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19304DT GSRS, MISSILE NUMBER 1031, ROUND NUMBER V-46. 28 JUNE 1--ETC(U)
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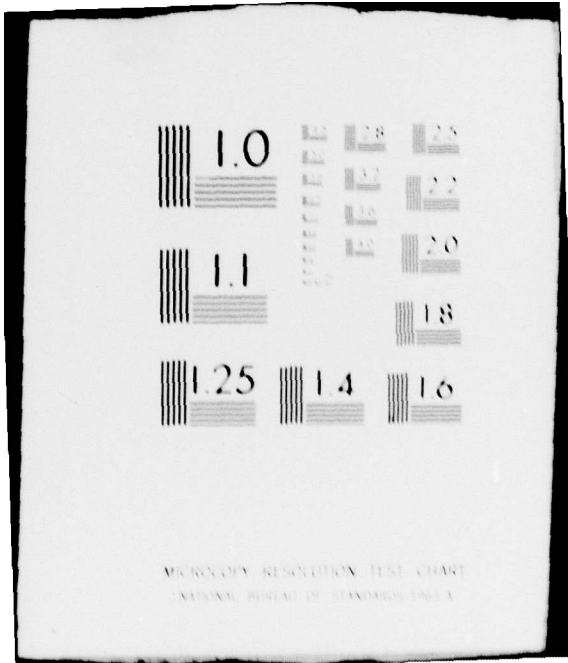
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DR 1037
JUNE 1979

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METEOROLOGICAL DATA REPORT

19304DT GSRS
Missile No. 1031
Round No. V-46
28 June 1979

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SEP 4 1979
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by

White Sands Meteorological Team

DDC FILE COPY

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, NEW MEXICO

ECOM

UNITED STATES ARMY ELECTRONICS COMMAND

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- 1. Ballistics
- 2. Meteorology
- 3. Wind

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Meteorological data gathered for the launching of 19304Dt GSRS, Missile Number 1031, Round Number V-46, are presented in tabular form.

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INTRODUCTION

19304DT GSRS . Missile Number 1031 . Round Number V-46 . was launched from LC-33 . White Sands Missile Range (WSMR), New Mexico, at 0713 MDT, 28 June 1979 . The scheduled launch time was 0700 MDT.

DISCUSSION

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

1. Observations

a. Surface

(1) Standard surface observations to include pressure, temperature ($^{\circ}\text{C}$), relative humidity, dew point ($^{\circ}\text{C}$), density (gm/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 RADS T-9 pilot observation at:

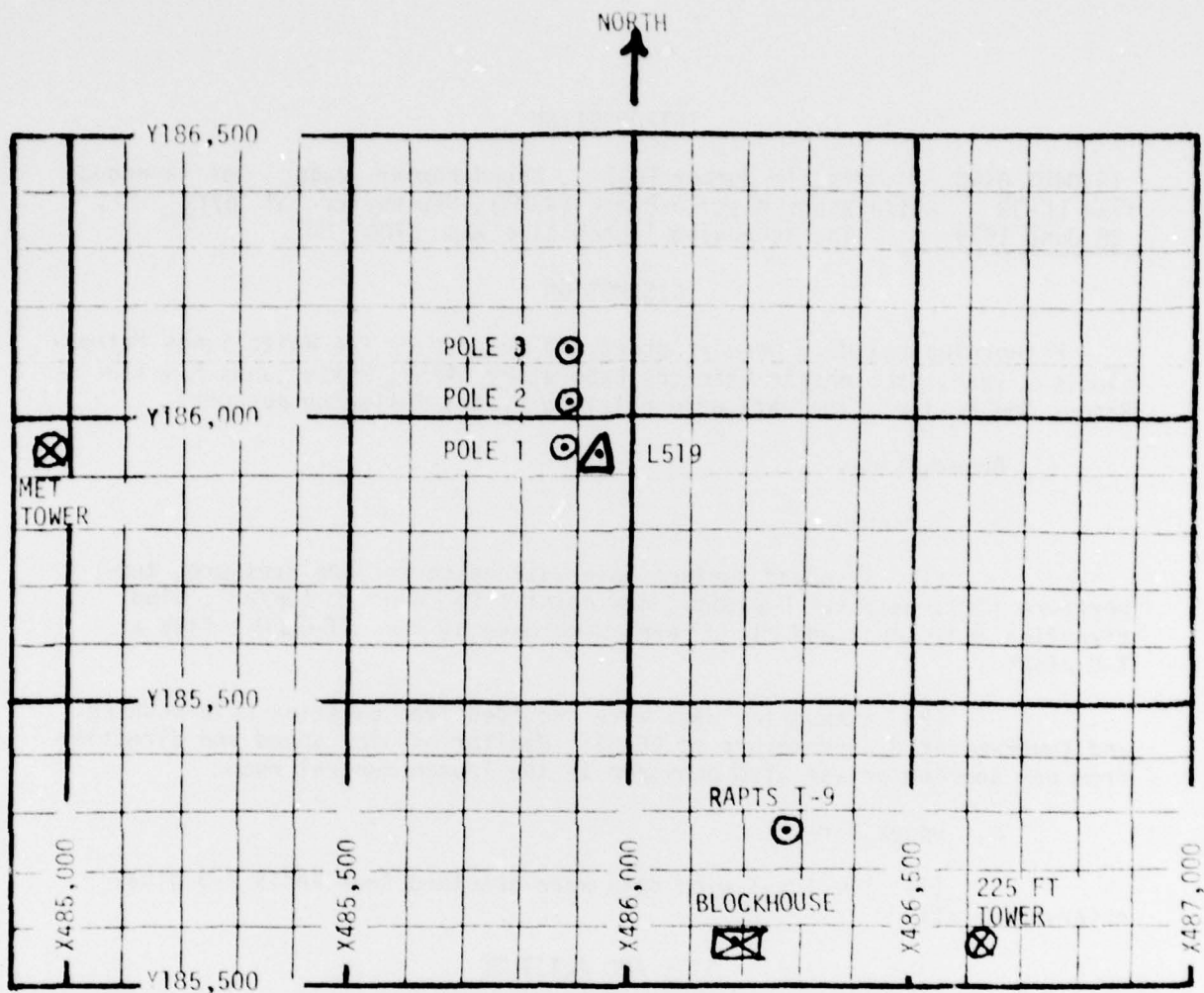
SITE AND ALTITUDE

LC-33 990 Meters

(2) Air structure data (rawinsonde) were collected at the following Met Sites. Data were collected from surface to 109,500 feet in 500-foot increments.

SITE AND TIME

SMR 0630 MST



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

TABLE 1. Surface observations taken at LC-33
 28 June 1979 at 0713 MDT, 19304DT GSRS,
 Missile No. 1031, Round No. V-46

| | | |
|-------------------|---------|-------------------|
| ELEVATION | 3977.30 | FT/MSL |
| PRESSURE | 883.2 | MBS |
| TEMPERATURE | 20.1 | °C |
| RELATIVE HUMIDITY | 51 | % |
| DEW POINT | 9.6 | °C |
| DENSITY | 1042 | GM/M ³ |
| WIND SPEED | CALM | MPH |
| WIND DIRECTION | | DEGREES |
| CLOUD COVER | CLEAR | |

TABLE 2. LC-33 FIXED POLE ANEMOMETER-MEASURED WINDS

| POLE #1 | | | POLE #2 | | | POLE #3 | | |
|---------------|------------|--------------|---------------|------------|--------------|---------------|------------|--------------|
| T-TIME SEC | DIR DEG | SPEED MPH | T-TIME SEC | DIR DEG | SPEED MPH | T-TIME SEC | DIR DEG | SPEED MPH |
| -30 | 000 | 00 | -30 | 000 | 00 | -30 | 137 | 04 |
| -20 | 000 | 00 | -20 | 000 | 00 | -20 | 137 | 04 |
| -10 | 000 | 00 | -10 | 000 | 00 | -10 | 138 | 04 |
| 0.0 | 000 | 00 | 0.0 | 000 | 00 | 0.0 | 138 | 04 |
| +10 | 000 | 00 | +10 | 000 | 00 | +10 | 021 | 03 |

Type 19304DT GSRS, Missile No. 1031, Round No. V-46 launched
 from LC-33 on 28 June 1979 at 0713 MDT

POLE #1 = X485,874.29 Y185,958.90 H4018.74 38.7 ft. AGL
 POLE #2 = X485,874.93 Y186,012.00 H4033.57 53.0 ft. AGL
 POLE #3 = X485,877.29 Y186,116.06 H4063.92 83.6 ft. AGL

NOTE: Wind directions are referenced to the firing azimuth _____
 or true north true north _____

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

| LEVEL #1 12 ft. | | | LEVEL #2 62 ft. | | |
|---------------------|------------|--------------|---------------------|------------|--------------|
| T-TIME SEC | DIR DEG | SPEED MPH | T-TIME SEC | DIR DEG | SPEED MPH |
| -30 | 000 | 00 | -30 | 145 | 04 |
| -20 | 000 | 00 | -20 | 145 | 04 |
| -10 | 000 | 00 | -10 | 145 | 03 |
| 0.0 | 000 | 00 | 0.0 | 145 | 03 |
| +10 | 000 | 00 | +10 | 145 | 03 |
| LEVEL #3 102 ft. | | | LEVEL #4 202 ft. | | |
| T-TIME SEC | DIR DEG | SPEED MPH | T-TIME SEC | DIR DEG | SPEED MPH |
| -30 | 147 | 03 | -30 | 160 | 04 |
| -20 | 147 | 03 | -20 | 160 | 04 |
| -10 | 147 | 03 | -10 | 160 | 03 |
| 0.0 | 147 | 03 | 0.0 | 161 | 03 |
| +10 | 148 | 03 | +10 | 161 | 04 |

WTSM Coordinates: X484,982.64 Y185,957.73 H3983.00 (base)

Type 19304DT GSRS, Missile No. 1031, Round No. V-46 launched
from LC-33 on 28 June 1979 at 0713 MDT.

NOTE: Wind directions are referenced to the firing azimuth _____
or true north true north.

TABLE 4. PILOT-BALLOON-MEASURED WIND DATA (30-METER INCREMENTS)

| HEIGHT METERS AGL | DIRECTION DEGREES | SPEED MPH |
|-------------------|-------------------|-----------|
| SFC | CALM | |
| 30 | 121 | 01.0 |
| 60 | 121 | 01.5 |
| 90 | 121 | 02.0 |
| 120 | 121 | 03.0 |
| 150 | 121 | 04.0 |
| 180 | 121 | 05.0 |
| 210 | 121 | 05.0 |
| 240 | 124 | 05.0 |
| 270 | 130 | 04.0 |
| 300 | 139 | 04.0 |
| 330 | 150 | 03.0 |
| 360 | 164 | 03.0 |

| HEIGHT METERS AGL | DIRECTION DEGREES | SPEED MPH |
|-------------------|-------------------|-----------|
| 390 | 181 | 03.0 |
| 420 | 198 | 03.0 |
| 450 | 207 | 03.0 |
| 480 | 213 | 02.0 |
| 510 | 221 | 02.0 |
| 540 | 232 | 02.0 |
| 570 | 246 | 02.0 |
| 600 | 262 | 02.0 |
| 630 | 277 | 02.0 |
| 660 | 291 | 02.0 |
| 690 | 301 | 02.0 |
| 720 | 302 | 03.0 |
| 750 | 313 | 03.0 |

Release Point Coordinates (WSTM): X486,037.24 Y486,037.24 H3977.30

Released from LC-33 on 28 June 1979 at 0713 MDT .

Type 19304DT GSRS , Missile No. 1031 , Round No. V-46 Launched from LC-33 on 28 June 1979 at 0713 .

NOTE: Wind directions are referenced to the firing azimuth or true north true north.

| HEIGHT METERS AGL | DIRECTION DEGREES | SPEED MPH |
|-------------------|-------------------|-----------|
| 780 | 317 | 04.0 |
| 810 | 319 | 04.0 |
| 840 | 320 | 05.0 |
| 870 | 318 | 05.0 |
| 900 | 317 | 05.0 |
| 930 | 316 | 05.0 |
| 960 | 315 | 06.0 |
| 990 | 314 | 06.0 |
| 1020 | | |
| 1050 | | |
| 1080 | | |
| 1110 | | |
| 1140 | | |
| 1170 | | |
| 1200 | | |
| 1230 | | |
| 1260 | | |
| 1290 | | |
| 1320 | | |
| 1350 | | |
| 1380 | | |
| 1410 | | |

| HEIGHT METERS AGL | DIRECTION DEGREES | SPEED MPH |
|-------------------|-------------------|-----------|
| 1440 | | |
| 1470 | | |
| 1500 | | |
| 1530 | | |
| 1560 | | |
| 1590 | | |
| 1620 | | |
| 1650 | | |
| 1680 | | |
| 1710 | | |
| 1740 | | |
| 1770 | | |
| 1800 | | |
| 1830 | | |
| 1860 | | |
| 1890 | | |
| 1920 | | |
| 1950 | | |
| 1980 | | |
| 2010 | | |
| 2040 | | |
| 2070 | | |

STATION ALTITUDE 5997.30 FEET MSL
 28 JUNE 79 0030 HRS MST
 ASCENSION NO. 213

SIGNIFICANT LEVEL DATA
 1790060213
 S M R

GEODEIC COORDINATES
 32.46034 LAT DEG
 106.42307 LON DEG

| PRESSURE MILLIBARS | GEOMETRIC ALTITUDE MSL FEET | TEMPERATURE AIR DEGREES CENTIGRADE | TEMPERATURE DEWPOINT DEGREES CENTIGRADE | REL. HUM. PERCENT |
|-----------------------|-----------------------------------|---|--|----------------------|
| 832.8 | 3997.3 | 23.0 | 7.9 | 38.0 |
| 650.0 | 5062.9 | 24.1 | 8.1 | 36.0 |
| 626.6 | 5284.4 | 23.7 | 6.9 | 34.0 |
| 617.0 | 6219.9 | 24.4 | 6.2 | 31.0 |
| 700.0 | 10588.3 | 14.5 | .0 | 37.0 |
| 650.0 | 12213.3 | 11.2 | -1.2 | 42.0 |
| 634.6 | 13284.7 | 9.2 | -7.5 | 32.0 |
| 571.7 | 16079.9 | .5 | -6.0 | 59.0 |
| 543.6 | 17403.5 | -2.6 | -10.6 | 54.0 |
| 508.5 | 19129.1 | -7.6 | -13.8 | 62.0 |
| 500.0 | 19561.3 | -6.6 | -25.9 | 18.0 |
| 424.4 | 23694.5 | -16.5 | -37.8 | 14.0 |
| 400.0 | 25152.8 | -18.8 | -40.2 | 13.0 |
| 377.4 | 26572.3 | -21.1 | -41.4 | 14.0 |
| 321.0 | 30429.6 | -30.9 | -48.9 | 15.0 |
| 315.0 | 30970.4 | -30.9 | | |
| 309.2 | 31303.3 | -32.3 | | |
| 300.0 | 32002.6 | -33.9 | | |
| 250.0 | 36122.3 | -43.9 | | |
| 200.0 | 40350.1 | -54.0 | | |
| 180.4 | 43107.2 | -59.0 | | |
| 150.0 | 46609.0 | -65.1 | | |
| 117.4 | 51741.9 | -69.5 | | |
| 100.0 | 54692.0 | -70.4 | | |
| 80.0 | 59270.1 | -70.0 | | |
| 70.0 | 61947.0 | -61.7 | | |
| 62.6 | 64249.6 | -58.5 | | |
| 50.0 | 69212.0 | -50.0 | | |
| 45.6 | 70637.4 | -55.4 | | |
| 31.2 | 78374.5 | -53.5 | | |
| 30.0 | 79744.8 | -50.5 | | |
| 20.0 | 86572.3 | -45.0 | | |
| 13.2 | 97099.5 | -43.0 | | |
| 10.0 | 104084.0 | -37.7 | | |
| 7.8 | 109601.3 | -34.8 | | |

STATION ALTITUDE 3497.30 FEET MSL
 28 JUNE 79 0630 HRS MST
 ASCENSION NG. 213

UPPER AIR DATA
 1790000213
 S M R

GEODETIC COORDINATES
 32.46034 LAT DEG
 106.42307 LON DEG

| GEOMETRIC ALTITUDE MSL FEET | PRESSURE MILLIBARS | AIR TEMPERATURE DEGREES CENTIGRADE | REL. HUM. PERCENT | DENSITY GW/CUBIC METER | SPEED OF SOUND KNOTS | WIND DIRECTION DEGREES (T) | WIND SPEED KNOTS | INDEX OF REFRACTION |
|-----------------------------|--------------------|------------------------------------|-------------------|------------------------|----------------------|----------------------------|------------------|---------------------|
| 397.3 | 862.8 | 23.0 | 38.0 | 1033.7 | 672.0 | .0 | .0 | 1.000277 |
| 400.0 | 882.7 | 23.0 | 38.0 | 1033.6 | 672.0 | 176.5 | .0 | 1.000277 |
| 450.0 | 867.5 | 23.5 | 37.1 | 1013.9 | 672.0 | 170.5 | 1.5 | 1.000272 |
| 500.0 | 852.5 | 24.0 | 36.2 | 994.5 | 673.2 | 170.5 | 2.9 | 1.000268 |
| 550.0 | 837.7 | 23.9 | 35.0 | 977.9 | 673.0 | 170.5 | 4.4 | 1.000262 |
| 600.0 | 823.3 | 23.9 | 33.0 | 961.0 | 673.0 | 170.5 | 5.8 | 1.000256 |
| 650.0 | 809.9 | 23.8 | 31.4 | 945.0 | 674.7 | 212.3 | 3.7 | 1.000250 |
| 700.0 | 794.8 | 22.6 | 32.1 | 932.1 | 671.4 | 209.3 | 4.5 | 1.000246 |
| 750.0 | 780.8 | 21.5 | 32.8 | 919.4 | 670.1 | 273.0 | 5.8 | 1.000242 |
| 800.0 | 767.1 | 20.4 | 33.4 | 906.9 | 669.3 | 280.0 | 6.8 | 1.000237 |
| 850.0 | 753.7 | 19.2 | 34.1 | 894.6 | 667.4 | 290.4 | 7.4 | 1.000233 |
| 900.0 | 740.5 | 18.1 | 34.8 | 882.4 | 666.1 | 310.7 | 7.9 | 1.000229 |
| 950.0 | 727.5 | 17.0 | 35.5 | 870.4 | 664.7 | 323.4 | 8.5 | 1.000225 |
| 1000.0 | 714.7 | 15.8 | 36.2 | 858.6 | 663.4 | 330.4 | 8.5 | 1.000221 |
| 1050.0 | 702.2 | 14.7 | 36.9 | 847.0 | 662.1 | 343.0 | 9.3 | 1.000217 |
| 1100.0 | 689.6 | 13.7 | 38.3 | 834.9 | 660.9 | 350.0 | 10.2 | 1.000214 |
| 1150.0 | 677.3 | 12.6 | 39.6 | 822.8 | 659.7 | 3.0 | 11.2 | 1.000210 |
| 1200.0 | 665.1 | 11.6 | 41.3 | 811.0 | 658.5 | 9.8 | 11.1 | 1.000207 |
| 1250.0 | 653.1 | 10.4 | 39.3 | 800.1 | 659.9 | 17.0 | 11.1 | 1.000202 |
| 1300.0 | 641.3 | 9.0 | 34.7 | 789.9 | 655.2 | 27.1 | 11.3 | 1.000195 |
| 1350.0 | 629.7 | 7.8 | 34.1 | 779.4 | 653.5 | 30.2 | 11.7 | 1.000191 |
| 1400.0 | 617.9 | 6.2 | 38.9 | 768.7 | 651.9 | 41.4 | 12.3 | 1.000189 |
| 1450.0 | 606.4 | 4.9 | 43.7 | 758.1 | 650.3 | 49.4 | 13.0 | 1.000187 |
| 1500.0 | 595.2 | 3.5 | 46.0 | 747.8 | 648.7 | 51.9 | 13.7 | 1.000185 |
| 1550.0 | 584.2 | 2.1 | 53.4 | 737.6 | 647.1 | 50.3 | 14.6 | 1.000183 |
| 1600.0 | 573.4 | .7 | 58.2 | 727.6 | 645.5 | 59.0 | 16.4 | 1.000181 |
| 1650.0 | 562.6 | -.5 | 57.4 | 717.2 | 644.0 | 59.6 | 17.9 | 1.000177 |
| 1700.0 | 552.0 | -1.7 | 55.5 | 706.9 | 642.6 | 59.0 | 19.2 | 1.000173 |
| 1750.0 | 541.6 | -2.9 | 54.4 | 696.8 | 641.1 | 59.5 | 19.5 | 1.000169 |
| 1800.0 | 531.2 | -4.4 | 56.8 | 687.3 | 639.2 | 61.3 | 19.1 | 1.000166 |
| 1850.0 | 521.0 | -5.9 | 59.1 | 678.0 | 637.4 | 63.0 | 18.6 | 1.000163 |
| 1900.0 | 511.0 | -7.4 | 61.4 | 668.9 | 635.8 | 70.0 | 18.1 | 1.000161 |
| 1950.0 | 501.2 | -9.8 | 24.2 | 659.0 | 634.0 | 75.0 | 17.4 | 1.000151 |
| 2000.0 | 491.7 | -7.7 | 17.6 | 649.4 | 634.9 | 74.0 | 16.5 | 1.000147 |
| 2050.0 | 481.7 | -6.8 | 17.1 | 639.7 | 633.9 | 64.0 | 15.2 | 1.000144 |
| 2100.0 | 472.3 | -10.0 | 16.6 | 629.1 | 632.0 | 63.0 | 13.7 | 1.000142 |
| 2150.0 | 463.0 | -11.2 | 16.1 | 618.6 | 630.0 | 65.1 | 11.6 | 1.000139 |
| 2200.0 | 453.9 | -12.4 | 15.6 | 608.3 | 627.1 | 63.2 | 9.5 | 1.000137 |
| 2250.0 | 445.0 | -13.0 | 15.2 | 597.2 | 624.7 | 60.8 | 9.4 | 1.000135 |
| 2300.0 | 435.3 | -14.6 | 14.7 | 586.2 | 622.2 | 90.1 | 9.4 | 1.000133 |

STATION ALTITUDE 3997.30 FEET NSL
 23 JUNE 79 0630 HRS MST
 ASCENSION NO. 213

UPPER AIR DATA
 1790060213
 S M R

GEODETIC COORDINATES
 32.40034 LAT DEG
 106.42307 LON DEG

| GEOMETRIC ALTITUDE MSL FEET | PRESSURE MILLIBARS | TEMPERATURE AIR DEGREE CENTIGRADE | REL. HUM. PERCENT | DENSITY GW/CUBIC METER | SPEED OF SOUND KNOTS | WIND DATA DIRECTION DEGREES(TM) | SPEED KNOTS | INDEX OF REFRACTION |
|--------------------------------|-----------------------|---|----------------------|------------------------------|----------------------------|---------------------------------------|----------------|---------------------------|
| | | | | | | | | |
| 23500.0 | 427.7 | -16.0 | 14.2 | 579.3 | 624.7 | 91.0 | 10.5 | 1.000130 |
| 24000.0 | 419.2 | -17.0 | 13.8 | 569.9 | 623.6 | 93.4 | 11.0 | 1.000128 |
| 24500.0 | 410.7 | -17.8 | 13.4 | 560.2 | 622.9 | 100.4 | 10.2 | 1.000126 |
| 25000.0 | 402.5 | -18.6 | 13.1 | 550.8 | 621.7 | 110.5 | 9.7 | 1.000124 |
| 25500.0 | 394.4 | -19.4 | 13.2 | 541.2 | 620.7 | 124.0 | 9.7 | 1.000122 |
| 26000.0 | 386.4 | -20.2 | 13.6 | 531.9 | 619.7 | 135.9 | 10.5 | 1.000119 |
| 26500.0 | 378.5 | -21.0 | 13.9 | 522.8 | 618.7 | 147.9 | 11.9 | 1.000117 |
| 27000.0 | 370.7 | -22.2 | 14.1 | 514.5 | 617.2 | 151.3 | 13.4 | 1.000115 |
| 27500.0 | 363.0 | -23.5 | 14.2 | 506.4 | 615.8 | 158.1 | 14.9 | 1.000114 |
| 28000.0 | 355.5 | -24.7 | 14.4 | 498.4 | 614.1 | 160.4 | 15.3 | 1.000112 |
| 28500.0 | 348.1 | -26.0 | 14.5 | 490.8 | 612.5 | 167.8 | 15.4 | 1.000110 |
| 29000.0 | 340.8 | -27.3 | 14.6 | 482.9 | 610.9 | 163.8 | 14.6 | 1.000108 |
| 29500.0 | 333.8 | -28.5 | 14.8 | 475.3 | 609.3 | 172.0 | 13.8 | 1.000106 |
| 30000.0 | 326.8 | -29.8 | 14.9 | 467.9 | 607.7 | 170.2 | 12.2 | 1.000105 |
| 30500.0 | 320.0 | -30.9 | 12.6** | 460.2 | 606.4 | 167.2 | 10.5 | 1.000103 |
| 31000.0 | 313.5 | -31.3 | | 451.3 | 605.0 | 171.2 | 8.4 | 1.000101 |
| 31500.0 | 306.6 | -32.8 | | 444.3 | 604.0 | 179.1 | 6.4 | 1.000099 |
| 32000.0 | 300.0 | -33.9 | | 436.9 | 602.6 | 212.4 | 6.1 | 1.000097 |
| 32500.0 | 293.5 | -35.1 | | 429.5 | 601.1 | 233.2 | 7.8 | 1.000096 |
| 33000.0 | 287.0 | -36.3 | | 422.2 | 599.5 | 243.8 | 11.6 | 1.000094 |
| 33500.0 | 280.6 | -37.5 | | 415.1 | 598.0 | 253.3 | 15.6 | 1.000092 |
| 34000.0 | 274.6 | -38.7 | | 408.1 | 596.5 | 257.4 | 19.4 | 1.000091 |
| 34500.0 | 268.6 | -40.0 | | 401.3 | 594.9 | 253.3 | 22.8 | 1.000089 |
| 35000.0 | 262.7 | -41.2 | | 394.8 | 593.4 | 233.1 | 22.8 | 1.000088 |
| 35500.0 | 257.0 | -42.4 | | 387.9 | 591.8 | 233.0 | 22.7 | 1.000086 |
| 36000.0 | 251.4 | -43.6 | | 381.5 | 590.2 | 233.3 | 21.6 | 1.000085 |
| 36500.0 | 245.7 | -44.7 | | 374.8 | 588.6 | 253.7 | 20.4 | 1.000083 |
| 37000.0 | 240.1 | -45.7 | | 367.7 | 587.3 | 257.8 | 19.4 | 1.000082 |
| 37500.0 | 234.6 | -46.8 | | 361.0 | 586.1 | 253.6 | 18.5 | 1.000080 |
| 38000.0 | 229.2 | -47.8 | | 354.4 | 584.8 | 260.9 | 18.8 | 1.000079 |
| 38500.0 | 224.0 | -48.9 | | 347.9 | 583.4 | 261.9 | 19.0 | 1.000077 |
| 39000.0 | 218.9 | -49.9 | | 341.8 | 582.1 | 262.0 | 18.9 | 1.000076 |
| 39500.0 | 213.9 | -51.0 | | 335.3 | 580.7 | 262.5 | 18.2 | 1.000075 |
| 40000.0 | 209.0 | -52.0 | | 329.2 | 579.3 | 264.0 | 16.4 | 1.000073 |
| 40500.0 | 204.2 | -53.1 | | 323.2 | 578.0 | 260.1 | 14.7 | 1.000072 |
| 41000.0 | 199.5 | -54.1 | | 317.5 | 576.8 | 263.2 | 13.6 | 1.000071 |
| 41500.0 | 194.8 | -55.3 | | 311.8 | 575.6 | 263.4 | 12.6 | 1.000069 |
| 42000.0 | 190.2 | -56.4 | | 306.0 | 574.5 | 264.4 | 13.3 | 1.000068 |
| 42500.0 | 185.7 | -57.6 | | 300.1 | 572.8 | 247.2 | 14.2 | 1.000067 |
| 43000.0 | 181.5 | -58.8 | | 294.6 | 570.4 | 247.0 | 16.6 | 1.000066 |

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

STATION ALTITUDE 3997.30 FEET MSL
 28 JUNE 79 0630 HRS MST
 ASCENSION I.O. 219

UPPER AIR DATA
 1790060213
 S M R

GEOGETIC COORDINATES
 32.48034 LAT DEG
 106.42307 LONG DEG

| GEOMETRIC ALTITUDE MSL FEET | PRESSURE MILLIBARS | TEMPERATURE AIR DEGREES CENTIGRADE | RELUM. PERCENT | DENSITY GW/CUBIC METER | SPEED OF SOUND KNOTS | WIND DATA DIRECTION, SPEED (M) KNOTS | INDEX OF REFRACTION. |
|--------------------------------|-----------------------|--|-------------------|------------------------------|----------------------------|---|----------------------------|
| 63500.0 | 64.9 | -59.5 | | 105.9 | 569.4 | 69.5 | 1.000024 |
| 64000.0 | 63.4 | -58.8 | | 103.0 | 570.3 | 67.1 | 1.000023 |
| 64500.0 | 61.8 | -58.5 | | 100.4 | 570.7 | 65.9 | 1.000022 |
| 65000.0 | 60.4 | -58.6 | | 98.0 | 570.7 | 65.5 | 1.000022 |
| 65500.0 | 58.9 | -58.6 | | 95.7 | 570.5 | 70.9 | 1.000021 |
| 66000.0 | 57.2 | -58.7 | | 93.5 | 570.5 | 70.3 | 1.000021 |
| 66500.0 | 55.2 | -58.7 | | 91.3 | 570.4 | 74.9 | 1.000020 |
| 67000.0 | 54.8 | -58.8 | | 89.1 | 570.4 | 71.7 | 1.000020 |
| 67500.0 | 53.5 | -58.8 | | 87.0 | 570.3 | 72.4 | 1.000019 |
| 68000.0 | 52.2 | -58.9 | | 85.0 | 570.2 | 77.7 | 1.000019 |
| 68500.0 | 51.0 | -59.0 | | 83.0 | 570.2 | 82.2 | 1.000018 |
| 69000.0 | 49.8 | -58.8 | | 80.9 | 570.3 | 91.8 | 1.000018 |
| 69500.0 | 48.0 | -57.9 | | 76.7 | 571.0 | 102.4 | 1.000018 |
| 70000.0 | 47.5 | -57.0 | | 75.5 | 572.8 | 105.8 | 1.000017 |
| 70500.0 | 46.3 | -56.0 | | 74.4 | 574.0 | 97.8 | 1.000017 |
| 71000.0 | 45.3 | -55.4 | | 72.4 | 574.9 | 90.4 | 1.000016 |
| 71500.0 | 44.2 | -55.2 | | 70.7 | 575.1 | 87.3 | 1.000016 |
| 72000.0 | 43.2 | -55.1 | | 69.0 | 575.2 | 85.0 | 1.000015 |
| 72500.0 | 42.2 | -55.0 | | 67.3 | 575.4 | 84.8 | 1.000015 |
| 73000.0 | 41.2 | -54.9 | | 65.7 | 575.6 | 83.2 | 1.000015 |
| 73500.0 | 40.2 | -54.8 | | 64.1 | 575.7 | 82.6 | 1.000014 |
| 74000.0 | 39.3 | -54.7 | | 62.6 | 575.9 | 80.1 | 1.000014 |
| 74500.0 | 38.4 | -54.5 | | 61.1 | 576.0 | 80.7 | 1.000014 |
| 75000.0 | 37.2 | -54.4 | | 59.7 | 576.2 | 87.3 | 1.000013 |
| 75500.0 | 36.6 | -54.3 | | 58.2 | 576.3 | 87.9 | 1.000013 |
| 76000.0 | 35.7 | -54.2 | | 56.9 | 576.5 | 87.7 | 1.000013 |
| 76500.0 | 34.9 | -54.1 | | 55.3 | 576.6 | 87.8 | 1.000012 |
| 77000.0 | 34.1 | -53.9 | | 54.2 | 576.6 | 89.2 | 1.000012 |
| 77500.0 | 33.3 | -53.8 | | 52.9 | 577.0 | 83.0 | 1.000012 |
| 78000.0 | 32.2 | -53.7 | | 51.6 | 577.1 | 83.0 | 1.000011 |
| 78500.0 | 31.2 | -53.6 | | 50.4 | 577.3 | 91.9 | 1.000011 |
| 79000.0 | 31.0 | -53.1 | | 49.1 | 578.0 | 93.4 | 1.000011 |
| 79500.0 | 30.3 | -51.3 | | 47.9 | 588.3 | 93.4 | 1.000011 |
| 80000.0 | 29.9 | -50.3 | | 46.3 | 588.5 | 93.0 | 1.000010 |
| 80500.0 | 28.9 | -50.0 | | 45.2 | 588.9 | 93.9 | 1.000010 |
| 81000.0 | 28.3 | -49.7 | | 44.1 | 582.3 | 100.2 | 1.000010 |
| 81500.0 | 27.5 | -49.4 | | 43.0 | 583.0 | 93.3 | 1.000010 |
| 82000.0 | 27.0 | -49.1 | | 42.0 | 583.2 | 95.7 | 1.000009 |
| 82500.0 | 26.4 | -48.8 | | 41.0 | 583.9 | 97.8 | 1.000009 |
| 83000.0 | 25.8 | -48.5 | | 40.0 | 584.0 | 95.5 | 1.000009 |

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STATION ALTITUDE 3497.30 FEET MSL
 28 JUNE 79 0630 HRS MST
 ASCENSION NO. 213

UPPER AIR DATA
 1790000213
 S M R

GEODETIC COORDINATES
 32.48034 LAT DEG
 106.42307 LONG DEG

| GEOMETRIC ALTITUDE MSL FEET | PRESSURE MILLIBARS | TEMPERATURE AIR DEGREES | TEMPERATURE DEWPOINT DEGREES | REL. HUM. PERCENT | DENSITY GM/CUBIC METER | SPEED SOUND KNOTS | DIRECTION DEGREES (T) | WIND DATA SPEED KNOTS | INDEX OF REFRACTION |
|-----------------------------|--------------------|-------------------------|------------------------------|-------------------|------------------------|-------------------|-----------------------|-----------------------|---------------------|
| 83500.0 | 25.2 | -46.1 | | | 39.1 | 584.4 | 93.1 | 20.9 | 1.000009 |
| 83000.0 | 24.7 | -47.8 | | | 38.1 | 584.0 | 93.0 | 20.6 | 1.000008 |
| 82500.0 | 24.1 | -47.5 | | | 37.2 | 585.2 | 92.1 | 20.9 | 1.000008 |
| 82000.0 | 23.6 | -47.2 | | | 36.3 | 585.0 | 90.5 | 21.3 | 1.000009 |
| 81500.0 | 23.0 | -46.9 | | | 35.4 | 585.0 | 89.1 | 21.8 | 1.000008 |
| 81000.0 | 22.5 | -46.6 | | | 34.5 | 585.4 | 88.0 | 23.1 | 1.000008 |
| 80500.0 | 22.0 | -46.3 | | | 33.8 | 585.8 | 83.0 | 25.3 | 1.000008 |
| 80000.0 | 21.5 | -46.0 | | | 33.0 | 587.2 | 61.0 | 27.5 | 1.000007 |
| 79500.0 | 21.0 | -45.7 | | | 32.2 | 587.0 | 79.1 | 29.8 | 1.000007 |
| 79000.0 | 20.5 | -45.4 | | | 31.4 | 585.0 | 73.9 | 31.5 | 1.000007 |
| 78500.0 | 20.1 | -45.0 | | | 30.5 | 585.4 | 73.0 | 33.3 | 1.000007 |
| 78000.0 | 19.6 | -44.9 | | | 29.9 | 585.0 | 75.4 | 35.0 | 1.000007 |
| 77500.0 | 19.2 | -44.8 | | | 29.3 | 585.7 | 78.4 | 35.6 | 1.000007 |
| 77000.0 | 18.8 | -44.7 | | | 28.5 | 585.8 | 75.4 | 35.7 | 1.000006 |
| 76500.0 | 18.5 | -44.6 | | | 28.0 | 584.0 | 75.5 | 35.8 | 1.000006 |
| 76000.0 | 17.9 | -44.5 | | | 27.3 | 589.1 | 73.4 | 35.9 | 1.000006 |
| 75500.0 | 17.5 | -44.4 | | | 26.7 | 589.3 | 70.3 | 36.3 | 1.000006 |
| 75000.0 | 17.1 | -44.3 | | | 26.1 | 589.4 | 70.1 | 36.6 | 1.000006 |
| 74500.0 | 16.6 | -44.1 | | | 25.5 | 589.5 | 70.0 | 37.0 | 1.000006 |
| 74000.0 | 16.4 | -44.0 | | | 24.9 | 589.7 | 73.4 | 37.3 | 1.000006 |
| 73500.0 | 16.0 | -43.9 | | | 24.4 | 589.8 | 79.1 | 37.6 | 1.000005 |
| 73000.0 | 15.7 | -43.8 | | | 23.8 | 590.0 | 79.7 | 37.9 | 1.000005 |
| 72500.0 | 15.3 | -43.7 | | | 23.3 | 590.1 | 80.3 | 38.3 | 1.000005 |
| 72000.0 | 15.0 | -43.6 | | | 22.7 | 590.2 | 80.0 | 38.9 | 1.000005 |
| 71500.0 | 14.6 | -43.5 | | | 22.2 | 590.4 | 80.9 | 39.6 | 1.000005 |
| 71000.0 | 14.3 | -43.4 | | | 21.7 | 590.5 | 84.4 | 40.2 | 1.000005 |
| 70500.0 | 14.0 | -43.3 | | | 21.2 | 590.7 | 80.7 | 39.9 | 1.000005 |
| 70000.0 | 13.7 | -43.2 | | | 20.7 | 590.8 | 80.0 | 39.4 | 1.000005 |
| 69500.0 | 13.4 | -43.1 | | | 20.3 | 590.9 | 79.2 | 38.9 | 1.000005 |
| 69000.0 | 13.1 | -42.8 | | | 19.8 | 591.2 | 75.0 | 38.6 | 1.000004 |
| 68500.0 | 12.8 | -42.4 | | | 19.3 | 591.5 | 73.0 | 38.9 | 1.000004 |
| 68000.0 | 12.5 | -42.0 | | | 18.8 | 592.5 | 75.0 | 39.2 | 1.000004 |
| 67500.0 | 12.2 | -41.6 | | | 18.4 | 592.8 | 77.0 | 39.0 | 1.000004 |
| 67000.0 | 12.0 | -41.1 | | | 18.0 | 593.4 | 75.5 | 39.8 | 1.000004 |
| 66500.0 | 11.7 | -40.7 | | | 17.6 | 593.9 | 74.0 | 40.0 | 1.000004 |
| 66000.0 | 11.5 | -40.3 | | | 17.1 | 594.5 | 69.0 | 40.3 | 1.000004 |
| 65500.0 | 11.2 | -39.9 | | | 16.7 | 595.0 | 62.5 | 40.4 | 1.000004 |
| 65000.0 | 11.0 | -39.5 | | | 16.3 | 595.5 | 69.0 | 40.2 | 1.000004 |
| 64500.0 | 10.7 | -39.0 | | | 16.0 | 596.1 | 67.0 | 40.2 | 1.000004 |
| 64000.0 | 10.5 | -38.6 | | | 15.6 | 596.6 | 90.2 | 40.1 | 1.000003 |

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STATION ALTITUDE 1997.30 FEET MSL
 28 JUNE 79 0630 HRS MST
 ASCENSION NO. 215

UPPER AIR DATA
 179066215
 S M R

GEODETIC COORDINATES
 32.48034 LAT DEG
 106.42307 LON DEG

| GEOMETRIC ALTITUDE MSL FEET | PRESSURE MILLIBARS | TEMPERATURE AIR DEGREES | TEMPERATURE DEWPOINT DEGREES CENTIGRADE | REL. HUM. PERCENT | DENSITY G/CM ³ METER | SPEED OF SOUND KNOTS | WIND DIRECTION DEGREES (T) | WIND SPEED KNOTS | INDEX OF REFRACTION |
|-----------------------------|--------------------|-------------------------|---|-------------------|---------------------------------|----------------------|----------------------------|------------------|---------------------|
| 10350.0 | 10.3 | -36.2 | | | 15.2 | 597.2 | 91.7 | 40.0 | 1.000003 |
| 10400.0 | 10.0 | -37.3 | | | 14.9 | 597.7 | 92.9 | 39.8 | 1.000003 |
| 10450.0 | 9.8 | -37.5 | | | 14.5 | 598.1 | 94.1 | 39.6 | 1.000003 |
| 10500.0 | 9.6 | -37.2 | | | 14.2 | 598.4 | 95.3 | 39.5 | 1.000003 |
| 10550.0 | 9.4 | -37.0 | | | 13.9 | 598.7 | 96.5 | 39.4 | 1.000003 |
| 10600.0 | 9.2 | -36.7 | | | 13.6 | 599.0 | | | 1.000003 |
| 10650.0 | 9.0 | -36.5 | | | 13.3 | 599.3 | | | 1.000003 |
| 10700.0 | 8.8 | -36.2 | | | 13.0 | 599.7 | | | 1.000003 |
| 10750.0 | 8.6 | -36.0 | | | 12.7 | 600.0 | | | 1.000003 |
| 10800.0 | 8.4 | -35.7 | | | 12.4 | 600.3 | | | 1.000003 |
| 10850.0 | 8.3 | -35.5 | | | 12.1 | 600.6 | | | 1.000003 |
| 10900.0 | 8.1 | -35.2 | | | 11.8 | 600.9 | | | 1.000003 |
| 10950.0 | 7.9 | -35.0 | | | 11.6 | 601.3 | | | 1.000003 |

STATION ALTITUDE 3997.30 FEET MSL
 28 JUNE 79 0630 HRS MST
 ASCENSION NO. 213

MRN SIGNIFICANT LEVEL DATA
 1790050213
 S M R

GEODETIC COORDINATES
 32.48034 LAT DEG
 106.42307 LON DEG

| GEOPOTENTIAL ALTITUDE METERS | DIRECTION DEG (TN) | SPEED MPS | WIND DATA | | DEW PT DEF DEG C | TEMPERATURE | | PRESSURE MILLIBARS |
|------------------------------------|-----------------------|--------------|------------|------------|---------------------|--------------|---------|-----------------------|
| | | | N-S MPS | E-W MPS | | AIR DEG C | | |
| 3320. | 9999.** | 9999.** | -9999.** | -9999.** | 99 | -34.8 | 7.800*0 | |
| 3155. | 93. | 20. | 1. | -20. | 99 | -27.7 | 1.000*1 | |
| 2950. | 79. | 20. | -4. | -19. | 99 | -43.0 | 1.320*1 | |
| 2887. | 79. | 17. | -3. | -17. | 99 | -45.0 | 2.000*1 | |
| 2719. | 99. | 11. | 2. | -11. | 99 | -50.5 | 3.000*1 | |
| 2494. | 94. | 12. | 1. | -12. | 99 | -53.5 | 3.120*1 | |
| 2151. | 93. | 11. | 0. | -11. | 99 | -55.4 | 4.560*1 | |
| 2092. | 90. | 8. | -0. | -0. | 99 | -59.0 | 5.000*1 | |
| 1951. | 66. | 5. | -2. | -0. | 99 | -58.5 | 6.260*1 | |
| 1882. | 58. | 4. | -2. | -4. | 99 | -61.7 | 7.000*1 | |
| 1801. | 69. | 2. | -1. | -2. | 99 | -70.0 | 8.000*1 | |
| 1660. | 282. | 2. | -0. | -2. | 99 | -70.4 | 1.000*2 | |

** WIND DATA NOT COMPUTED DUE TO MISSING RAW AZIMUTH AND ELEVATION ANGLES.

STATION ALTITUDE 3997.30 FEET MSL
 28 JUNE 79 0630 HRS MST
 ASCENSION, I.O. 213

MANDATORY LEVELS
 1790000213
 S W R

GEODETIC COORDINATES
 32.48034 LAT DEG
 106.42307 LONG DEG

| PRESSURE GEOPOTENTIAL | | TEMPERATURE | | REL. HUM. | WIND DATA | |
|-----------------------|---------|-------------|------------|-----------|-------------|-------|
| MILLIBARS | FEET | AIR | DEWPOINT | PERCENT | DIRECTION | SPEED |
| | | DEGREES | CENTIGRADE | | DEGREES(TM) | KNOTS |
| 850.0 | 5079. | 24.1 | 8.1 | 30. | 176.0 | 3.2 |
| 800.0 | 6817. | 23.1 | 5.4 | 32. | 255.4 | 3.8 |
| 750.0 | 8649. | 18.9 | 2.9 | 34. | 301.2 | 7.7 |
| 700.0 | 10578. | 14.5 | .0 | 37. | 350.7 | 9.5 |
| 650.0 | 12618. | 10.0 | -3.6 | 38. | 19.0 | 11.1 |
| 600.0 | 14776. | 4.1 | -6.4 | 47. | 49.0 | 13.4 |
| 550.0 | 17075. | -1.9 | -9.7 | 55. | 56.8 | 19.4 |
| 500.0 | 19533. | -6.6 | -26.9 | 16. | 75.8 | 17.3 |
| 450.0 | 22201. | -13.0 | -33.8 | 15. | 84.3 | 9.5 |
| 400.0 | 25110. | -18.8 | -40.2 | 15. | 114.3 | 9.6 |
| 350.0 | 28335. | -25.7 | -44.9 | 14. | 163.7 | 15.4 |
| 300.0 | 31976. | -33.9 | | | 211.5 | 8.1 |
| 250.0 | 36042. | -43.9 | | | 250.3 | 21.3 |
| 200.0 | 40350. | -54.0 | | | 264.1 | 13.8 |
| 175.0 | 43821. | -60.0 | | | 250.7 | 19.8 |
| 150.0 | 46741. | -65.1 | | | 302.8 | 8.4 |
| 125.0 | 50357. | -68.4 | | | 203.5 | 9.9 |
| 100.0 | 54721. | -70.4 | | | 270.9 | 4.0 |
| 80.0 | 59073. | -70.0 | | | 71.2 | 4.7 |
| 70.0 | 61733. | -61.7 | | | 57.8 | 8.2 |
| 60.0 | 64476. | -58.6 | | | 67.3 | 12.9 |
| 50.0 | 68551. | -59.0 | | | 89.2 | 15.9 |
| 40.0 | 73309. | -54.7 | | | 85.7 | 20.0 |
| 30.0 | 79273. | -50.5 | | | 99.0 | 22.2 |
| 25.0 | 83205. | -48.0 | | | 94.7 | 20.8 |
| 20.0 | 86165. | -45.0 | | | 78.0 | 33.4 |
| 15.0 | 94481. | -43.6 | | | 80.5 | 38.8 |
| 10.0 | 103516. | -37.7 | | | 93.0 | 39.8 |

STATION ALTITUDE 9997.30 FEET MSL
 28 JUNE 79 0630 HRS MST
 ASCENSION NO. 243

MRN MANDATORY LEVELS
 1790060213
 S M R

GEODETIC COORDINATES
 32.48034 LAT DEG
 106.42397 LONG DEG

| GEOPOTENTIAL ALTITUDE DECAMETERS | DIRECTION DEG (TN) | WIND DATA SPEED MPS | WIND DATA N-S MPS | E-W MPS | DEW PT DEP DEG C | TEMPERATURE | | PRESSURE MILLIBARS |
|--|-----------------------|---------------------------|-------------------------|------------|---------------------|--------------|--|-----------------------|
| | | | | | | AIR DEG C | | |
| 3155. | 93. | 20. | 1. | -20. | 99 | -37.7 | | 1.000+1 |
| 2880. | 81. | 20. | -3. | -20. | 99 | -43.6 | | 1.500+1 |
| 2687. | 79. | 17. | -3. | -17. | 99 | -45.0 | | 2.000+1 |
| 2539. | 95. | 11. | 1. | -11. | 99 | -48.0 | | 2.500+1 |
| 2419. | 99. | 11. | 2. | -11. | 99 | -50.5 | | 3.000+1 |
| 2304. | 86. | 10. | -1. | -10. | 99 | -54.7 | | 4.000+1 |
| 2092. | 89. | 8. | -0. | -0. | 99 | -59.0 | | 5.000+1 |
| 1978. | 67. | 7. | -3. | -0. | 99 | -58.6 | | 6.000+1 |
| 1882. | 58. | 4. | -2. | -4. | 99 | -61.7 | | 7.000+1 |
| 1801. | 71. | 2. | -1. | -2. | 99 | -70.0 | | 8.000+1 |
| 1568. | 279. | 2. | -0. | 2. | 99 | -70.4 | | 1.000+2 |
| 1535. | 203. | 5. | 5. | 2. | 99 | -68.4 | | 1.250+2 |
| 1425. | 303. | 4. | -3. | 4. | 99 | -65.1 | | 1.500+2 |
| 1330. | 251. | 10. | 3. | 10. | 99 | -60.0 | | 1.750+2 |
| 1245. | 264. | 7. | 1. | 7. | 99 | -54.0 | | 2.000+2 |
| 1099. | 255. | 11. | 3. | 11. | 99 | -43.9 | | 2.500+2 |
| 975. | 212. | 3. | 3. | 2. | 99 | -33.9 | | 3.000+2 |
| 864. | 164. | 8. | 6. | -2. | 19 | -25.7 | | 3.500+2 |
| 765. | 114. | 5. | 2. | -5. | 21 | -18.8 | | 4.000+2 |
| 677. | 85. | 5. | -0. | -5. | 21 | -13.0 | | 4.500+2 |
| 595. | 76. | 9. | -2. | -9. | 20 | -6.6 | | 5.000+2 |
| 520. | 59. | 10. | -5. | -9. | 09 | -1.9 | | 5.500+2 |
| 450. | 50. | 7. | -4. | -5. | 10 | 4.1 | | 6.000+2 |
| 385. | 20. | 6. | -5. | -2. | 14 | 10.0 | | 6.500+2 |
| 322. | 351. | 5. | -5. | 1. | 14 | 14.5 | | 7.000+2 |
| 264. | 301. | 4. | -2. | 3. | 15 | 18.9 | | 7.500+2 |
| 206. | 305. | 2. | 0. | 6. | 16 | 23.1 | | 8.000+2 |
| 155. | 177. | 2. | 2. | -5. | 16 | 24.1 | | 8.500+2 |