AD-A109 932 ARMY ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND WS--ETC F/G 4/2
14818B LANCE, MISSILE NUMBER 4576, ROUND NUMBER 370-APT, DECEMB--ETC(U)
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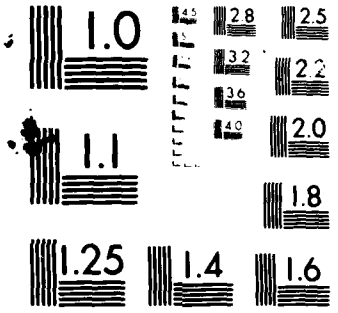

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DR 1211
November 1981
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METEOROLOGICAL DATA REPORT

14818B Lance
Missile Number 4576
Round Number 370-APT
December 6, 1981

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by

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ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, NEW MEXICO

410663

ECOM 0120 82031

UNITED STATES ARMY ELECTRONICS COMMAND

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19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)
Meteorological data gathered for the launching of the 14818B Lance, Missile Number 4576, Round Number 370-APT presented in tabular form.

4

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INTRODUCTION

14818B Lance, Missile Number 4576, Round Number 370-APT, was launched from LC-39, White Sands Missile Range (WSMR), New Mexico, at 1221:34 MST, 6 Nov 1981. 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 (°C), relative humidity, dew point (°C), density (gm/m^3), wind speed and direction, and cloud cover were made at the LC-39 Met Site at T-0 minutes.

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

b. Upper Air:

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

SITE AND ALTITUDE	
LC-39	3 KM

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

SITE AND TIME	
WSD	1220 MST
SMR	1130 MST

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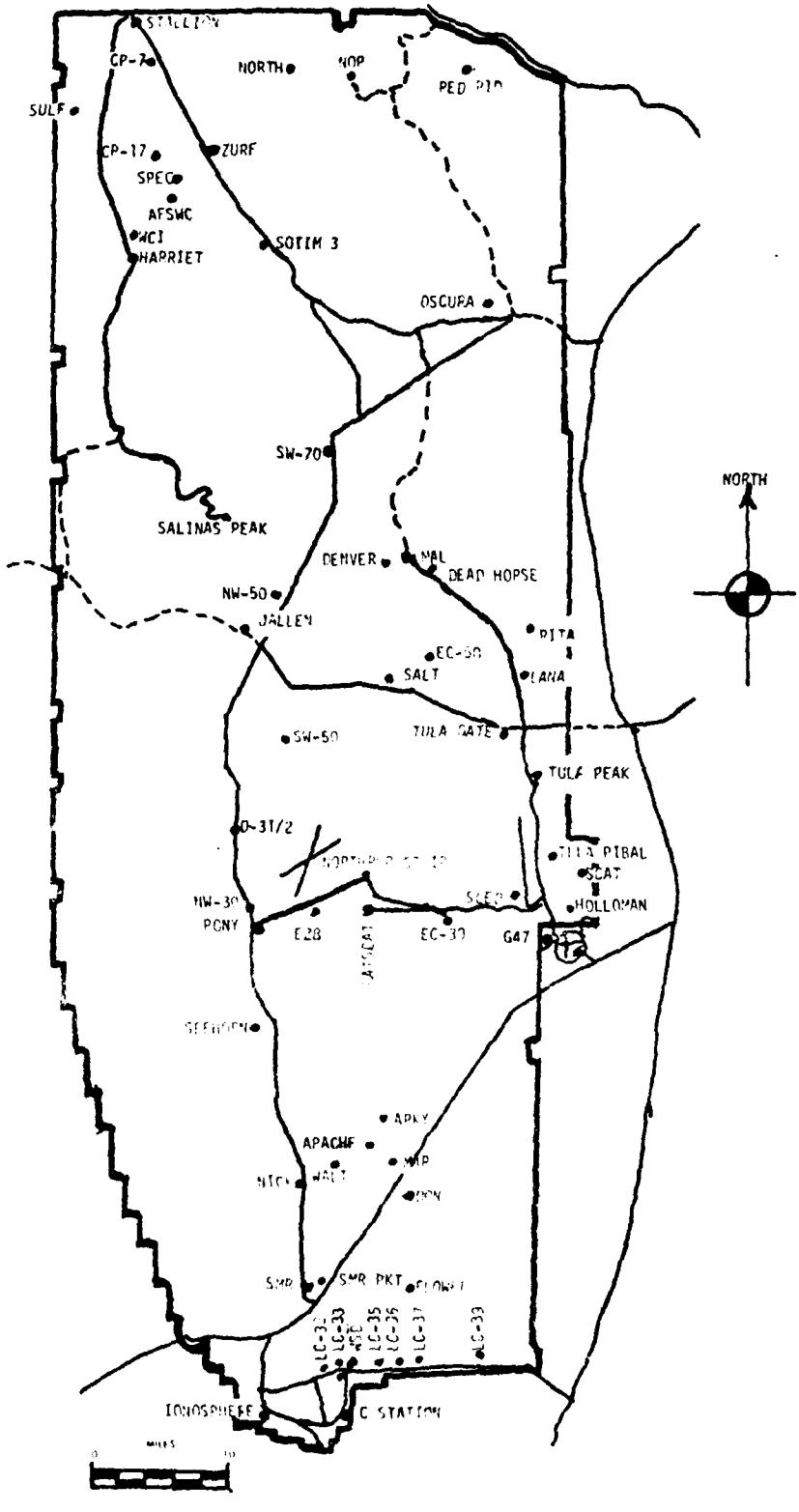
WSMR METEOROLOGICAL SITES



PROJECT SURFACE OBSERVATION

TABLE 1

STATION LC-39

DATE 6 (DAY) ~~Nov~~ (MONTH) ~~1981~~ (YEAR)

X= 530,938.82 Y= 186,564.96 H= 4,063.80

TIME M S I	PRESSURE mbs	TEMPERATURE °F	TEMPERATURE °C	DEW POINT °F	DEW POINT °C	RELATIVE HUMIDITY %	DENSITY gm/m³	WIND DIRECTION degs Tn	WIND SPEED kts	WIND CHARACTER kts	VISIBILITY
1145	883.2		22.8		9.0	41		150	03		40

OBSTRUCTIONS TO VISIBILITY	CLOUDS 1st LAYER AMT	1st LAYER TYPE	1st LAYER HGT	2nd LAYER AMT	2nd LAYER TYPE	2nd LAYER HGT	3rd LAYER AMT	3rd LAYER TYPE	3rd LAYER HGT	REMARKS
	1	SC	6,000	1	AC	12,000				

PSYCHROMETRIC COMPUTATION

TIME: MST	1145		
DRY BULB TEMP.	22.8		
WET BULB TEMP.	14.3		
WET BULB DEPR.	8.5		
DEW POINT	9.0		
RELATIVE HUMID.	41		

PILOT BALLOON MEASURED WIND DATA

TABLE 2

RELEASED FROM LC-39 DATE 6 Nov 1981 TIME 1135 MST

COORDINATES (WSTM) X= 530,938.82 Y= 186,564.96 H= 4,063.80

NOTE: WIND DIRECTIONS ARE REFERENCED TO _____.

HEIGHTS ARE METERS AGL X OR FEET AGL _____.

HEIGHT AGL	DIRECTION DEGREES	SPEED KNOTS	HEIGHT AGL	DIRECTION DEGREES	SPEED KNOTS	HEIGHT AGL	DIRECTION DEGREES	SPEED KNOTS
SFC	140	06	1800	194	23			
60	134	07	1860	198	23			
120	131	08	1920	199	22			
180	128	10	1980	200	22			
240	127	12	2040	201	21			
300	125	14	2100	203	20			
360	125	15	2160	203	20			
420	129	14	2220	203	20			
480	133	14	2280	202	20			
540	137	14	2340	201	20			
600	141	14	2400	201	20			
660	145	13	2460	200	20			
720	149	14	2520	199	20			
780	153	16	2580	199	20			
840	156	17	2640	198	21			
900	159	18	2700	198	21			
960	161	19	2760	197	21			
1020	162	21	2820	196	21			
1080	164	22	2880	195	21			
1140	165	24	2940	194	21			
1200	166	25	3000	194	21			
1260	166	27						
1320	169	27						
1380	171	27						
1440	174	26						
1500	177	26						
1560	180	26						
1620	183	25						
1680	186	25						
1740	190	24						

PILOT BALLOON MEASURED WIND DATA

TABLE 3

RELEASED FROM LC-39 DATE 6 Nov 1981 TIME 1145 MST

COORDINATES (WSTM) X= 530,938.82 Y= 186, 564.96 H= 4, 063.80

NOTE: WIND DIRECTIONS ARE REFERENCED TO _____.

HEIGHTS ARE METERS AGL X OR FEET AGL _____.

HEIGHT AGL	DIRECTION DEGREES	SPEED KNOTS	HEIGHT AGL	DIRECTION DEGREES	SPEED KNOTS	HEIGHT AGL	DIRECTION DEGREES	SPEED KNOTS
SFC	150	03	1800	195	19			
60	143	04	1860	199	18			
120	140	06	1920	200	18			
180	138	08	1980	202	17			
240	137	10	2040	204	17			
300	137	11	2100	206	16			
360	136	13	2160	207	16			
420	136	13	2220	206	16			
480	136	14	2280	205	16			
540	136	14	2340	204	16			
600	135	15	2400	203	16			
660	135	15	2460	203	16			
720	139	16	2520	203	16			
780	142	16	2580	204	16			
840	146	17	2640	204	16			
900	149	18	2700	205	16			
960	151	19	2760	212	16			
1020	156	20	2820	219	17			
1080	160	21	2880	226	17			
1140	163	22	2940	232	18			
1200	167	23	3000	236	19			
1260	169	25						
1320	172	25						
1380	175	24						
1440	178	24						
1500	181	24						
1560	184	23						
1620	186	22						
1680	189	21						
1740	192	20						

TABLE 4

Launch and Impact Area Computer Met Messages

6 November 1981

WSD 1220 MST		SMR 1130 MST	
METCM1324064		METCM1325064	
061230122884		061150122885	
00231010	29740884	00267006	29400885
01258013	29520874	01286009	29290875
02270014	29160849	02272013	29020849
03282012	28770810	03301010	28630810
04316022	28400763	04307014	28200763
05341018	28180718	05327027	28150718
06349019	27780676	06355020	27800676
07357023	27320635	07356022	27350635
08389022	26940597	08374023	26920596
09400023	26740560	09409023	26670560
10420026	26480525	10412029	26480525
11439030	26200492	11438030	26260492
12427040	25680446	12426042	25680446
13435050	24900390	13442051	24880390
14444050	24050339	14445052	23950339
15446056	23230294	15441058	23180293
16447060	22580253	16443061	22610253
17458048	22390218	17452056	22300217
18454040	21820187	18460040	21860186

STATION ALTITUDE 3989.00 FEET MSL
6 NOV. 61 1220 HRS MST
ASCENSION NO. 684

SIGNIFICANT LEVEL DATA
310002684
WHITE SANDS

GEODETIC COORDINATES
32.40045 LAT DEG
106.37033 LON DEG

TABLE 5

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT
865.9	3989.0	23.0	5.0	31.0
809.8	4445.4	19.9	4.8	37.0
850.0	5095.1	17.5	3.4	39.0
820.4	6084.6	14.6	2.2	45.0
791.4	7422.3	10.5	.8	50.0
762.6	8093.8	9.2	-.9	49.0
745.4	8789.9	10.1	1.5	55.0
700.0	10422.8	5.9	-1.0	61.0
675.8	11248.7	4.2	-1.8	65.0
650.4	11981.8	2.3	-3.1	58.0
633.8	13068.2	-.8	-7.1	62.0
616.0	13874.2	-2.3	-12.0	48.0
598.6	14559.0	-4.5	-15.4	42.0
590.0	14933.7	-4.5	-22.4	23.0
577.2	15501.7	-4.3	-19.6	29.0
539.4	17244.1	-8.1	-23.7	27.0
522.2	18071.3	-8.4	-25.8	23.0
500.0	19175.3	-10.4	-27.0	24.0
428.0	23051.6	-18.6	-33.3	28.0
400.0	24698.6	-22.7	-29.6	53.0
377.2	26105.3	-26.4	-30.4	69.0
370.2	26550.3	-27.1	-36.8	39.0
356.4	27447.4	-29.3	-40.3	34.0
323.4	29700.6	-35.8	-45.0	38.0
310.6	30619.3	-38.6	-45.6	42.0
300.0	31403.3	-39.6	-48.9	36.0
291.8	32025.7	-41.0		
262.2	34389.3	-47.1		
250.0	35424.6	-48.7		
245.0	35863.1	-47.6		
225.8	37632.8	-47.9		
200.0	40252.3	-52.7		
179.8	42499.2	-56.4		
170.6	43596.3	-57.1		
150.0	46261.3	-60.3		
137.4	48051.1	-63.6		
122.6	50347.1	-65.6		
112.2	52105.9	-70.0		
100.0	54355.0	-71.4		
37.0	57055.7	-74.1		

STATION ALTITUDE 3989.00 FEET MSL
8 NOV. 81 1220 HRS MST
ASCENSION NO. 084

SIGNIFICANT LEVEL DATA
ST0002084
WHITE SANDS

GEODETIC COORDINATES
32.40043 LAT DEG
106.37033 LON DEG

TABLE 5 CON'T

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT DEGREES CENTIGRADE	REL.HUM. PERCENT
80.8	57496.5	-59.1		
70.0	61329.5	-58.8		
59.4	64603.0	-55.3		
52.0	67305.2	-51.2		
50.0	68108.9	-51.0		
30.8	78145.5	-56.9		

UPPER AIR DATA
31000268A
WHITE SANDS
TABLE 6

STATION ALTITUDE 3989.00 FEET MSL
6 NOV. 81 1220 HRS MST
ASCENSION NO. 684

GEODETIC COORDINATES
32.40043 LAT DEG
106.37033 LON DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
3989.0	885.9	23.0	5.0	31.0	1035.9	671.7	130.0	9.9	1.000268
4000.0	885.0	22.9	5.0	31.1	1035.7	671.6	130.3	9.9	1.000268
4500.0	865.1	19.7	4.7	37.2	1028.9	667.9	140.9	12.0	1.000267
5000.0	852.9	17.9	3.6	38.7	1017.4	665.7	148.2	14.4	1.000262
5500.0	839.8	16.3	2.9	40.6	1004.8	663.9	151.2	14.0	1.000258
6000.0	822.9	14.8	2.3	42.7	992.1	662.2	154.2	11.9	1.000254
6500.0	808.1	13.4	1.8	45.2	979.2	660.6	152.2	11.1	1.000250
7000.0	793.8	12.0	1.3	47.8	966.4	658.9	166.1	15.2	1.000247
7500.0	779.4	10.8	.8	49.9	953.8	657.3	169.8	19.0	1.000243
8000.0	765.2	9.4	-.7	49.1	940.7	655.8	176.1	21.8	1.000237
8500.0	751.3	9.7	.5	52.3	922.3	656.3	181.7	22.8	1.000235
9000.0	737.7	9.8	1.2	55.8	905.9	658.2	188.2	21.3	1.000233
9500.0	724.2	8.3	.4	57.8	893.3	654.6	191.2	18.7	1.000229
10000.0	711.0	7.0	-.4	59.4	881.3	653.1	194.0	16.4	1.000225
10500.0	698.3	5.7	-1.1	61.4	869.2	651.6	196.2	16.3	1.000221
11000.0	685.1	4.7	-1.5	63.8	858.4	650.4	197.7	17.0	1.000218
11500.0	672.4	3.5	-2.9	62.8	844.3	648.9	197.3	18.3	1.000213
12000.0	659.9	2.2	-3.1	58.1	832.8	647.3	197.3	20.1	1.000208
12500.0	647.8	.8	-6.1	59.9	821.8	645.8	197.9	22.0	1.000203
13000.0	635.4	-.8	-7.0	61.7	811.3	643.8	200.9	23.1	1.000199
13500.0	623.4	-1.8	-9.9	53.9	798.9	642.3	204.8	23.9	1.000193
14000.0	611.8	-3.0	-12.8	46.3	787.8	640.8	211.0	23.2	1.000187
14500.0	600.0	-4.3	-15.2	42.3	778.8	639.1	217.0	22.7	1.000183
15000.0	588.3	-4.3	-22.1	23.7	762.3	638.8	222.2	22.3	1.000175
15500.0	577.2	-4.3	-19.8	29.0	747.3	639.0	223.4	22.8	1.000173
16000.0	566.1	-5.4	-20.8	28.4	736.0	637.7	224.7	22.7	1.000170
16500.0	555.2	-6.3	-22.0	27.9	724.3	636.4	227.1	22.7	1.000167
17000.0	544.3	-7.8	-23.2	27.3	713.3	635.1	230.1	23.1	1.000164
17500.0	534.0	-8.2	-24.3	23.8	701.7	634.3	234.1	24.4	1.000161
18000.0	523.7	-8.4	-25.8	23.3	688.8	634.1	237.8	25.8	1.000157
18500.0	513.3	-9.2	-26.2	23.4	677.3	633.1	240.3	27.1	1.000155
19000.0	503.3	-10.1	-26.8	23.8	666.4	632.0	243.2	28.4	1.000152
19500.0	493.3	-11.1	-27.3	24.2	655.7	630.8	245.0	30.3	1.000150
20000.0	483.7	-12.1	-28.3	24.4	645.3	629.3	246.3	32.3	1.000147
20500.0	474.1	-13.2	-29.1	24.7	635.1	628.2	245.0	34.8	1.000145
21000.0	464.7	-14.3	-29.9	24.9	625.1	627.0	243.4	37.3	1.000142
21500.0	455.3	-15.3	-30.7	25.2	615.2	625.7	241.2	39.0	1.000140
22000.0	446.4	-16.4	-31.6	25.3	605.3	624.4	239.4	40.2	1.000137
22500.0	437.6	-17.4	-32.4	25.7	595.9	623.1	238.7	40.4	1.000135
23000.0	428.9	-18.3	-33.2	26.0	586.3	621.8	239.4	41.0	1.000133

UPPER AIR DATA
310002664
WHITE SANDS

STATION ALTITUDE 3969.00 FEET MSL
6 NOV. 81 1220 HRS MST
ASCENSION NO. 084

GEODETIC COORDINATES
32.40043 LAT DEG
106.37033 LON DEG

TABLE 6 CON'T

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
23500.0	420.2	-19.7	-31.7	33.4	577.4	620.3	241.0	42.0	1.000131
24000.0	411.6	-21.0	-30.3	41.3	568.4	618.8	242.7	44.1	1.000129
24500.0	403.3	-22.2	-29.8	49.7	559.6	617.3	244.0	46.6	1.000128
25000.0	395.0	-23.3	-29.7	58.4	550.9	615.7	244.3	50.0	1.000126
25500.0	386.8	-24.8	-29.9	62.1	542.4	614.1	244.7	52.1	1.000124
26000.0	378.9	-26.1	-30.3	67.8	534.0	612.5	245.0	53.3	1.000122
26500.0	371.0	-27.0	-33.9	42.4	524.9	611.3	245.3	53.1	1.000119
27000.0	363.2	-28.3	-38.3	36.3	516.7	609.7	245.9	52.4	1.000116
27500.0	355.6	-29.6	-40.4	34.1	508.6	608.0	246.9	50.8	1.000114
28000.0	348.0	-31.0	-41.4	33.0	500.7	606.2	248.4	49.9	1.000113
28500.0	340.6	-32.4	-42.4	33.9	492.8	604.3	250.2	49.2	1.000111
29000.0	333.3	-33.8	-43.3	36.8	485.1	602.7	251.3	49.4	1.000109
29500.0	326.2	-35.2	-44.3	37.8	477.6	600.9	252.2	49.7	1.000107
30000.0	319.2	-36.7	-45.3	39.3	470.2	599.1	252.3	51.0	1.000105
30500.0	312.2	-38.2	-46.4	41.3	463.0	597.1	252.2	52.2	1.000104
31000.0	305.4	-39.1	-47.7	39.1	454.3	596.1	251.7	53.2	1.000102
31500.0	298.7	-39.8	-50.3	30.4**	445.9	595.1	251.4	53.8	1.000100
32000.0	292.1	-40.9	-73.9	1.3**	438.3	593.7	251.3	53.8	1.000098
32500.0	285.6	-42.2			430.8	592.0	251.0	54.3	1.000096
33000.0	279.2	-43.3			423.6	590.4	250.3	56.3	1.000094
33500.0	273.0	-44.8			416.4	588.7	250.0	57.9	1.000093
34000.0	266.9	-46.1			409.4	587.0	249.7	58.7	1.000091
34500.0	260.9	-47.3			402.3	585.3	250.0	59.3	1.000090
35000.0	254.9	-48.0			394.3	584.3	251.0	59.7	1.000088
35500.0	249.1	-48.3			386.3	583.9	252.2	59.7	1.000086
36000.0	243.3	-47.6			378.0	583.1	253.3	59.2	1.000084
36500.0	237.9	-47.6			367.3	583.1	254.7	57.1	1.000082
37000.0	232.3	-47.6			359.1	583.1	255.9	54.8	1.000080
37500.0	227.2	-47.6			351.0	583.1	256.3	52.8	1.000078
38000.0	222.1	-48.0			343.3	584.6	256.6	51.0	1.000077
38500.0	217.0	-49.0			337.2	583.3	255.9	50.0	1.000075
39000.0	212.0	-50.1			331.0	581.9	255.3	48.9	1.000074
39500.0	207.1	-51.1			325.0	580.3	254.7	47.0	1.000072
40000.0	202.4	-52.2			319.0	579.1	254.1	45.2	1.000071
40500.0	197.7	-53.1			312.9	577.9	254.1	43.0	1.000070
41000.0	193.0	-53.9			306.8	576.6	254.3	40.9	1.000068
41500.0	188.3	-54.2			300.7	575.7	255.9	39.2	1.000067
42000.0	184.1	-55.6			294.8	574.6	257.8	37.4	1.000066
42500.0	179.8	-56.4			289.0	573.6	260.8	35.6	1.000064
43000.0	175.5	-58.7			282.3	573.1	263.2	33.8	1.000063

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

UPPER AIR DATA

STATION ALTITUDE 3969.00 FEET MSL — 310002068A — GEODETIC COORDINATES

6 NOV. 81 — 1220 HRS MST — WHITE SANDS — 32.40043 LAT DEG

ASCENSION NO. 084 — TABLE 6 CON'T — 106.37033 LON DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
43500.0	171.4	-57.0			276.3	572.7	264.6	32.3	1.000062
44000.0	167.3	-57.6			270.4	572.0	265.6	31.0	1.000060
44500.0	163.3	-58.2			264.7	571.2	265.3	30.7	1.000059
45000.0	159.4	-58.8			259.1	570.4	264.9	30.7	1.000058
45500.0	155.6	-59.4			253.6	569.6	264.0	31.4	1.000056
46000.0	151.9	-60.0			248.3	568.8	263.3	32.1	1.000055
46500.0	148.3	-60.7			243.1	567.8	264.0	32.8	1.000054
47000.0	144.7	-61.7			238.3	566.8	264.9	33.5	1.000053
47500.0	141.2	-62.8			233.5	565.3	267.4	33.8	1.000052
48000.0	137.7	-63.5			228.9	564.1	269.9	34.0	1.000051
48500.0	134.4	-64.0			223.8	563.4	272.3	33.0	1.000050
49000.0	131.1	-64.4			218.8	562.8	275.2	32.0	1.000049
49500.0	127.9	-64.9			213.9	562.2	278.8	28.4	1.000048
50000.0	124.7	-65.3			209.1	561.7	277.9	24.3	1.000047
50500.0	121.7	-66.0			204.6	560.7	276.4	22.4	1.000046
51000.0	118.6	-67.2			200.7	559.0	271.7	22.9	1.000045
51500.0	115.7	-68.5			196.9	557.3	267.6	24.1	1.000044
52000.0	112.8	-69.7			193.2	555.6	264.8	27.5	1.000043
52500.0	110.0	-70.2			188.8	554.9	262.7	30.9	1.000042
53000.0	107.2	-70.6			184.3	554.3	262.3	29.8	1.000041
53500.0	104.5	-70.9			179.9	554.1	261.9	28.4	1.000040
54000.0	101.8	-71.2			175.7	553.7	261.3	25.7	1.000039
54500.0	99.3	-71.5			171.5	553.2	260.4	22.4	1.000038
55000.0	96.7	-72.0			167.6	552.5	261.8	19.3	1.000037
55500.0	94.3	-72.5			163.7	551.8	266.2	16.6	1.000036
56000.0	91.9	-73.0			159.9	551.1	274.3	16.0	1.000036
56500.0	89.5	-73.5			156.3	550.4	284.1	17.4	1.000035
57000.0	87.3	-74.0			152.7	549.7	291.3	18.4	1.000034
57500.0	85.0	-72.8			147.7	551.8	297.3	18.8	1.000033
58000.0	82.9	-70.8			142.7	554.1	301.4	18.8	1.000032
58500.0	80.8	-69.1			137.9	556.5	299.5	18.5	1.000031
59000.0	78.8	-69.0			134.4	556.6	298.2	18.1	1.000030
59500.0	76.8	-69.0			131.0	556.6	297.4	19.1	1.000029
60000.0	74.9	-68.9			127.7	556.7	296.7	20.3	1.000028
60500.0	73.0	-68.9			124.5	556.8	299.6	19.5	1.000028
61000.0	71.2	-68.8			121.4	556.9	307.3	17.2	1.000027
61500.0	69.4	-68.6			118.2	557.2	315.2	14.6	1.000026
62000.0	67.7	-68.1			115.0	557.9	318.0	9.1	1.000026
62500.0	66.0	-67.5			111.8	558.6	290.6	4.0	1.000025
63000.0	64.4	-67.0			108.8	559.3	237.6	3.3	1.000024

UPPER AIR DATA
31000020684
WHITE SANDS
TABLE 6 CON'T

STATION ALTITUDE 3959.00 FEET MSL
6 NOV. 81 1220 HRS MST
ASCENSION NO. 684

GEODETIC COORDINATES
32.40045 LAT DEG
106.37033 LON DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
63500.0	62.5	-66.5			105.8	560.1	208.7	5.5	1.000024
64000.0	61.2	-65.9			102.9	560.8	206.5	6.0	1.000023
64500.0	59.7	-65.4			100.1	561.5	224.2	4.7	1.000022
65000.0	58.5	-64.7			97.5	562.5	250.0	4.1	1.000022
65500.0	56.8	-63.9			94.6	563.5	281.5	4.0	1.000021
66000.0	55.5	-63.2			92.0	564.5	307.1	5.0	1.000020
66500.0	54.1	-62.4			89.4	565.5	323.3	6.1	1.000020
67000.0	52.8	-61.7			87.0	566.5	334.6	7.5	1.000019
67500.0	51.5	-61.5			84.7	567.0	339.7	8.1	1.000019
68000.0	50.3	-61.5			82.8	566.7	339.8	8.1	1.000018
68500.0	49.1	-61.4			80.7	566.9	339.3	8.1	1.000018
69000.0	47.9	-61.2			78.7	567.2	324.1	8.5	1.000018
69500.0	46.8	-60.9			76.8	567.5	310.7	9.1	1.000017
70000.0	45.6	-60.7			74.8	567.8	299.6	9.6	1.000017
70500.0	44.5	-60.5			73.0	568.1	289.0	9.7	1.000016
71000.0	43.5	-60.2			71.2	568.4	278.9	10.1	1.000016
71500.0	42.4	-60.0			69.4	568.8	272.6	9.6	1.000015
72000.0	41.4	-59.8			67.7	569.1	266.5	8.8	1.000015
72500.0	40.4	-59.5			66.0	569.4	259.8	8.5	1.000015
73000.0	39.5	-59.3			64.3	569.7	258.7	9.2	1.000014
73500.0	38.5	-59.1			62.7	570.0	257.9	10.0	1.000014
74000.0	37.6	-58.8			61.2	570.3	260.1	10.3	1.000014
74500.0	36.7	-58.6			59.6	570.6	267.9	9.9	1.000013
75000.0	35.8	-58.4			58.1	570.9	276.3	9.7	1.000013
75500.0	35.0	-58.1			56.7	571.3	274.5	12.2	1.000013
76000.0	34.2	-57.9			55.3	571.6	270.1	16.1	1.000012
76500.0	33.3	-57.7			53.9	571.9	267.4	20.1	1.000012
77000.0	32.5	-57.4			52.6	572.2			1.000012
77500.0	31.8	-57.2			51.3	572.5			1.000011
78000.0	31.0	-57.0			50.0	572.8			1.000011

STATION ALTITUDE 3969.00 FEET MSL
6 NOV. 81 1220 HRS MST
ASCENSION NO. 084

MANDATORY LEVELS
310002084
WHITE SANDS

GEODETIC COORDINATES
32.40043 LAT DEG
106.37033 LON DEG

TABLE 7

PRESSURE MILLIBARS	GEOPOTENTIAL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT DEGREES CENTIGRADE	REL.HUM. PERCENT	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS
850.0	5097.	17.5	5.4	39.	149.5	14.8
800.0	6776.	12.6	1.5	47.	164.7	13.3
750.0	8541.	9.8	.7	53.	182.2	22.4
700.0	10412.	5.9	-1.0	61.	195.9	16.5
650.0	12389.	1.1	-5.9	60.	197.9	21.6
600.0	14481.	-4.5	-15.1	42.	216.9	22.7
550.0	16724.	-7.0	-22.6	28.	228.5	22.7
500.0	19148.	-10.4	-27.0	24.	243.9	29.0
450.0	21782.	-16.0	-31.2	25.	239.9	40.0
400.0	24657.	-22.7	-29.6	53.	244.1	47.9
350.0	27821.	-30.7	-41.1	35.	247.9	50.1
300.0	31341.	-39.6	-48.9	36.	251.4	53.9
250.0	35347.	-48.7			251.9	59.8
200.0	40155.	-52.7			254.1	44.2
175.0	42955.	-56.8			263.3	33.7
150.0	46136.	-60.3			263.8	32.4
125.0	49814.	-65.3			277.7	24.9
100.0	54190.	-71.4			260.7	23.3
80.0	58499.	-69.1			299.3	18.4
70.0	61119.	-68.8			313.0	15.9
60.0	64171.	-65.3			278.7	5.0
50.0	67853.	-61.6			339.9	8.1
40.0	72413.	-59.4			259.4	8.6

STATION ALTITUDE 5997.50 FEET MSL
6 NOV. 81 1130 HRS MST
ASCENSION NO. 88

SIGNIFICANT LEVEL DATA
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TABLE 8

GEODETIC COORDINATES
32.48034 LAT DEG
106.42307 LON DEG

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT
884.8	5997.5	20.1	5.0	37.0
850.0	5725.4	18.1	2.9	41.0
784.5	8648.1	7.5	.0	59.0
749.2	8598.5	7.5	-2.8	48.0
732.5	9207.5	8.5	.1	50.0
700.0	10429.1	6.5	-.2	62.0
687.7	10906.8	5.0	-.0	70.0
681.8	11953.5	2.8	-4.2	60.0
632.5	13138.8	-1.2	-5.8	71.0
619.2	13686.9	-2.4	-8.1	65.0
594.8	14731.9	-4.7	-19.2	31.0
578.2	15464.0	-4.8	-22.7	23.0
543.5	17053.5	-8.5	-23.9	27.0
514.2	18467.4	-8.8	-26.9	21.0
500.0	19179.7	-9.8	-27.4	22.0
439.4	22412.5	-17.5	-30.5	31.0
400.0	24706.1	-22.5	-28.8	37.0
389.9	25321.1	-25.0	-29.5	66.0
369.8	26595.7	-27.8	-38.8	34.0
333.8	28970.0	-34.9	-44.8	36.0
312.5	30480.1	-39.1	-47.5	41.0
306.8	30887.2	-39.0	-48.8	35.0
300.0	31392.9	-39.4	-50.0	31.0
299.6	31425.0	-39.7	-48.7	37.0
280.7	32876.9	-43.9		
265.5	34116.5	-46.9		
250.0	35412.9	-46.9		
248.9	35509.2	-46.9		
227.8	37453.8	-48.8		
200.0	40228.4	-52.7		
171.5	43470.5	-56.7		
150.0	46241.4	-61.1		

UPPER AIR DATA
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STATION ALTITUDE 5997.50 FEET MSL
6 NOV. 81 1130 HRS MST
ASCENSION NO. 58

GEODETIC COORDINATES
32.48034 LAT DEG
106.42507 LON DEG

TABLE 9

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT DEGREES CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
5997.5	884.8	20.1	5.0	57.0	1047.2	668.4	150.0	6.0	1.000272
4000.0	824.7	20.1	5.0	57.0	1047.1	668.4	150.0	6.0	1.000272
4500.0	829.1	18.5	4.1	58.8	1035.1	666.5	155.2	7.7	1.000267
5000.0	853.8	16.5	3.1	40.6	1023.2	664.2	158.5	9.4	1.000262
5500.0	838.5	15.0	2.6	43.5	1010.4	662.4	161.2	10.8	1.000259
6000.0	823.4	13.5	2.3	46.4	997.3	660.7	165.8	10.8	1.000255
6500.0	808.6	12.1	1.8	49.5	984.4	659.0	167.0	9.9	1.000252
7000.0	794.0	10.6	1.5	52.5	971.7	657.3	170.1	9.4	1.000248
7500.0	779.7	9.1	.7	55.6	959.5	655.5	173.5	10.5	1.000244
8000.0	765.6	7.6	.1	58.7	947.0	653.8	171.8	15.1	1.000241
8500.0	751.7	7.5	-2.5	49.8	930.6	653.5	172.4	19.8	1.000232
9000.0	737.9	8.0	-.9	53.3	911.5	654.2	175.3	25.0	1.000231
9500.0	724.4	7.9	-.0	57.4	895.2	654.1	180.0	27.2	1.000229
10000.0	711.2	7.1	-.1	59.9	881.1	653.3	186.2	25.3	1.000226
10500.0	698.2	6.3	-.2	63.2	867.6	652.3	192.4	21.1	1.000223
11000.0	685.3	4.8	-.4	69.1	856.1	650.6	197.6	20.2	1.000220
11500.0	672.6	3.7	-2.4	64.2	843.8	649.2	199.5	20.6	1.000213
12000.0	660.1	2.6	-4.3	60.6	831.9	647.7	200.3	21.4	1.000208
12500.0	647.8	.9	-4.9	63.2	821.3	645.8	199.1	21.6	1.000204
13000.0	635.6	-.7	-5.6	69.7	810.9	643.6	198.3	21.7	1.000201
13500.0	623.6	-2.0	-7.3	67.0	799.5	642.2	200.4	21.8	1.000196
14000.0	611.8	-3.1	-10.9	54.8	787.9	640.7	203.6	22.0	1.000189
14500.0	600.1	-4.2	-16.2	38.3	776.5	639.3	209.3	22.3	1.000182
15000.0	588.7	-4.7	-20.4	28.1	765.4	638.3	215.7	22.6	1.000176
15500.0	577.4	-4.9	-22.7	23.1	749.3	638.3	222.7	23.0	1.000172
16000.0	566.3	-6.0	-23.1	24.3	737.9	637.0	227.6	23.9	1.000169
16500.0	555.3	-7.1	-23.4	23.6	726.6	635.7	231.2	24.9	1.000167
17000.0	544.6	-8.2	-23.9	20.8	715.6	634.4	232.2	25.8	1.000164
17500.0	534.1	-8.4	-24.8	23.1	702.3	634.1	232.9	26.7	1.000161
18000.0	523.7	-8.3	-23.9	23.0	689.0	633.9	234.7	27.4	1.000157
18500.0	513.3	-8.7	-26.9	21.0	676.1	633.7	236.7	27.9	1.000154
19000.0	503.3	-9.3	-27.3	21.7	665.0	632.7	239.6	27.9	1.000152
19500.0	493.6	-10.3	-27.6	22.9	654.5	631.5	241.1	29.2	1.000149
20000.0	483.9	-11.7	-28.0	24.3	644.4	630.1	239.5	33.0	1.000147
20500.0	474.3	-12.9	-28.4	23.7	634.3	628.7	238.3	36.3	1.000145
21000.0	464.9	-14.0	-28.9	27.1	624.7	627.3	237.3	38.9	1.000142
21500.0	455.7	-15.2	-29.3	28.3	615.1	625.9	237.9	39.9	1.000140
22000.0	446.7	-16.3	-29.9	29.9	605.7	624.4	239.8	39.3	1.000138
22500.0	437.8	-17.3	-30.2	32.0	596.4	623.0	241.8	40.4	1.000136
23000.0	429.0	-18.6	-29.3	37.7	588.8	621.7	243.8	42.2	1.000134

STATION ALTITUDE 5997.50 FEET MSL
6 NOV. 81 1130 HRS MST
ASCENSION NO. 88

UPPER AIR DATA
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GEODETIC COORDINATES
32.48034 LAT DEG
106.42507 LON DEG

TABLE 9 CON'T

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
23500.0	420.3	-19.8	-29.0	43.3	577.3	620.3	246.0	44.7	1.000132
24000.0	411.7	-20.9	-28.8	49.0	568.3	618.9	247.4	47.2	1.000130
24500.0	403.4	-22.0	-28.7	54.7	559.3	617.3	247.8	49.8	1.000128
25000.0	395.1	-23.7	-29.0	61.3	551.3	615.3	248.2	51.9	1.000126
25500.0	387.0	-25.4	-30.6	61.3	543.8	613.4	248.3	53.8	1.000124
26000.0	378.9	-26.4	-33.9	48.9	534.8	612.1	248.6	54.2	1.000121
26500.0	371.1	-27.4	-37.7	36.4	525.9	610.8	248.6	54.1	1.000119
27000.0	363.2	-28.8	-39.6	34.3	517.8	609.0	248.7	53.3	1.000117
27500.0	355.3	-30.4	-40.9	34.8	510.1	607.1	248.7	52.6	1.000115
28000.0	348.0	-31.9	-42.1	35.2	502.4	605.1	249.0	52.8	1.000113
28500.0	340.6	-33.3	-43.4	35.6	494.9	603.2	249.4	53.2	1.000111
29000.0	333.4	-35.0	-44.7	36.1	487.3	601.3	250.2	53.5	1.000109
29500.0	326.1	-36.4	-45.3	37.7	479.7	599.3	251.3	53.6	1.000108
30000.0	319.0	-37.8	-46.4	39.4	472.1	597.7	251.3	53.9	1.000106
30500.0	312.1	-39.1	-47.3	40.8	464.5	596.0	251.3	54.3	1.000104
31000.0	305.3	-39.1	-48.9	34.1	456.3	596.0	250.3	55.1	1.000102
31500.0	298.6	-39.9	-49.4	35.0**	445.9	595.0	248.9	56.0	1.000100
32000.0	292.0	-41.4	-54.3	22.3**	438.8	593.1	248.0	56.9	1.000098
32500.0	285.5	-42.8	-62.3	9.8**	431.8	591.3	247.4	57.7	1.000096
33000.0	279.1	-44.2			424.7	589.3	246.9	58.4	1.000095
33500.0	272.9	-45.4			417.4	587.9	246.3	58.8	1.000093
34000.0	266.7	-46.6			410.2	586.4	246.1	59.7	1.000091
34500.0	260.7	-46.9			403.4	586.0	246.2	60.9	1.000089
35000.0	254.8	-46.9			392.3	586.0	246.8	62.3	1.000087
35500.0	249.0	-46.9			383.4	586.0	248.3	64.0	1.000085
36000.0	243.3	-47.4			375.3	585.4	249.8	65.4	1.000084
36500.0	237.8	-47.9			367.7	584.7	252.3	65.7	1.000082
37000.0	232.4	-48.4			360.2	584.1	254.9	62.1	1.000080
37500.0	227.1	-48.9			352.8	583.4	256.1	58.9	1.000079
38000.0	221.9	-49.6			345.7	582.3	257.0	55.3	1.000077
38500.0	216.8	-50.3			338.8	581.6	256.0	53.2	1.000075
39000.0	211.8	-51.0			332.1	580.7	254.3	51.8	1.000074
39500.0	206.9	-51.7			325.4	579.8	253.6	50.6	1.000072
40000.0	202.1	-52.4			319.0	578.9	253.3	49.4	1.000071
40500.0	197.4	-53.0			312.3	578.0	254.1	46.9	1.000070
41000.0	192.8	-53.7			306.0	577.2	255.6	43.8	1.000068
41500.0	188.3	-54.3			299.7	576.4	257.8	41.0	1.000067
42000.0	183.9	-54.9			293.5	575.6	261.6	38.3	1.000065
42500.0	179.6	-55.5			287.4	574.7	263.3	36.0	1.000064
43000.0	175.4	-56.1			281.3	573.9	265.3	34.1	1.000063

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

STATION ALTITUDE 3997.30 FEET MSL
6 NOV. 81 1130 HRS MST
ASCENSION NO. 88

UPPER AIR DATA
3100060068
S M R

GEODETIC COORDINATES
32.46034 LAT DEG
106.42307 LON DEG

TABLE 9 CON'T

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)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
43500.0	171.3	-56.7			275.7	573.1	268.0	32.3	1.000061
44000.0	167.2	-57.5			270.1	572.0	268.9	30.5	1.000060
44500.0	163.2	-58.3			264.6	571.0	269.[illegible]	[illegible].7	1.000059
45000.0	159.3	-59.1			259.3	569.9			1.000058
45500.0	155.5	-59.9			254.0	568.9			1.000057
46000.0	151.8	-60.7			248.9	567.8			1.000055

STATION ALTITUDE 3997.30 FEET MSL
6 NOV. 81 1130 HRS MST
ASCENSION NO. 88

MANDATORY LEVELS
310000000088
S M R

GEODETIC COORDINATES
32.48034 LAT DEG
106.42307 LON DEG

TABLE 10

PRESSURE MILLIBARS	GEOPOTENTIAL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT DEGREES CENTIGRADE	REL.HUM. PERCENT	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS
850.0	5122.	16.1	2.9	41.	159.1	9.8
800.0	6798.	11.2	1.5	51.	168.1	9.4
750.0	8552.	7.5	-2.6	49.	172.8	20.4
700.0	10419.	6.5	-.2	62.	191.7	21.5
650.0	12598.	1.2	-4.7	64.	199.5	21.5
600.0	14489.	-4.2	-16.2	38.	209.5	22.5
550.0	16728.	-7.6	-23.6	26.	231.9	25.4
500.0	19153.	-9.8	-27.4	22.	240.6	28.0
450.0	21789.	-15.9	-29.7	29.	239.0	39.5
400.0	24665.	-22.5	-28.6	57.	248.0	50.8
350.0	27823.	-31.5	-41.8	35.	248.9	52.6
300.0	31350.	-39.4	-50.0	31.	249.2	55.8
250.0	35330.	-46.9			248.0	63.6
200.0	40131.	-52.7			253.3	48.7
175.0	42938.	-56.2			265.6	34.0
150.0	46116.	-61.1				