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INTRODUCTION

Rocketsonde atmospheric data for the 25-65 km levels at White Sands Missile Range (WSMR), New Mexico over the period 1961-1975 is the basis of two sections - Data and Modeling. The purpose of this report is to provide the upper portion of a complete atmospheric structure and a data base for projects such as balloon systems, rocket systems, lifting re-entry vehicles, missile detection system and high energy lasers.

Section I is data by month for the years 1961-1975. Standard Deviations are included by month for the years 1969-1975 extracted from "High Altitude Meteorological Data" reports (Reference 12). The extreme Standard Deviations for 25 and 26 km December 1969-1975 N-S, E-W winds do not follow the monthly or height trend 20 km to 30 km, so these four values are suspect.

Modeling in Section II is presented with emphasis on E-W wind component and the changeover cycle. A few cases of actual changeovers are presented for comparison with the model.

Rockets launched at Small Missile Range (SMR), provide a period of record of 1961-1975 with accuracies of instrumentation and the resulting data as stated in reference 9. SMR is located in the southern portion of WSMR (Figure 1).

SMR physical data = a. latitude $32^{\circ} 28' N$

b. longitude $106^{\circ} 25' W$

c. elevation 1,219 m MSL*

*MSL is measured above sea level.

EXPLANATION OF TERMS

1. WIND COMPONENTS

Average zonal and meridional components for the month are calculated.

A wind from the south or west is designated by a positive value, while a wind from the north or east is designated by a negative value. A zonal wind is from the east or west, a meridional from the north or south.

2. WIND GUSTS

Wind gusts are characterized by sudden, intermittent increases in speed, with at least five meters per second variation between peaks and lulls. The average time interval between peaks and lulls usually should not exceed 20 seconds.

3. TEMPERATURE

Average temperatures for the month for the given altitude are in degrees Celsius.

4. PRESSURE

Average pressures for the month for the given altitudes are in millibars.

5. DENSITY

Average densities for the month for the given altitude are in grams per cubic meter.

SECTION I PART 1

Rocketsonde data by month at WSMR is averaged 1961-1975 with standard deviations given for 1969-1975 portion in Tables 1-12.

Note that the numerical values for the standard deviations for temperatures, E-W, N-S Wind Components are larger in the winter (January and December) compared to summer (July and August). This may be attributed to the wintertime long and short term reversals which can cause considerable fluctuations in the temperature and wind fields. Long term reversals may be related to sudden warming episodes more prominent in the higher latitudes.

ROCKET- SONDE	1961 - 1975			1969 - 1975			TOTAL OBSNS	MEAN DENSITY G/CU M	TOTAL OBSNS	WIND DEV. S-N	WIND STD W-E	TEMP STD DEV.	PRESS STD DEV.	DENS. STD DEV.
	MEAN COMPS S-N	WIND MPS W-E	TOTAL OBSNS	MEAN TEMP DEG C	TOTAL OBSNS	MEAN PRESS MBS								
25	0	4	224	-55.3	99	24.850	94	39.723	94	4.1	10.1	3.6	.602	1.085
26	0	3	259	-54.0	119	21.311	113	33.821	113	4.6	11.6	3.9	.509	.914
27	0	4	264	-52.2	129	18.283	121	28.821	120	4.7	13.1	4.0	.442	.731
28	1	5	269	-50.8	130	15.687	122	24.563	122	5.3	14.7	4.2	.375	.594
29	1	7	272	-49.2	134	13.482	125	20.962	125	7.1	15.5	4.7	.339	.523
30	2	8	278	-47.5	137	11.608	128	17.922	128	7.6	16.6	5.2	.322	.498
31	2	10	283	-45.8	136	9.995	127	15.313	127	6.8	18.2	5.6	.281	.437
32	2	11	284	-43.7	136	8.620	127	13.093	127	7.6	19.6	5.9	.260	.378
33	3	13	284	-41.3	137	7.447	128	11.200	128	8.2	19.6	6.1	.242	.348
34	3	15	282	-38.9	133	6.435	124	9.573	124	8.7	21.7	6.7	.218	.324
35	2	17	283	-36.2	136	5.578	127	8.202	127	8.6	22.8	6.8	.200	.316
36	2	18	285	-33.2	138	4.846	128	7.031	128	9.0	22.3	8.2	.182	.296
37	2	19	286	-30.1	136	4.213	126	6.036	126	9.6	23.1	8.9	.165	.263
38	1	20	285	-26.7	136	3.672	127	5.186	127	10.3	23.2	9.6	.146	.227
39	3	20	284	-22.5	135	3.212	125	4.464	125	10.0	23.7	9.7	.138	.194
40	4	22	281	-19.0	133	2.804	123	3.843	123	11.5	23.0	9.3	.126	.167
41	6	24	281	-15.5	134	2.456	123	3.322	123	11.8	23.7	9.2	.115	.152
42	7	26	279	-12.7	134	2.156	123	2.886	123	13.4	23.9	8.5	.107	.137
43	9	28	276	-9.2	131	1.896	121	2.507	121	13.6	24.8	7.6	.095	.114
44	9	31	276	-6.5	133	1.674	123	2.192	123	15.0	25.3	8.2	.086	.110
45	10	34	274	-4.5	132	1.476	122	1.916	122	16.1	26.6	7.9	.079	.097
46	11	38	267	-3.4	131	1.303	121	1.685	121	18.0	28.1	7.1	.071	.088
47	13	40	260	-3.1	130	1.150	121	1.485	121	19.3	28.7	6.4	.064	.080
48	14	42	260	-3.7	128	1.014	119	1.311	119	19.9	29.9	5.8	.056	.066
49	15	43	252	-4.1	122	.897	113	1.161	113	20.9	30.6	5.6	.050	.060
50	15	44	247	-5.4	124	.792	115	1.028	115	19.9	31.0	5.6	.046	.054
51	14	46	252	-7.3	125	.698	116	.914	116	19.3	30.1	5.4	.041	.050
52	14	46	249	-9.0	122	.539	114	.812	114	19.1	30.8	5.9	.039	.048
53	15	47	245	-10.8	119	.540	111	.717	111	18.1	30.2	6.8	.034	.043
54	15	48	240	-11.9	117	.475	109	.634	109	18.2	30.2	6.8	.030	.039
55	14	49	232	-13.8	111	.417	106	.560	106	19.6	29.3	6.6	.027	.035
56	15	51	225	-15.0	107	.366	102	.495	102	19.9	29.4	6.8	.025	.032
57	13	54	219	-16.4	103	.323	99	.437	99	22.2	29.4	7.1	.022	.029
58	14	55	210	-17.1	97	.283	96	.386	96	22.3	29.3	7.9	.020	.026
59	14	58	197	-17.8	89	.249	89	.339	89	19.6	29.1	8.2	.018	.024
60	14	61	189	-18.5	80	.218	80	.298	80	20.0	29.1	9.2	.016	.022
61	13	65	163	-18.9	67	.190	67	.260	67	19.6	29.1	9.9	.015	.019
62	11	65	148	-19.3	61	.166	61	.228	61	19.5	30.9	9.5	.013	.016
63	10	68	126	-20.6	53	.145	53	.201	53	19.4	29.4	9.4	.012	.014
64	7	72	115	-23.2	47	.126	47	.176	47	21.9	28.5	9.8	.011	.012
65	6	74	103	-23.9	36	.109	36	.153	36	20.0	36.7	10.3	.008	.009

TABLE 1

ROCKET- SONDE	MEAN COMPS S-N	WIND MPS W-E	1961 - 1975 FEBRUARY			TOTAL OBSNS	MEAN DENSITY G/CU M	TOTAL OBSNS	WIND STD DEV. S-N W-E	1969 - 1975		DENS. STD DEV.
			MEAN TEMP DEG C	TOTAL OBSNS	MEAN PRESS MBS					TEMP STD DEV.	PRESS STD DEV.	
25	-1	2	-55.0	242	24.850	112	39.701	112	3.5 9.4	3.6	.553	1.046
26	-1	2	-54.0	270	21.315	129	33.861	129	4.3 10.1	3.8	.466	.803
27	-1	4	-52.4	275	18.271	140	28.852	140	4.5 11.6	4.5	.410	.663
28	-1	5	-50.3	282	15.684	145	24.550	145	5.1 12.3	5.1	.366	.606
29	-1	6	-48.4	283	13.475	150	20.922	150	5.0 13.4	5.1	.331	.514
30	-1	8	-45.8	298	11.595	150	17.789	150	6.0 15.3	4.9	.229	.476
31	0	10	-42.9	297	10.013	151	15.158	151	6.1 17.3	5.5	.267	.435
32	0	12	-39.4	298	8.666	151	12.931	151	6.3 18.1	6.1	.245	.408
33	1	15	-36.5	296	7.494	151	11.048	151	8.0 19.2	6.1	.223	.359
34	1	17	-33.3	295	6.506	150	9.460	150	8.7 20.8	6.0	.199	.314
35	-7	19	-30.0	295	5.656	150	8.113	150	9.5 21.9	5.9	.182	.266
36	-1	21	-27.5	296	4.930	151	6.997	151	9.4 23.4	6.8	.162	.256
37	-1	22	-24.9	296	4.299	151	6.037	151	10.7 24.0	7.3	.146	.235
38	-1	24	-21.9	293	3.756	151	5.216	151	10.4 24.7	7.8	.130	.210
39	-2	25	-19.2	293	3.287	151	4.518	151	10.5 25.2	8.3	.118	.179
40	0	25	-16.3	290	2.877	150	3.907	150	11.3 25.9	8.5	.110	.147
41	0	26	-13.7	285	2.524	150	3.394	150	11.1 30.0	8.5	.101	.127
42	1	28	-11.2	284	2.219	149	2.955	149	10.7 28.7	7.7	.093	.109
43	1	30	-9.2	283	1.952	150	2.583	150	11.8 29.3	7.0	.086	.098
44	3	32	-7.0	283	1.721	149	2.261	149	12.8 28.1	6.4	.070	.085
45	4	35	-5.6	282	1.515	150	1.978	150	12.7 27.7	6.4	.071	.084
46	5	36	-5.2	281	1.333	148	1.738	148	12.9 27.4	6.2	.064	.076
47	6	38	-5.1	280	1.175	144	1.523	144	14.6 26.4	5.6	.058	.071
48	7	40	-5.1	278	1.038	144	1.354	144	15.7 25.6	5.8	.052	.064
49	7	42	-5.6	275	.916	142	1.195	142	15.9 25.3	5.8	.047	.057
50	7	43	-6.4	273	.809	142	1.057	142	15.8 23.9	5.8	.043	.050
51	8	44	-7.4	272	.713	142	.936	142	15.1 24.7	5.9	.039	.045
52	8	45	-7.6	264	.631	137	.829	137	15.9 26.0	5.7	.035	.041
53	8	47	-8.6	256	.556	138	.733	138	15.7 25.7	6.2	.031	.036
54	7	49	-9.7	253	.490	137	.648	137	16.1 27.3	6.3	.030	.034
55	9	49	-11.0	249	.432	133	.575	133	17.0 28.0	6.7	.026	.031
56	7	51	-12.2	244	.380	129	.507	129	17.1 27.9	7.1	.024	.028
57	7	52	-13.0	237	.335	126	.448	126	17.5 27.2	7.1	.022	.027
58	9	54	-14.1	229	.294	121	.395	121	19.2 23.9	7.3	.020	.022
59	9	58	-15.2	214	.258	115	.348	115	18.5 23.2	7.4	.016	.020
60	10	60	-16.7	205	.226	111	.307	111	18.0 22.6	7.6	.014	.017
61	9	64	-18.6	188	.198	94	.270	94	17.9 24.6	7.7	.013	.014
62	6	67	-19.8	173	.174	85	.239	85	19.3 26.3	7.8	.012	.014
63	4	67	-20.5	153	.153	75	.210	75	20.5 27.4	8.0	.011	.011
64	2	66	-21.6	130	.134	65	.185	65	19.7 28.1	8.0	.011	.012
65	-2	66	-23.6	113	.117	50	.163	50	20.5 27.3	6.8	.009	.010

TABLE 2

ROCKET- SONDE	1961 - 1975 MARCH			1969 - 1975			WIND MPS W-E	WIND STD DEV.	TOTAL OBSNS	MEAN DENSITY G/CU M	TOTAL OBSNS	WIND STD DEV.	TEMP STD DEV.	PRESS STD DEV.	DENS. STD DEV.					
	TOTAL OBSNS	MEAN TEMP DEG C	TOTAL OBSNS	MEAN PRESS MBS	TOTAL OBSNS	MEAN DENSITY G/CU M										TOTAL OBSNS	WIND STD DEV.	TEMP STD DEV.	PRESS STD DEV.	DENS. STD DEV.
25	0	3	211	-53.4	101	25.014	97	39.683	97	3.5	6.6	3.7	.648	1.328						
26	1	4	246	-51.8	116	21.490	112	33.844	112	3.8	7.4	3.8	.495	.997						
27	1	5	254	-49.6	127	18.655	123	28.842	123	4.0	8.3	4.2	.415	.785						
28	2	7	261	-48.0	133	15.876	127	24.591	127	3.8	9.3	4.3	.359	.642						
29	1	8	267	-45.8	139	13.665	132	20.943	132	4.0	10.1	4.7	.319	.532						
30	1	10	273	-43.5	138	11.778	131	17.866	131	4.3	11.3	4.6	.291	.457						
31	2	12	273	-40.9	141	10.182	133	15.269	133	5.0	12.8	4.8	.263	.390						
32	2	13	272	-38.4	139	8.810	131	13.078	131	5.5	14.5	5.4	.239	.349						
33	2	16	273	-35.7	140	7.635	132	11.208	132	6.0	16.9	5.6	.219	.307						
34	2	19	272	-32.8	140	6.630	132	9.615	132	7.5	20.6	6.2	.201	.289						
35	1	21	270	-30.4	141	5.765	133	8.277	133	6.3	15.4	6.2	.182	.253						
36	1	23	270	-28.0	138	5.021	130	7.138	130	6.8	16.7	5.9	.169	.222						
37	0	24	271	-25.5	138	4.379	131	6.161	131	6.9	17.7	5.3	.154	.199						
38	0	25	270	-23.1	138	3.824	131	5.332	131	7.9	18.0	5.4	.139	.174						
39	0	26	267	-20.5	138	3.344	131	4.615	131	8.4	19.2	6.0	.128	.157						
40	0	26	264	-18.0	139	2.929	132	4.002	132	9.0	19.7	6.2	.116	.138						
41	0	26	263	-15.5	139	2.569	132	3.477	132	8.4	20.0	6.2	.105	.129						
42	2	27	262	-13.4	138	2.254	131	3.027	131	9.3	25.2	6.0	.094	.121						
43	3	28	260	-11.2	138	1.983	131	2.638	131	10.3	23.1	5.6	.085	.112						
44	4	29	257	-9.1	137	1.745	130	2.303	130	10.7	22.2	5.1	.076	.097						
45	4	30	257	-8.0	138	1.538	132	2.023	132	11.2	21.5	5.2	.068	.086						
46	5	31	258	-7.0	137	1.356	131	1.775	131	11.9	20.5	5.4	.061	.078						
47	6	32	256	-5.5	137	1.195	132	1.562	132	12.8	20.2	5.2	.055	.068						
48	6	32	253	-5.5	133	1.058	128	1.377	128	13.1	20.3	4.9	.050	.063						
49	7	33	250	-5.3	132	.933	127	1.214	127	12.8	18.2	5.3	.045	.055						
50	7	34	243	-5.2	131	.822	126	1.070	126	12.9	18.2	5.1	.039	.048						
51	7	35	238	-5.1	130	.726	125	.944	125	12.2	18.0	5.0	.036	.043						
52	7	35	233	-5.7	131	.641	126	.835	126	12.0	18.8	5.1	.033	.040						
53	9	36	232	-6.3	131	.566	126	.739	126	12.8	19.4	4.8	.030	.034						
54	9	36	229	-7.2	128	.499	123	.654	123	13.0	19.3	4.7	.028	.032						
55	8	37	221	-8.4	124	.439	119	.578	119	13.3	19.2	5.2	.024	.028						
56	7	38	216	-9.4	122	.387	118	.511	118	13.7	19.8	5.7	.021	.024						
57	6	39	212	-10.5	117	.340	113	.452	113	13.2	20.3	5.5	.018	.021						
58	7	41	200	-11.8	112	.299	108	.399	108	14.9	22.4	5.9	.016	.018						
59	7	41	187	-13.4	110	.262	107	.353	107	16.6	23.7	6.1	.014	.018						
60	7	40	174	-15.0	105	.230	93	.311	103	17.3	25.2	5.8	.014	.015						
61	6	41	153	-16.4	85	.201	84	.273	84	16.6	25.7	5.6	.012	.014						
62	5	42	138	-18.1	76	.177	76	.241	76	16.1	23.5	5.4	.008	.011						
63	4	39	119	-19.6	73	.155	73	.212	73	16.8	23.9	5.8	.009	.009						
64	4	39	106	-20.9	63	.135	63	.186	63	15.3	23.0	6.2	.008	.008						
65	1	38	95	-21.9	50	.118	50	.163	50	16.6	23.2	7.0	.007	.007						

TABLE 3

ROCKET- SONDE	MEAN COMPS S-N	WIND MPS W-E	1961 - 1975 APRIL		TOTAL OBSNS	MEAN DENSITY G/CU M	TOTAL OBSNS	1969 - 1975		PRESS STD DEV.	DENS. STD DEV.
			MEAN TEMP DEG C	TOTAL OBSNS				WIND STD DEV. S-N W-E	TEMP STD DEV.		
25	1	0	-51.5	93	85	40.243	85	2.9	4.3	.660	1.105
26	1	1	-49.5	107	99	34.229	99	3.2	4.4	.538	.885
27	1	3	-47.9	114	106	29.230	106	2.6	4.6	.459	.732
28	1	4	-46.2	123	115	24.962	115	3.1	5.3	.385	.597
29	1	6	-44.2	127	119	21.324	119	3.4	5.5	.338	.501
30	1	7	-41.8	128	120	18.233	120	4.1	6.5	.304	.417
31	1	9	-39.7	129	120	15.619	120	4.6	7.2	.277	.374
32	1	10	-36.8	129	120	13.368	120	5.2	7.7	.250	.335
33	2	12	-33.9	128	119	11.447	119	5.2	8.5	.229	.297
34	1	14	-31.6	126	117	9.852	117	6.0	9.1	.207	.269
35	1	16	-29.4	129	120	7.875	120	6.1	9.4	.187	.237
36	1	17	-26.6	129	120	7.321	120	5.6	10.2	.168	.220
37	0	17	-23.9	129	120	6.321	120	6.1	11.3	.149	.206
38	1	17	-20.9	129	120	5.461	120	6.9	12.2	.133	.186
39	5	16	-18.2	129	120	4.731	120	7.4	13.4	.117	.165
40	0	15	-15.0	129	120	4.099	120	8.3	14.6	.105	.148
41	5	14	-12.1	128	119	3.561	119	9.0	14.4	.093	.138
42	3	13	-9.5	127	118	3.102	118	8.9	15.5	.084	.123
43	4	13	-7.0	128	119	2.704	119	9.7	14.6	.080	.104
44	5	14	-4.9	126	117	2.365	117	8.5	15.6	.066	.089
45	5	14	-3.6	128	119	2.076	119	8.2	16.3	.059	.076
46	5	13	-2.3	127	118	1.822	118	8.3	16.6	.053	.066
47	6	13	-1.5	126	117	1.604	117	9.2	17.4	.048	.061
48	5	13	-1.2	125	116	1.417	116	10.8	17.8	.043	.053
49	4	12	-1.1	123	115	1.252	115	9.7	17.9	.037	.046
50	5	12	-1.4	121	113	1.107	113	8.7	17.7	.034	.043
51	5	11	-1.9	119	111	.981	111	9.7	18.2	.032	.038
52	5	11	-2.5	116	108	.868	108	8.2	18.6	.027	.035
53	5	10	-3.3	116	108	.769	108	8.9	18.3	.024	.030
54	4	9	-4.4	114	107	.681	107	9.3	17.4	.022	.027
55	3	9	-5.8	111	105	.604	105	12.2	19.7	.019	.026
56	5	7	-7.5	108	102	.535	102	13.1	19.6	.018	.022
57	6	6	-8.8	102	96	.475	96	12.0	19.6	.017	.020
58	7	6	-10.1	96	91	.422	91	11.7	20.7	.015	.018
59	7	5	-11.8	95	91	.372	91	12.6	19.8	.014	.015
60	7	5	-13.2	89	85	.329	85	12.8	20.2	.012	.013
61	6	4	-14.6	84	80	.291	80	12.8	21.4	.010	.012
62	7	4	-15.8	72	68	.256	68	11.6	20.7	.010	.011
63	6	3	-16.7	63	59	.226	59	14.7	21.7	.010	.009
64	7	4	-19.3	53	50	.198	50	12.4	18.7	.007	.007
65	4	1	-21.4	40	38	.175	38	13.7	16.7	.007	.006

TABLE 4

ROCKET- SONDE	MEAN COMPS S-N	WIND MPS W-E	TOTAL OBSNS	1961 - 1975		MAY MEAN PRESS MBS	TOTAL OBSNS	MEAN DENSITY G/CU M	TOTAL OBSNS	1969 - 1975		PRESS STD DEV.	DENS. STD DEV.
				MEAN TEMP DEG C	TOTAL OBSNS					WIND STD DEV. S-N W-E	TEMP STD DEV.		
25	1	-4	230	-50.3	96	26.157	90	40.868	90	2.9	3.4	.816	1.321
26	1	-3	259	-48.6	113	22.462	108	34.817	108	3.0	5.2	.637	1.004
27	1	-3	277	-46.7	117	19.330	113	29.735	113	2.9	5.0	.543	.831
28	1	-2	283	-45.1	127	16.659	119	25.419	119	2.9	5.0	.467	.703
29	0	-1	285	-43.2	125	14.373	117	21.765	117	3.1	5.7	.412	.612
30	0	-1	291	-41.2	129	12.409	121	18.625	121	3.6	6.1	.360	.519
31	1	-1	290	-38.9	132	10.731	123	15.950	123	3.7	6.8	.313	.446
32	2	0	294	-36.4	133	9.304	124	13.683	124	3.7	7.9	.275	.380
33	2	0	300	-33.8	134	8.072	125	11.744	125	3.9	9.1	.243	.315
34	1	0	299	-31.6	134	7.014	125	10.112	125	5.5	11.0	.216	.285
35	1	0	302	-29.0	134	6.102	124	8.836	124	10.8	11.1	.194	.254
36	1	-1	302	-27.3	133	5.320	123	7.534	123	10.1	8.8	.172	.224
37	0	-1	303	-24.0	135	4.643	124	6.493	124	6.2	8.7	.153	.206
38	0	-3	299	-20.8	134	4.063	123	5.607	123	4.2	7.8	.134	.178
39	0	-5	299	-17.7	134	3.558	123	4.854	123	4.6	7.8	.119	.157
40	0	-6	306	-14.7	135	3.120	124	4.206	124	4.8	9.1	.108	.142
41	1	-8	305	-11.6	134	2.740	123	3.649	123	5.3	9.9	.096	.131
42	1	-9	305	-8.5	134	2.410	123	3.175	123	4.6	10.4	.084	.113
43	2	-12	303	-6.0	134	2.124	123	2.770	123	6.3	10.8	.074	.099
44	3	-13	302	-4.0	134	1.873	123	2.425	123	7.1	13.4	.067	.083
45	3	-14	303	-2.1	133	1.653	123	2.126	123	8.1	15.0	.061	.074
46	4	-15	300	-1.0	133	1.463	123	1.874	123	10.2	16.3	.054	.070
47	4	-15	297	0	132	1.294	123	1.654	123	7.2	11.2	.048	.060
48	4	-16	295	5.3	131	1.146	122	1.463	122	6.7	11.4	.043	.050
49	4	-18	291	.1	131	1.014	122	1.295	122	7.9	11.2	.038	.043
50	4	-19	289	3.8	131	.898	122	1.146	122	8.0	9.7	.037	.039
51	5	-20	286	-.7	130	.793	121	1.015	121	6.3	10.5	.033	.034
52	5	-20	281	-1.8	126	.700	118	.900	118	5.9	10.2	.029	.032
53	5	-22	280	-3.1	125	.618	116	.798	116	7.0	10.5	.027	.029
54	5	-22	277	-4.6	123	.545	115	.708	115	8.4	12.7	.023	.026
55	4	-23	272	-6.3	121	.481	113	.628	113	8.3	11.6	.021	.024
56	4	-25	260	-7.9	121	.424	114	.557	114	8.2	11.7	.018	.019
57	4	-26	253	-9.5	120	.374	113	.493	113	8.4	11.7	.017	.020
58	4	-28	247	-11.2	120	.329	113	.437	113	9.0	10.9	.016	.016
59	3	-28	236	-13.2	116	.289	110	.386	110	10.4	13.7	.015	.017
60	3	-30	227	-14.9	105	.253	99	.341	99	9.7	14.6	.013	.015
61	4	-32	210	-17.5	100	.221	94	.300	94	8.4	14.7	.012	.014
62	6	-33	192	-19.4	94	.194	89	.265	89	10.1	13.6	.011	.011
63	6	-32	173	-21.7	82	.170	80	.235	80	10.9	13.9	.011	.010
64	6	-32	142	-24.6	64	.148	63	.207	63	11.8	14.6	.010	.010
65	4	-33	116	-28.6	50	.128	50	.181	50	11.9	16.5	.010	.010

TABLE 5

ROCKET- SONDE	MEAN COMPS S-N	WIND MPS W-E	1961 - 1975		JUNE MEAN PRESS MBS	TOTAL OBSNS	MEAN DENSITY G/CU M	TOTAL OBSNS	1969 - 1975		PRESS STD DEV.	DENS. STD DEV.
			MEAN TEMP DEG C	TOTAL OBSNS					WIND STD DEV. S-N W-E	TEMP STD DEV.		
25	1	-10	-49.0	95	26.808	92	41.699	92	2.4	3.5	1.098	1.814
26	1	-11	-47.1	114	23.056	111	35.563	111	2.7	8.8	.894	1.467
27	0	-12	-45.3	123	19.855	119	30.377	119	2.6	8.3	.740	1.197
28	1	-12	-43.2	134	17.114	127	25.952	127	2.6	8.2	.611	.960
29	1	-13	-41.8	137	14.776	129	22.260	129	3.0	8.4	.518	.799
30	1	-13	-39.9	139	12.764	130	19.066	130	3.3	8.8	.448	.707
31	2	-14	-37.6	139	11.049	130	16.348	130	3.9	9.2	.389	.622
32	1	-14	-35.3	141	9.579	132	13.936	132	4.0	9.4	.332	1.639
33	1	-15	-33.2	142	8.311	133	12.073	133	4.1	9.2	.288	.445
34	1	-16	-30.7	142	7.225	133	10.392	133	4.5	9.0	.253	.379
35	1	-17	-28.3	141	6.287	132	8.956	132	3.8	9.0	.219	.337
36	1	-17	-25.6	141	5.482	132	7.723	132	3.6	9.2	.191	.289
37	1	-19	-22.9	141	4.788	132	6.672	132	4.0	8.6	.166	.243
38	1	-21	-20.1	139	4.191	131	5.778	131	3.5	8.9	.146	.211
39	1	-22	-17.5	139	3.670	131	5.007	131	4.1	9.2	.129	.179
40	1	-24	-14.4	138	3.221	129	4.345	130	4.9	9.4	.114	.159
41	1	-26	-11.6	140	2.830	132	3.774	132	4.8	9.9	.099	.132
42	1	-29	-8.5	140	2.489	132	3.281	132	5.4	10.7	.090	.117
43	1	-31	-20.0	140	2.251	132	2.859	132	5.6	9.5	.080	.102
44	2	-32	-3.8	140	1.933	132	2.502	132	5.5	9.1	.075	.096
45	2	-33	-2.3	139	1.705	132	2.194	132	5.9	9.4	.063	.082
46	3	-35	-.9	138	1.506	131	1.929	131	6.8	10.7	.056	.073
47	4	-36	.1	136	1.333	129	1.700	129	7.5	10.8	.051	.068
48	4	-37	.2	138	1.180	131	1.504	131	6.6	9.8	.046	.062
49	6	-38	.1	136	1.044	130	1.333	130	7.5	9.8	.040	.053
50	5	-39	-.4	136	.923	130	1.180	130	7.1	10.1	.037	.046
51	5	-40	-.9	135	.816	129	1.044	129	7.4	9.6	.032	.038
52	5	-42	-1.9	134	.721	128	.926	128	8.3	9.5	.030	.034
53	5	-43	-3.2	131	.636	125	.821	125	7.4	11.2	.027	.031
54	5	-45	-4.9	131	.560	125	.728	125	8.3	11.8	.024	.027
55	4	-46	-6.7	130	.494	124	.646	124	8.8	12.0	.022	.025
56	3	-48	-8.4	129	.436	123	.573	123	9.9	12.3	.019	.024
57	3	-49	-10.2	124	.384	118	.508	118	10.3	11.2	.019	.023
58	3	-51	-11.7	125	.338	119	.450	119	9.7	13.0	.017	.020
59	3	-53	-13.8	123	.298	118	.399	118	10.6	14.6	.016	.016
60	2	-55	-15.9	114	.262	109	.354	109	11.8	17.5	.014	.016
61	4	-57	-18.5	104	.230	100	.313	100	12.3	18.4	.014	.016
62	4	-57	-20.5	95	.202	91	.278	91	14.3	18.7	.013	.015
63	3	-58	-22.9	84	.177	82	.246	82	14.5	17.9	.012	.014
64	3	-58	-24.8	74	.154	73	.216	73	15.4	17.5	.011	.012
65	4	-60	-28.6	58	.133	58	.189	58	19.2	18.5	.008	.009

TABLE 6

ROCKET- SONDE	MEAN COMPS S-N	WIND MPS W-E	TOTAL OBSNS	1961 - 1975			TOTAL OBSNS	MEAN DENSITY G/CU M	TOTAL OBSNS	1969 - 1975			PRESS STD DEV.	DENS. STD DEV.
				MEAN TEMP DEG C	TOTAL OBSNS	MEAN PRESS MBS				WIND STD DEV. S-N W-E	TEMP STD DEV.	PRESS STD DEV.		
25	1	-17	227	-49.5	90	26.998	89	42.208	82	3.5	4.9	.567	1.057	
26	1	-17	259	-47.7	116	23.363	115	36.083	108	3.3	4.1	1.237	1.893	
27	1	-18	264	-45.9	119	21.091	117	30.797	110	4.3	4.8	1.060	1.528	
28	1	-19	268	-44.1	124	17.330	121	26.337	114	3.8	4.5	.904	1.233	
29	1	-20	272	-42.2	125	14.958	122	22.546	115	3.6	4.5	.791	1.075	
30	1	-21	279	-40.3	126	12.928	123	19.330	116	3.9	4.3	.696	.944	
31	1	-21	283	-38.7	127	11.193	124	16.617	117	4.0	4.8	.614	.837	
32	1	-22	282	-36.5	126	9.693	123	14.263	117	3.8	4.7	.541	.731	
33	1	-22	283	-34.2	127	8.409	124	12.270	117	4.6	5.1	.477	.641	
34	1	-23	285	-32.5	127	7.306	124	10.587	117	4.7	5.3	.420	.547	
35	0	-24	285	-30.5	127	6.353	124	9.131	117	4.8	5.7	.372	.488	
36	0	-26	287	-27.8	126	5.417	123	7.868	116	4.8	6.0	.329	.432	
37	1	-28	289	-25.2	126	4.819	123	6.785	116	5.0	6.0	.292	.370	
38	1	-30	288	-22.6	126	4.208	123	5.862	116	5.6	6.0	.259	.325	
39	0	-31	287	-19.6	126	3.795	123	5.068	116	5.4	5.6	.232	.293	
40	0	-33	284	-17.1	125	3.225	122	4.394	117	5.7	6.2	.206	.257	
41	0	-36	284	-14.1	124	2.829	121	3.810	117	5.9	8.1	.184	.225	
42	1	-38	279	-11.6	124	2.487	121	3.316	117	6.3	7.0	.164	.202	
43	3	-40	280	-9.2	124	2.190	121	2.892	117	7.1	7.5	.147	.181	
44	4	-42	278	-7.0	124	1.930	121	2.528	117	6.4	7.5	.130	.161	
45	4	-42	276	-5.3	123	1.702	120	2.215	116	6.6	7.3	.118	.145	
46	4	-44	273	-4.2	123	1.500	120	1.945	116	6.3	7.5	.105	.128	
47	4	-45	272	-3.5	122	1.322	119	1.709	116	7.3	7.9	.093	.115	
48	4	-46	273	-3.0	121	1.170	118	1.509	115	7.0	8.3	.084	.101	
49	4	-47	272	-3.2	119	1.187	116	1.334	114	7.2	9.5	.074	.087	
50	4	-49	269	-3.8	118	.914	115	1.181	114	7.8	10.2	.067	.077	
51	4	-51	264	-4.4	116	.807	113	1.046	112	7.7	9.6	.061	.070	
52	4	-53	262	-5.7	116	.712	113	.927	112	7.7	11.7	.054	.063	
53	4	-54	257	-7.2	115	.627	112	.821	111	8.8	10.9	.049	.058	
54	5	-54	254	-8.5	114	.553	111	.728	110	9.9	11.1	.045	.052	
55	4	-54	246	-10.3	111	.487	108	.645	107	10.0	11.6	.039	.046	
56	4	-57	238	-12.0	111	.429	108	.572	107	11.2	13.1	.036	.042	
57	4	-59	225	-13.8	111	.378	108	.507	107	10.8	17.5	.032	.038	
58	4	-60	217	-15.5	106	.333	103	.448	102	12.3	16.0	.029	.033	
59	4	-61	200	-17.6	102	.297	100	.396	99	13.1	18.8	.026	.029	
60	4	-61	184	-19.2	97	.255	96	.349	95	16.6	24.3	.023	.027	
61	4	-63	172	-20.4	89	.222	89	.306	88	17.3	24.5	.021	.026	
62	7	-60	156	-21.5	81	.189	81	.270	81	16.9	27.7	.020	.025	
63	7	-55	145	-22.2	76	.172	76	.238	76	21.9	32.0	.018	.023	
64	4	-55	122	-22.8	59	.151	59	.210	59	24.8	31.8	.016	.022	
65	3	-50	103	-25.4	43	.131	43	.185	43	23.0	34.7	.016	.021	

TABLE 7

ROCKET- SONDE	MEAN COMPS S-N	WIND MPS W-E	1961 - 1975		AUGUST		TOTAL OBSNS	MEAN DENSITY G/CU M	TOTAL OBSNS	1969 - 1975		PRESS STD DEV.	DENS. STD DEV.
			MEAN TEMP DEG C	TOTAL OBSNS	MEAN PRESS MBS	WIND STD DEV. S-N W-E				TEMP STD DEV.			
25	0	-16	-50.1	263	26.833	107	41.825	92	2.5	3.0	3.1	1.308	2.149
26	1	-17	-48.4	280	23.078	126	35.706	112	2.9	3.1	2.7	.988	1.578
27	1	-17	-46.9	289	19.844	132	30.523	118	2.5	3.5	2.6	.823	1.307
28	1	-18	-45.2	292	17.094	132	26.090	118	2.6	3.8	2.5	.706	1.092
29	0	-19	-43.6	292	14.740	132	22.342	118	3.4	3.4	2.7	.610	.956
30	1	-20	-41.7	295	12.678	134	19.132	120	3.4	3.6	2.8	.524	.803
31	1	-20	-39.7	297	11.013	134	16.410	120	3.4	4.0	3.2	.457	.679
32	1	-20	-37.8	298	9.537	134	14.078	120	3.3	4.9	3.3	.398	.580
33	1	-21	-36.1	296	8.262	134	12.134	120	4.1	5.6	3.8	.351	.505
34	2	-21	-34.3	293	7.167	134	10.448	120	3.7	5.3	3.9	.310	.442
35	1	-21	-32.3	293	6.230	134	9.008	120	4.3	5.2	3.8	.272	.388
36	1	-22	-30.2	293	5.425	133	7.766	119	4.3	5.4	3.7	.240	.341
37	1	-23	-27.6	294	4.719	135	6.694	121	3.8	6.2	3.5	.209	.289
38	1	-24	-25.2	291	4.114	133	5.774	120	4.6	7.2	3.4	.185	.248
39	0	-26	-22.3	284	3.592	133	4.988	120	5.0	7.6	4.0	.163	.217
40	1	-27	-19.5	283	3.142	133	4.319	120	6.4	11.2	4.0	.145	.195
41	0	-29	-16.8	281	2.756	130	3.745	119	4.9	8.4	4.4	.130	.174
42	1	-30	-14.3	278	2.413	131	3.254	120	5.5	9.4	5.4	.114	.157
43	2	-32	-11.5	274	2.126	130	2.832	119	5.7	9.2	5.1	.103	.135
44	2	-33	-9.2	274	1.869	129	2.468	119	7.3	9.9	4.5	.090	.118
45	3	-34	-7.5	271	1.647	127	2.161	118	7.1	10.4	4.4	.080	.106
46	4	-36	-6.6	269	1.450	127	1.897	119	7.5	10.3	4.7	.071	.094
47	4	-35	-5.7	269	1.278	124	1.666	117	8.4	10.6	5.0	.065	.083
48	5	-36	-5.1	269	1.126	123	1.465	117	9.1	11.0	4.8	.057	.074
49	5	-36	-5.0	263	1.020	120	1.292	116	9.3	11.7	4.5	.051	.066
50	5	-36	-5.4	262	.877	117	1.144	115	10.0	12.8	4.5	.046	.056
51	6	-37	-5.9	256	.773	117	1.008	115	10.9	13.1	4.9	.041	.051
52	6	-37	-6.0	254	.626	118	.891	116	11.1	15.1	4.7	.036	.044
53	5	-37	-7.3	249	.602	116	.788	115	11.7	16.7	4.3	.033	.040
54	5	-36	-8.6	246	.531	115	.699	115	11.3	16.9	5.2	.029	.037
55	4	-36	-9.9	241	.467	113	.618	113	12.5	17.6	5.1	.026	.032
56	4	-36	-11.3	237	.410	110	.549	110	9.8	21.3	5.6	.023	.028
57	3	-35	-12.9	230	.361	108	.483	108	12.5	20.4	5.9	.021	.026
58	3	-34	-14.5	217	.317	104	.427	104	14.5	21.0	6.4	.020	.024
59	4	-32	-16.4	208	.278	103	.377	103	14.3	21.4	6.7	.016	.019
60	3	-31	-18.2	189	.244	96	.334	96	13.9	22.2	7.3	.015	.015
61	3	-30	-20.6	159	.214	78	.295	78	13.9	24.0	7.8	.015	.015
62	2	-26	-23.3	145	.186	72	.259	72	14.8	26.2	7.9	.012	.013
63	0	-20	-24.7	125	.162	62	.228	62	17.0	25.0	8.6	.010	.011
64	1	-20	-26.0	111	.141	53	.200	53	18.8	23.5	8.6	.010	.010
65	-2	-17	-27.7	88	.124	43	.176	43	20.4	28.0	8.9	.010	.010

TABLE 8

ROCKET- SONDE	MEAN COMPS S-N	WIND MPS W-E	1961 - 1975 SEPTEMBER			TOTAL OBSNS	MEAN DENSITY G/CU M	TOTAL OBSNS	1969 - 1975			PRESS STD DEV.	DENS. STD DEV.
			TOTAL OBSNS	MEAN TEMP DEG C	TOTAL OBSNS				WIND STD DEV.	TEMP STD DEV.	STD DEV.		
25	1	-8	246	-49.8	110	102	41.353	106	2.6	3.9	4.1	.701	1.220
26	0	-9	268	-48.0	129	126	35.313	126	3.2	5.8	4.0	.599	.926
27	1	-9	275	-46.6	134	131	30.191	131	2.6	5.0	3.8	.494	.747
28	1	-9	281	-45.0	136	133	25.841	133	3.3	5.0	4.0	.439	.615
29	1	-9	279	-43.3	135	132	22.138	132	3.2	5.4	4.0	.398	.539
30	1	-9	282	-41.6	136	133	18.975	133	6.6	6.1	4.6	.360	.454
31	1	-9	286	-40.1	136	133	16.288	133	3.5	7.8	4.5	.328	.384
32	2	-8	288	-38.8	138	135	14.010	135	3.8	6.3	4.7	.300	.334
33	2	-8	288	-37.2	137	134	12.051	134	8.5	6.6	4.6	.276	.308
34	2	-6	287	-35.2	133	131	10.368	131	4.0	6.5	4.3	.253	.281
35	0	-6	285	-33.5	138	135	8.936	135	4.0	6.8	4.3	.231	.254
36	0	-7	289	-31.4	137	134	7.697	134	4.2	8.7	4.4	.212	.231
37	0	-7	286	-28.9	138	135	6.635	135	5.7	10.9	4.6	.192	.214
38	0	-8	285	-26.6	136	133	5.727	133	5.0	9.1	4.3	.176	.192
39	2	-8	287	-23.5	137	134	4.940	134	5.4	9.7	4.4	.160	.173
40	1	-8	287	-20.8	136	133	4.272	133	5.9	9.3	4.1	.145	.165
41	2	-8	285	-18.1	138	135	3.711	135	6.0	9.4	4.1	.130	.154
42	1	-10	282	-15.0	137	134	3.219	134	6.3	10.1	4.2	.116	.138
43	2	-9	282	-12.0	138	135	2.796	135	7.0	10.0	3.8	.104	.126
44	2	-10	280	-9.8	137	132	2.439	134	7.7	12.1	4.0	.093	.115
45	3	-10	277	-7.8	136	133	2.130	133	6.0	11.9	4.2	.082	.103
46	3	-9	276	-6.1	136	133	1.864	133	7.8	11.3	4.4	.073	.091
47	4	-9	276	-5.0	136	133	1.636	133	7.8	13.5	4.2	.066	.081
48	5	-8	273	-4.4	136	133	1.438	133	7.8	14.1	4.3	.058	.076
49	6	-6	270	-4.1	136	133	1.268	133	9.2	14.9	4.1	.052	.067
50	5	-4	270	-3.7	134	131	1.118	131	8.3	14.7	4.1	.046	.062
51	5	-5	267	-4.3	132	129	.985	129	8.1	13.0	3.7	.038	.046
52	5	-4	259	-5.3	130	128	.873	128	8.9	14.4	3.8	.034	.042
53	5	-3	253	-6.2	128	126	.772	126	8.6	15.4	4.2	.032	.037
54	5	-2	247	-7.2	128	126	.683	126	8.5	15.5	4.6	.028	.032
55	5	-1	245	-8.6	126	124	.605	124	11.1	12.8	5.0	.025	.029
56	6	0	233	-9.8	121	119	.535	119	11.0	13.0	5.3	.023	.026
57	6	2	225	-10.8	117	120	.473	115	11.6	14.2	5.2	.021	.023
58	6	2	216	-12.1	117	115	.419	115	11.7	17.0	5.7	.019	.021
59	6	4	203	-13.4	114	113	.366	113	17.8	15.6	6.5	.018	.045
60	4	6	183	-15.3	107	106	.326	106	11.7	13.9	6.9	.015	.015
61	4	7	167	-17.4	95	95	.288	95	12.2	13.5	6.8	.015	.016
62	2	8	157	-19.1	90	90	.255	90	11.9	15.0	6.9	.013	.014
63	1	8	142	-21.4	83	83	.224	83	13.6	16.4	7.4	.012	.013
64	1	9	129	-23.1	70	70	.198	70	17.3	19.4	8.1	.011	.011
65	-1	12	108	-24.9	53	53	.175	53	16.8	22.8	8.4	.009	.010

TABLE 9

ROCKET- SONDE	MEAN COMPS S-N	WIND MPS W-E	1961 - 1975		OCTOBER MEAN PRESS MBS	TOTAL OBSNS	MEAN DENSITY G/CU M	TOTAL OBSNS	1969 - 1975		PRESS STD DEV.	DENS. STD DEV.
			MEAN TEMP DEG C	TOTAL OBSNS					WIND DEV. S-N W-E	TEMP DEV.		
25	0	1	-51.5	286	25.917	136	40.731	136	3.0	6.5	1.126	1.824
26	0	2	-50.0	305	22.268	151	34.763	151	3.0	6.7	.948	1.548
27	1	2	-48.4	312	19.151	155	29.689	155	3.5	7.7	.804	1.341
28	1	4	-47.2	318	16.479	157	25.402	157	3.6	8.2	.688	1.127
29	1	5	-46.1	321	14.183	160	21.762	160	3.6	9.1	.592	.939
30	1	5	-44.9	324	12.228	161	18.661	161	4.0	10.1	.516	.778
31	2	7	-43.4	326	10.551	161	16.008	161	4.2	10.9	.494	.654
32	2	9	-41.8	326	9.120	161	13.738	161	4.8	11.6	.393	.583
33	2	11	-39.8	328	7.882	161	11.769	161	5.4	12.9	.343	.507
34	2	13	-37.8	328	6.823	161	10.103	161	6.1	13.6	.302	.427
35	2	15	-35.8	329	5.916	161	8.682	161	5.9	14.7	.268	.358
36	2	16	-33.9	327	5.136	162	7.480	162	5.8	16.4	.237	.310
37	1	18	-31.1	324	4.466	161	6.429	161	6.2	17.0	.209	.286
38	0	20	-28.6	324	3.885	161	5.533	161	6.5	17.3	.188	.244
39	0	20	-25.8	323	3.390	162	4.774	162	6.7	18.1	.166	.214
40	0	21	-22.9	324	2.959	161	4.120	161	5.8	18.7	.148	.192
41	1	22	-19.9	312	2.584	162	3.561	162	6.3	18.8	.132	.167
42	1	23	-16.9	320	2.984	162	3.081	162	6.4	18.8	.117	.146
43	2	25	-13.7	315	1.984	159	2.666	159	7.3	19.3	.090	.105
44	3	27	-11.2	314	1.770	157	2.325	157	8.4	19.6	.094	.120
45	5	29	-9.0	316	1.539	157	2.030	157	8.1	19.4	.085	.105
46	5	30	-7.6	313	1.356	158	1.779	158	8.5	19.7	.075	.094
47	6	32	-6.4	306	1.196	157	1.562	157	8.8	19.8	.068	.083
48	7	34	-5.9	304	1.053	157	1.373	157	9.7	20.6	.061	.075
49	8	37	-5.5	300	.928	157	1.208	157	9.8	21.7	.054	.067
50	8	39	-5.4	296	.819	157	1.066	157	9.8	23.1	.048	.059
51	8	41	-5.8	288	.723	154	.940	154	9.9	24.5	.043	.049
52	7	42	-6.4	283	.638	150	.832	150	10.2	25.1	.041	.045
53	8	44	-7.3	278	.563	150	.737	150	9.9	26.0	.036	.042
54	8	45	-8.4	270	.495	150	.651	150	11.6	26.5	.032	.037
55	8	46	-9.8	264	.437	146	.577	146	12.4	21.5	.029	.033
56	7	47	-11.1	257	.384	144	.511	144	12.4	21.6	.025	.029
57	7	48	-12.3	245	.338	137	.451	137	12.3	22.3	.024	.027
58	7	49	-13.6	240	.297	134	.399	134	12.2	22.1	.022	.023
59	7	50	-15.1	230	.261	127	.352	127	13.2	21.9	.019	.021
60	8	50	-16.5	218	.229	120	.311	120	14.9	22.7	.018	.020
61	7	50	-17.9	195	.201	105	.274	105	13.9	22.8	.016	.018
62	7	49	-18.9	178	.178	98	.243	98	15.2	24.0	.014	.016
63	5	46	-20.2	160	.155	84	.214	84	16.1	25.1	.014	.015
64	4	47	-21.7	141	.136	71	.189	71	17.7	26.1	.012	.014
65	3	47	-22.9	122	.119	53	.166	53	20.1	26.8	.010	.011

TABLE 10

ROCKET- SONDE	MEAN COMPS S-N	WIND MPS W-E	1961 - 1975			NOVEMBER			TOTAL OBSNS	MEAN DENSITY G/CU M	TOTAL OBSNS	WIND STD DEV. S-N	WIND STD W-E	1969 - 1975			DENS. STD DEV.
			TOTAL OBSNS	MEAN TEMP DEG C	TOTAL OBSNS	PRESS MBS	PRESS STD DEV.	TEMP STD DEV.									
25	1	9	227	-53.9	121	25.238	118	40.120	118	4.5	7.4	3.4	.928	1.558			
26	1	12	250	-52.3	131	21.804	128	34.420	128	4.7	8.9	4.1	2.641	4.112			
27	2	14	257	-50.4	135	18.696	132	29.255	132	5.3	9.6	4.2	2.233	3.407			
28	2	16	258	-49.0	137	16.071	132	24.980	132	5.4	10.9	4.4	1.932	2.932			
29	3	18	261	-47.8	139	13.820	135	21.374	135	5.9	10.9	4.3	1.651	2.521			
30	3	20	262	-46.6	140	11.896	136	18.296	136	6.8	11.4	3.9	1.414	2.186			
31	4	23	263	-45.1	141	10.251	137	15.673	137	6.8	12.4	4.1	1.212	1.885			
32	4	26	264	-43.5	141	8.848	137	13.424	137	7.0	12.8	4.3	1.047	1.535			
33	5	28	266	-41.6	142	7.637	137	11.497	137	7.3	13.4	4.8	.910	1.336			
34	5	31	267	-39.9	142	6.604	137	9.869	137	8.9	14.1	5.1	.791	1.154			
35	5	34	265	-38.4	142	5.714	136	8.482	136	9.7	13.0	5.5	.694	.977			
36	4	37	267	-36.0	143	4.955	137	7.284	137	8.2	13.3	5.6	.606	.838			
37	4	40	265	-33.8	139	4.297	133	6.259	133	8.0	13.4	6.0	.541	.730			
38	3	41	268	-31.0	139	3.736	133	5.379	133	8.6	12.9	5.7	.479	.619			
39	3	43	268	-28.1	141	3.257	135	4.635	135	8.3	13.1	5.8	.418	.543			
40	3	45	267	-25.2	139	2.845	133	3.998	133	7.8	12.9	5.9	.371	.486			
41	4	47	269	-22.1	140	2.486	134	3.450	134	7.9	13.1	6.5	.327	.420			
42	5	49	268	-18.8	139	2.177	133	2.984	133	7.8	14.0	6.9	.291	.376			
43	6	52	267	-15.7	139	1.909	132	2.585	132	8.7	14.3	6.8	.258	.322			
44	7	54	265	-13.1	136	1.674	129	2.243	129	9.7	15.8	6.4	.229	.287			
45	8	58	264	-10.8	135	1.475	129	1.960	129	10.5	16.2	6.2	.202	.249			
46	10	60	259	-9.0	134	1.299	128	1.714	128	10.3	17.8	6.4	.181	.217			
47	11	63	255	-7.4	134	1.144	128	1.500	128	10.3	19.4	6.6	.162	.190			
48	12	66	255	-6.6	132	1.006	126	1.316	126	10.9	20.1	6.7	.145	.171			
49	13	69	252	-5.7	131	.885	125	1.154	125	11.9	20.8	6.6	.130	.157			
50	12	71	252	-5.6	129	.778	123	1.013	123	12.6	22.5	7.0	.117	.145			
51	13	72	251	-5.6	129	.686	123	.895	123	14.3	23.0	6.9	.104	.131			
52	14	74	247	-6.8	128	.616	122	.793	122	15.7	23.8	6.5	.092	.117			
53	14	75	244	-7.8	125	.534	119	.700	119	14.8	24.5	6.5	.082	.105			
54	14	76	238	-8.0	122	.470	115	.619	115	15.1	23.7	13.7	.073	.095			
55	13	76	229	-10.0	120	.414	114	.548	114	15.8	24.2	7.2	.064	.084			
56	13	76	218	-11.2	116	.364	111	.484	111	15.3	23.0	7.3	.057	.077			
57	13	76	212	-12.1	115	.320	110	.427	110	14.4	22.9	7.4	.051	.067			
58	13	75	206	-13.3	111	.281	106	.377	106	14.4	24.7	6.9	.045	.060			
59	12	75	200	-14.4	107	.247	103	.333	103	16.6	26.2	7.1	.040	.054			
60	12	74	178	-14.3	97	.218	92	.295	92	17.4	24.9	15.9	.038	.049			
61	11	73	158	-16.7	88	.191	84	.261	84	16.3	25.3	7.5	.034	.044			
62	11	71	133	-18.1	77	.166	73	.227	73	18.0	27.1	8.5	.014	.017			
63	9	70	112	-18.3	64	.146	61	.200	61	18.4	27.3	9.4	.013	.016			
64	6	62	90	-19.0	56	.128	54	.175	54	21.9	42.7	9.8	.012	.014			
65	3	61	80	-20.1	34	.111	32	.154	32	24.9	41.0	10.4	.011	.012			

ROCKET- SONDE	MEAN COMPS S-N	WIND MPS W-E	1961 - 1975		1969 - 1975		TOTAL OBSNS	MEAN DENSITY G/CU M	TOTAL OBSNS	WIND STD DEV.		PRESS STD DEV.	DENS. STD DEV.
			MEAN TEMP DEG C	TOTAL OBSNS	MEAN PRESS MBS	TEMP DEV.				S-N	W-E		
25	7	10	-53.9	120	25.035	2.9	117	39.804	117	95.0	95.1	.694	1.189
26	3	11	-52.9	236	21.463	3.0	126	33.975	126	88.2	88.4	.587	.979
27	-1	8	-51.7	243	18.421	3.1	135	29.001	135	4.2	12.6	.489	.814
28	-8	11	-50.5	249	15.803	3.5	137	24.744	137	4.9	14.3	.424	.692
29	-8	13	-49.1	249	13.581	3.8	138	21.122	138	6.1	15.9	.379	.619
30	0	16	-47.8	251	11.682	4.3	139	18.066	139	6.3	17.6	.330	.518
31	2	18	-45.9	252	10.064	4.9	140	15.444	140	6.7	18.3	.294	.443
32	2	22	-43.8	254	8.679	5.5	141	13.206	141	7.8	19.6	.265	.391
33	3	27	-41.4	251	7.492	5.8	140	11.280	140	8.8	21.4	.241	.343
34	4	31	-38.7	251	6.476	6.8	140	9.638	140	9.2	21.9	.218	.325
35	5	35	-36.3	252	5.614	6.6	139	8.255	139	10.1	22.1	.200	.366
36	5	39	-33.4	249	4.874	7.2	138	7.090	138	10.7	22.9	.178	.285
37	5	43	-30.6	249	4.238	7.7	138	6.095	138	12.0	22.8	.160	.245
38	5	46	-27.7	249	3.692	7.7	138	5.249	138	12.1	21.8	.146	.199
39	5	49	-24.4	248	3.224	8.4	136	4.522	136	11.5	21.6	.135	.177
40	5	52	-21.2	247	2.818	9.1	137	3.887	137	14.7	19.8	.124	.226
41	6	54	-17.9	245	2.466	10.2	137	3.373	137	14.4	19.9	.116	.140
42	7	56	-14.8	245	2.162	11.0	137	2.505	137	14.7	20.0	.108	.134
43	9	58	-11.3	242	1.902	11.8	135	2.580	135	13.9	20.0	.101	.121
44	11	61	-8.1	241	1.674	10.9	134	2.206	134	14.1	20.7	.094	.106
45	12	64	-6.0	239	1.475	10.2	135	1.930	135	15.4	20.0	.086	.094
46	13	66	-4.7	235	1.301	9.5	132	1.692	132	15.5	21.7	.078	.085
47	14	67	-4.3	235	1.145	9.6	132	1.487	132	16.0	22.9	.073	.078
48	15	68	-3.3	234	1.010	9.8	130	1.307	130	16.4	22.9	.067	.072
49	15	69	-3.4	232	.892	9.1	130	1.155	130	17.1	23.0	.062	.066
50	15	70	-4.0	234	.788	8.3	128	1.021	128	18.0	23.8	.056	.059
51	15	70	-4.8	227	.696	7.9	125	.904	125	19.0	26.9	.051	.055
52	15	72	-5.6	221	.615	7.7	124	.801	124	18.2	26.4	.045	.051
53	15	73	-7.4	216	.543	7.4	123	.712	123	18.6	26.1	.042	.047
54	15	71	-8.6	213	.478	7.6	123	.631	123	19.6	28.8	.039	.043
55	15	73	-9.8	208	.422	7.5	121	.558	121	20.2	26.4	.034	.040
56	15	74	-11.1	200	.371	7.6	114	.494	114	20.2	25.8	.031	.037
57	14	74	-12.8	186	.325	7.5	109	.435	109	20.0	26.4	.027	.033
58	13	74	-14.3	182	.286	7.5	107	.383	107	19.8	27.4	.023	.030
59	13	74	-15.7	172	.250	7.9	103	.338	103	20.1	29.0	.022	.027
60	13	72	-17.0	161	.220	8.2	96	.298	96	21.0	24.7	.019	.024
61	13	74	-18.5	146	.190	8.4	78	.260	78	20.6	26.7	.017	.020
62	11	74	-18.8	131	.167	8.9	72	.229	72	19.4	32.8	.016	.019
63	12	75	-21.0	112	.146	10.8	64	.202	64	20.7	32.0	.014	.017
64	13	79	-21.9	92	.125	10.6	42	.174	42	21.8	33.9	.012	.015
65	14	80	-21.6	72	.110	10.9	29	.153	29	22.0	35.5	.012	.013

TABLE 12

SECTION I PART 2

Vertical profiles of Mean Temperatures and Mean E-W Component Winds
at WSMR by the month for 1961 to 1975 are shown in Figures 2 through 25.

FIGURE 2

SEQUENCE NUMBER	3001	IOMUX CHANNEL	0	RANGE	AZIMUTH	ELEVATION	ID
OCTAL	DIF	OCTAL	DIF	OCTAL	DIF	OCTAL	DIF
2622542	-341	146	-45	143540	-14	000	00
2622201	-341	101	-45	143523	-15	000	00
2621640	-341	35	-44	143506	-15	000	00
2621277	-341	377770	377733	143471	-15	000	00
2620737	-340	377723	-45	143454	-15	000	00
2620376	-341	377656	-45	143437	-15	000	00
2620035	-341	377611	-45	143422	-15	000	00
2617474	-341	377545	-44	143405	-15	000	00

SEQUENCE NUMBER	3601	IOMUX CHANNEL	6	RANGE	AZIMUTH	ELEVATION	ID
OCTAL	DIF	OCTAL	DIF	OCTAL	DIF	OCTAL	DIF
2247436	-454	221600	-41	117426	-17	006	00
2246761	-455	221537	-41	117407	-17	006	00
2246343	-416	221477	-40	117367	-20	006	00
2246342	-1	221462	-15	117367	0	006	00
2246342	0	221466	-4	117372	3	006	00
2246342	0	221474	6	117373	1	006	00
2246342	0	221477	3	117374	1	006	00

SEQUENCE NUMBER	3601	IOMUX CHANNEL	6	RANGE	AZIMUTH	ELEVATION	ID
OCTAL	DIF	OCTAL	DIF	OCTAL	DIF	OCTAL	DIF
2246342	0	221502	0	110727	3	006	00
2246342	0	221502	0	110174	3	006	00
2246342	0	221502	0	107513	1	006	00
2246342	0	221502	0	107205	16	006	00
2246342	0	221502	0	107033	2	006	00
2246342	0	221502	0	106777	14	006	00
2246342	0	221502	0	107047	0	006	00
2246342	0	221502	0	107143	4	006	00
2246342	0	221502	0	107204	1	006	00
2246342	0	221502	0	107223	7	006	00

SEQUENCE NUMBER	3801	IOMUX CHANNEL	6	RANGE	AZIMUTH	ELEVATION	ID
OCTAL	DIF	OCTAL	DIF	OCTAL	DIF	OCTAL	DIF
2246342	0	364432	1423	15714	3	006	00
2246342	0	366053	1421	15023	1	006	00
2246342	0	367406	1333	14130	3	006	00
2246342	0	370604	1176	13236	2	006	00
2246342	0	371646	1042	12344	2	006	00
2246342	0	372561	713	11452	-672	006	00
2246342	0	373346	565	10560	-672	006	00
2246342	0	374012	444	7670	-670	006	00
2246342	0	374337	325	7000	-670	006	00
2246342	0	374552	213	6112	-666	006	00
2246342	0	374657	105	5223	-667	006	00
2246342	0	374662	3	4336	-665	006	00
2246342	0	374576	-64	3451	-665	006	00
2246342	0	374427	-147	2565	-664	006	00
2246342	0	374200	-227	1706	-657	006	00
2246342	0	373674	-304	1150	-536	006	00
2246342	0	373320	-354	554	-374	006	00
2246342	0	372716	-402	314	-240	006	00
2246342	0	372375	-321	174	-120	006	00
2246342	0	372152	-223	132	-42	006	00
2246342	0	372024	-126	104	-26	006	00
2246342	0	371772	-32	50	-34	006	00
2246342	0	372005	13	10	-40	006	00
2246342	0	372023	16	377753	377743	006	00
2246342	0	372026	3	377723	-30	006	00
2246342	0	372020	-6	377700	-23	006	00
2246342	0	372007	-11	377663	-15	006	00

DO NOT PHOTOGRAPH

•ELEVATION•••••		RADAR K112		TDIF SUBSQN ERROR		
OCTAL	DIF	ID MODE	TIME	OCTAL	DEC	RAEM
193590	-14	000 00127	404671154	62	3015	0000
193523	-15	000 00053	404671236	62	3016	0000
193506	-15	000 00127	404671320	62	3017	0000
193471	-15	000 00053	404671402	62	3018	0100
193459	-15	000 00127	404671464	62	3019	0100
193437	-15	000 00053	404671546	62	3020	0000
193422	-15	000 00127	404671630	62	3021	0000
193405	-15	000 00053	404671712	62	3022	0000

•ELEVATION•••••		RADAR K125		TDIF SUBSQN ERROR		
OCTAL	DIF	ID MODE	TIME	OCTAL	DEC	RAEM
117426	-17	006 00127	404772736	62	3688	0000
117407	-17	006 00053	404773020	62	3689	0000
117367	-20	006 00127	404773102	62	3690	0000
117367	0	006 00053	404773164	62	3691	1000
117372	3	006 00127	404773246	62	3692	0000
117373	1	006 00053	404773330	62	3693	0000
117374	1	006 00127	404773412	62	3694	0000

•ELEVATION•		RADAR K125		TDIF SUBSQN ERROR		
OCTAL	F	ID MODE	TIME	OCTAL	DEC	RAEM
110727	3	006 00127	405001612	62	3758	0000
110174	3	006 00053	405001674	62	3759	0000
107513	-1	006 00127	405001756	62	3760	0000
107205	-6	006 00053	405002040	62	3761	0010
107033	-2	006 00127	405002122	62	3762	0010
106777	-4	006 00053	405002204	62	3763	0010
107047	-0	006 00127	405002266	62	3764	0010
107143	4	006 00053	405002350	62	3765	0000
107204	1	006 00127	405002432	62	3766	0000
107223	7	006 00053	405002514	62	3767	0000

•ELEVATION•		RADAR K125		TDIF SUBSQN ERROR		
OCTAL	F	ID MODE	TIME	OCTAL	DEC	RAEM
15714	3	006 00127	405012436	62	3848	0000
15023	1	006 00053	405012520	62	3849	0000
14130	3	006 00127	405012602	62	3850	0000
13236	2	006 00053	405012664	62	3851	0100
12344	2	006 00127	405012746	62	3852	0100
11452	-672	006 00053	405013030	62	3853	0100
10560	-672	006 00127	405013112	62	3854	0100
7670	-670	006 00053	405013174	62	3855	0100
7000	-670	006 00127	405013256	62	3856	0100
6112	-666	006 00053	405013340	62	3857	0100
5223	-667	006 00127	405013422	62	3858	0100
4336	-665	006 00053	405013504	62	3859	0100
3451	-665	006 00127	405013566	62	3860	0000
2565	-664	006 00053	405013650	62	3861	0000
1706	-657	006 00127	405013732	62	3862	0000
1150	-536	006 00053	405014014	62	3863	0010
554	-374	006 00127	405014076	62	3864	0010
314	-240	006 00053	405014160	62	3865	0010
174	-120	006 00127	405014242	62	3866	0010
132	-42	006 00053	405014324	62	3867	0000
104	-26	006 00127	405014406	62	3868	0000
50	-34	006 00053	405014470	62	3869	0000
10	-40	006 00127	405014552	62	3870	0000
377753	377743	006 00053	405014634	62	3871	0010
377723	-30	006 00127	405014716	62	3872	0010
377700	-23	006 00053	405015000	62	3873	0000
377663	-15	006 00127	405015062	62	3874	0000
377650	-13	006 00053	405015144	62	3875	0000

DO NOT PHOTOGRAPH

2

FEBRUARY **FIGURE 3**

FIGURE 3

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ARY FIGURE 3

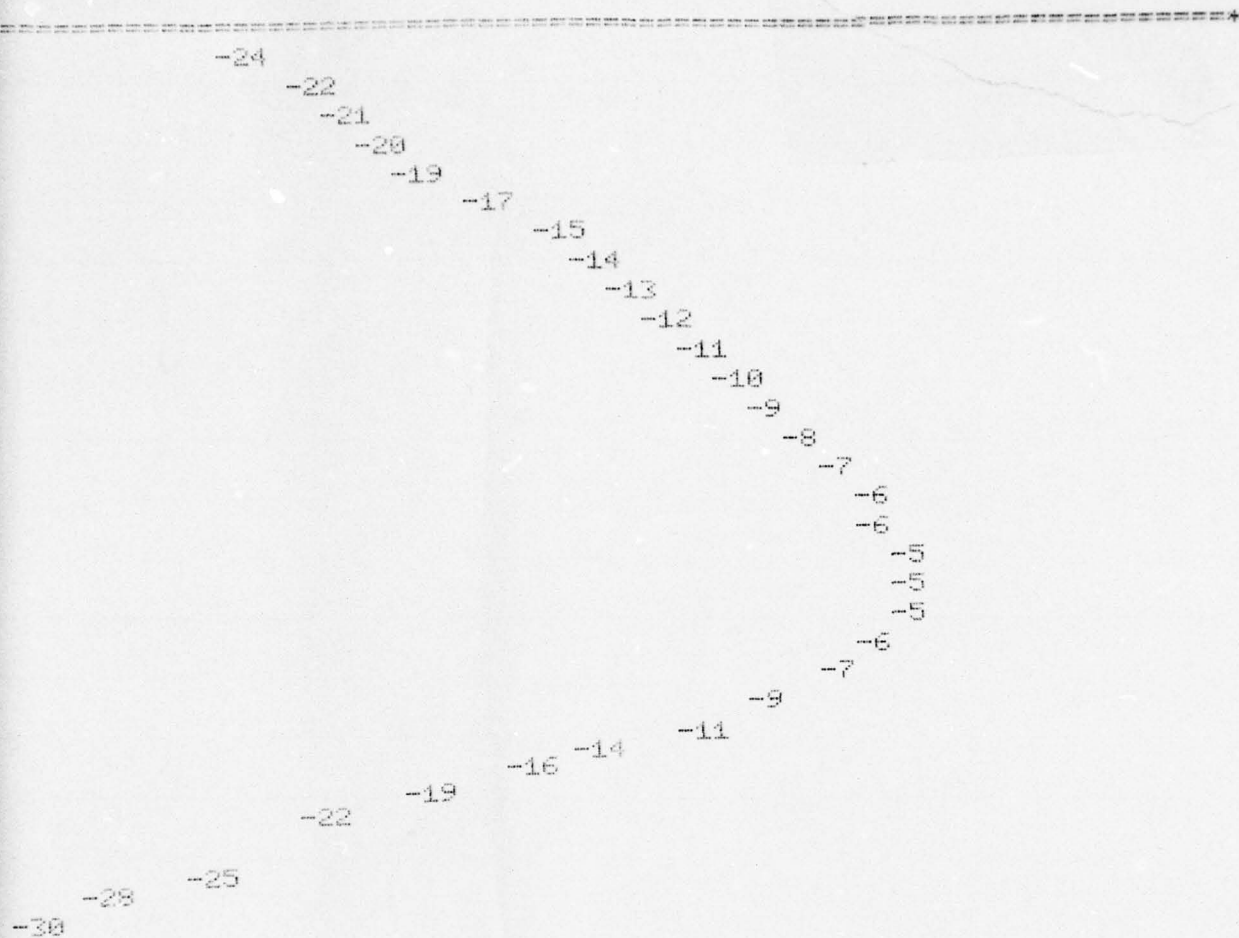
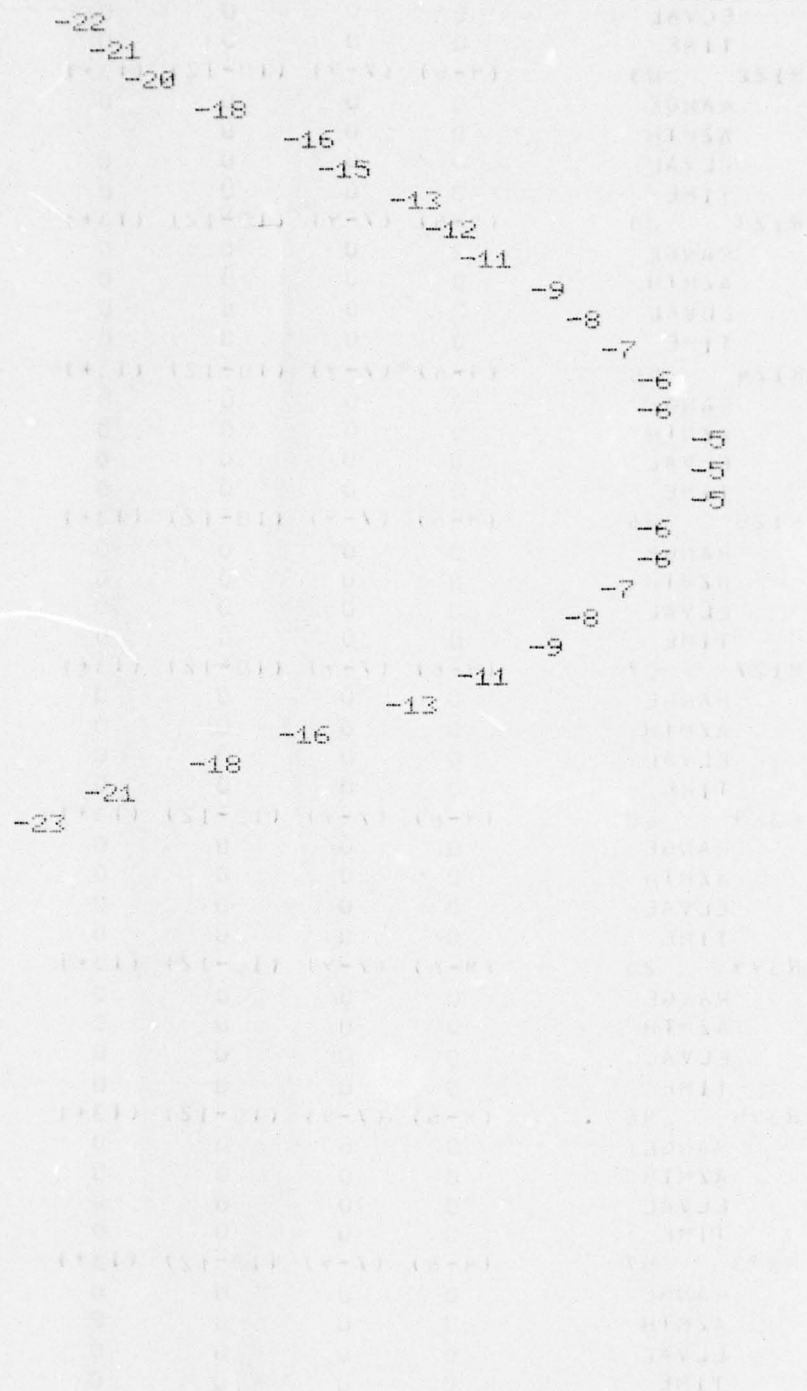


FIGURE 4



2

***SECOND DIFFERENCE TABLE FOR 10 RADARS

R112	00	(4-6)	(7-9)	(10-12)	(13+)
RANGE		0	0	0	0
AZMTH		0	0	0	0
ELVAL		0	0	0	0
TIME		0	0	0	0
R122	03	(4-6)	(7-9)	(10-12)	(13+)
RANGE		0	0	0	0
AZMTH		0	0	0	0
ELVAL		0	0	0	0
TIME		0	0	0	0
R123	04	(4-6)	(7-9)	(10-12)	(13+)
RANGE		2	0	0	0
AZMTH		0	0	0	0
ELVAL		0	0	0	0
TIME		0	0	0	0
R124	05	(4-6)	(7-9)	(10-12)	(13+)
RANGE		0	0	0	0
AZMTH		0	0	0	0
ELVAL		0	0	0	0
TIME		0	0	0	0
R125	06	(4-6)	(7-9)	(10-12)	(13+)
RANGE		0	0	0	0
AZMTH		0	0	0	0
ELVAL		0	0	0	0
TIME		0	0	0	0
R127	07	(4-6)	(7-9)	(10-12)	(13+)
RANGE		0	0	0	0
AZMTH		0	0	0	0
ELVAL		0	0	0	0
TIME		0	0	0	0
R364	60	(4-6)	(7-9)	(10-12)	(13+)
RANGE		0	0	0	0
AZMTH		0	0	0	0
ELVAL		0	0	0	0
TIME		0	0	0	0
R394	20	(4-6)	(7-9)	(10-12)	(13+)
RANGE		0	0	0	0
AZMTH		0	0	0	0
ELVAL		0	0	0	0
TIME		0	0	0	0
R395	46	(4-6)	(7-9)	(10-12)	(13+)
RANGE		0	0	0	0
AZMTH		0	0	0	0
ELVAL		0	0	0	0
TIME		0	0	0	0
R393	57	(4-6)	(7-9)	(10-12)	(13+)
RANGE		0	0	0	0
AZMTH		0	0	0	0
ELVAL		0	0	0	0
TIME		0	0	0	0

••MISSING FRAMES = 0

LASTPOINT	EOM	SAMPL	IDTA
000631457R			
000370712A			
000033747E			
406115666T	0	200	0
LASTPOINT	EOM	SAMPL	IDTA
000660776R			
000274401A			
000030655E			
406115666T	0	200	0
LASTPOINT	EOM	SAMPL	IDTA
000217350R			
000263331A			
000042061E			
406115666T	0	200	0
LAST	EOM	SAMPL	IDTA
0006			
0000			
0000			
4061	0	200	0
LAST	EOM	SAMPL	IDTA
0007			
0000			
0000			
4061	0	200	0
LAST	EOM	SAMPL	IDTA
0001			
0001			
0000			
4061	0	200	0
LAST	EOM	SAMPL	IDTA
0007			
0000			
0000			
4061	0	200	0
LAST	EOM	SAMPL	IDTA
0005			
0000			
000030625E			
406115666T	0	200	0
LASTPOINT	EOM	SAMPL	IDTA
000650724R			
000073160A			
000031266E			
406115666T	0	200	0
LASTPOINT	EOM	SAMPL	IDTA
000535064R			
000065143A			
000030775E			
406115666T	0	200	0

DO NOT PHOTOGRAPH

SEQ NUMBER 5201

2

DO NOT PHOTOGRAPH

13+)	LASTPOINT	EOM	SAMPL	IDTAL	MODTL	MODE	SUBCH
0	000631457R						
0	000370712A						
0	000033747E						
0	406115666T	0	200	0	0	00	0
13+)	LASTPOINT	EOM	SAMPL	IDTAL	MODTL	MODE	SUBCH
0	000660776R						
0	000274401A						
0	000030655E						
0	406115666T	0	200	0	0	00	3
13+)	LASTPOINT	EOM	SAMPL	IDTAL	MODTL	MODE	SUBCH
0	000217350R						
0	000263331A						
0	000042061E						
0	406115666T	0	200	0	0	00	4
13+)	LAST	EOM	SAMPL	IDTAL	MODTL	MODE	SUBCH
0	0006						
0	0000						
0	0000						
0	4061	0	200	0	0	00	5
13+)	LAST	EOM	SAMPL	IDTAL	MODTL	MODE	SUBCH
0	0007						
0	0000						
0	0000						
0	4061	0	200	0	0	00	6
13+)	LAST	EOM	SAMPL	IDTAL	MODTL	MODE	SUBCH
0	0001						
0	0001						
0	0000						
0	4061	0	200	0	0	00	7
13+)	LAST	EOM	SAMPL	IDTAL	MODTL	MODE	SUBCH
0	0007						
0	0000						
0	0000						
0	4061	0	200	0	0	05	9
13+)	LAST	EOM	SAMPL	IDTAL	MODTL	MODE	SUBCH
0	0005						
0	0000						
0	000030625E						
0	406115666T	0	200	0	0	05	10
13+)	LASTPOINT	EOM	SAMPL	IDTAL	MODTL	MODE	SUBCH
0	000650724R						
0	000073160A						
0	000031266E						
0	406115666T	0	200	0	0	05	14
13+)	LASTPOINT	EOM	SAMPL	IDTAL	MODTL	MODE	SUBCH
0	000535064R						
0	000065143A						
0	000030775E						
0	406115666T	0	200	0	0	00	15

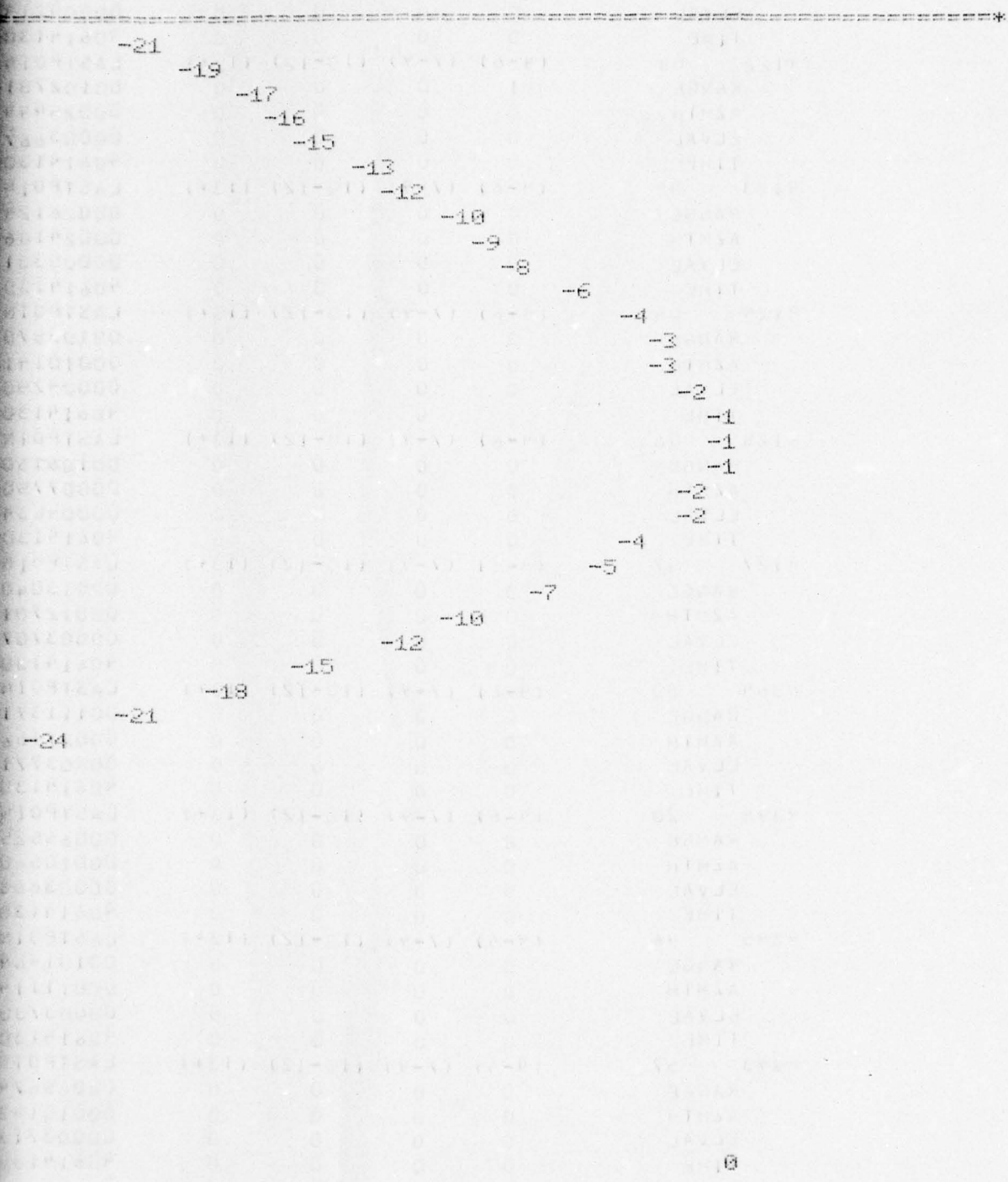
FIGURE 5

-19
-17
-16
-1
-18

#

FIGURE 5

2



***SECOND DIFFERENCE TABLE FOR 10 RADARS

R112	00	(4-6)	(7-9)	(10-12)	(13+)
RANGE		0	0	0	0
AZMTH		0	0	0	2
ELVAL		0	0	0	0
TIME		0	0	0	0
R122	03	(4-6)	(7-9)	(10-12)	(13+)
RANGE		1	0	0	0
AZMTH		0	0	0	0
ELVAL		0	0	0	0
TIME		0	0	0	0
R123	04	(4-6)	(7-9)	(10-12)	(13+)
RANGE		0	0	0	0
AZMTH		0	0	0	0
ELVAL		0	0	0	0
TIME		0	0	0	0
R124	05	(4-6)	(7-9)	(10-12)	(13+)
RANGE		0	0	0	0
AZMTH		0	0	0	0
ELVAL		0	0	0	0
TIME		0	0	0	0
R125	06	(4-6)	(7-9)	(10-12)	(13+)
RANGE		0	0	0	0
AZMTH		0	0	0	0
ELVAL		0	0	0	0
TIME		0	0	0	0
R127	07	(4-6)	(7-9)	(10-12)	(13+)
RANGE		0	0	0	0
AZMTH		0	0	0	0
ELVAL		0	0	0	0
TIME		0	0	0	0
R364	60	(4-6)	(7-9)	(10-12)	(13+)
RANGE		0	0	0	0
AZMTH		0	0	0	0
ELVAL		0	0	0	0
TIME		0	0	0	0
R394	20	(4-6)	(7-9)	(10-12)	(13+)
RANGE		0	0	0	0
AZMTH		0	0	0	0
ELVAL		0	0	0	0
TIME		0	0	0	0
R395	46	(4-6)	(7-9)	(10-12)	(13+)
RANGE		0	0	0	0
AZMTH		0	0	0	0
ELVAL		0	0	0	0
TIME		0	0	0	0
R393	57	(4-6)	(7-9)	(10-12)	(13+)
RANGE		0	0	0	0
AZMTH		0	0	0	0
ELVAL		0	0	0	0
TIME		0	0	0	0

**MISSING FRAMES = 0

LASTPOINT	EOM	SAMPL	IDTAL	MOD	SEQ N
000771736R					
000006114A					
000042133E					
406141306T	0	200	0	0	
LASTPOINT	EOM	SAMPL	IDTAL	MOD	
001027016R					
000254447A					
000036673E					
406141306T	0	200	0	0	
LASTPOINT	EOM	SAMPL	IDTAL	MOD	
000261247R					
000241066A					
000053013E					
406141306T	0	200	0	0	
LASTPOINT	EOM	SAMPL	IDTAL	MOD	
00005703R					
416A					
502E					
306T	0	200	0	0	
INT	EOM	SAMPL	IDTAL	MOD	
506R					
500A					
346E					
306T	0	200	0	0	
INT	EOM	SAMPL	IDTAL	MOD	
404R					
017A					
074E					
306T	0	200	0	0	
INT	EOM	SAMPL	IDTAL	MOD	
712R					
561A					
712E					
306T	0	200	0	0	
INT	EOM	SAMPL	IDTAL	MOD	
251R					
001A					
132E					
106T	0	200	0	0	
LASTPOINT	EOM	SAMPL	IDTAL	MOD	
001014640R					
000111141A					
000037301E					
406141306T	0	200	0	0	
LASTPOINT	EOM	SAMPL	IDTAL	MOD	
000656740R					
000101430A					
000037133E					
406141306T	0	200	0	0	

DO NOT PHOTOGRAPH

SEQ NUMBER 5401

2

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

000771736R

000006114A

000042133E

406141306T 0 200 0 0 00 0

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

001027016R

000254447A

000036673E

406141306T 0 200 0 0 00 3

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

000261247R

000241066A

000053013E

406141306T 0 200 0 0 00 4

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

5703R

416A

502E

306T 0 200 0 0 00 5

INT EOM SAMPL IDTAL MODTL MODE SUBCH

506R

500A

346E

306T 0 200 0 0 00 6

INT EOM SAMPL IDTAL MODTL MODE SUBCH

404R

017A

074E

306T 0 200 0 0 00 7

INT EOM SAMPL IDTAL MODTL MODE SUBCH

712R

561A

712E

306T 0 200 0 0 05 9

INT EOM SAMPL IDTAL MODTL MODE SUBCH

251R

001A

132E

106T 0 200 0 0 05 10

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

001014640R

000111141A

000037301E

406141306T 0 200 0 0 05 14

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

000656740R

000101430A

000037133E

406141306T 0 200 0 0 00 15

DO NOT PHOTOGRAPH

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TEMPERATURE CELCIUS

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FIGURE 6

65				-29					
64					-25				
63						-22			
62							-19		
61								-18	
60									-15
59									-13
58									-11
57									-10
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37									-24
36									-27
35									-29
34									-32
33									-34
32									-36
31									-39
30									-41
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26									-49
25									-50

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***SECOND DIFFERENCE TABLE FOR 10 RADARS

		(4-6)	(7-9)	(10-12)	(13+)	LASTPOINT	EOM	SAMPL	IDTAL	MO
R112	00	(4-6)	(7-9)	(10-12)	(13+)	001132225R				
RANGE		0	0	0	0	000023004A				
AZMTH		0	0	0	0	000050415E				
ELVAL		0	0	0	0	406164726T	0	200	0	
TIME		0	0	0	0	LASTPOINT	EOM	SAMPL	IDTAL	MO
R122	03	(4-6)	(7-9)	(10-12)	(13+)	001175043R				
RANGE		0	0	0	0	000234500A				
AZMTH		0	0	0	0	000045041E				
ELVAL		0	0	0	0	406164726T	0	200	0	
TIME		0	0	0	0	LASTPOINT	EOM	SAMPL	IDTAL	MO
R123	04	(4-6)	(7-9)	(10-12)	(13+)	000323117R				
RANGE		2	0	0	0	000216563A				
AZMTH		0	0	0	0	000063703E				
ELVAL		0	0	0	0	406164726T	0	200	0	
TIME		0	0	0	0	LASTPOINT	EOM	SAMPL	IDTAL	MO
R124	05	(4-6)	(7-9)	(10-12)	(13+)	001205316R				
RANGE		0	0	0	0	115565A				
AZMTH		0	0	0	0	052011E				
ELVAL		0	0	0	0	164726T	0	200	0	
TIME		0	0	0	0	POINT	EOM	SAMPL	IDTAL	MO
R125	06	(4-6)	(7-9)	(10-12)	(13+)	234460R				
RANGE		0	0	0	0	114113A				
AZMTH		0	0	0	0	046746E				
ELVAL		0	0	0	0	164726T	0	200	0	
TIME		0	0	0	0	POINT	EOM	SAMPL	IDTAL	MO
R127	07	(4-6)	(7-9)	(10-12)	(13+)	151561R				
RANGE		0	0	0	0	147510A				
AZMTH		0	0	0	0	145135E				
ELVAL		0	0	0	0	164726T	0	200	0	
TIME		0	0	0	0	POINT	EOM	SAMPL	IDTAL	MO
R364	60	(4-6)	(7-9)	(10-12)	(13+)	173513R				
RANGE		0	0	0	0	04504A				
AZMTH		0	0	0	0	146322E				
ELVAL		0	0	0	0	164726T	0	200	0	
TIME		0	0	0	0	POINT	EOM	SAMPL	IDTAL	MO
R394	20	(4-6)	(7-9)	(10-12)	(13+)	76622R				
RANGE		0	0	0	0	23010A				
AZMTH		0	0	0	0	44776E				
ELVAL		0	0	0	0	164726T	0	200	0	
TIME		0	0	0	0	LASTPOINT	EOM	SAMPL	IDTAL	MO
R395	46	(4-6)	(7-9)	(10-12)	(13+)	001160556R				
RANGE		0	0	0	0	000127106A				
AZMTH		0	0	0	0	000045331E				
ELVAL		0	0	0	0	406164726T	0	200	0	
TIME		0	0	0	0	LASTPOINT	EOM	SAMPL	IDTAL	MO
R393	57	(4-6)	(7-9)	(10-12)	(13+)	001000621R				
RANGE		0	0	0	0	000115723A				
AZMTH		0	0	0	0	000045361E				
ELVAL		0	0	0	0	406164726T	0	200	0	
TIME		0	0	0	0					

***MISSING FRAMES = 0

DO NOT PHOTOGRAPH

SEQ NUMBER 5601

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

001122225R

000023009A

000050415E

406164726T 0 200 0 0 00 0

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

001175043R

000234500A

000045041E

406164726T 0 200 0 0 00 3

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

000323117R

000216563A

000063703E

406164726T 0 200 0 0 00 4

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

001205316R

115565A

052011E

164726T 0 200 0 0 00 5

POINT EOM SAMPL IDTAL MODTL MODE SUBCH

234460R

114113A

046746E

164726T 0 200 0 0 00 6

POINT EOM SAMPL IDTAL MODTL MODE SUBCH

51561R

147510A

145135E

64726T 0 200 0 0 00 7

POINT EOM SAMPL IDTAL MODTL MODE SUBCH

73513R

04504A

146322E

64726T 0 200 0 0 05 9

POINT EOM SAMPL IDTAL MODTL MODE SUBCH

76622R

23010A

44776E

64726T 0 200 0 0 05 10

POINT EOM SAMPL IDTAL MODTL MODE SUBCH

001160556R

000127106A

000045331E

406164726T 0 200 0 0 05 14

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

001000621R

000115723A

000045361E

406164726T 0 200 0 0 00 15

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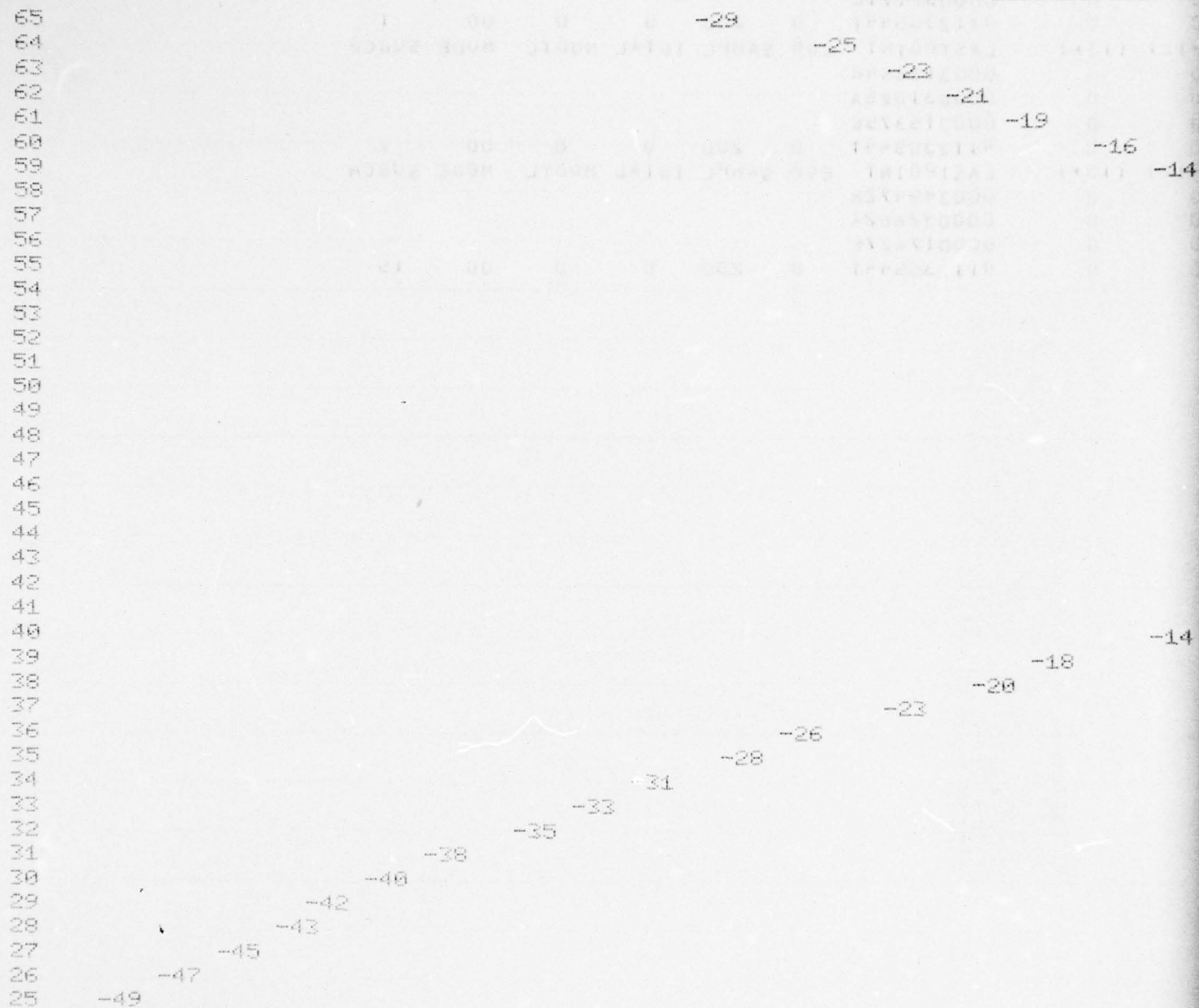
Z KM

TEMPERATURE CELCIUS

JUNE

FIGURE 7

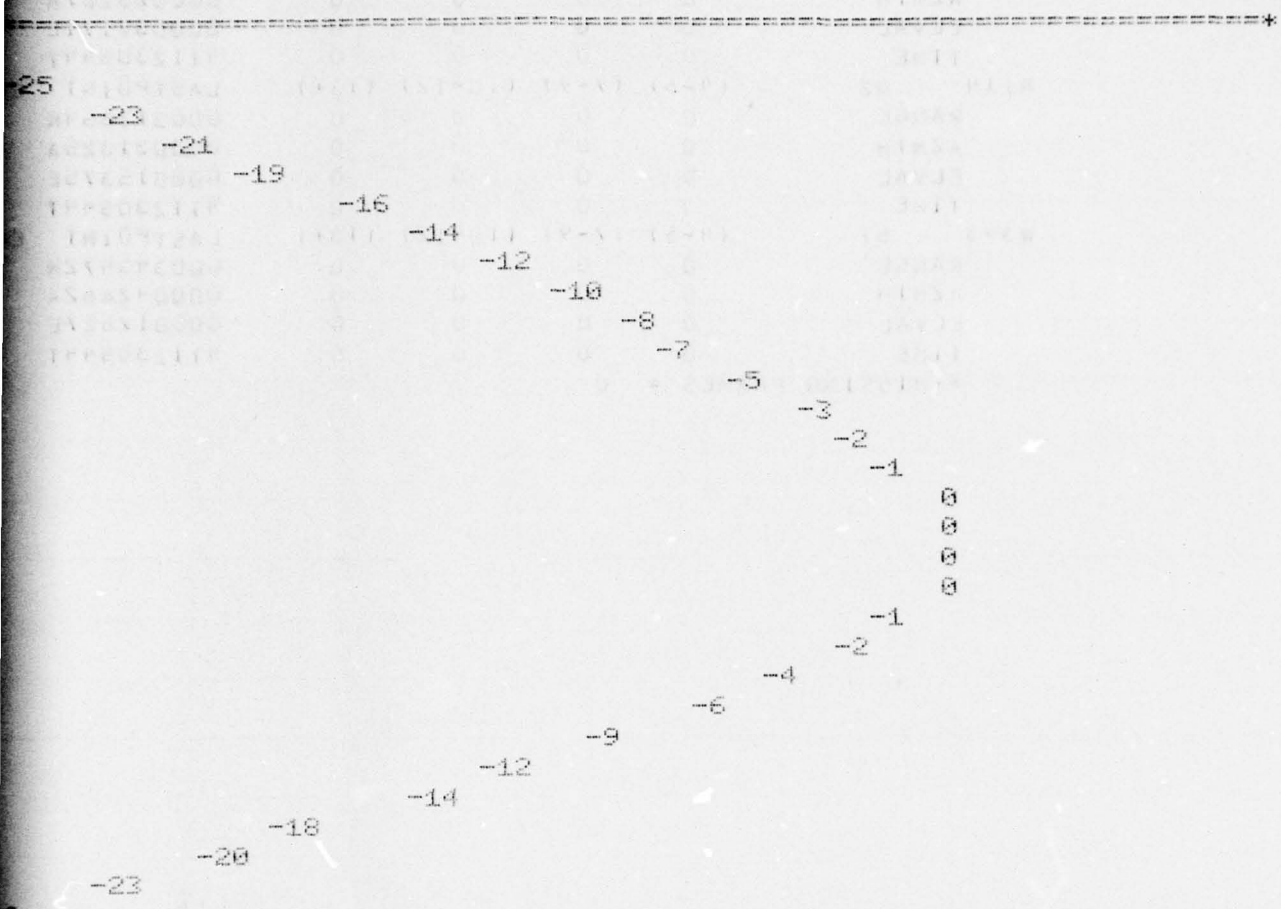
23



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FIGURE 7

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***SECOND DIFFERENCE TABLE FOR 3 RADARS

R113	01	(4-6)	(7-9)	(10-12)	(13+)	LASTPOINT	EOM	SAMPL	IDTAL
RANGE	0	0	0	0	0	001016341R			
AZMTH	0	0	0	0	0	000025267A			
ELVAL	0	0	0	0	0	000032171E			
TIME	0	0	0	0	0	411230544T	0	200	0
R114	02	(4-6)	(7-9)	(10-12)	(13+)	LASTPOINT	EOM	SAMPL	IDTAL
RANGE	0	0	0	0	0	000312654R			
AZMTH	0	0	0	0	0	000031325A			
ELVAL	0	0	0	0	0	000015375E			
TIME	0	0	0	0	0	411230544T	0	200	0
R393	57	(4-6)	(7-9)	(10-12)	(13+)	LASTPOINT	EOM	SAMPL	IDTAL
RANGE	0	0	0	0	0	000345472R			
AZMTH	0	0	0	0	0	000042662A			
ELVAL	0	0	0	0	0	000017627E			
TIME	0	0	0	0	0	411230544T	0	200	0

**MISSING FRAMES = 0

DO NOT PHOTOGRAPH

SEQ NUMBER 7201

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

001016341R

000025267A

000032171E

411230544T 0 200 0 0 00 1

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

000312654R

000031325A

000015375E

411230544T 0 200 0 0 00 2

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

000345472R

000042662A

000017627E

411230544T 0 200 0 0 00 15

2

DO NOT PHOTOGRAPH

2 KM

TEMPERATURE CELCIUS

JULY

FIGURE 8

2

***SECOND DIFFERENCE TABLE FOR 10 RADARS

RADAR	TIME	(4-6)	(7-9)	(10-12)	(13+)	LASTPOINT	EOM	SAMPL	IDTAL
R112	00	(4-6)	(7-9)	(10-12)	(13+)	002234406R			
	RANGE	0	0	0	0	000137157A			
	AZMTH	0	0	0	0	000116746E			
	ELVAL	0	0	0	0	406352066T	0	200	0
	TIME	0	0	0	0				
R122	03	(4-6)	(7-9)	(10-12)	(13+)	002341243R			
	RANGE	0	0	0	0	000075300A			
	AZMTH	0	0	0	0	000111653E			
	ELVAL	0	3	0	0	406352066T	0	200	0
	TIME	0	0	0	0				
R123	04	(4-6)	(7-9)	(10-12)	(13+)	000636146R			
	RANGE	2	0	0	0	000042200A			
	AZMTH	0	0	0	0	000146515E			
	ELVAL	0	0	0	0	406352066T	0	200	0
	TIME	0	0	0	0				
R124	05	(4-6)	(7-9)	(10-12)	(13+)	0362464R			
	RANGE	0	0	0	0	0231321A			
	AZMTH	0	0	0	0	0126021E			
	ELVAL	0	0	0	0	0352066T	0	200	0
	TIME	0	0	0	0				
R125	06	(4-6)	(7-9)	(10-12)	(13+)	0436243R			
	RANGE	0	0	0	0	0227276A			
	AZMTH	0	0	0	0	0116636E			
	ELVAL	0	0	0	0	0352066T	0	200	0
	TIME	0	0	0	0				
R127	07	(4-6)	(7-9)	(10-12)	(13+)	0321041R			
	RANGE	2	0	0	0	0313247A			
	AZMTH	0	0	0	0	0112261E			
	ELVAL	0	0	0	0	0352066T	0	200	0
	TIME	0	0	0	0				
R364	60	(4-6)	(7-9)	(10-12)	(13+)	0532204R			
	RANGE	0	0	0	0	0206355A			
	AZMTH	0	0	0	0	0120060E			
	ELVAL	0	0	0	0	0352066T	0	200	0
	TIME	0	0	0	0				
R394	20	(4-6)	(7-9)	(10-12)	(13+)	0747446R			
	RANGE	0	0	0	0	0242651A			
	AZMTH	0	0	0	0	0114651E			
	ELVAL	0	0	0	0	06352066T	0	200	0
	TIME	0	0	0	0				
R395	46	(4-6)	(7-9)	(10-12)	(13+)	002310017R			
	RANGE	0	0	0	0	000252765A			
	AZMTH	0	0	0	0	000112760E			
	ELVAL	0	0	0	0	406352066T	0	200	0
	TIME	0	0	0	0				
R393	57	(4-6)	(7-9)	(10-12)	(13+)	001753755R			
	RANGE	0	0	0	0	000230552A			
	AZMTH	0	0	0	0	000121374E			
	ELVAL	0	0	0	0	406352066T	0	200	0
	TIME	0	0	0	0				

***MISSING FRAMES = 0

DO NOT PHOTOGRAPH

SEQ NUMBER 6801

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

002234406R

000137157A

000116746E

406352066T 0 200 0 0 00 0

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

002341243R

000075300A

000111653E

406352066T 0 200 0 0 00 3

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

000636146R

000042200A

000146515E

406352066T 0 200 0 0 00 4

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

2362464R

0231321A

0126021E

5352066T 0 200 0 0 00 5

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

2436243R

0227276A

0116636E

5352066T 0 200 0 0 00 6

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

0321041R

0313247A

0112261E

5352066T 0 200 0 0 00 7

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

2532204R

0206355A

0120060E

5352066T 0 200 0 0 05 9

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

0747446R

0242651A

0114651E

406352066T 0 200 0 0 05 10

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

002310017R

000252765A

000112760E

406352066T 0 200 0 0 05 14

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

001753755R

000230552A

000121374E

406352066T 0 200 0 0 00 15

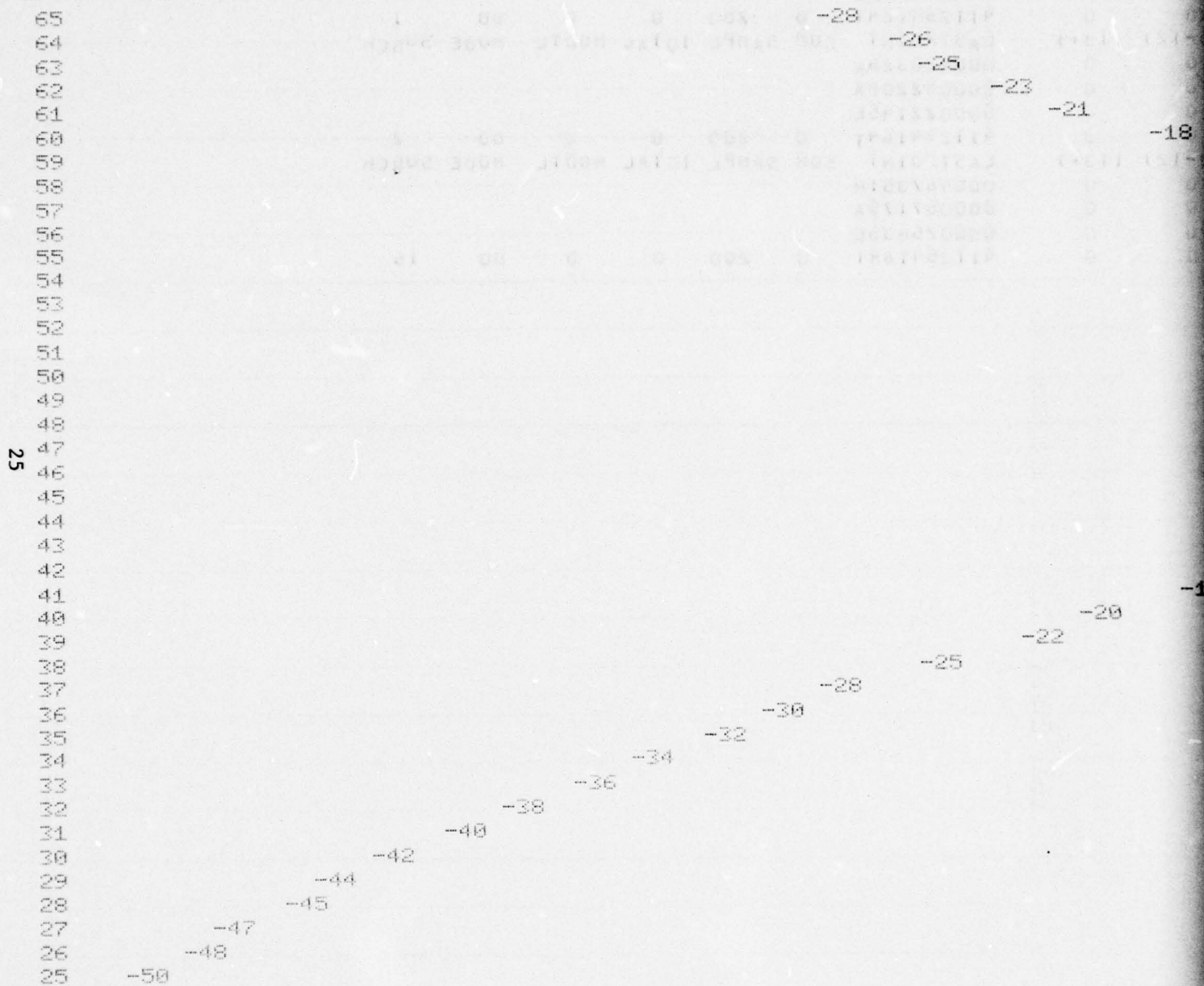
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2 KM

TEMPERATURE CELCIUS

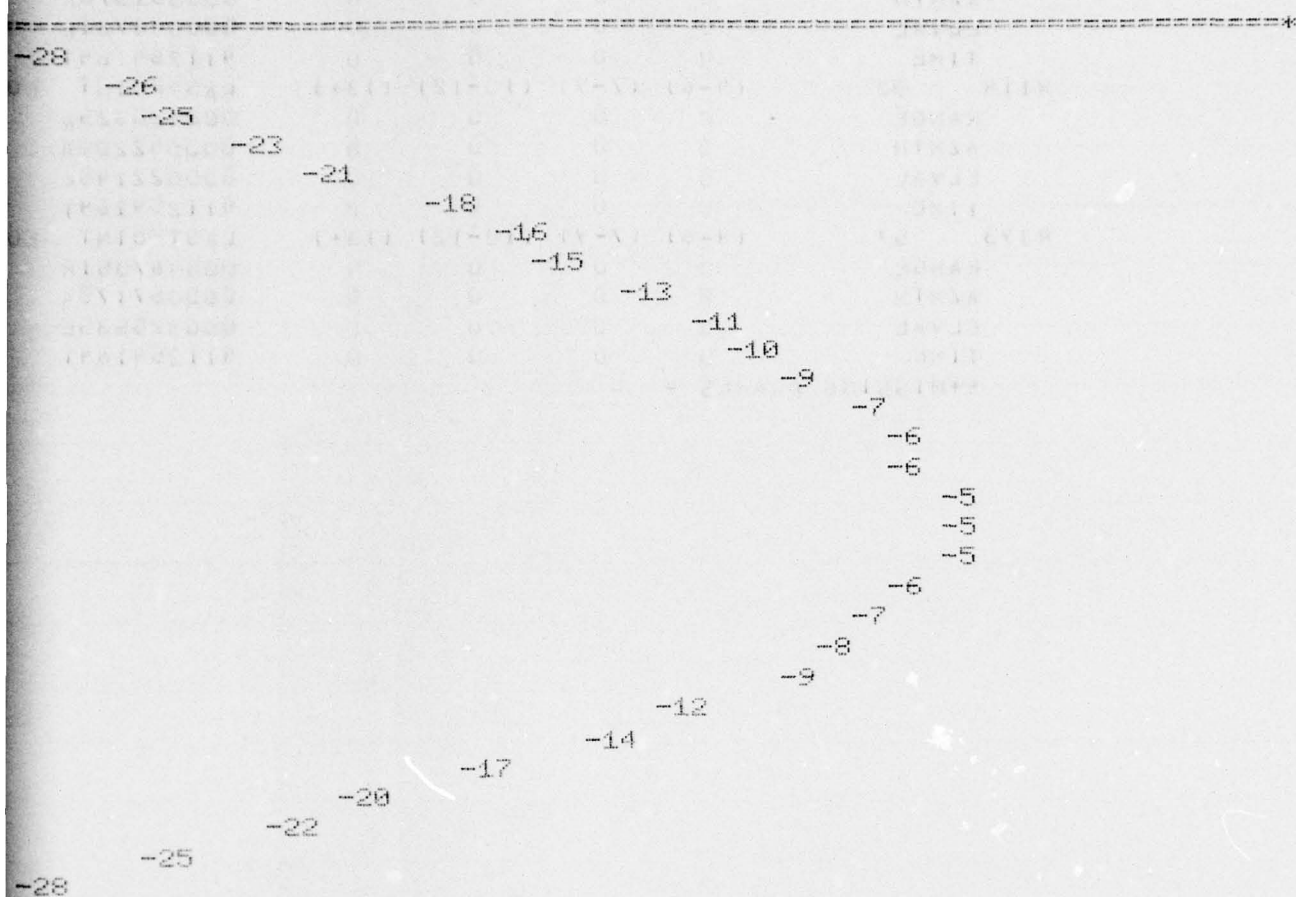
AUGUST

FIGURE 9



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FIGURE 9



***SECOND DIFFERENCE TABLE FOR 3 RADARS

R113 01 (4-6) (7-9) (10-12) (13+)

RANGE 0 0 0 0
 AZMTH 0 0 0 0
 ELVAL 0 0 0 0
 TIME 0 0 0 0

R114 02 (4-6) (7-9) (10-12) (13+)

RANGE 0 0 0 0
 AZMTH 0 0 0 0
 ELVAL 0 0 0 0
 TIME 0 0 0 0

R393 57 (4-6) (7-9) (10-12) (13+)

RANGE 0 0 0 0
 AZMTH 0 0 0 0
 ELVAL 0 0 0 0
 TIME 0 0 0 0

**MISSING FRAMES = 0

LASTPOINT EOM SAMPL IDTAL MOD

001304000R
 000051570A
 00004373IE
 411254164T 0 200 0 0

LASTPOINT EOM SAMPL IDTAL MOD

000420325R
 000042200A
 000022145E
 411254164T 0 200 0 0

LASTPOINT EOM SAMPL IDTAL MOD

000467351R
 000057175A
 000025535E
 411254164T 0 200 0 0

DO NOT PHOTODUPLICATE

1
SEQ NUMBER 7401

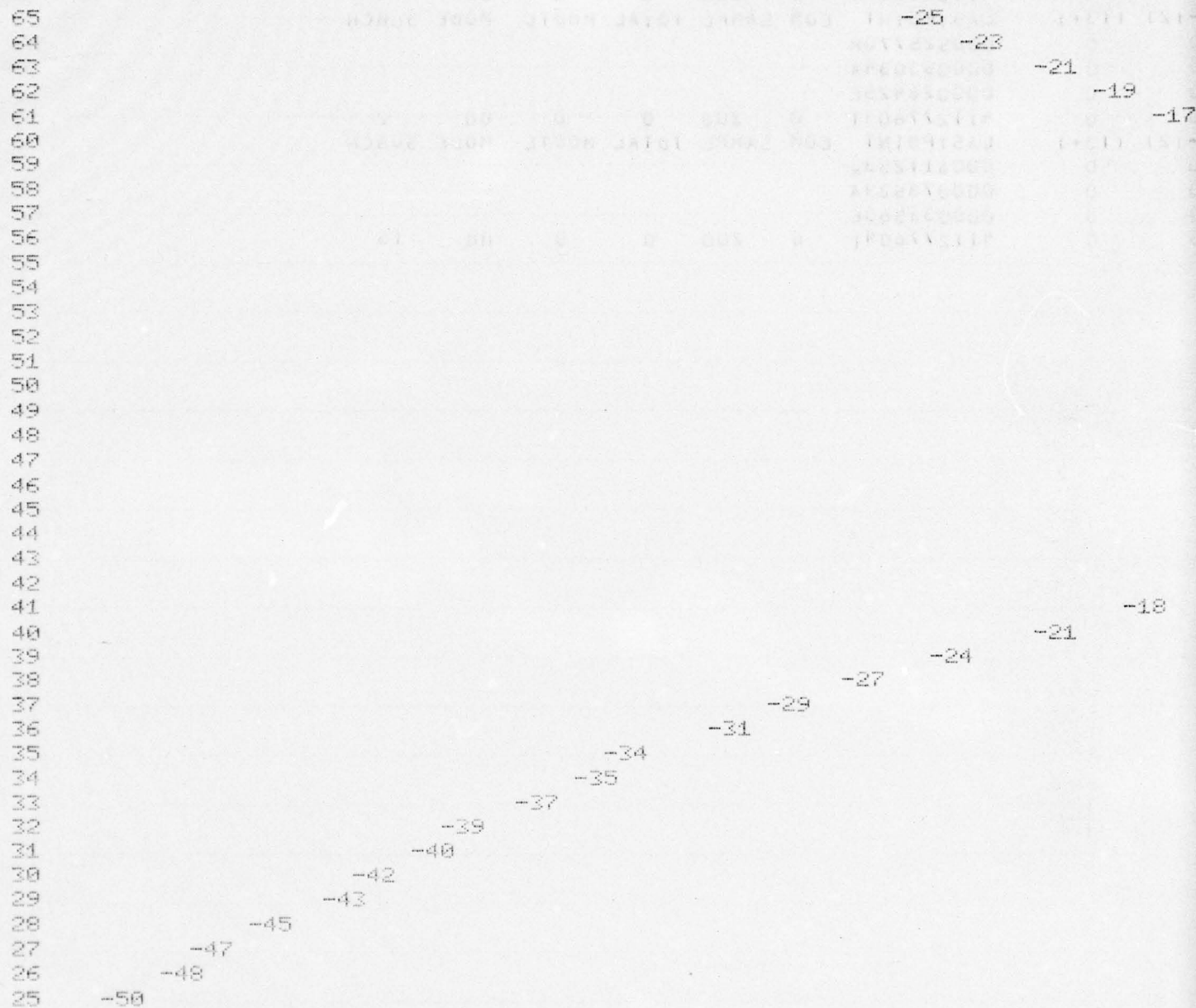
+) LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH
001304000R
000051570A
00004373IE
411254164T 0 200 0 0 00 1
+) LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH
000420325R
000042200A
000022145E
411254164T 0 200 0 0 00 2
+) LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH
00046735IR
000057175A
000025535E
411254164T 0 200 0 0 00 15



Z KM TEMPERATURE CELCIUS

SEPTEMBER 11 FIGURE 10

26

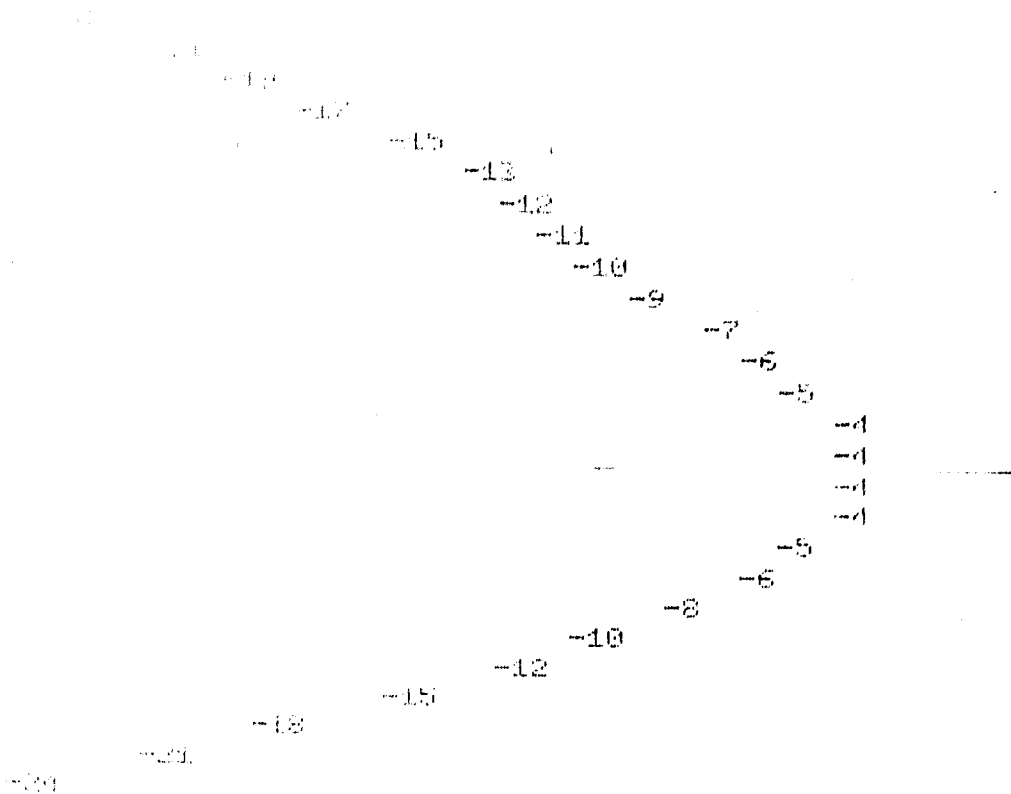


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FIGURE 10

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***SECOND DIFFERENCE TABLE FOR 3 RADARS

R113 01 (4-6) (7-9) (10-12) (13+)

RANGE	0	0	0	0
AZMTH	0	0	0	0
ELVAL	0	0	0	0
TIME	0	0	0	0

LASTPOINT EOM SAMPL IDTAL MO

001571441R
000075716A
000055305E
411277604T 0 200 0

R114 02 (4-6) (7-9) (10-12) (13+)

RANGE	0	0	0	0
AZMTH	0	0	0	0
ELVAL	0	0	0	0
TIME	0	0	0	0

LASTPOINT EOM SAMPL IDTAL MO

000525770R
000053034A
000026425E
411277604T 0 200 0

R393 57 (4-6) (7-9) (10-12) (13+)

RANGE	0	0	0	0
AZMTH	0	0	0	0
ELVAL	0	0	0	0
TIME	0	0	0	0

LASTPOINT EOM SAMPL IDTAL MO

000611253R
000073524A
000033560E
411277604T 0 200 0

••MISSING FRAMES = 0

DO NOT REGRAPH

SEQ NUMBER 7601

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

001571441R

000075716A

000055305E

411277604T 0 200 0 0 00 1

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

000525770R

000053034A

000026425E

411277604T 0 200 0 0 00 2

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

000611253R

000073524A

000033560E

411277604T 0 200 0 0 00 15

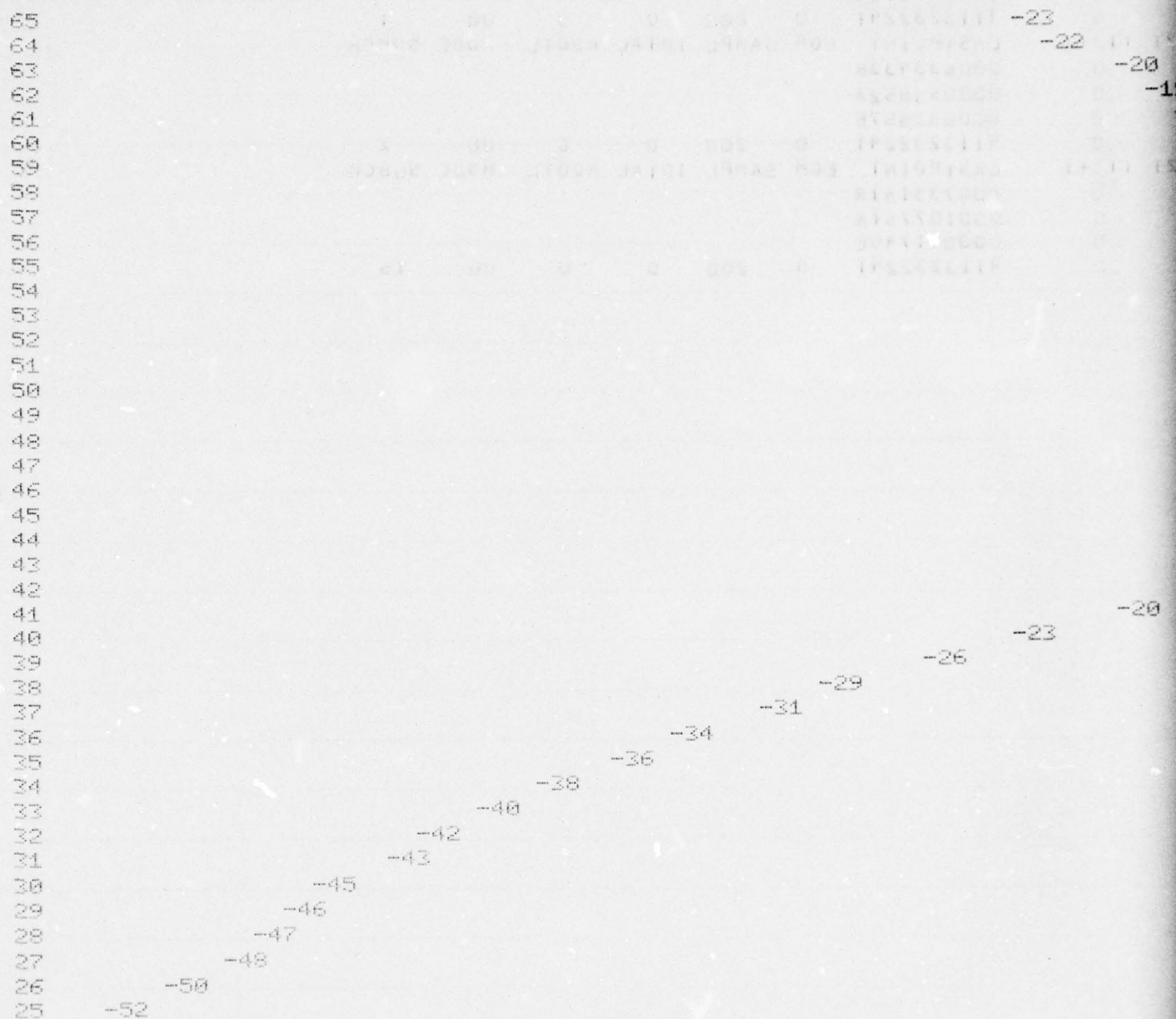
DO NOT PROCEED

Z KM

TEMPERATURE CELCIUS

OCTOBER FIGURE 11

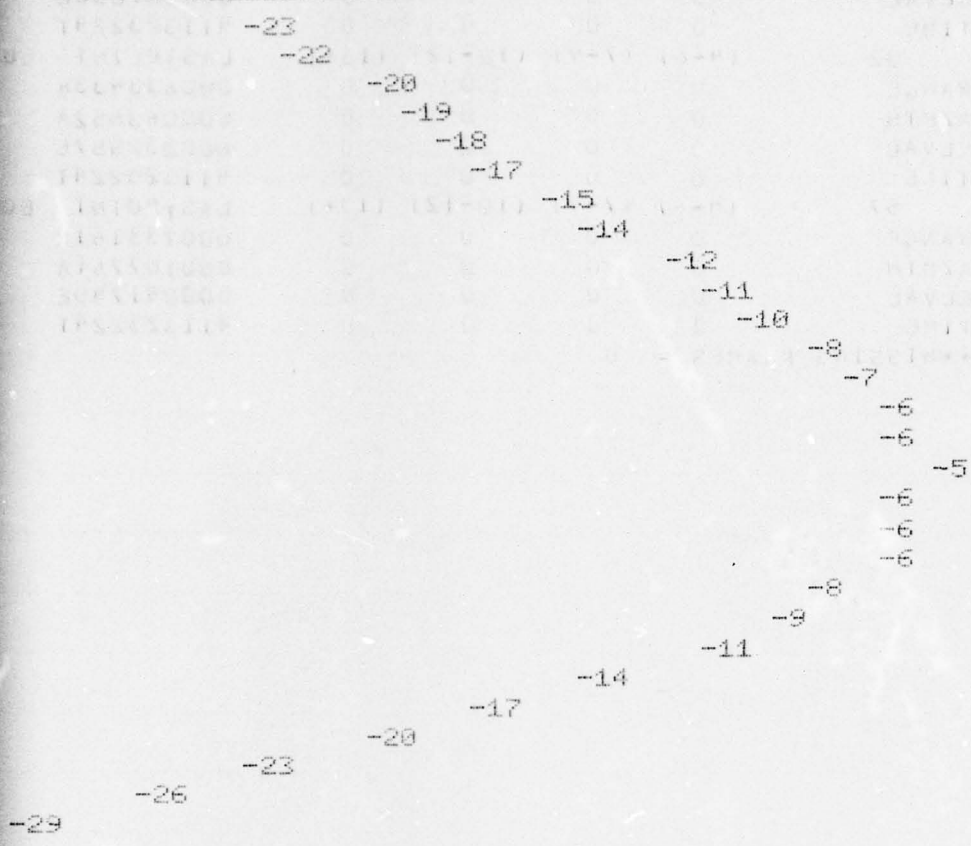
27



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FIGURE 11

2



***SECOND DIFFERENCE TABLE FOR 3 RADARS

R113 01 (4-6) (7-9) (10-12) (13+)

RANGE 0 0 0 0
 AZMTH 0 0 0 0
 ELVAL 0 0 0 0
 TIME 0 0 0 0

LASTPOINT EOM SAMPL IDTAL MODT

002057074R
 000122251A
 000067036E
 411323224T 0 200 0 0

R114 02 (4-6) (7-9) (10-12) (13+)

RANGE 0 0 0 0
 AZMTH 0 0 0 0
 ELVAL 0 0 0 0
 TIME 0 0 0 0

LASTPOINT EOM SAMPL IDTAL MODT

000633433R
 000063652A
 000032557E
 411323224T 0 200 0 0

R393 57 (4-6) (7-9) (10-12) (13+)

RANGE 0 0 0 0
 AZMTH 0 0 0 0
 ELVAL 0 0 0 0
 TIME 0 0 0 0

LASTPOINT EOM SAMPL IDTAL MODT

000733161R
 000107761A
 000041740E
 411323224T 0 200 0 0

***MISSING FRAMES = 0

DO NOT PHOTOGRAPH

RADARS

SEQ NUMBER 7801

12) (13+)	LASTPOINT	EOM	SAMPL	IDTAL	MODTL	MODE	SUBCH
0	002057074R						
0	000122251A						
0	000067036E						
0	411323224T	0	200	0	0	00	1
12) (13+)	LASTPOINT	EOM	SAMPL	IDTAL	MODTL	MODE	SUBCH
0	000633433R						
0	000063652A						
0	000032557E						
0	411323224T	0	200	0	0	00	2
12) (13+)	LASTPOINT	EOM	SAMPL	IDTAL	MODTL	MODE	SUBCH
0	000733161R						
0	000107761A						
0	000041740E						
0	411323224T	0	200	0	0	00	15

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DO NOT PHOTOGRAPH

2 KM

TEMPERATURE CELCIUS

NOVEMBER

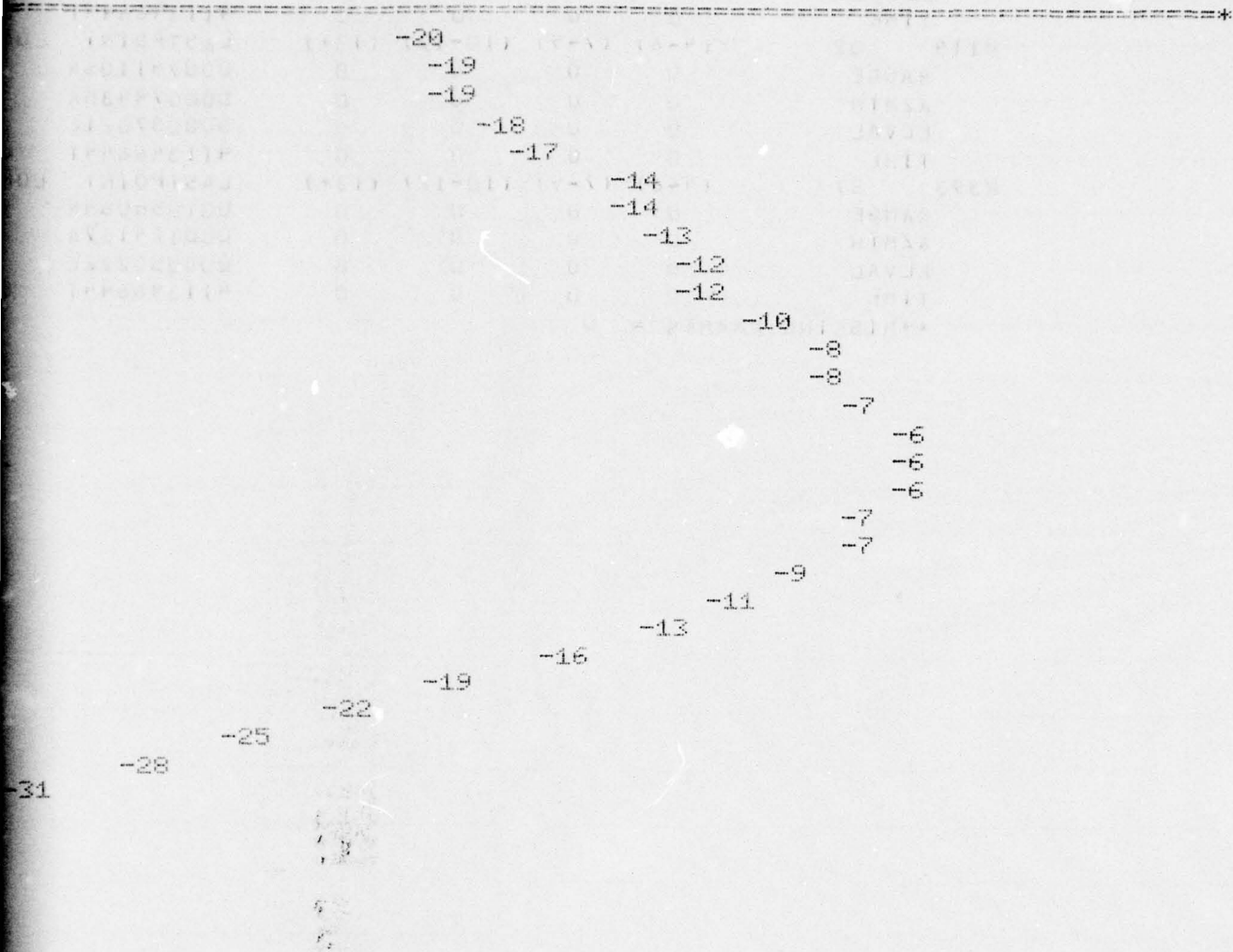
FIGURE 12

28



NUMBER **FIGURE 12**

2



***SECOND DIFFERENCE TABLE FOR 3 RADARS

R113 01 (4-6) (7-9) (10-12) (13+)

RANGE 0 0 0 0
 AZMTH 0 0 0 0
 ELVAL 0 0 0 0
 TIME 0 0 0 0

LASTPOINT EOM SAMPL IDTAL MO SEQ

002344531R
 000146563A
 000100712E
 411346644T 0 200 0

R114 02 (4-6) (7-9) (10-12) (13+)

RANGE 0 0 0 0
 AZMTH 0 0 0 0
 ELVAL 0 0 0 0
 TIME 0 0 0 0

LASTPOINT EOM SAMPL IDTAL MO

000741105R
 000074435A
 000037021E
 411346644T 0 200 0

R393 57 (4-6) (7-9) (10-12) (13+)

RANGE 0 0 0 0
 AZMTH 0 0 0 0
 ELVAL 0 0 0 0
 TIME 0 0 0 0

LASTPOINT EOM SAMPL IDTAL MO

001055054R
 000124157A
 000050222E
 411346644T 0 200 0

***MISSING FRAMES = 0

DO NOT PHOTOGRAPH

SEQ NUMBER 8001

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

00234453IR

000146563A

000100712E

411346644T 0 200 0 0 00 1

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

000741105R

000074435A

000037021E

411346644T 0 200 0 0 00 2

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

001055054R

000124157A

000050222E

411346644T 0 200 0 0 00 15

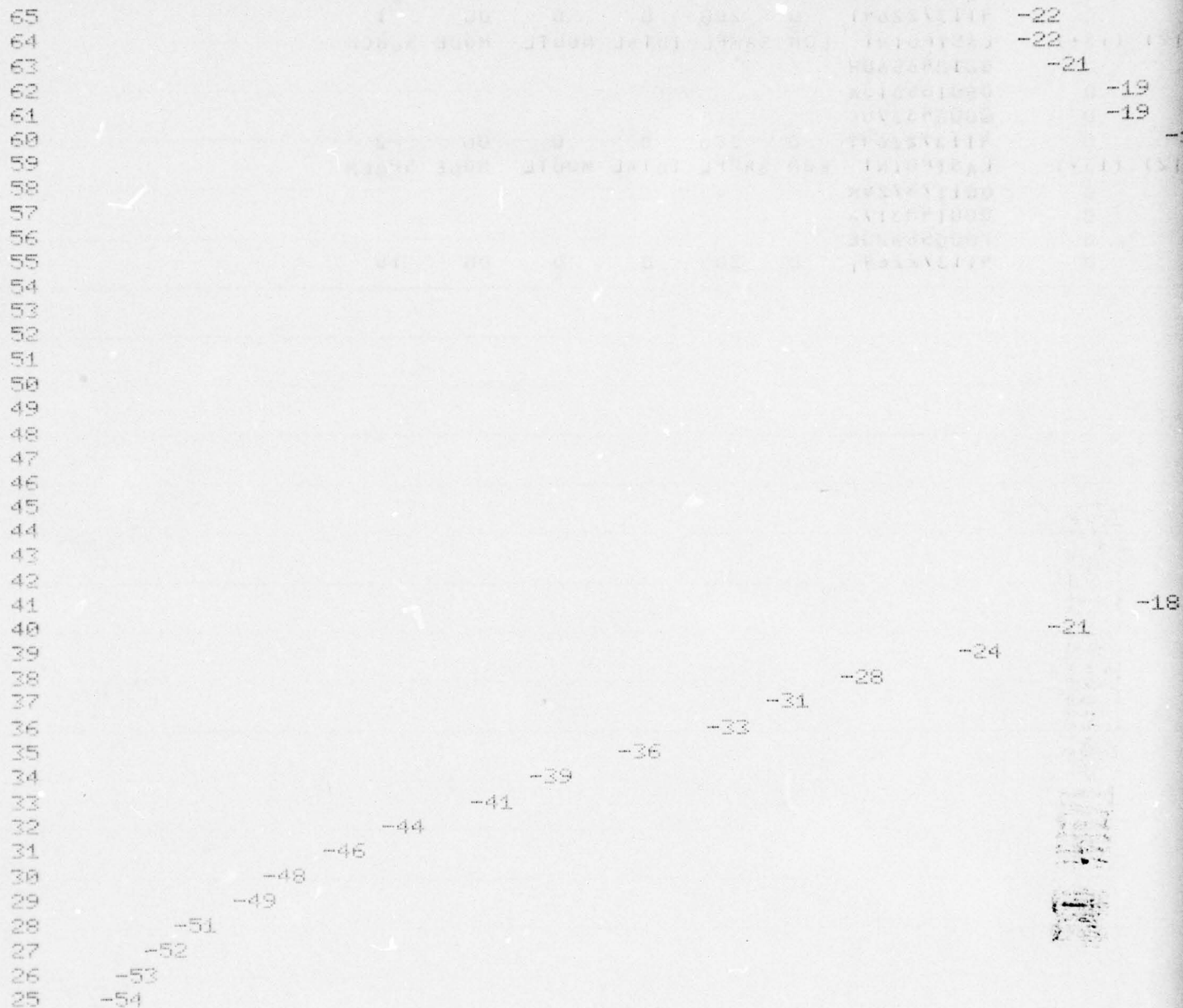
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TEMPERATURE CELCIUS

DECEMBER

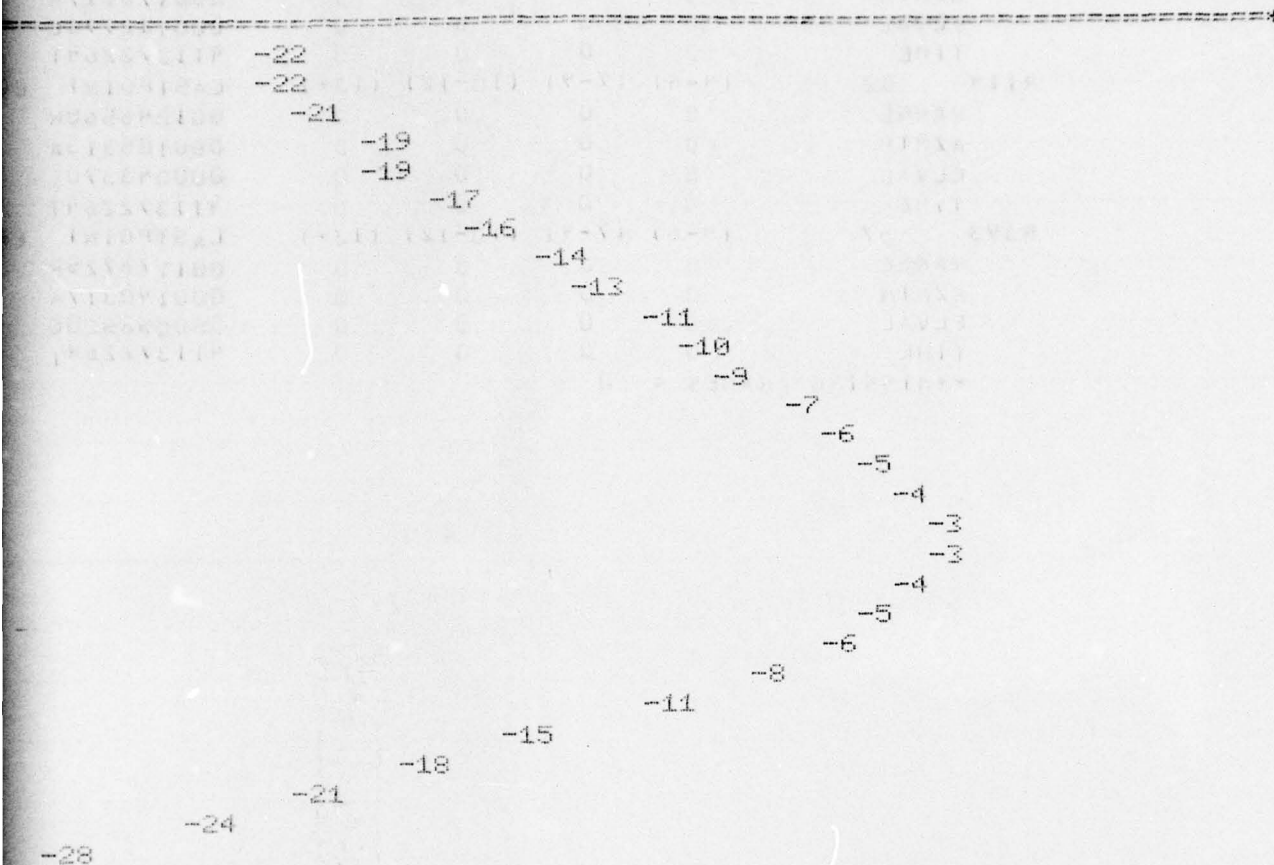
FIGURE 13

29



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BER FIGURE 13



***SECOND DIFFERENCE TABLE FOR 3 RADARS

SEQ NUM

R113	01	(4-6)	(7-9)	(10-12)	(13+)	LASTPOINT	EOM	SAMPL	IDTAL	MODT
RANGE		0	0	0	0	002632170R				
AZMTH		0	0	0	0	000173017A				
ELVAL		0	0	0	0	000112776E				
TIME		0	0	0	0	411372264T	0	200	0	0
R114	02	(4-6)	(7-9)	(10-12)	(13+)	LASTPOINT	EOM	SAMPL	IDTAL	MODT
RANGE		0	0	0	0	001046560R				
AZMTH		0	0	0	0	000105313A				
ELVAL		0	0	0	0	000043370E				
TIME		0	0	0	0	411372264T	0	200	0	0
R393	57	(4-6)	(7-9)	(10-12)	(13+)	LASTPOINT	EOM	SAMPL	IDTAL	MODT
RANGE		0	0	0	0	001176725R				
AZMTH		0	0	0	0	000140317A				
ELVAL		0	0	0	0	000056520E				
TIME		0	0	0	0	411372264T	0	200	0	0

***MISSING FRAMES = 0

DO NOT PHOTOGRAPH

SEQ NUMBER 8201

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

002632170R

000173017A

000112776E

411372264T 0 200 0 0 00 1

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

001046560R

000105313A

000043370E

411372264T 0 200 0 0 00 2

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

001176725R

000140317A

000056520E

411372264T 0 200 0 0 00 15

DO NOT PHOTOGRAPH

2 KM E-W COMPONENT WINDS MPS +E -W

JANUARY

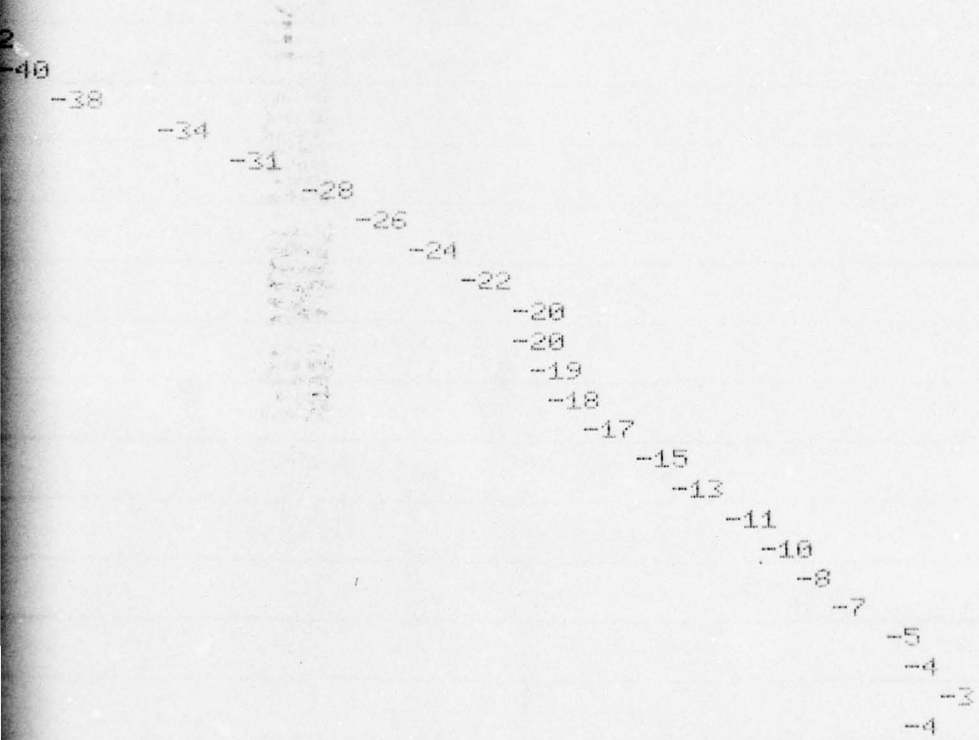
FIGURE 14

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FIGURE 14



***SECOND DIFFERENCE TABLE FOR 1 RADARS

R122 03 (4-6) (7-9) (10-12) (13+)

	(4-6)	(7-9)	(10-12)	(13+)
RANGE	0	0	0	0
DEPTH	0	0	0	0
ELVAL	0	0	0	0
TIME	0	0	0	0

**MISSING FRAMES = 0

LASTPOINT	EOM	SAMPL	IDTAL	MOD	SEQ	MU
001412450R						
000135115A						
000126001E						
4271540225	0	200	0	0		

DO NOT PHOTOGRAPH

SEQ NUMBER 11601

POINT	EOM	SAMPL	IDTAL	MODTL	MODE	SUBCH
12450R						
135115A						
126001E						
154022F	0	200	0	0	00	3

2

DO NOT PHOTOGRAPH

Z KM E-W COMPONENT WINDS MPS +E -W

FEBRUARY FIGURE 15

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FEBRUARY FIGURE 15

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***SECOND DIFFERENCE TABLE FOR 1 RADARS
 R122 03 (4-6) (7-9) (10-12) (13+)
 RANGE 0 0 0 0
 AZMTH 0 0 0 0
 ELVAL 0 0 0 0
 TIME 0 0 0 0
 **MISSING FRAMES = 0

LASTPOINT EOM SAMPL IDTAL
 001572342R
 000125671A
 000131636E
 427130402T 0 200 0

DO NOT PHOTOGRAPH

SEQ NUMBER 11401

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

001572342R

000125671A

000131636E

427130402T

0 200 0 0 00 3

2

DO NOT PHOTOGRAPH

1

Z KM

E-W COMPONENT WINDS MPS +E -W

MARCH

FIGURE 16

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FIGURE 16

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***SECOND DIFFERENCE TABLE FOR 1 RADARS

R122	03	(4-6)	(7-9)	(10-12)	(13+)
RANGE	0	0	0	0	0
DEPTH	0	0	0	0	0
ELVAL	0	0	0	0	0
TIME	0	0	0	0	0

LASTPOINT	EOM	SAMPL	IDTAL	MODTL	SEQ NUM
001752237R					
000115412A					
000135405E					
427104762T	0	200	0	0	

**MISSING FRAMES = 0

DO NOT PHOTOGRAPH

SEQ NUMBER 11201

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

001752237R

000115412A

000135405E

427104762T

0 200 0 0 00 3

2

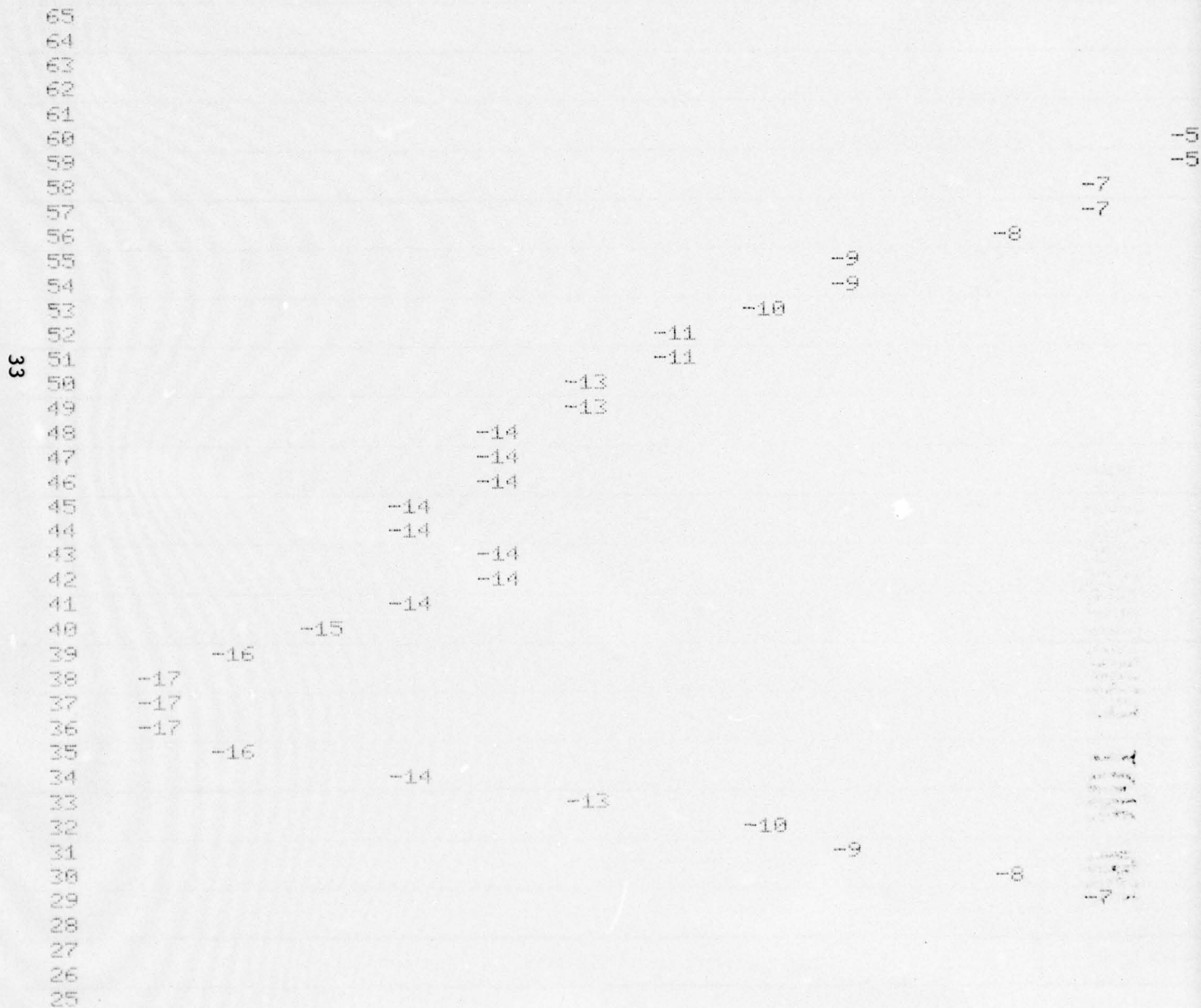
DO NOT PHOTOGRAPH

2 KM

E-W COMPONENT WINDS MPS +E -W

APRIL

FIGURE 17



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FIGURE 17

***SECOND DIFFERENCE TABLE FOR

1 RADARS

SEQ NUM

R122 03

(4-6) (7-9) (10-12) (13+)

LASTPOINT EOM SAMPL IDTAL MODT

RANGE 0 0 0 0

002132127R

DEPTH 0 0 0 0

000105146A

ELVAL 0 0 0 0

000141170E

TIME 0 0 0 0

427061342T

0 200 0 0

**MISSING FRAMES = 0

DO NOT PHOTOGRAPH

SEQ NUMBER 11001

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

002132127R

000105146A

000141170E

427061342T

0 200 0 0 00 3

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DO NOT PHOTOGRAPH

Z KM E-W COMPONENT WINDS MPS +E -W

MAY

FIGURE 18

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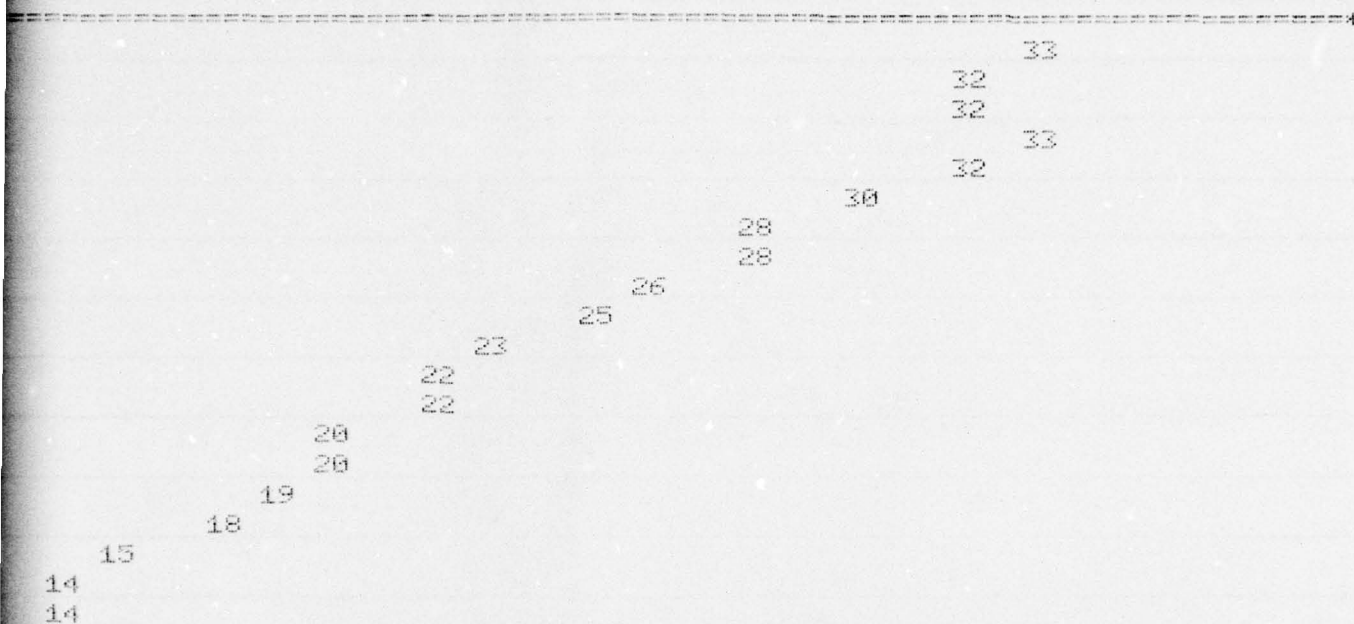


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MAY

FIGURE 18

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***SECOND DIFFERENCE TABLE FOR 1 RADARS

R122	03	(4-6)	(7-9)	(10-12)	(13+)
RANGE	0	0	0	0	0
DEPTH	0	0	0	0	0
ELVAL	0	0	0	0	0
TIME	0	0	0	0	0

**MISSING FRAMES = 0

SEQ NUMBER
 LASTPOINT EOM SAMPL IDTAL MODTL
 002651560R
 000054202A
 000154414E
 426766662T 0 200 0 0

DO NOT PHOTOGRAPH

SEQ NUMBER 10401

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

002651560R

000054202A

000154414E

426766662T

0 200 0 0 00 3

2

DO NOT PHOTOGRAPH

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Z KM E-W COMPONENT WINDS MPS +E -W

JUNE

FIGURE 19

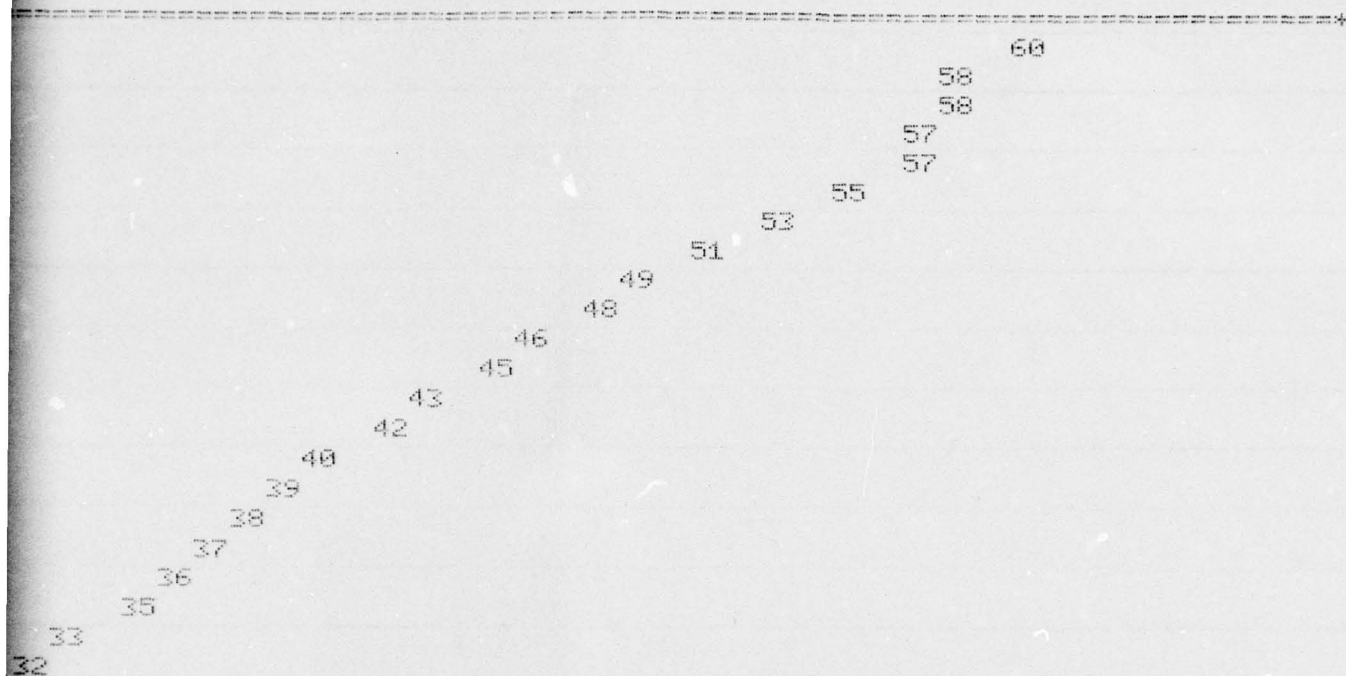


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JUNE

FIGURE 19

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***SECOND DIFFERENCE TABLE FOR 1 RADARS

SEQ NUMB

R122	03	(4-6)	(7-9)	(10-12)	(13+)	LASTPOINT	EOM	SAMPL	IDTAL	MODTL
RANGE		0	0	0	0	00303144R				
DEPTH		0	0	0	0	000043721A				
ELVAL		0	0	0	0	000160067E				
TIME		0	0	0	0	426743242T	0	200	0	0

**MISSING FRAMES = 0

DO NOT PHOTOGRAPH

SEQ NUMBER 10201

LASTPOINT	EOM	SAMPL	IDTAL	MODTL	MODE	SUBCH
003031444R						
000043721A						
000160067E						
426743242T	0	200	0	0	00	3

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DO NOT PHOTOGRAPH

Z KM

E-W COMPONENT WINDS MPS +E -W

JULY

FIGURE 20

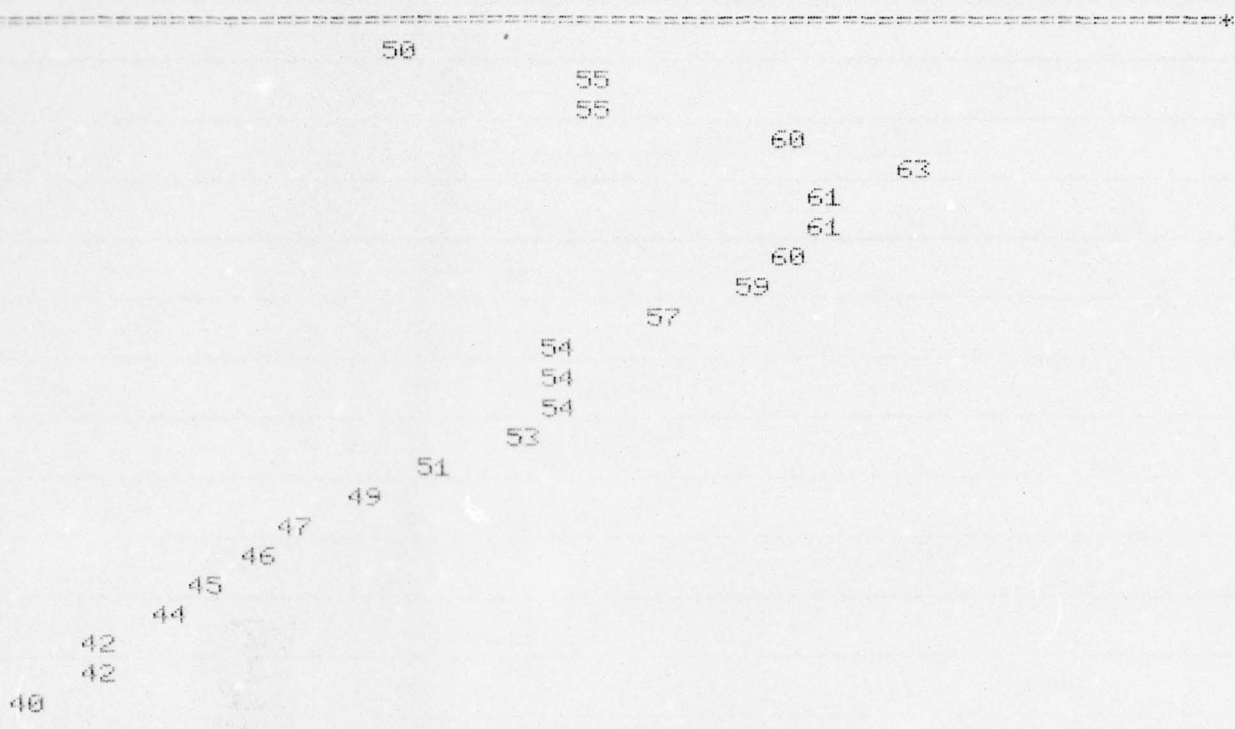
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JULY **FIGURE 20**



***SECOND DIFFERENCE TABLE FOR 1 RADARS

SEQ NUMBE

R122	03	(4-6)	(7-9)	(10-12)	(13+)	LASTPOINT	EOM	SAMPL	IDTAL	MODTL
RANGE		0	0	0	0	003211331R				
ALMTH		0	0	0	0	000033464A				
ELVAL		0	0	0	0	000163517E				
TIME		0	0	0	0	426717622T	0	200	0	0

**MISSING FRAMES = 0

DO NOT PHOTOGRAPH

SEQ NUMBER 10001

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH
003211331R
000033464A
000163517E
426717622T 0 200 0 0 00 3

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DO NOT PHOTOGRAPH

2 KM

E-W COMPONENT WINDS MPS +E -W

AUGUST

FIGURE 21



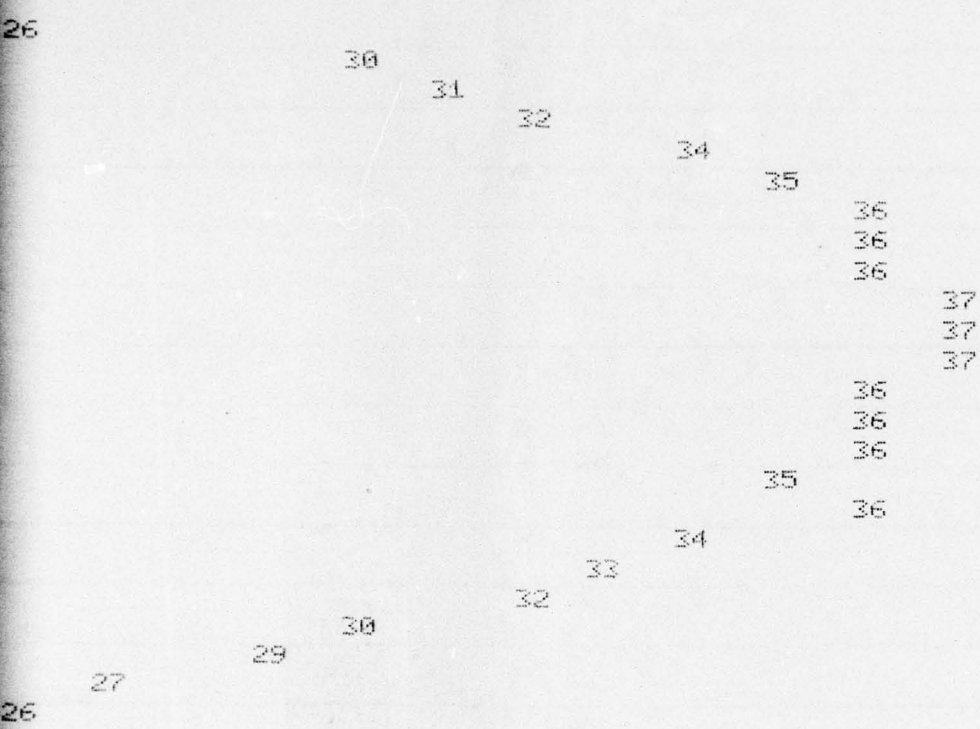
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AUGUST FIGURE 21

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***SECOND DIFFERENCE TABLE FOR 1 RADARS

R122 03 (4-6) (7-9) (10-12) (13+)

RANGE	0	0	0	0
ALMTH	0	0	0	0
ELVAL	0	0	0	0
TIME	0	0	0	0

**MISSING FRAMES = 0

LASTPOINT	EOM	SAMPL	IDTAL	MO
003371205R				
000023222A				
000167703E				
426674202T	0	200	0	

DO NOT PHOTOGRAPH

SEQ NUMBER 9801

LASTPOINT	EOM	SAMPL	IDTAL	MODTL	MODE	SUBCH
003371205R						
000023222A						
000167703E						
426674202T	0	200	0	0	00	3

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DO NOT PHOTOGRAPH

Z KM E-W COMPONENT WINDS MPS +E -W

SEPTEMBER

FIGURE 22



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SEPTEMBER

FIGURE 22

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SEPTEMBER 1961
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SEPTEMBER 1961

***SECOND DIFFERENCE TABLE FOR 1 RADARS

R122	03	(4-6)	(7-9)	(10-12)	(13+)
RANGE	0	0	0	0	0
DEPTH	0	0	0	0	0
ELVAL	0	0	0	0	0
TIME	0	0	0	0	0

LASTPOINT	EOM	SAMPL	IDTAL	MODT	SEQ NUM
003551062R					
000012753A					
000173645E					
426650562T	0	200	0	0	0

**MISSING FRAMES = 0

DO NOT PHOTOGRAPH

SEQ NUMBER 9601

LASTPOINT EOM SAMPL IDTAL MODTL MODE SUBCH

003551062R

000012753A

000173645E

426650562T

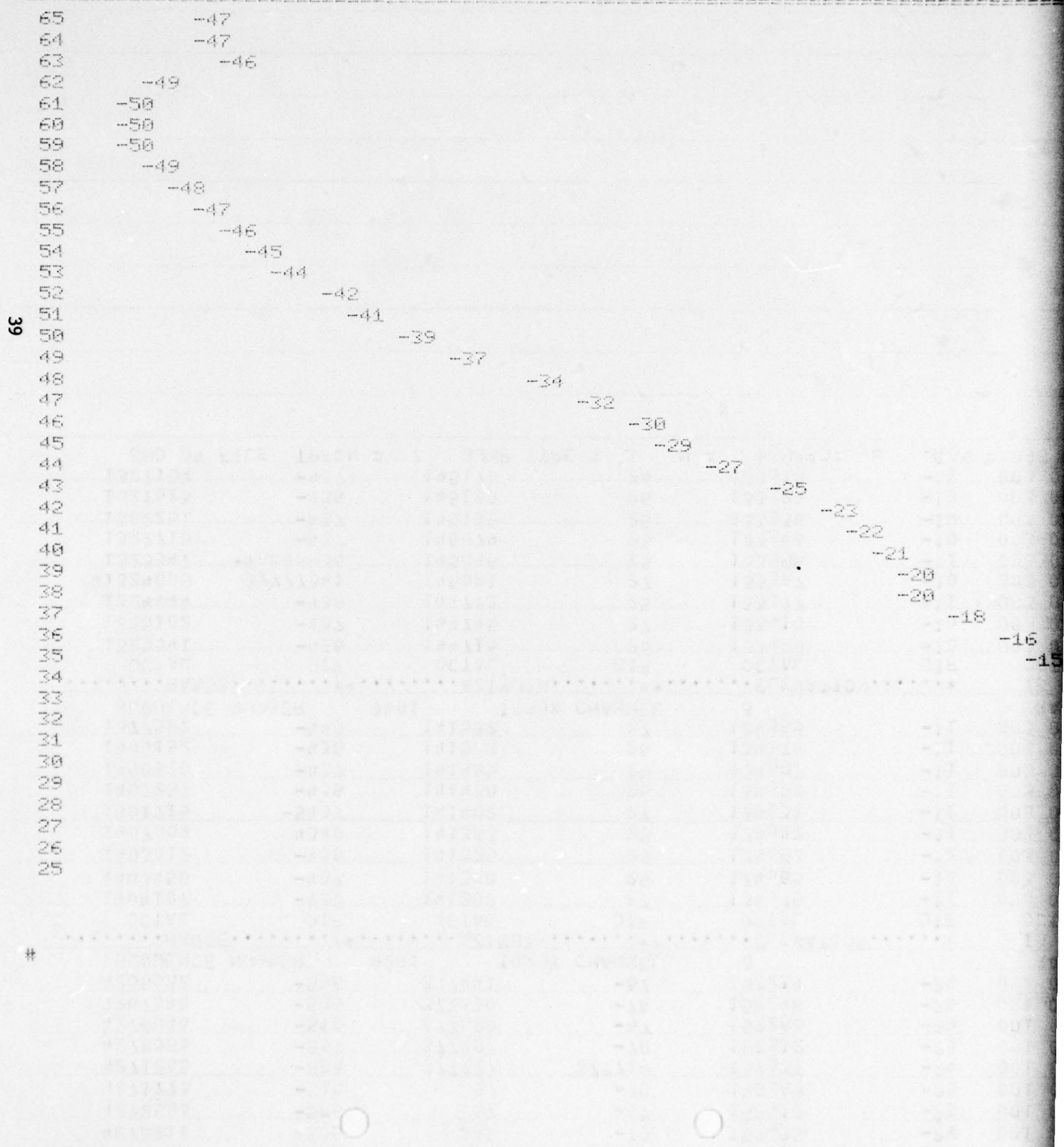
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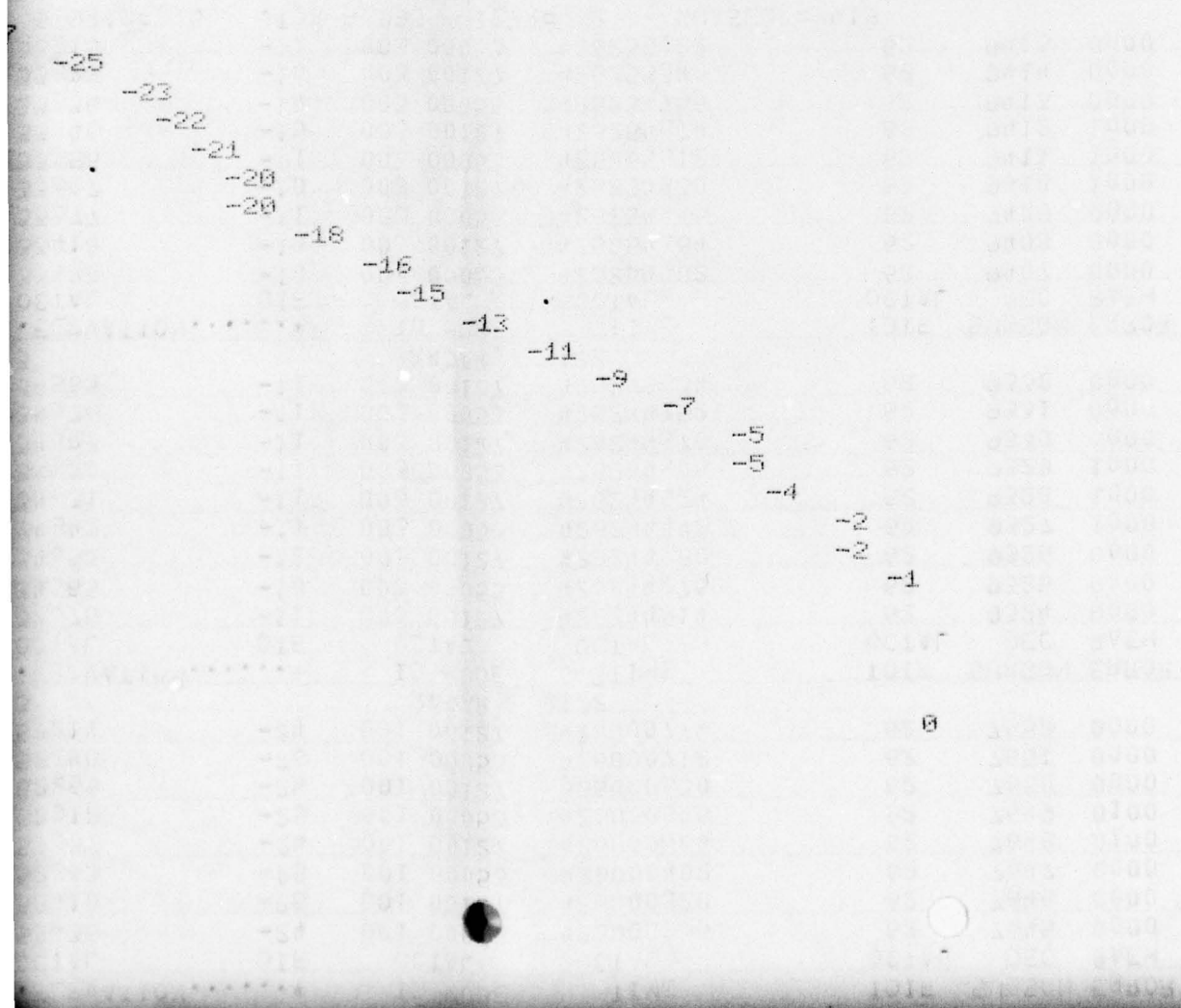
FIGURE 23



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OCTOBER FIGURE 23

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SEQUENCE NUMBER 7801		IOMUX CHANNEL 1		ELEVATION.....*		RADAR ID MOD	
.....RANGE.....**.....		AZIMUTH.....**.....		ELEVATION.....*		ID MOD.....	
OCTAL	DIF	OCTAL	DIF	OCTAL	DIF	OCTAL	DIF
4273211	-506	246	-70	152435	-24	001	000
4272503	-506	157	-67	152410	-25	001	000
4271773	-510	67	-70	152363	-25	001	000
4271265	-506	377777	377710	152337	-24	001	001
4270556	-507	377707	-70	152312	-25	001	000
4270046	-510	377620	-67	152266	-24	001	001
4267340	-506	377530	-70	152240	-26	001	000
4266632	-506	377441	-67	152214	-24	001	001

SEQUENCE NUMBER 9201		IOMUX CHANNEL 3		ELEVATION.....*		RADAR ID MOD	
.....RANGE.....**.....		AZIMUTH.....**.....		ELEVATION.....*		ID MOD.....	
OCTAL	DIF	OCTAL	DIF	OCTAL	DIF	OCTAL	DIF
1404107	-437	141252	27	134675	-11	003	001
1403450	-437	141300	26	134665	-10	003	000
1403012	-436	141326	26	134653	-12	003	001
1407354	4342	141353	25	134642	-11	003	000
1401715	-5437	141402	27	134631	-11	003	001
1401257	-436	141430	26	134620	-11	003	000
1400620	-437	141455	25	134607	-11	003	001
1400162	-436	141503	26	134576	-11	003	000
1377522	-440	141532	27	134565	-11	003	001

SEQUENCE NUMBER 9401		IOMUX CHANNEL 3		ELEVATION.....*		RADAR ID MOD	
.....RANGE.....**.....		AZIMUTH.....**.....		ELEVATION.....*		ID MOD.....	
OCTAL	DIF	OCTAL	DIF	OCTAL	DIF	OCTAL	DIF
1325541	-436	144716	25	133420	-10	003	000
1325102	-437	144745	27	133410	-10	003	001
1324444	-436	144772	25	133377	-11	003	000
41324005	37777341	145021	27	133367	-10	003	001
1323347	-40000436	145046	25	133356	-11	003	000
1322710	-437	145074	26	133346	-10	003	001
1322251	-437	145122	26	133336	-10	003	000
1321613	-436	145150	26	133326	-10	003	001
1321154	-437	145176	26	133315	-11	003	000

END OF FILE TPFCH = 7 DUMP TYPE = 1 N = 6 NRAD = 5 .IOK = 995

DO NOT PHOTOGRAPH

ELEVATION	TIME	ID	MODE	TIME
4250	001	00127	4250000000	
4250	001	00127	4250000000	
4250	001	00127	4250000000	
4250	001	00127	4250000000	
4250	001	00127	4250000000	
4250	001	00127	4250000000	
4250	001	00127	4250000000	
4250	001	00127	4250000000	
4250	001	00127	4250000000	
4250	001	00127	4250000000	

TIME	SUBSON	ERROR
62	9324	0000
62	9325	0000
62	9326	0000
62	9327	1000
62	9328	1000
62	9329	1000
62	9330	0000
62	9331	0000
62	9332	0000

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ELEVATION	TIME	ID	MODE	TIME
4250	003	00127	425244214	
4250	003	00053	425244275	
4250	003	00127	425244350	
4250	003	00053	425244442	
4250	003	00127	425244524	
4250	003	00053	425244606	
4250	003	00127	425244670	
4250	003	00053	425244752	
4250	003	00127	425245034	

TIME	SUBSON	ERROR
62	9324	0000
62	9325	0000
62	9326	0000
62	9327	1000
62	9328	1000
62	9329	1000
62	9330	0000
62	9331	0000
62	9332	0000

ELEVATION	TIME	ID	MODE	TIME
4250	003	00053	425254302	
4250	003	00127	425254364	
4250	003	00053	425254446	
4250	003	00127	425254530	
4250	003	00053	425254612	
4250	003	00127	425254674	
4250	003	00053	425254756	
4250	003	00127	425255040	
4250	003	00053	425255122	

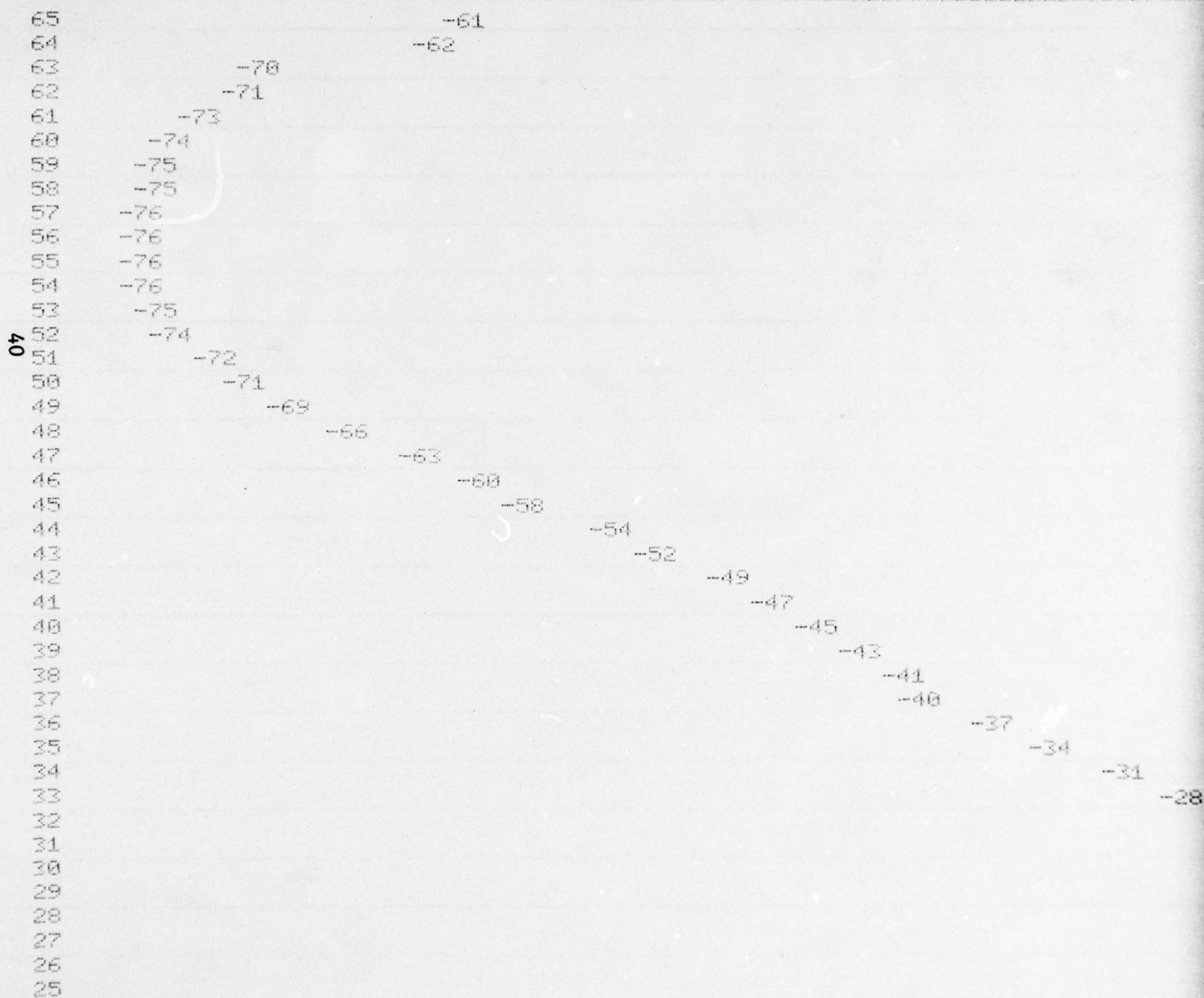
TIME	SUBSON	ERROR
62	9407	0000
62	9408	0000
62	9409	0000
62	9410	1000
62	9411	1000
62	9412	1000
62	9413	0000
62	9414	0000
62	9415	0000

GRADE = 5 .TOK = 995 IERR = 2 SUBSEQ = 9419

DO NOT PHOTOGRAPH

2 KM E-W COMPONENT WINDS MPS +E -W

NOVEMBER FIGURE 24

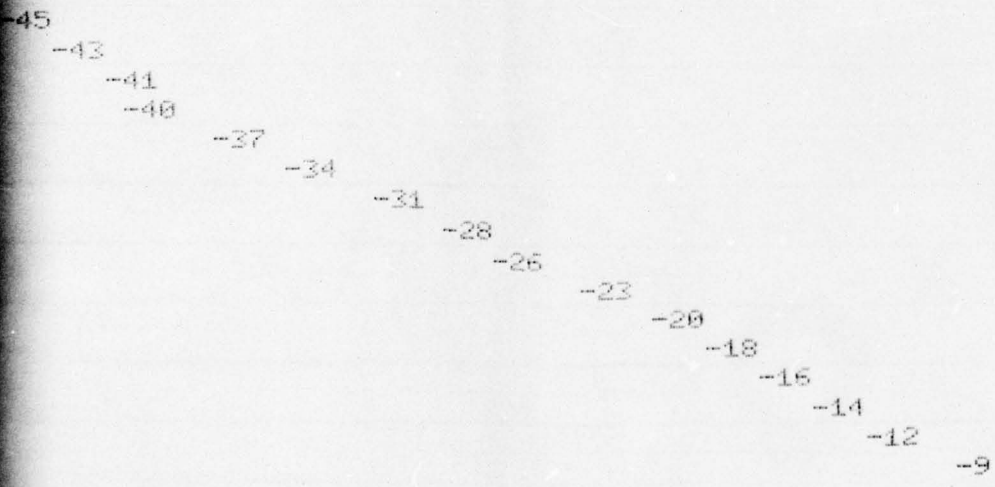


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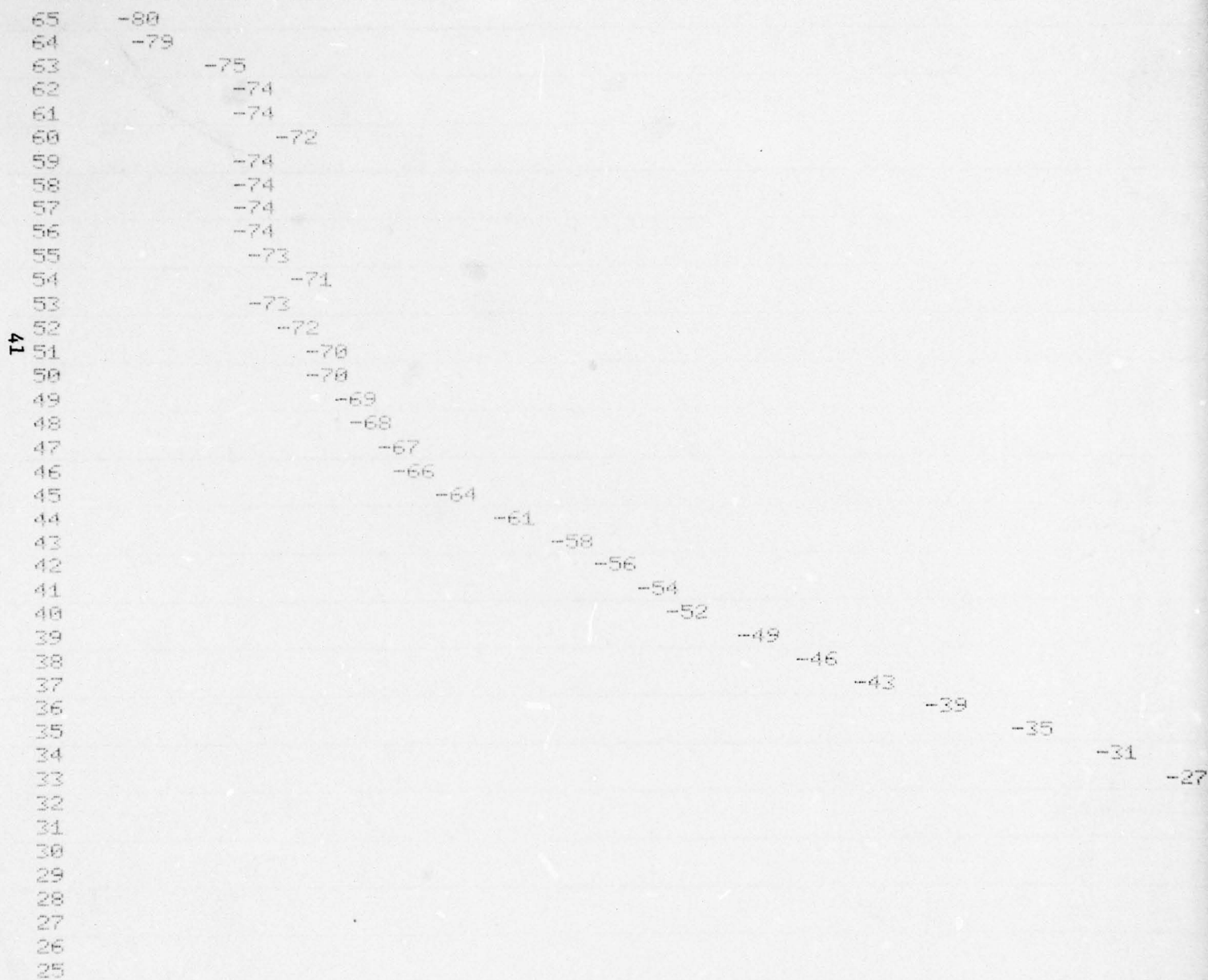
NOVEMBER FIGURE 24



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Z KM E-W COMPONENT WINDS MPS +E -W

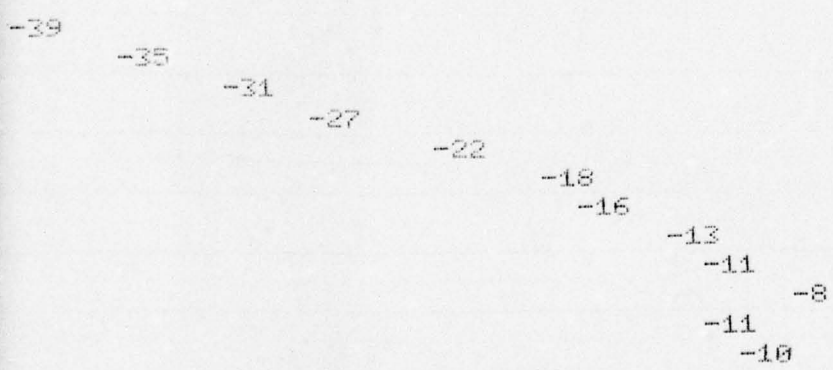
DECEMBER FIGURE 25



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ER FIGURE 25



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SECTION II PART 1

STRATOSPHERIC MODEL OF CLIMATOLOGICAL PARAMETERS OVER WSMR

This section presents models of the climatological data presented in Section I of this report. Stratospheric temperature, density, pressure, and wind components are modeled from 25-65 km on a Julian day basis. Following the presentation of the model is a detailed analysis of several spring and autumn wind crossover patterns. The modeling of the stratospheric parameters has been basically approached from a best fit point of view.

The model for the stratospheric wind is divided into two sections (North-South components and East-West components). The reader should note that the sign convention is the opposite to that utilized in Section I of this report, i.e., the model assigns + to N,E and - to W,S winds. A copy of the E-W model has been included showing nicely the spring and autumn crossovers (Table 13).

The essential equations and routines used for the E-W circulation model are presented briefly below. Essentially they consist of a best fit trigonometric function.

```

0110 PRINT "INPUT JULIAN DAY"
0130 INPUT X
0132 PRINT
0170 PRINT "INPUT Z IN KM"
0190 INPUT Z
0191 PRINT
0230 LET B=45
0250 LET A=B-X
0270 IF X<45 THEN LET A=0
0290 IF X>315 THEN LET A=270
0310 LET H1=-(2/3)*Z+148.33
0330 LET H2=-(2/3)*Z+298.33
0350 IF X<165 THEN LET D=-(70/45)*Z+361.111
0370 IF X>165 THEN LET D=-Z+350
0390 IF X>165 THEN IF X<195 THEN LET A=(270/360)*180
0410 LET J=1.71428*Z-41.4284
0430 IF Z<30 THEN LET J=5
0450 LET Y=J*COS((A*360)/(D*57.295))
0470 LET Y=INT(Y)

```


E-W WIND COMPONENT MODEL TABLE 13

DAY	HEIGHTS IN KM									
	20	25	30	35	40	45	50	55	60	65
1	5-	5-	10-	19-	28-	36-	45-	53-	62-	70-
6	5-	5-	5-	10-	19-	28-	36-	45-	53-	62-
11	5-	5-	5-	10-	19-	28-	36-	45-	53-	62-
16	5-	5-	5-	10-	19-	28-	36-	45-	53-	62-
21	5-	5-	5-	10-	19-	28-	36-	45-	53-	62-
26	5-	5-	5-	10-	19-	28-	36-	45-	53-	62-
31	5-	5-	5-	10-	19-	28-	36-	45-	53-	62-
36	5-	5-	5-	10-	19-	28-	36-	45-	53-	62-
41	5-	5-	5-	10-	19-	28-	36-	45-	53-	62-
46	5-	5-	5-	10-	19-	28-	36-	45-	53-	62-
51	5-	5-	5-	10-	19-	27-	36-	44-	53-	61-
56	5-	5-	5-	10-	19-	27-	35-	43-	52-	60-
61	5-	5-	5-	10-	18-	26-	34-	42-	50-	58-
66	5-	5-	5-	10-	17-	25-	33-	40-	47-	55-
71	5-	5-	5-	9-	16-	24-	31-	38-	44-	51-
76	5-	5-	5-	9-	15-	22-	29-	35-	41-	46-
81	4-	4-	4-	8-	14-	20-	26-	31-	37-	41-
86	4-	4-	4-	7-	13-	18-	23-	28-	32-	36-
91	4-	4-	4-	7-	11-	16-	20-	24-	27-	29-
96	3-	3-	3-	6-	10-	13-	17-	19-	21-	23-
101	3-	3-	3-	5-	8-	11-	13-	15-	16-	16-
106	2-	2-	2-	4-	6-	8-	9-	10-	10-	9-
111	2-	2-	2-	3-	5-	5-	6-	5-	4-	2-
116	2-	1-	1-	2-	3-	3-	2-	0	2	5
121	1-	1-	1-	1-	1-	0	2	5	8	12
126	1-	0	0	1	3	6	9	14	19	26
131	0	0	1	3	6	10	14	20	26	34
136	0	1	2	5	9	13	19	25	32	41
141	1	1	3	7	11	17	23	30	38	47
146	1	1	4	8	14	20	27	35	44	53
151	2	2	5	10	16	23	31	39	48	58
156	2	2	6	12	18	26	34	43	52	62
161	2	3	6	13	20	28	37	46	56	66
166	4	4	8	16	24	33	42	50	59	69
171	4	4	8	16	24	33	42	50	59	69
176	4	4	8	16	24	33	42	50	59	69
181	4	4	8	16	24	33	42	50	59	69
186	4	4	8	16	24	33	42	50	59	69
191	4	4	8	16	24	33	42	50	59	69
196	4	4	9	18	27	35	44	52	60	68
201	4	4	9	18	27	35	43	51	59	66
206	4	4	9	18	26	35	43	50	57	64
211	4	4	9	18	26	34	41	48	55	60
216	4	4	9	17	25	33	40	46	51	56
221	4	4	9	17	24	31	37	43	48	51
226	4	4	9	16	23	29	35	39	43	46
231	4	4	8	15	21	27	32	36	38	40
236	4	4	8	14	20	25	28	31	33	33
241	4	3	7	13	18	22	25	27	27	26
246	3	3	6	12	16	19	21	22	21	19
251	3	3	6	10	13	16	17	16	15	11
256	3	2	5	8	11	12	12	11	8	4
261	2	2	4	7	8	9	8	5	1	4-
266	2	2	3	5	6	5	3	0	5-	12-
271	1	1	2	3	3	2	1-	6-	12-	19-
276	1	1	1	1	0	2-	6-	11-	18-	26-
281	1	0	0	0	2-	6-	11-	17-	24-	33-
286	0	0	1-	2-	5-	9-	15-	22-	30-	40-
291	0	1-	2-	4-	8-	13-	19-	27-	36-	46-
296	1-	1-	3-	6-	10-	16-	23-	32-	41-	52-
301	1-	2-	4-	8-	13-	20-	27-	36-	46-	57-
306	2-	2-	5-	9-	15-	23-	31-	40-	50-	61-
311	2-	3-	5-	11-	18-	25-	34-	44-	54-	64-
316	3-	3-	6-	12-	19-	27-	36-	46-	56-	67-
321	3-	3-	6-	12-	19-	27-	36-	46-	56-	67-
326	3-	3-	6-	12-	19-	27-	36-	46-	56-	67-
331	3-	3-	6-	12-	19-	27-	36-	46-	56-	67-
336	3-	3-	6-	12-	19-	27-	36-	46-	56-	67-
341	3-	3-	6-	12-	19-	27-	36-	46-	56-	67-
346	3-	3-	6-	12-	19-	27-	36-	46-	56-	67-
351	3-	3-	6-	12-	19-	27-	36-	46-	56-	67-
356	3-	3-	6-	12-	19-	27-	36-	46-	56-	67-
361	3-	3-	6-	12-	19-	27-	36-	46-	56-	67-

NOTE: A MINUS SIGN FOLLOWING A NUMBER DENOTES A "WEST" COMPONENT

The E-W profiles fall into generally three major categories based on the slope of the curves. Type 1 - for strong well established easterly or westerly flow, the curves are nearly linear (Figure 14). Type 2 - for flow that still is predominately strong easterly or westerly, but is beginning to suggest a slowdown above 50 km. The profile suggests a hook configuration (Figure 16). Type 3 - this profile is strongly parabolic and occurs during the actual spring and fall turnovers (Figure 17).

The approach for the N-S circulation model was a best fit cubic polynomial with an additional logarithmic term with the following sign convention:

$$\begin{array}{cc} \text{N/S} & \text{S-} \\ & \text{N+} \end{array}$$

at Z = 25km Y = 1 mps where Y is N/S component in mps

at Z = 65km

$$\begin{aligned} Y_{65}(D) = & -63.597516 - 6.136 * D \\ & -.0057 * D^2 + 34.3045 * \ln(D) \\ & +.000004275 * D^3 \\ & +1.231017 * D * \ln(D) \end{aligned}$$

D = Julian Day

$$Y_Z(D) = \frac{Z - 25 (Y_{65}(D) - 1) + 40}{40}$$

where: Z is altitude in km

$Y_Z(D)$ = N/S wind in mps at Z km at Day "D"

$Y_{65}(D)$ is N/S wind in mps at Day "D" at 65km

The approach is to best fit the wind in altitude then linearly interpolate for time.

Both density and pressure being more conservative were best fit exponentially in height and then linearly interpolated in time. The equations are as follows.

DENSITY MODEL

Exponential spatial fit linearly interpolated temporal fit

$$P = e^{(J - .143 Z)} + f$$

Z in km

$$\text{for } 1 \leq \text{Day} \leq 182, \quad J = \frac{(D-1)(0.13)}{181} + 7.17$$

$$\text{for } 82 \leq \text{Day} \leq 365 \quad J = \frac{(D-182)(-0.13)}{183} + 7.3$$

f = 3.3 for Jan, 25km only

PRESSURE MODEL

Exponential spatial best fit linearly interpolated temporally

$$P = e^{(J - .13Z)} + f$$

f = 1.2 25km only

$$\text{for } 1 \leq \text{Day} \leq 182 \quad J = \frac{(D-1)(.05)}{181} + 6.45$$

$$\text{for } 182 \leq \text{Day} \leq 365 \quad J = \frac{(D-182)(-.05)}{183} + 6.50$$

Novlan modeled temperature from another best fit point of view. Temperature was best fit to a cubic polynomial in altitude with a term added then linearly interpolated for time. Results are good within 2 to 3°C. The equations are presented below:

TEMPERATURE MODEL

$$\begin{aligned} T_1 (\text{Jan}) \text{ C}^\circ &= -2400.59756 - 2593.055 Z \\ &\quad -10.37 Z^2 + .0216933 Z^3 \\ &\quad +6092.022 \ln(Z) \\ &\quad +665.3986 Z \ln(Z) \end{aligned}$$

$$\begin{aligned} T_2 (\text{June}) \text{ C}^\circ &= -3799.172 - 2260.56647 Z \\ &\quad -7.78677 Z^2 + .0216933 Z^3 \\ &\quad +6111.4755 \ln(Z) \\ &\quad +560.69812 Z \ln(Z) \end{aligned}$$

$$\text{for } 1 \leq D \leq 182 \quad \frac{(T_2 - T_1)(D-1)}{181} + T_1 = T$$

$$\text{for } 182 \leq D \leq 365 \quad \frac{(T_1 - T_2)(D-182)}{183} + T_2 = T$$

where T is in C°

McCullough utilized a least squares approach of a limited harmonic analysis method to model the stratospheric temperature. The model produces accuracies less than 1°C; however, as seen below, the model is lengthy and requires linear interpolation between 5km height increments.

The equations are as follows:

```

LIST
0005 LET X=1
0010 PRINT
0018 LET Y=-51.913-2.88*COS(6.28*X/365)-.725*SIN(6.28*X/365)
0020 LET Y=Y-.239*COS(4*3.14*X/365)-.323*SIN(4*3.14*X/365)
0030 LET A=INT(Y) 25KM
0040 LET Y=43.525-8.751*COS(6.28*X/365)+.434*SIN(6.28*X/365)
0050 LET Y=Y-.5608*COS(4*3.14*X/365)+.1981*SIN(4*3.14*X/365)
0060 LET Y=Y-.0992*COS(6*3.14*X/365)+.097*SIN(6*3.14*X/365)
0070 LET Y=Y+.263*COS(8*3.14*X/365)-.268*SIN(8*3.14*X/365)
0080 LET B=INT(Y) 30KM
0090 LET Y=-32.517-3.183*COS(6.28*X/365)+3.014*SIN(6.28*X/365)
0100 LET Y=Y-.3416*COS(4*3.14*X/365)+.757*SIN(4*3.14*X/365)
0110 LET Y=Y-.3745*COS(6*3.14*X/365)+.526*SIN(6*3.14*X/365)
0120 LET Y=Y-.1*COS(8*3.14*X/365)-.4861*SIN(8*3.14*X/365)
0130 LET Y=Y-.302*COS(31.4*X/365)-.588*SIN(31.4*X/365)
0140 LET C=INT(Y) 35KM
0150 LET Y=-18.685-2.476*COS(6.28*X/365)+3.574*SIN(6.28*X/365)
0160 LET Y=Y+.674*COS(4*3.14*X/365)+.543*SIN(4*3.14*X/365)
0170 LET Y=Y+.456*COS(6*3.14*X/365)+.893*SIN(6*3.14*X/365)
0180 LET D=INT(Y) 40KM
0190 LET Y=-6.035-1.498*COS(6.28*X/365)+2.322*SIN(6.28*X/365)
0200 LET Y=Y+1.42*COS(4*3.14*X/365)-.448*SIN(4*3.14*X/365)
0210 LET Y=Y+1.158*COS(6*3.14*X/365)+1.12*SIN(6*3.14*X/365)
0220 LET Y=Y+.499*COS(8*3.14*X/365)+.262*SIN(8*3.14*X/365)
0240 LET E=INT(Y) 45KM
0250 LET Y=-4.032-1.766*COS(6.28*X/365)+1.402*SIN(6.28*X/365)
0260 LET Y=Y+.516*COS(4*3.14*X/365)-1.691*SIN(4*3.14*X/365)
0270 LET Y=Y+.707*COS(6*3.14*X/365)+.214*SIN(6*3.14*X/365)
0280 LET Y=Y+.317*COS(8*3.14*X/365)-.235*SIN(8*3.14*X/365)
0290 LET F=INT(Y) 50KM
0300 LET Y=-9.182-1.738*COS(6.28*X/365)+1.007*SIN(6.28*X/365)
0310 LET Y=Y-1.202*COS(4*3.14*X/365)-1.488*SIN(4*3.14*X/365)
0320 LET Y=Y+.241*COS(6*3.14*X/365)-.268*SIN(6*3.14*X/365)
0330 LET Y=Y+.113*COS(8*3.14*X/365)-.907*SIN(8*3.14*X/365)
0340 LET G=INT(Y) 55KM

```



```

0350 LET Y=-16.224+.0917*COS(6.28*X/365)+.781*SIN(6.28*X/365)
0360 LET Y=Y-1.573*COS(4*3.14*X/365)-1.376*SIN(4*3.14*X/365)
0370 LET Y=Y+.0426*COS(6*3.14*X/365)-.139*SIN(6*3.14*X/365)
0380 LET Y=Y-.204*COS(8*3.14*X/365)-.642*SIN(8*3.14*X/365)
0390 LET Y=Y-.719*COS(31.4*X/365)+.338*SIN(31.4*X/365)
0400 LET H=INT(Y) 60KM
0410 LET Y=-24.206+2.932*COS(6.28*X/365)-.0541*SIN(6.28*X/365)
0420 LET Y=Y-1.185*COS(4*3.14*X/365)-.5234*SIN(4*3.14*X/365)
0430 LET Y=Y-.7445*COS(6*3.14*X/365)-1.687*SIN(6*3.14*X/365)
0440 LET Y=Y+.826*COS(8*3.14*X/365)+.386*SIN(8*3.14*X/365)
0450 LET Y=Y-.859*COS(31.4*X/365)-.119*SIN(31.4*X/365)
0 460 LET I=INT(Y) 65KM
0465 IF X>1 THEN GOTO 0490
0470 PRINT " J 25 30 35 40 45 50 55 60 65"
0490 PRINT X;A;B;C;D;E;F;G;H;I
0500 LET X=X+5
0505 IF X>365 THEN GOTO 0520
0510 GOTO 0010
0520 STOP

```

*

SECTION II PART 2

E-W WIND COMPONENT CHANGEOVER CASES AT WSMR

Changeover of the E-W wind component at WSMR from 25km to 65km is considered for four cases - 1969, 1970, 1972, and 1974. These cases are arbitrarily chosen for convenience and not because of special features. The next step is to establish changeover criteria for more objective timing.

Since the level from 25km to 30km changes only slightly, 30km to 65km will be used for the changeover criteria. The following criteria presented a reasonable approach although some subjectiveness is still present.

C	≥ 10 mps above 30km
R	
I	Close as possible to zero without significant changeover
T	
E	Close as possible to zero after changeover
R	
I	≥ 10 mps above 30km after changeover
A	

The greatest change occurs in the 50-65km region and decreases to 25km. Averages of the four cases give a fall changeover from September 10 to October 4 with a 24 day transition (Figure 26). The spring changeover average is April 16 to May 11 or 25 days (Figure 27).

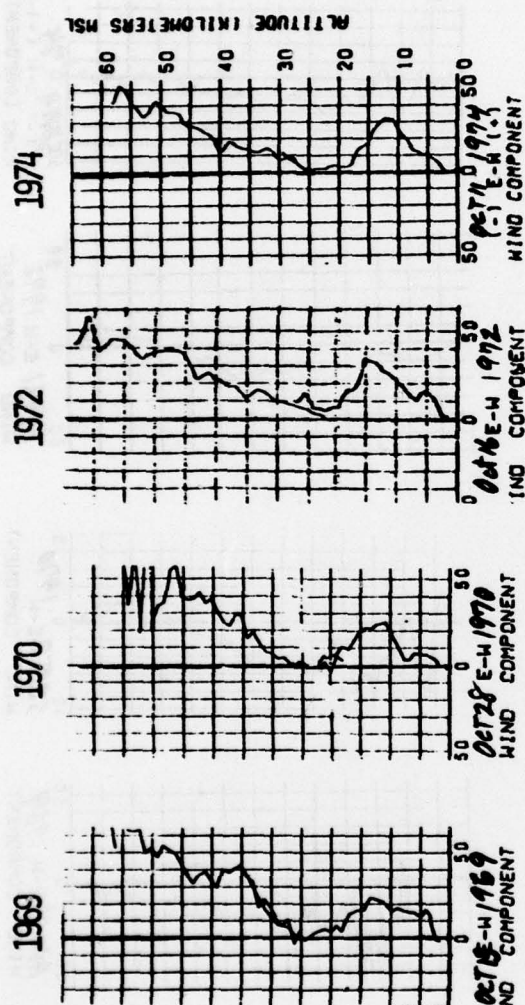
Our model of the changeover (Table 13) shows a fall changeover from September 14 to October 8 or 24 days and a spring changeover from April 20 to May 5 or 15 days. The shorter spring changeover is not confirmed by the four cases. Because of the many subjective factors, no conclusion can be drawn about the relative length of spring and winter changeover periods.

NOTE: The negative sign following a number means west wind in meters per second and a positive number is east wind (mps) - this convention is opposite to the Section I data where plus is west and south directions. The Data Section follows the convention of reference 12.

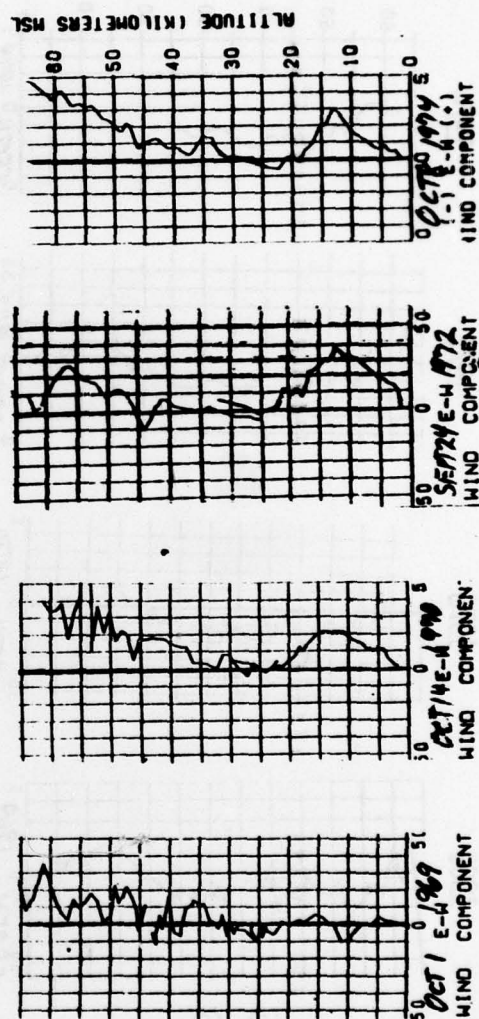
FOUR FALL CHANGEOVER CASES FIGURE 26

FALL

≥ OR NEAR 10MP
ABOVE 30KM WEST



CLOSE TO CHANGE-
OVER WITH AS LITTLE
SIGNIFICANT EAST AS
POSSIBLE



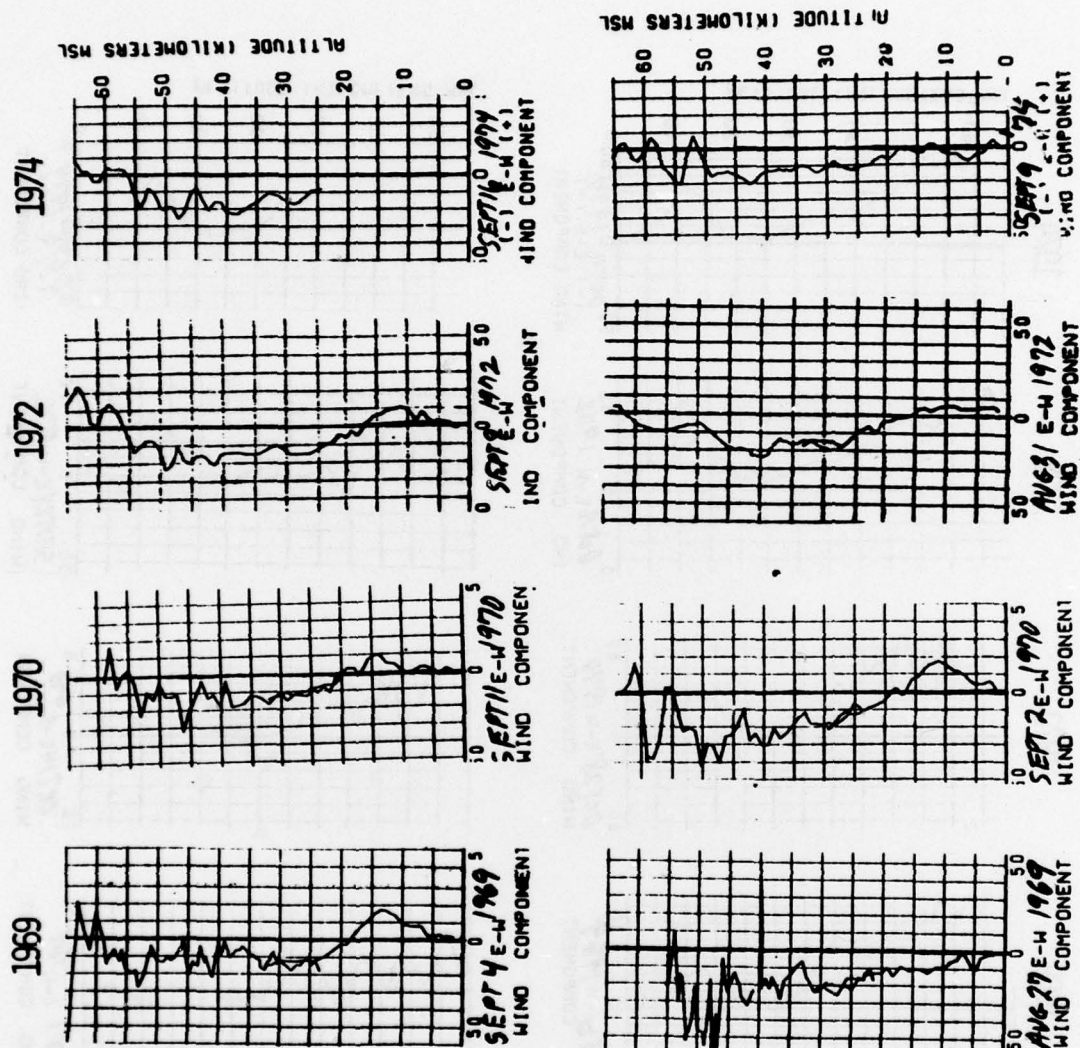
WIND COMPONENT IN METERS/SEC.

FOUR FALL CHANGEOVER CASES FIGURE 26 (CONT)

FALL

CLOSE TO CHANGE-
OVER WITH AS LITTLE
SIGNIFICANT WEST AS
POSSIBLE

≥ 10MPS EAST
ABOVE 30KM

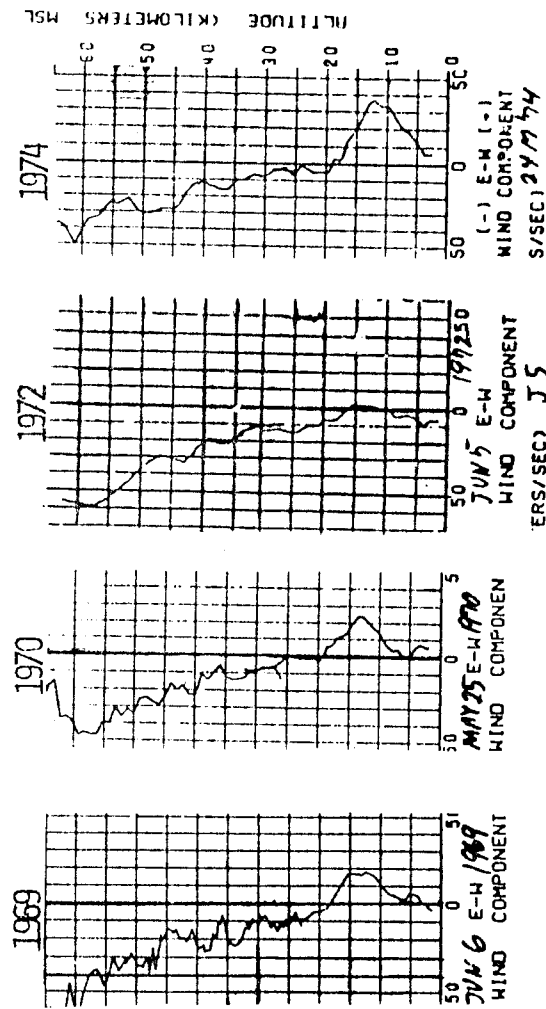


WIND COMPONENT IN METERS/SEC.

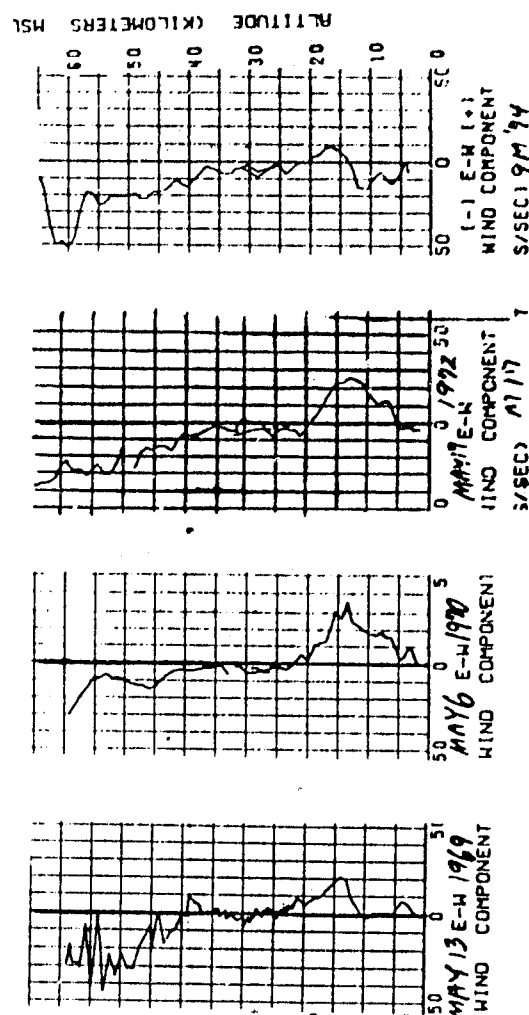
FOUR SPRING CHANGEOVER CASES FIGURE 27

SPRING

≥ OR NEAR 10MPS
ABOVE 30KM EAST



CLOSE TO CHANGE-
OVER WITH AS LITTLE
SIGNIFICANT WEST AS
POSSIBLE

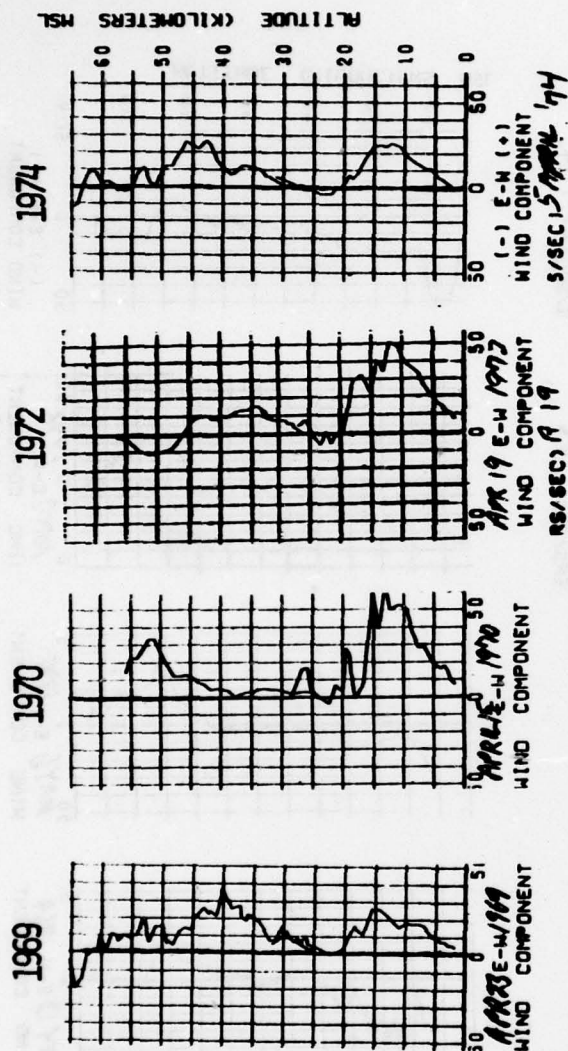


WIND COMPONENT IN METERS/SEC.

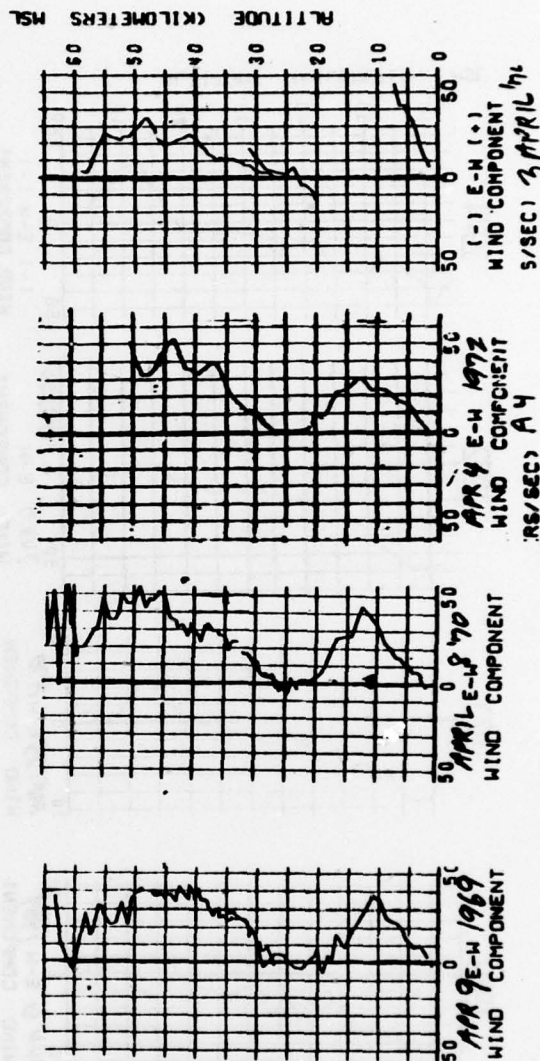
FOUR SPRING CHANGEOVER CASES FIGURE 27 (CONT.)

SPRING

CLOSE TO CHANGE-
OVER WITH AS LITTLE
SIGNIFICANT EAST AS
POSSIBLE



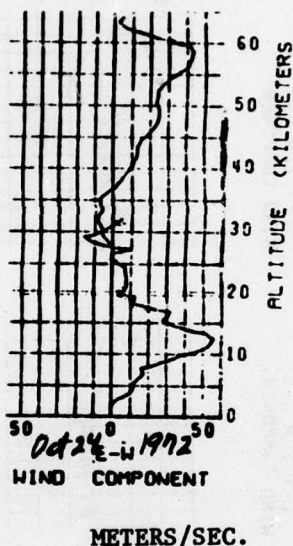
> 10MPS WEST
ABOVE 30KM



WIND COMPONENT IN METERS/SEC.

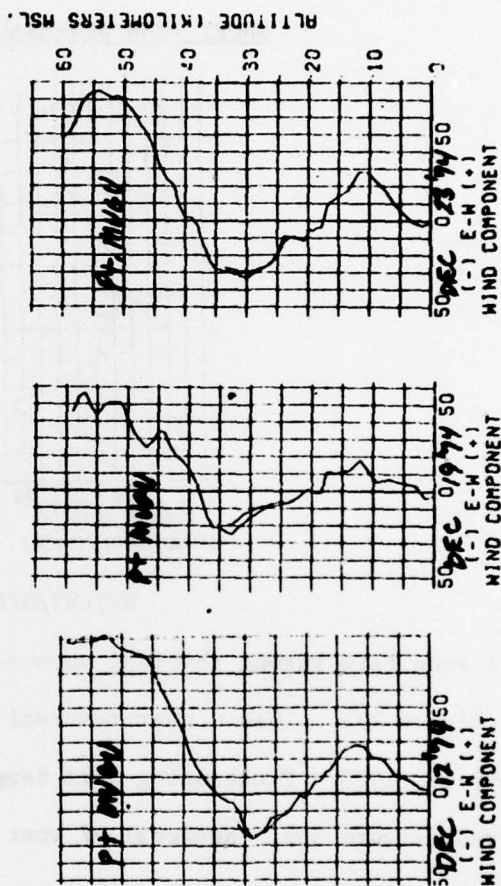
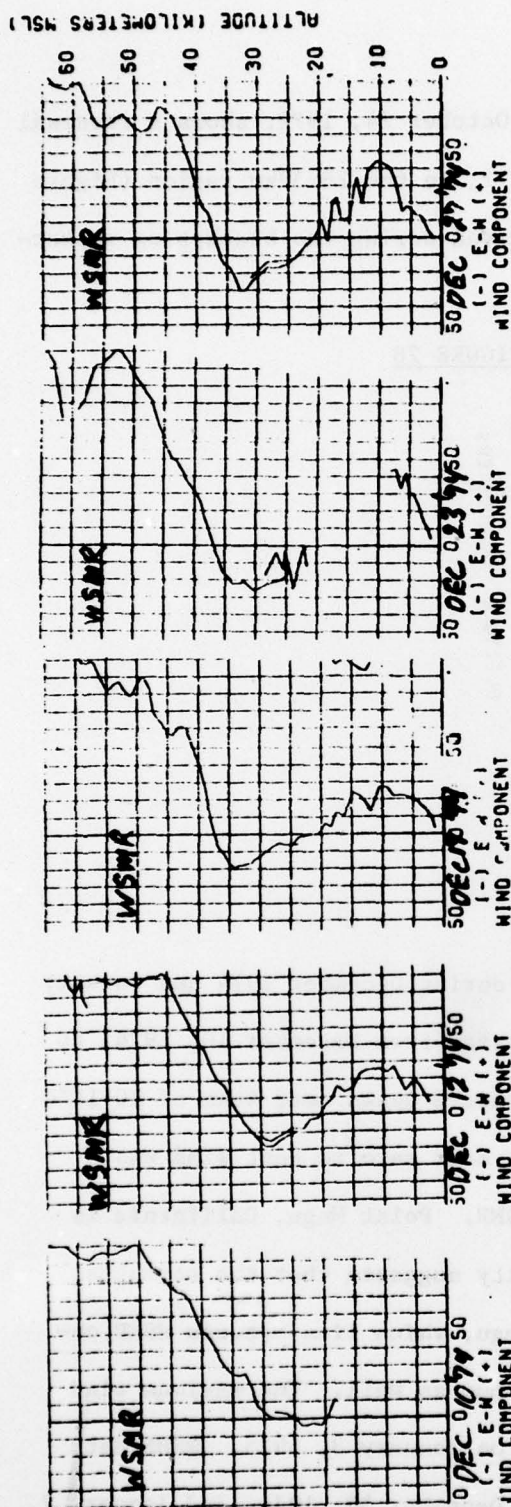
The transition is not well behaved. October 24, 1972, shows a reversal of the changeover completed October 16, 1972, in the 28-37km region (Figure 28). Zero or west wind component was observed during two bracketing rocket-sondes - October 20 and October 25, 1972.

SHORT TERM REVERSAL FIGURE 28

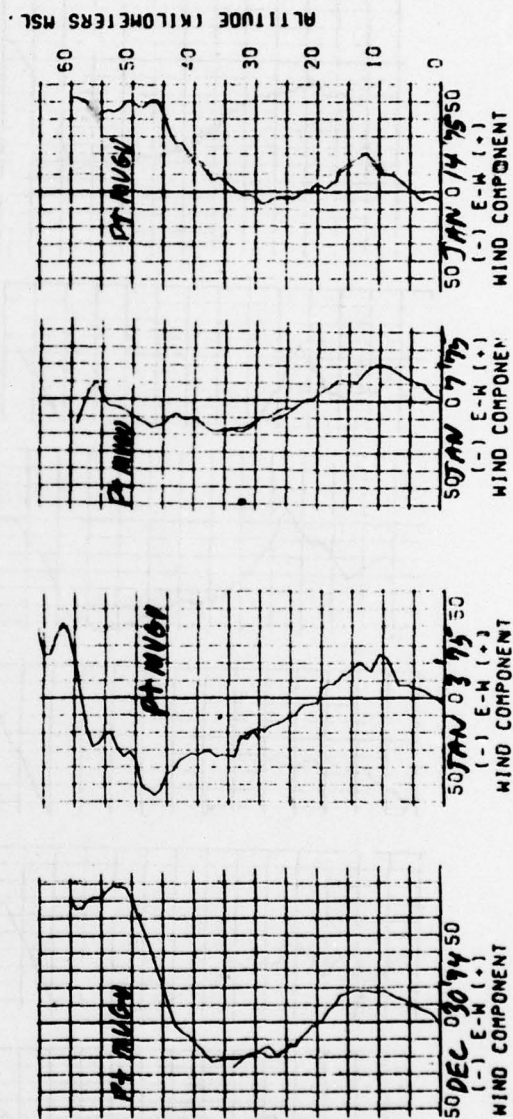
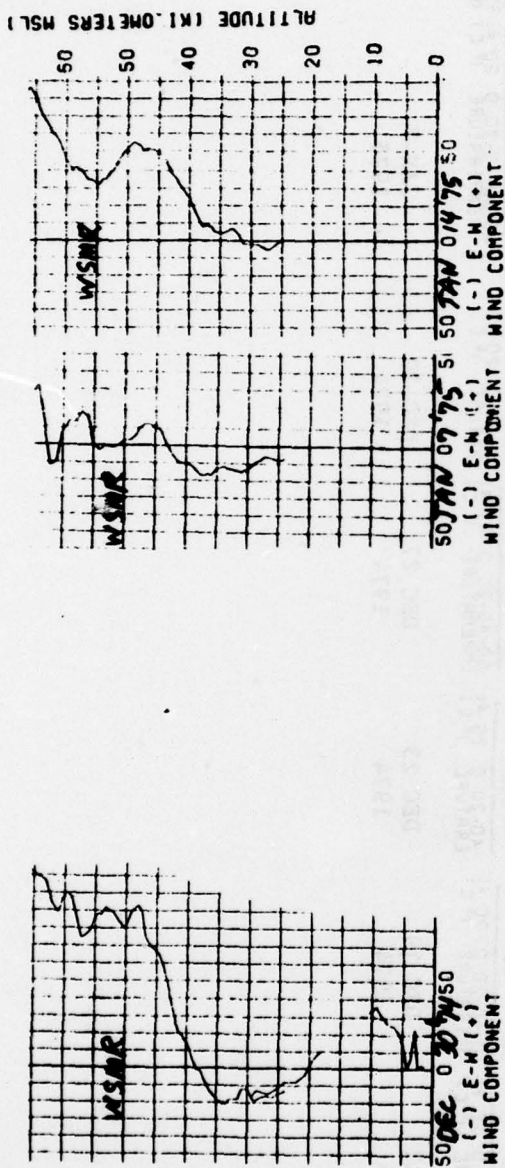


A long term strong reversal occurred during December 1974 and January 1975 (Figure 29). This winter reversal lasted from December 10, 1974, to January 14, 1975. Fluctuating warm temperature peaks near 46km of 10-15°C occurred (Figure 30). Reversal of west or near zero to east wind was stronger near 35km and reached 30mps at WSMR. Point Mugu, California is presented for comparison; and the similarity suggests that the strongest easterly wind component of 55mps at Pt. Mugu, which lies between WSMR observations, may be closer to the WSMR maximum as well. The maximum wind reversal band shifted at Pt. Mugu to 47km on January 3, 1975. WSMR data suggests a smaller vertical shift between December 30, 1974, and January 7, 1975.

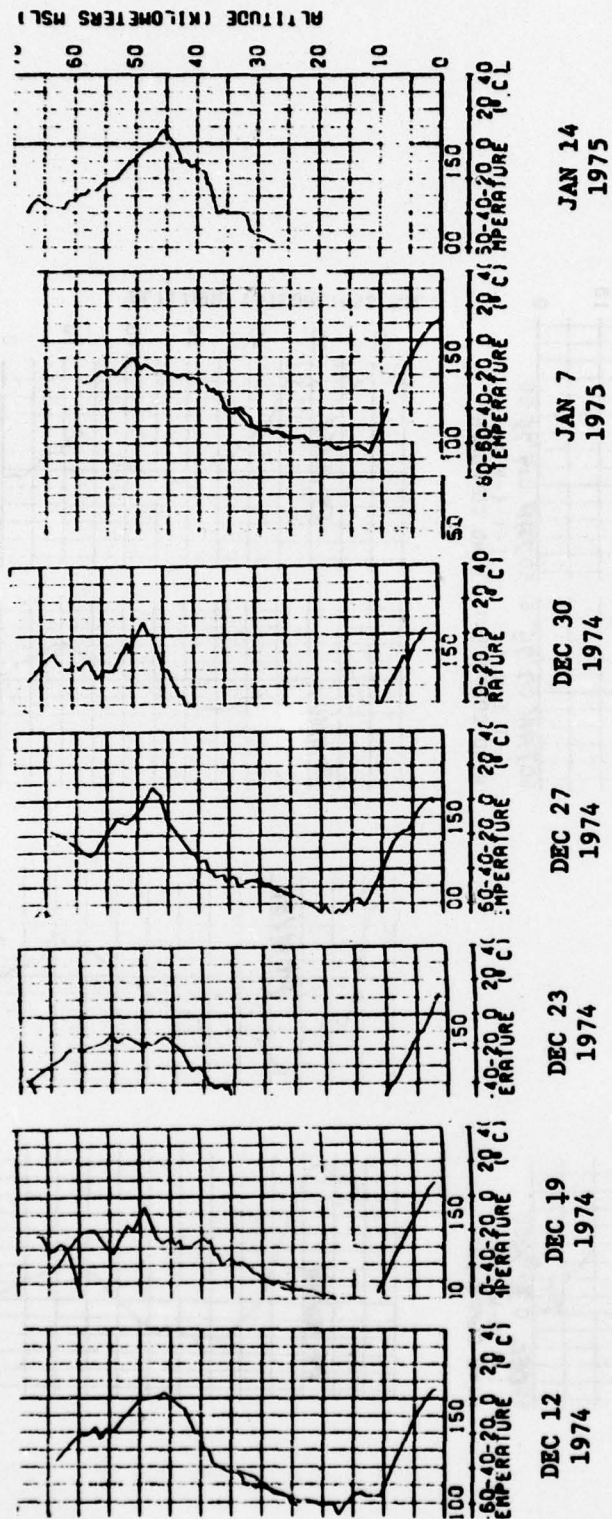
LONG TERM REVERSAL FIGURE 29



LONG TERM REVERSAL FIGURE 29 (CONT.)



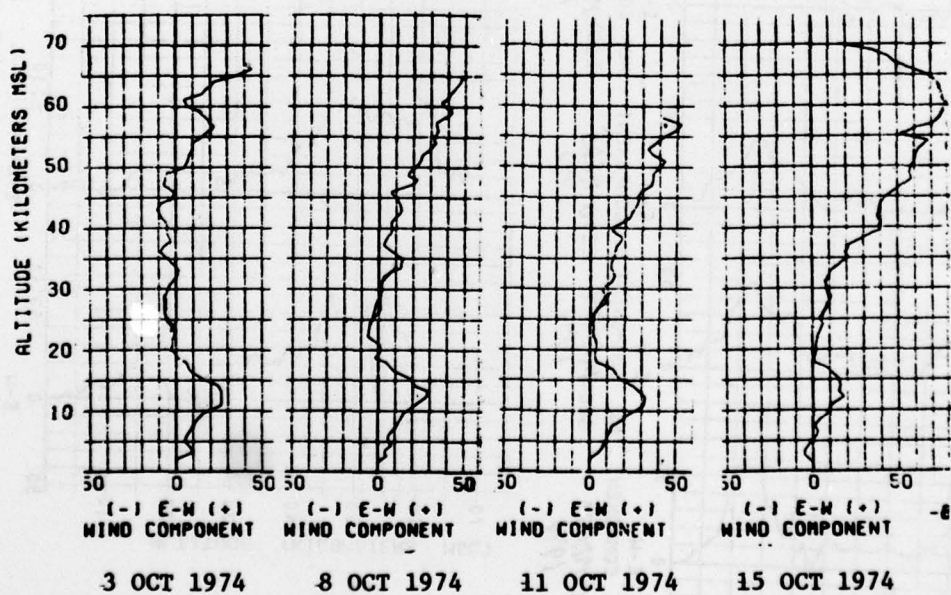
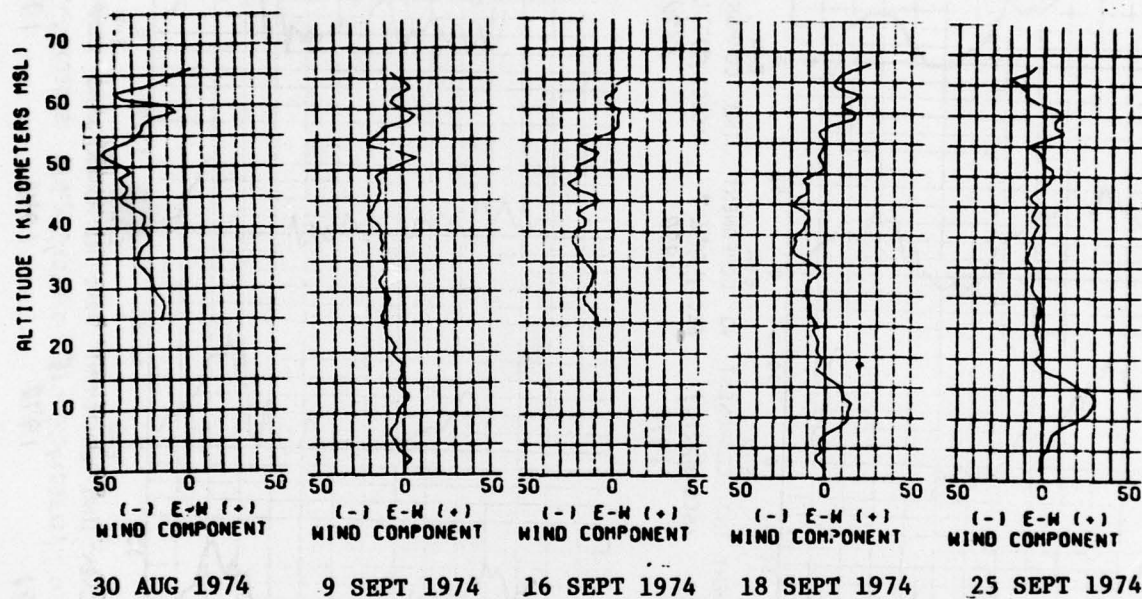
TEMPERATURE PROFILE AT WSMR DURING LONG TERM REVERSAL FIGURE 30



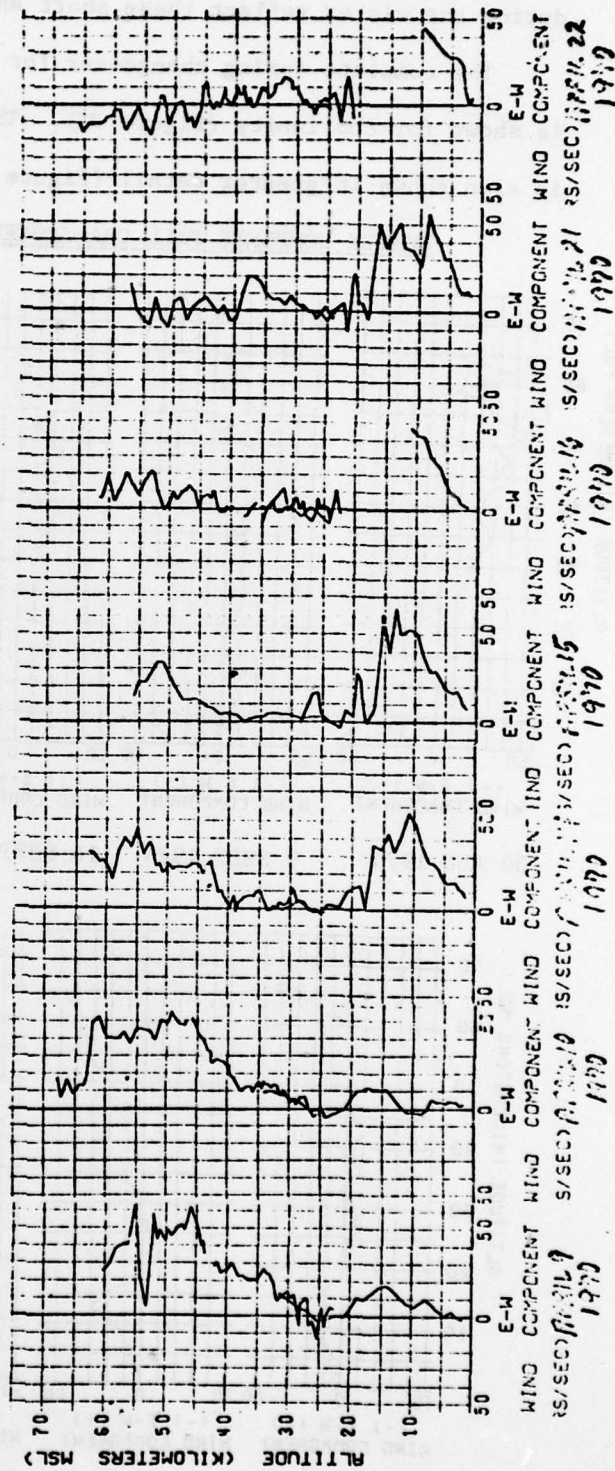
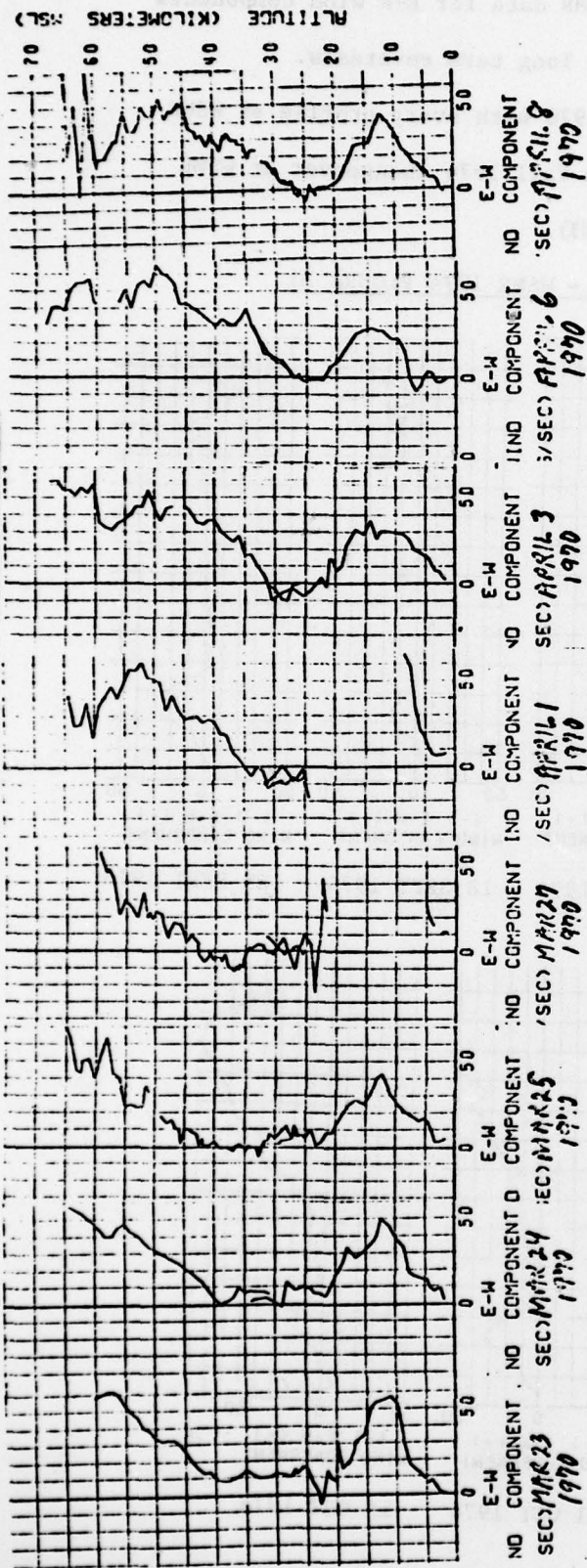
Higher standard deviations in the WSMR data for E-W wind components during the winter reflect these short and long term reversals.

The complete spring changeover for 1970 with every profile at WSMR is shown for continuity (Figure 32). The fall 1974 changeover at WSMR is also shown in greater detail (Figure 31).

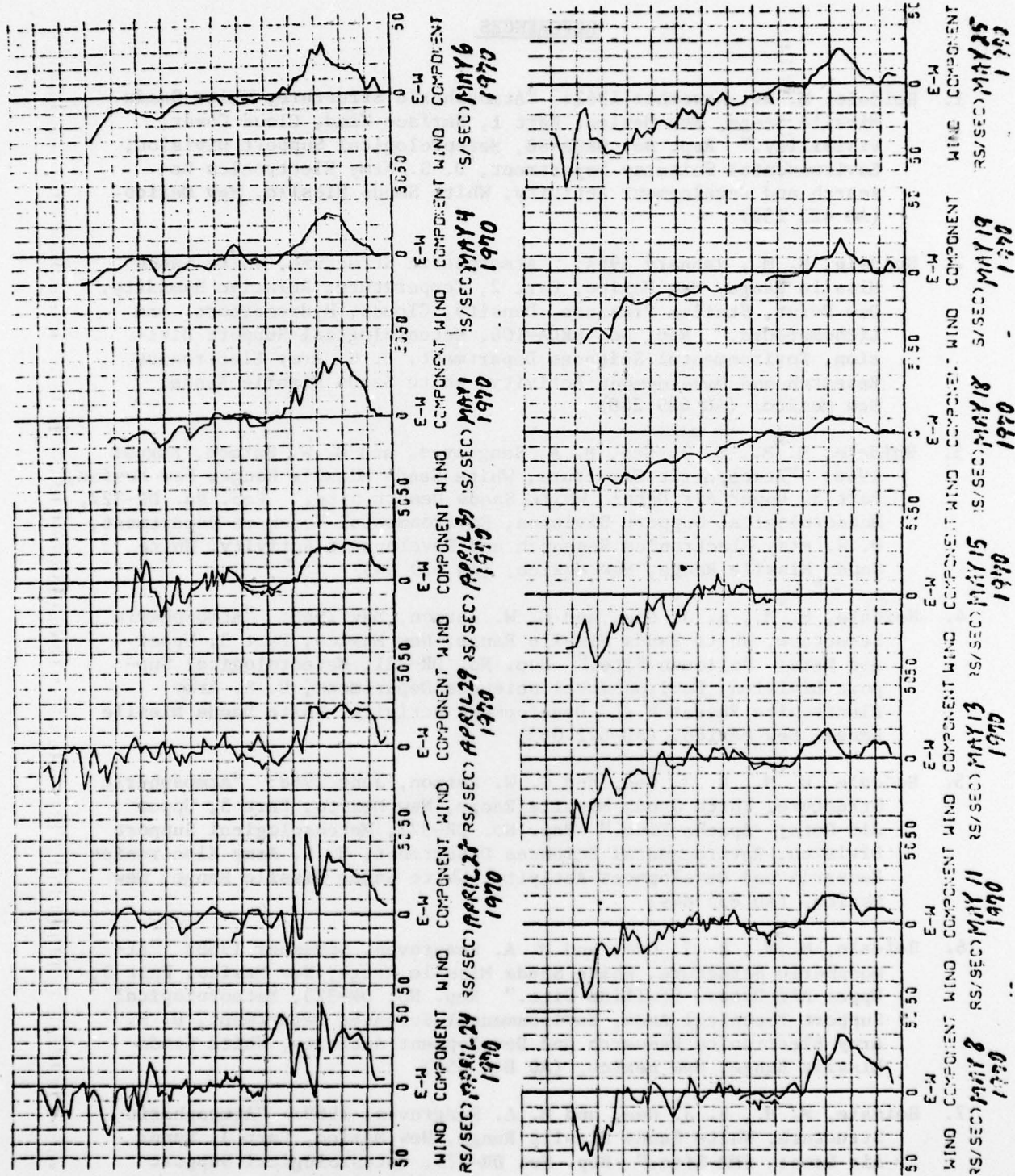
NEARLY COMPLETE FALL CHANGEOVER - WSMR 1974 FIGURE 31



COMPLETE SPRING CHANGEOVER - WSMR 1970 FIGURE 32.



COMPLETE SPRING CHANGEOVER - WSMR 1970 FIGURE 32 (CONT.)



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3. Hoidale, M. M., B. J. Gee, M. A. Seagraves, and G. W. Harmon, August 1968: "Atmospheric Structure, White Sands Missile Range, New Mexico, Part 3, Upper Air Data: White Sands Desert Site." Rep. No. DR-327, Meteorological Support Division, Environmental Sciences Department, U. S. Army Electronics Research and Development Activity, White Sands Missile Range, New Mexico. (AD 679 043)
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