US ARMY ELECTRONICS RESEARCH & DEVELOPMENT ACTIVITY

METEOROLOGICAL DATA REPORT

AEROBEE NASA 127 UA (S/N AF 142)

(15 April 1965)

BY

MARJORIE McLARDIE HOIDALE

ERDA-310

MAY 1965

WHITE SANDS MISSILE RANGE
NEW MEXICO

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METEOROLOGICAL SUPPORT DIVISION
ENVIRONMENTAL SCIENCES DIRECTORATE
U. S. ARMY ELECTRONICS RESEARCH AND DEVELOPMENT ACTIVITY
WHITE SANDS MISSILE RANGE
NEW MEXICO

ABSTRACT

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Meteorological data gathered for the launching of Aerobee NASA 127 UA (S/N AF 142) are presented for the National Aeronautics and Space Administration and for ballistic studies. The data appear, along with calculated ballistic data, in Appendixes A, B, C and D.

CONTENTS

INTRODUCTION

Aerobee NASA 127 UA (S/N AF 142) was launched by Naval Ordnance Missile Test Facility personnel, White Sands Missile Range, New Mexico, at 0345 hours MST, 15 April 1965.

Meteorological data used in conjunction with theoretical calculations to predict rocket impact were collected by the Meteorological Support Division, U. S. Army Electronics Research and Development Activity, White Sands Missile Range, New Mexico. The impact predictors for this firing were Ivan I. Layton and Gordon L. Dunaway.

DISCUSSION

Wind data for the first 4,000 feet above the surface were obtained from a Double-Theodolite Wind Velocity Computer System [1]. Balloons released at the launch site were observed and tracked from a 2,000-foot baseline. Continuous angular data were transmitted from two electrically instrumented theodolites to a computer where the data were reduced to obtain a velocity-vs-height relationship. The computer output drives two recorders which trace north-south and east-west components on a specially designed wind velocity computer ballistic chart. It is possible to read directly from the chart both the mean wind component values and the mean ballistic wind components in the various ballistic layers.

Temperature, pressure and humidity data, along with upper wind data from 4,000 to approximately 75,000 feet above the surface, were obtained from standard rawinsonde operations.

Mean wind component values in each ballistic zone were determined from vertical cross sections by the equal-area method.

Data appearing in Appendix D are based on the E. L. Walter [2] theory. The "Predicted Impact" includes, where applicable, an adjustment of impact based on the experience of the impact predictor and the forecast of firing time wind conditions.

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[1]. "Double-Theodolite Wind Velocity Computer," UNCLASSIFIED, U. S. Army Signal Research and Development Laboratory, Fort Monmouth, New Jersey, July 1959.

[2]. Walter, E. L., "Six-Variable Ballistic Model for a Rocket," Missile Meteorology Division, U. S. Army Signal Missile Support Agency, White Sands Missile Range, New Mexico, June 1962.

APPENDIX A

CALCULATED ROCKET PERFORMANCE VALUES

AND

TABLE OF BALLISTIC FACTORS

AEROBEE NASA 127 UA (S/N AF 142)

APPENDIX A

TABLE A-I

CALCULATED ROCKET PERFORMANCE VALUES

AEROBEE NASA 127 UA (S/N AF 142)

PAYLOAD 244.0 Pounds*

UNIT WIND EFFECT	Surface to 2,000 FT	2.75 Miles/MPH (3)
	2,000 to 100,000 FT	4.96 Miles/MPH
TOWER TILT EFFECT		20.15 Miles/Degree
BURNOUT:		
Velocity		6,000 Feet/Second
Altitude		131,314 Feet MSL
Time		51.8 Seconds
PEAK:		
Altitude		133.5 Miles MSL
Time		249 Seconds
TOTAL TIME OF FLIGHT		467 Seconds
CORIOLIS EFFECT (West)		6.40 Miles

*Includes Nosecone Weight

(3) An empirical correction has been made to the unit wind effect from 143 to 2,000 feet. This correction was determined from statistical studies.

Dunaway, G. L., "An Empirical Technique for Improving Aerobee-Hi Impact Predictions, "Meteorological Support Division, U. S. Army Electronics Research and Development Activity, White Sands Missile Range, New Mexico, May 1964.

APPENDIX A

TABLE A-II

TABLE OF BALLISTIC FACTORS

AEROBEE NASA 127 UA (S/N AF 142)

HEIGHT INTERVAL FEET	BALLISTIC FACTOR
143 - 200	.100
200 - 300	.130
300 - 400	.102
400 - 600	.150
600 - 800	.078
800 - 1,000	.012
1,000 - 1,200	.018
1,200 - 1,400	.013
1,400 - 1,600	.012
1,600 - 1,800	.011
1,800 - 2,000	.010
2,000 - 3,000	.052
3,000 - 4,000	.040
4,000 - 5,000	.022

HEIGHT INTERVAL FEET	BALLISTIC FACTOR
5,000 - 10,000	.078
10,000 - 15,000	.042
15,000 - 20,000	.030
20,000 - 25,000	.020
25,000 - 30,000	.017
30,000 - 35,000	.010
35,000 - 40,000	.010
40,000 - 45,000	.006
45,000 - 50,000	.009
50,000 - 60,000	.010
60,000 - 70,000	.007
70,000 - 80,000	.006
80,000 - 90,000	.003
90,000 - 100,000	.002

APPENDIX B

ANEMOMETER RECORDINGS OF WIND SPEED AND DIRECTION

AND

PILOT-BALLOON-MEASURED WIND DATA FORM 143 TO 4,000 FEET

AEROBEE NASA 127 UA (S/N AF 142)

TABLES PAGE

APPENDIX B

TABLE B-I

ANEMOMETER RECORDINGS OF WIND SPEED AND DIRECTION

AEROBEE NASA 127 UA (S/N AF 142)

TIME (Minutes)	WIND SPEED (Knots)	DIRECTION (Degrees)
T - 15	20.5	013
T - 10	21.0	015
T - 5	20.0	014
T - Time	19.0	015
T + 5	18.5	016
T + 10	19.5	015
T + 15	20.0	015

NOTE: Wind speeds and directions are 5-minute averages centered at indicated times.

APPENDIX B

TABLE B-II

PILOT-BALLOON-MEASURED WIND DATA

AEROBEE NASA 127 UA (S/N AF 142)

MEAN WIND COMPONENTS FOR BALLISTIC ZONES IN MILES PER HOUR

DOUBLE-THEODOLITE METHOD

RELEASE NO.	1		2		3		4	
RELEASE TIME (MST)	0001		0030		0100		0130	
LAYERS IN FEET	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
143 - 250	23.0N	11.0E	21.0N	5.0E	26.0N	2.0E	18.0N	6.5E
250 - 400	22.0	9.0	26.0	4.0	28.0	3.5	30.0	8.0
400 - 600	21.0	7.0	22.0	5.0	30.0	4.0	21.0	6.5
600 - 800	21.0	6.0	20.0	5.0	28.0	1.5	12.0	4.0
800 - 1,200	21.0	4.0	19.0	3.0	24.0	0.5	18.0	5.0W
1,200 - 1,600	22.0	1.0	21.0	2.0W	16.0	4.0W	9.0	3.0
1,600 - 2,000	25.0	1.0W	21.0	3.0	17.0	9.0	15.0	4.0
2,000 - 2,500	28.0	1.0	16.0	3.0	14.0	8.0	28.0	13.0
2,500 - 3,000	24.0	1.0	12.5	6.0	17.0	8.5	29.0	12.5
3,000 - 3,500	17.0	2.0	18.0	13.0	14.0	8.0	23.0	11.5
3,500 - 4,000	16.0	4.0	20.0	14.0	14.0	11.0	28.0	12.0

APPENDIX B

TABLE B-II (Cont)

PILOT-BALLOON-MEASURED WIND DATA

AEROBEE NASA 127 UA (S/N AF 142)

MEAN WIND COMPONENTS FOR BALLISTIC ZONES IN MILES PER HOUR

DOUBLE-THEODOLITE METHOD

RELEASE NO.	5		6		7		8	
RELEASE TIME (MST)	0200		0310		0330		0347	
LAYERS IN FEET	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
143 - 250	30.0N	1.0E	23.0N	2.0E	25.0N	0.0	21.0N	0.0
250 - 400	30.0	5.0	24.0	0.0	26.0	0.5W	23.0	1.0W
400 - 600	25.0	8.0	26.0	1.0W	27.0	0.0	26.0	2.0
600 - 800	22.0	7.0	32.0	4.0E	30.0	1.0E	30.0	0.5E
800 - 1,200	18.0	2.5	36.0	8.0	32.5	4.0	36.0	5.0
1,200 - 1,600	18.0	3.0W	38.0	8.0	36.0	6.0	38.0	6.0
1,600 - 2,000	18.0	4.0	40.0	8.0	40.0	6.0	41.0	5.0
2,000 - 2,500	26.0	6.0	40.0	8.0	42.0	8.0	42.0	5.0
2,500 - 3,000	38.0	9.0	45.0	7.0	43.0	8.0	46.0	5.0
3,000 - 3,500	24.0	12.0	M	M	23.0	24.0	46.0	6.0
3,500 - 4,000	28.0	11.5	M	M	28.0	24.0	M	M

M = Missing

APPENDIX C

TABLES OF UPPER AIR DATA

AEROBEE NASA 127 UA (S/N AF 142)

APPENDIX C

TABLE C-I

UPPER AIR DATA

AEROBEE NASA 127 UA (S/N AF 142)

MEAN WIND COMPONENTS FOR BALLISTIC ZONES IN KNOTS

RELEASE NO.	1	
RELEASE TIME (MST)	0300	
LAYERS IN FEET	N-S	E-W
4,000 - 5,000	15.5N	13.0W
5,000 - 10,000	0.0	26.0
10,000 - 15,000	5.5S	32.5
15,000 - 20,000	7.5	42.5

APPENDIX C

TABLE C-II

UPPER AIR DATA

AEROBEE NASA 127 UA (S/N AF 142)

MEAN WIND COMPONENTS FOR BALLISTIC ZONES IN KNOTS

RELEASE NO.	1		2		3	
RELEASE TIME (MST)	2130		0001		0345	
LAYERS IN FEET	N-S	E-W	N-S	E-W	N-S	E-W
4,000 - 5,000	12.0N	7.0W	7.5N	6.5W	10.5N	10.0W
5,000 - 10,000	11.5	20.0	3.0	17.5	3.0	23.0
10,000 - 15,000	0.0	32.0	0.0	32.0	0.0	31.0
15,000 - 20,000	9.0S	50.0	7.0S	40.5	5.0S	40.5
20,000 - 25,000	10.0	57.0	8.5	49.0	13.0	46.0
25,000 - 30,000	23.5	64.0	20.0	54.5	17.5	60.0
30,000 - 35,000	37.5	65.0	32.5	55.5	23.0	67.0
35,000 - 40,000	36.0	62.0	40.0	69.0	32.0	75.0
40,000 - 45,000	36.0	62.0	30.0	52.0	28.0	64.0
45,000 - 50,000	21.0	36.5	23.5	40.5	18.0	43.0
50,000 - 60,000	11.5	20.0	14.0	17.0	0.5	18.0
60,000 - 70,000	11.0N	2.0	9.0	0.0	1.5	7.0E
70,000 - 80,000	7.0S	1.0E	6.0N	7.0E	3.5N	0.5W
80,000 - 90,000	4.0	3.0W	7.0	1.0W	6.0	3.5E
90,000 - 100,000	2.5	7.0	12.0	0.0	BALLOON BURST	

STATION ALTITUDE 3989.0 FEET MSL
14 APR. 65 2130 HRS MST
ASCENSION NO. 302

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

TABLE C-III. UPPER AIR DATA - WHITE SANDS SITE

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
3989.0	879.9	15.5	-11.1	15.0	1060.9	661.9	270.0	9.9	1.000248
5000.0	848.4	14.8	-11.2	15.5	1025.5	661.1	280.7	12.6	1.000240
5500.0	833.3	14.4	-11.3	15.8	1008.4	660.7	286.0	13.9	1.000236
6000.0	818.3	14.0	-11.5	16.1	991.9	660.2	291.3	15.2	1.000233
6500.0	803.6	12.7	-12.1	16.6	978.5	658.7	296.7	16.5	1.000229
7000.0	789.1	11.4	-12.8	17.1	965.3	657.2	305.5	14.3	1.000226
7500.0	774.8	10.1	-13.5	17.6	952.2	655.6	314.9	11.9	1.000222
8000.0	760.7	8.8	-14.2	18.1	939.2	654.1	328.2	11.9	1.000219
8500.0	746.8	7.4	-15.0	18.6	926.4	652.6	338.5	12.7	1.000216
9000.0	733.1	6.1	-15.8	19.1	913.7	651.0	341.7	15.2	1.000212
9500.0	719.5	4.8	-16.5	19.6	901.2	649.5	342.0	17.1	1.000209
10000.0	706.2	3.5	-17.3	20.2	888.7	647.9	339.8	18.5	1.000206
10500.0	693.0	2.1	-18.2	20.7	876.5	646.3	330.8	19.4	1.000203
11000.0	680.0	1.2	-19.2	20.2	863.0	645.2	319.1	20.2	1.000199
11500.0	667.3	0.9	-20.8	18.1	847.7	644.8	306.8	22.3	1.000195
12000.0	654.7	0.6	-22.4	16.0	832.7	644.5	294.6	24.5	1.000191
12500.0	642.4	-0.1	-23.4	15.4	819.3	643.6	287.3	26.1	1.000187
13000.0	630.3	-1.2	-23.7	16.3	807.2	642.2	280.1	27.8	1.000184
13500.0	618.4	-2.4	-24.1	17.1	795.3	640.9	276.2	28.3	1.000182
14000.0	606.6	-3.5	-24.6	17.9	783.4	639.5	272.3	28.7	1.000179
14500.0	595.0	-4.7	-25.0	18.7	771.8	638.2	269.1	28.8	1.000176
15000.0	583.6	-5.8	-25.5	19.6	760.2	636.8	266.2	28.9	1.000173
15500.0	572.3	-7.1	-26.2	20.2	749.0	635.3	264.8	29.5	1.000171
16000.0	561.2	-8.3	-27.1	20.6	738.1	633.8	265.4	30.5	1.000168
16500.0	550.3	-9.6	-28.0	21.0	727.3	632.2	266.0	31.6	1.000165
17000.0	539.6	-10.9	-28.9	21.3	716.7	630.6	266.9	33.6	1.000163
17500.0	529.0	-12.3	-29.8	21.7	706.1	629.0	267.8	35.5	1.000160
18000.0	518.5	-13.6	-30.8	22.1	695.7	627.5	268.0	37.5	1.000158
18500.0	508.2	-14.9	-31.7	22.5	685.4	625.8	267.8	39.4	1.000155
19000.0	498.1	-16.2	-32.7	22.9	675.2	624.2	266.9	41.6	1.000153
19500.0	488.1	-17.4	-33.7	22.9	664.6	622.8	265.2	43.9	1.000150
20000.0	478.3	-18.4	-34.7	22.7	654.0	621.5	262.8	46.1	1.000148
20500.0	468.6	-19.5	-35.7	22.5	643.5	620.2	260.0	48.1	1.000145

STATION ALTITUDE 3989.0 FEET MSL
14 APR. 65 2130 HRS MST
ASCENSION NO. 302

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

TABLE C-III. UPPER AIR DATA - WHITE SANDS SITE (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
21000.0	459.1	-20.6	-36.7	22.3	633.2	618.9	258.7	49.1	1.000143
21500.0	449.7	-21.7	-37.7	22.2	623.0	617.5	257.5	50.5	1.000140
22000.0	440.5	-22.8	-38.8	22.0	612.9	616.2	256.4	52.8	1.000138
22500.0	431.5	-23.9	-39.8	21.8	603.0	614.8	256.2	53.9	1.000135
23000.0	422.6	-25.0	-40.8	21.7	593.2	613.4	256.6	54.4	1.000133
23500.0	413.8	-26.1	-41.8	21.5	583.5	612.1	256.5	54.9	1.000131
24000.0	405.2	-27.2	-42.9	21.3	573.9	610.7	256.1	55.4	1.000129
24500.0	396.7	-28.3	-43.9	21.1	564.5	609.3	256.0	55.9	1.000126
25000.0	388.3	-29.5	-44.9	21.1	555.3	607.8	256.2	56.2	1.000124
25500.0	380.1	-30.8	-45.9	21.5	546.5	606.2	256.1	56.5	1.000122
26000.0	372.0	-32.1	-46.9	21.9	537.8	604.5	256.0	56.6	1.000120
26500.0	364.1	-33.5	-47.9	22.3	529.3	602.8	255.6	57.1	1.000118
27000.0	356.3	-34.8	-48.9	22.7	520.8	601.2	254.9	58.4	1.000116
27500.0	348.6	-36.1	-50.1	22.6**	512.4	599.5	254.1	59.5	1.000115
28000.0	341.0	-37.3	-52.0	20.4**	503.8	598.0	253.2	60.3	1.000113
28500.0	333.6	-38.5	-54.0	18.2**	495.3	596.5	251.9	61.4	1.000111
29000.0	326.3	-39.7	-56.0	16.0**	487.0	594.9	250.1	62.8	1.000109
29500.0	319.1	-40.9	-58.3	13.8**	478.7	593.4	249.1	63.7	1.000107
30000.0	312.0	-42.1	-60.6	11.5**	470.6	591.8	248.8	64.0	1.000105
30500.0	305.1	-43.4	-63.3	9.3**	462.6	590.3	248.3	63.5	1.000103
31000.0	298.3	-44.6	-66.3	7.0**	454.6	588.7	247.6	62.4	1.000101
31500.0	291.5	-45.8	-70.0	4.8**	446.8	587.1	247.9	61.7	1.000100
32000.0	285.0	-47.1	-75.3	2.5**	439.1	585.5	249.1	61.5	1.000098
32500.0	278.5	-48.3	-91.7	0.2**	431.5	583.9	249.9	62.1	1.000096
33000.0	272.1	-49.1	0.	-0. **	423.2	582.8	250.0	63.8	1.000094
33500.0	265.9	-49.9	0.	-0. **	415.0	581.7	249.8	65.4	1.000092
34000.0	259.7	-50.8	0.	-0. **	406.9	580.7	249.0	66.8	1.000091
34500.0	253.7	-51.6	0.	-0. **	399.0	579.6	248.0	68.8	1.000089
35000.0	247.9	-51.8	0.	-0. **	390.2	579.3	245.9	73.8	1.000087
35500.0	242.1	-51.9	0.	-0. **	381.3	579.2	243.7	78.8	1.000085
36000.0	236.5	-51.9	0.	-0. **	372.5	579.1	239.7	77.9	1.000083
36500.0	231.0	-52.0	0.	-0. **	364.0	579.1	235.7	76.9	1.000081
37000.0	225.7	-51.9	0.	-0. **	355.3	579.2	233.9	79.6	1.000079

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE OF ZERO WAS USED IN THE INTERPOLATION

STATION ALTITUDE 3989.0 FEET MSL
14 APR. 65 2130 HRS MST
ASCENSION NO. 302

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

TABLE C-III. UPPER AIR DATA - WHITE SANDS SITE (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
37500.0	220.5	-51.5	0.	-0. **	346.6	579.7	233.0	83.8	1.000077
38000.0	215.4	-51.2	0.	-0. **	338.1	580.1	231.8	83.1	1.000075
38500.0	210.4	-50.8	0.	-0. **	329.8	580.6	230.2	77.2	1.000073
39000.0	205.6	-51.1	0.	-0. **	322.5	580.3	229.2	72.6	1.000072
39500.0	200.8	-51.3	0.	-0. **	315.4	579.9	230.4	72.5	1.000070
40000.0	196.2	-51.6	0.	-0. **	308.5	579.6	231.5	72.4	1.000069
40500.0	191.6	-51.9	0.	-0. **	301.8	579.2	231.8	70.2	1.000067
41000.0	187.2	-52.8	0.	-0. **	296.1	577.9	232.0	67.8	1.000066
41500.0	182.8	-54.2	0.	-0. **	290.9	576.2	233.1	69.0	1.000065
42000.0	178.5	-55.4	0.	-0. **	285.7	574.5	235.2	73.4	1.000064
42500.0	174.3	-55.7	0.	-0. **	279.4	574.1	237.4	77.3	1.000062
43000.0	170.2	-56.2	0.	-0. **	273.4	573.5	240.7	78.9	1.000061
43500.0	166.2	-56.9	0.	-0. **	267.8	572.6	244.0	80.6	1.000060
44000.0	162.3	-57.6	0.	-0. **	262.3	571.7	245.2	78.4	1.000058
44500.0	158.4	-58.3	0.	-0. **	256.8	570.8	246.1	75.5	1.000057
45000.0	154.6	-58.9	0.	-0. **	251.5	569.9	246.6	72.2	1.000056
45500.0	150.9	-59.6	0.	-0. **	246.3	569.0	245.8	67.8	1.000055
46000.0	147.3	-60.1	0.	-0. **	240.9	568.4	245.0	63.3	1.000054
46500.0	143.8	-59.4	0.	-0. **	234.4	569.2	241.9	58.9	1.000052
47000.0	140.3	-59.5	0.	-0. **	228.8	569.2	236.5	54.6	1.000051
47500.0	137.0	-60.2	0.	-0. **	224.1	568.2	231.8	51.0	1.000050
48000.0	133.7	-61.0	0.	-0. **	219.5	567.2	232.6	52.6	1.000049
48500.0	130.5	-61.8	0.	-0. **	215.0	566.1	233.5	54.2	1.000048
49000.0	127.3	-62.5	0.	-0. **	210.6	565.1	234.2	56.1	1.000047
49500.0	124.2	-63.3	0.	-0. **	206.2	564.1	234.9	57.9	1.000046
50000.0	121.2	-64.1	0.	-0. **	201.9	563.0	237.0	60.1	1.000045
50500.0	118.2	-64.8	0.	-0. **	197.7	562.0	240.5	62.5	1.000044
51000.0	115.3	-65.6	0.	-0. **	193.6	560.9	243.7	64.6	1.000043
51500.0	112.4	-65.6	0.	-0. **	188.8	560.9	244.3	62.4	1.000042
52000.0	109.7	-65.6	0.	-0. **	184.1	561.0	244.8	60.3	1.000041
52500.0	107.0	-65.5	0.	-0. **	179.5	561.1	244.8	55.6	1.000040
53000.0	104.3	-65.4	0.	-0. **	175.0	561.2	244.2	48.2	1.000039
53500.0	101.8	-65.4	0.	-0. **	170.6	561.3	243.5	40.8	1.000038

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE OF ZERO WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
14 APR. 65 2130 HRS MST
ASCENSION NO. 302

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

TABLE C-III. UPPER AIR DATA - WHITE SANDS SITE (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
54000.0	99.3	-65.4	0.	-0. **	166.5	561.2	243.2	39.0	1.000037
54500.0	96.8	-65.8	0.	-0. **	162.7	560.7	242.9	38.1	1.000036
55000.0	94.4	-66.1	0.	-0. **	158.9	560.3	240.3	35.7	1.000035
55500.0	92.1	-66.5	0.	-0. **	155.3	559.8	232.5	30.0	1.000035
56000.0	89.8	-66.8	0.	-0. **	151.7	559.3	224.7	24.2	1.000034
56500.0	87.6	-67.2	0.	-0. **	148.2	558.8	225.3	25.5	1.000033
57000.0	85.4	-67.5	0.	-0. **	144.8	558.3	227.8	28.4	1.000032
57500.0	83.3	-67.9	0.	-0. **	141.4	557.8	228.1	29.9	1.000031
58000.0	81.2	-68.3	0.	-0. **	138.1	557.3	217.4	25.3	1.000031
58500.0	79.2	-68.6	0.	-0. **	134.9	556.9	206.7	20.6	1.000030
59000.0	77.2	-69.0	0.	-0. **	131.8	556.4	203.3	18.7	1.000029
59500.0	75.3	-69.3	0.	-0. **	128.7	555.9	211.9	21.4	1.000029
60000.0	73.4	-69.7	0.	-0. **	125.7	555.4	220.4	24.1	1.000028
60500.0	71.6	-70.1	0.	-0. **	122.8	554.9	220.9	23.2	1.000027
61000.0	69.8	-70.4	0.	-0. **	119.9	554.4	215.1	19.3	1.000027
61500.0	68.0	-70.8	0.	-0. **	117.1	553.9	209.2	15.5	1.000026
62000.0	66.3	-69.9	0.	-0. **	113.6	555.1	211.1	14.6	1.000025
62500.0	64.6	-69.0	0.	-0. **	110.3	556.3	216.6	15.1	1.000025
63000.0	63.0	-68.2	0.	-0. **	107.1	557.5	222.1	15.6	1.000024
63500.0	61.4	-67.3	0.	-0. **	104.0	558.7	216.5	12.5	1.000023
64000.0	59.9	-66.4	0.	-0. **	101.0	559.9	207.6	8.3	1.000022
64500.0	58.4	-65.5	0.	-0. **	98.1	561.0	198.8	4.1	1.000022
65000.0	57.0	-64.7	0.	-0. **	95.3	562.2	210.0	5.2	1.000021
65500.0	55.6	-63.8	0.	-0. **	92.6	563.4	224.7	7.2	1.000021
66000.0	54.3	-63.0	0.	-0. **	89.9	564.5	239.5	9.2	1.000020
66500.0	52.9	-62.1	0.	-0. **	87.4	565.6	294.0	9.3	1.000019
67000.0	51.7	-61.4	0.	-0. **	85.0	566.6	351.6	9.3	1.000019
67500.0	50.4	-61.2	0.	-0. **	82.9	566.9	49.3	9.2	1.000018
68000.0	49.2	-61.0	0.	-0. **	80.8	567.2	57.3	8.1	1.000018
68500.0	48.0	-60.7	0.	-0. **	78.8	567.5	63.0	6.9	1.000018
69000.0	46.9	-60.5	0.	-0. **	76.8	567.9	68.7	5.7	1.000017
69500.0	45.7	-60.2	0.	-0. **	74.8	568.2	69.1	8.4	1.000017
70000.0	44.6	-60.0	0.	-0. **	73.0	568.5	69.0	11.4	1.000016

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ASCENSION NO. . 302

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

TABLE C-III. UPPER AIR DATA - WHITE SANDS SITE (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
70500.0	43.6	-59.8	0.	-0. **	71.1	568.8	69.0	14.3	1.000016
71000.0	42.5	-59.5	0.	-0. **	69.4	569.1	91.7	11.9	1.000015
71500.0	41.5	-59.3	0.	-0. **	67.6	569.4	116.6	9.0	1.000015
72000.0	40.5	-59.0	0.	-0. **	65.9	569.8	141.6	6.0	1.000015
72500.0	39.6	-58.8	0.	-0. **	64.3	570.1	142.0	5.7	1.000014
73000.0	38.6	-58.6	0.	-0. **	62.7	570.4	139.3	5.8	1.000014
73500.0	37.7	-58.3	0.	-0. **	61.1	570.7	136.5	5.9	1.000014
74000.0	36.8	-58.1	0.	-0. **	59.6	571.0	133.5	6.1	1.000013
74500.0	35.9	-57.8	0.	-0. **	58.2	571.3	130.6	6.2	1.000013
75000.0	35.1	-57.6	0.	-0. **	56.7	571.7	127.6	6.4	1.000013
75500.0	34.3	-57.4	0.	-0. **	55.3	572.0	123.7	6.3	1.000012
76000.0	33.4	-56.7	0.	-0. **	53.8	572.8	119.5	6.1	1.000012
76500.0	32.7	-55.9	0.	-0. **	52.4	573.9	115.3	5.9	1.000012
77000.0	31.9	-55.1	0.	-0. **	50.9	575.0	111.5	6.1	1.000011
77500.0	31.1	-54.3	0.	-0. **	49.6	576.1	107.9	6.6	1.000011
78000.0	30.4	-53.4	0.	-0. **	48.2	577.1	104.4	7.1	1.000011
78500.0	29.7	-52.6	0.	-0. **	46.9	578.2	112.5	6.9	1.000010
79000.0	29.0	-51.8	0.	-0. **	45.7	579.3	134.7	5.9	1.000010
79500.0	28.4	-51.8	0.	-0. **	44.6	579.3	156.9	4.9	1.000010
80000.0	27.7	-51.8	0.	-0. **	43.6	579.3	167.7	4.4	1.000010
80500.0	27.1	-51.8	0.	-0. **	42.6	579.3	148.7	4.9	1.000009
81000.0	26.4	-51.9	0.	-0. **	41.6	579.2	129.8	5.4	1.000009
81500.0	25.8	-51.9	0.	-0. **	40.7	579.2	112.1	5.8	1.000009
82000.0	25.2	-51.9	0.	-0. **	39.7	579.2	108.3	4.7	1.000009
82500.0	24.7	-51.9	0.	-0. **	38.8	579.2	104.6	3.7	1.000009
83000.0	24.1	-51.9	0.	-0. **	37.9	579.2	100.8	2.7	1.000008
83500.0	23.5	-51.9	0.	-0. **	37.1	579.1	126.5	2.3	1.000008
84000.0	23.0	-51.9	0.	-0. **	36.2	579.1	156.1	2.1	1.000008
84500.0	22.5	-52.0	0.	-0. **	35.4	579.1	185.7	1.8	1.000008
85000.0	21.9	-52.0	0.	-0. **	34.6	579.1	166.5	1.4	1.000008
85500.0	21.4	-52.0	0.	-0. **	33.8	579.1	125.0	0.9	1.000008
86000.0	20.9	-51.9	0.	-0. **	33.0	579.1	83.5	0.5	1.000007
86500.0	20.5	-51.6	0.	-0. **	32.2	579.6	75.9	0.8	1.000007

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E 488,580 FEET
N 185,045 FEET

TABLE C-III. UPPER AIR DATA - WHITE SANDS SITE (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
87000.0	20.0	-51.2	0.	-0. **	31.4	580.1	88.1	1.5	1.000007
87500.0	19.5	-50.8	0.	-0. **	30.6	580.7	100.3	2.2	1.000007
88000.0	19.1	-50.4	0.	-0. **	29.8	581.2	93.4	4.3	1.000007
88500.0	18.6	-50.0	0.	-0. **	29.1	581.7	80.9	6.8	1.000006
89000.0	18.2	-49.6	0.	-0. **	28.4	582.2	68.4	9.3	1.000006
89500.0	17.8	-49.2	0.	-0. **	27.7	582.7	68.2	7.4	1.000006
90000.0	17.4	-48.8	0.	-0. **	27.0	583.2	68.2	5.4	1.000006
90500.0	17.0	-48.4	0.	-0. **	26.4	583.7	67.5	4.1	1.000006
91000.0	16.6	-48.1	0.	-0. **	25.7	584.2	63.9	5.4	1.000006
91500.0	16.2	-47.7	0.	-0. **	25.1	584.7	60.2	6.8	1.000006
92000.0	15.9	-47.3	0.	-0. **	24.5	585.2	56.2	7.5	1.000005
92500.0	15.5	-46.9	0.	-0. **	23.9	585.7	51.5	7.2	1.000005
93000.0	15.2	-46.5	0.	-0. **	23.3	586.2	46.9	6.9	1.000005
93500.0	14.8	-46.1	0.	-0. **	22.8	586.7	45.3	6.9	1.000005
94000.0	14.5	-45.8	0.	-0. **	22.2	587.2	45.7	7.0	1.000005
94500.0	14.2	-45.4	0.	-0. **	21.7	587.7	46.2	7.1	1.000005
95000.0	13.9	-45.0	0.	-0. **	21.2	588.1	61.1	5.9	1.000005
95500.0	13.5	-44.6	0.	-0. **	20.6	588.6	79.4	4.3	1.000005
96000.0	13.2	-44.2	0.	-0. **	20.2	589.1	98.0	2.7	1.000004
96500.0	12.9	-43.9	0.	-0. **	19.7	589.6	134.9	3.1	1.000004
97000.0	12.7	-43.5	0.	-0. **	19.2	590.1	171.8	3.4	1.000004
97500.0	12.4	-43.1	0.	-0. **	18.7	590.6	202.6	3.9	1.000004
98000.0	12.1	-42.7	0.	-0. **	18.3	591.1	212.0	5.2	1.000004
98500.0	11.8	-42.3	0.	-0. **	17.9	591.5	221.4	6.6	1.000004
99000.0	11.6	-42.0	0.	-0. **	17.4	592.0	232.7	7.6	1.000004
99500.0	11.3	-41.6	0.	-0. **	17.0	592.5	246.4	8.3	1.000004
100000.0	11.1	-41.2	0.	-0. **	16.6	593.0	260.2	9.0	1.000004
100500.0	10.8	-40.9	0.	-0. **	16.2	593.5			1.000004
101000.0	10.6	-40.5	0.	-0. **	15.9	593.9			1.000004
101500.0	10.4	-40.1	0.	-0. **	15.5	594.4			1.000003
102000.0	10.1	-39.7	0.	-0. **	15.1	594.9			1.000003
102500.0	9.9	-39.4	0.	-0. **	14.8	595.4			1.000003

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STATION ALTITUDE 3989.0 FEET MSL
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WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

TABLE C-IV. UPPER AIR DATA - WHITE SANDS SITE

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
3989.0	881.3	10.4	-17.8	12.0	1082.2	655.9	360.0	8.0	1.000248
5000.0	849.5	13.3	-12.0	16.0	1032.2	659.4	0.7	14.7	1.000241
5500.0	834.2	12.7	-12.5	16.0	1015.7	658.7	1.1	18.1	1.000237
6000.0	819.2	11.8	-13.2	16.0	1000.6	657.6	1.4	21.4	1.000233
6500.0	804.4	10.9	-14.0	16.0	985.7	656.6	359.1	21.0	1.000229
7000.0	789.8	10.0	-14.7	16.0	970.9	655.5	353.5	16.2	1.000226
7500.0	775.4	9.1	-15.5	16.0	956.4	654.5	342.7	12.7	1.000222
8000.0	761.3	8.2	-16.2	16.0	942.0	653.4	329.0	9.9	1.000218
8500.0	747.3	7.1	-16.8	16.5	928.4	652.1	309.1	9.2	1.000215
9000.0	733.6	5.8	-17.3	17.2	915.3	650.6	287.4	9.1	1.000212
9500.0	720.0	4.6	-17.8	17.8	902.4	649.2	280.2	9.8	1.000208
10000.0	706.6	3.4	-18.4	18.5	889.6	647.8	275.3	10.7	1.000205
10500.0	693.5	2.2	-19.0	19.2	876.9	646.3	274.5	12.9	1.000202
11000.0	680.5	0.9	-19.6	19.9	864.4	644.9	274.6	15.4	1.000199
11500.0	667.7	0.7	-20.9	18.1	848.9	644.6	277.1	18.8	1.000195
12000.0	655.1	0.6	-22.4	15.9	833.2	644.5	277.8	22.5	1.000191
12500.0	642.8	-0.0	-23.5	15.2	819.6	643.7	276.9	26.3	1.000187
13000.0	630.7	-1.1	-24.2	15.5	807.3	642.4	276.3	28.2	1.000184
13500.0	618.8	-2.2	-24.8	15.8	795.2	641.1	275.8	29.7	1.000181
14000.0	607.0	-3.3	-25.5	16.1	783.3	639.8	273.6	30.4	1.000178
14500.0	595.4	-4.4	-26.2	16.5	771.5	638.5	271.6	31.0	1.000176
15000.0	584.0	-5.5	-26.9	16.8	759.8	637.2	271.0	31.3	1.000173
15500.0	572.7	-6.6	-27.6	17.1	748.3	635.9	270.3	31.6	1.000170
16000.0	561.7	-7.7	-28.3	17.4	736.9	634.5	269.3	31.7	1.000167
16500.0	550.8	-8.8	-29.0	17.8	725.6	633.2	268.8	31.8	1.000165
17000.0	540.0	-9.9	-29.8	18.2	714.6	631.8	269.2	31.7	1.000162
17500.0	529.5	-11.1	-30.4	18.8	703.8	630.4	268.2	31.6	1.000159
18000.0	519.0	-12.3	-31.1	19.4	693.1	628.9	265.5	31.2	1.000157
18500.0	508.8	-13.5	-31.8	20.0	682.6	627.5	263.9	32.2	1.000154
19000.0	498.7	-14.8	-32.5	20.7	672.2	626.0	263.4	34.6	1.000152
19500.0	488.8	-16.0	-33.2	21.3	662.0	624.5	262.2	36.9	1.000150
20000.0	479.0	-17.2	-34.0	21.9	651.9	623.0	260.4	39.0	1.000147
20500.0	469.3	-18.4	-34.8	22.6	641.8	621.5	259.0	41.0	1.000145

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TABLE C-IV. UPPER AIR DATA - WHITE SANDS SITE (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
21000.0	459.8	-19.7	-35.5	23.2	631.9	620.0	258.1	42.9	1.000142
21500.0	450.5	-20.9	-36.3	23.9	622.2	618.5	257.2	44.3	1.000140
22000.0	441.3	-22.2	-37.2	24.5	612.5	616.9	256.2	45.0	1.000138
22500.0	432.2	-23.4	-38.0	25.2	603.0	615.4	255.6	45.4	1.000136
23000.0	423.3	-24.7	-38.9	25.8	593.6	613.8	255.5	45.3	1.000133
23500.0	414.6	-26.0	-39.7	26.5	584.3	612.2	256.0	45.8	1.000131
24000.0	405.9	-27.2	-40.6	27.1	575.1	610.6	257.5	47.3	1.000129
24500.0	397.4	-28.5	-41.5	27.8	566.0	609.0	258.5	48.3	1.000127
25000.0	389.1	-29.8	-42.5	28.5	557.0	607.4	258.7	48.6	1.000125
25500.0	380.8	-31.1	-43.4	29.1	548.2	605.8	258.5	49.0	1.000123
26000.0	372.7	-32.4	-44.3	29.8	539.4	604.2	257.6	49.5	1.000121
26500.0	364.8	-33.7	-45.3	30.5	530.8	602.5	256.5	50.4	1.000119
27000.0	356.9	-35.0	-46.3	30.9	522.0	601.0	254.9	51.8	1.000117
27500.0	349.2	-36.0	-47.4	30.3	512.9	599.7	253.2	52.6	1.000115
28000.0	341.6	-37.0	-48.4	29.8	503.9	598.4	251.1	51.5	1.000113
28500.0	334.2	-38.0	-49.5	29.2	495.0	597.2	249.3	50.8	1.000111
29000.0	326.8	-39.1	-51.3	26.8**	486.6	595.7	249.2	51.8	1.000109
29500.0	319.7	-40.4	-53.7	22.8**	478.5	594.1	249.0	52.9	1.000107
30000.0	312.6	-41.6	-56.4	18.9**	470.5	592.5	249.3	54.2	1.000105
30500.0	305.7	-42.9	-59.3	14.9**	462.6	590.8	249.6	55.6	1.000103
31000.0	298.8	-44.2	-62.8	10.9**	454.8	589.2	250.2	57.8	1.000101
31500.0	292.1	-45.5	-67.2	6.9**	447.1	587.5	250.8	60.0	1.000100
32000.0	285.5	-46.8	-74.2	2.8**	439.5	585.8	251.1	62.4	1.000098
32500.0	279.0	-48.0	0.	-0. **	431.8	584.3	251.4	64.7	1.000096
33000.0	272.7	-49.0	0.	-0. **	423.8	583.0	250.5	63.5	1.000094
33500.0	266.4	-50.0	0.	-0. **	415.9	581.7	249.4	61.7	1.000093
34000.0	260.3	-51.0	0.	-0. **	408.1	580.4	249.0	62.0	1.000091
34500.0	254.3	-52.0	0.	-0. **	400.5	579.1	249.0	62.9	1.000089
35000.0	248.4	-52.3	0.	-0. **	391.8	578.7	248.3	63.0	1.000087
35500.0	242.6	-52.6	0.	-0. **	383.2	578.3	247.3	62.5	1.000085
36000.0	237.0	-52.9	0.	-0. **	374.8	577.9	245.0	62.7	1.000083
36500.0	231.5	-53.2	0.	-0. **	366.6	577.5	241.9	63.4	1.000082
37000.0	226.1	-53.5	0.	-0. **	358.6	577.1	240.2	66.8	1.000080

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE OF ZERO WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
15 APR. 65 0001 HRS MST
ASCENSION NO. 303

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

TABLE C-IV. UPPER AIR DATA - WHITE SANDS SITE (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT, CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
37500.0	220.8	-53.8	0.	-0. **	350.7	576.7	239.3	71.7	1.000078
38000.0	215.6	-54.1	0.	-0. **	342.9	576.3	238.1	73.9	1.000076
38500.0	210.6	-54.4	0.	-0. **	335.4	575.9	236.8	74.5	1.000075
39000.0	205.6	-54.7	0.	-0. **	328.0	575.5	236.2	76.2	1.000073
39500.0	200.8	-55.0	0.	-0. **	320.7	575.1	236.4	79.1	1.000071
40000.0	196.1	-55.3	0.	-0. **	313.6	574.7	235.9	80.1	1.000070
40500.0	191.5	-55.6	0.	-0. **	306.7	574.3	233.6	76.7	1.000068
41000.0	187.0	-55.9	0.	-0. **	299.9	573.9	231.9	74.4	1.000067
41500.0	182.6	-56.2	0.	-0. **	293.2	573.5	233.0	78.1	1.000065
42000.0	178.3	-56.5	0.	-0. **	286.7	573.1	234.2	81.5	1.000064
42500.0	174.0	-55.5	0.	-0. **	278.6	574.4	236.2	82.9	1.000062
43000.0	169.9	-55.1	0.	-0. **	271.5	575.0	238.2	84.2	1.000060
43500.0	166.0	-55.6	0.	-0. **	265.8	574.3	240.5	82.7	1.000059
44000.0	162.0	-56.1	0.	-0. **	260.2	573.6	242.9	80.6	1.000058
44500.0	158.2	-56.7	0.	-0. **	254.7	572.9	244.2	76.7	1.000057
45000.0	154.5	-57.2	0.	-0. **	249.3	572.2	244.4	70.8	1.000056
45500.0	150.8	-57.8	0.	-0. **	244.0	571.5	244.3	64.8	1.000054
46000.0	147.2	-58.3	0.	-0. **	238.8	570.7	242.7	58.4	1.000053
46500.0	143.7	-58.9	0.	-0. **	233.7	570.0	241.2	52.0	1.000052
47000.0	140.3	-59.4	0.	-0. **	228.6	569.3	238.2	50.9	1.000051
47500.0	136.9	-59.9	0.	-0. **	223.7	568.6	234.9	51.0	1.000050
48000.0	133.6	-60.5	0.	-0. **	218.9	567.8	232.7	51.3	1.000049
48500.0	130.4	-61.0	0.	-0. **	214.2	567.1	232.6	52.0	1.000048
49000.0	127.3	-61.6	0.	-0. **	209.6	566.3	232.6	52.8	1.000047
49500.0	124.2	-62.1	0.	-0. **	205.0	565.6	234.5	56.4	1.000046
50000.0	121.2	-62.7	0.	-0. **	200.6	564.9	236.8	60.5	1.000045
50500.0	118.2	-63.3	0.	-0. **	196.2	564.1	238.3	59.5	1.000044
51000.0	115.3	-63.3	0.	-0. **	191.5	564.1	239.1	53.0	1.000043
51500.0	112.5	-63.3	0.	-0. **	186.8	564.1	239.7	47.1	1.000042
52000.0	109.8	-63.3	0.	-0. **	182.2	564.1	238.5	49.8	1.000041
52500.0	107.1	-63.3	0.	-0. **	177.8	564.1	237.3	52.6	1.000040
53000.0	104.5	-63.3	0.	-0. **	173.5	564.1	236.8	51.5	1.000039
53500.0	101.9	-63.3	0.	-0. **	169.2	564.1	237.0	45.3	1.000038

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE OF ZERO WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
15 APR. 65 0001 HRS MST
ASCENSION NO. 303

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

TABLE C-IV. UPPER AIR DATA - WHITE SANDS SITE (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
54000.0	99.5	-63.6	0.	-0. **	165.3	563.7	237.2	39.1	1.000037
54500.0	97.0	-64.0	0.	-0. **	161.7	563.1	237.9	38.1	1.000036
55000.0	94.7	-64.5	0.	-0. **	158.0	562.5	239.0	39.6	1.000035
55500.0	92.3	-64.9	0.	-0. **	154.5	561.9	240.0	41.1	1.000034
56000.0	90.1	-65.4	0.	-0. **	151.0	561.2	241.6	36.8	1.000034
56500.0	87.8	-65.8	0.	-0. **	147.6	560.6	243.3	31.8	1.000033
57000.0	85.7	-66.3	0.	-0. **	144.3	560.0	244.0	27.4	1.000032
57500.0	83.6	-66.8	0.	-0. **	141.1	559.4	238.3	26.5	1.000031
58000.0	81.5	-67.2	0.	-0. **	137.9	558.8	232.5	25.6	1.000031
58500.0	79.5	-67.7	0.	-0. **	134.8	558.1	228.2	25.7	1.000030
59000.0	77.5	-68.1	0.	-0. **	131.7	557.5	226.2	27.2	1.000029
59500.0	75.6	-68.6	0.	-0. **	128.7	556.9	224.1	28.7	1.000029
60000.0	73.7	-69.1	0.	-0. **	125.8	556.3	220.2	25.4	1.000028
60500.0	71.8	-69.5	0.	-0. **	122.9	555.6	215.6	20.0	1.000027
61000.0	70.0	-70.0	0.	-0. **	120.1	555.0	210.9	14.6	1.000027
61500.0	68.3	-70.5	0.	-0. **	117.3	554.4	222.7	14.7	1.000026
62000.0	66.5	-70.5	0.	-0. **	114.4	554.3	234.9	14.9	1.000025
62500.0	64.9	-69.5	0.	-0. **	110.9	555.7	247.9	14.6	1.000025
63000.0	63.2	-68.4	0.	-0. **	107.6	557.2	264.1	12.1	1.000024
63500.0	61.7	-67.4	0.	-0. **	104.4	558.6	280.3	9.6	1.000023
64000.0	60.1	-66.3	0.	-0. **	101.3	560.0	287.8	7.3	1.000023
64500.0	58.7	-65.3	0.	-0. **	98.3	561.4	282.0	5.6	1.000022
65000.0	57.2	-64.3	0.	-0. **	95.4	562.8	276.1	3.9	1.000021
65500.0	55.8	-63.2	0.	-0. **	92.7	564.1	307.3	3.1	1.000021
66000.0	54.5	-62.2	0.	-0. **	90.0	565.5	4.5	2.9	1.000020
66500.0	53.2	-61.2	0.	-0. **	87.4	566.9	61.8	2.8	1.000019
67000.0	51.9	-60.3	0.	-0. **	84.9	568.1	76.8	7.5	1.000019
67500.0	50.6	-60.2	0.	-0. **	82.8	568.2	85.3	12.9	1.000018
68000.0	49.4	-60.1	0.	-0. **	80.8	568.3	93.9	16.5	1.000018
68500.0	48.2	-60.0	0.	-0. **	78.9	568.4	103.2	14.1	1.000018
69000.0	47.1	-60.0	0.	-0. **	76.9	568.5	112.4	11.6	1.000017
69500.0	45.9	-59.9	0.	-0. **	75.1	568.6	116.9	12.1	1.000017
70000.0	44.8	-59.8	0.	-0. **	73.2	568.8	118.2	14.4	1.000016

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE OF ZERO WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
15 APR. 65 0001 HRS MST
ASCENSION NO. 303

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

TABLE C-IV. UPPER AIR DATA - WHITE SANDS SITE (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
70500.0	43.8	-59.7	0.	-0. **	71.5	568.9	119.5	16.8	1.000016
71000.0	42.7	-59.6	0.	-0. **	69.7	569.0	130.0	13.6	1.000016
71500.0	41.7	-59.5	0.	-0. **	68.0	569.1	140.7	10.1	1.000015
72000.0	40.7	-59.5	0.	-0. **	66.4	569.2	146.3	7.4	1.000015
72500.0	39.7	-59.3	0.	-0. **	64.7	569.5	141.7	6.1	1.000014
73000.0	38.8	-58.8	0.	-0. **	63.0	570.1	137.1	4.8	1.000014
73500.0	37.9	-58.3	0.	-0. **	61.4	570.7	151.3	5.3	1.000014
74000.0	37.0	-57.9	0.	-0. **	59.8	571.3	181.5	7.4	1.000013
74500.0	36.1	-57.4	0.	-0. **	58.3	572.0	211.8	9.4	1.000013
75000.0	35.2	-56.9	0.	-0. **	56.8	572.6	207.8	9.4	1.000013
75500.0	34.4	-56.4	0.	-0. **	55.3	573.2	173.1	7.7	1.000012
76000.0	33.6	-56.0	0.	-0. **	53.9	573.8	138.5	5.9	1.000012
76500.0	32.8	-55.5	0.	-0. **	52.5	574.4	114.5	5.5	1.000012
77000.0	32.0	-55.0	0.	-0. **	51.2	575.0	103.4	6.8	1.000011
77500.0	31.3	-54.6	0.	-0. **	49.9	575.7	92.3	8.0	1.000011
78000.0	30.6	-54.3	0.	-0. **	48.7	576.0	82.5	10.4	1.000011
78500.0	29.8	-54.1	0.	-0. **	47.5	576.2	74.9	14.8	1.000011
79000.0	29.2	-54.0	0.	-0. **	46.3	576.5	67.4	19.2	1.000010
79500.0	28.5	-53.8	0.	-0. **	45.2	576.7	59.3	21.1	1.000010
80000.0	27.8	-53.6	0.	-0. **	44.1	576.9	49.7	15.3	1.000010
80500.0	27.2	-53.5	0.	-0. **	43.1	577.1	40.0	9.5	1.000010
81000.0	26.5	-53.3	0.	-0. **	42.1	577.3	27.5	4.2	1.000009
81500.0	25.9	-53.2	0.	-0. **	41.1	577.5	350.6	3.7	1.000009
82000.0	25.3	-53.0	0.	-0. **	40.1	577.8	313.7	3.3	1.000009
82500.0	24.7	-52.8	0.	-0. **	39.1	578.0	276.7	2.8	1.000009
83000.0	24.2	-52.7	0.	-0. **	38.2	578.2	270.0	4.4	1.000008
83500.0	23.6	-52.5	0.	-0. **	37.3	578.4	264.2	6.1	1.000008
84000.0	23.1	-52.3	0.	-0. **	36.4	578.6	258.4	7.8	1.000008
84500.0	22.5	-52.2	0.	-0. **	35.5	578.8	258.1	7.7	1.000008
85000.0	22.0	-52.0	0.	-0. **	34.7	579.0	258.8	7.1	1.000008
85500.0	21.5	-51.8	0.	-0. **	33.8	579.2	259.6	6.6	1.000008
86000.0	21.0	-51.7	0.	-0. **	33.0	579.5	267.0	5.8	1.000007
86500.0	20.5	-51.5	0.	-0. **	32.3	579.7	277.5	5.0	1.000007

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE OF ZERO WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
15 APR. 65 0001 HRS MST
ASCENSION NO. 303

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

TABLE C-IV. UPPER AIR DATA - WHITE SANDS SITE (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
87000.0	20.0	-51.4	0.	-0. **	31.5	579.9	288.1	4.1	1.000007
87500.0	19.6	-51.2	0.	-0. **	30.7	580.1	314.2	3.2	1.000007
88000.0	19.1	-51.0	0.	-0. **	30.0	580.3	356.2	2.4	1.000007
88500.0	18.7	-50.9	0.	-0. **	29.3	580.5	38.2	1.7	1.000007
89000.0	18.3	-50.5	0.	-0. **	28.6	580.9	75.6	1.1	1.000006
89500.0	17.8	-50.1	0.	-0. **	27.9	581.5	101.0	1.2	1.000006
90000.0	17.4	-49.6	0.	-0. **	27.2	582.1	126.4	1.2	1.000006
90500.0	17.0	-49.2	0.	-0. **	26.5	582.7	151.7	1.3	1.000006
91000.0	16.7	-48.7	0.	-0. **	25.9	583.3	169.3	2.2	1.000006
91500.0	16.3	-48.3	0.	-0. **	25.2	583.9	186.9	3.0	1.000006
92000.0	15.9	-47.8	0.	-0. **	24.6	584.5	204.4	3.8	1.000005
92500.0	15.5	-47.4	0.	-0. **	24.0	585.0	217.9	4.1	1.000005
93000.0	15.2	-47.0	0.	-0. **	23.4	585.6	229.9	4.0	1.000005
93500.0	14.9	-46.5	0.	-0. **	22.8	586.2	241.9	4.0	1.000005
94000.0	14.5	-46.1	0.	-0. **	22.3	586.8	250.8	4.1	1.000005
94500.0	14.2	-45.6	0.	-0. **	21.7	587.3	256.2	4.1	1.000005
95000.0	13.9	-45.2	0.	-0. **	21.2	587.9	261.5	4.2	1.000005
95500.0	13.6	-44.7	0.	-0. **	20.7	588.5			1.000005
96000.0	13.3	-44.3	0.	-0. **	20.2	589.1			1.000004
96500.0	13.0	-43.9	0.	-0. **	19.7	589.6			1.000004
97000.0	12.7	-43.4	0.	-0. **	19.2	590.2			1.000004
97500.0	12.4	-43.0	0.	-0. **	18.8	590.7			1.000004
98000.0	12.1	-42.5	0.	-0. **	18.3	591.3			1.000004
98500.0	11.9	-42.1	0.	-0. **	17.9	591.9			1.000004
99000.0	11.6	-41.7	0.	-0. **	17.5	592.4			1.000004

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE OF ZERO WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
15 APR. 65 0345 HRS MST
ASCENSION NO. 306

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

TABLE C-V. UPPER AIR DATA - WHITE SANDS SITE

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
3989.0	882.2	8.8	-12.4	21.0	1089.1	654.2	360.0	6.0	1.000254
5000.0	850.1	10.8	-10.2	21.7	1041.7	656.6	0.8	14.2	1.000245
5500.0	834.7	10.0	-10.6	22.4	1025.8	655.6	1.2	18.3	1.000241
6000.0	819.5	9.0	-11.1	22.8	1010.6	654.5	1.7	22.3	1.000238
6500.0	804.6	8.1	-11.7	23.2	995.6	653.4	2.1	26.4	1.000234
7000.0	789.8	7.1	-12.3	23.7	980.9	652.2	355.5	22.9	1.000230
7500.0	775.3	6.1	-12.9	24.1	966.2	651.0	348.6	19.1	1.000226
8000.0	761.0	5.1	-13.5	24.6	951.8	649.9	332.1	16.3	1.000223
8500.0	746.9	4.1	-14.2	25.0	937.5	648.7	315.0	13.6	1.000219
9000.0	733.0	3.4	-14.5	25.6	922.4	647.9	299.4	14.2	1.000215
9500.0	719.4	2.7	-14.9	26.1	907.6	647.1	284.0	15.2	1.000212
10000.0	705.9	2.0	-15.2	26.6	892.9	646.2	278.5	17.1	1.000208
10500.0	692.7	1.4	-15.9	26.4	878.1	645.6	274.4	19.1	1.000205
11000.0	679.7	1.2	-17.2	23.9	862.4	645.3	274.2	20.9	1.000200
11500.0	667.0	1.0	-18.7	21.4	847.0	645.0	275.4	22.7	1.000196
12000.0	654.5	0.4	-19.8	20.4	833.1	644.2	276.9	24.3	1.000192
12500.0	642.1	-0.8	-20.4	21.3	821.0	642.8	278.7	25.7	1.000189
13000.0	630.0	-2.1	-20.9	22.1	809.1	641.3	279.4	27.1	1.000186
13500.0	618.0	-3.3	-21.5	23.0	797.3	639.9	278.0	28.1	1.000183
14000.0	606.2	-4.5	-22.1	23.9	785.7	638.4	276.3	29.0	1.000180
14500.0	594.6	-5.7	-22.8	24.8	774.2	637.0	273.7	29.6	1.000178
15000.0	583.1	-6.3	-23.2	25.0	760.8	636.3	271.3	30.1	1.000175
15500.0	571.9	-7.2	-23.8	25.2	748.6	635.2	270.4	30.2	1.000172
16000.0	560.8	-8.3	-24.7	25.6	737.5	633.8	269.5	30.3	1.000169
16500.0	549.9	-9.5	-25.6	26.0	726.4	632.4	269.0	30.2	1.000166
17000.0	539.2	-10.7	-26.5	26.3	715.5	630.9	268.5	30.0	1.000163
17500.0	528.6	-11.9	-27.4	26.7	704.7	629.5	269.2	30.7	1.000161
18000.0	518.2	-13.2	-28.3	27.1	694.1	628.0	269.8	31.5	1.000158
18500.0	507.9	-14.4	-29.2	27.5	683.5	626.5	269.5	32.8	1.000155
19000.0	497.8	-15.6	-30.1	27.9	673.1	625.0	269.2	34.2	1.000153
19500.0	487.8	-16.8	-31.0	28.2	662.9	623.5	268.6	36.2	1.000150
20000.0	478.0	-18.1	-32.0	28.6	652.7	622.0	267.9	38.0	1.000148
20500.0	468.4	-19.3	-33.0	29.0	642.7	620.5	266.1	39.0	1.000145

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TABLE C-V. UPPER AIR DATA - WHITE SANDS SITE (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
21000.0	458.9	-20.5	-33.9	29.4	632.7	618.9	264.2	39.9	1.000143
21500.0	449.5	-21.8	-34.9	29.8	623.0	617.4	262.7	41.0	1.000141
22000.0	440.3	-23.1	-35.9	30.2	613.3	615.9	261.3	42.2	1.000138
22500.0	431.3	-24.3	-36.9	30.6	603.7	614.3	260.0	42.5	1.000136
23000.0	422.3	-25.6	-37.9	31.0	594.3	612.7	258.7	42.6	1.000134
23500.0	413.5	-26.9	-38.9	31.4	584.9	611.1	257.9	42.7	1.000132
24000.0	404.9	-28.2	-39.9	31.8	575.7	609.5	257.6	42.9	1.000129
24500.0	396.3	-29.5	-41.0	32.3	566.6	607.9	257.2	43.0	1.000127
25000.0	388.0	-30.9	-42.0	32.9	557.8	606.1	256.5	42.9	1.000125
25500.0	379.7	-32.2	-43.1	33.6	549.1	604.4	255.7	43.2	1.000123
26000.0	371.6	-33.6	-44.1	34.3	540.4	602.7	254.7	44.7	1.000121
26500.0	363.6	-35.0	-45.2	34.9	531.9	600.9	253.8	46.3	1.000119
27000.0	355.8	-36.4	-46.3	35.6	523.5	599.2	253.4	48.3	1.000117
27500.0	348.0	-37.8	-47.4	36.3	515.2	597.4	253.1	50.2	1.000115
28000.0	340.4	-39.2	-48.6	37.0	507.0	595.6	252.9	52.1	1.000113
28500.0	333.0	-38.8	-49.0	33.5	494.9	596.1	252.7	53.9	1.000111
29000.0	325.6	-39.9	-51.1	29.4**	486.4	594.7	253.3	55.2	1.000109
29500.0	318.5	-41.2	-53.6	25.3**	478.4	593.0	253.8	56.6	1.000107
30000.0	311.4	-42.6	-56.3	21.1**	470.6	591.2	253.3	58.4	1.000105
30500.0	304.5	-44.0	-59.2	16.9**	462.8	589.5	252.7	60.3	1.000103
31000.0	297.6	-45.3	-62.6	12.7**	455.2	587.7	252.9	61.5	1.000101
31500.0	290.9	-46.7	-66.7	8.4**	447.7	585.9	253.0	62.8	1.000100
32000.0	284.3	-48.1	-72.7	4.2**	440.2	584.1	253.0	63.6	1.000098
32500.0	277.8	-49.5	0.	-0. **	432.8	582.3	253.0	64.4	1.000096
33000.0	271.4	-49.9	0.	-0. **	423.7	581.7	253.7	64.8	1.000094
33500.0	265.2	-50.4	0.	-0. **	414.8	581.1	254.5	65.1	1.000092
34000.0	259.1	-51.2	0.	-0. **	406.7	580.1	255.4	66.5	1.000091
34500.0	253.1	-52.0	0.	-0. **	398.7	579.0	256.3	68.0	1.000089
35000.0	247.2	-52.8	0.	-0. **	390.9	578.0	256.2	69.0	1.000087
35500.0	241.4	-53.6	0.	-0. **	383.2	576.9	255.8	69.8	1.000085
36000.0	235.8	-54.4	0.	-0. **	375.6	575.8	254.7	69.9	1.000084
36500.0	230.3	-55.3	0.	-0. **	368.2	574.8	253.3	69.8	1.000082
37000.0	224.8	-56.1	0.	-0. **	360.9	573.7	250.7	69.8	1.000080

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TABLE C-V. UPPER AIR DATA - WHITE SANDS SITE (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
37500.0	219.5	-56.4	0.	-0. **	352.8	573.3	247.8	69.8	1.000079
38000.0	214.3	-56.6	0.	-0. **	344.8	573.1	246.1	71.4	1.000077
38500.0	209.3	-56.7	0.	-0. **	336.9	572.8	244.8	73.3	1.000075
39000.0	204.3	-56.9	0.	-0. **	329.2	572.5	244.9	76.8	1.000073
39500.0	199.5	-57.1	0.	-0. **	321.7	572.3	245.5	80.8	1.000072
40000.0	194.7	-57.3	0.	-0. **	314.4	572.0	246.5	83.7	1.000070
40500.0	190.1	-57.5	0.	-0. **	307.2	571.8	247.9	85.9	1.000068
41000.0	185.6	-57.7	0.	-0. **	300.2	571.5	248.9	86.8	1.000067
41500.0	181.2	-57.9	0.	-0. **	293.3	571.3	249.0	85.0	1.000065
42000.0	176.9	-58.0	0.	-0. **	286.4	571.2	248.7	83.0	1.000064
42500.0	172.7	-57.9	0.	-0. **	279.5	571.3	247.1	80.5	1.000062
43000.0	168.6	-57.9	0.	-0. **	272.8	571.3	245.7	77.9	1.000061
43500.0	164.6	-57.8	0.	-0. **	266.2	571.4	244.6	75.3	1.000059
44000.0	160.6	-57.7	0.	-0. **	259.8	571.5	244.3	74.6	1.000058
44500.0	156.8	-57.7	0.	-0. **	253.6	571.6	246.3	78.8	1.000056
45000.0	153.1	-57.6	0.	-0. **	247.5	571.6	248.2	80.9	1.000055
45500.0	149.5	-57.9	0.	-0. **	241.9	571.3	249.5	76.9	1.000054
46000.0	145.9	-58.2	0.	-0. **	236.5	570.8	250.3	74.1	1.000053
46500.0	142.4	-58.6	0.	-0. **	231.3	570.4	249.6	75.0	1.000052
47000.0	139.0	-59.0	0.	-0. **	226.2	569.9	248.1	73.1	1.000050
47500.0	135.7	-59.3	0.	-0. **	221.1	569.4	245.3	64.9	1.000049
48000.0	132.5	-59.7	0.	-0. **	216.2	568.9	243.1	59.8	1.000048
48500.0	129.3	-60.1	0.	-0. **	211.4	568.4	241.7	60.4	1.000047
49000.0	126.2	-60.4	0.	-0. **	206.7	567.9	241.2	59.5	1.000046
49500.0	123.1	-60.8	0.	-0. **	202.1	567.4	242.9	54.2	1.000045
50000.0	120.2	-61.2	0.	-0. **	197.5	566.9	244.6	49.5	1.000044
50500.0	117.3	-61.6	0.	-0. **	193.1	566.4	246.5	51.4	1.000043
51000.0	114.4	-61.9	0.	-0. **	188.8	565.9	248.4	53.3	1.000042
51500.0	111.7	-62.3	0.	-0. **	184.5	565.4	249.4	52.1	1.000041
52000.0	109.0	-62.7	0.	-0. **	180.4	564.9	249.9	49.4	1.000040
52500.0	106.3	-63.1	0.	-0. **	176.3	564.4	250.2	46.5	1.000039
53000.0	103.7	-63.4	0.	-0. **	172.3	563.9	247.6	41.9	1.000038
53500.0	101.2	-63.8	0.	-0. **	168.4	563.4	245.1	37.2	1.000038

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TABLE C-V. UPPER AIR DATA - WHITE SANDS SITE (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
54000.0	98.7	-64.3	0.	-0. **	164.6	562.8	241.4	31.6	1.000037
54500.0	96.3	-64.8	0.	-0. **	161.0	562.1	236.7	25.1	1.000036
55000.0	93.9	-65.3	0.	-0. **	157.4	561.4	231.9	19.1	1.000035
55500.0	91.6	-65.7	0.	-0. **	153.9	560.8	225.8	18.2	1.000034
56000.0	89.3	-66.2	0.	-0. **	150.4	560.1	219.7	17.3	1.000033
56500.0	87.1	-66.7	0.	-0. **	147.1	559.4	219.5	18.6	1.000033
57000.0	85.0	-67.2	0.	-0. **	143.8	558.7	221.8	20.8	1.000032
57500.0	82.9	-67.7	0.	-0. **	140.6	558.1	222.4	22.5	1.000031
58000.0	80.8	-68.2	0.	-0. **	137.4	557.4	220.2	23.3	1.000031
58500.0	78.8	-68.8	0.	-0. **	134.3	556.7	219.3	24.2	1.000030
59000.0	76.8	-69.3	0.	-0. **	131.3	556.0	230.3	24.9	1.000029
59500.0	74.9	-69.8	0.	-0. **	128.3	555.3	241.4	25.5	1.000029
60000.0	73.0	-70.0	0.	-0. **	125.2	555.0	250.5	23.5	1.000028
60500.0	71.2	-70.0	0.	-0. **	122.0	555.0	259.2	20.9	1.000027
61000.0	69.4	-69.9	0.	-0. **	119.0	555.1	267.6	19.4	1.000026
61500.0	67.6	-69.9	0.	-0. **	115.9	555.1	275.6	18.6	1.000026
62000.0	65.9	-69.8	0.	-0. **	113.0	555.2	289.7	16.9	1.000025
62500.0	64.3	-68.6	0.	-0. **	109.5	556.9	327.9	11.4	1.000024
63000.0	62.7	-67.3	0.	-0. **	106.1	558.7	6.1	5.8	1.000024
63500.0	61.1	-66.0	0.	-0. **	102.8	560.4	67.4	4.0	1.000023
64000.0	59.6	-64.8	0.	-0. **	99.7	562.1	134.7	3.3	1.000022
64500.0	58.2	-63.5	0.	-0. **	96.7	563.8	167.1	3.7	1.000022
65000.0	56.8	-62.5	0.	-0. **	93.9	565.2	141.4	6.2	1.000021
65500.0	55.4	-62.2	0.	-0. **	91.5	565.5	115.7	8.6	1.000020
66000.0	54.0	-62.0	0.	-0. **	89.2	565.8	117.3	8.3	1.000020
66500.0	52.7	-61.8	0.	-0. **	86.9	566.1	121.8	7.6	1.000019
67000.0	51.5	-61.5	0.	-0. **	84.7	566.4	122.8	7.8	1.000019
67500.0	50.2	-61.3	0.	-0. **	82.6	566.7	118.6	9.2	1.000018
68000.0	49.0	-61.1	0.	-0. **	80.5	567.0	114.5	10.7	1.000018
68500.0	47.8	-60.9	0.	-0. **	78.5	567.3	130.2	8.0	1.000017
69000.0	46.7	-60.6	0.	-0. **	76.5	567.6	146.0	5.3	1.000017
69500.0	45.6	-60.4	0.	-0. **	74.6	567.9	144.2	4.1	1.000017
70000.0	44.5	-60.2	0.	-0. **	72.8	568.2	130.2	4.0	1.000016

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TABLE C-V. UPPER AIR DATA - WHITE SANDS SITE(Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
70500.0	43.4	-60.0	0.	-0. **	70.9	568.5	112.1	4.2	1.000016
71000.0	42.4	-59.7	0.	-0. **	69.2	568.8	75.3	5.7	1.000015
71500.0	41.4	-59.5	0.	-0. **	67.4	569.1	38.6	7.3	1.000015
72000.0	40.4	-59.3	0.	-0. **	65.8	569.4	37.6	8.8	1.000015
72500.0	39.4	-59.1	0.	-0. **	64.1	569.7	47.5	10.3	1.000014
73000.0	38.5	-58.8	0.	-0. **	62.5	570.0	54.8	11.1	1.000014
73500.0	37.6	-58.6	0.	-0. **	61.0	570.3	57.3	10.7	1.000014
74000.0	36.7	-58.4	0.	-0. **	59.5	570.6	59.7	10.4	1.000013
74500.0	35.8	-58.2	0.	-0. **	58.0	570.9	65.4	8.8	1.000013
75000.0	34.9	-57.9	0.	-0. **	56.6	571.2	71.3	7.1	1.000013
75500.0	34.1	-57.7	0.	-0. **	55.2	571.5	75.1	5.4	1.000012
76000.0	33.3	-57.5	0.	-0. **	53.8	571.8	75.1	3.5	1.000012
76500.0	32.5	-57.3	0.	-0. **	52.5	572.1	75.1	1.6	1.000012
77000.0	31.7	-57.0	0.	-0. **	51.2	572.4	58.1	1.3	1.000011
77500.0	31.0	-56.8	0.	-0. **	49.9	572.7	31.2	2.0	1.000011
78000.0	30.3	-56.6	0.	-0. **	48.7	573.0	4.4	2.7	1.000011
78500.0	29.6	-56.4	0.	-0. **	47.5	573.3	339.8	2.5	1.000011
79000.0	28.9	-56.1	0.	-0. **	46.3	573.6	315.4	2.3	1.000010
79500.0	28.2	-55.9	0.	-0. **	45.2	573.9	297.0	2.0	1.000010
80000.0	27.5	-55.7	0.	-0. **	44.1	574.2	302.2	1.9	1.000010
80500.0	26.9	-55.5	0.	-0. **	43.0	574.5	307.4	1.7	1.000010
81000.0	26.2	-55.3	0.	-0. **	42.0	574.8	305.1	2.4	1.000009
81500.0	25.6	-55.0	0.	-0. **	40.9	575.1	294.9	3.9	1.000009
82000.0	25.0	-54.8	0.	-0. **	39.9	575.3	284.7	5.5	1.000009
82500.0	24.4	-54.6	0.	-0. **	39.0	575.6	294.8	5.8	1.000009
83000.0	23.9	-54.4	0.	-0. **	38.0	575.9	310.9	5.7	1.000008
83500.0	23.3	-54.2	0.	-0. **	37.1	576.2	326.1	5.7	1.000008
84000.0	22.8	-53.9	0.	-0. **	36.2	576.5	326.8	6.2	1.000008
84500.0	22.2	-53.7	0.	-0. **	35.3	576.8	327.4	6.7	1.000008
85000.0	21.7	-53.5	0.	-0. **	34.5	577.1	327.5	6.9	1.000008
85500.0	21.2	-53.3	0.	-0. **	33.6	577.4	326.6	6.4	1.000007
86000.0	20.7	-53.1	0.	-0. **	32.8	577.7	325.7	5.9	1.000007
86500.0	20.3	-52.8	0.	-0. **	32.0	577.9	329.3	5.0	1.000007

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87000.0	19.8	-52.6	0.	-0. **	31.3	578.2	335.5	3.9	1.000007
87500.0	19.3	-52.4	0.	-0. **	30.5	578.5	341.8	2.8	1.000007
88000.0	18.9	-52.2	0.	-0. **	29.8	578.8	13.1	2.5	1.000007
88500.0	18.4	-51.9	0.	-0. **	29.0	579.2	46.9	2.3	1.000006
89000.0	18.0	-51.3	0.	-0. **	28.3	580.0	76.9	2.3	1.000006
89500.0	17.6	-50.7	0.	-0. **	27.5	580.8	85.2	4.1	1.000006
90000.0	17.2	-50.0	0.	-0. **	26.8	581.6	93.5	5.8	1.000006
90500.0	16.8	-49.4	0.	-0. **	26.2	582.4	98.2	7.7	1.000006
91000.0	16.4	-48.8	0.	-0. **	25.5	583.2	97.2	9.8	1.000006
91500.0	16.0	-48.2	0.	-0. **	24.8	584.0	93.9	12.5	1.000006
92000.0	15.7	-47.6	0.	-0. **	24.2	584.8	85.7	16.6	1.000005
92500.0	15.3	-47.0	0.	-0. **	23.6	585.6	82.4	15.4	1.000005
93000.0	15.0	-46.4	0.	-0. **	23.0	586.3			1.000005
93500.0	14.6	-45.8	0.	-0. **	22.4	587.1			1.000005
94000.0	14.3	-45.2	0.	-0. **	21.9	587.9			1.000005

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE OF ZERO WAS USED IN THE INTERPOLATION.

APPENDIX D

AEROBEE NASA 127 UA (S/N AF 142)

IMPACT PREDICTION DATA

APPENDIX D

TABLE D-I

IMPACT PREDICTION DATA

MISSILE: AEROBEE NASA 127 UA (S/N AF 142)

TIME: 0345 MST
DATE: 15 April 1965

RELEASE TIME (MST)		DISPLACEMENT OF IMPACT DUE TO WIND IN MILES				THEORETICAL IMPACT IN MILES	
RAWIN-SONDE	PIBAL	143 TO 2,000 FT	2,000 TO 20,000 FT	20,000 TO 100,000 FT	TOTAL	N-S OF LAUNCHER	E-W OF LAUNCHER
R_1 2130 R 2130	P 0001	39.0N 13.4E	17.5N 27.2W	10.3S 24.8W	46.2N 38.6W	70.6N	2.7W
R_1 0001 R 2130	P 0030	39.2N 7.0E	8.7N 26.9W	10.3S 24.8W	37.6N 44.7W	62.0N	8.8W
R_1 0001 R 2130	P 0100	42.4N 4.4E	8.1N 25.4W	10.3S 24.8W	40.2N 45.8W	64.6N	9.9W
R_1 0001 R 2130	P 0130	36.5N 7.6E	7.3N 29.1W	10.3S 24.8W	33.5N 46.3W	57.9N	10.4W
R_1 0001 R 0001	P 0200	45.7N 7.0E	7.7N 27.6W	9.7S 22.8W	43.7N 43.4W	68.1N	7.5W
R_1 0001 R 0001	P 0310	46.8N 7.8E	5.6N 24.1W	9.7S 22.8W	42.7N 39.1W	67.1N	3.2W
R_2 0300 R 0001	P 0330	48.3N 1.2E	15.2N 21.2W	9.7S 22.8W	53.8N 42.8W	78.2N	6.9W
*R_1 0345 *R 0345	*P 0347	44.8N 0.2E	22.0N 22.8W	7.7S 24.0W	59.1N 46.6W	83.5N	10.7W

P = Double Theodolite Winds (143-4,000 Ft)
R = Rawinsonde Winds (Above 20,000 Ft)
R_1 = Rawinsonde Winds (4,000-20,000 Ft)
R_2 = Rawin Winds (4,000-20,000 Ft)
* Post-Shoot Data

APPENDIX D

TABLE D-I (Cont)

IMPACT PREDICTION DATA

AEROBEE NASA 127 UA SERIAL NO. AF 142

JACK SETTINGS

West leg 22 inches East leg 0 inches

LAUNCHER SETTING

Tilt 2.42 degrees Azimuth 060.0 degrees

COMPONENTS OF TILT

1.21 degrees north 2.10 degrees east

NO WIND IMPACT

24.4 miles north of Navy Blockhouse 35.9 miles east of Navy Blockhouse

PREDICTED IMPACT

85 miles north of Navy Blockhouse 0 miles E-W of Navy Blockhouse

PREDICTED BOOSTER IMPACT

Azimuth 055 degrees Distance 1,500 feet

Recommendation Fire

With 80 % confidence of impacting on range, based upon:

wind correction 62 miles

one hour wind variability 12 miles

Date/Time 15 April 1965/0340 MST

Actual Impact (From Launcher) 85.0 miles north, 14.0 miles west

Actual Booster Impact (From Launcher) N/A

U. S. ARMY ELECTRONICS RESEARCH AND DEVELOPMENT ACTIVITY
WHITE SANDS MISSILE RANGE
NEW MEXICO

FRANCISCO MEJIA-FLORES
LT COLONEL, SIGNAL CORPS
COMMANDING

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HEADQUARTERS
U. S. ARMY ELECTRONICS RESEARCH AND DEVELOPMENT ACTIVITY
WHITE SANDS MISSILE RANGE
NEW MEXICO

May 1965

1. Data Report ERDA-310 has been prepared under the supervision of the Meteorological Support Division and is published for the information and guidance of all concerned.

2. Suggestions or criticisms relative to the form, contents, purpose, or use of this publication should be referred to the Commanding Officer, U. S. Army Electronics Research and Development Activity, ATTN: SELWS-E, White Sands Missile Range, New Mexico.

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