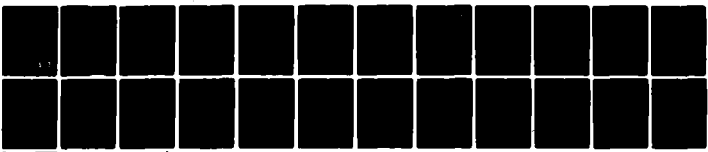


AD-A113 885 ARMY ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND WS--ETC F/6 4/2  
19304B MLRS, 19305A MLRS, MISSILE NUMBERS BN-031, BN-019, BN-01--ETC(U)  
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DR 1226  
Mar. 82

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METEOROLOGICAL DATA REPORT  
19304B MLRS, 19305A MLRS  
Missile Numbers BN-031, BN-019,  
BN-018, BN-017, BN-016, BN-027  
Round Numbers V-230/MD-84, V-231/MD-85,  
V-235/MD-89, V-232/MD-86, V-233/MD-87, V-234/MD-88  
13 March 1982

by

DONALD C. KELLER  
Program Support Coordinator  
Phone Number (505) 679-9568  
AVN Number 349-9568

ATMOSPHERIC SCIENCES LABORATORY  
WHITE SANDS MISSILE RANGE, NEW MEXICO

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UNITED STATES ARMY ELECTRONICS COMMAND

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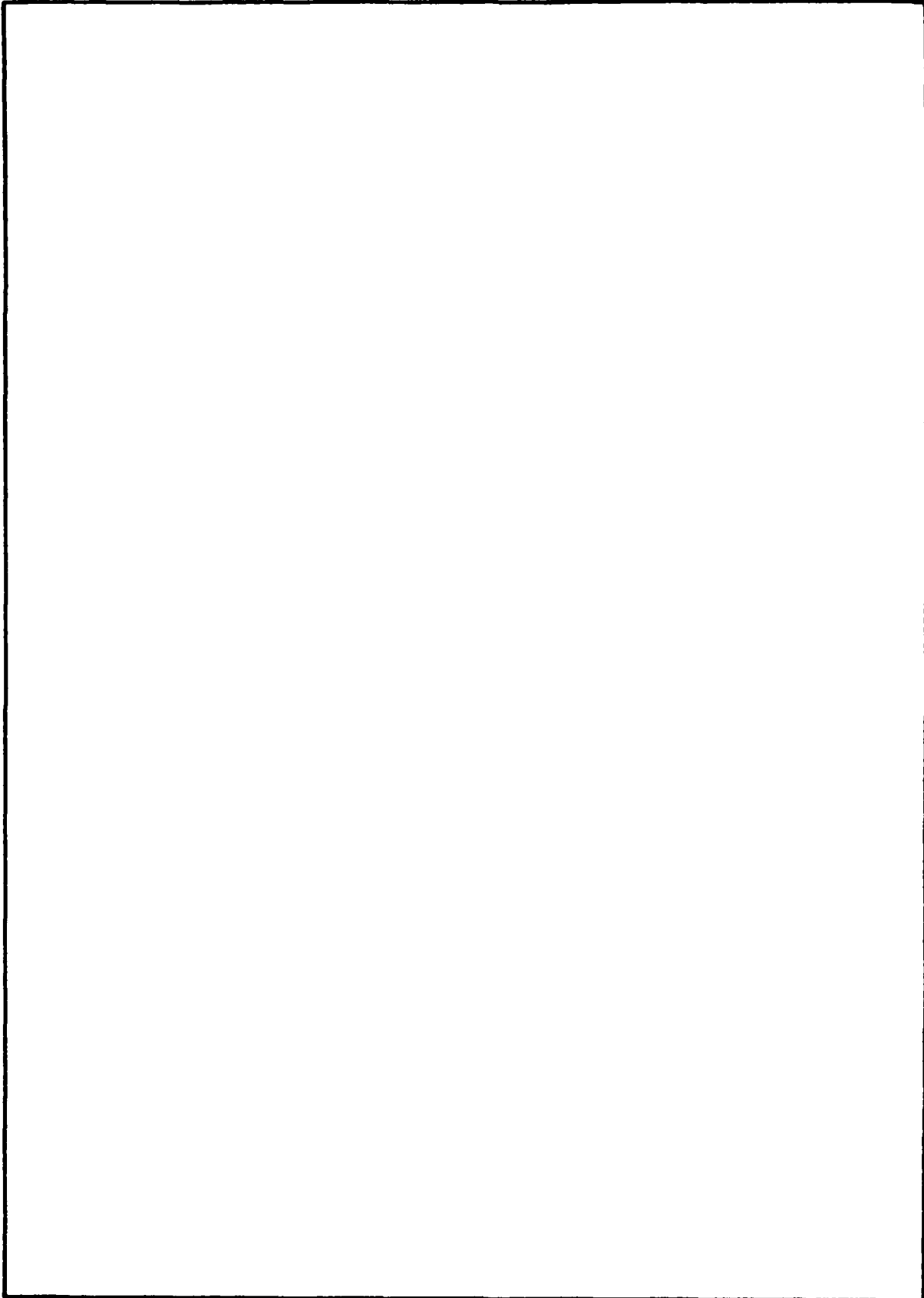
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## INTRODUCTION

19304B/19305A MLRS, Missile Numbers BN-031, BN-019, BN-018, BN-017, BN-16, and BN-027, Round Numbers V-230/MD-84, thru V-235/MD-89, were launched from LC-33, White Sands Missile Range (WSMR), New Mexico, at 1132:26, 1132:30, 1132:35, 1138:10, 1138:30, and 1138:34 MST, 13 March 1982. The scheduled launch times were 1130, 1130:04.5, 1130:09, 1131:00, 1131:04.5 and 1131:09 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 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 pilot-balloon observations at:

### SITE AND ALTITUDE

LC-33      2 Km  
NICK      1550 Meters

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

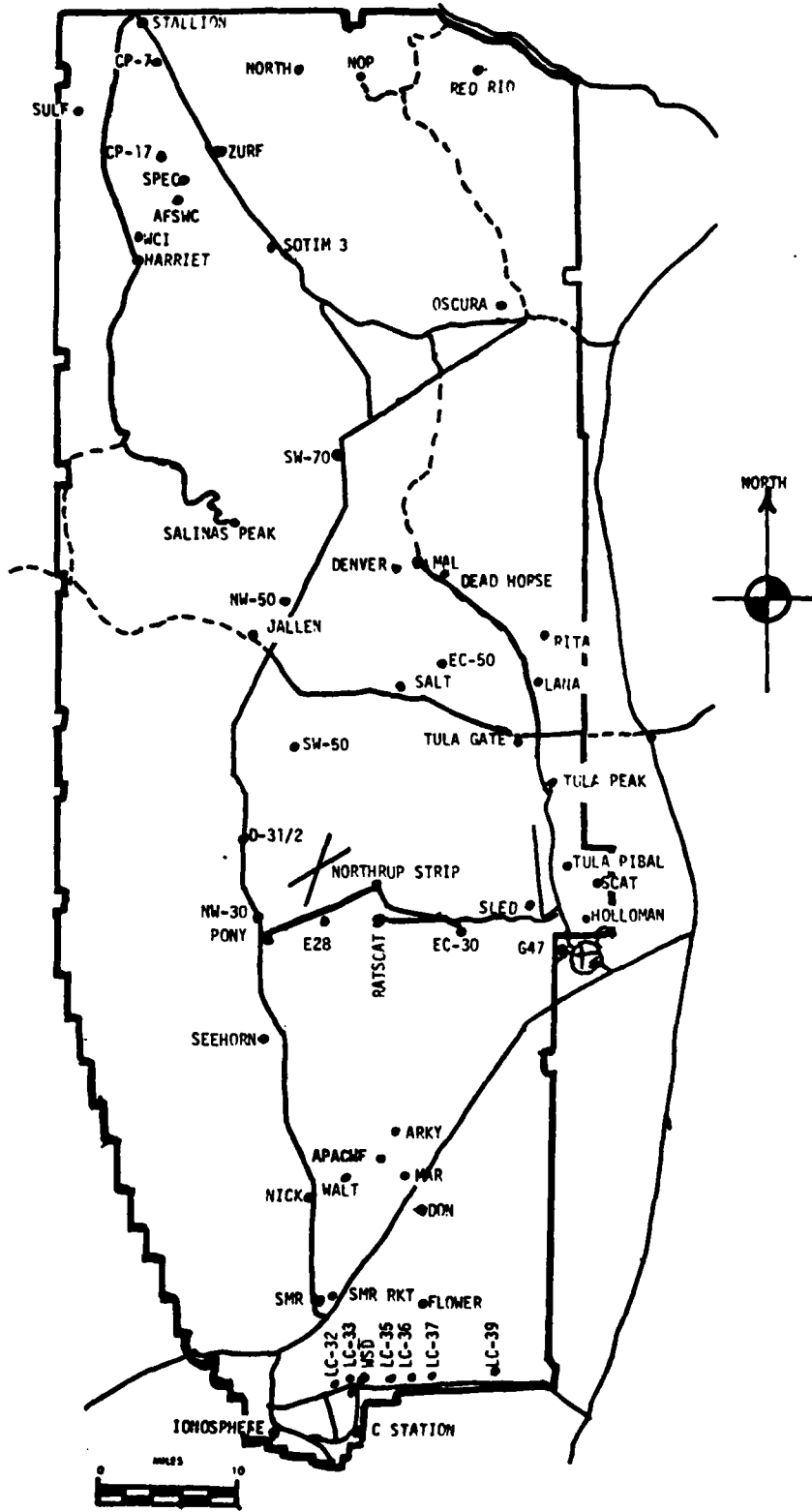
### SITE AND TIME

WSD      0830 MST  
LC-37    0930 MST  
WSD      1030 MST  
WSD      1130 MST

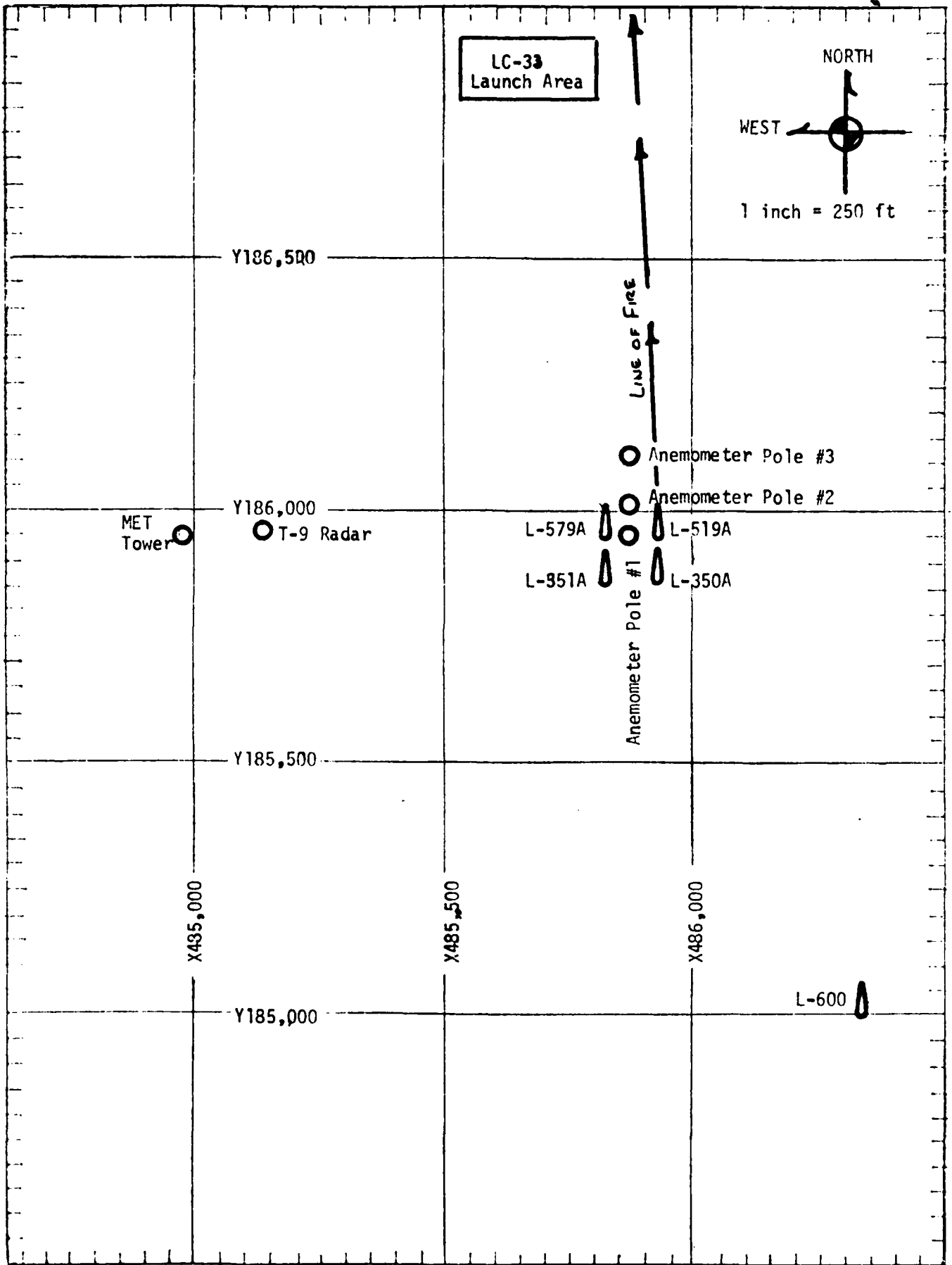
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DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By _____	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A	



# WSMR METEOROLOGICAL SITES







LC-33  
Launch Area

NORTH  
WEST  
1 inch = 250 ft

Y186,500

Y186,000

MET  
Tower

T-9 Radar

L-579A

Anemometer Pole #3

Anemometer Pole #2

L-519A

L-951A

L-350A

LINE OF FIRE

Y185,500

X435,000

X485,500

X486,000

Y185,000

L-600

PROJECT SURFACE OBSERVATION

TABLE 1 STATION LC-33 E & A  
 DATE 13 MAR 82 X = 484,932.64 Y = 185,957.73 H = 3983.00  
 DAY MONTH YEAR

TIME M S J	PRESSURE inbs	TEMPERATURE OF °C	DEW POINT OF °C	RELATIVE HUMIDITY %	DENSITY gm/m <sup>3</sup>	WIND		VISIBIL- ITY
						DIRECTION degs Tn	SPEED kts	
1132	873.2	20.5	3.8	33	1031	170	14	40
1136	873.2	20.5	3.8	33	1031	195	09	40

OBSTRUCTIONS TO VISIBILITY	CLOUDS						REMARKS
	1st LAYER		2nd LAYER		3rd LAYER		
	AMT	HGT	AMT	HGT	AMT	HGT	
	1	CU 6500	8	AS 10,000	1	C1 26,000	VIRGA WNW
	1	CU 6500	8	AS 10,000	1	C1 25,000	VIRGA WNW

PSYCHROMETRIC COMPUTATION

TIME:	1132	1136
DRY BULB TEMP.	20.5	20.5
WET BULB TEMP.	11.2	11.2
WET BULB DEPR.	9.3	9.3
DEW POINT	3.8	3.8
RELATIVE HUMID.	33	33

TABLE 2 LC-33 FIXED POLE ANEMOMETER MEASURED WINDS

POLE #1 X485,874.29 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		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
T-30	123	09	T-30	156	10	T -30	153	11
T-20	124	11	T-20	150	10	T -20	153	17
T-10	122	11	T-10	145	10	T -10	149	15
T 0.0	123	16	T 0.0	151	14	T 0.0	158	19
T+10	130	13	T+10	155	11	T +10	159	17

TABLE 3 LC-33 METEOROLOGICAL TOWER ANEMOMETER MEASURED WINDS (202 FT TOWER)

LEVEL #1, 12 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #2, 62 FEET X484,982.64, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
T-30	155	10	T -30	154	15
T-20	139	12	T -20	156	11
T-10	144	13	T -10	179	12
T 0.0	168	11	T 0.0	174	12
T+10	131	10	T +10	170	16

LEVEL #3, 102 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #4, 202 FEET X484,982, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
T-30	135	16	T -30	144	13
T-20	157	10	T -20	148	11
T-10	175	10	T -10	151	12
T 0.0	164	13	T 0.0	152	15
T+10	166	16	T +10	149	17

TABLE 4 LC-33 FIXED POLE ANEMOMETER MEASURED WINDS

]

POLE #1 X485,874.29 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 H4043.92 43.6 ft. AGL		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
T-30	173	07	T-30	193	06	T-30	206	13
T-20	176	08	T-20	192	08	T-20	200	13
T-10	169	08	T-10	185	07	T-10	195	12
T0.0	168	10	T0.0	196	08	T0.0	195	12
T+10	163	11	T+10	180	09	T+10	200	14

TABLE 5 LC-33 METEOROLOGICAL TOWER ANEMOMETER MEASURED WINDS (202 FT TOWER)

LEVEL #1, 12 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #2, 62 FEET X484,982.64, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
T-30	204	07	T-30	185	10
T-20	165	10	T-20	180	14
T-10	177	10	T-10	191	09
T0.0	194	07	T0.0	196	10
T+10	151	10	T+10	185	10

LEVEL #3, 102 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #4, 202 FEET X484,982, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
T-30	180	12	T-30	175	15
T-20	180	12	T-20	174	14
T-10	181	11	T-10	168	16
T0.0	171	13	T0.0	168	17
T+10	177	10	T+10	156	12

PILOT-BALLOON TRACKING DATA  
DATE 13 MARCH 1982

SITE: LC 33  
TIME: 1132 MST  
WSTN COORDINATES:  
X= 486,372.00  
Y= 184,146.75  
H= 3,981.15

SITE: NICK  
TIME: 1132 MST  
WSTN COORDINATES:  
X= 470,734.56  
Y= 255,775.64  
H= 4,126.57

LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS
SURFACE	170	11
150	MISG	MISG
210	MISG	MISG
270	156	21
330	161	21
390	150	25
450	160	27
510	165	22
570	174	22
630	177	23
690	188	23
750	185	23
810	195	27
870	195	29
930	189	31

Data obtained from Nike-Herc  
Tracked pilot-balloon  
observation.

LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS
SURFACE	164	04
150	145	14
210	143	16
270	141	16
330	140	16
390	140	17
450	143	17
510	145	20
570	157	19
630	174	19
690	175	22
750	176	27
810	178	26
870		
930		

Data obtained from single  
theodolite tracked pilot-balloon  
observation.

TABLE 7

AIMING AND T-TIME COMPUTER MET MESSAGES  
13 MARCH 1982

WSD 0830 MST  
METCM1324064  
131550122874

00142006 28790874  
01075005 28780864  
02224011 28740839  
03253024 28470800  
04257036 28110753  
05281038 27840708  
06292038 27470666  
07309038 27150626  
08333042 26680587  
09336053 26260551  
10359056 25910516  
11365065 25570483  
12376073 25010436

WSD 1030 MST  
METCM1324064  
131750122875

00338018 29410875  
01247026 29220864  
02262028 28850839  
03257027 28500800  
04268025 28050753  
05282036 27620709  
06305039 27250666  
07347044 26930625  
08348043 26460587  
09344043 26070550  
10344044 25780515  
11346051 25410482  
12357065 24890435

LC-37 0930 MST  
METCM1325064  
131650124874

00000000 29050874  
01312005 28900864  
02245010 28640838  
03251030 28400799  
04263041 28060752  
05291045 27750708  
06309044 27460665  
07314042 27030625  
08325051 26640587  
09345047 26240550  
10363052 25800515  
11356063 25460482  
MISSING

WSD 1130 MST  
METCM1324064  
131850122873

00444020 29480873  
01321027 29340863  
02315027 29100838  
03302025 28830799  
04311028 28360753  
05332023 27820709  
06339030 27290666  
07348038 26870626  
08350040 26460587  
09365043 26100550  
10361041 25830515  
11378042 25390482  
12394049 24860435

STATION ALTITUDE 3989.0 FEET MSL  
 13 MAR. 62 0830 HRS MST  
 ASCENSION, NO. 94

SIGNIFICANT LEVEL DATA

0720020094  
 WHITE SANDS

TABLE 8

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT
674.3	3989.0	13.6	53.0
864.4	4304.2	13.7	41.0
850.0	4769.3	14.1	40.0
817.4	5349.3	12.2	40.0
762.0	7785.5	7.6	49.0
700.0	10049.5	4.0	62.0
646.8	12144.2	-1.0	66.0
629.2	12865.9	-3.0	72.0
612.6	13561.2	-4.0	65.0
594.8	16101.6	-10.8	94.0
500.0	16706.6	-16.1	97.0
434.2	21935.6	-22.6	91.0
430.8	22345.1	-24.9	48.0
400.0	24111.8	-27.2	50.0

STATION ALTITUDE 3989.00 FEET MSL  
 13 MAR. 62 0630 HRS, MST  
 ASCENSION NO. 94

UPPER AIR DATA  
 0720020094  
 WHITE BANDS  
 TABLE 9

CELESTIC COORDINATES  
 32.40043 LAT DEG  
 106.37033 LONG DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND M/SEC	WIND DIRECTION CORES (10)	WIND SPEED KNOTS	INDEX OF REFRACTION
3989.0	874.5	15.6	4.2	1050.4	660.9	00.0	6.0	1.000274
4000.0	874.0	13.6	0.1	1050.0	660.9	00.9	6.0	1.000274
4500.0	850.3	13.9	.7	1033.0	660.9	113.1	6.3	1.000261
5000.0	842.9	13.7	.4	1020.8	660.7	120.0	11.9	1.000250
5500.0	827.8	12.8	-.4	1005.7	659.7	120.0	10.0	1.000252
6000.0	812.9	11.8	-1.1	991.1	658.5	141.0	20.1	1.000247
6500.0	790.2	10.6	-1.4	977.2	657.1	142.0	23.6	1.000244
7000.0	783.7	9.4	-1.8	963.0	655.7	142.9	27.5	1.000240
7500.0	769.4	8.2	-2.2	950.2	654.3	143.0	31.6	1.000237
8000.0	755.4	7.2	-2.4	936.1	653.2	145.3	34.9	1.000233
8500.0	741.5	6.4	-2.4	921.5	652.3	147.8	37.5	1.000230
9000.0	727.8	5.7	-2.4	907.0	651.4	151.1	36.4	1.000227
9500.0	714.4	4.9	-2.5	892.8	650.5	153.0	37.7	1.000224
10000.0	701.3	4.1	-2.6	878.8	649.5	159.8	37.3	1.000221
10500.0	688.2	2.9	-3.4	866.1	648.1	163.7	37.1	1.000217
11000.0	675.3	1.7	-4.4	853.8	646.7	164.4	37.5	1.000212
11500.0	662.7	.5	-5.3	841.6	645.3	164.1	38.1	1.000208
12000.0	650.3	-.7	-6.3	829.6	643.8	163.0	38.7	1.000204
12500.0	638.1	-2.0	-6.9	818.0	642.2	167.7	39.3	1.000201
13000.0	626.0	-3.2	-7.7	806.1	640.6	172.6	39.5	1.000197
13500.0	614.0	-3.9	-8.4	793.0	639.6	177.9	39.9	1.000192
14000.0	602.2	-5.2	-9.8	781.4	638.3	181.3	41.1	1.000189
14500.0	590.6	-6.5	-10.1	770.2	636.7	184.1	42.5	1.000187
15000.0	579.2	-7.9	-10.5	759.1	635.1	188.4	44.3	1.000184
15500.0	568.0	-9.2	-10.9	748.3	633.5	188.4	46.2	1.000181
16000.0	557.0	-10.5	-11.5	737.6	631.9	191.0	46.2	1.000178
16500.0	546.0	-11.6	-12.3	726.1	630.6	194.9	50.5	1.000175
17000.0	535.3	-12.6	-13.3	714.6	629.3	197.0	53.5	1.000171
17500.0	524.7	-13.6	-14.2	703.3	628.0	193.9	56.0	1.000168
18000.0	514.3	-14.7	-15.1	692.2	626.8	202.0	57.4	1.000165
18500.0	504.1	-15.7	-16.1	681.2	625.5	203.7	59.1	1.000162
19000.0	494.0	-16.7	-17.1	670.3	624.3	203.7	61.3	1.000159
19500.0	484.1	-17.7	-18.2	659.4	623.0	204.0		1.000155
20000.0	474.3	-18.7	-19.3	648.6	621.8			1.000152
20500.0	464.7	-19.7	-20.5	638.1	620.5			1.000149
21000.0	455.3	-20.7	-21.6	627.7	619.2			1.000146
21500.0	446.1	-21.7	-22.7	617.5	618.0			1.000143
22000.0	437.0	-23.0	-24.9	607.1	616.4			1.000140
22500.0	428.0	-25.1	-33.2	596.9	615.7			1.000136
23000.0	419.1	-25.8	-35.0	587.0	615.0			1.000133



STATION ALTITUDE 5989.00 FEET ASL  
 13 MAR. 62 0830 HRS MST  
 ASCENSION, 110. 94

UPPER AIR DATA  
 0720020094  
 WHITE SANDS

GEODETIC COORDINATES  
 32.40043 LAT DEG  
 106.37033 LONG DEG

TABLE 9 CONT'D

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES CELSIUS	TEMPERATURE DEPOSIT DEGREES CELSIUS	REL. HUM. PERCENT	DENSITY GM/CM <sup>3</sup> METER	SPEED OF SOUND METERS PER SECOND	WIND DIRECTION DEGREES (TN)	WIND SPEED KNOTS	INDEX OF REFRACTION
23500.0	410.4	-26.4	-36.9	36.2	579.3	612.0			1.000151
24000.0	401.9	-27.1	-38.9	31.1	568.8	611.2			1.000128

MANDATORY LEVELS  
 0720020094  
 WHITE SANDS

STATION ALTITUDE 3989.00 FEET MSL  
 13 MAR. 62 0830 HRS MST  
 ASCENSION NO. 94

GEOUTIC COORDINATES  
 32.40043 LAT DEG  
 106.37033 LON DEG

TABLE 10

PRESSURE (GEOPOTENTIAL)	TEMPERATURE	HUMIDITY	WIND DATA	SPEED
MILLIBARS	AIR DEGREES	PERCENT	DIRECTION (DEGREES)	KNOTS
FEET	CENTIGRADE			
850.0	14.1	40.	122.9	10.1
600.0	10.8	43.	141.9	23.2
750.0	6.9	51.	140.3	35.9
1000.0	4.0	62.	160.1	37.3
1200.0	-1.7	60.	163.8	30.7
1400.0	-5.4	71.	181.0	41.4
1630.0	-11.2	94.	193.8	49.6
1860.0	-16.1	97.	204.2	60.0
2125.0	-21.3	92.		
2407.0	-27.2	30.		

STATION ALTITUDE 4051.7 FEET MSL  
 13 MAR. 62 0930 HRS MST  
 ASCENSION NO. 14

SIGNIFICANT LEVEL DATA  
 0720100014  
 LC-37

GEOLYTIC COORDINATES  
 32.40175 LAT DEG  
 100.51232 LONG DEG

TABLE 11

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE	REL. HUM. PERCENT
873.9	4051.4	16.4	43.0
850.0	4921.4	17.9	42.0
813.6	6025.2	11.1	43.0
767.0	7631.2	7.1	36.0
738.4	8556.8	6.0	36.0
700.0	10087.3	2.8	71.0
675.2	11045.6	1.5	64.0
632.2	12775.2	-2.9	71.0
615.2	13483.0	-4.9	63.0
597.8	14223.4	-6.2	64.0
531.6	17203.2	-13.5	80.0
515.4	17574.1	-16.1	56.0
500.0	18724.3	-17.3	97.0
438.6	21919.4	-23.2	96.0
424.0	22728.3	-27.4	54.0

GEODETIC COORDINATES  
32.40175 LAT DEG  
100.31252 LONG DEG

UPPER AIR DATA  
0720180014  
LC-37

TABLE 12

STATION ALTITUDE 4051.37 FEET MSL  
13 MAR. 52 0933 HRS MST  
ASCENSION, NO. 14

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GW/CUBIC METER	SPEED OF SOUND KNOTS	WIND DIRECTION DEGREES (TN)	WIND SPEED KNOTS	INDEX OF REFRACTION
4451.4	873.9	10.4	43.0	1047.8	664.1	0.0	0.0	1.000270
4500.0	859.9	14.4	42.4	1078.7	661.6			1.000263
5000.0	844.5	12.6	42.1	1020.0	659.5			1.000257
5500.0	829.3	11.9	42.6	1010.8	658.6			1.000248
6000.0	814.3	11.1	43.0	995.3	657.7			1.000240
6500.0	799.5	9.9	46.8	981.3	656.3			1.000243
7000.0	785.0	8.7	50.9	967.7	654.9			1.000240
7500.0	770.7	7.4	54.9	954.2	653.5	144.3	30.8	1.000240
8000.0	756.6	6.7	56.7	939.2	652.0	147.2	40.4	1.000236
8500.0	742.7	6.2	57.7	923.7	652.0	153.2	41.9	1.000232
9000.0	729.0	5.2	61.1	909.7	650.9	160.1	43.2	1.000229
9500.0	715.5	4.1	65.7	896.4	649.6	164.0	43.4	1.000226
10000.0	702.3	3.0	70.2	883.4	648.3	167.9	43.1	1.000223
10500.0	689.2	2.2	68.0	869.5	647.4	169.2	42.6	1.000218
11000.0	676.4	1.6	64.3	855.6	646.5	169.6	42.1	1.000215
11500.0	663.6	0.3	65.8	843.3	645.0	170.9	43.3	1.000209
12000.0	651.1	-0.9	67.9	831.4	643.5	172.1	44.8	1.000205
12500.0	638.9	-2.2	69.9	819.6	642.0	174.0	44.5	1.000201
13000.0	626.8	-3.5	68.5	808.2	640.3	175.0	44.0	1.000197
13500.0	614.8	-4.9	63.0	797.2	638.9	179.3	44.2	1.000192
14000.0	603.0	-5.8	63.7	784.5	637.5	182.7	44.5	1.000188
14500.0	591.3	-6.9	65.5	772.4	636.2	184.9	45.3	1.000185
15000.0	579.8	-8.1	68.2	760.9	634.7	186.9	46.2	1.000182
15500.0	568.5	-9.3	70.9	749.6	633.2	189.0	47.3	1.000179
16000.0	557.4	-10.6	73.5	738.4	631.7	191.7	49.3	1.000176
16500.0	546.5	-11.8	76.2	727.5	630.2	194.1	51.4	1.000173
17000.0	535.9	-13.0	78.9	716.7	628.7	196.3	53.6	1.000170
17500.0	525.3	-14.5	86.2	706.0	626.9	197.6	55.5	1.000167
18000.0	514.9	-16.1	96.0	697.0	624.9	199.2	57.4	1.000165
18500.0	504.6	-16.9	96.7	685.2	623.9	200.5	59.3	1.000162
19000.0	494.4	-17.8	96.9	673.7	622.9	201.4	59.8	1.000159
19500.0	484.3	-18.7	96.8	662.3	621.7	201.4	59.8	1.000159
20000.0	474.5	-19.7	96.6	651.5	620.6	201.6	59.8	1.000152
20500.0	464.9	-20.6	96.4	640.6	619.4	201.6	62.2	1.000149
21000.0	455.5	-21.5	96.3	629.9	618.3	201.0	66.1	1.000147
21500.0	446.2	-22.4	96.1	619.5	617.1	200.6	70.0	1.000144
22000.0	437.1	-23.6	91.8	609.6	615.6			1.000141
22500.0	428.1	-26.2	65.9	603.7	612.3			1.000137

AX WIND DATA INFLUENCE TO ISSING RAW AZIMUTH AND DIRECTION ANGLES.

MANDATORY LEVELS  
0720180014  
LC-37

GEODTIC COORDINATES  
32.40175 LAT DEG  
106.31232 LONG DEG

STATION ALTITUDE 4051.37 FEET (SL)  
13 MAR. 62  
ASCENSION, NO. 14

TABLE 13

PRESSURE MILLIBARS	GEOPOTENTIAL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUMID. PERCENT	WIND DATA	
				DIRECTION DEGREES(TN)	SPEED KNOTS
150.0	4618.	12.9	42.	9999.0	9999.0XX
100.0	6481.	10.0	47.	9999.0	9999.0XX
750.0	8279.	6.5	57.	140.5	41.5
700.0	10077.	2.8	71.	100.5	43.1
650.0	12036.	-1.0	68.	172.2	44.9
600.0	14112.	-6.0	64.	163.5	44.7
550.0	16327.	-11.4	75.	193.5	50.7
500.0	18678.	-17.3	97.	200.9	59.8
450.0	21267.	-22.0	96.	200.8	60.3

XX WIND DATA INVALID DUE TO MISSING RAW AZIMUTH AND ELEVATION ANGLES.

STATION ALTITUDE 3989.0 FEET MSL  
 13 MAR. 62 1036 HRS. 51  
 ASCENSION NO. 95

SIGNIFICANT LEVEL DATA  
 072002009J  
 WHITE SANDS

GEODETIC COORDINATES  
 32.40043 LAT DEG  
 106.57033 LONG DEG

TABLE 14

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT
874.5	3989.0	20.0	53.0
860.4	4154.2	19.0	31.0
850.0	4786.7	15.8	35.0
820.8	5755.3	12.4	41.0
811.4	6072.4	12.2	42.0
735.6	8737.4	4.8	61.0
709.0	10060.1	1.5	76.0
662.6	11500.8	-1.8	89.0
636.2	12568.6	-3.2	74.0
627.4	12930.8	-3.9	71.0
584.2	14764.2	-9.5	68.0
552.0	15874.7	-12.2	95.0
500.0	18661.2	-16.9	89.0
475.0	19919.9	-20.4	86.0
462.4	20574.7	-20.6	82.0
447.2	21385.0	-22.2	79.0
424.6	22619.1	-26.3	74.0
417.4	23035.4	-27.3	58.0
410.0	23459.8	-27.9	52.0
400.0	24043.9	-27.6	48.0

STATION ALTITUDE 3989.00 FEET MSL  
 13 MAR. 62 1030 HRS MST  
 ASCENSION NO. 95

UPPER AIR DATA  
 0720020095  
 WHITE SANDS  
 TABLE 15

GEOMETRIC ALTITUDE 3989.00 FEET MSL  
 13 MAR. 62 1030 HRS MST  
 ASCENSION NO. 95

RESULTS COORDINATES  
 32.40043 LAT ULC  
 106.37033 LONG WEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	DIR. CLIM. FEET	WIND VELOCITY (KT)	INDEX OF REFRACTION
3989.0	874.5	20.0	33.0	1035.7	668.1	190.0	18.1	1.000265
4000.0	874.2	19.9	32.9	1035.6	668.1	189.7	18.1	1.000265
4500.0	850.7	17.3	33.2	1027.2	664.8	170.4	18.9	1.000258
5000.0	843.5	15.1	36.3	1016.7	662.3	164.9	20.7	1.000255
5500.0	820.4	13.3	39.4	1004.7	660.3	155.4	23.2	1.000252
6000.0	813.5	12.2	41.8	990.3	659.1	148.0	26.2	1.000248
6500.0	798.7	11.0	45.0	976.5	657.6	145.9	26.4	1.000245
7000.0	769.2	9.6	48.6	963.4	656.0	140.6	24.7	1.000242
7500.0	739.9	8.2	52.2	950.5	654.4	148.4	24.6	1.000239
8000.0	753.8	6.8	55.7	937.8	652.8	151.4	26.5	1.000236
8500.0	742.1	5.5	59.3	923.3	651.2	153.9	28.4	1.000232
9000.0	720.4	4.1	64.0	912.6	649.6	150.1	30.9	1.000229
9500.0	714.9	2.9	69.6	899.8	648.2	157.9	33.4	1.000227
10000.0	701.6	1.6	75.3	886.9	646.7	160.4	35.4	1.000224
10500.0	688.4	.5	80.0	873.9	645.3	164.0	36.6	1.000220
11000.0	673.5	-6.6	84.4	861.1	644.0	167.3	37.9	1.000217
11500.0	662.8	-1.8	88.9	848.5	642.6	175.0	38.8	1.000214
12000.0	650.2	-2.5	82.0	834.7	641.8	182.5	40.5	1.000208
12500.0	637.9	-3.1	75.0	821.1	640.9	187.9	42.1	1.000202
13000.0	625.7	-4.1	71.6	808.6	639.8	191.7	43.5	1.000197
13500.0	613.7	-5.6	76.3	797.6	637.6	194.6	44.5	1.000194
14000.0	601.8	-7.2	80.9	786.8	635.9	195.1	44.2	1.000191
14500.0	590.2	-8.7	85.5	776.2	634.1	195.7	43.8	1.000188
15000.0	578.8	-10.1	89.5	765.1	632.4	195.7	43.4	1.000184
15500.0	567.5	-11.3	92.6	753.7	630.9	195.6	43.0	1.000181
16000.0	556.3	-12.4	94.7	742.1	629.6	195.6	43.2	1.000178
16500.0	545.3	-13.2	93.7	729.8	628.5	194.5	43.3	1.000174
17000.0	534.4	-14.1	92.6	717.7	627.5	194.6	44.0	1.000171
17500.0	523.8	-14.9	91.5	705.6	626.4	193.6	44.7	1.000167
18000.0	513.4	-15.8	90.4	694.1	625.4	193.2	43.8	1.000164
18500.0	503.2	-16.6	89.3	682.7	624.3	192.7	42.8	1.000161
19000.0	493.1	-17.8	88.2	672.2	622.8	193.7	45.7	1.000157
19500.0	483.2	-19.2	87.0	662.3	621.1	194.5	48.5	1.000154
20000.0	473.4	-20.4	85.5	652.1	619.6	194.6	53.4	1.000151
20500.0	463.8	-20.6	82.5	639.2	619.4	194.7	58.0	1.000148
21000.0	454.4	-21.4	80.4	628.4	618.3	196.0	57.2	1.000145
21500.0	445.1	-22.6	78.5	618.4	618.0	196.9	59.4	1.000142
22000.0	435.9	-24.2	76.5	609.7	614.8	202.3	64.1	1.000140
22500.0	426.9	-25.9	74.5	601.2	612.7	203.9	71.9	1.000137
23000.0	418.0	-27.2	59.4	581.9	611.1			1.000134

STATION ALTITUDE 3989.00 FEET MSL  
 13 MAR. 62 1030 HRS PST  
 ASCENSION NO. 95

UPPER AIR DATA  
 0720020093  
 WHITE SANDS

GEODETIC COORDINATES  
 32.40043 LAT DEG  
 106.37033 LON DEG

TABLE 15 CONT'D

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CM <sup>3</sup>	SPEED OF SOUND METERS PER SECOND	WIND DATA		INDEX OF REFRACTION
						DIRECTION DEGREES (IN)	SPEED KNOTS	
23500.0	409.3	-27.9	51.7	581.2	610.2			1.000131
24000.0	400.7	-27.6	48.3	569.4	610.5			1.000129



STATION ALTITUDE 3989.00 FEET ASL  
 13 MAR. 42  
 ASCENSION IS. 95

MAJORITY LEVELS  
 072002009  
 WHITE SANDS  
 TABLE 16

GEODETIC COORDINATES  
 52.40045 LAT DEG  
 106.37033 LONG DEG

PRESSURE EQUIPOTENTIAL		TEMPERATURE		ALL. HUM. PERCENT	WIND DATA	
MILLIBARS	FEET	AIR DEGREES CENTIGRADE	DIR. (POINT)		SPEED KNOTS	DIR. (POINT)
450.0	4783.	15.8	04	35.	109.0	17.9
700.0	6456.	11.1	-4	45.	145.9	20.5
750.0	8209.	6.3	-1.0	57.	152.5	27.3
700.0	10050.	1.5	-2.3	70.	160.8	35.5
650.0	11976.	-2.5	-5.1	62.	182.6	40.5
600.0	14066.	-7.4	-10.0	82.	195.2	44.1
550.0	16267.	-12.9	-15.6	94.	194.7	43.3
500.0	18635.	-16.9	-18.3	89.	193.0	43.7
450.0	21203.	-21.9	-24.3	80.	196.7	57.2
400.0	24004.	-27.6	-35.2	40.		

STATION ALTITUDE 5989.00 FEET MSL  
 13 MAR. 52 1130 HRS MST  
 ASCENSION NO. 96

SIGHTICANT LEVEL DATA  
 0720020090  
 WHITE SANDS

GEODETIC COORDINATES  
 32.40043 LAT DEG  
 106.37033 LONG DEG

TABLE 17

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE AIR DEGREE FAHRENHEIT	REL. HUM. PERCENT
873.0	3089.0	20.8	2.0	30.0
861.0	4354.2	19.9	3.7	42.0
850.0	4742.2	17.6	4.6	42.0
833.4	5294.4	16.1	3.5	43.0
820.0	5611.3	16.3	4.0	44.0
723.4	9188.1	6.5	-9	59.0
700.0	10069.8	2.8	-2.3	90.0
658.2	11695.1	-2.1	-2.0	90.0
644.0	12264.6	-3.0	-0.2	67.0
623.0	13091.9	-4.9	-10.4	65.0
615.4	13441.7	-6.4	-9.1	61.0
601.8	14016.0	-6.9	-12.7	63.0
573.5	15243.2	-10.9	-14.0	70.0
560.4	15826.7	-11.6	-10.8	65.0
552.2	16197.7	-12.5	-10.5	72.0
546.6	16343.6	-12.9	-17.7	67.0
544.2	16563.9	-13.0	-13.4	97.0
512.0	18088.4	-15.0	-15.2	90.0
500.0	18675.8	-17.6	-10.1	90.0
493.2	19012.6	-18.5	-21.1	80.0
480.8	19636.7	-19.3	-24.4	64.0
465.4	20430.1	-21.3	-20.3	64.0
457.0	20829.0	-22.3	-20.9	66.0
442.8	21631.7	-24.1	-29.6	60.0
428.0	22444.8	-25.9	-26.4	79.0
400.0	24052.4	-27.5	-29.0	67.0

UPPER AIR DATA  
 072002090  
 WHITE SANDS

STATION ALTITUDE 3989.0 FEET MSL  
 13 MAR 62 1130 HRS EST  
 ASCENSION NO. 96

VELOCITY CORRECTED  
 52.4043 LAT DEG  
 106.57033 LONG DEG

TABLE 18

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES	TEMPERATURE DEWPOINT DEGREES	RELAT HUM PERCENT	DENSITY GM/CUBIC METER	WIND SPEED KNOTS	WIND DIRECTION DEGREES (TR)	WIND VELOCITY KNOTS	INDEX OF REFRACTION
3989.0	873.0	20.8	2.6	30.0	1031.5	69.0	250.0	20.0	1.000262
4000.0	872.7	20.7	2.7	30.4	1031.1	68.9	249.7	19.9	1.000262
4500.0	857.3	18.4	5.3	42.0	1020.4	66.5	234.0	17.6	1.000267
5000.0	842.2	16.9	4.1	42.5	1007.8	64.7	216.0	16.8	1.000261
5500.0	827.3	15.2	3.9	43.6	992.2	63.9	198.7	17.7	1.000258
6000.0	812.4	13.9	3.6	45.6	977.8	62.8	183.9	20.1	1.000254
6500.0	797.4	12.5	3.0	47.7	964.8	61.2	172.7	23.5	1.000250
7000.0	782.4	11.1	2.3	49.8	952.1	60.0	172.4	24.8	1.000246
7500.0	767.4	9.8	1.6	51.9	939.5	58.0	174.5	25.4	1.000242
8000.0	752.4	8.4	.9	54.0	927.1	56.5	176.5	26.0	1.000237
8500.0	741.8	8.4	.2	56.1	914.9	54.7	179.0	25.9	1.000233
9000.0	723.4	7.0	-0.6	58.2	902.9	53.1	181.5	25.9	1.000229
9500.0	713.0	5.2	-1.4	62.5	892.3	50.9	185.8	26.2	1.000226
10000.0	701.8	3.1	-2.2	68.2	882.0	48.4	185.8	26.9	1.000222
10500.0	686.7	1.5	-2.2	76.1	871.0	46.6	187.6	27.6	1.000220
11000.0	675.8	-0.5	-2.3	84.5	859.4	44.8	189.7	29.1	1.000218
11500.0	665.1	-1.5	-2.5	92.8	847.9	43.0	191.7	30.9	1.000215
12000.0	650.6	-2.6	-5.5	80.5	835.6	41.0	193.4	32.7	1.000207
12500.0	636.2	-3.5	-8.9	66.4	823.1	40.3	193.7	34.5	1.000200
13000.0	620.0	-4.7	-10.2	65.2	811.0	38.9	193.7	36.3	1.000195
13500.0	614.0	-6.5	-9.4	79.2	800.5	36.6	194.7	37.8	1.000194
14000.0	602.2	-6.9	-12.6	63.5	786.7	35.2	196.4	39.1	1.000188
14500.0	590.5	-8.5	-13.1	68.9	776.1	34.2	198.0	40.4	1.000185
15000.0	579.0	-11.2	-13.7	75.0	765.7	32.5	201.7	39.6	1.000182
16000.0	567.7	-12.0	-16.7	72.3	754.1	30.9	205.6	38.8	1.000178
16500.0	556.6	-12.0	-16.7	68.3	741.6	29.9	208.2	38.0	1.000174
17000.0	545.6	-13.0	-14.5	88.3	729.5	28.8	208.3	36.8	1.000174
17500.0	534.8	-13.6	-13.9	97.3	716.7	28.1	203.7	36.5	1.000171
18000.0	524.2	-14.2	-14.5	97.6	704.3	27.3	201.1	36.5	1.000168
18500.0	513.8	-14.9	-15.1	97.9	692.1	26.5	202.0	41.5	1.000165
19000.0	503.6	-16.8	-17.2	96.8	680.6	24.1	205.2	45.8	1.000165
19500.0	493.5	-18.5	-21.0	96.8	674.4	22.9	208.4	49.0	1.000161
20000.0	483.5	-19.1	-23.6	67.5	662.6	21.1	211.9	48.9	1.000157
20500.0	473.7	-20.2	-25.2	68.0	652.0	19.8	214.9	44.2	1.000153
21000.0	464.1	-21.5	-26.4	64.4	642.0	18.2	217.9	42.6	1.000150
21500.0	454.6	-22.7	-27.5	64.7	631.9	16.7	216.6	42.0	1.000147
22000.0	445.2	-23.8	-29.2	61.0	621.7	15.3	219.1	45.3	1.000145
22500.0	436.0	-24.9	-29.0	68.6	611.6	13.9	219.1	49.1	1.000142
23000.0	427.0	-26.0	-28.5	79.3	601.5	12.7	218.0	49.1	1.000140
23500.0	418.1	-26.5	-28.6	81.8	590.1	11.8	218.0	49.1	1.000138
24000.0	410.1	-26.5	-28.6	81.8	580.1	11.2	218.0	49.1	1.000135

STATION ALTITUDE 3989.70 FEET MSL  
 13 MAR. 62  
 ASCENSION NO. 90  
 1130 HRS MST

UPPER AIR DATA  
 0720020090  
 WHITE SANDS

RESULTS COORDINATES  
 32.40043 LAT DEG  
 106.37033 LON DEG

TABLE 18 CONT'D

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	WIND DATA		INDEX OF REFRACTION
		AIR DEGREES CELSIUS	DEWPOINT CELSIUS			DIRECTION DEGREES (TN)	SPEED KNOTS	
23500.0	409.4	-27.0	-28.8	84.3	579.0	011.4		1.000132
24000.0	400.9	-27.4	-29.0	86.7	568.1	010.8		1.000130

STATION ALTITUDE 3989.00 FEET MSL  
 13 MAR. 12 1130 HRS MST  
 ASCENSION NO. 96

MAINTENANCE LEVELS  
 0720020090  
 WHITE SANDS

TABLE 19

PRESSURE GEOPOTENTIAL		TEMPERATURE		HUMIDITY		WIND DATA	
MILLIBARS	FEET	AIR DEGREES	DEWPOINT	PERCENT	DIR. (TN)	SPEED	KNUTS
			CENTIGRADE				
650.0	4739.	17.6	4.0	42.	226.2	17.0	
600.0	6429.	14.1	3.1	47.	174.0	25.0	
750.0	8201.	9.2	.0	52.	177.5	20.0	
700.0	10060.	2.8	-2.3	59.	186.0	27.0	
650.0	12010.	-2.6	-5.7	79.	193.5	32.8	
600.0	14076.	-7.1	-12.0	64.	196.7	39.3	
550.0	16277.	-12.8	-17.3	69.	208.3	37.3	
500.0	18650.	-17.6	-18.1	90.	200.3	50.0	
450.0	21212.	-23.2	-28.3	63.	210.0	47.1	
400.0	24613.	-27.5	-29.0	87.			

CELESTIAL COORDINATES  
 32.40043 LAT UEG  
 106.37033 LON UEG