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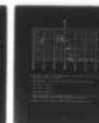
ARMY ELECTRONICS COMMAND WHITE SANDS MISSILE RANGE N--ETC F/G 4/2  
19702A GSRs, MISSILE NUMBER 087, ROUND NUMBER B-11.(U)  
APR 79

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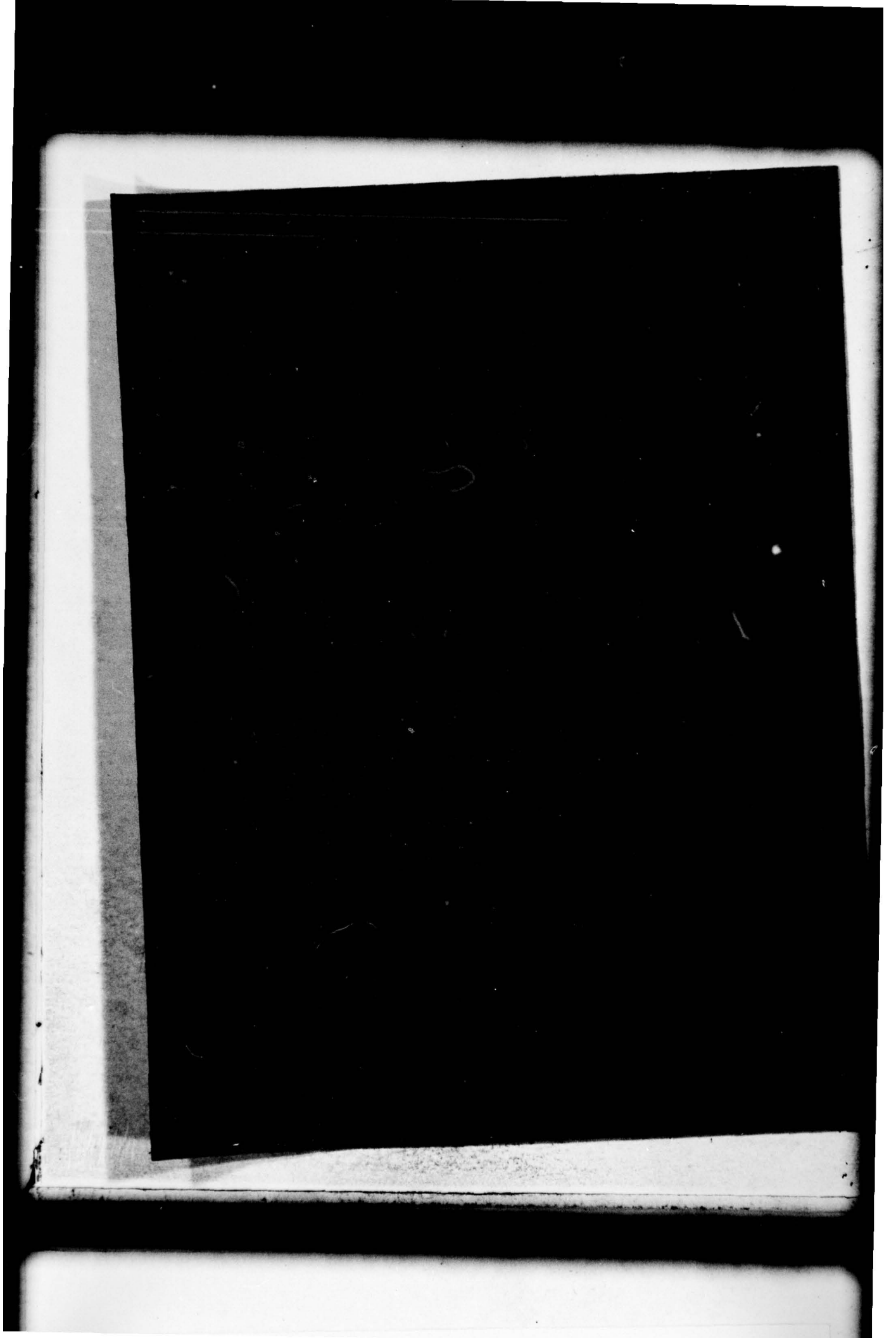
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<b>14</b> <del>EC&amp;M</del> REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM	
1. REPORT NUMBER DR-1002		2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) 19702A GSRS, Missile Number 087, Round Number B-11		5. TYPE OF REPORT & PERIOD COVERED	
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17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)			
18. SUPPLEMENTARY NOTES			
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) 1. Ballistics 2. Meteorology 3. Wind			
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Meteorological data gathered for the launching of 19702A GSRS, Missile Number 087, Round Number B-11, are presented in tabular form.			

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## INTRODUCTION

19702A GSRS , Missile Number 087 , Round Number B-11 , was launched from LC-33 , White Sands Missile Range (WSMR), New Mexico, at 1155 MST, 23 April 1979 . The scheduled launch time was 1145 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 direction and speed, and cloud cover were made at the LC-33 Met Site at T-0 minutes.

(2) Anemometer data were provided from existing pole-mounted and tower-mounted anemometers at LC-33. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

#### b. Upper Air

(1) Low level wind data were obtained from RPTS T-9 pibal observation at:

## SITE AND ALTITUDE

LC-33 1 kilometer (50-meter increments) 1145 MST

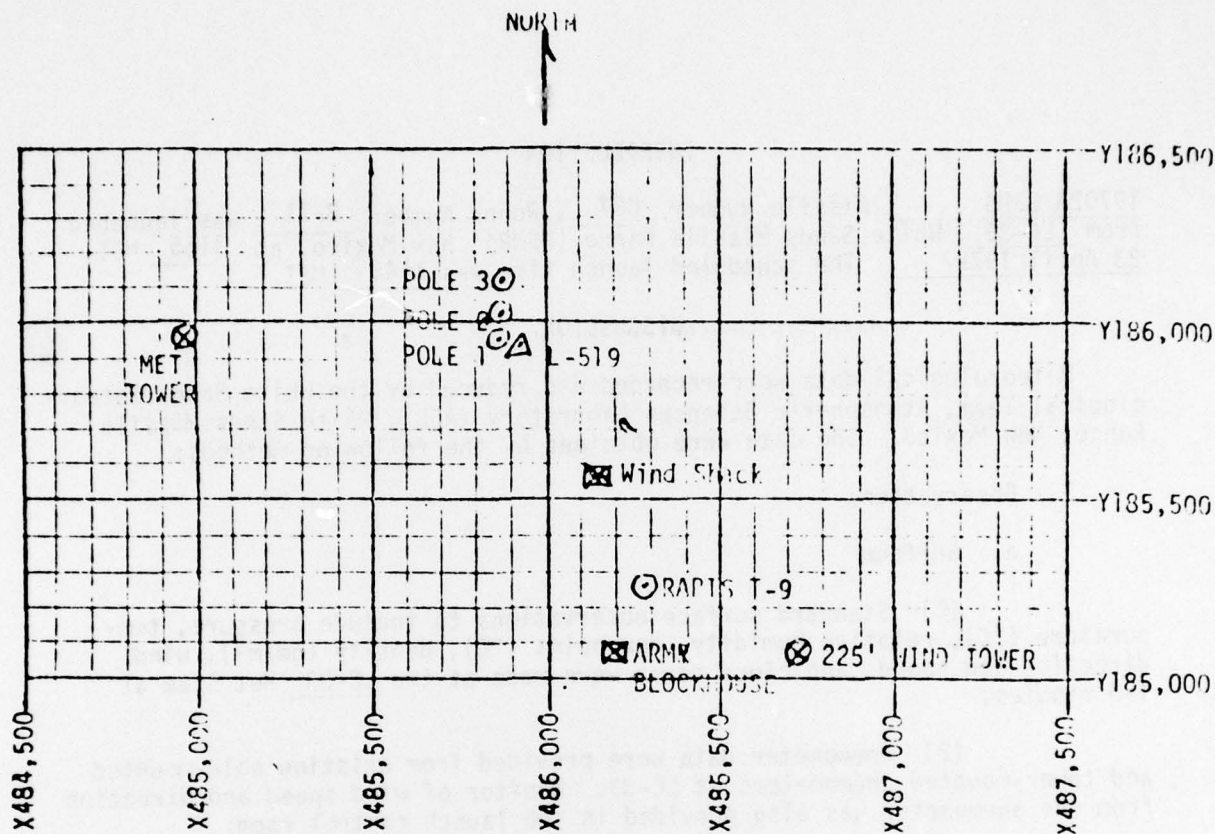
LC-33 1 kilometer (50-meter increments) 1155 MST

(2) Air structure data (rawinsonde) were collected at the following Met Sites. Data were collected from surface to 39,500 feet in 500-foot increments.

## SITE AND TIME

SMR Met Site at T-0 minutes





1. MET TOWER - 4 Bendix Model T-120 Anemometers at 12 ft, 62 ft, 102 ft and 202 ft with E/A recorders in Wind Shack.
2. POLE ANEMOMETER - Bendix Model T-120 with E/A recorders in Wind Shack
  - (a) Pole #1 - 38.7 ft
  - (b) Pole #2 - 53.0 ft
  - (c) Pole #3 - 83.6 ft
3. 225 FT WIND TOWER - 5 Bendix Model T-120 Anemometers at 35 ft, 88 ft, 128 ft, 168 ft and 200 ft with 5 X-Y visual indicators in Blockhouse.
4. RAPTIS T-9 - Radar Automatic Pilot-Balloon Tracking System T-9 Radar

The data are presented in the following tabulations:

ELEVATION	3977.30	FT/MSL
PRESSURE	878.5	MBS
TEMPERATURE	24.3	°C
RELATIVE HUMIDITY	35	%
DEW POINT	7.8	°C
DENSITY	1023	GM/M <sup>3</sup>
WIND SPEED	CALM	MPH
WIND DIRECTION	1	DEGREES
CLOUD COVER	1	Cb
CLOUD COVER	2	Cu
CLOUD COVER	7	C1

TABLE I. SURFACE OBSERVATIONS TAKEN AT 1155 LOCAL TIME, 23 APRIL 1979, AT LC-33, 19702A GSRS, MISSILE NO. 087, ROUND NO. B-11.

LC-33 FIXED POLE ANEMOMETER MEASURED WINDS

POLE #1			POLE #2			POLE #3		
T-TIME SEC	DIR DEG	SPEED MPH	T-TIME SEC	DIR DEG	SPEED MPH	T-TIME SEC	DIR DEG	SPEED MPH
-30	152	03	-30	143	07	-30	159	08
-20	128	05	-20	140	08	-20	161	08
-10	144	05	-10	147	07	-10	154	08
0.0	137	05	0.0	160	08	0.0	140	08
+10	145	05	+10	147	07	+10	143	09

POLE #1 = X485,074.29 Y185,958.90 H4018.74 38.7 ft. AGL

POLE #2 = X485,874.93 Y186,012.00 H4033.57 53.0 ft. AGL

POLE #3 = X485,877.29 Y186,116.06 H4063.92 83.6 ft. AGL

TABLE II

TYPE 19702A GSRS (FC) MISSILE NO. 087 ROUND NO. B-11

LAUNCHED FROM LC-33 DATE 23 Apr 11 1979 TIME 1155 LST

NOTE: WIND DIRECTIONS ARE REFERENCED TO THE FIRING AZIMUTH \_\_\_\_\_

OR TRUE NORTH TRUE NORTH



LC-33 METEOROLOGICAL TOWER ANEMOMETER MEASURED WINDS (202 FT TOWER)

LEVEL #1 12 ft			LEVEL #2 62 ft		
T-TIME SEC	DIR DEG	SPEED MPH	T-TIME SEC	DIR DEG	SPEED MPH
-30	124	09	-30	120	09
-20	123	09	-20	105	09
-10	113	08	-10	113	07
0.0	105	08	0.0	125	05
+10	104	06	+10	101	06
LEVEL #3 102 ft			LEVEL #4 202 ft		
T-TIME SEC	DIR DEG	SPEED MPH	T-TIME SEC	DIR DEG	SPEED MPH
-30	124	11	-30	122	09
-20	134	11	-20	147	06
-10	131	09	-10	137	07
0.0	136	08	0.0	127	10
+10	150	09	+10	125	10

WTSM COORDINATES: X484,082.64 Y185,957.73 H3983.00 (base)

TABLE III

TYPE 19702A GSRS (FC) MISSILE NO. 087 ROUND NO. B-11  
 LAUNCHED FROM LC-33 DATE 23 April 1979 TIME 1155 MST

NOTE: WIND DIRECTIONS ARE REFERENCED TO THE FIRING AZIMUTH \_\_\_\_\_

OR TRUE NORTH TRUE NORTH

PILOT BALLOON MEASURED WIND DATA

HEIGHT METERS	DIR DEG	SPEED MPH
SUR	CALM	CALM
50	CALM	CALM
100	203	04
150	091	10
200	112	07
250	142	05
300	154	06
350	148	05
400	150	07
450	149	08
500	140	08

HEIGHT METERS	DIR DEG	SPEED MPH
550	134	07
600	143	06
650	160	04
700	155	03
750	135	02
800	173	02
850	240	02
900	198	05
950	188	08
1000	196	09
1050		

TABLE IV

RELEASED FROM LC-33 DATE 23 April 1979 TIME 1145 LST

RELEASE POINT COORDINATES (WSTM) X = 486,037.24 Y = 182,350.16 H = 3977.30

MISSILE TYPE 19702A GSRs (FC) MISSILE NO. 087 ROUND NO. B-11

MISSILE LAUNCHED FROM LC-33 DATE 23 April 1979 TIME 1155 LST

NOTE: WIND DIRECTIONS ARE REFERENCED TO THE FIRING AZIMUTH

OR TRUE NORTH TRUE NORTH

PILOT BALLOON MEASURED WIND DATA

HEIGHT METERS	DIR DEG	SPEED MPH
SUR	CALM	CALM
50	CALM	CALM
100	051	01
150	167	04
200	192	05
250	234	08
300	259	08
350	259	04
400	239	04
450	209	06
500	169	06

HEIGHT METERS	DIR DEG	SPEED MPH
550	184	08
600	187	09
650	181	10
700	181	11
750	182	12
800	188	13
850	189	12
900	195	13
950	199	12
1000	213	11
1050		

TABLE y

RELEASED FROM LC-33 DATE 23 April 1979 TIME 1155 LST  
 RELEASE POINT COORDINATES (WSTM) X = 486,037.24 Y = 182,350.16 H = 3977.30  
 MISSILE TYPE 19702A GSRS (FC) MISSILE NO. 087 ROUND NO. B-11  
 MISSILE LAUNCHED FROM LC-33 DATE 23 April 1979 TIME 1155 LST  
 NOTE: WIND DIRECTIONS ARE REFERENCED TO THE FIRING AZIMUTH \_\_\_\_\_  
 OR TRUE NORTH TRUE NORTH



STATION ALTITUDE 3997.30 FEET MSL  
 23 APR. 79 1100 HRS MST  
 ASCENSION NO. 70

SIGNIFICANT LEVEL DATA  
 1130080070  
 S M R

GEODETIC COORDINATES  
 32.48034 LAT DEG  
 106.42307 LON DEG

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT
878.8	3997.3	25.0	7.6	33.0
872.0	4219.5	21.2	3.9	32.0
850.0	4943.0	19.1	4.5	38.0
819.6	5963.3	14.9	3.1	45.0
739.4	8797.0	8.8	1.7	61.0
720.0	9519.1	7.6	-2.7	46.0
700.0	10260.2	6.1	-3.5	50.0
691.4	10612.8	5.4	-4.2	50.0
654.4	12079.7	1.2	-6.4	57.0
645.2	12434.1	.7	-6.2	60.0
627.2	13198.3	-1.7	-7.0	67.0
618.4	13567.6	-2.8	-10.6	55.0
590.6	14760.4	-5.7	-10.8	67.0
556.6	16279.9	-8.9	-24.9	26.0
548.2	16667.0	-8.9	-30.1	16.0
531.8	17440.1	-9.0	-25.8	24.0
500.0	18997.3	-13.1	-30.3	22.0
492.0	19401.3	-13.3	-30.9	21.0
453.8	21404.2	-18.7	-30.3	35.0
438.8	22244.4	-21.3	-31.5	39.0
410.0	23660.2	-25.0	-39.2	25.0
400.0	24450.4	-25.3	-43.1	17.0
362.6	26768.7	-31.0	-47.4	18.0
349.6	27617.8	-32.8	-48.9	18.0
330.8	28890.4	-35.9		
300.0	31099.8	-41.5		
250.0	35088.1	-51.2		
234.8	36420.1	-54.9		
224.6	37333.2	-56.5		
200.8	39639.9	-57.2		



STATION ALTITUDE 3997.30 FEET MSL  
 23 APR. 79 1100 HRS MST  
 ASCENSION NO. 70

UPPER AIR DATA  
 1130000070  
 S M R

GEODETIC COORDINATES  
 32.48034 LAT DEG  
 106.42307 LON DEG

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	DEWPOINT CENTIGRADE				DIRECTION DEGREES (TN)	SPEED KNOTS	
3997.3	878.8	25.0	7.6	33.0	1022.2	674.2	180.0	2.1	1.000272
4000.0	878.7	25.0	7.6	33.0	1022.3	674.1	180.0	2.1	1.000272
4500.0	863.4	20.4	4.2	34.3	1021.0	665.7	182.4	2.6	1.000264
5000.0	848.3	18.9	4.4	30.4	1008.2	667.0	184.1	3.0	1.000262
5500.0	833.3	16.8	3.8	41.8	997.5	664.6	185.4	3.4	1.000258
6000.0	818.5	14.8	3.1	45.2	986.7	662.3	186.4	3.9	1.000255
6500.0	803.8	13.7	3.0	48.0	972.5	661.0	205.5	4.2	1.000252
7000.0	789.3	12.7	2.8	50.9	958.6	659.8	222.6	4.9	1.000248
7500.0	775.1	11.6	2.5	53.7	944.9	658.6	232.8	6.7	1.000245
8000.0	761.1	10.5	2.2	56.5	931.4	657.3	237.9	8.5	1.000241
8500.0	747.4	9.4	1.9	59.3	918.1	656.1	233.7	8.5	1.000238
9000.0	733.9	8.5	.5	57.3	904.9	654.8	228.5	8.3	1.000232
9500.0	720.5	7.6	-2.6	48.3	891.6	653.7	219.6	7.6	1.000223
10000.0	707.3	6.7	-3.2	49.3	878.3	652.5	216.2	7.2	1.000219
10500.0	694.3	5.6	-4.0	50.0	865.4	651.3	218.4	7.0	1.000215
11000.0	681.4	4.3	-4.7	51.8	853.0	649.7	223.0	6.9	1.000211
11500.0	668.8	2.9	-5.5	54.2	842.2	648.0	227.5	6.9	1.000208
12000.0	656.4	1.4	-6.2	56.6	830.9	646.3	222.5	7.0	1.000204
12500.0	644.1	.6	-6.2	60.4	817.9	645.2	216.5	7.1	1.000202
13000.0	631.9	-1.1	-6.8	65.1	807.3	643.3	207.9	7.5	1.000199
13500.0	620.0	-2.6	-9.9	57.2	796.9	641.4	203.6	7.7	1.000192
14000.0	608.2	-3.9	-10.6	59.4	785.4	639.9	202.5	7.8	1.000189
14500.0	596.6	-5.1	-10.7	64.4	773.9	638.4	217.0	7.2	1.000187
15000.0	585.1	-6.2	-12.6	60.5	762.4	637.0	239.3	7.3	1.000182
15500.0	573.8	-7.3	-16.6	47.0	751.0	635.6	260.6	8.5	1.000176
16000.0	562.7	-8.3	-21.5	33.6	739.6	634.2	274.9	10.6	1.000171
16500.0	551.8	-8.9	-27.5	20.3	727.1	633.4	278.1	11.5	1.000165
17000.0	541.1	-8.9	-28.0	19.4	715.1	633.4	282.4	12.2	1.000162
17500.0	530.5	-9.2	-26.0	23.9	699.7	633.1	290.5	12.5	1.000160
18000.0	520.1	-10.5	-27.4	23.3	689.5	631.9	295.6	13.5	1.000157
18500.0	509.9	-11.8	-28.3	22.6	679.4	629.9	296.1	14.3	1.000154
19000.0	499.9	-13.1	-30.3	22.0	669.5	628.4	295.2	15.3	1.000152
19500.0	490.0	-13.6	-30.3	21.7	657.4	627.8	291.8	16.4	1.000149
20000.0	480.3	-14.9	-30.4	25.2	647.6	626.2	291.2	17.9	1.000147
20500.0	470.7	-16.3	-30.2	28.7	638.0	624.5	291.7	18.9	1.000145
21000.0	461.3	-17.6	-30.2	32.2	628.6	622.9	295.3	18.1	1.000143
21500.0	452.0	-19.0	-30.4	35.5	619.4	621.2	293.3	16.9	1.000141
22000.0	442.9	-20.6	-31.2	37.9	610.6	619.2	304.9	14.6	1.000139
22500.0	433.8	-21.9	-32.7	36.6	601.3	617.6	303.6	13.2	1.000136
23000.0	424.9	-23.1	-35.0	32.4	591.7	616.2	312.7	12.3	1.000134

STATION ALTITUDE 3997.30 FEET MSL  
 23 APR. 79 1100 HRS MST  
 ASCENSION NO. 70

UPPER AIR DATA  
 113000070  
 S M R

GEODETIC COORDINATES  
 32.48034 LAT DEG  
 106.42307 LON DEG

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 DIRECTION DEGREES (TN)	SPEED KNOTS	INJEX OF REFRACTION
23500.0	416.2	-24.2	-37.4	28.1	582.2	614.8	315.9	11.8	1.000131
24000.0	407.6	-25.1	-40.0	23.1	572.2	613.7	318.4	11.6	1.000129
24500.0	399.2	-25.4	-43.2	17.0	561.2	613.2	312.4	12.5	1.000126
25000.0	390.8	-26.7	-44.1	17.2	552.2	611.7	307.2	13.7	1.000124
25500.0	382.6	-27.9	-45.0	17.5	543.4	610.2	302.3	15.4	1.000122
26000.0	374.6	-29.1	-46.0	17.7	534.7	608.6	297.9	17.6	1.000120
26500.0	366.7	-30.3	-46.9	17.9	526.1	607.1	293.8	21.0	1.000118
27000.0	359.0	-31.5	-47.8	18.0	517.5	605.9	290.8	24.8	1.000116
27500.0	351.4	-32.6	-48.7	18.0	508.7	604.3	288.7	28.9	1.000114
28000.0	343.8	-33.7	-52.7	12.6**	500.3	602.8	287.4	28.7	1.000112
28500.0	336.5	-34.9	-60.3	5.5**	492.1	601.3	285.1	28.2	1.000110
29000.0	329.2	-36.2			483.9	599.7	279.9	27.6	1.000108
29500.0	322.0	-37.4			475.9	598.1	275.7	27.6	1.000106
30000.0	315.0	-38.7			468.0	595.5	272.4	27.9	1.000104
30500.0	308.1	-40.0			460.3	594.9	273.9	28.0	1.000103
31000.0	301.3	-41.2			452.7	593.3	275.1	28.8	1.000101
31500.0	294.6	-42.5			444.9	591.7	275.3	30.4	1.000099
32000.0	287.9	-43.7			437.1	590.1	274.5	31.8	1.000097
32500.0	281.4	-44.9			429.5	588.5	274.0	33.2	1.000096
33000.0	275.0	-46.1			422.0	587.0	274.3	34.5	1.000094
33500.0	268.8	-47.3			414.7	585.4	274.1	36.2	1.000092
34000.0	262.7	-48.5			407.5	583.9	274.6	36.5	1.000091
34500.0	256.8	-49.8			400.3	582.3	273.8	35.1	1.000089
35000.0	251.0	-51.0			393.6	580.7	273.4	32.7	1.000088
35500.0	245.2	-52.3			386.8	579.9	279.8	32.7	1.000086
36000.0	239.5	-53.7			380.2	577.1	280.3	33.7	1.000085
36500.0	233.9	-55.0			373.6	575.4	280.8	36.3	1.000083
37000.0	228.4	-55.9			366.3	574.2	283.7	39.5	1.000082
37500.0	223.0	-56.5			359.7	573.4	291.3	40.4	1.000080
38000.0	217.7	-57.7			353.4	573.2	282.5	44.7	1.000078
38500.0	212.6	-56.8			342.4	573.0	295.0	48.9	1.000076
39000.0	207.5	-57.0			334.5	572.3	299.0	48.9	1.000075
39500.0	202.6	-57.1			326.8	572.6			1.000073

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

STATION ALTITUDE 3997.30 FEET MSL  
 23 APR. 79 1100 HRS MST  
 ASCENSION NO. 70

MANDATORY LEVELS  
 1130060070  
 S M R

GEODETIC COORDINATES  
 32.48034 LAT DEG  
 106.42307 LON DEG

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
MILLIBARS	FEET	AIR DEGREES	DEWPOINT CENTIGRADE		DIRECTION DEGREES(TN)	SPEED KNOTS
850.0	4939.	19.1	4.5	38.	163.9	2.9
800.0	6529.	13.5	2.9	49.	210.6	4.3
750.0	8401.	9.6	2.0	59.	234.5	8.5
700.0	10270.	6.1	-3.5	50.	247.4	7.1
650.0	12245.	1.0	-6.3	50.	220.0	7.0
600.0	14335.	-4.7	-10.7	63.	210.5	7.4
550.0	16562.	-8.9	-28.7	18.	278.6	11.7
500.0	16971.	-13.1	-30.5	22.	295.3	15.3
450.0	21577.	-19.4	-30.6	36.	300.3	16.4
400.0	24410.	-25.3	-43.1	17.	313.1	12.4
350.0	27541.	-32.7	-48.9	16.	288.5	29.1
300.0	31038.	-41.5			275.2	29.0
250.0	35012.	-51.2			278.8	32.4



STATION ALTITUDE 3997.30 FEET MSL  
 23 APR. 79 1100 HRS MST  
 ASCENSION NO. 70

MRI. MANDATORY LEVELS  
 1130000070  
 S M R

GEODETIC COORDINATES  
 32.48034 LAT DEG  
 106.42307 LON DEG

GEOPOTENTIAL ALTITUDE DECAMETERS	DIRECTION DEG (TN)	SPEED MPS	WIND DATA		E-W MPS	DEW PT DEP DEG C	TEMPERATURE		PRESSURE MILLIBARS
			N-S MPS	DIR			AIR DEG C	WET DEG C	
1067.	279.	17.	-3.		16.	99	-51.2		2.500+2
946.	275.	15.	-1.		13.	99	-41.5		3.000+2
839.	288.	15.	-5.		14.	16	-32.7		3.500+2
744.	313.	6.	-4.		5.	18	-25.3		4.000+2
658.	300.	8.	-4.		7.	11	-19.4		4.500+2
578.	295.	8.	-3.		7.	17	-13.1		5.000+2
505.	279.	6.	-1.		8.	20	-8.9		5.500+2
437.	210.	4.	3.		2.	06	-4.7		6.000+2
373.	220.	4.	3.		2.	07	1.0		6.500+2
313.	217.	4.	3.		2.	10	6.1		7.000+2
250.	234.	4.	3.		4.	08	9.6		7.500+2
202.	211.	2.	2.		1.	11	13.5		8.000+2
151.	184.	2.	2.		0.	15	19.1		8.500+2