96	1716	5630	5	230	2.3	4.4	3.8	2.3
9.50	48.1	62.7	1615	1.00	1806	5926	5	233	2.5	4.9	3.9	3.0
10.00	48.2	62.0	1690	1.05	1896	6221	5	230	2.9	5.6	4.3	3.6
10.50	48.0	61.5	1783	1.11	1986	6516	5	229	3.3	6.8	5.2	4.5
11.00	47.5	60.6	1897	1.18	2076	6811	5	225	3.0	5.8	4.5	3.5
11.50	47.0	59.6	2014	1.25	2166	7107	5	221	3.8	7.9	4.0	5.6
12.00	46.8	58.5	2113	1.31	2256	7402	5	233	2.8	5.5	4.4	3.3
12.50	47.0	59.1	2182	1.36	2346	7697	6	272	2.2	4.2	4.4	-0.1
13.00	47.5	60.4	2227	1.38	2436	7992	6	286	1.7	3.3	3.2	-0.9
13.50	48.2	61.0	2253	1.40	2526	8288	7	300	1.4	2.7	2.3	-1.3
14.00	49.0	62.2	2269	1.41	2616	8583	7	315	1.6	3.1	2.2	-2.2
14.50	49.8	63.3	2282	1.42	2706	8878	7	311	2.0	3.9	3.0	-2.6
15.00	50.3	65.0	2316	1.44	2796	9174	7	320	2.6	5.1	3.3	-3.9
15.50	51.1	67.1	2324	1.44	2886	9469	7	319	2.6	5.0	3.2	-3.8
16.00	51.5	68.6	2362	1.47	2976	9764	7	298	2.2	4.2	3.7	-2.0
16.50	51.8	69.5	2408	1.50	3066	10059	6	278	1.9	3.7	3.6	-0.5
17.00	52.0	69.9	2461	1.53	3156	10355	6	252	3.3	6.4	6.1	2.0
17.50	51.2	69.7	2605	1.62	3246	10650	6	253	1.4	2.8	2.6	0.8
18.00	52.6	70.0	2546	1.58	3336	10945	0	12	0.9	1.7	-0.4	-1.7
18.50	53.0	70.7	2577	1.60	3426	11241	7	304	2.2	4.2	3.5	-2.4
19.00	53.2	72.3	2626	1.63	3516	11536	7	310	3.9	7.6	5.8	-4.9
19.50	53.1	75.0	2703	1.68	3606	11831	7	309	4.4	8.6	6.7	-5.4
20.00	53.0	76.9	2781	1.73	3696	12126	7	305	4.0	7.7	6.3	-4.5

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 10

LOCATION: PENNAR CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 15 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. D E G R E E S	AZIMUTH D E G R E E S	R A N G E METERS	R A N G E MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	D I R E C T I O N CLASS 0- 7	D I R E C T I O N DEGREES	V E L O C I T Y METERS/SEC (SPEED)	V E L O C I T Y NAUTICAL MILES PER HOUR (SPEED)	V E L O C I T Y (U)	V E L O C I T Y (V)
0.50	23.0	156.9	254	0.16	114	374	7	327	8.7	16.9	9.1	-14.2
1.00	22.5	147.4	521	0.32	222	729	7	306	8.6	16.7	13.5	-9.8
1.50	22.9	136.0	746	0.46	321	1053	6	291	9.4	18.3	17.1	-6.4
2.00	21.9	128.2	1030	0.64	420	1378	6	279	10.4	20.3	20.0	-3.2
2.50	21.5	119.2	1302	0.81	519	1703	6	271	8.4	16.4	16.4	-0.1
3.00	22.7	116.0	1463	0.91	618	2028	6	271	5.3	10.2	10.2	-0.2
3.50	24.0	113.8	1587	0.99	713	2338	6	262	3.9	7.6	7.6	1.0
4.00	25.7	111.5	1664	1.03	807	2648	6	256	3.8	7.4	7.2	1.8
4.50	26.8	109.3	1773	1.10	902	2958	6	263	5.2	10.1	10.0	1.3
5.00	27.0	107.1	1943	1.21	996	3268	6	263	6.5	12.6	12.5	1.5
5.50	26.9	104.7	2129	1.32	1086	3563	6	252	6.9	13.5	12.8	4.2
6.00	27.0	101.1	2296	1.43	1176	3859	5	243	6.6	12.9	11.5	5.8
6.50	27.3	98.5	2441	1.52	1266	4154	5	240	6.1	11.9	10.2	6.0
7.00	27.6	95.7	2582	1.60	1356	4449	5	232	5.6	10.9	8.6	6.7
7.50	28.2	93.3	2686	1.67	1446	4744	5	213	4.1	8.1	4.3	6.8
8.00	29.5	91.0	2704	1.68	1536	5040	5	204	3.8	7.3	2.9	6.7
8.50	30.3	88.9	2772	1.72	1626	5335	5	224	3.6	7.1	4.9	5.1
9.00	30.9	87.8	2857	1.78	1716	5630	5	237	3.9	7.6	6.3	4.2
9.50	31.2	86.5	2972	1.85	1806	5926	5	247	4.0	7.8	7.2	3.1
10.00	31.5	86.2	3084	1.92	1896	6221	6	267	3.7	7.2	7.2	0.4
10.50	31.8	86.5	3193	1.98	1986	6516	6	277	4.3	8.4	8.3	-1.0
11.00	31.8	87.0	3339	2.07	2076	6811	6	276	4.2	8.2	8.2	-0.9
11.5	32.1	87.2	3447	2.14	2166	7107	6	275	3.7	7.2	7.2	-0.6
12.00	32.2	87.5	3559	2.21	2256	7402	6	270	4.1	7.9	7.9	0.0
12.50	32.4	87.4	3687	2.29	2346	7697	6	265	5.0	9.7	9.7	0.5
13.00	32.2	87.3	3859	2.40	2436	7992	6	267	4.7	9.2	9.2	0.4
13.50	32.4	87.4	3971	2.47	2526	8288	6	279	4.1	7.9	7.8	-1.3
14.00	32.5	88.0	4097	2.55	2616	8583	6	286	4.1	8.0	7.7	-2.3
14.50	32.7	88.5	4206	2.61	2706	8878	6	281	3.4	6.6	6.5	-1.2
15.00	33.0	88.6	4296	2.67	2796	9174	6	256	3.0	5.9	5.7	1.4
15.50	33.3	88.0	4384	2.73	2886	9469	6	249	2.8	5.4	5.0	1.9
16.00	33.7	87.9	4453	2.77	2976	9764	6	268	2.5	4.9	4.9	0.2
16.50	34.0	88.0	4537	2.82	3066	10059	6	285	3.2	6.2	5.9	-1.6
17.00	34.2	88.6	4635	2.88	3156	10355	7	295	3.6	7.1	6.4	-3.0
17.50	34.4	89.2	4737	2.94	3246	10650	6	289	3.7	7.2	6.8	-2.3
18.00	34.5	89.5	4845	3.01	3336	10945	6	275	4.1	7.9	7.9	-0.7
18.50	34.5	89.5	4976	3.09	3426	11241	6	279	4.4	8.6	8.5	-1.4
19.00	34.5	90.0	5107	3.17	3516	11536	7	297	4.9	9.5	8.5	-4.4
19.50	34.5	91.0	5238	3.25	3606	11831	7	305	5.2	10.2	8.4	-5.8
20.00	34.5	91.9	5369	3.34	3696	12126	7	304	5.2	10.0	8.3	-5.6

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 11

LOCATION: NEWARK CALIFORNIA

SPECIFICS: GUSTY WIND

DATE OF LAUNCH: 15 AUGUST 1976

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 21:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	26.9	156.4	213	0.13	114	374	7	336	9.4	10.2	7.4	-16.6
1.00	21.0	156.0	563	0.35	222	729	7	323	4.9	9.6	5.7	-7.7
1.50	31.9	148.0	506	0.31	321	1053	5	209	3.2	6.2	3.0	5.4
2.00	41.2	137.0	473	0.29	420	1378	5	226	3.5	6.7	4.9	4.7
2.50	45.5	125.0	504	0.31	519	1703	5	238	4.2	8.1	6.9	4.2
3.00	46.7	111.9	577	0.36	618	2028	5	240	3.6	6.9	6.0	3.4
3.50	48.5	107.0	625	0.39	713	2338	5	226	2.5	4.8	3.4	3.3
4.00	50.9	100.0	651	0.40	807	2648	5	219	3.8	7.4	4.7	5.7
4.50	50.3	90.4	743	0.46	902	2958	5	240	6.0	11.7	10.1	5.8
5.00	46.0	86.0	956	0.59	996	3268	6	250	8.3	16.0	15.1	6.4
5.50	41.5	82.4	1221	0.76	1086	3563	6	248	7.6	14.7	13.6	5.4
6.00	40.0	80.3	1394	0.87	1176	3859	5	216	2.0	3.8	2.2	3.1
6.50	44.0	78.6	1305	0.81	1266	4154	5	200	7.2	13.6	7.3	13.5
7.00	38.0	67.8	1728	1.07	1356	4449	6	256	9.5	18.5	18.0	2.6
7.50	37.5	77.7	1877	1.17	1446	4744	7	302	7.6	14.7	13.6	-7.7
8.00	37.0	78.2	2030	1.26	1536	5040	6	271	4.8	9.3	9.3	-0.1
8.50	36.9	79.4	2158	1.34	1626	5335	6	283	4.3	8.3	8.2	-1.0
9.00	37.0	80.9	2269	1.41	1716	5630	6	285	4.1	7.9	7.6	-2.0
9.50	37.1	81.9	2380	1.48	1806	5926	7	294	2.9	5.7	5.2	-2.3
10.00	38.0	83.2	2419	1.50	1896	6221	7	296	2.2	4.2	3.8	-1.9
10.50	38.5	83.6	2489	1.55	1986	6516	6	292	2.8	5.5	5.0	-2.0
11.00	38.9	85.0	2565	1.59	2076	6811	7	294	3.6	6.9	6.4	-2.8
11.50	38.9	85.9	2677	1.66	2166	7107	6	282	4.2	8.2	8.0	-1.7
12.00	38.7	86.5	2808	1.75	2256	7402	6	285	5.6	10.8	10.5	-2.8
12.50	38.0	88.0	2995	1.86	2346	7697	6	288	6.6	13.2	12.5	-4.1
13.00	37.3	89.2	3190	1.98	2436	7992	7	293	6.6	12.8	11.7	-5.1
13.50	36.9	90.9	3356	2.09	2526	8288	7	294	6.8	13.3	12.1	-5.5
14.00	36.2	92.0	3566	2.22	2616	8583	6	292	7.1	13.8	12.8	-5.1
14.50	35.7	93.2	3757	2.33	2706	8878	6	282	6.3	12.3	12.0	-2.6
15.00	35.3	93.0	3940	2.45	2796	9174	6	277	5.7	11.0	11.0	-1.3
15.50	35.1	93.5	4098	2.55	2886	9469	7	302	5.1	9.9	8.4	-5.2
16.00	35.2	95.0	4210	2.62	2976	9764	7	305	4.6	9.0	7.4	-5.1
16.50	35.2	95.4	4338	2.70	3066	10059	6	289	4.9	9.6	9.1	-3.1
17.00	35.0	95.9	4499	2.80	3156	10355	6	284	5.2	10.0	9.7	-2.5
17.50	34.9	96.0	4644	2.89	3246	10650	6	280	5.8	11.2	11.1	-2.0
18.00	34.5	96.2	4845	3.01	3336	10945	6	286	7.5	14.6	14.0	-4.1
18.50	33.9	96.9	5090	3.16	3426	11241	6	288	7.8	15.1	14.4	-4.6
19.00	33.5	97.2	5303	3.30	3516	11536	6	282	6.5	12.7	12.4	-2.7
19.50	33.3	97.3	5480	3.41	3606	11831	6	279	6.3	12.3	12.1	-1.9
20.00	33.0	97.3	5682	3.53	3696	12126	6	277	6.7	13.1	12.9	-1.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 12

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 16 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 01:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	40.4	165.9	127	0.08	114	374	7	336	4.3	8.4	3.4	-7.7
1.00	39.8	156.2	259	0.16	222	729	7	307	2.8	5.4	4.3	-3.2
1.50	48.8	143.5	276	0.17	321	1053	5	228	2.1	4.1	3.0	2.7
2.00	58.8	127.7	251	0.16	420	1378	4	186	3.5	6.8	0.8	6.7
2.50	69.9	94.1	188	0.12	519	1703	4	196	3.6	7.0	1.9	6.7
3.00	66.8	78.0	262	0.16	618	2028	5	243	3.0	5.8	5.2	2.6
3.50	63.4	79.1	354	0.22	713	2338	6	281	4.1	8.1	7.9	-1.6
4.00	58.0	89.4	501	0.31	807	2648	6	289	5.5	10.8	10.2	-3.5
4.50	53.5	91.6	663	0.41	902	2958	6	282	5.8	11.3	11.1	-2.3
5.00	49.5	94.4	846	0.53	996	3268	6	277	6.2	12.1	12.0	-1.4
5.50	46.2	94.7	1036	0.64	1086	3563	6	273	3.5	6.9	6.8	-0.4
6.00	47.9	94.2	1057	0.66	1176	3859	6	270	6.9	13.4	13.4	0.0
6.50	41.0	93.4	1449	0.90	1266	4154	6	268	9.3	18.1	18.1	0.5
7.00	39.9	92.2	1615	1.00	1356	4449	6	268	7.3	14.1	14.1	0.5
7.50	37.4	92.1	1883	1.17	1446	4744	6	273	7.1	13.7	13.7	-0.8
8.00	36.9	92.4	2038	1.27	1536	5040	6	272	6.5	12.6	12.5	-0.3
8.50	35.5	93.0	2271	1.41	1626	5335	6	267	7.5	14.6	14.6	0.8
9.00	34.5	91.4	2488	1.55	1716	5630	6	263	7.2	14.0	13.9	1.7
9.50	33.7	90.6	2699	1.68	1806	5926	6	261	7.1	13.9	13.7	2.1
10.00	33.0	89.9	2910	1.81	1896	6221	6	264	6.7	12.9	12.9	1.3
10.50	32.[illegible]	89.8	3096	1.92	1986	6516	6	250	6.2	12.0	11.3	4.1
11.00	32.4	87.7	3262	2.03	2076	6811	6	253	6.5	12.6	12.[illegible]	3.8
11.50	31.9	87.9	3470	2.16	2166	7107	6	253	6.8	13.2	12.6	3.8
12.00	31.6	86.1	3657	2.27	2256	7402	5	239	6.5	12.7	10.9	6.4
12.50	31.5	86.1	3819	2.37	2366	7697	5	246	5.4	10.6	9.7	4.3
13.00	31.5	84.5	3965	2.46	2433	7992	6	250	5.[illegible]	9.8	9.2	3.4
13.50	31.5	84.0	4112	2.56	2526	8288	6	257	5.8	11.2	10.9	2.5
14.00	31.2	83.9	4310	2.68	2616	8583	6	270	6.7	13.0	13.0	0.1
14.50	30.9	84.5	4511	2.80	2706	8878	6	274	8.2	15.9	15.8	-1.0
15.00	30.2	84.9	4794	2.98	2796	9174	6	270	9.0	17.5	17.5	0.0
15.50	29.7	85.1	5019	3.14	2886	9469	6	271	9.1	17.6	17.6	-0.2
16.00	29.1	85.5	5336	3.32	2976	9764	6	273	9.1	17.6	17.6	-1.0
16.50	28.7	85.9	5589	3.47	3066	10059	6	271	9.0	17.5	17.5	-0.3
17.00	28.2	86.0	5875	3.65	3156	10355	6	271	8.4	16.4	16.4	-0.2
17.50	28.0	86.3	6094	3.79	3246	10650	6	270	8.7	16.9	16.9	0.1
18.00	27.5	86.3	6397	3.97	3336	10945	6	266	9.4	18.2	18.1	1.2
18.50	27.2	86.3	6655	4.13	3426	11241	5	266	9.2	17.9	17.8	1.2
19.00	26.8	86.3	6949	4.32	3516	11536	6	265	9.4	18.3	18.3	1.6
19.50	26.5	86.2	7220	4.49	3606	11831	6	266	7.5	14.6	14.6	0.9
20.00	26.5	86.3	7401	4.60	3696	12126	6	270	6.0	11.7	11.7	-0.1

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 13

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 16 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 1100 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	48.1	114.2	97	0.06	114	374	7	302	4.0	7.8	6.6	-4.1
1.00	43.8	121.9	240	0.15	222	729	7	304	3.9	7.5	6.3	-4.2
1.50	43.8	120.9	328	0.20	321	1053	7	300	2.0	4.0	3.4	-2.0
2.00	48.8	121.4	362	0.23	420	1378	2	74	0.3	0.6	-0.6	-0.2
2.50	50.4	123.5	316	0.20	519	1703	5	205	0.6	1.1	0.5	1.0
3.00	59.5	116.0	360	0.22	618	2028	5	243	1.6	3.2	2.8	1.4
3.50	62.1	110.3	374	0.23	713	2338	5	226	4.0	7.7	5.6	5.3
4.00	58.2	89.2	497	0.31	807	2648	5	243	5.9	11.5	10.3	5.1
4.50	53.2	87.5	670	0.42	902	2958	6	272	7.1	13.8	13.8	-0.5
5.00	47.0	90.6	823	0.51	996	3268	6	283	5.8	11.3	11.0	-2.6
5.50	46.9	92.9	1011	0.63	1086	3563	6	285	7.6	14.8	14.3	-3.9
6.00	40.5	95.4	1370	0.85	1176	3859	6	288	9.9	19.2	18.2	-6.0
6.50	38.4	98.5	1590	0.99	1266	4154	7	297	7.5	14.6	13.0	-6.6
7.00	36.8	100.7	1790	1.12	1355	4449	7	298	5.1	9.9	10.5	-5.7
7.50	36.6	102.2	1939	1.20	1446	4744	7	300	7.8	15.1	13.0	-7.6
8.00	34.3	104.7	2243	1.39	1536	5040	7	301	9.9	19.1	15.5	-9.4
8.50	33.2	106.4	2476	1.54	1626	5335	7	302	7.8	15.2	12.9	-8.1
9.00	32.4	107.7	2695	1.67	1716	5630	7	304	7.8	15.2	12.6	-8.5
9.50	31.6	109.2	2926	1.82	1806	5926	7	307	7.9	15.3	12.3	-9.1
10.00	31.0	110.5	3145	1.95	1896	6221	7	309	7.2	14.0	10.9	-8.8
10.50	30.7	111.7	3335	2.07	1986	6516	7	311	6.5	12.6	9.6	-8.2
11.00	30.5	112.7	3514	2.18	2076	6811	7	309	7.1	13.7	10.7	-8.6
11.50	30.0	113.6	3741	2.32	2166	7107	7	306	6.8	13.2	10.7	-7.8
12.00	29.9	114.1	3913	2.43	2256	7402	7	301	5.5	10.7	9.2	-5.5
12.50	29.9	114.2	4069	2.53	2346	7697	7	293	5.2	10.1	9.3	-3.9
13.00	29.9	114.0	4226	2.63	2436	7992	6	291	4.9	9.6	8.9	-3.5
13.50	30.0	114.0	4365	2.71	2526	8288	6	289	4.9	9.6	9.0	-3.2
14.00	30.0	113.7	4521	2.81	2616	8583	6	286	5.6	10.8	10.4	-2.9
14.50	29.9	113.4	4695	2.92	2706	8878	6	284	6.6	12.9	12.5	-3.0
15.00	29.6	112.9	4911	3.05	2796	9174	6	277	7.5	14.7	14.5	-1.9
15.50	29.3	112.0	5132	3.19	2886	9469	6	272	8.3	16.2	16.1	-0.5
16.00	28.9	111.0	5380	3.34	2976	9764	6	267	9.2	17.9	17.8	1.0
16.50	28.5	109.6	5636	3.50	3066	10059	6	266	9.9	19.2	19.2	1.2
17.00	28.0	108.6	5924	3.68	3156	10355	6	265	9.3	18.0	18.0	1.7
17.50	27.8	107.4	6145	3.82	3246	10650	6	257	10.1	19.7	19.2	4.3
18.00	27.3	105.8	6452	4.01	3336	10945	6	257	12.5	24.2	23.6	5.5
18.50	26.7	104.2	6800	4.23	3426	11241	6	259	13.8	26.7	26.2	5.3
19.00	25.0	102.8	7197	4.47	3516	11536	6	272	28.5	55.5	55.5	-1.7
19.50	23.0	101.7	8481	5.27	3606	11831	6	263	15.9	30.8	30.6	3.8
20.00	24.5	100.5	8097	5.03	3696	12126	3	125	14.0	27.3	-22.2	15.8

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

SUMMARY FOR ASCENT # 14

LOCATION: NEWARK CALIFORNIA

SPECIFICS: GUSTY WINDS

DATE OF LAUNCH: 16 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	18.8	163.0	317	0.20	114	374	7	313	10.2	19.7	14.4	-13.5
1.00	19.5	133.3	610	0.38	222	729	7	297	11.0	21.4	19.1	-9.7
1.50	19.1	131.5	910	0.57	321	1053	7	304	9.4	18.2	15.2	-10.1
2.00	19.5	128.6	1169	0.73	420	1378	6	288	8.3	16.0	15.2	-5.1
2.50	20.4	123.4	1379	0.86	519	1703	6	270	7.7	14.9	14.9	0.1
3.00	21.5	117.9	1554	0.97	618	2028	6	253	6.7	13.0	12.4	3.8
3.50	23.0	112.7	1664	1.03	713	2338	6	256	5.7	11.1	10.8	2.7
4.00	23.7	110.7	1825	1.13	807	2648	6	276	6.0	11.6	11.6	-1.3
4.50	24.0	109.8	2011	1.25	902	2958	6	281	6.2	12.1	11.9	-2.2
5.00	24.3	109.0	2193	1.36	996	3268	6	281	5.1	10.0	9.8	-1.9
5.50	25.0	108.6	2316	1.44	1086	3563	6	279	4.2	8.2	8.1	-1.3
6.00	25.6	108.0	2442	1.52	1176	3859	6	273	4.2	8.2	8.2	-0.5
6.50	26.2	107.1	2561	1.59	1266	4154	6	270	5.1	9.8	9.8	0.1
7.00	26.3	106.0	2732	1.70	1356	4449	6	270	5.2	10.2	10.2	-0.1
7.50	26.7	105.3	2863	1.78	1446	4744	6	273	6.7	13.0	13.0	-0.6
8.00	26.1	104.3	3123	1.94	1536	5040	6	275	9.5	18.5	18.4	-1.6
8.50	25.3	103.6	3427	2.13	1626	5335	6	276	10.3	20.0	19.9	-2.0
9.00	24.6	102.9	3735	2.32	1716	5630	6	272	9.5	18.4	18.4	-0.7
9.50	24.3	102.0	3987	2.48	1806	5926	6	267	7.8	15.1	15.1	0.7
10.00	24.3	101.2	4186	2.60	1896	6221	6	261	6.7	13.0	12.9	2.1
10.50	24.4	100.1	4365	2.71	1986	6516	6	255	6.6	12.7	12.3	3.3
11.00	24.5	99.0	4542	2.82	2076	6811	6	249	6.0	11.6	10.8	4.2
11.50	24.8	97.9	4675	2.90	2166	7107	5	243	5.7	11.[illegible]	9.9	5.0
12.00	25.0	96.6	4825	3.00	2256	7402	6	248	6.1	11.9	11.0	4.5
12.50	25.1	95.7	4995	3.10	2346	7697	6	260	6.7	13.0	12.8	2.4
13.00	25.0	95.3	5211	3.24	2436	7992	6	267	6.9	13.4	13.4	0.8
13.50	25.0	95.0	5404	3.36	2526	8288	6	263	6.1	11.9	11.8	1.4
14.00	25.1	94.5	5572	3.46	2616	8583	5	247	7.2	14.0	12.9	5.4
14.50	25.0	93.0	5790	3.60	2706	8878	6	264	7.9	15.3	15.2	1.5
15.00	24.8	93.7	6038	3.75	2796	9174	6	279	8.9	17.2	17.0	-2.7
15.50	24.5	93.5	6320	3.93	2886	9469	6	272	10.6	20.5	20.5	-0.6
16.00	24.0	93.5	6671	4.15	2976	9764	6	275	9.2	17.9	17.9	-1.5
16.50	24.0	93.6	6873	4.27	3066	10059	6	277	7.3	14.2	14.1	-1.7
17.00	23.9	93.7	7108	4.42	3156	10355	6	281	6.8	13.2	13.0	-2.5
17.50	24.0	93.0	7277	4.52	3246	10650	6	289	6.4	12.5	11.7	-4.1
18.00	24.0	94.5	7479	4.65	3336	10945	6	287	6.9	13.4	12.8	-3.9
18.50	24.0	94.7	7681	4.77	3426	11241	6	284	6.8	13.3	12.9	-3.2
19.00	24.0	95.0	7884	4.90	3516	11536	6	284	8.8	17.0	16.5	-4.1
19.50	23.7	95.3	8201	5.10	3606	11831	6	279	11.4	22.2	21.9	-3.4
20.00	23.3	95.3	8568	5.32	3696	12126	6	275	12.2	23.8	23.7	-2.2

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 15

LOCATION: NEWARK CALIFORNIA

SPECIFICS: WIND CHANGE // LOST IN BACKGROUND LIGHT

DATE OF LAUNCH: 16 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 23:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	54.9	25.8	76	0.05	114	374	5	210	2.7	5.2	2.6	4.5
1.00	53.5	30.4	160	0.10	222	729	5	218	3.2	6.1	3.8	4.9
1.50	50.0	34.3	264	0.16	321	1053	5	228	3.6	7.0	5.2	4.6
2.00	48.2	40.7	370	0.23	420	1378	6	256	4.5	8.8	8.5	2.1
2.50	45.7	55.4	501	0.31	519	1703	6	264	5.5	10.7	10.6	1.2
3.00	43.2	60.9	652	0.40	618	2028	6	264	6.9	13.3	13.2	1.5
3.50	38.6	68.1	885	0.55	713	2338	6	283	9.1	17.7	17.2	-4.0
4.00	35.6	80.0	1119	0.70	807	2648	6	292	11.2	21.7	20.1	-8.2
4.50	31.8	87.0	1444	0.90	902	2958	6	285	11.2	21.7	21.0	-5.5
5.00	29.5	89.2	1750	1.09	996	3268	6	279	10.4	20.2	19.9	-3.3
5.50	27.7	90.7	2057	1.29	1086	3563	6	276	10.5	20.4	20.3	-2.3
6.00	26.2	91.1	2378	1.48	1176	3859	6	273	10.9	20.9	20.9	-1.2
6.50	25.0	91.3	2702	1.68	1266	4154	6	274	9.5	18.9	18.9	-1.2
7.00	24.5	91.6	2962	1.84	1356	4449	6	276	8.9	17.3	17.3	-1.7
7.50	24.0	92.0	3234	2.01	1446	4744	6	280	8.8	17.1	16.9	-3.0
8.00	23.7	92.9	3485	2.17	1536	5040	6	283	8.3	16.2	15.1	-3.7
8.50	23.5	93.5	3726	2.32	1626	5335	6	281	7.5	14.6	14.3	-2.7
9.00	23.5	93.8	3933	2.44	1716	5630	6	278	8.3	16.0	15.9	-2.2
9.50	23.1	94.0	4220	2.62	1806	5926	6	281	8.7	16.9	15.6	-3.1
10.00	23.0	94.2	4453	2.77	1896	6221	6	283	9.4	18.3	17.0	-4.2
10.50	22.5	95.1	4780	2.97	1986	6516	6	279	11.2	21.8	21.5	-3.5
11.00	22.0	95.2	5123	3.18	2076	6811	6	275	10.3	20.1	20.0	-1.9
11.50	21.8	95.1	5400	3.36	2166	7107	6	271	9.8	19.1	19.1	-0.4
12.00	21.5	94.8	5712	3.55	2256	7402	6	270	11.6	22.6	22.6	0.1
12.50	21.0	94.5	6096	3.79	2346	7697	6	271	11.4	22.2	22.2	-0.4
13.00	20.8	94.4	6397	3.97	2436	7992	6	269	10.8	20.9	20.9	0.3
13.50	20.5	94.0	6740	4.19	2526	8288	6	267	9.8	19.0	19.0	0.9
14.00	20.5	93.8	6981	4.34	2616	8583	6	273	8.0	15.6	15.6	-0.7
14.50	20.5	93.9	7221	4.49	2706	8878	6	269	8.7	16.9	16.9	0.2
15.00	20.4	93.5	7502	4.66	2796	9174	6	255	7.0	13.6	13.2	3.4
15.50	20.7	92.9	7622	4.74	2886	9469	3	147	3.2	6.3	-3.4	5.2
16.00	21.9	92.3	7388	4.59	3976	9764	6	257	7.5	14.6	14.2	3.4
16.50	20.8	92.0	8056	5.01	3066	10059	6	264	13.8	26.7	26.6	2.6
17.00	21.0	91.5	8206	5.10	3156	10355	6	261	6.5	12.7	12.5	1.9
17.50	21.6	91.5	8440	5.24	3246	10650	6	274	4.9	9.4	9.4	-0.7
18.00	21.4	91.3	8497	5.28	3336	10945	6	277	7.9	15.3	15.1	-1.9
18.50	21.0	91.8	8909	5.54	3426	11241	6	278	10.0	19.5	19.3	-2.6
19.00	21.1	92.0	9096	5.65	3516	11536	6	281	6.3	12.3	12.0	-2.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA

S U M M A R Y F O R A S C E N T # 16

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 17 AUGUST 1970

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. D E G R E E S	AZIMUTH D E G R E E S	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	65.4	199.7	49	0.03	114	374	0	6	1.1	2.2	-0.2	-2.2
1.00	72.7	185.9	67	0.04	222	729	1	29	0.2	0.3	-0.2	-0.3
1.50	79.2	201.3	60	0.04	321	1053	2	70	2.6	5.1	-4.8	-1.8
2.00	64.5	232.2	197	0.12	420	1378	3	123	4.8	9.3	-7.8	5.0
2.50	61.3	290.5	281	0.17	519	1703	5	218	4.0	7.7	4.8	6.1
3.00	83.8	353.1	66	0.04	618	2028	6	269	5.8	11.2	11.2	0.1
3.50	79.5	38.8	131	0.08	713	2338	5	244	3.8	7.3	6.5	3.2
4.00	72.3	49.4	256	0.16	807	2648	6	251	4.8	9.4	8.9	3.1
4.50	65.5	60.9	408	0.25	902	2958	6	282	5.8	11.3	11.1	-2.3
5.00	61.2	79.9	544	0.34	996	3268	7	304	7.5	14.5	12.0	-8.2
5.50	56.0	94.3	728	0.45	1086	3563	7	311	8.1	15.8	11.9	-10.4
6.00	51.5	104.1	931	0.58	1176	3859	7	314	7.7	15.0	10.7	-10.5
6.50	46.3	109.7	1123	0.70	1266	4154	7	315	7.4	14.4	10.1	-10.3
7.00	45.4	114.1	1331	0.83	1356	4449	7	311	7.7	14.9	11.3	-9.7
7.50	42.7	115.8	1561	0.97	1446	4744	7	308	8.4	16.3	12.9	-9.9
8.00	40.0	117.8	1823	1.13	1536	5040	7	304	9.3	18.0	14.9	-10.1
8.50	37.5	118.0	2111	1.31	1626	5335	7	301	9.1	17.7	15.2	-9.1
9.00	35.8	118.5	2371	1.47	1716	5630	7	301	8.8	17.1	14.7	-8.8
9.50	34.3	118.6	2639	1.64	1806	5926	7	299	8.8	17.1	15.0	-8.3
10.00	33.1	118.6	2899	1.80	1896	6221	7	297	9.2	18.0	16.0	-8.1
10.50	31.8	118.3	3193	1.98	1986	6516	7	298	9.6	18.6	16.4	-8.7
11.00	30.8	118.5	3472	2.16	2076	6811	7	301	9.1	17.8	15.2	-9.2
11.50	30.0	118.7	3741	2.32	2166	7107	7	302	8.7	16.9	14.4	-8.8
12.00	29.4	118.9	3993	2.48	2256	7402	7	300	8.3	16.1	14.0	-7.9
12.50	28.9	118.8	4239	2.63	2346	7697	7	295	8.1	15.6	14.2	-6.7
13.00	28.5	118.5	4476	2.78	2436	7992	6	292	7.7	15.0	14.0	-5.6
13.50	28.2	118.1	4700	2.92	2526	8288	6	288	7.3	14.2	13.5	-4.5
14.00	28.0	117.6	4909	3.05	2616	8583	6	282	7.6	14.9	14.5	-3.1
14.50	27.7	116.7	5143	3.20	2706	8878	6	281	8.6	16.7	16.5	-3.1
15.00	27.3	116.0	5406	3.36	2796	9174	6	278	8.9	17.3	17.1	-2.5
15.50	27.0	115.0	5652	3.51	2886	9469	6	273	9.0	17.4	17.4	-1.0
16.00	26.7	114.0	5905	3.67	2976	9764	6	272	9.2	17.9	17.9	-0.6
16.50	26.4	113.0	6164	3.83	3066	10059	0	5	15.5	30.1	-2.9	-30.0
17.00	26.7	122.1	6263	3.89	3156	10355	6	277	10.8	21.1	20.9	-2.6
17.50	25.5	111.5	6753	4.22	3246	10650	5	239	26.9	52.2	44.8	26.8
18.00	25.0	110.5	7141	4.44	3336	10945	6	271	12.0	23.2	23.2	-0.5
18.50	24.6	109.0	7470	4.64	3426	11241	6	267	10.1	19.7	19.6	1.0
19.00	24.5	108.7	7702	4.79	3516	11536	6	270	11.5	22.3	22.3	-0.1
19.50	23.9	108.0	8124	5.05	3606	11831	6	274	12.8	24.8	24.7	-1.8
20.00	23.6	107.4	8446	5.25	3696	12126	6	273	11.1	21.6	21.6	-1.0

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 17

LOCATION: NEWARK CALIFORNIA

SPECIFICS: BALLOON WENT OVERHEAD---LOST IN TWILIGHT

DATE OF LAUNCH: 17 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 06:00 P.D.T.

TIME MINUTES	ELEV. D E G R E E S	AZIMUTH D E G R E E S	R A N G E METERS	R A N G E MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	D I R E C T I O N CLASS 0-7	D I R E C T I O N DEGREES	V E L O C I T Y METERS/SEC (SPEED)	V E L O C I T Y NAUTICAL MILES PER HOUR (SPEED)	V E L O C I T Y MILES PER HOUR (U)	V E L O C I T Y MILES PER HOUR (V)
0.50	53.3	309.0	81	0.05	114	374	3	137	3.1	6.0	-4.1	4.4
1.00	49.5	317.0	184	0.11	222	729	3	136	3.1	6.1	-4.2	4.4
1.50	49.6	314.0	268	0.17	321	1053	3	139	2.5	4.8	-3.2	3.6
2.00	51.1	317.8	334	0.21	420	1378	3	152	2.2	4.2	-2.0	3.7
2.50	52.5	319.9	394	0.24	519	1703	4	170	2.6	5.0	-0.9	4.9
3.00	52.3	327.8	473	0.29	618	2028	4	198	3.0	5.9	1.8	5.6
3.50	54.0	337.5	513	0.32	713	2338	5	225	2.8	5.5	3.9	3.9
4.00	56.2	345.7	536	0.33	807	2648	7	310	3.6	7.0	5.4	-4.5
4.50	69.4	355.1	337	0.21	902	2958	7	330	4.9	9.5	4.7	-8.2
5.00	75.0	2.9	265	0.16	996	3268	0	355	5.6	10.9	0.9	-10.9
5.50	90.0	10.7	0	0.00	1086	3563	1	31	7.1	13.7	-7.1	-11.7
6.00	79.0	344.7	227	0.14	1176	3859	1	65	7.6	14.7	-13.3	-6.3

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 18

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 17 AUGUST 1970

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 07:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	52.4	331.5	83	0.05	114	374	3	152	3.3	6.4	-3.0	5.7
1.00	47.5	332.0	198	0.12	222	729	3	151	4.4	8.6	-4.2	7.5
1.50	42.2	330.8	347	0.22	321	1053	3	149	4.8	9.3	-4.8	7.9
2.00	40.5	330.0	485	0.30	420	1378	3	155	4.7	9.1	-3.9	8.3
2.50	39.2	332.6	629	0.39	519	1703	4	167	4.5	8.8	-1.9	8.6
3.00	39.3	336.2	748	0.46	618	2028	4	181	3.4	6.7	0.1	6.7
3.50	40.9	339.5	816	0.51	713	2338	4	182	2.9	5.7	0.2	5.7
4.00	41.4	341.0	909	0.56	807	2648	0	358	2.5	4.9	0.2	-4.9
4.50	53.0	335.5	675	0.42	962	2958	0	7	7.7	14.9	-1.7	-14.8
5.00	61.7	319.1	533	0.33	996	3268	1	27	8.3	16.1	-7.3	-14.3
5.50	63.7	288.8	534	0.33	1086	3563	0	18	6.8	13.3	-4.0	-12.7
6.00	68.0	271.4	473	0.29	1176	3859	0	2	6.8	13.3	-0.4	-13.3
6.50	65.7	245.2	569	0.35	1266	4154	0	12	6.3	12.3	-2.6	-12.0
7.00	64.0	236.9	658	0.41	1356	4449	0	346	6.0	11.7	2.8	-11.3
7.50	63.2	216.1	727	0.45	1446	4744	7	332	8.4	16.2	7.5	-14.4
8.00	60.5	201.7	866	0.54	1536	5040	7	336	8.5	16.6	6.9	-15.1
8.50	56.4	191.6	1076	0.67	1626	5335	7	336	9.3	18.1	7.4	-16.5
9.00	52.4	184.0	1317	0.82	1716	5630	7	328	10.0	19.4	10.3	-16.4
9.50	49.0	176.3	1565	0.97	1806	5926	7	333	15.0	29.1	13.3	-25.9
10.00	41.5	171.4	2136	1.33	1896	6221	7	32[illegible]	10.3	20.0	11.1	-16.7
10.50	43.0	167.9	2123	1.32	1986	6516	6	280	3.8	7.3	7.2	-1.3
11.00	43.0	165.9	2220	1.38	2076	6811	7	314	5.9	11.4	8.1	-8.0
11.50	41.7	163.3	2424	1.51	2166	7107	7	320	7.5	14.7	9.4	-11.2
12.00	40.5	161.6	2634	1.64	2256	7402	7	322	8.4	16.3	10.0	-12.9
12.50	32.9	159.7	2900	1.80	2376	7697	7	328	19.3	37.5	20.0	-31.8
13.00	32.8	157.4	3771	2.34	2436	7992	7	309	9.1	17.6	13.7	-11.1
13.50	36.7	155.0	3381	2.10	2526	8288	5	211	5.3	10.3	5.3	8.8
14.00	36.0	153.3	3592	2.23	2616	8583	7	305	9.0	17.4	14.3	-10.0
14.50	35.0	151.0	3856	2.40	2706	8878	7	306	9.8	19.0	15.5	-11.0
15.00	34.1	149.5	4121	2.56	2796	9174	7	306	9.0	17.5	14.1	-10.3
15.50	33.5	148.0	4351	2.70	2886	9469	7	301	8.8	17.1	14.8	-8.7
16.00	32.9	146.3	4591	2.85	2976	9764	7	298	10.0	19.3	17.1	-9.1
16.50	32.1	144.5	4872	3.03	3066	10059	7	297	10.3	20.1	17.9	-9.1
17.00	31.5	142.9	5140	3.19	3156	10355	7	295	11.3	22.0	19.9	-9.3
17.50	30.6	141.0	5479	3.40	3246	10650	7	295	12.1	23.5	21.4	-9.8
18.00	29.9	139.5	5791	3.60	3336	10945	7	293	11.9	23.1	21.2	-9.2
18.50	29.2	137.9	6119	3.80	3426	11241	7	293	12.4	24.1	22.3	-9.3
19.00	28.5	136.5	6465	4.02	3516	11536	6	290	12.1	23.6	22.2	-8.0
19.50	28.0	135.0	6771	4.21	3606	11831	6	286	12.4	24.1	23.1	-6.8
20.00	27.4	133.5	7119	4.42	3696	12126	6	287	13.1	25.4	24.4	-7.3

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 19

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 17 AUGUST 1978

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 08:00 P.D.T.

TIME MINUTES	ELEV. D E G R E E S	AZIMUTH D E G R E E S	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	42.2	338.1	119	0.07	114	374	3	153	4.2	8.2	-3.8	7.3
1.00	40.4	332.8	254	0.16	222	729	3	142	4.1	8.0	-4.9	6.3
1.50	41.6	327.2	362	0.23	321	1053	3	148	3.6	6.9	-3.7	5.9
2.00	41.5	330.6	468	0.29	420	1378	4	169	4.0	7.7	-1.4	7.6
2.50	41.0	335.9	590	0.37	519	1703	6	179	3.0	5.9	-0.1	5.9
3.00	40.0	338.3	634	0.39	618	2028	6	253	0.7	1.3	1.2	0.4
3.50	50.3	339.8	587	0.36	713	2338	1	23	3.6	7.0	-2.7	-6.4
4.00	57.6	320.8	504	0.31	807	2648	0	18	8.4	16.3	-5.0	-15.5
4.50	67.8	281.2	365	0.23	902	2958	0	16	11.9	23.2	-6.3	-22.3
5.00	59.1	239.8	593	0.37	996	3268	0	14	11.8	23.0	-5.5	-22.3
5.50	53.0	220.5	814	0.51	1086	3563	0	8	9.7	18.8	-3.8	-18.6
6.00	47.9	214.4	1057	0.66	1176	3859	0	17	8.6	16.8	-4.8	-16.1
6.50	44.0	211.3	1305	0.81	1266	4154	0	15	7.0	13.7	-5.6	-13.2
7.00	42.7	208.9	1463	0.91	1356	4449	0	1	5.3	10.3	-0.2	-10.3
7.50	42.2	205.5	1588	0.99	1446	4744	0	346	5.9	11.5	2.8	-11.2
8.00	41.3	200.9	1742	1.08	1536	5040	0	344	7.2	14.0	4.0	-13.8
8.50	40.0	196.9	1931	1.20	1626	5335	0	341	9.0	17.4	5.7	-16.4
9.00	38.5	191.8	2181	1.36	1716	5630	7	335	8.9	17.3	7.3	-15.6
9.50	37.4	188.2	2354	1.46	1806	5926	7	330	7.9	15.3	7.5	-13.3
10.00	36.5	184.8	2554	1.59	1896	6221	0	338	9.5	18.4	7.0	-17.1
10.50	34.7	182.4	2859	1.78	1986	6516	7	335	7.2	13.9	5.9	-12.6
11.00	35.2	180.6	2934	1.82	2076	6811	7	332	5.2	10.1	4.8	-8.9
11.50	34.6	179.5	3131	1.95	2166	7107	0	345	6.9	13.4	3.4	-13.0
12.00	34.0	178.7	3336	2.07	2256	7402	0	341	8.2	16.0	5.2	-15.1
12.50	33.0	177.0	3603	2.24	2346	7697	7	330	7.8	15.2	7.5	-13.2
13.00	32.9	175.3	3756	2.33	2436	7992	7	323	7.6	14.7	9.0	-11.7
13.50	32.3	173.3	3986	2.48	2526	8288	7	322	8.5	16.5	10.1	-13.1
14.00	31.9	171.5	4193	2.61	2616	8583	7	319	8.6	16.8	11.0	-12.6
14.50	31.4	169.5	4423	2.75	2706	8878	7	321	9.3	18.0	11.4	-14.0
15.00	30.8	168.0	4680	2.91	2796	9174	7	325	9.2	17.8	10.3	-14.5
15.50	30.3	166.8	4929	3.06	2886	9469	7	324	9.2	17.8	10.5	-14.3
16.00	29.8	165.5	5186	3.22	2976	9764	7	322	9.5	18.5	11.3	-14.6
16.50	29.3	164.3	5453	3.39	3066	10059	7	312	9.8	19.0	14.2	-12.6
17.00	29.0	162.2	5683	3.53	3156	10355	7	306	10.6	20.7	16.7	-12.2
17.50	28.5	160.5	5967	3.71	3246	10650	7	303	10.0	19.3	16.2	-10.6
18.00	28.4	158.7	6159	3.83	3336	10945	7	298	9.6	18.7	16.5	-8.8
18.50	28.1	157.0	6405	3.98	3426	11241	6	290	10.7	20.8	19.6	-7.1
19.00	28.0	154.5	6601	4.10	3516	11536	6	287	12.0	23.2	22.3	-6.7
19.50	27.6	152.4	6886	4.28	3606	11831	6	288	12.7	24.6	23.4	-7.7
20.00	27.3	150.1	7149	4.44	3696	12126	6	284	12.8	25.0	24.2	-6.2

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 20

LOCATION: NEWARK CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 17 AUGUST 1970

ELEVATION OF LAUNCH SITE: 20 FEET

TIME OF LAUNCH: 09:00 P.D.T.

TIME	ELEV.	AZIMUTH	R A N G E		M.S.L. ALTITUDE		D I R E C T I O N		-----V E L O C I T Y---- METERS/SEC	NAUTICAL MILES PER HOUR		
MINUTES	D E G R E E S		METERS	MILES	METERS	FEET	CLASS 0- 7	DEGREES	(SPEED)	(SPEED)	(U)	(V)
0.50	48.7	329.1	95	0.06	114	374	3	153	3.7	7.1	-3.2	6.4
1.00	44.5	333.3	220	0.14	222	729	3	154	5.8	11.3	-5.0	10.2
1.50	35.3	333.0	445	0.28	321	1053	3	152	2.7	5.3	-2.5	4.7
2.00	47.1	332.8	385	0.24	420	1378	4	181	0.6	1.2	0.0	1.2
2.50	47.0	335.1	478	0.30	519	1703	4	171	3.2	6.3	-1.0	6.2
3.00	46.9	338.8	573	0.36	618	2028	4	189	0.9	1.8	0.3	1.8
3.50	53.4	338.5	527	0.33	713	2338	0	6	4.6	9.0	-0.9	-9.0
4.00	66.5	317.5	348	0.22	807	2648	0	10	9.7	18.9	-3.2	-18.6
4.50	71.2	253.8	305	0.19	902	2958	3	144	3.7	7.3	-4.3	5.9
5.00	60.0	320.1	572	0.36	996	3268	0	9	13.9	27.0	-4.0	-26.7
5.50	07.2	204.6	1000	0.62	1086	3563	0	10	30.4	59.1	-10.5	-58.2
6.00	37.5	207.0	1525	0.95	1176	3859	1	29	13.6	26.4	-12.6	-23.1
6.50	34.8	206.4	1813	1.13	1266	4154	0	21	8.6	16.7	-6.1	-15.6
7.00	33.5	205.6	2040	1.27	1356	4449	0	17	6.8	13.2	-3.9	-12.6
7.50	33.6	204.7	2217	1.38	1446	4744	0	4	5.3	10.3	-0.8	-10.2
8.00	33.7	202.8	2338	1.45	1536	5040	0	343	4.9	9.6	2.8	-9.2
8.50	33.5	200.1	2448	1.52	1626	5335	7	335	6.4	12.5	5.3	-11.3
9.00	33.2	196.5	2613	1.62	1716	5630	0	340	8.5	16.6	5.6	-15.6
9.50	32.2	193.5	2858	1.78	1806	5926	0	350	9.7	18.8	3.2	-18.6
10.00	31.0	191.8	3145	1.95	1896	6221	0	356	9.9	19.2	1.2	-19.2
10.50	30.0	190.6	3429	2.13	1986	6516	0	357	9.3	18.1	0.9	-18.1
11.00	29.3	189.6	3689	2.29	2076	6811	0	354	8.1	15.7	1.8	-15.6
11.50	29.0	188.5	3947	2.45	2166	7107	0	343	6.8	13.3	3.9	-12.7
12.00	29.0	187.0	4059	2.52	2256	7402	7	337	6.9	13.4	5.2	-12.4
12.50	28.8	185.6	4256	2.64	2346	7697	0	342	7.6	14.8	4.6	-14.0
13.00	28.5	184.5	4476	2.78	2436	7992	0	342	8.3	16.2	4.9	-15.4
13.50	28.1	183.2	4720	2.93	2526	8288	7	334	10.2	19.8	8.5	-17.8
14.00	27.5	181.0	5014	3.12	2616	8583	7	332	10.2	19.9	9.4	-17.5
14.50	27.2	179.7	5254	3.26	2706	8878	7	334	9.9	19.2	8.5	-17.2
15.00	26.7	178.2	5547	3.45	2796	9174	7	332	10.2	19.8	9.3	-17.5
15.50	26.4	176.9	5862	3.61	2886	9469	7	334	9.8	19.1	8.5	-17.1
16.00	26.0	175.9	6089	3.78	2976	9764	7	334	9.0	17.4	7.6	-15.7
16.50	25.9	175.0	6302	3.92	3066	10059	7	324	8.3	16.1	9.4	-13.0
17.00	25.6	173.6	6516	4.05	3156	10355	7	322	9.0	17.5	10.8	-13.8
17.50	25.6	172.8	6762	4.20	3246	10650	7	319	8.6	16.8	10.9	-12.7
18.00	25.6	171.2	6950	4.32	3336	10945	7	312	8.0	15.6	11.6	-10.5
18.50	25.6	170.0	7128	4.44	3426	11241	7	308	8.4	16.3	12.9	-10.1
19.00	25.6	168.5	7326	4.55	3516	11536	7	306	9.2	17.9	14.4	-10.6
19.50	25.5	167.1	7508	4.69	3606	11831	7	300	9.9	19.3	16.7	-9.7
20.00	25.5	165.2	7736	4.81	3696	12126	7	293	10.5	20.5	18.9	-7.9

* CALCULATIONS OF BOTH SIDES OF THIS ASCENT WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 1

LOCATION: SAN JOSE STATE UNIVERSITY

SPECIFICS:

DATE OF LAUNCH: 31 JULY 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 17:00 G.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	40.0	157.0	129	0.08	172	564	7	337	4.1	8.0	3.1	-7.4
1.00	41.0	157.0	248	0.15	260	919	0	344	3.6	7.0	1.0	-6.7
1.50	42.4	161.4	345	0.21	379	1243	0	350	3.2	6.1	1.0	-6.0
2.00	43.6	162.8	435	0.27	478	1568	7	331	3.7	7.2	3.5	-6.3
2.50	42.3	157.3	564	0.35	577	1893	7	315	4.5	8.9	6.2	-6.2
3.00	41.7	152.3	687	0.43	676	2218	7	318	4.2	8.0	5.3	-6.1
3.50	41.2	151.5	807	0.50	771	2528	7	327	4.0	7.8	4.3	-6.5
4.00	40.8	150.8	928	0.58	865	2838	7	327	4.2	8.1	4.4	-6.8
4.50	40.3	150.5	1056	0.66	960	3148	7	321	4.4	8.5	5.3	-6.6
5.00	39.8	148.7	1188	0.74	1054	3458	7	318	4.2	8.2	5.6	-6.1
5.50	39.6	148.0	1306	0.81	1144	3753	7	324	3.8	7.3	4.3	-5.9
6.00	39.8	147.9	1414	0.88	1234	4049	7	330	3.6	7.0	3.5	-6.1
6.50	39.0	148.3	1523	0.95	1324	4344	7	337	3.8	7.3	2.8	-6.8
7.00	39.5	149.2	1632	1.02	1414	4639	0	346	3.9	7.5	1.0	-7.3
7.50	39.5	150.6	1747	1.09	1504	4934	0	352	4.5	8.7	1.2	-8.7
8.00	39.0	152.4	1889	1.17	1594	5230	0	355	5.2	10.2	0.8	-10.1
8.50	38.5	154.3	2037	1.27	1684	5525	0	2	5.2	10.0	-0.3	-10.0
9.00	38.3	156.4	2165	1.35	1774	5820	0	7	4.8	9.3	-1.1	-9.3
9.50	38.2	158.2	2287	1.42	1864	6116	0	6	4.2	8.1	-0.9	-8.0
10.00	38.4	159.4	2385	1.48	1954	6411	0	1	2.5	4.9	-0.1	-4.9
10.50	39.2	159.6	2428	1.51	2044	6706	1	61	0.6	1.1	-1.0	-0.5
11.00	40.9	160.3	2390	1.48	2134	7001	3	121	2.1	4.0	-3.4	2.1
11.50	42.8	161.5	2333	1.45	2224	7297	3	113	3.4	6.6	-6.1	2.5
12.00	44.9	164.0	2258	1.40	2314	7592	2	111	4.2	8.1	-7.6	2.9
12.50	47.0	166.6	2182	1.36	2404	7887	2	111	4.1	7.9	-7.4	2.8
13.00	48.9	169.3	2120	1.32	2494	8182	3	115	3.4	6.5	-5.9	2.0
13.50	50.7	171.0	2063	1.28	2584	8478	3	118	1.6	3.1	-2.8	1.5
14.00	51.7	171.4	2061	1.28	2674	8773	0	14	1.1	2.2	-0.5	-2.1
14.50	51.6	171.7	2125	1.32	2764	9068	0	355	2.2	4.4	0.4	-4.3
15.00	51.8	171.6	2196	1.36	2854	9364	0	341	2.5	4.9	1.6	-4.7
15.50	51.7	171.0	2274	1.41	2944	9659	7	318	2.8	5.4	3.7	-4.0
16.00	51.8	169.3	2337	1.45	3034	9954	7	298	3.5	6.8	6.0	-3.2
16.50	51.8	167.0	2408	1.50	3124	10249	6	292	4.1	8.0	7.4	-3.0
17.00	51.8	164.5	2479	1.54	3214	10545	6	287	4.2	8.1	7.7	-2.3
17.50	51.9	162.1	2540	1.58	3304	10840	6	278	4.6	9.0	8.9	-1.2
18.00	52.0	158.9	2602	1.62	3394	11135	6	266	5.2	10.1	10.1	0.7
18.50	52.4	155.5	2634	1.64	3484	11431	6	264	4.9	9.4	9.1	2.6
19.00	53.0	152.6	2645	1.64	3574	11726	6	255	4.5	8.8	8.5	2.2
19.50	53.2	149.8	2693	1.67	3664	12021	6	266	5.0	9.8	9.8	0.6
20.00	53.0	146.9	2781	1.73	3754	12316	6	271	5.5	10.6	10.6	-0.1

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 2

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 31 JULY 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 23:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	63.0	175.0	55	0.03	172	564	0	353	1.3	2.5	0.3	-2.5
1.00	70.0	173.0	79	0.05	280	919	4	159	2.3	4.4	-1.6	4.1
1.50	75.0	328.0	84	0.05	379	1243	4	161	4.8	9.3	-3.1	8.8
2.00	63.0	336.0	211	0.13	478	1568	4	164	3.0	5.8	-1.6	5.6
2.50	63.0	339.0	261	0.16	577	1893	3	141	1.8	3.6	-2.2	2.8
3.00	62.5	331.0	319	0.20	676	2218	0	352	0.3	0.6	0.1	-0.6
3.50	71.0	338.0	243	0.15	771	2528	7	314	1.6	3.1	2.2	-2.1
4.00	74.0	338.0	230	0.14	865	2838	0	338	3.0	5.8	2.2	-5.4
4.50	86.0	339.0	63	0.04	960	3148	0	338	3.8	7.4	2.8	-6.9
5.00	90.0	126.0	0	0.00	1054	3458	7	316	2.5	4.8	3.3	-3.5
5.50	85.0	121.0	94	0.06	1144	3753	0	339	6.3	12.3	4.5	-11.5
6.00	72.0	158.5	380	0.24	1234	4049	0	351	5.7	11.1	1.6	-11.0
6.50	72.0	161.2	409	0.25	1324	4344	0	11	2.8	5.5	-1.1	-5.4
7.00	68.5	168.5	532	0.33	1414	4639	0	340	6.5	12.6	4.4	-11.8
7.50	61.0	160.5	796	0.50	1504	4934	0	4	4.8	9.3	-0.7	-9.3
8.00	62.0	174.0	814	0.51	1594	5230	2	70	3.4	6.7	-6.3	-2.3
8.50	63.0	175.0	825	0.51	1684	5525	7	308	2.2	4.3	3.4	-2.6
9.00	62.0	168.0	909	0.56	1774	5820	6	269	1.7	3.3	3.3	0.0
9.50	65.0	166.0	839	0.52	1864	6116	4	170	2.6	5.1	-0.8	5.0
10.00	68.3	167.5	752	0.47	1954	6411	5	205	3.0	5.8	2.5	5.2
10.50	70.4	159.2	705	0.44	2044	6706	5	237	3.5	6.9	5.7	3.8
11.00	71.2	151.2	705	0.44	21[illegible]	7001	6	27[illegible]	2.8	5.4	5.4	-0.1
11.50	70.1	[illegible]	742	0.49	[illegible]	7297	7	333	2.6	5.0	2.3	-4.5
12.00	69.1	151.3	859	0.53	2314	7592	0	19	3.6	6.9	-2.2	-6.6
12.50	68.3	158.1	931	0.58	2404	7887	1	28	4.0	7.8	-3.6	-6.[illegible]
13.00	67.4	162.9	1012	0.6[illegible]	2494	8182	1	27	4.3	8.3	-3.7	-7.4
13.50	66.1	168.0	1117	0.69	2584	8476	1	36	3.7	7.1	-4.2	-5.7
14.00	66.1	171.6	1157	0.72	2674	8773	2	71	2.5	4.9	-4.6	-1.6
14.50	67.0	175.5	1146	0.71	2764	9068	2	88	2.9	5.7	-5.7	-0.2
15.00	67.6	180.3	1150	0.71	2854	9364	2	81	2.2	4.2	-4.2	-0.7
15.50	68.0	181.9	1164	0.72	2944	9659	1	67	0.8	1.6	-1.5	-0.6
16.00	68.5	182.5	1170	0.73	3034	9954	2	70	0.2	0.4	-0.4	-0.1
16.50	69.1	182.5	1169	0.73	3124	10249	7	330	0.6	1.3	0.6	-1.1
17.00	69.1	181.5	1203	0.75	3214	10545	7	298	1.5	3.0	2.6	-1.4
17.50	69.5	179.8	1211	0.75	3304	10840	6	292	1.3	2.5	2.3	-0.9
18.00	69.7	178.2	1232	0.77	3394	11135	0	342	1.2	2.3	0.7	-2.2
18.50	69.5	177.7	1279	0.79	3484	11431	7	303	1.7	3.3	2.8	-1.8
19.00	69.8	174.5	1291	0.80	3574	11726	6	288	3.1	6.0	5.7	-1.8
19.50	69.8	170.3	1353	0.84	3664	12021	6	283	2.9	5.7	5.6	-1.3
20.00	69.8	167.4	1356	0.84	3754	12316	6	263	2.3	4.5	4.4	0.6

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 3

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: LOST BEHIND POST ON ROOF THEODOLITE SET ON 180 DEGS MAG.

DATE OF LAUNCH: 1 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. D E G R E E S	AZIMUTH D E G R E E S	R A N G E METERS	R A N G E MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	D I R E C T I O N CLASS 0-7	D I R E C T I O N DEGREES	V E L O C I T Y METERS/SEC (SPEED)	V E L O C I T Y NAUTICAL MILES PER HOUR (SPEED)	V E L O C I T Y (U)	V E L O C I T Y (V)
0.50	40.0	344.0	129	0.08	172	564	4	170	3.9	7.5	-1.3	7.4
1.00	43.0	350.0	232	0.14	280	919	3	153	6.3	12.2	-5.5	16.9
1.50	32.0	336.0	504	0.31	379	1243	4	161	8.1	15.8	-5.1	14.9
2.00	30.0	344.0	717	0.45	478	1568	4	181	5.5	10.8	0.2	10.9
2.50	32.0	346.0	821	0.51	577	1893	4	189	2.3	4.4	0.7	4.4
3.00	36.0	348.0	842	0.52	676	2218	5	229	1.7	3.3	2.5	2.2
3.50	39.0	352.0	872	0.54	771	2528	5	243	3.0	5.8	5.2	2.6
4.00	41.5	359.0	905	0.56	865	2838	5	248	3.4	6.6	6.1	2.5
4.50	43.5	4.0	944	0.59	960	3148	5	244	2.8	5.5	5.0	2.4
5.00	45.0	8.0	990	0.62	1054	3458	5	233	2.4	4.7	3.7	2.8
5.50	46.0	10.0	1043	0.65	1144	3753	5	218	2.6	5.1	3.1	4.0
6.00	46.0	12.0	1130	0.70	1234	4049	5	227	3.5	6.8	5.0	4.6
6.50	46.0	16.0	1217	0.76	1324	4344	5	233	4.1	8.0	6.4	4.8
7.00	45.5	19.0	1327	0.82	1414	4639	5	212	3.0	5.9	3.1	5.0
7.50	46.0	16.0	1391	0.86	1504	4934	4	162	2.1	4.0	-1.3	3.8
8.00	47.0	16.0	1427	0.89	1594	5230	3	142	2.6	5.1	-3.1	4.0
8.50	47.5	13.0	1484	0.92	1684	5525	4	162	3.3	6.4	-2.0	6.1
9.00	47.0	12.0	1595	0.99	1774	5820	4	174	2.9	5.6	-0.6	5.6
9.50	47.5	11.0	1649	1.02	1864	6116	4	161	0.9	1.8	-0.6	1.7
10.00	49.0	11.0	1643	1.02	1954	6411	7	299	1.0	1.9	1.7	-0.9
10.50	50.5	13.0	1632	1.01	2044	6706	4	195	8.4	16.2	4.3	15.7
11.00	44.0	12.0	2144	1.33	2134	7001	4	191	22.4	43.4	8.1	42.7
11.50	36.0	12.0	2973	1.85	2224	7297	4	196	41.2	80.0	21.7	77.0
12.00	26.0	14.0	4613	2.87	2314	7592	4	198	91.3	177.3	55.3	168.4
12.50	15.5	16.0	8438	5.24	2404	7887	4	198	127.7	248.0	78.3	235.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 4

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: THEODOLITE SET ON 180 DEGS MAG.

DATE OF LAUNCH: 1 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 11:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	68.0	296.1	44	0.03	172	564	3	136	1.3	2.5	-1.7	1.8
1.00	70.5	316.0	76	0.05	280	919	4	167	1.9	3.7	-0.8	3.7
1.50	65.0	334.0	147	0.09	379	1243	4	168	3.8	7.4	-1.5	7.2
2.00	54.5	340.0	295	0.18	478	1568	4	165	4.9	9.5	-2.4	9.2
2.50	49.5	341.5	438	0.27	577	1893	4	164	4.0	7.7	-2.1	7.4
3.00	49.0	342.0	532	0.33	676	2218	4	173	3.7	7.2	-0.8	7.2
3.50	47.0	345.5	659	0.41	771	2528	4	196	4.3	8.4	2.3	8.0
4.00	46.5	353.0	760	0.47	865	2836	5	207	4.8	9.4	4.3	8.3
4.50	45.0	358.0	896	0.56	960	3148	5	214	4.0	7.8	4.3	6.5
5.00	46.0	2.5	956	0.59	1054	3458	5	230	3.6	7.0	5.4	4.5
5.50	46.0	7.5	1043	0.65	1144	3753	5	218	3.1	5.9	3.7	4.7
6.00	46.5	8.0	1110	0.69	1234	4049	4	195	2.2	4.3	1.1	4.2
6.50	47.0	8.3	1175	0.73	1324	4344	4	184	2.5	4.8	0.3	4.8
7.00	47.0	7.5	1259	0.78	1414	4639	4	162	2.9	5.6	-1.7	5.4
7.50	47.2	5.0	1333	0.83	1504	4934	3	148	2.0	3.9	-2.0	3.3
8.00	48.5	4.3	1354	0.84	1594	5230	2	73	1.0	2.0	-1.9	-0.6
8.50	51.0	2.5	1312	0.82	1684	5525	1	47	0.7	1.4	-1.0	-1.0
9.00	52.3	3.0	1322	0.82	1774	5820	4	190	0.9	1.8	0.3	1.7
9.50	52.8	2.8	1366	0.85	1864	6116	4	170	2.2	4.3	-0.8	4.2
10.00	52.5	1.8	1450	0.90	1954	6411	4	168	2.2	4.2	-0.9	4.1
10.50	53.0	1.5	1492	0.93	2044	6706	4	186	1.[illegible]	2.[illegible]	0.2	[illegible].4
11.00	53.5	2.0	1526	0.95	2134	7001	5	234	0.6	1.1	0.9	0.6
11.50	55.0	2.5	1512	0.94	2224	7297	[illegible]	285	0.7	1.3	1.3	-0.3
12.00	56.0	3.5	1510	0.94	2314	7592	6	268	1.1	2.2	2.2	0.1
12.50	57.0	5.0	1520	0.94	2404	7887	6	254	1.4	2.8	[illegible].7	0.8
13.00	57.5	6.5	1548	0.96	2494	8182	5	245	1.7	3.4	3.1	1.4
13.50	58.0	8.3	1575	0.98	2584	8478	6	250	1.8	3.5	3.3	1.2
14.00	58.5	10.0	1599	0.99	2674	8773	5	238	2.0	3.9	3.3	2.0
14.50	58.5	11.5	1655	1.03	2764	9068	5	221	2.8	5.4	3.5	4.0
15.00	58.0	12.8	1743	1.08	2854	9364	5	221	3.0	5.8	3.8	4.4
15.50	57.8	14.3	1814	1.13	2944	9659	5	229	3.0	5.8	4.4	3.8
16.00	57.5	16.0	1892	1.18	3034	9954	5	238	3.5	6.9	5.9	3.6
16.50	57.2	18.6	1972	1.23	3124	10249	5	242	3.5	6.9	6.1	3.2
17.00	57.0	20.3	2046	1.27	3214	10545	5	224	2.4	4.7	3.3	3.4
17.50	57.0	20.3	2104	1.31	3304	10840	5	221	1.2	2.3	1.5	1.8
18.00	57.5	21.0	2113	1.31	3394	11135	0	8	0.3	0.5	-0.1	-0.5
18.50	58.5	20.4	2088	1.30	3484	11431	2	70	0.3	0.6	-0.6	-0.2
19.00	59.3	20.6	2101	1.31	3574	11726	6	267	0.7	1.3	1.3	0.1
19.50	59.7	21.4	2104	1.31	3664	12021	6	269	1.3	2.5	2.5	0.1
20.00	60.[illegible]	22.5	2130	1.32	3754	12316	6	259	1.6	3.2	3.1	0.6

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 5

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 1 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME LAUNCH: 17:15 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	49.0	312.5	94	0.06	172	564	3	138	3.1	6.0	-4.0	4.5
1.00	49.3	318.2	186	0.12	280	919	2	87	3.6	5.0	-4.9	-0.3
1.50	54.0	284.0	229	0.14	379	1243	1	39	4.3	8.3	-5.3	-6.5
2.00	54.7	258.0	293	0.18	478	1568	1	26	3.1	6.0	-2.6	-5.4
2.50	57.9	249.7	322	0.20	577	1893	0	0	1.6	3.1	0.0	-3.1
3.00	61.9	241.2	327	0.20	676	2218	0	350	1.6	3.1	0.5	-3.1
3.50	63.5	234.2	352	0.22	771	2528	0	5	2.7	5.2	-0.4	-5.2
4.00	61.4	223.3	437	0.27	865	2838	0	17	3.6	6.9	-2.0	-6.6
4.50	59.0	220.2	538	0.33	960	3148	0	21	3.0	5.8	-2.1	-5.5
5.00	58.4	216.7	609	0.38	1054	3458	0	6	2.8	5.5	-0.6	-5.5
5.50	57.6	212.3	685	0.43	1144	3753	0	359	2.5	4.9	0.1	-4.9
6.00	57.9	209.5	734	0.46	1234	4049	0	8	2.8	5.4	-0.7	-5.4
6.50	56.3	201.6	840	0.52	1324	4344	0	351	3.2	6.2	1.0	-6.2
7.00	56.5	201.8	894	0.56	1416	4639	7	309	4.1	8.1	4.7	-3.8
7.50	58.1	195.8	896	0.56	1504	4934	6	280	1.8	7.2	2.5	-1.3
8.00	60.2	187.0	876	0.54	1594	5230	6	273	4.3	8.7	8.7	-0.4
8.50	61.6	178.4	878	0.54	1686	5525	6	274	4.6	8.8	9.0	-0.5
9.00	62.2	169.5	902	0.56	1774	5820	6	279	3.4	6.6	6.5	-1.1
9.50	62.5	166.0	937	0.58	1864	6116	6	292	1.7	3.2	3.0	-1.2
10.00	63.1	164.5	959	0.60	1954	6411	0	344	0.8	1.6	0.4	-1.4
10.50	63.6	165.4	983	0.61	2044	6706	0	350	0.8	1.7	0.3	-1.6
11.00	64.0	164.8	1010	0.63	2134	7001	7	314	0.8	1.6	1.2	-1.1
11.50	64.6	164.4	1026	0.64	2224	7297	0	347	0.7	1.4	0.3	-1.4
12.00	64.9	164.9	1054	0.65	2314	7592	0	1	1.0	1.9	0.0	-1.9
12.50	65.2	165.3	1081	0.67	2404	7887	0	339	0.3	0.6	0.2	-0.5
13.00	66.2	164.8	1072	0.67	2494	8182	1	47	0.1	0.3	-0.2	-0.2
13.50	66.7	165.7	1085	0.67	2584	8478	1	25	1.2	2.4	-1.0	-2.2
14.00	66.6	167.2	1129	0.70	2674	8773	0	20	1.8	3.4	-1.2	-3.2
14.50	66.5	168.6	1174	0.73	2764	9068	1	23	1.4	2.6	-1.0	-2.4
15.00	66.8	169.5	1196	0.74	2854	9364	1	42	0.8	1.6	-1.1	-1.2
15.50	67.3	170.5	1205	0.75	2944	9659	2	106	1.0	2.0	-1.9	0.5
16.00	68.5	172.2	1170	0.73	3034	9954	3	142	1.8	3.4	-2.1	2.7
16.50	70.0	173.1	1114	0.69	3124	10249	4	162	2.5	4.8	-1.5	4.6
17.00	72.0	173.7	1024	0.64	3214	10545	4	175	2.5	4.8	-0.4	4.8
17.50	73.4	172.8	966	0.60	3304	10840	5	206	2.0	3.9	1.7	3.5
18.00	74.5	169.7	923	0.57	3394	11135	5	227	1.9	3.8	2.8	2.5
18.50	75.2	166.8	904	0.56	3484	11431	5	228	1.4	2.8	2.1	1.9
19.00	75.9	164.9	882	0.55	3574	11726	5	229	1.0	2.0	1.5	1.3
19.50	76.3	163.3	878	0.55	3664	12021	5	219	0.5	0.9	0.6	0.7
20.00	76.8	163.4	865	0.54	3754	12316	3	156	0.4	0.8	-0.3	0.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

SUMMARY FOR ASCENT # 6

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 1 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 21:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	63.0	321.0	55	0.03	172	564	3	135	1.6	3.1	-2.2	2.2
1.00	66.6	318.0	96	0.06	280	919	3	87	1.2	2.4	-2.4	-0.1
1.50	70.0	290.0	115	0.07	379	1243	0	357	3.7	7.2	0.4	-7.2
2.00	68.5	200.0	163	0.10	478	1568	7	327	5.0	9.7	5.3	-8.1
2.50	66.8	165.0	220	0.14	577	1893	7	309	3.4	6.6	5.1	-4.1
3.00	63.0	160.1	298	0.19	676	2218	7	336	2.4	4.7	1.9	-4.3
3.50	62.7	161.3	365	0.23	777	2528	1	33	2.2	4.4	-2.4	-3.6
4.00	63.6	176.0	394	0.24	865	2838	2	60	3.7	7.2	-7.1	-1.2
4.50	66.1	195.0	397	0.25	960	3148	2	105	3.8	7.4	-7.1	2.0
5.00	68.8	210.0	384	0.23	1054	3458	2	111	2.3	4.4	-4.1	1.6
5.50	69.4	214.5	406	0.25	1144	3753	2	82	0.6	1.1	-1.1	-0.1
6.00	70.9	213.7	405	0.25	1234	4049	6	254	0.7	1.3	1.3	0.4
6.50	73.4	210.5	376	0.23	1324	4344	4	194	1.1	2.1	0.5	2.1
7.00	75.7	217.3	344	0.21	1414	4639	4	177	1.7	3.3	-0.2	3.3
7.50	78.4	221.7	296	0.18	1504	4934	4	191	1.8	3.4	0.7	3.4
8.00	80.6	227.8	253	0.16	1594	5230	4	190	1.8	3.4	0.6	3.4
8.50	82.5	237.0	213	0.13	1684	5525	4	202	1.9	3.7	1.4	3.4
9.00	84.7	248.0	159	0.10	1772	5820	5	208	1.9	3.7	1.7	3.3
9.50	86.0	263.0	126	0.08	1864	6116	4	201	1.8	3.6	1.3	3.3
10.00	86.6	290.0	112	0.07	1954	6411	5	203	1.8	3.4	1.3	3.1
10.50	86.6	314.0	118	0.07	2044	6706	5	232	1.3	2.5	2.0	1.6
11.00	87.3	333.0	99	0.06	2133	7001	6	280	0.9	1.7	1.7	-0.3
11.50	87.9	330.0	79	0.05	2224	7297	7	320	0.6	1.2	0.8	-0.9

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 7

LOCATION: SAN JOSE STATE UNIVERSITY

SPECIFICS: [redacted]

DATE OF LAUNCH: 2 AUGUST 1978

ELEVATION - LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. D E G R E E S	AZIMUTH D E G R E E S	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	39.0	327.0	133	0.08	172	564	3	137	4.5	8.0	-6.0	6.4
1.00	38.5	317.0	272	0.17	280	919	3	139	3.8	7.4	-4.9	5.6
1.50	41.0	322.0	362	0.23	379	1243	3	156	4.6	9.0	-3.7	8.2
2.00	37.5	326.5	541	0.34	478	1568	3	157	6.1	11.8	-4.6	10.8
2.50	35.5	329.6	719	0.45	577	1893	4	169	4.4	8.6	-1.7	8.5
3.00	37.6	333.8	795	0.49	676	2218	4	190	3.0	5.8	1.1	5.8
3.50	39.2	337.5	866	0.54	771	2528	5	206	2.6	5.5	2.5	5.0
4.00	41.4	342.4	909	0.56	865	2838	5	218	1.6	3.3	1.9	2.5
4.50	44.3	342.8	918	0.57	960	3148	6	275	0.3	0.7	0.7	-0.1
5.00	47.7	343.6	901	0.56	1054	3458	7	308	0.5	1.0	0.8	-0.6
5.50	50.4	343.9	893	0.56	1144	3753	0	345	1.3	2.6	0.5	-2.0
6.00	53.4	341.5	838	0.52	1231	4039	0	354	1.3	2.6	0.3	-2.6
6.50	57.1	342.9	815	0.51	1324	4344	0	349	0.9	1.8	0.3	-1.8
7.00	59.9	342.1	783	0.49	1414	4639	7	336	1.1	2.3	0.9	-2.0
7.50	62.5	343.5	750	0.47	1504	4934	6	285	0.4	0.8	0.8	-0.2
8.00	63.3	344.7	770	0.48	1594	5230	4	200	0.3	0.6	0.2	0.6
8.50	64.7	344.4	766	0.48	1684	5525	2	84	0.5	1.1	-1.1	-0.1
9.00	65.6	342.3	776	0.48	1774	5820	2	77	1.1	2.2	-2.1	-0.5
9.50	66.8	339.4	771	0.48	1864	6116	1	60	0.7	1.4	-1.2	-0.7
10.00	67.9	339.2	767	0.48	1954	6411	5	217	1.7	3.4	2.0	2.7
10.50	67.2	345.5	832	0.52	2044	6706	5	219	3.5	6.8	4.3	5.3
11.00	66.7	351.0	891	0.55	2134	7001	5	223	3.1	6.0	4.1	4.3
11.50	66.4	355.0	944	0.59	2224	7297	5	226	2.6	5.0	3.6	3.5
12.00	66.3	358.3	988	0.61	2314	7592	5	224	2.3	4.5	3.1	3.3
12.50	66.0	0.8	1042	0.65	2404	7887	5	221	2.4	4.6	3.1	3.5
13.00	65.7	3.4	1097	0.68	2494	8182	5	209	2.3	4.4	2.2	3.9
13.50	65.2	4.0	1164	0.72	2584	8478	5	208	2.0	3.8	1.8	3.4
14.00	65.3	5.7	1206	0.75	2674	8773	5	211	2.4	4.7	2.8	3.7
14.50	64.5	7.5	1288	0.80	2764	9068	5	212	2.7	5.3	2.8	4.5
15.00	64.1	8.8	1355	0.84	2854	9364	5	216	2.0	3.8	2.2	3.1
15.50	64.2	9.8	1392	0.87	2944	9659	5	221	1.6	3.1	2.0	2.3
16.00	64.2	10.8	1436	0.89	3034	9954	5	221	3.1	5.9	3.9	4.5
16.50	63.1	13.3	1552	0.96	3124	10249	5	219	2.8	5.4	3.4	4.2
17.00	63.3	13.6	1584	0.98	3214	10545	5	214	1.6	3.1	1.8	2.6
17.50	63.1	14.5	1644	1.02	3304	10840	5	220	3.0	5.8	3.7	4.5
18.00	62.3	16.2	1748	1.09	3394	11135	5	234	2.2	4.4	3.5	2.6
18.50	62.9	17.3	1750	1.09	3484	11431	5	211	2.3	4.5	2.3	3.8
19.00	61.8	17.3	1882	1.17	3574	11726	4	188	3.3	6.4	0.9	6.4
19.50	61.6	16.4	1947	1.21	3664	12021	4	164	3.2	6.2	-1.8	6.0
20.00	61.0	14.4	2045	1.27	3754	12316	4	159	4.1	8.0	-2.0	7.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 8

LOCATION: SAN JOSE SATATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 2 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 11:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	69.0	343.0	41	0.03	172	564	4	181	1.5	2.8	0.0	2.8
1.00	68.0	1.0	87	0.05	280	919	4	187	1.6	3.1	0.4	3.0
1.50	67.0	0.0	134	0.08	379	1243	4	180	3.0	5.9	0.0	5.9
2.00	57.0	0.0	269	0.17	478	1568	4	187	4.0	7.8	0.9	7.8
2.50	53.8	4.3	375	0.23	577	1893	4	199	4.0	7.9	2.6	7.4
3.00	50.5	9.2	504	0.31	676	2218	4	194	3.1	6.1	1.5	5.9
3.50	51.5	7.5	562	0.35	771	2528	4	161	2.8	5.5	-1.8	5.2
4.00	50.5	2.3	660	0.41	865	2838	4	176	3.4	6.7	-0.4	6.6
4.50	49.5	4.5	765	0.48	960	3148	4	199	3.9	7.5	2.4	7.1
5.00	48.2	6.5	885	0.55	1054	3458	4	200	3.9	7.5	2.5	7.0
5.50	47.5	8.0	990	0.61	1144	3753	4	194	3.5	6.7	1.7	6.5
6.00	47.0	8.0	1091	0.68	1234	4049	4	182	3.2	6.3	0.2	6.3
6.50	46.0	7.0	1183	0.74	1324	4344	4	167	3.4	6.5	-1.4	6.4
7.00	46.5	4.8	1281	0.80	1414	4639	4	165	3.5	6.8	-1.7	6.6
7.50	46.2	3.8	1381	0.86	1504	4934	4	171	3.4	6.5	-1.0	6.4
8.00	46.0	3.0	1478	0.92	1594	5230	4	170	3.1	6.1	-1.0	6.0
8.50	46.0	2.2	1564	0.97	1684	5525	4	167	2.5	4.9	-1.1	4.7
9.00	46.5	1.5	1623	1.01	1774	5820	4	160	1.5	3.0	-1.0	2.8
9.50	47.5	1.0	1649	1.02	1864	6116	3	136	1.2	2.2	-1.6	1.6
10.00	48.5	359.8	1672	1.04	1954	6411	3	129	1.1	2.2	-1.7	1.4
10.50	49.5	359.2	1691	1.05	2044	6706	4	180	1.1	2.1	0.0	2.1
11.00	50.0	359.8	1737	1.08	2134	7001	5	211	1.7	3.4	1.8	2.9
11.50	50.5	1.0	17[illegible]	1.13	2224	7297	5	214	1.7	3.3	1.8	2.7
12.00	51.0	1.6	[illegible]22	1.13	2314	75[illegible]	4	202	1.8	3.5	1.3	3.2
12.50	51.2	3.2	1881	1.17	2404	7887	5	209	1.7	3.3	1.6	2.9
13.00	51.8	3.0	1912	1.19	2494	8182	5	213	1.7	3.3	1.9	2.7
13.50	52.0	3.8	1969	1.22	2584	8478	5	215	2.2	4.3	2.5	3.5
14.00	52.2	5.0	2025	1.26	2674	8773	5	229	2.7	5.3	4.0	3.5
14.50	52.3	7.0	2087	1.30	2764	9068	5	226	1.7	3.3	2.3	2.3
15.00	53.0	6.8	2102	1.31	2854	9364	5	210	0.8	1.6	0.8	1.3
15.50	53.5	7.5	2131	1.32	2944	9659	5	233	1.5	2.9	2.3	1.8
16.00	53.9	8.5	2166	1.35	3034	9954	5	245	2.7	5.2	4.7	2.3
16.50	54.2	11.0	2223	1.38	3124	10249	6	249	4.4	8.5	7.9	3.0
17.00	53.8	16.2	2305	1.43	3214	10545	5	246	5.9	11.4	10.4	4.6
17.50	53.0	17.8	2442	1.52	3304	10840	6	248	6.5	12.5	11.6	4.8
18.00	52.5	21.2	2555	1.59	3394	11135	6	255	6.2	12.1	11.7	3.1
18.50	52.1	24.6	2662	1.65	3484	11431	6	264	5.6	10.8	10.8	1.1
19.00	52.2	27.5	2723	1.69	3574	11726	6	275	5.2	10.0	10.0	-0.8
19.50	52.3	30.0	2782	1.73	3664	12021	6	277	4.6	9.0	9.0	-1.1
20.00	52.5	32.5	2831	1.76	3754	12316	6	277	3.9	7.7	7.6	-1.0

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 9

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 2 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 17:00 P.D.T

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	33.4	146.6	164	0.10	172	564	7	330	5.3	10.3	5.2	-8.9
1.00	34.1	150.0	319	0.20	280	919	7	329	3.5	6.8	3.4	-5.8
1.50	40.2	148.2	373	0.23	379	1243	7	321	1.0	1.9	1.2	-1.5
2.00	47.6	148.6	378	0.23	478	1568	5	244	1.5	2.8	2.5	1.2
2.50*	777.0	777.0	401	0.25	577	1893	5	241	3.0	5.8	5.1	2.9
3.00	55.3	133.0	434	0.26	676	2218	5	219	4.4	8.5	5.3	6.6
3.50	57.7	99.8	447	0.28	771	2528	5	220	5.1	10.0	6.5	7.6
4.00	55.4	90.0	553	0.34	865	2838	5	234	4.3	8.3	6.8	4.9
4.50	53.9	83.5	653	0.41	960	3148	5	228	3.9	7.6	5.6	3.1
5.00	53.1	77.0	743	0.46	1056	3458	5	221	3.9	7.6	4.9	3.7
5.50	52.2	72.7	838	0.52	1144	3753	5	223	4.1	7.9	5.4	3.7
6.00	50.8	69.5	954	0.59	1234	4049	5	236	4.4	8.5	7.0	4.8
6.50	49.1	68.7	1091	0.68	1324	4344	5	245	4.6	8.9	8.1	3.8
7.00	47.7	64.6	1228	0.76	1410	4639	6	249	3.4	6.6	6.2	2.4
7.50	48.0	63.7	1297	0.81	1504	4934	5	229	2.0	3.8	3.9	2.5
8.00	48.9	66.8	1339	0.83	1594	5230	4	179	2.3	4.4	-0.1	4.4
8.50	50.2	64.3	1350	0.84	1684	5525	3	152	3.0	5.8	-2.7	5.1
9.00	52.0	59.1	1336	0.83	1774	5820	3	147	2.6	5.0	-3.7	4.2
9.50	53.3	56.7	1342	0.83	1864	6116	3	151	1.7	3.3	-1.6	2.9
10.00	54.6	54.7	1343	0.83	1954	6411	3	149	1.9	3.7	-1.9	3.1
10.50	55.7	51.9	1351	0.84	2044	6706	3	156	1.9	3.7	-1.5	3.4
11.00	56.5	50.0	1370	0.85	2134	7001	4	170	1.7	3.3	-0.6	3.3
11.50	57.0	48.2	1403	0.87	2224	7297	4	183	1.9	3.7	0.2	3.7
12.00	57.2	46.7	1450	0.90	2314	7592	4	184	1.3	2.6	0.2	2.6
12.50	58.0	46.0	1462	0.91	2404	7887	5	213	0.4	0.7	0.4	0.6
13.00	58.8	45.5	1472	0.91	2494	8182	6	254	0.8	1.5	1.4	0.4
13.50	59.2	46.8	1502	0.93	2584	8478	5	244	1.5	2.9	2.6	1.2
14.00	59.2	47.5	1556	0.97	2674	8773	6	264	1.9	3.8	3.7	0.4
14.50	59.4	49.3	1597	0.99	2764	9068	6	264	2.5	4.8	4.7	0.5
15.00	59.0	50.5	1675	1.04	2854	9364	6	251	3.0	5.8	5.5	1.9
15.50	58.5	51.5	1765	1.10	2944	9659	6	248	3.0	5.8	5.4	2.2
16.00	58.1	52.2	1849	1.15	3034	9954	6	249	2.8	5.5	5.1	2.0
16.50	57.8	53.0	1927	1.20	3124	10249	6	250	2.6	5.1	4.8	1.7
17.00	57.5	53.6	1999	1.24	3214	10545	5	238	2.0	3.9	3.3	2.1
17.50	57.7	53.3	2048	1.27	3304	10840	5	207	1.5	2.9	1.4	2.6
18.00	58.0	52.5	2081	1.29	3394	11135	4	179	1.3	2.6	-0.1	2.6
18.50	58.5	51.5	2096	1.30	3484	11431	4	174	1.4	2.7	-0.3	2.7
19.00	58.8	50.6	2126	1.32	3574	11726	4	191	1.6	3.2	0.6	3.1
19.50	58.9	49.8	2172	1.35	3664	12021	5	211	1.9	3.7	1.9	3.2
20.00	58.8	49.6	2235	1.39	3754	12316	5	223	2.1	4.1	2.8	3.0

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 10

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]--LOST DUE TO DIM LIGHT

DATE OF LAUNCH: 2 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 23:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	56.5	148.0	71	0.04	172	564	7	318	2.1	4.2	2.8	-3.1
1.00	59.2	137.5	129	0.08	280	919	7	293	0.6	1.2	1.1	-0.5
1.50	71.8	136.4	104	0.06	379	1243	3	139	1.8	3.5	-2.3	2.6
2.00	87.0	130.0	22	0.01	478	1568	4	165	3.1	6.1	-1.6	5.9
2.50	78.0	12.0	109	0.07	577	1893	4	169	4.2	8.1	-1.6	7.9
3.00	69.1	352.0	234	0.15	676	2218	4	170	2.9	5.6	-1.0	5.5
3.50	68.6	358.5	277	0.17	771	2528	6	248	2.0	3.9	3.6	1.5
4.00	70.2	16.0	288	0.18	865	2838	6	268	3.6	7.1	7.1	0.3
4.50	68.4	36.5	355	0.22	960	3148	6	270	4.2	8.1	8.1	0.0
5.00	66.5	50.0	430	0.27	1054	3458	6	271	3.8	7.5	7.5	-0.1
5.50	64.1	57.4	524	0.33	1144	3753	6	264	3.9	7.5	7.4	0.8
6.00	61.5	61.8	635	0.39	1234	4049	6	262	3.4	6.5	6.5	0.9
6.50	60.5	64.2	713	0.44	1324	4344	6	256	3.3	6.4	6.2	1.6
7.00	58.5	65.1	827	0.51	1414	4639	6	249	4.1	7.9	7.4	2.8
7.50	56.4	65.5	957	0.59	1504	4934	6	252	4.4	8.6	8.2	2.6
8.00	54.5	66.8	1091	0.68	1594	5230	6	261	3.6	7.1	7.0	1.1
8.50	54.2	68.3	1.68	0.73	1684	5525	6	276	2.3	4.5	4.5	-0.5
9.00	54.6	70.0	1215	0.76	1774	5[illegible]0	6	276	1.4	2.7	2.[illegible]	-0.4
9.50	55.4	70.2	1242	0.77	1864	6116	5	240	1.1	2.1	1.8	1.1
10.00	55.9	69.5	1280	0.80	1954	6411	5	204	2.0	3.8	1.5	3.5
10.50	56.2	66.5	1325	0.82	2044	6706	5	203	2.4	4.6	1.8	4.2
11.00	56.3	65.2	1381	0.86	2134	7001	5	213	2.5	4.8	2.6	4.0
11.50	56.1	63.3	1451	0.90	2224	7297	5	213	3.0	5.8	3.1	4.9
12.00	55.7	61.6	1535	0.95	2314	7592	5	211	2.9	5.6	2.9	4.8
12.50	55.6	60.0	1602	1.00	2404	7887	4	199	2.8	5.5	1.8	5.2
13.00	55.6	57.6	1664	1.03	2494	8182	4	195	3.1	6.0	1.6	5.8
13.50	55.4	55.7	1736	1.08	2584	8478	4	202	3.4	6.6	2.5	6.1
14.00	54.9	53.9	1834	1.14	2674	8773	5	205	3.3	6.4	2.7	5.8
14.50	54.7	52.7	1912	1.19	2764	9068	5	203	2.7	5.2	2.1	4.8
15.00	54.7	51.5	1975	1.23	2854	9364	4	192	2.4	4.7	1.0	4.6
15.50	54.9	50.0	2024	1.26	2944	9659	4	184	2.7	5.2	0.3	5.2
16.00	54.9	48.2	2087	1.30	3034	9954	4	179	2.8	5.5	-0.1	5.5
16.50	55.1	46.5	2135	1.33	3124	10249	4	180	3.2	6.3	0.0	6.3
17.00	54.8	44.5	2222	1.38	3214	10545	4	176	3.3	6.5	-0.4	6.5
17.50	55.0	42.6	2269	1.41	3304	10840	4	166	2.9	5.7	-1.4	5.5

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 11

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 3 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES (SPEED)	VELOCITY (U)	VELOCITY (V) PER HOUR
0.50	64.9	84.0	51	0.03	172	564	0	12	1.1	2.2	-0.5	-2.2
1.00	72.5	191.9	68	0.04	280	919	1	45	1.7	3.2	-2.3	-2.3
1.50	77.6	197.0	68	0.04	379	1243	4	173	1.4	2.7	-0.3	2.7
2.00	86.0	305.0	29	0.02	478	1568	3	155	4.9	9.6	-4.1	8.7
2.50	69.0	324.5	250	0.16	577	1893	4	160	5.0	9.7	-3.9	9.1
3.00	62.2	337.5	323	0.20	676	2218	5	204	2.8	5.5	2.2	5.0
3.50	62.6	347.8	366	0.23	771	2528	5	214	2.3	4.4	2.4	3.6
4.00	62.7	353.3	413	0.26	865	2838	5	220	1.7	3.3	2.1	2.5
4.50	64.0	358.4	437	0.27	960	3148	5	226	1.8	3.5	2.5	2.4
5.00	63.8	3.5	487	0.30	1054	3458	5	223	2.0	3.9	2.6	2.8
5.50	63.9	7.5	529	0.33	1144	3753	5	232	2.3	4.4	3.4	2.7
6.00	63.4	13.4	586	0.36	1234	4049	5	236	2.3	4.4	3.7	2.5
6.50	63.5	16.9	628	0.39	1324	4344	5	236	1.3	2.1	2.5	1.7
7.00	64.0	19.0	658	0.41	1414	4639	6	249	0.8	1.5	1.6	0.6
7.50	65.4	20.2	659	0.41	1504	4934	0	357	0.4	0.8	0.0	-0.3
8.00	67.4	19.8	637	0.40	1594	5230	1	39	0.8	1.5	-0.9	-1.2
8.50	69.2	18.8	615	0.38	1684	5525	1	42	0.5	1.0	-0.7	0.7
9.00	70.4	18.7	609	0.38	1774	5820	4	162	0.1	0.2	-0.1	0.2
9.50	71.0	18.5	620	0.39	1864	6116	4	202	1.0	2.0	0.7	1.8
10.00	70.5	19.0	669	0.42	1954	6411	5	209	2.4	4.6	2.3	3.0
10.50	69.0	20.5	760	0.47	3044	6706	5	242	3.1	6.0	5.3	2.8
11.00	68.5	28.0	815	0.51	2134	7001	5	247	4.4	8.6	7.9	3.4
11.50	66.0	32.0	962	0.60	2224	7297	6	249	4.3	8.4	7.8	3.0
12.00	65.5	37.5	1025	0.64	2314	7592	6	253	4.8	9.2	8.8	2.7
12.50	63.0	41.0	1193	0.74	2404	7887	5	243	4.8	9.3	8.3	4.3
13.00	62.0	43.0	1292	0.80	2494	8182	5	241	3.6	7.0	6.1	3.4
13.50	61.0	44.0	1397	0.87	2584	8478	5	239	3.2	6.2	5.5	3.2
14.00	60.5	45.0	1477	0.92	2674	8773	5	243	2.8	5.5	4.5	2.5
14.50	60.0	46.0	1559	0.97	2764	9068	5	245	3.5	6.8	6.2	2.9
15.00	59.0	47.5	1676	1.04	2854	9364	5	239	3.5	6.8	5.8	3.5
15.50	58.5	47.5	1765	1.10	2944	9659	5	235	2.8	5.4	4.4	3.1
16.00	58.2	48.2	1841	1.14	3034	9954	5	246	2.6	5.0	4.6	2.0
16.50	58.0	49.0	1912	1.19	3124	10249	5	226	3.4	6.6	4.8	4.6
17.00	57.0	48.0	2046	1.27	3214	10545	5	205	4.9	9.6	4.0	8.7
17.50	56.0	45.8	2185	1.36	3304	10840	4	186	6.1	11.9	1.3	11.8
18.00	55.0	42.0	2332	1.45	3394	11135	4	185	6.4	12.3	1.0	12.3
18.50	54.0	40.0	2485	1.54	3484	11431	4	172	7.5	14.6	-2.0	14.5
19.00	53.0	34.5	2645	1.64	3574	11726	4	184	10.5	20.5	1.6	20.4
19.50	50.0	33.0	3021	1.88	3664	12021	4	169	10.0	19.5	-3.8	19.1
20.00	50.0	26.5	3096	1.92	3754	12316	3	132	11.8	23.0	-17.1	15.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 12

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 3 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 11:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	89.0	96.5	2	0.00	172	564	0	11	0.6	1.2	-0.2	-1.1
1.00	80.5	191.0	36	0.02	280	919	0	20	0.8	1.6	-0.5	-1.5
1.50	81.2	197.5	49	0.03	379	1243	4	190	0.5	0.9	0.2	0.9
2.00	89.0	196.7	7	0.00	478	1568	4	192	1.6	3.0	0.6	2.9
2.50	85.0	6.5	45	0.03	577	1893	4	201	1.4	2.7	0.9	2.5
3.00	83.0	21.2	75	0.05	676	2218	5	217	1.0	1.9	1.1	1.5
3.50	82.0	23.5	99	0.06	771	2528	5	220	1.4	2.7	1.7	2.1
4.00	79.0	31.0	156	0.10	865	2838	5	214	1.9	3.8	2.1	3.1
4.50	76.5	29.2	215	0.13	960	3148	4	198	2.6	5.1	1.6	4.9
5.00	72.5	24.6	312	0.19	1054	3458	4	195	3.0	5.9	1.5	5.7
5.50	70.0	22.8	393	0.24	1144	3753	4	189	4.0	7.7	1.2	7.6
6.00	65.0	17.8	546	0.34	1234	4049	4	181	4.0	7.7	0.1	7.7
6.50	63.8	14.5	620	0.39	1324	4344	4	174	3.1	6.0	-0.6	5.9
7.00	62.0	11.8	718	0.45	1414	4639	4	167	3.0	5.7	-1.3	5.6
7.50	61.5	8.5	782	0.49	1504	4934	3	157	2.6	5.0	-2.0	4.6
8.00	61.0	5.8	848	0.53	1594	5230	4	161	2.6	5.1	-1.7	4.8
8.50	60.3	4.0	924	0.57	1684	5525	5	236	3.3	6.4	5.3	3.6
9.00	60.0	14.6	997	0.61	1774	5820	5	209	1.3	2.6	1.3	2.3
9.50	61.0	6.0	998	0.62	1864	6116	3	124	1.7	3.3	-2.7	1.9
10.00	61.5	9.2	1026	0.64	1954	6411	6	259	2.6	5.0	4.9	0.9
10.50	62.0	14.0	1053	0.65	2044	6706	6	267	2.3	4.5	4.5	0.2
11.00	62.[illegible]	16.5	1064	0.66	2134	7001	6	266	1.2	2.3	2.3	0.2
11.50	63.5	17.6	1077	0.67	2224	7297	6	250	0.9	1.8	1.7	0.6
12.00	64.0	18.8	1097	0.68	2314	7592	5	234	1.1	2.2	1.7	1.3
12.50	64.2	19.6	1133	0.70	2404	7887	5	217	1.[illegible]	2.6	1.6	2.1
13.00	64.2	20.0	1176	0.73	2494	8182	4	189	1.6	3.0	0.5	3.0
13.50	64.1	18.8	1224	0.76	2584	8478	4	172	1.9	3.8	-0.5	3.7
14.00	63.9	17.6	1270	0.79	2674	8773	4	176	2.2	4.3	-0.3	4.3
14.50	63.5	16.6	1346	0.84	2764	9068	4	178	2.3	4.5	-0.2	4.5
15.00	63.2	15.7	1409	0.88	2854	9364	4	168	2.0	4.0	-0.8	3.9
15.50	63.2	14.3	1455	0.90	2944	9659	4	161	2.1	4.0	-1.3	3.8
16.00	63.0	13.0	1513	0.94	3034	9954	3	156	2.0	4.0	-1.6	3.6
16.50	63.1	11.5	1552	0.96	3124	10249	3	156	2.6	5.0	-2.1	4.6
17.00	62.5	9.2	1640	1.02	3214	10545	4	159	4.4	8.5	-3.0	8.0
17.50	61.2	7.0	1781	1.11	3304	10840	5	220	5.6	10.9	7.0	8.4
18.00	59.8	14.7	1938	1.20	3394	11135	4	167	7.2	14.1	-3.1	13.7
18.50	57.3	3.2	2196	1.36	3484	11431	3	143	12.2	23.6	-14.3	18.9
19.00	55.0	1.2	2458	1.53	3574	11726	4	163	9.1	17.6	-5.2	16.8
19.50	53.0	359.2	2713	1.69	3664	12021	4	164	9.2	17.9	-5.0	17.1
20.00	51.0	358.0	2986	1.86	3754	12316	4	166	9.4	18.2	-4.3	17.7

~~* CALCULATION ON BOTH SIDES OF THIS LINE WERE MADE USING LINEARLY INTERPOLATED DATA.~~

S U M M A R Y F O R A S C E N T # 13

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 3 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME	ELEV.	AZIMUTH	RANGE		M.S.L. ALTITUDE		DIRECTION		VELOCITY METERS/SEC	NAUTICAL MILES PER HOUR		
MINUTES	DEGREES		METERS	MILES	METERS	FEET	CLASS 0- 7	DEGREES	(SPEED)	(SPEED)	(U)	(V)
0.50	40.4	159.8	127	0.08	172	564	0	341	4.4	8.5	2.8	-8.1
1.00	39.3	160.8	264	0.16	280	919	0	343	3.5	6.8	2.0	-6.5
1.50	43.1	161.6	337	0.21	379	1243	7	311	1.3	2.5	1.9	-1.6
2.00	51.3	154.2	332	0.21	478	1568	5	217	1.5	2.9	1.7	2.3
2.50	60.1	147.3	295	0.18	577	1893	4	195	2.0	3.8	1.0	3.7
3.00	67.0	136.5	255	0.16	676	2218	5	215	2.7	5.3	3.0	4.3
3.50	68.5	114.5	278	0.17	771	2528	5	234	2.0	3.7	4.6	1.4
4.00	67.8	104.2	327	0.20	865	2838	5	239	2.8	5.5	4.7	2.8
4.50	66.0	94.1	399	0.25	960	3148	5	243	3.6	7.1	6.3	3.2
5.00	62.7	87.8	511	0.32	1054	3458	5	246	3.9	7.5	6.9	3.1
5.50	60.4	83.8	614	0.38	1148	3753	6	277	3.0	5.9	5.9	-0.8
6.00	59.4	90.3	692	0.43	1234	4049	7	293	2.7	5.2	4.8	-2.0
6.50	59.6	89.7	757	0.47	1324	4344	5	208	3.4	6.7	3.1	5.9
7.00	59.1	77.5	808	0.50	1414	4639	6	168	3.5	6.9	0.5	6.8
7.50	60.9	74.4	801	0.50	1504	4934	3	155	1.1	2.2	-0.9	2.0
8.00	62.5	72.4	796	0.49	1594	5230	5	204	0.9	1.7	0.7	1.6
8.50	62.7	71.6	836	0.52	1684	5525	6	256	1.2	2.4	2.4	0.6
9.00	63.0	72.7	871	0.54	1774	5820	6	281	2.0	4.0	1.9	-0.7
9.50	62.3	75.2	945	0.59	1864	6116	6	286	2.4	4.7	4.5	-1.3
10.00	62.2	77.3	996	0.62	1954	6411	7	295	2.2	4.2	3.8	-1.8
10.50	62.1	79.8	1049	0.65	2044	6706	7	300	2.1	4.0	3.5	-2.0
11.00	62.2	81.7	1091	0.68	2134	7001	6	292	1.8	3.4	3.2	-1.3
11.50	62.2	83.5	1134	0.71	2224	7297	6	278	1.8	3.5	3.5	-0.5
12.00	62.0	83.2	1196	0.74	2314	7592	6	276	1.9	3.7	3.7	-0.4
12.50	61.9	83.8	1249	0.78	2404	7887	6	280	1.9	3.8	3.7	-0.7
13.00	61.7	84.7	1308	0.81	2494	8182	6	284	1.7	3.3	3.2	-0.8
13.50	61.9	85.3	1346	0.84	2584	8478	6	274	1.2	2.4	2.4	-0.2
14.00	62.1	85.2	1382	0.86	2674	8773	6	251	1.0	2.0	1.9	0.6
14.50	62.5	84.7	1406	0.87	2764	9068	5	229	1.1	2.1	1.6	1.4
15.00	62.8	83.7	1434	0.89	2854	9364	5	211	1.4	2.6	1.3	2.3
15.50	63.2	82.1	1455	0.90	2944	9659	4	197	1.6	3.1	0.9	2.9
16.00	63.6	80.3	1474	0.92	3034	9954	4	189	1.6	3.2	0.5	3.1
16.50	64.1	78.5	1486	0.92	3124	10249	4	189	2.0	3.9	0.6	3.8
17.00	64.3	76.0	1516	0.94	3214	10545	4	202	2.7	5.2	1.9	4.9
17.50	64.0	73.6	1580	0.98	3304	10840	5	220	3.3	6.5	4.2	5.0
18.00	63.2	72.0	1682	1.05	3394	11135	5	227	4.1	8.0	5.8	5.4
18.50	62.7	70.1	1803	1.12	3484	11431	5	218	4.5	8.8	5.4	6.9
19.00	61.4	67.5	1914	1.19	3574	11726	5	209	4.1	8.0	3.8	7.0
19.50	61.0	65.4	1996	1.24	3664	12021	5	206	3.4	6.6	2.9	6.0
20.00	60.7	63.7	2071	1.29	3754	12316	5	206	3.2	6.2	2.7	5.6

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 14

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 4 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	86.5	278.2	7	0.00	172	564	9	999	0.0	0.0	0.0	0.0
1.00	90.0	278.2	0	0.00	280	919	2	109	0.7	1.4	-1.3	0.4
1.50	81.2	287.4	49	0.03	379	1243	3	138	2.0	3.8	-2.5	2.8
2.00	74.1	318.2	118	0.07	478	1568	3	146	2.0	3.9	-2.2	3.2
2.50	72.5	315.2	162	0.10	577	1893	3	139	0.9	1.7	-1.1	1.3
3.00	74.5	318.5	170	0.11	676	2218	6	291	0.6	1.1	1.0	-0.4
3.50	79.5	321.4	131	0.08	771	2528	7	323	1.6	3.0	1.8	-2.4
4.00	84.5	313.0	77	0.05	865	2838	7	328	1.7	3.3	1.8	-2.8
4.50	88.0	298.2	31	0.02	960	3148	7	325	1.4	2.8	1.6	-2.3
5.00	88.9	203.0	19	0.01	1054	3458	7	320	1.6	3.2	2.0	-2.4
5.50	86.3	149.3	70	0.04	1144	3753	7	321	2.0	3.9	2.4	-3.0
6.00	83.7	148.8	129	0.08	1234	4049	7	303	1.6	3.1	2.6	-1.7
6.50	82.7	134.0	161	0.10	1324	4344	6	284	2.1	4.1	4.0	-1.0
7.00	80.0	126.6	238	0.15	1414	4639	7	295	1.8	3.4	3.1	-1.5
7.50	79.6	126.5	264	0.16	1504	4934	7	328	2.3	4.5	2.4	-3.8
8.00	76.4	134.5	370	0.23	1594	5230	7	331	4.5	8.8	4.2	-7.7
8.50	72.1	139.1	523	0.33	1684	5525	7	326	3.4	6.6	3.7	-5.5
9.00	71.5	138.7	572	0.36	1774	5820	7	307	2.2	4.3	3.5	-2.6
9.50	70.0	136.7	655	0.41	1864	6116	7	300	3.0	5.8	5.0	-2.9
10.00	68.5	134.3	744	0.46	1954	6411	6	290	2.0	3.9	3.7	-1.3
10.50	68.9	132.6	764	0.47	2044	6706	7	305	2.9	5.7	4.6	-3.2
11.00	[illegible]	132.5	917	0.57	2134	7001	7	316	3.9	7.5	5.3	-5.5
11.50	65.2	133.4	998	0.62	2224	7297	7	331	[illegible]	4.1	2.0	[illegible].6
12.00	65.3	134.7	1040	0.65	2314	7592	0	340	1.1	2.1	0.7	-2.0
12.50	65.7	135.0	1057	0.66	2404	7887	0	12	0.4	0.7	-0.1	-0.7
13.00	66.6	135.7	1052	0.65	2494	8182	2	79	0.5	1.1	-1.0	-0.2
13.50	67.8	136.5	1039	0.65	2584	8478	3	123	0.7	1.3	-1.1	0.7
14.00	68.9	136.3	1012	0.63	2674	8773	4	181	1.6	3.1	0.1	3.1
14.50	70.2	132.5	972	0.60	2764	9068	4	191	2.4	4.6	0.9	4.5
15.00	71.4	129.1	939	0.58	2854	9364	4	180	2.3	4.4	0.0	4.4
15.50	72.9	126.0	886	0.55	2944	9659	4	162	2.6	5.0	-1.6	4.8
16.00	74.7	123.2	813	0.50	3034	9954	3	152	2.9	5.6	-2.6	4.9
16.50	76.5	120.1	735	0.46	3124	10249	3	150	3.3	6.5	-3.2	5.6
17.00	78.5	115.0	641	0.40	3214	10545	3	155	3.3	6.4	-2.7	5.8
17.50	79.8	108.8	583	0.36	3304	10840	3	152	3.5	6.7	-3.1	5.9
18.00	81.6	100.2	497	0.31	3394	11135	3	139	4.6	8.9	-5.9	6.6
18.50	83.8	87.3	372	0.23	3484	11431	4	160	4.0	7.8	-2.7	7.3
19.00	83.1	70.8	425	0.26	3574	11726	4	187	4.3	8.4	1.0	8.4
19.50	82.3	55.5	487	0.30	3664	12021	4	184	4.3	8.4	0.6	8.4
20.00	81.1	46.5	578	0.36	3754	12316	4	188	4.1	8.0	1.2	7.9

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 15

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: BALLOON LOST IN SUN ... [redacted]

DATE OF LAUNCH: 4 AUGUST 1976

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 11:00 P.D.T.

TIME MINUTES	ELEV. D E G	AZIMUTH D E G	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL (SPEED)	VELOCITY MILES PER HOUR (U)	VELOCITY MILES PER HOUR (V)
0.50	46.0	164.5	104	0.06	172	564	0	347	2.9	5.6	1.2	-5.4
1.00	51.5	167.2	172	0.11	280	919	1	26	0.6	1.3	-0.5	-1.1
1.50	67.0	175.0	134	0.08	379	1243	3	118	1.3	2.6	-2.3	1.2
2.00	72.0	194.0	135	0.08	478	1568	3	139	3.0	5.9	-2.9	4.4
2.50	74.0	272.0	109	0.07	577	1893	3	152	3.5	6.7	-3.2	5.9
3.00	77.0	291.8	141	0.09	676	2218	4	165	1.4	2.8	-0.7	2.7
3.50	77.5	303.4	157	0.10	771	2528	5	209	1.4	2.8	1.4	2.4
4.00	79.0	325.0	156	0.10	865	2838	5	234	1.5	2.8	2.3	1.7
4.50	80.5	336.5	150	0.09	960	3148	6	262	1.0	1.9	1.8	0.3
5.00	82.0	346.5	139	0.09	1054	3458	7	307	0.6	1.2	1.0	-0.7
5.50	83.7	345.4	119	0.07	1144	3753	1	29	0.4	0.8	-0.4	-0.7
6.00	84.0	339.0	123	0.08	1234	4049	2	97	0.2	0.3	-0.3	0.0
6.50	84.4	340.9	124	0.08	1324	4344	7	313	0.6	1.1	0.8	-0.7
7.00	86.0	347.8	94	0.06	1414	4639	7	324	1.8	3.6	2.1	-2.9
7.50	88.5	41.3	38	0.02	1504	4934	7	309	2.4	4.8	3.7	-3.0
8.00	86.5	90.5	94	0.06	1594	5230	7	296	2.6	5.1	4.6	-2.2
8.50	84.0	103.2	170	0.11	1684	5525	7	318	2.2	4.2	2.9	-3.2
9.00	83.0	118.5	210	0.13	1774	5820	0	341	2.2	4.3	1.4	-4.1
9.50	81.6	128.3	266	0.17	1864	6116	7	335	2.2	4.3	1.8	-3.9
10.00	80.2	132.3	326	0.20	1954	6411	7	318	2.2	4.4	2.9	-3.2
10.50	78.6	131.5	399	0.25	2044	6706	7	302	2.9	5.6	4.7	-3.0
11.00	76.5	128.8	497	0.31	2134	7001	7	311	2.7	5.2	3.9	-3.4
11.50	75.5	131.3	559	0.35	2224	7297	0	343	2.1	4.0	1.1	-3.8
12.00	75.0	135.5	603	0.37	2314	7592	0	346	2.2	4.3	1.0	-4.1
12.50	74.0	137.7	671	0.42	2404	7887	7	336	2.5	4.8	1.9	-4.4
13.00	73.0	139.5	743	0.46	2494	8182	7	334	3.0	5.7	2.6	-5.1
13.50	71.5	141.0	843	0.52	2584	8478	7	332	3.4	6.6	3.1	-5.9

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 16

LOCATION: SAN JOSE STATE UNIVERSITY, CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 4 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	45.1	138.2	108	0.07	172	564	7	311	3.8	7.3	5.6	-4.8
1.00	43.6	130.8	227	0.14	280	919	7	309	3.8	7.4	5.7	-4.6
1.50	43.3	131.8	334	0.21	379	1243	7	317	3.3	6.4	4.4	-4.7
2.00	44.3	133.6	424	0.26	476	1568	7	300	2.9	5.6	4.8	-2.8
2.50	45.5	127.8	504	0.31	577	1893	6	277	2.8	5.5	5.4	-0.7
3.00	47.1	123.5	569	0.35	676	2218	6	260	1.7	3.2	3.2	0.5
3.50	50.6	120.5	576	0.36	771	2528	0	338	0.3	0.5	0.2	-0.5
4.00	54.0	124.4	582	0.36	865	2838	0	16	1.5	2.9	-0.8	-2.8
4.50	56.0	128.7	604	0.38	960	3148	0	19	1.6	3.0	-1.0	-2.9
5.00	58.2	132.8	614	0.38	1054	3458	1	48	1.3	2.6	-1.9	-1.7
5.50	61.1	136.3	596	0.37	1144	3753	2	70	1.7	3.3	-3.2	-1.1
6.00	63.9	142.0	573	0.36	1234	4049	2	81	2.5	4.9	-4.8	-0.7
6.50	67.4	149.9	524	0.33	1324	4344	2	82	2.9	5.7	-5.6	-0.8
7.00	69.3	159.4	510	0.32	1414	4639	1	61	2.8	5.5	-4.8	-2.6
7.50	69.2	167.9	547	0.34	1504	4934	1	39	2.6	5.1	-3.2	-4.0
8.00	68.4	172.3	606	0.38	1594	5230	1	26	2.4	4.6	-2.0	-4.1
8.50	67.7	175.5	664	0.41	1684	5525	1	23	1.7	3.4	-1.3	-3.1
9.00	67.8	176.7	698	0.43	1774	5820	0	359	1.8	3.5	0.1	-3.5
9.50	66.8	176.0	771	0.48	1864	6116	0	342	3.1	6.1	1.9	-5.8
10.00	65.0	173.5	881	0.55	1954	6411	7	332	4.2	8.1	3.8	-7.1
10.50	63.1	170.1	1005	0.62	2044	6706	7	321	3.9	7.6	4.8	-5.9
11.00	62.3	166.8	1087	0.68	2134	7001	7	322	4.7	9.2	5.5	-7.3
11.50	59.7	164.3	1263	0.78	2224	7297	7	322	5.2	10.1	5.7	-8.4
12.00	58.4	162.2	1389	0.86	2314	7592	7	323	4.8	9.2	5.6	-7.3
12.50	56.8	160.2	1531	0.95	2404	7887	7	328	8.3	16.1	8.5	-13.7
13.00	55.4	158.5	1871	1.16	2494	8182	7	323	4.8	9.4	5.6	-7.5
13.50	54.3	157.5	1811	1.13	2584	8478	7	298	1.3	2.5	2.2	-1.2
14.00	53.5	157.0	1931	1.20	2674	8773	7	331	3.4	6.6	3.2	-5.7
14.50	53.3	156.8	2013	1.25	2764	9068	0	351	2.5	4.9	0.8	-4.9
15.00	53.3	158.0	2080	1.29	2854	9364	0	21	2.5	4.9	-1.7	-4.5
15.50	53.6	159.6	2123	1.32	2944	9659	1	36	2.6	5.0	-3.0	-4.1
16.00	53.9	161.5	2166	1.35	3034	9954	1	44	3.3	6.4	-4.4	-4.6
16.50	54.1	164.2	2215	1.38	3124	10249	1	54	3.9	7.6	-6.1	-4.4
17.00	54.5	167.2	2247	1.40	3214	10545	1	57	4.2	8.2	-6.8	-4.5
17.50	54.6	170.2	2303	1.43	3304	10840	1	53	4.3	8.4	-6.6	-5.1
18.00	54.6	172.9	2367	1.47	3394	11135	1	54	4.3	8.4	-6.8	-5.0
18.50	54.6	175.7	2430	1.51	3484	11431	1	53	4.5	8.8	-7.1	-5.3
19.00	54.4	178.3	2513	1.56	3574	11726	1	52	4.6	9.0	-7.1	-5.6
19.50	54.2	180.8	2596	1.61	3664	12021	1	58	3.7	7.2	-6.1	-3.8
20.00	54.5	182.5	2637	1.64	3754	12316	1	67	2.8	5.5	-5.1	-2.2

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 17

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 4 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 23:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	73.5	179.0	32	0.02	172	564	3	150	1.1	2.1	-1.0	1.8
1.00	73.1	330.4	66	0.04	280	919	4	158	3.9	7.6	-2.9	7.0
1.50	56.9	334.4	205	0.13	379	1243	3	153	2.6	5.0	-2.3	4.5
2.00	62.0	332.3	220	0.14	478	1568	2	97	0.7	1.4	-1.3	0.2
2.50	65.8	325.6	231	0.14	577	1893	0	9	0.8	1.6	-0.2	-1.5
3.00	73.3	323.4	184	0.11	676	2218	0	346	2.3	4.4	1.0	-4.3
3.50	80.8	301.0	114	0.07	771	2528	7	328	3.3	6.3	3.6	-5.3
4.00	88.7	196.4	18	0.01	865	2838	0	339	4.4	8.6	3.1	-8.1
4.50	78.0	181.0	190	0.12	960	3148	0	358	4.9	9.5	0.3	-9.5
5.00	72.5	179.0	312	0.19	1054	3458	0	353	4.1	7.9	1.0	-7.9
5.50	68.1	176.5	434	0.27	1144	3753	0	347	4.4	8.6	1.9	-8.4
6.00	63.8	173.6	576	0.36	1233	4045	0	345	4.2	8.1	2.1	-7.8
6.50	61.6	172.2	681	0.42	1324	4344	0	350	4.0	7.7	1.4	-7.6
7.00	58.9	172.5	814	0.51	1414	4639	0	359	4.3	8.4	0.1	-8.3
7.50	57.0	174.1	935	0.58	1509	4934	0	12	3.9	7.6	-1.5	-7.5
8.00	55.8	176.9	1040	0.65	1594	5230	1	32	3.7	7.1	-3.7	-5.1
8.50	55.4	181.0	1118	0.69	1684	5525	1	44	3.6	7.0	-4.8	-3.0
9.00	55.0	184.4	1197	0.74	1774	5820	1	47	3.5	6.7	-4.9	-4.6
9.50	54.8	187.8	1270	0.79	1864	6116	1	58	4.1	7.9	-6.7	-4.2
10.00	54.3	192.1	1358	0.84	1954	6411	1	59	4.6	8.9	-7.6	-4.7
10.50	53.6	196.2	1460	0.91	2044	6706	1	55	4.4	8.6	-7.1	-4.9
11.00	52.9	199.3	1566	0.97	2134	7001	1	53	4.9	9.6	-7.7	-5.7
11.50	51.7	202.2	1706	1.06	2224	7297	1	52	5.1	9.9	-7.8	-6.0
12.00	50.9	204.5	1829	1.14	2314	7592	1	60	5.0	9.7	-8.4	-4.8
12.50	50.2	207.6	1950	1.21	2404	7887	1	66	4.8	9.4	-8.6	-3.8
13.00	49.8	209.9	2054	1.28	2494	8182	1	67	4.1	8.0	-7.3	-3.1
13.50	49.6	211.8	2145	1.33	2584	8478	2	80	3.2	6.3	-6.2	-1.1
14.00	50.1	213.8	2182	1.36	2674	8773	2	109	2.7	5.3	-5.0	1.7
14.50	51.0	216.0	2186	1.36	2764	9068	3	120	3.1	6.1	-5.3	3.0
15.00	51.7	218.7	2203	1.37	2854	9364	3	118	3.1	5.9	-5.2	2.8
15.50	52.4	220.7	2218	1.38	2944	9659	3	115	2.6	5.1	-4.6	2.1
16.00	52.9	222.6	2246	1.40	3034	9954	2	109	2.3	4.4	-4.2	1.8
16.50	53.4	223.9	2273	1.41	3124	10249	2	92	1.5	2.9	-2.9	0.1
17.00	53.8	224.3	2305	1.43	3214	10545	2	90	1.1	2.2	-2.2	0.0
17.50	54.4	225.1	2320	1.44	3304	10840	3	135	1.5	3.0	-2.1	2.1
18.00	55.3	226.6	2306	1.43	3394	11135	3	156	2.3	4.5	-1.8	4.2
18.50	56.4	228.4	2272	1.41	3484	11431	4	171	3.0	5.7	-0.9	5.7
19.00	57.8	230.4	2210	1.37	3574	11726	4	171	3.4	6.5	-1.1	6.4
19.50	58.9	232.9	2172	1.35	3664	12021	4	172	4.0	7.7	-1.1	7.7
20.00	60.4	236.0	2096	1.30	3754	12316	4	178	4.6	8.9	-0.4	8.9

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 18

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 7 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	64.0	141.7	53	0.03	172	564	7	308	1.3	2.5	2.0	-1.5
1.00	70.5	127.7	76	0.05	280	919	4	163	1.6	3.1	-0.9	2.9
1.50	80.9	5.7	50	0.03	379	1243	3	144	2.8	5.4	-3.2	4.4
2.00	76.9	336.6	96	0.06	478	1568	0	343	0.9	1.8	0.5	-1.8
2.50	87.6	100.4	22	0.01	577	1893	7	326	4.9	9.5	5.3	-7.8
3.00	72.0	140.5	199	0.12	676	2218	7	329	5.4	10.5	5.5	-9.0
3.50	64.3	146.0	340	0.21	771	2528	0	338	6.1	11.8	4.4	-10.9
4.00	55.2	152.0	557	0.35	865	2838	0	345	7.3	14.2	3.8	-13.7
4.50	49.4	156.5	768	0.48	960	3148	0	345	8.2	15.9	4.0	-15.3
5.00	43.6	158.2	1040	0.65	1054	3458	0	343	9.2	17.8	5.1	-17.0
5.50	39.4	159.3	1315	0.82	1144	3753	0	343	9.0	17.4	4.9	-16.7
6.00	36.6	160.0	1575	0.98	1234	4049	0	343	7.9	15.3	4.4	-14.6
6.50	35.2	160.3	1786	1.11	1324	4344	0	341	6.9	13.3	4.3	-12.6
7.00	34.2	160.2	1986	1.23	1414	4639	0	342	6.1	11.8	3.6	-11.2
7.50	33.8	160.6	2151	1.34	1504	4934	0	349	5.5	10.6	2.0	-10.5
8.00	33.5	161.5	2312	1.44	1594	5230	0	354	4.8	9.2	0.9	-9.2
8.50	33.7	162.2	2429	1.51	1684	5525	0	359	3.7	7.2	0.2	-7.2
9.00	34.1	163.0	2526	1.57	1774	5820	0	4	3.2	6.3	-0.5	-6.2
9.50	34.6	163.8	2609	1.62	1864	6116	0	18	2.1	4.1	-1.3	-3.9
10.00	35.7	164.6	2630	1.63	1954	6411	0	355	0.8	1.6	0.1	-1.5
10.50	36.7	164.0	2656	1.65	2044	6706	1	29	0.7	1.3	-0.6	-1.1
11.00	37.9	165.2	2659	1.65	2134	7001	2	100	1.4	2.8	-2.8	0.5
11.50	39.5	165.7	2620	1.63	2224	7297	2	106	1.8	3.4	-3.3	0.7
12.00	40.5	167.2	2607	1.62	2314	7592	2	106	2.[illegible]	4.5	-4.3	[illegible].2
12.50	42.5	168.4	2554	1.59	2404	7887	3	120	3.0	5.7	-5.0	2.9
13.00	44.3	170.2	2490	1.55	2494	8182	3	116	3.5	6.7	-6.1	2.9
13.50	46.6	172.3	2434	1.51	2584	8478	3	118	3.7	7.3	-6.4	3.4
14.00	47.9	174.5	2358	1.47	2674	8773	3	121	3.5	6.9	-5.9	3.6
14.50	49.5	176.4	2306	1.43	2764	9068	3	113	2.8	5.4	-5.0	2.1
15.00	50.7	178.2	2284	1.42	2854	9364	2	105	2.8	5.4	-5.2	1.4
15.50	51.9	180.4	2258	1.40	2944	9659	2	96	2.1	4.0	-4.0	0.4
16.00	52.6	181.3	2271	1.41	3034	9954	2	88	1.7	3.3	-3.3	-0.1
16.50	53.5	183.0	2264	1.41	3124	10249	2	97	1.5	3.0	-2.9	0.4
17.00	54.3	183.6	2264	1.41	3214	10545	2	106	0.9	1.8	-1.8	0.5
17.50	55.2	184.4	2252	1.40	3304	10840	3	127	1.3	2.6	-2.0	1.5
18.00	56.3	185.3	2221	1.38	3394	11135	3	142	1.7	3.3	-2.0	2.6
18.50	57.5	186.2	2179	1.35	3484	11431	3	141	2.1	4.0	-2.5	3.1
19.00	58.7	187.6	2134	1.33	3574	11726	3	134	2.3	4.5	-3.2	3.2
19.50	59.6	189.2	2095	1.30	3664	12021	3	137	2.6	5.1	-3.4	3.7
20.00	61.1	191.0	2037	1.27	3754	12316	3	142	2.9	5.6	-3.5	4.5

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 19

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 7 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 11:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	A.S.L. ALTITUDE METERS	A.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	76.0	121.0	27	0.02	172	564	7	297	0.9	1.7	1.6	-0.0
1.00	78.0	117.0	54	0.03	280	919	5	203	0.2	0.3	0.1	0.3
1.50	85.0	99.0	28	0.02	379	1243	3	140	1.2	2.4	-1.6	1.8
2.00	85.5	359.2	33	0.02	478	1568	3	140	0.7	1.3	-0.9	1.0
2.50	87.0	1.5	27	0.02	577	1893	7	309	1.3	2.6	2.0	-1.6
3.00	84.0	145.5	64	0.04	676	2218	7	319	2.0	3.8	3.5	-2.9
3.50	82.0	128.3	99	0.06	771	2528	0	349	2.1	4.2	0.8	-4.1
4.00	78.2	149.0	167	0.10	865	2838	0	1	3.4	6.6	-0.2	-6.5
4.50	73.0	164.5	274	0.17	960	3140	0	158	3.9	7.6	0.2	-7.6
5.00	68.5	166.3	390	0.24	1054	3458	0	350	4.0	7.8	0.6	-7.7
5.50	64.5	167.3	515	0.32	1144	3753	0	354	4.0	7.7	0.7	-7.7
6.00	61.8	169.4	627	0.39	1234	4049	0	4	3.9	7.6	-0.5	-7.5
6.50	59.5	172.4	742	0.46	1324	4344	0	17	3.9	7.6	-2.2	-7.3
7.00	57.0	176.8	844	0.53	1414	4639	1	38	4.1	8.0	-3.7	-7.0
7.50	56.5	181.0	953	0.59	1504	4934	1	28	4.4	8.6	-4.1	-7.6
8.00	54.8	184.2	1079	0.67	1594	5230	1	24	4.7	9.2	-3.7	-8.4
8.50	53.0	186.2	1221	0.76	1684	5525	0	17	5.2	10.1	-2.9	-9.6
9.00	51.0	187.0	1385	0.86	1774	5820	0	23	5.0	9.7	-2.5	-9.0
9.50	50.0	189.2	1510	0.94	1864	6116	1	30	4.6	9.0	-4.5	-7.8
10.00	49.0	190.8	1643	1.02	1954	6411	1	29	3.9	7.6	-3.8	-6.6
10.50	48.8	191.9	1733	1.08	2044	6706	1	29	3.3	6.4	-3.3	-5.6
11.00	48.5	192.7	1831	1.14	2134	7001	1	26	3.3	6.4	-2.8	-5.7
11.50	48.3	193.3	1924	1.20	2224	7297	1	29	3.1	6.1	-2.9	-5.3
12.00	48.2	194.2	2012	1.25	2314	7592	1	32	2.8	5.5	-2.9	-4.6
12.50	48.3	194.8	2085	1.30	2404	7887	1	26	2.4	4.6	-2.0	-4.1
13.00	48.5	195.0	2150	1.34	2494	8183	1	24	1.9	3.7	-1.5	-3.4
13.50	48.9	195.3	2196	1.37	2584	8478	1	29	1.4	2.6	-1.3	-2.3
14.00	49.5	195.5	2229	1.39	2674	8773	1	38	1.2	2.3	-1.4	-1.9
14.50	50.0	196.0	2266	1.41	2764	9068	1	30	1.9	3.7	-1.9	-3.2
15.00	50.0	196.2	2341	1.45	2854	9364	1	42	1.5	3.0	-2.0	-2.2
15.50	50.8	197.0	2349	1.46	2944	9659	1	66	1.2	2.3	-2.1	-0.9
16.00	51.2	197.5	2388	1.48	3034	9954	1	62	1.0	1.9	-1.7	-0.9
16.50	52.0	198.0	2391	1.49	3124	10249	3	137	1.1	2.1	-1.5	1.6
17.00	53.2	198.9	2357	1.46	3214	10545	3	155	2.4	4.7	-2.0	4.3
17.50	54.8	200.5	2286	1.42	3304	10840	3	149	3.6	7.1	-3.6	6.1
18.00	56.3	203.2	2221	1.38	3394	11135	3	142	3.6	7.1	-4.3	5.6
18.50	57.5	205.4	2179	1.35	3484	11431	3	137	3.1	6.1	-4.2	4.5
19.00	58.5	207.8	2151	1.34	3574	11726	3	130	3.5	6.7	-5.2	4.3
19.50	59.3	210.8	2138	1.33	3664	12021	3	122	3.9	7.5	-6.4	4.0
20.00	59.8	214.0	2148	1.33	3754	12316	3	118	4.0	7.8	-6.9	3.6

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 20

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 7 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	39.2	144.2	132	0.08	172	564	7	327	4.5	8.8	4.8	-7.4
1.00	38.6	147.1	271	0.17	280	919	7	330	5.8	11.2	5.6	-9.7
1.50	33.4	148.5	478	0.30	379	1243	7	326	7.5	14.6	8.2	-12.1
2.00	29.8	146.3	723	0.45	478	1568	7	321	8.6	16.7	10.6	-12.9
2.50	27.4	144.4	990	0.61	577	1893	7	318	9.1	17.7	11.9	-13.1
3.00	25.8	142.7	1266	0.79	676	2218	7	316	9.0	17.6	12.2	-12.7
3.50	24.8	141.5	1529	0.95	771	2528	7	309	8.0	15.5	12.1	-9.7
4.00	24.8	138.9	1734	1.08	865	2838	7	298	6.7	13.0	11.4	-6.1
4.50	25.2	136.7	1903	1.18	960	3148	7	302	5.3	10.3	8.7	-5.4
5.00	25.9	136.3	2039	1.27	1054	3458	7	322	4.2	8.2	5.1	-6.5
5.50	26.0	137.3	2157	1.34	1144	3753	7	336	4.9	9.5	3.8	-8.7
6.00	26.6	138.6	2316	1.44	1234	4049	0	340	5.5	10.6	3.7	-9.9
6.50	27.1	140.2	2462	1.53	1324	4344	0	342	5.2	10.1	3.1	-9.6
7.00	27.4	141.5	2604	1.62	1414	4639	0	345	5.1	9.9	2.5	-9.6
7.50	27.7	142.9	2743	1.70	1504	4934	0	353	5.0	9.8	1.1	-9.7
8.00	28.1	144.7	2865	1.78	1594	5230	0	4	4.9	9.6	-0.8	-9.6
8.50	28.6	146.7	2971	1.85	1684	5525	0	13	5.6	10.8	-2.4	-10.5
9.00	28.9	149.3	3098	1.92	1774	5820	0	15	5.9	11.5	-2.9	-11.1
9.50	29.2	151.4	3221	2.00	1864	6116	0	21	6.6	12.7	-4.6	-11.9
10.00	29.4	154.6	3354	2.08	1954	6411	0	16	5.7	11.1	-3.1	-10.6
10.50	29.7	155.4	3471	2.16	2044	6706	0	8	4.3	8.3	-1.2	-8.2
11.00	30.1	156.9	3571	2.22	2134	7001	0	20	4.4	8.6	-2.9	-9.1
11.50	30.5	158.3	36[illegible]7	2.28	2224	7297	1	23	3.7	7.3	-2.[illegible]	-6.7
12.00	31.1	159.4	3730	2.32	2314	7592	0	21	3.1	6.0	-2.2	-5.6
12.50	31.[illegible]	160.2	3604	2.36	2404	7887	1	27	2.4	4.7	-2.1	-4.2
13.00	32.4	161.0	3829	2.38	2494	8182	1	31	2.4	4.6	-2.3	-3.9
13.50	32.9	161.8	3895	2.42	2584	8478	1	31	3.3	6.4	-3.3	-5.5
14.00	33.4	163.2	3958	2.46	2674	8773	1	36	3.8	7.3	-4.3	-6.0
14.50	33.8	164.4	4033	2.51	2764	9068	1	36	4.4	8.5	-5.0	-6.8
15.00	34.1	166.1	4121	2.56	2854	9364	1	36	4.5	8.8	-5.2	-7.1
15.50	34.4	167.3	4206	2.61	2944	9659	1	39	4.1	7.9	-4.9	-6.2
16.00	34.8	168.7	4273	2.66	3034	9954	1	47	4.2	8.2	-6.0	-5.5
16.50	35.2	170.2	4338	2.70	3124	10249	1	46	3.8	7.4	-5.3	-5.1
17.00	35.6	171.2	4400	2.73	3214	10545	1	48	2.7	5.3	-4.0	-3.5
17.50	36.2	172.0	4427	2.75	3304	10840	1	65	3.0	5.7	-5.2	-2.4
18.00	36.8	173.4	4451	2.77	3394	11135	1	56	1.1	2.2	-1.9	-1.2
18.50	37.5	172.8	4457	2.77	3484	11431	7	336	0.4	0.9	0.3	-0.8
19.00	38.1	173.3	4476	2.78	3574	11726	1	49	1.1	2.1	-1.6	-1.4
19.50	38.7	173.5	4494	2.79	3664	12021	2	84	0.3	0.5	-0.5	-0.1
20.00	39.5	173.5	4476	2.78	* 3754	12316	4	174	0.6	1.1	-0.1	1.1

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 21

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 7 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 23:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	62.5	164.0	56	0.03	172	564	0	354	1.5	2.8	0.3	-2.8
1.00	68.0	174.0	87	0.05	280	919	0	10	0.3	0.7	-0.1	-0.7
1.50	76.5	171.0	76	0.05	379	1243	6	266	0.9	1.7	1.7	0.1
2.00	76.0	144.0	103	0.06	478	1568	7	294	3.2	6.1	5.6	-2.5
2.50	65.0	129.5	239	0.15	577	1893	7	308	3.5	6.8	5.4	-4.2
3.00	63.0	133.0	312	0.19	676	2218	7	331	3.2	6.2	3.0	-5.4
3.50	59.0	139.0	425	0.26	771	2528	7	331	6.1	11.8	5.9	-10.4
4.00	50.0	142.5	672	0.42	865	2838	7	329	8.6	16.6	5.7	-15.8
4.50	42.0	144.5	995	0.62	960	3148	7	327	9.2	17.8	9.7	-15.0
5.00	39.0	144.5	1223	0.76	1054	3458	7	321	6.5	12.6	7.9	-9.8
5.50	38.0	143.5	1382	0.86	1144	3753	7	325	5.5	10.7	6.1	-8.8
6.00	37.0	144.6	1553	0.96	1234	4049	7	330	5.4	10.4	5.2	-9.1
6.50	36.5	144.8	1703	1.06	1324	4344	7	334	4.6	8.9	4.2	-8.4
7.00	36.3	146.0	1838	1.14	1414	4639	0	346	3.9	7.7	1.8	-7.5
7.50	36.8	147.4	1925	1.20	1504	4934	0	7	3.5	6.8	-0.9	-6.8
8.00	37.4	150.0	2001	1.24	1594	5230	0	20	4.3	8.3	-2.9	-7.7
8.50	37.8	153.0	2088	1.30	1684	5525	1	26	4.1	8.0	-3.5	-7.2
9.00	38.5	155.5	2150	1.34	1774	5820	1	38	3.5	6.8	-4.2	-5.3
9.50	39.5	158.0	2184	1.36	1864	6116	1	40	3.6	7.0	-4.5	-5.4
10.00	40.0	160.5	2253	1.40	1954	6411	1	34	4.5	8.7	-4.9	-7.2
10.50	40.2	163.5	2343	1.46	2044	6706	1	36	5.2	10.0	-5.9	-8.1
11.00	40.3	166.5	2441	1.52	2134	7001	1	31	5.0	9.8	-5.0	-8.4
11.50	40.2	168.5	2556	1.59	2224	7297	1	31	4.4	8.5	-4.4	-7.3
12.00	40.5	170.5	2634	1.64	2314	7592	1	40	3.5	6.8	-4.4	-5.2
12.50	41.0	172.0	2692	1.67	2404	7887	1	38	2.7	5.3	-3.2	-4.1
13.00	41.5	173.0	2747	1.71	2494	8182	1	47	3.0	5.8	-4.2	-4.0
13.50	42.0	175.0	2799	1.74	2584	8478	1	51	3.9	7.7	-6.0	-4.8
14.00	42.2	177.0	2878	1.79	2674	8773	1	61	3.7	7.2	-6.3	-3.5
14.50	43.0	179.0	2895	1.80	2764	9068	2	72	3.5	6.9	-6.5	-2.1
15.00	43.5	181.0	2940	1.83	2854	9364	2	71	4.1	8.0	-7.5	-2.6
15.50	44.0	183.5	2982	1.85	2944	9659	2	81	4.0	7.7	-7.6	-1.2
16.00	44.6	185.5	2991	1.86	3034	9954	2	78	3.2	6.2	-6.1	-1.3
16.50	45.2	187.0	3039	1.89	3124	10249	2	71	3.9	7.7	-7.3	-2.5
17.00	45.5	189.5	3096	1.92	3214	10545	2	87	4.6	8.9	-8.9	-0.4
17.50	46.3	192.0	3096	1.92	3304	10840	2	84	3.6	7.0	-7.0	-0.7
18.00	46.5	193.3	3160	1.96	3394	11135	2	74	3.1	6.1	-5.9	-1.7
18.50	47.0	195.0	3169	1.98	3484	11431	2	75	3.8	7.3	-7.1	-1.9
19.00	47.0	196.8	3273	2.03	3574	11726	1	62	4.0	7.8	-6.9	-3.6
19.50	47.0	198.0	3357	2.09	3664	12021	1	58	3.6	7.1	-6.0	-3.8
20.00	47.0	199.2	3441	2.14	3754	12316	1	59	3.7	7.1	-6.1	-3.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 1

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 8 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	58.7	143.5	66	0.04	172	564	7	312	1.9	3.7	2.8	-2.5
1.00	62.0	132.0	115	0.07	280	919	5	231	1.2	2.3	1.8	1.4
1.50	73.2	95.0	95	0.06	379	1243	4	165	1.4	2.7	-0.7	2.6
2.00	81.3	86.0	63	0.04	478	1568	7	322	0.5	1.0	0.6	-0.8
2.50	77.0	106.0	110	0.07	577	1893	7	319	2.8	5.4	3.5	-4.1
3.00	71.0	125.0	211	0.13	676	2218	0	341	3.0	5.9	1.9	-5.6
3.50	69.2	140.0	268	0.17	771	2528	0	357	2.8	5.4	0.2	-5.4
4.00	67.0	148.0	340	0.21	865	2838	0	349	3.7	7.2	1.4	-7.1
4.50	62.0	153.0	476	0.30	960	3148	0	353	4.7	9.1	1.0	-9.1
5.00	58.5	159.5	607	0.38	1054	3458	0	1	4.5	8.8	-0.1	-8.8
5.50	56.0	163.0	728	0.45	1144	3753	0	3	4.0	7.8	-0.3	-7.8
6.00	54.5	166.0	835	0.52	1234	4049	0	5	4.5	8.8	-0.8	-8.7
6.50	52.0	169.0	984	0.61	1324	4344	0	4	5.5	10.7	-0.7	-10.7
7.00	49.5	171.0	1153	0.72	1414	4639	0	357	5.2	10.2	0.5	-10.2
7.50	48.0	171.0	1297	0.81	1504	4934	0	356	5.4	10.5	0.7	-10.5
8.00	46.0	172.2	1478	0.92	1594	5230	0	357	5.6	10.9	0.5	-10.9
8.50	44.8	172.3	1631	1.01	1684	5525	0	353	4.8	9.3	1.2	-9.2
9.00	44.1	172.3	1766	1.10	1774	5820	0	353	3.6	6.9	0.8	-6.9
9.50	44.3	172.4	1845	1.15	1864	6116	0	349	2.2	4.3	0.8	-4.2
10.00	44.9	172.1	1897	1.18	1954	6411	7	335	1.5	3.0	1.2	-2.7
10.50	45.7	171.6	1932	1.20	2044	6706	0	339	1.0	2.0	0.7	-1.9
11.00	46.8	171.3	1958	1.22	2134	7001	0	352	0.7	1.3	0.2	-1.3
11.50	47.6	171.0	1972	1.23	2224	7297	7	313	0.6	1.1	0.0	-0.7
12.00	48.6	171.1	1984	1.23	2314	7592	7	311	0.7	1.4	1.1	-0.9
12.50	49.4	170.8	2006	1.25	2404	7887	0	344	0.4	0.9	0.2	-0.8
13.00	50.4	171.0	2010	1.25	2494	8182	2	70	0.5	1.0	-1.0	-0.3
13.50	51.4	171.7	2012	1.25	2584	8478	2	90	0.9	1.7	-1.7	0.0
14.00	52.5	172.5	2003	1.24	2674	8773	2	100	0.7	1.4	-1.4	0.3
14.50	53.5	172.9	1998	1.24	2764	9068	1	25	0.8	1.5	-0.6	-1.4
15.00	53.8	173.2	2042	1.27	2854	9364	1	30	1.2	2.3	-1.2	-2.0
15.50	54.5	174.1	2054	1.28	2944	9659	1	64	1.5	2.8	-2.6	-1.2
16.00	55.1	175.5	2072	1.29	3034	9954	2	76	1.8	3.5	-3.4	-0.8
16.50	55.9	177.1	2072	1.29	3124	10249	2	92	1.9	3.6	-3.6	0.2
17.00	56.8	178.8	2061	1.28	3214	10545	2	96	1.9	3.8	-3.7	0.4
17.50	57.6	180.3	2056	1.28	3304	10840	2	96	2.1	4.1	-4.1	0.4
18.00	58.4	182.1	2049	1.27	3394	11135	2	99	2.3	4.5	-4.5	0.7
18.50	59.2	184.2	2039	1.27	3484	11431	2	100	2.5	4.9	-4.8	0.8
19.00	59.8	186.3	2015	1.25	3574	11726	2	108	2.2	4.2	-4.0	1.3
19.50	60.3	187.8	2012	1.25	3664	12021	3	121	1.7	3.2	-2.8	1.7
20.00	601.5	188.9	1995	1.24	3754	12316	3	122	1.4	2.7	-2.3	1.4

* CALCULATIONS ON BOTH SIDES OF THIS SUMMARY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 2

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 8 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 11:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	51.0	146.0	87	0.05	172	564	7	309	2.5	4.9	3.8	-3.1
1.00	55.0	129.2	151	0.09	290	919	6	285	1.4	2.7	2.6	-0.7
1.50	63.1	126.0	160	0.10	379	1243	5	232	0.7	1.4	1.1	0.0
2.00	68.2	114.8	166	0.10	478	1568	6	278	1.1	2.1	2.1	-0.3
2.50	66.8	118.0	220	0.14	577	1893	7	305	1.9	3.7	3.0	-2.1
3.00	65.5	119.0	279	0.17	676	2218	7	314	1.6	3.2	2.3	-2.2
3.50	65.0	123.0	315	0.20	771	2528	0	1	1.6	3.1	0.0	-3.2
4.00	67.2	133.8	337	0.21	865	2838	1	39	1.4	2.7	-1.7	-2.1
4.50	70.5	137.9	317	0.20	960	3148	2	84	1.2	2.3	-2.3	-0.2
5.00	73.4	144.5	295	0.18	1054	3458	2	86	1.6	3.1	-3.1	-0.2
5.50	76.0	164.2	269	0.17	1149	3753	3	98	2.3	4.4	-4.4	-0.2
6.00	78.0	171.6	249	0.15	1234	4049	2	92	3.2	6.3	-6.3	0.2
6.50	78.8	198.1	249	0.16	1324	4344	2	97	3.3	6.5	-6.4	0.8
7.00	78.5	216.2	275	0.17	1414	4639	2	98	3.2	6.2	-6.1	0.9
7.50	76.8	232.0	338	0.21	1504	4934	2	101	3.5	6.7	-6.6	1.3
8.00	75.0	243.5	410	0.25	1594	5230	2	102	3.5	6.9	-6.7	1.4
8.50	72.8	251.0	501	0.31	1684	5525	2	98	3.3	6.3	-6.3	0.9
9.00	71.2	254.5	582	0.36	1774	5820	2	89	3.0	5.8	-5.8	-0.1
9.50	69.5	255.8	673	0.42	1864	6116	2	81	2.7	5.3	-5.2	-0.8
10.00	68.5	255.9	743	0.46	1954	6411	2	73	2.1	4.1	-3.9	-1.2
10.50	66.0	255.3	800	0.50	2044	6706	1	65	1.9	3.7	-3.4	-1.5
11.00	67.5	254.5	857	0.53	2134	7001	1	61	2.3	4.5	-3.9	-2.2
11.50	66.6	253.2	935	0.58	2224	7297	1	61	2.5	4.8	-4.2	-2.3
12.00	66.0	252.5	1002	0.62	2314	7592	1	64	2.0	3.8	-3.4	-1.7
12.50	65.8	252.2	1052	0.65	2404	7887	1	56	1.9	3.7	-3.1	-2.1
13.00	65.4	250.8	1113	0.69	2494	8182	1	40	1.9	3.6	-2.3	-2.8
13.50	65.5	249.2	1148	0.71	2584	8478	1	28	1.9	3.8	-1.8	-3.3
14.00	65.3	247.0	1200	0.75	2674	8773	1	23	2.5	4.9	-1.9	-4.5
14.50	65.0	244.2	1259	0.78	2764	9068	0	13	2.7	5.2	-1.1	-5.1
15.00	65.0	241.2	1301	0.81	2854	9364	0	3	2.6	5.1	-0.3	-5.1
15.50	65.0	238.3	1343	0.83	2944	9659	0	3	2.5	4.8	-0.3	-4.8
16.00	65.0	236.0	1385	0.86	3034	9954	0	3	2.0	3.9	-0.2	-3.9
16.50	65.2	234.3	1414	0.88	3124	10249	0	351	1.6	3.1	0.5	-3.1
17.00	65.6	232.5	1429	0.89	3214	10545	7	319	1.6	3.0	2.0	-2.3
17.50	66.5	230.5	1409	0.88	3304	10840	7	303	1.6	3.1	2.6	-1.7
18.00	67.2	228.8	1400	0.87	3394	11135	7	300	1.4	2.7	2.3	-1.3
18.50	68.0	227.3	1382	0.86	3484	11431	7	303	1.2	2.3	1.9	-1.2
19.00	68.5	226.0	1383	0.86	3574	11726	7	316	1.0	2.0	1.4	-1.4
19.50	69.0	224.8	1382	0.86	3664	12021	6	281	1.2	2.3	2.3	-0.4
20.00	70.0	223.5	1343	0.83	3754	12316	6	263	1.7	3.2	3.2	0.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 3

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 8 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. D E G R E E S	AZIMUTH D E G R E E S	R A N G E METERS	R A N G E MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	D I R E C T I O N CLASS 0-7	D I R E C T I O N DEGREES	-----V E L O C I T Y---- METERS/SEC (SPEED)	NAUTICAL MILES PER HOUR (SPEED)	(U)	(V)
0.50	38.1	138.0	138	0.09	172	564	7	337	4.6	8.9	3.6	-8.2
1.00	38.1	156.5	275	0.17	280	919	0	352	4.0	7.8	1.1	-7.8
1.50	40.8	159.6	365	0.23	379	1243	0	344	1.7	3.3	0.9	-3.1
2.00	47.8	158.6	375	0.23	478	1568	7	310	1.1	2.1	1.6	-1.4
2.50	50.5	155.2	423	0.26	577	1893	7	314	2.7	5.2	3.7	-3.6
3.00	49.4	151.4	525	0.33	676	2218	7	317	3.9	7.5	5.2	-5.5
3.50	47.5	148.6	647	0.40	771	2528	7	312	4.7	9.2	6.8	-6.2
4.00	45.1	144.7	798	0.50	865	2838	7	308	5.4	10.5	8.2	-6.5
4.50	43.1	141.9	957	0.59	960	3148	7	308	5.6	10.8	8.6	-6.6
5.00	41.4	139.7	1123	0.70	1054	3458	7	305	5.5	10.6	8.7	-6.1
5.50	40.3	137.6	1273	0.79	1144	3753	7	298	5.1	9.8	8.7	-4.6
6.00	39.7	135.1	1409	0.88	1234	4049	7	296	4.4	8.6	7.7	-3.8
6.50	39.6	134.0	1523	0.95	1324	4344	7	308	3.7	7.3	5.7	-4.4
7.00	39.6	134.1	1632	1.01	1414	4639	7	324	3.8	7.3	4.3	-5.9
7.50	39.5	135.3	1747	1.09	1504	4934	0	338	4.3	8.3	3.1	-7.7
8.00	39.3	137.3	1869	1.16	1594	5230	0	345	4.6	9.0	2.4	-8.7
8.50	39.1	139.2	1993	1.24	1684	5525	0	347	4.7	9.2	2.0	-8.9
9.00	38.9	141.1	2119	1.32	1774	5820	0	352	4.6	9.0	1.2	-8.9
9.50	38.9	143.1	2231	1.39	1864	6116	0	358	4.5	8.8	0.3	-8.8
10.00	38.9	145.1	2337	1.46	1954	6411	0	359	4.3	8.4	0.1	-8.4
10.50	39.0	146.7	2445	1.52	2044	6706	0	3	3.8	7.5	-0.4	-7.5
11.00	39.3	148.3	2529	1.57	2134	7001	0	8	3.6	7.0	-0.9	-6.9
11.50	39.6	149.8	2611	1.62	2224	7297	0	6	3.2	6.2	-0.7	-6.1
12.00	40.0	150.8	2681	1.67	2314	7592	0	12	2.2	4.3	-0.9	-4.2
12.50	40.8	151.7	2711	1.68	2404	7887	1	30	1.5	2.9	-1.4	-2.5
13.00	41.7	152.4	2727	1.69	2494	8182	0	19	1.4	2.8	-0.9	-2.6
13.50	42.3	153.0	2769	1.72	2584	8478	0	1	2.3	4.4	-0.1	-4.4
14.00	42.5	153.7	2848	1.77	2674	8773	0	358	3.4	6.7	0.2	-6.7
14.50	42.4	154.7	2957	1.84	2764	9068	0	357	4.1	8.0	0.5	-8.0
15.00	42.2	155.5	3077	1.91	2854	9364	0	351	4.4	8.5	1.4	-8.4
15.50	41.9	156.0	3210	1.99	2944	9659	0	351	4.8	9.4	1.5	-9.2
16.00	41.5	156.8	3357	2.09	3034	9954	0	354	5.2	10.1	1.0	-10.1
16.50	41.1	157.6	3508	2.18	3124	10249	0	359	5.2	10.2	0.1	-10.2
17.00	40.8	158.7	3649	2.27	3214	10545	0	4	4.8	9.3	-0.6	-9.2
17.50	40.7	159.5	3767	2.34	3304	10840	0	2	4.5	8.8	-0.4	-8.8
18.00	40.5	160.3	3890	2.42	3394	11135	0	359	4.7	9.1	0.2	-9.1
18.50	40.3	160.8	4033	2.51	3484	11431	0	351	4.6	8.9	1.4	-8.8
19.00	40.1	161.0	4168	2.59	3574	11726	0	346	4.6	8.9	2.2	-8.6
19.50	39.9	161.1	4308	2.68	3664	12021	0	338	4.6	9.0	3.4	-8.3
20.00	39.7	160.8	4435	2.76	3754	12316	7	332	4.7	9.1	4.3	-8.0

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 4

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 8 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 22:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	81.3	159.8	58	0.04	172	564	0	344	1.3	2.5	-0.7	-2.4
1.00	70.8	164.1	76	0.05	280	919	3	122	0.7	1.3	-1.1	0.7
1.50	83.4	202.3	36	0.02	379	1243	3	134	1.9	3.7	-2.7	2.6
2.00	81.5	276.3	62	0.04	478	1568	3	135	1.9	3.7	-2.6	2.6
2.50	78.3	296.4	106	0.07	577	1893	5	205	0.4	0.8	0.3	0.7
3.00	84.5	299.1	59	0.04	676	2218	7	319	3.1	6.1	4.0	-4.6
3.50	82.0	163.4	99	0.06	771	2526	0	338	4.2	8.2	3.1	-7.6
4.00	75.3	168.0	210	0.13	865	2838	0	345	4.8	9.4	2.4	-9.1
4.50	66.5	164.6	389	0.24	960	3148	7	334	6.6	12.9	5.7	-11.6
5.00	58.6	158.7	604	0.38	1054	3458	7	333	7.3	14.3	6.5	-12.7
5.50	52.6	158.5	826	0.51	1144	3753	0	343	6.3	12.2	3.5	-11.7
6.00	50.0	160.5	982	0.61	1234	4049	0	355	4.8	9.3	0.8	-9.2
6.50	48.9	162.7	1103	0.69	1324	4344	0	5	4.3	8.5	-0.8	-8.3
7.00	48.0	165.5	1216	0.76	1418	4639	0	17	4.8	9.3	-2.7	-8.8
7.50	46.9	169.6	1348	0.84	1504	4934	1	25	5.6	10.9	-4.5	-9.9
8.00	45.7	173.7	1493	0.93	1594	5230	1	29	5.5	10.6	-5.1	-9.3
8.50	45.1	177.0	1614	1.00	1684	5525	1	28	4.9	9.5	-4.4	-8.5
9.00	44.4	179.1	1746	1.09	1774	5820	1	27	4.8	9.4	-4.3	-8.3
9.50	43.9	181.5	1870	1.16	1864	6116	1	33	5.1	9.9	-5.4	-8.2
10.00	43.3	184.0	2006	1.25	1954	6411	1	33	6.0	11.6	-6.3	-9.7
10.50	42.2	186.5	2184	1.36	2044	6706	1	32	7.1	13.7	-7.2	-11.7
11.00	40.9	188.7	2390	1.48	2134	7001	1	31	7.4	14.3	-7.4	-12.3
11.50	39.8	190.6	2593	1.61	2224	7297	1	33	7.2	13.9	-7.5	-11.7
12.00	38.9	192.3	2788	1.73	2314	7592	1	35	6.5	12.7	-7.4	-10.3
12.50	38.4	193.8	2952	1.83	2404	7887	1	35	6.4	12.4	-7.1	-10.1
13.00	37.7	195.0	3144	1.95	2494	8182	1	35	6.5	12.7	-7.4	-10.3
13.50	37.2	196.3	3320	2.06	2584	8478	1	43	3.9	7.6	-5.2	-5.5
14.00	37.8	196.9	3353	2.08	2674	8773	1	39	3.8	7.4	-4.6	-5.8
14.50	37.4	197.7	3531	2.19	2764	9068	1	26	8.0	15.5	-6.7	-14.0
15.00	36.1	198.0	3826	2.38	2854	9364	0	20	7.5	14.5	-5.0	-13.6
15.50	36.9	198.0	3979	2.47	2944	9659	0	14	5.4	10.5	-2.6	-10.1
16.00	36.6	197.7	4148	2.58	3034	9954	0	11	5.2	10.1	-2.0	-10.0
16.50	35.8	197.5	4390	2.67	3124	10249	0	14	4.5	8.7	-2.2	-8.4
17.00	35.5	197.5	4416	2.74	3214	10545	0	17	4.8	9.3	-2.8	-8.8
17.50	35.3	197.5	4576	2.84	3304	10840	0	18	5.4	10.4	-3.1	-9.9
18.00	35.1	197.5	4738	2.94	3394	11135	0	13	5.8	11.2	-2.6	-10.9
18.50	34.8	197.2	4921	3.06	3484	11431	0	12	6.2	12.0	-2.5	-11.7
19.00	34.5	197.1	5107	3.17	3574	11726	0	14	6.0	11.6	-2.8	-11.2
19.50	34.3	197.0	5277	3.28	3664	12021	0	19	5.4	10.4	-3.4	-9.9
20.00	34.2	197.2	5430	3.37	3754	12316	1	24	5.1	9.9	-4.1	-9.1

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 5

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted] LOST BEHIND RADAR

DATE OF LAUNCH: 9 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	ALTITUDE M.S.L. METERS	ALTITUDE M.S.L. FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	85.5	193.0	8	0.01	172	564	4	166	0.4	0.9	-0.2	0.8
1.00	83.0	345.5	27	0.02	280	919	4	164	2.2	4.2	-1.4	4.0
1.50	68.5	339.2	124	0.08	379	1243	3	156	1.9	3.6	-1.5	3.3
2.00	71.5	338.0	139	0.09	478	1568	7	300	0.3	0.7	0.6	-0.3
2.50	78.0	346.0	109	0.07	577	1893	7	308	2.0	3.8	3.0	-2.4
3.00	83.5	37.0	70	0.04	676	2218	7	305	2.3	4.5	3.6	-2.3
3.50	82.8	74.4	89	0.06	771	2528	0	339	2.7	5.3	1.9	-5.0
4.00	80.6	134.0	141	0.09	865	2838	0	9	4.2	8.2	-1.2	-8.1
4.50	75.5	168.0	232	0.14	960	3148	1	25	5.5	10.7	-4.5	-9.2
5.00	68.0	185.5	400	0.25	1054	3458	1	26	5.2	10.1	-4.5	-9.1
5.50	64.5	190.2	515	0.32	1144	3753	0	18	5.6	10.9	-3.3	-10.3
6.00	58.6	191.0	731	0.45	1234	4049	7	331	8.2	16.0	7.8	-13.9
6.50	53.0	191.0	949	0.59	1324	4344	0	10	7.2	14.1	-2.4	-13.9
7.00	49.2	190.5	1165	0.72	1414	4639	1	44	9.7	18.8	-13.0	-13.6
7.50	46.2	190.5	1381	0.86	1504	4934	0	9	7.5	14.5	-2.2	-14.3
8.00	43.5	190.0	1612	1.00	1594	5230	0	5	7.7	15.0	-1.4	-15.0
8.50	41.3	189.2	1844	1.15	1684	5525	0	0	7.2	13.9	-0.1	-13.9
9.00	40.6	188.0	2039	1.27	1774	5820	0	358	7.4	14.3	0.6	-14.3
9.50	38.3	187.0	2279	1.42	1864	6116	0	357	7.6	14.9	0.8	-14.8
10.00	37.2	186.0	2490	1.55	1954	6411	0	352	7.7	14.9	2.1	-14.7
10.50	36.0	184.5	2725	1.69	2044	6706	0	351	7.4	14.4	2.2	-14.3
11.00	35.4	184.0	2926	1.82	2134	7001	0	356	6.4	12.5	0.8	-12.5
11.50	34.0	183.5	3108	1.93	2224	7297	0	358	7.3	14.2	0.6	-14.2
12.00	33.9	183.0	3361	2.09	2314	7592	0	357	8.5	16.5	0.9	-16.5

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 6

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 9 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 09:30 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	54.6	359.5	77	0.05	172	564	4	164	2.1	4.1	-3.2	3.9
1.00	59.7	343.6	126	0.08	280	919	3	146	2.8	5.4	-3.0	4.5
1.50	63.3	336.6	335	0.15	379	1243	3	152	2.0	3.4	-2.5	4.8
2.00	59.9	337.1	291	0.18	478	1568	6	285	0.3	0.6	0.6	-0.2
2.50	66.5	340.6	223	0.14	577	1893	0	339	3.0	5.9	2.9	-5.5
3.00	79.9	334.7	109	0.07	676	2218	0	1	4.9	9.5	-0.1	-9.5
3.50	80.5	222.8	114	0.07	771	2528	0	16	7.3	14.2	-3.9	-13.7
4.00	65.6	207.1	363	0.23	865	2838	0	19	8.0	15.5	-5.1	-14.6
4.50	56.8	203.8	586	0.36	960	3148	0	18	8.4	16.4	-5.1	-15.6
5.00	48.8	201.9	867	0.54	1054	3458	0	19	9.4	18.2	-5.9	-17.2
5.50	43.3	201.4	1146	0.71	1148	3753	0	21	9.0	17.5	-5.2	-16.4
6.00	39.7	201.4	1409	0.88	1234	4049	0	19	8.5	16.5	-5.4	-15.5
6.50	37.5	200.7	1654	1.03	1324	4344	0	13	8.1	15.6	-5.5	-15.4
7.00	35.5	199.2	1893	1.18	1414	4639	0	7	7.5	14.5	-5.8	-14.5
7.50	34.5	197.8	2095	1.30	1504	4934	0	5	7.0	13.6	-5.3	-13.5
8.00	33.6	196.7	2303	1.43	1594	5230	0	7	6.8	13.1	-5.7	-13.0
8.50	33.0	196.1	2495	1.55	1684	5525	0	7	6.6	12.8	-5.6	-12.7
9.00	32.4	195.3	2695	1.67	1774	5820	0	7	6.9	13.4	-5.6	-13.3
9.50	31.8	194.8	2903	1.80	1864	6116	0	8	7.6	14.7	-5.1	-14.5
10.00	31.0	194.3	3145	1.95	1954	6411	0	7	7.9	15.4	-5.9	-15.3
10.50	30.4	193.7	3375	2.10	2044	6706	0	9	7.6	14.8	-5.3	-14.6
11.00	29.9	193.6	3600	2.24	2134	7001	0	15	7.1	13.8	-5.7	-13.3
11.50	29.5	193.9	3802	2.36	2224	7297	1	23	6.9	13.4	-5.3	-12.3
12.00	29.3	194.6	4009	2.49	2314	7592	1	27	6.9	13.3	-6.1	-11.9
12.50	29.1	195.2	4204	2.61	2404	7887	1	26	7.0	13.6	-6.0	-12.1
13.00	28.8	195.7	4420	2.75	2494	8182	1	23	7.7	14.9	-5.9	-13.7
13.50	28.4	196.0	4661	2.90	2584	8478	1	23	7.9	15.3	-6.0	-14.1
14.00	28.1	196.4	4888	3.04	2674	8773	1	24	8.1	15.8	-6.5	-14.3
14.50	27.7	196.8	5143	3.20	2764	9068	1	25	7.9	15.4	-6.6	-13.9
15.00	27.5	197.2	5360	3.33	2854	9364	1	24	7.7	15.0	-6.1	-13.7
15.50	27.2	197.4	5604	3.48	2944	9659	0	18	7.8	15.2	-4.8	-14.4
16.00	27.0	197.3	5829	3.62	3034	9954	0	11	7.6	14.0	-2.8	-14.5
16.50	26.8	196.9	6058	3.76	3124	10249	0	5	7.4	14.4	-1.1	-14.3
17.00	26.7	196.4	6263	3.89	3214	10545	0	0	7.2	13.9	0.0	-13.9
17.50	26.5	195.8	6470	4.02	3304	10840	0	354	7.0	13.6	1.5	-13.4
18.00	26.6	195.0	6650	4.13	3394	11135	0	349	6.7	12.9	2.4	-12.7
18.50	26.6	194.3	6830	4.24	3484	11431	0	342	5.9	11.5	3.6	-10.9
19.00	26.8	193.4	6949	4.32	3574	11726	0	338	4.8	9.4	3.5	-8.7
19.50	27.0	192.9	7065	4.39	3664	12021	0	347	4.3	8.3	1.8	-8.1
20.00	27.2	192.5	7180	4.46	3754	12316	0	349	4.2	8.1	1.5	-7.9

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 7

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 9 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 13:40 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	39.5	157.3	131	0.08	172	564	7	336	3.7	7.1	2.9	-6.5
1.00	44.5	156.0	220	0.14	280	919	7	329	2.2	4.3	2.2	-3.7
1.50	50.2	153.0	262	0.16	379	1243	7	310	1.9	3.6	2.8	-2.3
2.00	52.0	147.2	323	0.20	478	1568	7	297	3.3	6.4	5.7	-2.9
2.50	49.5	137.8	438	0.27	577	1893	6	290	3.8	7.4	6.9	-2.6
3.00	49.4	132.0	525	0.33	676	2218	7	306	2.4	4.7	3.9	-2.8
3.50	50.5	134.8	582	0.36	771	2528	0	7	3.4	6.5	-0.8	-6.5
4.00	50.5	146.5	660	0.41	865	2838	0	17	5.7	11.1	-3.3	-10.6
4.50	48.2	157.2	801	0.50	960	3148	0	21	7.0	13.7	-4.8	-12.8
5.00	45.6	167.2	969	0.60	1054	3458	1	26	8.5	16.5	-7.2	-14.8
5.50	42.0	175.8	1199	0.75	1144	3753	1	28	9.3	18.0	-8.6	-15.8
6.00	39.2	182.0	1335	0.83	1234	4049	1	31	8.8	17.2	-8.9	-14.7
6.50	37.2	186.5	1660	1.03	1324	4344	1	28	8.6	16.8	-7.9	-14.8
7.00	35.2	188.8	1914	1.19	1414	4639	0	20	8.8	17.1	-5.9	-16.0
7.50	33.5	189.8	2176	1.35	1504	4934	0	18	9.0	17.5	-5.4	-16.6
8.00	32.0	190.8	2449	1.52	1594	5230	0	18	9.7	18.8	-5.8	-17.8
8.50	30.5	191.5	2750	1.71	1684	5525	0	18	10.2	19.9	-6.1	-19.0
9.00	29.2	192.2	3060	1.90	1774	5820	0	19	9.5	18.4	-6.0	-17.4
9.50	28.5	192.8	3315	2.06	1864	6116	0	19	8.8	17.1	-5.6	-16.2
10.00	27.8	193.2	3585	2.23	1954	6411	0	18	9.0	17.5	-5.3	-16.6
10.50	27.2	193.5	3853	2.39	2044	6706	0	21	8.6	16.8	-6.0	-15.6
11.00	26.8	194.2	4098	2.55	2134	7001	1	24	9.1	17.6	-7.2	-16.1
11.50	26.2	194.8	4390	2.73	2224	7297	0	21	9.3	18.1	-6.5	-16.9
12.00	25.8	195.0	4654	2.89	2314	7592	0	18	8.6	16.7	-5.[illegible]	-15.5
12.50	25.5	195.1	4906	3.05	2404	7887	0	18	7.3	14.3	-4.5	-13.5
13.00	25.5	195.3	5095	3.17	2494	8182	1	25	5.6	10.8	-4.5	-9.9
13.50	25.7	195.7	5236	3.25	2584	8478	1	28	4.8	9.3	-4.4	-8.2
14.00	25.9	196.0	5375	3.34	2674	8773	1	30	5.1	10.0	-5.0	-8.6
14.50	26.0	196.5	5536	3.44	2764	9068	1	29	5.0	9.8	-4.8	-8.5
15.00	26.2	196.7	5670	3.52	2854	9364	0	19	4.4	8.6	-2.8	-8.2
15.50	26.4	196.5	5802	3.61	2944	9659	0	2	4.9	9.6	-0.4	-9.6
16.00	26.5	196.0	5957	3.70	3034	9954	0	359	5.4	10.5	0.1	-10.5
16.50	26.6	195.7	6111	3.80	3124	10249	0	359	6.3	12.2	0.2	-12.2
17.00	26.5	195.0	6318	3.93	3214	10545	0	347	5.7	11.2	2.6	-10.9
17.50	26.6	194.2	6414	3.99	3304	10840	7	331	4.9	9.6	4.6	-8.4
18.00	27.0	193.2	6535	4.06	3394	11135	7	336	6.3	12.2	5.0	-11.1
18.50	27.0	192.2	6712	4.17	3484	11431	7	321	5.5	10.6	6.7	-8.3
19.00	27.5	191.0	6743	4.19	3574	11726	7	310	4.0	7.8	6.0	-5.0
19.50	27.6	190.4	6828	4.24	3664	12021	7	334	4.1	7.9	3.4	-7.1
20.00	28.0	189.6	6940	4.31	3754	12316	7	337	4.4	8.6	3.3	-8.0

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 8

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

OBSERVER: [redacted]

DATE OF LAUNCH: 9 AUGUST 1974

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	* M.S.L. ALTITUDE METERS	* M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	39.0	153.2	116	0.06	172	564	0	339	4.8	9.2	3.3	-8.6
1.00	37.1	158.8	288	0.18	280	919	0	352	4.4	8.5	1.2	-8.4
1.50	38.7	165.0	393	0.24	379	1243	0	1	2.5	4.9	-0.1	-4.9
2.00	43.9	166.6	430	0.27	478	1568	7	324	1.0	2.0	1.1	-1.6
2.50	45.7	162.9	451	0.28	577	1893	7	313	2.0	3.8	2.8	-2.6
3.00	49.0	159.5	532	0.33	676	2218	7	326	3.0	5.8	3.2	-4.8
3.50	48.6	158.0	623	0.39	771	2528	7	330	3.8	7.4	3.6	-6.4
4.00	46.6	156.8	757	0.47	865	2838	7	330	4.9	9.5	4.8	-8.2
4.50	44.4	155.4	914	0.57	960	3148	0	341	6.0	11.5	3.9	-10.9
5.00	41.6	158.0	1115	0.69	1054	3458	0	355	7.8	15.2	1.4	-15.2
5.50	38.3	161.9	1368	0.85	1144	3753	0	358	9.9	19.1	0.8	-19.1
6.00	34.8	164.8	1683	1.05	1234	4049	0	357	11.0	21.3	1.0	-21.3
6.50	32.3	166.9	2099	1.25	1324	4344	0	358	10.7	20.7	0.5	-20.7
7.00	30.3	168.6	2310	1.44	1414	4639	0	1	9.2	18.0	-0.3	-18.8
7.50	29.2	170.0	2577	1.60	1504	4934	0	1	9.0	17.5	-0.4	-17.5
8.00	28.3	171.0	2842	1.77	1594	5230	0	359	9.5	18.4	0.4	-18.4
8.50	27.3	171.8	3148	1.95	1684	5525	0	358	10.1	19.6	0.7	-19.6
9.00	26.4	172.2	3445	2.14	1774	5820	0	359	9.0	18.1	0.3	-19.1
9.50	25.8	172.8	3723	2.31	1864	6116	0	6	8.9	17.2	-1.9	-17.1
10.00	25.5	174.1	3962	2.46	1954	6411	0	15	8.9	17.4	-4.4	-16.8
10.50	25.1	175.5	4227	2.63	2044	6706	0	17	8.9	17.3	-5.1	-16.5
11.00	24.9	176.8	4459	2.77	2134	7001	0	20	8.9	17.3	-5.9	-16.2
11.50	24.6	178.2	4718	2.93	2224	7297	0	20	9.0	17.5	-6.1	-16.4
12.00	24.4	179.3	4960	3.08	2314	7592	0	20	8.7	16.9	-5.7	-15.9
12.50	24.2	180.3	5207	3.24	2404	7887	0	17	9.1	17.7	-5.1	-16.9
13.00	23.9	181.0	5484	3.41	2494	8182	0	18	8.3	16.2	-4.9	-15.5
13.50	23.9	181.8	5687	3.53	2584	8478	1	25	6.4	12.3	-5.1	-11.2
14.00	24.1	182.5	5835	3.63	2674	8773	1	32	5.1	9.9	-5.3	-8.4
14.50	24.4	183.3	5954	3.70	2764	9068	1	33	4.5	8.7	-4.8	-7.2
15.00	24.7	183.8	6066	3.77	2854	9364	0	22	4.4	8.6	-3.3	-8.0
15.50	24.9	184.1	6204	3.86	2944	9659	0	11	4.6	8.9	-1.7	-8.8
16.00	25.1	184.1	6340	3.94	3034	9954	0	0	5.0	9.7	0.0	-9.7
16.50	25.2	183.9	6503	4.04	3124	10249	0	357	5.9	11.5	0.7	-11.5
17.00	25.2	183.7	6694	4.16	3214	10545	0	352	6.0	11.6	1.5	-11.5
17.50	25.3	183.3	6854	4.26	3304	10840	0	347	6.6	12.9	2.8	-12.6
18.00	25.2	182.8	7077	4.40	3394	11135	0	348	7.1	13.9	2.9	-13.6
18.50	25.2	182.4	7268	4.52	3484	11431	0	346	6.7	12.9	3.3	-12.5
19.00	25.2	181.9	7459	4.63	3574	11726	0	341	6.8	13.2	4.2	-12.5
19.50	25.2	181.3	7650	4.75	3664	12021	7	335	7.1	13.8	5.8	-12.5
20.00	25.2	180.5	7842	4.87	3754	12316	7	331	7.3	14.2	6.8	-12.5

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 9

LOCATION: SAN JOSE SATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 9 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 21:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	ALTITUDE M.S.L. METERS	ALTITUDE M.S.L. FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	50.5	156.0	89	0.06	172	564	0	339	2.8	5.4	1.9	-5.0
1.00	52.5	150.0	166	0.10	280	919	0	0	1.4	2.7	0.0	-2.7
1.50	62.0	167.5	167	0.10	379	1243	5	224	1.3	2.6	1.8	1.9
2.00	70.0	130.0	151	0.09	478	1568	6	261	1.8	3.5	3.5	0.6
2.50	68.2	135.5	205	0.13	577	1893	7	332	2.7	5.2	2.5	-4.6
3.00	63.5	141.2	305	0.19	676	2218	0	342	4.7	9.1	2.8	-8.7
3.50	56.2	151.0	473	0.29	771	2528	0	343	9.4	18.2	5.3	-17.4
4.00	43.2	155.5	853	0.53	865	2838	0	340	9.6	18.6	6.2	-17.6
4.50	40.6	156.2	1045	0.65	960	3148	0	349	7.4	14.4	2.8	-14.1
5.00	37.5	160.0	1280	0.80	1054	3458	0	350	9.5	18.4	3.1	-18.1
5.50	34.0	161.2	1601	0.99	1144	3753	0	351	10.1	19.6	3.1	-19.3
6.00	31.8	163.5	1887	1.17	1234	4049	0	356	10.7	20.8	1.3	-20.7
6.50	29.5	165.5	2227	1.38	1324	4344	0	358	11.1	21.6	0.9	-21.6
7.00	28.0	167.3	2539	1.58	1414	4639	0	358	10.2	19.8	0.7	-19.8
7.50	27.0	168.2	2826	1.76	1504	4934	0	356	8.9	17.3	1.1	-17.3
8.00	26.5	168.8	3069	1.91	1594	5230	0	355	7.8	15.2	1.3	-15.1
8.50	26.2	169.2	3292	2.05	1684	5525	0	0	7.4	14.4	0.0	-14.4
9.00	26.0	170.2	3506	2.18	1774	5820	0	12	7.1	13.9	-2.9	-13.6
9.50	26.0	171.8	3691	2.29	1864	6116	0	18	7.5	14.6	-4.6	-13.9
10.00	25.8	173.3	3910	2.43	1954	6411	0	19	8.5	16.5	-5.3	-15.6
10.50	25.5	175.0	4151	2.58	2044	6706	0	21	8.0	15.5	-5.5	-14.5
11.00	25.5	176.4	4340	2.70	2134	7001	1	26	7.2	14.0	-6.1	-12.6
11.50	25.5	177.8	4529	2.81	2224	7297	1	24	8.2	16.0	-6.6	-14.6
12.00	25.2	179.0	4781	2.97	2314	7592	0	19	7.9	15.3	-5.1	-13.5
12.50	25.2	179.8	4973	3.09	2404	7887	0	12	6.5	12.7	-2.7	-12.4
13.00	25.2	180.0	5166	3.21	2494	8182	0	16	5.0	9.6	-2.6	-9.3
13.50	25.8	180.7	5260	3.27	2584	8478	1	27	3.5	6.8	-3.0	-6.0
14.00	26.0	181.0	5351	3.33	2674	8773	1	29	1.6	3.1	-1.5	-2.7
14.50	26.8	181.2	5345	3.32	2764	9068	0	15	1.3	2.6	-0.7	-2.5
15.00	27.2	181.2	5429	3.37	2854	9364	0	352	2.0	3.8	0.5	-3.8
15.50	27.8	181.0	5462	3.39	2944	9659	0	1	1.8	3.6	-0.1	-3.6
16.00	28.2	181.2	5539	3.44	3034	9954	0	1	2.9	5.6	-0.1	-5.6
16.50	28.5	181.0	5636	3.50	3124	10249	0	345	4.1	8.0	2.1	-7.8
17.00	28.8	180.5	5778	3.59	3214	10545	7	338	3.9	7.5	3.2	-6.8
17.50	29.0	180.0	5845	3.63	3304	10840	7	330	4.4	8.6	4.3	-7.4
18.00	29.0	179.2	6007	3.73	3394	11135	0	339	4.9	9.5	3.5	-8.8
18.50	29.2	179.0	6119	3.80	3484	11431	7	333	5.0	9.8	4.4	-8.7
19.00	29.2	178.0	6280	3.90	3574	11726	7	331	6.0	11.7	5.6	-10.3
19.50	29.2	177.5	6441	4.00	3664	12021	7	335	5.8	11.3	4.8	-10.2
20.00	29.2	176.8	6602	4.10	3754	12316	7	331	6.0	11.6	5.7	-10.2

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 10

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 10 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 0100 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	51.9	165.5	58	0.04	172	564	7	336	1.5	2.9	1.2	-2.6
1.00	67.7	155.5	89	0.06	280	919	4	166	1.0	1.9	-0.5	1.8
1.50	90.6	155.5	0	0.00	379	1243	4	158	3.8	7.5	-2.9	5.0
2.00	71.1	338.9	142	0.09	478	1568	4	166	1.6	3.1	-0.7	3.0
2.50	79.5	345.9	95	0.06	577	1893	0	339	2.4	4.6	1.7	-4.3
3.00	90.0	338.9	0	0.00	676	2218	0	339	4.8	9.3	3.3	-8.8
3.50*	77.0	177.0	196	0.12	771	2528	7	336	6.5	12.7	5.2	-11.6
4.00	63.9	156.0	392	0.24	865	2838	7	336	8.5	16.5	6.7	-15.1
4.50	51.7	156.0	707	0.44	960	3148	7	335	10.0	19.5	8.4	-17.6
5.00	44.9	155.1	993	0.62	1054	3458	7	333	8.4	16.2	7.4	-14.4
5.50	41.5	154.7	1208	0.75	1144	3753	0	342	5.4	10.7	5.3	-9.9
6.00	41.7	156.9	1313	0.82	1234	4049	0	3	4.8	9.4	-0.4	-9.4
6.50	40.6	160.0	1470	0.91	1328	4344	0	1	6.4	12.5	-0.1	-12.5
7.00	38.9	162.2	1673	1.04	1414	4639	0	357	7.1	13.9	0.7	-13.8
7.50	37.0	163.3	1893	1.17	1504	4934	0	352	7.3	14.3	1.0	-14.1
8.00	36.0	164.3	2106	1.31	1594	5230	0	348	7.5	14.5	2.9	-14.2
8.50	34.8	164.7	2331	1.45	1684	5525	0	347	7.0	13.6	3.1	-13.2
9.00	34.1	164.7	2526	1.57	1774	5820	0	347	6.0	11.6	2.6	-11.3
9.50	33.5	165.0	2685	1.67	1864	6116	0	353	4.8	9.4	1.1	-9.3
10.00	33.9	165.6	2813	1.75	1954	6411	0	1	3.9	7.6	-0.2	-7.6
10.50	34.2	166.3	2913	1.81	2044	6706	0	14	3.7	7.2	-1.7	-7.0
11.00	34.5	167.6	3012	1.87	2134	7001	1	34	3.3	6.5	-3.7	-5.3
11.50	35.3	169.1	3051	1.90	2224	7297	1	54	2.8	5.5	-4.5	-2.3
12.00	36.1	170.5	3086	1.92	2314	7592	1	47	2.4	4.6	-3.4	-3.1
12.50	36.8	171.3	3128	1.94	2404	7887	1	36	2.2	4.3	-2.5	-3.4
13.00	37.4	172.2	3178	1.97	2494	8182	1	24	2.6	5.1	-2.1	-4.6
13.50	37.7	172.8	3261	2.03	2584	8478	0	15	2.7	5.3	-1.4	-5.1
14.00	38.1	173.3	3329	2.07	2674	8773	0	1	4.1	8.0	-0.2	-8.0
14.50	37.6	173.4	3506	2.18	2764	9068	0	11	1.6	3.1	-0.6	-3.1
15.00	39.2	173.8	3421	2.13	2854	9364	3	155	1.3	2.5	-1.0	2.3
15.50	40.0	173.8	3432	2.13	2944	9659	6	289	0.8	1.5	1.4	-0.5
16.00	40.5	173.1	3441	2.14	3034	9954	6	288	2.0	3.9	3.7	-1.2
16.50	41.3	172.0	3483	2.16	3124	10249	6	289	3.0	5.8	5.4	-1.9
17.00	41.8	170.5	3523	2.19	3214	10545	6	285	3.6	7.0	6.8	-1.8
17.50	42.2	168.8	3573	2.22	3304	10840	6	280	3.9	7.6	7.5	-1.3
18.00	42.7	167.0	3609	2.24	3394	11135	6	277	4.0	7.8	7.8	-0.9
18.50	43.1	165.2	3655	2.27	3484	11431	6	286	4.2	8.2	7.9	-2.3
19.00	43.2	163.6	3738	2.32	3574	11726	7	293	4.4	8.5	7.8	-3.3
19.50	43.3	162.1	3820	2.37	3664	12021	6	290	4.1	7.9	7.4	-2.7
20.00	43.5	160.7	3888	2.42	3754	12316	6	287	3.9	7.5	7.2	-2.2

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 11

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted] LOST IN STRATUS AT 2:45 MINS.

DATE OF LAUNCH: 10 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	52.0	173.5	84	0.05	172	564	0	351	2.2	4.3	0.7	-4.3
1.00	58.3	170.5	133	0.08	280	919	4	190	0.4	0.7	0.1	0.7
1.50	78.5	168.0	64	0.04	379	1243	4	178	3.4	6.6	-0.3	6.6
2.00	80.0	11.0	73	0.05	478	1568	4	181	2.8	5.4	0.1	5.4
2.50	78.5	9.4	104	0.06	577	1893	4	186	1.0	2.0	0.2	2.0

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 12

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: ASSUMED TO BE FROM MAG NORTH [illegible] LOST IN SUN

DATE OF LAUNCH: 10 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 9:45 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	74.9	164.1	29	0.02	172	564	7	314	1.3	2.5	1.8	-1.7
1.00	70.6	133.5	76	0.05	280	919	6	277	1.4	2.8	2.8	-0.4
1.50	72.1	112.7	102	0.06	379	1243	5	218	1.3	2.6	1.6	2.0
2.00	75.7	99.3	136	0.07	478	1568	6	285	0.7	1.4	1.3	-0.3
2.50	74.3	110.3	144	0.09	577	1893	0	346	2.8	5.5	1.3	-5.3
3.00	70.9	136.6	212	0.13	676	2218	0	356	4.8	9.3	0.6	-9.2
3.50	62.4	155.3	369	0.23	771	2528	0	358	6.7	13.0	0.5	-13.0
4.00	54.2	164.0	618	0.38	865	2838	0	359	7.3	14.2	0.3	-14.2

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 13

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 10 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 13:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	57.6	145.2	69	0.04	172	564	0	338	2.7	5.2	3.0	-3.9
1.00	53.2	158.0	162	0.10	280	919	0	346	2.0	3.9	1.0	-3.8
1.50	59.2	158.2	188	0.12	379	1243	3	332	1.7	3.4	2.7	-2.1
2.00	68.0	121.0	167	0.10	478	1568	5	240	3.2	6.2	5.4	-1.1
2.50	64.6	108.6	250	0.16	577	1893	6	275	2.7	5.3	5.3	-0.4
3.00	62.3	108.0	321	0.20	676	2218	7	301	2.3	4.9	3.6	-2.7
3.50	61.8	112.7	379	0.24	771	2528	7	315	3.0	5.8	4.1	-4.1
4.00	58.7	117.6	487	0.30	865	2838	7	315	2.4	4.5	3.7	-3.4
4.50	55.0	123.2	627	0.39	960	3148	7	320	2.7	5.1	4.8	-3.4
5.00	52.2	129.3	768	0.48	1054	3458	0	340	5.1	9.9	3.4	-9.3
5.50	50.5	135.0	890	0.55	1144	3753	0	354	4.9	9.6	1.0	-9.5
6.00	49.5	141.3	999	0.62	1234	4049	0	5	5.2	10.2	-0.9	-10.1
6.50	48.3	147.2	1119	0.70	1324	4344	0	8	5.4	10.5	-3.5	-10.4
7.00	47.4	152.4	1241	0.77	1414	4639	0	5	5.9	11.5	-1.1	-11.4
7.50	45.5	156.3	1415	0.88	1504	4934	0	356	6.7	13.0	1.0	-13.0
8.00	43.1	158.0	1618	1.01	1594	5230	0	340	6.6	12.9	4.3	-12.1
8.50	41.8	157.2	1812	1.13	1684	5525	7	323	6.5	12.7	8.0	-9.8
9.00	40.6	154.7	1995	1.24	1774	5820	7	313	6.2	12.0	9.1	-8.5
9.50	39.7	153.0	2168	1.35	1864	6116	7	318	5.9	11.6	7.6	-6.4
10.00	39.0	152.2	2334	1.45	1954	6411	7	323	5.4	10.6	6.3	-8.4
10.50	38.5	151.7	2488	1.55	2044	6706	7	321	5.4	10.4	6.6	-8.0
11.00	38.0	150.8	2649	1.65	2134	7001	7	309	5.8	11.4	8.7	-7.2
11.50	37.5	149.0	2815	1.75	2224	7297	7	300	6.4	12.5	10.8	-6.2
12.00	37.0	147.0	2986	1.86	2314	7592	7	296	6.1	11.9	10.7	-5.1
12.50	36.8	145.3	3128	1.94	2404	7887	7	294	6.3	12.2	11.2	-4.9
13.00	36.3	143.4	3308	2.06	2494	8182	7	293	7.1	13.7	12.6	-5.4
13.50	35.8	141.6	3494	2.17	2584	8478	7	294	7.9	15.4	14.0	-6.2
14.00	35.0	139.8	3727	2.32	2674	8773	6	291	7.7	15.0	14.0	-5.3
14.50	34.7	138.1	3899	2.42	2764	9068	6	283	7.1	13.8	13.4	-3.0
15.00	34.4	136.2	4075	2.53	2854	9364	6	281	7.6	14.7	14.5	-2.8
15.50	34.0	134.4	4270	2.65	2944	9659	6	283	8.1	15.7	15.3	-3.5
16.00	33.5	132.8	4487	2.79	3034	9954	6	282	7.6	14.7	14.4	-3.0
16.50	33.3	131.4	4658	2.89	3124	10249	6	284	7.8	14.7	14.3	-3.4
17.00	32.8	130.2	4888	3.04	3214	10545	6	290	7.6	14.6	13.9	-5.0
17.50	32.5	129.5	5086	3.16	3304	10840	7	294	6.6	12.8	11.7	-5.2
18.00	32.3	129.0	5268	3.27	3394	11135	7	296	6.6	12.9	11.6	-5.6
18.50	32.0	128.5	5473	3.40	3484	11431	7	298	6.7	13.0	11.5	-6.0
19.00	31.8	128.2	5661	3.52	3574	11726	7	297	6.8	13.2	11.8	-6.0
19.50	31.5	127.7	5875	3.65	3664	12021	7	297	6.5	12.7	11.2	-5.8
20.00	31.4	127.5	6045	3.76	3754	12316	7	301	5.7	11.1	9.6	-5.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 14

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 10 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	28.0	151.3	203	0.13	172	564	7	329	5.3	10.3	5.4	-8.8
1.00	34.1	148.7	319	0.20	280	919	7	330	3.3	6.3	3.2	-5.5
1.50	38.3	150.6	399	0.25	379	1243	7	326	1.5	2.9	1.6	-2.4
2.00	45.3	148.1	410	0.25	478	1568	6	249	0.8	1.5	1.4	0.5
2.50	51.5	144.1	408	0.25	577	1893	5	246	2.4	4.7	4.3	2.0
3.00	54.5	139.4	453	0.28	676	2218	6	276	3.2	6.2	6.2	-0.5
3.50	52.0	128.9	552	0.34	771	2528	7	316	4.2	8.1	5.6	-5.8
4.00	48.8	131.7	701	0.44	865	2838	7	318	5.3	10.3	6.9	-7.7
4.50	45.9	132.3	868	0.54	960	3148	7	318	5.7	11.1	7.4	-8.3
5.00	43.5	133.8	1043	0.65	1054	3458	7	328	6.3	12.3	6.6	-10.4
5.50	41.1	137.0	1238	0.77	1144	3753	7	335	6.7	12.9	5.6	-11.7
6.00	39.4	139.5	1424	0.89	1234	4049	7	336	6.3	12.2	5.1	-11.1
6.50	38.2	141.3	1601	0.99	1324	4344	0	339	6.2	12.0	4.2	-11.3
7.00	37.2	143.6	1779	1.11	1414	4639	7	336	5.9	11.5	4.7	-10.5
7.50	36.5	143.9	1946	1.21	1504	4934	7	333	6.0	11.7	5.3	-10.5
8.00	35.6	145.2	2137	1.33	1594	5230	0	339	6.6	12.8	4.5	-12.0
8.50	34.8	146.5	2331	1.45	1684	5525	7	334	7.0	13.6	6.0	-12.2
9.00	33.8	146.6	2554	1.59	1774	5820	7	320	7.0	13.7	8.8	-10.5
9.50	33.2	145.5	2751	1.71	1864	6116	7	310	6.0	11.6	8.8	-7.5
10.00	33.1	144.6	2899	1.80	1954	6411	7	305	5.3	10.2	8.4	-5.9
10.50	33.0	143.4	3049	1.89	2044	6706	7	303	4.7	9.1	7.7	-5.0
11.00	33.2	142.7	3162	1.97	2134	7001	7	307	4.4	8.5	6.8	-5.1
11.50	33.2	142.1	3301	2.05	2224	7297	7	306	4.8	9.3	7.5	-4.4
12.00	33.2	141.3	3438	2.13	2314	7592	7	302	4.9	9.4	8.0	-3.0
12.50	33.2	140.5	3576	2.22	2404	7887	7	297	4.7	9.2	8.2	-4.2
13.00	33.3	139.5	3639	2.30	2494	8182	7	294	5.1	9.8	9.0	-4.0
13.50	33.2	138.5	3851	2.39	2584	8478	7	296	5.2	10.1	9.1	-4.4
14.00	33.2	137.7	3989	2.48	2674	8773	7	295	5.2	10.2	9.2	-4.4
14.50	33.1	136.8	4142	2.57	2764	9068	7	295	5.5	10.7	9.7	-4.5
15.00	32.9	136.0	4296	2.67	2854	9364	7	298	5.7	11.1	9.8	-5.3
15.50	32.8	135.4	4469	2.78	2944	9659	7	302	6.0	11.6	9.9	-6.1
16.00	32.6	134.9	4644	2.89	3034	9954	7	302	6.0	11.7	9.9	-6.2
16.50	32.4	134.4	4822	3.00	3124	10249	7	301	6.1	11.9	10.2	-6.2
17.00	32.2	134.0	5002	3.11	3214	10545	7	300	6.6	12.8	11.1	-6.4
17.50	31.9	133.3	5205	3.23	3304	10840	7	299	6.7	13.0	11.4	-6.3
18.00	31.7	132.8	5392	3.35	3394	11135	7	300	6.4	12.5	10.8	-6.3
18.50	31.5	132.4	5581	3.47	3484	11431	7	299	6.5	12.7	11.0	-6.2
19.00	31.3	131.9	5773	3.59	3574	11726	7	299	7.0	13.6	11.9	-6.7
19.50	31.0	131.5	5991	3.72	3664	12021	7	297	7.2	13.9	12.4	-6.4
20.00	30.8	130.9	6190	3.85	3754	12316	7	293	7.0	13.5	12.4	-5.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 15

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 10 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 21:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	50.0	151.0	91	0.06	172	564	7	336	2.9	5.6	2.3	-5.1
1.00	51.5	156.0	172	0.11	280	919	0	342	2.1	4.1	1.2	-3.9
1.50	55.6	157.5	316	0.13	379	1243	6	269	1.3	2.5	2.5	0.0
2.00	62.6	136.5	215	0.13	478	1568	6	254	1.5	3.0	2.9	0.8
2.50	64.5	135.5	245	0.15	577	1893	7	339	1.8	3.6	2.4	-2.7
3.00	62.0	137.2	325	0.20	676	2218	7	327	6.4	12.3	5.8	-10.4
3.50	48.5	142.4	625	0.39	771	2528	7	315	7.4	14.3	5.1	-13.0
4.00	46.5	147.3	760	0.47	865	2836	7	336	7.3	14.2	5.9	-12.9
4.50	40.3	147.8	1056	0.66	960	3148	0	338	8.9	17.3	6.5	-16.1
5.00	37.5	151.7	1290	0.80	1054	3458	0	354	8.2	15.9	1.7	-15.9
5.50	35.5	156.0	1514	0.94	1144	3753	0	351	10.2	19.8	2.0	-19.6
6.00	31.9	158.0	1880	1.17	1234	4049	0	351	11.4	22.1	3.9	-21.9
6.50	30.0	160.6	2182	1.36	1324	4344	0	8	8.9	17.2	-2.7	-17.1
7.00	29.8	164.3	2357	1.46	1414	4639	0	7	8.2	15.8	-1.9	-15.7
7.50	28.7	165.3	2630	1.63	1504	4934	0	348	8.7	16.8	3.1	-16.6
8.00	28.0	165.3	2878	1.79	1594	5230	0	353	7.9	15.3	2.0	-15.1
8.50	27.6	166.4	3099	1.93	1684	5525	0	351	7.3	14.2	2.3	-14.0
9.00	27.3	166.0	3313	2.06	1774	5820	0	352	7.5	14.7	2.1	-14.5
9.50	26.5	167.1	3548	2.20	1864	6116	0	0	9.6	18.5	0.1	-18.6
10.00	26.0	168.0	3875	2.41	1954	6411	0	9	11.4	22.1	-3.5	-21.8
10.50	25.3	170.6	4189	2.60	2044	6706	0	13	9.5	18.4	-4.1	-18.0
11.00	25.2	171.1	4399	2.73	2134	7001	0	7	7.0	13.5	-1.7	-13.3
11.50	25.2	172.1	4500	2.86	2224	7297	0	19	8.0	15.5	-5.3	-14.6
12.00	25.0	173.8	4825	3.00	2314	7592	1	33	8.7	16.8	-9.1	-14.1
12.50	25.1	176.0	4995	3.10	2404	7887	1	30	6.4	12.4	-6.1	-10.8
13.00	25.3	176.3	5141	3.19	2494	8182	0	3	7.7	14.9	-0.0	-14.9
13.50	24.8	176.6	5454	3.39	2584	8478	0	12	12.9	25.0	-5.1	-24.5
14.00	23.9	178.3	5890	3.66	2674	8773	1	37	8.4	16.2	-9.8	-12.9
14.50	24.8	179.8	5843	3.63	2764	9068	2	109	3.3	6.3	-6.0	2.1
15.00	25.6	180.1	5923	3.62	2854	9364	4	166	7.7	15.0	-3.7	14.6
15.50	28.1	181.0	5394	3.35	2944	9659	4	165	8.8	17.1	-4.5	16.5
16.00	29.2	181.6	5314	3.30	3034	9954	0	18	2.2	4.3	-1.3	-4.1
16.50	29.0	181.4	5520	3.43	3124	10249	1	27	9.8	19.1	-8.7	-16.9
17.00	28.3	184.1	5850	3.64	3214	10545	1	41	6.4	12.4	-8.1	-9.4
17.50	29.1	183.8	5821	3.62	3304	10840	7	313	2.2	4.3	3.2	-2.9
18.00	29.3	183.1	5934	3.69	3394	11135	0	341	2.7	5.3	1.7	-5.0
18.50	29.6	183.2	5972	3.71	3484	11431	0	352	5.5	10.6	1.6	-10.5
19.00	29.3	182.5	6255	3.89	3574	11726	0	340	9.9	19.3	6.7	-18.1
19.50	28.9	181.1	6521	4.05	3664	12021	0	342	7.1	13.9	4.3	-13.2
20.00	29.0	181.2	6657	4.14	3754	12316	0	6	4.5	8.8	-0.9	-8.8

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 16

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 11 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 01:00 P.D.T.

TIME MINUTES	ELEV. D E G	AZIMUTH R E E S	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION GLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	71.8	140.7	36	0.02	172	564	9	999	0.0	0.0	0.0	0.0
1.00	90.0	140.7	0	0.00	280	919	4	159	2.2	4.2	-1.5	3.9
1.50	72.8	345.5	98	0.06	379	1243	4	160	4.6	8.9	-3.1	8.4
2.00	56.4	339.9	276	0.17	478	1568	4	160	3.6	7.1	-2.5	6.6
2.50	58.4	341.5	316	0.20	577	1893	5	245	1.2	2.4	2.2	1.0
3.00	64.5	354.5	292	0.18	676	2218	7	312	3.1	6.0	4.5	-4.0
3.50	75.7	12.5	180	0.11	771	2528	7	329	6.7	13.0	6.7	-11.1
4.00*	777.0	777.0	302	0.19	865	2838	7	329	8.9	17.3	9.0	-14.8
4.50	64.7	131.5	423	0.26	960	3148	7	320	9.2	17.8	11.5	-13.6
5.00	54.3	131.5	711	0.44	1054	3458	7	316	8.5	16.6	11.6	-11.8
5.50	49.1	133.7	930	0.58	1144	3753	7	312	8.1	15.6	11.7	-10.4
6.00	44.8	131.6	1195	0.74	1234	4049	7	303	8.3	16.2	13.5	-8.9
6.50	41.4	130.1	1429	0.89	1324	4344	7	308	7.9	15.3	12.1	-9.4
7.00	39.0	130.5	1667	1.04	1414	4639	7	303	8.0	15.5	13.0	-8.3
7.50	37.1	128.2	1904	1.18	1504	4934	7	294	7.2	13.9	12.7	-5.6
8.00	36.3	127.1	2083	1.29	1594	5230	7	295	6.5	12.7	11.5	-5.4
8.50	35.3	126.0	2288	1.42	1684	5525	6	292	7.1	13.8	12.8	-5.2
9.00	34.4	124.6	2497	1.55	1774	5820	6	282	7.2	14.0	13.7	-2.8
9.50	33.8	122.2	2689	1.67	1864	6116	6	272	6.7	13.0	13.0	-0.6
10.00	33.6	120.3	2845	1.77	1954	6411	6	269	6.1	11.9	11.9	0.3
10.50	33.4	118.3	3003	1.87	2044	6706	6	262	5.6	11.0	10.6	1.6
11.00	33.6	116.4	3116	1.94	2134	7001	6	257	5.1	9.9	9.7	2.3
11.50	33.7	114.7	3239	2.01	2224	7297	6	252	5.3	10.2	9.7	3.2
12.00	33.9	112.6	3344	2.08	2314	7592	5	240	5.5	10.8	9.4	5.3
12.50	34.2	110.2	3443	2.14	2404	7887	5	233	5.4	10.6	8.4	6.4
13.00	34.6	108.0	3522	2.19	2494	8182	5	226	5.5	10.6	7.7	7.4
13.50	35.0	105.5	3599	2.24	2584	8478	5	225	5.1	10.0	7.1	7.1
14.00	35.4	103.7	3673	2.28	2674	8773	5	232	5.0	9.8	7.3	6.1
14.50	35.5	101.8	3785	2.35	2764	9068	5	244	6.0	11.6	10.4	5.0
15.00	35.2	100.4	3955	2.46	2854	9364	6	252	6.5	12.6	12.0	3.9
15.50	34.9	99.1	4126	2.57	2944	9659	6	255	6.1	11.9	11.5	3.1
16.00	34.7	98.3	4289	2.67	3034	9954	6	260	5.7	11.0	10.9	1.8
16.50	34.5	97.7	4452	2.77	3124	10249	6	262	6.3	12.2	12.1	1.7
17.00	34.1	97.0	4653	2.89	3214	10545	6	261	6.7	13.1	12.9	2.1
17.50	33.8	96.3	4840	3.01	3304	10840	6	262	7.2	14.0	13.8	2.1
18.00	33.3	95.7	5069	3.15	3394	11135	6	262	7.3	14.2	14.1	2.0
18.50	33.0	95.1	5266	3.27	3484	11431	6	262	6.8	13.2	13.1	1.8
19.00	32.7	94.7	5467	3.40	3574	11726	6	261	7.0	13.5	13.4	2.0
19.50	32.4	94.1	5673	3.52	3664	12021	6	260	6.7	13.1	12.9	2.3
20.00	32.2	93.7	5860	3.64	3754	12316	6	262	6.4	12.4	12.3	1.8

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 17

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 11 AUGUST 1978

ELEVATION OF LAUNCH: 1394 310 FEET

TIME OF LAUNCH: 10:35 P.D.T.

TIME MINUTES	ELEV. D E G R E E S	AZIMUTH D E G R E E S	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	61.2	299.2	59	0.04	172	564	3	149	2.0	4.0	*2.0	3.4
1.00	60.5	329.3	122	0.08	280	919	4	158	2.9	5.7	*2.2	5.3
1.50	54.3	328.5	226	0.14	379	1243	3	142	3.0	5.7	*3.6	4.5
2.00	54.2	324.8	299	0.19	478	1568	2	101	1.0	2.0	*2.0	0.4
2.50	62.0	318.7	273	0.17	577	1893	3	332	2.4	4.6	2.2	-2.1
3.00	75.5	318.5	158	0.10	676	2218	7	317	4.3	8.3	5.7	*6.0
3.50	88.5	350.0	19	0.01	771	2528	7	312	6.2	12.0	9.0	*8.0
4.00	75.0	126.8	215	0.13	865	2838	7	315	7.3	14.2	10.0	*10.0
4.50	64.8	133.2	424	0.26	960	3148	7	320	6.0	13.2	9.8	*10.2
5.00	58.0	135.5	619	0.38	1054	3458	7	318	6.1	11.8	7.8	*8.0
5.50	54.0	135.8	785	0.49	1144	3753	7	316	5.5	10.6	7.5	*7.6
6.00	51.0	135.5	947	0.59	1234	4049	7	318	5.5	10.7	7.4	*8.0
6.50	49.5	136.5	1115	0.69	1321	4334	7	320	5.3	9.9	6.4	*7.9
7.00	47.2	137.1	1250	0.78	1410	4639	7	319	4.4	8.5	5.5	*6.4
7.50	46.3	137.0	1376	0.86	1504	4934	7	311	4.8	9.2	6.2	*5.9
8.00	45.5	136.0	1504	0.93	1594	5230	7	296	4.3	8.3	7.2	*3.7
8.50	45.0	133.8	1630	1.01	1684	5525	5	285	3.9	7.5	7.5	*2.0
9.00	45.0	132.0	1710	1.06	1774	5820	6	285	3.8	7.0	7.2	*1.0
9.50	44.6	130.3	1825	1.13	1864	6116	6	285	3.9	7.6	7.2	*2.1
10.00	44.5	129.0	1923	1.20	1954	6411	6	279	4.6	8.9	8.7	*1.4
10.50	43.8	126.2	2065	1.28	2044	6706	6	277	7.4	14.3	14.3	*1.9
11.00	41.8	123.2	2315	1.44	2134	7001	6	276	10.4	20.1	20.0	*2.1
11.50	39.5	119.5	2520	1.63	2224	7297	6	271	12.3	23.8	23.8	*0.4
12.00	37.2	115.6	2964	1.84	2314	7592	6	264	13.1	25.5	25.4	2.7
12.50	35.4	111.5	3393	2.05	2404	7887	6	256	13.8	25.3	24.6	6.0
13.00	34.0	107.7	3603	2.24	2494	8182	6	254	11.8	22.9	22.1	6.1
13.50	33.0	105.2	3880	2.41	2584	8478	6	258	11.4	22.2	21.7	4.8
14.00	31.8	103.0	4210	2.62	2674	8773	6	260	11.1	21.6	21.3	3.7
14.50	31.0	101.0	4491	2.79	2764	9068	5	263	11.0	21.3	21.1	2.3
15.00	30.0	100.3	4832	3.00	2854	9364	6	262	11.6	22.5	22.3	3.2
15.50	29.2	99.0	5153	3.20	2944	9659	6	261	11.2	21.7	21.4	3.4
16.00	28.5	98.0	5470	3.40	3034	9954	6	260	11.4	22.1	21.8	3.9
16.50	27.8	96.8	5804	3.61	3124	10249	6	260	11.6	22.3	22.0	3.9
17.00	27.2	96.0	6129	3.81	3214	10545	6	262	11.9	23.2	22.9	3.2
17.50	26.5	95.2	6498	4.04	3304	10840	6	264	11.9	23.0	22.9	2.2
18.00	26.0	94.8	6828	4.24	3394	11135	6	268	11.3	21.9	21.9	0.9
18.50	25.5	94.5	7170	4.45	3484	11431	6	268	11.7	22.9	22.8	0.6
19.00	25.0	94.2	7527	4.68	3574	11726	6	270	13.4	26.1	26.1	0.2
19.50	24.3	94.0	7973	4.95	3664	12021	6	268	12.8	24.8	24.8	1.0
20.00	24.0	93.6	8288	5.15	3754	12316	6	264	10.7	20.7	20.6	2.3

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

SUMMARY FOR ASCENT # 18

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 11 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	19.4	148.6	307	0.19	172	564	7	329	8.7	16.9	8.8	-14.4
1.00	22.5	148.6	521	0.32	280	919	7	327	6.1	11.8	6.4	-10.0
1.50	25.1	147.9	672	0.42	379	1243	7	324	6.5	12.7	7.4	-10.3
2.00	24.4	146.8	913	0.57	478	1568	7	319	6.7	13.0	8.5	-9.8
2.50	25.6	144.6	1071	0.67	577	1893	7	303	5.2	10.2	8.5	-5.5
3.00	26.9	140.8	1206	0.75	676	2218	6	288	4.1	7.9	7.5	-2.5
3.50	29.0	138.1	1275	0.79	771	2528	6	259	2.6	5.0	4.9	0.9
4.00	31.9	134.8	1287	0.80	865	2838	6	251	2.8	5.4	5.1	1.7
4.50	33.6	131.6	1348	0.84	960	3148	6	267	3.2	6.2	6.2	0.3
5.00	34.8	129.1	1434	0.89	1054	3458	6	270	3.6	6.9	6.9	0.0
5.50	35.5	126.2	1514	0.94	1144	3753	6	258	3.7	7.2	7.1	1.5
6.00	36.6	122.8	1575	0.98	1234	4049	5	246	3.2	6.3	5.7	2.6
6.50	37.9	120.2	1619	1.01	1324	4344	5	236	3.0	5.9	4.9	3.3
7.00	39.2	117.0	1655	1.03	1414	4639	5	241	3.5	6.7	5.9	3.3
7.50	39.7	114.3	1734	1.08	1504	4934	6	258	4.6	8.9	8.7	1.9
8.00	39.2	111.7	1976	1.17	1594	5230	6	264	5.7	11.0	11.0	1.1
8.50	38.5	109.5	2037	1.27	1684	5525	6	264	6.1	11.8	11.7	1.2
9.00	37.8	107.3	2205	1.37	1774	5820	6	264	6.4	12.4	12.4	1.3
9.50	37.0	105.5	2389	1.48	1864	6116	6	262	6.5	12.6	12.5	1.7
10.00	36.4	103.6	2564	1.59	1954	6411	6	259	6.6	12.7	12.5	2.5
10.50	35.8	101.8	2745	1.71	2044	6706	6	260	6.5	12.6	12.4	2.3
11.00	35.5	100.5	2934	1.82	2134	7001	6	265	6.9	13.4	13.3	1.2
11.50	34.5	99.6	3143	1.95	2224	7297	6	271	7.6	14.8	14.[illegible]	-0.2
12.00	33.7	99.2	3374	2.10	2314	7592	6	273	8.4	16.3	16.3	-0.9
12.50	32.7	98.7	3645	2.26	2404	7887	6	274	9.4	18.2	18.2	-1.1
13.00	31.7	98.4	3936	2.44	2494	8182	6	277	10.0	19.4	19.3	-2.5
13.50	30.7	98.5	4244	2.64	2584	8478	6	281	11.0	21.4	21.0	-4.1
14.00	29.6	98.8	4594	2.85	2674	8773	6	281	11.8	22.9	22.5	-4.5
14.50	28.6	98.9	4952	3.08	2764	9068	6	277	12.0	23.3	23.2	-2.7
15.00	27.7	98.8	5314	3.30	2854	9364	6	271	11.4	22.1	22.1	-0.3
15.50	27.1	97.9	5628	3.50	2944	9659	6	267	10.5	20.3	20.3	1.0
16.00	26.6	97.3	5931	3.69	3034	9954	6	264	10.6	20.6	20.4	2.2
16.50	26.1	96.5	6246	3.88	3124	10249	6	262	11.1	21.5	21.3	2.9
17.00	25.6	95.8	6576	4.09	3214	10545	6	265	10.9	21.1	21.0	1.9
17.50	25.2	95.4	6885	4.28	3304	10840	6	267	10.1	19.6	19.6	0.9
18.00	24.9	95.1	7174	4.46	3394	11135	6	265	9.9	19.2	19.1	1.6
18.50	24.6	94.6	7470	4.64	3484	11431	6	259	10.4	20.2	19.8	4.0
19.00	24.3	93.0	7773	4.83	3574	11726	6	262	11.3	21.9	21.5	4.3
19.50	23.9	93.3	8124	5.05	3664	12021	6	262	12.1	23.5	23.3	3.3
20.00	23.5	92.8	8496	5.27	3754	12316	6	262	12.3	23.9	23.7	3.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 19

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 11 AUGUST 1970

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 23:15 G.M.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	67.3	179.3	45	0.03	172	564	0	346	3.3	4.5	1.1	-4.4
1.00	57.3	169.7	139	0.09	280	919	7	333	2.7	5.2	2.3	-4.6
1.50	67.6	159.0	201	0.12	319	1343	7	297	1.0	2.0	1.8	-0.9
2.00	65.9	151.3	185	0.12	478	1568	6	250	0.6	1.1	1.1	0.4
2.50	68.3	149.0	204	0.13	577	1893	7	308	2.1	4.1	3.2	-2.5
3.00	63.4	141.9	306	0.19	676	2218	7	304	4.3	8.3	6.9	-4.6
3.50	57.6	134.9	450	0.28	771	3528	7	305	5.5	10.8	8.8	-5.2
4.00	51.7	133.2	633	0.39	865	2838	7	306	6.7	13.0	10.3	-7.7
4.50	46.5	130.7	850	0.53	960	3148	7	302	6.9	13.2	11.3	-7.1
5.00	43.6	128.8	1040	0.65	1054	3458	7	295	5.8	11.2	10.2	-4.7
5.50	42.3	126.1	1187	0.74	1144	3753	6	284	6.0	11.7	11.3	-2.8
6.00	40.4	122.5	1375	0.85	1234	4049	6	276	6.7	13.1	13.0	-1.4
6.50	39.1	118.6	1550	0.96	1324	4344	6	267	6.0	11.7	11.1	0.6
7.00	38.1	115.7	1722	1.07	1414	4639	6	262	5.5	10.9	11.9	1.6
7.50	37.7	111.8	1863	1.16	1504	4934	6	274	7.5	14.5	14.4	-0.9
8.00	35.5	110.4	2145	1.33	1594	5230	6	281	8.2	15.9	15.7	-3.0
8.50	34.6	108.5	2348	1.46	1684	5525	6	272	6.0	11.7	11.3	-0.5
9.00	34.6	107.9	2679	1.64	1774	5820	6	270	7.8	15.2	15.1	0.0
9.50	33.8	105.3	2763	1.74	1864	6116	6	267	8.9	17.3	17.1	0.9
10.00	32.4	104.3	2978	1.85	1954	6411	6	256	7.1	13.8	13.4	3.4
10.50	32.0	102.4	3169	1.97	2044	6706	6	253	6.9	13.4	12.8	3.9
11.00	31.8	100.6	3339	2.07	2134	7001	5	244	7.3	14.2	12.8	6.1
11.50	31.5	98.0	3525	2.19	2224	7297	5	242	8.4	16.3	14.4	7.6
12.00	31.0	95.8	3745	2.33	2314	7592	5	246	8.0	15.5	14.2	6.3
12.50	30.7	94.3	3941	2.45	2404	7887	6	252	8.7	16.9	16.0	5.1
13.00	29.9	93.0	4226	2.63	2494	8182	6	256	10.2	19.9	19.3	5.0
13.50	29.1	91.8	4528	2.81	2584	8478	5	255	10.8	21.0	20.3	5.5
14.00	28.3	90.6	4847	3.01	2674	8773	6	254	11.1	21.6	20.7	6.1
14.50	27.6	89.5	5165	3.21	2764	9068	6	251	11.0	21.4	20.3	6.9
15.00	27.0	88.3	5476	3.40	2854	9364	5	247	11.4	22.1	20.6	8.7
15.50	26.4	86.9	5802	3.61	2944	9659	5	245	13.0	33.2	21.1	9.7
16.00	25.8	85.7	6144	3.82	3034	9954	5	245	11.5	22.3	20.2	9.5
16.50	25.4	84.6	6444	4.00	3124	10249	5	244	11.4	22.2	20.0	9.6
17.00	24.9	83.6	6786	4.22	3214	10545	5	244	11.8	22.9	20.5	10.0
17.50	24.5	82.6	7110	4.42	3304	10840	5	239	12.6	24.4	21.0	12.6
18.00	24.0	81.2	7479	4.65	3394	11135	5	242	12.1	23.5	20.7	11.1
18.50	23.7	80.7	7791	4.84	3484	11431	5	244	9.6	18.7	16.9	8.1
19.00	23.6	80.0	8034	4.99	3574	11726	5	241	10.7	20.9	18.2	10.2
19.50	23.2	78.2	8399	5.22	3664	12021	5	241	12.3	23.9	20.9	11.7
20.00	22.9	78.4	8735	5.43	3754	12316	5	239	11.9	23.1	19.8	11.8

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 20

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted] BALLOON BROKE

DATE OF LAUNCH: 13 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. D E G R E E S	AZIMUTH D E G R E E S	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	66.0	166.3	48	0.03	172	564	0	356	1.6	3.0	0.2	-3.0
1.00	66.6	176.1	93	0.06	280	919	0	15	1.5	3.0	-0.8	-2.9
1.50	66.6	185.3	136	0.08	379	1243	1	33	1.3	2.5	-1.4	-2.1
2.00	69.6	189.6	163	0.10	470	1550	4	202	0.1	0.2	0.1	0.1
2.50	75.6	184.7	132	0.08	577	1893	3	244	1.5	2.9	2.6	1.3
3.00	78.2	158.8	128	0.08	676	2218	6	287	3.1	6.0	5.7	-1.8
3.50	70.5	138.3	250	0.16	771	2528	7	307	5.3	10.3	8.3	-6.2
4.00	61.4	135.6	431	0.27	865	2838	7	313	6.7	13.1	9.6	-8.9
4.50	53.9	135.0	653	0.41	960	3148	7	309	6.8	13.1	10.3	-8.2
5.00	49.8	132.2	837	0.52	1054	3458	7	302	5.5	10.6	9.1	-5.6
5.50	47.9	130.5	976	0.61	1144	3753	7	309	5.9	11.5	9.0	-7.1
6.00	42.5	131.1	1191	0.74	1234	4049	7	316	7.2	13.9	9.6	-10.1
6.50	41.9	132.3	1404	0.87	1324	4344	7	315	6.8	13.2	9.3	-9.4
7.00	40.2	132.2	1598	0.99	1414	4639	7	307	5.9	11.5	9.2	-7.0
7.50	39.3	131.3	1759	1.09	1504	4934	7	297	5.4	10.4	9.3	-4.8
8.00	38.7	129.7	1910	1.19	1594	5230	6	292	5.1	10.0	9.3	-3.7
8.50	38.3	128.4	2051	1.27	1684	5525	7	297	5.3	10.3	9.2	-4.7
9.00	37.6	127.9	2220	1.38	1774	5820	7	297	5.7	11.1	9.9	-5.1
9.50	37.0	126.8	2389	1.48	1864	6116	6	288	5.9	11.4	10.0	-3.5
10.00	36.5	126.2	2554	1.59	1954	6411	6	287	5.9	11.5	11.0	-3.4
10.50	36.0	124.3	2725	1.69	2044	6706	6	291	5.8	11.2	10.5	-4.0
11.00	35.6	123.5	2891	1.80	2134	7001	6	283	6.0	11.6	11.3	-2.7
11.50	35.2	121.9	3062	1.90	2224	7297	6	277	6.3	12.3	12.2	-1.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 21

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 13 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 11:09 P.D.T.

TIME MINUTES	ELEV. D E G R E E S	AZIMUTH D E G R E E S	RANGE METERS	RANGE MILES	ALTITUDE METERS (M.S.L.)	ALTITUDE FEET (M.S.L.)	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	58.2	124.5	67	0.04	172	564	7	308	2.0	3.8	3.0	-2.4
1.00	61.3	129.0	119	0.07	380	919	7	319	2.2	4.2	2.7	-3.2
1.50	58.2	134.3	195	0.12	379	1243	7	317	3.0	5.8	3.9	-4.3
2.00	54.3	133.6	297	0.18	478	1568	7	313	2.7	5.3	3.9	-3.6
2.50	55.0	133.8	359	0.22	577	1893	6	281	1.1	2.1	2.0	-0.4
3.00	60.0	128.0	353	0.22	676	2218	5	209	1.5	3.0	1.5	2.6
3.50	63.8	119.0	340	0.22	771	2520	5	204	1.0	2.0	1.5	3.3
4.00	66.8	109.6	343	0.21	865	2838	5	226	1.5	2.8	2.1	2.0
4.50	66.8	106.2	384	0.24	960	3148	6	263	2.2	4.3	4.5	0.5
5.00	64.5	102.0	473	0.29	1054	3458	6	269	2.9	5.6	5.6	-0.1
5.50	63.0	101.0	550	0.34	1144	3753	6	292	2.7	5.3	5.0	-2.0
6.00	61.5	104.5	635	0.39	1236	4049	7	309	2.8	5.5	4.3	-3.5
6.50	60.8	107.5	704	0.44	1324	4344	7	314	3.0	5.8	4.2	-4.0
7.00	59.5	110.8	795	0.49	1414	4639	7	312	3.5	6.9	5.1	-4.5
7.50	58.0	113.0	900	0.56	1504	4934	7	335	2.9	5.6	2.3	-5.1
8.00	58.8	118.3	927	0.58	1594	5230	0	354	3.2	6.3	0.7	-6.5
8.50	58.0	123.0	1012	0.63	1684	5525	0	344	3.6	7.0	1.9	-5.8
9.00	57.5	126.5	1089	0.68	1774	5820	7	336	3.7	7.2	2.9	-6.5
9.50	56.2	128.8	1205	0.75	1864	6116	7	327	4.7	9.2	5.0	-7.7
10.00*	777.0	777.0	1360	0.85	1954	6411	7	326	5.3	10.3	5.8	-8.5
10.50*	777.0	777.0	1515	0.94	2044	6706	7	326	5.3	10.3	5.8	-8.5
11.00*	777.0	777.0	1670	1.04	3134	7001	7	326	5.3	10.3	5.8	-8.5
11.50	49.8	134.6	1825	1.13	2224	7297	7	332	4.4	8.5	4.1	-7.5
12.00	49.5	136.0	1922	1.19	2314	7592	7	323	12.7	24.7	14.7	-19.8
12.50	47.2	137.2	2581	1.60	2404	7887	7	334	3.3	6.5	2.8	-5.8
13.00	49.0	137.7	2112	1.34	2494	8182	3	132	5.9	11.4	-8.5	7.1
13.50	48.5	138.0	2230	1.39	2584	8478	7	329	4.3	8.4	4.3	-7.2
14.00	47.8	138.9	2367	1.47	2674	8773	7	322	5.1	9.9	6.1	-7.8
14.50	46.8	138.5	2535	1.58	2764	9068	7	312	5.5	10.7	8.0	-7.1
15.00	46.0	138.0	2694	1.67	2854	9364	7	307	5.5	10.7	8.5	-6.5
15.50	45.2	137.2	2860	1.78	2944	9659	7	304	5.6	10.9	9.0	-6.2
16.00	44.5	136.5	3022	1.88	3034	9954	7	305	5.3	10.2	8.4	-5.9
16.50	44.0	136.0	3169	1.97	3124	10249	7	309	5.0	9.7	7.6	-6.1
17.00	43.5	135.8	3319	2.06	3214	10545	7	311	5.3	10.3	7.9	-6.7
17.50	42.9	135.5	3487	2.17	3304	10840	7	310	6.8	13.2	10.0	-8.5
18.00	41.8	135.2	3724	2.31	3394	11135	7	307	7.5	14.6	11.7	-8.8
18.50	41.0	134.5	3934	2.44	3484	11431	7	306	7.7	15.0	12.1	-8.9
19.00	40.0	134.2	4183	2.60	3574	11726	7	306	8.6	16.7	13.6	-9.8
19.50	39.0	133.5	4446	2.76	3664	12021	7	299	8.7	16.9	14.8	-8.1
20.00	38.2	132.5	4689	2.91	3754	12316	7	295	8.5	16.6	15.1	-7.0

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 22

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 13 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	53.2	163.8	81	0.05	172	564	7	336	3.3	6.3	2.6	-5.8
1.00	47.8	156.0	196	0.12	280	919	7	330	4.1	8.0	4.0	-7.0
1.50	43.9	153.5	327	0.20	379	1243	7	321	5.0	9.8	6.2	-7.6
2.00	40.0	146.8	493	0.31	478	1568	7	314	5.6	11.0	7.9	-7.6
2.50	38.0	143.7	657	0.41	577	1893	7	312	5.0	9.8	7.2	-6.6
3.00	37.8	141.3	789	0.49	676	2218	7	308	4.4	8.5	6.7	-5.2
3.50	37.8	139.2	911	0.57	771	2528	7	299	4.2	8.2	7.2	-4.0
4.00	37.9	136.0	1029	0.64	865	2838	6	286	4.5	8.8	8.4	-2.4
4.50	38.0	131.7	1146	0.71	960	3148	6	274	4.6	9.0	8.9	-0.7
5.00	38.4	127.5	1249	0.78	1054	3458	6	268	4.5	8.8	8.8	0.2
5.50	38.5	123.8	1358	0.84	1144	3753	6	274	3.2	6.3	6.3	-0.4
6.00	39.6	123.1	1414	0.88	1234	4049	6	286	1.8	3.5	3.3	-0.9
6.50	40.8	122.5	1460	0.91	1324	4344	7	305	1.4	2.8	2.3	-1.6
7.00	42.0	123.2	1499	0.93	1414	4639	0	20	1.1	2.1	-0.7	-2.0
7.50	44.3	125.0	1476	0.92	1504	4934	1	51	1.9	3.7	-2.9	-2.3
8.00	46.2	127.5	1467	0.91	1594	5230	1	41	2.1	4.0	-2.6	-3.0
8.50	47.8	129.8	1469	0.91	1684	5525	1	32	2.2	4.3	-2.3	-3.7
9.00	49.0	132.6	1486	0.92	1774	5820	1	25	3.1	6.0	-2.6	-5.5
9.50	49.7	136.6	1527	0.95	1864	6115	0	15	4.4	8.5	-3.2	-8.2
10.00	49.3	140.8	1626	1.01	1954	6411	0	1	4.6	8.9	-0.2	-8.9
10.50	48.8	143.0	1733	1.08	2044	6706	0	349	3.8	7.4	1.4	-7.3
11.00	48.5	144.2	1831	1.14	2134	7001	0	338	3.6	7.1	2.6	-6.6
11.50	48.0	144.7	1945	1.21	2224	7297	7	333	3.0	5.9	2.7	-5.3
12.00	48.2	145.0	2012	1.25	2314	7592	7	302	2.2	4.3	2.0	-3.8
12.50	48.4	145.2	2078	1.29	2404	7887	0	347	2.5	4.8	1.1	-4.7
13.00	48.5	146.5	2150	1.34	2494	8182	0	3	3.2	6.1	-0.4	-6.1
13.50	49.5	148.2	2230	1.39	2583	8478	0	6	4.0	7.7	-1.1	-7.7
14.00	48.2	150.4	2334	1.45	2674	8773	0	3	4.8	9.4	-0.4	-9.4
14.50	47.5	152.0	2474	1.54	2764	9068	0	346	5.9	11.5	2.7	-11.1
15.00	46.2	152.5	2676	1.66	2854	9364	7	332	6.1	11.8	5.6	-10.5
15.50	45.4	152.0	2840	1.76	2944	9659	7	320	5.9	11.5	7.4	-8.7
16.00	44.5	151.0	3022	1.88	3034	9954	7	315	5.7	11.1	7.8	-7.8
16.50	44.0	150.2	3169	1.97	3124	10249	7	310	4.9	9.4	7.2	-6.1
17.00	43.7	149.2	3296	2.05	3214	10545	7	306	5.5	10.7	8.6	-6.4
17.50	43.0	148.0	3474	2.16	3304	10840	7	308	6.7	13.0	10.3	-7.9
18.00	42.2	146.8	3672	2.28	3394	11135	7	309	6.9	13.3	10.4	-8.4
18.50	41.5	146.0	3866	2.40	3484	11431	7	312	6.3	12.2	9.1	-8.1
19.00	41.0	145.5	4038	2.51	3574	11726	7	314	5.7	11.1	8.0	-7.6
19.50	40.6	145.0	4200	2.61	3664	12021	7	316	6.1	11.8	8.2	-8.5
20.00	40.0	144.7	4398	2.73	3754	12316	7	318	6.6	12.9	8.5	-9.6

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 23

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: [redacted]

DATE OF LAUNCH: 13 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 23:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	90.0	208.0	0	0.00	172	564	1	28	0.5	0.9	-0.6	-0.8
1.00	82.4	208.0	29	0.02	280	919	0	9	1.1	2.1	-0.3	-2.1
1.50	78.4	189.2	65	0.04	379	1243	7	307	1.0	2.0	1.6	-1.2
2.00	80.2	150.9	72	0.04	478	1568	6	254	1.5	2.9	2.7	0.8
2.50	80.7	117.8	84	0.05	577	1893	6	278	1.4	2.7	2.6	-0.4
3.00	77.3	122.4	138	0.09	676	2210	7	321	3.0	5.8	3.7	-4.5
3.50	69.9	133.3	259	0.16	771	2528	7	328	4.7	9.2	4.8	-7.8
4.00	62.8	139.2	412	0.26	865	2838	7	336	4.0	8.1	3.7	-8.3
4.50	59.1	145.5	536	0.33	960	3148	0	343	5.1	9.8	2.8	-9.4
5.00	54.7	149.7	701	0.44	1054	3458	0	342	5.6	10.9	3.4	-10.4
5.50	51.3	151.8	865	0.54	1144	3753	0	341	5.3	10.4	3.4	-9.8
6.00	49.0	153.1	1042	0.65	1234	4049	0	338	4.8	9.1	3.4	-8.6
6.50	47.6	153.4	1151	0.71	1324	4344	7	337	3.3	6.8	2.5	-5.9
7.00	48.0	153.8	1216	0.76	1414	4639	0	342	1.9	3.7	1.1	-3.6
7.50	48.7	154.2	1265	0.79	1504	4934	0	345	1.7	3.3	0.8	-3.2
8.00	49.3	154.7	1336	0.83	1594	5230	0	350	2.1	4.0	0.3	-4.1
8.50	49.4	155.0	1389	0.86	1684	5525	0	3	1.7	3.2	-0.2	-3.4
9.00	50.5	156.7	1410	0.88	1774	5820	0	10	2.1	4.1	-0.7	-4.0
9.50	50.3	158.3	1494	0.93	1864	6116	0	0	3.1	5.9	0.0	-5.9
10.00	50.1	158.3	1580	0.98	1954	6411	0	358	3.0	5.8	0.2	-5.9
10.50	49.9	160.4	1667	1.04	2044	6706	0	353	2.9	5.6	0.7	-5.6
11.00	49.8	160.6	1749	1.09	2134	7001	0	354	2.5	4.8	0.5	-4.8
11.50	50.0	161.5	1812	1.13	2224	7297	0	11	1.9	3.7	-0.7	-3.6
12.00	50.6	162.4	1848	1.15	2314	7592	1	30	1.5	3.0	-1.5	-2.6
12.50	51.3	163.6	1875	1.16	2404	7887	1	37	1.2	2.4	-1.4	-1.9
13.00	52.1	164.2	1892	1.18	2494	8182	1	65	1.1	2.0	-1.0	-0.9
13.50	53.2	165.5	1885	1.17	2584	8478	2	73	1.7	3.3	-3.2	-1.0
14.00	54.0	167.3	1896	1.18	2674	8773	1	39	2.3	4.4	-2.8	-3.4
14.50	53.9	168.7	1969	1.22	2764	9068	0	10	3.3	6.4	-1.1	-6.3
15.00	53.3	169.4	2080	1.29	2854	9364	0	4	3.7	7.3	-0.6	-7.3
15.50	52.8	170.3	2186	1.36	2944	9659	0	13	3.5	6.7	-1.5	-6.5
16.00	52.6	171.5	2271	1.41	3034	9954	0	18	3.6	7.1	-2.1	-6.7
16.50	52.1	172.7	2382	1.49	3124	10249	0	14	4.4	8.3	-2.1	-8.2
17.00	51.4	173.8	2515	1.56	3214	10545	0	11	4.6	8.0	-1.7	-8.7
17.50	50.8	174.6	2642	1.64	3304	10840	0	8	4.6	9.0	-1.2	-8.9
18.00	50.1	175.2	2784	1.73	3394	11135	0	1	4.5	8.7	-0.2	-8.7
18.50	49.6	175.2	2911	1.81	3484	11431	0	358	4.1	8.0	0.3	-7.9
19.00	49.2	175.4	3030	1.88	3574	11726	0	4	4.8	9.3	-0.7	-9.3
19.50	48.4	176.0	3196	1.99	3664	12021	0	6	5.9	11.6	-1.2	-11.5
20.00	47.5	176.5	3381	2.10	3754	12316	0	5	6.2	12.1	-1.1	-12.1

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 1

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 14 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	52.5	330.5	83	0.05	172	564	3	149	4.8	9.3	-4.8	7.9
1.00	37.0	328.5	287	0.18	290	918	3	144	4.9	9.5	-5.6	7.6
1.50	40.0	325.2	375	0.23	379	1243	3	146	1.5	3.0	-1.7	2.5
2.00	47.5	327.8	379	0.24	478	1568	0	340	0.3	0.6	0.2	-0.6
2.50	55.2	324.4	357	0.22	577	1893	0	22	2.7	5.3	-1.9	-4.9
3.00	63.0	302.8	312	0.19	676	2218	1	23	5.5	10.7	-4.2	-9.8
3.50	64.5	267.8	337	0.21	771	2528	1	27	6.8	13.3	-6.1	-11.8
4.00	58.5	246.5	491	0.31	865	2838	1	31	7.0	13.6	-7.0	-11.7
4.50	53.3	236.0	667	0.41	960	3148	1	30	6.8	13.2	-6.6	-11.4
5.00	49.2	230.0	855	0.53	1054	3458	1	29	6.7	13.0	-6.4	-11.4
5.50	46.0	226.0	1043	0.65	1144	3753	1	33	6.1	11.9	-6.5	-10.0
6.00	44.0	225.0	1212	0.75	1234	4049	1	45	4.7	9.2	-6.5	-6.5
6.50	43.5	225.8	1328	0.83	1324	4344	1	57	3.7	7.1	-6.0	-3.9
7.00	43.4	226.8	1428	0.89	1414	4639	1	59	3.2	6.3	-5.4	-3.2
7.50	43.5	227.5	1517	0.94	1504	4934	1	63	3.3	6.4	-5.7	-2.9
8.00	43.4	228.7	1618	1.01	1594	5230	1	65	3.4	6.6	-6.0	-2.8
8.50	43.4	229.5	1713	1.06	1684	5525	1	55	3.6	7.0	-5.8	-4.0
9.00	43.0	229.5	1834	1.14	1774	5820	1	41	3.9	7.5	-5.0	-5.7
9.50	42.8	228.5	1944	1.21	1864	6116	1	28	3.7	7.2	-3.3	-6.3
10.00	42.8	227.2	2041	1.27	1954	6411	0	19	3.4	6.6	-2.1	-6.2
10.50	43.0	225.8	2123	1.34	2044	6706	0	14	3.2	6.2	-1.5	-6.0
11.00	43.2	224.5	2204	1.37	2134	7001	0	17	2.4	4.7	-1.1	-4.5
11.50	43.8	224.0	2272	1.40	2224	7297	1	24	2.5	4.9	-2.0	-4.5
12.00	43.8	223.2	2346	1.46	2314	7592	1	26	3.4	6.7	-2.9	-6.0
12.50	43.7	222.5	2449	1.52	2404	7887	0	18	3.9	7.6	-2.4	-7.2
13.00	43.5	221.0	2561	1.59	2494	8182	0	9	4.1	7.9	-1.2	-7.8
13.50	43.5	219.6	2656	1.65	2584	8478	0	1	3.4	6.7	-0.1	-6.7
14.00	43.8	218.2	2722	1.69	2674	8773	0	357	3.1	6.1	0.3	-6.0
14.50	44.0	217.0	2796	1.74	2764	9068	0	4	2.9	5.7	-0.4	-5.7
15.00	44.2	216.2	2869	1.78	2854	9364	0	14	2.6	5.1	-1.2	-4.9
15.50	44.4	215.8	2941	1.83	2944	9659	1	27	2.8	5.4	-2.4	-4.8
16.00	44.4	215.7	3033	1.88	3034	9954	1	30	2.9	5.6	-2.8	-4.8
16.50	44.5	215.5	3114	1.93	3124	10249	1	29	2.5	4.9	-2.4	-4.3
17.00	44.7	215.4	3193	1.98	3214	10545	1	36	2.5	4.8	-2.8	-3.9
17.50	44.8	215.5	3263	2.03	3304	10840	1	46	3.1	6.0	-4.3	-4.1
18.00	44.7	216.0	3365	2.09	3394	11135	1	51	3.8	7.3	-5.7	-4.6
18.50	44.5	216.5	3480	2.16	3484	11431	1	40	4.5	8.8	-5.6	-6.7
19.00	44.0	216.3	3635	2.26	3524	11726	1	28	5.5	10.7	-5.1	-9.4
19.50	43.4	215.8	3807	2.37	3664	12021	1	29	5.4	10.5	-5.1	-9.2
20.00	43.0	215.7	3957	2.46	3754	12316	1	33	5.0	9.7	-5.3	-8.1

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 2

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 14 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 09:00 P.D.T.

TIME MINUTES	ELEV. D E G R E E S	AZIMUTH D E G R E E S	R A N G E METERS	R A N G E MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	D I R E C T I O N CLASS 0- 7	D I R E C T I O N DEGREES	V E L O C I T Y METERS/SEC (SPEED)	V E L O C I T Y NAUTICAL MILES PER HOUR (SPEED)	V E L O C I T Y (U)	V E L O C I T Y (V)
0.50	73.9	338.3	31	0.02	172	564	4	175	1.4	2.8	-0.3	2.8
1.00	68.2	354.8	86	0.05	280	919	4	190	2.2	4.2	0.8	4.2
1.50	63.4	4.3	158	0.10	379	1243	5	208	1.8	3.5	1.4	3.5
2.00	67.6	12.0	171	0.11	478	1568	0	359	1.3	2.5	0.0	-2.5
2.50	80.9	9.3	82	0.05	577	1893	0	21	4.2	8.2	-3.0	-7.7
3.00	81.6	218.3	90	0.06	676	2218	1	28	5.9	11.5	-5.3	-10.0
3.50	68.2	213.0	273	0.17	771	2500	1	37	4.3	8.3	-5.1	-6.7
4.00	66.4	217.5	350	0.22	865	2838	1	57	3.3	6.4	-5.3	-3.5
4.50	62.8	223.5	460	0.29	960	3140	2	68	4.1	8.0	-7.4	-3.0
5.00	59.8	230.2	576	0.36	1054	3458	2	70	3.9	7.5	-7.3	-1.6
5.50	58.4	234.0	664	0.41	1144	3753	3	82	3.7	7.2	-6.3	-0.8
6.00	56.6	239.2	771	0.48	1234	4049	2	84	3.3	6.3	-6.3	-0.6
6.50	56.3	241.4	840	0.52	1324	4344	2	78	2.0	3.9	-1.8	-0.8
7.00	56.7	241.7	887	0.55	1414	4639	1	61	1.1	2.2	-1.0	-1.0
7.50	57.5	241.4	907	0.56	1504	4934	2	85	1.5	3.0	-0.8	-0.2
8.00	57.7	243.0	967	0.60	1594	5230	2	91	2.2	4.2	-4.2	0.2
8.50	57.8	245.2	1020	0.63	1684	5525	2	83	1.8	3.5	-3.4	-0.4
9.00	58.0	245.7	1069	0.66	1774	5820	2	73	1.6	3.1	-3.0	-0.9
9.50	58.2	245.9	1116	0.69	1864	6116	1	61	1.1	2.0	-2.0	-1.6
10.00	58.2	245.3	1172	0.73	1954	6411	1	35	1.4	2.7	-1.6	-2.3
10.50	59.0	243.8	1190	0.74	2044	6706	0	354	0.9	1.8	0.2	-1.8
11.00	60.1	242.8	1190	0.74	2134	7001	0	16	0.9	1.8	-0.5	-1.7
11.50	60.4	241.0	1227	0.76	2224	7297	1	32	2.1	4.0	-3.1	-3.4
12.00	60.0	240.0	1299	0.81	2314	7592	1	27	3.0	5.8	-2.6	-5.2
12.50	59.5	237.6	1378	0.86	2404	7887	0	14	3.7	7.1	-3.7	-6.9
13.00	59.0	233.8	1460	0.91	2494	8182	0	2	3.8	7.4	-0.3	-7.4
13.50	58.9	230.6	1520	0.94	2584	8479	0	350	3.1	5.8	1.0	-5.8
14.00	59.3	227.7	1550	0.96	2674	8773	0	338	2.5	4.9	1.9	-4.5
14.50	59.8	225.2	1571	0.98	2764	9068	7	334	2.2	4.2	1.8	-3.8
15.00	60.3	223.2	1591	0.99	2854	9364	0	344	1.9	3.7	1.0	-3.5
15.50	60.6	221.7	1639	1.01	2944	9659	0	1	1.7	3.2	-0.1	-3.2
16.00	60.7	220.9	1667	1.04	3034	9954	1	23	1.4	2.7	-1.1	-2.5
16.50	60.8	220.8	1710	1.06	3124	10249	1	51	1.7	3.3	-2.6	-2.1
17.00	60.7	221.5	1768	1.10	3214	10545	1	62	2.6	5.0	-4.4	-2.4
17.50	60.2	222.5	1856	1.15	3304	10840	1	59	3.8	7.3	-6.3	-3.8
18.00	59.2	223.5	1985	1.23	3394	11135	1	56	4.9	9.6	-7.9	-5.4
18.50	57.9	224.3	2145	1.33	3484	11431	1	57	5.8	11.2	-9.4	-6.1
19.00	56.5	225.5	2323	1.44	3574	11726	1	59	6.1	11.9	-10.2	-6.1
19.50	55.2	226.5	2502	1.55	3664	12021	1	58	5.6	10.9	-9.2	-5.7
20.00	54.3	227.1	2652	1.65	3754	12316	1	57	5.1	9.8	-8.3	-5.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 3

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 14 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 13:00 P.D.T.

TIME MINUTES	ELEV. DEG	AZIMUTH DEGS	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	72.0	319.4	35	0.02	172	564	4	171	0.3	0.6	-0.1	0.5
1.00	85.5	351.4	17	0.01	280	919	6	263	1.2	2.3	2.2	0.3
1.50	79.5	52.8	58	0.04	379	1243	6	262	1.5	3.0	3.0	0.4
2.00	77.2	72.0	94	0.06	478	1569	6	276	1.4	2.7	2.7	-0.3
2.50	75.5	78.3	133	0.08	577	1893	6	281	1.5	2.8	2.8	-0.5
3.00	74.0	85.7	175	0.11	676	2218	7	294	1.4	2.7	2.4	-1.1
3.50	73.8	91.9	205	0.13	771	2528	7	301	0.8	1.5	1.3	-0.8
4.00	75.0	92.8	215	0.13	865	2838	6	279	0.3	0.6	0.6	-0.1
4.50	76.0	92.5	223	0.14	960	3148	6	273	0.3	0.5	0.5	0.0
5.00	76.9	92.8	230	0.14	1054	3458	1	39	0.2	0.4	-0.3	-0.3
5.50	78.7	95.3	216	0.13	1144	3753	1	59	1.0	1.9	-1.6	-1.0
6.00	81.0	102.8	185	0.12	1234	4049	2	68	1.5	2.9	-2.6	-1.1
6.50	83.5	111.8	144	0.09	1324	4344	2	88	2.3	4.4	-4.4	-0.1
7.00	87.3	135.2	64	0.04	1414	4639	2	87	2.6	5.1	-5.1	-0.2
7.50	87.4	201.8	65	0.04	1504	4934	2	82	2.7	5.2	-5.2	-0.7
8.00	85.0	230.6	134	0.08	1594	5230	2	83	2.8	5.5	-5.5	-0.7
8.50	82.6	247.2	210	0.13	1684	5525	2	77	2.3	4.5	-4.4	-1.0
9.00	81.0	248.5	271	0.17	1774	5820	1	57	1.6	3.2	-2.7	-1.7
9.50	80.3	244.0	308	0.19	1864	6116	1	31	1.7	3.3	-1.7	-2.8
10.00	79.3	238.5	357	0.22	1954	6411	1	34	2.6	5.1	-2.8	-4.2
10.50	77.2	234.0	450	0.28	2044	6706	1	40	3.5	6.7	-4.3	-5.2
11.00	74.9	231.6	559	0.35	2134	7001	1	45	4.1	7.9	-5.7	-5.5
11.50	72.2	231.0	694	0.43	2224	7297	1	49	4.9	9.5	-7.1	-6.2
12.00	69.3	230.6	850	0.53	2314	7592	1	57	4.9	9.4	-7.9	-5.1
12.50	67.2	232.8	984	0.61	2404	7887	2	63	4.5	8.7	-8.1	-3.0
13.00	65.5	235.1	1107	0.69	2494	8182	1	67	4.2	8.1	-7.5	-3.2
13.50	64.0	235.6	1229	0.76	2584	8478	1	45	4.0	7.7	-5.4	-5.4
14.00	62.8	233.3	1341	0.83	2674	8773	0	20	4.1	8.0	-2.7	-7.5
14.50	62.0	229.8	1436	0.89	2764	9068	0	4	3.9	7.5	-0.5	-7.5
15.00	61.7	226.6	1502	0.93	2854	9364	0	358	3.1	6.0	0.2	-6.0
15.50	61.6	224.4	1557	0.97	2944	9659	0	3	1.9	3.6	-0.2	-3.6
16.00	61.9	223.8	1586	0.99	3034	9954	1	29	0.9	1.7	-0.8	-1.5
16.50	62.3	223.9	1607	1.00	3124	10249	3	125	0.6	1.1	-0.9	0.6
17.00	63.2	225.0	1591	0.99	3214	10545	4	172	1.9	3.7	-0.5	3.7
17.50	64.6	227.3	1538	0.96	3304	10840	4	177	3.6	7.0	-0.3	7.0
18.00	66.4	231.3	1455	0.90	3394	11135	4	170	4.6	9.0	-1.6	8.9
18.50	67.6	236.9	1410	0.88	3484	11431	3	155	4.2	8.2	-3.5	7.4
19.00	68.0	241.3	1418	0.88	3574	11726	3	148	3.0	5.8	-3.1	4.9
19.50	68.5	244.2	1416	0.88	3664	12021	3	133	1.7	3.4	-2.4	2.3
20.00	68.5	245.2	1454	0.90	3754	12316	2	100	1.4	2.8	-2.8	0.5

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T 0 4

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 14 AUGUST 1970

ELEVATION OF LAUNCH SITE: 310 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	26.8	147.2	214	0.13	172	564	7	331	7.8	15.1	7.4	-13.3
1.00	24.8	150.7	457	0.29	280	919	7	334	8.4	16.5	7.1	-14.8
1.50	23.6	152.2	721	0.45	379	1243	7	334	7.9	15.4	6.7	-13.9
2.00	23.7	152.4	943	0.59	478	1568	7	330	6.0	11.6	5.2	-10.1
2.50	25.4	151.5	1090	0.67	577	1893	7	323	4.5	8.8	3.3	-7.0
3.00	26.8	150.2	1212	0.75	676	2218	7	320	4.4	8.6	5.5	-6.6
3.50	27.8	149.3	1340	0.83	771	2528	7	328	4.1	8.0	4.2	-6.7
4.00	28.8	149.8	1457	0.91	865	2838	7	334	3.8	7.5	3.3	-5.7
4.50	29.7	150.0	1570	0.98	960	3148	7	330	3.8	7.5	3.0	-5.4
5.00	30.4	149.8	1687	1.05	1054	3458	7	324	3.5	6.7	3.9	-5.4
5.50	31.3	149.5	1776	1.10	1144	3753	7	318	2.6	4.9	3.3	-3.6
6.00	32.5	148.9	1857	1.16	1234	4040	7	315	1.7	3.3	2.9	-2.4
6.50	33.9	148.6	1975	1.17	1324	4344	0	343	1.5	2.9	1.4	-1.7
7.00	35.4	149.4	1900	1.18	1414	4639	0	1[illegible]	1.6	3.1	-0.6	-3.0
7.50	36.5	150.5	1946	1.21	1504	4934	0	[illegible]	2.0	3.9	-0.8	-3.9
8.00	37.4	151.3	2001	1.24	1594	5230	7	32[illegible]	1.[illegible]	3.[illegible]	1.[illegible]	-2.0
8.50	38.7	150.3	2043	1.26	1684	5526	7	36	1.[illegible]	2.7	[illegible]	[illegible]
9.00	40.0	153.4	2039	1.27	1774	5820	1	59	2.8	5.5	-4.7	-2.9
9.50	41.5	155.1	2036	1.26	1864	6116	2	76	2.3	4.5	-4.4	-1.1
10.00	43.2	157.3	2013	1.25	1954	6411	2	93	2.9	5.6	-5.6	0.3
10.50	45.3	159.6	1959	1.22	2044	6706	2	103	3.3	6.4	-6.2	1.5
11.00	47.4	162.1	1903	1.18	2134	7001	2	107	4.8	9.3	-8.9	2.7
11.50	50.2	166.9	1800	1.12	2224	7297	3	113	6.9	13.4	-12.4	5.1
12.00	53.5	173.0	1665	1.03	2314	7592	3	115	7.9	15.4	-13.9	6.6
12.50	56.5	180.8	1549	0.96	2404	7887	3	118	7.4	14.4	-13.7	5.5
13.00	59.0	187.5	1460	0.91	2494	8182	3	127	5.5	10.7	-8.6	6.4
13.50	61.3	192.0	1380	0.86	2584	8478	3	131	3.8	7.3	-5.5	4.8
14.00	62.7	195.5	1347	0.84	2674	8773	2	103	2.9	5.7	-5.6	1.3
14.50	62.8	199.3	1388	0.86	2764	9068	2	79	4.1	7.9	-7.7	-1.7
15.00	62.1	203.9	1477	0.92	2854	9364	1	64	4.8	9.2	-8.3	-4.0
15.50	60.9	206.5	1603	1.00	2944	9659	1	58	4.4	8.5	-7.2	-4.5
16.00	60.2	208.8	1701	1.06	3034	9954	1	60	3.2	6.3	-5.4	-3.1
16.50	60.9	210.0	1767	1.10	3124	10249	1	62	2.5	4.9	-3.9	-3.0
17.00	59.7	210.7	1841	1.14	3214	10545	1	38	1.9	3.0	-2.3	-2.9
17.50	59.9	210.5	1878	1.17	3304	10840	0	340	0.9	1.8	0.6	-1.7
18.00	60.6	209.4	1876	1.17	3394	11135	7	303	2.0	3.8	3.2	-2.1
18.50	61.1	206.9	1888	1.17	3484	11431	7	301	3.0	5.0	4.9	-3.0
19.00	61.7	204.0	1890	1.17	3574	11726	7	295	2.7	5.3	4.8	-2.3
19.50	62.3	201.9	1890	1.17	3664	12021	7	296	1.8	3.5	3.2	-1.5
20.00	62.6	200.7	1896	1.18	3754	12316	7	300	1.3	2.6	2.2	-1.3

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 5

LOCATION: SAN JOSE STATE UNIVERSITY, CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 14 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 21:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	43.5	173.5	114	0.07	172	564	0	343	4.5	8.7	2.6	-8.3
1.00	38.5	169.5	268	0.17	280	919	7	332	5.4	10.5	4.0	-9.3
1.50	36.0	157.6	434	0.27	379	1243	7	327	5.8	11.3	6.1	-9.6
2.00	34.0	154.0	614	0.38	478	1568	7	329	6.8	13.2	6.9	-11.2
2.50	31.5	153.2	837	0.52	577	1893	7	333	7.8	15.2	7.0	-13.5
3.00	29.5	152.4	1082	0.67	676	2218	7	333	8.0	15.6	6.9	-13.9
3.50	28.2	153.3	1318	0.82	771	2528	7	332	7.9	15.4	7.2	-13.6
4.00	27.2	153.0	1569	0.97	865	2838	7	334	7.3	14.2	6.2	-12.8
4.50	27.0	153.5	1758	1.09	960	3148	0	351	5.7	11.0	1.7	-10.9
5.00	27.7	156.2	1886	1.17	1054	3458	0	7	5.2	10.0	-1.3	-10.0
5.50	28.1	158.4	2023	1.26	1144	3753	0	13	4.9	9.5	-2.2	-9.3
6.00	28.8	161.0	2128	1.32	1234	4049	1	23	5.0	9.6	-3.7	-8.9
6.50	29.3	163.7	2245	1.40	1324	4344	0	18	5.0	9.8	-3.0	-9.3
7.00	29.5	165.4	2376	1.48	1414	4639	0	21	5.1	9.9	-3.6	-9.2
7.50	30.0	168.0	2494	1.55	1504	4934	1	32	5.1	9.9	-5.2	-8.4
8.00	30.5	170.3	2597	1.61	1594	5230	1	36	4.4	8.5	-5.0	-6.8
8.50	31.2	172.2	2675	1.66	1684	5525	1	45	3.3	6.4	-4.5	-4.5
9.00	32.2	173.7	2715	1.69	1774	5820	1	65	2.3	4.5	-4.1	-1.9
9.50	33.5	175.0	2720	1.69	1864	6116	3	129	1.1	2.1	-1.7	1.3
10.00	35.3	174.7	2669	1.66	1954	6411	5	223	1.9	3.6	2.5	2.6
10.50	36.8	173.2	2647	1.64	2044	6706	5	243	2.8	5.4	4.8	2.5
11.00	38.4	171.3	2612	1.62	2134	7001	5	238	3.1	5.9	5.0	3.1
11.50	40.0	169.5	2574	1.60	2224	7297	5	224	2.7	5.2	3.6	3.8
12.00	41.8	168.4	2516	1.56	2314	7592	5	210	2.0	3.9	1.9	3.4
12.50	43.3	167.7	2483	1.54	2404	7887	5	203	1.2	2.4	1.0	2.2
13.00	44.7	167.4	2458	1.53	2494	8182	4	185	0.7	1.4	-0.1	1.4
13.50	45.9	167.4	2442	1.52	2584	8478	3	115	0.4	0.7	-0.6	0.3
14.00	46.9	167.8	2442	1.52	2674	8773	2	87	1.1	2.2	-2.2	-0.1
14.50	48.0	169.0	2431	1.51	2764	9068	2	98	3.1	6.0	-6.0	0.9
15.00	49.6	172.0	2383	1.48	2854	9364	2	100	4.4	8.5	-8.4	1.5
15.50	50.8	175.0	2349	1.46	2944	9659	2	101	4.8	9.2	-9.0	1.8
16.00	52.2	178.7	2304	1.43	3034	9954	2	104	4.6	9.0	-8.7	2.2
16.50	53.4	181.6	2273	1.41	3124	10249	2	102	3.7	7.2	-7.1	1.5
17.00	54.3	184.2	2254	1.41	3214	10545	2	85	3.2	6.2	-6.1	-0.5
17.50	54.6	186.3	2303	1.43	3304	10840	1	63	3.6	7.1	-6.3	-3.2
18.00	54.4	188.7	2384	1.48	3394	11135	1	52	4.4	8.5	-6.7	-5.3
18.50	53.9	190.6	2494	1.55	3484	11431	1	45	4.1	8.1	-5.7	-5.7
19.00	53.6	193.0	2588	1.61	3574	11726	1	57	3.1	6.0	-5.0	-3.3
19.50	53.9	193.5	2625	1.63	3664	12021	2	106	1.5	2.9	-2.8	0.8
20.00	55.0	194.0	2594	1.61	3754	12316	4	165	1.6	3.1	-0.8	3.0

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 6

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 15 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 01:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	52.5	346.5	83	0.05	172	564	4	177	1.9	3.5	-0.2	3.6
1.00	62.8	356.7	111	0.07	280	919	2	79	0.3	0.6	-0.6	-0.1
1.50	74.8	334.0	86	0.05	379	1243	0	13	1.3	2.5	-0.6	-2.5
2.00	84.2	324.9	42	0.03	478	1568	0	341	2.4	4.7	1.5	-4.4
2.50*	777.0	777.0	101	0.06	577	1893	0	341	3.3	6.5	2.1	-6.1
3.00	75.3	164.9	161	0.10	676	2218	0	338	3.5	6.0	2.5	-6.4
3.50	68.9	161.3	273	0.17	771	2528	1	336	3.7	7.1	2.9	-6.6
4.00	64.6	160.0	380	0.24	865	2838	0	339	3.7	7.3	2.7	-6.7
4.50	61.0	159.9	496	0.31	960	3148	0	339	3.0	5.7	2.0	-5.4
5.00	60.6	159.8	558	0.35	1054	3458	0	17	1.4	2.8	-0.8	-2.6
5.50	62.3	165.1	567	0.35	1144	3753	0	16	1.5	2.9	-0.4	-0.8
6.00	64.6	169.8	556	0.35	1234	4049	2	92	1.1	2.3	-0.3	0.1
6.50	66.4	171.9	550	0.34	1324	4344	2	80	0.8	1.6	-0.3	-0.2
7.00	67.6	173.7	556	0.35	1414	4639	1	63	1.2	2.3	-2.1	-1.1
7.50	68.1	179.8	579	0.36	1504	4934	1	61	1.0	2.0	-2.1	-1.8
8.00	68.3	183.4	609	0.38	1594	5230	1	54	1.0	2.0	-2.0	-2.0
8.50	68.3	186.5	645	0.40	1684	5525	1	39	1.0	2.0	-1.9	-3.0
9.00	67.5	187.0	708	0.44	1774	5820	0	19	1.9	3.7	-1.5	-3.5
9.50	67.2	188.3	757	0.47	1864	6116	0	19	1.1	2.2	-0.7	-2.1
10.00	67.7	188.8	775	0.48	1954	6411	2	77	0.5	1.0	-1.0	-0.2
10.50	68.8	190.4	768	0.48	2044	6706	2	111	0.8	1.6	-1.5	0.6
11.00	69.7	192.5	766	0.48	2134	7001	2	84	1.0	1.9	-1.9	-0.2
11.50	70.0	194.5	786	0.49	2224	7297	1	47	1.4	2.7	-2.0	-1.9
12.00	69.6	195.8	837	0.52	2314	7592	1	33	0.9	1.8	-1.0	-1.5
12.50	70.3	195.7	838	0.52	2404	7887	3	117	0.4	0.8	-0.8	0.4
13.00	71.1	197.6	832	0.52	2494	8182	3	125	1.7	3.3	-2.7	1.9
13.50	72.2	202.5	809	0.50	2584	8478	3	125	2.6	5.1	-4.3	3.0
14.00	73.0	208.5	798	0.50	2674	8773	3	127	2.4	4.7	-3.7	2.8
14.50	73.8	212.7	784	0.49	2764	9068	3	149	1.6	3.2	-1.6	2.7
15.00	74.9	214.9	753	0.47	2854	9364	4	172	2.1	4.2	-0.5	4.1
15.50	76.5	219.6	691	0.43	2944	9659	4	177	3.0	5.8	-0.3	5.8
16.00	78.2	225.2	620	0.39	3034	9954	4	178	3.6	7.0	-0.3	7.0
16.50	79.8	234.8	551	0.34	3124	10249	4	166	4.2	8.1	-2.0	7.9
17.00	80.3	248.8	538	0.33	3214	10545	3	152	4.2	8.1	-3.9	7.2
17.50	79.9	260.4	577	0.36	3304	10840	3	139	3.8	7.4	-4.9	5.5
18.00	78.9	267.9	653	0.41	3394	11135	3	124	3.6	6.9	-5.7	3.9
18.50	77.7	271.8	746	0.46	3484	11431	2	112	2.8	5.5	-5.1	2.0
19.00	77.0	272.7	810	0.50	3574	11726	2	94	1.4	2.8	-2.8	0.2
19.50	77.0	272.0	831	0.53	3664	12021	1	58	1.0	1.9	-2.9	-1.8
20.00	76.3	268.8	900	0.56	3754	12316	1	55	2.8	5.4	-4.4	-3.1

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 7

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 15 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. DEG	AZIMUTH DEG	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	43.0	4.5	116	0.07	172	564	4	165	2.8	5.4	-1.4	5.2
1.00	52.5	345.3	166	0.10	280	919	3	146	1.7	3.3	-1.8	2.7
1.50	57.0	346.5	205	0.13	379	1243	4	170	1.3	2.5	-0.4	2.5
2.00	59.5	346.8	244	0.15	478	1568	4	198	0.9	1.8	0.6	1.7
2.50	63.8	353.0	252	0.16	577	1893	0	344	0.7	1.3	0.4	-1.2
3.00	71.5	347.4	205	0.13	676	2218	0	358	2.6	5.1	0.2	-5.1
3.50	82.3	344.8	96	0.06	771	2528	0	347	3.4	6.6	1.4	-6.5
4.00	90.0	344.8	0	0.00	865	2838	7	331	3.1	6.0	2.9	-5.2
4.50	84.0	137.5	94	0.06	960	3148	0	357	1.7	3.4	0.2	-3.4
5.00	84.0	177.0	104	0.06	1054	3458	7	310	2.3	4.4	3.4	-2.8
5.50	78.0	133.0	230	0.14	1144	3753	7	295	4.0	7.8	7.0	-3.3
6.00	75.5	132.7	303	0.19	1234	4049	7	303	3.4	6.5	5.5	-3.5
6.50	71.2	128.3	429	0.27	1324	4344	7	298	4.1	8.0	7.1	-3.7
7.00	68.0	126.0	545	0.34	1414	4639	7	295	3.3	6.5	5.9	-2.7
7.50	66.5	124.0	626	0.39	1504	4934	6	275	2.3	4.4	4.4	-0.4
8.00	66.5	120.0	665	0.41	1594	5230	5	243	1.9	3.7	3.3	1.7
8.50	67.0	115.7	608	0.43	1684	5525	5	245	1.9	3.7	3.3	1.5
9.00	66.7	112.8	736	0.46	1774	5820	6	252	1.7	3.3	3.1	1.0
9.50	67.0	110.5	764	0.47	1864	6116	6	257	1.3	2.6	2.5	0.6
10.00	67.0	109.5	802	0.50	1954	6411	8	278	1.5	2.9	2.9	-0.4
10.50	66.7	109.2	853	0.53	2044	6706	7	309	1.1	2.2	1.7	-1.4
11.00	67.3	111.0	866	0.54	2134	7001	1	43	1.1	2.0	-1.4	-1.5
11.50	69.0	113.2	829	0.52	2224	7297	2	96	2.0	3.8	-3.8	0.4
12.00	71.3	113.4	753	0.47	2314	7592	3	117	2.3	4.6	-4.1	2.1
12.50	73.6	112.4	699	0.43	2404	7887	3	138	1.7	3.4	-2.2	2.5
13.00	74.8	109.6	660	0.41	2494	8182	4	177	1.0	1.9	-0.1	1.9
13.50	75.2	107.8	666	0.41	2584	8478	5	239	1.0	1.9	1.6	1.0
14.00	75.0	105.8	699	0.43	2674	8773	6	267	1.3	2.5	2.5	0.1
14.50	74.7	105.7	739	0.46	2764	9068	6	289	1.2	2.4	2.3	-0.8
15.00	74.5	106.1	774	0.48	2854	9364	7	317	1.2	2.2	1.5	-1.6
15.50	74.5	108.3	799	0.50	2944	9659	0	346	1.5	3.0	0.7	-2.9
16.00	74.5	111.6	824	0.51	3034	9954	0	4	1.3	2.3	-0.2	-3.3
16.50	75.0	113.2	820	0.51	3124	10249	2	72	0.6	1.1	-1.1	-0.3
17.00	75.8	113.2	797	0.50	3214	10545	2	94	0.2	0.4	-0.4	0.0
17.50	76.0	113.5	808	0.50	3304	10840	7	328	0.5	1.1	0.6	-0.9
18.00	76.1	114.5	824	0.51	3394	11135	7	325	1.1	2.2	1.2	-1.8
18.50	75.9	115.8	865	0.54	3484	11431	7	313	1.7	3.3	2.4	-2.2
19.00	75.3	116.5	921	0.57	3574	11726	6	287	1.9	3.7	3.5	-1.1
19.50	74.8	114.8	978	0.61	3664	12021	6	258	2.8	5.5	5.3	1.1
20.00	74.0	110.8	1058	0.66	3754	12316	6	251	3.6	6.9	6.6	2.2

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 8

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 15 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 09:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	90.0	196.0	0	0.00	172	564	4	167	1.2	2.3	-0.5	2.3
1.00*	77.0	777.0	72	0.04	280	919	4	167	2.4	4.6	-1.1	4.5
1.50	65.5	346.5	144	0.09	379	1243	3	156	2.7	5.3	-2.2	4.8
2.00	60.6	339.0	233	0.14	478	1568	4	164	2.1	4.0	-1.1	3.9
2.50	62.5	346.5	257	0.17	577	1893	5	219	1.5	2.9	1.9	2.3
3.00	64.7	354.9	289	0.18	676	2218	6	248	1.3	2.6	2.4	1.0
3.50	67.8	1.4	288	0.18	771	2528	7	298	1.4	2.5	2.2	-1.2
4.00	72.3	9.7	256	0.16	865	2838	7	315	2.2	4.2	3.0	-3.0
4.50	76.2	27.1	220	0.14	960	3148	7	305	2.6	5.0	4.0	-2.9
5.00	76.7	45.8	234	0.15	1054	3458	6	292	2.5	4.8	4.5	-1.8
5.50	75.5	60.1	279	0.17	1144	3753	6	291	2.7	5.2	4.9	-1.8
6.00	74.0	71.5	335	0.21	1234	4049	6	292	2.5	4.9	4.5	-1.8
6.50	72.8	77.8	390	0.24	1324	4344	6	294	2.1	4.0	4.0	-1.0
7.00	71.6	80.4	449	0.28	1414	4639	6	272	2.2	4.3	4.3	-0.2
7.50	70.3	81.4	518	0.32	1504	4934	6	255	2.4	4.6	4.4	1.2
8.00	68.9	79.2	590	0.37	1594	5230	5	243	2.5	4.8	4.2	2.3
8.50	67.7	77.3	664	0.41	1684	5525	5	245	2.4	4.3	3.3	1.8
9.00	66.8	76.6	733	0.46	1774	5820	5	242	2.0	3.9	3.5	1.3
9.50	66.6	74.9	779	0.48	1864	6116	5	231	1.6	3.0	2.4	1.9
10.00	66.6	73.8	818	0.51	1954	6411	5	215	1.1	2.2	1.3	1.8
10.50	67.3	71.9	832	0.52	2044	6706	4	171	1.4	2.8	-0.4	2.6
11.00	68.1	68.2	832	0.52	2134	7001	4	164	2.0	4.0	-1.1	3.8
11.50	68.6	63.6	846	0.53	2224	7297	4	181	2.2	4.3	0.0	4.3
12.00	68.4	60.3	891	0.55	2314	7592	4	202	2.0	3.9	1.5	3.5
12.50	68.1	58.7	941	0.58	2404	7887	5	234	1.4	2.0	2.3	1.7
13.00	68.1	59.7	977	0.61	2494	8182	7	306	1.1	2.1	1.7	-1.2
13.50	69.0	62.2	967	0.60	2584	8478	7	335	1.7	3.3	1.3	-3.0
14.00	69.6	65.6	971	0.60	2674	8773	7	324	2.2	4.2	2.5	-3.4
14.50	69.8	69.7	993	0.62	2764	9068	7	328	2.0	3.8	2.0	-3.3
15.00	70.4	72.4	993	0.62	2854	9364	0	357	1.2	2.4	0.1	-2.4
15.50	71.3	73.8	975	0.61	2944	9659	1	48	1.2	2.3	-1.7	-1.5
16.00	72.6	74.2	931	0.58	3034	9954	1	65	0.9	1.7	-1.5	-0.7
16.50	73.2	74.3	924	0.57	3124	10249	1	35	0.3	0.7	-0.4	-0.5
17.00	73.8	75.0	915	0.57	3214	10545	7	331	0.4	0.7	0.3	-0.6
17.50	74.0	75.6	929	0.58	3304	10840	0	18	0.7	1.4	-0.4	-1.3
18.00	75.0	77.3	892	0.55	3394	11135	0	16	1.5	3.1	-0.9	-2.0
18.50	75.5	81.0	884	0.55	3484	11431	0	346	2.4	4.6	1.1	-4.5
19.00	75.5	86.4	908	0.56	3574	11726	7	335	3.1	6.0	2.5	-5.4
19.50	75.2	91.8	951	0.59	3664	12021	7	321	3.3	6.3	4.1	-5.0
20.00	74.3	95.4	1037	0.64	3754	12316	7	310	3.5	6.9	5.3	-4.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 9

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 15 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 13:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	51.8	148.8	85	0.05	172	564	0	338	2.8	5.4	2.0	-5.0
1.00	52.5	157.8	166	0.10	280	919	0	349	2.7	5.3	1.1	-5.1
1.50	52.2	161.2	244	0.15	379	1243	0	353	2.0	3.9	0.5	-3.8
2.00	55.7	164.2	282	0.18	478	1568	7	327	1.1	2.2	1.2	-1.8
2.50	58.8	158.1	311	0.19	577	1893	6	279	1.7	3.2	3.2	-0.5
3.00	61.2	148.7	336	0.21	676	2218	6	274	2.1	4.1	4.0	-0.3
3.50	61.6	140.9	382	0.24	771	2528	6	266	2.3	4.5	4.5	0.3
4.00	62.3	131.5	421	0.26	865	2838	6	260	2.6	5.1	5.1	0.9
4.50	61.8	124.2	480	0.30	960	3148	6	268	3.0	5.8	5.8	0.2
5.00	60.3	118.8	565	0.35	1054	3458	6	273	3.1	6.1	6.1	-0.3
5.50	59.0	115.6	649	0.40	1144	3753	6	270	3.1	5.9	5.9	0.0
6.00	58.0	111.9	731	0.45	1234	4049	6	260	3.0	5.8	5.8	1.0
6.50	57.5	108.1	803	0.50	1324	4344	6	249	3.1	6.0	5.6	2.1
7.00	57.0	103.7	877	0.54	1414	4639	5	245	3.3	6.4	5.8	2.7
7.50	56.4	100.0	957	0.59	1504	4934	5	240	3.0	5.8	5.0	2.9
8.00	56.5	96.7	1013	0.63	1594	5230	5	233	2.7	5.3	4.3	3.2
8.50	56.4	93.6	1076	0.67	1684	5525	5	235	2.5	4.9	4.1	2.8
9.00	56.5	91.6	1132	0.70	1774	5820	5	238	1.6	3.1	2.6	1.7
9.50	57.3	90.8	1156	0.72	1864	6116	5	238	1.0	1.9	1.6	1.0
10.00	58.0	90.0	1181	0.73	1954	6411	5	210	1.1	2.2	1.1	1.9
10.50	59.0	88.0	1190	0.74	2044	6706	4	180	1.7	3.2	0.0	3.2
11.00	60.2	85.2	1186	0.74	2134	7001	4	179	2.0	3.9	-0.1	3.9
11.50	61.0	82.2	1197	0.74	2224	7297	5	207	2.7	5.3	2.4	4.7
12.00	60.4	79.0	1278	0.79	2314	7592	5	243	2.8	5.4	4.8	2.4
12.50	59.9	79.9	1356	0.84	2404	7887	6	265	2.3	4.4	4.4	0.4
13.00	59.4	79.6	1414	0.88	2494	8182	6	279	1.4	2.8	2.7	-0.4
13.50	60.3	81.0	1437	0.89	2584	8478	7	305	0.9	1.7	1.4	-1.0
14.00	60.9	81.1	1453	0.90	2674	8773	7	307	1.0	1.9	1.5	-1.1
14.50	61.3	82.6	1478	0.92	2764	9068	7	323	1.9	3.7	2.2	-2.9
15.00	61.6	84.9	1509	0.94	2854	9364	7	323	2.1	4.1	2.5	-3.3
15.50	61.8	86.7	1544	0.96	2944	9659	7	305	1.9	3.8	3.1	-2.2
16.00	61.7	87.6	1599	0.99	3034	9954	6	281	2.2	4.4	4.3	-0.0
16.50	61.3	87.8	1675	1.04	3124	10249	6	271	2.5	4.8	4.8	-0.1
17.00	61.0	87.9	1746	1.08	3214	10545	6	263	2.0	3.9	3.9	0.5
17.50	61.0	87.5	1796	1.12	3304	10840	6	258	0.9	1.8	1.7	0.4
18.00	61.6	87.6	1801	1.12	3394	11135	0	359	0.6	1.2	0.0	-1.2
18.50	62.3	88.7	1796	1.12	3484	11431	0	354	1.9	3.7	0.4	-3.7
19.00	62.7	91.2	1813	1.13	3574	11726	7	336	2.8	5.5	2.2	-5.0
19.50	62.6	93.5	1866	1.16	3664	12021	7	318	3.2	6.1	4.1	-4.6
20.00	62.2	95.3	1946	1.21	3754	12316	7	311	3.3	6.4	4.8	-4.3

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 10

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 15 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME	ELEV.	AZIMUTH	R A N G E		M.S.L. ALTITUDE		D I R E C T I O N		=====V E L O C I T Y===== METERS/SEC	NAUTICAL MILES PER HOUR		
MINUTES	D E G R E E S		METERS	MILES	METERS	FEET	CLASS 0- 7	DEGREES	(SPEED)	(SPEED)	(U)	(V)
0.50	54.3	158.8	78	0.05	172	564	7	334	3.7	7.1	3.2	-6.4
1.00	44.4	153.6	221	0.14	280	919	7	329	5.4	10.6	5.5	-9.0
1.50	38.0	150.7	403	0.25	379	1243	7	317	5.1	11.8	8.1	-8.5
2.00	35.6	143.1	578	0.36	478	1568	7	297	5.4	10.4	9.3	-4.7
2.50	36.5	135.7	693	0.43	577	1893	6	283	4.4	8.6	8.4	-1.9
3.00	37.4	130.7	800	0.50	676	2218	6	280	4.2	8.1	8.0	-1.4
3.50	37.9	126.4	908	0.56	771	2528	6	271	4.0	7.7	7.7	-0.2
4.00	38.8	122.0	996	0.62	865	2838	6	263	3.4	6.7	6.6	0.0
4.50	40.0	118.8	1067	0.66	960	3148	6	260	3.3	6.4	6.3	1.1
5.00	40.7	115.4	1151	0.72	1054	3458	6	259	4.0	7.7	7.6	1.5
5.50	40.6	111.8	1260	0.78	1148	3753	6	258	4.0	7.0	7.6	1.6
6.00	40.9	109.2	1351	0.84	1234	4049	6	261	3.4	6.0	6.5	1.1
6.50	41.2	107.6	1439	0.89	1324	4344	6	270	3.2	6.1	6.1	0.0
7.00	41.4	106.9	1531	0.95	1414	4639	6	277	3.0	5.8	5.8	-0.7
7.50	41.7	106.6	1616	1.00	1504	4934	6	272	2.5	4.8	4.8	-0.2
8.00	42.4	105.6	1676	1.04	1594	5230	6	254	2.1	4.0	4.0	1.2
8.50	43.2	104.1	1725	1.07	1684	5525	5	245	2.5	4.8	4.3	2.0
9.00	43.7	102.5	1789	1.11	1774	5820	6	258	3.1	6.1	6.0	1.3
9.50	43.5	101.6	1897	1.18	1864	6116	6	271	3.1	6.0	6.0	-0.1
10.00	43.8	101.4	1971	1.22	1954	6411	6	281	4.9	9.5	9.4	-1.8
10.50	42.1	101.5	2191	1.36	2044	6706	6	282	5.7	11.1	10.9	-2.3
11.00	41.8	101.5	2315	1.44	2134	7001	6	279	4.0	7.8	7.7	-1.3
11.50	41.6	101.3	2433	1.51	2224	7297	6	279	3.8	7.4	7.3	-1.2
12.00	41.5	101.3	2543	1.58	2314	7592	6	281	2.9	5.7	5.6	-1.1
12.50	41.9	101.3	2608	1.62	2404	7887	6	281	2.0	3.8	3.7	-0.7
13.00	42.4	101.3	2661	1.65	2494	8182	6	274	1.7	3.4	3.4	-0.2
13.50	42.9	101.0	2712	1.69	2584	8478	6	258	1.5	3.1	3.1	0.7
14.00	43.5	100.5	2750	1.71	2674	8773	6	259	1.5	2.9	2.9	0.6
14.50	44.0	100.3	2796	1.74	2764	9068	6	285	2.0	3.9	3.7	-1.0
15.00	44.2	100.7	2869	1.78	2854	9364	7	294	3.0	5.8	5.4	-2.3
15.50	44.1	101.1	2972	1.85	2944	9659	6	278	1.4	6.7	6.6	-0.9
16.00	44.0	100.5	3076	1.91	3034	9954	6	267	3.8	7.3	7.3	0.4
16.50	43.8	100.1	3191	1.98	3124	10249	6	273	3.5	6.8	6.8	-0.3
17.00	43.8	100.0	3285	2.04	3214	10545	6	286	2.9	5.7	5.5	-1.6
17.50	43.9	100.0	3367	2.09	3304	10840	7	302	2.0	5.7	4.0	-3.0
18.00	44.0	101.1	3448	2.14	3394	11135	7	313	3.4	6.7	4.9	-4.6
18.50	44.0	102.2	3542	2.20	3484	11431	7	321	4.0	7.7	4.9	-6.0
19.00	44.0	103.5	3635	2.26	3574	11726	7	316	3.9	7.7	5.3	-5.5
19.50	43.9	104.2	3741	2.32	3664	12021	7	301	3.7	7.2	6.2	-3.7
20.00	43.8	104.5	3848	2.39	3754	12316	7	295	3.6	7.0	6.4	-3.0

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 11

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 15 AUGUST 1970

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 21:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	50.0	151.5	91	0.06	172	564	7	333	2.8	5.5	2.5	-4.9
1.00	52.0	153.0	169	0.10	280	919	7	337	1.8	3.4	1.3	-3.2
1.50	58.0	154.6	197	0.12	379	1243	0	342	1.2	2.3	0.7	-2.2
2.00	60.0	155.7	239	0.15	478	1568	0	5	0.7	1.4	-0.1	-1.3
2.50	65.5	159.8	234	0.15	577	1893	1	65	0.3	0.5	-0.5	-0.2
3.00	68.6	159.6	240	0.15	676	2218	0	347	1.2	2.4	0.5	-2.3
3.50	66.5	161.5	307	0.19	771	2528	0	359	2.2	4.3	0.1	-4.3
4.00	65.4	166.4	367	0.23	865	2838	7	326	2.5	4.8	2.7	-4.0
4.50	63.2	156.5	452	0.28	960	3148	7	313	3.8	7.3	5.4	-5.0
5.00	60.1	153.6	569	0.35	1054	3458	7	330	2.6	5.1	2.6	-4.4
5.50	60.6	154.7	609	0.38	1144	3753	0	347	3.0	5.8	1.3	-5.7
6.00	57.8	156.8	746	0.46	1234	4049	0	345	4.0	7.8	2.0	-7.5
6.50	56.1	157.6	847	0.53	1324	4344	0	346	3.3	6.4	1.6	-6.2
7.00	55.1	158.7	942	0.59	1414	4639	0	345	5.8	11.4	2.9	-11.0
7.50	50.3	159.8	1196	0.74	1504	4934	0	342	5.6	10.8	3.3	-10.3
8.00	50.9	159.6	1275	0.79	1594	5230	0	353	3.0	5.7	0.7	-5.7
8.50	49.6	161.5	1369	0.85	1684	5525	0	345	3.9	7.6	1.9	-7.3
9.00	48.6	160.5	1508	0.94	1774	5820	7	323	3.7	7.2	4.3	-5.8
9.50	48.7	159.0	1581	0.98	1864	6116	7	324	5.5	10.7	6.3	-8.6
10.00	46.0	157.5	1835	1.13	1954	6411	7	331	6.0	11.6	5.2	-10.4
10.50	45.6	158.0	1939	1.20	2044	6706	0	354	4.2	8.2	0.9	-8.2
11.00	45.0	159.5	2076	1.29	2134	7001	0	6	4.0	7.7	-0.6	-7.7
11.50	45.1	161.0	2152	1.34	2224	7297	0	8	4.7	9.1	-1.2	-9.0
12.00	44.1	162.8	2322	1.44	2314	7592	0	8	4.5	8.8	-1.3	-8.7
12.50	44.3	164.0	2398	1.49	2404	7887	0	5	5.1	9.8	-0.8	-9.8
13.00	43.0	165.3	2606	1.62	2494	8182	0	1	6.6	12.8	-0.2	-12.8
13.50	42.2	166.4	2779	1.73	2584	8478	1	24	5.8	11.3	-4.5	-10.4
14.00	42.1	169.6	2880	1.79	2674	8773	1	38	5.6	10.9	-6.8	-8.6
14.50	42.0	171.5	2999	1.86	2764	9068	0	20	7.6	14.7	-5.0	-13.9
15.00	40.3	173.6	3290	2.04	2854	9364	0	10	8.4	16.3	-2.8	-16.1
15.50	39.6	174.1	3481	2.16	2944	9659	0	6	7.1	13.8	-1.4	-13.7
16.00	38.7	175.0	3707	2.30	3034	9954	1	31	4.5	8.7	-4.5	-7.4
16.50	39.6	176.6	3699	2.30	3124	10249	0	15	6.2	12.1	-3.1	-11.7
17.00	37.8	176.8	4061	2.52	3214	10545	0	359	7.5	14.5	0.2	-14.5
17.50	38.0	176.9	4147	2.58	3304	10840	3	155	0.6	1.2	-0.5	1.1
18.00	39.6	177.0	4025	2.50	3394	11135	0	357	5.2	10.0	0.5	-10.0
18.50	37.5	176.9	4457	2.77	3484	11431	0	3	7.0	13.6	-0.8	-13.6
19.00	38.3	177.6	4444	2.76	3574	11726	1	56	2.2	4.2	-3.5	-2.4
19.50	38.5	178.3	4526	2.81	3664	12021	0	9	2.7	5.3	-0.8	-5.3
20.00	38.7	178.0	4605	2.86	3754	12316	0	342	2.8	5.4	1.7	-5.1

CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 12

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

~~SPECIFICS: SAILSON INDUS~~

DATE OF LAUNCH: 16 AUGUST 1978

~~ELEVATION OF LAUNCH SITE: 210 FEET~~

TIME OF LAUNCH: 01:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.00	79.8	300.0	19	0.01	173	564	3	147	1.0	3.0	-0.1	2.9
1.00	74.2	327.2	61	0.04	280	919	4	163	1.5	3.0	-0.2	2.9
1.50	71.2	336.2	107	0.07	379	1243	4	173	2.7	5.2	-0.7	5.3
2.00	61.9	345.9	221	0.14	478	1568	4	188	3.4	6.6	0.9	6.6
2.50	59.6	357.0	301	0.19	577	1893	5	237	3.5	6.8	4.9	4.6
3.00	58.8	15.3	371	0.23	676	2219	6	257	3.9	7.5	7.3	1.7
3.50	59.8	30.8	411	0.26	771	2528	6	287	4.0	7.7	7.4	-2.3
4.00	61.6	48.7	433	0.27	865	2838	7	300	4.6	8.8	7.7	-4.4
4.50	61.0	64.3	496	0.31	960	3148	7	298	5.2	10.1	8.8	-5.8
5.00	58.1	77.2	616	0.38	1054	3458	6	289	5.1	10.0	9.4	-3.2
5.50	55.3	80.9	749	0.46	1144	3753	6	274	5.0	9.7	9.7	-0.7
6.00	52.2	82.8	908	0.56	1234	4049	6	271	5.4	10.5	10.5	-0.1
6.50	49.7	83.8	1069	0.66	1324	4344	6	264	5.5	10.7	10.6	1.1
7.00	47.5	83.2	1237	0.77	1414	4639	6	261	5.5	10.8	10.6	1.7
7.50	45.8	83.1	1400	0.87	1504	4934	6	271	5.4	10.4	10.4	-0.3
8.00	44.5	84.9	1557	0.97	1594	5230	6	280	5.2	10.1	9.9	-1.8
8.50	43.6	86.2	1701	1.06	1684	5525	6	274	5.0	9.7	9.7	-0.7
9.00	42.7	86.4	1853	1.15	1774	5820	6	265	5.0	9.6	9.6	0.9
9.50	42.6	86.0	1999	1.24	1864	6116	6	259	5.1	10.0	9.8	1.8
10.00	41.2	85.4	2159	1.34	1954	6411	6	262	5.5	10.6	10.5	1.4
10.50	40.4	85.5	2326	1.45	2044	6706	6	272	5.8	11.2	11.2	-0.4
11.00	39.6	86.3	2502	1.55	2134	7001	6	279	5.8	11.3	11.2	-1.8
11.50	39.0	87.3	2667	1.66	2224	7297	6	286	5.6	10.8	10.4	-3.0
12.00	38.6	88.6	2819	1.75	2314	7592	6	288	5.6	10.9	10.4	-3.4
12.50	38.1	89.6	2984	1.85	2404	7887	6	287	5.9	11.4	10.9	-3.3
13.00	37.6	90.6	3155	1.96	2494	8182	6	286	6.4	12.5	12.0	-3.5
13.50	36.9	91.5	3356	2.09	2584	8478	6	285	6.4	12.4	12.0	-3.1
14.00	36.5	92.1	3527	2.19	2674	8773	6	283	6.1	11.9	11.6	-2.6
14.50	36.0	92.6	3716	2.31	2764	9068	6	282	6.5	12.6	12.3	-2.7
15.00	35.5	93.1	3911	2.43	2854	9364	6	283	6.6	12.8	12.5	-2.8

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 13

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 16 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 11:00 P.D.T.

TIME MINUTES	ELEV. D E G R E E S	AZIMUTH D E G R E E S	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	86.5	227.5	7	0.00	172	564	1	33	0.3	0.6	-0.3	-0.5
1.00	85.5	213.2	17	0.01	280	919	0	346	0.7	1.4	0.3	-1.4
1.50	81.3	173.0	48	0.03	379	1243	7	323	1.1	2.1	1.2	-1.7
2.00	80.2	156.0	72	0.04	478	1568	7	310	1.1	2.1	1.6	-1.3
2.50	78.4	148.1	105	0.07	577	1893	7	309	1.0	2.0	1.6	-1.3
3.00	78.0	143.5	130	0.08	676	2218	6	284	2.0	4.0	3.8	-0.9
3.50	73.4	124.2	211	0.13	771	2528	6	277	4.3	8.3	8.2	-1.1
4.00	65.9	112.5	350	0.22	865	2838	6	280	6.1	11.9	11.7	-2.0
4.50	57.8	108.5	564	0.35	960	3148	6	287	6.9	13.5	12.9	-3.9
5.00	52.0	109.5	773	0.48	1054	3458	7	297	6.6	12.8	11.4	-5.7
5.50	48.5	111.9	956	0.59	1144	3753	7	307	6.5	12.7	10.1	-7.7
6.00	45.4	116.4	1154	0.72	1234	4049	7	310	6.8	13.3	10.2	-8.5
6.50	43.0	117.3	1351	0.84	1324	4344	7	308	6.5	12.6	9.9	-7.9
7.00	41.3	118.7	1537	0.95	1414	4639	7	305	6.1	11.9	9.7	-6.9
7.50	40.0	119.0	1716	1.07	1504	4934	7	313	6.0	11.7	8.6	-8.0
8.00	39.0	121.4	1889	1.17	1594	5230	7	322	6.2	12.1	7.4	-9.6
8.50	38.1	123.1	2066	1.28	1684	5525	7	322	6.2	12.1	7.5	-9.5
9.00	37.3	124.7	2245	1.39	1774	5820	7	322	6.1	11.8	7.3	-9.3
9.50	36.7	125.9	2415	1.50	1864	6116	7	320	5.8	11.3	7.2	-8.7
10.00	36.2	126.8	2583	1.60	1954	6411	7	324	5.3	10.3	6.5	-8.0
10.50	36.0	127.6	2725	1.69	2044	6706	7	326	4.7	9.1	5.0	-7.6
11.00	36.0	128.7	2849	1.77	2134	7001	7	329	4.6	8.9	4.6	-7.6
11.50	35.9	129.5	2984	1.85	2224	7297	7	322	4.6	9.0	5.5	-7.1
12.00	35.8	129.8	3120	1.94	2314	7593	7	311	5.1	10.0	7.6	-6.5
12.50	35.4	129.6	3293	2.05	2404	7887	7	301	5.9	11.5	9.8	-5.9
13.00	35.0	129.0	3470	2.16	2494	8182	7	297	6.6	12.8	11.4	-5.9
13.50	34.4	128.3	3680	2.29	2584	8478	7	295	8.1	15.7	14.2	-6.7
14.00	33.5	127.3	3903	2.45	2674	8773	7	294	9.5	18.5	16.9	-7.6
14.50	32.5	126.4	4236	2.63	2764	9068	6	292	10.2	19.7	18.3	-7.5
15.00	31.6	125.3	4535	2.82	2854	9364	6	291	10.5	20.5	19.1	-7.3
15.50	30.7	124.4	4850	3.01	2944	9659	6	287	11.4	22.1	21.1	-6.4
16.00	29.8	122.9	5180	3.22	3034	9954	6	279	13.0	25.2	24.9	-4.1
16.50	28.8	121.0	5566	3.46	3124	10249	6	276	13.6	26.4	26.3	-2.7
17.00	28.0	119.3	5924	3.68	3214	10545	6	276	13.4	26.1	25.9	-2.7
17.50	27.2	117.9	6304	3.92	3304	10840	6	276	13.6	26.4	26.3	-2.6
18.00	26.5	116.5	6679	4.15	3394	11135	6	276	14.3	27.8	27.6	-2.8
18.50	25.7	115.3	7106	4.42	3484	11431	6	276	15.6	30.3	30.1	-3.1
19.00	24.9	114.0	7562	4.70	3574	11726	6	275	16.0	31.0	30.9	-2.6
19.50	24.2	112.9	8010	4.98	3664	12021	6	272	15.8	30.6	30.6	-1.1
20.00	23.6	111.6	8446	5.25	3754	12316	6	269	15.8	30.7	30.7	0.5

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 14

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 16 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	41.0	166.1	124	0.08	172	564	0	349	4.6	8.9	1.8	-9.7
1.00	38.3	168.5	274	0.17	280	919	0	350	5.0	9.7	1.6	-9.5
1.50	36.7	169.0	423	0.26	379	1243	0	339	5.2	10.1	3.7	-9.4
2.00	35.4	163.2	583	0.36	478	1568	7	322	5.7	11.1	6.9	-8.7
2.50	34.6	156.8	744	0.46	577	1893	7	308	5.7	11.1	8.8	-6.9
3.00	34.7	150.2	884	0.55	676	2219	7	296	5.5	10.6	9.5	-4.7
3.50	34.8	144.7	1017	0.63	771	2528	6	292	5.2	10.2	9.4	-1.9
4.00	34.9	140.5	1148	0.71	865	2838	7	295	4.9	9.6	8.7	-4.1
4.50	34.9	138.3	1284	0.80	960	3148	7	298	4.6	9.0	7.8	-4.2
5.00	35.1	136.2	1409	0.88	1054	3458	6	286	3.7	7.1	6.8	-2.0
5.50	36.2	133.7	1476	0.92	1144	3753	6	274	3.1	6.1	6.1	-0.4
6.00	37.0	131.5	1553	0.96	1234	4049	6	279	3.4	6.6	6.6	-1.0
6.50	37.5	129.6	1648	1.02	1324	4344	6	279	3.8	7.3	7.3	-1.0
7.00	37.7	127.4	1747	1.09	1414	4639	6	282	3.8	7.3	7.3	-1.6
7.50	37.8	126.3	1856	1.15	1504	4934	7	295	4.2	8.2	7.4	-3.5
8.00	37.5	125.9	1994	1.24	1594	5230	7	299	4.7	9.1	8.0	-4.3
8.50	37.2	125.3	2134	1.33	1684	5525	7	293	4.7	9.1	8.4	-2.5
9.00	37.0	124.3	2269	1.41	1774	5820	6	289	4.9	9.5	9.0	-3.0
9.50	36.7	123.3	2415	1.50	1864	6116	6	288	4.9	9.5	9.1	-2.9
10.00	36.5	122.4	2554	1.59	1954	6411	6	289	5.0	9.7	9.2	-3.1
10.50	36.2	121.7	2705	1.68	2044	6706	6	289	5.4	10.5	9.9	-3.4
11.00	35.8	120.9	2870	1.78	2134	7001	6	284	6.2	12.0	11.7	-2.9
11.50	35.2	119.6	3062	1.90	2224	7297	6	282	6.8	13.3	13.0	-2.8
12.00	34.6	118.6	3262	2.03	2314	7592	6	289	7.1	13.8	13.1	-4.5
12.50	33.9	118.3	3482	2.16	2404	7887	7	296	7.1	13.7	12.3	-6.0
13.00	33.4	118.3	3665	2.29	2494	8182	7	298	6.6	12.9	11.4	-6.1
13.50	33.0	118.3	3880	2.41	2584	8478	7	302	6.5	12.8	10.8	-6.9
14.00	32.6	118.7	4081	2.54	2674	8773	6	285	7.0	13.5	13.1	-3.5
14.50	32.2	117.0	4288	2.66	2764	9068	6	276	7.5	14.5	14.5	-1.6
15.00	31.8	116.5	4500	2.80	2854	9364	7	293	7.5	14.6	13.4	-5.6
15.50	31.3	116.6	4737	2.94	2944	9659	7	296	9.4	18.2	16.4	-7.9
16.00	30.4	116.4	5062	3.15	3034	9954	7	297	11.2	21.7	19.4	-9.7
16.50	29.5	116.6	5409	3.36	3124	10249	7	297	12.7	24.7	22.0	-11.3
17.00	28.4	116.6	5826	3.62	3214	10545	6	292	14.8	28.2	26.1	-10.7
17.50	27.3	116.0	6277	3.90	3304	10840	6	288	15.3	29.8	28.3	-9.4
18.00	26.3	115.4	6738	4.19	3394	11135	6	286	15.6	30.4	29.2	-8.3
18.50	25.4	114.7	7203	4.48	3484	11431	6	282	15.9	30.9	30.2	-6.2
19.00	24.6	113.7	7667	4.76	3574	11726	6	280	15.8	30.7	30.3	-5.3
19.50	23.9	113.0	8124	5.05	3664	12021	6	284	15.9	30.9	30.1	-7.4
20.00	23.2	112.6	8609	5.35	3754	12316	6	286	16.3	31.7	30.4	-8.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 15

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 16 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 23:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	74.3	355.7	30	0.02	172	564	3	151	0.5	0.9	-0.5	0.8
1.00	82.3	330.8	29	0.02	280	919	5	209	0.5	0.9	0.4	0.8
1.50	79.9	11.5	56	0.03	379	1243	5	238	1.6	3.2	2.7	1.7
2.00	76.0	41.4	103	0.06	478	1568	6	251	2.1	4.2	3.9	1.4
2.50	72.2	53.8	165	0.10	577	1893	6	288	3.1	6.0	5.7	-1.8
3.00	68.1	85.0	246	0.15	676	2218	7	304	5.0	9.7	8.1	-5.4
3.50	61.2	100.2	388	0.24	771	2528	7	300	5.1	10.0	8.6	-5.0
4.00	56.6	104.7	528	0.33	865	2838	7	299	5.1	9.9	8.6	-4.8
4.50	52.6	108.6	685	0.43	960	3148	7	300	5.6	10.8	9.4	-5.3
5.00	49.2	110.8	856	0.53	1054	3458	7	303	6.4	12.4	10.5	-6.7
5.50	45.5	113.6	1061	0.66	1144	3753	7	304	7.6	14.7	12.2	-8.2
6.00	42.0	115.2	1299	0.81	1234	4049	7	308	7.4	14.4	11.4	-8.8
6.50	40.1	117.8	1496	0.93	1324	4344	7	314	7.7	14.9	10.6	-10.4
7.00	37.8	120.2	1740	1.08	1414	4639	7	316	9.0	17.5	12.3	-12.5
7.50	35.5	122.5	2019	1.25	1504	4934	7	318	9.4	18.3	12.2	-13.7
8.00	33.8	124.8	2285	1.42	1594	5230	7	317	8.8	17.1	11.6	-12.5
8.50	32.6	125.5	2533	1.57	1684	5525	7	309	9.0	17.5	13.5	-11.1
9.00	31.7	125.5	2824	1.75	1774	5820	7	301	9.6	18.6	15.9	-9.6
9.50	30.1	124.7	3105	1.93	1864	6116	6	292	9.0	17.6	16.2	-6.7
10.00	29.4	123.4	3354	2.08	1954	6411	6	288	8.6	16.7	15.9	-5.1
10.50	28.8	122.3	3602	2.24	2044	6706	6	288	8.7	16.9	16.1	-5.2
11.00	28.2	121.3	3861	2.40	2134	7001	5	290	8.0	17.5	13.[illegible]	-6.0
11.50	27.9	120.7	4132	2.57	2224	7297	6	289	8.5	16.5	15.6	-5.4
12.00	27.3	119.9	4359	2.71	2314	7592	6	282	8.0	15.6	15.3	-3.3
12.50	27.0	118.8	4593	2.85	2404	7887	6	279	8.0	15.5	15.3	-2.5
13.00	26.8	117.9	4911	2.99	2494	8182	6	280	8.1	15.7	15.5	-2.7
13.50	26.5	117.0	5054	3.14	2584	8478	6	284	8.1	15.7	15.2	-3.7
14.00	26.3	116.6	5281	3.28	2674	8773	6	290	7.7	14.9	14.0	-5.0
14.50	26.1	116.4	5511	3.42	2764	9068	7	298	8.2	15.9	14.1	-7.4
15.00	25.8	116.7	5771	3.59	2854	9364	7	304	7.9	15.4	12.8	-8.6
15.50	25.7	117.0	5984	3.72	2944	9659	7	306	7.7	14.9	12.1	-8.8
16.00	25.5	117.4	6227	3.87	3034	9954	7	302	8.2	15.9	13.4	-8.5
16.50	25.3	117.4	6473	4.02	3124	10249	7	293	9.4	18.2	16.8	-7.0
17.00	24.9	117.0	6786	4.22	3214	10545	6	286	11.9	23.1	22.2	-6.5
17.50	24.3	116.3	7176	4.46	3304	10840	6	284	11.8	23.0	22.3	-5.6
18.00	24.0	115.8	7479	4.65	3394	11135	6	286	9.8	19.0	18.3	-5.1
18.50	23.8	115.6	7754	4.82	3484	11431	6	291	9.3	18.0	16.8	-6.6
19.00	23.6	115.5	8034	4.99	3574	11726	7	294	10.1	19.6	17.9	-8.0
19.50	23.3	115.4	8359	5.19	3664	12021	7	298	9.6	18.7	16.4	-8.9
20.00	23.2	115.7	8609	5.35	3754	12316	7	306	8.5	16.5	13.4	-9.6

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 16

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: LOST AT 7:00

DATE OF LAUNCH: 17 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME	ELEV.	AZIMUTH	R A N G E		M.S.L. ALTITUDE		D I R E C T I O N		V E L O C I T Y		
									METERS/SEC	NAUTICAL MILES PER HOUR	
MINUTES	D E G R E E S		METERS	MILES	METERS	FEET	CLASS 0- 7	DEGREES	(SPEED)	(SPEED) (U)	(V)
0.50	33.0	341.5	166	0.10	172	564	4	159	5.4	10.6	-3.7 9.9
1.00	33.5	339.5	326	0.20	280	919	4	161	3.5	6.8	-2.2 6.4
1.50	40.0	341.0	375	0.23	379	1243	3	155	1.5	3.1	-1.4 2.8
2.00	44.5	338.5	421	0.26	478	1568	2	104	1.7	3.3	-3.2 0.8
2.50	49.5	329.8	438	0.27	577	1893	2	104	2.3	4.5	-4.3 1.1
3.00	50.0	325.8	514	0.32	676	2218	3	153	3.2	6.3	-2.8 5.6
3.50	48.2	330.8	632	0.39	771	2528	4	197	3.4	6.6	2.0 6.3
4.00	50.5	339.8	660	0.41	865	2838	6	282	3.6	6.9	6.8 -1.4
4.50	60.0	348.9	517	0.32	960	3148	7	323	6.2	12.1	7.2 -9.8
5.00	72.0	359.2	322	0.20	1054	3458	7	330	7.4	14.4	7.1 -12.5
5.50	81.0	45.0	171	0.11	1144	3753	0	347	6.0	11.6	2.6 -11.2
6.00	86.0	109.0	92	0.05	1234	4049	1	36	2.7	5.3	-3.1 -4.3
6.50	88.7	116.0	29	0.02	1324	4344	2	105	1.8	3.5	-3.3 0.9

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 17

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: LOST AT 6:30 AFTER GOING OVERHEAD

DATE OF LAUNCH: 17 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 06:00 P.D.T.

TIME	ELEV.	AZIMUTH	R A N G E		M.S.L. ALTITUDE		D I R E C T I O N		V E L O C I T Y		
									METERS/SEC	NAUTICAL MILES PER HOUR	
MINUTES	D E G R E E S		METERS	MILES	METERS	FEET	CLASS 0- 7	DEGREES	(SPEED)	(SPEED) (U)	(V)
0.50	45.5	337.2	106	0.07	172	564	4	166	4.4	8.6	-2.0 8.4
1.00	39.0	346.3	267	0.17	280	919	3	151	5.2	10.1	-4.9 8.8
1.50	37.0	333.5	418	0.26	379	1243	3	119	3.5	6.8	-6.0 3.3
2.00	43.5	325.5	436	0.27	478	1568	1	55	1.3	2.5	-2.0 -1.4
2.50	51.0	322.0	415	0.26	577	1893	1	42	0.7	1.4	-1.0 -1.0
3.00	55.0	319.8	429	0.27	676	2218	3	122	0.8	1.5	-1.3 0.8
3.50	57.0	330.0	459	0.29	771	2528	5	227	0.9	1.8	1.3 1.2
4.00	61.5	327.0	435	0.27	865	2838	6	287	2.8	5.4	5.2 -1.6
4.50	69.7	336.0	331	0.21	960	3148	7	315	4.4	8.5	6.0 -6.0
5.00	79.3	343.7	187	0.12	1054	3458	7	331	5.4	10.4	5.0 -9.1
5.50	88.5	44.6	28	0.03	1144	3753	0	344	3.1	6.1	1.7 -5.8
6.00	90.0	44.6	0	0.00	1234	4049	1	45	0.9	1.8	-1.3 -1.3

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 18

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 17 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 07:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	42.3	316.5	119	0.07	172	564	3	139	4.9	9.5	-6.2	7.1
1.00	36.4	310.9	293	0.18	280	919	3	137	5.0	9.7	-6.6	7.1
1.50	37.0	317.1	419	0.26	379	1243	3	132	2.9	5.7	-4.2	3.8
2.00	41.5	316.5	468	0.29	478	1568	2	90	0.5	1.0	-1.0	0.0
2.50	49.4	314.1	440	0.27	577	1893	0	3	0.7	1.4	-0.1	-1.4
3.00	54.3	312.5	440	0.27	676	2218	7	304	0.1	0.3	0.2	-0.2
3.50	58.6	314.3	431	0.27	771	2528	6	290	1.5	3.0	2.8	-1.0
4.00	66.0	315.1	357	0.22	865	2839	7	326	3.5	6.8	3.8	-5.7
4.50	75.6	303.3	230	0.14	960	3148	0	351	4.6	9.0	1.4	-8.9
5.00	78.8	267.3	196	0.12	1054	3458	0	355	4.2	8.2	0.7	-8.2
5.50	78.9	233.2	212	0.13	1144	3753	7	337	4.2	8.2	3.2	-7.6
6.00	77.4	201.5	262	0.16	1234	4049	7	320	5.3	10.2	6.5	-7.8
6.50	73.7	174.6	368	0.23	1324	4344	7	311	6.6	12.9	9.7	-8.5
7.00	68.0	158.2	545	0.34	1414	4639	7	312	7.7	14.9	11.1	-9.9
7.50	61.8	150.8	772	0.48	1504	4934	7	315	8.2	15.9	11.3	-11.3
8.00	56.4	147.2	1017	0.63	1594	5230	7	314	8.3	16.1	11.6	-11.2
8.50	52.2	144.2	1257	0.78	1684	5525	7	309	7.8	15.1	11.8	-9.4
9.00	49.4	141.4	1466	0.91	1774	5820	7	308	6.6	12.7	10.1	-7.8
9.50	47.7	140.3	1638	1.02	1864	6116	7	309	6.3	12.3	9.6	-7.7
10.00	45.8	138.8	1838	1.14	1954	6411	7	303	7.1	13.8	11.6	-7.6
10.50	44.0	136.8	2050	1.27	2044	6706	7	298	7.1	13.9	12.2	-6.5
11.00	42.7	134.9	2243	1.39	2134	7001	7	298	6.5	12.7	11.2	-5.9
11.50	41.7	133.8	2424	1.51	2224	7297	7	297	6.2	12.3	11.0	-5.5
12.00	40.8	132.3	2607	1.63	2314	7592	7	296	6.7	13.0	11.7	-5.7
12.50	39.8	131.3	2809	1.76	2404	7887	7	296	7.0	13.6	12.3	-5.9
13.00	38.9	130.0	3012	1.87	2494	8182	6	292	7.9	15.3	14.2	-5.6
13.50	37.7	128.6	3261	2.03	2584	8478	6	291	9.2	17.9	16.7	-6.5
14.00	36.4	127.1	3540	2.20	2674	8773	6	290	10.4	20.2	19.0	-6.8
14.50	35.0	125.6	3856	2.40	2764	9068	6	289	11.2	21.7	20.5	-7.2
15.00	33.7	124.3	4183	2.60	2854	9364	6	285	11.4	22.1	21.3	-5.9
15.50	32.6	122.6	4503	2.80	2944	9659	6	282	11.1	21.6	21.1	-4.6
16.00	31.7	121.3	4806	2.99	3034	9954	6	282	10.8	21.0	20.5	-4.2
16.50	30.9	120.0	5113	3.18	3124	10249	6	278	10.5	20.4	20.2	-2.7
17.00	30.3	118.6	5391	3.35	3214	10545	6	275	10.4	20.1	20.1	-1.6
17.50	29.7	117.3	5680	3.53	3304	10840	6	272	10.0	19.5	19.4	-0.7
18.00	29.3	116.0	5934	3.69	3394	11135	6	270	9.5	18.5	18.5	-0.1
18.50	28.9	114.9	6195	3.85	3484	11431	6	273	10.5	20.5	20.4	-0.9
19.00	28.3	113.8	6519	4.05	3574	11726	6	274	11.7	22.0	22.7	-1.6
19.50	27.7	112.8	6857	4.26	3664	12021	6	274	12.7	24.7	24.6	-1.9
20.00	27.0	111.9	7242	4.50	3754	12316	6	275	13.5	26.2	26.1	-2.1

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 19

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 17 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 09:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	26.5	308.5	317	0.13	172	564	3	131	7.0	13.6	-10.3	-9.9
1.00	27.2	310.8	420	0.26	280	919	3	137	5.4	10.6	-7.2	-7.7
1.50	30.2	313.7	541	0.34	379	1243	3	140	4.1	7.9	-5.1	-6.0
2.00	32.0	314.0	663	0.41	478	1568	3	132	2.6	5.1	-3.8	-3.4
2.50	36.3	313.2	698	0.43	577	1893	2	95	1.0	2.0	-2.0	-0.2
3.00	40.7	310.9	712	0.44	676	2218	1	51	0.8	1.5	-1.2	-1.0
3.50	45.0	309.5	707	0.44	771	2528	0	347	1.3	2.5	0.6	-2.4
4.00	50.9	306.9	651	0.40	865	2838	0	355	3.8	7.3	0.5	-7.3
4.50	57.3	292.8	578	0.36	960	3148	0	6	6.8	13.2	-1.5	-13.2
5.00	60.2	268.3	567	0.35	1054	3458	0	6	8.8	17.1	-1.8	-17.0
5.50	58.7	242.8	657	0.41	1144	3753	0	3	9.2	17.9	-1.0	-17.9
6.00	54.8	226.3	825	0.51	1234	4049	0	3	7.9	15.4	-0.7	-15.4
6.50	53.0	219.0	904	0.56	1324	4344	0	357	6.5	12.7	-0.6	-12.6
7.00	50.3	211.0	1121	0.70	1414	4639	0	346	6.7	13.1	-1.3	-12.7
7.50	48.5	203.6	1274	0.79	1504	4934	0	344	7.4	14.3	-4.0	-13.9
8.00	46.3	198.1	1462	0.91	1594	5230	0	339	7.9	15.3	-5.5	-14.2
8.50	44.5	191.0	1648	1.02	1684	5525	7	332	8.3	16.1	-8.4	-13.1
9.00	43.5	185.2	1802	1.12	1774	5820	7	318	8.3	16.0	-10.5	-12.0
9.50	42.3	180.3	1978	1.23	1864	6116	7	318	7.0	13.5	-9.1	-10.0
10.00	41.9	176.8	2106	1.31	1954	6411	7	313	6.0	11.6	-8.4	-8.0
10.50	41.5	173.6	2238	1.39	2044	6706	7	314	5.9	11.5	-8.3	-8.1
11.00	41.0	171.0	2381	1.48	2134	7001	7	318	6.3	12.2	-8.1	-9.1
11.50	40.2	168.7	2556	1.59	2224	7297	7	316	6.8	13.3	-8.2	-9.6
12.00	39.5	166.1	2729	1.70	2314	7592	7	311	7.0	13.6	-10.3	-8.9
12.50	38.9	163.6	2900	1.80	2404	7887	7	301	7.1	13.8	-11.8	-7.1
13.00	38.6	160.4	3044	1.89	2494	8182	7	297	7.5	14.5	-12.9	-6.6
13.50	38.0	157.8	3225	2.00	2584	8478	6	292	8.2	15.9	-14.7	-5.9
14.00	37.6	154.2	3389	2.11	2674	8773	7	294	7.9	15.4	-14.1	-6.2
14.50	37.0	152.5	3583	2.23	2764	9068	7	299	7.8	15.2	-13.2	-7.4
15.00	36.4	150.1	3744	2.35	2854	9364	7	295	9.3	18.0	-16.4	-7.6
15.50	35.5	147.7	4038	2.51	2944	9659	7	294	10.1	19.7	-18.0	-8.0
16.00	34.7	145.3	4289	2.67	3034	9954	7	293	10.5	20.4	-18.8	-8.0
16.50	33.8	143.2	4571	2.84	3124	10249	7	294	11.0	21.4	-19.5	-8.9
17.00	32.9	141.3	4869	3.03	3214	10545	7	295	11.1	21.5	-19.5	-9.0
17.50	32.1	139.7	5165	3.21	3304	10840	7	293	11.3	22.0	-20.3	-8.5
18.00	31.3	137.9	5477	3.40	3394	11135	6	288	11.4	22.2	-21.2	-6.8
18.50	30.7	136.1	5760	3.58	3484	11431	6	283	11.0	21.4	-20.8	-4.8
19.00	30.2	134.3	6031	3.75	3574	11726	6	278	10.9	21.2	-21.0	-2.9
19.50	29.8	132.4	6286	3.91	3664	12021	6	274	11.6	22.4	-22.4	-1.6
20.00	29.3	130.4	6576	4.09	3754	12316	6	274	12.2	23.7	-23.7	-1.5

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 20

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 17 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 09:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	=====VELOCITY===== METERS/SEC (SPEED)	NAUTICAL MILES PER HOUR (SPEED)	(U)	(V)
0.50	78.7	341.0	22	0.01	172	564	3	135	1.3	2.6	-1.8	1.8
1.00	69.8	314.8	79	0.05	280	919	3	130	2.1	4.2	-3.2	2.7
1.50	64.9	314.2	148	0.09	379	1243	3	133	1.7	3.3	-2.4	2.2
2.00	66.3	313.5	182	0.11	478	1568	2	86	0.6	1.2	-1.2	-0.1
2.50	71.3	305.3	174	0.11	577	1893	0	2	3.0	5.8	-0.2	-5.8
3.00	76.5	248.5	147	0.09	676	2218	0	2	6.9	13.5	-0.4	-13.5
3.50	63.5	206.2	352	0.22	771	2528	0	4	9.7	18.9	-1.5	-18.8
4.00	50.5	196.0	660	0.41	865	2838	0	7	11.7	22.7	-2.6	-22.6
4.50	40.7	193.1	1041	0.65	960	3148	0	8	11.8	22.8	-3.1	-22.6
5.00	36.0	191.8	1363	0.85	1054	3458	0	5	9.6	18.6	-1.7	-18.6
5.50	33.8	190.3	1613	1.00	1144	3753	0	358	7.7	15.0	0.6	-15.0
6.00	32.8	188.2	1815	1.13	1234	4049	0	345	7.4	14.4	3.7	-13.9
6.50	31.9	184.9	2024	1.26	1324	4344	0	342	8.3	16.1	4.9	-15.4
7.00	30.7	182.7	2274	1.41	1414	4639	0	342	9.3	18.0	5.6	-17.1
7.50	29.5	180.0	2545	1.58	1504	4934	7	336	9.5	18.4	7.4	-16.9
8.00	28.7	177.5	2795	1.74	1594	5230	7	331	8.8	17.2	8.2	-15.1
8.50	28.2	175.2	3021	1.88	1684	5525	7	324	7.6	14.9	8.6	-12.1
9.00	28.2	173.0	3180	1.98	1774	5820	7	319	6.2	12.1	7.9	-9.1
9.50	28.4	171.4	3329	2.07	1864	6116	7	322	5.3	10.3	6.3	-8.1
10.00	28.6	170.3	3467	2.15	1954	6411	7	330	4.9	9.4	4.7	-8.2
10.50	28.8	169.7	3602	2.24	2044	6706	7	334	5.4	10.6	4.7	-9.5
11.00	28.7	168.0	3741	2.35	2134	7001	7	329	6.7	13.9	6.6	-11.1
11.50	28.5	167.7	3978	2.47	2221	7297	7	324	7.5	14.7	8.6	-11.9
12.00	28.2	166.3	4196	2.61	2314	7592	7	324	8.3	16.1	9.5	-13.0
12.50	27.8	165.1	4428	2.76	2404	7887	7	324	8.4	16.3	9.5	-13.3
13.00	27.5	164.0	4662	2.90	2494	8182	7	324	8.2	16.0	9.2	-13.0
13.50	27.2	163.1	4903	3.05	2584	8478	7	320	8.6	16.8	8.9	-14.2
14.00	26.8	162.4	5167	3.21	2674	8773	7	328	8.8	17.1	9.2	-14.5
14.50	26.5	161.6	5415	3.36	2764	9068	7	324	8.4	16.2	9.5	-13.1
15.00	26.2	160.8	5646	3.51	2854	9364	7	321	8.7	16.9	10.7	-13.1
15.50	26.0	159.8	5905	3.67	2944	9659	7	314	9.2	17.9	12.8	-12.5
16.00	25.8	158.5	6144	3.82	3034	9954	7	307	8.9	17.2	13.8	-10.4
16.50	25.7	157.2	6358	3.95	3124	10249	7	299	8.5	16.4	14.3	-8.1
17.00	25.7	155.7	6545	4.07	3214	10545	6	290	8.8	17.3	16.1	-6.0
17.50	25.7	153.9	6732	4.18	3304	10840	6	286	10.1	19.5	18.8	-5.4
18.00	25.6	151.9	6950	4.32	3394	11135	6	285	11.4	22.2	21.4	-5.8
18.50	25.4	149.8	7203	4.48	3484	11431	6	282	11.8	23.0	22.5	-4.7
19.00	25.3	147.7	7435	4.61	3574	11726	6	281	12.5	24.4	23.9	-4.7
19.50	25.0	145.6	7720	4.80	3664	12021	6	281	13.9	26.9	26.4	-5.3
20.00	24.7	143.4	8023	4.99	3754	12316	6	280	14.3	27.7	27.3	-4.6

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY HERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 21

LOCATION: SAN JOSE STATE UNIVERSITY CALIFORNIA

SPECIFICS: BALLOON WENT BEHIND RADAR

DATE OF LAUNCH: 17 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 10:00 P.D.T.

TIME	ELEV.	AZIMUTH	R A N G E		M.S.L. ALTITUDE		D I R E C T I O N		V E L O C I T Y METERS/SEC	NAUTICAL MILES PER HOUR		
MINUTES	D E G R E E S		METERS	MILES	METERS	FEET	CLASS 0- 7	DEGREES	(SPEED)	(SPEED)	(U)	(V)
0.50	70.0	302.8	39	0.02	172	564	3	123	1.3	2.5	-2.1	1.4
1.00	70.1	303.2	78	0.05	280	919	3	148	1.6	2.7	-1.4	2.2
1.50	69.3	319.7	119	0.07	379	1243	4	187	1.5	2.9	0.3	2.9
2.00	70.8	337.6	144	0.09	478	1568	7	293	1.2	2.2	2.1	-0.9
2.50	82.8	348.3	65	0.04	577	1893	6	286	0.6	1.1	1.1	-0.3
3.00	78.4	350.1	126	0.08	676	2218	0	5	7.1	13.7	-1.2	-13.7
3.50	62.3	169.4	353	0.22	771	2529	0	9	13.5	26.3	-4.0	-26.0
4.00	49.1	192.0	894	0.43	865	2838	0	19	11.0	23.2	-7.5	-21.9
4.50	39.8	195.4	1075	0.67	960	3148	0	21	11.7	22.8	-8.1	-21.3
5.00	35.4	196.4	1393	0.87	1064	3458	0	16	9.5	18.4	-6.2	-17.7
5.50	33.3	195.2	1642	1.02	1144	3753	0	5	7.8	15.5	-5.2	-14.5
6.00	32.5	193.6	1837	1.14	1234	4049	0	343	7.0	13.6	-3.9	-12.9
6.50	32.1	189.3	2009	1.25	1324	4344	7	335	8.1	15.8	-5.7	-14.3
7.00	31.1	185.8	2238	1.39	1414	4639	0	341	8.6	16.7	-5.6	-15.0
7.50	30.2	183.6	2474	1.54	1504	4934	0	343	8.3	16.1	-5.6	-15.4
8.00	29.5	181.8	2704	1.68	1594	5230	0	343	8.1	15.7	-4.5	-15.1
8.50	28.9	180.3	2935	1.82	1684	5525	0	339	6.8	13.2	-4.7	-12.3
9.00	29.0	178.9	3085	1.92	1774	5820	7	337	5.4	10.5	-4.2	-9.6
9.50	29.1	178.0	3334	2.01	1864	6116	0	343	5.6	10.9	-3.1	-10.4
10.00	29.0	177.4	3410	2.12	1954	6411	0	346	6.2	12.1	-2.9	-11.8
10.50	28.8	176.8	3602	2.24	2044	6706	0	348	6.5	12.7	-2.7	-12.4
11.00	28.6	176.4	3797	2.36	2134	7001	0	349	6.9	13.4	-2.6	-13.1
11.50	28.3	176.0	4012	2.49	2224	7297	0	345	7.7	14.9	-3.8	-14.4
12.00	27.9	175.2	4250	2.64	2314	7592	0	342	9.0	17.4	-5.5	-16.5
12.50	27.3	174.3	4534	2.82	2404	7887	0	342	11.4	22.1	-6.8	-21.0
13.00	26.3	173.4	4917	3.06	2494	8182	0	339	9.8	18.9	-7.0	-17.6
13.50	26.2	172.5	5099	3.17	2584	8478	7	331	7.9	15.1	-7.3	-13.2
14.00	26.0	171.5	5351	3.33	2674	8773	7	332	8.6	16.8	-8.0	-14.7
14.50	25.8	170.6	5585	3.47	2764	9068	7	328	8.5	16.5	-8.7	-14.0
15.00	25.6	169.5	5823	3.62	2854	9364	7	323	8.9	17.3	-10.3	-13.9
15.50	25.4	168.3	6065	3.77	2944	9659	7	320	8.7	16.8	-10.7	-13.0
16.00	25.3	167.2	6283	3.90	3034	9954	7	316	8.5	16.5	-11.5	-11.9
16.50	25.2	165.9	6503	4.04	3124	10249	7	314	9.3	18.0	-13.0	-12.5
17.00	25.0	164.6	6755	4.20	3214	10545	7	312	9.4	18.3	-13.6	-12.3
17.50	24.9	163.3	6980	4.34	3304	10840	7	308	9.3	17.9	-14.0	-11.1
18.00	24.8	162.0	7207	4.48	3394	11135	7	302	9.1	17.8	-15.1	-9.4
18.50	24.8	160.5	7402	4.60	3484	11431	7	298	9.6	18.6	-16.4	-8.8
19.00	24.7	159.0	7631	4.74	3574	11726	7	299	10.1	19.6	-17.1	-9.5

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 22

LOCATION: SAN JOSE STATE UNIVERSITY, CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 17 AUGUST 1978

ELEVATION OF LAUNCH SITE: 210 FEET

TIME OF LAUNCH: 11:00 P.D.T.

TIME MINUTES	ELEV. DEG	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	H.S.L. ALTITUDE METERS	H.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	78.9	15.3	21	0.01	172	564	5	232	0.5	1.1	0.8	0.6
1.00	81.4	52.1	33	0.03	280	910	7	325	0.7	1.3	0.8	-1.1
1.50	84.2	114.6	32	0.02	379	1243	7	336	1.0	2.0	0.8	-1.8
2.00	81.5	124.7	62	0.04	478	1568	7	314	1.4	2.7	2.0	-1.9
2.50	77.3	128.6	116	0.07	577	1893	7	336	2.1	4.1	1.7	-3.8
3.00	73.4	146.0	183	0.11	676	2218	0	12	3.5	6.7	-1.4	-6.6
3.50	68.4	170.0	280	0.17	771	2528	1	28	6.0	11.7	-5.5	-10.3
4.00	59.3	188.2	476	0.30	865	2838	1	39	7.5	14.5	-9.2	-11.2
4.50	53.4	200.7	665	0.41	960	3148	1	47	7.2	14.1	-10.3	-9.5
5.00	49.1	206.8	858	0.53	1054	3458	1	41	6.7	13.0	-8.6	-9.8
5.50	45.8	208.4	1050	0.65	1144	3753	1	28	5.9	11.5	-5.4	-10.1
6.00	44.0	207.1	1212	0.75	1234	4049	0	13	5.2	10.2	-2.2	-9.9
6.50	42.9	204.8	1356	0.84	1324	4344	0	6	5.3	10.4	-1.1	-10.3
7.00	41.7	203.8	1515	0.94	1414	4639	0	3	5.7	11.1	-0.6	-11.1
7.50	40.6	200.5	1680	1.04	1504	4934	0	0	6.4	12.4	-0.1	-12.4
8.00	39.2	198.3	1876	1.17	1594	5230	0	2	7.2	14.1	-0.5	-14.0
8.50	37.7	196.7	2096	1.30	1684	5525	0	6	8.1	15.8	-1.5	-15.7
9.00	36.0	195.7	2354	1.46	1774	5820	0	10	9.1	17.7	-3.2	-17.4
9.50	34.3	195.4	2639	1.64	1864	6116	0	14	8.5	16.6	-4.0	-16.1
10.00	33.4	195.4	2866	1.78	1954	6411	0	18	6.8	13.3	-4.0	-12.7
10.50	33.0	195.7	3049	1.89	2044	6706	1	23	6.4	12.5	-4.9	-11.5
11.00	32.5	196.3	3249	2.02	2134	7001	1	25	6.9	13.4	-5.6	-12.1
11.50	32.0	196.8	3457	2.15	2224	7297	0	21	7.3	14.2	-5.2	-13.2
12.00	31.6	196.9	3686	2.29	2314	7592	0	15	8.3	16.2	-4.3	-15.6
12.50	30.6	196.5	3957	2.46	2404	7887	0	11	9.6	18.7	-3.6	-18.3
13.00	29.7	196.1	4260	2.65	2494	8182	0	7	10.6	20.5	-2.6	-20.4
13.50	28.8	195.3	4584	2.85	2584	8478	0	4	10.3	20.0	-1.5	-20.0
14.00	28.2	194.6	4868	3.02	2674	8773	0	359	8.9	17.3	0.3	-17.3
14.50	27.9	193.6	5099	3.17	2764	9068	0	350	8.1	15.8	2.8	-15.5
15.00	27.7	192.4	5314	3.30	2854	9364	0	344	7.0	15.1	4.2	-14.5
15.50	27.6	191.2	5509	3.42	2944	9659	0	344	7.8	15.1	4.1	-14.5
16.00	27.4	190.2	5730	3.56	3034	9954	0	346	8.1	15.8	3.8	-15.3
16.50	27.2	189.2	5954	3.70	3124	10249	0	345	8.3	16.1	4.3	-15.5
17.00	27.0	188.2	6182	3.84	3214	10545	0	339	8.2	16.0	5.6	-14.9
17.50	26.9	187.0	6386	3.97	3304	10840	7	334	8.7	16.8	7.3	-15.2
18.00	26.7	185.7	6621	4.11	3394	11135	7	333	9.3	18.1	8.2	-16.2
18.50	26.5	184.4	6859	4.26	3484	11431	7	329	9.8	19.0	9.7	-16.3
19.00	26.3	182.8	7102	4.41	3574	11726	7	324	9.8	19.0	11.3	-15.4
19.50	26.2	181.4	7316	4.55	3664	12021	7	320	9.6	18.6	12.1	-14.2
20.00	26.1	179.9	7532	4.68	3754	12316	7	319	9.7	18.8	12.4	-14.1

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 1

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 31 JULY 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 11:05 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	ALTITUDE M.S.L. METERS	ALTITUDE M.S.L. FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	64.0	220.0	53	0.03	210	689	1	41	1.8	3.4	-2.2	-2.6
1.00	69.0	221.0	105	0.07	318	1044	1	66	0.7	1.3	-1.2	-0.5
1.50	74.0	231.0	90	0.06	417	1368	7	294	0.9	1.7	1.6	-0.7
2.00	76.0	191.0	103	0.06	516	1693	7	308	5.3	10.2	8.0	-6.3
2.50	59.0	145.0	308	0.19	615	2018	7	319	5.4	10.5	6.9	-8.0
3.00	57.0	151.0	397	0.25	714	2343	7	287	2.1	4.1	3.6	-1.0
3.50	59.0	137.0	425	0.26	809	2653	5	238	2.0	3.9	3.3	2.1
4.00	63.0	134.0	408	0.25	903	2963	2	102	1.7	3.4	-3.3	0.7
4.50	69.0	147.0	344	0.21	998	3273	2	81	3.2	6.1	-6.0	-1.0
5.00	71.5	161.2	331	0.21	1093	3583	2	85	3.3	6.3	-6.3	-0.6
5.50	74.2	181.5	306	0.19	1182	3876	2	71	4.5	8.7	-8.3	-2.8
6.00	70.0	200.4	426	0.26	1272	4174	1	33	4.5	8.7	-4.7	-7.3
6.50	66.3	195.6	553	0.34	1362	4469	0	18	4.0	7.7	-2.3	-7.3
7.00	63.5	198.3	664	0.41	1452	4764	1	22	4.7	9.0	-6.3	-7.9
7.50	60.1	200.2	828	0.51	1542	5059	0	22	5.4	10.4	-3.9	-9.7
8.00	57.2	200.4	986	0.61	1632	5355	1	23	5.2	10.2	-3.9	-9.4
8.50	54.6	200.9	1143	0.71	1722	5650	1	24	5.4	10.6	-4.2	-9.7
9.00	52.5	201.2	1312	0.82	1812	5945	1	25	3.7	7.3	-3.0	-6.6
9.50	52.8	201.5	1366	0.85	1902	6241	0	20	3.2	6.2	-2.2	-5.8
10.00	51.5	201.1	1503	0.93	1992	6536	0	16	3.5	6.8	-1.9	-6.5
10.50	51.5	200.8	1575	0.98	2082	6831	7	311	0.8	1.6	1.2	-1.0
11.00	53.7	198.4	1521	0.94	2172	7126	6	260	2.0	3.9	3.8	0.6
11.50	54.9	196.9	1518	0.94	2262	7422	5	210	2.7	5.2	2.6	4.5
12.00	58.2	198.1	1363	0.85	2352	7717	4	172	2.4	4.6	-0.7	4.6
12.50	59.3	199.4	1385	0.86	2442	8012	3	150	0.7	1.3	-0.7	1.1
13.00	61.2	198.1	1336	0.83	2532	8307	6	250	0.4	0.8	0.8	0.3
13.50	61.4	198.6	1374	0.85	2622	8603	7	312	1.4	2.7	2.0	-1.8
14.00	62.3	196.2	1370	0.85	2712	8898	6	260	2.4	4.6	4.6	0.8
14.50	64.1	193.1	1311	0.81	2802	9193	5	246	1.9	3.6	3.3	1.5
15.00	65.6	192.4	1301	0.81	2892	9489	5	247	5.3	10.3	9.5	4.0
15.50	68.2	180.2	1152	0.72	2982	9784	5	238	7.5	14.6	12.3	7.8
16.00	70.6	174.4	1034	0.64	3072	10079	5	240	4.8	9.3	8.1	4.7
16.50	71.3	166.3	1036	0.64	3162	10374	5	225	5.1	9.9	7.0	7.0
17.00	74.5	158.7	874	0.54	3252	10670	4	199	5.7	11.0	3.6	10.4
17.50	76.6	152.6	772	0.48	3342	10965	5	209	4.8	9.4	4.6	8.2
18.00	77.7	140.7	726	0.45	3432	11260	5	212	4.5	8.7	4.6	7.3
18.50	78.8	132.6	677	0.42	3522	11556	5	206	4.0	7.8	3.4	7.0
19.00	79.2	121.4	663	0.41	3612	11851	5	211	4.4	8.5	4.3	7.3
19.50	79.4	110.1	674	0.42	3702	12146	5	216	3.5	6.8	4.0	5.5
20.00	79.1	104.3	711	0.44	3792	12441	5	225	2.6	5.1	3.6	3.6

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 2

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS: SKY PARTIALLY OBSCURED TO THE SOUTHWEST IN HAZE AND SMOKE

DATE OF LAUNCH: 31 JULY 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	27.2	131.1	210	0.13	210	689	7	308	7.1	13.8	10.9	-8.6
1.00	26.8	128.3	428	0.27	318	1044	7	298	6.6	10.6	9.3	-5.1
1.50	30.5	123.4	535	0.33	417	1368	6	284	3.4	6.6	6.4	-1.6
2.00	33.8	120.7	618	0.38	516	1693	6	285	4.1	8.1	7.8	-2.1
2.50	33.5	117.7	775	0.48	615	2018	7	310	4.6	8.9	6.8	-5.8
3.00	34.5	123.7	890	0.55	714	2343	6	275	3.8	7.4	7.4	-0.6
3.50	35.5	112.5	990	0.62	809	2653	5	246	3.8	7.4	6.8	3.0
4.00	37.8	112.9	1033	0.64	903	2963	7	310	1.3	2.6	2.0	-1.7
4.50	40.0	113.8	1067	0.66	998	3273	7	311	1.4	2.8	2.1	-1.8
5.00	41.6	114.3	1115	0.69	1092	3583	7	313	1.7	3.4	2.5	-2.3
5.50	42.8	115.5	1168	0.72	1162	3878	7	310	3.1	6.0	4.6	-3.8
6.00	42.1	116.5	1295	0.80	1272	4174	7	311	4.6	8.9	6.8	-5.8
6.50	41.3	118.4	1434	0.89	1362	4469	7	319	5.3	10.3	6.7	-7.8
7.00	40.3	120.9	1592	0.99	1452	4764	7	325	6.3	12.2	7.0	-9.9
7.50	39.6	123.6	1748	1.10	1542	5059	0	344	5.4	10.5	2.9	-10.1
8.00	39.7	127.8	1843	1.15	1632	5355	0	345	3.9	7.5	1.9	-7.3
8.50	39.6	128.3	1958	1.22	1722	5650	0	359	2.0	3.9	0.0	-3.9
9.00	41.7	130.6	1919	1.19	1812	5945	0	18	3.2	6.3	-1.9	-6.0
9.50	41.5	133.4	2035	1.26	1902	6241	0	19	4.6	8.7	-2.9	-8.3
10.00	42.9	137.7	2034	1.26	1992	6536	1	24	5.9	11.4	-4.7	-10.4
10.50	42.3	142.2	2176	1.35	2082	6831	0	12	5.7	11.1	-2.3	-10.9
11.00	42.6	144.8	2251	1.40	2172	7126	0	21	2.8	5.4	-1.9	-5.1
11.50	43.6	145.8	2258	1.41	2262	7422	0	11	0.7	1.4	-0.3	-1.4
12.00	44.6	145.5	2282	1.42	2352	7717	7	329	1.2	2.3	1.2	-2.0
12.50	45.0	145.9	2340	1.45	2442	8012	7	294	1.7	3.4	3.1	-1.4
13.00	45.7	144.3	2371	1.47	2532	8307	6	265	2.0	3.9	3.8	0.4
13.50	46.4	143.4	2400	1.49	2622	8603	6	257	1.9	3.7	3.6	0.9
14.00	47.2	141.8	2417	1.50	2712	8898	5	245	3.3	6.5	5.9	2.7
14.50	47.8	138.8	2448	1.52	2802	9193	5	236	4.5	8.7	7.2	4.9
15.00	48.7	135.5	2451	1.52	2892	9489	5	234	5.7	11.0	9.0	6.5
15.50	49.0	131.0	2504	1.56	2982	9784	5	242	5.2	10.0	8.8	4.8
16.00	49.3	128.8	2555	1.59	3072	10079	5	242	4.2	8.2	7.2	3.9
16.50	49.6	125.8	2604	1.62	3162	10374	5	246	4.5	8.7	8.0	3.5
17.00	49.5	123.7	2690	1.67	3252	10670	6	272	2.9	5.5	5.5	-0.2
17.50	49.3	122.8	2748	1.71	3342	10965	6	266	2.4	4.6	4.6	0.4
18.00	49.5	121.9	2808	1.74	3432	11260	6	268	2.7	5.2	5.2	0.2
18.50	49.9	121.9	2880	1.79	3522	11556	6	278	2.6	5.0	4.9	-0.7
19.00	50.0	120.7	2935	1.83	3612	11851	6	263	3.0	5.7	5.7	0.7
19.50	50.1	119.8	3021	1.88	3702	12146	6	262	3.6	7.1	7.0	1.0
20.00	49.8	118.2	3118	1.94	3792	12441	6	258	4.3	8.4	8.2	1.8

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 3

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 1 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 05:20 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL (SPEED)	VELOCITY MILES PER HOUR (U)	VELOCITY MILES PER HOUR (V)
0.50*	777.0	777.0	150	0.09	210	689	3	154	5.0	9.7	-4.3	8.7
1.00*	777.0	777.0	300	0.19	318	1044	3	154	5.0	9.7	-4.3	8.7
1.50	35.0	334.0	450	0.28	417	1368	3	155	4.2	8.1	-3.4	7.3
2.00	37.0	334.4	549	0.34	516	1694	4	158	3.1	6.0	-2.2	5.6
2.50	38.9	335.2	636	0.40	615	2018	4	161	2.2	4.2	-1.4	4.0
3.00	42.0	335.6	680	0.42	714	2343	7	312	0.8	1.5	1.1	-1.0
3.50*	777.0	316.5	594	0.37	809	2653	7	327	2.9	5.6	3.1	-4.7
4.00	57.6	338.7	504	0.32	903	2963	6	279	3.2	6.2	6.1	-1.0
4.50	60.0	355.0	517	0.32	996	3273	6	274	4.4	8.6	8.6	-0.6
5.00	65.0	10.0	462	0.29	1092	3583	5	227	3.1	6.0	4.4	4.1
5.50	59.0	8.0	649	0.40	1182	3878	4	181	4.1	7.9	0.2	7.9
6.00	59.0	7.0	703	0.44	1272	4174	5	215	2.5	4.9	2.8	4.0
6.50	58.0	13.0	787	0.49	1362	4469	5	225	2.5	4.8	3.4	3.4
7.00	58.8	13.3	824	0.51	1452	4764	4	190	2.9	5.6	1.0	5.5
7.50	56.3	12.5	960	0.60	1542	5059	4	192	3.1	6.1	1.2	6.0
8.00	56.5	13.0	1013	0.63	1632	5355	4	202	1.8	3.4	1.3	3.2

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 4

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS: LIGHT GAS AND SMOKE

DATE OF LAUNCH: 1 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 11:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	34.8	307.5	157	0.10	310	689	3	143	4.9	9.5	-5.7	7.6
1.00	36.5	323.2	292	0.18	318	1044	3	152	5.2	10.1	-4.8	8.9
1.50	34.4	323.6	460	0.29	417	1368	3	155	4.5	8.8	-3.8	8.0
2.00	36.4	328.8	562	0.35	516	1693	4	174	3.7	7.2	-0.7	7.2
2.50	37.6	333.4	661	0.41	615	2018	4	169	3.9	7.5	-1.5	7.4
3.00	38.0	334.6	783	0.49	714	2343	4	168	3.2	6.3	-1.3	6.2
3.50	39.7	336.8	851	0.53	809	2653	5	208	2.5	4.8	2.2	4.2
4.00	42.3	342.3	880	0.55	903	2963	5	230	2.3	4.6	3.5	2.9
4.50	44.8	345.4	902	0.56	998	3273	5	241	1.9	3.7	3.2	1.8
5.00	47.4	349.4	910	0.57	1092	3583	6	261	2.6	5.0	4.9	0.8
5.50	50.2	355.2	900	0.56	1182	3878	6	253	2.7	5.2	4.9	1.5
6.00	51.2	359.1	941	0.58	1272	4174	5	234	2.9	5.7	4.6	3.3
6.50	51.6	3.8	1002	0.62	1362	4469	5	225	2.9	5.7	4.0	4.0
7.00	51.6	5.9	1070	0.66	1452	4764	5	213	2.6	5.1	2.7	4.2
7.50	51.2	7.6	1141	0.71	1542	5059	5	213	2.6	5.0	2.7	4.2
8.00	51.7	9.2	1208	0.75	1632	5355	5	205	2.7	5.3	2.3	4.8
8.50	51.3	9.8	1298	0.81	1722	5650	5	204	1.6	3.2	1.3	2.9
9.00	52.7	10.3	1303	0.81	1812	5945	5	226	1.4	2.7	2.0	1.9
9.50	52.9	11.9	1366	0.85	1902	6241	5	220	2.6	5.0	3.3	3.9
10.00	52.7	13.4	1440	0.89	1992	6536	5	207	2.4	4.8	2.2	4.2
10.50	52.0	13.3	1508	0.94	2082	6831	4	190	1.3	2.6	0.4	2.6
11.00	53.7	13.2	1521	0.94	2172	7126	4	199	1.0	2.0	0.6	1.9
11.50	54.0	13.6	1569	0.98	2262	7422	5	221	2.0	3.9	2.6	3.0
12.00	54.1	15.2	1629	1.01	2352	7717	5	234	2.4	4.7	3.8	2.7
12.50	54.3	16.8	1681	1.04	2442	8012	5	239	2.8	5.4	4.6	2.8
13.00	54.2	19.0	1753	1.09	2532	8307	5	236	3.4	6.6	5.5	3.7
13.50	53.8	20.6	1844	1.15	2622	8603	5	230	3.8	7.4	5.7	4.8
14.00	53.2	22.5	1953	1.21	2712	8898	5	230	4.3	8.3	6.3	5.4
14.50	52.5	24.4	2072	1.29	2802	9193	5	228	4.6	8.9	6.6	5.9
15.00	51.7	25.6	2203	1.37	2892	9489	5	224	4.7	9.2	6.3	6.6
15.50	50.9	26.5	2381	1.45	2982	9784	5	223	4.7	9.1	6.2	6.7
16.00	50.2	27.5	2475	1.54	3072	10079	5	239	4.6	8.9	7.6	4.6
16.50	49.3	29.8	2577	1.60	3162	10374	5	235	4.0	7.8	6.4	4.4
17.00	49.5	29.9	2690	1.67	3252	10670	5	215	3.7	7.1	4.1	5.9
17.50	49.2	30.2	2797	1.74	3342	10965	5	215	3.9	7.6	4.4	6.3
18.00	48.7	30.3	2925	1.82	3432	11260	5	213	4.7	9.2	5.1	7.6
18.50	48.4	30.5	3075	1.91	3522	11556	5	214	5.2	10.2	5.8	8.4
19.00	47.3	30.7	3239	2.01	3612	11851	5	209	5.6	10.9	5.4	9.5
19.50	46.5	30.4	3416	2.12	3702	12146	5	209	5.6	10.9	5.2	9.6
20.00	45.9	30.5	3576	2.22	3792	12441	5	213	5.3	10.3	5.6	8.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 5

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS: THIN HAZE AND SMOKE ALL QUADRANTS

DATE OF LAUNCH: 1 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES (SPEED)	VELOCITY MILES PER HOUR (U)	VELOCITY MILES PER HOUR (V)
0.50	32.2	318.4	172	0.11	210	689	3	138	5.6	10.9	-7.3	8.0
1.00	32.8	317.7	335	0.21	318	1044	3	148	4.6	9.0	-4.7	7.6
1.50	35.2	324.6	447	0.28	417	1368	4	171	2.5	4.9	-0.7	4.8
2.00	41.5	328.0	468	0.29	516	1693	7	311	2.3	4.5	3.4	-2.9
2.50	58.6	330.7	313	0.19	615	2018	7	319	4.6	9.0	5.9	-6.8
3.00	72.1	341.0	198	0.12	714	2343	7	309	4.1	7.9	6.1	-5.0
3.50	80.0	16.6	125	0.08	809	2653	7	301	3.5	6.0	5.8	-3.5
4.00	80.1	56.3	140	0.09	903	2963	7	294	2.8	5.5	5.0	-2.3
4.50	77.6	75.5	197	0.12	998	3273	6	272	3.5	6.8	6.8	-0.2
5.00	71.3	77.9	335	0.21	1092	3583	6	259	4.3	8.3	8.2	1.6
5.50	67.2	77.5	454	0.28	1182	3878	5	242	3.8	7.3	6.4	3.5
6.00	64.6	71.4	556	0.35	1272	4174	5	227	3.5	6.8	5.1	3.7
6.50	62.8	67.8	648	0.40	1362	4469	5	211	3.0	5.7	2.9	4.9
7.00	62.6	61.9	700	0.43	1452	4764	5	203	3.2	6.2	2.6	5.8
7.50	61.1	57.9	795	0.49	1542	5059	4	188	2.2	4.4	0.6	4.3
8.00	62.8	53.9	786	0.49	1632	5355	3	126	1.5	2.9	-2.4	1.7
8.50	64.7	51.6	766	0.48	1722	5650	2	104	1.2	2.3	-2.2	0.6
9.00	66.5	49.7	744	0.46	1812	5945	1	66	2.7	5.2	-4.7	-2.1
9.50	71.2	47.8	613	0.38	1902	6241	1	60	4.0	7.8	-6.7	-3.8
10.00	74.9	44.7	510	0.32	1992	6536	2	71	2.6	5.0	-4.7	-1.6
10.50	76.5	40.3	475	0.30	2082	6831	2	97	1.2	2.3	-2.2	0.3
11.00	77.2	38.0	470	0.29	2172	7126	4	183	1.3	2.5	0.1	2.5
11.50	76.0	35.4	539	0.33	2262	7422	4	195	2.4	4.6	1.2	4.4
12.00	75.0	32.8	603	0.37	2352	7717	4	195	1.8	3.5	0.9	3.4
12.50	74.7	32.0	640	0.40	2442	8012	5	205	2.5	4.9	2.0	4.4
13.00	72.8	31.3	752	0.47	2532	8307	5	204	5.2	10.2	4.2	9.3
13.50	69.3	29.5	952	0.59	2622	8603	5	204	6.0	11.7	4.8	10.7
14.00	66.9	28.9	1113	0.69	2712	8898	5	205	4.6	9.0	3.8	8.2
14.50	65.5	28.5	1230	0.76	2802	9193	4	201	3.5	6.7	2.4	6.3
15.00	64.7	27.7	1319	0.82	2892	9489	4	193	2.3	4.4	1.0	4.3
15.50	64.7	27.0	1361	0.85	2982	9784	4	197	3.5	6.8	2.0	6.5
16.00	62.8	26.3	1526	0.95	3072	10079	4	195	3.9	7.6	2.0	7.4
16.50	62.5	25.3	1593	0.99	3162	10374	4	189	1.6	3.1	0.5	3.1
17.00	62.6	25.3	1619	1.01	3252	10670	6	255	0.9	1.8	1.7	0.5
17.50	63.3	26.6	1630	1.01	3342	10965	7	294	1.6	3.0	2.8	-1.2
18.00	64.0	28.6	1624	1.01	3432	11260	7	296	2.3	4.5	4.1	-2.0
18.50	64.4	31.7	1639	1.02	3522	11556	6	265	2.3	4.5	4.5	0.4
19.00	64.1	32.6	1704	1.06	3612	11851	6	251	2.5	4.8	4.6	1.5
19.50	64.0	34.8	1756	1.09	3702	12146	6	260	2.5	4.8	4.8	0.8
20.00	63.9	36.0	1808	1.12	3792	12441	6	251	2.1	4.1	3.9	1.3

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 6

LOCATION: MORGAN HILL, CALIFORNIA

SPECIFICS: LATE

DATE OF LAUNCH: 2 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 0030 G.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	53.8	312.5	79	0.05	210	689	3	135	3.7	7.1	-5.0	5.1
1.00	44.5	315.4	220	0.14	318	1044	3	140	5.3	10.3	-6.7	7.9
1.50	38.4	318.4	397	0.25	417	1368	3	141	5.0	9.8	-6.2	7.6
2.00	38.5	318.5	520	0.32	516	1693	3	136	4.2	8.1	-5.7	5.8
2.50	38.4	317.3	647	0.40	615	2018	3	138	2.9	5.6	-3.8	4.2
3.00	41.4	318.9	694	0.43	714	2343	4	163	1.5	2.9	-0.8	2.8
3.50	44.1	320.4	729	0.45	809	2653	6	249	0.4	0.7	0.7	0.3
4.00	49.4	320.2	687	0.43	903	2963	7	304	1.6	3.1	2.5	-1.7
4.50	54.5	322.8	639	0.40	998	3273	7	302	3.9	7.5	6.3	-4.0
5.00	64.5	328.9	472	0.29	1092	3583	6	287	3.8	7.4	7.1	-2.2
5.50	66.4	339.1	472	0.29	1187	3878	6	274	2.1	4.0	4.0	-0.2
6.00	70.5	343.2	414	0.26	1272	4174	7	311	2.6	5.1	3.8	-3.3
6.50	74.8	351.6	342	0.21	1362	4469	6	281	3.2	6.3	6.2	-1.2
7.00	74.8	11.2	367	0.23	1452	4764	6	259	4.0	7.7	7.5	1.5
7.50	73.5	25.4	427	0.27	1542	5059	6	251	4.3	8.4	7.9	2.7
8.00	70.4	35.3	545	0.34	1632	5355	5	240	4.0	7.7	6.7	3.9
8.50	68.5	37.6	638	0.40	1722	5650	5	236	2.4	4.6	3.8	2.6
9.00	68.3	39.5	680	0.42	1812	5945	6	252	1.4	2.7	2.6	0.8
9.50	66.5	41.5	709	0.44	1902	6241	5	235	1.8	3.4	2.8	2.0
10.00	67.5	41.5	763	0.49	1992	6536	5	220	1.9	3.7	2.4	2.9
10.50	67.4	41.5	824	0.51	2082	6831	5	220	1.2	2.4	1.6	1.8
11.00	67.5	41.4	857	0.53	2172	7126	5	211	1.2	2.3	1.2	2.0
11.50	67.5	40.5	895	0.56	2262	7422	5	223	1.2	2.4	1.6	1.8
12.00	67.5	41.5	932	0.58	2352	7717	5	223	1.7	3.4	2.3	2.4
12.50	66.9	38.8	998	0.62	2442	8012	5	209	1.9	3.6	1.8	3.2
13.00	66.8	40.2	1042	0.65	2532	8307	4	195	1.8	3.5	0.9	3.3
13.50	66.5	38.6	1096	0.68	2622	8603	4	189	1.9	3.7	0.6	3.7
14.00	66.4	37.2	1140	0.71	2712	8898	5	220	1.3	2.5	1.6	1.9
14.50	66.5	36.5	1174	0.73	2802	9193	3	147	3.0	5.8	-3.2	4.9
15.00	66.5	29.2	1213	0.75	2892	9489	3	142	4.5	8.7	-5.4	6.9
15.50	66.3	26.5	1260	0.79	2982	9784	4	165	2.1	4.0	-1.1	3.8
16.00	66.3	25.4	1304	0.81	3072	10079	4	180	2.3	4.4	0.6	4.4
16.50	65.5	24.7	1395	0.87	3162	10374	4	177	3.7	7.2	-0.4	7.2
17.00	64.5	21.3	1502	0.93	3252	10670	4	161	3.4	6.5	-2.2	6.1
17.50	64.5	19.5	1503	0.96	3342	10965	3	149	2.2	4.3	-2.2	3.7
18.00	64.5	17.5	1588	0.99	3432	11260	4	171	2.7	5.3	-0.8	5.2
18.50	63.7	16.9	1690	1.05	3522	11556	4	188	2.9	5.5	0.8	5.5
19.00	63.4	16.6	1758	1.09	3612	11851	4	178	0.6	1.2	0.0	1.2
19.50	64.8	16.5	1725	1.07	3702	12146	1	46	0.7	1.4	-1.0	-1.0
20.00	65.0	15.9	1721	1.07	3792	12441	2	93	0.6	1.2	-1.2	0.1

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 7

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS: SKY OBSCURED (FOG)

DATE OF LAUNCH: 2 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	59.0	312.0	65	0.04	210	689	3	138	2.2	4.3	-2.9	3.2
1.00	58.2	317.8	134	0.08	318	1044	3	143	2.3	4.5	-2.7	3.6

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 8

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS: THIN HAZE AND SMOKE ALL QUADRANTS

DATE OF LAUNCH: 2 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 11:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	47.2	309.3	100	0.06	210	689	3	140	2.9	5.5	-3.6	4.2
1.00	51.6	320.0	171	0.11	318	1044	3	151	2.5	4.8	-2.3	4.2
1.50	52.2	322.5	244	0.15	417	1368	4	165	2.3	4.5	-1.2	4.3
2.00	53.8	331.0	303	0.19	516	1693	5	203	3.4	6.6	2.5	6.1
2.50	52.9	349.5	388	0.24	615	2018	5	214	3.0	5.8	3.3	4.8
3.00	55.8	353.6	416	0.26	714	2343	4	187	1.3	2.6	0.3	2.6
3.50	56.6	352.5	466	0.29	809	2653	5	225	3.0	5.8	4.1	4.1
4.00	55.7	8.4	546	0.34	903	2963	5	229	4.4	8.6	6.5	5.6
4.50	54.8	12.4	651	0.40	998	3273	5	214	4.1	8.0	4.5	6.6
5.00	51.9	16.3	776	0.48	1092	3583	4	172	4.0	7.8	-1.1	7.7
5.50	50.8	6.9	891	0.55	1162	3878	4	181	3.5	6.8	0.2	6.8
6.00	50.0	13.1	982	0.61	1272	4174	5	209	3.8	7.4	3.5	6.5
6.50	49.0	11.3	1095	0.68	1362	4469	4	177	3.7	7.3	-0.4	7.2
7.00	48.4	10.1	1199	0.74	1452	4764	4	180	4.0	7.8	0.0	7.8
7.50	47.2	9.3	1333	0.83	1542	5059	4	188	3.1	6.1	0.8	6.1
8.00	47.8	9.8	1387	0.86	1632	5355	4	187	2.2	4.2	0.5	4.2
8.50	47.9	9.0	1464	0.91	1722	5650	4	189	3.0	5.8	0.9	5.7
9.00	47.5	9.7	1567	0.97	1812	5945	4	200	2.5	4.8	1.6	4.5
9.50	48.2	10.0	1609	1.00	1902	6241	4	181	1.3	2.5	0.0	2.5
10.00	49.0	9.3	1643	1.02	1992	6536	4	173	0.8	1.6	-0.2	1.6
10.50	50.1	9.5	1656	1.03	2082	6831	4	183	0.5	0.9	0.0	0.9
11.00	51.1	9.2	1670	1.04	2172	7126	3	133	1.8	3.5	-2.5	2.4
11.50	51.5	6.5	1718	1.07	2262	7422	3	119	1.7	3.4	-3.0	1.6
12.00	52.8	5.9	1708	1.06	2352	7717	1	52	1.5	2.9	-2.3	-1.8
12.50	54.7	4.3	1657	1.03	2442	8012	3	114	1.9	3.6	-3.3	1.5
13.00	54.3	2.3	1726	1.07	2532	8307	3	146	3.2	6.2	-3.5	5.1
13.50	54.3	0.5	1813	1.13	2622	8603	4	169	2.1	4.1	-0.8	4.0
14.00	54.4	1.5	1869	1.16	2712	8898	5	234	2.0	3.8	3.1	2.2
14.50	55.1	3.4	1884	1.17	2802	9193	6	257	2.0	3.9	3.8	0.9
15.00	55.7	5.0	1903	1.18	2892	9489	5	247	1.6	3.1	2.8	1.2
15.50	56.2	5.9	1920	1.20	2982	9784	6	267	2.0	3.8	3.7	0.9
16.00	56.8	8.3	1949	1.21	3072	10079	5	233	4.3	8.3	6.6	5.0
16.50	55.4	11.0	2111	1.31	3162	10374	5	226	5.6	11.0	7.8	7.7
17.00	54.1	13.6	2222	1.38	3252	10670	5	230	5.1	9.8	7.6	6.3
17.50	54.0	15.7	2454	1.52	3342	10965	5	229	4.5	8.7	6.6	5.7
18.00	53.7	17.3	2446	1.52	3432	11260	5	235	3.9	7.6	6.1	4.4
18.50	53.4	19.0	2540	1.58	3522	11556	5	246	3.4	6.7	6.1	2.8
19.00	53.6	20.7	2588	1.61	3612	11851	5	245	2.9	5.6	5.1	2.4
19.50	53.5	21.7	2644	1.64	3702	12146	5	236	2.9	5.6	4.6	3.1
20.00	53.5	22.6	2730	1.70	3792	12441	5	240	2.8	5.5	4.7	2.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 9

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS: SKY HAZY NEAR THE SURFACE

DATE OF LAUNCH: 2 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 17:11 P.D.T.

TIME MINUTES	ELEV. DEG	AZIMUTH DEG	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	76.8	315.9	214	0.13	210	689	3	145	6.2	12.1	-7.0	9.9
1.00	30.0	324.7	374	0.23	318	1044	3	150	1.7	3.4	-1.7	2.9
1.50	44.9	320.5	316	0.20	417	1368	0	350	1.7	3.3	0.6	-3.3
2.00	55.5	315.7	285	0.18	516	1693	7	337	3.4	6.7	2.6	-6.1
2.50	75.5	294.2	133	0.08	615	2018	7	334	3.9	7.5	3.3	-6.8
3.00	80.9	266.2	98	0.06	714	2343	7	324	3.5	7.0	4.1	-5.7
3.50	80.2	177.2	122	0.08	809	2653	7	318	5.2	10.1	6.7	-7.6
4.00	71.7	155.5	265	0.16	903	2963	7	323	4.9	9.5	5.7	-7.6
4.50	65.9	152.8	401	0.25	998	3273	7	297	4.6	8.9	7.9	-4.0
5.00	62.8	136.0	509	0.32	1092	3583	6	267	3.9	7.6	7.5	0.4
5.50	63.5	129.5	538	0.33	1182	3878	6	248	2.6	5.1	4.7	1.9
6.00	63.4	121.9	586	0.36	1272	4174	5	246	2.4	4.6	4.1	2.7
6.50	62.5	113.2	656	0.41	1362	4469	5	243	3.0	5.8	6.2	3.0
7.00	61.8	107.2	724	0.45	1452	4764	6	252	3.3	6.4	6.1	1.9
7.50	60.5	104.1	815	0.51	1542	5059	6	261	3.5	6.8	6.8	1.0
8.00	59.0	101.4	910	0.57	1633	5355	6	284	3.0	5.8	5.5	-1.8
8.50	58.5	104.1	993	0.62	1722	5650	5	247	2.9	5.7	5.2	2.3
9.00	58.0	96.0	1069	0.66	1812	5945	5	214	3.5	6.8	3.8	5.7
9.50	59.0	93.5	1082	0.67	1902	6241	5	216	2.1	4.0	2.4	3.2
10.00	59.0	90.8	1136	0.71	1992	6536	5	210	2.6	5.1	2.6	4.4
10.50	59.6	86.5	1162	0.72	2082	6831	4	171	1.7	3.3	-0.5	3.3
11.00	61.5	85.4	1124	0.70	2172	7126	3	118	0.6	1.2	-1.1	0.6
11.50	62.4	85.5	1129	0.70	2262	7422	4	163	0.2	0.3	-0.1	0.3
12.00	63.5	84.9	1122	0.70	2353	7717	4	160	1.2	2.0	-0.8	2.3
12.50	64.8	81.8	1111	0.69	2442	8012	3	155	2.0	4.0	-1.7	3.6
13.00	65.9	78.8	1087	0.68	2532	8307	4	168	2.8	5.4	-1.2	5.3
13.50	66.2	73.2	1111	0.69	2622	8603	4	191	3.0	5.9	1.1	5.8
14.00	65.9	70.5	1168	0.73	2712	8898	5	224	2.6	5.0	3.4	1.6
14.50	65.2	69.7	1248	0.78	2802	9193	5	227	2.8	5.5	4.0	3.7
15.00	64.6	67.6	1325	0.82	2892	9489	5	228	2.2	4.4	3.2	2.9
15.50	64.5	67.6	1374	0.85	2982	9784	5	235	2.1	4.1	3.4	2.4
16.00	64.0	66.6	1449	0.90	3072	10079	5	237	2.3	4.6	3.8	2.5
16.50	63.7	66.6	1512	0.94	3162	10374	5	247	1.7	3.3	3.0	1.3
17.00	63.8	66.5	1550	0.96	3252	10670	5	244	1.1	2.2	2.0	1.0
17.50	64.0	66.5	1580	0.98	3342	10965	5	240	1.2	2.4	2.1	1.2
18.00	64.0	65.2	1624	1.01	3432	11260	5	228	1.4	2.7	2.0	1.8
18.50	64.1	65.6	1661	1.03	3522	11556	5	220	1.3	2.6	1.7	2.0
19.00	64.2	65.0	1697	1.05	3612	11851	5	218	1.1	2.1	1.3	1.6
19.50	64.5	64.6	1717	1.07	3702	12146	5	233	1.2	2.4	1.9	1.4
20.00	64.4	64.5	1768	1.10	3792	12441	5	241	1.7	3.3	2.9	1.6

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

SUMMARY FOR ASCENT # 10

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 2 AUGUST 1970

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 23:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	69.0	320.0	57	0.04	210	689	2	164	2.0	3.9	-1.1	3.7
1.00*	777.6	777.0	123	0.08	316	1044	4	193	2.4	4.6	0.2	4.6
1.50	59.2	351.0	188	0.12	417	1368	4	193	2.0	3.8	0.2	3.8
2.00	60.5	353.3	234	0.15	516	1693	3	137	1.5	2.9	-2.0	2.1
2.50	62.5	340.0	267	0.17	615	2018	3	139	0.9	1.7	-1.1	1.3
3.00	65.4	347.2	280	0.17	714	2343	6	257	1.5	3.0	2.9	0.7
3.50	69.0	359.7	271	0.17	809	2653	6	277	2.2	4.2	4.2	-0.5
4.00	71.7	14.6	265	0.16	903	2963	6	266	2.9	5.6	5.6	0.4
4.50	69.7	31.4	331	0.21	998	3273	6	260	4.1	7.9	7.8	1.4
5.00	66.6	45.7	428	0.27	1092	3583	6	277	4.1	7.9	7.8	-0.9
5.50	65.8	58.5	485	0.30	1192	3878	6	284	4.0	7.7	7.5	-1.9
6.00	63.3	65.8	588	0.37	1272	4174	6	280	3.8	7.4	7.3	-1.3
6.50	61.9	71.6	673	0.42	1362	4469	6	271	3.5	6.9	6.9	-0.2
7.00	59.8	72.5	786	0.49	1452	4764	6	260	4.3	8.3	8.2	1.5
7.50	57.2	73.8	928	0.58	1542	5059	6	255	3.0	5.8	5.6	1.5
8.00	57.6	74.0	963	0.60	1632	5355	5	241	3.4	6.5	5.7	3.2
8.50	55.2	71.5	1126	0.70	1722	5650	5	240	3.3	6.4	5.6	3.2
9.00	55.9	70.2	1158	0.72	1812	5945	5	221	2.5	4.9	3.3	3.7
9.50	56.0	68.0	1260	0.78	1902	6241	5	228	3.3	6.4	4.8	4.3
10.00	54.5	67.5	1343	0.83	1992	6536	5	230	2.6	5.1	3.9	3.3
10.50	54.5	66.0	1412	0.88	2082	6831	5	215	3.1	6.0	3.5	4.9
11.00	54.0	63.7	1504	0.93	2172	7126	5	212	3.3	6.4	3.4	5.4
11.50	53.8	62.0	1581	0.98	2262	7422	5	217	1.3	2.6	1.6	2.1
12.00	55.0	62.4	1575	0.98	2352	7717	5	204	1.1	2.1	0.9	1.9
12.50	55.1	59.6	1632	1.01	2442	8012	4	195	2.7	5.2	1.4	5.0
13.00	55.2	58.4	1689	1.05	2532	8307	4	194	2.9	5.7	1.4	5.6
13.50	55.1	56.4	1756	1.09	2622	8603	4	201	2.7	5.3	1.9	4.9
14.00	55.1	55.3	1821	1.13	2712	8898	4	200	2.6	5.0	1.7	4.7
14.50	55.1	53.8	1884	1.17	2802	9193	4	175	2.4	4.7	-0.4	4.7
15.00	55.8	51.5	1896	1.18	2892	9489	4	158	3.0	5.7	-2.2	5.3
15.50	56.1	48.5	1935	1.20	2982	9784	4	179	2.6	5.1	-0.1	5.1
16.00	57.1	47.9	1990	1.24	3072	10079	4	178	2.7	5.2	-0.2	5.2
16.50	56.3	45.0	2041	1.27	3162	10374	4	167	3.4	6.5	-1.5	6.3
17.00	56.3	43.1	2101	1.31	3252	10670	3	140	3.1	6.1	-3.9	4.6
17.50	57.5	39.6	2064	1.28	3342	10965	3	136	4.3	8.4	-5.8	6.0
18.00	57.4	36.1	2130	1.32	3432	11260	3	144	3.2	6.2	-3.6	5.0
18.50	58.2	36.8	2120	1.32	3522	11556	3	117	5.0	9.7	-8.7	4.3
19.00	59.1	28.9	2101	1.31	3612	11851	3	128	5.6	11.0	-8.7	6.7
19.50	59.6	25.6	2163	1.34	3702	12146	3	143	5.0	9.6	-5.8	7.7
20.00	60.7	21.1	2244	1.39	3792	12441	3	137	6.6	12.8	-8.7	9.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 11

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS: LP STR A THIN HAZE AND SMOKE ALL QUADS WNDS LGT & VAR

DATE OF LAUNCH: 3 AUGUST 1976

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 11:04 P.D.T.

TIME MINUTES	ELEV. D E G R E E S	AZIMUTH D E G R E E S	R A N G E METERS	R A N G E MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	D I R E C T I O N CLASS 0- 7	D I R E C T I O N DEGREES	V E L O C I T Y METERS/SEC (SPEED)	V E L O C I T Y NAUTICAL MILES PER HOUR (SPEED)	V E L O C I T Y (U)	V E L O C I T Y (V)
0.50	63.6	289.5	54	0.03	210	689	2	111	1.5	3.0	-2.9	1.0
1.00	67.0	290.5	92	0.06	318	1044	3	150	0.7	1.4	-0.7	1.2
1.50	74.0	307.5	90	0.06	417	1368	6	260	1.2	2.3	2.3	0.4
2.00	83.5	341.6	47	0.03	516	1693	6	280	1.6	3.2	3.1	-0.6
2.50	85.0	34.2	45	0.03	615	2018	6	268	1.2	2.4	2.4	0.1
3.00	83.0	50.6	75	0.05	714	2343	5	244	1.0	2.0	1.8	0.9
3.50	81.6	51.6	104	0.06	809	2653	5	220	1.4	2.6	1.7	2.0
4.00	79.0	45.0	156	0.10	903	2963	5	218	2.6	5.1	3.2	4.0
4.50	73.8	43.5	260	0.16	998	3273	5	215	2.5	4.9	2.8	4.0
5.00	72.9	40.3	305	0.19	1092	3583	6	195	2.4	4.7	1.2	4.5
5.50	70.0	33.5	393	0.24	1182	3878	4	190	2.6	5.1	0.9	5.1
6.00	69.0	30.1	449	0.28	1272	4174	6	198	2.1	4.1	0.6	4.1
6.50	67.9	27.4	512	0.32	1362	4465	5	219	3.0	5.8	3.9	5.9
7.00	63.8	33.0	664	0.41	1452	4766	4	164	3.0	5.8	-1.0	5.6
7.50	65.0	10.5	653	0.41	1542	5059	3	121	4.2	8.2	-7.1	4.3
8.00	65.3	11.8	704	0.44	1632	5355	3	142	2.0	3.9	-3.0	3.9
8.50	65.1	7.0	752	0.47	1722	5650	3	142	2.7	5.2	-3.2	4.1
9.00	64.5	3.1	810	0.51	1812	5945	3	147	2.2	4.3	-2.4	3.6
9.50	64.5	1.2	859	0.53	1902	6241	4	173	1.4	2.7	-0.3	2.7
10.00	64.6	2.2	897	0.56	1992	6536	5	231	1.0	1.9	1.5	1.2
10.50	65.6	4.1	898	0.56	2082	6831	6	272	1.0	1.9	1.9	-0.1
11.00	66.5	6.0	900	0.56	2172	7126	6	279	1.6	3.1	3.1	-0.5
11.50	67.5	10.4	895	0.56	2262	7422	6	287	1.9	3.7	3.5	-1.0
12.00	68.5	13.2	866	0.55	2352	7717	7	308	0.9	1.8	1.4	-1.1
12.50	69.6	13.7	870	0.54	2442	8012	0	350	0.4	0.7	0.1	-0.7
13.00	70.4	13.8	865	0.54	2532	8307	7	300	0.3	0.6	0.5	-0.4
13.50	71.1	14.8	863	0.54	2622	8603	7	295	0.2	0.3	0.3	-0.1
14.00	71.7	14.5	863	0.54	2712	8898	3	129	0.2	0.3	-0.3	0.2
14.50	72.2	14.2	867	0.54	2802	9193	4	202	0.2	0.4	0.1	0.3
15.00	72.6	14.6	874	0.54	2892	9489	5	236	0.3	0.6	0.5	0.3
15.50	73.0	15.0	881	0.55	2982	9784	3	155	0.2	0.5	-0.2	0.4
16.00	73.4	14.0	885	0.55	3072	10079	3	121	0.8	1.6	-1.4	0.8
16.50	73.7	12.0	895	0.56	3162	10374	2	106	1.2	2.3	-2.2	0.7
17.00	74.2	9.4	891	0.55	3252	10670	2	101	1.7	3.3	-3.3	0.6
17.50	74.5	5.4	899	0.56	3342	10965	2	109	2.5	4.9	-4.6	1.6
18.00	74.4	0.2	930	0.58	3432	11260	3	128	3.7	7.1	-5.7	4.3
18.50	73.2	355.0	1033	0.64	3522	11556	3	142	5.5	10.7	-6.6	8.5
19.00	71.0	350.5	1209	0.75	3612	11851	3	150	6.4	12.4	-6.3	10.7
19.50	68.9	348.2	1389	0.86	3702	12146	3	155	7.7	15.0	-6.3	13.5
20.00	65.8	346.2	1658	1.03	3792	12441	3	156	9.1	17.8	-7.2	16.2

A CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 12

LOCATION: MORGAN HILL, CALIFORNIA

SPECIFICS: SMOKE AND HAZE ALL QUADRANTS

DATE OF LAUNCH: 3 AUGUST 1979

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	LISV DEGREES	AZIMUTH DEGREES	R A N G E METERS	R A N G E MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	44.7	306.3	109	0.07	210	689	3	130	1.7	3.3	-3.5	2.1
1.00	64.5	310.3	102	0.06	318	1044	7	311	2.1	4.0	3.0	-2.6
1.50*	77.0	77.0	116	0.07	417	1369	7	315	3.8	7.5	5.3	-5.3
2.00	72.4	138.1	131	0.08	516	1693	7	306	3.4	6.6	5.3	-3.9
2.50	67.1	128.7	217	0.13	615	2018	6	292	3.3	6.5	6.0	-2.5
3.00	62.2	122.6	323	0.20	714	2343	7	296	2.9	5.6	5.1	-2.5
3.50	61.2	124.1	348	0.24	809	2653	6	268	2.7	5.3	5.3	0.2
4.00	59.8	111.0	466	0.29	903	2963	5	240	4.0	7.8	7.9	4.6
4.50	57.3	97.1	575	0.36	998	3273	5	228	4.7	9.2	6.9	6.1
5.00	56.8	88.1	649	0.40	1092	3583	5	231	3.6	7.0	5.5	4.4
5.50	56.6	84.0	743	0.46	1189	3898	5	239	3.0	5.9	5.0	3.0
6.00	55.4	81.8	810	0.50	1272	4174	5	237	2.3	4.5	3.8	2.5
6.50	55.4	80.6	869	0.54	1362	4469	5	226	2.0	3.9	2.8	2.7
7.00	56.0	77.4	911	0.57	1452	4764	5	223	2.0	3.9	2.7	2.8
7.50	56.1	76.4	959	0.60	1542	5059	6	258	1.7	3.3	3.2	0.7
8.00	56.5	77.5	1013	0.63	1632	5355	6	285	1.6	3.1	3.0	-0.8
8.50	57.0	78.8	1052	0.65	1722	5650	6	291	1.3	2.4	2.3	-0.9
9.00	57.8	79.7	1077	0.67	1812	5945	6	283	1.8	3.5	3.4	-0.8
9.50	57.3	81.0	1151	0.72	1902	6241	6	202	2.2	4.3	4.2	-0.9
10.00	57.8	82.1	1199	0.75	1992	6536	7	328	3.1	6.1	3.2	-5.1
10.50	58.6	89.0	1237	0.77	2082	6831	7	337	3.0	5.8	2.3	-5.3
11.00	59.7	90.0	1259	0.78	2172	7126	7	324	0.9	1.7	1.0	-1.3
11.50	59.6	90.9	1267	0.79	2262	7422	7	312	0.9	1.7	1.3	-1.2
12.00	60.0	91.6	1299	0.81	2352	7717	4	164	1.1	2.2	-0.6	2.1
12.50	61.9	87.9	1249	0.78	2442	8012	4	179	1.0	2.0	0.0	2.0
13.00	61.9	88.5	1290	0.81	2532	8307	6	299	1.5	2.9	2.8	-1.0
13.50	62.1	89.2	1334	0.83	2622	8603	7	305	0.7	1.3	1.1	-0.7
14.00	63.0	89.9	1330	0.83	2712	8898	1	36	0.7	1.3	-0.8	-1.0
14.50	64.1	90.7	1311	0.81	2802	9193	2	96	1.5	2.9	-2.0	0.3
15.00	66.6	99.5	1242	0.77	2892	9489	3	144	1.5	2.9	-1.7	2.4
15.50	66.4	97.4	1258	0.78	2982	9784	4	164	2.4	4.6	-1.3	4.4
16.00	67.8	83.0	1212	0.75	3072	10079	4	169	1.3	2.6	-0.5	2.5
16.50	67.8	83.8	1249	0.78	3162	10374	5	233	2.4	4.6	3.7	2.7
17.00	67.0	86.0	1337	0.83	3252	10670	5	223	2.0	3.9	2.7	2.8
17.50	67.5	80.5	1343	0.84	3342	10965	4	199	4.4	8.6	2.8	8.1
18.00	66.0	71.0	1483	0.92	3432	11260	4	191	6.2	12.1	2.4	11.8
18.50	66.1	67.2	1516	0.94	3522	11556	4	164	3.9	7.7	-2.2	7.3
19.00	66.7	62.0	1512	0.94	3612	11851	3	147	4.3	8.4	-4.6	7.0
19.50	67.5	57.4	1491	0.93	3702	12146	3	155	5.3	10.2	-4.4	9.3
20.00	67.1	50.3	1559	0.97	3792	12441	4	163	6.7	13.0	-3.7	12.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 13

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS: ALTOSTRATUS WEST @ STRATUS SOUTHWEST

DATE OF LAUNCH: 3 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 23:27 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	N.S.L. ALTITUDE METERS	N.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	53.5	352.5	80	0.05	210	689	4	159	2.8	5.3	-2.0	5.0
1.00	52.6	338.5	165	0.10	318	1044	3	149	2.5	4.8	-2.5	4.2
1.50	54.5	337.4	225	0.14	417	1368	4	163	0.7	1.4	-0.4	1.3
2.00	63.4	339.5	207	0.13	516	1693	0	359	0.8	1.6	0.0	-1.6
2.50	70.8	331.5	179	0.11	615	2018	1	28	1.0	2.0	-0.9	-1.7
3.00	74.2	324.2	173	0.11	714	2343	6	263	0.7	1.3	1.3	0.2
3.50	76.6	344.2	168	0.10	809	2653	6	264	2.2	4.3	4.2	0.4
4.00	79.0	10.5	156	0.10	903	2963	6	280	3.0	5.7	5.6	-1.2
4.50	79.6	46.5	174	0.11	998	3273	6	281	3.7	7.2	7.1	-1.3
5.00	74.6	65.7	273	0.17	1092	3583	6	282	3.1	6.1	5.9	-1.4
5.50	73.5	75.4	320	0.20	1182	3878	6	279	2.5	4.9	4.8	-0.8
6.00	70.8	77.5	407	0.25	1272	4174	6	283	3.0	5.7	5.6	-1.2
6.50	69.0	85.3	484	0.30	1362	4469	6	253	1.2	2.3	2.2	0.7
7.00	70.5	76.8	478	0.30	1452	4764	5	205	1.9	3.7	1.1	2.4
7.50	69.8	77.5	530	0.33	1542	5059	7	320	1.6	3.0	1.9	-2.3
8.00	71.0	86.0	527	0.33	1632	5355	0	18	2.0	3.9	-1.2	-3.7
8.50	73.5	69.8	480	0.30	1722	5650	1	37	3.2	6.2	-3.0	-5.0
9.00	76.0	106.1	426	0.26	1812	5945	1	33	4.1	7.9	-4.3	-6.7
9.50	77.4	120.5	402	0.25	1902	6241	1	32	3.5	6.9	-3.6	-5.9
10.00	77.4	135.1	423	0.26	1992	6536	1	29	3.0	5.9	-2.8	-5.1
10.50	77.3	144.5	446	0.28	2082	6831	0	22	2.4	4.7	-1.8	-4.3
11.00	76.5	150.6	497	0.31	2172	7126	0	2	2.2	4.3	-0.2	-4.4
11.50	75.5	153.0	559	0.35	2262	7422	0	352	2.5	4.8	0.7	-4.7
12.00	74.2	155.4	637	0.40	2352	7717	0	351	2.3	4.5	0.7	-4.5
12.50	73.5	156.5	693	0.43	2442	8012	0	341	2.6	5.1	1.7	-4.8
13.00	71.9	156.5	794	0.49	2532	8307	7	334	3.7	7.3	3.1	-6.5
13.50	70.0	156.0	917	0.57	2622	8603	7	337	3.8	7.6	3.0	-7.0
14.00	68.5	156.6	1028	0.64	2712	8898	0	345	3.9	7.7	2.0	-7.4
14.50	66.9	157.8	1152	0.72	2802	9193	0	342	4.5	8.7	2.5	-8.3
15.00	65.1	157.8	1295	0.80	2892	9489	0	339	4.7	9.2	3.3	-8.6
15.50	63.5	158.1	1436	0.89	2982	9784	0	340	3.9	7.5	2.5	-7.1
16.00	62.8	158.2	1526	0.95	3072	10079	0	355	4.7	9.2	0.9	-9.2
16.50	60.6	160.8	1710	1.06	3162	10374	0	352	5.2	10.2	1.5	-10.1
17.00	59.8	160.5	1833	1.14	3252	10670	0	18	4.0	7.9	-2.4	-7.5
17.50	59.5	165.2	1909	1.19	3342	10965	1	29	4.0	7.7	-3.7	-6.8
18.00	59.0	165.6	2001	1.24	3432	11260	7	331	5.1	9.8	4.7	-8.6
18.50	57.2	163.3	2204	1.37	3522	11556	7	329	3.6	7.0	3.6	-6.0
19.00	57.8	164.0	2210	1.37	3612	11851	0	8	2.0	3.8	-0.5	-3.8
19.50	57.3	164.5	2311	1.44	3702	12146	0	346	2.5	4.8	1.2	-4.7
20.00	57.4	164.1	2360	1.47	3792	12441	7	326	1.7	3.3	1.9	-2.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 14

LOCATION: MORGAN HILL CALIFORNIA

DATE OF LAUNCH: 4 AUGUST 1979

~~LOCATION OF LAUNCH SITE: 35.5 [illegible]~~

TIME OF LAUNCH: 05:05 G.M.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	A.S.L. ALTITUDE METERS	A.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	73.2	297.0	23	0.02	210	689	3	123	2.4	4.7	-4.0	2.6
1.00	56.6	303.0	146	0.09	318	1044	3	126	2.9	5.6	-4.5	3.3
1.50	56.8	304.6	266	0.13	417	1366	3	127	3.5	6.7	-4.5	4.9
2.00	49.7	311.0	351	0.22	516	1693	3	143	2.9	5.7	-3.5	4.5
2.50	53.6	323.0	378	0.24	615	2018	4	161	0.6	1.2	-0.3	1.2
3.00	59.8	316.5	362	0.24	714	2343	5	240	0.8	1.5	1.3	0.8
3.50	67.5	315.9	358	0.23	809	2653	6	266	1.0	2.0	2.0	0.1
4.00	68.7	322.1	345	0.21	903	2963	6	259	1.2	2.3	2.3	0.4
4.50	69.3	330.5	338	0.21	998	3273	5	230	1.4	2.8	2.2	1.8
5.00	70.1	336.1	356	0.22	1092	3583	5	245	1.8	3.4	3.1	1.5
5.50	72.2	348.2	347	0.22	1182	3878	6	265	2.5	4.9	4.9	0.4
6.00	73.5	1.0	340	0.21	1272	4174	6	276	2.0	3.9	3.9	-0.4
6.50	75.3	8.7	331	0.21	1362	4469	6	252	1.9	3.7	3.5	1.1
7.00	73.6	16.9	392	0.24	1452	4764	5	226	1.7	3.4	2.5	2.3
7.50	73.8	17.5	418	0.26	1542	5059	3	156	0.7	1.4	-0.6	1.3
8.00	74.4	13.6	427	0.27	1632	5355	3	115	1.2	2.4	-2.2	1.0
8.50	75.0	7.8	411	0.27	1722	5650	1	50	0.8	1.5	-1.1	-1.0
9.00	77.1	9.0	392	0.24	1812	5945	0	351	3.3	6.5	1.0	-6.4
9.50	82.1	21.0	250	0.16	1902	6241	0	350	5.5	10.6	1.8	-10.4
10.00	86.6	61.6	132	0.08	1992	6536	0	351	5.7	11.1	1.7	-10.9

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 15

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 4 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 05:28 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	WIND VELOCITY METERS/SEC (SPEED)	WIND VELOCITY NAUTICAL MILES PER HOUR (SPEED)	WIND VELOCITY NAUTICAL MILES PER HOUR (U)	WIND VELOCITY NAUTICAL MILES PER HOUR (V)
0.50	62.0	352.0	57	0.04	210	689	3	151	1.9	3.7	-1.8	3.3
1.00	62.0	331.0	115	0.07	318	1044	3	128	3.4	6.6	-5.2	4.1
1.50*	777.0	777.0	250	0.16	417	1368	3	126	4.6	9.0	-7.3	5.4
2.00	47.0	313.5	386	0.24	516	1693	3	138	2.7	5.3	-3.6	3.9
2.50	51.2	317.7	412	0.26	615	2018	1	34	0.5	0.9	-0.5	-0.7
3.00	58.0	309.5	382	0.24	714	2343	0	7	1.4	2.7	-0.3	-2.6
3.50	62.7	307.8	365	0.23	809	2653	7	317	1.4	2.7	1.8	-2.0
4.00	69.5	307.3	299	0.19	903	2963	6	271	0.8	1.6	1.6	0.0
4.50	70.0	313.0	326	0.20	998	3273	4	193	1.3	2.6	0.6	2.6
5.00	71.0	318.8	341	0.21	1092	3583	5	232	0.9	1.8	1.4	1.1
5.50	73.4	323.0	322	0.20	1182	3878	6	282	1.5	2.8	2.8	-0.6
6.00	76.7	331.0	277	0.17	1272	4174	6	278	1.8	3.6	3.5	-0.5
6.50	78.5	340.7	256	0.16	1362	4469	5	230	1.9	3.7	2.8	2.4
7.00	76.7	351.7	319	0.20	1452	4764	5	207	2.2	4.2	1.9	3.8
7.50	76.0	356.0	359	0.22	1542	5059	4	168	1.2	2.3	-0.5	2.3
8.00	75.7	351.1	390	0.24	1632	5355	3	136	1.5	3.0	-2.1	2.2
8.50	75.0	348.2	434	0.27	1722	5650	1	54	0.3	0.6	-0.5	-0.3
9.00	77.4	348.7	382	0.24	1812	5945	0	358	2.5	4.9	0.2	-4.9
9.50	81.0	343.2	285	0.18	1902	6241	0	353	4.2	8.2	0.9	-8.1
10.00	86.0	339.7	132	0.08	1992	6536	0	338	5.2	10.1	3.0	-9.4
10.50	88.9	116.0	38	0.02	2082	6831	7	330	5.4	10.5	5.2	-9.1

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 16

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS: THIN HAZE AND SMOKE ALL QUADRANTS

DATE OF LAUNCH: 4 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 11.09 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	CAGE METERS	CAGE MILES	ALTITUDE METERS	ALTITUDE FEET	DIRECTIONAL CLASS (1-7)	DIRECTION DEGREES	WIND VELOCITY METERS/SEC (SPEED)	WIND VELOCITY NAUTICAL MILES PER HOUR (SPEED)	(U)	(V)
0.50	18.3	363.5	158	0.10	210	689	3	126	4.6	9.0	-7.2	5.3
1.00	28.0	366.2	175	0.11	348	1143	3	154	3.5	6.8	-3.0	6.2
1.50	31.[illegible]	371.2	356	0.22	517	1698	4	177	3.4	6.6	-0.4	6.6
2.00	43.[illegible]	377.8	456	0.28	616	2021	3	157	3.2	6.1	-2.6	5.6
2.50	47.3	383.5	543	0.34	615	2018	3	134	2.2	4.6	-0.3	3.4
3.00	46.[illegible]	389.0	627	0.39	716	2348	5	84	0.5	1.0	-1.0	-0.2
3.50	51.[illegible]	384.6	656	0.24	809	2654	5	279	0.6	1.2	1.2	-0.2
4.00	55.5	377.0	851	0.34	903	2963	5	242	1.3	2.1	1.0	1.0
4.50	58.9	380.2	949	0.39	928	3272	6	258	1.3	2.5	2.4	0.5
5.00	63.0	378.7	1028	0.25	1082	3582	5	232	1.7	3.2	2.6	2.0
5.50	62.1	380.2	572	0.36	1182	3878	5	227	1.8	3.5	2.5	2.4
6.00	64.0	385.0	571	0.35	1272	4174	7	305	1.3	2.6	2.1	-1.5
6.50	68.8	385.3	509	0.32	1362	4469	0	340	1.1	2.2	0.8	-2.1
7.00	65.0	385.7	505	0.31	1452	4766	6	288	0.9	1.8	1.7	-0.5
7.50	71.5	350.8	482	0.30	1542	5059	6	280	2.0	3.9	3.9	-0.7
8.00	73.1	259.5	465	0.29	1632	5355	6	291	3.2	6.2	5.8	-2.2
8.50	75.5	14.2	419	0.26	1722	5650	7	314	3.5	6.9	5.0	-4.8
9.00	74.1	26.6	253	0.22	1812	5945	0	330	3.7	7.1	2.5	-6.7
9.50	81.5	22.0	239	0.17	1902	6241	0	355	2.4	8.4	0.7	-8.4
10.00	84.5	71.3	192	0.11	1992	6536	0	357	4.6	9.0	0.4	-8.9
10.50	84.0	111.5	208	0.13	2082	6831	0	350	3.8	7.5	1.4	-7.3
11.00	82.5	128.2	373	0.13	2172	7126	0	345	3.7	7.1	1.8	-6.9
11.50	80.0	136.2	281	0.24	2262	7422	0	344	4.5	8.7	2.4	-8.4
12.00	77.1	140.6	515	0.32	2352	7717	0	350	3.2	6.1	1.1	-6.0
12.50	76.7	149.7	553	0.34	2442	8012	0	351	3.4	6.6	1.0	-6.5
13.00	72.[illegible]	153.2	795	0.41	2532	8307	0	343	4.7	9.1	2.6	-8.7
13.50	71.8	153.6	829	0.51	2622	8603	7	334	4.3	8.4	3.6	-7.6
14.00	69.2	153.3	965	0.60	2712	8898	7	330	4.8	9.4	4.7	-8.1
14.50	67.3	152.9	1118	0.69	2802	9193	7	335	4.6	9.0	3.8	-8.1
15.00	66.0	153.8	1232	0.72	2892	9489	0	352	4.3	8.3	1.1	-8.2
15.50	64.7	156.5	1301	0.85	2982	9784	0	9	4.2	8.1	-1.3	-8.0
16.00	63.9	159.5	1455	0.90	3072	10079	1	23	4.4	8.5	-3.4	-7.8
16.50	63.1	163.6	1552	0.96	3162	10374	1	30	4.5	8.8	-4.5	-7.6
17.00	62.5	166.9	1640	1.00	3252	10670	1	38	3.9	7.6	-4.6	-6.0
17.50	62.3	170.0	1701	1.06	3342	10965	1	60	2.9	5.6	-4.9	-2.8
18.00	63.0	172.5	1697	1.05	3432	11260	2	106	2.6	5.1	-4.9	1.4
18.50	64.4	175.0	1639	1.02	3522	11556	3	142	3.8	7.4	-4.6	5.8
19.00	66.6	177.0	1504	0.93	3612	11851	4	158	5.7	11.0	-4.1	10.2
19.50	69.9	179.3	1317	0.82	3702	12146	4	163	6.5	12.7	-3.6	12.1
20.00	73.0	181.7	1128	0.70	3792	12441	4	165	6.5	12.7	-3.2	12.3

~~CALCULATIONS ON GROUND SLOPE OF THIS ASCENT WERE MADE USING LINEARLY INTERPOLATED DATA.~~

S U M M A R Y F O R A S C E N T # 17

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 4 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 17:10 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	71.3	35.9	37	0.02	210	689	0	345	1.4	2.6	0.7	-2.6
1.00	69.3	165.4	82	0.05	318	1044	7	333	4.7	9.0	4.1	-8.1
1.50	50.0	146.0	264	0.16	417	1368	7	320	6.1	11.9	7.6	-9.1
2.00	43.1	144.8	442	0.27	516	1693	7	326	2.8	5.4	3.1	-4.5
2.50	49.9	145.9	432	0.27	615	2018	7	304	3.2	6.2	5.1	-3.5
3.00	44.4	138.6	625	0.39	714	2343	7	302	3.4	6.6	5.6	-3.5
3.50	48.5	138.3	625	0.39	809	2653	5	239	0.4	0.8	0.7	0.4
4.00	51.8	136.2	630	0.39	903	2962	5	222	0.6	1.2	0.8	0.9
4.50	55.2	134.9	622	0.39	998	3273	2	71	0.1	0.2	-0.1	0.0
5.00	57.6	136.6	628	0.39	1092	3583	0	17	1.7	3.3	-1.0	-3.1
5.50	58.0	142.5	675	0.42	1182	3878	0	20	4.5	8.8	-3.0	-8.3
6.00	56.0	154.6	789	0.49	1272	4174	0	2	5.2	10.0	-0.3	-10.0
6.50	53.4	154.6	936	0.58	1362	4469	0	344	4.0	7.8	[illegible]	-7.5
7.00	52.7	156.8	1028	0.64	1452	4764	0	344	3.9	7.6	[illegible]	-7.3
7.50	51.0	158.3	1166	0.72	1542	5059	7	330	5.0	9.8	0.7	-9.8
8.00	48.0	155.0	1378	0.86	1632	5355	7	325	6.3	12.2	7.0	-10.0
8.50	46.5	153.7	1537	0.96	1722	5650	7	323	6.2	12.1	7.3	-9.7
9.00	44.4	152.5	1746	1.09	1812	5945	7	319	7.0	13.6	8.3	-10.2
9.50	42.8	150.6	1944	1.21	1902	6241	7	318	5.9	11.5	7.8	-8.5
10.00	42.1	150.0	2092	1.30	1992	6536	7	326	5.3	10.3	6.7	-8.6
10.50	41.2	150.0	2262	1.41	2082	6831	7	337	3.9	7.5	3.0	-6.9
11.00	41.7	150.7	2323	1.44	2172	7126	0	356	2.7	5.2	0.3	-5.2
11.50	41.9	151.7	2407	1.50	2262	7422	0	13	3.3	6.4	-1.5	-6.2
12.00	42.3	153.8	2473	1.54	2352	7717	1	27	3.8	7.5	-3.4	-6.6
12.50	42.6	156.0	2545	1.58	2442	8012	1	43	3.3	6.5	-4.4	-4.8
13.00	43.6	158.0	2552	1.59	2532	8307	1	26	3.5	6.7	-2.9	-6.1
13.50	43.2	159.4	2684	1.67	2622	8603	0	5	7.3	14.2	-1.1	-14.1
14.00	41.5	161.8	2950	1.83	2712	8898	1	23	3.0	5.8	-2.2	-5.3
14.50	43.8	161.9	2816	1.75	2802	9193	0	11	2.4	4.7	-0.9	-4.6
15.00	42.2	163.1	3077	1.91	2892	9489	0	7	7.1	13.9	-1.6	-13.8
15.50	41.9	165.1	3210	1.99	2982	9784	0	17	5.5	10.8	-3.2	-10.3
16.00	41.5	166.3	3357	2.09	3072	10079	0	13	5.8	11.2	-2.4	-10.9
16.50	41.0	167.7	3520	2.19	3162	10374	0	15	6.0	11.6	-3.0	-11.2
17.00	40.6	169.0	3675	2.28	3252	10670	0	19	5.8	11.2	-3.7	-10.6
17.50	40.3	170.4	3820	2.37	3342	10965	1	24	5.3	10.4	-4.3	-9.4
18.00	40.2	171.7	3941	2.45	3432	11260	1	30	3.3	6.4	-3.2	-5.6
18.50	40.7	172.2	3976	2.47	3522	11556	1	34	2.5	4.8	-2.7	-4.0
19.00	40.9	173.1	4052	2.52	3612	11851	1	44	3.2	6.2	-4.3	-4.5
19.50	41.3	174.3	4098	2.55	3702	12146	2	80	3.4	6.7	-6.6	-1.2
20.00	42.2	176.0	4070	2.53	3792	12441	2	98	4.1	8.1	-8.0	1.2

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y R O U A S C O U T # 10

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 4 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 23:17 P.D.T.

TIME SECONDS	ELEV. DEG.	AZIMUTH DEG.	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE KFEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (H)	VELOCITY (V)
0.50	66.0	307.2	47	0.03	210	689	3	144	2.5	6.8	-2.8	3.9
1.00	65.5	324.9	138	0.09	319	1044	3	150	2.0	5.7	-2.0	4.9
1.50	65.1	325.0	220	0.14	417	1368	3	125	0.9	1.7	-1.4	1.0
2.00	64.2	319.8	300	0.19	514	1685	7	316	2.3	4.4	2.9	-3.4
2.50	66.4	306.1	97	0.06	615	2016	7	313	4.5	8.7	6.4	-6.0
3.00	65.1	116.7	23	0.05	714	2341	7	320	5.7	11.0	7.0	-8.4
3.50	70.0	134.8	257	0.16	809	2653	7	320	5.9	11.4	7.4	-8.7
4.00	67.2	135.7	322	0.20	902	2958	7	312	4.8	9.2	6.9	-6.2
4.50	68.8	131.4	522	0.32	996	3273	7	311	2.8	5.4	4.0	-3.5
5.00	59.3	132.4	593	0.37	1092	3583	7	326	1.8	3.4	1.9	-2.9
5.50	58.1	135.5	826	0.60	1192	3878	7	323	3.3	6.5	3.9	-5.1
6.00	56.1	136.3	795	0.49	1292	4176	7	327	3.0	5.9	2.2	-4.9
6.50	56.8	136.0	825	0.51	1392	4469	1	26	2.1	4.0	-1.9	-3.6
7.00	56.2	143.2	677	0.52	1492	4764	1	25	1.8	3.5	-1.5	-3.1
7.50	58.8	144.5	772	0.54	1592	5059	7	306	1.6	3.0	2.4	-1.8
8.00	58.6	142.5	822	0.52	1692	5355	1	30	4.3	8.3	-4.9	-6.7
8.50	56.7	158.8	885	0.54	1792	5650	1	43	6.9	12.9	-8.8	-9.4
9.00	58.6	164.2	1079	0.66	1892	5945	0	19	4.5	8.5	-2.8	-8.0
9.50	56.9	167.0	1136	0.74	1992	6241	0	8	3.6	7.0	-1.0	-7.0
10.00	56.1	168.2	1270	0.79	1992	6536	1	35	4.3	8.1	-4.6	-6.6
10.50	55.2	173.7	1370	0.86	2092	6831	1	37	5.4	10.5	-6.3	-6.4
11.00	54.0	177.5	1509	0.93	2172	7126	1	35	5.3	10.2	-4.3	-9.3
11.50	52.2	180.2	1557	1.03	2262	7422	1	29	5.1	9.9	-4.8	-8.6
12.00	51.8	182.7	1771	1.10	2352	7717	1	37	3.7	7.3	-4.4	-5.8
12.50	51.8	184.4	1821	1.14	2442	8012	1	65	1.9	3.6	-3.3	-1.5
13.00	53.1	185.8	1835	1.13	2532	8307	2	101	2.0	3.9	-3.8	0.8
13.50	54.0	186.1	1831	1.14	2622	8603	2	102	2.9	5.5	-5.4	1.2
14.00	55.2	191.3	1814	1.11	2712	8898	2	112	3.2	6.2	-5.6	2.5
14.50	56.5	194.0	1787	1.11	2802	9193	3	113	3.2	6.2	-5.7	2.4
15.00	57.4	197.2	1784	1.11	2892	9489	3	125	3.0	5.9	-4.8	3.4
15.50	59.0	199.6	1730	1.08	2982	9784	3	134	2.8	5.4	-3.9	3.8
16.00	60.6	202.3	1718	1.03	3072	10079	3	127	3.2	6.2	-4.9	3.7
16.50	61.2	205.8	1682	1.05	3162	10374	3	134	5.2	10.0	-7.2	7.0
17.00	62.7	212.4	1626	1.01	3252	10670	3	132	7.0	13.6	-10.1	9.1
17.50	63.5	220.2	1615	1.00	3342	10965	3	130	5.8	11.3	-8.6	7.2
18.00	64.1	224.7	1617	1.00	3432	11260	3	139	4.8	9.4	-6.3	7.1
18.50	65.0	230.5	1595	0.99	3522	11556	3	142	5.2	10.1	-6.2	8.0
19.00	65.4	235.8	1607	1.00	3612	11851	3	141	5.6	10.9	-6.8	8.5
19.50	65.7	242.5	1625	1.01	3702	12146	3	142	5.6	10.9	-6.8	8.5
20.00	65.2	247.8	1666	1.04	3792	12441	3	139	4.9	9.5	-6.2	7.1

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 19

LOCATION: MORGAN HILL CALIFORNIA

~~SPECIFICS: CLOUD COVER TO SOUTH~~

DATE OF LAUNCH: 7 AUGUST 1978

~~ELEVATION OF LAUNCH SITE: 335 FEET~~

TIME OF LAUNCH: 05:23 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	83.0	304.0	13	0.01	210	689	3	120	0.8	1.6	-1.4	0.8
1.00	77.4	299.7	48	0.03	318	1044	3	118	0.9	1.7	-1.5	0.8
1.50*	777.0	777.0	66	0.04	417	1368	3	119	0.6	1.2	-1.0	0.6
2.00*	777.0	777.0	84	0.05	516	1693	3	119	0.6	1.2	-1.0	0.6
2.50	76.7	299.2	103	0.06	615	2018	7	301	2.3	4.8	-3.8	-2.3
3.00	85.0	124.1	54	0.03	714	2343	7	310	6.6	12.8	9.9	-0.2
3.50*	777.0	777.0	297	0.18	809	2653	7	316	8.1	15.6	11.1	-13.3
4.00	56.0	134.4	540	0.34	903	2963	7	324	9.7	18.9	13.1	-18.3
4.50	45.6	140.5	877	0.54	998	3273	7	330	12.7	24.6	13.5	-21.3
5.00	37.5	143.3	1290	0.80	1092	3583	7	328	10.4	20.2	10.8	-17.1
5.50	35.8	143.5	1497	0.93	1182	3878	7	325	6.4	12.4	7.0	-10.2
6.00*	777.0	777.0	1672	1.04	1272	4174	7	326	5.8	11.3	6.3	-9.4
6.50	34.3	144.0	1847	1.15	1362	4469	7	338	5.1	10.0	4.7	-8.2
7.00	34.4	146.0	1972	1.23	1452	4764	0	2	3.2	6.3	-0.2	-6.4
7.50	35.7	147.4	2004	1.25	1542	5059	0	354	1.7	3.2	0.3	-3.2
8.00	36.6	147.3	2060	1.28	1632	5355	7	326	2.3	4.5	2.6	-3.7
8.50	37.1	147.2	2142	1.33	1722	5650	7	339	1.5	2.9	1.4	-2.6
9.00	38.5	147.5	2150	1.34	1812	5945	0	353	1.5	2.9	0.4	-2.9
9.50	39.0	148.3	2223	1.38	1902	6241	0	347	2.4	4.6	1.0	-4.5
10.00	39.6	148.7	2285	1.42	1992	6536	0	340	2.0	4.0	1.4	-3.7
10.50	40.2	148.9	2343	1.46	2082	6831	7	336	0.5	1.0	0.4	-0.9
11.00	41.6	148.8	2315	1.44	2172	7126	2	76	1.6	3.3	-3.1	-0.8
11.50	43.0	151.2	2316	1.44	2262	7422	1	53	2.7	5.3	-4.2	-3.2
12.00	43.9	152.8	2338	1.45	2352	7717	1	52	2.1	4.1	-3.3	-2.5
12.50	45.0	154.3	2340	1.45	2442	8012	2	85	2.3	4.5	-4.4	-0.4
13.00	46.7	156.0	2290	1.42	2532	8307	2	99	3.2	6.1	-6.1	1.0
13.50	48.4	158.3	2237	1.39	2622	8603	2	82	6.5	12.6	-12.5	-1.7
14.00	49.7	165.7	2213	1.38	2712	8898	2	101	4.3	8.6	-8.3	1.6
14.50	52.0	164.3	2109	1.31	2802	9193	3	147	2.0	3.8	-2.0	3.2
15.00	53.0	166.7	2102	1.31	2892	9489	2	87	3.2	6.1	-6.1	-0.4
15.50	54.2	169.4	2077	1.29	2982	9784	2	79	3.1	6.1	-5.9	-1.1
16.00	54.7	171.8	2103	1.31	3072	10079	1	51	1.9	3.7	-2.9	-2.4
16.50	55.1	173.1	2136	1.33	3162	10374	1	49	1.6	3.2	-2.4	-2.1
17.00	55.6	174.0	2157	1.34	3252	10670	1	61	3.2	6.2	-5.4	-3.0
17.50	55.7	176.7	2210	1.37	3342	10965	1	50	2.1	4.1	-3.1	-2.6
18.00	56.2	176.7	2229	1.39	3432	11260	1	66	0.9	1.7	-1.6	-0.7
18.50	56.9	178.0	2229	1.39	3522	11556	2	80	2.6	5.1	-5.0	-0.9
19.00	57.3	180.7	2253	1.40	3612	11851	2	70	3.1	6.1	-5.8	-2.0
19.50	57.5	182.5	2293	1.43	3702	12146	2	74	2.3	4.5	-4.3	-1.2
20.00	56.1	184.0	2297	1.43	3792	12441	2	90	2.0	3.9	-3.9	0.0

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 20

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 7 AUGUST 1975

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 11:04 P.D.T.

TIME (HOURS)	ELEV. (DEGREES)	AZIMUTH (DEGREES)	RANGE (METERS)	RANGE (MILES)	S.S.L. ALTITUDE METERS	S.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY (SPEED) METERS/SEC	VELOCITY (SPEED) NAUTICAL MILES PER HOUR	VELOCITY Vector (U)	VELOCITY Vector (V)
0.50	56.5	319.4	67	0.03	210	689	3	149	1.8	3.5	-1.8	3.0
0.50	43.6	329.2	102	0.07	318	1042	3	159	1.8	3.5	-1.3	2.3
1.00	64.0	332.8	154	0.10	417	1368	3	156	1.0	1.9	-0.8	1.7
1.50	64.0	332.8	156	0.10	516	1693	4	176	0.6	1.3	-0.1	1.1
2.00	68.2	331.6	186	0.11	615	2016	4	306	3.2	6.2	5.0	-3.7
2.50	76.2	336.8	185	0.11	714	2341	7	309	5.7	11.2	8.6	-7.1
3.00	82.8	86.5	83	0.05	811	2659	7	305	4.4	8.6	7.1	-5.0
3.50	74.2	104.1	200	0.12	903	2963	7	313	2.8	5.5	4.0	-3.8
4.00	68.4	112.6	317	0.20	990	3248	7	331	1.6	3.1	1.5	-2.7
4.50	60.2	117.4	388	0.22	1072	3517	7	344	1.4	2.7	0.8	-2.6
5.00	68.2	121.3	366	0.28	1150	3773	0	1	1.8	3.5	-0.1	-3.5
5.50	68.7	125.8	421	0.26	1182	3878	0	18	2.6	5.0	-1.5	-4.8
6.00	68.5	133.0	461	0.29	1272	4171	0	12	3.3	6.3	-1.3	-6.3
6.50	68.7	143.2	491	0.31	1362	4469	0	8	3.8	7.3	-1.0	-7.2
7.00	66.4	149.6	790	0.37	1452	4766	0	25	2.9	5.7	-2.4	-5.1
7.50	65.8	150.8	671	0.42	1542	5059	1	14	4.1	7.9	-1.9	-7.7
8.00	65.3	161.6	704	0.44	1632	5355	0	358	4.5	8.8	0.3	-8.8
8.50	61.5	166.5	800	0.55	1722	5650	0	345	2.7	5.2	1.3	-5.0
9.00	60.3	166.2	967	0.60	1812	5945	0	346	2.6	5.0	1.2	-4.9
9.50	60.0	166.3	1039	0.65	1902	6241	0	346	2.5	4.9	1.2	-4.7
10.00	59.3	166.2	1122	0.70	1992	6536	0	349	2.4	4.7	0.9	-4.7
10.50	59.0	166.2	1190	0.74	2082	6831	0	7	2.8	5.5	-0.7	-5.5
11.00	58.5	166.2	1265	0.79	2172	7126	0	13	2.7	5.3	-1.1	-5.2
11.50	58.5	168.8	1350	0.84	2262	7422	0	19	2.0	3.9	-1.3	-3.7
12.00	57.8	169.4	1417	0.88	2352	7717	0	18	3.0	5.9	-1.9	-5.6
12.50	56.1	171.2	1457	0.91	2442	8012	0	13	3.8	7.5	-1.7	-7.3
13.00	57.0	172.6	1576	0.98	2532	8307	0	22	3.3	6.4	-2.4	-6.0
13.50	56.8	173.2	1674	1.04	2622	8603	0	33	2.8	5.4	-2.9	-4.5
14.00	56.1	175.2	1756	1.09	2712	8898	1	33	1.8	3.4	-1.9	-2.9
14.50	56.2	177.5	1807	1.12	2802	9193	1	33	1.0	1.9	-1.0	-1.2
15.00	56.8	177.8	1840	1.14	2892	9489	2	102	0.5	1.1	-1.2	-1.3
15.50	58.0	178.5	1900	1.12	2982	9784	1	44	0.9	1.8	-3.5	-1.3
16.00	57.7	179.0	1878	1.17	3072	10079	2	70	1.9	3.7	-5.6	1.6
16.50	59.0	181.2	1839	1.14	3162	10374	2	106	3.0	5.8	-4.4	-0.7
17.00	59.8	184.4	1833	1.14	3252	10670	2	80	2.3	4.4	-3.1	0.4
17.50	60.8	186.0	1871	1.16	3342	10965	2	97	1.6	3.1	-3.2	5.1
18.00	61.2	187.4	1831	1.14	3432	11260	3	148	3.1	6.0	-4.8	8.2
18.50	63.2	189.8	1726	1.07	3522	11556	3	150	4.9	9.5	-5.2	6.6
19.00	65.1	193.3	1603	1.00	3612	11851	3	142	4.3	8.4	-5.2	6.0
19.50	66.5	196.9	1565	0.97	3702	12146	3	142	4.4	8.5	-5.8	9.2
20.00	68.4	201.9	1461	0.91	3792	12441	3	148	5.6	10.9		

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 21

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS: HAZY HORIZON EAST AND SOUTHEAST

DATE OF LAUNCH: 7 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 18:04 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	65.0	295.0	50	0.03	210	689	0	356	1.0	2.0	0.1	-2.0
1.00	74.0	176.3	62	0.04	318	1044	7	326	5.5	10.6	5.9	-8.8
1.50	47.8	151.5	286	0.18	417	1368	3	335	8.0	15.6	9.0	-12.7
2.00	37.7	148.2	536	0.33	516	1693	7	324	9.4	18.2	10.6	-14.8
2.50	31.2	146.8	847	0.53	615	2018	7	326	9.9	19.3	10.8	-16.0
3.00	28.4	147.0	1132	0.70	714	2343	7	325	9.7	18.9	10.8	-15.5
3.50	26.3	145.1	1429	0.89	809	2653	7	319	9.3	18.1	11.8	-13.7
4.00	25.4	144.5	1687	1.05	903	2963	7	316	8.1	15.8	11.0	-11.3
4.50	25.1	143.5	1912	1.19	998	3273	7	318	7.3	14.2	9.5	-10.6
5.00	25.0	143.2	2123	1.32	1092	3583	7	324	7.6	14.8	8.8	-11.9
5.50	24.5	143.5	2370	1.47	1192	3878	7	330	7.8	15.2	7.7	-13.2
6.00	24.3	144.4	2591	1.61	1277	4174	0	340	9.1	17.7	6.0	-16.6
6.50	23.5	146.6	2898	1.80	1362	4469	0	351	9.4	18.2	2.9	-17.9
7.00	23.5	149.0	3105	1.93	1452	4764	0	3	8.0	15.6	-0.9	-15.5
7.50	23.6	151.6	3296	2.05	1542	5059	0	4	8.9	17.3	-1.4	-17.2
8.00	23.3	154.0	3553	2.21	1632	5355	0	8	8.3	16.1	-2.3	-16.0
8.50	23.6	156.2	3708	2.30	1722	5650	0	19	6.5	12.9	-4.0	-12.0
9.00	24.0	158.1	3841	2.39	1812	5945	1	35	7.2	14.1	-8.1	-11.5
9.50	24.5	161.6	3950	2.45	1902	6241	1	28	7.1	13.7	-6.4	-12.2
10.00	24.6	162.6	4128	2.57	1992	6536	0	11	5.6	10.9	-2.0	-10.7
10.50	25.0	163.8	4246	2.64	2082	6831	0	19	5.1	10.0	-3.3	-9.4
11.00	25.3	165.0	4379	2.72	2172	7126	1	27	5.0	9.6	-4.3	-8.6
11.50	25.8	166.4	4468	2.78	2262	7422	1	63	5.0	9.8	-8.7	-4.5
12.00	26.6	168.8	4454	2.77	2352	7717	1	39	2.7	5.3	-3.2	-4.2
12.50	27.1	168.0	4573	2.84	2442	8012	1	23	4.6	9.0	-3.5	-8.3
13.00	27.4	170.7	4688	2.91	2532	8307	1	50	3.7	7.2	-5.5	-4.6
13.50	28.3	170.4	4680	2.91	2622	8603	0	8	1.4	2.7	-0.4	-2.7
14.00	28.7	171.0	4767	2.96	2712	8898	1	47	3.9	7.9	-5.5	-5.1
14.50	29.3	172.7	4811	2.99	2802	9193	1	67	2.9	5.6	-5.2	-2.2
15.00	30.1	173.0	4813	2.99	2892	9489	1	40	2.3	4.6	-2.9	-3.5
15.50	30.4	173.9	4909	3.05	2982	9784	1	38	3.5	6.7	-4.1	-5.3
16.00	30.9	174.7	4963	3.08	3072	10079	2	83	3.1	6.1	-6.1	-0.8
16.50	31.9	176.1	4916	3.05	3162	10374	1	53	3.6	7.1	-5.7	-4.2
17.00	31.8	176.8	5080	3.16	3252	10670	0	4	5.2	10.1	-0.8	-10.1
17.50	31.8	176.6	5226	3.25	3342	10965	0	359	3.8	7.4	0.1	-7.4
18.00	32.1	176.9	5308	3.30	3432	11260	1	25	2.3	4.5	-1.9	-4.1
18.50	32.6	177.3	5348	3.32	3522	11556	0	19	2.5	4.8	-1.6	-4.6
19.00	32.8	177.5	5446	3.38	3612	11851	0	8	2.6	5.1	-0.7	-5.0
19.50	33.2	177.6	5501	3.42	3702	12146	0	358	1.4	2.8	0.1	-2.8
20.00	33.7	177.5	5533	3.44	3792	12441	0	341	1.1	2.1	0.7	-2.0

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 22

LOCATION: MOJCAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 7 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 23:06 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	65.0	131.6	50	0.01	210	689	7	316	2.6	5.0	3.5	-3.6
1.00	54.5	138.0	156	0.10	418	1044	7	328	4.3	8.3	4.4	-7.1
1.50	45.8	145.2	306	0.19	417	1368	7	326	6.7	13.0	7.3	-10.7
2.00	38.5	143.1	472	0.24	615	1693	7	318	8.4	16.4	10.9	-13.2
2.50	32.3	140.8	811	0.50	715	2010	7	318	8.5	16.4	11.1	-12.2
3.00	30.6	140.5	1060	0.66	713	2343	7	325	7.7	15.0	8.5	-12.4
3.50	29.0	142.5	1276	0.79	809	2653	7	332	7.4	14.5	6.7	-12.8
4.00	26.1	144.4	1500	0.93	903	2964	7	329	10.2	19.9	10.3	-17.0
4.50	25.4	144.5	1868	1.17	988	3273	7	326	11.2	21.8	12.3	-18.0
5.00	24.5	143.5	2172	1.35	1092	3583	7	331	8.7	16.8	8.0	-14.8
5.50	24.2	142.9	2403	1.49	1182	3878	0	340	7.2	14.0	4.7	-13.2
6.00	24.4	142.1	2591	1.61	1274	4174	0	345	5.2	10.2	2.6	-9.8
6.50	25.0	140.2	2702	1.68	1362	4469	0	10	3.9	7.6	-1.3	-7.5
7.00	26.6	138.4	2768	1.72	1452	4764	0	20	3.9	7.5	-2.6	-7.1
7.50	28.8	137.9	2851	1.77	1542	5059	0	358	5.6	10.8	0.4	-10.8
8.00	31.5	138.3	2969	1.91	1632	5355	3	143	10.0	21.0	-13.0	16.6
8.50	36.2	150.8	2213	1.38	1722	5650	3	146	12.6	24.6	-13.9	20.3
9.00	38.4	155.6	2319	1.44	1812	5945	0	348	10.4	20.3	4.1	-19.9
9.50	36.5	157.8	2825	1.76	1902	6241	0	354	9.9	19.2	2.1	-19.0
10.00	33.2	159.8	2888	1.79	1992	6536	1	44	3.3	6.5	-4.5	-4.7
10.50	34.2	161.4	2913	1.81	2082	6831	1	36	3.2	6.3	-3.7	-5.1
11.00	33.8	162.5	4901	1.86	2172	7126	1	27	3.0	5.7	-2.6	-5.1
11.50	35.4	163.8	3039	1.89	2262	7422	1	44	2.4	4.8	-3.3	-3.4
12.00	36.2	164.9	3074	1.91	2352	7717	1	55	2.1	4.1	-3.3	-2.3
12.50	37.2	166.0	3083	1.92	2442	8012	2	84	2.3	4.5	-4.5	-0.5
13.00	38.5	167.5	3055	1.90	2532	8307	2	78	8.6	16.6	-16.3	-3.6
13.50	39.0	175.5	3112	1.93	2622	8603	1	65	6.6	12.8	-11.6	-5.5
14.00	38.5	174.5	3156	1.97	2712	8898	1	293	3.6	7.0	6.4	-2.7
14.50	40.0	172.1	3218	2.00	2802	9193	1	47	1.2	2.3	-1.7	-1.6
15.00	41.0	175.5	3210	1.99	2892	9489	2	76	5.2	10.0	-9.7	-2.5
15.50	41.4	177.5	3267	2.03	2982	9784	1	58	3.8	7.4	-6.3	-3.9
16.00	41.8	179.0	3322	2.06	3072	10079	1	52	3.6	7.1	-5.6	-4.4
16.50	42.0	180.5	3398	2.11	3162	10374	1	55	3.4	6.5	-5.4	-3.7
17.00	42.5	181.8	3438	2.14	3252	10670	1	50	3.4	6.6	-5.0	-4.3
17.50	42.5	183.0	3536	2.20	3342	10965	1	43	4.3	8.3	-5.7	-6.1
18.00	42.5	182.5	3634	2.26	3432	11260	1	58	3.7	7.1	-6.0	-3.8
18.50	43.0	185.8	3668	2.28	3522	11556	1	47	2.9	5.6	-4.1	-3.8
19.00	43.0	186.3	3764	2.34	3612	11851	0	20	3.3	6.4	-2.1	-6.1
19.50	43.0	186.5	3861	2.40	3702	12146	0	20	3.8	7.4	-2.6	-6.9
20.00	42.8	187.1	3985	2.48	3792	12441	1	35	4.4	8.5	-3.6	-7.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 1

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 8 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	63.2	160.0	55	0.03	210	689	7	336	1.9	3.7	1.5	-3.4
1.00	61.8	158.4	118	0.07	318	1044	7	322	0.7	1.3	0.8	-1.1
1.50*	777.0	777.0	95	0.06	417	1368	4	175	0.8	1.5	-0.1	1.5
2.00	79.8	145.4	74	0.05	516	1693	6	288	2.6	5.0	4.7	-1.5
2.50*	777.0	777.0	234	0.15	615	2018	7	295	5.4	10.6	9.6	-4.5
3.00	57.3	120.5	393	0.24	714	2343	7	299	5.5	10.6	9.3	-5.2
3.50	51.7	121.3	558	0.35	809	2653	7	308	4.8	9.2	7.3	-5.7
4.00	49.8	123.7	677	0.42	903	2963	7	320	4.8	9.4	6.1	-7.2
4.50	46.9	127.6	838	0.52	998	3273	7	332	6.7	13.1	6.1	-11.6
5.00	43.3	134.3	1051	0.65	1092	3583	7	335	7.3	14.1	6.0	-12.8
5.50	41.0	136.9	1242	0.77	1182	3878	0	330	6.4	12.4	4.6	-11.5
6.00	39.7	140.6	1409	0.88	1272	4174	0	7	10.0	19.5	-2.5	-19.3
6.50	36.7	152.8	1690	1.05	1362	4469	7	332	6.5	12.6	5.9	-11.1
7.00	37.0	143.0	1792	1.11	1452	4764	6	278	7.1	13.8	13.7	-1.9
7.50	36.2	142.6	1968	1.22	1542	5059	0	341	5.5	10.6	3.4	-10.1
8.00	36.0	145.8	2106	1.31	1632	5355	0	356	4.4	8.5	0.5	-8.6
8.50	35.5	146.9	2189	1.36	1722	5650	7	332	2.5	4.8	2.3	-4.2
9.00	37.3	146.2	2253	1.40	1812	5945	7	319	2.2	4.3	2.8	-3.2
9.50	37.6	146.0	2321	1.44	1902	6241	7	327	2.7	5.2	3.6	-4.4
10.00*	777.0	777.0	2414	1.50	1992	6536	7	333	3.1	6.1	3.8	-5.4
10.50	38.3	146.5	2507	1.56	2082	6831	0	339	2.9	5.6	2.0	-5.3
11.00	38.7	147.1	2584	1.61	2172	7126	0	349	2.2	4.3	0.8	-4.2
11.50	39.4	147.6	2630	1.63	2262	7422	0	338	1.7	3.2	1.2	-3.0
12.00	40.0	147.5	2681	1.67	2352	7717	7	326	1.8	3.5	2.0	-2.9
12.50*	777.0	777.0	2738	1.70	2442	8012	7	330	1.8	3.7	1.8	-3.2
13.00	41.0	147.6	2795	1.74	2532	8307	0	346	1.9	3.7	0.4	-1.7
13.50	42.1	147.9	2789	1.73	2622	8603	1	35	0.9	1.7	-1.1	-0.5
14.00	42.8	148.7	2819	1.75	2712	8898	1	25	1.0	1.9	-1.1	-2.4
14.50	43.6	149.3	2835	1.76	2802	9193	1	50	1.4	2.7	-1.6	-1.4
15.00	44.6	150.0	2829	1.76	2892	9489	1	63	1.1	2.1	-3.3	-1.7
15.50	45.5	151.6	2830	1.76	2982	9784	2	71	1.9	3.7	-5.8	-2.0
16.00	46.7	153.8	2799	1.74	3072	10079	2	75	3.2	6.1	-5.3	-1.4
16.50	47.6	155.0	2794	1.74	3162	10374	2	80	2.8	5.5	-5.1	-0.9
17.00	48.8	157.0	2158	1.71	3252	10670	2	82	2.7	5.2	-7.2	-1.0
17.50	49.8	159.5	2738	1.70	3342	10965	2	83	3.7	7.3	-8.9	-1.2
18.00	51.0	162.7	2697	1.68	3432	11260	2	94	4.6	9.0	-10.2	0.7
18.50	52.5	165.8	2624	1.63	3522	11556	2	90	5.3	10.2	-9.0	0.0
19.00	53.2	168.5	2626	1.63	3612	11851	2	88	4.6	9.0	-9.2	-0.3
19.50	54.4	172.0	2577	1.60	3702	12146	2	92	4.8	9.3	-9.3	0.3
20.00	55.1	174.7	2574	1.60	3792	12441	2	85	4.0	7.9	-7.8	-0.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 2

LOCATION: MORGAN HILL, CALIFORNIA

SPECIFICS: FAZE AND SMOKE ALL QUADRANTS

DATE OF LAUNCH: 8 AUGUST 1979

ELEVATION OF LAUNCH SITE: 336 FEET

TIME OF LAUNCH: 11:00 P.D.T.

TIME MINUTES	ELEV DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	69.0	301.2	41	0.03	210	689	2	109	1.3	2.5	-2.4	0.8
1.00	70.0	290.6	79	0.05	318	1044	2	86	1.3	2.4	-2.4	-0.2
1.50	70.4	278.5	112	0.07	417	1368	2	77	1.0	2.0	-1.9	-0.4
2.00	72.0	275.1	135	0.08	516	1693	0	340	0.2	0.4	0.2	-0.4
2.50	73.3	272.0	106	0.07	615	2018	7	316	1.1	2.2	1.5	-1.6
3.00	74.2	266.9	95	0.06	714	2343	7	316	2.7	5.3	3.6	-3.8
3.50	80.8	175.9	114	0.07	868	2853	7	300	1.7	3.3	2.8	-1.6
4.00	83.8	175.9	87	0.05	903	2963	3	154	1.8	3.4	-1.9	3.1
4.50	87.9	283.6	44	0.03	998	3273	3	123	2.6	4.9	-4.1	2.7
5.00	82.8	267.9	125	0.08	1092	3583	2	96	3.9	7.6	-7.6	0.7
5.50	76.6	276.7	173	0.17	1182	3878	2	85	3.6	7.0	-7.0	-0.6
6.00	73.7	265.0	342	0.21	1272	4174	2	70	4.2	8.1	-7.6	-2.7
6.50	67.8	261.0	514	0.32	1362	4469	2	72	5.4	10.4	-9.9	-3.3
7.00	64.0	259.0	653	0.41	1452	4764	2	74	5.3	10.2	-9.8	-2.7
7.50	60.1	258.3	828	0.51	1542	5059	2	81	5.1	9.9	-9.0	-1.5
8.00	57.8	259.7	963	0.60	1632	5355	2	89	4.1	7.9	-7.9	-0.1
8.50	56.6	260.9	1068	0.66	1722	5650	2	93	2.8	5.4	-5.4	0.2
9.00	56.1	261.6	1128	0.70	1812	5945	2	95	2.0	3.9	-3.9	0.3
9.50	56.8	262.3	1187	0.74	1902	6241	2	93	1.9	3.8	-3.6	0.2
10.00	56.7	262.7	1242	0.77	1992	6536	2	89	1.7	3.2	-3.2	-0.1
10.50	57.6	262.8	1288	0.80	2082	6831	2	70	1.2	2.4	-2.2	-0.8
11.00	57.6	262.0	1311	0.82	2172	7126	1	46	1.5	3.0	-2.1	-2.1
11.50	57.4	260.5	1360	0.85	2262	7422	1	35	1.8	3.5	-2.0	-2.9
12.00	58.3	258.7	1380	0.86	2352	7717	0	19	1.9	3.6	-1.2	-3.4
12.50	58.6	256.5	1417	0.88	2442	8012	0	13	2.2	4.2	-1.0	-4.1
13.00	59.2	254.8	1449	0.90	2532	8307	0	356	2.5	4.9	0.4	-4.9
13.50	60.1	250.6	1449	0.90	2622	8603	0	343	3.3	6.4	1.9	-6.1
14.00	60.8	246.2	1459	0.91	2712	8898	7	333	3.2	6.2	2.8	-5.5
14.50	62.0	243.0	1436	0.89	2802	9193	7	337	3.0	5.8	2.3	-5.3
15.00	62.2	239.2	1471	0.91	2892	9489	0	347	1.5	3.0	0.7	-2.9
15.50	63.1	239.5	1461	0.91	2982	9784	7	334	1.5	2.9	1.3	-2.6
16.00	63.5	235.8	1481	0.92	3072	10079	7	336	3.1	5.9	2.4	-5.4
16.50	64.0	232.5	1492	0.93	3162	10374	7	332	2.3	4.5	2.1	-4.0
17.00	64.5	230.5	1502	0.93	3252	10670	7	311	1.6	3.1	2.4	-2.1
17.50	65.8	228.0	1477	0.92	3342	10965	6	280	1.8	3.5	3.5	-0.6
18.00	66.7	227.2	1434	0.89	3432	11260	6	265	2.0	3.9	3.8	0.4
18.50	68.0	225.9	1382	0.86	3522	11556	6	261	2.5	4.8	4.8	0.8
19.00	69.5	223.6	1312	0.82	3612	11851	6	277	2.4	4.6	4.6	-0.5
19.50	70.3	221.0	1241	0.81	3702	12146	7	293	2.3	4.4	4.1	-1.7
20.00	71.0	217.8	1271	0.79	3792	12441	6	290	2.5	4.9	4.6	-1.7

* CALCULATIONS ON BOTH SIDES OF THIS POINT WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 3

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 8 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 17:05 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	32.5	330.7	170	0.11	210	689	3	151	5.1	10.0	-4.8	0.8
1.00	35.6	331.2	308	0.19	318	1044	3	120	1.9	3.7	-3.2	1.9
1.50	49.6	318.6	274	0.17	417	1368	0	351	2.5	4.9	0.7	-4.9
2.00	67.3	313.5	173	0.11	516	1693	7	320	4.2	8.1	5.3	-6.2
2.50	87.2	307.7	25	0.02	615	2018	7	312	5.8	11.3	8.4	-7.6
3.00	74.0	131.0	175	0.11	714	2343	7	310	6.8	13.2	10.1	-8.4
3.50	61.7	130.0	380	0.24	809	2653	7	321	7.8	15.2	9.6	-11.0
4.00	51.2	138.1	644	0.40	903	2963	7	322	8.5	16.5	10.2	-13.0
4.50	45.3	136.9	866	0.55	998	3273	7	319	8.8	17.1	11.3	-12.8
5.00	40.2	136.4	1172	0.73	1092	3583	7	319	8.4	16.4	10.9	-12.3
5.50	37.8	137.5	1392	0.87	1182	3878	7	303	6.3	12.1	10.2	-6.6
6.00	37.3	134.4	1536	0.95	1272	4174	6	282	5.2	10.4	10.2	-3.2
6.50	37.1	131.1	1666	1.04	1362	4469	6	284	5.8	11.3	11.0	-2.7
7.00	36.2	129.6	1845	1.15	1452	4764	7	301	6.6	12.8	11.0	-6.5
7.50	35.0	129.1	2057	1.28	1542	5059	7	318	7.0	13.5	9.1	-10.0
8.00	34.1	130.6	2250	1.40	1632	5355	0	253	8.5	16.5	3.4	-15.3
8.50	33.4	137.2	2457	1.53	1722	5650	7	333	7.0	13.5	6.2	-12.1
9.00	32.8	134.0	2653	1.65	1812	5945	7	308	6.0	11.7	9.3	-7.2
9.50	32.6	136.0	2815	1.75	1902	6241	0	352	5.5	10.7	1.5	-10.6
10.00	32.9	138.2	2921	1.82	1992	6536	0	0	4.8	9.3	-0.1	-9.3
10.50	33.2	139.8	3026	1.88	2082	6831	0	10	3.8	7.5	-1.3	-7.4
11.00	34.0	141.4	3069	1.91	2172	7126	1	24	3.8	7.4	-3.1	-6.8
11.50	34.6	143.6	3131	1.95	2262	7422	1	24	4.5	8.7	-3.6	-8.0
12.00	35.1	145.7	3201	1.99	2352	7717	1	31	4.9	9.6	-4.9	-8.2
12.50	35.7	148.4	3256	2.02	2442	8012	1	30	5.5	10.7	-5.4	-9.2
13.00	35.9	150.8	3357	2.09	2532	8307	1	31	5.7	11.2	-5.7	-9.6
13.50	36.3	153.5	3431	2.13	2622	8603	1	27	6.6	12.9	-5.9	-11.5
14.00	36.4	156.1	3592	2.23	2712	8898	1	25	7.2	14.0	-5.9	-12.7
14.50	36.0	158.7	3716	2.31	2802	9193	1	24	7.2	14.0	-5.6	-12.8
15.00	35.6	160.8	3897	2.42	2892	9489	0	19	5.9	11.5	-3.8	-10.9
15.50	35.8	162.0	3993	2.48	2982	9784	0	10	5.3	10.3	-1.7	-10.2
16.00	35.4	162.9	4179	2.60	3072	10079	0	3	6.1	11.9	-0.5	-11.8
16.50	35.2	163.7	4338	2.70	3162	10374	0	358	5.5	10.7	0.4	-10.7
17.00	35.0	164.0	4499	2.80	3252	10670	0	355	4.6	9.0	0.7	-9.0
17.50	35.1	164.4	4610	2.86	3342	10965	0	358	5.6	11.0	0.3	-11.0
18.00	34.8	165.0	4827	3.00	3433	11260	0	358	6.0	11.6	0.3	-11.6
18.50	34.6	165.4	4958	3.08	3522	11556	7	324	6.0	11.6	6.8	-9.5
19.00	34.2	163.6	5165	3.21	3612	11851	0	354	6.4	12.4	1.3	-12.3
19.50	34.0	166.0	5337	3.32	3702	12146	1	23	6.5	12.6	-5.0	-11.6
20.00	34.6	168.2	5471	3.40	3792	12441	0	354	4.5	8.7	0.9	-8.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 4

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS: LIGHT WENT OUT ON THEODOLITE

DATE OF LAUNCH: 8 AUGUST 1976

ELEVATION OF LAUNCH SITE: 300 FEET

TIME OF LAUNCH: 23:42 P.D.T.

TIME MINUTES	ELEV. DEG	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	74.0	161.0	31	0.02	210	689	7	335	1.2	2.3	1.0	-2.1
1.00	71.5	150.0	72	0.04	318	1044	7	321	1.3	2.6	1.6	-2.0
1.50	70.7	146.5	110	0.07	417	1368	7	313	2.1	4.2	3.1	-2.8
2.00*	777.0	777.0	198	0.12	516	1693	7	313	2.9	5.7	4.1	-3.9
2.50*	777.0	777.0	285	0.18	615	2018	7	313	2.9	5.7	4.1	-3.9
3.00	58.7	137.2	372	0.23	714	2343	7	319	4.7	9.2	6.0	-6.9
3.50	51.2	138.7	568	0.35	809	2653	7	324	6.7	13.0	7.7	-10.5
4.00	46.0	140.7	778	0.48	903	2963	7	324	7.0	13.6	8.0	-11.0
4.50	42.2	141.0	988	0.61	998	3273	7	327	6.4	12.4	6.7	-10.4
5.00	40.6	142.8	1155	0.72	1092	3583	7	308	4.9	9.6	7.6	-5.9
5.50	40.2	136.0	1278	0.79	1182	3878	7	316	4.0	7.8	5.4	-5.6
6.00	40.0	141.7	1394	0.87	1272	4174	0	356	4.3	8.4	0.6	-8.4
6.50	40.2	143.2	1491	0.93	1362	4469	0	352	3.4	6.6	1.0	-6.5
7.00	40.6	145.8	1575	0.98	1452	4764	0	354	3.5	6.7	0.7	-6.7
7.50	40.7	147.7	1674	1.04	1542	5059	0	16	3.4	6.5	-1.8	-6.3
8.00	41.8	150.6	1711	1.06	1632	5355	1	27	3.7	7.2	-3.2	-6.5
8.50	42.4	154.8	1799	1.12	1722	5650	0	15	4.3	8.4	-2.1	-8.1
9.00	41.9	156.0	1906	1.18	1812	5945	0	354	5.7	11.0	1.1	-11.0
9.50	40.3	157.0	2122	1.32	1902	6241	0	354	6.9	13.3	1.5	-13.2
10.00	39.4	159.1	2361	1.43	1992	6536	0	12	4.9	9.4	-1.9	-9.2
10.50	39.9	161.0	2369	1.47	2082	6831	0	11	5.4	10.5	-2.0	-10.4
11.00	38.7	162.9	2588	1.61	2172	7126	0	3	6.4	12.3	-0.6	-12.3
11.50	38.8	164.0	2725	1.69	2262	7422	0	5	5.3	10.3	-0.9	-10.2
12.00	38.0	165.3	2850	1.79	2352	7717	0	1	5.2	10.2	-0.1	-10.2
12.50	37.7	166.7	3028	1.88	2442	8012	0	0	5.7	11.1	-0.1	-11.1
13.00	37.1	166.9	3213	2.00	2532	8307	0	357	6.4	12.5	0.6	-12.4
13.50	36.5	167.0	3406	2.12	2622	8603	0	351	4.4	8.5	1.4	-8.4
14.00	36.9	167.2	3476	2.16	2712	8898	0	359	4.1	8.0	0.2	-8.0
14.50	36.5	167.8	3688	2.27	2802	9193	0	3	4.4	8.5	-0.4	-8.5
15.00	36.5	168.3	3729	2.32	2892	9489	1	24	3.5	6.9	-2.8	-6.3
15.50	37.0	169.7	3822	2.37	2982	9784	0	17	4.0	7.8	-2.3	-7.4
16.00	37.0	170.0	3941	2.45	3072	10079	0	357	3.5	6.8	0.3	-6.8
16.50	37.2	170.1	4041	2.51	3162	10374	0	354	3.0	5.9	0.6	-5.8

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 5

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 9 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 05:20 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	A.S.L. ALTITUDE METERS	A.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	51.8	314.7	85	0.05	210	689	3	134	3.8	7.5	-5.4	5.2
1.00	43.1	313.9	231	0.14	318	1044	3	137	2.0	4.0	-2.7	2.9
1.50	56.6	316.0	208	0.13	417	1368	3	137	2.0	3.9	-2.6	2.8
2.00	49.8	315.0	350	0.22	516	1693	2	96	0.9	1.8	-1.8	0.2
2.50*	777.0	777.0	257	0.16	615	2018	7	333	3.5	6.7	-3.1	-6.0
3.00	75.0	292.3	164	0.10	714	2343	7	320	4.3	8.3	-5.4	-6.4
3.50	85.5	218.0	56	0.03	809	2653	7	334	4.5	8.8	-3.8	-7.9
4.00*	777.0	777.0	190	0.12	903	2963	0	0	4.6	9.0	0.0	-9.0
4.50	70.1	185.8	324	0.20	998	3273	0	3	4.8	9.3	-0.5	-9.3
5.00	64.5	186.1	472	0.29	1092	3583	0	2	4.9	9.5	-0.3	-9.5
5.50	60.3	183.8	616	0.38	1182	3878	0	353	5.4	10.1	1.3	-10.3
6.00	56.0	180.9	789	0.49	1272	4174	0	346	6.3	12.3	3.0	-11.0
6.50	52.0	177.0	984	0.61	1362	4469	0	351	7.2	13.8	2.2	-13.8
7.00	48.0	177.3	1216	0.76	1452	4764	0	358	7.6	14.8	0.6	-14.7
7.50	45.0	177.2	1440	0.89	1542	5059	0	355	8.3	16.1	1.3	-16.0
8.00	41.8	176.7	1711	1.06	1632	5355	0	352	8.4	16.3	2.3	-16.2
8.50	39.8	175.8	1944	1.21	1722	5650	0	351	8.4	16.3	2.4	-16.1
9.00	37.7	175.5	2212	1.37	1812	5945	0	354	8.1	15.8	1.6	-15.7
9.50	36.5	175.5	2433	1.51	1902	6241	0	0	8.1	15.8	0.0	-15.8
10.00	35.0	176.3	2699	1.68	1992	6536	0	9	8.2	15.9	-2.4	-15.7
10.50	34.2	177.7	2913	1.81	2083	6831	0	11	6.3	12.3	-2.3	-12.1
11.00	34.0	178.1	3069	1.91	2172	7126	0	7	5.3	10.3	-1.2	-10.2
11.50	33.8	178.6	3227	2.00	2262	7422	0	6	6.7	12.9	-1.3	-12.9
12.00	33.0	179.0	3465	2.15	2352	7717	0	3	7.5	14.5	-0.7	-14.5
12.50	32.5	179.1	3673	2.28	2442	8012	0	356	5.6	10.9	0.8	-10.8
13.00	32.6	179.7	3800	2.36	2532	8307	0	2	4.7	9.2	-0.3	-9.2
13.50	32.5	179.3	3956	2.46	2622	8603	0	2	6.8	13.3	-0.4	-13.3
14.00	31.8	179.0	4210	2.62	2712	8898	0	4	8.4	16.3	-1.1	-16.3
14.50	31.2	179.8	4458	2.77	2802	9193	0	356	8.5	16.5	1.1	-16.4
15.00	30.6	178.7	4718	2.93	2892	9489	0	349	8.3	16.1	3.1	-15.8
15.50	30.2	178.7	4948	3.07	2982	9784	0	2	7.5	14.5	-0.5	-14.5
16.00	29.9	179.0	5165	3.21	3072	10079	0	3	8.1	15.7	-0.9	-15.6
16.50	29.4	179.1	5431	3.37	3162	10374	0	5	6.7	13.1	-1.0	-13.1
17.00	29.5	179.4	5568	3.46	3252	10670	0	14	6.7	13.0	-3.1	-12.7
17.50	29.1	180.1	5821	3.62	3342	10965	0	15	7.2	13.9	-3.6	-13.4
18.00	29.1	180.5	5983	3.72	3432	11260	0	16	5.2	10.0	-2.8	-9.6
18.50	29.2	180.9	6119	3.80	3522	11556	1	24	4.5	8.7	-3.6	-7.9
19.00	29.4	181.5	6229	3.87	3612	11851	1	32	3.2	6.2	-3.3	-5.3
19.50	29.8	181.8	6286	3.91	3702	12146	1	30	3.1	6.0	-3.0	-5.1
20.00	30.0	182.3	6391	3.97	3792	12441	1	30	4.0	7.7	-3.8	-6.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 6

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 9 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 09:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	ALTITUDE METERS (M.S.L.)	ALTITUDE FEET (M.S.L.)	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	50.9	316.9	88	0.05	210	689	3	139	3.1	6.1	-4.0	4.6
1.00	49.9	319.3	198	0.12	318	1044	3	149	4.2	8.1	-4.2	6.2
1.50	43.2	325.8	339	0.21	417	1368	3	153	4.6	8.9	-4.1	8.0
2.00	41.9	327.4	463	0.29	516	1693	4	162	2.0	3.8	-1.2	3.6
2.50	48.8	330.0	449	0.28	615	2018	7	300	2.4	4.7	4.0	-2.4
3.00	61.0	330.5	339	0.21	714	2343	7	315	4.0	7.8	5.5	-5.5
3.50	72.2	340.1	227	0.14	809	2653	0	351	2.8	5.5	0.9	-5.4
4.00	77.5	126.8	178	0.11	903	2963	1	24	3.7	7.1	-2.9	-6.5
4.50	80.7	277.5	147	0.09	998	3273	0	17	5.0	9.7	-2.9	-9.3
5.00	78.8	233.5	313	0.19	1092	3583	0	21	6.9	13.4	-4.0	-12.5
5.50	66.5	218.8	470	0.29	1182	3878	0	22	8.3	16.1	-6.1	-14.9
6.00	58.9	212.0	706	0.44	1272	4173	0	18	8.4	16.4	-5.0	-15.6
6.50	52.7	207.8	960	0.60	1362	4469	0	12	8.7	16.8	-3.5	-16.5
7.00	48.2	203.5	1207	0.75	1452	4764	0	8	8.0	15.5	-2.3	-15.3
7.50	45.4	201.4	1420	0.88	1542	5059	0	10	7.6	14.7	-2.4	-14.5
8.00	42.8	199.7	1652	1.03	1632	5355	0	14	7.2	14.0	-3.3	-13.6
8.50	41.2	199.6	1851	1.15	1722	5650	1	24	7.0	13.7	-5.5	-12.5
9.00	39.5	200.5	2076	1.29	1813	5945	1	28	6.0	11.7	-5.5	-10.3
9.50	39.2	201.0	2207	1.37	1902	6241	1	28	5.1	9.8	-4.5	-8.7
10.00	38.5	201.8	2376	1.48	1992	6536	1	28	5.0	9.8	-4.5	-8.7
10.50	36.3	201.8	2507	1.56	2082	6831	1	27	4.7	9.2	-4.2	-8.2
11.00	37.8	202.0	2659	1.65	2172	7126	0	20	5.3	10.3	-3.5	-9.7
11.50	37.4	201.6	2825	1.75	2262	7422	0	15	6.2	12.1	-3.2	-11.6
12.00	36.6	201.2	3030	1.88	2352	7717	0	9	7.1	13.8	-2.3	-13.7
12.50	35.9	200.0	3244	2.02	2442	8012	0	7	7.5	14.6	-1.9	-14.5
13.00	35.0	199.4	3470	2.16	2532	8307	0	9	8.3	16.2	-2.5	-16.0
13.50	34.0	198.5	3736	2.32	2622	8603	0	8	9.8	19.1	-2.8	-18.9
14.00	32.8	197.8	4050	2.52	2712	8898	0	9	11.3	22.0	-3.3	-21.7
14.50	31.5	197.0	4406	2.74	2802	9193	0	10	11.5	22.4	-4.0	-22.0
15.00	30.5	196.2	4736	2.94	2892	9489	0	13	11.1	21.5	-4.9	-21.0
15.50	29.6	196.5	5070	3.15	2982	9784	0	12	10.4	20.2	-4.3	-19.7
16.00	29.0	196.2	5350	3.33	3072	10079	0	11	8.7	16.9	-3.3	-16.6
16.50	28.7	196.0	5589	3.47	3162	10374	0	0	8.3	16.1	-2.2	-15.9
17.00	28.3	195.6	5850	3.64	3252	10670	0	4	8.3	15.8	-1.0	-15.8
17.50	28.1	195.0	6066	3.77	3342	10965	0	359	7.1	13.9	0.2	-13.9
18.00	28.0	194.4	6263	3.89	3432	11260	0	356	7.4	14.3	1.1	-14.3
18.50	27.8	193.7	6487	4.03	3522	11556	0	359	8.3	16.1	0.2	-16.0
19.00	27.5	193.3	6743	4.19	3612	11851	0	0	7.8	15.2	-0.1	-15.2
19.50	27.4	192.8	6945	4.32	3702	12146	0	359	7.5	14.6	0.3	-14.6
20.00	27.2	192.4	7180	4.46	3792	12441	0	1	8.0	15.5	-0.2	-15.5

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 7

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 9 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 13:01 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	56.7	335.6	71	0.04	210	689	4	168	2.0	3.8	-0.8	3.7
1.00	61.5	348.2	117	0.07	318	1044	5	205	0.5	1.0	0.4	0.9
1.50	73.8	349.7	93	0.06	417	1368	7	325	3.0	5.8	3.4	-4.8
2.00*	777.0	777.0	193	0.12	516	1693	7	322	5.2	10.2	6.2	-8.1
2.50*	777.0	777.0	292	0.18	615	2018	7	322	5.2	10.2	6.2	-8.1
3.00	57.4	136.0	391	0.24	714	2343	7	319	6.4	12.4	8.2	-9.3
3.50	48.8	136.1	618	0.38	809	2653	7	321	8.3	16.2	10.2	-12.6
4.00	42.0	138.8	890	0.55	903	2963	7	327	11.0	21.4	11.8	-17.9
4.50	35.1	141.5	1274	0.79	998	3273	7	331	10.1	19.7	9.6	-17.2
5.00	33.6	143.7	1490	0.93	1092	3583	0	343	7.2	13.9	4.1	-13.3
5.50	32.7	146.8	1682	1.05	1182	3878	0	352	6.8	13.2	1.8	-13.1
6.00	32.2	149.7	1858	1.15	1272	4174	0	356	6.3	12.3	0.9	-12.3
6.50	31.9	152.0	2024	1.26	1362	4469	0	359	6.5	12.5	0.1	-12.5
7.00	31.5	154.7	2203	1.37	1452	4764	0	4	7.1	13.9	-1.1	-13.8
7.50	31.0	157.5	2397	1.48	1542	5059	0	7	8.5	16.5	-2.1	-16.5
8.00	30.0	160.7	2650	1.65	1632	5355	0	5	8.8	17.1	-1.5	-17.0
8.50	29.4	162.4	2875	1.79	1722	5650	0	7	8.2	15.9	-2.1	-15.8
9.00	28.9	164.8	3098	1.92	1812	5945	0	10	11.8	22.9	-3.9	-22.5
9.50	27.1	167.7	3518	2.19	1902	6241	0	12	9.2	17.8	-3.7	-17.5
10.00	27.7	168.8	3600	2.24	1992	6536	0	15	7.4	14.5	-3.8	-14.0
10.50	26.8	170.7	3920	2.44	2082	6831	0	8	10.0	19.4	-2.7	-19.2
11.00	26.4	171.5	4170	2.59	2172	7126	0	3	8.7	16.8	-0.8	-16.8
11.50	26.0	172.1	4439	2.75	2262	7422	0	11	5.0	9.7	-1.9	-9.5
12.00	26.8	172.8	4454	2.77	2352	7717	0	7	6.4	12.4	-1.6	-12.2
12.50	26.0	173.3	4798	2.98	2442	8012	0	3	8.2	15.9	-0.8	-15.9
13.00	26.2	173.8	4938	3.07	2532	8307	0	10	5.6	10.9	-1.9	-10.7
13.50	26.2	174.4	5121	3.18	2622	8603	0	7	5.5	10.6	-1.2	-10.5
14.00	26.4	174.8	5258	3.27	2712	8898	0	5	5.0	9.7	-0.9	-9.6
14.50	26.5	175.0	5415	3.36	2802	9193	0	7	6.2	12.0	-1.4	-11.9
15.00	26.4	175.4	5620	3.49	2892	9489	0	5	6.1	11.8	-0.9	-11.8
15.50	26.5	175.6	5776	3.59	2982	9784	7	326	6.4	12.4	6.9	-10.3
16.00	26.5	173.6	5957	3.70	3072	10079	0	354	5.6	10.8	1.2	-10.8
16.50	26.6	175.5	6111	3.80	3162	10374	1	27	6.0	11.7	-5.2	-10.5
17.00	26.7	175.4	6263	3.89	3252	10670	0	351	5.1	9.8	1.5	-9.7
17.50	26.8	175.3	6414	3.98	3342	10965	0	349	5.0	9.8	1.9	-9.6
18.00	26.9	175.1	6564	4.08	3432	11260	0	348	4.5	8.8	1.8	-8.6
18.50	27.1	175.0	6683	4.15	3522	11556	0	355	5.4	10.5	0.9	-10.5
19.00	27.0	175.1	6889	4.28	3612	11851	0	0	4.9	9.5	0.0	-9.5
19.50	27.3	175.2	6975	4.33	3702	12146	0	355	2.3	4.5	0.4	-4.5
20.00	27.7	175.1	7028	4.37	3792	12441	0	342	1.8	3.6	1.1	-3.4

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T 8 0

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS: BALLOON TRAVELLED BEHIND A TREE

DATE OF LAUNCH: 9 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 17:01 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	44.3	294.0	111	0.07	210	689	3	113	3.7	7.1	-6.6	2.8
1.00	44.4	292.1	221	0.14	318	1044	3	135	4.5	8.7	-6.1	6.1
1.50	40.2	309.0	373	0.23	417	1368	3	140	4.1	7.9	-5.1	6.1
2.00	42.4	307.1	453	0.28	516	1693	1	60	1.2	2.3	-2.0	-1.2
2.50	51.8	299.5	404	0.25	615	2018	0	339	4.5	8.8	3.1	-8.2
3.00	61.5	274.2	266	0.17	714	2343	6	288	9.8	19.1	18.1	-6.0
3.50	73.5	86.4	209	0.13	809	2653	7	318	8.6	16.7	11.1	-12.5
4.00	65.6	168.1	374	0.23	903	2963	0	350	9.3	18.1	3.2	-17.8
4.50	55.4	150.1	618	0.38	996	3273	7	316	10.8	21.0	14.7	-15.0
5.00	45.2	147.4	983	0.61	1092	3583	7	322	12.4	24.1	14.9	-18.9
5.50	38.5	145.5	1358	0.84	1182	3878	7	322	11.1	21.5	13.2	-17.0
6.00	35.4	145.3	1646	1.02	1272	4174	7	329	13.5	26.2	13.4	-22.5
6.50	30.7	146.9	2165	1.35	1362	4469	7	335	15.0	29.1	12.5	-26.3
7.00	28.0	148.6	2539	1.58	1452	4764	0	342	11.7	22.8	7.2	-21.6
7.50	26.8	150.5	2851	1.77	1542	5059	0	344	11.7	22.8	6.1	-21.9
8.00	25.4	152.0	3222	2.00	1632	5355	0	346	13.5	26.3	6.2	-25.6
8.50	24.0	153.0	3639	2.26	1722	5650	0	349	14.4	28.1	5.3	-27.5

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 9

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 9 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 21:04 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	54.0	318.0	78	0.05	210	689	3	139	2.5	4.8	-3.2	3.6
1.00*	777.0	777.0	149	0.09	318	1044	3	139	2.3	4.5	-3.0	3.4
1.50	55.2	318.8	219	0.14	417	1368	3	116	2.3	4.5	-4.1	2.0
2.00	65.6	307.7	283	0.18	516	1693	0	3	1.3	2.6	-0.1	-2.6
2.50	71.6	299.7	171	0.11	615	2018	7	313	3.7	7.2	5.3	-4.9
3.00	84.0	290.2	64	0.04	714	2343	7	316	6.4	12.4	8.7	-8.9
3.50	72.4	147.5	224	0.14	809	2653	7	311	7.8	15.1	11.4	-10.0
4.00	63.0	134.4	408	0.25	903	2963	7	319	7.6	14.8	9.7	-11.2
4.50	52.8	141.8	680	0.42	998	3273	7	336	11.6	22.5	9.2	-20.5
5.00*	777.0	777.0	1090	0.68	1092	3583	0	338	13.9	26.9	10.1	-24.9
5.50*	777.0	777.0	1499	0.93	1182	3878	0	338	13.9	26.9	10.1	-24.9
6.00	31.5	152.2	1909	1.19	1272	4174	0	341	14.6	28.3	9.0	-26.8
6.50	28.1	154.6	2360	1.47	1362	4469	0	342	12.9	25.0	7.7	-23.7
7.00	26.8	155.0	2673	1.66	1452	4764	0	354	4.9	9.6	1.1	-9.5
7.50	28.6	156.7	2641	1.64	1542	5059	0	351	10.5	20.3	3.2	-20.1
8.00	25.0	158.0	3281	2.04	1632	5355	0	349	14.7	28.5	5.6	-27.9
8.50	24.8	159.7	3506	2.18	1722	5650	0	7	8.1	15.8	-1.8	-15.7
9.00	24.7	161.6	3718	2.31	1812	5945	0	10	8.1	15.7	-2.8	-15.5
9.50	24.6	163.3	3932	2.44	1902	6241	0	13	7.9	15.3	-3.4	-14.9
10.00	24.6	165.0	4128	2.57	1992	6536	0	13	9.0	17.4	-4.0	-17.0
10.50	24.2	166.8	4406	2.74	2082	6831	0	19	8.9	17.4	-5.5	-16.5
11.00	24.3	168.7	4585	2.85	2172	7126	0	15	11.4	22.1	-5.8	-21.3
11.50	23.3	170.5	5015	3.12	2262	7422	0	14	9.8	19.1	-4.6	-18.6
12.00	23.7	171.5	5126	3.18	2352	7717	0	17	8.2	15.9	-4.6	-15.2
12.50	23.2	172.8	5460	3.39	2442	8012	0	15	10.8	21.0	-5.5	-20.2
13.00	23.0	174.1	5725	3.56	2532	8307	0	17	7.6	14.8	-4.2	-14.1
13.50	23.2	174.6	5880	3.65	2622	8603	0	16	6.5	12.7	-3.6	-12.2
14.00	23.2	175.5	6090	3.78	2712	8898	0	15	7.4	14.4	-3.7	-13.9
14.50	23.2	176.0	6300	3.91	2802	9193	0	15	7.4	14.4	-3.7	-13.9
15.00	23.2	176.8	6510	4.04	2892	9489	1	27	6.3	12.2	-5.6	-10.8
15.50	23.5	177.7	6624	4.12	2982	9784	1	42	3.8	7.4	-5.0	-5.4
16.00	24.0	178.2	6671	4.15	3072	10079	1	36	4.5	8.8	-5.1	-7.2
16.50	24.1	179.1	6841	4.25	3162	10374	1	35	5.0	9.7	-5.6	-7.9
17.00	24.5	179.7	6912	4.29	3252	10670	0	10	4.6	8.8	-1.5	-8.7
17.50	24.5	179.5	7110	4.42	3342	10965	0	354	5.7	11.2	1.1	-11.1
18.00*	24.6	777.0	7256	4.51	3432	11260	0	357	4.9	9.5	0.5	-9.5
18.50	24.8	179.4	7402	4.60	3522	11556	0	0	6.3	12.2	-0.1	-12.2
19.00	24.7	179.5	7631	4.74	3612	11851	0	354	7.7	15.0	1.5	-14.9
19.50	24.6	179.1	7863	4.89	3702	12146	0	340	6.9	13.4	4.6	-12.6
20.00	24.7	178.5	8023	4.99	3792	12441	7	331	6.0	11.7	5.6	-10.2

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

SUMMARY FOR ASCENT # 10

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 10 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 01:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	50.0	327.1	91	0.06	210	689	3	152	3.0	6.8	-2.7	5.1
1.00	50.5	332.0	178	0.11	318	1044	3	153	3.1	6.1	-2.8	5.4
1.50	48.5	331.0	279	0.17	417	1368	3	140	3.1	6.0	-3.9	4.6
2.00	48.9	325.8	361	0.22	516	1693	3	118	1.5	3.0	-2.6	1.4
2.50	45.0	322.9	359	0.22	615	2018	7	319	3.6	7.0	4.6	-5.3
3.00	76.2	335.8	150	0.09	714	2343	7	323	7.1	13.8	8.4	-11.0
3.50	84.5	142.4	68	0.04	809	2653	7	328	8.2	15.9	8.5	-13.5
4.00	66.8	144.2	343	0.21	903	2963	7	326	10.8	21.0	11.6	-17.5
4.50	51.3	146.1	717	0.45	998	3273	7	330	12.3	23.9	11.9	-20.7
5.00	42.5	148.3	1080	0.67	1092	3583	7	337	10.8	20.9	8.2	-19.2
5.50	38.5	151.2	1358	0.84	1182	3878	0	348	9.4	18.2	3.9	-17.8
6.00	35.8	154.9	1622	1.01	1272	4174	0	349	9.4	18.3	3.4	-18.0
6.50	33.5	156.5	1904	1.18	1362	4469	0	347	8.6	16.6	3.9	-16.2
7.00	32.4	157.7	2127	1.32	1452	4764	0	349	7.6	14.8	2.7	-14.5
7.50	31.5	159.0	2350	1.46	1542	5059	0	358	7.2	13.9	0.6	-13.9
8.00	31.1	161.0	2536	1.58	1632	5355	0	8	6.3	12.2	-1.7	-12.1
8.50	31.1	162.9	2680	1.67	1722	5650	0	16	5.7	11.1	-3.1	-10.7
9.00	31.2	165.0	2824	1.75	1812	5945	0	22	5.3	10.2	-3.8	-9.5
9.50	31.5	166.8	2937	1.83	1902	6241	1	35	6.1	11.9	-6.9	-9.7
10.00	31.6	170.3	3072	1.91	1992	6536	1	42	7.5	14.6	-9.7	-10.9
10.50	31.6	173.4	3216	2.00	2082	6831	1	35	6.6	12.8	-7.3	-10.5
11.00	31.6	175.0	3365	2.09	2172	7126	1	34	5.9	11.6	-6.4	-9.6
11.50	31.7	177.2	3497	2.17	2262	7422	1	43	6.9	13.4	-9.1	-9.9
12.00	31.6	179.8	3657	2.27	2352	7717	1	34	5.9	11.5	-6.4	-9.6
12.50	31.7	180.8	3780	2.35	2442	8012	0	32	4.9	9.6	-3.5	-8.9
13.00	31.7	181.4	3935	2.44	2532	8307	0	19	5.1	9.9	-3.3	-9.4
13.50	31.7	181.8	4080	2.54	2622	8603	0	11	4.6	9.0	-1.6	-8.9
14.00	31.8	182.9	4210	2.62	2712	8898	0	14	4.1	8.0	-2.0	-7.7
14.50	32.0	182.5	4321	2.68	2802	9193	0	15	2.9	5.6	-1.4	-5.4
15.00	32.5	182.5	4379	2.72	2892	9489	0	3	1.9	3.7	-0.2	-3.7
15.50	33.0	182.5	4435	2.76	2982	9784	0	339	1.6	3.2	1.1	-3.0
16.00	33.6	182.0	4470	2.78	3072	10079	7	315	2.5	4.8	3.4	-3.4
16.50	34.0	181.1	4537	2.82	3162	10374	7	311	2.9	5.7	4.3	-3.7
17.00	34.5	180.3	4583	2.85	3252	10670	7	302	2.8	5.5	4.6	-2.9
17.50	35.0	179.3	4627	2.88	3342	10965	7	302	3.7	7.2	6.1	-3.8
18.00	35.3	178.0	4703	2.92	3432	11260	7	310	4.2	8.2	6.3	-5.2
18.50	35.5	177.0	4798	2.98	3522	11556	7	317	4.3	8.4	5.8	-6.2
19.00	35.6	176.0	4903	3.05	3612	11851	7	312	4.5	8.8	6.5	-5.9
19.50	35.8	174.8	4992	3.10	3702	12146	7	293	7.2	14.0	12.8	-5.6
20.00	35.8	171.7	5116	3.18	3792	12441	6	288	10.0	19.5	18.5	-5.9

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 11

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 10 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 05:05 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	45.0	326.7	108	0.07	210	689	3	149	2.1	4.2	-2.1	3.6
1.00	59.2	329.0	129	0.08	318	1044	3	146	4.5	8.7	-4.9	7.2
1.50	39.9	326.2	377	0.23	417	1368	3	147	6.2	12.1	-6.6	10.1
2.00	39.5	327.4	502	0.31	516	1693	3	154	3.4	6.6	-2.8	5.9
2.50	41.6	329.0	578	0.36	615	2018	7	315	1.0	1.9	1.4	-1.3
3.00	54.0	329.1	345	0.28	714	2343	7	329	5.4	10.5	5.6	-9.0
3.50	70.3	329.5	253	0.16	809	2653	7	327	5.6	11.0	5.9	-9.2
4.00	82.4	334.7	107	0.07	903	2963	7	325	10.8	21.1	12.0	-17.3
4.50	66.0	142.6	399	0.25	998	3273	7	324	13.4	26.0	15.1	-21.2
5.00	54.8	142.9	698	0.43	1092	3583	7	321	9.7	18.9	13.0	-14.6
5.50	47.7	141.5	983	0.61	1182	3878	7	320	9.1	17.7	11.5	-13.5
6.00	43.2	141.5	1246	0.77	1272	4174	7	326	6.6	12.9	7.3	-10.6
6.50	42.4	142.7	1380	0.86	1362	4469	7	329	6.1	11.8	6.2	-10.1
7.00	40.0	143.1	1609	1.00	1452	4764	7	324	7.4	14.4	8.5	-11.6
7.50	38.3	143.0	1823	1.13	1542	5059	7	322	6.3	12.2	7.6	-9.6
8.00	37.6	142.8	1987	1.23	1632	5355	7	322	6.1	11.8	7.2	-9.4
8.50	36.5	142.9	2189	1.36	1722	5650	7	326	5.3	10.2	5.8	-8.5
9.00	36.6	143.2	2303	1.43	1812	5945	0	338	3.0	5.8	2.2	-5.4
9.50	37.3	144.0	2363	1.47	1902	6241	0	16	2.0	3.9	-1.1	-3.7
10.00	38.5	145.5	2376	1.48	1992	6536	0	11	3.0	5.8	-1.1	-5.7
10.50	38.5	147.0	2489	1.55	2082	6831	1	29	2.3	4.5	-2.2	-3.9
11.00	40.3	148.4	2441	1.52	2172	7126	2	82	2.7	5.3	-5.2	-0.7
11.50	41.7	150.5	2424	1.51	2262	7422	2	69	3.1	6.1	-5.7	-2.2
12.00	43.0	152.8	2413	1.50	2352	7717	2	81	3.2	6.1	-6.1	-1.0
12.50	44.7	154.8	2365	1.47	2442	8012	2	82	2.3	4.5	-4.5	-0.7
13.00	45.7	156.0	2371	1.47	2532	8307	1	65	1.9	3.7	-3.4	-1.6
13.50	46.8	157.0	2366	1.47	2622	8603	1	28	1.4	2.8	-1.3	-2.5
14.00	47.1	157.6	2425	1.51	2712	8898	0	342	2.1	4.1	1.3	-3.8
14.50	47.3	157.8	2491	1.55	2802	9193	7	323	2.1	4.1	2.4	-3.3
15.00	47.6	156.9	2548	1.58	2892	9489	7	302	3.3	6.5	5.5	-3.5
15.50	47.3	155.3	2658	1.65	2982	9784	7	312	4.9	9.5	7.1	-6.4
16.00	46.5	154.4	2818	1.75	3072	10079	7	305	4.5	8.7	7.2	-5.0
16.50	46.6	152.6	2894	1.80	3162	10374	7	302	5.2	10.0	8.5	-5.3
17.00	45.6	151.3	3085	1.92	3252	10670	7	311	6.6	12.8	9.7	-8.3
17.50	44.8	150.0	3263	2.03	3342	10965	7	305	6.0	11.7	9.6	-6.7
18.00	44.3	148.6	3412	2.12	3432	11260	7	307	6.1	11.9	9.5	-7.1
18.50	43.5	147.7	3604	2.24	3522	11556	7	311	7.7	15.0	11.4	-9.8
19.00	42.3	146.5	3857	2.40	3612	11851	7	312	6.8	13.2	9.8	-8.8
19.50	42.0	146.1	3998	2.48	3702	12146	7	314	4.6	8.9	6.4	-6.2
20.00	41.8	145.7	4127	2.56	3792	12441	7	313	4.4	8.5	6.2	-5.9

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 12

LOCATION: MURGAS FIELD CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 10 AUGUST 1970

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 0000 P.D.T.

TIME MINUTES	ELEV DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	52.5	161.6	83	0.05	210	689	7	326	2.4	4.8	2.6	-3.9
1.00	55.8	146.2	147	0.09	318	1044	7	308	1.7	3.4	2.6	-2.1
1.50	60.4	143.0	179	0.11	417	1368	6	250	0.4	0.8	0.3	0.3
2.00	69.6	137.0	155	0.10	515	1693	4	195	0.9	1.7	0.5	1.7
2.50	73.5	126.8	152	0.09	615	2018	7	308	1.1	2.1	1.7	-1.3
3.00	70.2	134.3	220	0.14	714	2343	7	321	4.3	8.4	5.2	-6.6
3.50	60.0	136.0	404	0.25	809	2653	7	328	7.0	13.6	7.3	-11.5
4.00	51.5	143.2	637	0.40	903	2963	7	336	8.8	17.2	6.9	-15.7
4.50	44.1	147.5	924	0.57	996	3273	7	336	9.9	19.3	8.0	-17.6
5.00	38.5	149.2	1227	0.76	1092	3583	7	330	9.8	19.1	9.5	-16.6
5.50	35.5	148.2	1544	0.96	1187	3870	7	320	8.5	16.6	10.7	-12.7
6.00	34.0	146.4	1735	1.08	1272	4176	7	314	6.7	12.9	9.3	-9.0
6.50	33.5	145.0	1904	1.18	1359	4469	7	319	5.9	11.5	7.5	-8.7
7.00	32.9	145.2	2087	1.30	1452	4764	7	322	6.5	12.7	7.8	-10.0
7.50	32.4	144.0	2296	1.43	1542	5059	7	320	6.9	13.3	8.6	-10.2
8.00	31.5	143.3	2497	1.55	1632	5355	7	311	6.3	12.2	9.2	-8.1
8.50	31.3	143.0	2664	1.66	1722	5650	7	301	6.1	11.8	10.1	-6.1
9.00	31.1	141.4	2835	1.76	1812	5945	6	291	6.2	12.0	11.2	-4.2
9.50	31.1	139.2	2984	1.85	1902	6241	6	289	5.8	11.2	10.6	-3.7
10.00	31.1	136.0	3133	1.95	1992	6536	7	290	5.3	10.3	9.1	-4.8
10.50	31.1	137.2	3282	2.04	2082	6831	7	295	4.6	9.0	8.1	-3.9
11.00	31.4	136.2	3431	2.14	2172	7126	6	277	3.7	7.3	7.2	-0.9
11.50	32.4	134.5	3557	2.15	2262	7422	6	270	3.6	7.0	7.0	-0.1
12.00	32.4	133.7	3545	2.20	2352	7717	6	275	3.4	6.7	6.7	-0.6
12.50	32.9	132.7	3617	2.25	2442	8012	6	275	2.9	5.7	5.7	-0.5
13.00	33.4	132.0	3685	2.29	2532	8307	6	278	2.7	5.2	5.2	-0.7
13.50	33.9	131.2	3750	2.33	2622	8603	6	280	2.5	4.8	4.8	-0.8
14.00	34.4	130.8	3812	2.37	2712	8898	6	279	2.1	4.0	4.0	-0.6
14.50	35.0	130.4	3856	2.40	2802	9193	6	262	1.8	3.5	3.4	0.5
15.00	35.7	129.6	3883	2.41	2892	9489	6	264	1.9	3.7	3.7	0.4
15.50	36.2	129.4	3935	2.45	2982	9784	6	270	2.2	4.2	4.2	0.0
16.00	36.7	128.4	3985	2.48	3072	10079	6	272	3.2	6.2	6.2	-0.3
16.50	36.8	127.5	4050	2.54	3162	10374	6	284	4.7	9.1	8.9	-2.1
17.00	36.1	126.8	4241	2.64	3252	10670	6	290	5.6	10.8	10.2	-3.7
17.50	36.3	126.3	4411	2.74	3342	10965	6	292	5.9	11.4	10.5	-4.3
18.00	36.6	125.7	4583	2.85	3432	11260	7	296	6.2	12.0	10.8	-5.3
18.50	35.8	125.4	4777	2.97	3522	11556	7	294	6.4	12.3	11.3	-5.0
19.00	35.3	124.8	4957	3.08	3612	11851	6	292	6.2	12.1	11.3	-4.5
19.50	35.0	124.4	5141	3.19	3702	12146	6	292	7.0	13.6	12.7	-5.1
20.00	34.5	123.8	5369	3.34	3792	12441	6	291	7.8	15.2	14.2	-5.3

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

SUMMARY FOR ASCENT # 13

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 10 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 13:15 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	29.1	309.0	194	0.12	210	689	3	136	6.2	12.1	-8.4	8.7
1.00	30.1	315.9	373	0.23	318	1044	3	149	4.7	9.2	-4.7	7.9
1.50	33.8	321.0	471	0.29	417	1368	4	173	2.8	5.5	-0.7	5.5
2.00	38.6	327.2	519	0.32	516	1693	5	214	1.7	3.3	1.8	2.7
2.50	45.2	332.0	509	0.32	615	2018	6	277	0.9	1.8	1.8	-0.2
3.00	51.6	332.3	485	0.30	714	2343	7	322	2.0	3.8	2.4	-3.0
3.50	60.9	335.0	393	0.24	809	2653	7	316	4.1	7.9	5.5	-5.7
4.00	72.0	347.7	260	0.16	903	2963	7	316	6.9	13.3	8.2	-9.6
4.50*	777.0	777.0	292	0.18	998	3273	7	318	8.7	16.9	11.3	-12.6
5.00	71.9	114.7	324	0.20	1092	3583	7	327	7.8	15.2	8.4	-12.7
5.50	65.0	131.5	504	0.31	1182	3878	0	346	7.4	14.4	3.5	-14.0
6.00	59.3	144.7	695	0.43	1272	4174	0	348	8.3	16.1	3.3	-15.8
6.50	53.0	149.8	949	0.59	1362	4469	0	339	8.1	15.8	5.7	-14.7
7.00	49.0	150.5	1174	0.73	1452	4764	7	330	6.9	13.3	6.6	-11.6
7.50	46.6	150.0	1362	0.85	1542	5059	7	332	6.1	11.9	5.6	-10.5
8.00	44.8	150.8	1541	0.96	1632	5355	0	340	5.6	10.9	3.7	-10.3
8.50	43.7	152.0	1695	1.05	1722	5650	0	349	5.1	9.9	1.9	-9.7
9.00	43.0	153.8	1834	1.14	1812	5945	0	356	4.7	9.1	0.7	-9.1
9.50	42.6	155.3	1957	1.22	1902	6241	0	352	4.6	9.0	1.2	-8.9
10.00	42.0	156.2	2099	1.30	1992	6536	0	348	4.8	9.3	1.9	-9.1
10.50	41.5	156.9	2238	1.39	2082	6831	7	337	4.8	9.4	3.7	-8.7
11.00	40.9	156.3	2390	1.48	2172	7126	7	318	5.6	10.8	7.2	-8.0
11.50	40.2	154.5	2556	1.59	2262	7422	0	345	4.9	9.6	2.4	-9.2
12.00	40.6	157.3	2681	1.67	2352	7717	0	340	4.2	8.2	2.8	-7.7
12.50	39.8	155.0	2809	1.75	2442	8012	6	274	9.5	18.5	18.5	-1.2
13.00	39.2	147.4	2979	1.85	2532	8307	6	271	9.8	19.1	19.1	-0.3
13.50	39.0	145.2	3112	1.93	2622	8603	6	287	5.9	11.5	11.1	-3.3
14.00	38.7	143.3	3258	2.02	2712	8898	6	282	6.0	11.7	11.4	-2.4
14.50	38.6	141.0	3382	2.10	2802	9193	6	274	5.5	10.7	10.6	-0.8
15.00	38.7	139.2	3482	2.16	2892	9489	6	275	4.9	9.6	9.6	-0.8
15.50	38.7	137.6	3595	2.23	2982	9764	6	274	4.2	8.2	8.2	-0.6
16.00	39.0	136.4	3668	2.28	3072	10079	6	260	4.3	8.3	8.1	1.4
16.50	39.3	134.3	3739	2.32	3162	10374	6	265	5.7	11.2	11.1	1.1
17.00	39.0	132.4	3890	2.42	3252	10670	6	276	6.3	12.3	12.2	-1.4
17.50	38.7	131.0	4044	2.51	3342	10965	6	286	6.3	12.3	11.8	-3.3
18.00	38.2	130.1	4232	2.63	3432	11260	7	297	8.4	16.4	14.6	-7.6
18.50	37.9	129.5	4538	2.52	3522	11556	7	305	6.6	12.7	10.4	-7.4
19.00	37.2	129.7	4624	2.87	3612	11851	6	287	4.3	8.4	8.0	-2.4
19.50	37.6	128.3	4777	2.97	3702	12146	6	286	6.5	12.7	12.2	-3.5
20.00	36.8	127.9	4987	3.10	3792	12441	7	299	7.1	13.7	12.0	-6.6

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 14

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 10 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL (SPEED)	VELOCITY MILES PER HOUR (U)	VELOCITY MILES PER HOUR (V)
0.50	51.9	317.0	85	0.05	210	689	3	143	2.8	5.4	-3.3	4.3
1.00	52.5	322.7	166	0.10	318	1044	4	167	1.2	2.3	-0.5	2.2
1.50	64.5	330.5	150	0.09	417	1368	7	333	1.5	2.9	1.3	-2.6
2.00	79.0	311.2	80	0.05	516	1693	0	344	3.4	6.6	1.0	-6.3
2.50	82.5	195.2	68	0.04	615	2018	7	323	4.8	9.3	5.5	-7.5
3.00	71.0	147.8	211	0.13	714	2343	7	316	7.6	14.8	10.3	-10.6
3.50	55.0	142.8	495	0.31	809	2653	7	322	10.2	19.9	12.3	-15.6
4.00	44.2	143.2	824	0.51	903	2963	7	323	8.0	15.6	9.4	-12.5
4.50	42.5	143.0	977	0.61	998	3273	7	321	7.0	13.6	8.5	-10.7
5.00	38.5	142.6	1245	0.77	1092	3583	7	317	7.8	15.2	10.4	-11.1
5.50	36.8	141.0	1444	0.90	1182	3878	7	312	4.7	9.2	6.8	-6.2
6.00	37.5	140.7	1525	0.95	1272	4174	7	318	2.3	4.6	3.1	-3.4
6.50	38.5	140.7	1584	0.98	1362	4469	7	326	1.5	3.1	1.7	-2.6
7.00	39.8	141.0	1620	1.01	1452	4764	7	326	1.7	3.3	1.9	-2.7
7.50	40.5	141.0	1686	1.05	1542	5059	7	323	1.8	3.3	2.1	-2.8
8.00	41.5	141.1	1729	1.07	1632	5355	7	318	1.9	3.7	2.5	-2.7
8.50	42.0	140.8	1798	1.12	1722	5650	7	306	3.2	6.2	5.1	-3.5
9.00	41.8	139.5	1913	1.19	1812	5945	7	299	3.7	7.1	6.2	-3.5
9.50	41.9	138.5	2006	1.25	1902	6241	7	294	3.5	6.9	6.3	-2.9
10.00	41.9	137.0	2106	1.31	1992	6536	6	288	3.8	7.4	7.0	-2.3
10.50	41.9	135.5	2207	1.37	2082	6831	7	293	4.3	8.2	7.5	-3.2
11.00	41.5	134.5	2340	1.45	2172	7126	7	300	4.8	9.3	8.1	-4.6
11.50	41.0	133.7	2485	1.54	2262	7422	7	299	5.1	9.9	8.7	-4.7
12.00	40.5	132.7	2634	1.64	2352	7717	7	304	5.1	10.0	8.3	-5.5
12.50	40.0	132.6	2789	1.73	2442	8012	6	291	5.8	11.2	10.5	-4.0
13.00	39.4	130.2	2958	1.84	2532	8307	6	281	7.0	13.7	13.4	-2.6
13.50	38.6	128.6	3157	1.96	2622	8603	6	288	6.8	13.3	12.7	-4.0
14.00	38.0	127.5	3341	2.08	2712	8898	6	289	6.4	12.4	11.7	-4.0
14.50	37.5	126.6	3519	2.19	2802	9193	6	292	6.2	12.1	11.2	-4.5
15.00	37.0	126.0	3702	2.30	2892	9489	6	292	5.9	11.5	10.6	-4.3
15.50	36.7	125.2	3864	2.40	2982	9784	6	292	6.6	12.8	11.8	-4.9
16.00	36.0	124.7	4088	2.54	3072	10079	7	296	8.0	15.5	14.9	-6.8
16.50	35.2	124.2	4338	2.70	3162	10374	7	298	8.0	15.6	13.8	-7.3
17.00	34.6	124.0	4566	2.84	3252	10670	7	300	7.8	15.1	13.1	-7.6
17.50	34.0	123.8	4804	2.98	3342	10965	7	299	7.8	15.1	13.3	-7.2
18.00	33.5	123.5	5031	3.13	3432	11260	7	298	7.4	14.4	12.7	-6.7
18.50	33.1	123.3	5246	3.26	3522	11556	7	298	8.0	15.6	13.8	-7.2
19.00	32.5	123.0	5510	3.42	3612	11851	6	290	7.7	14.9	14.0	-5.0
19.50	32.3	122.2	5695	3.54	3702	12146	6	283	7.8	15.1	14.7	-3.5
20.00	31.8	121.5	5951	3.70	3792	12441	6	286	8.9	17.2	16.6	-4.9

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 15

LOCATION: [illegible] HILL CALIFORNIA

SPECIFIC:

DATE OF LAUNCH: 16 AUGUST 1978

[illegible] OF TRACK SLIPS: 335 [illegible]

TIME OF LAUNCH: 21:18 P.D.T.

TIME (HOURS)	[illegible] (DEG)	[illegible] (DEG)	RANGE (METERS)	RANGE (MILES)	ALTITUDE (METERS)	ALTITUDE (FEET)	DIRECTION CLASS 0-7	DIRECTION (DEGREES)	METERS/SEC (SPEED)	NAUTICAL MILES PER HOUR (SPEED)	(U)	(V)
0.50	65.8	349.2	73	0.05	210	689	4	165	2.2	4.2	-1.1	4.1
1.00	55.8	343.8	131	0.08	318	1014	4	150	0.7	1.4	-0.7	1.2
1.50	71.0	342.2	115	0.07	417	1368	0	347	1.0	1.9	0.8	-1.8
2.00	46.1	343.2	73	0.05	516	1693	7	325	0.6	1.2	0.7	-1.0
2.50	61.1	350.2	80	0.05	615	2018	5	243	0.5	0.9	0.8	0.4
3.00	52.3	2.7	83	0.05	714	2343	7	311	3.8	7.3	5.5	-4.9
3.50+	177.0	177.0	232	0.14	804	2638	7	315	7.2	14.0	9.9	-9.9
4.00	68.5	120.0	382	0.24	903	2963	7	317	8.1	15.7	10.7	-11.5
4.50	54.1	131.1	616	0.46	998	3273	7	318	10.5	20.4	13.6	-15.2
5.00	44.5	133.2	1067	0.73	1092	3583	7	316	11.4	22.2	15.4	-16.0
5.50	39.0	133.7	1334	0.83	1192	3878	7	314	10.9	21.1	15.3	-14.5
6.00	35.2	133.5	1654	1.03	1272	4174	7	314	9.9	19.2	13.7	-13.4
6.50	33.7	133.9	1925	1.20	1362	4469	7	317	8.9	17.4	11.8	-12.8
7.00	31.5	134.0	2194	1.36	1452	4764	7	313	6.6	12.9	9.4	-8.8
7.50	31.9	133.8	2327	1.44	1542	5059	7	298	5.4	10.5	9.3	-4.9
8.00	31.4	132.4	2597	1.58	1632	5355	7	299	7.3	14.3	12.5	-6.8
8.50	30.5	131.1	2750	1.71	1722	5650	7	295	5.3	10.3	9.3	-4.4
9.00	31.3	130.5	2812	1.75	1812	5945	6	290	3.3	6.5	6.1	-2.2
9.50	31.5	130.0	2937	1.83	1902	6241	6	291	3.3	6.5	6.1	-2.3
10.00	32.2	129.2	3001	1.88	1992	6536	6	266	2.0	3.9	3.9	0.3
10.50	33.7	129.1	3026	1.88	2082	6831	6	280	1.3	2.5	2.5	-0.4
11.00	33.5	128.6	3069	1.91	2172	7126	7	328	1.0	2.0	1.1	-1.7
11.50	35.0	128.6	3085	1.92	2262	7422	0	5	1.5	2.9	-0.3	-2.9
12.00	35.5	129.0	3120	1.94	2352	7717	7	328	0.6	1.1	0.6	-0.9
12.50	36.0	129.0	3117	1.94	2442	8012	6	263	1.1	2.2	2.2	0.3
13.00	37.5	129.0	3167	1.97	2532	8307	7	309	1.6	3.1	2.4	-2.0
13.50	38.1	129.0	3218	2.00	2622	8603	7	313	1.3	2.6	1.9	-1.8
14.00	38.5	129.1	3246	2.02	2712	8898	7	315	2.0	3.9	2.8	-2.7
14.50	39.0	129.2	3335	2.07	2802	9193	7	302	2.5	4.9	4.1	-2.6
15.00	39.4	128.8	3347	2.11	2892	9489	7	301	2.7	5.2	4.5	-2.7
15.50	39.5	128.9	3394	2.17	2982	9784	7	301	3.3	6.3	5.4	-3.3
16.00	39.6	128.3	3590	2.23	3072	10079	7	300	4.1	8.0	7.0	-4.0
16.50	39.8	128.2	3734	2.32	3162	10374	7	300	4.8	9.3	8.1	-4.7
17.00	39.1	127.6	3878	2.41	3252	10670	6	290	4.6	8.9	8.3	-3.1
17.50	39.1	127.0	4091	2.49	3342	10965	6	284	4.8	9.3	9.0	-2.3
18.00	39.5	126.2	4142	2.57	3432	11260	6	290	6.0	11.6	11.0	-4.0
18.50	40.2	125.5	4345	2.70	3522	11556	6	292	6.6	12.8	11.8	-4.8
19.00	37.8	125.0	4525	2.81	3612	11851	6	288	5.7	11.1	10.6	-3.4
19.50	37.5	123.3	4675	2.90	3702	12146	6	290	6.1	11.8	11.1	-4.1
20.00	37.1	123.9	4875	3.03	3792	12441	7	295	6.9	13.4	12.2	-5.6

+ CALCULATIONS OF DATA AFTER 19.5 SECONDS ARE BASED UPON LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 16

LOCATION: MORGAN HILL, CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 11 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 01:10 P.D.T.

ELEV. MINUTES	ELEV. D E G R E E S	AZIMUTH D E G R E E S	R A N G E METERS	R A N G E MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	D I R E C T I O N CLASS 0- 7	D I R E C T I O N DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	50.5	309.2	89	0.06	210	689	3	141	3.8	7.3	-4.5	5.7
1.00	43.6	321.4	225	0.14	318	1044	3	147	4.0	7.9	-4.3	6.6
1.50	43.8	322.0	328	0.20	417	1368	3	147	3.5	6.8	-3.7	5.8
2.00	43.5	324.2	436	0.27	516	1693	3	149	4.0	7.8	-4.1	6.7
2.50	42.0	324.9	570	0.35	615	2018	3	154	2.8	5.4	-2.3	4.9
3.00	45.5	327.0	601	0.37	714	2343	6	292	2.1	4.2	3.9	-1.5
3.50	56.5	333.5	468	0.29	809	2653	7	308	6.7	13.0	10.2	-8.0
4.00	72.1	357.5	259	0.16	903	2963	7	311	10.6	20.5	15.5	-13.4
4.50*	777.0	777.0	433	0.27	996	3273	7	312	12.7	24.6	18.2	-16.5
5.00	58.5	114.5	607	0.38	1092	3583	7	323	9.4	18.2	11.0	-14.5
5.50	55.0	126.1	756	0.47	1182	3878	7	322	7.5	14.5	9.0	-11.4
6.00*	777.0	777.0	1026	0.64	1272	4174	7	306	9.0	17.5	14.1	-10.3
6.50	44.2	126.1	1296	0.81	1362	4469	7	303	8.6	16.7	14.1	-9.1
7.00	41.2	125.0	1542	0.96	1452	4764	7	299	8.6	16.8	14.7	-8.1
7.50	38.8	124.0	1810	1.12	1542	5059	7	295	8.4	16.2	14.7	-6.8
8.00	36.9	122.5	2038	1.27	1632	5355	6	288	7.5	14.6	13.9	-4.5
8.50	35.8	120.8	2266	1.40	1722	5650	6	285	7.6	14.8	14.3	-3.9
9.00	34.6	119.4	2479	1.54	1812	5945	6	281	7.4	14.4	14.2	-2.7
9.50	34.0	117.5	2669	1.66	1902	6241	6	272	7.0	13.5	13.5	-0.4
10.00	33.5	115.5	2855	1.77	1992	6536	6	264	6.9	13.5	13.4	1.3
10.50	33.2	113.2	3026	1.88	2082	6831	6	259	6.2	12.1	11.8	2.3
11.00	33.2	111.5	3163	1.97	2172	7126	6	251	5.4	10.5	10.0	3.4
11.50	33.4	109.4	3276	2.04	2262	7422	6	237	4.7	9.2	7.7	5.1
12.00	34.0	107.5	3336	2.07	2352	7717	5	225	3.7	7.2	5.1	5.1
12.50	34.7	106.0	3379	2.10	2442	8012	5	218	3.2	6.2	3.8	4.9
13.00	35.5	104.8	3407	2.12	2532	8307	5	205	3.5	6.8	2.9	6.2
13.50	36.3	103.5	3418	2.12	2622	8603	4	201	3.5	6.8	2.5	6.4
14.00	37.2	101.0	3439	2.14	2712	8898	5	209	3.4	6.6	3.2	5.7
14.50	37.8	99.3	3481	2.16	2802	9193	5	222	3.0	5.8	3.8	4.3
15.00	38.3	98.5	3533	2.20	2892	9489	5	240	3.0	5.8	5.0	2.9
15.50	38.5	97.5	3621	2.25	2982	9784	6	248	3.4	6.8	6.0	2.5
16.00	38.7	96.9	3707	2.30	3072	10079	6	258	3.3	6.4	6.2	1.4
16.50	38.6	96.5	3806	2.36	3162	10374	6	260	3.2	6.2	6.1	1.0
17.00	39.0	96.1	3890	2.42	3252	10670	6	257	3.2	6.2	6.0	1.4
17.50	38.1	95.6	3987	2.48	3342	10966	6	256	3.9	7.6	7.4	1.8
18.00	39.0	95.0	4112	2.56	3432	11260	6	259	4.9	9.5	9.3	1.8
18.50	38.7	94.5	4269	2.65	3522	11556	6	263	5.1	9.9	9.9	1.1
19.00	38.5	94.2	4413	2.74	3612	11851	6	263	5.5	10.6	10.6	1.3
19.50	38.1	93.7	4591	2.85	3702	12146	6	263	6.4	12.5	12.4	1.5
20.00	37.8	93.3	4792	2.98	3792	12441	6	264	6.8	13.1	13.1	1.3

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

SUMMARY FOR ASCENT # 17

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 11 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 11:15 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	61.5	323.3	59	0.04	210	689	3	149	1.7	3.3	-1.7	2.8
1.00	64.6	329.0	103	0.06	318	1044	4	182	2.1	4.0	0.1	4.0
1.50	61.2	349.5	173	0.11	417	1368	3	120	2.1	4.0	-3.5	2.0
2.00	62.0	312.9	220	0.14	516	1693	6	264	1.3	2.4	2.4	0.3
2.50	70.3	13.5	184	0.11	615	2018	6	282	5.3	10.2	10.0	-2.2
3.00	74.6	60.5	169	0.10	714	2343	7	316	5.0	9.7	6.8	-6.9
3.50	70.2	97.9	254	0.16	809	2653	7	322	5.8	11.3	7.0	-8.9
4.00	62.9	118.0	410	0.25	903	2963	7	320	5.7	11.0	7.0	-8.5
4.50*	777.0	777.0	557	0.35	998	3273	7	314	5.0	9.7	6.9	-6.8
5.00*	777.0	777.0	703	0.44	1092	3583	7	314	5.0	9.7	6.9	-6.8
5.50	51.8	126.5	850	0.53	1182	3878	7	312	5.0	9.8	7.3	-6.5
6.00	49.4	126.9	1003	0.62	1272	4174	7	303	5.3	10.0	8.4	-5.5
6.50	47.4	125.6	1159	0.72	1362	4469	6	290	4.9	9.5	8.9	-3.2
7.00	46.4	123.0	1286	0.80	1452	4764	6	269	4.4	8.6	8.6	0.2
7.50	46.2	119.0	1361	0.86	1542	5059	6	254	4.7	9.2	8.9	2.5
8.00	45.8	114.7	1488	0.92	1632	5355	6	254	4.6	8.9	8.5	2.4
8.50	45.6	112.0	1586	0.99	1722	5650	6	255	5.2	10.1	9.8	2.6
9.00	44.5	108.1	1740	1.08	1812	5945	6	250	6.4	12.4	11.7	4.2
9.50	43.6	104.2	1890	1.17	1902	6241	6	255	6.7	13.1	12.7	3.3
10.00	42.1	102.1	2092	1.30	1992	6536	6	273	7.9	15.4	15.4	-0.9
10.50	40.0	102.0	2360	1.47	2082	6831	6	277	8.9	17.2	17.1	-2.0
11.00	38.3	101.0	2621	1.63	2172	7126	6	268	9.9	19.3	19.2	0.7
11.50	36.3	99.2	2940	1.83	2262	7422	6	259	10.7	20.8	20.4	4.0
12.00	34.9	96.7	3225	2.00	2352	7717	6	251	10.5	20.4	19.3	6.5
12.50	33.7	94.4	3509	2.18	2442	8012	5	247	9.7	18.8	17.3	7.3
13.00	33.0	92.3	3742	2.33	2532	8307	5	246	8.3	16.1	14.8	6.5
13.50	32.5	91.0	3956	2.46	2622	8603	6	253	9.9	19.3	18.5	5.6
14.00	31.2	89.7	4310	2.68	2712	8898	6	253	10.0	19.4	18.6	5.6
14.50	30.8	88.7	4529	2.81	2802	9193	6	256	8.9	17.4	16.9	4.2
15.00	30.0	88.2	4832	3.00	2892	9489	6	261	9.8	19.0	18.8	3.0
15.50	29.4	87.8	5111	3.18	2982	9784	6	260	10.0	19.4	19.1	3.4
16.00	28.7	87.3	5425	3.37	3072	10079	6	259	10.6	20.5	20.2	3.8

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 18

LOCATION: MORGAN HILL CALIFORNIA

~~SPECIFICS:~~

DATE OF LAUNCH: 11 AUGUST 1978

~~ELEVATION OF LAUNCH SITE: 335 FEET~~

TIME OF LAUNCH: 17:02 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL (SPEED)	VELOCITY MILES PER HOUR (U)	VELOCITY MILES PER HOUR (V)
0.50	33.0	133.3	166	0.10	210	689	7	318	7.3	14.1	9.5	-10.5
1.00	26.3	137.7	437	0.27	318	1044	7	322	8.7	16.9	10.4	-13.4
1.50	24.6	140.0	688	0.43	417	1368	7	319	7.9	15.3	10.0	-11.6
2.00	24.5	138.5	908	0.56	516	1693	7	310	6.8	13.1	10.1	-8.5
2.50	25.2	136.3	1090	0.68	615	2016	7	299	5.0	9.7	8.5	-4.7
3.00	27.1	133.7	1196	0.73	714	2343	6	287	2.6	5.0	4.8	-1.5
3.50	29.9	132.6	1229	0.76	809	2653	6	287	1.1	2.2	2.1	-0.6
4.00	32.5	132.3	1257	0.78	903	2963	6	291	1.3	2.6	2.4	-0.9
4.50	34.8	131.6	1303	0.81	998	3273	7	310	2.7	5.3	3.5	-3.9
5.00	34.9	132.9	1419	0.88	1092	3583	7	312	4.2	8.1	6.0	-5.4
5.50	34.8	131.6	1554	0.97	1182	3878	7	297	4.8	9.3	8.3	-4.2
6.00	34.6	130.2	1696	1.05	1272	4174	6	287	5.4	10.5	10.0	-3.1
6.50	34.2	127.5	1854	1.15	1362	4469	6	274	6.1	11.8	11.8	-0.8
7.00	34.0	124.0	2001	1.24	1452	4764	6	262	6.1	11.8	11.7	1.6
7.50	34.1	120.5	2127	1.32	1542	5059	6	256	5.7	11.0	10.7	2.7
8.00	34.3	117.5	2243	1.39	1632	5355	6	257	5.3	10.2	10.0	2.3
8.50	34.4	115.2	2366	1.47	1722	5650	6	259	5.1	9.9	9.7	1.9
9.00	34.5	113.1	2488	1.55	1812	5945	6	265	4.8	9.3	9.3	0.9
9.50	34.5	112.0	2619	1.63	1902	6241	6	267	4.6	9.0	9.0	0.5
10.00	34.6	110.5	2740	1.70	1992	6536	6	260	4.7	9.1	8.9	1.6
10.50	34.2	109.0	2859	1.78	2082	6831	6	262	4.9	9.5	9.4	1.4
11.00	34.6	107.8	3001	1.86	2172	7126	6	269	6.4	12.5	12.5	0.1
11.50	33.8	106.7	3227	2.00	2262	7422	6	274	8.4	16.3	16.3	-1.1
12.00	32.8	105.8	3491	2.17	2352	7717	6	270	9.7	18.9	18.9	-0.1
12.50	31.7	106.2	3799	2.35	2442	8012	6	263	11.0	21.4	21.2	2.4
13.00	30.6	107.3	4109	2.55	2532	8307	6	261	10.3	20.0	19.8	3.1
13.50	30.0	101.0	4365	2.71	2622	8603	6	258	9.1	17.7	17.3	3.7
14.00	29.5	99.5	4613	2.87	2712	8898	6	255	9.3	18.0	17.4	4.7
14.50	29.0	98.1	4871	3.03	2802	9193	6	255	8.8	17.1	16.5	4.5
15.00	28.7	97.0	5096	3.17	2892	9489	6	258	8.8	17.1	16.8	3.4
15.50	28.2	96.2	5371	3.34	2982	9784	6	264	8.4	16.3	16.2	1.0
16.00	28.0	95.8	5586	3.47	3072	10079	6	265	7.8	15.1	15.0	1.4
16.50	27.7	95.1	5828	3.62	3163	10374	6	258	8.1	15.8	15.4	3.2
17.00	27.5	94.4	6051	3.76	3252	10670	6	254	8.0	15.5	14.9	4.3
17.50	27.3	93.7	6277	3.90	3342	10965	6	251	7.7	15.0	14.2	4.8
18.00	27.2	92.8	6479	4.03	3432	11260	5	218	4.5	8.8	5.3	6.9
18.50	28.0	91.7	6432	4.00	3522	11556	5	247	9.2	17.9	16.4	7.1
19.00	26.7	90.8	6979	4.34	3612	11851	6	258	13.5	26.2	25.6	5.4
19.50	26.5	90.2	7220	4.49	3702	12146	6	256	10.1	19.6	19.0	4.9
20.00	26.0	89.6	7566	4.70	3792	12441	6	257	11.8	22.9	22.3	5.1

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 19

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 11 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 23:00 P.D.T.

TIME MINUTES	ELEV. D E G R E E S	AZIMUTH D E G R E E S	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	62.3	145.8	57	0.04	210	689	7	321	3.0	5.9	3.7	-4.6
1.00	56.0	141.2	181	0.11	318	1044	7	314	4.1	7.9	5.7	-5.5
1.50	46.4	136.0	300	0.19	417	1369	7	314	4.3	8.4	6.1	-5.8
2.00	43.2	136.7	441	0.27	516	1693	7	313	4.7	9.1	6.6	-6.2
2.50	41.5	134.6	580	0.36	615	2018	7	307	5.5	10.6	8.5	-6.4
3.00	38.6	132.7	767	0.48	714	2343	7	301	6.1	11.8	10.2	-6.1
3.50	36.9	129.2	941	0.58	809	2653	7	319	5.0	9.8	6.4	-7.4
4.00	36.9	134.5	1067	0.66	903	2963	6	277	6.7	13.0	12.9	-1.6
4.50	34.6	119.7	1298	0.81	998	3273	6	259	9.7	18.8	18.5	3.7
5.00	33.9	115.4	1473	0.92	1092	3583	6	269	7.9	15.3	15.3	0.3
5.50	32.1	111.6	1722	1.07	1182	3878	6	268	7.2	13.9	13.9	0.5
6.00	32.1	109.3	1865	1.16	1272	4174	6	270	7.4	14.3	14.3	-0.1
6.50	30.5	107.3	2139	1.33	1362	4469	6	266	8.6	16.7	16.6	1.1
7.00	29.0	104.2	2348	1.46	1452	4764	6	258	7.4	14.4	14.1	3.1
7.50	29.6	102.3	2535	1.58	1542	5059	6	257	6.8	13.1	12.8	2.9
8.00	29.4	100.5	2715	1.69	1632	5355	6	261	6.6	12.9	12.8	1.9
8.50	29.1	99.5	2911	1.81	1722	5650	6	251	7.2	14.0	13.2	4.7
9.00	28.9	96.3	3098	1.92	1812	5945	5	243	7.3	14.1	12.7	6.1
9.50	28.8	95.0	3274	2.03	1902	6241	5	243	6.7	13.0	11.5	5.9
10.00	28.8	92.8	3438	2.14	1992	6536	6	252	6.7	13.0	12.4	4.1
10.50	28.5	92.5	3647	2.27	2082	6831	6	249	7.6	14.8	13.8	5.2
11.00	29.3	90.1	3851	2.40	2172	7126	5	240	8.7	16.9	14.6	8.4
11.50	27.8	88.6	4097	2.55	2262	7422	5	246	9.0	17.5	16.0	7.1
12.00	27.3	87.2	4359	2.71	2352	7717	5	245	8.6	16.7	15.1	7.1
12.50	27.1	86.0	4573	2.84	2442	8012	5	242	7.9	15.3	13.5	7.2
13.00	26.9	84.8	4790	2.98	2532	8307	5	213	12.3	24.0	13.1	20.1
13.50	26.5	79.3	5054	3.14	2622	8603	5	205	13.8	26.8	11.4	24.2
14.00	26.4	77.0	5258	3.27	2712	8898	7	314	12.2	23.7	17.1	-16.4
14.50	26.1	85.5	5511	3.42	2802	9193	7	312	15.2	29.5	21.8	-19.9
15.00	25.6	84.4	5823	3.62	2892	9489	5	209	14.7	28.5	13.7	25.0
15.50	25.5	78.5	6038	3.75	2982	9784	4	202	14.1	27.4	10.1	25.4
16.00	25.4	77.5	6255	3.89	3072	10079	5	231	7.6	14.8	11.4	9.4
16.50	25.4	76.6	6444	4.00	3162	10374	5	239	9.3	18.1	15.5	9.3
17.00	24.9	76.0	6786	4.22	3252	10670	5	239	9.3	18.1	15.5	9.4
17.50	24.9	75.2	6980	4.34	3342	10965	5	235	8.7	16.9	13.7	9.8
18.00	24.6	74.5	7273	4.52	3432	11260	5	242	7.8	15.1	13.4	7.0
18.50	24.7	74.4	7436	4.62	3522	11556	6	249	6.6	12.8	11.9	4.7
19.00	24.6	74.2	7667	4.76	3612	11851	5	246	6.0	11.6	10.6	4.8
19.50	24.8	74.0	7791	4.84	3702	12146	6	250	10.4	20.2	19.0	6.8
20.00	24.0	73.9	8288	5.15	3792	12441	6	252	16.6	32.2	30.7	9.8

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 20

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 13 AUGUST 1979

ELEVATION OF LAUNCH SITE: 338 FEET

TIME OF LAUNCH: 11:50 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	78.2	354.0	23	0.01	210	689	4	187	1.3	2.5	0.3	2.5
1.00	70.5	6.7	76	0.05	318	1044	5	214	1.6	3.1	1.7	2.6
1.50	70.0	26.0	115	0.07	417	1368	5	243	1.8	3.6	3.3	1.6
2.00	68.2	40.2	166	0.10	516	1693	6	260	1.9	3.8	3.7	0.7
2.50	68.0	53.4	207	0.13	615	2018	6	292	2.1	4.1	3.7	-1.5
3.00	68.9	70.5	236	0.15	714	2343	7	309	2.5	4.8	3.7	-3.0
3.50	68.2	83.7	288	0.18	809	2653	7	308	3.0	5.8	4.6	-3.6
4.00	65.5	94.9	365	0.23	903	2963	7	313	3.9	7.7	5.6	-5.2
4.50	62.2	106.0	472	0.29	998	3273	0	344	5.0	9.7	2.6	-9.3
5.00	61.1	125.7	547	0.34	1092	3583	0	354	5.3	10.4	1.1	-10.3
5.50	58.5	132.7	663	0.41	1182	3879	0	344	4.2	8.2	2.3	-7.8
6.00	56.9	137.6	763	0.47	1272	4174	0	344	4.2	8.1	2.3	-7.7
6.50	54.9	141.0	886	0.55	1362	4469	7	336	4.6	9.0	3.6	-8.2
7.00	52.7	142.6	1028	0.64	1452	4764	7	328	4.6	9.0	4.8	-7.6
7.50	51.1	142.6	1162	0.72	1542	5059	7	312	5.2	10.2	7.5	-6.9
8.00	48.8	140.2	1339	0.83	1632	5355	7	309	5.8	11.2	8.6	-7.1
8.50	47.2	139.6	1500	0.93	1722	5650	7	307	3.6	7.0	5.6	-4.2
9.00	47.9	138.4	1551	0.96	1812	5945	6	279	3.5	6.9	6.8	-1.0
9.50	47.2	134.8	1667	1.04	1902	6241	6	280	4.5	8.7	8.5	-1.5
10.00	46.9	133.0	1769	1.10	1992	6536	6	291	3.7	7.2	6.8	-2.5
10.50	46.6	132.0	1872	1.16	2082	6831	7	308	3.6	7.0	5.5	-4.4
11.00	46.2	132.5	1985	1.23	2172	7126	7	317	4.1	7.9	5.4	-5.8
11.50	45.6	132.6	2115	1.31	2262	7422	7	294	4.6	9.0	8.3	-3.6
12.00	45.0	130.2	2250	1.40	2352	7717	6	284	5.0	9.6	9.3	-2.4
12.50	44.5	129.2	2381	1.48	2442	8012	6	292	4.2	8.1	7.5	-3.1
13.00	44.3	128.4	2490	1.55	2532	8307	7	296	4.1	7.9	7.1	-3.5
13.50	43.9	128.0	2619	1.63	2622	8603	7	301	5.2	10.1	8.6	-5.2
14.00	43.0	127.6	2799	1.74	2712	8898	7	301	6.4	12.4	10.6	-6.4
14.50	42.0	127.1	2999	1.86	2802	9193	7	294	6.4	12.5	11.4	-5.1
15.00	41.3	126.0	3176	1.97	2892	9489	7	295	5.4	10.4	9.5	-4.3
15.50	41.0	125.9	3313	2.06	2982	9784	6	284	6.0	11.7	11.4	-2.9
16.00	40.2	123.8	3515	2.18	3072	10079	6	282	7.7	14.9	14.6	-3.0
16.50	39.3	123.0	3739	2.32	3162	10374	6	288	7.0	13.5	12.9	-4.1
17.00	38.8	122.1	3918	2.43	3252	10670	6	282	7.5	14.6	14.2	-3.1
17.50	37.9	120.6	4162	2.59	3342	10965	6	282	8.3	16.0	15.7	-3.4
18.00	37.2	119.9	4387	2.73	3432	11260	6	283	8.0	15.5	15.1	-3.5
18.50	36.5	119.0	4622	2.87	3522	11556	6	279	6.3	12.3	12.1	-2.0
19.00	36.5	118.3	4743	2.95	3612	11851	6	280	8.5	16.4	16.2	-2.7
19.50	35.2	117.1	5103	3.17	3702	12146	6	280	9.9	19.2	18.9	-3.4
20.00	34.8	116.3	5309	3.30	3792	12441	6	277	7.3	14.1	14.0	-1.8

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 21

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 13 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	50.5	335.2	89	0.06	210	689	3	153	3.1	6.0	-2.7	5.4
1.00	49.2	333.3	186	0.12	318	1044	3	151	3.2	6.3	-3.1	5.5
1.50	48.0	332.0	284	0.18	417	1368	4	158	2.6	5.0	-1.9	4.7
2.00	50.5	335.4	341	0.21	516	1693	4	162	0.8	1.6	-0.5	1.5
2.50	57.1	333.5	332	0.21	615	2018	7	310	1.0	2.0	1.5	-1.3
3.00	64.9	340.8	287	0.18	714	2343	7	308	2.9	5.7	4.5	-3.5
3.50	75.0	357.5	189	0.12	809	2653	7	316	4.1	7.9	5.8	-5.7
4.00	81.5	38.6	120	0.07	903	2963	7	320	5.8	11.3	7.3	-8.6
4.50	75.5	109.5	232	0.14	998	3273	7	316	6.2	12.0	8.4	-8.6
5.00	69.2	117.1	376	0.23	1092	3583	7	313	5.7	11.1	8.1	-7.6
5.50	62.5	123.8	562	0.35	1182	3878	7	310	5.0	9.8	7.1	-8.4
6.00	60.8	131.6	651	0.40	1272	4174	0	9	3.8	7.5	-1.2	-7.4
6.50	61.3	141.5	690	0.43	1362	4469	0	20	2.8	5.5	-1.9	-5.2
7.00	61.6	144.1	730	0.45	1452	4764	7	330	2.0	3.9	1.9	-3.4
7.50	60.7	142.8	808	0.50	1542	5059	7	326	2.7	5.3	2.9	-4.3
8.00	59.8	144.5	890	0.55	1632	5355	1	38	6.3	12.2	-7.5	-9.6
8.50	59.0	164.7	973	0.60	1722	5650	1	35	6.3	12.2	-7.0	-10.0
9.00	57.8	163.8	1077	0.67	1812	5945	7	332	3.6	6.9	3.2	-6.1
9.50	56.7	162.5	1182	0.73	1902	6241	7	318	4.0	7.8	5.2	-5.8
10.00	55.6	159.2	1289	0.81	1992	6536	7	309	4.0	7.7	6.0	-4.8
10.50	55.0	157.0	1386	0.86	2082	6831	7	312	3.3	6.4	4.7	-4.3
11.00	54.5	155.7	1477	0.92	2172	7126	7	328	3.4	6.6	3.5	-5.5
11.50	53.7	155.8	1587	0.99	2262	7422	0	338	3.7	7.1	2.7	-6.6
12.00	53.0	156.0	1696	1.05	2352	7717	0	340	3.0	5.7	2.0	-5.4
12.50	53.0	156.2	1763	1.10	2442	8012	0	342	2.0	4.0	1.2	-3.8
13.00	53.2	156.4	1818	1.13	2532	8307	0	344	1.7	3.3	0.6	-3.2
13.50	53.5	156.6	1865	1.16	2622	8603	0	343	2.5	4.9	1.4	-4.6
14.00	53.0	156.9	1867	1.22	2712	8898	0	343	2.8	5.5	1.7	-5.3
14.50	53.0	157.1	2035	1.26	2802	9193	0	344	2.9	5.7	1.9	-5.5
15.00	52.5	157.5	2141	1.33	2892	9489	0	348	1.6	3.2	0.7	-3.1
15.50	53.5	157.6	2131	1.32	2982	9784	7	334	5.1	10.0	4.3	-9.0
16.00	50.5	157.1	2448	1.53	3072	10079	7	329	7.8	15.2	7.9	-13.0
16.50	49.7	156.0	2595	1.61	3162	10374	7	307	4.6	8.9	7.1	-5.4
17.00	49.5	154.2	2690	1.67	3252	10670	7	308	7.9	15.3	12.1	-9.5
17.50	47.0	151.8	3021	1.88	3342	10965	7	319	8.6	16.8	10.9	-12.7
18.00	46.2	151.8	3191	1.98	3432	11260	6	290	7.5	14.6	13.7	-5.1
18.50	45.4	146.7	3373	2.10	3522	11556	6	282	9.2	17.8	17.5	-3.6
19.00	44.5	145.0	3572	2.22	3612	11851	7	302	6.5	12.5	10.7	-6.6
19.50	44.0	144.2	3728	2.32	3702	12146	7	307	6.0	11.6	9.3	-7.1
20.00	43.3	143.4	3916	2.43	3792	12441	7	308	6.5	12.6	10.0	-7.8

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 22

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 13 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 23:23 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	52.0	311.5	84	0.05	210	689	3	122	2.1	4.0	-3.4	2.1
1.00	60.2	302.0	124	0.08	318	1044	7	329	1.0	2.0	1.0	-1.7
1.50	84.2	276.3	32	0.02	417	1368	7	315	4.2	8.2	5.8	-5.8
2.00	71.9	147.2	135	0.08	516	1693	7	328	5.8	11.3	6.0	-9.6
2.50	57.2	154.5	331	0.21	615	2010	7	335	7.1	13.8	5.7	-12.6
3.00	47.5	153.5	561	0.35	714	2343	7	334	6.4	12.5	5.5	-11.2
3.50*	777.0	777.0	717	0.45	809	2653	7	332	5.2	10.1	4.7	-9.0
4.00	42.5	153.0	874	0.54	903	2963	7	335	5.6	10.8	4.6	-9.8
4.50	40.4	153.8	1052	0.65	998	3273	0	340	5.5	10.6	3.6	-10.0
5.00	39.5	154.9	1201	0.75	1092	3583	0	342	4.6	8.9	2.7	-8.4
5.50	39.2	155.5	1324	0.82	1192	3878	0	339	3.7	7.2	2.6	-6.8
6.00	39.4	155.5	1424	0.89	1272	4174	7	327	3.4	6.7	3.6	-5.6
6.50	39.5	154.4	1529	0.95	1362	4469	7	316	3.6	7.1	4.9	-5.1
7.00	39.6	152.9	1632	1.01	1452	4764	7	319	3.6	7.1	4.6	-5.4
7.50	39.6	152.5	1741	1.08	1542	5059	0	340	3.8	7.3	2.5	-6.9
8.00	39.5	153.8	1856	1.15	1632	5355	0	356	4.0	7.8	0.6	-7.8
8.50	39.5	155.3	1965	1.22	1722	5650	0	354	3.8	7.5	0.8	-7.4
9.00	39.5	156.0	2074	1.29	1812	5945	0	358	3.6	7.1	0.3	-7.0
9.50	39.7	157.5	2168	1.35	1902	6241	0	18	3.4	6.6	-2.0	-6.2
10.00	40.3	159.5	2229	1.38	1992	6536	0	14	2.2	4.3	-1.0	-4.2
10.50	41.0	159.5	2270	1.42	2082	6831	0	17	2.0	3.8	-1.2	-3.7
11.00	41.7	161.3	2323	1.44	2172	7126	0	7	2.3	4.4	-0.5	-4.4
11.50	42.0	161.0	2399	1.49	2262	7422	7	325	2.0	3.9	2.2	-3.2
12.00	42.7	160.5	2438	1.52	2352	7717	7	319	1.5	2.9	1.9	-2.2
12.50	43.3	160.2	2483	1.54	2442	8012	7	303	1.1	2.1	1.8	-1.1
13.00	44.3	159.6	2490	1.55	2532	8307	1	54	0.6	1.2	-0.9	-0.7
13.50	45.3	161.0	2494	1.55	2622	8603	1	53	1.7	3.3	-2.6	-2.0
14.00	46.0	161.8	2520	1.57	2712	8898	0	19	1.8	3.5	-1.2	-3.3
14.50	46.3	162.5	2580	1.60	2802	9193	0	10	2.7	5.3	-1.0	-5.2
15.00	46.3	163.5	2666	1.66	2892	9489	0	2	3.5	6.9	-0.3	-6.9
15.50	46.0	164.0	2781	1.73	2982	9784	0	6	4.5	8.8	-0.9	-8.7
16.00	45.5	165.5	2919	1.81	3072	10079	0	0	3.7	7.2	0.0	-7.2
16.50	45.6	165.2	2997	1.86	3162	10374	0	344	3.1	6.1	1.7	-5.8
17.00	45.4	165.4	3106	1.93	3252	10670	0	343	4.1	7.9	2.4	-7.5
17.50	45.0	165.0	3240	2.01	3342	10965	0	341	3.7	7.3	2.4	-6.9
18.00	45.0	165.1	3330	2.07	3432	11260	0	359	4.1	8.0	0.1	-8.0
18.50	44.5	166.0	3480	2.16	3522	11556	0	0	5.2	10.2	-0.1	-10.2
19.00	44.0	166.4	3635	2.26	3612	11851	0	356	5.1	9.9	0.7	-9.8
19.50	43.8	166.8	3780	2.35	3702	12146	0	354	6.4	12.3	1.3	-12.3
20.00	42.6	167.1	4013	2.49	3792	12441	0	352	7.8	15.1	2.1	-15.0

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 1

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 14 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 05:23 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL (SPEED)	VELOCITY MILES PER HOUR (U)	VELOCITY MILES PER HOUR (V)
0.50	66.5	343.2	47	0.03	210	689	4	169	1.5	2.8	-0.5	2.8
1.00	68.0	349.3	87	0.05	318	1044	4	160	2.1	4.1	-1.4	3.8
1.50	61.3	341.0	172	0.11	417	1368	3	155	2.5	4.9	-2.0	4.5
2.00	60.1	340.5	238	0.15	516	1693	4	167	1.2	2.4	-0.5	2.4
2.50	64.3	342.8	247	0.15	615	2018	6	256	0.2	0.3	0.3	0.1
3.00	66.8	342.7	237	0.15	714	2343	1	48	2.0	3.9	-2.9	-2.6
3.50	72.3	314.0	225	0.14	809	2653	1	54	3.6	7.1	-5.7	-4.1
4.00	71.6	291.7	266	0.17	903	2963	1	55	3.0	5.8	-4.8	-3.3
4.50	70.7	279.8	314	0.19	998	3273	1	33	3.2	6.2	-3.4	-5.2
5.00	70.1	260.2	358	0.22	1092	3583	1	32	4.0	7.7	-4.0	-6.5
5.50	67.0	251.1	458	0.28	1182	3878	1	40	4.0	7.7	-4.9	-5.9
6.00	64.4	244.2	561	0.35	1272	4174	1	35	4.0	7.7	-4.5	-6.3
6.50	62.1	239.0	667	0.41	1362	4469	1	37	3.0	5.8	-3.5	-4.6
7.00	61.8	237.8	724	0.45	1452	4764	1	27	2.9	5.7	-2.6	-5.1
7.50	60.3	232.5	821	0.51	1542	5059	0	16	4.2	8.1	-2.3	-7.8
8.00	58.8	227.4	927	0.58	1632	5355	0	17	4.3	8.4	-2.4	-8.1
8.50	57.2	224.1	1044	0.65	1722	5650	1	25	4.6	9.0	-3.8	-8.2
9.00	55.2	222.2	1188	0.74	1812	5945	1	36	6.1	11.8	-7.0	-9.5
9.50	52.0	222.1	1406	0.87	1902	6241	1	45	4.8	9.3	-6.6	-6.6
10.00	52.0	222.8	1477	0.92	1992	6536	1	54	3.3	6.3	-5.1	-3.7
10.50	51.1	223.6	1598	0.99	2082	6831	1	40	3.6	7.1	-4.5	-5.4
11.00	50.7	222.4	1694	1.05	2172	7126	0	19	3.2	6.2	-2.0	-5.9
11.50	50.6	221.0	1774	1.10	2262	7422	0	10	3.1	6.1	-1.0	-6.0
12.00	50.5	219.3	1855	1.15	2352	7717	0	14	2.7	5.3	-1.3	-5.1
12.50	50.6	218.8	1922	1.19	2442	8012	1	23	2.6	5.0	-2.0	-4.6
13.00	50.5	218.1	2003	1.24	2532	8307	0	9	3.4	6.5	-1.1	-6.4
13.50	50.2	216.1	2100	1.30	2622	8603	0	4	3.7	7.2	-0.4	-7.2
14.00	50.0	214.8	2190	1.36	2712	8898	0	4	3.5	6.8	-0.5	-6.8
14.50	49.8	213.3	2282	1.42	2802	9193	0	4	3.4	6.5	-0.5	-6.5
15.00	49.7	212.3	2366	1.47	2892	9489	0	6	2.8	5.5	-0.6	-5.4
15.50	49.8	211.5	2434	1.51	2982	9784	0	2	2.7	5.3	-0.2	-5.3
16.00	49.8	210.4	2510	1.56	3072	10079	0	359	1.9	3.7	0.1	-3.7
16.50	50.4	210.1	2531	1.57	3162	10374	0	22	1.6	3.1	-1.2	-2.9
17.00	50.4	210.1	2606	1.62	3252	10670	1	24	3.0	5.8	-2.4	-5.3
17.50	50.1	209.7	2709	1.68	3342	10965	0	22	3.0	5.8	-2.2	-5.4
18.00	50.1	209.6	2784	1.73	3432	11260	1	28	2.3	4.5	-2.1	-4.0
18.50	50.2	209.6	2849	1.77	3522	11556	1	30	2.2	4.2	-2.1	-3.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 2

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 14 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 09:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	77.0	344.3	25	0.02	210	689	4	171	1.1	2.2	-0.3	2.2
1.00	72.3	351.2	69	0.04	318	1044	4	172	1.7	3.3	-0.5	3.2
1.50	68.2	350.1	126	0.08	417	1368	4	169	2.0	3.8	-0.8	3.8
2.00	65.6	349.5	188	0.12	516	1693	6	251	0.4	0.9	0.8	0.3
2.50	75.5	1.4	133	0.08	615	2018	7	324	2.1	4.2	2.5	-3.3
3.00	81.5	27.2	91	0.06	714	2343	0	346	0.8	1.5	0.4	-1.4
3.50	82.8	9.4	89	0.06	809	2653	1	62	1.4	2.7	-2.4	-1.3
4.00	86.2	322.5	53	0.03	903	2963	1	44	2.5	4.9	-3.4	-3.6
4.50	84.0	256.5	94	0.06	998	3273	1	47	4.1	8.0	-5.9	-5.4
5.00	76.6	239.8	247	0.15	1092	3583	1	54	5.6	10.9	-8.8	-6.4
5.50	68.5	239.0	425	0.26	1182	3878	1	61	5.7	11.1	-9.7	-5.4
6.00	63.2	240.5	591	0.37	1272	4174	1	46	6.4	12.4	-8.9	-8.7
6.50	57.5	232.7	803	0.50	1362	4469	2	72	6.9	13.4	-12.7	-4.1
7.00	53.5	245.3	998	0.62	1452	4764	2	96	7.0	13.6	-13.6	1.5
7.50	51.5	247.4	1145	0.71	1542	5059	2	80	3.8	7.4	-7.3	-1.3
8.00	51.4	248.0	1221	0.76	1632	5355	1	60	2.6	5.0	-4.3	-2.5
8.50	51.3	246.5	1298	0.81	1722	5650	1	45	3.4	6.5	-4.6	-4.6
9.00	50.5	244.8	1410	0.88	1812	5945	1	40	3.9	7.6	-4.8	-5.8
9.50	50.0	242.5	1510	0.94	1902	6241	1	32	3.8	7.4	-4.0	-6.3
10.00	49.6	240.4	1609	1.00	1992	6536	1	34	3.6	7.0	-3.9	-5.8
10.50	49.3	239.0	1703	1.06	2082	6831	1	40	2.4	4.6	-3.0	-3.5
11.00	49.8	238.8	1743	1.08	2172	7126	1	46	1.1	2.2	-1.5	-1.5
11.50	50.7	238.5	1768	1.10	2262	7422	1	59	0.5	0.9	-0.8	-0.5
12.00	51.8	238.8	1771	1.10	2352	7717	1	59	0.7	1.3	-1.1	-0.7
12.50	52.3	238.5	1809	1.12	2442	8012	0	16	2.2	4.4	-1.2	-4.2
13.00	52.4	236.0	1871	1.16	2532	8307	0	0	3.3	6.4	0.0	-6.4
13.50	52.7	233.5	1920	1.19	2622	8603	0	348	3.2	6.3	1.3	-6.2
14.00	53.2	230.7	1953	1.21	2712	8898	0	348	2.9	5.6	1.1	-5.5
14.50	53.5	229.0	1998	1.24	2802	9193	0	353	2.2	4.3	0.5	-4.3
15.00	54.0	227.5	2027	1.26	2892	9489	7	334	2.4	4.6	2.1	-4.2
15.50	54.7	225.1	2039	1.27	2982	9784	7	331	2.3	4.4	2.1	-3.9
16.00	55.2	223.8	2064	1.28	3072	10079	0	338	2.0	3.8	1.5	-3.5
16.50	55.7	222.1	2087	1.30	3162	10374	7	334	1.3	2.5	1.1	-2.3
17.00	56.4	221.8	2093	1.30	3252	10670	0	21	1.0	2.0	-0.7	-1.9
17.50	56.5	221.5	2145	1.33	3342	10965	1	43	2.6	5.0	-3.4	-3.6
18.00	56.0	221.9	2246	1.40	3432	11260	1	53	3.5	6.8	-5.4	-4.1
18.50	55.5	222.5	2351	1.46	3522	11556	1	54	4.5	8.8	-7.1	-5.2
19.00	54.4	223.2	2513	1.56	3612	11851	1	45	5.7	11.1	-7.8	-7.9
19.50	53.2	222.8	2693	1.67	3702	12146	1	36	6.4	12.4	-7.4	-10.0
20.00	51.9	222.3	2893	1.80	3792	12441	1	36	6.7	13.1	-7.6	-10.6

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 3

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 14 AUGUST '9[illegible]

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 13:09 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.504	777.0	777.0	52	0.03	210	689	7	331	1.7	3.4	1.6	*3.0
1.00	64.2	151.3	104	0.06	318	1044	7	335	1.3	2.5	1.0	*2.2
1.50	67.0	153.5	129	0.08	417	1368	0	345	0.9	1.8	0.5	*1.7
2.00	69.1	156.1	158	0.10	516	1693	0	359	1.1	2.1	0.0	*2.1
2.50	69.9	161.9	188	0.12	615	2018	0	3	0.7	1.3	*0.1	*1.3
3.00	72.3	161.5	195	0.12	714	2343	3	130	0.6	1.2	*0.9	0.8
3.50	77.5	169.2	157	0.10	809	2653	3	123	0.8	1.6	*1.3	0.9
4.00	78.7	172.5	160	0.10	903	2963	1	40	0.4	0.8	*0.5	*0.6
4.50	79.1	175.2	172	0.11	998	3273	4	167	1.0	2.0	*0.5	1.9
5.00	84.3	176.1	99	0.06	1092	3583	3	152	2.2	4.2	*2.0	3.7
5.50	86.1	219.5	74	0.05	1182	3878	3	128	2.1	4.0	*3.2	2.4
6.00	85.4	255.7	94	0.06	1272	4174	3	122	2.0	3.8	*3.3	2.0
6.50	83.3	272.1	148	0.09	1362	4469	2	99	1.9	3.6	*3.5	0.6
7.00	81.5	268.5	202	0.13	1452	4764	2	78	3.5	6.7	*6.6	*1.4
7.50	76.4	264.0	354	0.22	1542	5059	2	69	4.0	7.7	*7.2	*2.7
8.00	74.2	258.1	433	0.27	1632	5355	1	60	4.0	7.7	*6.7	*3.9
8.50	70.3	254.3	580	0.36	1722	5650	1	58	4.0	7.8	*6.6	*4.1
9.00	68.8	251.0	663	0.41	1812	5945	1	48	3.6	7.0	*5.2	*4.6
9.50	66.6	247.4	779	0.48	1902	6241	1	47	4.6	8.9	*6.5	*6.0
10.00	64.0	244.1	922	0.57	1992	6536	1	42	4.1	7.9	*5.3	*5.8
10.50	63.1	241.5	1005	0.62	2082	6831	1	40	3.0	5.8	*3.7	*4.4
11.00	62.3	240.3	1087	0.68	2172	7126	1	28	2.8	5.5	*2.5	*4.8
11.50	62.0	236.8	1148	0.71	2262	7422	0	16	3.1	6.0	*1.7	*5.7
12.00	61.4	234.3	1227	0.76	2352	7717	1	33	3.4	6.7	*3.7	*5.6
12.50	60.2	233.3	1340	0.83	2442	8012	1	45	3.8	7.4	*5.3	*5.2
13.00	59.1	232.9	1454	0.90	2532	8307	1	57	3.9	7.6	*6.4	*4.2
13.50	58.0	233.8	1575	0.98	2622	8603	1	66	4.5	8.8	*8.0	*3.6
14.00	56.8	234.9	1721	1.07	2712	8898	2	68	4.3	8.4	*7.8	*3.2
14.50	55.9	235.8	1828	1.14	2802	9193	1	59	3.2	6.1	*5.3	*3.2
15.00	55.6	235.3	1910	1.19	2892	9489	1	32	2.6	5.0	*2.7	*4.3
15.50	55.6	234.0	1972	1.23	2982	9784	1	26	2.2	4.2	*1.9	*3.8
16.00	55.7	233.5	2026	1.26	3072	10079	1	42	1.4	2.8	*1.9	*2.1
16.50	56.1	233.5	2056	1.28	3162	10374	2	69	0.9	1.7	*1.6	*0.6
17.00	56.6	233.9	2077	1.29	3252	10670	3	114	1.0	2.0	*1.9	0.8
17.50	57.2	235.0	2088	1.30	3342	10965	3	148	1.4	2.7	*1.4	2.3
18.00	58.1	236.2	2073	1.29	3432	11260	4	179	3.4	6.6	*0.2	6.6
18.50	59.9	239.9	1983	1.23	3522	11556	4	188	3.3	6.4	0.9	6.3
19.00	61.0	240.5	1946	1.21	3612	11851	1	45	0.9	1.8	*1.3	*1.3
19.50	60.5	239.5	2037	1.27	3702	12146	2	87	2.0	3.9	*1.9	*0.2
20.00	60.9	242.0	2054	1.28	3792	12441	3	140	3.0	5.9	*3.8	4.5

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 4

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 14 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	FLTV. DIRECTION	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (U)	VELOCITY NAUTICAL MILES PER HOUR (V)	VELOCITY NAUTICAL MILES PER HOUR
0.50	30.5	142.5	183	0.11	210	689	7	322	7.0	13.5	8.3	-10.7
1.00	27.3	142.2	418	0.26	410	1044	7	320	6.8	13.3	8.5	-10.2
1.50	28.0	141.5	592	0.37	417	1368	7	320	3.9	7.5	4.8	-5.8
2.00	32.5	141.5	650	0.40	516	1693	7	335	1.5	2.9	1.6	-2.4
2.50	37.0	142.0	681	0.42	615	2018	7	331	1.2	2.4	1.1	-2.1
3.00	40.3	142.3	722	0.45	714	2343	7	324	2.7	5.2	3.1	-4.2
3.50	40.0	142.4	842	0.52	809	2653	7	309	0.5	0.9	0.7	-0.6
4.00	46.9	143.0	750	0.47	903	2963	3	140	2.3	4.5	-2.9	3.5
4.50	51.9	142.8	702	0.44	998	3273	2	92	1.0	2.0	-2.0	0.1
5.00	54.3	145.8	711	0.44	1092	3583	1	66	1.1	2.1	-1.9	-0.9
5.50	57.2	148.1	691	0.43	1182	3878	2	99	1.3	2.5	-2.4	0.4
6.00	60.6	150.0	652	0.41	1272	4174	2	100	1.9	3.6	-3.6	0.6
6.50	63.7	155.8	623	0.39	1362	4469	2	91	1.7	3.4	-3.4	0.1
7.00	65.2	159.0	615	0.38	1452	4764	1	38	1.1	2.2	-1.3	-1.7
7.50	65.5	161.0	656	0.41	1542	5059	1	24	1.7	3.3	-1.3	-3.0
8.00	65.7	165.0	691	0.43	1632	5355	1	50	2.8	5.5	-4.2	-3.5
8.50	65.8	173.5	725	0.46	1722	5650	1	56	4.8	9.3	-7.8	-5.2
9.00	65.1	184.2	830	0.52	1812	5945	1	58	5.5	10.6	-9.0	-5.6
9.50	62.8	192.2	935	0.57	1902	6241	1	65	4.3	8.4	-7.6	-3.6
10.00	62.5	197.5	984	0.61	1992	6536	2	72	3.1	5.0	-5.6	-1.9
10.50	62.5	201.0	1031	0.64	2082	6831	2	84	2.6	5.0	-5.0	-0.5
11.00	63.0	205.2	1055	0.66	2172	7126	2	100	3.3	6.4	-6.3	1.1
11.50	63.3	211.2	1036	0.58	2262	7422	2	103	4.6	8.9	-6.7	1.9
12.00	63.8	213.5	1146	0.71	2353	7717	2	33	4.6	9.0	-8.0	1.0
12.50	62.3	221.0	1229	0.76	2442	8012	2	84	3.4	6.5	-6.5	-0.7
13.00	61.9	225.0	1298	0.81	2532	8307	1	58	3.1	6.0	-5.1	-3.2
13.50	60.8	225.0	1408	0.88	2622	8603	1	48	3.5	6.8	-5.0	-4.6
14.00	60.0	225.8	1507	0.93	2712	8898	1	57	3.0	5.8	-4.9	-3.1
14.50	59.6	226.4	1584	0.98	2802	9193	2	78	2.0	3.9	-3.8	-0.8
15.00	60.0	227.7	1611	1.00	2892	9489	2	92	1.5	3.0	-3.0	0.1
15.50	60.2	228.7	1649	1.02	2982	9784	2	71	1.5	2.9	-2.8	-1.0
16.00	60.3	228.9	1694	1.05	3072	10079	1	45	1.5	2.9	-2.0	-2.0
16.50	60.4	228.5	1738	1.08	3162	10374	1	31	2.2	4.2	-2.2	-3.6
17.00	60.9	227.6	1819	1.13	3252	10670	7	309	2.0	3.9	3.1	-2.5
17.50	62.0	224.5	1723	1.07	3342	10965	6	274	3.1	6.0	6.0	-0.5
18.00	63.5	221.0	1697	1.05	3432	11260	0	340	3.4	6.6	2.3	-6.2
18.50	62.0	218.7	1818	1.13	3522	11556	6	292	3.3	6.3	5.9	-2.4
19.00	65.0	216.5	1637	1.02	3612	11851	6	249	3.3	6.5	6.1	2.3
19.50	65.4	215.2	1648	1.02	3702	12146	0	349	1.3	2.5	0.5	-2.4
20.00	65.8	214.7	1688	1.05	3792	12441	0	15	1.5	2.8	-0.8	-2.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 5

LOCATION: MORGAN HILL CALIFORNIA

~~SPECIFICS:~~

DATE OF LAUNCH: 14 AUGUST 1978

~~ELEVATION OF LAUNCH SITE: 335 FEET~~

TIME OF LAUNCH: 21:06 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	44.4	313.8	110	0.07	210	689	0	340	0.5	1.0	0.4	-1.0
1.00*	777.0	777.0	140	0.09	318	1044	7	319	4.6	9.0	5.9	-6.9
1.50	61.7	143.2	170	0.11	417	1368	7	323	6.6	12.9	7.8	-10.5
2.00	44.0	144.2	429	0.27	516	1693	7	325	9.8	19.1	11.1	-15.6
2.50	34.0	144.3	761	0.47	615	2018	7	324	10.4	20.2	11.8	-16.4
3.00	30.2	144.2	1052	0.65	714	2343	7	326	9.5	18.4	10.4	-15.2
3.50	28.0	144.9	1329	0.83	809	2653	7	331	8.0	15.6	7.6	-13.7
4.00	27.6	146.3	1532	0.95	903	2963	0	339	6.9	13.5	4.9	-12.5
4.50	27.2	148.2	1735	1.08	998	3273	0	346	6.7	13.1	3.2	-12.7
5.00	27.3	150.4	1918	1.19	1092	3583	0	4	5.9	11.4	-0.8	-11.4
5.50	28.0	154.0	2031	1.26	1182	3878	0	22	5.8	11.4	-4.2	-10.6
6.00	28.5	157.7	2155	1.34	1272	4174	0	19	5.6	10.9	-3.6	-10.3
6.50	28.9	160.0	2282	1.42	1362	4469	1	27	5.8	11.2	-5.1	-10.0
7.00	29.4	164.0	2396	1.49	1452	4764	1	34	5.8	11.2	-6.2	-9.4
7.50	29.9	166.4	2504	1.56	1542	5059	1	29	4.8	9.4	-4.5	-8.2
8.00	30.4	168.5	2608	1.62	1632	5355	2	73	3.2	6.3	-6.0	-1.8
8.50	32.7	170.8	2523	1.57	1722	5650	2	105	3.0	5.7	-5.6	1.4
9.00	34.0	172.1	2535	1.58	1812	5945	3	150	3.2	6.2	-3.1	5.3
9.50	37.5	172.5	2346	1.46	1902	6241	3	136	2.4	4.7	-3.5	3.4
10.00	38.0	174.1	2419	1.50	1992	6536	3	128	2.8	5.4	-4.2	3.3
10.50	41.6	175.5	2230	1.39	2082	6831	4	158	3.7	7.3	-2.7	5.7
11.00	43.2	175.7	2204	1.37	2172	7126	4	181	1.4	2.8	0.0	2.8
11.50	45.2	175.3	2145	1.33	2262	7422	4	169	1.7	3.2	-0.6	3.2
12.00	46.9	176.0	2106	1.31	2352	7717	3	148	2.8	5.4	-2.9	4.6
12.50	49.5	177.5	1999	1.24	2442	8012	3	131	2.5	4.8	-3.6	3.2
13.00	50.5	179.0	2003	1.24	2532	8307	2	85	1.4	2.7	-2.7	-0.3
13.50	51.5	179.9	2005	1.25	2622	8603	2	79	1.2	2.3	-2.3	-0.5
14.00	52.3	181.0	2017	1.25	2712	8898	2	71	1.8	3.4	-3.2	1.1
14.50	52.8	182.7	2042	1.27	2802	9193	2	81	2.5	4.8	-4.8	-0.8
15.00	53.7	185.1	2049	1.27	2892	9489	2	93	3.7	7.2	-7.2	0.3
15.50	54.5	188.9	2054	1.28	2982	9784	2	100	3.5	6.8	-6.7	1.2
16.00	55.5	191.0	2041	1.27	3072	10079	3	153	6.0	11.7	-5.3	10.4
16.50	55.9	195.8	1774	1.10	3162	10374	2	98	5.1	9.9	-9.9	-0.4
17.00	55.9	199.0	2133	1.33	3252	10670	1	46	8.1	15.8	-11.3	-11.0
17.50	55.7	202.1	2210	1.37	3342	10965	1	64	3.6	6.9	-6.2	-3.0
18.00	55.5	202.8	2289	1.42	3432	11260	1	65	2.9	5.7	-5.1	-2.4
18.50	55.4	205.0	2342	1.46	3522	11556	1	53	3.9	7.6	-6.1	-4.6
19.00	54.6	205.5	2494	1.55	3612	11851	1	30	5.7	11.1	-5.5	-9.6
19.50	53.3	205.6	2683	1.67	3702	12146	1	35	4.3	8.4	-4.8	-6.9
20.00	53.3	206.4	2750	1.71	3792	12441	1	55	2.6	5.0	-4.1	-2.8

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T 6 6

LOCATION: MOFCH HILL CALIFORNIA

SPECIFICS: LOST AT 12:00

DATE OF LAUNCH: 15 AUGUST 1978

ELEVATION OF LAUNCH SITE: 336 FEET

TIME OF LAUNCH: 01:50 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	ALTITUDE M.S.L. METERS	ALTITUDE M.S.L. FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	77.4	327.9	24	0.02	210	689	3	137	2.1	4.0	-2.8	2.9
1.00	60.6	316.9	125	0.06	318	1044	3	136	2.7	5.2	-3.6	3.8
1.50	59.5	317.5	185	0.12	417	1360	0	348	0.5	1.0	0.2	-1.0
2.00*	777.0	777.0	111	0.07	516	1693	7	329	3.0	5.7	3.0	-4.9
2.50	86.0	246.1	36	0.02	615	2018	2	219	4.7	9.2	6.0	-7.0
3.00	73.0	145.5	183	0.11	714	2343	7	325	5.6	10.8	6.2	-8.9
3.50	65.0	151.2	329	0.20	809	2653	7	337	4.5	8.7	3.4	-5.3
4.00	60.5	152.4	455	0.28	903	2963	7	336	1.7	3.2	1.3	-3.0
4.50	64.4	152.3	429	0.27	998	3273	3	153	0.7	1.3	-0.6	1.2
5.00	67.1	152.3	514	0.26	1092	3583	4	198	0.4	0.7	0.2	0.7
5.50	69.0	150.2	415	0.26	1182	3878	5	240	0.6	1.2	1.1	0.6
6.00	70.5	147.0	414	0.26	1272	4174	5	203	0.9	1.7	0.7	1.6
6.50	73.0	144.0	385	0.24	1362	4469	4	161	1.7	3.3	-1.1	3.1
7.00	76.8	142.5	332	0.20	1452	4764	3	137	2.2	4.3	-1.2	4.0
7.50	79.9	137.0	257	0.16	1542	5059	4	169	2.1	4.0	-0.8	3.9
8.00	82.1	127.5	212	0.13	1632	5355	4	167	2.0	3.9	-0.9	3.8
8.50	84.2	115.5	165	0.10	1722	5650	4	172	2.2	4.2	-0.6	4.1
9.00	85.0	90.5	150	0.09	1812	5945	4	185	2.3	4.5	0.4	4.4
9.50	84.5	67.4	173	0.11	1902	6241	4	189	2.3	4.4	0.7	4.3
10.00	83.5	52.0	215	0.13	1992	6536	4	189	1.3	2.6	0.4	2.5
10.50	83.5	50.0	226	0.14	2082	6831	1	62	0.6	1.1	-1.0	-0.5
11.00	85.0	50.0	183	0.11	2172	7126	1	48	1.9	3.6	-2.7	-2.4
11.50	87.0	51.5	113	0.07	2262	7422	1	50	2.4	4.6	-3.5	-3.0
12.00	89.0	56.0	39	0.02	2352	7717	1	52	2.5	4.8	-3.8	-2.9

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 7

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 15 AUGUST 1978

ELEVATION OF LAUNCH SITE: 325 FEET

TIME OF LAUNCH: 05:20 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	71.2	320.2	37	0.02	210	689	3	143	1.3	2.6	-1.6	2.1
1.00	69.7	323.0	80	0.05	318	1044	3	152	2.0	3.9	-1.8	3.5
1.50	63.5	329.2	157	0.10	417	1368	3	150	1.7	3.3	-1.6	2.9
2.00	66.4	327.1	161	0.11	516	1693	6	288	0.9	1.8	1.7	-0.6
2.50*	777.0	777.0	162	0.10	615	2018	7	296	2.6	5.1	4.6	-2.2
3.00*	777.0	777.0	143	0.09	714	2343	7	296	2.6	5.1	4.6	-2.2
3.50	80.0	67.1	125	0.08	809	2653	0	344	7.0	13.6	3.8	-13.0
4.00	65.9	153.2	358	0.22	903	2963	7	333	7.6	14.8	6.7	-13.2
4.50	61.7	138.9	482	0.30	998	3273	6	277	4.2	8.1	8.0	-1.0
5.00	61.4	130.6	540	0.34	1092	3583	6	248	3.1	6.0	5.5	2.3
5.50	62.1	120.3	572	0.36	1182	3878	5	233	3.3	6.4	5.1	3.8
6.00	62.3	112.4	614	0.38	1272	4174	5	233	3.4	6.6	5.3	4.0
6.50	61.7	104.1	678	0.42	1362	4469	5	244	3.6	6.9	6.2	3.1
7.00	60.2	100.4	773	0.48	1452	4764	5	244	3.1	6.1	5.5	2.6
7.50	60.0	95.5	831	0.52	1542	5059	5	234	2.9	5.7	4.7	3.3
8.00	59.4	92.3	905	0.56	1632	5355	5	238	3.1	6.0	5.1	3.2
8.50	58.7	89.2	985	0.61	1722	5650	5	246	3.5	6.8	6.2	2.7
9.00	57.3	87.5	1098	0.68	1812	5945	6	260	3.8	7.4	7.2	1.3
9.50	56.1	87.4	1210	0.75	1902	6241	6	264	2.7	5.3	5.2	0.6
10.00	56.3	87.0	1260	0.78	1992	6536	6	274	1.0	2.0	2.0	-0.1
10.50	57.3	87.7	1271	0.79	2082	6831	0	352	1.1	2.2	0.3	-2.1
11.00	58.5	90.0	1269	0.79	2172	7126	1	48	1.4	2.8	-2.0	-1.9
11.50	60.8	90.3	1207	0.75	2262	7422	2	96	2.0	4.0	-4.0	0.4
12.00	63.0	89.4	1146	0.71	2352	7717	3	124	1.8	3.4	-2.0	1.9
12.50	64.4	87.3	1121	0.70	2442	8012	3	156	1.9	3.6	-1.5	3.3
13.00	65.5	84.1	1107	0.69	2532	8307	0	339	1.1	2.1	0.8	-2.0
13.50	65.6	90.4	1143	0.71	2622	8603	5	214	1.6	3.3	1.0	3.6
14.00	65.8	80.4	1173	0.73	2712	8898	4	193	4.1	8.0	1.7	7.8
14.50	65.7	79.0	1219	0.76	2802	9193	5	223	2.3	4.4	3.0	3.2
15.00	65.3	76.7	1283	0.80	2892	9489	5	208	2.9	5.7	2.7	5.1
15.50	65.1	73.1	1337	0.83	2982	9784	4	180	3.5	6.8	0.0	6.8
16.00	65.6	68.0	1347	0.84	3072	10079	4	171	1.9	3.6	-0.6	3.6
16.50	66.1	68.4	1356	0.84	3162	10374	3	156	2.6	5.1	-2.1	4.7
17.00	66.8	61.3	1350	0.84	3252	10670	3	157	3.0	5.8	-2.3	5.3
17.50	67.2	60.9	1362	0.85	3342	10965	6	269	0.4	0.8	0.8	0.0
18.00	67.6	61.8	1373	0.85	3432	11260	6	270	1.3	2.5	2.5	0.0
18.50	67.3	62.4	1431	0.89	3522	11556	6	256	2.6	5.1	5.0	1.2
19.00	66.5	63.3	1526	0.95	3612	11851	6	262	3.6	6.9	6.8	1.0
19.50	65.6	64.9	1631	1.01	3702	12146	6	263	3.0	5.9	5.8	0.7
20.00	65.3	65.4	1697	1.05	3792	12441	6	258	2.2	4.3	4.2	0.9

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 8

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 15 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 09:20 P.D.T.

TIME SECONDS	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.00	57.0	308.2	70	0.04	210	689	3	149	2.7	5.2	-2.7	4.5
0.50	53.3	329.2	161	0.10	318	1044	3	155	3.8	7.4	-3.1	6.7
1.00	47.1	329.0	293	0.18	417	1368	3	154	3.8	7.4	-3.2	6.7
1.50	46.8	332.2	399	0.24	516	1693	4	167	2.6	5.0	-1.1	4.9
2.00	49.2	335.2	443	0.28	615	2018	7	305	1.1	2.1	1.7	-1.2
2.50	61.5	337.3	332	0.21	714	2343	7	314	2.0	3.8	2.8	-2.6
3.00	64.6	342.7	335	0.21	809	2653	7	294	1.9	3.7	3.4	-1.5
3.50	72.0	355.0	260	0.16	903	2963	7	303	3.2	6.2	5.2	-3.4
4.00	76.6	15.5	224	0.14	998	3273	7	297	2.9	5.6	5.0	-2.6
4.50	77.3	36.0	223	0.14	1092	3583	6	287	2.6	5.1	4.8	-1.5
5.00	76.0	51.0	269	0.17	1182	3878	6	270	3.2	6.2	6.2	0.0
5.50	72.5	60.8	369	0.23	1272	4174	5	247	3.4	6.7	6.2	2.6
6.00	69.5	58.1	471	0.29	1362	4469	5	221	3.7	7.2	4.8	5.4
6.50	66.8	53.5	584	0.36	1452	4764	5	215	4.1	7.9	4.5	6.5
7.00	64.0	50.3	702	0.44	1542	5059	5	217	3.8	7.3	4.4	5.9
7.50	62.3	48.0	803	0.50	1632	5355	5	219	3.3	6.4	4.0	5.0
8.00	61.0	47.8	898	0.56	1722	5650	5	225	3.1	6.0	4.2	4.2
8.50	60.0	48.1	987	0.61	1812	5945	5	227	2.4	4.6	3.3	3.1
9.00	60.0	47.7	1039	0.65	1902	6241	4	192	1.7	3.2	0.7	3.1
9.50	60.5	45.0	1068	0.66	1992	6536	4	176	2.6	5.0	-0.3	5.0
10.00	60.0	41.6	1143	0.71	2082	6831	4	181	3.0	5.8	0.1	5.8
10.50	59.8	39.1	1205	0.75	2172	7126	4	190	3.0	5.7	1.0	5.7
11.00	59.6	37.5	1298	0.81	2262	7422	5	212	3.0	5.8	3.1	4.9
11.50	58.8	38.2	1382	0.86	2352	7717	6	248	2.2	4.2	3.9	1.6
12.00	58.9	40.2	1412	0.88	2442	8012	7	300	1.7	3.4	2.0	-1.7
12.50	60.0	42.4	1403	0.87	2532	8307	7	330	1.7	3.3	1.6	-2.9
13.00	61.3	44.2	1380	0.86	2622	8603	0	339	2.0	3.9	1.4	-3.6
13.50	62.6	46.9	1353	0.84	2712	8898	7	330	2.0	3.8	1.9	-3.3
14.00	63.4	49.0	1352	0.84	2802	9193	7	311	1.6	3.2	2.4	-2.1
14.50	63.9	51.0	1367	0.85	2892	9489	6	292	1.8	3.5	3.3	-1.3
15.00	64.0	53.0	1405	0.87	2982	9784	6	262	1.7	3.3	3.3	0.4
15.50	63.9	53.1	1455	0.90	3072	10079	5	223	2.0	4.0	2.7	2.9
16.00	63.5	52.2	1526	0.95	3162	10374	5	208	2.1	4.1	1.9	3.6
16.50	63.5	51.1	1571	0.98	3252	10670	4	177	1.2	2.3	-0.1	2.3
17.00	64.2	50.1	1566	0.97	3342	10965	2	108	0.5	1.1	-1.0	0.3
17.50	65.0	50.1	1553	0.96	3432	11260	0	347	0.9	1.7	0.4	-1.6
18.00	65.7	51.8	1544	0.96	3522	11556	7	325	3.3	6.5	3.7	-5.3
18.50	66.2	57.5	1548	0.96	3612	11851	7	312	4.1	8.0	5.9	-5.4
19.00	66.6	60.5	1603	1.00	3702	12146	6	289	2.8	5.4	5.1	-1.7
19.50	65.4	52.0	1658	1.03	3792	12441	6	279	2.3	4.5	4.5	-0.7
20.00												

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 9

LOCATION: MORGAN HILL CALIFORNIA

~~SPECIFICS:~~

DATE OF LAUNCH: 15 AUGUST 1978

~~ELEVATION OF LAUNCH SITE: 335 FEET~~

TIME OF LAUNCH: 13:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	56.2	294.1	73	0.04	210	689	3	135	2.3	4.6	-3.2	3.2
1.00	56.9	315.4	141	0.09	318	1044	3	148	2.0	3.8	-2.0	3.2
1.50	60.0	315.4	182	0.11	417	1368	3	152	0.9	1.8	-0.8	1.6
2.00	64.9	319.9	194	0.12	516	1693	5	226	0.7	1.4	1.0	1.0
2.50	70.0	329.2	187	0.12	615	2018	6	271	1.8	3.4	-3.4	-0.1
3.00	76.4	352.3	148	0.09	714	2343	7	293	2.7	5.3	4.9	-2.1
3.50	81.1	30.0	111	0.07	809	2653	7	303	3.6	7.0	5.9	-3.8
4.00	78.4	79.7	164	0.10	903	2963	7	302	3.8	7.4	6.3	-3.9
4.50	74.4	95.8	260	0.16	998	3273	7	294	2.9	5.6	5.1	-2.3
5.00	72.0	97.4	322	0.20	1092	3583	6	276	2.4	4.6	4.6	-0.5
5.50	70.0	95.9	393	0.24	1182	3878	6	266	2.9	5.6	5.6	0.4
6.00	67.2	93.3	492	0.31	1272	4174	6	265	3.3	6.5	6.4	0.6
6.50	64.9	92.1	580	0.37	1362	4469	6	265	3.4	6.7	6.7	0.6
7.00	62.7	90.7	697	0.43	1452	4764	6	266	3.5	6.9	6.8	0.3
7.50	60.9	90.9	801	0.50	1542	5059	6	272	3.2	6.2	6.2	-0.2
8.00	59.9	90.9	887	0.55	1632	5355	6	270	4.2	8.1	8.1	-0.1
8.50	57.0	90.9	1052	0.65	1722	5650	6	262	4.6	9.0	8.9	1.2
9.00	55.8	88.9	1162	0.72	1812	5945	6	253	3.5	6.9	6.6	2.0
9.50	55.1	87.8	1256	0.78	1902	6241	6	260	3.0	5.9	5.8	1.0
10.00	54.6	87.7	1343	0.83	1992	6536	5	242	2.9	5.6	4.9	2.7
10.50	54.5	84.7	1412	0.88	2082	6831	5	213	3.5	6.9	3.8	5.7
11.00	54.5	81.0	1477	0.92	2172	7126	5	210	4.0	7.8	3.9	6.8
11.50	54.1	77.4	1564	0.97	2262	7422	5	213	4.9	9.6	5.2	8.1
12.00	53.1	73.5	1689	1.05	2352	7717	5	218	5.1	9.9	6.0	7.8
12.50	52.3	71.2	1809	1.12	2442	8012	5	218	3.1	6.1	3.7	4.8
13.00	52.8	70.1	1844	1.15	2532	8307	4	198	1.3	2.6	0.8	2.5
13.50	53.6	69.2	1858	1.15	2622	8603	4	184	1.2	2.4	0.1	2.4
14.00	54.3	68.0	1875	1.17	2712	8898	4	169	1.6	3.1	-0.6	3.1
14.50	55.2	66.3	1877	1.17	2802	9193	3	155	2.7	5.2	-2.2	4.7
15.00	56.1	63.1	1875	1.16	2892	9489	3	155	1.8	3.5	-1.5	3.2
15.50	56.9	63.0	1877	1.17	2982	9784	4	169	2.9	5.6	-1.1	5.5
16.00	57.0	58.1	1929	1.20	3072	10079	4	176	3.7	7.1	-0.6	7.1
16.50	57.2	57.1	1972	1.23	3162	10374	7	304	3.5	6.7	5.6	-3.8
17.00	57.3	63.5	2022	1.26	3252	10670	7	310	4.1	8.0	6.1	-5.2
17.50	57.6	63.7	2056	1.28	3342	10965	5	245	3.3	6.4	5.8	2.8
18.00	56.3	63.6	2221	1.38	3432	11260	5	247	3.9	7.6	6.9	3.0
18.50	56.2	64.0	2289	1.42	3522	11556	6	263	1.6	3.2	3.2	-0.4
19.00	56.6	64.4	2314	1.44	3612	11851	7	314	1.0	2.0	1.4	-1.3
19.50	57.3	65.4	2311	1.44	3702	12146	7	336	1.8	3.4	1.4	-3.1
20.00	57.9	67.0	2315	1.44	3792	12441	7	333	2.2	4.2	1.9	-3.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 10

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 15 AUGUST 1973

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	ALTITUDE METERS	ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	47.0	144.3	101	0.06	210	689	3	125	2.2	4.3	-3.5	2.5
1.00	50.0	305.1	333	0.02	318	1044	2	120	3.1	5.9	-5.1	3.0
1.50	72.3	276.0	101	0.06	417	1368	7	333	3.4	6.6	2.9	-5.9
2.00	75.5	189.2	107	0.07	516	1693	7	328	5.8	11.3	6.1	-9.6
2.50	59.8	162.9	299	0.19	615	2018	7	329	7.1	13.8	7.0	-11.9
3.00	50.0	157.1	514	0.32	716	2343	7	323	7.1	13.9	8.3	-11.1
3.50	44.6	151.4	716	0.45	809	2653	7	316	6.7	13.0	9.0	-9.3
4.00	41.7	147.8	899	0.56	903	2963	7	308	6.2	12.0	9.4	-7.4
4.50	40.0	143.6	1067	0.66	998	3273	7	301	5.1	9.9	8.5	-5.1
5.00	40.0	141.1	1180	0.73	1092	3583	6	279	3.5	6.8	6.7	-1.1
5.50	41.4	136.7	1225	0.76	1182	3878	6	284	2.0	3.8	3.7	-0.9
6.00	42.5	137.9	1277	0.79	1272	4174	6	253	2.8	5.5	5.3	1.6
6.50	43.9	130.0	1309	0.81	1362	4469	5	243	4.4	8.5	7.6	3.9
7.00	44.6	127.3	1369	0.85	1452	4764	6	270	3.3	6.3	6.3	0.0
7.50	44.5	125.1	1465	0.91	1542	5059	6	256	2.7	5.3	5.1	1.2
8.00	46.0	122.3	1478	0.92	1632	5355	5	242	2.3	4.5	3.9	2.1
8.50	46.6	120.5	1532	0.95	1722	5650	5	241	2.0	4.0	3.5	1.9
9.00	48.0	118.3	1540	0.96	1812	5945	6	262	2.2	4.3	4.3	0.6
9.50	47.7	117.6	1633	1.02	1902	6241	6	283	1.9	3.6	3.5	-0.8
10.00	48.9	117.3	1649	1.02	1992	6536	6	291	1.4	2.7	2.5	-1.0
10.50	49.0	117.3	1721	1.07	2082	6831	6	286	2.4	4.8	4.6	-1.3
11.00	49.1	116.4	1793	1.11	2172	7126	6	263	2.5	4.8	4.7	0.6
11.50	49.5	114.7	1845	1.15	2262	7422	5	239	2.2	4.3	3.7	2.2
12.00	50.5	113.0	1868	1.16	2352	7717	5	215	1.8	3.7	2.1	3.1
12.50	51.4	111.2	1864	1.16	2442	8012	5	238	1.6	3.2	2.7	1.7
13.00	51.6	110.6	1926	1.30	2532	8307	6	282	2.1	4.0	3.9	-0.8
13.50	51.7	110.6	1990	1.24	2622	8603	6	285	2.4	4.6	4.5	-1.2
14.00	51.6	110.2	2089	1.29	2712	8898	6	260	3.3	6.4	6.3	1.1
14.50	51.3	107.9	2163	1.34	2802	9193	6	258	4.0	7.8	7.6	1.6
15.00	50.8	107.0	2225	1.41	2892	9489	6	267	3.6	7.0	7.0	0.4
15.50	50.6	106.0	2366	1.47	2982	9784	5	245	2.3	4.4	4.0	1.9
16.00	51.3	104.8	2379	1.48	3072	10079	5	247	1.5	2.8	2.6	1.1
16.50	51.5	104.7	2434	1.51	3162	10374	6	285	1.8	3.5	3.4	-0.9
17.00	51.7	104.8	2488	1.55	3252	10670	6	292	2.4	4.7	4.3	-1.7
17.50	51.5	105.1	2577	1.60	3342	10965	7	299	3.4	6.6	5.8	-3.3
18.00	51.1	105.9	2687	1.67	3432	11260	7	302	3.5	6.8	5.8	-3.7
18.50	50.9	106.4	2779	1.73	3522	11556	7	302	3.4	6.6	5.6	-3.5
19.00	50.6	107.0	2883	1.79	3612	11851	7	295	3.4	6.5	5.9	-2.8
19.50	50.4	107.0	2978	1.85	3702	12146	6	280	3.6	7.0	6.9	-1.2
20.00	50.0	106.5	3096	1.92	3792	12441	6	274	4.0	7.8	7.8	-0.6

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 11

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 15 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 21:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	52.4	322.0	83	0.05	210	689	3	147	4.2	8.1	-4.4	6.8
1.00	40.9	327.1	249	0.15	318	1044	3	155	4.3	8.3	-3.4	7.6
1.50	43.0	332.2	338	0.21	417	1368	4	174	1.9	3.7	-0.4	3.7
2.00	49.4	335.3	355	0.22	516	1693	1	32	0.6	1.2	-0.6	-1.0
2.50	58.0	326.5	321	0.20	615	2018	7	323	1.9	3.6	2.2	-2.9
3.00	68.0	341.0	247	0.15	714	2343	6	273	3.5	6.8	6.8	-0.4
3.50	70.0	7.5	257	0.16	809	2653	6	273	4.1	7.9	7.9	-0.4
4.00	71.1	36.5	274	0.17	903	2963	6	277	5.8	11.2	11.1	-1.4
4.50	64.2	60.6	433	0.27	996	3273	6	276	6.0	11.6	11.6	-1.1
5.00	60.8	70.4	553	0.34	1092	3583	6	274	5.9	11.5	11.5	-0.8
5.50	55.9	76.6	756	0.47	1182	3878	6	264	6.3	12.3	12.3	1.3
6.00	51.6	76.0	927	0.58	1272	4174	6	257	5.7	11.0	10.7	2.4
6.50	49.0	76.0	1095	0.68	1362	4469	6	256	5.9	11.5	11.1	2.8
7.00	46.5	76.0	1281	0.80	1452	4764	6	255	6.2	12.0	11.6	3.1
7.50	44.5	75.7	1465	0.91	1542	5059	6	255	7.0	13.5	13.1	3.5
8.00	42.0	75.8	1699	1.06	1632	5355	6	251	6.7	12.9	12.2	4.2
8.50	41.0	74.7	1864	1.16	1722	5650	5	247	4.6	9.0	8.3	3.5
9.00	40.9	74.6	1974	1.23	1812	5945	6	250	4.2	8.2	7.7	2.7
9.50	40.4	74.2	2115	1.31	1902	6241	6	249	4.3	8.3	7.7	2.9
10.00	40.3	74.0	2229	1.38	1992	6536	6	250	4.1	7.9	7.5	2.7
10.50	40.0	73.8	2360	1.47	2082	6831	6	248	4.9	9.5	8.8	3.6
11.00	39.4	73.3	2520	1.57	2172	7126	5	246	4.9	9.4	8.6	3.9
11.50	39.3	72.9	2648	1.65	2262	7422	6	250	3.7	7.1	6.7	2.5
12.00	39.4	73.0	2739	1.70	2352	7717	6	262	2.7	5.2	5.2	0.8
12.50	39.8	73.4	2809	1.75	2442	8012	6	269	1.8	3.6	3.6	0.1
13.00	40.5	73.6	2845	1.77	2532	8307	6	260	2.2	4.3	4.2	0.7
13.50	40.6	73.7	2940	1.83	2622	8603	6	271	3.7	7.1	7.1	-0.1
14.00	40.5	74.8	3056	1.90	2712	8898	6	280	3.5	6.7	6.6	-1.2
14.50	40.8	75.4	3128	1.94	2802	9193	6	272	2.9	5.6	5.6	-0.2
15.00	40.9	75.7	3221	2.00	2892	9489	6	275	2.2	4.4	4.3	-0.4
15.50	41.5	76.2	3255	2.02	2982	9784	7	300	1.8	3.5	3.0	-1.7
16.00	42.0	77.0	3299	2.05	3072	10079	7	298	2.4	4.6	4.1	-2.1
16.50	42.3	77.8	3363	2.09	3162	10374	6	289	3.6	7.1	6.7	-2.3
17.00	42.1	78.9	3486	2.17	3252	10670	6	287	4.7	9.1	8.7	-2.7
17.30	41.9	80.0	3611	2.24	3342	10965	6	287	4.4	8.6	8.3	-2.5
18.00	41.8	80.8	3724	2.31	3432	11260	6	283	4.1	7.9	7.7	-1.7
18.50	41.7	81.4	3839	2.39	3522	11556	6	282	4.8	9.4	9.2	-1.9
19.00	41.3	82.3	3995	2.48	3612	11851	6	282	5.4	10.4	10.2	-2.2
19.50	41.0	83.0	4141	3.57	3702	12146	6	282	7.1	13.8	13.5	-2.9
20.00	40.0	84.2	4398	2.73	3792	12441	6	283	9.0	17.6	17.1	-3.9

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 12

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS: ELEVATION OBSERVED EXCEEDED 90 DEGREES OF THIS RUN

DATE OF LAUNCH: 16 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 11:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	A.S.L. ALTITUDE METERS	A.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	49.1	308.2	94	0.06	210	689	3	140	3.2	6.1	-4.0	4.7
1.00	48.7	319.3	190	0.12	318	1044	4	161	2.5	4.9	-1.6	4.6
1.50	53.4	328.6	234	0.15	417	1368	4	165	1.0	2.0	-0.5	1.9
2.00	60.3	325.6	246	0.18	516	1693	0	340	1.7	3.3	1.1	-3.1
2.50	75.1	320.0	136	0.08	615	2018	7	326	4.0	7.7	4.3	-6.4
3.00	89.3	313.8	7	0.00	714	2343	7	316	4.4	8.6	6.0	-6.2
3.50	79.5	132.0	131	0.08	809	2653	7	306	5.4	10.6	8.6	-6.2
4.00	66.1	125.5	349	0.20	903	2963	7	301	5.8	11.4	9.7	-5.9
4.50	61.8	124.3	480	0.30	998	3273	7	297	6.0	11.6	10.3	-5.3
5.00	55.7	121.2	675	0.42	1092	3583	6	292	6.8	13.1	12.2	-4.8
5.50	50.6	118.5	881	0.55	1182	3878	6	292	6.4	12.5	11.5	-4.7
6.00	47.9	117.9	1083	0.68	1273	4174	7	297	6.8	13.3	11.8	-6.1
6.50	44.3	118.1	1291	0.80	1362	4469	7	299	6.8	13.1	11.5	-6.3
7.00	42.7	118.1	1463	0.91	1452	4764	7	296	5.8	11.3	10.2	-4.9
7.50	41.3	117.6	1639	1.02	1542	5059	7	294	6.0	11.7	10.7	-4.8
8.00	40.0	117.4	1823	1.13	1632	5355	7	297	5.8	11.2	10.0	-5.1
8.50	39.2	117.5	1986	1.23	1722	5650	7	299	5.6	10.8	9.5	-5.2
9.00	38.4	117.5	2157	1.34	1812	5945	6	280	5.5	10.7	10.6	-1.8
9.50	38.0	115.0	2304	1.43	1902	6241	6	263	6.9	13.3	13.2	1.6
10.00	37.0	112.2	2508	1.56	1992	6536	6	260	6.7	13.1	12.9	2.2
10.50	35.8	110.0	2647	1.64	2082	6831	6	266	6.3	12.2	12.1	1.0
11.00	35.0	108.8	2849	1.77	2172	7126	6	271	7.9	15.3	15.3	-0.2
11.50	34.9	107.1	3096	1.92	2262	7422	6	268	9.2	17.9	17.9	0.5
12.00	33.7	105.5	3376	2.10	2352	7717	6	268	10.1	19.6	19.6	0.7
12.50	32.5	109.0	3673	2.28	2442	8012	6	264	9.7	18.8	18.7	1.9
13.00	31.8	102.4	3919	2.44	2532	8307	6	263	9.8	19.1	18.9	2.4
13.50	30.8	101.1	4227	2.63	2622	8603	6	266	11.0	21.4	21.3	1.4
14.00	29.8	100.1	4557	2.83	2712	8898	6	266	11.1	21.5	21.5	1.7
14.50	29.0	99.0	4871	3.03	2802	9193	6	270	11.6	22.6	22.6	-0.1
15.00	28.0	98.8	5247	3.26	2892	9489	6	262	13.1	25.5	25.2	3.7
15.50	27.1	96.6	5628	3.50	2982	9784	6	249	13.8	26.8	25.1	9.4
16.00	26.4	94.9	5963	3.72	3072	10079	6	257	13.8	26.9	26.2	6.1
16.50	25.5	94.1	6415	3.99	3162	10374	6	262	13.7	26.6	26.3	3.9
17.00	24.9	93.3	6786	4.22	3252	10670	6	259	14.2	27.6	27.1	5.0
17.50	24.1	92.4	7243	4.50	3342	10965	6	262	17.9	34.8	34.5	4.7
18.00	23.0	91.8	7845	4.87	3432	11260	6	263	19.2	37.3	37.0	4.6
18.50	22.2	91.1	8480	5.21	3522	11556	6	261	14.3	27.8	27.4	4.5
19.00	22.0	90.7	8688	5.40	3612	11851	6	257	12.2	23.7	23.1	5.2
19.50	21.6	90.0	9093	5.65	3702	12146	6	258	14.1	27.3	26.8	5.6
20.00	21.2	89.4	9513	5.91	3792	12441	6	261	14.2	27.6	27.2	4.3

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 13

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 16 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 17:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	35.7	148.5	150	0.09	210	689	7	330	5.0	9.9	4.9	-8.5
1.00	35.5	150.2	303	0.19	318	1044	7	331	4.9	9.6	4.7	-8.4
1.50	35.2	150.0	447	0.28	417	1368	7	327	3.8	7.4	4.0	-6.2
2.00	38.0	149.0	530	0.33	516	1693	7	307	2.4	4.6	3.7	-2.8
2.50	41.5	144.5	580	0.36	615	2018	6	269	1.8	3.5	3.5	0.1
3.00	46.0	139.9	591	0.37	714	2343	5	238	1.5	3.0	2.6	1.6
3.50	50.0	135.5	593	0.37	809	2653	5	216	1.3	2.6	1.5	2.1
4.00	54.2	132.2	578	0.36	903	2963	5	229	0.7	1.4	1.1	0.9
4.50	56.3	131.3	597	0.37	998	3273	6	278	1.4	2.8	2.7	-0.4
5.00	56.7	128.0	650	0.40	1092	3583	6	289	2.6	5.0	4.7	-1.6
5.50	55.5	126.8	742	0.46	1182	3878	7	300	3.3	6.4	5.5	-3.2
6.00	54.1	126.2	847	0.53	1272	4174	7	301	4.1	8.0	6.9	-4.1
6.50	51.9	125.3	968	0.61	1362	4469	7	294	4.6	9.0	8.2	-3.7
7.00	50.3	123.2	1121	0.70	1452	4764	6	282	4.2	8.1	7.9	-1.6
7.50	49.7	120.6	1221	0.76	1542	5059	6	273	4.0	7.8	7.8	-0.4
8.00	48.9	118.0	1335	0.83	1632	5355	6	272	4.0	7.7	7.7	-0.2
8.50	48.5	116.0	1433	0.89	1722	5650	6	271	3.5	6.8	6.8	-0.1
9.00	46.3	114.4	1524	0.95	1812	5945	6	278	3.5	6.7	6.6	-1.0
9.50	47.8	113.8	1632	1.01	1902	6241	6	290	4.0	7.8	7.3	-2.6
10.00	47.0	113.8	1762	1.10	1992	6536	6	285	4.2	8.1	7.8	-2.1
10.50	46.5	112.6	1879	1.17	2082	6831	6	281	4.0	7.8	7.7	-1.5
11.00	46.0	112.3	1999	1.24	2172	7126	6	285	3.4	6.5	6.3	-1.7
11.50	46.1	111.9	2079	1.29	2262	7422	6	283	6.0	11.6	11.3	-2.6
12.00	43.7	110.9	2354	1.46	2352	7717	6	280	9.4	18.3	18.0	-3.2
12.50	41.6	109.4	2636	1.64	2442	8012	6	279	8.7	16.9	16.7	-2.5
13.00	40.3	108.7	2865	1.78	2532	8307	6	281	7.6	14.8	14.5	-2.9
13.50	39.2	108.2	3090	1.92	2622	8603	6	282	8.8	17.1	16.7	-3.4
14.00	37.6	107.6	3389	2.11	2712	8898	6	280	10.1	19.6	19.2	-3.5
14.50	36.2	106.9	3689	2.29	2802	9193	6	279	10.0	19.5	19.2	-3.0
15.00	35.0	106.3	3985	2.48	2892	9489	6	279	9.8	19.0	18.7	-2.9
15.50	34.0	105.8	4270	2.65	2982	9784	6	280	10.4	20.3	20.0	-3.7
16.00	32.8	105.5	4609	2.86	3072	10079	6	279	11.8	22.9	22.6	-3.8
16.50	31.6	104.9	4974	3.09	3162	10374	6	277	13.5	26.3	26.1	-3.1
17.00	30.2	104.2	5412	3.36	3252	10670	6	275	14.3	27.8	27.7	-2.3
17.50	29.1	103.4	5821	3.62	3342	10965	6	265	14.0	27.2	27.1	2.6
18.00	28.2	101.6	6210	3.86	3432	11260	6	269	14.8	28.7	28.7	0.5
18.50	27.1	101.5	6683	4.15	3522	11556	6	273	15.5	30.2	30.1	-1.7
19.00	26.2	100.5	7133	4.43	3612	11851	6	268	15.3	29.8	29.8	0.9
19.50	25.4	99.9	7582	4.71	3702	12146	6	270	14.4	28.0	28.0	-0.1
20.00	24.8	99.4	7986	4.96	3792	12441	6	270	13.7	26.5	26.5	-0.1

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 14

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 16 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 23:38 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	A.S.L. ALTITUDE METERS	A.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	52.0	334.6	84	0.05	210	689	3	156	2.5	4.8	-2.0	4.4
1.00	55.5	335.5	148	0.09	318	1044	4	161	1.3	2.5	-0.8	2.3
1.50	63.3	337.6	160	0.10	417	1368	6	277	0.7	1.3	1.3	-0.2
2.00	72.3	350.7	132	0.08	516	1693	7	336	1.4	2.8	1.1	-2.6
2.50	81.9	339.3	73	0.05	615	2018	0	350	2.0	4.0	0.0	-4.0
3.00	88.0	290.5	21	0.01	710	2343	7	323	1.7	3.3	2.0	-2.6
3.50*	777.0	777.0	66	0.04	809	2653	6	289	2.0	3.8	3.6	-1.3
4.00*	777.0	777.0	111	0.07	903	2963	6	289	2.0	3.8	3.6	-1.3
4.50	80.1	109.3	156	0.10	998	3273	6	279	5.2	10.0	9.9	-1.7
5.00	67.7	101.8	405	0.25	1092	3583	6	280	10.7	20.8	20.4	-3.7
5.50	53.6	102.1	796	0.49	1182	3878	6	281	9.0	17.4	17.1	-3.4
6.00	51.1	101.4	944	0.59	1272	4174	6	280	7.7	15.0	14.8	-2.7
6.50	45.0	101.5	1260	0.78	1362	4469	6	281	9.9	19.2	18.8	-3.8
7.00	41.3	101.4	1537	0.95	1452	4764	6	278	9.0	17.4	17.3	-2.4
7.50	36.7	100.4	1797	1.12	1542	5059	6	275	9.8	19.0	19.0	-1.5
8.00	35.6	99.5	2121	1.32	1632	5355	6	273	10.6	20.6	20.6	-1.0
8.50	33.7	98.4	2429	1.51	1722	5650	6	271	10.2	19.8	19.8	-0.2
9.00	32.1	97.5	2726	1.69	1812	5945	6	267	8.2	16.0	16.0	0.8
9.50	31.7	96.5	2914	1.81	1902	6241	6	268	9.2	17.9	17.9	0.6
10.00	30.0	95.9	3274	2.03	1992	6536	6	272	11.5	22.3	22.3	-0.7
10.50	28.8	95.6	3602	2.24	2082	6831	6	272	10.3	20.1	20.1	-0.7
11.00	28.0	95.3	3893	2.42	2172	7126	6	270	8.0	15.5	15.5	0.1
11.50	27.9	94.9	4080	2.53	2262	7422	6	266	6.9	13.5	13.4	1.0
12.00	27.6	94.4	4304	2.67	2352	7717	6	270	7.3	14.1	14.1	0.1
12.50	27.4	94.4	4514	2.81	2442	8012	6	278	6.1	11.8	11.7	-1.7
13.00	27.5	94.7	4668	2.90	2532	8307	6	292	5.7	11.0	10.3	-4.1
13.50	27.5	95.6	4841	3.01	2622	8603	6	288	6.3	12.2	11.6	-3.8
14.00	27.4	95.7	5035	3.13	2712	8898	6	279	4.7	9.1	9.0	-1.5
14.50	27.8	95.8	5171	3.18	2802	9193	6	279	2.8	5.5	5.4	-0.8
15.00	26.2	95.8	5203	3.23	2892	9489	6	282	3.1	6.0	5.8	-1.2
15.50	28.5	96.0	5398	3.30	2982	9784	6	278	3.7	7.2	7.1	-1.0
16.00	28.7	95.9	5425	3.37	3072	10079	6	271	5.2	10.0	10.0	-0.1
16.50	28.6	95.7	5612	3.49	3162	10374	6	269	7.5	14.7	14.7	0.2
17.00	28.7	95.4	5875	3.65	3252	10670	6	268	9.0	17.4	17.4	0.7
17.50	27.8	95.0	6145	3.82	3342	10965	6	267	10.2	19.8	19.7	1.1
18.00	27.2	94.6	6479	4.03	3432	11260	6	269	10.0	19.4	19.4	0.2
18.50	26.9	94.5	6741	4.19	3522	11556	6	273	9.3	18.2	18.1	-1.1
19.00	26.5	94.5	7040	4.37	3612	11851	6	275	10.0	19.3	19.3	-1.5

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 15

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS: LOST IN BASE OF CLOUDS.

DATE OF LAUNCH: 17 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 05:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	58.2	327.8	67	0.04	210	689	3	142	2.2	4.3	-2.6	3.4
1.00	56.5	322.1	132	0.08	318	1044	3	140	2.7	5.3	-3.5	4.1
1.50	53.7	322.0	231	0.14	417	1368	3	142	3.3	6.4	-4.0	5.0

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 16

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS: LOST IN STRATUS

DATE OF LAUNCH: 17 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 07:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	48.9	353.4	94	0.06	210	689	4	162	3.2	6.3	-1.9	6.0
1.00	48.2	342.3	193	0.12	318	1044	3	148	3.3	6.5	-3.5	5.5
1.50	47.5	336.0	289	0.18	417	1368	3	144	3.4	6.7	-3.9	5.4
2.00	46.4	333.0	394	0.24	516	1693	3	145	3.6	6.9	-4.0	5.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 17

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS: LOST IN BASE OF STRATUS

DATE OF LAUNCH: 17 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 08:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	64.5	0.1	52	0.03	210	689	4	172	2.0	3.8	-0.5	3.8
1.00	61.4	352.0	118	0.07	318	1044	3	154	3.1	6.0	-2.6	5.3
1.50	53.7	339.5	231	0.14	417	1366	3	148	3.5	6.8	-3.6	5.7
2.00	52.3	336.5	320	0.20	516	1693	3	140	2.9	5.7	-3.6	4.3
2.50	52.0	331.1	401	0.25	615	2018	3	131	2.9	5.7	-4.3	3.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 18

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS: LOST IN STRATOCUMULUS

DATE OF LAUNCH: 17 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 09:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	55.5	6.2	74	0.05	210	689	4	173	2.2	4.3	-0.5	4.2
1.00	58.8	353.2	132	0.08	318	1044	3	141	2.1	4.2	-2.6	3.2
1.50	59.1	337.5	189	0.12	417	1368	3	120	2.5	4.9	-4.2	2.4
2.00	56.7	324.5	252	0.16	516	1693	2	101	2.3	4.4	-4.3	0.9
2.50	60.8	314.4	287	0.18	615	2018	1	62	1.1	2.1	-1.9	-1.0
3.00	68.3	310.5	269	0.17	714	2343	7	333	3.3	6.4	2.9	-5.8
3.50	80.5	281.0	118	0.07	809	2653	7	328	5.5	10.7	5.6	-9.1
4.00	82.1	196.5	111	0.07	903	2963	7	329	5.3	10.2	5.2	-8.8
4.50	74.2	169.7	253	0.16	996	3273	0	341	4.5	8.8	2.8	-8.3
5.00	69.6	171.2	368	0.23	1092	3583	7	317	3.9	7.6	5.2	-5.6
5.50	66.5	154.0	470	0.29	1182	3878	7	309	4.7	9.1	7.0	-5.7
6.00	62.6	153.2	606	0.38	1272	4174	7	330	4.6	8.9	4.4	-7.7

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 19

LOCATION: MORGAN HILL CALIFORNIA

SPECIFICS:

DATE OF LAUNCH: 17 AUGUST 1978

ELEVATION OF LAUNCH SITE: 235 FEET

TIME OF LAUNCH: 10:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0- 7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	54.0	326.5	76	0.05	210	689	3	146	2.4	4.6	-2.6	3.9
1.00	56.4	326.2	144	0.09	318	1044	3	142	2.1	4.1	-2.5	3.2
1.50	57.1	324.0	204	0.13	417	1368	3	151	1.6	3.1	-1.5	2.7
2.00	59.9	328.1	240	0.15	516	1693	3	157	1.3	2.6	-1.0	2.4
2.50	61.2	327.7	283	0.18	615	2018	4	186	0.5	0.9	0.1	0.9
3.00	66.5	331.8	262	0.16	714	2343	7	312	1.9	3.7	2.7	-2.4
3.50	76.0	337.7	176	0.11	809	2653	7	308	3.5	6.7	5.3	-4.2
4.00	82.2	21.0	110	0.07	903	2963	0	345	6.2	11.9	3.0	-11.5
4.50	77.7	172.0	195	0.12	998	3273	0	1	7.6	14.7	-0.3	-14.7
5.00	70.4	175.1	353	0.22	1092	3583	0	355	5.8	11.2	0.9	-11.3
5.50	63.2	174.1	546	0.34	1162	3878	0	349	6.5	12.6	2.4	-12.3
6.00	57.7	172.0	740	0.46	1272	4174	0	346	6.3	12.1	2.8	-11.8
6.50	53.9	171.0	919	0.57	1362	4469	0	349	5.5	10.8	2.2	-10.6
7.00	51.5	171.0	1074	0.67	1452	4764	0	359	5.1	9.9	0.2	-9.9
7.50	49.7	172.9	1221	0.76	1542	5059	0	3	5.6	11.0	-0.5	-10.9
8.00	47.4	173.8	1407	0.87	1632	5355	0	4	4.7	9.2	-0.7	-9.1
8.50	47.2	175.0	1500	0.93	1722	5650	0	356	4.8	9.2	0.7	-9.2
9.00	45.3	174.1	1692	1.05	1812	5945	0	339	7.2	13.9	4.5	-13.0
9.50	43.2	171.5	1917	1.19	1902	6241	7	329	7.3	14.2	7.2	-12.2
10.00	42.0	169.1	2099	1.30	1992	6536	7	324	6.1	11.8	6.9	-9.5
10.50	41.9	167.2	2216	1.40	2082	6831	7	323	5.8	11.2	6.7	-9.0
11.00	40.6	165.5	2415	1.50	2172	7126	7	327	5.4	12.5	6.8	-10.5
11.50	39.6	164.3	2613	1.62	2262	7422	7	332	7.6	14.7	7.0	-13.0
12.00	38.2	163.3	2859	1.78	2352	7717	7	336	8.3	16.1	6.5	-14.8
12.50	37.0	163.0	3105	1.93	2442	8012	7	334	7.4	14.3	6.2	-12.9
13.00	36.4	162.1	3296	2.05	2532	8307	7	327	6.7	13.0	7.1	-10.9
13.50	35.8	161.2	3494	2.17	2622	8603	7	329	6.7	12.9	6.6	-11.1
14.00	35.3	160.7	3686	2.29	2712	8898	7	336	8.0	15.6	6.3	-14.2
14.50	34.2	160.6	3973	2.47	2802	9193	7	336	8.1	15.6	6.5	-14.2
15.00	33.8	160.1	4168	2.59	2892	9489	7	325	7.4	14.3	8.1	-11.8
15.50	33.2	159.1	4401	2.73	2982	9784	7	320	8.1	15.7	10.2	-12.0
16.00	32.7	158.0	4626	2.87	3072	10079	7	316	8.6	16.7	11.6	-11.9
16.50	32.1	156.7	4878	3.03	3162	10374	7	308	9.3	18.1	14.2	-11.2
17.00	31.6	154.9	5120	3.18	3252	10670	7	302	9.3	18.2	15.4	-9.7
17.50	31.2	153.3	5350	3.32	3342	10965	7	310	9.3	18.1	13.9	-11.6
18.00	30.6	152.5	5631	3.50	3432	11260	7	300	11.2	21.8	18.9	-10.8
18.50	30.0	149.7	5924	3.68	3522	11556	6	285	12.9	25.0	24.2	-5.4
19.00	29.5	147.2	6179	3.84	3612	11851	6	289	13.3	25.9	24.5	-8.3
19.50	28.8	145.1	6548	4.07	3702	12146	6	292	14.0	27.1	25.1	-10.3
20.00	28.2	143.2	6882	4.28	3792	12441	6	290	13.4	26.0	24.3	-9.1

* CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.

S U M M A R Y F O R A S C E N T # 20

LOCATION: MORGAN HILL

SPECIFICS:

DATE OF LAUNCH: 17 AUGUST 1978

ELEVATION OF LAUNCH SITE: 335 FEET

TIME OF LAUNCH: 11:00 P.D.T.

TIME MINUTES	ELEV. DEGREES	AZIMUTH DEGREES	RANGE METERS	RANGE MILES	M.S.L. ALTITUDE METERS	M.S.L. ALTITUDE FEET	DIRECTION CLASS 0-7	DIRECTION DEGREES	VELOCITY METERS/SEC (SPEED)	VELOCITY NAUTICAL MILES PER HOUR (SPEED)	VELOCITY (U)	VELOCITY (V)
0.50	67.8	311.0	44	0.03	210	689	3	126	1.6	3.0	-2.5	1.8
1.00	66.5	305.7	94	0.06	318	1044	3	127	1.3	2.5	-2.0	1.5
1.50	69.0	308.2	121	0.08	417	1368	5	238	0.8	1.6	1.3	0.8
2.00	76.0	330.6	88	0.05	516	1693	6	283	2.3	4.4	4.3	-1.0
2.50	83.5	41.0	58	0.04	615	2018	7	308	3.4	6.5	5.1	-4.0
3.00	77.5	109.5	131	0.08	714	2343	7	331	4.1	7.9	3.9	-6.9
3.50	71.8	136.9	232	0.14	809	2653	0	357	3.3	6.4	0.3	-6.4
4.00	71.0	150.9	276	0.17	903	2963	1	23	3.2	6.3	-2.5	-5.8
4.50	68.2	166.8	358	0.22	998	3273	1	26	4.8	9.3	-4.1	-8.3
5.00	63.3	179.2	498	0.31	1092	3583	1	23	5.6	10.9	-4.2	-10.1
5.50	58.5	184.2	662	0.41	1182	3878	0	10	7.0	13.6	-2.4	-13.4
6.00	52.0	184.2	914	0.57	1272	4174	0	3	6.0	11.6	-0.6	-11.6
6.50	51.0	183.7	1020	0.63	1362	4469	0	356	4.7	9.1	0.6	-9.1
7.00	48.5	182.3	1194	0.74	1452	4764	0	355	5.4	10.5	1.0	-10.5
7.50	47.0	181.5	1343	0.83	1542	5059	0	358	6.0	11.6	0.5	-11.6
8.00	44.5	181.2	1552	0.96	1632	5355	0	354	7.1	13.8	1.3	-13.8
8.50	42.5	179.8	1768	1.10	1722	5650	0	357	7.5	14.6	0.8	-14.6
9.00	40.5	180.2	2003	1.24	1812	5945	0	358	8.8	17.1	0.6	-17.1
9.50	38.1	179.4	2296	1.43	1902	6241	0	350	9.3	18.1	3.1	-17.8
10.00	36.5	179.0	2554	1.59	1992	6536	0	345	9.1	17.7	4.5	-17.1
10.50	35.0	178.7	2828	1.76	2082	6831	0	349	8.3	16.1	3.0	-15.8
11.00	34.2	178.6	3046	1.89	2172	7126	0	358	7.7	14.9	0.5	-14.9
11.50	33.3	178.3	3288	2.04	2262	7422	0	5	8.0	15.5	-1.5	-15.4
12.00	32.8	177.8	3518	2.19	2352	7717	0	9	8.0	15.6	-2.6	-15.4
12.50	31.5	178.5	3759	2.34	2442	8012	0	6	7.8	15.1	-1.4	-15.0
13.00	31.2	178.7	3961	2.47	2532	8307	0	359	8.4	16.2	0.4	-16.2
13.50	30.6	178.5	4261	2.65	2622	8603	0	353	8.7	17.0	2.2	-16.6
14.00	30.1	178.0	4502	2.80	2712	8898	0	345	8.4	16.3	4.2	-15.8
14.50	29.5	177.1	4753	2.95	2802	9193	0	343	8.4	16.4	4.8	-15.6
15.00	29.2	176.5	4942	3.10	2892	9489	7	337	7.8	15.2	6.0	-14.0
15.50	29.0	175.3	5196	3.23	2982	9784	7	320	7.9	15.3	9.9	-11.7
16.00	28.9	173.5	5380	3.34	3072	10079	7	320	7.5	14.5	9.4	-11.1
16.50	28.9	172.6	5566	3.46	3162	10374	7	319	7.4	14.4	9.4	-10.9
17.00	28.7	171.0	5754	3.58	3252	10670	7	310	8.9	17.3	13.3	-11.0
17.50	28.5	169.1	5967	3.71	3342	10965	7	308	10.6	20.7	16.3	-12.8
18.00	28.1	167.0	6237	3.88	3432	11260	7	308	11.2	21.7	17.1	-13.3
18.50	27.8	165.2	6487	4.03	3522	11556	7	300	12.6	24.4	21.2	-12.1
19.00	27.4	162.3	6771	4.21	3612	11851	7	297	13.1	25.5	22.8	-11.5
19.50	27.1	160.4	7035	4.37	3702	12146	7	295	11.8	23.0	20.8	-9.8
20.00	26.9	158.2	7273	4.52	3792	12441	6	290	12.1	23.5	22.1	-8.1

* -CALCULATIONS ON BOTH SIDES OF THIS ENTRY WERE MADE USING LINEARLY INTERPOLATED DATA.