

AD-A110 204

ARMY ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND WS--ETC F/G 4/2  
MISSILE NUMBERS BC-043, BC-042, AND BC-041, ROUND NUMBERS V-191--ETC(U)  
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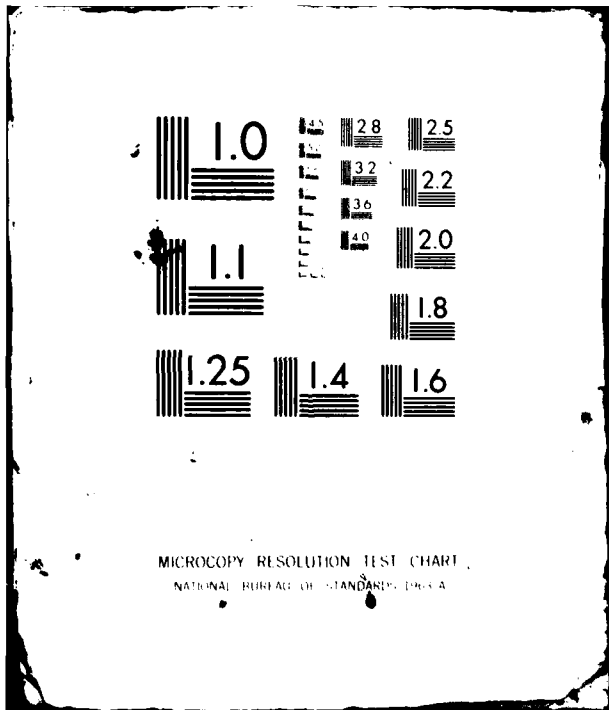
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MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

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DR 1216  
14 December 1981

AD

AD A110204

METEOROLOGICAL DATA REPORT  
Missile Numbers BC-043, BC-042, and BC-041  
Round Numbers V-191/MD-45, V-192/MD-46, and V-193/MD-47  
14 December 1981

by

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ATMOSPHERIC SCIENCES LABORATORY  
WHITE SANDS MISSILE RANGE, NEW MEXICO

**ECOM**

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 the 19313A MLRS, Missile Numbers BC-041, BC-042, and BC-043, Round Numbers V-191/MD-45, V-192/MD-46, and V-193/MD-47 presented in tabular form.		

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## INTRODUCTION

19313A MLRS, Missile Numbers BC-043, BC-042 and BC-041, Round Numbers V-191/MD-45, V-192/MD-46 and V-193/MD-47, were launched from Tula Gate, White Sands Missile Range (WSMR), New Mexico, at 1613:33, 1613:38 and 1613:42 MST, 14 December 1981. The scheduled launch time were 1600, 1600:04.5 and 1600:09 MST.

## DISCUSSION

Meteorological data were recorded and reduced by the White Sands Meteorological Team, Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, New Mexico. The data were obtained by the following methods:

### 1. Observations.

#### a. Surface:

(1) Standard surface observations to include pressure, temperature ( $^{\circ}\text{C}$ ), relative humidity, dew point ( $^{\circ}\text{C}$ ), density ( $\text{gm}/\text{m}^3$ ), wind speed and direction, and cloud cover were made at the Tula Gate Met Site at T-0 minutes.

(2) Monitor of wind speed and direction from one anemometer was provided in the launch control room.

#### b. Upper Air:

(1) Low level wind data were obtained from pilot-balloon observations at:

## SITE AND ALTITUDE

Tula Gate 1550 Meters  
MAL 2000 Meters

(2) Air structure data (rawinsonde) were collected at the following Met Sites:

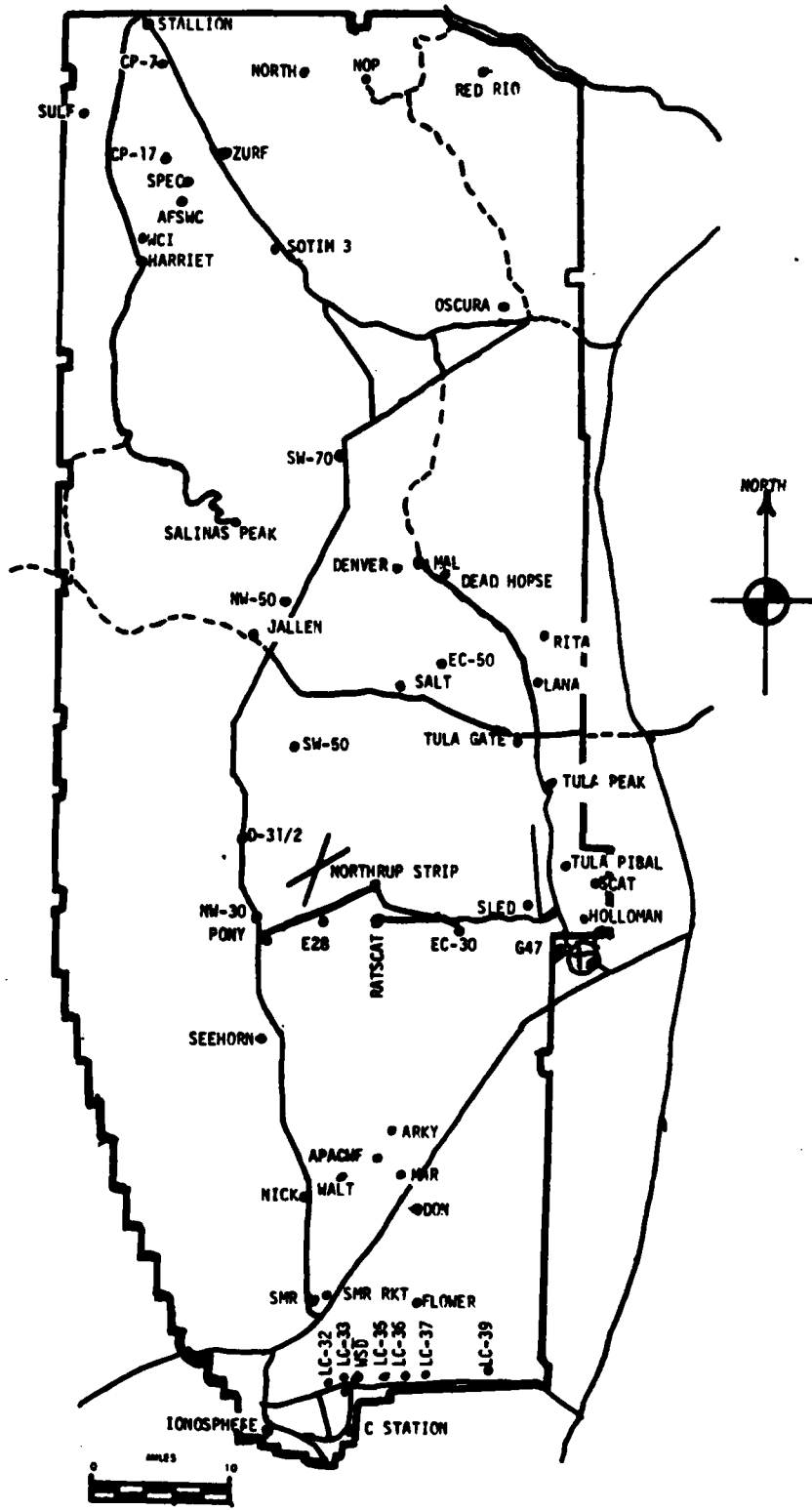
## SITE AND TIME

JALLEN 1300 MST  
LANA 1430 MST  
JALLEN 1500 MST  
LANA 1614 MST

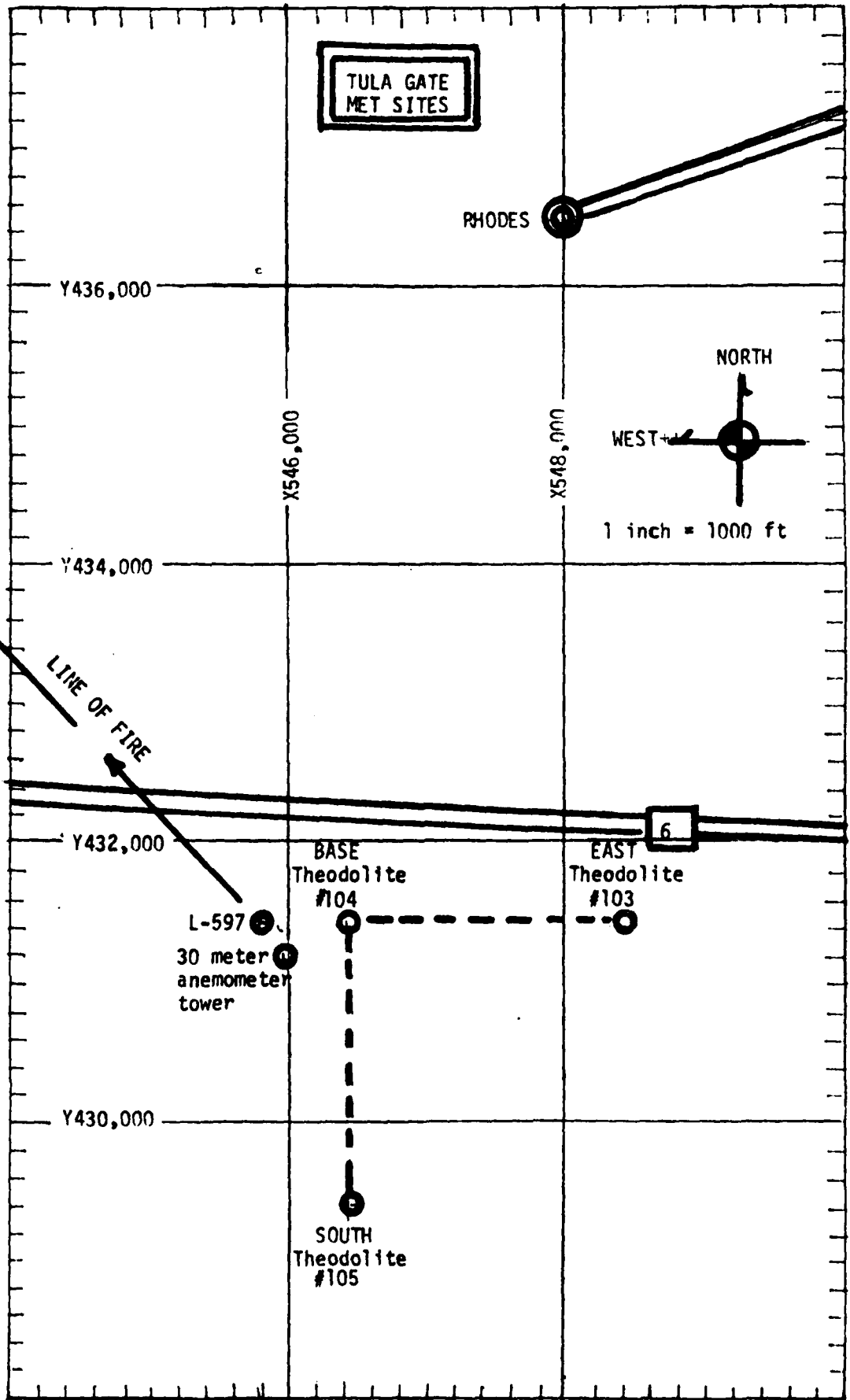
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# WSMR METEOROLOGICAL SITES







PROJECT SURFACE OBSERVATION

TABLE 1 STATION Iula Gate D/T Site  
 DATE 14 Dec 1981 X = 546,402.29 Y = 431,426.23 H = 4,105.86  
DAY MONTH YEAR

TIME M_S_T	PRESSURE mbs	TEMPERATURE OF °C	DEW POINT OF °C	RELATIVE HUMIDITY %	DENSITY gm/m <sup>3</sup>	WIND		VISIBIL- ITY
						DIRECTION degs	SPEED kts	
1610	876.1	10.5	5.0	44	1072	150	02	35

OBSTRUCTIONS TO VISIBILITY	CLOUDS						REMARKS
	1st LAYER		2nd LAYER		3rd LAYER		
	AMT	TYPE	HGT	AMT	TYPE	HGT	
	9	CS	22,000				

PSYCHROMETRIC COMPUTATION

TIME:	MST	1610
DRY BULB TEMP.		10.5
WET BULB TEMP.		5.0
WET BULB DEPR.		5.5
DEW POINT		-1.2
RELATIVE HUMID.		44

TABLE 2

T-TIME PILOT-BALLOON MEASURED WIND DATA  
DATE 14 December 1981

SITE: Tula Gate  
TIME: 1610 MST  
WSTM COORDINATES:  
X= 547,402.29  
Y= 430,426.23  
H= 4,101.86

SITE: MAL  
TIME: 1610 MST  
WSTM COORDINATES:  
X= 511,420.45  
Y= 495,563.18  
H= 4,127.00

<u>LAYER MIDPOINT METERS AGL</u>	<u>DIRECTION DEGREES</u>	<u>SPEED KNOTS</u>	<u>LAYER MIDPOINT METERS AGL</u>	<u>DIRECTION DEGREES</u>	<u>SPEED KNOTS</u>
SURFACE	150	02	SURFACE	240	01
150	160	03	150	216	03
210	163	03	210	220	03
270	168	02	270	228	03
330	179	01	330	238	02
390	214	01	390	235	02
500	286	02	500	273	01
650	312	05	650	338	04
800	315	10	800	339	06
950	313	13	950	338	06
1150	311	16	1150	322	14
1350	306	15	1350	326	21
1550	306	14	1550	334	23
1750	M I S G		1750	341	28
2000	M I S G		2000	347	33

All data obtained from Double Theodolite tracked pilot-balloon observations.

AIMING AND T-TIME COMPUTER MET MESSAGES  
14 December 1981

JALLEN 1300 MST	LANA 1430 MST	JALLEN 1500 MST	LANA 1614 MST
METCM1332065	METCM1331062	METCM1332065	METCM1331062
141900124883	142050127876	142100124881	142220127876
00000000 28450883	00000000 28410876	00320005 28640881	00000000 28450876
01280003 28280872	01600003 28390866	01304004 28480871	01329004 28420866
02360002 27990846	02315001 28170840	02258003 28210845	02278003 28210840
03544012 27650805	03527003 27760800	03525005 27880804	03562004 27890800
04570017 27380757	04571014 27460752	04543012 27440756	04595020 27650752
05582027 27100711	05599019 27410707	05603023 27150710	05581025 27530707
06586020 26920667	06582020 27230664	06579030 27160667	06605028 27360665
07590026 26760626	07600026 26920624	07599029 26980626	07606026 27120624
08605031 26520588	08599026 26770585	08602025 26720588	08599028 26750586
09603028 26280551	09594028 26440549	09593029 26360551	09596029 26380550
10586033 25980516	10601030 26050514	10584028 25990517	10580030 26010515
11580036 25640483	11584027 25650482	11580030 25630484	11568025 25590482
12553044 25050436	12545035 25140435	12547040 25070437	12545034 25060436

STATION ALTITUDE 4051.00 FEET MSL  
 14 DEC. 81 1300 HRS MST  
 ASCENSION NO. 215

SIGNIFICANT LEVEL DATA  
 3480030215  
 JALLEN  
 TABLE 4

GEODETIC COORDINATES  
 33.16712 LAT DEG  
 106.49511 LON DEG

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE		REL. HUM. PERCENT
		AIR DEGREES	DEWPOINT CENTIGRADE	
882.6	4051.0	11.0	-1.7	41.0
875.1	4284.0	9.1	-2.5	44.0
849.5	5088.2	6.6	-2.8	51.0
834.7	5560.6	4.8	-3.5	55.0
772.3	7626.0	.6	-12.1	38.0
754.1	8254.7	.6	-17.1	25.0
699.6	10218.5	-3.2	-20.4	25.0
673.9	11190.4	-3.8	-21.8	23.0
648.1	12200.8	-5.0	-19.8	30.0
639.7	12537.9	-4.7	-18.1	34.0
597.3	14300.9	-8.0	-17.3	47.0
573.1	15356.2	-8.7	-21.7	34.0
499.6	18811.8	-15.0	-29.0	29.0
440.0	21929.0	-22.0	-35.9	27.0
399.5	24235.9	-28.5	-40.3	31.0
383.4	25201.3	-30.8	-41.2	35.0
343.2	27752.8	-37.6	-42.3	61.0

STATION ALTITUDE 4051.00 FEET MSL  
 14 DEC. 81  
 ASCENSION NO. 215

UPPER AIR DATA  
 3480030215  
 JALLEN

GEODETIC COORDINATES  
 33.16712 LAT DEG  
 106.49511 LON DEG

TABLE 5

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		INJEX OF REFRACTION
							DIRECTION ULGRES(TN)	SPEED KNOTS	
4051.0	882.6	11.0	-1.7	41.0	1079.6	657.5	.0	.0	1.000266
4500.0	868.1	8.4	-2.5	45.9	1071.7	654.4	301.6	1.8	1.000263
5000.0	852.3	6.9	-2.7	50.2	1057.9	652.6	301.6	3.9	1.000260
5500.0	836.6	5.0	-3.4	54.5	1045.4	650.5	301.6	5.9	1.000256
6000.0	821.0	3.9	-5.2	51.4	1030.4	649.1	301.6	7.9	1.000250
6500.0	805.7	2.9	-7.2	47.3	1015.1	647.8	304.7	11.3	1.000244
7000.0	790.7	1.9	-9.3	43.2	1000.1	646.5	308.0	14.7	1.000238
7500.0	776.0	.9	-11.5	39.0	985.3	645.3	314.2	15.6	1.000232
8000.0	761.4	.6	-14.8	30.3	968.0	644.9	319.8	16.3	1.000225
8500.0	747.1	.1	-17.5	25.0	951.6	644.3	325.2	16.8	1.000220
9000.0	732.9	-.8	-18.4	25.0	937.0	643.1	327.8	18.7	1.000216
9500.0	719.1	-1.8	-19.2	25.0	922.5	642.0	328.8	21.4	1.000212
10000.0	705.5	-2.8	-20.0	25.0	908.4	640.8	328.0	23.8	1.000209
10500.0	692.1	-3.4	-20.8	24.4	893.1	640.1	327.5	25.5	1.000205
11000.0	678.9	-3.7	-21.6	23.4	877.1	639.7	328.4	24.1	1.000201
11500.0	665.9	-4.2	-21.1	25.1	861.9	639.1	327.8	23.4	1.000198
12000.0	653.1	-4.8	-20.2	28.6	847.2	638.5	326.6	23.1	1.000195
12500.0	640.6	-4.7	-18.3	33.5	830.8	638.5	328.2	24.5	1.000193
13000.0	628.3	-5.6	-17.8	37.4	817.2	637.6	331.4	26.0	1.000190
13500.0	616.2	-6.5	-17.5	41.1	804.3	636.5	335.5	27.6	1.000187
14000.0	604.3	-7.4	-17.3	44.8	791.5	635.4	337.2	29.7	1.000185
14500.0	592.7	-8.1	-18.0	44.5	778.3	634.5	339.5	30.5	1.000181
15000.0	581.2	-8.5	-20.1	38.4	764.3	634.1	342.6	30.0	1.000177
15500.0	569.8	-9.0	-22.0	33.8	750.9	633.4	342.5	28.7	1.000173
16000.0	558.6	-9.9	-23.0	33.1	738.7	632.3	341.1	27.6	1.000170
16500.0	547.6	-10.8	-24.1	32.3	726.7	631.2	337.0	28.6	1.000167
17000.0	536.9	-11.7	-25.1	31.6	715.0	630.1	333.5	29.7	1.000164
17500.0	526.3	-12.6	-26.2	30.9	703.4	629.0	331.1	31.1	1.000161
18000.0	516.0	-13.5	-27.3	30.2	692.0	627.9	329.5	32.5	1.000158
18500.0	505.8	-14.4	-28.3	29.5	680.8	626.8	328.6	33.9	1.000155
19000.0	495.8	-15.4	-29.4	28.9	669.9	625.6	327.8	34.7	1.000152
19500.0	485.8	-16.5	-30.5	28.6	659.3	624.2	326.9	35.1	1.000150
20000.0	476.0	-17.7	-31.6	28.2	648.8	622.8	323.2	36.1	1.000147
20500.0	466.4	-18.8	-32.7	27.9	638.6	621.4	319.2	37.8	1.000144
21000.0	457.0	-19.9	-33.8	27.6	628.5	620.0	315.2	40.6	1.000142
21500.0	447.8	-21.0	-34.9	27.3	618.5	618.7	312.2	43.3	1.000140
22000.0	438.7	-22.2	-36.0	27.1	608.8	617.2	309.9	46.0	1.000137
22500.0	429.6	-23.6	-36.9	28.0	599.6	615.5	309.6	47.5	1.000135
23000.0	420.7	-25.0	-37.9	28.9	590.5	613.7	309.6	48.9	1.000133
23500.0	412.0	-26.4	-38.8	29.7	581.6	612.0	310.4	49.4	1.000131

STATION ALTITUDE 4051.00 FEET MSL  
 14 DEC. 61  
 ASCENSION NO. 215

UPPER AIR DATA  
 348U030215  
 JALLEN

GEODETIC COORDINATES  
 33.16712 LAT DEG  
 106.49511 LON DEG

TABLE 5 CON'T

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	#INCLINATION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
24000.0	403.5	-27.8	30.6	572.8	610.2	310.4	50.2	1.000129
24500.0	395.0	-29.1	32.1	563.9	608.6	309.3	51.3	1.000127
25000.0	386.7	-30.3	34.2	554.7	607.1	308.5	53.0	1.000125
25500.0	378.5	-31.6	38.0	545.7	605.5	307.8	54.9	1.000123
26000.0	370.3	-32.9	43.1	537.0	603.9	308.4	54.1	1.000121
26500.0	362.4	-34.3	48.2	528.4	602.2			1.000119
27000.0	354.6	-35.6	53.3	519.9	600.5			1.000117
27500.0	347.0	-36.9	58.4	511.6	598.8			1.000115

STATION ALTITUDE 4051.00 FEET MSL  
 14 DEC. 81 1300 HRS MST  
 ASCENSION NO. 215

MANDATORY LEVELS  
 3480030215  
 JALLEN  
 TABLE 6

GEODETIC COORDINATES  
 33.16712 LAT DEG  
 106.49511 LON DEG

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
MILLIBARS	FEET	AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE		DIRECTION DEGREES(TN)	SPEED KNOTS
850.0	5069.	6.6	-2.8	51.	301.6	4.1
800.0	6688.	2.5	-6.0	46.	305.8	12.8
750.0	8391.	.3	-17.4	25.	324.1	16.7
700.0	10194.	-3.2	-20.4	25.	327.7	24.7
650.0	12113.	-4.9	-20.0	29.	327.0	23.4
600.0	14170.	-7.8	-17.3	46.	337.7	30.4
550.0	16381.	-10.6	-23.9	33.	337.8	28.3
500.0	18767.	-15.0	-28.9	29.	328.1	34.5
450.0	21353.	-20.8	-34.6	27.	312.9	42.6
400.0	24168.	-28.4	-40.2	31.	310.0	50.6
350.0	27259.	-36.4	-41.9	56.		



STATION ALTITUDE 4173.44 FEET MSL  
 14 DEC. 81  
 ASCENSION NO. 5

SIGNIFICANT LEVEL DATA  
 348U320005  
 LANA

GEODETIC COORDINATES  
 33.13510 LAT DEG  
 106.15446 LONG DEG

TABLE 7

PRESSURE GEOMETRIC ALTITUDE		TEMPERATURE		REL. HUM. PERCENT
MILLIBARS	MSL FEET	AIR DEGREES	DEWPOINT CENTIGRADE	
876.4	4173.4	10.1	.7	52.0
865.4	4518.6	10.3	.1	49.0
850.0	5008.1	8.8	-1.0	50.0
786.8	7083.9	2.2	-4.5	61.0
783.9	7182.1	2.9	-6.5	50.0
749.0	8388.1	.4	-10.7	43.0
707.6	9888.6	1.1	-12.6	35.0
700.0	10173.6	.3	-12.7	37.0
673.6	11185.5	-3	-11.9	41.0
637.6	12621.5	-3.5	-12.1	51.0
602.1	14104.5	-5.6	-17.3	39.0
584.6	14865.5	-5.3	-15.3	45.0
500.0	18831.7	-14.5	-25.6	38.0
467.5	20494.0	-18.5	-29.0	39.0
436.7	22157.5	-21.3	-32.1	37.0
400.0	24264.2	-27.0	-35.3	45.0
363.9	26482.1	-32.8	-39.1	53.0
350.1	27377.8	-32.9	-42.1	39.0
300.0	30883.0	-42.6		
273.4	32925.3	-47.5		
255.4	34396.7	-50.8		

STATION ALTITUDE 4173.44 FEET MSL  
 14 DEC. 81  
 ASCENSION NO. 5

UPPER AIR DATA  
 3480320005  
 LANA

TABLE 8

GEODETIC COORDINATES  
 33.13510 LAT DEG  
 106.15446 LON DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INJEX OF REFRACTION
		AIR DEGREES	DEWPOINT CENTIGRADE				DIRECTION DEGREES(TN)	SPEED KNOTS	
4173.4	876.4	10.1	.7	52.0	1074.9	656.6	0	0	1.000270
4500.0	866.0	10.3	.1	49.2	1061.5	656.8	181.4	.1	1.000266
5000.0	850.3	8.8	-1.0	50.0	1047.8	655.0	181.4	.4	1.000260
5500.0	834.6	7.2	-1.8	52.6	1034.4	653.1	181.4	.6	1.000256
6000.0	819.2	5.6	-2.6	55.3	1021.2	651.2	259.4	.9	1.000252
6500.0	804.1	4.1	-3.5	57.9	1008.2	649.4	309.9	1.9	1.000248
7000.0	789.3	2.5	-4.4	60.6	995.5	647.5	3.3	5.0	1.000244
7500.0	774.5	2.2	-7.6	48.2	978.1	647.0	33.0	8.3	1.000235
8000.0	760.1	1.2	-9.3	45.3	963.6	645.8	314.7	13.2	1.000230
8500.0	745.0	.5	-10.8	42.4	948.3	644.8	310.3	16.5	1.000225
9000.0	731.8	.7	-11.4	39.7	929.8	645.1	318.4	17.7	1.000220
9500.0	718.1	.9	-12.1	37.1	911.6	645.4	336.2	18.3	1.000215
10000.0	704.6	.8	-12.6	35.8	895.0	645.2	335.6	19.2	1.000211
10500.0	691.4	.1	-12.4	38.3	880.3	644.4	332.1	20.0	1.000208
11000.0	678.4	-.2	-12.0	40.3	864.6	644.1	329.7	20.2	1.000205
11500.0	665.5	-1.0	-11.9	43.2	850.7	643.1	329.1	20.7	1.000202
12000.0	652.9	-2.1	-12.0	46.7	838.0	641.8	332.1	22.3	1.000199
12500.0	640.6	-3.2	-12.1	50.2	825.6	640.5	334.4	23.8	1.000196
13000.0	628.3	-4.0	-13.4	47.9	812.3	639.5	336.1	25.2	1.000192
13500.0	616.3	-4.7	-15.1	43.9	799.0	638.6	337.0	25.6	1.000188
14000.0	604.5	-5.5	-16.9	39.8	785.9	637.7	337.6	25.7	1.000184
14500.0	592.9	-5.4	-16.3	42.1	770.8	637.8	338.3	26.0	1.000181
15000.0	581.5	-5.6	-15.7	44.8	756.3	637.6	338.0	26.4	1.000178
15500.0	570.2	-6.8	-17.0	43.9	744.9	636.2	338.1	27.2	1.000175
16000.0	559.0	-7.9	-18.3	43.0	733.6	634.8	337.6	27.7	1.000171
16500.0	548.1	-9.1	-19.6	42.1	722.5	633.3	337.0	28.0	1.000168
17000.0	537.4	-10.3	-20.9	41.2	711.6	631.9	336.3	28.3	1.000165
17500.0	526.9	-11.4	-22.2	40.4	700.8	630.5	335.5	28.6	1.000162
18000.0	516.7	-12.6	-23.5	39.5	690.3	629.1	334.3	28.6	1.000159
18500.0	506.6	-13.7	-24.8	38.6	679.9	627.7	332.8	28.2	1.000156
19000.0	496.6	-14.9	-26.0	38.1	669.5	626.2	331.4	27.9	1.000153
19500.0	486.7	-16.1	-27.0	38.4	659.2	624.6	330.0	27.5	1.000151
20000.0	476.9	-17.3	-28.0	38.7	649.1	623.3	326.3	28.4	1.000148
20500.0	467.4	-18.5	-29.0	39.0	639.1	621.8	321.8	29.5	1.000146
21000.0	457.9	-19.4	-29.9	38.4	628.3	620.8	315.0	30.9	1.000143
21500.0	448.6	-20.2	-30.8	37.8	617.6	619.7	309.2	32.2	1.000140
22000.0	439.5	-21.0	-31.8	37.2	607.1	618.7	304.2	33.4	1.000138
22500.0	430.5	-22.2	-32.5	36.3	597.5	617.2	302.4	34.8	1.000135
23000.0	421.6	-23.6	-33.3	40.2	588.4	615.5	301.1	36.0	1.000133
23500.0	412.9	-24.9	-34.0	42.1	579.4	613.9	299.9	36.3	1.000131

STATION ALTITUDE 4173.44 FEET MSL  
 14 DEC. 81  
 ASCENSION NO. 5

UPPER AIR DATA  
 3480320005  
 LANA

GEODETIC COORDINATES  
 33.13510 LAT DEG  
 106.15446 LON DEG

TABLE 8 CONT

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION (DEGREES(TN))	SPEED KNOTS	INDEX OF REFRACTION
24000.0	404.4	-26.3	44.0	570.5	612.2	299.2	36.4	1.000129
24500.0	390.0	-27.6	45.9	561.7	610.5	299.4	36.2	1.000127
25000.0	387.6	-28.9	47.7	552.8	608.9	301.3	36.2	1.000125
25500.0	379.5	-30.2	49.5	544.1	607.3	305.1	36.7	1.000123
26000.0	371.5	-31.5	51.3	535.5	605.6	308.3	38.0	1.000121
26500.0	363.6	-32.8	52.7	526.9	604.0	310.5	40.3	1.000119
27000.0	355.9	-33.2	44.9	515.8	604.0	312.1	43.1	1.000116
27500.0	348.2	-33.2	37.6**	505.6	603.5	312.5	47.0	1.000114
28000.0	340.6	-34.6	32.1**	497.4	601.7	312.9	50.0	1.000111
28500.0	333.2	-36.0	26.5**	489.4	600.0	313.1	51.1	1.000110
29000.0	326.0	-37.4	21.0**	481.6	598.2	313.5	51.7	1.000108
29500.0	318.8	-38.8	15.4**	473.9	596.4	314.1	51.9	1.000106
30000.0	311.9	-40.2	9.8**	466.3	594.7	314.6	52.5	1.000104
30500.0	305.1	-41.5	4.3**	458.9	592.9	315.0	53.4	1.000102
31000.0	298.4	-42.9		451.4	591.2	315.0	54.6	1.000101
31500.0	291.7	-44.1		443.6	589.6	314.8	55.8	1.000099
32000.0	285.1	-45.3		435.9	588.1	315.7	58.0	1.000097
32500.0	278.7	-46.5		428.4	586.5	316.8	60.3	1.000095
33000.0	272.5	-47.7		420.9	585.0	318.3	62.2	1.000094
33500.0	266.2	-48.8		413.4	583.5			1.000092
34000.0	260.1	-49.9		405.9	582.1			1.000090

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

MANDATORY LEVELS  
 3480320005  
 LANA

STATION ALTITUDE 4173.44 FEET MSL  
 14 DEC. 81 1430 HRS MST  
 ASCENSION NO. 5

TABLE 9

PRESSURE GEOPOTENTIAL MILLIBARS	FEET	TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE		DIRECTION DEGREES(TN)	SPEED KNOTS
850.0	5005.	8.8	-1.0	50.	181.4	.4
800.0	6636.	3.6	-3.7	59.	336.5	2.5
750.0	8346.	.5	-10.6	43.	311.4	15.5
700.0	10164.	.3	-12.7	37.	334.4	19.5
650.0	12108.	-2.4	-12.0	47.	332.8	22.6
600.0	14179.	-5.6	-17.1	40.	337.8	25.8
550.0	16410.	-8.9	-19.4	42.	337.1	28.0
500.0	18807.	-14.5	-25.6	38.	310.1	32.1
450.0	21396.	-20.1	-30.7	38.	299.3	36.3
400.0	24226.	-27.0	-35.3	45.	312.4	40.0
350.0	27337.	-32.9	-42.1	39.**	315.1	54.2
300.0	30824.	-42.6				

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

STATION ALTITUDE 4051.00 FEET MSL  
 14 DEC. 61 1500 HRS MST  
 ASCENSION NO. 216

SIGNIFICANT LEVELL DATA  
 J480030216  
 JALLEN  
 TABLE 10

GEODETTIC COORDINATES  
 53.16712 LAT UEG  
 106.49511 LON UEG

PRESSURE GEOMETRIC MILLIBARS MSL FEET	TEMPERATURE AIR DEGREE CENTIGRADE	REL. HUM. PERCENT
881.0 4051.0	12.7 2.3	49.0
879.0 4113.6	11.7 .8	47.0
849.8 5036.5	8.6 -2.1	47.0
813.9 6203.4	6.0 -5.6	43.0
753.7 8250.0	.5 -11.2	41.0
699.2 10216.6	-2.8 -17.5	31.0
693.5 10429.9	-2.3 -17.9	29.0
667.1 11444.3	-1.4 -12.9	41.0
593.4 14485.9	-5.7 -17.7	38.0
499.5 18846.9	-15.2 -25.7	40.0
432.9 22350.5	-23.0 -33.9	36.0
399.5 24268.6	-27.6 -34.8	50.0
387.7 24975.8	-29.3 -35.8	53.0
373.1 25676.8	-30.0 -39.9	37.0
331.5 28612.1	-36.3 -43.9	45.0

STATION ALTITUDE 4051.00 FEET MSL  
 14 DEC. 61 1500 HRS MST  
 ASCENSION NO. 216

UPPER AIR DATA  
 3480030216  
 JALLEN  
 TABLE 11

GEODETIC COORDINATES  
 33.16712 LAT DEG  
 106.49511 LONG DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREE CENTIGRADE	REL-HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
4051.0	881.0	12.7	49.0	1070.4	659.7	180.0	5.1	1.000272
4500.0	866.7	10.4	47.0	1062.0	656.9	184.2	3.8	1.000265
5000.0	850.9	8.7	47.0	1049.2	654.8	194.0	2.4	1.000259
5500.0	835.4	7.6	45.4	1034.4	653.4	223.2	1.3	1.000253
6000.0	820.0	6.5	43.7	1019.7	652.1	283.0	2.4	1.000248
6500.0	804.9	5.2	42.7	1005.5	650.5	294.6	5.1	1.000243
7000.0	789.9	3.9	42.2	991.8	648.9	299.6	7.5	1.000238
7500.0	775.2	2.5	41.7	978.2	647.3	302.7	9.8	1.000233
8000.0	760.8	1.2	41.2	964.8	645.7	306.1	11.5	1.000229
8500.0	746.5	.1	39.7	950.7	644.4	315.0	13.2	1.000224
9000.0	732.4	-.8	37.2	935.7	643.3	326.1	15.3	1.000219
9500.0	718.6	-1.6	34.6	920.9	642.3	334.4	20.3	1.000215
10000.0	705.0	-2.4	32.1	906.4	641.3	337.7	25.1	1.000210
10500.0	691.6	-2.2	29.8	886.6	641.5	333.8	27.3	1.000206
11000.0	678.5	-1.8	35.7	870.2	642.1	350.4	28.7	1.000204
11500.0	665.7	-1.5	40.9	852.5	642.5	327.2	29.1	1.000201
12000.0	653.0	-2.2	40.5	838.5	641.7	329.1	29.5	1.000198
12500.0	640.5	-2.9	40.0	824.7	640.8	332.8	30.0	1.000194
13000.0	628.3	-3.6	39.5	811.1	640.0	335.9	28.7	1.000190
13500.0	616.4	-4.3	39.0	797.8	639.1	339.4	27.2	1.000187
14000.0	604.6	-5.0	38.5	784.7	638.3	339.0	26.8	1.000183
14500.0	593.1	-5.7	38.0	771.8	637.4	338.6	26.5	1.000180
15000.0	581.5	-6.8	38.2	759.9	636.1	337.2	26.9	1.000177
15500.0	570.1	-7.9	38.5	748.1	634.7	335.7	27.4	1.000174
16000.0	559.0	-9.0	38.7	736.6	633.4	334.1	27.7	1.000171
16500.0	548.0	-10.1	36.9	725.2	632.1	332.4	27.9	1.000168
17000.0	537.3	-11.2	39.2	714.0	630.8	331.3	28.0	1.000165
17500.0	526.8	-12.3	39.4	703.0	629.5	330.5	28.1	1.000162
18000.0	516.5	-13.4	39.6	692.1	628.1	329.8	28.1	1.000159
18500.0	506.4	-14.4	39.8	681.5	626.8	329.3	28.0	1.000156
19000.0	496.4	-15.5	39.8	670.9	625.5	327.2	28.7	1.000154
19500.0	486.4	-16.7	39.3	660.2	624.1	324.5	29.7	1.000151
20000.0	476.5	-17.8	38.7	649.7	622.7	322.1	30.7	1.000148
20500.0	466.9	-18.9	38.1	639.4	621.3	319.9	31.7	1.000145
21000.0	457.4	-20.0	37.5	629.2	620.0	316.6	33.7	1.000143
21500.0	448.2	-21.1	37.0	619.3	618.6	313.1	36.3	1.000140
22000.0	439.1	-22.2	36.4	609.5	617.2	308.8	39.1	1.000138
22500.0	430.2	-23.4	37.1	599.8	615.8	304.4	42.3	1.000136
23000.0	421.3	-24.6	40.7	590.2	614.3	302.9	45.2	1.000134
23500.0	412.6	-25.8	44.4	580.8	612.9	302.4	47.6	1.000131

STATION ALTITUDE 4051.00 FEET MSL  
 14 DEC. 81 1500 HRS MST  
 ASCENSION NO. 216

UPPER AIR DATA  
 3481030210  
 JALLEN

GEODETIC COORDINATES  
 33.16712 LAT DEG  
 106.49511 LONG DEG

TABLE 1 CONT

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DIRECTION (DEGREES(TM))	WIND DATA SPEED KNOTS	INCLINATION OF REFRACTION	INCLINATION OF REFRACTION
		AIR DEGREES CENTIGRADE	TEMP DEGREES CENTIGRADE							
24000.0	404.0	-27.0	-34.6	48.0	571.5	611.4	302.8	49.2	1.000129	1.000129
24500.0	395.6	-28.2	-35.1	51.0	562.4	609.9	305.8	50.0	1.000127	1.000127
25000.0	387.3	-29.3	-35.9	52.6	553.2	608.4	310.0	51.7	1.000125	1.000125
25500.0	379.1	-29.7	-38.1	43.7	542.4	607.9	315.1	54.9	1.000122	1.000122
26000.0	371.1	-30.3	-40.1	37.4	532.2	607.2	318.2	58.0	1.000120	1.000120
26500.0	363.2	-31.4	-40.8	38.8	523.3	605.7	320.4	60.8	1.000118	1.000118
27000.0	355.4	-32.6	-41.5	40.3	514.6	604.3	322.0	63.3	1.000116	1.000116
27500.0	347.8	-33.7	-42.2	41.7	506.0	602.8			1.000114	1.000114
28000.0	340.4	-34.9	-42.9	43.2	497.6	601.4			1.000112	1.000112
28500.0	333.1	-36.0	-43.7	44.7	489.3	599.9			1.000110	1.000110

MANDATORY LEVELS  
 3480030216  
 JALLEN

STATION ALTITUDE 4051.00 FEET MSL  
 14 DEC. 61 1500 HRS MST  
 ASCENSION NO. 216

GEODETIC COORDINATES  
 33.16712 LAT DEG  
 106.49511 LON DEG

TABLE 12

PRESSURE MILLIBARS	GEOPOTENTIAL FEET	TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE		DIRECTION DEGREES(TN)	SPEED KNOTS
850.0	5027.	8.6	-2.0	47.	194.9	2.4
800.0	6661.	4.8	-6.9	43.	296.4	5.9
750.0	8373.	.3	-11.6	40.	311.6	12.7
700.0	10177.	-2.7	-17.4	31.	336.2	25.9
650.0	12111.	-2.4	-14.0	40.	329.9	29.6
600.0	14185.	-5.3	-17.3	38.	338.8	26.7
550.0	16408.	-9.9	-21.2	39.	332.7	27.9
500.0	18797.	-15.1	-25.7	40.	328.2	28.3
450.0	21381.	-20.9	-31.7	37.	313.8	35.8
400.0	24200.	-27.5	-34.8	50.	304.0	49.6
350.0	27317.	-33.4	-42.0	41.		



GEODETIC COORDINATES  
 33.13510 LAT DEG  
 106.15446 LON DEG

SIGNIFICANT LEVEL DATA  
 3480320000

LANA  
 TABLE 13

STATION ALTITUDE 4173.44 FEET MSL  
 14 DEC. 81 1614 HRS 11ST  
 ASCENSION NO. 6

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR TEMPOINT DEGREES CENTIGRADE	REL. HUM. PERCENT
875.9	4173.4	-1.2	44.0
871.1	4323.8	-1.7	41.0
850.0	4993.4	-2.1	45.0
823.7	5845.4	-3.1	49.0
784.1	7168.4	-8.3	40.0
731.5	9016.6	-12.0	32.0
709.0	10183.2	-9.8	42.0
632.3	12861.5	-14.7	36.0
500.0	18854.8	-23.9	46.0
460.1	20901.9	-27.0	56.0
443.7	21784.1	-32.6	35.0
423.4	22914.8	-33.2	42.0
400.0	24272.7	-36.4	39.0
365.1	26423.0	-42.4	31.0
346.8	27617.5	-44.4	32.0
308.5	30283.6		
300.0	30909.3		
256.3	34360.4		

STATION ALTITUDE 4173.44 FEET MSL  
 14 DEC. 81 1614 HRS MST  
 ASCENSION NO. 6

UPPER AIR DATA  
 3480320000  
 LANA

GEODETIC COORDINATES  
 33.13510 LAT DEG  
 106.15446 LON DEG

TABLE 14

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		EL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION	
		AIR DEGREES	WINDPOINT DEGREES				DIRECTION DEGREES (TN)	SPEED KNOTS		
4173.4	873.9	10.5	-1.2	44.0	1073.1	656.9	00	210.9	.0	1.000265
4500.0	865.5	10.5	-1.8	42.1	1060.4	656.9		210.9	.3	1.000261
5000.0	849.8	9.2	-2.1	45.0	1046.1	655.4		210.9	.7	1.000258
5500.0	834.3	7.8	-2.7	47.4	1032.2	653.7		210.9	1.2	1.000254
6000.0	819.0	6.5	-3.7	47.9	1018.1	652.2		210.9	1.6	1.000249
6500.0	803.9	5.5	-5.6	44.5	1003.2	650.9		297.3	2.6	1.000243
7000.0	789.0	4.4	-7.6	41.1	988.6	649.6		318.0	6.0	1.000237
7500.0	774.4	3.7	-9.1	38.6	972.8	648.7		330.6	11.9	1.000232
8000.0	760.0	3.2	-10.3	36.4	956.7	648.1		334.1	17.3	1.000227
8500.0	745.8	2.7	-11.5	34.2	940.0	647.4		334.5	20.9	1.000222
9000.0	732.0	2.1	-12.8	32.1	925.2	646.7		333.7	23.6	1.000218
9500.0	718.3	1.9	-11.5	36.1	908.4	646.6		331.1	24.6	1.000215
10000.0	704.9	1.8	-10.2	40.4	891.8	646.4		330.5	25.6	1.000213
10500.0	691.6	1.3	-10.4	41.3	876.5	645.9		332.3	26.5	1.000209
11000.0	678.6	.7	-11.3	40.2	862.1	645.1		334.4	27.4	1.000205
11500.0	665.9	.1	-12.2	39.1	847.8	644.4		337.5	27.8	1.000201
12000.0	653.3	-.5	-13.1	37.9	833.6	643.6		340.2	28.1	1.000197
12500.0	641.0	-1.2	-14.0	36.8	820.0	642.9		340.5	27.2	1.000193
13000.0	628.9	-1.9	-14.9	36.2	806.8	642.0		340.9	26.3	1.000190
13500.0	616.7	-3.0	-15.6	37.1	794.4	640.7		340.0	25.9	1.000186
14000.0	604.7	-4.1	-16.3	37.9	782.2	639.3		340.1	25.7	1.000183
14500.0	593.0	-5.2	-17.1	38.7	770.3	638.0		338.1	26.5	1.000180
15000.0	581.5	-6.3	-17.8	39.6	758.5	636.7		337.0	27.3	1.000177
15500.0	570.2	-7.5	-18.6	40.4	746.9	635.3		337.0	28.1	1.000174
16000.0	559.2	-8.6	-19.3	41.2	735.6	634.0		336.3	28.6	1.000171
16500.0	548.3	-9.7	-20.1	42.1	724.4	632.6		335.0	28.9	1.000168
17000.0	537.7	-10.8	-20.9	42.9	713.3	631.3		332.2	28.4	1.000165
17500.0	527.2	-11.9	-21.7	43.7	702.5	629.9		328.3	27.7	1.000162
18000.0	517.0	-13.0	-22.5	44.6	691.8	628.6		325.9	28.0	1.000160
18500.0	507.0	-14.1	-23.3	45.4	681.4	627.2		324.2	28.2	1.000157
19000.0	497.1	-15.3	-24.1	46.7	671.1	625.8		323.3	28.0	1.000154
19500.0	487.1	-16.7	-24.8	49.2	661.2	624.1		321.7	27.3	1.000152
20000.0	477.3	-18.1	-25.6	51.6	651.5	622.4		319.5	26.5	1.000150
20500.0	467.7	-19.5	-26.4	54.0	641.9	620.7		315.8	26.4	1.000147
21000.0	458.2	-20.7	-27.6	53.7	632.0	619.2		312.2	27.3	1.000145
21500.0	448.9	-21.1	-30.6	41.8	620.2	618.7		309.1	29.2	1.000141
22000.0	439.8	-21.8	-32.7	36.3	609.3	617.7		308.4	33.8	1.000138
22500.0	430.7	-23.0	-33.0	39.4	599.7	616.3		307.2	36.8	1.000136
23000.0	421.9	-24.2	-33.4	41.8	590.1	614.8		305.5	38.2	1.000134
23500.0	413.2	-25.2	-34.6	40.7	580.2	613.6		303.5	38.1	1.000131

STATION ALTITUDE 4173.44 FEET MSL  
 14 DEC. 81 1614 HRS MST  
 ASCENSION NO. 6

UPPER AIR DATA  
 348032000L  
 LANA  
 TABLE 14 CONT

GEODETIC COORDINATES  
 33.13510 LAT DEG  
 106.15446 LONG DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
						DIRECTION (DEGREES (TN))	SPEED KNOTS	
24000.0	404.6	-26.2	39.6	570.5	612.3	305.3	38.8	1.000129
24500.0	390.2	-27.1	38.2	560.9	611.1	308.9	40.1	1.000126
25000.0	387.8	-28.1	36.3	551.3	609.9	312.4	42.0	1.000124
25500.0	379.7	-29.1	34.4	541.9	608.7	315.9	43.9	1.000122
26000.0	371.7	-30.1	32.6	532.6	607.4	319.8	46.0	1.000120
26500.0	363.9	-31.1	31.1	523.6	606.2	324.7	48.3	1.000118
27000.0	356.1	-32.2	31.5	514.7	604.8	327.3	51.5	1.000115
27500.0	348.6	-33.2	31.9	506.1	603.5	328.8	55.0	1.000113
28000.0	341.0	-34.5	27.4**	497.7	601.9	329.4	59.0	1.000111
28500.0	333.6	-35.7	21.4**	489.5	600.3	329.2	62.5	1.000109
29000.0	326.4	-37.0	15.4**	481.4	598.7	328.6	65.8	1.000107
29500.0	319.3	-38.2	9.4**	473.5	597.1	327.7	66.7	1.000106
30000.0	312.4	-39.5	3.4**	465.7	595.5	326.7	67.2	1.000104
30500.0	305.5	-40.7		457.9	594.0	326.1	67.0	1.000102
31000.0	298.8	-41.8		449.9	592.5	325.6	67.1	1.000100
31500.0	292.0	-43.1		442.1	590.9	325.3	67.7	1.000098
32000.0	285.4	-44.3		434.5	589.4	324.8	66.2	1.000097
32500.0	279.0	-45.5		427.0	587.8	324.4	64.7	1.000095
33000.0	272.7	-46.7		419.6	586.2	323.9	63.7	1.000093
33500.0	266.6	-48.0		412.4	584.6	323.3	65.2	1.000092
34000.0	260.5	-49.2		405.3	583.0			1.000090

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

GEODETIC COORDINATES  
 33.13510 LAT DEG  
 106.15446 LON DEG

MANDATORY LEVELS  
 3480320000  
 LANA

TABLE 15

STATION ALTITUDE 4173.44 FEET MSL  
 14 DEC. 81  
 ASCENSION NO. 6  
 1614 HRS MST

PRESSURE GEOPOTENTIAL MILLIBARS	FEET	TEMPERATURE		REL. HUM. PERCENT	WIND DATA		
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE		DIRECTION DEGREES(TN)	SPEED KNOTS	WIND DATA KNOTS
850.0	4990.	9.2	-2.1	45.	210.9	0.7	
800.0	6626.	5.2	-6.1	44.	306.3	3.4	
750.0	8346.	2.8	-11.1	35.	334.4	19.9	
700.0	10174.	1.7	-9.8	42.	331.2	25.9	
650.0	12125.	-0.7	-13.3	38.	340.3	27.9	
600.0	14210.	-4.6	-16.6	38.	339.2	26.0	
550.0	16438.	-9.5	-20.0	42.	335.1	28.9	
500.0	18830.	-14.9	-23.9	46.	323.6	28.9	
450.0	21410.	-21.0	-30.2	43.	309.5	28.9	
400.0	24234.	-26.7	-36.4	39.	307.2	39.4	
350.0	27357.	-33.0	-44.1	32.	328.7	54.2	
300.0	30850.	-41.6			325.7	67.0	