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ARMY ELECTRONICS COMMAND WHITE SANDS MISSILE RANGE N--ETC F/G 4/2  
12817A LANCE MISSILE NUMBER 4106, ROUND NUMBER 295 RCL.(U)  
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April 1977

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METEOROLOGICAL DATA REPORT

12817A LANCE  
MISSILE NO. 4106, ROUND NO. 295 RCL  
(21 APRIL 1977)

BY

WSMR METEOROLOGICAL TEAM

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WHITE SANDS MISSILE RANGE, NEW MEXICO

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UNITED STATES ARMY ELECTRONICS COMMAND

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Meteorological data gathered for the launching of 12817A Lance, Missile Number 4106, Round Number 295 RCL, are presented in tabular form.			

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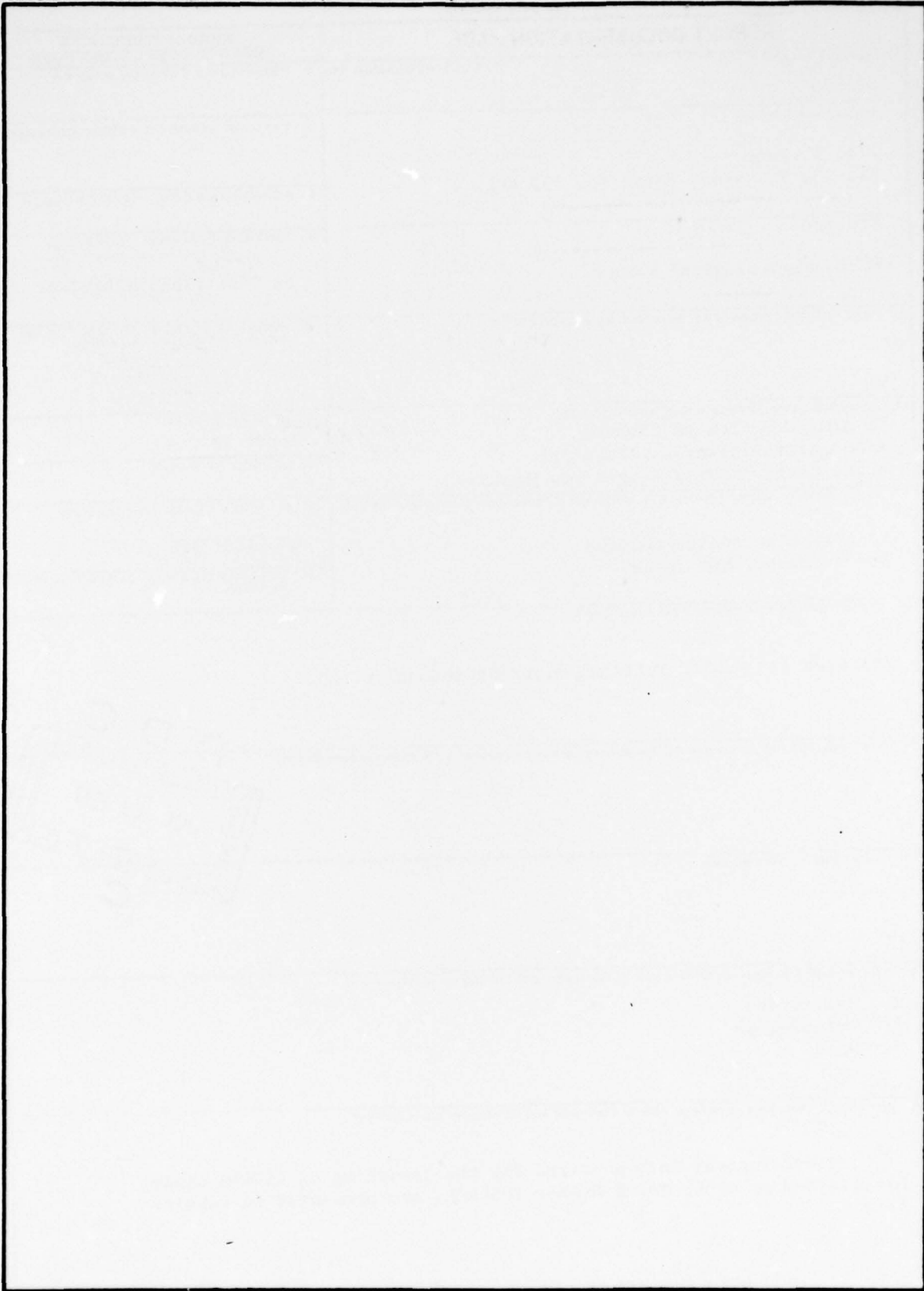
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CONTENTS

	PAGE
INTRODUCTION -----	1
DISCUSSION -----	1
TABLES	
I. Surface Observations taken at Ratscat -----	1
II. Surface Observations taken at Ratscat -----	2
III. Anemometer-Measured Wind Speed and Direction, Pole No. 1 -----	3
IV. Pilot-Balloon-Measured Wind Data, Release No. 1 at 0847 MST -----	4
V. Pilot-Balloon-Measured Wind Data, Release No. 2 at 0903 MST -----	6
VI. Jallen Significant Level Data (Release Time: 0840 MST) -----	9
VII. Jallen Upper Air Data (Release Time: 0840 MST) -----	11
VIII. Jallen Mandatory Levels (Release Time: 0840 MST) -----	17
IX. Holloman Significant Level Data (Release Time: 0850 MST) -----	18
X. Holloman Upper Air Data (Release Time: 0850 MST) -----	20
XI. Holloman Mandatory Levels (Release Time: 0850 MST) -----	23

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## INTRODUCTION

12817A Lance, Missile Number 4106, Round Number 295 RCL, was launched from RATSCAT, White Sands Missile Range (WSMR), New Mexico, at 0850 HRS MST, 21 April 1977. The scheduled launch time was 0845 HRS MST.

## DISCUSSION

Meteorological data were recorded and reduced by the WSMR Meteorological Team, Atmospheric Sciences Laboratory (ASL), WSMR, New Mexico. The data are presented in the following tabulations.

ELEVATION	3964.61	FEET/MSL
PRESSURE	880.2	MBS
TEMPERATURE	8.2	°C
RELATIVE HUMIDITY	66	%
DEW POINT	2.2	°C
DENSITY	1085.0	GM/M <sup>3</sup>
WIND SPEED	02	MPH
WIND DIRECTION	125	DEGREES
CLOUD COVER	.1	Sc

TABLE I. SURFACE OBSERVATIONS TAKEN AT RATSCAT, 0841 HRS MST/21 APRIL 1977.

ELEVATION	3964.61	FEET/MSL
PRESSURE	880.2	MBS
TEMPERATURE	10.0	°C
RELATIVE HUMIDITY	63	%
DEW POINT	3.2	°C
DENSITY	1078.0	GM/M <sup>3</sup>
WIND SPEED	02	MPH
WIND DIRECTION	129	DEGREES
CLOUD COVER	.1	Sc

TABLE II. SURFACE OBSERVATIONS TAKEN AT RATSCAT,  
0847 HRS MST/21 APRIL 1977.

T-TIME (MIN-SEC)	SPEED (MPH)	DIR DEG
-30.0	01	250
-20.0	01	250
-10.0	02	250
-00.00	02	250

TABLE III. ANEMOMETER-MEASURED WIND SPEED AND DIRECTION, POLE NO. 1  
 12817A LANCE, MISSILE NO. 4106, ROUND NO. 295 RCL  
 LAUNCHED FROM RATSCAT, 0902 MST/21 APRIL 1977

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)	HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
SUR	000	00	2100	180	0.5
100	180	01	2200	284	4.0
200	180	02	2300	289	9.5
300	193	02	2400	315	9.5
400	360	0.5	2500	326	3.5
500	008	3.5	2600	328	5.0
600	328	4.5	2700	292	2.5
700	315	6.5	2800	307	2.5
800	291	4.5	2900	305	6.0
900	198	1.5	3000	310	10.5
1000	191	8.0	3100	320	9.0
1100	211	8.0	3200	291	4.5
1200	196	3.5	3300	294	9.0
1300	220	4.0	3400	291	7.5
1400	360	0.5	3500	291	7.5
1500	180	1.0	3600	284	10.5
1600	143	2.5	3700	283	7.0
1700	140	4.0	3800	286	7.0
1800	124	2.0	3900	283	9.0
1900	135	3.0	4000	301	14.0
2000	141	3.0	4100	298	15.0

TABLE IV. PILOT-BALLOON-MEASURED WIND DATA, RELEASE NO. 1  
RELEASED FROM RATSCAT, AT 0847 MST/21 APRIL 1977  
12817A LANCE, MISSILE NO. 4106, ROUND NO. 295 RCL

PIBAL RELEASE POINT WSTM COORDINATES:

X = 513,312.04    Y = 357,958.56    Z = 3964.61

APPROXIMATELY: 1/4 MILE EAST OF LAUNCHER.

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
4200	299	15.5
4300	301	13.5
4400	303	14.0
4500	313	14.0
4600	321	12.0
4700	305	12.0
4800	298	12.5
4900	310	11.0
5000	324	15.5
5100	318	15.5
5200	315	13.0
5300	304	12.5
5400	318	13.5
5500	307	15.0
5600	326	14.5

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
5700	334	16.0
5800	320	15.5
5900	322	14.5
6000	316	16.5
6100	317	12.0
6200	315	14.0
6300	318	14.5
6400	315	15.5
6500	314	15.5
6600	331	14.5
6700	315	17.0
6800	325	13.0
6900	318	14.0
7000	313	13.5

TABLE IV. (CONT)

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)	HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
SUR	000	00	2100	323	2.5
100	000	00	2200	346	4.0
200	360	0.5	2300	270	2.5
300	018	3.0	2400	270	1.0
400	018	1.5	2500	297	1.0
500	078	2.5	2600	276	4.5
600	055	2.0	2700	287	5.5
700	180	2.0	2800	312	7.5
800	174	5.0	2900	276	5.0
900	169	5.0	3000	261	6.5
1000	202	11.5	3100	260	6.0
1100	204	7.0	3200	261	6.5
1200	198	5.0	3300	270	8.5
1300	149	3.0	3400	286	7.5
1400	174	5.0	3500	287	7.0
1500	130	4.0	3600	296	8.0
1600	173	4.0	3700	279	10.0
1700	180	4.0	3800	294	16.0
1800	173	4.0	3900	315	12.0
1900	211	3.0	4000	300	10.0
2000	233	2.5	4100	324	11.0

TABLE V. PILOT-BALLOON-MEASURED WIND DATA, RELEASE NO. 2  
RELEASED FROM RATSCAT, AT 0903 MST/21 APRIL 1977  
12817A LANCE, MISSILE NO. 4106, ROUND NO. 295 RCL

PIBAL RELEASE POINT WSTM COORDINATES:

X = 513,312.04      Y = 357,958.56      Z = 3964.61

APPROXIMATELY: 1/4 MILE EAST OF LAUNCHER.

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
4200	319	12.0
4300	317	9.5
4400	315	10.5
4500	308	11.0
4600	327	9.0
4700	325	12.0
4800	321	11.0
4900	321	10.5
5000	319	11.5
5100	310	11.5
5200	313	11.0
5300	303	15.0
5400	315	10.5
5500	308	14.0
5600	323	15.5
5700	334	17.5
5800	327	17.5
5900	321	13.5
6000	340	13.0
6100	324	13.5
6200	332	11.5
6300	330	13.0
6400	330	12.0
6500	348	12.0

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
6600	335	18.0
6700	330	17.3
6800	341	18.0
6900	348	20.0
7000	347	21.0
7100	339	25.0
7200	340	28.5
7300	348	27.5
7400	355	24.5
7500	353	24.0
7600	343	26.0
7700	350	26.5
7800	344	25.5
7900	342	27.0
8000	341	30.0
8100	338	28.0
8200	337	28.0
8300	334	27.5
8400	334	28.0
8500	335	28.5
8600	337	30.5
8700	333	32.0
8800	331	31.5
8900	331	29.0

TABLE V. (CONT)

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
9000	335	28.5
9100	330	27.5
9200	332	28.0
9300	322	27.0
9400	323	27.0
9500	326	25.5
9600	328	28.0
9700	328	28.0
9800	323	27.0
9900	321	21.0
10000	317	25.5
10100	322	27.5
10200	318	28.5

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
10300	318	26.0
10400	319	24.5
10500	318	23.5
10600	314	23.5
10700	308	26.5
10800	307	24.0
10900	321	24.0
11000	314	24.0
11100	316	25.0
11200	320	26.5
11300	320	26.0
11400	317	23.5

TABLE V. (CONT)

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

WSTM SITE COORDINATES  
450491.60 FEET E  
464023.05 FEET N

SIGNIFICANT LEVEL DATA  
111003016  
JALLEN

STATION ALTITUDE 4051.00 FEET MSL  
21 APR. 77 0840 HRS MST  
ASCENSION NO. 160

TABLE VI.

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE		REL. HUM. PERCENT
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE	
881.5	4051.0	11.3	3.1	57.0
850.0	5043.7	8.2	-2.7	46.0
798.4	6737.5	6.9	-9.0	31.0
700.0	10227.1	-2.4	-9.7	57.0
669.6	11381.2	-4.5	-10.3	64.0
589.2	14651.0	-11.2	-18.2	56.0
572.4	15380.5	-11.6	-22.7	39.0
500.0	18734.4	-19.7	-31.5	34.0
422.8	22747.1	-29.8	-44.6	22.0
400.0	24036.6	-33.6	-47.1	24.0
377.6	25356.6	-37.3	-49.3	27.0
346.6	27282.5	-42.4		
300.0	30454.0	-48.1		
287.4	31382.2	-49.4		
266.4	33006.7	-52.8		
250.0	34351.3	-54.6		
230.8	36026.0	-57.1		
207.8	38213.7	-57.1		
200.0	39013.2	-56.0		
188.6	40238.4	-57.6		
181.6	41026.0	-57.1		
161.8	43434.2	-56.9		
150.0	45022.2	-54.9		
133.4	47481.5	-57.0		
127.4	48445.7	-55.4		
119.5	49788.2	-56.6		
106.2	52258.4	-56.2		
100.0	53515.1	-57.6		
92.2	55210.4	-56.6		
70.0	60944.4	-58.9		

STATION ALTITUDE 4051.00 FEET MSL  
21 APR. 77 0840 HRS MST  
ASCENSION NO. 160

SIGNIFICANT LEVEL DATA  
1JJ0030160  
JALLEN

WSTM SITE COORDINATES  
450491.60 FEET E  
464023.05 FEET N

TABLE VI. (CONT)

PRESSURE GEOMETRIC ALTITUDE MILLIBARS MSL FEET	TEMPERATURE AIR DEWPOINT DEGREFS CENTIGRADE	REL. HUM. PERCENT
65.0 62477.6	-59.4	
61.4 63663.2	-56.6	
50.0 67941.0	-59.0	
42.8 71176.9	-57.1	
30.0 78653.6	-54.4	
20.0 87318.7	-50.6	

UPPER AIR DATA  
 1110030160  
 TALLEN

STATION ALTITUDE 4051.00 FEET MSL  
 21 APR. 77 0840 HRS MST  
 ASCENSION NO. 160

WSTM SITE COORDINATES  
 450491.60 FEET E  
 464023.05 FEET N

TABLE VII.

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT DEGREES	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DIRECTION DEGREES(TN)	WIND SPEED KNOTS	INDEX OF REFRACTION
4051.0	981.5	11.3	3.1	57.0	1076.0	608.1	.0	.0	1.000276
4500.0	867.1	9.9	.5	52.0	1064.3	656.3	30.1	.3	1.000267
5000.0	851.4	8.3	-2.4	46.5	1051.3	654.4	30.1	.6	1.000259
5500.0	835.8	7.8	-4.3	42.0	1034.1	653.7	30.1	.9	1.000252
6000.0	820.5	7.5	-6.1	37.5	1016.7	653.2	352.0	.9	1.000245
6500.0	805.4	7.1	-8.0	33.1	999.7	652.7	283.6	3.1	1.000239
7000.0	790.5	6.2	-8.9	33.0	984.4	651.6	283.8	5.3	1.000234
7500.0	775.8	4.9	-9.7	36.7	970.6	650.1	295.5	6.7	1.000232
8000.0	761.3	3.5	-8.6	40.4	957.0	648.5	309.7	8.2	1.000229
8500.0	747.1	2.2	-8.7	44.1	943.7	647.0	324.1	10.0	1.000226
9000.0	733.1	.9	-8.9	47.9	930.6	645.4	334.4	12.0	1.000223
9500.0	719.4	-0.5	-9.2	51.6	917.6	643.8	341.9	14.2	1.000220
10000.0	706.0	-1.8	-9.5	55.3	904.9	642.3	346.7	16.3	1.000217
10500.0	692.7	-2.9	-9.8	58.7	891.5	640.9	350.1	18.3	1.000214
11000.0	679.5	-3.8	-10.1	61.7	877.5	639.9	346.3	19.5	1.000210
11500.0	666.5	-4.7	-10.5	63.7	863.7	638.7	341.6	20.7	1.000207
12000.0	653.6	-5.8	-11.8	62.5	850.3	637.5	334.9	21.8	1.000203
12500.0	640.9	-6.8	-13.0	61.3	837.1	636.2	329.5	23.0	1.000198
13000.0	628.5	-7.8	-14.2	60.0	824.2	635.0	327.0	23.8	1.000195
13500.0	616.3	-8.8	-15.4	58.8	811.4	633.7	325.4	23.8	1.000191
14000.0	604.4	-9.9	-16.6	57.6	798.9	632.5	324.4	22.7	1.000187
14500.0	592.7	-10.9	-17.8	56.4	786.5	631.2	323.2	22.3	1.000183
15000.0	581.1	-11.4	-20.2	47.9	772.8	630.5	321.9	21.9	1.000179
15500.0	569.6	-11.9	-23.0	38.8	759.1	629.9	321.3	22.8	1.000174
16000.0	558.3	-13.1	-24.3	38.1	747.4	628.4	320.8	23.9	1.000171
16500.0	547.1	-14.3	-25.7	37.3	736.0	626.9	321.1	24.9	1.000168
17000.0	536.2	-15.5	-27.0	36.6	724.7	625.5	321.3	26.0	1.000165
17500.0	525.5	-16.7	-28.3	35.8	713.6	624.0	321.1	27.3	1.000162
18000.0	515.0	-17.9	-29.6	35.1	702.7	622.5	320.9	28.6	1.000160
18500.0	504.7	-19.1	-30.9	34.3	692.0	621.0	321.8	29.9	1.000157

UPPER AIR DATA  
111033016J  
JALLEN

STATION ALTITUDE 4051.00 FFFT MSL  
21 APR. 77 0840 HRS MST  
ASCENSION NO. 160

WSTM SITE COORDINATES  
450491.60 FEET E  
464023.05 FEET N

TABLE VII. (CONT)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DIRECTION DEGREES(TN)	WIND SPEED KNOTS	INDEX OF REFRACTION
6400.0	60.4	-56.8	97.3	573.0	228.2	9.9	1.000022	
6450.0	59.0	-57.1	95.1	572.7	213.9	8.1	1.000021	
6500.0	57.6	-57.3	93.0	572.3	194.7	6.8	1.000021	
6550.0	56.2	-57.6	90.9	571.9	172.6	5.0	1.000020	
6600.0	54.9	-57.9	88.8	571.6	138.7	4.6	1.000020	
6650.0	53.6	-58.2	86.9	571.2	119.0	3.9	1.000019	
6700.0	52.3	-58.5	84.9	570.8	97.4	2.6	1.000019	
6750.0	51.1	-58.8	83.0	570.4	53.5	2.0	1.000018	
6800.0	49.9	-59.0	81.1	570.2	321.6	2.8	1.000018	
6850.0	48.7	-58.7	79.1	570.5	301.9	5.9	1.000018	
6900.0	47.5	-58.4	77.1	570.9	299.1	7.3	1.000017	
6950.0	46.4	-58.1	75.1	571.3	301.2	6.5	1.000017	
7000.0	45.3	-57.8	73.3	571.7	304.0	5.8	1.000016	
7050.0	44.2	-57.5	71.4	572.1	320.7	4.3	1.000016	
7100.0	43.2	-57.2	69.6	572.5	352.3	3.4	1.000015	
7150.0	42.1	-57.0	67.9	572.8	22.0	3.9	1.000015	
7200.0	41.2	-56.8	66.3	573.0	32.7	4.8	1.000015	
7250.0	40.2	-56.6	64.7	573.3	39.7	5.9	1.000014	
7300.0	39.2	-56.4	63.1	573.5	41.5	6.0	1.000014	
7350.0	38.3	-56.3	61.6	573.7	41.4	5.7	1.000014	
7400.0	37.4	-56.1	60.1	574.0	41.2	5.3	1.000013	
7450.0	36.5	-55.9	58.6	574.2	41.0	6.3	1.000013	
7500.0	35.7	-55.7	57.2	574.5	40.9	7.3	1.000013	
7550.0	34.9	-55.5	55.8	574.7	42.8	7.6	1.000012	
7600.0	34.0	-55.4	54.4	574.9	49.0	6.8	1.000012	
7650.0	33.2	-55.2	53.1	575.2	56.7	6.1	1.000012	
7700.0	32.5	-55.0	51.8	575.4	67.8	4.5	1.000012	
7750.0	31.7	-54.8	50.6	575.6	92.4	2.9	1.000011	
7800.0	30.9	-54.6	49.3	575.9	137.6	2.6	1.000011	
7850.0	30.2	-54.5	48.1	576.1	160.9	3.4	1.000011	

UPPER AIR DATA  
 1110030160  
 JALLEN

STATION ALTITUDE 4051.00 FFFT MSL  
 21 APR. 77 0840 HRS MST  
 ASCENSION NO. 160

WSTM SITE COORDINATES  
 450491.60 FEET E  
 464023.05 FEET N

TABLE VII. (CONT)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR - DEGREE CENTIGRADE	RFL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
						DIRECTION DEGREES(TN)	SPEED KNOTS	
7900.0	29.5	-54.2	47.0	576.4	173.9	4.5	1.000010	
7950.0	28.8	-54.0	45.8	576.7	181.4	5.4	1.000010	
8000.0	28.2	-53.8	44.7	577.0	188.1	5.2	1.000010	
8050.0	27.5	-53.6	43.7	577.3	195.1	5.1	1.000010	
8100.0	26.9	-53.4	42.6	577.5	210.3	4.9	1.000009	
8150.0	26.3	-53.2	41.6	577.8	233.7	5.1	1.000009	
8200.0	25.7	-52.9	40.6	578.1	252.3	6.1	1.000009	
8250.0	25.1	-52.7	39.6	578.4	278.1	12.5	1.000009	
8300.0	24.5	-52.5	38.6	578.7	287.0	22.0	1.000009	
8350.0	23.9	-52.3	37.7	579.0	290.4	31.7	1.000008	
8400.0	23.4	-52.1	36.8	579.3	293.3	26.9	1.000008	
8450.0	22.8	-51.8	35.9	579.6	297.8	20.7	1.000008	
8500.0	22.3	-51.6	35.1	579.8			1.000008	
8550.0	21.8	-51.4	34.2	580.1			1.000008	
8600.0	21.3	-51.2	33.4	580.4			1.000007	
8650.0	20.8	-51.0	32.6	580.7			1.000007	
8700.0	20.3	-50.7	31.8	581.0			1.000007	

UPPER AIR DATA  
 1110030160  
 JALLEN

STATION ALTITUDE 4051.00 FFFFT MSL  
 21 APR. 77 0840 HRS MST  
 ASCENSION NO. 16C

WSTM SITE COORDINATES  
 450491.60 FEET E  
 464023.05 FEET N

TABLE VII. (CONT)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES CENTIGRADE	RFL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DIRECTION DEGREES(TN)	WIND SPEED KNOTS	INDEX OF REFRACTION
4900.0	124.1	-55.9		199.0	574.2	230.2	19.3	1.000044
4950.0	121.2	-56.3		194.7	573.6	234.7	19.1	1.000043
5000.0	119.3	-56.6		190.3	573.3	240.2	19.1	1.000042
5050.0	115.5	-56.5		185.7	573.4	242.9	19.0	1.000041
5100.0	112.8	-56.4		181.3	573.6	243.8	18.7	1.000040
5150.0	110.1	-56.3		174.9	573.7	243.9	18.3	1.000039
5200.0	107.5	-56.2		172.7	573.8	234.7	17.5	1.000038
5250.0	105.0	-56.5		168.8	573.5	224.8	17.1	1.000038
5300.0	102.5	-57.0		165.2	572.7	216.2	17.0	1.000037
5350.0	100.1	-57.6		161.7	572.0	209.0	17.2	1.000036
5400.0	97.7	-57.3		157.7	572.3	202.0	17.6	1.000035
5450.0	95.4	-57.0		153.8	572.7	201.7	17.3	1.000034
5500.0	93.1	-56.7		149.9	573.1	201.6	17.0	1.000033
5550.0	90.9	-56.7		146.4	573.1	202.4	16.6	1.000033
5600.0	88.8	-56.9		143.0	572.9	204.4	16.2	1.000032
5650.0	86.7	-57.1		139.7	572.6	206.6	15.8	1.000031
5700.0	84.6	-57.3		136.6	572.3	208.0	17.2	1.000030
5750.0	82.6	-57.5		133.4	572.1	209.1	18.7	1.000030
5800.0	80.6	-57.7		130.4	571.8	211.3	21.6	1.000029
5850.0	78.7	-57.9		127.4	571.5	213.7	25.5	1.000028
5900.0	76.9	-58.1		124.5	571.3	216.0	28.2	1.000028
5950.0	75.0	-58.3		121.7	571.0	220.4	26.1	1.000027
6000.0	73.2	-58.5		118.9	570.7	225.6	24.3	1.000026
6050.0	71.5	-58.7		116.2	570.5	231.1	22.1	1.000026
6100.0	69.6	-58.9		113.5	570.2	237.8	20.0	1.000025
6150.0	68.1	-59.1		110.9	570.0	242.3	19.2	1.000025
6200.0	66.5	-59.2		108.3	569.8	243.5	19.5	1.000024
6250.0	64.9	-59.3		105.8	569.6	244.4	19.6	1.000024
6300.0	63.4	-58.2		102.7	571.2	241.5	16.1	1.000023
6350.0	61.9	-57.0		99.7	572.8	236.9	12.6	1.000022

UPPER AIR DATA  
 1110330160  
 JALLEN  
 TABLE VII. (CONT)

STATION ALTITUDE 4051.00 FEET MSL  
 21 APR. 77 0840 HRS MST  
 ASCENSION NO. 163

WSTM SITE COORDINATES  
 450491.60 FEET E  
 464023.05 FEET N

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES CENTIGRADE	REF. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
						DIRECTION DEGREES(TN)	SPEED KNOTS	
1900.0	494.5	-20.4	33.2	651.2	619.5	322.7	31.2	1.000154
1950.0	484.3	-21.6	31.7	670.5	617.9	325.1	30.9	1.000151
2000.0	474.2	-22.9	30.2	660.0	616.4	329.0	30.1	1.000149
2050.0	464.4	-24.1	28.7	649.6	614.8	329.2	29.3	1.000146
2100.0	454.4	-25.4	27.2	639.4	613.2	330.1	28.5	1.000144
2150.0	445.4	-26.7	25.7	629.4	611.7	330.3	28.3	1.000141
2200.0	436.2	-27.9	24.2	619.6	610.1	330.3	28.3	1.000139
2250.0	427.2	-29.2	22.7	609.9	608.5	331.7	27.8	1.000137
2300.0	418.2	-30.5	22.4	600.5	606.8	333.4	27.4	1.000134
2350.0	409.3	-32.0	23.2	591.3	605.0	333.5	27.6	1.000132
2400.0	400.6	-33.5	23.9	582.3	603.1	333.5	27.9	1.000130
2450.0	392.0	-34.9	25.1	573.1	601.4	333.4	27.9	1.000128
2500.0	383.5	-36.3	26.2	564.1	599.6	333.4	27.9	1.000126
2550.0	375.2	-37.7	25.0	555.1	597.8	331.5	28.6	1.000124
2600.0	366.9	-39.0	18.3	545.9	596.1	329.4	29.3	1.000122
2650.0	358.9	-40.3	11.0	537.0	594.4	328.8	30.5	1.000120
2700.0	351.0	-41.7	4.0	528.2	592.7	328.4	31.7	1.000118
2750.0	343.2	-42.8		519.0	591.3	329.3	32.7	1.000116
2800.0	335.5	-43.7		509.3	590.1	330.5	33.6	1.000113
2850.0	327.9	-44.6		499.8	589.0	331.0	35.3	1.000111
2900.0	320.5	-45.5		490.5	587.8	331.2	37.4	1.000109
2950.0	313.3	-46.4		481.3	586.7	331.3	39.6	1.000107
3000.0	306.3	-47.3		472.4	585.5	331.3	41.8	1.000105
3050.0	299.4	-48.2		463.5	584.3	331.0	44.5	1.000103
3100.0	292.5	-48.9		454.4	583.4	330.1	48.1	1.000101
3150.0	285.8	-49.6		445.5	582.4	329.4	51.5	1.000099
3200.0	279.7	-50.7		437.3	581.1	329.0	54.7	1.000097
3250.0	272.6	-51.7		429.2	579.7	328.7	57.0	1.000096
3300.0	266.5	-52.8		421.3	578.3	328.5	53.9	1.000094
3350.0	260.3	-53.5		412.7	577.4	328.3	50.8	1.000092

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

UPPER AIR DATA  
 111003016  
 JALLEN

STATION ALTITUDE 4051.00 FFFT MSL  
 21 APR. 77 0840 HRS MST  
 ASCENSION NO. 163

WSTM SITE COORDINATES  
 450491.60 FEET E  
 464023.05 FEET N

TABLE VII. (CONT)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REF. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
						DIRECTION DEGREES(TN)	SPEED KNOTS	
34000.0	254.2	-54.1	434.3	575.5	327.9	47.6	1.000090	
34500.0	244.2	-54.8	394.1	575.6	327.4	44.4	1.000088	
35000.0	242.4	-55.6	388.1	574.7	326.5	45.0	1.000086	
35500.0	236.7	-56.3	380.2	573.7	325.6	46.2	1.000085	
36000.0	231.1	-57.1	372.5	572.7	323.5	47.3	1.000083	
36500.0	225.5	-57.1	363.8	572.6	321.2	48.4	1.000081	
37000.0	220.3	-57.1	355.2	572.6	319.5	46.7	1.000079	
37500.0	215.0	-57.1	346.7	572.6	318.0	43.4	1.000077	
38000.0	209.9	-57.1	338.5	572.6	315.8	39.0	1.000075	
38500.0	205.7	-56.7	329.9	573.1	312.3	33.1	1.000073	
39000.0	200.1	-56.0	321.1	574.1	306.9	28.7	1.000072	
39500.0	195.4	-56.6	314.4	573.2	299.1	27.8	1.000070	
40000.0	190.8	-57.3	307.9	572.4	291.0	27.4	1.000069	
40500.0	186.2	-57.4	300.8	572.2	283.0	27.0	1.000067	
41000.0	181.8	-57.1	293.2	572.6	275.0	27.1	1.000065	
41500.0	177.5	-57.1	284.2	572.7	269.5	27.6	1.000064	
42000.0	173.3	-57.0	279.4	572.7	264.5	28.3	1.000062	
42500.0	169.2	-57.0	272.7	572.8	261.6	30.5	1.000061	
43000.0	165.2	-56.9	264.2	572.8	260.1	33.6	1.000059	
43500.0	161.3	-56.8	259.7	573.0	260.1	35.9	1.000058	
44000.0	157.5	-56.2	252.9	573.8	262.5	36.9	1.000056	
44500.0	153.8	-55.6	244.2	574.7	264.6	37.5	1.000055	
45000.0	150.2	-54.9	239.7	575.5	264.4	33.9	1.000053	
45500.0	146.6	-55.3	234.5	575.0	264.1	30.2	1.000052	
46000.0	143.2	-55.7	229.4	574.4	257.3	27.0	1.000051	
46500.0	139.8	-56.2	224.4	573.9	247.2	24.4	1.000050	
47000.0	136.5	-56.6	219.6	573.3	239.6	22.9	1.000049	
47500.0	133.3	-57.0	214.8	572.8	235.9	21.9	1.000048	
48000.0	130.1	-56.1	208.9	573.9	232.5	21.0	1.000047	
48500.0	127.1	-55.4	203.3	574.8	231.4	20.2	1.000045	

STATION ALTITUDE 4051.00 FEET MSL  
 21 APR. 77  
 ASCENSION NO. 140

MANDATORY LEVELS  
 11100330160  
 JALLEN  
 TABLE VIII.

#STM SITE COORDINATES  
 450491.60 FEET E  
 464023.05 FEET N

PRESSURE MILLIBARS	GEOPOTENTIAL FEET	AIR TEMPERATURE DEGREES CENTIGRADE	TEMPERATURE DEWPOINT	REL. HUM. PERCENT	WIND DATA DIRECTION DEGREES(TN)	SPEED KNOTS
850.0	5042.	6.2	-2.7	46.	31.1	6
900.0	6681.	6.9	-8.8	31.	279.1	4.1
750.0	8407.	2.5	-8.7	43.	321.9	9.6
700.0	10221.	-2.4	-9.7	57.	348.3	17.2
650.0	12139.	-6.1	-12.1	42.	333.1	22.2
600.0	14180.	-10.2	-17.1	57.	324.0	22.5
550.0	16366.	-14.0	-25.3	38.	321.0	24.7
500.0	18715.	-19.7	-31.5	34.	322.2	30.5
450.0	21250.	-26.0	-39.6	26.	330.3	28.3
400.0	24006.	-33.5	-47.1	24.	333.5	27.9
350.0	27026.	-41.8	-69.7	3.000	328.3	31.9
300.0	30405.	-48.1			331.1	44.7
250.0	34289.	-54.6			327.6	45.4
200.0	38934.	-56.0			306.8	28.7
175.0	41707.	-57.7			266.6	28.0
150.0	44917.	-54.9			264.4	33.8
125.0	48723.	-55.8			230.6	19.6
100.0	53369.	-57.6			208.9	17.2
80.0	58000.	-57.8			212.2	22.8
70.0	60757.	-58.9			236.8	20.3
60.0	63939.	-56.9			224.9	9.4
50.0	67709.	-59.0			328.4	2.4
40.0	72330.	-56.6			40.6	6.1
30.0	78347.	-54.4			165.4	3.7
25.0	82195.	-52.7			278.7	12.9
20.0	86945.	-50.6				

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

STATION ALTITUDE 4126.59 FEET MSL  
 21 APR. 77 0850 HRS MST  
 ASCENSION NO. 277

SIGNIFICANT LEVEL DATA  
 1110040277  
 HOLLOMAN

WSTM SITE COORDINATES  
 571739.24 FEET E  
 362745.21 FEET N

TABLE IX.

PRESSURE GEOMETRIC ALTITUDE MILLIBARS MSL FEET	TEMPERATURE		REL. HUM. PERCENT	
	AIR DEGREES	DEWPOINT CENTIGRADE		
680.1	4126.6	12.2	1.8	49.0
869.7	4452.1	9.4	-1.6	46.0
850.0	5074.9	8.3	-2.0	43.0
819.8	6055.2	7.7	-4.7	41.0
710.1	9885.0	-6	-10.8	46.0
700.0	10260.4	-1.8	-10.6	51.0
677.8	11099.2	-4.3	-10.9	60.0
666.8	11522.1	-5.6	-11.1	65.0
618.8	13437.5	-8.5	-18.5	44.0
566.3	15680.5	-12.5	-23.0	41.0
532.3	17225.8	-15.6	-29.5	29.0
500.0	18767.9	-19.2	-31.0	34.0
400.0	24071.4	-33.6	-35.1	30.0
368.3	25956.2	-38.9	-49.8	30.0
311.8	29645.9	-47.6		
300.0	30481.8	-49.2		
286.3	31336.5	-51.4		
271.3	32633.3	-52.3		
250.0	34365.9	-54.5		
210.8	37928.7	-58.6		
200.0	39023.9	-56.0		
176.3	41666.6	-56.0		
160.3	43648.6	-58.6		
153.3	44579.8	-55.6		
150.0	45036.4	-56.0		
135.3	47191.8	-57.4		
112.3	51090.6	-55.5		
100.0	53512.2	-58.6		
91.8	55282.9	-59.3		
89.3	55854.8	-58.3		

STATION ALTITUDE 4126.59 FEET MSL  
21 APR. 77 0850 HRS MST  
ASCENSION NO. 277

SIGNIFICANT LEVEL DATA  
1110010277  
HOLLOMAN

TABLE IX. (CONT)

PRESSURE GEOMETRIC ALTITUDE MILLIBARS MSL FEET	TEMPERATURE AIR DEWPOINT DEGREES CENIGRAJE	REL. HUM. PERCENT
60.3 58047.3	-60.9	
74.3 59645.1	-59.7	

WSTM SITE COORDINATES  
571739.24 FEET E  
302745.21 FEET N

UPPER AIR DATA  
 1110010277  
 HOLLOMAN  
 TABLE X.

STATION ALTITUDE 4126.09 FEET MSL  
 21 APR. 77 0850 HRS MST  
 ASCENSION NO. 277

WSTW SITE COORDINATES  
 571739.24 FEET E  
 362745.21 FEET N

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE				DIRECTION DEGREES(TN)	SPEED KNOTS	
4126.6	880.1	12.2	1.8	49.0	1074.2	659.1	.0	.0	1.000271
4800.0	856.6	8.8	-1.9	47.1	1050.5	654.9	252.0	1.6	1.000261
5000.0	833.7	8.0	-3.4	44.3	1030.9	653.9	252.0	3.6	1.000252
6400.0	809.3	7.0	-5.2	41.5	1004.5	652.6	262.6	4.7	1.000244
7200.0	785.3	5.2	-6.5	42.5	981.0	650.6	299.0	6.0	1.000237
8000.0	762.1	3.5	-7.7	43.5	953.1	648.5	299.0	11.4	1.000230
8800.0	739.6	1.8	-9.0	44.6	933.8	646.4	301.4	12.9	1.000224
9000.0	717.7	.0	-10.3	45.6	914.0	644.4	311.3	12.7	1.000218
10400.0	690.3	-2.2	-10.6	52.5	893.9	641.7	318.0	14.0	1.000213
11200.0	675.2	-4.6	-10.9	61.2	874.6	638.9	328.6	17.8	1.000209
12000.0	654.5	-6.3	-12.8	59.8	853.4	636.8	337.0	20.2	1.000202
12800.0	634.4	-7.5	-15.9	51.0	831.1	635.3	352.2	20.3	1.000195
13600.0	614.8	-8.8	-18.9	43.8	809.5	633.7	323.1	20.1	1.000188
14400.0	595.7	-10.2	-20.4	42.7	780.7	631.9	320.0	21.0	1.000182
15200.0	577.2	-11.6	-22.0	41.6	760.3	630.2	321.1	23.5	1.000177
16000.0	559.1	-13.1	-24.3	38.5	740.7	628.4	321.2	26.7	1.000172
16800.0	541.5	-14.7	-27.6	32.3	729.6	626.4	320.5	29.9	1.000166
17600.0	524.3	-16.5	-29.9	30.2	711.3	624.5	319.3	29.9	1.000161
18400.0	507.5	-18.3	-30.6	32.8	693.6	622.0	319.6	30.2	1.000157
19200.0	491.0	-20.4	-32.2	33.7	676.5	619.5	320.4	30.4	1.000153
20000.0	474.7	-22.5	-34.3	33.1	659.8	616.8	323.3	30.0	1.000149
20800.0	459.0	-24.7	-36.4	32.5	643.5	614.1	329.3	28.3	1.000145
21600.0	443.8	-26.9	-38.6	31.9	627.7	611.4	329.3	25.9	1.000141
22400.0	429.1	-29.1	-40.7	31.3	612.4	608.7	334.4	25.2	1.000137
23200.0	414.9	-31.2	-42.8	30.7	597.4	606.0	338.5	26.0	1.000134
24000.0	401.2	-33.4	-44.9	30.1	582.9	603.2	341.3	26.0	1.000131
24800.0	387.4	-35.6	-46.9	30.0	568.2	600.4	337.9	28.2	1.000127
25600.0	374.1	-37.9	-48.9	30.0	553.9	597.0	335.4	29.8	1.000124
26400.0	361.0	-39.9	-51.8	26.4**	539.2	594.9	333.9	30.9	1.000120
27200.0	348.2	-41.8	-55.8	19.9**	524.4	592.5	332.0	31.5	1.000117

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

UPPER AIR DATA  
 1110010277  
 HOLLOWMAN  
 TABLE X. (CONT)

STATION ALTITUDE 4126.59 FEET MSL  
 21 APR. 77 0850 HRS MST  
 ASCENSION NO. 277

WSTM SITE COORDINATES  
 571739.24 FEET E  
 362745.21 FEET N

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT DEGREE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DIRECTION DEGREES (TN)	WIND SPEED KNOTS	INDEX OF REFRACTION
28000.0	355.8	-43.7	-60.5	13.4**	505.9	590.1	327.8	32.1	1.000114
28800.0	323.9	-45.6	-66.9	6.9**	495.9	587.7	323.8	32.9	1.000111
29600.0	312.4	-47.5	-86.5	.4**	482.3	585.2	320.0	37.8	1.000107
30400.0	301.1	-49.0			468.1	583.2	319.3	44.0	1.000104
31200.0	290.1	-51.0			455.1	580.5	321.4	49.4	1.000101
32000.0	279.5	-51.9			440.0	579.5	324.2	53.4	1.000098
32800.0	269.2	-52.5			425.0	578.7	328.6	58.4	1.000095
33600.0	259.2	-53.5			411.1	577.3	328.4	54.5	1.000092
34400.0	249.6	-54.5			397.7	576.0	327.9	51.0	1.000089
35200.0	240.2	-55.5			384.4	574.8	324.4	50.0	1.000086
36000.0	231.2	-56.4			371.5	573.6	328.2	50.1	1.000083
36800.0	222.5	-57.3			359.1	572.4	319.8	40.5	1.000080
37600.0	214.1	-58.2			347.1	571.1	302.5	37.8	1.000077
38400.0	206.1	-57.5			332.9	572.1	291.9	44.3	1.000074
39200.0	198.3	-58.0			318.2	574.1	300.7	51.0	1.000071
40000.0	190.9	-56.0			300.2	574.1	285.4	34.4	1.000068
40800.0	183.7	-58.0			294.8	574.1	257.0	28.0	1.000066
41600.0	176.9	-58.0			285.7	574.1	244.4	33.3	1.000063
42400.0	170.2	-57.0			274.3	572.8	272.1	47.8	1.000061
43200.0	163.8	-58.0			265.2	571.4	279.5	57.0	1.000059
44000.0	157.6	-57.5			254.6	572.1	280.0	54.5	1.000057
44800.0	151.7	-55.8			245.1	574.4	271.8	33.4	1.000054
45600.0	146.0	-58.4			234.6	573.8	242.8	22.0	1.000052
46400.0	140.5	-56.9			226.4	572.9	191.9	30.6	1.000050
47200.0	135.2	-57.4			218.4	572.2	201.1	31.8	1.000049
48000.0	130.2	-57.0			209.8	572.8	225.8	27.0	1.000047
48800.0	125.3	-56.6			201.6	573.3	246.2	26.6	1.000045
49600.0	120.6	-58.2			193.7	573.8	257.8	28.5	1.000043
50400.0	116.1	-55.8			188.1	574.3	276.4	25.7	1.000041
51200.0	111.7	-55.6			178.9	574.6	306.1	27.6	1.000040

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

STATION ALTITUDE 4126.59 FEET MSL  
 21 APR. 77 0850 HRS MST  
 ASCENSION NO. 277

UPPER AIR DATA  
 1110010277  
 HOLLOWMAN

WSTM SITE COORDINATES  
 571739.24 FEET E  
 362745.21 FEET N

TABLE X. (CONT)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES	DEWPOINT DEGREES	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
52000.0	107.5	-56.7			170.0	573.2	204.1	5.0	1.000039
52800.0	103.5	-57.7			167.3	571.8			1.000037
53000.0	99.6	-58.6			161.7	570.0			1.000036
54400.0	95.8	-59.0			150.8	570.2			1.000035
55200.0	92.2	-59.3			150.1	569.7			1.000033
56000.0	88.7	-58.5			140.9	570.6			1.000032
56800.0	85.3	-59.4			139.0	569.5			1.000031
57600.0	82.1	-60.4			134.3	568.3			1.000030
58400.0	78.9	-60.6			129.4	567.9			1.000029
59200.0	75.9	-60.0			124.1	568.7			1.000028

STATION ALTITUDE 4126.59 FEET MSL  
 21 APR. 77 0850 HRS MST  
 ASCENSION NO. 277

MANDATORY LEVELS  
 111001027,  
 HOLLOMAN  
 TABLE XI.

WSTM SITE COORDINATES  
 571739.24 FEET E  
 362745.21 FEET N

PRESSURE GEOPOTENTIAL		TEMPERATURE	REL. HUMID.	WIND DATA	
MILLIBARS	FEET	AIR DEWPOINT	PERCENT	DIRECTION	SPEED
		DEGREES		DEGREES(TN)	KNOTS
650.0	5073.	8.3	48.	252.0	2.3
600.0	6712.	6.3	42.	296.7	5.5
750.0	8437.	2.6	44.	300.0	12.4
700.0	10254.	-1.8	51.	317.0	13.8
650.0	12170.	-6.6	58.	350.5	20.8
600.0	14210.	-9.9	43.	319.6	20.7
550.0	16396.	-14.0	35.	320.9	26.2
500.0	18748.	-19.2	34.	319.9	30.3
450.0	21285.	-26.0	32.	327.3	26.5
400.0	24040.	-33.6	30.	341.5	26.4
350.0	27061.	-41.6	21.**	332.6	31.5
300.0	30433.	-49.2		319.5	44.6
250.0	34304.	-54.5		328.1	51.1
200.0	38945.	-58.0		296.9	49.4
175.0	41731.	-56.2		253.9	36.2
150.0	44932.	-56.0		262.2	27.6
125.0	48722.	-56.6		246.7	26.5
100.0	53367.	-58.6			
80.0	57953.	-60.8			

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