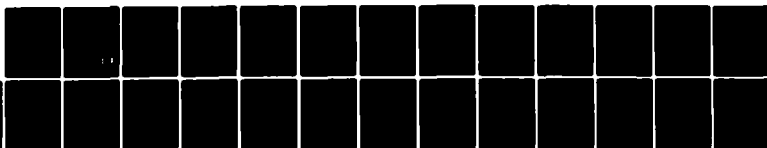


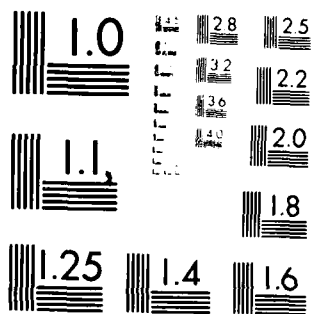
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METEOROLOGICAL DATA REPORT

19320B MIRS  
Missile Numbers FV3-14, FV3-08,  
FV3-26, FV3-27, FV3-28, FV3-29  
Round Number 467/AT2-37 thru 472/AT2-42  
14 July 83

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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| 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)<br>Meteorological data gathered for the launching of the 19320B MLRS, Missile<br>Number FV3-14, FV3-08, FV3-26, FV3-27, FV3-28, FV3-29, Round Number 467/AT2-37<br>thru 472/AT2-42 are presented in tabular form. |                                  |                                                                |

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# CONTENTS

|                                                                                                          | PAGE |
|----------------------------------------------------------------------------------------------------------|------|
| INTRODUCTION -----                                                                                       | 1    |
| DISCUSSION -----                                                                                         | 1    |
| GENERAL AREA MAP -----                                                                                   | 2    |
| LAUNCH AREA DIAGRAM -----                                                                                | 3    |
| TABLES:                                                                                                  |      |
| 1. Surface Observations taken at 0938 MDT at LC-33 -----                                                 | 4    |
| 2. Anemometer-Measured Wind Speed and Direction, LC-33<br>Fixed Pole, taken at 0938 MDT -----            | 5    |
| 3. Anemometer-Measured Wind Speed and Direction, Tower<br>Levels 1, 2, 3, and 4, taken at 0938 MDT ----- | 5    |
| 4. Launch and Impact Pilot-Balloon Measured Wind Data -----                                              | 6    |
| 5. Aiming and T-Time Computer Met Messages -----                                                         | 7    |
| 6. LC-37 Significant Level Data at 0700 MDT -----                                                        | 8    |
| 7. LC-37 Upper Air Data at 0700 MDT -----                                                                | 9    |
| 8. LC-37 Mandatory Levels at 0700 MDT -----                                                              | 11   |
| 9. WSD Significant Level Data at 0825 MDT -----                                                          | 12   |
| 10. WSD Upper Air Data at 0825 MDT -----                                                                 | 13   |
| 11. WSD Mandatory Levels at 0825 MDT -----                                                               | 14   |
| 12. WSD Significant Level Data at 0938 MDT -----                                                         | 15   |
| 13. WSD Upper Air Data at 0938 MDT -----                                                                 | 17   |
| 14. WSD Mandatory Levels at 0938 MDT -----                                                               | 22   |

## INTRODUCTION

19320B MLRS, Missile Numbers FV3-14, FV3-08, FV3-26, FV3-27, FV3-28, and FV3-29, Round Numbers 467/AT2-37 thru 472/AT2-42, were launched from LC-33, White Sands Missile Range (WSMR), New Mexico, at 0937:47, 0937:57, 0938:02, 0938:07 and 0938:16 MDT, 14 JUL 83. The scheduled launch times were 0930 MDT with a 4.5 second separation.

## 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. (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

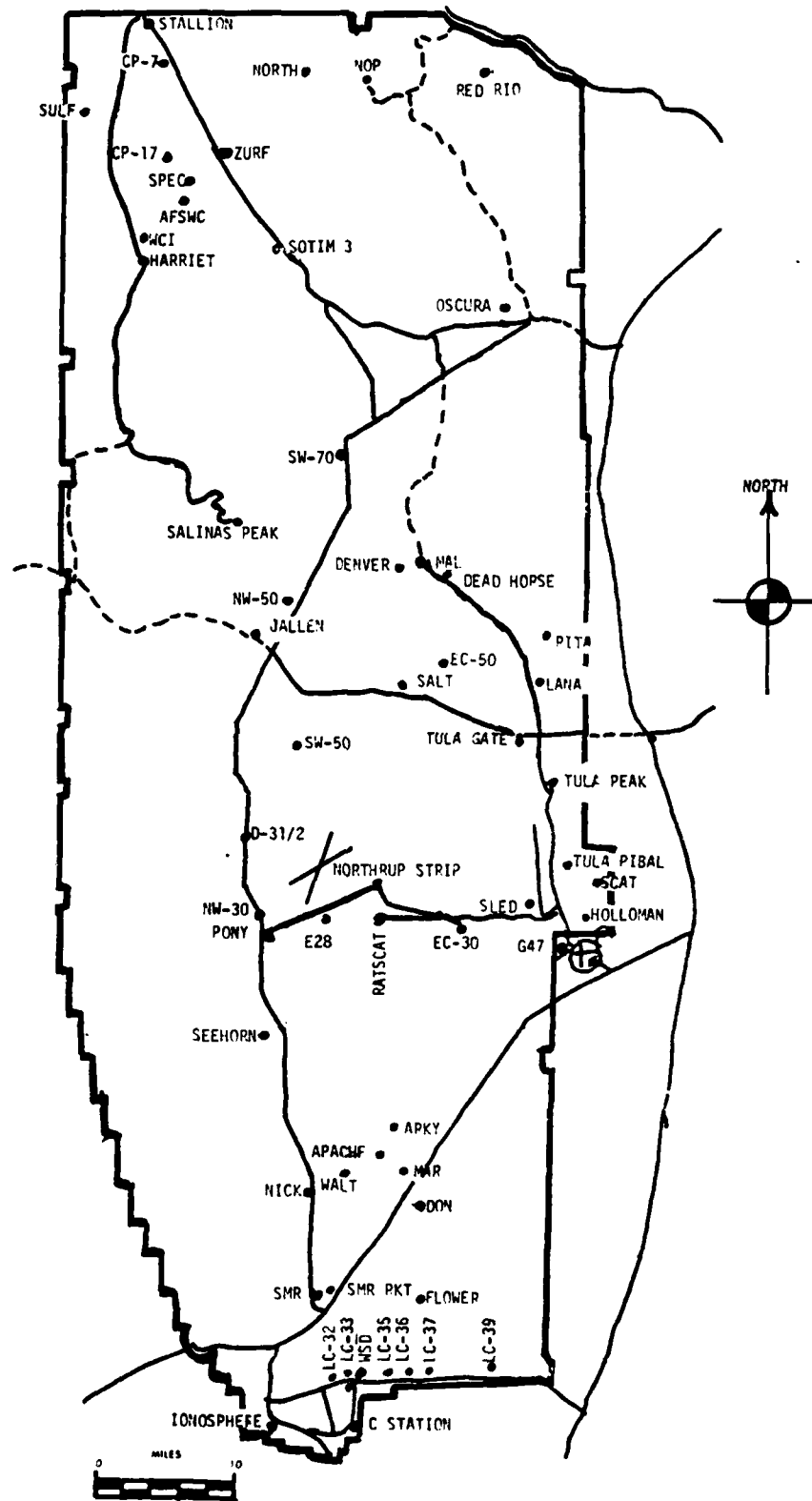
|       |      |
|-------|------|
| LC-33 | 2 Km |
| DON   | 2 Km |

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

#### SITE AND TIME

|       |          |
|-------|----------|
| LC-37 | 0700 MDT |
| WSD   | 0825 MDT |
| WSD   | 0938 MDT |

# WSMR METEOROLOGICAL SITES



LC-33  
Launch Area

NORTH

WEST

1 inch = 250 ft

Y185,500

LINE OF FIRE

Anemometer Pole #3

Anemometer Pole #2

MET  
Tower

Y186,000  
T-9 Radar

L-579A

L-519A

L-351A

L-350A

Anemometer Pole #1

Y185,500

X485,000

X495,500

X496,000

Y135,000

L-500

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STATION LC-33 E and A

DATE 14 July 83

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| INSTRUCTIONS<br>TO VISIBILITY | CLOUDS    |      |           |     |           |     | REMARKS |
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| TYPE: MDT       | 0938 |  |
| DRY BULB TEMP.  | 25.3 |  |
| WET BULB TEMP.  | 17.6 |  |
| WET BULB DEPR.  | 7.7  |  |
| DEN POINT       | 13.8 |  |
| RELATIVE HUMID. | 49   |  |

TABLE 2 LC-33 FIXED POLE ANEMOMETER MEASURED WINDS

| POLE #1<br>X485,874.29<br>Y185,958.90<br>H4018.74<br>38.7 ft. AGL |            |                | POLE #2<br>X485,874.29<br>Y186.012.00<br>H4033.57<br>53.0 ft. AGL |            |                | POLE #3<br>X485,877.29<br>Y186,116.06<br>H4063.92<br>83.6 ft. AGL |            |                |
|-------------------------------------------------------------------|------------|----------------|-------------------------------------------------------------------|------------|----------------|-------------------------------------------------------------------|------------|----------------|
| T-TIME<br>SEC                                                     | DIR<br>DEG | SPEED<br>KNOTS | T-TIME<br>SEC                                                     | DIR<br>DEG | SPEED<br>KNOTS | T-TIME<br>SEC                                                     | DIR<br>DEG | SPEED<br>KNOTS |
| T -30                                                             |            | CALM           | T-30                                                              | 346        | CALM           | T-30                                                              | 335        | 03             |
| T -20                                                             |            | CALM           | T-20                                                              | 346        | CALM           | T-20                                                              | 001        | 05             |
| T -10                                                             |            | CALM           | T-10                                                              | 346        | CALM           | T-10                                                              | 001        | 05             |
| T 0.0                                                             |            | CALM           | T0.0                                                              | 346        | CALM           | T0.0                                                              | 007        | 04             |
| T +10                                                             |            | 03             | T+10                                                              | 343        | CALM           | T+10                                                              | 001        | 05             |

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

| LEVEL #1, 12 FEET<br>X484,982.64, Y185,057.73, H3983.00 (base) |         |             | LEVEL #2, 62 FEET<br>X484,982.64, Y185,057.73, H3983.00 (base) |         |             |
|----------------------------------------------------------------|---------|-------------|----------------------------------------------------------------|---------|-------------|
| T-TIME SEC                                                     | DIR DEG | SPEED KNOTS | T-TIME SEC                                                     | DIR DEG | SPEED KNOTS |
| T -30                                                          | 301     | 01          | T-30                                                           |         | CALM        |
| T -20                                                          | 301     | 01          | T-20                                                           |         | CALM        |
| T -10                                                          | 312     | 02          | T-10                                                           |         | CALM        |
| T 0.0                                                          | 333     | 03          | T0.0                                                           | 347     | 04          |
| T +10                                                          | 336     | 04          | T+10                                                           | 351     | 04          |

| LEVEL #3, 102 FEET<br>X484,982.64, Y185,057.73, H3983.00 (base) |         |             | LEVEL #4, 202 FEET<br>X484,982.64, Y185,057.73, H3983.00 (base) |         |             |
|-----------------------------------------------------------------|---------|-------------|-----------------------------------------------------------------|---------|-------------|
| T-TIME SEC                                                      | DIR DEG | SPEED KNOTS | T-TIME SEC                                                      | DIR DEG | SPEED KNOTS |
| T -30                                                           | 350     | CALM        | T-30                                                            | 348     | 04          |
| T -20                                                           | 354     | CALM        | T-20                                                            | 349     | 06          |
| T -10                                                           | 344     | 03          | T-10                                                            | 342     | 05          |
| T 0.0                                                           | 348     | 04          | T0.0                                                            | 005     | 06          |
| T +10                                                           | 007     | 04          | T+10                                                            | 008     | 04          |

## T-TIME PILOT-BALLOON MEASURED WIND DATA

DATE 14 JUL 83

SITE: LC-33

TIME: 0938 MDT

WSTM COORDINATES:

X= 484,837.34

Y= 184,124.44

H= 3,975.57

SITE: DON

TIME 0938 MDT

WSTM COORDINATES:

X= 511,988.37

Y= 247,396.36

H= 3,996.83

| LAYER MIDPOINT<br>METERS AGL | DIRECTION<br>DEGREES | SPEED<br>KNOTS |
|------------------------------|----------------------|----------------|
| SURFACE                      | 335                  | 03             |
| 150                          | 037                  | 03             |
| 210                          | 056                  | 04             |
| 270                          | 075                  | 03             |
| 330                          | 098                  | 03             |
| 390                          | 119                  | 03             |
| 500                          | 164                  | 04             |
| 650                          | 185                  | 07             |
| 800                          | 191                  | 09             |
| 950                          | 199                  | 10             |
| 1150                         | 206                  | 12             |
| 1350                         | 220                  | 11             |
| 1550                         | 254                  | 11             |
| 1750                         | 263                  | 12             |
| 2000                         | 269                  | 16             |

Data obtained from a Double Theodite  
tracked pilot-balloon observation.

| LAYER MIDPOINT<br>METERS AGL | DIRECTION<br>DEGREES | SPEED<br>KNOTS |
|------------------------------|----------------------|----------------|
| SURFACE                      |                      | CALM           |
| 150                          |                      | CALM           |
| 210                          |                      | CALM           |
| 270                          |                      | CALM           |
| 330                          | 151                  | 01             |
| 390                          | 154                  | 02             |
| 500                          | 154                  | 05             |
| 650                          | 180                  | 05             |
| 800                          | 184                  | 05             |
| 950                          | 197                  | 04             |
| 1150                         | 209                  | 05             |
| 1350                         | 230                  | 06             |
| 1550                         | 254                  | 06             |
| 1750                         | 283                  | 05             |
| 2000                         | 294                  | 07             |

Data obtained from a RAPS-T-9  
Radar tracked pilot-balloon ob-  
servation.

## AIMING AND T-TIME COMPUTER NET MESSAGES

14 JULY 1983

|                   |                   |
|-------------------|-------------------|
| LC-37 0790 MDT    | WSD 0938 MDT      |
| METCML324063      | METCML324064      |
| 141300124879      | 141560122882      |
| 00000000 29120879 | 00640002 29920882 |
| 01281004 29490869 | 01020005 29790872 |
| 02208012 29590844 | 02171004 29570847 |
| 03319009 29360806 | 03336008 29360809 |
| 04369013 29060760 | 04393010 29040763 |
| 05449011 28710717 | 05489012 28730719 |
| 06518014 28310675 | 06531016 28360678 |
| 07556016 27900635 | 07579011 27990638 |
| 08595014 27490598 | 08594011 27560600 |
| 09636012 27150562 | 09610011 27160564 |
| 10614015 26690527 | 10627014 26730529 |
| 11598012 26490494 | 11605017 26450496 |
| 12556010 26030448 | 12578009 26070450 |

STATION ALTITUDE 4051.7 FEET MSL.  
14 JULY 63 0700 MDT  
ASCENDING 100 100

SIGNIFICANT LEVEL DATA  
1950140102  
LC-37

GEODETIC COORDINATES  
32.40175 LAT DEG  
106.31232 LONG DEG

TABLE 6

| PRESSURE  | GEOMETRIC<br>ALTITUDE | TEMPERATURE<br>AIR | TEMPERATURE<br>DEWPOINT | REL. HUM.<br>PERCENT |
|-----------|-----------------------|--------------------|-------------------------|----------------------|
| MILLIBARS | MSL FEET              | DEGREES            | CENTIGRADE              |                      |
| 874.1     | 4051.4                | 16.0               | 12.9                    | 82.0                 |
| 877.0     | 4119.0                | 21.8               | 12.9                    | 57.0                 |
| 866.2     | 4105.0                | 21.6               | 12.2                    | 55.0                 |
| 850.0     | 5011.1                | 21.4               | 11.7                    | 54.0                 |
| 751.6     | 8481.6                | 15.5               | 6.2                     | 54.0                 |
| 700.0     | 10051.7               | 11.3               | 2.9                     | 50.0                 |
| 617.0     | 13066.7               | 2.9                | -2.4                    | 68.0                 |
| 596.0     | 15050.0               | .4                 | -5.0                    | 63.0                 |
| 581.6     | 15035.6               | -1.0               | -6.9                    | 64.0                 |
| 543.0     | 17222.6               | -5.4               | -10.9                   | 65.0                 |
| 525.9     | 18000.9               | -6.8               | -14.3                   | 55.0                 |
| 512.6     | 18703.3               | -8.2               | -14.6                   | 60.0                 |
| 500.1     | 18378.4               | -8.0               | -19.2                   | 40.0                 |
| 500.0     | 19135.0               | -8.3               | -19.7                   | 39.0                 |
| 500.0     | 19339.0               | -8.6               | -15.8                   | 50.0                 |
| 492.6     | 19719.7               | -8.2               | -19.1                   | 41.0                 |
| 480.2     | 20100.8               | -9.0               | -21.3                   | 36.0                 |
| 471.6     | 20327.9               | -10.6              | -17.0                   | 50.0                 |
| 463.6     | 21260.4               | -11.5              | -16.9                   | 54.0                 |
| 455.4     | 21710.1               | -12.3              | -13.4                   | 60.0                 |
| 447.6     | 22144.2               | -12.9              | -22.8                   | 43.0                 |
| 432.4     | 23007.3               | -15.3              | -23.8                   | 48.0                 |
| 400.6     | 24350.5               | -16.7              | -26.0                   | 34.0                 |
| 400.0     | 24035.8               | -17.7              | -32.1                   | 27.0                 |

STATION ALTITUDE 4051.37 FEET MSL  
14 JULY 35  
ASLUS-1,0 NO. 102

UPPER AIR DATA  
1950100102  
LC-37

GEODETIC COORDINATES  
32-40175 LAT DEG  
106-51232 LONG DEG

TABLE 7

| GEODETIC<br>ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | AIR<br>TEMPERATURE<br>DEGREES<br>CELSIUS | REL. HUMIDITY<br>PERCENT | DENSITY<br>GM/CM <sup>3</sup> | SPEED OF<br>SOUND<br>METERS<br>PER SECOND | WIND DATA<br>DIRECTION<br>DEGREES (TN) | WIND<br>SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|----------------------------------|-----------------------|------------------------------------------|--------------------------|-------------------------------|-------------------------------------------|----------------------------------------|------------------------|---------------------------|
| 4051.4                           | 879.1                 | 16.0                                     | 82.0                     | 1052.5                        | 604.0                                     | 0                                      | 0                      | 1.000302                  |
| 4500.0                           | 865.0                 | 21.6                                     | 55.0                     | 1016.4                        | 670.9                                     | 147.0                                  | 2.5                    | 1.000289                  |
| 5000.0                           | 850.5                 | 21.4                                     | 54.0                     | 999.5                         | 670.7                                     | 147.0                                  | 5.2                    | 1.000283                  |
| 5500.0                           | 835.0                 | 20.6                                     | 54.0                     | 984.9                         | 669.7                                     | 147.0                                  | 0.0                    | 1.000277                  |
| 6000.0                           | 820.7                 | 19.7                                     | 54.0                     | 970.6                         | 668.6                                     | 147.0                                  | 10.6                   | 1.000271                  |
| 6500.0                           | 805.5                 | 18.9                                     | 54.0                     | 956.6                         | 667.6                                     | 169.2                                  | 9.7                    | 1.000266                  |
| 7000.0                           | 792.1                 | 18.0                                     | 54.0                     | 942.7                         | 666.5                                     | 169.9                                  | 10.3                   | 1.000260                  |
| 7500.0                           | 775.2                 | 17.2                                     | 54.0                     | 929.0                         | 665.5                                     | 199.6                                  | 11.4                   | 1.000255                  |
| 8000.0                           | 764.5                 | 16.3                                     | 54.0                     | 915.5                         | 664.5                                     | 208.3                                  | 12.2                   | 1.000249                  |
| 8500.0                           | 751.1                 | 15.5                                     | 54.0                     | 902.5                         | 663.4                                     | 219.1                                  | 11.8                   | 1.000244                  |
| 9000.0                           | 737.7                 | 14.4                                     | 54.5                     | 889.6                         | 662.1                                     | 230.6                                  | 11.5                   | 1.000239                  |
| 9500.0                           | 724.5                 | 13.3                                     | 55.0                     | 877.1                         | 660.8                                     | 243.9                                  | 11.2                   | 1.000234                  |
| 10000.0                          | 711.5                 | 12.3                                     | 55.5                     | 864.6                         | 659.6                                     | 253.9                                  | 11.2                   | 1.000230                  |
| 10500.0                          | 698.8                 | 11.2                                     | 56.2                     | 852.7                         | 658.2                                     | 268.5                                  | 11.5                   | 1.000225                  |
| 11000.0                          | 685.0                 | 10.0                                     | 57.9                     | 840.6                         | 656.8                                     | 279.4                                  | 12.3                   | 1.000221                  |
| 11500.0                          | 673.4                 | 8.7                                      | 59.7                     | 829.1                         | 655.3                                     | 291.6                                  | 13.8                   | 1.000217                  |
| 12000.0                          | 661.1                 | 7.5                                      | 61.4                     | 817.0                         | 653.8                                     | 299.2                                  | 15.0                   | 1.000213                  |
| 12500.0                          | 649.0                 | 6.3                                      | 63.2                     | 805.3                         | 652.4                                     | 304.9                                  | 15.9                   | 1.000209                  |
| 13000.0                          | 637.1                 | 5.0                                      | 64.9                     | 793.2                         | 650.9                                     | 309.4                                  | 16.1                   | 1.000205                  |
| 13500.0                          | 625.5                 | 3.8                                      | 66.7                     | 784.2                         | 649.4                                     | 313.6                                  | 15.8                   | 1.000201                  |
| 14000.0                          | 614.0                 | 2.6                                      | 67.4                     | 773.2                         | 647.9                                     | 319.6                                  | 15.2                   | 1.000197                  |
| 14500.0                          | 602.5                 | 1.6                                      | 65.3                     | 761.9                         | 646.6                                     | 323.3                                  | 14.6                   | 1.000192                  |
| 15000.0                          | 591.2                 | .5                                       | 63.2                     | 750.7                         | 645.3                                     | 337.2                                  | 13.7                   | 1.000188                  |
| 15500.0                          | 580.1                 | -1.2                                     | 64.0                     | 741.3                         | 643.2                                     | 347.2                                  | 12.6                   | 1.000184                  |
| 16000.0                          | 569.1                 | -2.4                                     | 64.3                     | 730.6                         | 641.7                                     | 354.3                                  | 12.2                   | 1.000180                  |
| 16500.0                          | 558.3                 | -3.6                                     | 64.6                     | 720.1                         | 640.2                                     | 0                                      | 12.1                   | 1.000176                  |
| 17000.0                          | 547.7                 | -4.9                                     | 64.9                     | 709.7                         | 638.7                                     | 355.6                                  | 13.5                   | 1.000173                  |
| 17500.0                          | 537.2                 | -5.9                                     | 61.6                     | 699.0                         | 637.5                                     | 351.5                                  | 14.8                   | 1.000169                  |
| 18000.0                          | 526.9                 | -6.7                                     | 55.6                     | 687.9                         | 636.4                                     | 345.4                                  | 15.1                   | 1.000164                  |
| 18500.0                          | 516.7                 | -7.8                                     | 58.5                     | 677.3                         | 635.1                                     | 341.2                                  | 14.9                   | 1.000162                  |
| 19000.0                          | 506.7                 | -8.1                                     | 59.5                     | 665.4                         | 634.5                                     | 339.5                                  | 13.7                   | 1.000155                  |
| 19500.0                          | 496.9                 | -8.4                                     | 49.7                     | 653.1                         | 634.2                                     | 336.7                                  | 12.5                   | 1.000154                  |
| 20000.0                          | 487.2                 | -8.8                                     | 37.4                     | 641.4                         | 633.7                                     | 332.5                                  | 11.3                   | 1.000149                  |
| 20500.0                          | 477.7                 | -9.4                                     | 46.9                     | 631.4                         | 632.5                                     | 324.2                                  | 10.1                   | 1.000146                  |
| 21000.0                          | 468.4                 | -11.0                                    | 55.2                     | 621.6                         | 631.2                                     | 311.4                                  | 9.2                    | 1.000147                  |
| 21500.0                          | 459.2                 | -11.4                                    | 57.2                     | 611.7                         | 630.0                                     | 306.3                                  | 9.6                    | 1.000144                  |
| 22000.0                          | 450.2                 | -12.7                                    | 48.6                     | 601.6                         | 629.0                                     | 305.5                                  | 10.3                   | 1.000140                  |
| 22500.0                          | 441.3                 | -13.0                                    | 45.1                     | 592.5                         | 627.5                                     | 312.0                                  | 10.9                   | 1.000137                  |
| 23000.0                          | 432.5                 | -15.3                                    | 48.0                     | 583.9                         | 625.8                                     | 319.1                                  | 11.7                   | 1.000135                  |
| 23500.0                          | 423.9                 | -15.8                                    | 42.9                     | 573.4                         | 625.2                                     | 0                                      | 0                      | 1.000132                  |

STATION ALTITUDE 9,51.37 FEET SL  
 14 JULY 83 0700 MDT  
 ASCENDING NO. 102

UPPER AIR DATA  
 1950180102  
 LC-37

TABLE 7 CONT

| GEOMETRIC ALTITUDE |       | PRESSURE  |       | TEMPERATURE |       | REL. HUM.  |  | DENSITY  |  | SPEED OF |  | WIND DATA   |  | INDEX      |  |
|--------------------|-------|-----------|-------|-------------|-------|------------|--|----------|--|----------|--|-------------|--|------------|--|
| ALTITUDE           |       | MILLIBARS |       | AIR         |       | PERCENT    |  | GM/CUBIC |  | SOUND    |  | DIRECTION   |  | OF         |  |
| MSL FEET           |       | MILLIBARS |       | DEGREES     |       | CENTIGRADE |  | METER    |  | KNOTS    |  | DEGREES(TN) |  | REFRACTION |  |
| 24000.0            | 915.4 | -16.3     | -27.4 | 37.7        | 563.2 | 624.4      |  |          |  |          |  |             |  | 1.000129   |  |
| 24500.0            | 407.1 | -17.0     | -20.6 | 32.2        | 553.3 | 623.7      |  |          |  |          |  |             |  | 1.000126   |  |

STATION ALTITUDE 4051.37 FEET MSL  
14 JULY 83  
ASCENSION NO. 102

MANDATORY LEVELS  
1950100102  
IC-37

GEODETIC COORDINATES  
32.40175 LAT DEG  
106.31232 LONG DEG

TABLE 8

| PRESSURE GEOPOTENTIAL |        | TEMPERATURE                  |                        | REL. HUM. |              | WIND DATA |                |
|-----------------------|--------|------------------------------|------------------------|-----------|--------------|-----------|----------------|
| MILLIBARS             | FEET   | AIR<br>DEGREES<br>CENTIGRADE | DEWPOINT<br>CENTIGRADE | PERCENT   | DEGREES (TN) | DIRECTION | SPEED<br>KNOTS |
| 850.0                 | 5007.  | 21.4                         | 11.7                   | 54.       | 147.0        |           | 5.3            |
| 800.0                 | 6725.  | 18.5                         | 9.0                    | 54.       | 179.4        |           | 9.8            |
| 750.0                 | 8533.  | 15.4                         | 6.1                    | 54.       | 219.9        |           | 11.8           |
| 700.0                 | 10401. | 11.3                         | 2.9                    | 50.       | 265.4        |           | 11.4           |
| 650.0                 | 12457. | 6.4                          | -1.1                   | 63.       | 304.5        |           | 15.8           |
| 600.0                 | 14504. | 1.3                          | -4.5                   | 65.       | 330.2        |           | 14.5           |
| 550.0                 | 16869. | -4.6                         | -10.2                  | 65.       | 350.8        |           | 13.1           |
| 500.0                 | 19312. | -8.6                         | -15.0                  | 56.       | 338.0        |           | 12.9           |
| 450.0                 | 21976. | -12.7                        | -21.3                  | 48.       | 305.5        |           | 10.3           |
| 400.0                 | 24894. | -17.7                        | -32.1                  | 27.       |              |           |                |

STATION ALTITUDE 3989.00 FEET MSL  
14 JULY 83  
ASCESSION NO. 351  
0825 MDT

SIGNIFICANT LEVEL DATA  
1950020351  
WHITE SANDS

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LONG DEG

TABLE 9

| PRESSURE | GEOMETRIC | TEMPERATURE   | REL. HUM. |
|----------|-----------|---------------|-----------|
| HILLIARS | ALTITUDE  | AIR DEW POINT | PERCENT   |
| MSL FEET |           | DEGREES       |           |
|          |           | CENTIGRAH     |           |
| 881.9    | 3989.0    | 20.2          | 63.0      |
| 872.8    | 4283.4    | 20.0          | 59.0      |
| 851.9    | 4707.1    | 21.8          | 55.0      |
| 850.0    | 5037.1    | 20.7          | 53.0      |
| 765.3    | 7891.4    | 17.0          | 53.0      |
| 700.0    | 10476.2   | 11.1          | 50.0      |
| 661.5    | 12019.9   | 7.4           | 60.0      |
| 626.7    | 13735.5   | 4.3           | 55.0      |
| 596.0    | 14917.4   | 1.4           | 61.0      |
| 570.5    | 15969.9   | -1.7          | 73.0      |
| 562.0    | 16362.9   | -2.1          | 56.0      |
| 529.4    | 17913.2   | -6.4          | 59.0      |
| 500.0    | 19375.0   | -9.3          | 39.0      |
|          |           | -20.6         |           |

GEODETIC COORDINATES  
32-40043 LAT DEG  
106-37033 LONG DEG

UPPER AIR DATA  
1950020351  
WHITE SANDS

TABLE 10

STATION ALTITUDE 3589.0 FEET MSL  
14 JULY 63 0825 MDT  
ASCENDING NO. 351

| GEODETIC ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | AIR TEMPERATURE<br>DEGREES CENTIGRADE | REL. HUM.<br>PERCENT | DENSITY<br>GM/CM <sup>3</sup> | SPEED OF<br>SOUND<br>KNOTS | DIRECTION<br>DEGREES (TN) | WIND DATA<br>SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|-------------------------------|-----------------------|---------------------------------------|----------------------|-------------------------------|----------------------------|---------------------------|-----------------------------|---------------------------|
| 3589.0                        | 881.9                 | 20.2                                  | 63.0                 | 1040.6                        | 669.4                      | 300.0                     | 4.1                         | 1.000298                  |
| 4000.0                        | 881.6                 | 20.2                                  | 62.9                 | 1040.2                        | 669.4                      | 299.8                     | 4.0                         | 1.000297                  |
| 4500.0                        | 860.2                 | 20.0                                  | 57.0                 | 1019.8                        | 670.1                      | 281.7                     | 1.6                         | 1.000289                  |
| 5000.0                        | 851.1                 | 20.8                                  | 53.2                 | 1002.7                        | 669.9                      | 168.4                     | 1.4                         | 1.000281                  |
| 5500.0                        | 830.2                 | 20.1                                  | 53.0                 | 987.7                         | 669.0                      | 144.4                     | 3.7                         | 1.000275                  |
| 6000.0                        | 821.5                 | 19.5                                  | 53.0                 | 972.7                         | 668.2                      | 158.0                     | 4.7                         | 1.000270                  |
| 6500.0                        | 807.1                 | 18.8                                  | 53.0                 | 957.8                         | 667.5                      | 186.5                     | 5.4                         | 1.000265                  |
| 7000.0                        | 792.4                 | 18.2                                  | 53.0                 | 943.2                         | 666.7                      | 200.8                     | 7.4                         | 1.000260                  |
| 7500.0                        | 779.0                 | 17.5                                  | 53.0                 | 928.9                         | 665.9                      | 208.3                     | 9.6                         | 1.000255                  |
| 8000.0                        | 765.3                 | 16.8                                  | 53.1                 | 915.0                         | 665.0                      | 219.2                     | 10.3                        | 1.000250                  |
| 8500.0                        | 751.6                 | 15.6                                  | 53.7                 | 902.4                         | 663.6                      | 229.4                     | 10.9                        | 1.000244                  |
| 9000.0                        | 730.2                 | 14.5                                  | 54.3                 | 890.0                         | 662.2                      | 241.9                     | 10.7                        | 1.000239                  |
| 9500.0                        | 723.1                 | 13.3                                  | 54.9                 | 877.8                         | 660.8                      | 254.9                     | 10.7                        | 1.000234                  |
| 10000.0                       | 712.1                 | 12.2                                  | 55.4                 | 865.8                         | 659.5                      | 268.5                     | 10.8                        | 1.000230                  |
| 10500.0                       | 699.4                 | 11.0                                  | 56.2                 | 853.9                         | 658.1                      | 280.2                     | 11.6                        | 1.000225                  |
| 11000.0                       | 680.7                 | 9.8                                   | 59.4                 | 842.0                         | 656.7                      | 289.3                     | 12.9                        | 1.000222                  |
| 11500.0                       | 674.2                 | 8.6                                   | 62.6                 | 830.2                         | 655.3                      | 296.7                     | 13.0                        | 1.000219                  |
| 12000.0                       | 662.0                 | 7.4                                   | 65.9                 | 818.7                         | 653.9                      | 304.1                     | 12.9                        | 1.000215                  |
| 12500.0                       | 649.8                 | 6.5                                   | 62.9                 | 800.5                         | 652.7                      | 315.4                     | 11.3                        | 1.000209                  |
| 13000.0                       | 637.9                 | 5.6                                   | 59.7                 | 794.5                         | 651.5                      | 329.1                     | 10.3                        | 1.000204                  |
| 13500.0                       | 620.1                 | 4.7                                   | 56.5                 | 782.7                         | 650.4                      | 339.5                     | 9.9                         | 1.000198                  |
| 14000.0                       | 614.6                 | 3.6                                   | 56.5                 | 771.5                         | 649.0                      | 348.0                     | 9.9                         | 1.000194                  |
| 14500.0                       | 603.1                 | 2.3                                   | 59.2                 | 760.9                         | 647.4                      | 350.7                     | 10.2                        | 1.000191                  |
| 15000.0                       | 591.9                 | .9                                    | 62.9                 | 750.4                         | 645.8                      | 352.7                     | 10.6                        | 1.000188                  |
| 15500.0                       | 580.8                 | -4                                    | 68.1                 | 739.9                         | 644.2                      | 353.8                     | 11.0                        | 1.000185                  |
| 16000.0                       | 569.8                 | -1.7                                  | 71.7                 | 729.5                         | 642.8                      | 354.9                     | 11.3                        | 1.000182                  |
| 16500.0                       | 559.0                 | -2.5                                  | 56.3                 | 718.1                         | 641.6                      | 356.1                     | 11.4                        | 1.000175                  |
| 17000.0                       | 546.4                 | -3.0                                  | 57.2                 | 708.1                         | 639.9                      | 355.2                     | 11.8                        | 1.000171                  |
| 17500.0                       | 537.9                 | -5.3                                  | 58.2                 | 698.3                         | 638.2                      | 353.4                     | 12.3                        | 1.000168                  |
| 18000.0                       | 527.6                 | -6.6                                  | 57.8                 | 688.4                         | 636.6                      |                           |                             | 1.000165                  |
| 18500.0                       | 517.4                 | -7.6                                  | 51.0                 | 677.8                         | 635.3                      |                           |                             | 1.000160                  |
| 19000.0                       | 507.4                 | -8.6                                  | 44.1                 | 667.3                         | 634.0                      |                           |                             | 1.000156                  |

STATION ALTITUDE 3989.00 FEET MSL  
14 JULY 63 0825 MDT  
ASCENDING 10. 551

MANDATORY LEVELS  
1950020351  
WHITE SANDS

GEOLETIC COORDINATES  
32.41043 LAT DEG  
106.37033 LONG DEG

TABLE 11

| PRESSURE (POPOFF) |        | TEMPERATURE                  |                        | REL. HUM. |  | WIND DATA                 |                |
|-------------------|--------|------------------------------|------------------------|-----------|--|---------------------------|----------------|
| MILLIBARS         | FEET   | AIR<br>DEGREES<br>CENTIGRADE | DEWPOINT<br>CENTIGRADE | PERCENT   |  | DIRECTION<br>DEGREES (TR) | SPEED<br>KNOTS |
| 850.0             | 5013.  | 20.7                         | 10.6                   | 53.       |  | 164.4                     | 1.5            |
| 800.0             | 5708.  | 18.5                         | 8.7                    | 53.       |  | 193.4                     | 6.3            |
| 750.0             | 6558.  | 15.5                         | 6.2                    | 54.       |  | 230.9                     | 10.8           |
| 700.0             | 7466.  | 11.1                         | 2.7                    | 50.       |  | 279.6                     | 11.5           |
| 650.0             | 8401.  | 6.5                          | .0                     | 63.       |  | 315.1                     | 11.4           |
| 600.0             | 9422.  | 1.9                          | -5.0                   | 60.       |  | 351.4                     | 10.3           |
| 550.0             | 10504. | -3.7                         | -10.9                  | 57.       |  | 355.4                     | 11.7           |
| 500.0             | 11607. | -9.3                         | -20.6                  | 39.       |  |                           |                |

STATION ALTITUDE 5989.00 FEET AMSL  
14 JULY 63 0938 MDT  
ASCENSION I.O. 352

SIGNIFICANT LEVEL DATA  
1950020352  
WHITE SANDS

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LONG DEG

TABLE 12

| PRESSURE GEODETIC<br>ALTITUDE<br>MILLIBARS MSL FEET | TEMPERATURE<br>AIR DEWPOINT<br>DEGREES CENTIGRADE | REL. HUM.<br>PERCENT |
|-----------------------------------------------------|---------------------------------------------------|----------------------|
| 881.9                                               | 23.2                                              | 54.0                 |
| 875.0                                               | 23.4                                              | 40.0                 |
| 856.0                                               | 20.9                                              | 53.0                 |
| 824.2                                               | 20.3                                              | 50.0                 |
| 758.1                                               | 15.7                                              | 53.0                 |
| 706.0                                               | 11.7                                              | 53.0                 |
| 675.6                                               | 9.3                                               | 60.0                 |
| 622.1                                               | 4.6                                               | 53.0                 |
| 586.8                                               | -6                                                | 73.0                 |
| 554.9                                               | -2.8                                              | 54.0                 |
| 513.9                                               | -7.7                                              | 63.0                 |
| 503.3                                               | -8.0                                              | 37.0                 |
| 500.0                                               | -8.8                                              | 53.0                 |
| 483.9                                               | -9.3                                              | 50.0                 |
| 480.9                                               | -9.6                                              | 21.0                 |
| 463.8                                               | -11.5                                             | 44.0                 |
| 441.9                                               | -13.4                                             | 22.0                 |
| 421.0                                               | -14.6                                             | 28.0                 |
| 413.3                                               | -14.9                                             | 17.0                 |
| 400.0                                               | -18.4                                             | 23.0                 |
| 354.8                                               | -25.0                                             | 30.0                 |
| 319.6                                               | -32.2                                             | 35.0                 |
| 300.0                                               | -33.3                                             | 22.0                 |
| 250.0                                               | -39.7                                             | 19.0                 |
| 215.7                                               | -47.6                                             |                      |
| 200.0                                               | -50.9                                             |                      |
| 169.2                                               | -57.7                                             |                      |
| 154.0                                               | -61.7                                             |                      |
| 135.2                                               | -61.2                                             |                      |
| 123.9                                               | -67.0                                             |                      |
| 114.5                                               | -68.5                                             |                      |
| 107.5                                               | -69.0                                             |                      |
| 104.5                                               | -70.1                                             |                      |
| 101.1                                               | -68.5                                             |                      |
| 100.0                                               | -69.2                                             |                      |
| 96.8                                                | -69.4                                             |                      |
| 92.3                                                | -64.6                                             |                      |
| 77.0                                                | -60.8                                             |                      |
| 64.0                                                | -58.0                                             |                      |
| 57.6                                                | -60.0                                             |                      |

GEONUTIC COORDINATES  
32.40043 LAT DEG  
106.37033 LONG DEG

SIGNIFICANT LEVEL DATA  
19500.0352  
WHITE SANDS  
TABLE 12 CONT

STATION ALTITUDE 34,89.00 FEET MSL  
14 JULY 53  
ASCLL151,1110. 352

| PRESSURE GEO. STATIC<br>ALTITUDE<br>MILLIBARS MSL FEET | TEMPERATURE<br>AIR DEWPOINT<br>DEGREES CENTIGRADE | REL. HUM.<br>PERCENT |
|--------------------------------------------------------|---------------------------------------------------|----------------------|
|                                                        |                                                   |                      |
| 50.0 63222.1                                           | -55.0                                             |                      |
| 42.1 72849.7                                           | -55.5                                             |                      |
| 30.0 80097.8                                           | -49.1                                             |                      |
| 20.0 89613.3                                           | -43.5                                             |                      |
| 14.6 96034.6                                           | -42.8                                             |                      |
| 12.1 100260.9                                          | -39.8                                             |                      |

UPPER AIR DATA  
1950020352  
WHITE SANDS

STATION ALTITUDE 3989.00 FEET MSL  
14 JULY 63 0938 MDT  
ASCENDING 110. 552

GEOPHYSIC COORDINATES  
32.40043 LAT DEG  
106.37033 LONG DEG

TABLE 13

| GEOPHYSIC<br>ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR<br>DEGREES<br>CENTIGRADE | REL.HUM.<br>PERCENT | DENSITY<br>GM/CM <sup>3</sup><br>METER | SPEED OF<br>SOUND<br>KNOTS | WIND DATA<br>DIRECTION<br>DEGREES(TN) | WIND<br>SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|-----------------------------------|-----------------------|---------------------------------------------|---------------------|----------------------------------------|----------------------------|---------------------------------------|------------------------|---------------------------|
| 3989.0                            | 881.9                 | 23.2                                        | 54.0                | 1029.9                                 | 672.9                      | 360.0                                 | 1.9                    | 1.000296                  |
| 4000.0                            | 881.6                 | 23.2                                        | 53.6                | 1029.5                                 | 672.9                      | .3                                    | 1.9                    | 1.000295                  |
| 4050.0                            | 860.3                 | 22.5                                        | 48.4                | 1014.7                                 | 671.8                      | 63.4                                  | .5                     | 1.000284                  |
| 5000.0                            | 851.3                 | 21.0                                        | 52.6                | 1002.2                                 | 670.1                      | 152.3                                 | 2.0                    | 1.000281                  |
| 5500.0                            | 830.4                 | 20.5                                        | 51.1                | 986.6                                  | 669.5                      | 156.9                                 | 3.9                    | 1.000274                  |
| 6000.0                            | 821.8                 | 19.9                                        | 50.3                | 971.7                                  | 668.7                      | 173.7                                 | 5.8                    | 1.000268                  |
| 6500.0                            | 807.3                 | 19.0                                        | 50.9                | 957.7                                  | 667.6                      | 191.1                                 | 8.2                    | 1.000263                  |
| 7000.0                            | 793.1                 | 18.0                                        | 51.5                | 944.0                                  | 666.5                      | 200.6                                 | 9.5                    | 1.000258                  |
| 7500.0                            | 779.1                 | 17.1                                        | 52.1                | 930.5                                  | 665.4                      | 208.4                                 | 10.4                   | 1.000253                  |
| 8000.0                            | 763.4                 | 16.2                                        | 52.7                | 917.1                                  | 664.3                      | 221.1                                 | 9.9                    | 1.000248                  |
| 8500.0                            | 751.9                 | 15.3                                        | 53.0                | 903.9                                  | 663.2                      | 235.0                                 | 9.8                    | 1.000243                  |
| 9000.0                            | 736.4                 | 14.4                                        | 53.0                | 890.7                                  | 662.1                      | 249.6                                 | 10.6                   | 1.000238                  |
| 9500.0                            | 723.2                 | 13.5                                        | 53.0                | 877.7                                  | 661.0                      | 262.4                                 | 11.9                   | 1.000233                  |
| 10000.0                           | 712.3                 | 12.6                                        | 53.0                | 864.9                                  | 659.9                      | 274.5                                 | 13.4                   | 1.000229                  |
| 10500.0                           | 699.5                 | 11.7                                        | 53.1                | 852.3                                  | 658.8                      | 285.4                                 | 14.7                   | 1.000224                  |
| 11000.0                           | 686.9                 | 10.4                                        | 56.9                | 840.7                                  | 657.5                      | 298.1                                 | 15.5                   | 1.000221                  |
| 11500.0                           | 674.4                 | 9.1                                         | 59.7                | 829.1                                  | 655.8                      | 307.3                                 | 15.2                   | 1.000218                  |
| 12000.0                           | 662.1                 | 8.1                                         | 58.2                | 817.2                                  | 654.5                      | 315.9                                 | 13.7                   | 1.000212                  |
| 12500.0                           | 650.0                 | 7.1                                         | 56.7                | 805.4                                  | 653.2                      | 320.8                                 | 12.4                   | 1.000207                  |
| 13000.0                           | 638.1                 | 6.0                                         | 55.1                | 793.8                                  | 651.9                      | 325.0                                 | 11.3                   | 1.000202                  |
| 13500.0                           | 626.4                 | 5.0                                         | 53.6                | 782.3                                  | 650.6                      | 327.1                                 | 11.1                   | 1.000197                  |
| 14000.0                           | 614.4                 | 3.7                                         | 56.4                | 771.4                                  | 649.1                      | 329.6                                 | 10.9                   | 1.000194                  |
| 14500.0                           | 603.3                 | 2.3                                         | 61.9                | 760.9                                  | 647.5                      | 333.3                                 | 10.5                   | 1.000192                  |
| 15000.0                           | 592.1                 | .9                                          | 67.4                | 750.6                                  | 645.8                      | 336.8                                 | 10.4                   | 1.000189                  |
| 15500.0                           | 581.6                 | -6                                          | 72.9                | 740.5                                  | 644.1                      | 340.0                                 | 10.5                   | 1.000187                  |
| 16000.0                           | 570.0                 | -15.5                                       | 65.2                | 729.3                                  | 642.9                      | 342.7                                 | 10.7                   | 1.000181                  |
| 16500.0                           | 559.3                 | -24                                         | 57.3                | 718.2                                  | 641.6                      | 345.3                                 | 11.0                   | 1.000175                  |
| 17000.0                           | 548.6                 | -36                                         | 55.5                | 707.8                                  | 640.1                      | 348.2                                 | 11.9                   | 1.000171                  |
| 17500.0                           | 538.1                 | -50                                         | 58.1                | 698.0                                  | 638.4                      | 350.1                                 | 12.9                   | 1.000168                  |
| 18000.0                           | 527.8                 | -65                                         | 60.7                | 688.3                                  | 636.7                      | 349.7                                 | 14.5                   | 1.000166                  |
| 18500.0                           | 517.7                 | -77                                         | 60.7                | 678.4                                  | 635.2                      | 347.8                                 | 16.0                   | 1.000162                  |
| 19000.0                           | 507.6                 | -79                                         | 41.5                | 666.1                                  | 634.6                      | 343.6                                 | 17.3                   | 1.000156                  |
| 19500.0                           | 497.8                 | -89                                         | 52.4                | 655.4                                  | 633.7                      | 341.5                                 | 17.2                   | 1.000155                  |
| 20000.0                           | 488.1                 | -9.3                                        | 47.2                | 643.8                                  | 633.1                      | 340.7                                 | 16.0                   | 1.000151                  |
| 20500.0                           | 478.6                 | -9.9                                        | 24.0                | 632.9                                  | 632.3                      | 343.3                                 | 12.9                   | 1.000145                  |
| 21000.0                           | 469.2                 | -10.9                                       | 36.6                | 622.8                                  | 631.2                      | 347.0                                 | 9.8                    | 1.000144                  |
| 21500.0                           | 460.0                 | -11.8                                       | 40.3                | 612.8                                  | 630.0                      | 343.1                                 | 8.2                    | 1.000142                  |
| 22000.0                           | 451.0                 | -12.6                                       | 31.3                | 602.6                                  | 629.0                      | 329.0                                 | 7.8                    | 1.000138                  |
| 22500.0                           | 442.1                 | -13.4                                       | 22.2                | 592.6                                  | 628.0                      | 311.1                                 | 8.8                    | 1.000135                  |
| 23000.0                           | 433.3                 | -14.1                                       | 25.4                | 582.4                                  | 627.2                      | 301.3                                 | 10.8                   | 1.000133                  |

STATION ALTITUDE 3,890.00 F T SL  
14 JULY 63  
ASCISSION NO. 552

UPPER AIR DATA  
1950020352  
WHITE SANDS

GEODETIC COORDINATES  
32-40.043 LAT DEG  
106-37.033 LONG DEG

TABLE 13 CONT

| GEOMETRIC ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | AIR TEMPERATURE<br>DEGREES, CENTIGRADE | REL. HUM.<br>PERCENT | DENSITY<br>GM/CM <sup>3</sup><br>MEETER | SPEED OF<br>SOUND<br>KNOTS | WIND DIRECTION<br>DEGREES (TN) | WIND SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|--------------------------------|-----------------------|----------------------------------------|----------------------|-----------------------------------------|----------------------------|--------------------------------|---------------------|---------------------------|
| 23500.0                        | 424.7                 | -14.7                                  | 24.9                 | 572.2                                   | 620.5                      | 295.4                          | 13.0                | 1.000130                  |
| 24000.0                        | 410.3                 | -15.4                                  | 17.9                 | 562.5                                   | 625.5                      | 294.5                          | 13.9                | 1.000127                  |
| 24500.0                        | 400.0                 | -16.9                                  | 20.5                 | 554.5                                   | 623.7                      | 294.3                          | 14.6                | 1.000125                  |
| 25000.0                        | 399.8                 | -18.4                                  | 23.0                 | 546.6                                   | 621.9                      | 295.9                          | 14.7                | 1.000124                  |
| 25500.0                        | 391.6                 | -19.6                                  | 24.2                 | 537.8                                   | 620.5                      | 298.0                          | 15.0                | 1.000122                  |
| 26000.0                        | 383.6                 | -20.7                                  | 25.4                 | 529.2                                   | 619.1                      | 301.5                          | 15.5                | 1.000120                  |
| 26500.0                        | 375.8                 | -21.8                                  | 26.6                 | 520.8                                   | 617.7                      | 303.5                          | 15.6                | 1.000118                  |
| 27000.0                        | 368.1                 | -23.0                                  | 27.8                 | 512.5                                   | 616.3                      | 303.6                          | 15.1                | 1.000116                  |
| 27500.0                        | 360.6                 | -24.1                                  | 29.1                 | 504.3                                   | 614.9                      | 302.9                          | 14.6                | 1.000114                  |
| 28000.0                        | 353.2                 | -25.3                                  | 30.2                 | 496.3                                   | 613.4                      | 301.0                          | 14.1                | 1.000112                  |
| 28500.0                        | 345.8                 | -26.8                                  | 31.2                 | 488.0                                   | 611.0                      | 298.0                          | 13.3                | 1.000110                  |
| 29000.0                        | 338.5                 | -28.2                                  | 32.2                 | 481.4                                   | 609.7                      | 293.4                          | 12.2                | 1.000108                  |
| 29500.0                        | 331.4                 | -29.7                                  | 33.3                 | 474.2                                   | 607.9                      | 290.4                          | 11.6                | 1.000107                  |
| 30000.0                        | 324.5                 | -31.2                                  | 34.3                 | 467.0                                   | 606.1                      | 290.7                          | 11.6                | 1.000105                  |
| 30500.0                        | 317.6                 | -32.3                                  | 33.7                 | 459.4                                   | 604.6                      | 294.8                          | 13.2                | 1.000103                  |
| 31000.0                        | 310.9                 | -32.7                                  | 29.3                 | 450.3                                   | 604.2                      | 302.2                          | 17.8                | 1.000101                  |
| 31500.0                        | 304.2                 | -33.1                                  | 24.9                 | 441.4                                   | 603.7                      | 305.3                          | 23.2                | 1.000099                  |
| 32000.0                        | 297.7                 | -33.6                                  | 21.9                 | 432.8                                   | 603.0                      | 305.5                          | 29.8                | 1.000097                  |
| 32500.0                        | 291.3                 | -34.3                                  | 21.5                 | 424.8                                   | 602.1                      | 303.5                          | 36.9                | 1.000095                  |
| 33000.0                        | 285.0                 | -35.1                                  | 21.2                 | 417.0                                   | 601.1                      | 299.8                          | 38.4                | 1.000093                  |
| 33500.0                        | 278.8                 | -35.9                                  | 20.8                 | 409.3                                   | 600.1                      | 296.7                          | 41.2                | 1.000092                  |
| 34000.0                        | 272.7                 | -36.6                                  | 20.1                 | 401.7                                   | 599.1                      | 294.0                          | 43.6                | 1.000090                  |
| 34500.0                        | 266.8                 | -37.4                                  | 20.1                 | 394.3                                   | 598.2                      | 293.0                          | 45.3                | 1.000088                  |
| 35000.0                        | 261.1                 | -38.2                                  | 19.7                 | 387.0                                   | 597.2                      | 292.6                          | 46.8                | 1.000087                  |
| 35500.0                        | 255.4                 | -39.0                                  | 19.4                 | 379.9                                   | 596.2                      | 292.5                          | 47.0                | 1.000085                  |
| 36000.0                        | 249.9                 | -39.7                                  | 18.9                 | 372.9                                   | 595.2                      | 292.3                          | 47.0                | 1.000083                  |
| 36500.0                        | 244.3                 | -40.9                                  | 16.0                 | 366.5                                   | 593.7                      | 293.3                          | 46.8                | 1.000082                  |
| 37000.0                        | 238.8                 | -42.1                                  | 13.1                 | 360.2                                   | 592.1                      | 294.5                          | 46.6                | 1.000080                  |
| 37500.0                        | 233.5                 | -43.4                                  | 10.2                 | 354.0                                   | 590.0                      | 295.0                          | 46.6                | 1.000079                  |
| 38000.0                        | 228.3                 | -44.6                                  | 7.3                  | 347.9                                   | 589.0                      | 295.4                          | 46.6                | 1.000078                  |
| 38500.0                        | 223.2                 | -45.8                                  | 4.4                  | 341.9                                   | 587.4                      | 294.1                          | 46.5                | 1.000076                  |
| 39000.0                        | 218.2                 | -47.0                                  | 1.5                  | 336.1                                   | 585.9                      | 292.8                          | 46.4                | 1.000075                  |
| 39500.0                        | 213.3                 | -48.1                                  |                      | 330.1                                   | 584.4                      | 291.5                          | 46.2                | 1.000074                  |
| 40000.0                        | 208.4                 | -49.1                                  |                      | 324.0                                   | 583.1                      | 290.4                          | 46.4                | 1.000072                  |
| 40500.0                        | 203.6                 | -50.1                                  |                      | 318.1                                   | 581.0                      | 289.8                          | 47.4                | 1.000071                  |
| 41000.0                        | 198.9                 | -51.1                                  |                      | 312.1                                   | 580.5                      | 289.9                          | 48.3                | 1.000070                  |
| 41500.0                        | 194.3                 | -52.1                                  |                      | 306.2                                   | 579.2                      | 290.7                          | 49.1                | 1.000068                  |
| 42000.0                        | 189.8                 | -53.0                                  |                      | 300.3                                   | 578.0                      | 290.5                          | 48.9                | 1.000067                  |
| 42500.0                        | 185.3                 | -54.0                                  |                      | 294.6                                   | 576.7                      | 290.0                          | 48.3                | 1.000066                  |
| 43000.0                        | 181.0                 | -55.0                                  |                      | 289.0                                   | 575.5                      | 288.5                          | 47.3                | 1.000064                  |

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

STATION ALTITUDE 3489.00 FEET MSL  
 14 JULY 83 0938 EDT  
 ASCENSION NO. 352

UPPER AIR DATA  
 1950020352  
 WHITE SANDS

GEODETIC COORDINATES  
 32.40043 LAT DEG  
 106.37033 LONG DEG

TABLE 13 CONT

| GEOMETRIC ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR DEGREE C | REL. HUM.<br>PERCENT | DENSITY<br>GM/CM <sup>3</sup> | SPEED OF<br>SOUND<br>KIOTS | WIND DATA<br>DIRECTION<br>DEGREES (TN) | WIND<br>SPEED<br>KIOTS | INDEX<br>OF<br>REFRACTION |
|--------------------------------|-----------------------|-----------------------------|----------------------|-------------------------------|----------------------------|----------------------------------------|------------------------|---------------------------|
| 43500.0                        | 176.7                 | -55.9                       |                      | 203.5                         | 574.2                      | 288.4                                  | 45.9                   | 1.000063                  |
| 44000.0                        | 172.6                 | -56.9                       |                      | 278.1                         | 572.9                      | 289.2                                  | 44.2                   | 1.000062                  |
| 44500.0                        | 168.6                 | -57.8                       |                      | 272.7                         | 571.7                      | 291.1                                  | 43.1                   | 1.000061                  |
| 45000.0                        | 164.5                 | -58.6                       |                      | 267.2                         | 570.6                      | 293.1                                  | 42.5                   | 1.000060                  |
| 45500.0                        | 160.6                 | -59.4                       |                      | 261.8                         | 569.5                      | 295.0                                  | 42.3                   | 1.000059                  |
| 46000.0                        | 156.7                 | -60.2                       |                      | 256.4                         | 568.4                      | 297.5                                  | 41.2                   | 1.000057                  |
| 46500.0                        | 153.0                 | -61.0                       |                      | 251.3                         | 567.4                      | 304.7                                  | 39.7                   | 1.000056                  |
| 47000.0                        | 149.3                 | -61.7                       |                      | 245.9                         | 566.5                      | 308.3                                  | 36.1                   | 1.000055                  |
| 47500.0                        | 145.7                 | -61.5                       |                      | 239.8                         | 565.7                      | 308.4                                  | 31.2                   | 1.000053                  |
| 48000.0                        | 142.2                 | -61.4                       |                      | 233.9                         | 565.9                      | 302.0                                  | 25.1                   | 1.000052                  |
| 48500.0                        | 138.7                 | -61.2                       |                      | 228.1                         | 567.1                      | 291.0                                  | 20.9                   | 1.000051                  |
| 49000.0                        | 135.4                 | -62.2                       |                      | 223.0                         | 565.8                      | 275.6                                  | 18.8                   | 1.000050                  |
| 49500.0                        | 132.0                 | -63.5                       |                      | 219.4                         | 564.1                      | 267.7                                  | 17.4                   | 1.000049                  |
| 50000.0                        | 128.8                 | -64.7                       |                      | 215.3                         | 562.5                      | 264.5                                  | 20.9                   | 1.000048                  |
| 50500.0                        | 125.7                 | -65.9                       |                      | 211.2                         | 560.8                      | 267.1                                  | 20.6                   | 1.000047                  |
| 51000.0                        | 122.6                 | -67.1                       |                      | 207.2                         | 559.3                      | 271.6                                  | 19.9                   | 1.000046                  |
| 51500.0                        | 119.5                 | -67.6                       |                      | 202.6                         | 558.6                      | 280.7                                  | 18.1                   | 1.000045                  |
| 52000.0                        | 116.6                 | -68.1                       |                      | 198.1                         | 557.8                      | 290.8                                  | 17.1                   | 1.000044                  |
| 52500.0                        | 113.7                 | -68.6                       |                      | 193.5                         | 557.2                      | 300.8                                  | 17.0                   | 1.000043                  |
| 53000.0                        | 110.8                 | -68.8                       |                      | 188.9                         | 557.0                      | 305.0                                  | 17.6                   | 1.000042                  |
| 53500.0                        | 108.1                 | -69.0                       |                      | 184.3                         | 556.7                      | 306.7                                  | 18.4                   | 1.000041                  |
| 54000.0                        | 105.3                 | -69.7                       |                      | 180.4                         | 555.6                      | 310.4                                  | 19.1                   | 1.000040                  |
| 54500.0                        | 102.7                 | -69.3                       |                      | 175.5                         | 556.2                      | 315.5                                  | 19.1                   | 1.000039                  |
| 55000.0                        | 100.1                 | -69.1                       |                      | 171.0                         | 556.5                      | 324.9                                  | 17.6                   | 1.000038                  |
| 55500.0                        | 97.6                  | -69.3                       |                      | 166.8                         | 556.2                      | 333.5                                  | 14.5                   | 1.000037                  |
| 56000.0                        | 95.2                  | -68.9                       |                      | 162.3                         | 556.8                      | 345.8                                  | 10.6                   | 1.000036                  |
| 56500.0                        | 92.8                  | -68.8                       |                      | 156.7                         | 559.6                      | 11.6                                   | 7.3                    | 1.000035                  |
| 57000.0                        | 90.5                  | -64.8                       |                      | 151.4                         | 562.3                      | 46.1                                   | 6.7                    | 1.000034                  |
| 57500.0                        | 88.3                  | -64.3                       |                      | 147.3                         | 563.0                      | 57.7                                   | 7.2                    | 1.000033                  |
| 58000.0                        | 86.2                  | -63.9                       |                      | 143.5                         | 563.5                      | 53.6                                   | 6.7                    | 1.000032                  |
| 58500.0                        | 84.1                  | -63.5                       |                      | 139.7                         | 564.0                      | 39.5                                   | 5.9                    | 1.000031                  |
| 59000.0                        | 82.0                  | -63.2                       |                      | 136.1                         | 564.5                      | 44.2                                   | 5.6                    | 1.000030                  |
| 59500.0                        | 80.1                  | -62.8                       |                      | 132.0                         | 565.0                      | 63.6                                   | 6.6                    | 1.000030                  |
| 60000.0                        | 78.1                  | -62.4                       |                      | 129.1                         | 565.5                      | 95.3                                   | 11.5                   | 1.000029                  |
| 60500.0                        | 76.2                  | -62.1                       |                      | 125.8                         | 566.0                      | 102.0                                  | 14.8                   | 1.000028                  |
| 61000.0                        | 74.4                  | -61.7                       |                      | 122.5                         | 566.5                      | 105.0                                  | 17.0                   | 1.000027                  |
| 61500.0                        | 72.6                  | -61.3                       |                      | 119.3                         | 567.0                      | 104.6                                  | 16.2                   | 1.000027                  |
| 62000.0                        | 70.8                  | -61.0                       |                      | 116.2                         | 567.5                      | 103.5                                  | 16.2                   | 1.000026                  |
| 62500.0                        | 69.1                  | -60.4                       |                      | 113.2                         | 568.2                      | 101.9                                  | 16.6                   | 1.000025                  |
| 63000.0                        | 67.4                  | -59.7                       |                      | 110.1                         | 569.2                      | 98.7                                   | 15.7                   | 1.000025                  |

STATION ALTITUDE 3,89.00 FEET MSL  
 14 JULY 83 0933 EDT  
 ASCENSION NO. 352

UPPER AIR DATA  
 1950020352  
 WHITE SANDS

GEODETIC COORDINATES  
 32.4,043 LAT DEG  
 106.37033 LONG DEG

TABLE 13 CONT

| GEOMETRIC ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR DEGREES<br>CENTIGRADE | REL.HUMID.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF<br>SOUND<br>METERS<br>PER SECOND | WIND DATA<br>DIRECTION<br>DEGREES (TN)<br>SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|--------------------------------|-----------------------|------------------------------------------|-----------------------|------------------------------|-------------------------------------------|----------------------------------------------------------|---------------------------|
| 63500.0                        | 65.8                  | -59.0                                    |                       | 107.1                        | 570.1                                     | 95.8                                                     | 1.000024                  |
| 64000.0                        | 64.3                  | -58.3                                    |                       | 104.2                        | 571.0                                     | 94.5                                                     | 1.000023                  |
| 64500.0                        | 62.7                  | -58.3                                    |                       | 101.7                        | 571.0                                     | 94.7                                                     | 1.000023                  |
| 65000.0                        | 61.2                  | -58.9                                    |                       | 99.6                         | 570.2                                     | 95.6                                                     | 1.000022                  |
| 65500.0                        | 59.8                  | -59.5                                    |                       | 97.5                         | 569.4                                     | 102.1                                                    | 1.000022                  |
| 66000.0                        | 58.3                  | -59.9                                    |                       | 95.3                         | 569.0                                     | 109.0                                                    | 1.000021                  |
| 66500.0                        | 57.0                  | -59.1                                    |                       | 92.7                         | 570.0                                     | 118.7                                                    | 1.000021                  |
| 67000.0                        | 55.6                  | -58.4                                    |                       | 90.2                         | 571.0                                     | 125.1                                                    | 1.000020                  |
| 67500.0                        | 54.3                  | -57.6                                    |                       | 87.8                         | 572.0                                     | 127.0                                                    | 1.000020                  |
| 68000.0                        | 53.0                  | -56.8                                    |                       | 85.4                         | 573.0                                     | 117.9                                                    | 1.000019                  |
| 68500.0                        | 51.4                  | -56.1                                    |                       | 83.1                         | 574.0                                     | 102.6                                                    | 1.000018                  |
| 69000.0                        | 50.5                  | -55.3                                    |                       | 80.8                         | 575.0                                     | 94.4                                                     | 1.000018                  |
| 69500.0                        | 49.3                  | -55.0                                    |                       | 78.8                         | 575.4                                     | 90.0                                                     | 1.000018                  |
| 70000.0                        | 48.2                  | -55.1                                    |                       | 77.0                         | 575.3                                     | 93.7                                                     | 1.000017                  |
| 70500.0                        | 47.1                  | -55.2                                    |                       | 75.2                         | 575.2                                     | 95.9                                                     | 1.000017                  |
| 71000.0                        | 46.0                  | -55.2                                    |                       | 73.5                         | 575.1                                     | 94.3                                                     | 1.000016                  |
| 71500.0                        | 44.9                  | -55.3                                    |                       | 71.8                         | 575.0                                     | 90.9                                                     | 1.000016                  |
| 72000.0                        | 43.8                  | -55.4                                    |                       | 70.1                         | 574.9                                     | 84.4                                                     | 1.000016                  |
| 72500.0                        | 42.8                  | -55.5                                    |                       | 68.5                         | 574.8                                     | 80.0                                                     | 1.000015                  |
| 73000.0                        | 41.8                  | -55.4                                    |                       | 66.9                         | 574.9                                     | 79.1                                                     | 1.000015                  |
| 73500.0                        | 40.8                  | -54.9                                    |                       | 65.2                         | 575.5                                     | 79.5                                                     | 1.000015                  |
| 74000.0                        | 39.9                  | -54.5                                    |                       | 63.6                         | 576.1                                     | 81.2                                                     | 1.000014                  |
| 74500.0                        | 39.0                  | -54.0                                    |                       | 62.0                         | 576.7                                     | 80.4                                                     | 1.000014                  |
| 75000.0                        | 38.1                  | -53.6                                    |                       | 60.4                         | 577.2                                     | 77.6                                                     | 1.000013                  |
| 75500.0                        | 37.2                  | -53.2                                    |                       | 58.9                         | 577.8                                     | 77.3                                                     | 1.000013                  |
| 76000.0                        | 36.3                  | -52.7                                    |                       | 57.4                         | 578.4                                     | 78.4                                                     | 1.000013                  |
| 76500.0                        | 35.5                  | -52.3                                    |                       | 56.0                         | 579.0                                     | 79.5                                                     | 1.000012                  |
| 77000.0                        | 34.7                  | -51.8                                    |                       | 54.6                         | 579.6                                     | 80.6                                                     | 1.000012                  |
| 77500.0                        | 33.9                  | -51.4                                    |                       | 53.2                         | 580.1                                     | 81.9                                                     | 1.000012                  |
| 78000.0                        | 33.1                  | -51.0                                    |                       | 51.9                         | 580.7                                     | 83.2                                                     | 1.000012                  |
| 78500.0                        | 32.3                  | -50.5                                    |                       | 50.6                         | 581.5                                     | 84.0                                                     | 1.000011                  |
| 79000.0                        | 31.6                  | -50.1                                    |                       | 49.3                         | 581.9                                     | 86.4                                                     | 1.000011                  |
| 79500.0                        | 30.9                  | -49.6                                    |                       | 48.1                         | 582.4                                     | 85.7                                                     | 1.000011                  |
| 80000.0                        | 30.1                  | -49.2                                    |                       | 46.9                         | 583.0                                     | 84.3                                                     | 1.000010                  |
| 80500.0                        | 29.5                  | -48.8                                    |                       | 45.7                         | 583.5                                     | 84.6                                                     | 1.000010                  |
| 81000.0                        | 28.8                  | -48.5                                    |                       | 44.7                         | 583.9                                     | 85.3                                                     | 1.000010                  |
| 81500.0                        | 28.1                  | -48.2                                    |                       | 43.6                         | 584.3                                     | 88.0                                                     | 1.000010                  |
| 82000.0                        | 27.5                  | -47.9                                    |                       | 42.8                         | 584.7                                     | 91.1                                                     | 1.000009                  |
| 82500.0                        | 26.9                  | -47.6                                    |                       | 41.5                         | 585.1                                     | 92.0                                                     | 1.000009                  |
| 83000.0                        | 26.3                  | -47.3                                    |                       | 40.5                         | 585.5                                     | 92.2                                                     | 1.000009                  |

STATION ALTITUDE 309.00 F. T. 154  
14 JULY 83 0938 REPT  
ASCENSION NO. 352

UPPER AIR DATA  
1950020352  
WHITE SANDS

GEOGETIC COORDINATES  
32°41.043 LAT DEG  
106°37033 LOI DEG

TABLE 13 CONT

| GEOMETRIC ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR DEGREE, CENTIGRADE | REL. HUM. PERCENT | DENSITY<br>GM/CM <sup>3</sup> | WIND SPEED<br>KNOTS | WIND DIRECTION<br>DEGREES (TH) | WIND SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|--------------------------------|-----------------------|---------------------------------------|-------------------|-------------------------------|---------------------|--------------------------------|---------------------|---------------------------|
| 83500.0                        | 25.7                  | -47.0                                 |                   | 39.6                          | 585.4               | 92.7                           | 29.3                | 1.000009                  |
| 84000.0                        | 25.1                  | -46.6                                 |                   | 38.6                          | 580.3               | 93.3                           | 29.0                | 1.000009                  |
| 84500.0                        | 24.0                  | -46.3                                 |                   | 37.7                          | 586.7               | 95.7                           | 29.8                | 1.000008                  |
| 85000.0                        | 24.0                  | -46.0                                 |                   | 36.8                          | 587.1               | 93.6                           | 31.0                | 1.000008                  |
| 85500.0                        | 23.5                  | -45.7                                 |                   | 35.9                          | 587.5               | 100.0                          | 31.0                | 1.000008                  |
| 86000.0                        | 22.9                  | -45.4                                 |                   | 35.1                          | 587.9               | 100.7                          | 30.5                | 1.000008                  |
| 86500.0                        | 22.4                  | -45.1                                 |                   | 34.2                          | 588.3               | 100.0                          | 29.8                | 1.000008                  |
| 87000.0                        | 21.9                  | -44.8                                 |                   | 33.4                          | 588.7               | 97.2                           | 28.6                | 1.000007                  |
| 87500.0                        | 21.4                  | -44.5                                 |                   | 32.6                          | 589.2               | 94.2                           | 27.6                | 1.000007                  |
| 88000.0                        | 20.9                  | -44.1                                 |                   | 31.9                          | 589.6               | 89.6                           | 26.7                | 1.000007                  |
| 88500.0                        | 20.5                  | -43.8                                 |                   | 31.1                          | 590.0               | 84.6                           | 26.0                | 1.000007                  |
| 89000.0                        | 20.0                  | -43.5                                 |                   | 30.4                          | 590.4               | 80.7                           | 25.9                | 1.000007                  |
| 89500.0                        | 19.6                  | -43.5                                 |                   | 29.7                          | 590.4               | 76.3                           | 26.4                | 1.000007                  |
| 90000.0                        | 19.1                  | -43.4                                 |                   | 29.0                          | 590.5               | 75.9                           | 26.9                | 1.000006                  |
| 90500.0                        | 18.7                  | -43.4                                 |                   | 28.4                          | 590.6               | 78.1                           | 28.4                | 1.000006                  |
| 91000.0                        | 18.3                  | -43.3                                 |                   | 27.7                          | 590.6               | 80.1                           | 30.0                | 1.000006                  |
| 91500.0                        | 17.9                  | -43.3                                 |                   | 27.1                          | 590.7               | 81.1                           | 31.8                | 1.000006                  |
| 92000.0                        | 17.5                  | -43.2                                 |                   | 26.5                          | 590.8               | 81.5                           | 33.9                | 1.000006                  |
| 92500.0                        | 17.1                  | -43.2                                 |                   | 25.9                          | 590.8               | 81.8                           | 35.9                | 1.000006                  |
| 93000.0                        | 16.7                  | -43.1                                 |                   | 25.3                          | 590.9               | 83.3                           | 36.2                | 1.000006                  |
| 93500.0                        | 16.4                  | -43.1                                 |                   | 24.8                          | 590.9               | 84.8                           | 36.5                | 1.000006                  |
| 94000.0                        | 16.0                  | -43.0                                 |                   | 24.2                          | 591.0               | 85.7                           | 36.8                | 1.000005                  |
| 94500.0                        | 15.6                  | -43.0                                 |                   | 23.7                          | 591.1               | 86.1                           | 37.0                | 1.000005                  |
| 95000.0                        | 15.3                  | -42.9                                 |                   | 23.1                          | 591.1               | 85.2                           | 37.2                | 1.000005                  |
| 95500.0                        | 15.0                  | -42.9                                 |                   | 22.6                          | 591.2               | 77.6                           | 34.0                | 1.000005                  |
| 96000.0                        | 14.6                  | -42.8                                 |                   | 22.1                          | 591.3               | 68.0                           | 31.6                | 1.000005                  |
| 96500.0                        | 14.3                  | -42.5                                 |                   | 21.6                          | 591.7               | 68.2                           | 30.6                | 1.000005                  |
| 97000.0                        | 14.0                  | -42.1                                 |                   | 21.1                          | 592.2               | 78.5                           | 30.9                | 1.000005                  |
| 97500.0                        | 13.7                  | -41.8                                 |                   | 20.6                          | 592.6               | 84.2                           | 32.2                | 1.000005                  |
| 98000.0                        | 13.4                  | -41.4                                 |                   | 20.1                          | 593.1               | 94.9                           | 38.5                | 1.000004                  |
| 98500.0                        | 13.1                  | -41.0                                 |                   | 19.6                          | 593.5               | 99.7                           | 45.2                | 1.000004                  |
| 99000.0                        | 12.8                  | -40.7                                 |                   | 19.2                          | 594.0               |                                |                     | 1.000004                  |
| 99500.0                        | 12.5                  | -40.3                                 |                   | 18.7                          | 594.4               |                                |                     | 1.000004                  |
| 100000.0                       | 12.2                  | -40.0                                 |                   | 18.3                          | 594.4               |                                |                     | 1.000004                  |

STATION ALTITUDE 3989.00 F. 11 MSL  
14 JULY 83 0938 MDT  
ASCENSION NO. 352

MANDATORY LEVELS  
1950020352  
WHITE SANDS  
TABLE 14

GEOSETIC COORDINATES:  
32.41043 LAT DEG  
106.37033 LONG DEG

| PRESSURE GEOPOTENTIAL |        | TEMPERATURE    |                        | REL. HUM. |              | WIND DATA      |  |
|-----------------------|--------|----------------|------------------------|-----------|--------------|----------------|--|
| MILLIBARS             | FLEET  | AIR<br>DEGREES | DEWPOINT<br>CENTIGRADE | PERCENT   | DEGREES (TH) | SPEED<br>KNOTS |  |
| 650.0                 | 5039.  | 20.9           | 11.0                   | 53.       | 153.3        | 2.2            |  |
| 800.0                 | 6756.  | 18.5           | 8.2                    | 51.       | 190.3        | 9.1            |  |
| 750.0                 | 8563.  | 15.2           | 5.7                    | 53.       | 237.1        | 9.9            |  |
| 700.0                 | 10471. | 11.7           | 2.5                    | 53.       | 284.8        | 14.7           |  |
| 650.0                 | 12490. | 7.1            | -1.0                   | 57.       | 320.8        | 12.4           |  |
| 600.0                 | 14633. | 1.9            | -4.3                   | 64.       | 334.4        | 10.4           |  |
| 550.0                 | 16914. | -3.4           | -11.1                  | 55.       | 347.8        | 11.8           |  |
| 500.0                 | 19360. | -8.8           | -16.6                  | 53.       | 341.7        | 17.5           |  |
| 450.0                 | 22022. | -12.7          | -26.5                  | 30.       | 327.2        | 7.8            |  |
| 400.0                 | 24940. | -18.4          | -34.3                  | 23.       | 295.9        | 14.7           |  |
| 350.0                 | 28167. | -25.9          | -38.1                  | 31.       | 300.2        | 13.9           |  |
| 300.0                 | 31761. | -33.3          | -47.6                  | 22.       | 305.5        | 27.3           |  |
| 250.0                 | 35908. | -39.7          | -54.4                  | 19.       | 292.3        | 47.0           |  |
| 200.0                 | 40780. | -50.9          |                        |           | 289.7        | 48.1           |  |
| 175.0                 | 43606. | -56.3          |                        |           | 288.7        | 45.2           |  |
| 150.0                 | 46776. | -61.7          |                        |           | 307.4        | 36.9           |  |
| 125.0                 | 50464. | -66.2          |                        |           | 267.8        | 20.5           |  |
| 100.0                 | 54853. | -69.2          |                        |           | 324.9        | 17.6           |  |
| 80.0                  | 59303. | -62.8          |                        |           | 67.1         | 6.4            |  |
| 70.0                  | 62015. | -60.8          |                        |           | 102.9        | 16.4           |  |
| 60.0                  | 65185. | -59.4          |                        |           | 100.7        | 18.9           |  |
| 50.0                  | 68459. | -55.0          |                        |           | 92.2         | 20.3           |  |
| 40.0                  | 73632. | -54.5          |                        |           | 80.8         | 20.9           |  |
| 30.0                  | 79751. | -49.1          |                        |           | 84.2         | 28.7           |  |
| 25.0                  | 83609. | -46.6          |                        |           | 93.3         | 29.0           |  |
| 20.0                  | 88591. | -43.5          |                        |           | 80.9         | 25.9           |  |
| 15.0                  | 94948. | -42.9          |                        |           | 80.0         | 34.7           |  |

**DATE**  
**ILME**