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DR-451
August 1969
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METEOROLOGICAL DATA REPORT

NIKE-HYDAC STV-89
(30 July 1969)

AND

NIKE-HYDAC, BALLISTIC ROUND
(30 July 1969)

BY

GORDON L. DUNAWAY

ATMOSPHERIC SCIENCES OFFICE
WHITE SANDS MISSILE RANGE, NEW MEXICO

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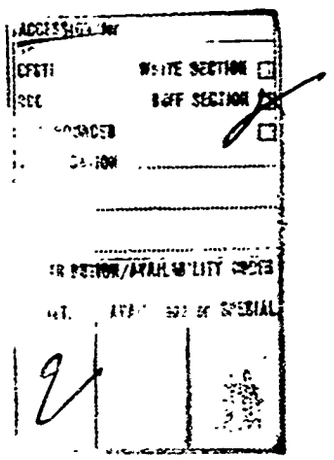

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METEOROLOGICAL DATA REPORT

NIKE-HYDAC STV-89
(30 July 1969)

And

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(30 July 1969)

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DR-451

August 1969

DA Task 1T665702D127-02

ATMOSPHERIC SCIENCES OFFICE
WHITE SANDS MISSILE RANGE, NEW MEXICO

ABSTRACT

Meteorological data gathered for the launching of Nike-Hydac, STV-89 and Nike-Hydac, Ballistic Round are presented for the Space and Missile Systems Organization, AFMDC, Holloman Air Force Base, New Mexico, and for ballistic studies. The data appear, along with calculated ballistic data, in tabular form.

CONTENTS

INTRODUCTION

Nike-Hydac, STV-89, was launched from Launch Complex-33, L-314, White Sands Missile Range (WSMR), New Mexico, at 1055 hours MDT, 30 July 1969.

Nike-Hydac, Ballistic Round, was launched from Launch Complex-33, Left boom of L-361, WSMR, at 1145 MDT, 30 July 1969.

Meteorological data used in conjunction with theoretical calculations to predict rocket impact were collected by the Meteorological Support Technical Area, U. S. Army Electronics Research and Development Activity, WSMR, New Mexico. Ballistics Meteorologists for these firings were Gordon L. Dunaway and Len E. Carter.

DISCUSSION

Wind data for the first 216 feet above the surface were obtained from a system composed of five Aerovanes mounted on a 200-foot tower and cabled to component wind indicators.

From 216 to 4,000 feet above the surface, wind data were obtained from T-9 Radar tracked balloon axcents.

Temperature, pressure, and humidity data, along with upper wind data from 4,000 to 70,000 feet above the surface, were obtained from standard rawinsonde observations.

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

Theoretical rocket performance values and wind-weighting values as a function of altitude were provided by the Atmospheric Sciences Office, (ASO) and are the basis for the data appearing in Table I.

PAYLOAD		210	Pounds
CORIOLIS DISPLACEMENT	WEST	4.8	Miles
SECOND-STAGE IGNITION	TIME	20.0	Seconds
	ALTITUDE	35,770	Feet MSL
PEAK	TIME	236	Seconds
	ALTITUDE	714,480	Feet MSL
UNIT WIND EFFECT			Miles/MPH
	RANGE	2.16	Miles/MPH
	CROSS	2.24	Miles/MPH
TOWER TILT EFFECT		14.4	Miles/Degree

TABLE I. THEORETICAL ROCKET PERFORMANCE VALUES
NIKE-HYDAC STV-89

PAYLOAD		225	Pounds
CORIOLIS DISPLACEMENT	WEST	4.4	Miles
SECOND-STAGE IGNITION	TIME	20	Seconds
	ALTITUDE	35,600	Feet MSL
PEAK	TIME	240	Seconds
	ALTITUDE	735,000	Feet MSL
UNIT WIND EFFECT	RANGE	2.18	Miles/MPH
	CROSS	2.25	Miles/MPH
			Miles/MPH
TOWER TILT EFFECT		14.6	Miles/Degree

TABLE II. THEORETICAL ROCKET PERFORMANCE VALUES
NIKE-HYDAC, BALLISTIC ROUND

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
11- 60	.135
60- 108	.075
108- 148	.070
148- 184	.031
184- 216	.029
216- 300	.052
300- 400	.048
400- 600	.082
600- 800	.058
800-1000	.039

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
1000- 1400	.071
1400- 2000	.065
2000- 2500	.031
2500- 3000	.027
3000- 3500	.010
3500- 4160	.009
4160-11000	-.024
11000-16000	-.018
16000-21000	-.018
21000-26000	-.012

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
26000-31770	-.012
31770-36000	.132
36000-41000	.058
41000-46000	.032
46000-56000	.018
56000-66000	.011
66000-73300	.001

TABLE III. BALLISTIC FACTORS
NIKE-HYDAC, STV-89

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
11- 60	.127
60- 108	.084
108- 148	.054
148- 184	.041
184- 216	.024
216- 300	.059
300- 400	.052
400- 600	.079
600- 800	.053
800-1000	.041

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
1000- 1400	.074
1400- 2000	.067
2000- 2500	.034
2500- 3000	.023
3000- 3500	.014
3500- 4000	.005
4000- 5000	-.005
5000- 9000	-.012
9000-15000	-.017
15000-21000	-.016

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
21000-26000	-.010
26000-31000	-.005
31000-36000	.129
36000-41000	.055
41000-46000	.026
46000-51000	.015
51000-56000	.008
56000-61000	.001

TABLE IV. BALLISTIC FACTORS
NIKE-HYDAC, BALLISTIC ROUND

AERO-VANE NO. *	MEAN WIND COMPONENTS IN MILES PER HOUR													
	1 0845 MDT		2 0853 MDT		3 0915 MDT		4 0945 MDT		5 1000 MDT		6 1015 MDT		7 1025 MDT	
	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
1	1.0S	0.5E	1.0S	1.0E	1.0S	2.0E	5.0S	2.0E	4.0S	2.0E	4.0S	3.0E	3.0S	2.0E
2	1.0	1.0	2.0	0.5	0.0	2.0	6.0	2.0	5.0	2.0	4.0	3.0	2.0	2.0
3	1.5	1.0	1.0	0.5	0.0	2.0	6.0	4.0	4.0	2.0	4.0	3.0	2.0	2.0
4	1.5	0.5	2.0	1.0	1.0S	2.0	6.0	4.0	5.0	2.0	4.0	2.0	3.0	2.0
5	1.0	0.5	2.5	2.0	0.0	3.0	7.0	3.0	5.0	2.0	3.0	1.0	4.0	2.0

AERO-VANE NO. *	MEAN WIND COMPONENTS IN MILES PER HOUR													
	8 1035 MDT		9 1046 MDT		10 1055 MDT		11 1115 MDT		12 1125 MDT		13 1135 MDT		14 1145 MDT	
	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
1	2.0S	0.0	0.0	0.0	2.0S	2.0E	4.0S	0.0	3.0S	0.0	4.0S	0.0	4.0S	2.0W
2	0.0	0.0	0.0	0.0	4.0	3.0	4.0	0.0	4.0	0.0	4.0	0.0	6.0	2.0
3	0.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	6.0	0.0	6.0	2.0
4	2.0S	0.0	0.0	0.0	3.0	2.0	3.0	0.0	2.0	0.0	6.0	0.0	6.0	1.0
5	0.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	4.0	0.0	7.0	0.0	6.0	1.0

TABLE V. ANEMOMETER WIND SPEED AND DIRECTION
NIKE-HYDAC, STV-89 AND NIKE-HYDAC, BALLISTIC ROUND

* Heights corresponding to Aerovane Numbers: 1 = 35 Feet 3 = 128 Feet 5 = 200 Feet
2 = 88 Feet 4 = 168 Feet

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN MILES PER HOUR													
	1 0845 MDT		2 0855 MDT		3 0915 MDT		4 0945 MDT		5 1000 MDT		6 1015 MDT		7 1029 MDT	
	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
216- 300	0.0	1.5E	1.0S	1.0E	2.0S	2.0E	5.0S	2.0E	4.5S	2.0E	3.0S	1.5E	3.5S	2.0E
300- 400	0.0	2.5	2.5	1.5	7.5	2.0	5.0	1.5	5.5	2.0	2.5	0.0	3.0	2.0
400- 600	2.0S	0.0	2.0	1.5	7.0	3.5	5.0	1.5	6.0	3.0	2.5	1.0E	1.5	3.5
600- 800	4.0	0.5E	3.5	1.0	6.5	4.5	1.0N	0.5	4.5	3.0	3.5	1.0	4.5	5.0
800-1000	6.0	2.0	10.0	1.5	7.5	2.5	3.0S	0.5W	5.5	3.5	4.5	1.5	4.0	3.5
1000-1400	11.0	2.0	13.5	2.5	12.0	0.5	6.5	2.5	6.0	1.0	3.0	2.5	3.5	2.5
1400-2000	9.0	3.0W	7.5	2.0W	5.0	2.5W	3.0	1.5	1.5	1.0	2.0N	0.0	2.0	3.0
2000-2500	1.5	2.5	3.5N	2.5	1.0N	5.0	0.0	7.5	3.0N	5.0W	2.5	5.0W	2.0N	6.5W
2500-3000	3.5N	2.5	2.5	4.5	2.0S	7.5	1.0S	10.0	2.0	10.0	2.0	7.5	3.5	10.0
3000-3500	1.0	3.5	1.5	4.0	1.5	6.5	0.5	7.5	0.5S	10.0	1.5	12.0	2.0	11.3
3500-4160	0.5	3.0	1.0S	3.5	0.5	6.5	2.0	8.5	1.0	10.5	0.5	10.5	2.0	12.0

TABLE VI. PILOT-BALLOON-MEASURED WIND DATA
NIKE-HYDAC STV-89 AND NIKE-HYDAC BALLISTIC ROUND

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN MILES PER HOUR													
	8 1035 MDT		9 1046 MDT		10 1055 MDT		11 1115 MDT		12 1125 MDT		13 1135 MDT		14 1145 MDT	
	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
216- 300	4.5S	1.0W	1.0N	0.0	1.5S	2.0E	3.5S	0.0	4.0S	0.5W	3.5S	0.0	4.0S	2.0W
300- 400	9.0	2.0	2.0S	1.0W	2.0	4.0	2.5	0.5E	3.0	1.0	2.5	1.0E	2.5	1.5
400- 600	7.5	2.0E	1.0	3.0E	1.5	3.5	1.0	0.5	1.5	1.0	0.5N	0.5W	6.0	2.5
600- 800	2.5	0.5	3.5	4.0	0.0	1.5	0.0	2.5W	3.5	1.5	1.5S	1.5	2.5	1.5
800-1000	3.5	0.0	0.5N	0.5W	1.5S	1.5	1.5N	0.5E	4.0	2.5	2.0	0.0	2.0	1.5
1000-1400	0.5	3.0E	0.5S	3.0E	5.5	0.5	1.0	1.0	3.0	3.5	0.5	1.5W	0.5	2.5
1400-2000	1.0N	1.0W	4.0	2.5	0.0	2.0W	1.5	2.5	3.0	5.0	0.0	4.5	0.5	0.0
2000-2500	2.5	8.0	1.0N	1.0W	0.5N	7.5	5.5S	0.5	1.0	0.5	0.0	0.5	3.0N	1.0E
2500-3000	1.0	11.5	5.5	10.0	2.0	11.5	4.0	3.5W	5.5N	3.0	0.5N	5.0	3.5	3.0W
3000-3500	1.5	13.0	3.5	11.0	5.0	12.5	1.5N	8.0	5.5	0.5	1.0	7.5	4.0	3.5
3500-4160	3.0	13.0	6.5	13.0	6.5	12.5	7.0	12.0	9.0	8.5	2.0	6.0	4.0	7.0

TABLE VI. PILOT-BALLOON-MEASURED WIND DATA (CONT)
NIKE-HYDAC STV-89 AND NIKE-HYDAC BALLISTIC ROUND

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN KNOTS					
	1 0745 MDT		2 1015 MDT			
	N-S	E-W	N-S	E-W	N-S	E-W
4160-11000	8.0N	1.5E	11.0N	0.0		
11000-16000	1.5	8.0	1.0	7.0E		
16000-21000	7.0	4.0	8.5	7.0		
21000-26000	11.0	13.0	7.5	13.0		
26000-31770	11.0	19.0	7.0	19.0		
31770-36000	5.0	27.5	10.0	26.5		
36000-41000	11.5	31.0	10.5	28.0		
41000-46000	5.5	30.5	5.0	29.5		
46000-56000	4.0	23.5	0.0	25.0		
56000-66000	0.0	26.0	0.0	25.0		
66000-73300	0.0	38.0	0.0	34.0		

TABLE VII. RAWINSONDE-MEASURED WIND DATA
NIKE-HYDAC STV-89

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN KNOTS					
	1 1015 MDT					
	N-S	E-W	N-S	E-W	N-S	E-W
4000- 5000	0.0	12.0W				
5000- 9000	8.5N	5.0				
9000-15000	0.0	10.0E				
15000-21000	6.5	7.5				
21000-26000	7.5	13.0				
26000-31600	7.0	19.0				
31600-36000	9.5	26.0				
36000-41000	10.0	28.0				
41000-46000	5.0	29.5				
46000-51000	0.0	26.0				
51000-56000	0.0	24.0				
56000-61000	0.0	23.0				

TABLE VIII. RAWINSONDE-MEASURED WIND DATA
NIKE-HYDAC, BALLISTIC ROUND

STATION ALTITUDE 3989.00 FEET MSL
30 JULY 69 0745 HRS MDT
ASCENSION NO. 756

SIGNIFICANT LEVEL DATA
0132003902
WHITE SANDS

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE IX

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT DEGREES CENTIGRADE	REL.HUM. PERCENT
882.2	3989.0	22.8	9.3	42.0
869.0	4422.0	25.2	9.1	36.0
861.0	4688.3	24.5	8.5	36.0
804.0	6651.3	22.3	7.4	38.0
705.0	10348.7	14.1	0.0	38.0
633.0	13296.4	6.3	0.8	68.0
614.0	14115.6	4.6	-17.7	18.0
611.0	14247.0	6.0	-23.4	10.0
606.0	14468.1	6.5	-23.0	10.0
476.0	20824.6	-6.1	-32.9	10.0
416.0	24251.6	-12.2	-37.7	10.0
385.0	26180.3	-17.3	-31.6	28.0
370.0	27155.7	-19.9	-27.6	51.0
363.0	27621.0	-21.0	-40.9	15.0
308.0	31544.4	-29.9	-38.8	42.0
302.0	32005.0	-30.9	-36.3	60.0
293.0	32709.9	-32.3	-41.3	41.0
271.0	34506.1	-36.8	-44.2	47.0
248.0	36507.5	-41.6	-50.1	40.0
174.0	44105.4	-60.2	0.	-0. **
129.0	50082.2	-72.3	0.	-0. **
91.0	56860.4	-71.8	0.	-0. **
75.0	60673.2	-66.5	0.	-0. **
56.0	66647.2	-56.8	0.	-0. **
41.0	73187.9	-55.8	0.	-0. **
23.0	85619.4	-46.2	0.	-0. **
20.0	88684.0	-47.6	0.	-0. **
11.0	101947.7	-41.0	0.	-0. **
8.3	108302.5	-40.4	0.	-0. **
6.0	115843.1	-27.4	0.	-0. **

** RELATIVE HUMIDITY NOT SUPPLIED. ZERO VALUE ASSUMED FOR COMPUTATIONS.

STATION ALTITUDE 3989.00 FEET MSL
30 JULY 69 0745 HRS MDT
ASCENSION NO. 756

UPPER AIR DATA
0132003902
WHITE SANDS

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE X

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIR DEG W OF TN	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
3989.0	882.2	22.8	9.3	42.0	1033.4	671.5	0.	0.	1.000281
4000.0	881.9	22.9	9.3	41.8	1032.8	671.6	359.2	0.0	1.000281
4500.0	866.6	25.0	9.0	36.0	1007.7	674.0	324.7	2.0	1.000273
5000.0	851.7	24.2	8.3	36.3	993.3	673.0	290.1	3.9	1.000268
5500.0	837.0	23.6	8.0	36.8	978.0	672.4	255.5	5.8	1.000264
6000.0	822.5	23.0	7.8	37.3	962.9	671.7	220.9	7.8	1.000260
6500.0	808.3	22.5	7.4	37.8	948.0	671.1	223.7	7.6	1.000256
7000.0	794.1	21.5	6.7	38.0	934.6	670.0	235.1	7.0	1.000251
7500 0	780.1	20.4	5.7	38.0	921.8	668.6	242.9	6.9	1.000246
8000.0	766.4	19.3	4.7	38.0	909.2	667.3	250.6	6.6	1.000240
8500.0	752.9	18.2	3.7	38.0	896.8	666.0	258.3	6.2	1.000235
9000.0	739.6	17.1	2.7	38.0	884.5	664.6	269.5	5.5	1.000230
9500.0	726.6	16.0	1.7	38.0	872.4	663.3	285.7	5.0	1.000226
10000.0	713.8	14.9	0.7	38.0	860.5	661.9	307.7	4.7	1.000221
10500.0	701.1	13.7	0.2	39.5	848.8	660.6	330.1	4.9	1.000218
11000.0	688.4	12.4	0.7	44.6	837.1	659.1	351.7	5.0	1.000216
11500.0	676.0	11.1	1.0	49.7	825.6	657.6	10.9	4.9	1.000215
12000.0	663.7	9.7	1.1	54.8	814.4	656.1	29.4	5.9	1.000213
12500.0	651.7	8.4	1.1	59.9	803.4	654.6	47.5	7.5	1.000211
13000.0	639.9	7.1	1.0	65.0	792.5	653.1	67.2	7.2	1.000208
13500.0	628.2	5.9	-2.3	55.6	782.0	651.4	80.1	7.7	1.000199
14000.0	616.6	4.8	-13.5	25.1	771.8	649.6	77.9	10.0	1.000183
14500.0	605.3	6.4	-23.1	10.0	753.8	651.3	77.1	10.6	1.000173
15000.0	593.9	5.4	-23.8	10.0	742.3	650.1	76.6	10.5	1.000170
15500.0	582.7	4.5	-24.6	10.0	730.9	648.9	70.6	11.5	1.000167
16000.0	571.7	3.5	-25.4	10.0	719.8	647.8	67.7	11.3	1.000164
16500.0	561.0	2.5	-26.2	10.0	708.8	646.6	68.0	9.7	1.000161
17000.0	550.4	1.5	-26.9	10.0	698.0	645.4	74.8	7.2	1.000159
17500.0	540.1	0.5	-27.7	10.0	687.4	644.3	83.6	5.5	1.000156
18000.0	529.9	-0.5	-28.5	10.0	676.9	643.1	95.6	5.9	1.000154

STATION ALTITUDE 3989.00 FEET MSL
30 JULY 69 0745 HRS MDT
ASCENSION NO. 756

UPPER AIR DATA
0132003902
WHITE SANDS

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE X (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIR DEG W OF TN	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
18500.0	519.9	-1.5	-29.3	10.0	666.6	641.9	107.4	6.3	1.000151
19000.0	510.2	-2.5	-30.0	10.0	656.5	640.7	118.1	6.9	1.000149
19500.0	500.6	-3.5	-30.8	10.0	646.5	639.5	104.6	7.4	1.000146
20000.0	491.1	-4.5	-31.6	10.0	636.7	638.4	88.8	7.1	1.000144
20500.0	481.9	-5.5	-32.4	10.0	627.0	637.2	69.1	5.3	1.000142
21000.0	472.7	-6.4	-33.1	10.0	617.3	636.0	38.1	4.9	1.000139
21500.0	463.5	-7.3	-33.8	10.0	607.3	635.0	4.1	5.2	1.000137
22000.0	454.5	-8.2	-34.5	10.0	597.5	633.9	1.6	6.5	1.000135
22500.0	445.7	-9.1	-35.2	10.0	587.9	632.8	4.2	7.7	1.000133
23000.0	437.0	-10.0	-35.9	10.0	578.4	631.8	13.5	8.9	1.000130
23500.0	428.5	-10.9	-36.6	10.0	569.0	630.7	23.3	10.2	1.000128
24000.0	420.1	-11.8	-37.3	10.0	559.9	629.6	33.0	11.5	1.000126
24500.0	411.9	-12.9	-36.2	12.3	551.2	628.3	35.6	12.9	1.000124
25000.0	403.7	-14.2	-34.0	17.0	542.9	626.7	37.5	14.2	1.000123
25500.0	395.7	-15.5	-32.7	21.7	534.8	625.1	37.2	15.2	1.000121
26000.0	387.8	-16.8	-31.8	26.3	526.9	623.5	37.0	16.0	1.000120
26500.0	380.0	-18.2	-29.8	35.5	519.0	621.9	36.9	16.7	1.000119
27000.0	372.4	-19.5	-28.0	47.3	511.1	620.4	41.3	16.8	1.000117
27500.0	364.8	-20.7	-36.0	24.4	503.4	618.7	47.4	16.7	1.000114
28000.0	357.3	-21.9	-40.1	17.6	495.3	617.3	50.5	17.0	1.000111
28500.0	349.9	-23.0	-39.4	21.0	487.2	615.9	53.0	17.4	1.000110
29000.0	342.6	-24.1	-38.9	24.5	479.3	614.5	54.1	18.0	1.000108
29500.0	335.5	-25.3	-38.6	27.9	471.5	613.1	53.8	18.4	1.000106
30000.0	328.6	-26.4	-38.5	31.4	463.8	611.7	52.2	18.7	1.000105
30500.0	321.8	-27.5	-38.5	34.8	456.3	610.3	52.7	19.5	1.000103
31000.0	315.1	-28.7	-38.6	38.3	448.9	608.9	53.9	20.3	1.000101
31500.0	308.6	-29.8	-38.8	41.7	441.7	607.5	55.7	20.4	1.000100
32000.0	302.1	-30.9	-36.3	59.8	434.3	606.2	57.4	20.4	1.000098
32500.0	295.7	-31.9	-39.7	46.7	426.8	604.9	59.1	20.5	1.000096
33000.0	289.3	-33.0	-41.7	42.0	419.7	603.4	60.5	20.3	1.000095

STATION ALTITUDE 3989.00 FEET MSL
30 JULY 69 0745 HRS MDT
ASCENSION NO. 756

UPPER AIR DATA
0132003902
WHITE SANDS

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE X (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIR DEG W OF TN	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
33500.0	283.1	-34.3	-42.5	43.6	412.9	601.9	61.7	20.0	1.000093
34000.0	277.0	-35.5	-43.3	45.3	406.1	600.3	63.9	20.5	1.000091
34500.0	271.1	-36.8	-44.2	47.0	399.5	598.7	66.3	21.1	1.000090
35000.0	265.1	-38.0	-45.6	45.3	392.8	597.2	68.2	21.8	1.000088
35500.0	259.3	-39.2	-47.1	43.5	386.1	595.6	69.9	22.7	1.000087
36000.0	253.6	-40.4	-48.6	41.8	379.6	594.1	71.2	24.0	1.000085
36500.0	248.1	-41.6	-50.0	40.0	373.2	592.6	72.0	25.2	1.000084
37000.0	242.4	-42.8	-51.7	37.4**	366.6	591.0	72.3	26.0	1.000082
37500.0	236.8	-44.0	-53.5	34.8**	360.0	589.4	71.7	27.2	1.000080
38000.0	231.3	-45.3	-55.2	32.1**	353.6	587.8	70.6	28.7	1.000079
38500.0	226.0	-46.5	-57.0	29.5**	347.4	586.2	70.4	29.4	1.000078
39000.0	220.8	-47.7	-58.9	26.9**	341.2	584.7	70.6	29.8	1.000076
39500.0	215.7	-48.9	-60.7	24.2**	335.1	583.1	69.9	30.9	1.000075
40000.0	210.7	-50.1	-62.7	21.6**	329.2	581.5	69.2	32.1	1.000073
40500.0	205.9	-51.4	-64.7	19.0**	323.4	579.9	69.2	32.2	1.000072
41000.0	201.1	-52.6	-66.9	16.3**	317.7	578.3	69.3	32.3	1.000071
41500.0	196.5	-53.8	-69.1	13.7**	312.1	576.7	68.3	32.7	1.000070
42000.0	192.0	-55.0	-71.6	11.1**	306.6	575.1	67.3	33.0	1.000068
42500.0	187.5	-56.3	-74.4	8.5**	301.3	573.4	67.8	32.9	1.000067
43000.0	183.2	-57.5	-77.8	5.8**	296.0	571.8	68.3	32.9	1.000066
43500.0	179.0	-58.7	-82.4	3.2**	290.8	570.2	68.8	32.3	1.000065
44000.0	174.9	-59.9	-92.9	0.6**	285.7	568.6	69.4	31.8	1.000064
44500.0	170.6	-61.0	0.	-0. **	280.2	567.1	69.8	31.7	1.000062
45000.0	166.4	-62.0	0.	-0. **	274.6	565.8	70.1	31.6	1.000061
45500.0	162.3	-63.0	0.	-0. **	269.1	564.4	70.2	31.0	1.000060
46000.0	158.3	-64.0	0.	-0. **	263.7	563.1	70.1	30.3	1.000059
46500.0	154.3	-65.0	0.	-0. **	258.4	561.7	70.8	30.4	1.000058
47000.0	150.5	-66.1	0.	-0. **	253.2	560.3	71.5	30.5	1.000056
47500.0	146.8	-67.1	0.	-0. **	248.2	559.0	73.7	30.8	1.000055
48000.0	143.2	-68.1	0.	-0. **	243.3	557.6	76.2	31.2	1.000054

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

STATION ALTITUDE 3989.00 FEET MSL
30 JULY 69 0745 HRS MDT
ASCENSION NO. 7[illegible]

UPPER AIR DATA
0132003902
WHITE SANDS

TABLE X (Cont)

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIR DEG W OF TN	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
48500.0	139.6	-69.1	0.	-0. **	238.4	556.2	77.2	30.6	1.000053
49000.0	136.2	-70.1	0.	-0. **	233.7	554.8	77.6	29.7	1.000052
49500.0	132.8	-71.1	0.	-0. **	229.1	553.5	77.0	28.6	1.000051
50000.0	129.5	-72.1	0.	-0. **	224.5	552.1	75.6	27.2	1.000050
50500.0	126.3	-72.3	0.	-0. **	219.0	551.9	74.5	25.7	1.000049
51000.0	123.0	-72.2	0.	-0. **	213.4	551.9	74.3	23.9	1.000048
51500.0	119.9	-72.2	0.	-0. **	207.9	552.0	74.3	22.1	1.000046
52000.0	116.9	-72.2	0.	-0. **	202.6	552.0	75.7	21.0	1.000045
52500.0	113.9	-72.1	0.	-0. **	197.4	552.1	77.1	20.1	1.000044
53000.0	111.0	-72.1	0.	-0. **	192.4	552.1	78.6	20.2	1.000043
53500.0	108.2	-72.0	0.	-0. **	187.4	552.2	80.0	20.3	1.000042
54000.0	105.4	-72.0	0.	-0. **	182.6	552.2	79.9	20.1	1.000041
54500.0	102.8	-72.0	0.	-0. **	178.0	552.3	79.8	19.9	1.000040
55000.0	100.1	-71.9	0.	-0. **	173.4	552.3	77.5	19.6	1.000039
55500.0	97.6	-71.9	0.	-0. **	169.0	552.4	75.1	19.4	1.000038
56000.0	95.1	-71.9	0.	-0. **	164.6	552.4	74.5	18.7	1.000037
56500.0	92.7	-71.8	0.	-0. **	160.4	552.5	74.3	17.8	1.000036
57000.0	90.4	-71.6	0.	-0. **	156.2	552.8	76.9	18.1	1.000035
57500.0	88.1	-70.9	0.	-0. **	151.8	553.7	80.7	18.9	1.000034
58000.0	85.9	-70.2	0.	-0. **	147.5	554.7	86.2	20.4	1.000033
58500.0	83.7	-69.5	0.	-0. **	143.3	555.6	92.8	22.4	1.000032
59000.0	81.6	-68.8	0.	-0. **	139.2	556.6	97.3	24.7	1.000031
59500.0	79.6	-68.1	0.	-0. **	135.3	557.5	100.2	27.1	1.000030
60000.0	77.6	-67.4	0.	-0. **	131.4	558.5	100.9	27.5	1.000029
60500.0	75.7	-66.7	0.	-0. **	127.7	559.4	100.2	26.7	1.000028
61000.0	73.8	-66.0	0.	-0. **	124.1	560.5	98.3	25.7	1.000028
61500.0	72.0	-65.2	0.	-0. **	120.7	561.6	95.5	24.8	1.000027
62000.0	70.3	-64.3	0.	-0. **	117.3	562.7	93.9	24.3	1.000026
62500.0	68.6	-63.5	0.	-0. **	114.0	563.7	93.8	24.3	1.000025
63000.0	66.9	-62.7	0.	-0. **	110.8	564.8	93.7	24.4	1.000025

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

STATION ALTITUDE 3989.00 FEET MSL
30 JULY 69 0745 HRS MST
ASCENSION NO. 756

UPPER AIR DATA
0132003902
WHITE SANDS

WSTN SITE COORDINATES
488580.00FEET E
185048.00FEET N

TABLE X (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIR DEG W OF TN	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
63500.0	65.3	-61.9	0.	-0. **	107.7	565.9	91.6	25.2	1.000024
64000.0	63.7	-61.1	0.	-0. **	104.7	567.0	89.6	26.0	1.000023
64500.0	62.2	-60.3	0.	-0. **	101.8	568.1	89.2	26.5	1.000023
65000.0	60.7	-59.5	0.	-0. **	99.0	569.2	89.9	26.8	1.000022
65500.0	59.2	-58.7	0.	-0. **	96.2	570.3	90.4	27.0	1.000021
66000.0	57.8	-57.9	0.	-0. **	93.5	571.3	90.4	26.1	1.000021
66500.0	56.4	-57.0	0.	-0. **	90.9	572.4	90.3	25.2	1.000020
67000.0	55.1	-56.7	0.	-0. **	88.7	572.8	90.1	24.1	1.000020
67500.0	53.8	-56.7	0.	-0. **	86.5	572.9	89.9	23.0	1.000019
68000.0	52.5	-56.	0.	-0. **	84.5	573.0	89.2	23.0	1.000019
68500.0	51.3	-56.5	0.	-0. **	82.5	573.1	88.1	24.1	1.000018
69000.0	50.1	-56.4	0.	-0. **	80.5	573.2	86.8	25.3	1.000018
69500.0	48.9	-56.4	0.	-0. **	78.6	573.3	85.1	26.7	1.000017
70000.0	47.7	-56.3	0.	-0. **	76.7	573.4	83.5	28.2	1.000017
70500.0	46.6	-56.2	0.	-0. **	74.8	573.5	84.1	30.1	1.000017
71000.0	45.5	-56.1	0.	-0. **	73.1	573.6	84.8	32.0	1.000016
71500.0	44.4	-56.1	0.	-0. **	71.3	573.7	84.9	33.2	1.000016
72000.0	43.4	-56.0	0.	-0. **	69.6	573.8	84.8	34.2	1.000015
72500.0	42.4	-55.9	0.	-0. **	67.9	573.9	85.2	35.8	1.000015
73000.0	41.4	-55.8	0.	-0. **	66.3	574.0	85.7	37.8	1.000015
73500.0	40.4	-55.6	0.	-0. **	64.7	574.4	86.3	39.7	1.000014
74000.0	39.5	-55.2	0.	-0. **	63.1	574.9	87.1	41.3	1.000014
74500.0	38.6	-54.8	0.	-0. **	61.5	575.4	87.9	42.9	1.000014
75000.0	37.7	-54.4	0.	-0. **	60.0	575.9	88.6	44.4	1.000013
75500.0	36.8	-54.0	0.	-0. **	58.5	576.4	88.9	45.3	1.000013
76000.0	36.0	-53.6	0.	-0. **	57.1	576.9	89.2	46.3	1.000013
76500.0	35.1	-53.2	0.	-0. **	55.7	577.4	89.5	47.2	1.000012
77000.0	34.3	-52.9	0.	-0. **	54.3	577.9	89.2	47.2	1.000012
77500.0	33.6	-52.5	0.	-0. **	53.0	578.4	88.9	47.2	1.000012
78000.0	32.8	-52.1	0.	-0. **	51.7	578.9	88.6	47.1	1.000012

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

STATION ALTITUDE 3989.00 FEET MSL
30 JULY 69 0745 HRS MDT
ASCENSION NO. 756

UPPER AIR DATA
0132003902
WHITE SANDS

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE X (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIR DEG W OF TN	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
78500.0	32.0	-51.7	0.	-0. **	50.4	579.4	87.5	47.1	1.000011
79000.0	31.3	-51.3	0.	-0. **	49.1	579.9	86.2	47.0	1.000011
79500.0	30.6	-50.9	0.	-0. **	47.9	580.5	84.9	47.0	1.000011
80000.0	29.9	-50.5	0.	-0. **	46.7	581.0	83.9	46.7	1.000010
80500.0	29.2	-50.2	0.	-0. **	45.6	581.5	83.2	46.2	1.000010
81000.0	28.5	-49.8	0.	-0. **	44.5	582.0	82.5	45.7	1.000010
81500.0	27.9	-49.4	0.	-0. **	43.4	582.5	82.1	45.4	1.000010
82000.0	27.2	-49.0	0.	-0. **	42.3	583.0	82.2	45.5	1.000009
82500.0	26.6	-48.6	0.	-0. **	41.3	583.5	82.4	45.6	1.000009
83000.0	26.0	-48.2	0.	-0. **	40.2	584.0	82.7	45.4	1.000009
83500.0	25.4	-47.8	0.	-0. **	39.2	584.5	84.2	44.4	1.000009
84000.0	24.8	-47.5	0.	-0. **	38.3	585.0	85.7	43.3	1.000009
84500.0	24.2	-47.1	0.	-0. **	37.3	585.5	87.2	42.2	1.000008
85000.0	23.7	-46.7	0.	-0. **	36.4	586.0	87.2	42.7	1.000008
85500.0	23.1	-46.3	0.	-0. **	35.5	586.5	87.3	43.1	1.000008
86000.0	22.6	-46.4	0.	-0. **	34.7	586.4	87.3	43.6	1.000008
86500.0	22.1	-46.6	0.	-0. **	34.0	586.1	87.1	43.5	1.000008
87000.0	21.6	-46.8	0.	-0. **	33.2	585.8	86.9	43.4	1.000007
87500.0	21.1	-47.1	0.	-0. **	32.5	585.5	86.7	43.2	1.000007
88000.0	20.6	-47.3	0.	-0. **	31.8	585.2	86.8	43.8	1.000007
88500.0	20.2	-47.5	0.	-0. **	31.1	584.9	86.8	44.5	1.000007
89000.0	19.7	-47.4	0.	-0. **	30.4	585.0	86.9	45.1	1.000007
89500.0	19.3	-47.2	0.	-0. **	29.7	585.3	88.1	44.5	1.000007
90000.0	18.8	-46.9	0.	-0. **	29.0	585.6	89.4	43.7	1.000006
90500.0	18.4	-46.7	0.	-0. **	28.4	586.0	90.6	43.0	1.000006
91000.0	18.0	-46.4	0.	-0. **	27.7	586.3	92.2	41.9	1.000006
91500.0	17.6	-46.2	0.	-0. **	27.0	586.6	93.8	40.8	1.000006
92000.0	17.2	-45.9	0.	-0. **	26.4	586.9	95.5	39.7	1.000006
92500.0	16.8	-45.7	0.	-0. **	25.8	587.2	96.2	38.9	1.000006
93000.0	16.5	-45.5	0.	-0. **	25.2	587.6	96.9	38.0	1.000006

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

STATION ALTITUDE 3989.00 FEET MSL
30 JULY 69 0745 HRS MDT
ASCENSION NO. 756

UPPER AIR DATA
0132003902
WHITE SANDS

TABLE X (Conc)

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIR DEG W OF TN	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
93500.0	16.1	-45.2	0.	-0. **	24.6	587.9	97.6	37.2	1.000005
94000.0	15.7	-45.0	0.	-0. **	24.0	588.2	97.7	36.5	1.000005
94500.0	15.4	-44.7	0.	-0. **	23.5	588.5	97.7	35.8	1.000005
95000.0	15.0	-44.5	0.	-0. **	22.9	588.8	97.8	35.1	1.000005
95500.0	14.7	-44.2	0.	-0. **	22.4	589.2	97.3	35.3	1.000005
96000.0	14.4	-44.0	0.	-0. **	21.9	589.5	96.8	35.5	1.000005
96500.0	14.1	-43.7	0.	-0. **	21.4	589.8	96.4	35.7	1.000005
97000.0	13.7	-43.5	0.	-0. **	20.9	590.1	96.1	35.3	1.000005
97500.0	13.4	-43.2	0.	-0. **	20.4	590.4	96.0	34.9	1.000005
98000.0	13.1	-43.0	0.	-0. **	19.9	590.8	95.8	34.5	1.000004
98500.0	12.8	-42.7	0.	-0. **	19.4	591.1	93.9	34.8	1.000004
99000.0	12.6	-42.5	0.	-0. **	19.0	591.4	92.0	35.1	1.000004
99500.0	12.3	-42.2	0.	-0. **	18.5	591.7	90.2	35.5	1.000004
100000.0	12.0	-42.0	0.	-0. **	18.1	592.0	88.3	36.2	1.000004
100500.0	11.7	-41.7	0.	-0. **	17.7	592.4	86.5	36.9	1.000004
101000.0	11.5	-41.5	0.	-0. **	17.3	592.7	84.6	37.7	1.000004
101500.0	11.2	-41.2	0.	-0. **	16.9	593.0	82.9	38.3	1.000004
102000.0	11.0	-41.0	0.	-0. **	16.5	593.3	81.2	39.0	1.000004
102500.0	10.7	-40.9	0.	-0. **	16.1	593.3	79.6	39.6	1.000004
103000.0	10.5	-40.9	0.	-0. **	15.8	593.4	79.0	40.6	1.000004
103500.0	10.3	-40.9	0.	-0. **	15.4	593.5	78.4	41.5	1.000003
104000.0	10.0	-40.8	0.	-0. **	15.1	593.5	77.9	42.5	1.000003
104500.0	9.8	-40.8	0.	-0. **	14.7	593.6	77.0	44.0	1.000003
105000.0	9.6	-40.7	0.	-0. **	14.4	593.6	76.0	45.4	1.000003
105500.0	9.4	-40.7	0.	-0. **	14.1	593.7	75.0	46.9	1.000003
106000.0	9.2	-40.6	0.	-0. **	13.8	593.8	79.1	50.7	1.000003
106500.0	9.0	-40.6	0.	-0. **	13.5	593.8	74.4	54.8	1.000003
107000.0	8.8	-40.5	0.	-0. **	13.2	593.9	75.7	58.9	1.000003
107500.0	8.6	-40.5	0.	-0. **	12.9	593.9	76.4	60.5	1.000003
108000.0	8.4	-40.4	0.	-0. **	12.6	594.0	77.1	61.5	1.000003

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

STATION ALTITUDE 3989.00 FEET MSL
30 JULY 69 0745 HRS MDT
ASCENSION NO. 756

UPPER AIR DATA
0132003902
WHITE SANDS

WSTN SITE COORDINATES
488580.00FEET E
189045.00FEET N

TABLE X (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIR DEG N OF TN	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
108500.0	8.2	-40.1	0.	-0. **	12.3	594.5	77.9	62.6	1.000003
109000.0	8.1	-39.2	0.	-0. **	12.0	595.6	78.9	63.3	1.000003
109500.0	7.9	-38.3	0.	-0. **	11.7	596.7	80.2	63.8	1.000003
110000.0	7.7	-37.5	0.	-0. **	11.4	597.8	81.9	64.4	1.000003
110500.0	7.6	-36.6	0.	-0. **	11.1	598.9	82.8	64.9	1.000002
111000.0	7.4	-35.7	0.	-0. **	10.8	599.9	84.4	63.6	1.000002
111500.0	7.2	-34.9	0.	-0. **	10.6	601.0	86.0	62.2	1.000002
112000.0	7.1	-34.0	0.	-0. **	10.3	602.1	87.5	60.9	1.000002
112500.0	6.9	-33.2	0.	-0. **	10.1	603.2			1.000002
113000.0	6.8	-32.3	0.	-0. **	9.8	604.3			1.000002
113500.0	6.6	-31.4	0.	-0. **	9.6	605.4			1.000002
114000.0	6.5	-30.6	0.	-0. **	9.3	606.4			1.000002
114500.0	6.4	-29.7	0.	-0. **	9.1	607.5			1.000002
115000.0	6.2	-28.9	0.	-0. **	8.9	608.6			1.000002
115500.0	6.1	-28.0	0.	-0. **	8.7	609.7			1.000002

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE HAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET MSL
30 JULY 69 0745 HRS MDT
ASCENSION NO. 756

MANDATORY LEVELS
0132003902
WHITE SANDS

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE XI

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL.HUM.	WIND DATA	
		AIR	DEWPOINT		DIR D.	SPEED
MILLIBARS	FEET	DEGREES CENTIGRADE		PERCENT	DEG W OF TN	KNOTS
850.0	5056.	24.1	0.3	36.	286.1	4.1
800.0	6791.	22.0	7.1	38.	230.8	7.2
750.0	8617.	18.0	3.5	38.	261.0	6.0
700.0	10539.	13.6	0.3	40.	332.1	4.9
650.0	12570.	8.2	1.1	61.	50.5	7.5
600.0	14723.	6.0	-23.4	10.	77.1	10.5
550.0	17040.	1.4	-27.0	10.	75.6	7.0
500.0	19503.	-3.5	-30.9	10.	103.2	7.4
450.0	22237.	-8.6	-34.9	10.	0.2	7.1
400.0	25200.	-14.8	-33.3	19.	37.4	14.7
350.0	28462.	-23.0	-39.4	21.	53.0	17.4
300.0	32107.	-31.2	-37.3	56.	57.9	20.5
250.0	36260.	-41.2	-40.5	41.	71.9	24.9
200.0	41109.	-52.9	-67.4	16.**	68.9	32.5
175.0	43891.	-59.9	-92.1	1.**	69.3	31.8
150.0	47003.	-66.2	0.	-0.**	71.7	30.6
125.0	50566.	-72.3	0.	-0.**	74.4	25.0
100.0	54877.	-71.9	0.	-0.**	77.4	19.6
80.0	59216.	-68.3	0.	-0.**	99.5	26.5
70.0	61870.	-64.2	0.	-0.**	93.9	24.3
60.0	65003.	-59.1	0.	-0.**	90.1	27.0
50.0	68788.	-56.4	0.	-0.**	86.7	25.3
40.0	73444.	-55.4	0.	-0.**	86.3	40.4
30.0	79530.	-50.6	0.	-0.**	84.1	46.9
25.0	83455.	-47.6	0.	-0.**	85.1	43.7
20.0	88307.	-47.6	0.	-0.**	86.9	44.7
15.0	94587.	-44.4	0.	-0.**	97.8	39.1
10.0	103582.	-40.8	0.	-0.**	77.7	42.3
7.0	111612.	-33.6	0.	-0.**	88.2	60.3

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

STATION ALTITUDE 3989.00 FEET MSL
30 JULY 69 1015 HRS MDT
ASCENSION NO. 757

SIGNIFICANT LEVEL DATA
0132003903
WHITE SANDS

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE XII

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT
882.5	3989.0	29.2	12.3	35.0
872.0	4337.6	26.9	8.9	32.0
692.0	10873.6	12.4	-1.9	37.0
660.0	12171.2	9.2	-1.2	48.0
632.0	13346.4	6.4	-8.3	34.0
612.0	14214.0	7.2	-22.5	10.0
594.0	15018.8	6.3	-23.2	10.0
412.0	24525.7	-13.0	-32.4	18.0
369.0	27254.2	-19.7	-32.3	32.0
343.0	29024.4	-24.0	-41.7	18.0
336.0	29518.6	-25.1	-40.3	23.0
330.0	29948.8	-26.0	-33.1	52.0
318.0	30828.3	-27.9	-38.8	35.0
273.0	34370.5	-36.9	-45.5	41.0
256.0	35826.1	-40.0	-50.3	33.0
216.0	39568.5	-49.6	0.	-0. **
156.0	46352.7	-64.6	0.	-0. **
124.0	50885.8	-72.7	0.	-0. **
109.0	53371.7	-74.4	0.	-0. **
63.0	64209.1	-62.7	0.	-0. **
56.0	66632.2	-58.2	0.	-0. **
39.0	74155.6	-58.2	0.	-0. **
23.0	85402.7	-48.1	0.	-0. **
20.0	88451.1	-48.1	0.	-0. **
16.5	92707.8	-41.7	0.	-0. **
10.5	102859.9	-41.4	0.	-0. **

** RELATIVE HUMIDITY NOT SUPPLIED. ZERO VALUE ASSUMED FOR COMPUTATIONS.

STATION ALTITUDE 3989.00 FEET MSL
30 JULY 69 1015 HRS MDT
ASCENSION NO. 757

UPPER AIR DATA
0132003901
WHITE SANDS

WSTN SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE XIII

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIR DEG W OF TN	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
3989.0	882.5	29.2	12.3	38.0	1010.8	679..	0.	0.	1.000284
4000.0	882.2	29.1	12.1	34.9	1010.7	679.0	359.6	0.0	1.000284
4500.0	867.0	26.5	8.6	32.1	1003.1	675.7	339.2	1.6	1.000271
5000.0	851.8	25.4	7.8	32.5	989.9	674.4	318.8	3.2	1.000265
5500.0	836.9	24.3	7.0	32.9	975.8	673.1	298.5	4.7	1.000260
6000.0	822.2	23.2	6.2	33.3	962.4	671.8	278.1	6.3	1.000255
6500.0	807.8	22.1	5.4	33.7	949.2	670.5	267.3	7.7	1.000250
7000.0	793.6	21.0	4.6	34.0	936.3	669.2	275.3	8.9	1.000246
7500.0	779.7	19.9	3.8	34.4	923.5	667.8	278.8	9.6	1.000241
8000.0	766.0	18.8	3.0	34.8	910.9	666.5	279.6	10.0	1.000236
8500.0	752.6	17.7	2.1	35.2	898.5	665.2	294.7	9.0	1.000232
9000.0	739.4	16.6	1.3	35.6	886.2	663.9	303.1	9.0	1.000228
9500.0	726.5	15.4	0.4	35.9	874.2	662.6	307.6	9.7	1.000223
10000.0	713.7	14.3	-0.4	36.3	862.3	661.2	318.4	9.1	1.000219
10500.0	701.2	13.2	-1.2	36.7	850.5	659.9	329.7	8.4	1.000215
11000.0	688.8	12.1	-1.8	38.1	838.9	658.6	351.6	7.7	1.000212
11500.0	676.4	10.9	-1.4	42.3	827.2	657.2	15.6	7.0	1.000210
12000.0	664.1	9.6	-1.3	46.5	815.7	655.8	40.5	7.9	1.000208
12500.0	652.0	8.4	-3.1	44.1	804.6	654.3	65.5	9.4	1.000203
13000.0	640.1	7.2	-6.1	38.1	793.7	652.7	84.2	11.3	1.000196
13500.0	628.4	6.5	-9.9	29.7	781.5	651.8	99.8	12.9	1.000188
14000.0	616.9	7.0	-17.2	15.9	766.4	652.0	105.8	13.0	1.000178
14500.0	605.5	6.9	-22.7	10.0	753.0	651.8	108.5	12.8	1.000172
15000.0	594.4	6.3	-23.2	10.0	740.6	651.1	107.7	11.4	1.000170
15500.0	583.1	5.3	-23.5	10.4	729.1	650.0	101.6	10.0	1.000167
16000.0	572.0	4.3	-23.8	10.8	717.8	648.8	93.7	8.5	1.000164
16500.0	561.1	3.3	-24.2	11.2	706.8	647.6	86.3	7.7	1.000162
17000.0	550.4	2.3	-24.6	11.7	695.8	646.4	80.2	6.9	1.000159
17500.0	539.9	1.3	-25.0	12.1	685.1	645.2	84.9	5.9	1.000157
18000.0	529.6	.2	-25.4	12.5	674.6	644.0	86.9	5.0	1.000154

STATION ALTITUDE 3989.00 FEET MSL
30 JULY 69 1015 HRS MDT
ASCENSION NO. 757

UPPER AIR DATA
0132003903
WHITE SANDS

WSTN SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE XIII (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIR DEG W OF TN	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
18500.0	519.5	-0.8	-25.9	12.9	664.2	642.8	81.8	4.7	1.000152
19000.0	509.6	-1.8	-26.4	13.4	654.0	641.6	74.4	4.6	1.000149
19500.0	499.9	-2.8	-26.9	13.8	643.9	640.4	64.3	4.8	1.000147
20000.0	490.4	-3.8	-27.3	14.2	634.0	639.2	50.7	5.7	1.000145
20500.0	481.0	-4.8	-27.9	14.6	624.3	638.0	35.4	7.0	1.000142
21000.0	471.9	-5.8	-28.4	15.0	614.8	636.8	25.5	8.7	1.000140
21500.0	462.9	-6.9	-28.9	15.5	605.3	635.6	16.7	10.4	1.000138
22000.0	454.1	-7.9	-29.5	15.9	596.1	634.3	20.6	11.1	1.000136
22500.0	445.4	-8.9	-30.0	16.3	587.0	633.1	24.6	11.7	1.000133
23000.0	436.9	-9.9	-30.6	16.7	578.0	631.9	30.2	11.9	1.000131
23500.0	428.6	-10.9	-31.2	17.1	569.2	630.7	35.8	12.1	1.000129
24000.0	420.4	-11.9	-31.8	17.6	560.5	629.4	43.0	12.5	1.000127
24500.0	412.4	-12.9	-32.4	18.0	552.0	628.2	50.3	13.0	1.000125
25000.0	404.2	-14.2	-32.1	20.4	543.5	626.7	53.1	13.2	1.000123
25500.0	396.1	-15.4	-31.9	23.0	535.2	625.3	54.6	13.2	1.000122
26000.0	388.2	-16.6	-31.9	25.6	527.0	623.8	55.9	13.8	1.000120
26500.0	380.4	-17.8	-32.0	28.1	518.9	622.3	57.1	14.6	1.000118
27000.0	372.8	-19.1	-32.2	30.7	511.0	620.8	58.5	15.2	1.000116
27500.0	365.3	-20.3	-33.5	30.1	503.1	619.3	60.0	15.6	1.000114
28000.0	357.8	-21.5	-36.0	26.1	495.3	617.8	61.2	16.2	1.000112
28500.0	350.5	-22.7	-38.6	22.1	487.5	616.3	62.2	17.1	1.000110
29000.0	343.3	-23.9	-41.6	18.2	479.9	614.7	62.2	17.5	1.000108
29500.0	336.3	-25.1	-40.4	22.8	472.1	613.4	61.9	17.7	1.000106
30000.0	329.3	-26.1	-33.4	51.0	464.2	612.1	62.1	18.1	1.000106
30500.0	322.4	-27.2	-36.5	41.3	456.6	610.8	62.5	18.5	1.000103
31000.0	315.7	-28.3	-39.1	35.3	449.1	609.3	62.6	19.0	1.000101
31500.0	308.9	-29.6	-40.0	36.1	441.9	607.7	62.6	19.4	1.000100
32000.0	302.3	-30.9	-41.0	37.0	434.7	606.1	63.6	19.9	1.000098
32500.0	295.9	-32.1	-41.9	37.8	427.7	604.5	65.3	20.4	1.000096
33000.0	289.6	-33.4	-42.9	38.7	420.8	602.9	66.6	20.8	1.000095

STATION ALTITUDE 3989.00 FEET MSL
30 JULY 69 1015 HRS MDT
ASCENSION NO. 757

UPPER AIR DATA
0132003903
WHITE SANDS

NSTM SITE COORDINATES
408580.00FEET E
185045.00FEET N

TABLE XIII (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIR DEG W OF TN	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
33500.0	283.4	-34.7	-43.8	39.5	414.1	601.3	67.0	21.1	1.000093
34000.0	277.4	-36.0	-44.8	40.4	407.4	599.7	67.4	21.4	1.000091
34500.0	271.4	-37.2	-45.9	40.3	400.7	598.2	69.4	21.6	1.000090
35000.0	265.5	-38.2	-47.5	37.5	393.8	596.8	71.2	21.9	1.000088
35500.0	259.7	-39.3	-49.2	34.8	386.9	595.5	70.9	22.8	1.000087
36000.0	254.0	-40.4	-51.1	31.9**	380.2	594.0	70.5	23.6	1.000085
36500.0	248.3	-41.7	-53.5	27.4**	373.8	592.4	71.0	24.4	1.000084
37000.0	242.7	-43.0	-56.1	22.6**	367.4	590.7	71.8	24.8	1.000082
37500.0	237.3	-44.3	-58.9	18.2**	361.2	589.1	72.1	25.8	1.000081
38000.0	231.9	-45.6	-62.1	13.8**	355.1	587.4	72.3	26.9	1.000079
38500.0	226.7	-46.9	-66.0	9.4**	349.1	585.7	73.1	27.3	1.000078
39000.0	221.6	-48.1	-71.4	5.0**	343.2	584.1	74.2	27.5	1.000076
39500.0	216.7	-49.4	-85.4	0.6**	337.4	582.4	74.0	27.9	1.000075
40000.0	211.6	-50.6	0.	-0. **	331.2	580.9	72.9	28.5	1.000074
40500.0	206.6	-51.7	0.	-0. **	324.9	579.5	71.5	28.7	1.000072
41000.0	201.7	-52.8	0.	-0. **	318.8	578.0	69.9	28.6	1.000071
41500.0	196.9	-53.9	0.	-0. **	312.8	576.6	68.5	28.9	1.000070
42000.0	192.2	-55.0	0.	-0. **	307.0	575.1	67.2	29.4	1.000068
42500.0	187.7	-56.1	0.	-0. **	301.2	573.7	68.0	29.8	1.000067
43000.0	183.2	-57.2	0.	-0. **	295.6	572.2	69.9	30.1	1.000066
43500.0	178.9	-58.3	0.	-0. **	290.1	570.6	71.5	30.3	1.000065
44000.0	174.6	-59.4	0.	-0. **	284.7	569.3	72.8	30.6	1.000063
44500.0	170.5	-60.5	0.	-0. **	279.4	567.8	73.8	30.6	1.000062
45000.0	166.5	-61.6	0.	-0. **	274.2	566.3	74.2	30.4	1.000061
45500.0	162.5	-62.7	0.	-0. **	269.1	564.8	74.1	30.3	1.000060
46000.0	158.7	-63.8	0.	-0. **	264.1	563.4	72.4	30.4	1.000059
46500.0	154.8	-64.9	0.	-0. **	259.0	562.0	70.8	30.5	1.000058
47000.0	151.0	-65.8	0.	-0. **	253.6	560.8	72.0	31.0	1.000056
47500.0	147.2	-66.7	0.	-0. **	248.4	559.5	73.2	31.4	1.000055
48000.0	143.5	-67.5	0.	-0. **	243.2	558.3	75.7	31.1	1.000054

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

STATION ALTITUDE 3989.00 FEET MSL
30 JULY 69 1015 HRS MDT
ASCENSION NO. 757

UPPER AIR DATA
0132003903
WHITE SANDS

WSTN SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE XIII (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIR DEG W OF TN	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
48500.0	139.9	-68.4	0.	-0. **	238.1	557.1	78.4	30.6	1.000053
49000.0	136.4	-69.3	0.	-0. **	233.2	555.9	81.2	29.5	1.000052
49500.0	133.0	-70.2	0.	-0. **	228.4	554.7	83.9	27.9	1.000051
50000.0	129.7	-71.1	0.	-0. **	223.7	553.5	85.5	26.3	1.000050
50500.0	126.4	-72.0	0.	-0. **	219.0	552.2	84.3	24.9	1.000049
51000.0	123.3	-72.8	0.	-0. **	214.3	551.2	83.1	23.7	1.000048
51500.0	120.1	-73.1	0.	-0. **	209.2	550.7	81.9	24.6	1.000047
52000.0	117.0	-73.5	0.	-0. **	204.2	550.2	80.7	25.5	1.000045
52500.0	114.0	-73.8	0.	-0. **	199.3	549.8	80.9	25.9	1.000044
53000.0	111.1	-74.1	0.	-0. **	194.5	549.3	81.5	26.2	1.000043
53500.0	108.3	-74.3	0.	-0. **	189.7	549.1	82.1	26.5	1.000042
54000.0	105.6	-73.7	0.	-0. **	184.5	549.9	82.6	26.7	1.000041
54500.0	103.0	-73.2	0.	-0. **	179.4	550.6	83.1	26.8	1.000040
55000.0	100.4	-72.6	0.	-0. **	174.4	551.4	82.8	26.4	1.000039
55500.0	97.9	-72.1	0.	-0. **	169.6	552.1	81.5	25.2	1.000038
56000.0	95.4	-71.6	0.	-0. **	164.9	552.8	80.2	23.9	1.000037
56500.0	93.0	-71.0	0.	-0. **	160.4	553.6	79.5	24.3	1.000036
57000.0	90.7	-70.5	0.	-0. **	156.0	554.3	79.0	25.3	1.000035
57500.0	88.5	-69.9	0.	-0. **	151.7	555.1	78.7	26.2	1.000034
58000.0	86.2	-69.4	0.	-0. **	147.5	555.8	81.7	25.8	1.000033
58500.0	84.1	-68.9	0.	-0. **	143.4	556.5	84.7	25.4	1.000032
59000.0	82.0	-68.3	0.	-0. **	139.5	557.3	88.2	25.2	1.000031
59500.0	79.9	-67.8	0.	-0. **	135.6	558.0	92.4	25.1	1.000030
60000.0	77.9	-67.2	0.	-0. **	131.9	558.7	96.5	24.9	1.000029
60500.0	76.0	-66.7	0.	-0. **	128.3	559.5	98.5	23.6	1.000029
61000.0	74.1	-66.2	0.	-0. **	124.7	560.2	100.1	22.0	1.000028
61500.0	72.3	-65.6	0.	-0. **	121.3	560.9	100.6	20.7	1.000027
62000.0	70.4	-65.1	0.	-0. **	118.0	561.7	99.5	20.0	1.000026
62500.0	68.7	-64.5	0.	-0. **	114.7	562.4	98.4	19.3	1.000026
63000.0	67.0	-64.0	0.	-0. **	111.6	563.1	96.4	20.4	1.000025

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

STATION ALTITUDE 3989.00 FEET MSL
30 JULY 69 1015 HRS MDT
ASCENSION NO. 757

UPPER AIR DATA
0132003903
WHITE SANDS

TABLE XIII (Cont)

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIR DEG N OF TN	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
63500.0	65.3	-63.5	0.	-0. **	108.5	563.8	94.4	21.4	1.000024
64000.0	63.7	-62.9	0.	-0. **	105.5	564.6	93.7	22.7	1.000023
64500.0	62.1	-62.2	0.	-0. **	102.6	565.6	91.1	24.2	1.000023
65000.0	60.6	-61.2	0.	-0. **	99.7	566.8	89.9	25.4	1.000022
65500.0	59.2	-60.3	0.	-0. **	96.8	568.1	89.5	26.8	1.000022
66000.0	57.7	-59.4	0.	-0. **	94.1	569.3	89.1	28.0	1.000021
66500.0	56.4	-58.4	0.	-0. **	91.5	570.5	89.3	27.2	1.000020
67000.0	55.0	-58.2	0.	-0. **	89.2	570.9	89.8	25.5	1.000020
67500.0	53.7	-58.2	0.	-0. **	87.1	570.9	90.3	23.8	1.000019
68000.0	52.4	-58.2	0.	-0. **	85.0	570.9	92.2	23.1	1.000019
68500.0	51.2	-58.2	0.	-0. **	83.0	570.9	94.2	22.5	1.000018
69000.0	50.0	-58.2	0.	-0. **	81.0	570.9	95.2	22.3	1.000018
69500.0	48.8	-58.2	0.	-0. **	79.1	570.9	93.5	23.5	1.000018
70000.0	47.6	-58.2	0.	-0. **	77.2	570.9	91.8	24.6	1.000017
70500.0	46.5	-58.2	0.	-0. **	75.4	570.9	89.5	26.5	1.000017
71000.0	45.4	-58.2	0.	-0. **	73.6	570.9	86.8	28.8	1.000016
71500.0	44.3	-58.2	0.	-0. **	71.8	570.9	84.1	31.2	1.000016
72000.0	43.3	-58.2	0.	-0. **	70.1	570.9	84.0	33.6	1.000016
72500.0	42.2	-58.2	0.	-0. **	68.5	570.9	84.4	36.0	1.000015
73000.0	41.2	-58.2	0.	-0. **	66.8	570.9	84.9	38.3	1.000015
73500.0	40.2	-58.2	0.	-0. **	65.2	570.9	86.4	38.9	1.000015
74000.0	39.3	-58.2	0.	-0. **	63.7	570.9	87.9	39.5	1.000014
74500.0	38.4	-57.9	0.	-0. **	62.1	571.3	89.5	40.2	1.000014
75000.0	37.5	-57.4	0.	-0. **	60.5	571.9	91.1	41.3	1.000013
75500.0	36.6	-57.0	0.	-0. **	59.0	572.5	92.7	42.4	1.000013
76000.0	35.8	-56.5	0.	-0. **	57.5	573.1	93.7	42.9	1.000013
76500.0	34.9	-56.1	0.	-0. **	56.1	573.7	94.1	43.0	1.000012
77000.0	34.1	-55.6	0.	-0. **	54.7	574.3	94.5	43.0	1.000012
77500.0	33.3	-55.2	0.	-0. **	53.3	574.8	89.5	42.5	1.000012
78000.0	32.6	-54.7	0.	-0. **	51.9	575.4	81.6	41.7	1.000012

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

STATION ALTITUDE 3989.00 FEET MSL
30 JULY 69 1015 HRS MDT
ASCENSION NO. 757

UPPER AIR DATA
0132003903
WHITE SANDS

MSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE XIII (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIR DEG W OF TN	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
78500.0	31.8	-54.3	0.	-0. **	50.6	576.0	73.7	40.9	1.000011
79000.0	31.1	-53.8	0.	-0. **	49.4	576.6	77.0	41.5	1.000011
79500.0	30.3	-53.4	0.	-0. **	48.1	577.2	82.7	42.4	1.000011
80000.0	29.6	-53.0	0.	-0. **	46.9	577.8	88.5	43.3	1.000010
80500.0	29.0	-52.5	0.	-0. **	45.7	578.4	88.0	44.0	1.000010
81000.0	28.3	-52.1	0.	-0. **	44.6	579.0	87.5	44.6	1.000010
81500.0	27.6	-51.6	0.	-0. **	43.4	579.6	87.7	45.3	1.000010
82000.0	27.0	-51.2	0.	-0. **	42.4	580.2	93.1	46.5	1.000009
82500.0	26.4	-50.7	0.	-0. **	41.3	580.7	98.4	47.8	1.000009
83000.0	25.7	-50.3	0.	-0. **	40.2	581.3	103.1	48.8	1.000009
83500.0	25.1	-49.8	0.	-0. **	39.2	581.9	98.4	46.0	1.000009
84000.0	24.6	-49.4	0.	-0. **	38.2	582.5	93.7	43.2	1.000009
84500.0	24.0	-48.9	0.	-0. **	37.3	583.1	89.0	40.5	1.000008
85000.0	23.4	-48.5	0.	-0. **	36.3	583.7	87.4	39.0	1.000008
85500.0	22.9	-48.1	0.	-0. **	35.4	584.1	86.7	37.8	1.000008
86000.0	22.4	-48.1	0.	-0. **	34.6	584.1	85.9	36.6	1.000008
86500.0	21.9	-48.1	0.	-0. **	33.9	584.1	85.8	36.0	1.000008
87000.0	21.4	-48.1	0.	-0. **	33.1	584.1	86.4	36.0	1.000007
87500.0	20.9	-48.1	0.	-0. **	32.3	584.1	86.9	36.1	1.000007
88000.0	20.4	-48.1	0.	-0. **	31.6	584.1	87.4	36.1	1.000007
88500.0	20.0	-48.0	0.	-0. **	30.9	584.2	87.4	36.5	1.000007
89000.0	19.5	-47.3	0.	-0. **	30.1	585.2	87.4	36.8	1.000007
89500.0	19.1	-46.5	0.	-0. **	29.3	586.2	87.5	37.2	1.000007
90000.0	18.6	-45.8	0.	-0. **	28.6	587.1	88.6	37.1	1.000006
90500.0	18.2	-45.0	0.	-0. **	27.8	588.1	90.0	36.9	1.000006
91000.0	17.8	-44.3	0.	-0. **	27.1	589.1	91.4	36.7	1.000006
91500.0	17.4	-43.5	0.	-0. **	26.4	590.1	92.4	36.3	1.000006
92000.0	17.0	-42.8	0.	-0. **	25.8	591.0	92.4	35.9	1.000006
92500.0	16.7	-42.0	0.	-0. **	25.1	592.0	92.4	34.7	1.000006
93000.0	16.3	-41.7	0.	-0. **	24.5	592.4	92.4	33.9	1.000005

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

STATION ALTITUDE 3989.00 FEET MSL
30 OCT 69 1015 HRS MDT
ASCENSION NO. 757

UPPER AIR DATA
0132003903
WHITE SANDS

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE XIII (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIR DEG W OF TN	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
93500.0	15.9	-41.7	0.	-0. **	24.0	592.4	92.9	34.0	1.000005
94000.0	15.6	-41.7	0.	-0. **	23.4	592.4	93.5	34.3	1.000005
94500.0	15.2	-41.6	0.	-0. **	22.9	592.4	94.0	34.5	1.000005
95000.0	14.9	-41.6	0.	-0. **	22.4	592.5	94.3	34.7	1.000005
95500.0	14.6	-41.6	0.	-0. **	21.9	592.5	94.5	34.9	1.000005
96000.0	14.3	-41.6	0.	-0. **	21.4	592.5	94.6	35.1	1.000005
96500.0	13.9	-41.6	0.	-0. **	21.0	592.5	94.7	35.3	1.000005
97000.0	13.6	-41.6	0.	-0. **	20.5	592.5	95.0	36.1	1.000005
97500.0	13.3	-41.6	0.	-0. **	20.1	592.6	95.3	37.0	1.000004
98000.0	13.0	-41.5	0.	-0. **	19.6	592.6	95.5	37.8	1.000004
98500.0	12.7	-41.5	0.	-0. **	19.2	592.6	95.4	38.3	1.000004
99000.0	12.5	-41.5	0.	-0. **	18.8	592.6	95.0	38.6	1.000004
99500.0	12.2	-41.5	0.	-0. **	18.3	592.6	94.7	38.9	1.000004
100000.0	11.9	-41.5	0.	-0. **	17.9	592.7			1.000004
100500.0	11.7	-41.5	0.	-0. **	17.5	592.7			1.000004
101000.0	11.4	-41.5	0.	-0. **	17.2	592.7			1.000004
101500.0	11.2	-41.4	0.	-0. **	16.8	592.7			1.000004
102000.0	10.9	-41.4	0.	-0. **	16.4	592.7			1.000004
102500.0	10.7	-41.4	0.	-0. **	16.0	592.8			1.000004

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

STATION ALTITUDE 3989.00 FEET MSL
30 JULY 69 1015 HRS MDT
ASCENSION NO. 757

MANDATORY LEVELS
0132003903
WHITE SANDS

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE XIV

PRESSURE MILLIBARS	GEOPOTENTIAL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	WIND DATA DIR DEG	WIND DATA O. W OF TN	WIND DATA SPEED KNOTS
850.0	5075.	25.3	7.7	33.	315.7		3.4
800.0	6810.	21.5	5.0	34.	272.3		8.4
750.0	8632.	17.4	2.0	35.	293.8		8.7
700.0	10551.	13.1	-1.3	37.	330.9		8.3
650.0	12578.	8.2	-3.6	43.	69.2		9.7
600.0	14737.	6.6	-22.9	10.	108.1		12.0
550.0	17060.	2.2	-24.6	12.	80.9		6.7
500.0	19560.	-2.8	-26.8	14.	62.7		4.8
450.0	22271.	-8.3	-29.7	16.	23.0		11.5
400.0	25234.	-14.8	-32.0	22.	53.9		13.2
350.0	28499.	-22.8	-38.8	22.	62.2		17.1
300.0	32146.	-31.3	-41.3	37.	64.3		20.1
250.0	36293.	-41.3	-52.7	28.**	70.8		24.2
200.0	41131.	-53.1	0.	-0.**	69.2		28.6
175.0	43915.	-59.3	0.	-0.**	72.9		30.6
150.0	47031.	-66.0	0.	-0.**	72.3		31.1
125.0	50605.	-72.4	0.	-0.**	83.7		24.3
100.0	54886.	-72.6	0.	-0.**	82.7		26.3
80.0	59239.	-67.8	0.	-0.**	91.6		25.1
70.0	61892.	-64.9	0.	-0.**	99.3		19.9
60.0	65003.	-60.8	0.	-0.**	89.7		26.1
50.0	68760.	-58.2	0.	-0.**	95.2		22.3
40.0	73369.	-58.2	0.	-0.**	86.8		39.0
30.0	79375.	-53.2	0.	-0.**	84.8		42.8
25.0	83260.	-49.7	0.	-0.**	97.6		45.5
20.0	88079.	-48.1	0.	-0.**	87.4		36.4
15.0	94419.	-41.6	0.	-0.**	94.3		34.7

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

RELEASE TIME (MDT)		SECOND-STAGE IMPACT DISPLACEMENT IN MILES DUE TO WIND								AZIMUTH (DEGREES)	THEORETICAL IMPACT FROM LAUNCHER (IN MILES)		
		11-216 FT		216-4160 FT		4160-73300 FT		TOTAL					
RAWINSONDE	PIBAL	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W		RANGE	N-S	E-W
0745	0845	0.8S	0.5E	4.2S	0.1E	2.9N	16.8E	2.1S	17.4E	357.0	68.2	68.1N	3.6W
0745	0855	1.1S	0.7E	4.7S	0.3E	2.9N	16.8E	2.9S	17.8E	357.3	67.4	67.3N	3.2W
0745	0915	0.4S	1.6E	6.3S	0.5E	2.9N	16.8E	3.8S	18.9E	358.2	66.4	66.4N	2.1W
0745	0945	4.2S	2.0E	3.6S	1.4W	2.9N	16.8E	4.9S	17.4E	356.8	65.4	65.3N	3.6W
0745	1000	3.2S	1.5E	4.0S	0.6E	2.9N	16.8E	4.3S	18.9E	358.2	65.9	65.9N	2.1W
0745	1015	2.9S	2.1E	1.7S	0.3W	2.9N	16.8E	1.7S	18.6E	358.0	68.5	68.5N	2.4W
0745	1025	2.0S	1.5E	2.3S	1.3E	2.9N	16.8E	1.4S	19.6E	358.8	68.8	68.8N	1.4W
0745	1035	0.7S	0.0	3.0S	1.4W	2.9N	16.8E	0.8S	15.4E	355.4	69.6	69.4N	5.6W
0745	1046	0.0	0.0	0.7S	0.6E	2.9N	16.8E	2.2N	17.4E	357.2	72.5	72.4N	3.6W
1015	*1055	1.9S	1.7E	1.2S	0.3W	3.7N	16.0E	0.6N	17.4E	357.1	70.9	70.8N	3.6W

	AZIMUTH (DEGREES)	MILES FROM LAUNCHER		
		RANGE	N-S	E-W
LAUNCHER SETTING (ELEVATION 85.0 DEGREES QE)	347.0	72.0	70.2N	16.2W
NO WIND IMPACT	343.3	73.5	70.2N	21.0W
PREDICTED SECOND-STAGE IMPACT	357.0	70.0	69.9N	3.7W
SECOND-STAGE IMPACT, RADAR TRACK	339.4	79.8	74.7N	28.1W
PREDICTED BOOSTER IMPACT	320.0	0.9	0.7N	0.6W
ACTUAL BOOSTER IMPACT	N/A	N/A	N/A	N/A

TABLE XV. IMPACT PREDICTION DATA
NIKE-HYDAC STV-89

* POST-SHOOT DATA

RELEASE TIME (MDT)		SECOND-STAGE IMPACT DISPLACEMENT IN MILES DUE TO WIND								AZI-MUTH (DEG-REES)	THEORETICAL IMPACT FROM LAUNCHER (IN MILES)		
		11-216 FT		216-4000 FT		4000-61000 FT		TOTAL					
RAWIN-SONDE	PIBAL	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W		RANGE	N-S	E-W
1015	1055	1.9S	1.7E	1.3S	0.2W	4.0N	15.2E	0.8N	16.7E	358.8	65.4	65.1N	1.4W
1015	1115	2.5S	0.0	0.9S	0.1W	4.0N	15.2E	0.6N	15.1E	357.4	65.0	64.9N	3.9W
1015	1125	2.2S	0.0	2.3S	2.4W	4.0N	15.2E	0.5S	12.8E	355.3	64.0	63.8N	5.3W
1015	1135	3.6S	0.0	1.0S	1.7W	4.0N	15.2E	0.6S	13.5E	355.9	63.9	63.7N	4.6W
1015	*1145	3.8S	1.3W	1.9S	1.9W	4.0N	15.2E	1.7S	12.0E	354.4	62.9	62.6N	6.1W

	AZI-MUTH (DEG-REES)	MILES FROM LAUNCHER		
		RANGE	N-S	E-W
LAUNCHER SETTING (ELEVATION 85.5 DEGREES QE)	348.0	65.7	64.3N	13.7W
NO WIND IMPACT	344.3	68.8	64.3N	18.1W
PREDICTED SECOND-STAGE IMPACT	357.0	70.0	69.9N	3.7W
SECOND-STAGE IMPACT, RADAR TRACK	340.8	58.9	53.6N	19.4W
PREDICTED BOOSTER IMPACT	320.0	0.9	0.7N	0.6W
ACTUAL BOOSTER IMPACT	N/A	N/A	N/A	N/A

TABLE XVI. IMPACT PREDICTION DATA (CONT)
NIKE-HYDAC BALLISTIC ROUND

* POST-SHOOT DATA

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13. ABSTRACT

Meteorological data gathered for the launching of Nike-Hydac, STV-89 and Nike- Hydac, Ballistic Round are presented for the Space and Missile Systems Organization, AFMDC, Holloman Air Force Base, New Mexico, and for ballistic studies. The data appear, along with calculated ballistic data, in tabular form.

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2. Meteorology						
3. Wind						