US ARMY ELECTRONICS RESEARCH & DEVELOPMENT ACTIVITY

METEOROLOGICAL DATA REPORT

AEROBEE NASA 4.56 GG (S/N NASA 133)
(12 March 1965)

BY

MARJORIE McLARDIE HOIDALE

ERDA-294

MARCH 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

21307

Meteorological data gathered for the launching of Aerobee NASA 4.56 GG (S/N NASA 133) 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.

Author

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INTRODUCTION

Aerobee NASA 4.56 GG (S/N NASA 133) was launched by Naval Ordnance Missile Test Facility personnel, White Sands Missile Range, New Mexico, at 2038 hours MST, 12 March 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 Gordon L. Dunaway and Marjorie M. Hoidale.

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 4.56 GG (S/N NASA 133)

APPENDIX A

TABLE A-I

CALCULATED ROCKET PERFORMANCE VALUES

AEROBEE NASA 4.56 GG (S/N NASA 133)

PAYLOAD 320.0 Pounds *

UNIT WIND EFFECT	Surface to 2,000 FT	2.38 Miles/MPH (3)
	2,000 to 100,000 FT	4.28 Miles/MPH
TOWER TILT EFFECT		17.33 Miles/Degree
BURNOUT:		
Velocity		5,402 Feet/Second
Altitude		122,338 Feet MSL
Time		51.0 Seconds
PEAK:		
Altitude		110.8 Miles MSL
Time		220 Seconds
TOTAL TIME OF FLIGHT		425 Seconds
CORIOLIS EFFECT (West)		5.05 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 4.56 GG (S/N NASA 133)

HEIGHT INTERVAL FEET	BALLISTIC FACTOR	HEIGHT INTERVAL FEET	BALLISTIC FACTOR
143 - 200	.100	5,000 - 10,000	.078
200 - 300	.130	10,000 - 15,000	.042
300 - 400	.102	15,000 - 20,000	.030
400 - 600	.150	20,000 - 25,000	.020
600 - 800	.078	25,000 - 30,000	.017
800 - 1,000	.012	30,000 - 35,000	.010
1,000 - 1,200	.018	35,000 - 40,000	.010
1,200 - 1,400	.013	40,000 - 45,000	.006
1,400 - 1,600	.012	45,000 - 50,000	.009
1,600 - 1,800	.011	50,000 - 60,000	.010
1,800 - 2,000	.010	60,000 - 70,000	.007
2,000 - 3,000	.052	70,000 - 80,000	.006
3,000 - 4,000	.040	80,000 - 90,000	.003
4,000 - 5,000	.022	90,000 - 100,000	.002

APPENDIX B

ANEMOMETER RECORDINGS OF WIND SPEED AND DIRECTION

AND

PILOT-BALLOON-MEASURED WIND DATA FROM 143 to 4,000 FEET

AEROBEE NASA 4.56 GG (S/N NASA 133)

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APPENDIX B

TABLE B-I

ANEMOMETER RECORDINGS OF WIND SPEED AND DIRECTION

AEROBEE NASA 4.56 GG (S/N NASA 133)

TIME (MINUTES)	WIND SPEED (KNOTS)	DIRECTION (DEGREES)
T - 15	19.0	301
T - 10	17.5	302
T - 5	17.5	297
T - Time	15.0	309
T + 5	16.5	320
T + 10	17.0	321
T + 15	17.0	326

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 4.56 GG (S/N NASA 133)

MEAN WIND COMPONENTS FOR BALLISTIC ZONES IN MILES PER HOUR

DOUBLE-THEODOLITE METHOD

RELEASE NO.	1		2		3		4	
RELEASE TIME (MST)	1635		1650		1720		1754	
LAYERS IN FEET	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
143 - 250	0.0	21.0W	0.5S	19.0W	0.5S	20.0W	0.5S	20.0W
250 - 400	0.5S	24.0	1.0	25.0	1.0	23.0	1.0	27.0
400 - 600	1.0	24.0	0.5	22.0	1.0	27.0	0.5	30.5
600 - 800	1.0	24.0	0.5	24.0	0.5	26.0	1.0	31.0
800 - 1,200	1.0	25.0	0.5	25.0	1.0	28.0	1.0	38.0
1,200 - 1,600	1.0	21.0	1.0	28.0	0.5	32.0	1.0	45.0
1,600 - 2,000	0.5	25.0	1.0	31.5	0.5	37.0	0.5	46.5
2,000 - 2,500	0.5	32.0	0.5	32.0	0.5	37.0	1.5	50.0
2,500 - 3,000	1.0	24.0	0.5	42.5	1.0	37.0	1.5	50.0
3,000 - 3,500	0.5	22.0	1.0	40.0	0.5	28.0	1.0	50.0
3,500 - 4,000	0.5	16.0	0.5	31.0	0.0	14.0	1.0	50.0

APPENDIX B

TABLE B-II (Cont)

PILOT-BALLOON-MEASURED WIND DATA

AEROBEE NASA 4.56 GG (S/N NASA 133)

MEAN WIND COMPONENTS FOR BALLISTIC ZONES IN MILES PER HOUR

DOUBLE-THEODOLITE METHOD

RELEASE NO.	5		6		7		8	
RELEASE TIME (MST)	1822		1850		1855		1903	
LAYERS IN FEET	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
143 - 250	0.5S	11.0W	0.5S	16.0W	0.5S	17.0W	0.5S	20.0W
250 - 400	0.5	17.5	1.0	20.0	1.0	20.0	0.5	25.0
400 - 600	1.0	23.0	1.0	22.0	1.0	22.0	0.5	32.0
600 - 800	1.0	24.0	0.5	21.0	1.0	25.5	1.0	34.0
800 - 1,200	1.0	25.0	1.0	28.0	1.0	22.0	0.5	26.0
1,200 - 1,600	1.0	32.0	1.0	21.0	1.0	25.0	1.0	25.5
1,600 - 2,000	1.0	37.0	0.5	22.0	1.0	18.5	1.0	20.5
2,000 - 2,500	0.5	36.0	0.0	17.0	0.5	20.0	0.5	22.0
2,500 - 3,000	1.0	27.0	*M	M	1.0	21.0	0.5	22.0
3,000 - 3,500	0.5	23.0	M	M	M	M	M	M
3,500 - 4,000	0.5	22.0	M	M	M	M	M	M

*M = Missing

APPENDIX B

TABLE B-II (Cont)

PILOT-BALLOON-MEASURED WIND DATA

AEROBEE NASA 4.56 GG (S/N NASA 133)

MEAN WIND COMPONENTS FOR BALLISTIC ZONES IN MILES PER HOUR

DOUBLE-THEODOLITE METHOD

RELEASE NO.	9		10		11		12	
RELEASE TIME (MST)	1915		1931		1940		1953	
LAYERS IN FEET	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
143 - 250	0.5S	18.0W	3.0N	14.5W	3.5N	15.5W	3.5N	16.0W
250 - 400	1.0	24.0	2.5	24.0	0.0	18.0	0.0	21.5
400 - 600	1.0	26.0	6.0S	31.0	9.5S	24.0	6.5S	29.5
600 - 800	1.0	25.0	4.5	32.5	7.5	26.0	4.5	27.5
800 - 1,200	1.0	30.0	3.5	33.0	2.5	24.5	2.0	31.0
1,200 - 1,600	1.0	26.0	3.0	29.0	3.0	19.0	3.0	28.0
1,600 - 2,000	0.5	17.0	1.5	26.0	3.0	18.0	2.5	24.5
2,000 - 2,500	*M	M	0.5	17.0	3.5	18.0	1.0	16.0
2,500 - 3,000	M	M	3.5	11.5	1.5	11.0	4.0	13.5
3,000 - 3,500	M	M	4.0	17.0	0.5N	12.0	M	M
3,500 - 4,000	M	M	4.5	18.0	0.0	16.0	M	M

*M = Missing

APPENDIX B

TABLE B-II (Cont)

PILOT-BALLOON-MEASURED WIND DATA

AEROBEE NASA 4.56 GG (S/N NASA 133)

MEAN WIND COMPONENTS FOR BALLISTIC ZONES IN MILES PER HOUR

DOUBLE-THEODOLITE METHOD

RELEASE NO.	13		14		15		16	
RELEASE TIME (MST)	2001		2014		2023		2043	
LAYERS IN FEET	**N-S**	**E-W**	**N-S**	**E-W**	**N-S**	**E-W**	**N-S**	**E-W**
143 - 250	0.0	14.0W	3.5N	18.0W	4.0N	20.0W	5.0N	15.0W
250 - 400	4.5S	21.0	3.5S	25.0	3.5S	26.0	4.5	19.0
400 - 600	6.0	27.5	9.5	31.0	8.0	30.0	5.0	23.0
600 - 800	0.0	33.0	6.5	39.0	0.5	28.0	3.5	24.0
800 - 1,200	3.5S	31.5	4.5	36.0	2.0	25.0	0.5	26.0
1,200 - 1,600	2.5	30.0	2.0	35.0	4.5	21.0	2.5S	25.0
1,600 - 2,000	1.5	18.0	1.0	14.0	1.5	22.0	6.0	28.0
2,000 - 2,500	*M	M	0.5	14.0	M	M	11.5	31.0
2,500 - 3,000	M	M	M	M	M	M	6.0	16.0
3,000 - 3,500	M	M	M	M	M	M	M	M
3,500 - 4,000	M	M	M	M	M	M	M	M

*M = Missing

APPENDIX C

TABLES OF UPPER AIR DATA

AEROBEE NASA 4.56 GG (S/N NASA 133)

APPENDIX C

TABLE C-I

UPPER AIR DATA

AEROBEE NASA 4.56 GG (S/N NASA 133)

MEAN WIND COMPONENTS FOR BALLISTIC ZONES IN KNOTS

RELEASE NO.	1	
RELEASE TIME (MST)	1923	
LAYERS IN FEET	N-S	E-W
4,000 - 5,000	9.0S	25.5W
5,000 - 10,000	11.5	32.0
10,000 - 15,000	12.5	34.0
15,000 - 20,000	15.5	43.5

APPENDIX C

TABLE C-II

UPPER AIR DATA

AEROBEE NASA 4.56 GG (S/N NASA 133)

MEAN WIND COMPONENTS FOR BALLISTIC ZONES IN KNOTS

RELEASE NO.	1		2		3	
RELEASE TIME (MST)	1420		1650		2038	
LAYERS IN FEET	N-S	E-W	N-S	E-W	N-S	E-W
4,000 - 5,000	2.5S	8.0W	3.0S	15.5W	8.0S	23.0W
5,000 - 10,000	6.0	10.5	18.0	31.0	7.5	24.0
10,000 - 15,000	11.5	32.0	12.5	34.0	6.0	31.5
15,000 - 20,000	16.5	45.0	10.0	57.0	5.5	46.5
20,000 - 25,000	52.0	89.0	30.0	83.0	4.5	64.5
25,000 - 30,000	38.0	103.0	33.0	91.0	9.0	88.0
30,000 - 35,000	43.0	118.0	21.0	119.0	22.0	104.0
35,000 - 40,000	32.0	87.5	18.0	101.0	8.0	99.0
40,000 - 45,000	32.0	87.5	12.5	70.0	19.0	93.0
45,000 - 50,000	24.5	66.5	10.0	56.0	18.5	61.5
50,000 - 60,000	3.0	16.5	16.0N	44.0	21.5	22.0
60,000 - 70,000	6.0N	5.0	11.0S	6.5	3.5N	8.5
70,000 - 80,000	1.0S	7.0	1.5N	10.0	9.0	2.0E
80,000 - 90,000	3.0	5.0	3.0	16.5	6.0	0.0
90,000 - 100,000	0.0	15.0	7.5	9.0	FLIGHT EQUIPMENT FAILURE	

TABLE C-III

UPPER AIR DATA

3907107

WHITE SANDS SITE

STATION ALTITUDE 3989.0 FEET MSL
12 MAR. 65 1420 HRS MST
ASCENSION NO. 204

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

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
3989.0	875.7	14.0	-0.1	38.0	1059.8	660.7	310.0	15.9	1.000264
5000.0	843.9	9.2	-6.4	32.6	1039.7	654.8	290.8	14.1	1.000250
5500.0	828.5	8.1	-7.0	33.7	1024.8	653.5	281.3	13.2	1.000246
6000.0	813.4	6.7	-7.4	36.0	1011.1	651.9	271.8	12.3	1.000242
6500.0	798.4	5.2	-7.8	38.4	997.6	650.2	263.4	11.3	1.000239
7000.0	783.6	3.8	-8.4	40.8	984.3	648.5	258.5	9.9	1.000235
7500.0	769.0	2.3	-8.9	43.1	971.1	646.8	253.2	8.9	1.000232
8000.0	754.6	0.9	-9.6	45.5	958.0	645.1	246.8	8.5	1.000228
8500.0	740.4	-0.4	-10.4	47.0	944.6	643.5	241.6	8.3	1.000225
9000.0	726.4	-1.5	-11.4	47.0	930.5	642.2	239.1	8.8	1.000220
9500.0	712.6	-2.7	-12.2	48.2	917.0	640.7	236.8	9.5	1.000217
10000.0	699.1	-4.1	-12.9	50.5	904.1	639.1	236.2	11.0	1.000213
10500.0	685.7	-5.5	-13.6	52.9	891.4	637.4	235.6	12.5	1.000210
11000.0	672.5	-6.8	-14.4	55.2	878.8	635.8	234.8	14.1	1.000207
11500.0	659.5	-8.2	-15.2	57.6	866.4	634.1	233.8	15.7	1.000203
12000.0	646.6	-8.6	-15.6	57.3	850.9	633.6	233.2	17.5	1.000199
12500.0	634.1	-10.0	-16.3	60.3	838.6	632.0	233.8	20.0	1.000196
13000.0	621.6	-11.3	-17.0	63.2	826.4	630.4	234.5	22.6	1.000193
13500.0	609.4	-12.7	-17.8	66.2	814.4	628.7	236.9	25.1	1.000190
14000.0	597.4	-14.0	-18.7	67.6	802.3	627.2	239.7	27.6	1.000187
14500.0	585.5	-15.1	-20.0	66.6	790.0	625.7	242.7	29.9	1.000183
15000.0	573.8	-16.0	-21.5	62.8	776.9	624.6	246.0	32.1	1.000179
15500.0	562.3	-16.3	-23.5	54.0	762.2	624.3	249.3	34.2	1.000175
16000.0	551.1	-17.1	-24.9	50.9	749.4	623.3	251.8	35.8	1.000172
16500.0	540.0	-18.7	-25.5	55.4	738.8	621.3	254.2	37.3	1.000169
17000.0	529.0	-20.2	-26.1	59.8	728.4	619.4	255.1	38.0	1.000167
17500.0	518.3	-21.7	-26.9	63.5	717.9	617.5	255.2	38.2	1.000164
18000.0	507.7	-22.4	-28.9	56.5	705.2	616.7	255.0	38.3	1.000160
18500.0	497.2	-23.2	-30.8	50.1	692.9	615.7	254.3	38.1	1.000157
19000.0	487.0	-24.5	-31.7	51.6	682.1	614.1	253.7	38.0	1.000155
19500.0	476.9	-25.7	-32.6	53.1	671.4	612.6	253.5	38.6	1.000152
20000.0	467.0	-27.0	-33.5	54.6	660.8	611.0	253.7	39.5	1.000149
20500.0	457.2	-28.3	-34.5	56.2	650.4	609.4	255.6	41.5	1.000147

TABLE C-III (Cont)
UPPER AIR DATA
3907107
WHITE SANDS SITE

STATION ALTITUDE 3989.0 FEET MSL
12 MAR. 65 1420 HRS MST
ASCENSION NO. 204

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

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	447.6	-29.5	-36.1	53.6	639.9	607.9	257.3	44.3	1.000144
21500.0	438.1	-30.6	-38.6	46.2	629.3	606.5	257.9	49.5	1.000142
22000.0	428.8	-31.7	-41.3	38.7	618.7	605.1	258.0	55.1	1.000139
22500.0	419.7	-32.5	-42.1	38.5	607.6	604.1	257.0	61.5	1.000136
23000.0	410.7	-33.3	-42.6	39.1	596.5	603.1	255.4	67.9	1.000134
23500.0	401.9	-34.1	-43.2	39.7	585.7	602.1	253.4	74.1	1.000131
24000.0	393.3	-34.8	-43.8	40.2	575.0	601.1	251.6	80.1	1.000129
24500.0	384.8	-35.6	-44.4	40.8	564.4	600.1	249.8	85.9	1.000126
25000.0	376.5	-36.2	-45.9	36.4	553.5	599.4	248.2	91.0	1.000124
25500.0	368.3	-36.6	-48.2	29.5	542.4	598.9	246.6	95.8	1.000121
26000.0	360.3	-37.0	-50.5	23.6**	531.6	598.4	245.6	100.5	1.000119
26500.0	352.5	-37.6	-51.8	21.5**	521.3	597.7	244.8	105.1	1.000116
27000.0	344.8	-38.1	-53.1	19.5**	511.1	596.9	244.0	107.9	1.000114
27500.0	337.3	-38.7	-54.5	17.4**	501.2	596.2	243.1	110.1	1.000112
28000.0	329.9	-39.3	-56.0	15.3**	491.4	595.5	243.0	111.8	1.000110
28500.0	322.6	-39.8	-57.6	13.2**	481.7	594.8	243.0	113.4	1.000107
29000.0	315.5	-40.4	-59.4	11.2**	472.3	594.1	243.2	114.7	1.000105
29500.0	308.6	-40.9	-61.5	9.1**	463.0	593.4	243.6	116.1	1.000103
30000.0	301.7	-41.5	-63.9	7.0**	453.8	592.6	244.4	116.4	1.000101
30500.0	295.1	-42.1	-66.9	4.9**	444.9	591.9	245.3	116.8	1.000099
31000.0	288.5	-42.6	-71.3	2.8**	436.1	591.2	246.0	117.2	1.000097
31500.0	282.1	-43.2	-80.6	0.7**	427.4	590.4	246.7	117.6	1.000095
32000.0	275.8	-43.5	0.0	0.0**	418.4	590.0	247.1	116.4	1.000093
32500.0	269.6	-43.7	0.0	0.0**	409.4	589.8	247.3	114.8	1.000091
33000.0	263.6	-43.9	0.0	0.0**	400.6	589.6	247.5	112.9	1.000089
33500.0	257.7	-44.1	0.0	0.0**	391.9	589.3	247.6	110.9	1.000087
34000.0	251.9	-44.3	0.0	0.0**	383.5	589.1	248.2	111.4	1.000085
34500.0	246.3	-44.5	0.0	0.0**	375.2	588.8	249.0	113.3	1.000084
35000.0	240.7	-44.5	0.0	0.0**	366.8	588.8	249.9	113.3	1.000082
35500.0	235.3	-44.1	0.0	0.0**	358.0	589.3	250.9	112.2	1.000080
36000.0	230.1	-43.9	0.0	0.0**	349.7	589.5	251.7	112.0	1.000078
36500.0	224.9	-44.6	0.0	0.0**	342.9	588.7	252.4	112.4	1.000076
37000.0	219.9	-45.2	0.0	0.0**	336.1	587.8	252.8	111.2	1.000075

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

TABLE C-III (Cont)
UPPER AIR DATA
3907107
WHITE SANDS SITE

STATION ALTITUDE 3989.0 FEET MSL
12 MAR. 65 1420 HRS MST
ASCENSION NO. 204

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

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	214.9	-45.9	0.0	0.0**	329.5	587.0	253.0	108.2	1.000073
38000.0	210.1	-46.6	0.0	0.0**	323.0	586.1	252.9	105.7	1.000072
38500.0	205.3	-47.2	0.0	0.0**	316.6	585.3	252.3	104.7	1.000071
39000.0	200.7	-47.9	0.0	0.0**	310.4	584.4	251.8	103.7	1.000069
39500.0	196.1	-48.6	0.0	0.0**	304.2	583.5	251.3	103.8	1.000068
40000.0	191.6	-49.2	0.0	0.0**	298.1	582.7	250.8	104.6	1.000066
40500.0	187.2	-49.9	0.0	0.0**	292.2	581.8	250.3	105.5	1.000065
41000.0	182.9	-50.3	0.0	0.0**	286.0	581.2	250.0	108.4	1.000064
41500.0	178.7	-50.7	0.0	0.0**	279.9	580.8	249.6	111.3	1.000062
42000.0	174.6	-51.0	0.0	0.0**	273.8	580.3	249.2	113.6	1.000061
42500.0	170.6	-51.3	0.0	0.0**	267.9	579.9	248.8	115.8	1.000060
43000.0	166.6	-51.7	0.0	0.0**	262.1	579.5	248.5	113.6	1.000058
43500.0	162.8	-52.1	0.0	0.0**	256.5	578.9	248.2	109.4	1.000057
44000.0	159.0	-53.9	0.0	0.0**	252.6	576.6	248.3	104.8	1.000056
44500.0	155.2	-55.6	0.0	0.0**	248.7	574.3	248.7	99.8	1.000055
45000.0	151.6	-56.9	0.0	0.0**	244.2	572.6	249.2	95.2	1.000054
45500.0	148.0	-57.3	0.0	0.0**	238.9	572.1	250.2	92.1	1.000053
46000.0	144.5	-57.8	0.0	0.0**	233.7	571.5	251.1	89.0	1.000052
46500.0	141.0	-58.2	0.0	0.0**	228.6	570.9	252.5	88.0	1.000051
47000.0	137.7	-58.8	0.0	0.0**	223.8	570.0	253.9	87.1	1.000050
47500.0	134.4	-59.5	0.0	0.0**	219.2	569.1	255.4	83.0	1.000049
48000.0	131.2	-60.2	0.0	0.0**	214.6	568.3	256.9	77.7	1.000048
48500.0	128.0	-60.5	0.0	0.0**	209.7	567.9	258.1	72.2	1.000047
49000.0	124.9	-60.5	0.0	0.0**	204.7	567.8	259.2	66.5	1.000046
49500.0	121.9	-60.6	0.0	0.0**	199.9	567.7	259.1	63.2	1.000045
50000.0	119.0	-60.7	0.0	0.0**	195.1	567.6	258.0	61.9	1.000043
50500.0	116.1	-60.8	0.0	0.0**	190.5	567.4	256.6	60.6	1.000042
51000.0	113.3	-60.9	0.0	0.0**	186.0	567.3	254.6	59.4	1.000041
51500.0	110.6	-60.9	0.0	0.0**	181.6	567.2	252.5	58.3	1.000040
52000.0	107.9	-61.0	0.0	0.0**	177.3	567.1	251.5	54.0	1.000039
52500.0	105.3	-61.1	0.0	0.0**	173.1	567.0	250.5	49.6	1.000039
53000.0	102.8	-61.2	0.0	0.0**	169.0	566.9	250.4	45.5	1.000038
53500.0	100.3	-61.6	0.0	0.0**	165.2	566.4	250.8	41.5	1.000037

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

TABLE C-III (Cont)
UPPER AIR DATA
3907107
WHITE SANDS SITE

STATION ALTITUDE 3989.0 FEET MSL
12 MAR. 65 1420 HRS MST
ASCENSION NO. 204

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

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	97.9	-62.1	0.0	0.0**	161.6	565.7	251.6	37.8	1.000036
54500.0	95.5	-62.4	0.0	0.0**	157.9	565.3	252.8	34.5	1.000035
55000.0	93.2	-61.7	0.0	0.0**	153.5	566.2	254.4	30.3	1.000034
55500.0	90.9	-61.0	0.0	0.0**	149.4	567.2	256.4	24.0	1.000033
56000.0	88.8	-60.3	0.0	0.0**	145.3	568.1	258.4	17.8	1.000032
56500.0	86.6	-59.6	0.0	0.0**	141.4	569.0	261.9	13.5	1.000031
57000.0	84.6	-59.1	0.0	0.0**	137.7	569.6	265.4	9.2	1.000031
57500.0	82.5	-59.3	0.0	0.0**	134.5	569.4	262.4	11.8	1.000030
58000.0	80.6	-59.5	0.0	0.0**	131.4	569.1	255.2	19.0	1.000029
58500.0	78.6	-59.7	0.0	0.0**	128.4	568.8	248.6	26.2	1.000029
59000.0	76.8	-60.7	0.0	0.0**	125.8	567.6	248.4	34.0	1.000028
59500.0	74.9	-62.0	0.0	0.0**	123.6	565.9	248.2	41.8	1.000028
60000.0	73.1	-63.3	0.0	0.0**	121.3	564.1	248.1	44.3	1.000027
60500.0	71.3	-64.6	0.0	0.0**	119.1	562.4	247.9	38.6	1.000027
61000.0	69.5	-65.9	0.0	0.0**	116.9	560.6	247.8	32.8	1.000026
61500.0	67.8	-63.3	0.0	0.0**	112.6	564.1	211.8	27.5	1.000025
62000.0	66.2	-63.1	0.0	0.0**	109.8	564.3	145.2	22.6	1.000024
62500.0	64.6	-62.9	0.0	0.0**	107.0	564.6	78.5	17.7	1.000024
63000.0	63.0	-62.7	0.0	0.0**	104.3	564.8	71.8	24.5	1.000023
63500.0	61.5	-62.6	0.0	0.0**	101.7	565.1	70.0	32.2	1.000023
64000.0	60.0	-63.3	0.0	0.0**	99.6	564.1	64.0	26.2	1.000022
64500.0	58.5	-63.9	0.0	0.0**	97.4	563.3	55.5	12.3	1.000022
65000.0	57.1	-63.5	0.0	0.0**	94.9	563.8	22.4	6.6	1.000021
65500.0	55.7	-63.1	0.0	0.0**	92.4	564.4	316.2	11.9	1.000021
66000.0	54.4	-62.7	0.0	0.0**	90.0	564.9	253.4	16.7	1.000020
66500.0	53.0	-62.3	0.0	0.0**	87.6	565.5	248.4	12.4	1.000020
67000.0	51.8	-61.9	0.0	0.0**	85.3	566.0	243.4	8.1	1.000019
67500.0	50.5	-61.5	0.0	0.0**	83.1	566.5	214.2	6.6	1.000019
68000.0	49.3	-61.1	0.0	0.0**	81.0	567.1	154.5	8.5	1.000018
68500.0	48.1	-60.7	0.0	0.0**	78.9	567.6	94.8	10.4	1.000018
69000.0	47.0	-60.3	0.0	0.0**	76.8	568.1	35.8	8.7	1.000017
69500.0	45.8	-59.9	0.0	0.0**	74.9	568.6	337.1	5.7	1.000017
70000.0	44.7	-59.5	0.0	0.0**	72.9	569.2	280.1	3.0	1.000016

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

TABLE C-III (Cont)
UPPER AIR DATA
3907107
WHITE SANDS SITE

STATION ALTITUDE 3989.0 FEET MSL
12 MAR. 65 1420 HRS MST
ASCENSION NO. 204

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

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	43.7	-59.1	0.0	0.0**	71.1	569.7	272.0	7.7	1.000016
71000.0	42.6	-58.7	0.0	0.0**	69.2	570.2	263.9	12.4	1.000015
71500.0	41.6	-58.3	0.0	0.0**	67.5	570.7	258.0	13.3	1.000015
72000.0	40.6	-57.9	0.0	0.0**	65.8	571.3	255.1	9.2	1.000015
72500.0	39.7	-57.5	0.0	0.0**	64.1	571.8	252.2	5.1	1.000014
73000.0	38.7	-57.1	0.0	0.0**	62.5	572.3	202.3	4.1	1.000014
73500.0	37.8	-56.7	0.0	0.0**	60.9	572.8	146.5	3.4	1.000014
74000.0	36.9	-56.3	0.0	0.0**	59.3	573.3	124.3	3.2	1.000013
74500.0	36.0	-56.0	0.0	0.0**	57.8	573.8	164.2	3.6	1.000013
75000.0	35.2	-55.6	0.0	0.0**	56.4	574.4	204.2	4.1	1.000013
75500.0	34.4	-55.2	0.0	0.0**	55.0	574.9	219.5	5.1	1.000012
76000.0	33.6	-54.9	0.0	0.0**	53.6	575.3	229.3	6.1	1.000012
76500.0	32.8	-54.7	0.0	0.0**	52.3	575.5	226.8	6.7	1.000012
77000.0	32.0	-54.5	0.0	0.0**	51.0	575.8	173.3	5.2	1.000011
77500.0	31.3	-54.3	0.0	0.0**	49.8	576.0	119.8	3.8	1.000011
78000.0	30.5	-54.1	0.0	0.0**	48.6	576.3	90.1	4.0	1.000011
78500.0	29.8	-53.9	0.0	0.0**	47.4	576.6	85.4	5.9	1.000011
79000.0	29.1	-53.7	0.0	0.0**	46.3	576.8	80.7	7.8	1.000010
79500.0	28.5	-53.5	0.0	0.0**	45.1	577.1	29.7	6.7	1.000010
80000.0	27.8	-53.3	0.0	0.0**	44.1	577.3	325.9	4.7	1.000010
80500.0	27.2	-53.1	0.0	0.0**	43.0	577.6	266.9	3.2	1.000010
81000.0	26.5	-52.9	0.0	0.0**	42.0	577.9	265.4	6.9	1.000009
81500.0	25.9	-52.7	0.0	0.0**	40.9	578.1	263.9	10.7	1.000009
82000.0	25.3	-52.5	0.0	0.0**	40.0	578.4	270.7	12.1	1.000009
82500.0	24.7	-52.3	0.0	0.0**	39.0	578.6	291.4	9.7	1.000009
83000.0	24.2	-52.1	0.0	0.0**	38.1	578.9	312.2	7.3	1.000008
83500.0	23.6	-51.9	0.0	0.0**	37.2	579.1	325.5	6.6	1.000008
84000.0	23.1	-51.7	0.0	0.0**	36.3	579.4	333.8	7.2	1.000008
84500.0	22.5	-51.5	0.0	0.0**	35.4	579.7	342.0	7.8	1.000008
85000.0	22.0	-51.3	0.0	0.0**	34.6	579.9	333.7	8.0	1.000008
85500.0	21.5	-51.1	0.0	0.0**	33.7	580.2	317.5	8.2	1.000008
86000.0	21.0	-50.9	0.0	0.0**	32.9	580.4	301.3	8.3	1.000007
86500.0	20.5	-50.7	0.0	0.0**	32.2	580.7	291.1	8.7	1.000007

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

TABLE C-III (Cont)
UPPER AIR DATA
3907107
WHITE SANDS SITE

STATION ALTITUDE 3989.0 FEET MSL
12 MAR. 65 1420 HRS MST
ASCENSION NO. 204

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

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	20.1	-50.6	0.0	0.0**	31.4	580.9	283.7	9.2	1.000007
87500.0	19.6	-50.4	0.0	0.0**	30.6	581.2	276.3	9.7	1.000007
88000.0	19.1	-50.2	0.0	0.0**	29.9	581.4	273.2	10.2	1.000007
88500.0	18.7	-49.9	0.0	0.0**	29.2	581.8	272.1	10.8	1.000006
89000.0	18.3	-49.6	0.0	0.0**	28.5	582.2	271.0	11.3	1.000006
89500.0	17.9	-49.3	0.0	0.0**	27.8	582.6	290.2	10.9	1.000006
90000.0	17.5	-48.9	0.0	0.0**	27.1	583.0	320.4	10.0	1.000006
90500.0	17.1	-48.6	0.0	0.0**	26.5	583.5	350.6	9.1	1.000006
91000.0	16.7	-48.3	0.0	0.0**	25.8	583.9	351.0	9.1	1.000006
91500.0	16.3	-48.0	0.0	0.0**	25.2	584.3	329.8	9.8	1.000006
92000.0	15.9	-47.7	0.0	0.0**	24.6	584.7	308.5	10.5	1.000005
92500.0	15.6	-47.4	0.0	0.0**	24.0	585.1	294.9	11.8	1.000005
93000.0	15.2	-47.1	0.0	0.0**	23.4	585.5	288.8	13.8	1.000005
93500.0	14.9	-46.7	0.0	0.0**	22.9	585.9	282.6	15.8	1.000005
94000.0	14.5	-46.4	0.0	0.0**	22.3	586.3	277.3	16.7	1.000005
94500.0	14.2	-46.1	0.0	0.0**	21.8	586.7	273.1	16.1	1.000005
95000.0	13.9	-45.8	0.0	0.0**	21.3	587.1	268.9	15.5	1.000005
95500.0	13.6	-45.5	0.0	0.0**	20.8	587.5			1.000005
96000.0	13.3	-45.2	0.0	0.0**	20.3	587.9			1.000005
96500.0	13.0	-44.9	0.0	0.0**	19.8	588.3			1.000004
97000.0	12.7	-44.6	0.0	0.0**	19.3	588.7			1.000004
97500.0	12.4	-44.3	0.0	0.0**	18.9	589.1			1.000004
98000.0	12.1	-43.9	0.0	0.0**	18.4	589.5			1.000004

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

TABLE C-IV
UPPER AIR DATA
3907108
WHITE SANDS SITE

STATION ALTITUDE 3989.0 FEET MSL
12 MAR. 65 1650 HRS MST
ASCENSION NO. 205

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

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	876.4	13.0	2.6	49.0	1063.7	659.7	340.0	12.0	1.000271
5000.0	844.6	9.5	-4.4	37.1	1039.1	655.3	314.8	12.6	1.000252
5500.0	829.2	8.0	-4.7	40.2	1025.5	653.6	302.3	12.9	1.000249
6000.0	814.0	6.6	-5.1	43.3	1012.0	651.9	289.8	13.2	1.000246
6500.0	799.0	5.1	-5.5	46.3	998.7	650.1	277.4	13.5	1.000242
7000.0	784.2	3.6	-6.0	49.4	985.5	648.4	271.4	14.3	1.000239
7500.0	769.6	2.1	-6.6	52.6	972.5	646.6	270.8	15.4	1.000235
8000.0	755.2	0.6	-6.9	57.1	959.4	644.8	269.0	16.4	1.000232
8500.0	741.0	-0.9	-7.1	62.8	946.4	643.1	263.1	17.1	1.000229
9000.0	727.0	-2.3	-7.4	68.5	933.6	641.4	257.2	18.0	1.000226
9500.0	713.1	-3.8	-7.8	74.2	920.9	639.6	250.9	21.5	1.000223
10000.0	699.5	-5.3	-8.3	80.0	908.3	637.8	244.8	25.0	1.000220
10500.0	686.0	-6.7	-9.0	84.0	895.5	636.1	242.5	29.9	1.000216
11000.0	672.8	-7.3	-10.7	77.1	880.4	635.4	240.5	34.6	1.000211
11500.0	659.8	-7.9	-12.5	70.2	865.5	634.6	239.3	38.6	1.000206
12000.0	647.0	-8.7	-14.1	65.1	851.4	633.6	238.8	39.6	1.000201
12500.0	634.4	-9.7	-15.6	62.8	838.2	632.3	238.8	39.0	1.000197
13000.0	622.0	-10.8	-17.0	60.4	825.1	631.0	239.4	37.3	1.000193
13500.0	609.8	-11.8	-18.5	58.1	812.3	629.7	239.1	35.8	1.000189
14000.0	597.8	-12.9	-20.0	55.7	799.5	628.4	239.8	34.4	1.000185
14500.0	585.9	-14.0	-21.1	55.4	787.3	627.0	242.6	33.3	1.000182
15000.0	574.3	-15.3	-22.2	55.9	775.3	625.5	245.2	32.3	1.000179
15500.0	562.8	-16.5	-23.2	56.4	763.5	624.0	246.7	32.2	1.000176
16000.0	551.5	-17.7	-24.3	56.9	751.9	622.5	248.3	32.1	1.000172
16500.0	540.4	-19.0	-25.4	57.4	740.3	621.0	249.7	32.9	1.000169
17000.0	529.4	-20.2	-26.5	58.0	729.0	619.4	251.0	33.8	1.000167
17500.0	518.7	-21.5	-27.6	58.5	717.7	617.9	251.6	34.5	1.000164
18000.0	508.1	-22.7	-28.7	59.0	706.6	616.3	251.1	35.0	1.000161
18500.0	497.6	-24.0	-29.8	59.6	695.6	614.7	250.7	35.6	1.000158
19000.0	487.3	-25.3	-30.9	60.1	684.8	613.1	251.0	36.1	1.000155
19500.0	477.2	-26.6	-32.0	60.6	674.0	611.5	251.6	36.8	1.000153
20000.0	467.2	-27.9	-33.2	61.2	663.4	609.9	252.3	38.8	1.000150
20500.0	457.4	-29.1	-34.3	61.7	653.0	608.3	253.1	44.4	1.000148

TABLE C-IV (Cont)
UPPER AIR DATA
3907108
WHITE SANDS SITE

STATION ALTITUDE 3989.0 FEET MSL
12 MAR. 65 1650 HRS MST
ASCENSION NO. 205

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

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	447.8	-30.4	-35.5	62.3	642.6	606.7	253.8	50.1	1.000145
21500.0	438.3	-31.8	-36.6	62.8	632.4	605.0	254.7	48.2	1.000143
22000.0	428.9	-33.1	-37.8	63.4	622.4	603.4	255.6	46.2	1.000140
22500.0	419.7	-34.4	-39.0	64.0	612.4	601.7	256.5	48.3	1.000138
23000.0	410.6	-35.6	-40.6	60.7	602.1	600.2	257.3	51.7	1.000135
23500.0	401.7	-36.7	-42.3	57.1	591.9	598.8	257.9	53.6	1.000133
24000.0	393.0	-37.9	-44.0	53.4	581.9	597.3	258.2	54.1	1.000130
24500.0	384.4	-39.0	-45.7	49.8	572.0	595.8	256.9	62.0	1.000128
25000.0	376.0	-39.4	-47.3	43.4	560.2	595.4	254.1	76.2	1.000125
25500.0	367.7	-37.2	-49.0	28.7	542.9	598.2	251.4	83.8	1.000121
26000.0	359.8	-36.1	-52.1	17.9**	528.8	599.5	249.3	89.7	1.000118
26500.0	352.0	-36.6	-55.4	12.6**	518.5	598.8	248.1	94.5	1.000116
27000.0	344.3	-37.2	-60.1	7.3**	508.4	598.2	247.4	93.9	1.000113
27500.0	336.8	-37.7	-69.9	2.0**	498.4	597.5	246.9	92.3	1.000111
28000.0	329.5	-38.5	0.0	0.0**	489.3	596.4	246.4	91.5	1.000109
28500.0	322.3	-39.5	0.0	0.0**	480.6	595.2	246.0	90.7	1.000107
29000.0	315.2	-40.5	0.0	0.0**	472.1	593.9	245.7	90.2	1.000105
29500.0	308.2	-41.6	0.0	0.0**	463.7	592.6	245.6	89.9	1.000103
30000.0	301.4	-42.6	0.0	0.0**	455.4	591.3	245.8	91.3	1.000101
30500.0	294.6	-43.6	0.0	0.0**	447.2	589.9	246.4	94.6	1.000100
31000.0	288.1	-44.2	0.0	0.0**	438.3	589.2	247.1	97.4	1.000098
31500.0	281.6	-44.7	0.0	0.0**	429.4	588.6	248.0	98.5	1.000096
32000.0	275.3	-45.2	0.0	0.0**	420.7	587.9	248.8	98.1	1.000094
32500.0	269.1	-45.7	0.0	0.0**	412.1	587.3	249.5	90.0	1.000092
33000.0	263.0	-46.2	0.0	0.0**	403.7	586.6	250.3	84.0	1.000090
33500.0	257.1	-46.6	0.0	0.0**	395.3	586.1	251.0	82.1	1.000088
34000.0	251.2	-46.5	0.0	0.0**	386.2	586.2	251.6	85.8	1.000086
34500.0	245.6	-46.4	0.0	0.0**	377.3	586.3	251.9	96.8	1.000084
35000.0	240.0	-46.3	0.0	0.0**	368.7	586.4	252.2	109.9	1.000082
35500.0	234.6	-46.2	0.0	0.0**	360.2	586.5	252.6	127.6	1.000080
36000.0	229.3	-46.2	0.0	0.0**	351.9	586.7	253.0	144.2	1.000078
36500.0	224.1	-46.1	0.0	0.0**	343.9	586.8	253.3	147.6	1.000077
37000.0	219.0	-46.1	0.0	0.0**	336.1	586.7	253.6	150.9	1.000075

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

TABLE C-IV (Cont)
UPPER AIR DATA
3907108
WHITE SANDS SITE

STATION ALTITUDE 3989.0 FEET MSL
12 MAR. 65 1650 HRS MST
ASCENSION NO. 205

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

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	214.1	-46.6	0.0	0.0**	329.3	586.1	254.0	135.9	1.000073
38000.0	209.3	-47.1	0.0	0.0**	322.5	585.4	254.4	119.7	1.000072
38500.0	204.5	-47.6	0.0	0.0**	315.9	584.8	254.9	92.8	1.000070
39000.0	199.9	-48.1	0.0	0.0**	309.4	584.1	255.4	64.7	1.000069
39500.0	195.3	-48.6	0.0	0.0**	303.0	583.5	255.5	50.9	1.000067
40000.0	190.8	-49.1	0.0	0.0**	296.8	582.8	255.5	42.2	1.000066
40500.0	186.5	-49.6	0.0	0.0**	290.7	582.1	255.2	42.3	1.000065
41000.0	182.2	-50.1	0.0	0.0**	284.6	581.5	254.4	56.5	1.000063
41500.0	178.0	-50.8	0.0	0.0**	278.9	580.7	253.7	70.7	1.000062
42000.0	173.9	-51.5	0.0	0.0**	273.4	579.6	253.2	90.5	1.000061
42500.0	169.9	-52.3	0.0	0.0**	268.0	578.6	252.7	110.2	1.000060
43000.0	165.9	-53.1	0.0	0.0**	262.7	577.6	252.5	121.6	1.000059
43500.0	162.1	-53.9	0.0	0.0**	257.5	576.6	252.5	128.7	1.000057
44000.0	158.3	-54.7	0.0	0.0**	252.4	575.5	252.5	132.0	1.000056
44500.0	154.6	-55.5	0.0	0.0**	247.4	574.5	252.9	122.5	1.000055
45000.0	150.9	-56.2	0.0	0.0**	242.4	573.5	253.3	112.9	1.000054
45500.0	147.3	-57.0	0.0	0.0**	237.6	572.4	253.7	105.7	1.000053
46000.0	143.8	-57.8	0.0	0.0**	232.8	571.4	254.3	99.7	1.000052
46500.0	140.4	-58.6	0.0	0.0**	228.1	570.3	254.8	93.7	1.000051
47000.0	137.1	-59.4	0.0	0.0**	223.5	569.2	255.1	90.0	1.000050
47500.0	133.8	-60.2	0.0	0.0**	218.9	568.2	255.5	86.3	1.000049
48000.0	130.6	-61.1	0.0	0.0**	214.5	567.1	255.6	82.8	1.000048
48500.0	127.4	-61.9	0.0	0.0**	210.1	566.0	255.4	79.7	1.000047
49000.0	124.3	-62.6	0.0	0.0**	205.7	564.9	255.3	76.6	1.000046
49500.0	121.3	-63.3	0.0	0.0**	201.3	564.1	255.0	72.2	1.000045
50000.0	118.3	-63.9	0.0	0.0**	197.0	563.2	254.7	67.6	1.000044
50500.0	115.4	-63.4	0.0	0.0**	191.7	564.0	254.3	64.8	1.000043
51000.0	112.6	-62.7	0.0	0.0**	186.4	564.9	254.0	62.5	1.000042
51500.0	109.9	-62.0	0.0	0.0**	181.3	565.8	253.7	60.3	1.000040
52000.0	107.2	-61.3	0.0	0.0**	176.4	566.7	253.4	58.1	1.000039
52500.0	104.6	-61.3	0.0	0.0**	172.1	566.8	253.2	56.2	1.000038
53000.0	102.1	-61.8	0.0	0.0**	168.3	566.1	253.5	56.9	1.000037
53500.0	99.6	-61.7	0.0	0.0**	164.2	566.2	253.9	57.5	1.000037

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

TABLE C-IV (Cont)
UPPER AIR DATA
3907108
WHITE SANDS SITE

STATION ALTITUDE 3989.0 FEET MSL
12 MAR. 65 1650 HRS MST
ASCENSION NO. 205

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

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
54000.0	97.2	-61.2	0.0	0.0**	159.9	566.9	254.4	58.3	1.000036
54500.0	94.9	-60.7	0.0	0.0**	155.6	567.5	255.4	59.5	1.000035
55000.0	92.6	-60.2	0.0	0.0**	151.5	568.2	256.3	60.6	1.000034
55500.0	90.4	-59.7	0.0	0.0**	147.5	568.9	257.1	60.5	1.000033
56000.0	88.2	-60.1	0.0	0.0**	144.3	568.4	257.8	59.8	1.000032
56500.0	86.1	-60.6	0.0	0.0**	141.2	567.6	258.4	59.0	1.000031
57000.0	84.0	-61.2	0.0	0.0**	138.1	566.9	257.5	58.2	1.000031
57500.0	82.0	-61.8	0.0	0.0**	135.2	566.1	256.6	57.4	1.000030
58000.0	80.0	-62.3	0.0	0.0**	132.3	565.4	255.3	51.7	1.000029
58500.0	78.1	-62.9	0.0	0.0**	129.4	564.6	253.7	42.2	1.000029
59000.0	76.2	-63.5	0.0	0.0**	126.6	563.8	251.4	32.4	1.000028
59500.0	74.3	-64.1	0.0	0.0**	123.8	563.0	241.6	20.1	1.000028
60000.0	72.5	-64.6	0.0	0.0**	121.1	562.3	231.7	7.7	1.000027
60500.0	70.7	-65.2	0.0	0.0**	118.5	561.5	192.2	5.8	1.000026
61000.0	69.0	-65.8	0.0	0.0**	115.9	560.7	134.2	10.4	1.000026
61500.0	67.3	-66.4	0.0	0.0**	113.4	559.9	76.2	15.0	1.000025
62000.0	65.6	-67.0	0.0	0.0**	110.9	559.1	26.2	11.0	1.000025
62500.0	64.0	-67.5	0.0	0.0**	108.4	558.3	336.5	6.5	1.000024
63000.0	62.4	-67.4	0.0	0.0**	105.6	558.5	292.1	3.8	1.000024
63500.0	60.9	-66.1	0.0	0.0**	102.4	560.4	278.6	11.7	1.000023
64000.0	59.4	-64.7	0.0	0.0**	99.2	562.1	265.1	19.7	1.000022
64500.0	57.9	-63.5	0.0	0.0**	96.2	563.8	255.2	23.1	1.000021
65000.0	56.5	-63.9	0.0	0.0**	94.1	563.2	251.5	18.9	1.000021
65500.0	55.1	-64.3	0.0	0.0**	92.0	562.7	247.8	14.7	1.000020
66000.0	53.8	-64.8	0.0	0.0**	89.9	562.1	211.0	11.3	1.000020
66500.0	52.4	-64.5	0.0	0.0**	87.6	562.5	156.9	8.2	1.000020
67000.0	51.2	-63.2	0.0	0.0**	84.9	564.1	102.8	5.0	1.000019
67500.0	49.9	-62.0	0.0	0.0**	82.4	565.8	147.1	6.0	1.000018
68000.0	48.7	-60.8	0.0	0.0**	79.9	567.4	195.4	7.0	1.000018
68500.0	47.6	-59.6	0.0	0.0**	77.6	569.1	233.1	9.1	1.000017
69000.0	46.4	-58.4	0.0	0.0**	75.3	570.7	239.1	14.4	1.000017
69500.0	45.3	-57.9	0.0	0.0**	73.3	571.3	245.0	19.7	1.000016
70000.0	44.2	-57.8	0.0	0.0**	71.6	571.4	248.9	20.5	1.000016

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

TABLE C-IV (Cont)
UPPER AIR DATA
3907108
WHITE SANDS SITE

STATION ALTITUDE 3989.0 FEET MSL
12 MAR. 65 1650 HRS MST
ASCENSION NO. 205

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

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
70500.0	43.2	-57.7	0.0	0.0**	69.9	571.5	250.5	16.6	1.000016
71000.0	42.2	-57.7	0.0	0.0**	68.2	571.6	252.2	12.7	1.000015
71500.0	41.2	-57.6	0.0	0.0**	66.5	571.7	273.9	9.8	1.000015
72000.0	40.2	-57.5	0.0	0.0**	65.0	571.8	304.6	7.4	1.000014
72500.0	39.2	-57.5	0.0	0.0**	63.4	571.9	335.2	4.9	1.000014
73000.0	38.3	-57.4	0.0	0.0**	61.9	572.0	330.6	6.6	1.000014
73500.0	37.4	-57.3	0.0	0.0**	60.4	572.0	321.4	8.8	1.000013
74000.0	36.5	-57.2	0.0	0.0**	58.9	572.1	312.0	10.9	1.000013
74500.0	35.7	-57.2	0.0	0.0**	57.5	572.2	300.5	11.9	1.000013
75000.0	34.8	-57.1	0.0	0.0**	56.2	572.3	289.0	12.9	1.000013
75500.0	34.0	-57.0	0.0	0.0**	54.8	572.4	278.7	13.3	1.000012
76000.0	33.2	-57.0	0.0	0.0**	53.5	572.5	273.0	11.6	1.000012
76500.0	32.4	-56.9	0.0	0.0**	52.2	572.6	267.2	9.8	1.000012
77000.0	31.6	-56.8	0.0	0.0**	51.0	572.7	262.1	8.5	1.000011
77500.0	30.9	-56.8	0.0	0.0**	49.8	572.8	259.6	9.2	1.000011
78000.0	30.2	-56.7	0.0	0.0**	48.6	572.8	257.1	10.0	1.000011
78500.0	29.5	-56.6	0.0	0.0**	47.4	572.9	254.9	10.9	1.000011
79000.0	28.8	-56.6	0.0	0.0**	46.3	573.0	255.8	12.8	1.000010
79500.0	28.1	-56.5	0.0	0.0**	45.2	573.1	256.6	14.8	1.000010
80000.0	27.4	-55.5	0.0	0.0**	43.9	574.4	257.5	16.7	1.000010
80500.0	26.8	-54.5	0.0	0.0**	42.7	575.8	267.1	13.5	1.000010
81000.0	26.2	-53.4	0.0	0.0**	41.5	577.2	276.7	10.3	1.000009
81500.0	25.6	-53.1	0.0	0.0**	40.5	577.6	286.4	7.0	1.000009
82000.0	25.0	-53.1	0.0	0.0**	39.5	577.6	295.7	6.0	1.000009
82500.0	24.4	-53.1	0.0	0.0**	38.6	577.6	305.0	5.3	1.000009
83000.0	23.8	-53.1	0.0	0.0**	37.7	577.6	314.3	4.6	1.000008
83500.0	23.3	-53.1	0.0	0.0**	36.8	577.6	312.8	5.3	1.000008
84000.0	22.7	-53.1	0.0	0.0**	36.0	577.6	306.4	6.6	1.000008
84500.0	22.2	-53.1	0.0	0.0**	35.1	577.6	300.0	8.0	1.000008
85000.0	21.7	-53.1	0.0	0.0**	34.3	577.6	293.8	11.1	1.000008
85500.0	21.2	-53.1	0.0	0.0**	33.5	577.6	287.8	16.0	1.000007
86000.0	20.7	-53.1	0.0	0.0**	32.8	577.6	281.8	20.8	1.000007
86500.0	20.2	-53.1	0.0	0.0**	32.0	577.6	275.8	25.7	1.000007

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

TABLE C-IV (Cont)

UPPER AIR DATA

3907108

WHITE SANDS SITE

STATION ALTITUDE 3989.0 FEET MSL
12 MAR. 65 1650 HRS MST
ASCENSION NO. 205

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

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	19.7	-53.1	0.0	0.0**	31.3	577.6	275.4	26.2	1.000007
87500.0	19.3	-53.1	0.0	0.0**	30.5	577.6	275.1	26.6	1.000007
88000.0	18.8	-53.1	0.0	0.0**	29.8	577.6	274.8	27.0	1.000007
88500.0	18.4	-53.1	0.0	0.0**	29.1	577.6	274.5	27.4	1.000006
89000.0	18.0	-53.1	0.0	0.0**	28.5	577.6	275.5	26.5	1.000006
89500.0	17.6	-53.1	0.0	0.0**	27.8	577.6	276.5	25.5	1.000006
90000.0	17.2	-53.1	0.0	0.0**	27.2	577.6	277.5	24.5	1.000006
90500.0	16.8	-53.1	0.0	0.0**	26.5	577.6	278.5	23.6	1.000006
91000.0	16.4	-53.1	0.0	0.0**	25.9	577.6	276.0	24.0	1.000006
91500.0	16.0	-53.1	0.0	0.0**	25.3	577.6	273.2	24.5	1.000006
92000.0	15.6	-53.1	0.0	0.0**	24.7	577.6	270.4	25.0	1.000006
92500.0	15.3	-53.1	0.0	0.0**	24.2	577.6	267.6	25.5	1.000005
93000.0	14.9	-53.0	0.0	0.0**	23.6	577.8	269.1	24.6	1.000005
93500.0	14.6	-52.6	0.0	0.0**	23.0	578.3	271.6	23.3	1.000005
94000.0	14.2	-52.2	0.0	0.0**	22.4	578.8	274.0	22.0	1.000005
94500.0	13.9	-51.8	0.0	0.0**	21.9	579.3	276.5	20.7	1.000005
95000.0	13.6	-51.4	0.0	0.0**	21.3	579.8	276.7	20.9	1.000005
95500.0	13.3	-51.1	0.0	0.0**	20.8	580.3	276.0	21.5	1.000005
96000.0	13.0	-50.7	0.0	0.0**	20.3	580.8	275.4	22.2	1.000005
96500.0	12.7	-50.3	0.0	0.0**	19.8	581.3	274.7	22.8	1.000004
97000.0	12.4	-49.9	0.0	0.0**	19.3	581.8			1.000004
97500.0	12.1	-49.5	0.0	0.0**	18.8	582.3			1.000004
98000.0	11.8	-49.2	0.0	0.0**	18.4	582.8			1.000004
98500.0	11.5	-48.8	0.0	0.0**	17.9	583.3			1.000004
99000.0	11.3	-48.4	0.0	0.0**	17.5	583.8			1.000004
99500.0	11.0	-48.0	0.0	0.0**	17.1	584.2			1.000004
100000.0	10.8	-47.6	0.0	0.0**	16.7	584.7			1.000004
100500.0	10.5	-47.3	0.0	0.0**	16.2	585.2			1.000004
101000.0	10.3	-46.9	0.0	0.0**	15.9	585.7			1.000004
101500.0	10.1	-46.5	0.0	0.0**	15.5	586.2			1.000003

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

TABLE C-V
UPPER AIR DATA
3907109
WHITE SANDS SITE

STATION ALTITUDE 3989.0 FEET MSL
12 MAR. 65 2038 HRS MST
ASCENSION NO. 207

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

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	879.3	8.7	-1.4	49.0	1084.4	654.5	320.0	12.0	1.000268
5000.0	847.2	8.5	-3.6	42.2	1045.8	654.2	291.3	17.5	1.000255
5500.0	831.7	7.4	-4.5	42.6	1030.8	652.8	277.2	20.2	1.000251
6000.0	816.4	6.2	-5.4	43.3	1016.3	651.4	263.0	22.9	1.000246
6500.0	801.3	5.0	-6.2	44.0	1001.9	650.0	254.5	24.5	1.000242
7000.0	786.5	3.8	-7.1	44.7	987.7	648.6	253.1	25.0	1.000238
7500.0	771.9	2.6	-8.0	45.4	973.7	647.1	251.9	25.2	1.000234
8000.0	757.5	1.4	-9.0	46.1	959.8	645.7	251.2	24.9	1.000229
8500.0	743.2	0.2	-9.9	46.8	946.0	644.2	250.5	24.6	1.000225
9000.0	729.2	-1.1	-10.4	49.6	932.7	642.6	250.0	24.1	1.000222
9500.0	715.4	-2.5	-10.8	52.9	919.7	641.0	249.5	23.5	1.000219
10000.0	701.8	-3.9	-11.4	56.3	906.8	639.4	249.4	23.1	1.000215
10500.0	688.4	-5.3	-11.9	59.6	894.1	637.7	249.6	22.9	1.000212
11000.0	675.1	-6.6	-12.6	63.0	881.5	636.1	249.9	22.7	1.000209
11500.0	662.1	-8.0	-13.2	66.4	869.0	634.4	250.7	23.6	1.000206
12000.0	649.2	-9.4	-14.0	69.9	856.7	632.7	251.5	24.6	1.000202
12500.0	636.5	-10.6	-14.9	71.0	843.7	631.3	252.3	25.8	1.000199
13000.0	624.0	-11.7	-16.0	71.0	830.6	630.0	252.9	27.1	1.000195
13500.0	611.7	-12.8	-17.0	71.0	817.7	628.6	254.1	28.3	1.000191
14000.0	599.6	-13.8	-18.0	71.0	804.9	627.3	255.7	29.1	1.000188
14500.0	587.7	-14.9	-19.1	71.0	792.3	626.0	257.1	29.7	1.000184
15000.0	576.0	-16.0	-20.1	71.0	779.8	624.7	258.2	29.8	1.000181
15500.0	564.5	-17.1	-21.2	71.0	767.5	623.3	258.7	29.9	1.000178
16000.0	553.1	-18.2	-22.3	71.0	755.3	622.0	258.9	29.9	1.000174
16500.0	542.0	-19.3	-23.3	71.0	743.3	620.6	258.2	30.9	1.000171
17000.0	531.0	-20.4	-24.4	71.0	731.5	619.2	258.2	31.7	1.000168
17500.0	520.2	-21.5	-25.5	71.0	719.8	617.9	259.3	32.0	1.000165
18000.0	509.5	-22.6	-26.6	71.0	708.2	616.5	260.7	32.9	1.000162
18500.0	499.1	-23.7	-27.6	71.0	696.8	615.1	262.1	34.4	1.000159
19000.0	488.7	-24.9	-28.8	71.4	685.7	613.6	262.6	35.8	1.000156
19500.0	478.6	-26.3	-29.9	72.6	675.3	611.9	262.7	37.0	1.000154
20000.0	468.6	-27.7	-31.1	73.8	665.0	610.1	262.5	39.0	1.000151
20500.0	458.8	-29.1	-32.3	75.0	654.8	608.4	262.1	41.4	1.000148

TABLE C-V (Cont)
UPPER AIR DATA
3907109
WHITE SANDS SITE

STATION ALTITUDE 3989.0 FEET MSL
12 MAR. 65 2038 HRS MST
ASCENSION NO. 207

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

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	449.1	-30.5	-33.5	76.2	644.7	606.6	262.8	43.6	1.000146
21500.0	439.5	-31.9	-34.7	77.5	634.7	604.8	264.3	45.7	1.000143
22000.0	430.2	-33.4	-36.0	78.7	624.9	603.0	265.2	47.8	1.000141
22500.0	420.9	-32.6	-37.5	62.6	609.7	603.9	265.3	50.1	1.000137
23000.0	412.0	-32.2	-39.5	48.9**	595.6	604.5	265.4	52.1	1.000134
23500.0	403.2	-32.8	-41.1	44.1**	584.5	603.7	265.5	53.5	1.000131
24000.0	394.6	-33.5	-42.8	39.3**	573.6	602.8	265.0	54.7	1.000129
24500.0	386.1	-34.2	-44.6	34.6**	562.8	602.0	263.0	55.4	1.000126
25000.0	377.8	-34.8	-46.5	29.8**	552.2	601.2	262.8	56.1	1.000124
25500.0	369.7	-35.5	-48.6	25.0**	541.8	600.3	264.4	56.9	1.000121
26000.0	361.7	-36.1	-51.1	20.2**	531.6	599.5	265.4	59.1	1.000119
26500.0	353.8	-36.8	-53.9	15.3**	521.5	598.6	266.0	61.8	1.000116
27000.0	346.1	-37.5	-57.5	10.5**	511.7	597.8	267.3	64.3	1.000114
27500.0	338.6	-38.1	-62.8	5.7**	501.9	596.9	268.5	66.9	1.000112
28000.0	331.2	-38.8	-76.9	0.8**	492.4	596.1	268.3	71.6	1.000110
28500.0	323.9	-39.8	0.0	0.0**	483.7	594.7	268.1	76.4	1.000108
29000.0	316.8	-41.0	0.0	0.0**	475.4	593.3	268.9	78.0	1.000106
29500.0	309.7	-42.1	0.0	0.0**	467.1	591.8	269.7	79.6	1.000104
30000.0	302.8	-43.0	0.0	0.0**	458.4	590.8	268.4	79.5	1.000102
30500.0	296.1	-43.1	0.0	0.0**	448.5	590.5	266.9	79.4	1.000100
31000.0	289.5	-43.3	0.0	0.0**	438.9	590.3	265.2	80.7	1.000098
31500.0	283.0	-43.5	0.0	0.0**	429.5	590.0	263.4	82.8	1.000096
32000.0	276.7	-43.7	0.0	0.0**	420.2	589.8	261.2	86.2	1.000094
32500.0	270.5	-43.9	0.0	0.0**	411.1	589.6	261.0	93.4	1.000092
33000.0	264.5	-44.1	0.0	0.0**	402.3	589.3	260.8	100.0	1.000090
33500.0	258.5	-44.3	0.0	0.0**	393.6	589.1	260.4	102.9	1.000088
34000.0	252.8	-44.5	0.0	0.0**	385.1	588.8	260.1	105.9	1.000086
34500.0	247.1	-44.7	0.0	0.0**	376.8	588.6	259.6	109.6	1.000084
35000.0	241.5	-44.9	0.0	0.0**	368.6	588.3	259.2	113.3	1.000082
35500.0	236.1	-45.0	0.0	0.0**	360.7	588.1	258.8	114.1	1.000080
36000.0	230.8	-45.2	0.0	0.0**	352.8	587.8	258.5	114.4	1.000079
36500.0	225.6	-45.4	0.0	0.0**	345.2	587.6	257.9	110.8	1.000077
37000.0	220.5	-45.7	0.0	0.0**	337.7	587.3	257.2	106.7	1.000075

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

TABLE C-V (Cont)

UPPER AIR DATA

3907109

WHITE SANDS SITE

STATION ALTITUDE 3989.0 FEET MSL
12 MAR. 65 2038 HRS MST
ASCENSION NO. 207

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

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	215.5	-46.2	0.0	0.0**	330.9	586.6	256.6	102.5	1.000074
38000.0	210.7	-46.8	0.0	0.0**	324.3	585.8	255.9	98.3	1.000072
38500.0	205.9	-47.7	0.0	0.0**	318.2	584.7	255.8	97.4	1.000071
39000.0	201.2	-49.0	0.0	0.0**	312.7	583.0	255.6	97.0	1.000070
39500.0	196.6	-50.3	0.0	0.0**	307.4	581.2	255.6	98.2	1.000068
40000.0	192.1	-51.3	0.0	0.0**	301.6	580.0	255.8	100.7	1.000067
40500.0	187.6	-52.2	0.0	0.0**	295.8	578.8	255.8	103.1	1.000066
41000.0	183.3	-53.1	0.0	0.0**	290.1	577.6	255.4	105.0	1.000065
41500.0	179.0	-54.0	0.0	0.0**	284.6	576.4	255.0	106.9	1.000063
42000.0	174.8	-54.9	0.0	0.0**	279.1	575.2	254.3	105.9	1.000062
42500.0	170.7	-55.8	0.0	0.0**	273.7	574.0	253.6	104.9	1.000061
43000.0	166.7	-56.8	0.0	0.0**	268.3	572.8	253.2	102.6	1.000060
43500.0	162.7	-57.7	0.0	0.0**	263.1	571.6	252.9	100.1	1.000059
44000.0	158.8	-58.6	0.0	0.0**	257.9	570.3	253.1	98.2	1.000057
44500.0	155.0	-59.3	0.0	0.0**	252.6	569.4	253.9	97.1	1.000056
45000.0	151.3	-59.2	0.0	0.0**	246.4	569.6	254.6	96.0	1.000055
45500.0	147.7	-59.1	0.0	0.0**	240.4	569.7	255.9	96.0	1.000054
46000.0	144.2	-59.0	0.0	0.0**	234.6	569.8	257.2	96.1	1.000052
46500.0	140.7	-58.9	0.0	0.0**	228.8	570.0	258.4	96.1	1.000051
47000.0	137.4	-58.8	0.0	0.0**	223.3	570.1	259.1	96.0	1.000050
47500.0	134.1	-58.7	0.0	0.0**	217.9	570.2	259.9	96.0	1.000049
48000.0	130.9	-59.4	0.0	0.0**	213.3	569.3	260.6	95.5	1.000048
48500.0	127.8	-60.0	0.0	0.0**	208.8	568.4	260.6	92.5	1.000047
49000.0	124.7	-60.7	0.0	0.0**	204.5	567.5	260.6	89.5	1.000046
49500.0	121.7	-61.4	0.0	0.0**	200.2	566.6	260.0	84.4	1.000045
50000.0	118.7	-62.0	0.0	0.0**	195.9	565.8	258.4	75.9	1.000044
50500.0	115.9	-62.1	0.0	0.0**	191.3	565.6	256.8	67.3	1.000043
51000.0	113.0	-62.2	0.0	0.0**	186.7	565.5	253.8	61.8	1.000042
51500.0	110.3	-62.3	0.0	0.0**	182.3	565.3	250.8	56.4	1.000041
52000.0	107.6	-62.5	0.0	0.0**	178.0	565.2	249.2	55.3	1.000040
52500.0	105.0	-62.6	0.0	0.0**	173.8	565.0	248.0	55.3	1.000039
53000.0	102.5	-62.7	0.0	0.0**	169.6	564.9	249.1	59.2	1.000038
53500.0	100.0	-62.8	0.0	0.0**	165.6	564.7	250.8	64.3	1.000037

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

TABLE C-V (Cont)
UPPER AIR DATA
3907109
WHITE SANDS SITE

STATION ALTITUDE 3989.0 FEET MSL
12 MAR. 65 2038 HRS MST
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WSTM SITE COORDINATES
E 488,580 FEET
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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	97.5	-62.7	0.0	0.0**	161.5	564.8	252.2	64.2	1.000036
54500.0	95.2	-62.6	0.0	0.0**	157.5	565.0	253.4	62.5	1.000035
55000.0	92.9	-62.6	0.0	0.0**	153.6	565.1	253.8	59.4	1.000034
55500.0	90.6	-62.5	0.0	0.0**	149.9	565.2	253.6	55.1	1.000033
56000.0	88.4	-62.4	0.0	0.0**	146.2	565.3	252.9	50.8	1.000033
56500.0	86.3	-62.3	0.0	0.0**	142.6	565.4	250.5	46.1	1.000032
57000.0	84.2	-62.2	0.0	0.0**	139.1	565.5	248.2	41.5	1.000031
57500.0	82.1	-62.1	0.0	0.0**	135.6	565.6	242.1	36.0	1.000030
58000.0	80.2	-62.1	0.0	0.0**	132.3	565.7	234.9	30.2	1.000029
58500.0	78.2	-62.0	0.0	0.0**	129.0	565.8	227.6	24.3	1.000029
59000.0	76.3	-61.9	0.0	0.0**	125.9	565.9	210.1	21.1	1.000028
59500.0	74.5	-61.8	0.0	0.0**	122.8	566.0	191.8	17.9	1.000027
60000.0	72.7	-62.3	0.0	0.0**	120.1	565.4	173.5	14.8	1.000027
60500.0	70.9	-63.0	0.0	0.0**	117.5	564.5	173.5	13.7	1.000026
61000.0	69.2	-63.6	0.0	0.0**	115.0	563.6	173.9	12.6	1.000026
61500.0	67.5	-64.3	0.0	0.0**	112.6	562.7	182.6	13.1	1.000025
62000.0	65.8	-65.0	0.0	0.0**	110.2	561.8	211.1	17.2	1.000025
62500.0	64.2	-64.9	0.0	0.0**	107.4	562.0	239.6	21.3	1.000024
63000.0	62.6	-63.9	0.0	0.0**	104.3	563.2	246.2	25.7	1.000023
63500.0	61.1	-63.0	0.0	0.0**	101.4	564.4	252.2	30.1	1.000023
64000.0	59.6	-62.1	0.0	0.0**	98.5	565.6	254.4	27.3	1.000022
64500.0	58.2	-61.2	0.0	0.0**	95.7	566.8	255.2	21.7	1.000021
65000.0	56.8	-61.0	0.0	0.0**	93.3	567.2	249.0	15.1	1.000021
65500.0	55.4	-60.8	0.0	0.0**	91.0	567.4	233.7	7.5	1.000020
66000.0	54.1	-60.7	0.0	0.0**	88.7	567.6	214.5	0.5	1.000020
66500.0	52.8	-60.5	0.0	0.0**	86.5	567.8	146.7	1.3	1.000019
67000.0	51.5	-60.4	0.0	0.0**	84.4	568.0	78.9	2.2	1.000019
67500.0	50.3	-60.2	0.0	0.0**	82.3	568.2	21.0	4.2	1.000018
68000.0	49.1	-60.1	0.0	0.0**	80.3	568.4	330.4	7.0	1.000018
68500.0	47.9	-59.9	0.0	0.0**	78.3	568.6	279.8	9.7	1.000017
69000.0	46.8	-59.8	0.0	0.0**	76.4	568.8	276.0	13.9	1.000017
69500.0	45.6	-59.6	0.0	0.0**	74.5	569.0	272.4	18.0	1.000017
70000.0	44.6	-59.5	0.0	0.0**	72.7	569.1	269.7	19.6	1.000016

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

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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	43.5	-59.4	0.0	0.0**	70.9	569.3	268.0	17.5	1.000016
71000.0	42.5	-59.2	0.0	0.0**	69.1	569.5	266.3	15.4	1.000015
71500.0	41.4	-59.1	0.0	0.0**	67.4	569.7	263.7	11.4	1.000015
72000.0	40.5	-58.9	0.0	0.0**	65.8	569.9	261.0	7.0	1.000015
72500.0	39.5	-58.8	0.0	0.0**	64.2	570.1	260.8	3.5	1.000014
73000.0	38.6	-58.6	0.0	0.0**	62.6	570.3	268.1	2.9	1.000014
73500.0	37.6	-58.5	0.0	0.0**	61.1	570.5	275.4	2.2	1.000014
74000.0	36.7	-58.3	0.0	0.0**	59.6	570.7	298.4	1.8	1.000013
74500.0	35.9	-58.2	0.0	0.0**	58.1	570.9	329.3	1.7	1.000013
75000.0	35.0	-58.0	0.0	0.0**	56.7	571.1	1.1	2.5	1.000013
75500.0	34.2	-57.9	0.0	0.0**	55.3	571.3	36.3	8.0	1.000012
76000.0	33.4	-57.7	0.0	0.0**	54.0	571.5	71.6	13.4	1.000012
76500.0	32.6	-57.6	0.0	0.0**	52.7	571.7	74.6	15.4	1.000012
77000.0	31.8	-57.5	0.0	0.0**	51.4	571.9	71.2	16.8	1.000011
77500.0	31.1	-57.3	0.0	0.0**	50.1	572.1	43.8	15.7	1.000011
78000.0	30.3	-57.2	0.0	0.0**	48.9	572.2	351.9	12.1	1.000011
78500.0	29.6	-57.0	0.0	0.0**	47.7	572.5	305.3	9.3	1.000011
79000.0	28.9	-56.7	0.0	0.0**	46.5	572.9	294.2	12.0	1.000010
79500.0	28.2	-56.4	0.0	0.0**	45.4	573.2	283.1	14.7	1.000010
80000.0	27.6	-56.2	0.0	0.0**	44.3	573.5	328.0	11.7	1.000010
80500.0	26.9	-55.9	0.0	0.0**	43.2	573.9	33.6	6.8	1.000010
81000.0	26.3	-55.7	0.0	0.0**	42.1	574.2	78.2	3.8	1.000009
81500.0	25.7	-55.4	0.0	0.0**	41.1	574.5	78.3	5.2	1.000009
82000.0	25.1	-55.2	0.0	0.0**	40.1	574.9	78.4	6.6	1.000009
82500.0	24.5	-54.9	0.0	0.0**	39.1	575.2	31.8	6.0	1.000009
83000.0	23.9	-54.7	0.0	0.0**	38.1	575.5	340.4	5.1	1.000008
83500.0	23.3	-54.4	0.0	0.0**	37.2	575.9	321.8	4.9	1.000008
84000.0	22.8	-54.2	0.0	0.0**	36.3	576.2	336.5	5.3	1.000008
84500.0	22.3	-53.9	0.0	0.0**	35.4	576.5	351.5	5.8	1.000008
85000.0	21.8	-53.7	0.0	0.0**	34.5	576.8	9.4	6.8	1.000008
85500.0	21.2	-53.4	0.0	0.0**	33.7	577.2	27.4	7.8	1.000008
86000.0	20.8	-53.2	0.0	0.0**	32.9	577.5	40.2	7.5	1.000007
86500.0	20.3	-52.9	0.0	0.0**	32.1	577.8	50.5	6.5	1.000007

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

TABLE C-V (Cont)
UPPER AIR DATA
3907109
WHITE SANDS SITE

STATION ALTITUDE 3989.0 FEET MSL
12 MAR. 65 2038 HRS MST
ASCENSION NO. 207

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

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	19.8	-52.7	0.0	0.0**	31.3	578.2	45.7	6.0	1.000007
87500.0	19.3	-52.4	0.0	0.0**	30.5	578.5	343.3	7.6	1.000007
88000.0	18.9	-52.2	0.0	0.0**	29.8	578.8	281.0	9.2	1.000007
88500.0	18.5	-51.9	0.0	0.0**	29.1	579.1	252.9	8.5	1.000006
89000.0	18.0	-51.7	0.0	0.0**	28.4	579.5	244.2	6.7	1.000006
89500.0	17.6	-51.4	0.0	0.0**	27.7	579.8	234.5	4.9	1.000006
90000.0	17.2	-51.2	0.0	0.0**	27.0	580.1	174.6	3.4	1.000006
90500.0	16.8	-50.9	0.0	0.0**	26.4	580.4	114.6	1.9	1.000006
91000.0	16.4	-50.7	0.0	0.0**	25.7	580.8	54.9	1.6	1.000006
91500.0	16.1	-50.5	0.0	0.0**	25.1	581.1	355.5	3.0	1.000006
92000.0	15.7	-50.2	0.0	0.0**	24.5	581.4	296.1	4.3	1.000005
92500.0	15.3	-50.0	0.0	0.0**	23.9	581.7			1.000005
93000.0	15.0	-49.7	0.0	0.0**	23.4	582.0			1.000005
93500.0	14.6	-49.5	0.0	0.0**	22.8	582.4			1.000005
94000.0	14.3	-49.2	0.0	0.0**	22.3	582.7			1.000005
94500.0	14.0	-49.0	0.0	0.0**	21.7	583.0			1.000005
95000.0	13.7	-48.7	0.0	0.0**	21.2	583.3			1.000005

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

APPENDIX D

AEROBEE NASA 4.56 GG (S/N NASA 133)

IMPACT PREDICTION DATA

APPENDIX D

TABLE D-I

IMPACT PREDICTION DATA

TIME: 2038 MST
DATE: 12 March 1965

MISSILE: AEROBEE NASA 4.56 GG (S/N NASA 133)

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 1420 R 1420	P 1635	0.7S 35.3W	7.7S 27.6W	15.5S 34.0W	23.9S 96.9W	45.9N	3.4E
R_1 1420 R 1420	P 1650	1.1S 34.3W	7.8S 32.7W	15.5S 34.0W	24.4S 101.0W	45.4N	0.7W
R_1 1420 R 1420	P 1720	1.1S 37.0W	7.6S 30.2W	15.5S 34.0W	24.2S 101.2W	45.6N	0.9W
R_1 1650 R 1420	P 1754	1.1S 42.8W	11.8S 48.9W	15.5S 34.0W	28.4S 125.7W	41.4N	25.4W
R_1 1650 R 1420	P 1822	0.8S 28.6W	11.6S 40.0W	15.5S 34.0W	27.9S 102.6W	41.9N	2.3W
R_1 1650 R 1650	P 1850	1.1S 28.9W	11.6S 40.0W	7.8S 33.4W	20.5S 102.3W	49.3N	2.0W
R_1 1650 R 1650	P 1855	0.9S 30.6W	11.5S 37.6W	7.8S 33.4W	20.2S 101.6W	49.6N	1.3W
R_1 1650 R 1650	P 1903	0.9S 39.6W	12.7S 37.8W	7.8S 33.4W	21.4S 110.8W	48.4N	10.5W
R_1 1650 R 1650	P 1915	1.1S 34.9W	12.7S 37.8W	7.8S 33.4W	21.6S 106.1W	48.2N	5.8W
R_1 1650 R 1650	P 1931	1.2S 37.3W	12.5S 35.2W	7.8S 33.4W	21.5S 105.9W	48.3N	5.6W
R_2 1923 R 1650	P 1940	4.0S 29.8W	10.7S 34.0W	7.8S 33.4W	22.5S 97.2W	47.3N	3.1E
R_2 1923 R 1650	P 1953	2.1S 34.7W	10.8S 34.0W	7.8S 33.4W	20.7S 102.1W	49.1N	1.8W
R_2 1923 R 1650	P 2001	4.5S 34.1W	10.8S 34.0W	7.8S 33.4W	23.1S 101.5W	46.7N	1.2W
R_2 1923 R 1650	P 2014	4.8S 40.3W	10.8S 34.0W	7.8S 33.4W	23.4S 107.7W	46.4N	7.4W
R_2 1923 R 1650	P 2023	3.2S 37.7W	10.8S 34.0W	7.8S 33.4W	21.8S 105.1W	48.0N	4.8W
*R_1 2038 *R 2038	*P 2043	6.0N 30.6W	7.6S 32.4W	4.6S 30.0W	6.2S 93.0W	63.6N	7.3E

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 4.56 GG SERIAL NO. NASA 133

JACK SETTINGS

West leg 69 inches East leg 5 inches

LAUNCHER SETTING

Tilt 7.26 degrees Azimuth 055.5 degrees

COMPONENTS OF TILT

4.11 degrees north 6.08 degrees east

NO WIND IMPACT

69.8 miles north of Navy Blockhouse 100.3 miles east of Navy Blockhouse

PREDICTED IMPACT

50 miles north of Navy Blockhouse 5 miles west of Navy Blockhouse

PREDICTED BOOSTER IMPACT

Azimuth 055 degrees Distance 2,500 feet

Recommendation No fire

With 65 % confidence of impacting on range, based upon:

wind correction 107 miles

one hour wind variability 10.5 miles

Date/Time 12 March 1965/2027 MST

Actual Impact (From Launcher) 59.4 miles north, 7.8 miles west (*SOTIM)

Actual Booster Impact (From Launcher) N/A

*Sonic Observation of Trajectory and Impact of Missiles

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

March 1965

1. Data Report ERDA-294 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.

FOR THE COMMANDER:

for G. H. HENDRIKS
2d Lt, AGC
Assistant Adjutant