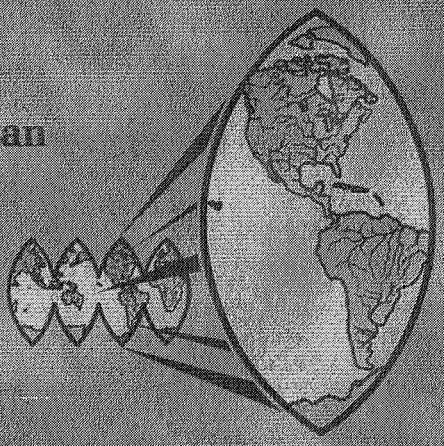
NASA SP-176

# EXAMETNET DATA REPORT SERIES

Experimental InterAmerican
Meteorological
Rocket
Network



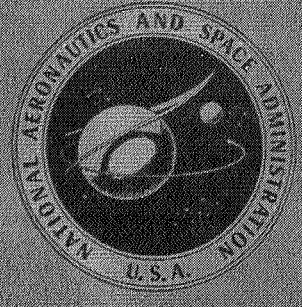
# ANNUAL REPORT, 1967

Sponsored by the EXAMETNET Executive Committee
of the participating national scientific organizations

ARGENTINA — *Comisión Nacional de Investigaciones Espaciales*

BRAZIL — *Comissão Nacional de Atividades Espaciais*

UNITED STATES — *National Aeronautics and Space Administration*



NASA SP-176

# EXAMETNET DATA REPORT SERIES

# ANNUAL REPORT, 1967

Prepared under contract for NASA's Wallops Station and the Exametnet Executive Committee by Shellenger Research Laboratories, University of Texas at El Paso


*Scientific and Technical Information Division*
OFFICE OF TECHNOLOGY UTILIZATION 1969
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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## FOREWORD

The Experimental InterAmerican Meteorological Rocket Network (EXAMETNET) is a cooperative program among the national space organizations of Argentina, Brazil, and the United States of America with potential for growth and participation by other countries and national space organizations. The purpose of this program is to establish and demonstrate the capabilities of an interhemispheric network of meteorological sounding rocket launch sites. The EXAMETNET provides scientific measurements of the state of the upper atmosphere. These measurements will facilitate research into structure and circulation of the atmosphere in both the Northern and Southern Hemisphere and the interrelation of the atmospheric behavior in both hemispheres. The data from this network, when combined with data from other networks and launching sites, will furnish upper-air observational coverage extending from the Antarctic to the Arctic regions.

Each participating national space organization has provided personnel, facilities, and equipment to carry out the functions necessary for successful operation of this program. One such function is the preparation and dissemination of scientific and technical data. This annual EXAMETNET data report is a compilation of the Quarter Data Reports that have been disseminated to the network participants for their early review and editing. Broader dissemination is then possible by this annual presentation of quality controlled network data. The EXAMETNET reports contain wind and temperature data from each observation and the additional information needed for proper evaluation and interpretation of the soundings.

## PROLOGO

La Red Interamericana Experimental de Investigaciones Meteorológicas con Cohetes (Experimental InterAmerican Meteorological Rocket Network, EXAMETNET) constituye un programa cooperativo entre las organizaciones nacionales espaciales de la Argentina, Brasil y los Estados Unidos de América con capacidad para desarrollarso y admitir la participación de otros países y otras organizaciones nacionales espaciales. El objetivo de este programa es demostrar las posibilidades de una red interhemisférica de bases de lanzamiento de cohetes sonda meteorológicos. Por medio de la red EXAMETNET se obtienen mediciones científicas del estado de la alta atmósfera. Estos datos facilitarán la investigación de la estructura y circulación atmosféricas en los hemisferios notte y sur y la interrelación del comportamiento atmosférico en los mismos. Al considerarse en conjunto con los datos suministrados por otras redes y bases de lanzamiento y al materializarse el crecimiento potencial existente, los resultados de las mediciones proporcionarán información sobre la alta atmósfera desde una a otra región polar.

Cada organización nacional participante ha designado y proporcionado personal, instalaciones y equipos para llevar a cabo las funciones y cumplir con las responsabilidades necesarias para la operación exitosa de la red. Una de dichas funciones es la preparación y distribución de datos científicos y técnicos. Este Informe EXAMETNET Anual es una compilación de los Informes de Datos Trimestrales que han sido distribuídos a los participantes de la red para su revisión y corrección. Por medio de esta presentación anual de información de alta calidad se hace posible una distribución en mayor escala. Los informes de EXAMETNET contienen datos de viento y temperatura de cada una de las observaciones e información adicional para una correcta evaluación e interpretación de los sondeos.

# PREFÁCIO

A Rêde Experimental InterAmericana de Foguetes Meteorológicos (EXAMETNET) é um programa coope rativo entre as organizações espaciais nacionais da Argentina, Brasil e Estados Unidos da América, com potencial para crescer e para ter a participação de outros países e respectivas organizações espaciais. Sua finalidade é estabelecer e demonstrar as capabilidades de uma rêde interhemisférica de campos de lançamento de foguetes meteorológicos. A EXAMETNET obtem, na alta atmosfera, medições de interêsse científico. Tais medições facilitarão as pesquisas sôbre a estrutura e a circulação da atmosfera, tanto no hemisfério norte, como no hemisfério sul, e também a interrelação do comportamento atmosférico nos dois hemisférios. Os dados desta rêde, se combinados com os dados fornecidos por outras rêdes e campos de lançamento, permitirão uma cobertura observacional das camades superiores da atmosfera, desde a Antártica até o Ártico.

Cada organização participante tem provido o pessoal, as facilidades e o equipamento destinados às funções necessárias ao êxito das operações. Uma das referidas funções é o preparo e a disseminação dos dados científicos e técnicos. Êste relatório anual de dados da EXAMETNET é uma compilação des Relatórios Trimestrais de Dados, que têm sido distribuidos aos participantes da rêde para conhecimento e revisão. Uma disseminação mais ampla fica sendo possível por esta apresentação anual de dados de qualidade controlada. As sondagens EXAMETNET contêm dados de ventos e temperatura de cada observação, e as informações adicionais necessárias a adequada avaliação e interpretação das sondagens.

CONTENTS

# INTRODUCTION

EXAMETNET meteorological rocket launchings and data dissemination are conducted synoptically from launch sites at Chamical, Argentina; Natal, Brazil; and Wallops Island, Virginia, U.S.A. The reduced data from the launchings for each quarter are checked, further reduced, compiled, and published in the EXAMETNET Data Report Series by Schellenger Research Laboratories of the University of Texas at El Paso. These network data reports, after being reviewed and edited by all participants of the EXAMETNET, are then compiled into the annual publication for broad dissemination.

This annual publication contains, for the year 1967, the meteorological rocket observational data acquired by each participant. Appendixes concerning related activities of the EXAMETNET are also included in the annual reports. The appendixes for this report describe the data and some of the technical and scientific activities of EXAMETNET and participants in addition, list all EXAMETNET and related publications.

## METEOROLOGICAL ROCKET SUMMARY

| Page No. | Date of Launch (GMT) | Time of Launch (GMT) | Motor Type | Flight System: Payload Type | Flight System: Sensor Type 1. Wind 2. Temp. | Temp. Profile (Tens of Meters MSL) | Wind Profile (Tens of Meters MSL) |
|---|---|---|---|---|---|---|---|
| CHAMICAL, ARGENTINA | | | | | | Lat. 30° 22'S | Long. 66° 17'W |
| 8 | 18 Jan 67 | 1413 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6800-2500 |
| 22 | 15 Feb 67 | 1401 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6700-2600 |
| 48 | 12 Apr 67 | 1445 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6900-2300 |
| 62 | 17 May 67 | 1615 | Arcas | Arcasonde 2B | 1. Chute<br>2. Bead Therm. | N. A. | 3600-1800 |
| 72 | 14 Jun 67 | 1640 | Arcas | Arcasonde 2B | 1. Chute<br>2. Bead Therm. | N. A. | 6100-1900 |
| 94 | 16 Aug 67 | 1425 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6500-2100 |
| 108 | 13 Sep 67 | 2030 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6800-2800 |
| 120 | 18 Oct 67 | 2103 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6600-2400 |
| 132 | 15 Nov 67 | 1557 | Arcas | Arcasonde 2B | 1. Chute<br>2. Bead Therm. | N. A. | 5700-1700 |
| 142 | 13 Dec 67 | 1355 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6200-4000 |
| NATAL, BRAZIL | | | | | | Lat. 05° 55'S | Long. 35° 10'W |
| 10 | 18 Jan 67 | 1500 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6500-1800 |
| 16 | 1 Feb 67 | 1500 | Judi | Chaff | 1. Chaff<br>2. N. A | N. A. | 6400-1800 |
| 24 | 15 Feb 67 | 1500 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6200-1800 |
| 28 | 22 Feb 67 | 1500 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 5700-1800 |
| 30 | 1 Mar 67 | 1500 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6100-1800 |
| 38 | 22 Mar 67 | 1500 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 5200-1800 |
| 42 | 29 Mar 67 | 1627 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6600-1800 |

N. A. = NOT APPLICABLE

## METEOROLOGICAL ROCKET SUMMARY

| Page No. | Date of Launch (GMT) | Time of Launch (GMT) | Motor Type | Flight System: Payload Type | Flight System: Sensor Type 1. Wind 2. Temp. | Temp. Profile (Tens of Meters MSL) | Wind Profile (Tens of Meters MSL) |
|---|---|---|---|---|---|---|---|
| NATAL, BRAZIL (continued) | | | | | | Lat. 05° 55'S | Long. 35° 10'W |
| 70 | 14 Jun 67 | 1511 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6000-1800 |
| 82 | 5 Jul 67 | 1500 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6600-1800 |
| 84 | 12 Jul 67 | 1658 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6600-1800 |
| 90 | 2 Aug 67 | 1500 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6500-1800 |
| 96 | 16 Aug 67 | 1500 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6500-1800 |
| 106 | 13 Sep 67 | 1500 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6400-1800 |
| 126 | 25 Oct 67 | 1630 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6300-1800 |
| 130 | 15 Nov 67 | 1400 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6600-2000 |
| 144 | 13 Dec 67 | 1500 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6300-1800 |
| WALLOPS ISLAND, VIRGINIA, U.S.A. | | | | | | Lat. 37° 51'N | Long. 75° 29'W |
| 12 | 18 Jan 67 | 1604 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 4950-2000 | 5200-2000 |
| 14 | 25 Jan 67 | 1639 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 4185-1859 | 4500-1900 |
| 18 | 1 Feb 67 | 1838 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5712-2000 | 5400-2000 |
| 20 | 9 Feb 67 | 1501 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6500-3600 |
| 26 | 15 Feb 67 | 1651 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5864-1862 | 5500-2000 |
| 32 | 3 Mar 67 | 1648 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6400-3500 |
| 34 | 8 Mar 67 | 1521 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5578-2079 | 5500-1900 |
| 36 | 16 Mar 67 | 1429 | Judi | WOX-3A | 1. Chute<br>2. Bead Therm. | 5553-1800 | 5000-1800 |

N. A. = NOT APPLICABLE

## METEOROLOGICAL ROCKET SUMMARY

| Page No. | Date of Launch (GMT) | Time of Launch (GMT) | Motor Type | Flight System: Payload Type | Flight System: Sensor Type 1. Wind 2. Temp. | Temp. Profile (Tens of Meters MSL) | Wind Profile (Tens of Meters MSL) |
|---|---|---|---|---|---|---|---|
| WALLOPS ISLAND, VIRGINIA, U.S.A. (continued) | | | | | | Lat. 37° 51'N | Long. 75° 29'W |
| 38 | 22 Mar 67 | 1845 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6500-3000 |
| 40 | 29 Mar 67 | 1952 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6300-3300 |
| 42 | 6 Apr 67 | 2143 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5447-1832 | 6000-1900 |
| 50 | 12 Apr 67 | 1509 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5602-1868 | 5600-1900 |
| 52 | 20 Apr 67 | 1806 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5834-1792 | 5700-1900 |
| 54 | 26 Apr 67 | 1451 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5383-1500 | 5000-1500 |
| 56 | 3 May 67 | 1407 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5855-1814 | 5500-1900 |
| 58 | 10 May 67 | 1758 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5749-1768 | 5500-1800 |
| 60 | 17 May 67 | 1429 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5325-1829 | 5200-1900 |
| 64 | 25 May 67 | 1849 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5294-1850 | 5200-1900 |
| 66 | 2 Jun 67 | 1846 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5377-1780 | 5700-1800 |
| 68 | 7 Jun 67 | 1432 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5502-1798 | 5600-1900 |
| 74 | 15 Jun 67 | 1742 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5121-1829 | 5000-1900 |
| 76 | 21 Jun 67 | 1414 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 4734-1811 | 5300-1900 |
| 78 | 28 Jun 67 | 1501 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5307-1814 | 5600-1900 |
| 80 | 5 Jul 67 | 1442 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 6157-1829 | 6000-1900 |
| 86 | 20 Jul 67 | 2011 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | N. A. | 5500-1900 |
| 88 | 26 Jul 67 | 1414 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 6050-1800 | 5900-1900 |

N. A. = NOT APPLICABLE

## METEOROLOGICAL ROCKET SUMMARY

| Page No. | Date of Launch (GMT) | Time of Launch (GMT) | Motor Type | Flight System | | Temp. Profile (Tens of Meters MSL) | Wind Profile (Tens of Meters MSL) |
|---|---|---|---|---|---|---|---|
| | | | | Payload Type | Sensor Type<br>1. Wind<br>2. Temp. | | |
| WALLOPS ISLAND, VIRGINIA, U.S.A. (continued) | | | | | Lat. 37° 51'N Long. 75° 29'W | | |
| 92 | 9 Aug 67 | 0130 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 4676-2000 | 4500-1800 |
| 98 | 16 Aug 67 | 1730 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5560-1829 | 5900-1900 |
| 100 | 25 Aug 67 | 1417 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5386-1829 | 5300-1900 |
| 102 | 30 Aug 67 | 1818 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5617-1804 | 5400-1900 |
| 104 | 6 Sep 67 | 1435 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5197-1826 | 5100-1900 |
| 110 | 15 Sep 67 | 1345 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 4892-1801 | 4800-1900 |
| 112 | 20 Sep 67 | 1529 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5151-1765 | 5000-1800 |
| 114 | 27 Sep 67 | 1445 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5066-1811 | 5100-1900 |
| 116 | 5 Oct 67 | 0007 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5090-2164 | 5200-1900 |
| 118 | 12 Oct 67 | 1530 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 4734-1728 | 4600-1800 |
| 122 | 20 Oct 67 | 1350 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5072-1265 | 5000-1500 |
| 124 | 25 Oct 67 | 1417 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5400-1800 | 5200-1700 |
| 128 | 3 Nov 67 | 1726 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5547-1677 | 5600-1700 |
| 134 | 15 Nov 67 | 1744 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6500-3300 |
| 136 | 21 Nov 67 | 1515 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5020-1737 | 5000-1800 |
| 138 | 29 Nov 67 | 1953 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5578-1682 | 5200-1700 |
| 140 | 6 Dec 67 | 1945 | Judi | Chaff | 1. Chaff<br>2. N. A. | N. A. | 6200-2900 |
| 146 | 13 Dec 67 | 1816 | Arcas | Arcasonde 1A | 1. Chute<br>2. Bead Therm. | 5084-1811 | 5000-1900 |

N. A. = NOT APPLICABLE

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (CNIE) CHAMICAL, ARGENTINA | | | |
| 87320 | 30°22 S 66°17' W ALT. 457 M | JANUARY 18, 1967 | 1413 | 2040 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 022 | 223 | 68 | 140 | 170 | +067 | -056 |
| 023 | 167 | 67 | 147 | 122 | +053 | -034 |
| 024 | 111 | 66 | 127 | 114 | +035 | -047 |
| 026 | 083 | 65 | 117 | 124 | +029 | -057 |
| 028 | 111 | 64 | 108 | 123 | +020 | -060 |
| 029 | 111 | 63 | 097 | 122 | +008 | -062 |
| 031 | 067 | 62 | 091 | 130 | +001 | -067 |
| 034 | 056 | 61 | 090 | 134 | +000 | -069 |
| 037 | 056 | 60 | 087 | 138 | -004 | -071 |
| 040 | 056 | 59 | 083 | 129 | -008 | -066 |
| 043 | 056 | 58 | 082 | 122 | -009 | -062 |
| 046 | 048 | 57 | 084 | 121 | -006 | -062 |
| 050 | 042 | 56 | 088 | 119 | -002 | -061 |
| 054 | 042 | 55 | 088 | 119 | -002 | -061 |
| 058 | 037 | 54 | 090 | 119 | +000 | -061 |
| 063 | 033 | 53 | 091 | 126 | +001 | -065 |
| 068 | 033 | 52 | 088 | 128 | -002 | -066 |
| 073 | 033 | 51 | 089 | 134 | -001 | -069 |
| 078 | 030 | 50 | 085 | 144 | -006 | -074 |
| 084 | 030 | 49 | 083 | 141 | -009 | -072 |
| 089 | 028 | 48 | 077 | 143 | -016 | -072 |
| 096 | 024 | 47 | 078 | 143 | -015 | -072 |
| 103 | 028 | 46 | 078 | 141 | -015 | -071 |
| 108 | 028 | 45 | 079 | 143 | -014 | -072 |
| 115 | 026 | 44 | 081 | 128 | -010 | -065 |
| 121 | 024 | 43 | 080 | 107 | -010 | -054 |
| 129 | 021 | 42 | 089 | 091 | -001 | -047 |
| 137 | 021 | 41 | 095 | 094 | +004 | -048 |
| 145 | 021 | 40 | 090 | 089 | +000 | -046 |
| 153 | 020 | 39 | 082 | 084 | -006 | -043 |
| 162 | 018 | 38 | 073 | 081 | -012 | -040 |
| 172 | 017 | 37 | 081 | 079 | -006 | -040 |
| 182 | 017 | 36 | 076 | 070 | -009 | -035 |
| 192 | 018 | 35 | 075 | 068 | -009 | -034 |
| 201 | 017 | 34 | 086 | 058 | -002 | -030 |
| 212 | 014 | 33 | 092 | 051 | +001 | -026 |
| 224 | 015 | 32 | 084 | 053 | -003 | -027 |
| 234 | 014 | 31 | 073 | 047 | -007 | -023 |
| 248 | 013 | 30 | 074 | 042 | -006 | -021 |
| 260 | 013 | 29 | 083 | 045 | -003 | -023 |
| 273 | 012 | 28 | 083 | 033 | -002 | -017 |
| 287 | 012 | 27 | 086 | 027 | -001 | -014 |
| 300 | 012 | 26 | 085 | 021 | -001 | -011 |
| 315 | 012 | 25 | 068 | 021 | -004 | -010 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M$^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 0950.7 | 0046 | 020 | 005 | -002 | -001 | 20 | +28.5 |
| 0794.0 | 0200 | 143 | 012 | +005 | -004 | 43 | +10.0 |
| 0621.0 | 0400 | 245 | 045 | +010 | +021 | 31 | -00.8 |
| 0481.0 | 0600 | 245 | 048 | +010 | +022 | 36 | -16.3 |
| 0366.0 | 0800 | 239 | 075 | +020 | +033 | 28 | -32.0 |
| 0254.0 | 1000 | 231 | 101 | +033 | +040 | 28 | -45.8 |
| 0201.5 | 1200 | 248 | 087 | +017 | +042 | 28 | -59.5 |
| 0146.5 | 1400 | 290 | 057 | -010 | +028 | | -57.8 |
| 0106.2 | 1600 | 295 | 095 | -021 | +044 | | -65.8 |
| 0076.4 | 1800 | 150 | 017 | +008 | -004 | | -67.3 |
| 0055.8 | 2000 | 014 | 015 | -007 | -002 | | -60.1 |
| 0040.2 | 2200 | 102 | 025 | +003 | -013 | | -57.0 |
| 0028.1 | 2400 | 065 | 020 | -004 | -009 | | -49.9 |
| 0022.1 | 2600 | 098 | 016 | +001 | -008 | | -45.2 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 100 SEC. ACTUAL.. 86 SEC.
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 040 DEG. AZIMUTH 85.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 2 SEC. 3,353 METERS ALTITUDE
MOTOR TRACK DROPPED.. 86 SEC. 68,580 METERS ALTITUDE
PAYLOAD ACQUISITION.. 120 SEC. 68,498 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 1,980 SEC. 23,378 METERS ALTITUDE
APOGEE.. 104 SEC. 69,324 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

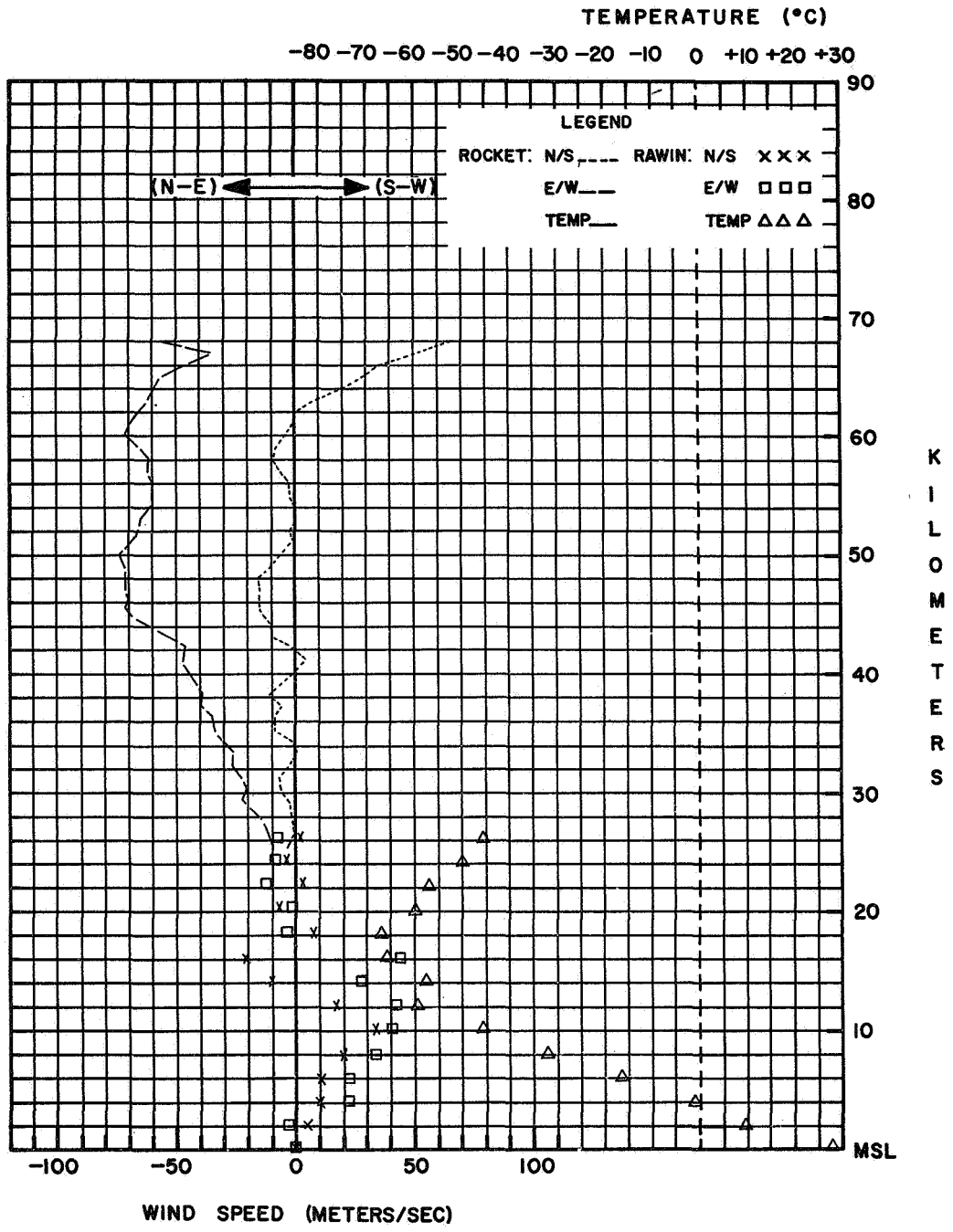
RADIOSONDE MANUFACTURER.. VAISALA
RADIOSONDE TYPE.. VAISALA
TEMPERATURE ELEMENT TYPE.. BIMETAL
PRESSURE SENSOR TYPE.. ANEROID
GROUND EQUIPMENT TYPE.. VAISALA + MPS-19 RADAR
BALLOON TYPE.. TOTEX
BALLOON SIZE.. 800 GRAMS
FREE LIFT.. 1,200 GRAMS
ASCENSION RATES.. SFC-400MB = 379 M/MINUTE
400MB-TOP = 414 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 950.7 MB
TEMPERATURE.. 28.5 DEG. C
RELATIVE HUMIDITY.. 20%
VISIBILITY.. 50 KM
SURFACE WIND.. 20 DEG. 5 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 1 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. 1 OCTAS/CI
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC 030 DEG./05 KTS.




STATION: (CNIE) CHAMICAL, ARGENTINA
DATE: 18 JANUARY 1967

ROCKET TIME: 1013 LST 1413 GCT
ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF
RADIOSONDE TYPE: VAISALA

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (CNAE) NATAL, BRAZIL | Z | Z | Z |
| 82599 | 5°55' S 35°10' W ALT. 43 M | JANUARY 18, 1967 | 1500 | 1217 |

# TABULATED DATA

ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 022 | 083 | 65 | 258 | 109 | +012 | +055 |
| 024 | 083 | 64 | 249 | 106 | +020 | +051 |
| 026 | 083 | 63 | 237 | 121 | +034 | +052 |
| 028 | 067 | 62 | 213 | 095 | +041 | +027 |
| 031 | 056 | 61 | 201 | 086 | +041 | +016 |
| 034 | 048 | 60 | 203 | 078 | +037 | +016 |
| 038 | 048 | 59 | 192 | 056 | +028 | +006 |
| 041 | 048 | 58 | 153 | 022 | +010 | -005 |
| 045 | 042 | 57 | 054 | 017 | -005 | -007 |
| 049 | 042 | 56 | 073 | 020 | -003 | -010 |
| 053 | 037 | 55 | 172 | 014 | +007 | -001 |
| 058 | 030 | 54 | 097 | 067 | +004 | -034 |
| 064 | 030 | 53 | 079 | 111 | -011 | -056 |
| 069 | 030 | 52 | 077 | 158 | -018 | -079 |
| 075 | 028 | 51 | 077 | 169 | -019 | -085 |
| 081 | 028 | 50 | 075 | 143 | -019 | -071 |
| 087 | 026 | 49 | 077 | 132 | -015 | -066 |
| 094 | 024 | 48 | 080 | 140 | -012 | -071 |
| 101 | 024 | 47 | 073 | 136 | -020 | -067 |
| 108 | 022 | 46 | 072 | 135 | -021 | -066 |
| 116 | 021 | 45 | 073 | 130 | -019 | -064 |
| 124 | 021 | 44 | 095 | 143 | +007 | -073 |
| 132 | 021 | 43 | 095 | 123 | +006 | -063 |
| 140 | 019 | 42 | 098 | 100 | +007 | -051 |
| 150 | 018 | 41 | 096 | 094 | +005 | -048 |
| 159 | 018 | 40 | 094 | 095 | +003 | -049 |
| 169 | 016 | 39 | 106 | 105 | +015 | -052 |
| 180 | 017 | 38 | 109 | 101 | +017 | -049 |
| 189 | 016 | 37 | 106 | 097 | +014 | -048 |
| 201 | 014 | 36 | 098 | 098 | +007 | -050 |
| 212 | 015 | 35 | 093 | 101 | +003 | -052 |
| 223 | 014 | 34 | 090 | 078 | +000 | -040 |
| 236 | 013 | 33 | 085 | 074 | -003 | -038 |
| 249 | 013 | 32 | 083 | 075 | -005 | -038 |
| 261 | 013 | 31 | 082 | 069 | -005 | -035 |
| 275 | 012 | 30 | 088 | 049 | -001 | -025 |
| 288 | 012 | 29 | 086 | 031 | -001 | -016 |
| 303 | 011 | 28 | 083 | 031 | -002 | -016 |
| 318 | 010 | 27 | 034 | 007 | -003 | -002 |
| 335 | 009 | 26 | 027 | 004 | -002 | -001 |
| 354 | 009 | 25 | 259 | 010 | +001 | +005 |
| 371 | 009 | 24 | 265 | 021 | +001 | +011 |
| 391 | 008 | 23 | 281 | 020 | -002 | +010 |
| 412 | 008 | 22 | 302 | 018 | -005 | +008 |
| 432 | 008 | 21 | 256 | 008 | +001 | +004 |
| 455 | 007 | 20 | 259 | 010 | +001 | +005 |
| 478 | 007 | 19 | 252 | 006 | +001 | +003 |
| 504 | 007 | 18 | 121 | 011 | +003 | -005 |

ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|

RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1005.0 | 0004 | 110 | 010 | +002 | -005 | 67 | +29.5 |
| 0801.0 | 0200 | 123 | 015 | +004 | -006 | 28 | +16.4 |
| 0629.0 | 0400 | 260 | 002 | +000 | +001 | | +03.6 |
| 0430.0 | 0600 | 112 | 017 | +003 | -008 | | -13.2 |
| 0377.0 | 0800 | 087 | 024 | -001 | -012 | | -19.0 |
| 0284.5 | 1000 | 057 | 015 | -004 | -006 | | -36.2 |
| 0211.8 | 1200 | 030 | 029 | -013 | -007 | | -53.5 |
| 0153.5 | 1400 | 046 | 012 | -004 | -004 | | -67.6 |
| 0109.7 | 1600 | 070 | 009 | -002 | -004 | | -76.1 |
| 0076.8 | 1800 | 195 | 011 | +005 | +001 | | -78.3 |
| 0054.8 | 2000 | 250 | 018 | +003 | +009 | | -70.6 |
| 0039.5 | 2200 | 350 | 006 | -003 | +001 | | -62.0 |
| 0028.7 | 2400 | 270 | 022 | +000 | +011 | | -58.2 |
| 0020.8 | 2600 | 330 | 007 | -003 | +002 | | -55.5 |
| 0015.4 | 2800 | 090 | 026 | -000 | -013 | | -49.2 |
| 0011.3 | 3000 | 093 | 016 | +000 | -008 | | -47.3 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 110 SEC. ACTUAL.. 90 SEC.
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 050 DEG. AZIMUTH 85.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 4 SECONDS 4,846 METERS ALTITUDE
MOTOR TRACK DROPPED.. 69 SECONDS 56,754 METERS ALTITUDE
PAYLOAD ACQUISITION.. 109 SECONDS 66,660 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 3,180 SECONDS 16,820 METERS ALTITUDE
APOGEE.. 109 SECONDS 66,660 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

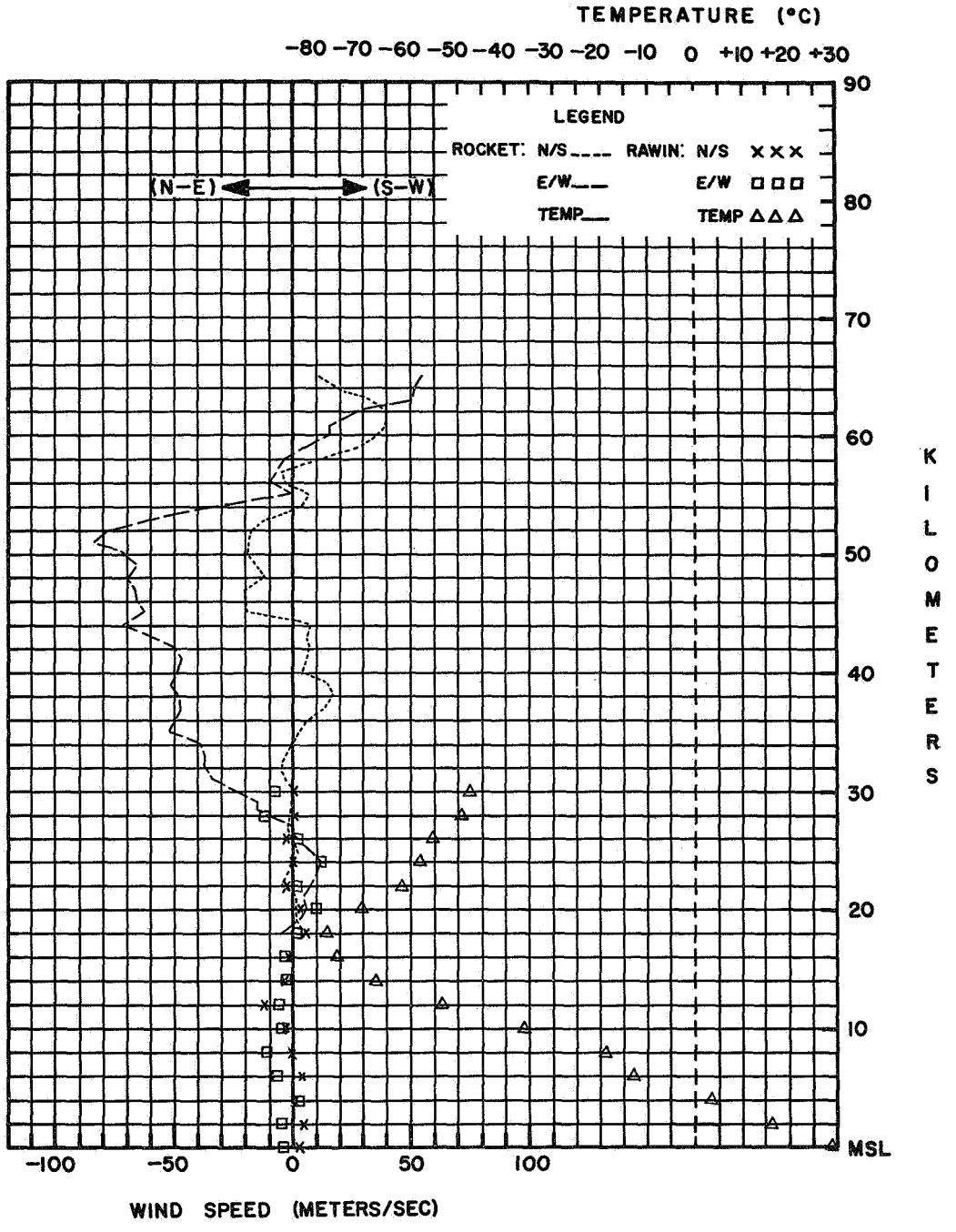
RADIOSONDE MANUFACTURER.. BENDIX
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID
GROUND EQUIPMENT TYPE.. GMD-1A
BALLOON TYPE.. KAYSAM
BALLOON SIZE.. 1,000 GRAMS
FREE LIFT.. 1,200 GRAMS
ASCENSION RATES.. SFC-400MB = 298 M/MINUTE
400MB-TOP = 322 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,005.0 MB
TEMPERATURE.. 29.5 DEG. C
RELATIVE HUMIDITY.. 67%
VISIBILITY.. 20 KM
SURFACE WIND.. 110 DEG. 10 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 5 OCTAS
LOW.. CU
MIDDLE.. NONE
HIGH.. CI
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

21 FT. 120 DEG/6 KTS,
29 FT. 120 DEG/6 KTS, 51 FT. 110 DEG/4 KTS,
82 FT. 120 DEG/9 KTS, 133 FT. 120 DEG/10 KTS




STATION: (CNAE) NATAL, BRAZIL

DATE: 18 JANUARY 1967

ROCKET TIME: 1200 LST 1500 GCT

ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF

RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE Z | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | | | |
| 72402 | 37°51' N 75°29' W ALT. 3 M | JANUARY 18, 1967 | 1604 | 1115 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 024 | 099 | 52 | 271 | 156 | -002 | +080 |
| 026 | 083 | 51 | 269 | 122 | +001 | +063 |
| 028 | 067 | 50 | 269 | 095 | +001 | +049 |
| 031 | 067 | 49 | 274 | 082 | -003 | +042 |
| 033 | 067 | 48 | 274 | 076 | -003 | +039 |
| 036 | 048 | 47 | 266 | 076 | +003 | +039 |
| 040 | 048 | 46 | 253 | 075 | +011 | +037 |
| 043 | 048 | 45 | 243 | 074 | +017 | +034 |
| 047 | 048 | 44 | 246 | 062 | +013 | +029 |
| 050 | 048 | 43 | 257 | 054 | +006 | +027 |
| 054 | 037 | 42 | 258 | 048 | +005 | +024 |
| 059 | 037 | 41 | 257 | 042 | +005 | +021 |
| 063 | 037 | 40 | 264 | 035 | +002 | +018 |
| 068 | 030 | 39 | 267 | 033 | +001 | +017 |
| 074 | 028 | 38 | 254 | 034 | +005 | +017 |
| 080 | 026 | 37 | 267 | 041 | +001 | +021 |
| 087 | 026 | 36 | 274 | 060 | -002 | +031 |
| 093 | 024 | 35 | 263 | 076 | +005 | +039 |
| 101 | 022 | 34 | 249 | 092 | +017 | +044 |
| 108 | 020 | 33 | 241 | 102 | +025 | +046 |
| 118 | 018 | 32 | 239 | 093 | +025 | +041 |
| 127 | 017 | 31 | 237 | 086 | +024 | +037 |
| 138 | 016 | 30 | 237 | 088 | +025 | +038 |
| 148 | 015 | 29 | 238 | 085 | +023 | +037 |
| 160 | 013 | 28 | 244 | 071 | +016 | +033 |
| 173 | 012 | 27 | 249 | 071 | +013 | +034 |
| 188 | 010 | 26 | 245 | 069 | +015 | +032 |
| 205 | 010 | 25 | 243 | 059 | +014 | +027 |
| 222 | 009 | 24 | 243 | 052 | +012 | +024 |
| 242 | 009 | 23 | 232 | 047 | +015 | +019 |
| 260 | 008 | 22 | 239 | 041 | +011 | +018 |
| 285 | 006 | 21 | 249 | 050 | +009 | +024 |
| 312 | 004 | 20 | 245 | 060 | +013 | +028 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY -3 G M | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 4950 | -12.8 | 00.786 | 01.051 | 323 | 271 | 089 | -001 | +046 |
| 4910 | -10.7 | 00.827 | 01.098 | 325 | 274 | 084 | -003 | +043 |
| 4830 | -09.0 | 00.916 | 01.208 | 326 | 274 | 078 | -003 | +040 |
| 4621 | -16.6 | 01.200 | 01.630 | 321 | 256 | 074 | +009 | +037 |
| 4510 | -17.4 | 01.389 | 01.892 | 321 | 245 | 073 | +016 | +034 |
| 4350 | -24.3 | 01.720 | 02.407 | 316 | 250 | 058 | +010 | +028 |
| 4280 | -22.6 | 01.890 | 02.628 | 317 | 257 | 052 | +006 | +026 |
| 4110 | -30.3 | 02.385 | 03.421 | 312 | 257 | 042 | +005 | +021 |
| 3910 | -19.5 | 03.129 | 04.298 | 319 | 267 | 033 | +001 | +017 |
| 3860 | -24.3 | 03.347 | 04.685 | 316 | 260 | 034 | +003 | +017 |
| 3750 | -29.3 | 03.891 | 05.559 | 313 | 261 | 037 | +003 | +019 |
| 3710 | -28.8 | 04.113 | 05.863 | 313 | 267 | 041 | +001 | +021 |
| 3650 | -25.2 | 04.465 | 06.274 | 316 | 272 | 051 | -001 | +026 |
| 3610 | -30.0 | 04.718 | 06.760 | 313 | 274 | 058 | -002 | +030 |
| 3500 | -32.0 | 05.501 | 07.946 | 311 | 263 | 076 | +005 | +039 |
| 3456 | -35.0 | 05.853 | 08.561 | 309 | 256 | 082 | +010 | +041 |
| 3414 | -34.0 | 06.211 | 09.048 | 310 | 251 | 089 | +015 | +043 |
| 3380 | -38.9 | 06.520 | 09.697 | 307 | 247 | 093 | +019 | +044 |
| 3250 | -45.4 | 07.887 | 12.064 | 303 | 240 | 098 | +025 | +044 |
| 3222 | -44.1 | 08.221 | 12.503 | 303 | 239 | 095 | +025 | +042 |
| 3155 | -48.0 | 09.084 | 14.055 | 301 | 237 | 090 | +025 | +039 |
| 3090 | -45.7 | 10.011 | 15.332 | 302 | 237 | 086 | +024 | +037 |
| 2947 | -50.2 | 12.410 | 19.392 | 299 | 237 | 086 | +024 | +037 |
| 2868 | -48.5 | 13.986 | 21.688 | 300 | 240 | 081 | +021 | +036 |
| 2694 | -55.6 | 18.257 | 29.236 | 296 | 249 | 071 | +013 | +034 |
| 2627 | -53.7 | 20.256 | 32.155 | 297 | 247 | 070 | +014 | +033 |
| 2377 | -57.7 | 29.909 | 48.360 | 294 | 241 | 051 | +013 | +023 |
| 2320 | -55.8 | 32.703 | 52.417 | 296 | 235 | 047 | +014 | +020 |
| 2103 | -56.1 | 45.899 | 73.668 | 295 | 249 | 050 | +009 | +024 |
| 2000 | -60.0 | 54.000 | 88.256 | 293 | | | | |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 2044 | -58.1 | 50.000 | 80.987 | 294 | 247 | 055 | +011 | +026 |
| 2366 | -57.6 | 30.000 | 48.494 | 294 | 241 | 051 | +013 | +023 |
| 2625 | -53.9 | 20.000 | 31.784 | 297 | 247 | 070 | +014 | +033 |
| 3076 | -45.7 | 10.000 | 15.318 | 302 | 237 | 086 | +024 | +037 |
| 3317 | -41.2 | 07.000 | 10.513 | 305 | 244 | 097 | +022 | +045 |
| 3550 | -30.7 | 05.000 | 07.185 | 312 | 270 | 064 | +000 | +033 |
| 4214 | -24.3 | 02.000 | 02.800 | 316 | 259 | 050 | +005 | +025 |
| 4733 | -11.2 | 01.000 | 01.330 | 324 | 271 | 076 | -001 | +039 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1030.0 | 0000 | 335 | 006 | -003 | +001 | 66 | +00.0 |
| 0803.0 | 0200 | 269 | 025 | +000 | +013 | 25 | -05.2 |
| 0620.0 | 0400 | 256 | 061 | +008 | +030 | 16 | -08.9 |
| 0475.0 | 0600 | 255 | 097 | +013 | +048 | 20 | -22.0 |
| 0360.0 | 0800 | 245 | 107 | +023 | +050 | 33 | -37.5 |
| 0267.0 | 1000 | 245 | 101 | +022 | +047 | | -49.7 |
| 0196.0 | 1200 | | | | | | -51.8 |
| 0143.0 | 1400 | | | | | | -60.2 |
| 0103.0 | 1600 | | | | | | -64.7 |
| 0074.0 | 1800 | | | | | | -64.8 |
| 0054.0 | 2000 | | | | | | -63.0 |
| 0039.2 | 2200 | | | | | | -58.1 |
| 0028.5 | 2400 | 250 | 046 | +008 | +022 | | -56.5 |
| 0021.0 | 2600 | 250 | 066 | +012 | +032 | | -54.9 |
| 0015.5 | 2800 | 250 | 056 | +010 | +027 | | -53.1 |
| 0011.2 | 3000 | 239 | 105 | +028 | +046 | | -49.6 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 126 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 130 DEG. AZIMUTH 76.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 18 SECONDS 4,572 METERS ALTITUDE
MOTOR TRACK DROPPED.. 126 SECONDS 52,914 METERS ALTITUDE
PAYLOAD ACQUISITION.. 126 SECONDS 52,914 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,050 SECONDS 18,745 METERS ALTITUDE
APOGEE.. 120 SECONDS 53,066 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 16 FT. DIAMETER DISC-GAP-BAND PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1,682 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 173 SEC. 49,531 METERS ALTITUDE
TO 1,873 SEC. 19,995 METER ALTITUDE

REMARKS

EXPERIMENTAL PAYLOAD TEST. DISC-GAP-BAND PARACHUTE

THERMODYNAMICS BASE DATA.. PRESSURE 54.0 MB
ALTITUDE 20,000 METERS
TEMPERATURE -63.0 DEG. C

RADIOSONDE AND BALLOON DATA

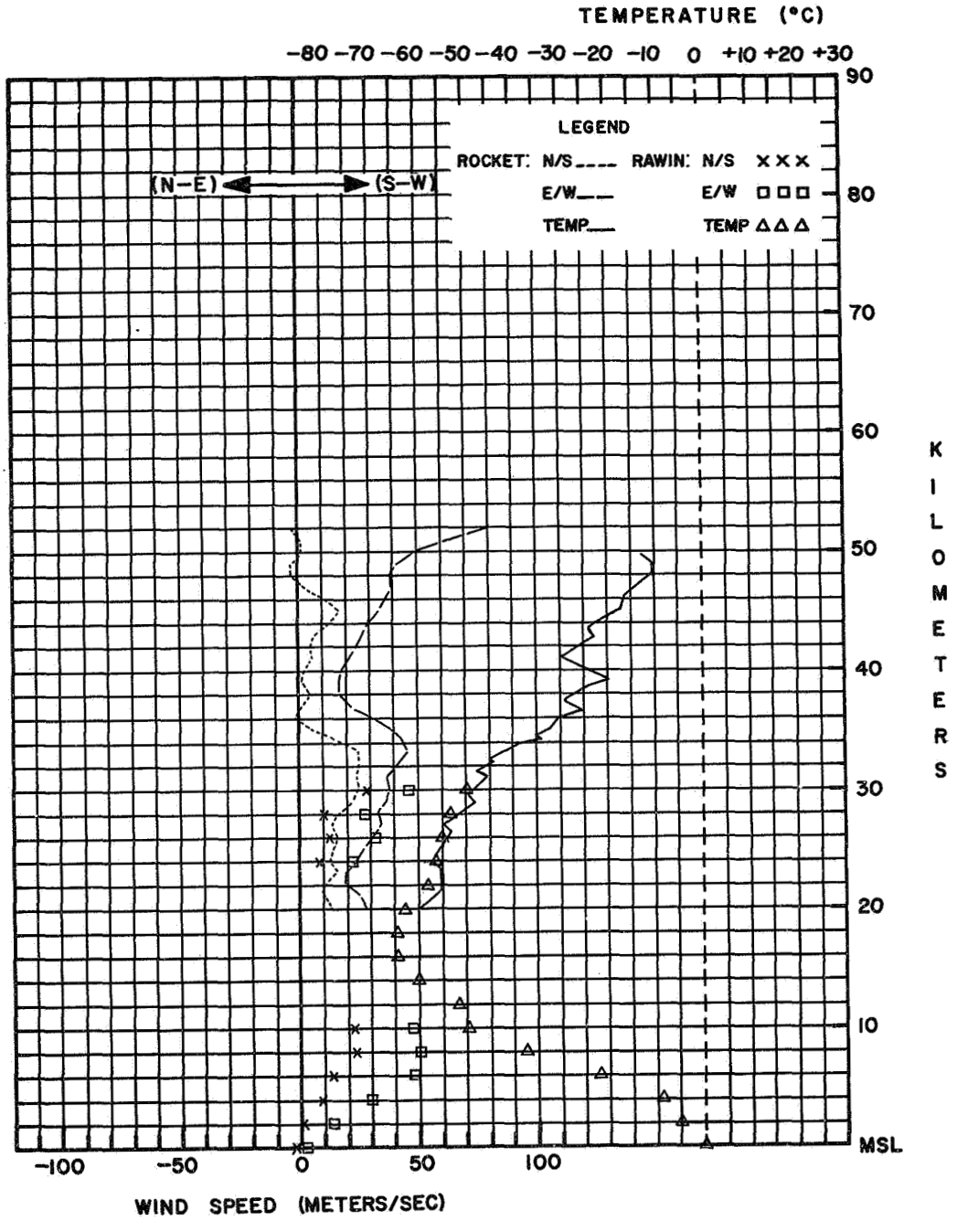
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400MB = 318 M/MINUTE
400MB-TOP = 391 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,030.0 MB
TEMPERATURE.. 0.0 DEG. C
RELATIVE HUMIDITY.. 66%
VISIBILITY.. 11 KM
SURFACE WIND.. 335 DEG. 6 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 0 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 355 DEG/17 KTS, 50 FT. 359 DEG/13 KTS,
100 FT. 357 DEG/15 KTS, 150 FT. 001 DEG/16 KTS,
200 FT. 360 DEG/17 KTS, 250 FT. 359 DEG/16 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA
DATE: 18 JANUARY 1967

ROCKET TIME: 1104 LST 1604 GCT
ROCKET MOTOR TYPE: ARCAS

PAYLOAD TYPE: ARCASONDE-1A
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | Z | Z | Z |
| 72402 | 37°51' N 75°29' W ALT. 3 M | JANUARY 25, 1967 | 1639 | 1115 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 029 | 099 | 45 | 269 | 095 | +001 | +049 |
| 031 | 083 | 44 | 273 | 086 | -002 | +044 |
| 033 | 067 | 43 | 277 | 078 | -005 | +040 |
| 036 | 056 | 42 | 275 | 074 | -003 | +038 |
| 039 | 067 | 41 | 268 | 062 | +001 | +032 |
| 041 | 067 | 40 | 262 | 057 | +004 | +029 |
| 044 | 048 | 39 | 264 | 053 | +003 | +027 |
| 048 | 048 | 38 | 267 | 043 | +001 | +022 |
| 051 | 048 | 37 | 270 | 039 | +000 | +020 |
| 055 | 042 | 36 | 270 | 039 | +000 | +020 |
| 059 | 042 | 35 | 273 | 035 | -001 | +018 |
| 063 | 037 | 34 | 288 | 039 | -006 | +019 |
| 068 | 033 | 33 | 282 | 038 | -004 | +019 |
| 073 | 033 | 32 | 266 | 029 | +001 | +015 |
| 078 | 033 | 31 | 262 | 029 | +002 | +015 |
| 083 | 028 | 30 | 266 | 027 | +001 | +014 |
| 090 | 021 | 29 | 270 | 019 | +000 | +010 |
| 099 | 019 | 28 | 270 | 014 | +000 | +007 |
| 108 | 016 | 27 | 304 | 014 | -004 | +006 |
| 120 | 014 | 26 | 323 | 019 | -008 | +006 |
| 132 | 013 | 25 | 308 | 022 | -007 | +009 |
| 145 | 012 | 24 | 304 | 021 | -006 | +009 |
| 159 | 011 | 23 | 307 | 019 | -006 | +008 |
| 175 | 011 | 22 | 304 | 021 | -006 | +009 |
| 189 | 011 | 21 | 305 | 024 | -007 | +010 |
| 206 | 010 | 20 | 291 | 027 | -005 | +013 |
| 223 | 009 | 19 | 279 | 037 | -003 | +019 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY $10^{-3}$ G M | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 4185 | -23.6 | 01.610 | 02.248 | 317 | 273 | 072 | -002 | +037 |
| 4084 | -23.6 | 01.846 | 02.577 | 317 | 268 | 062 | +001 | +032 |
| 3962 | -30.6 | 02.182 | 03.134 | 312 | 262 | 055 | +004 | +028 |
| 3801 | -29.5 | 02.728 | 03.901 | 313 | 267 | 043 | +001 | +022 |
| 3615 | -32.1 | 03.536 | 05.110 | 311 | 270 | 039 | +000 | +020 |
| 3478 | -32.4 | 04.284 | 06.200 | 311 | 276 | 035 | -002 | +018 |
| 3341 | -38.6 | 05.206 | 07.733 | 307 | 285 | 038 | -005 | +019 |
| 3286 | -40.7 | 05.638 | 08.449 | 306 | 279 | 035 | -003 | +018 |
| 3213 | -46.2 | 06.277 | 09.636 | 302 | 270 | 031 | +000 | +016 |
| 3060 | -42.8 | 07.872 | 11.905 | 304 | 262 | 029 | +002 | +015 |
| 3000 | -47.6 | 08.606 | 13.292 | 301 | 266 | 027 | +001 | +014 |
| 2874 | -50.0 | 10.407 | 16.247 | 299 | 270 | 017 | +000 | +009 |
| 2700 | -46.4 | 13.524 | 20.778 | 302 | 304 | 014 | -004 | +006 |
| 2580 | -52.1 | 16.217 | 25.558 | 298 | 319 | 021 | -008 | +007 |
| 2429 | -53.2 | 20.454 | 32.397 | 297 | 304 | 021 | -006 | +009 |
| 2410 | -56.3 | 21.067 | 33.844 | 295 | 304 | 021 | -006 | +009 |
| 2180 | -56.5 | 30.193 | 48.550 | 295 | 304 | 021 | -006 | +009 |
| 2050 | -61.7 | 37.104 | 61.130 | 292 | 297 | 026 | -006 | +012 |
| 2000 | -60.2 | 40.194 | 65.754 | 293 | 291 | 027 | -005 | +013 |
| 1930 | -64.8 | 44.995 | 75.233 | 289 | 283 | 034 | -004 | +017 |
| 1859 | -63.7 | 50.500 | 83.994 | 290 | | | | |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 1860 | -63.8 | 50.000 | 83.202 | 290 | | | | |
| 2178 | -56.5 | 30.000 | 48.238 | 295 | 304 | 021 | -006 | +009 |
| 2436 | -53.1 | 20.000 | 31.660 | 297 | 304 | 021 | -006 | +009 |
| 2889 | -49.5 | 10.000 | 15.574 | 300 | 270 | 019 | +000 | +010 |
| 3129 | -44.7 | 07.000 | 10.673 | 303 | 262 | 029 | +002 | +015 |
| 3354 | -37.2 | 05.000 | 07.383 | 308 | 285 | 038 | -005 | +019 |
| 4003 | -26.8 | 02.000 | 02.828 | 315 | 264 | 059 | +003 | +030 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1023.0 | 0000 | 200 | 006 | +003 | +001 | 96 | +06.1 |
| 0804.5 | 0200 | | | | | 70 | +03.6 |
| 0627.0 | 0400 | | | | | 29 | -04.6 |
| 0483.0 | 0600 | 242 | 021 | +005 | +010 | 28 | -17.4 |
| 0368.0 | 0800 | 241 | 035 | +009 | +016 | 32 | -32.7 |
| 0276.5 | 1000 | 251 | 040 | +007 | +019 | | -49.1 |
| 0201.0 | 1200 | 245 | 049 | +011 | +023 | | -62.9 |
| 0144.5 | 1400 | 269 | 072 | +001 | +037 | | -61.7 |
| 0105.5 | 1600 | 275 | 054 | -002 | +028 | | -68.0 |
| 0075.3 | 1800 | 271 | 041 | -000 | +021 | | -68.4 |
| 0054.3 | 2000 | 301 | 027 | -007 | +012 | | -66.6 |
| 0038.8 | 2200 | 303 | 025 | -007 | +011 | | -58.2 |
| 0028.5 | 2400 | 319 | 022 | -009 | +007 | | -57.9 |
| 0024.5 | 2600 | 303 | 035 | -010 | +015 | | -56.1 |
| 0015.4 | 2800 | 316 | 015 | -006 | +005 | | -50.8 |
| 0011.3 | 3000 | 289 | 027 | -005 | +013 | | -47.8 |
| 0008.4 | 3200 | 257 | 029 | +003 | +015 | | -42.8 |
| 0006.2 | 3400 | | | | | | -41.6 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. FAIR
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 139 SEC.
TYPE OF LAUNCHER.. ARCAS WITHOUT GAS GENERATOR
LAUNCHER SETTING.. 100 DEG. AZIMUTH 78.5 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 1,006 METERS ALTITUDE
MOTOR TRACK DROPPED.. 139 SECONDS 47,946 METERS ALTITUDE
PAYLOAD ACQUISITION.. 139 SECONDS 47,946 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 1,380 SECONDS 18,593 METERS ALTITUDE
APOGEE.. 128 SECONDS 49,988 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 16 FT. DIAMETER DISC-GAP-BAND PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1,678 MHZ
TELEMETRY QUALITY.. FAIR
TELEMETRY DATA RECEIVED FROM.. 219 SEC. 41,850 METERS ALTITUDE
TO 1,380 SEC. 18,593 METERS ALTITUDE

REMARKS

EXPERIMENTAL PAYLOAD TEST.
TEMPERATURE FROM KRYLON BEAD RATHER THAN ALUMINIZED BEAD.
THERMODYNAMICS BASE DATA.. PRESSURE 69.0 MB
ALTITUDE 18,590 METERS
TEMPERATURE -67.9 DEG. C

RADIOSONDE AND BALLOON DATA

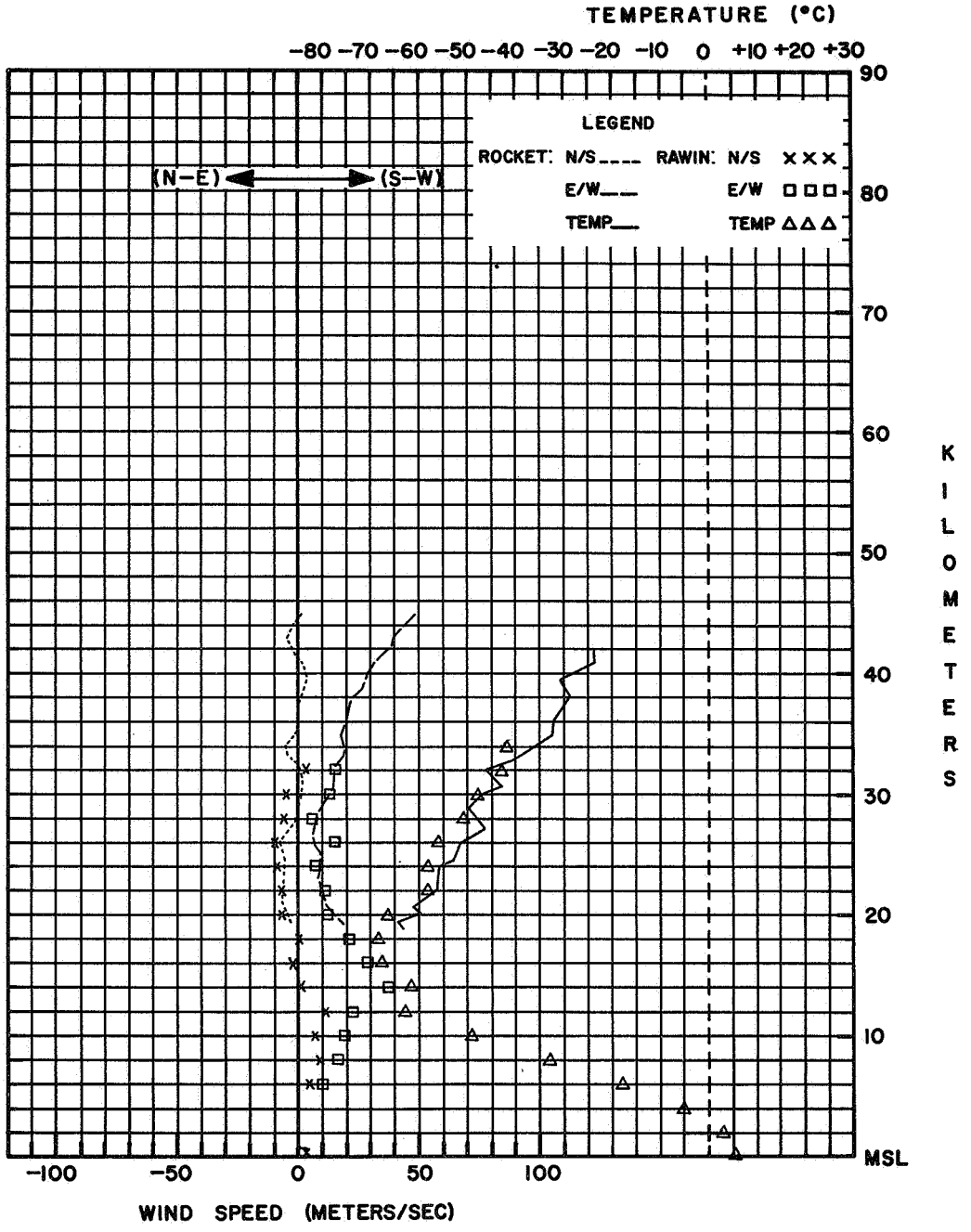
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400MB = 289 M/MINUTE
400MB-TOP = 425 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,023.0 MB
TEMPERATURE.. 6.1 DEG. C
RELATIVE HUMIDITY.. 96%
VISIBILITY.. 8 KM
SURFACE WIND.. 200 DEG. 6 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 8 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. 8 OCTAS/CU
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. HAZE

WIND AT ROCKET LAUNCH

SFC. 197 DEG/9 KTS, 50 FT. 190 DEG/11 KTS,
100 FT. 201 DEG/14 KTS, 150 FT. 205 DEG/17 KTS,
200 FT. 210 DEG/14 KTS, 250 FT. 225 DEG/12 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA
**DATE:** 25 JANUARY 1967

**ROCKET TIME:** 1139 LST 1639 GCT
**ROCKET MOTOR TYPE:** ARCAS

**PAYLOAD TYPE:** ARCASONDE-1A
**RADIOSONDE TYPE:** 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (CNAE) NATAL, BRAZIL | | | |
| 82599 | 5°55' S 35°10' W ALT. 43 M | FEBRUARY 1, 1967 | 1500 | 1200 |

# TABULATED DATA

## ROCKET WINDS

| TIME OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 022 | 099 | 64 | 225 | 088 | +032 | +032 |
| 024 | 083 | 63 | 229 | 077 | +026 | +030 |
| 026 | 067 | 62 | 238 | 099 | +027 | +043 |
| 029 | 048 | 61 | 249 | 094 | +017 | +045 |
| 033 | 048 | 60 | 254 | 063 | +009 | +031 |
| 036 | 048 | 59 | 281 | 040 | -004 | +020 |
| 040 | 042 | 58 | 343 | 033 | -016 | +005 |
| 044 | 042 | 57 | 360 | 041 | -021 | +000 |
| 048 | 042 | 56 | 012 | 046 | -023 | -005 |
| 052 | 037 | 55 | 013 | 044 | -022 | -005 |
| 057 | 030 | 54 | 360 | 051 | -026 | +000 |
| 063 | 030 | 53 | 356 | 058 | -030 | +002 |
| 068 | 030 | 52 | 017 | 053 | -026 | -008 |
| 074 | 026 | 51 | 068 | 057 | -011 | -027 |
| 081 | 026 | 50 | 092 | 101 | +002 | -052 |
| 087 | 026 | 49 | 097 | 135 | +009 | -069 |
| 094 | 024 | 48 | 094 | 154 | +006 | -079 |
| 101 | 024 | 47 | 093 | 160 | +004 | -082 |
| 108 | 021 | 46 | 094 | 133 | +005 | -068 |
| 117 | 020 | 45 | 093 | 138 | +004 | -071 |
| 125 | 020 | 44 | 092 | 091 | +002 | -047 |
| 134 | 019 | 43 | 087 | 078 | -002 | -040 |
| 143 | 018 | 42 | 091 | 078 | +001 | -040 |
| 153 | 018 | 41 | 099 | 079 | +006 | -040 |
| 162 | 017 | 40 | 100 | 067 | +006 | -034 |
| 173 | 016 | 39 | 095 | 070 | +003 | -036 |
| 183 | 017 | 38 | 093 | 086 | +002 | -044 |
| 193 | 015 | 37 | 094 | 099 | +004 | -051 |
| 205 | 014 | 36 | 092 | 095 | +002 | -049 |
| 216 | 014 | 35 | 089 | 088 | -001 | -045 |
| 229 | 013 | 34 | 093 | 084 | +002 | -043 |
| 241 | 014 | 33 | 094 | 082 | +003 | -042 |
| 253 | 013 | 32 | 076 | 056 | -007 | -028 |
| 266 | 012 | 31 | 086 | 060 | -002 | -031 |
| 281 | 011 | 30 | 092 | 051 | +001 | -026 |
| 295 | 011 | 29 | 081 | 035 | -003 | -018 |
| 311 | 010 | 28 | 061 | 024 | -006 | -011 |
| 328 | 011 | 27 | 068 | 010 | -002 | -005 |
| 342 | 010 | 26 | 112 | 010 | +002 | -005 |
| 360 | 009 | 25 | 143 | 010 | +004 | -003 |
| 378 | 009 | 24 | 153 | 004 | +002 | -001 |
| 397 | 009 | 23 | 279 | 012 | -001 | +006 |
| 417 | 008 | 22 | 284 | 016 | -002 | +008 |
| 439 | 008 | 21 | 284 | 008 | -001 | +004 |
| 461 | 007 | 20 | 297 | 004 | -001 | +002 |
| 485 | 007 | 19 | 282 | 028 | -003 | +014 |
| 509 | 007 | 18 | 277 | 047 | -003 | +024 |

## ROCKET THERMODYNAMICS

| ALT OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|

## RAWINSONDE

| PRESSURE MB | ALT OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1005.0 | 0004 | 120 | 014 | +004 | -006 | 74 | +29.0 |
| 0803.0 | 0200 | 108 | 007 | +001 | -003 | 52 | +14.9 |
| 0629.0 | 0400 | 338 | 008 | -004 | +002 | 24 | +03.8 |
| 0490.0 | 0600 | 173 | 009 | +005 | -001 | | -06.1 |
| 0377.0 | 0800 | 189 | 021 | +011 | +002 | | -20.8 |
| 0274.3 | 1000 | 198 | 037 | +018 | +006 | | -36.0 |
| 0211.0 | 1200 | 201 | 047 | +023 | +009 | | -51.6 |
| 0154.1 | 1400 | 207 | 037 | +017 | +009 | | -65.7 |
| 0109.7 | 1600 | 172 | 027 | +014 | -002 | | -78.6 |
| 0076.6 | 1800 | 051 | 011 | -004 | -004 | | -73.2 |
| 0054.9 | 2000 | 286 | 004 | -001 | +002 | | -66.3 |
| 0039.6 | 2200 | 276 | 022 | -001 | +011 | | -63.1 |
| 0028.7 | 2400 | 180 | 012 | +006 | -000 | | -58.2 |
| 0021.0 | 2600 | 213 | 012 | +005 | +003 | | -55.3 |
| 0015.4 | 2800 | 078 | 025 | -003 | -013 | | -52.8 |
| 0011.3 | 3000 | 090 | 048 | -000 | -025 | | -49.9 |
| 0008.3 | 3200 | 080 | 061 | -005 | -031 | | -40.6 |
| 0006.2 | 3400 | 095 | 088 | +004 | -045 | | -39.7 |
| 0004.7 | 3600 | | | | | | -38.5 |
| 0003.5 | 3800 | | | | | | -37.4 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 110 SEC. ACTUAL.. 105 SEC.
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 50.0 DEG. AZIMUTH 82.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 4 SECONDS 4,724 METERS ALTITUDE
MOTOR TRACK DROPPED.. 105 SECONDS 65,533 METERS ALTITUDE
PAYLOAD ACQUISITION.. 105 SECONDS 65,533 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 3,260 SECONDS 16,764 METERS ALTITUDE
APOGEE.. 105 SECONDS 65,533 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. NONE
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

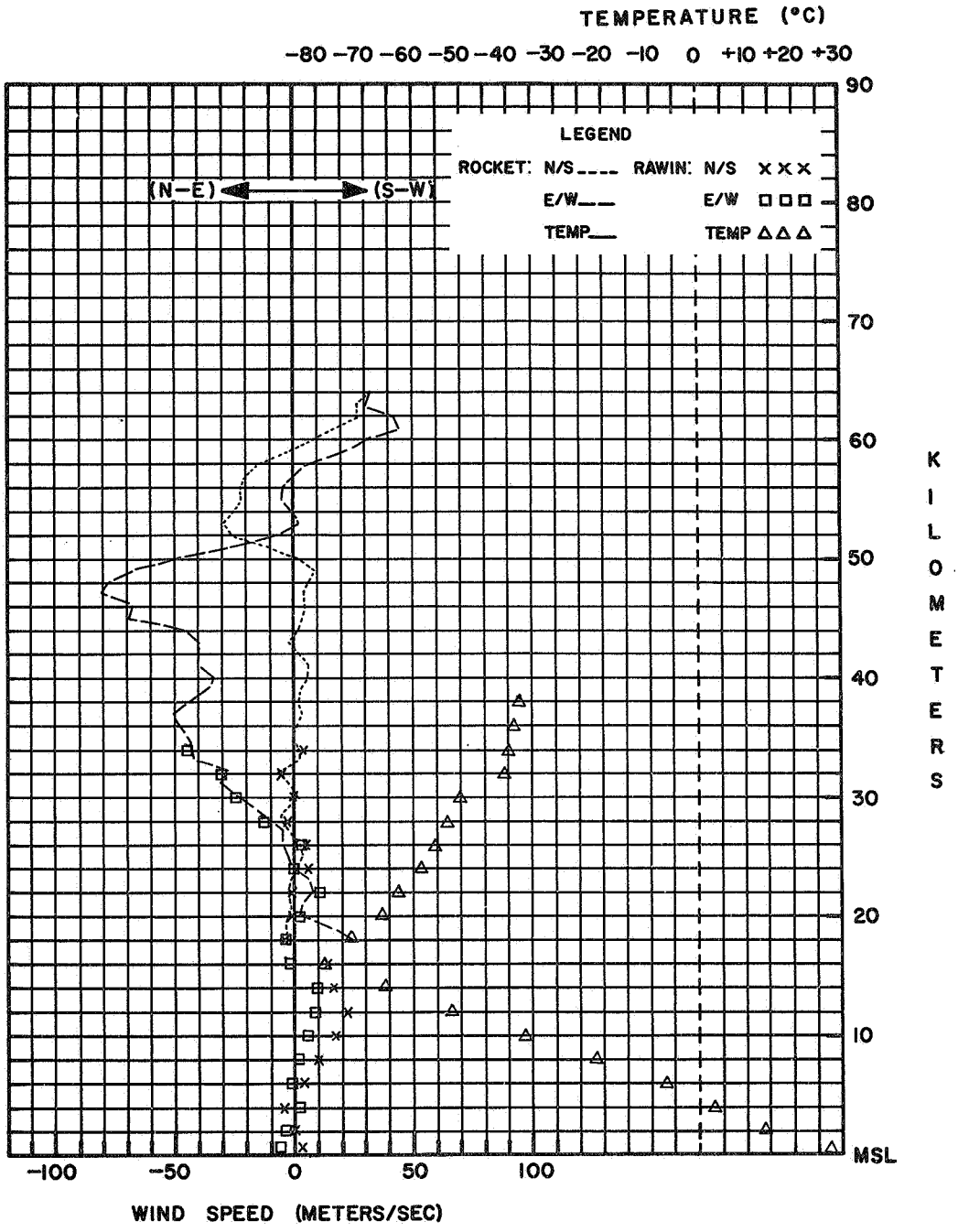
RADIOSONDE MANUFACTURER.. BENDIX
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID
GROUND EQUIPMENT TYPE.. GMD-1A
BALLOON TYPE.. KAYSAM
BALLOON SIZE.. 1,000 GRAMS
FREE LIFT.. 1,200 GRAMS
ASCENSION RATES.. SFC-400 MB = 268 M/MINUTE
400 MB-TOP = 341 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,005.0 MB
TEMPERATURE.. 29.0 DEG. C
RELATIVE HUMIDITY.. 74%
VISIBILITY.. 20 KM
SURFACE WIND.. 120 DEG. 14 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 6 OCTAS
LOW.. CU, SC
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

21 FT. 90 DEG/8 KTS, 29 FT. 90 DEG/6 KTS,
51 FT. 110 DEG/6 KTS, 82 FT. 80 DEG/6 KTS,
133 FT. 90 DEG/10 KTS




STATION: (CNAE) NATAL, BRAZIL

DATE: 1 FEBRUARY 1967

ROCKET TIME: 1200 LST 1500 GCT

ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF

RADIOSONDE TYPE: 1680 MHZ

RP STATION NAME

(NASA) WALLOPS ISLAND, VIRGINIA

72402 37°51' N 75°29' W ALT. 3 M

DATE Z | ROCKET RAWINSONDE LAUNCH TIME Z | RELEASE TIME Z

FEBRUARY 1, 1967 1838 1632

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 031 | 067 | 54 | 259 | 156 | +015 | +079 |
| 033 | 067 | 53 | 259 | 143 | +014 | +072 |
| 036 | 067 | 52 | 249 | 154 | +028 | +074 |
| 038 | 083 | 51 | 247 | 160 | +032 | +076 |
| 040 | 067 | 50 | 249 | 175 | +032 | +084 |
| 043 | 067 | 49 | 254 | 174 | +025 | +086 |
| 045 | 067 | 48 | 247 | 167 | +034 | +079 |
| 048 | 056 | 47 | 245 | 168 | +037 | +078 |
| 051 | 056 | 46 | 249 | 164 | +030 | +079 |
| 054 | 056 | 45 | 251 | 152 | +026 | +074 |
| 057 | 056 | 44 | 253 | 146 | +022 | +072 |
| 060 | 048 | 43 | 252 | 137 | +022 | +067 |
| 064 | 037 | 42 | 259 | 127 | +013 | +064 |
| 069 | 037 | 41 | 263 | 129 | +008 | +066 |
| 073 | 037 | 40 | 265 | 103 | +005 | +053 |
| 078 | 033 | 39 | 267 | 086 | +002 | +044 |
| 083 | 030 | 38 | 269 | 086 | +001 | +044 |
| 089 | 028 | 37 | 267 | 080 | +002 | +041 |
| 095 | 028 | 36 | 269 | 078 | +001 | +040 |
| 101 | 024 | 35 | 269 | 082 | +001 | +042 |
| 109 | 020 | 34 | 269 | 078 | +001 | +040 |
| 118 | 020 | 33 | 268 | 066 | +001 | +034 |
| 126 | 020 | 32 | 266 | 060 | +002 | +031 |
| 135 | 016 | 31 | 266 | 055 | +002 | +028 |
| 147 | 014 | 30 | 268 | 049 | +001 | +025 |
| 158 | 014 | 29 | 267 | 039 | +001 | +020 |
| 170 | 012 | 28 | 267 | 035 | +001 | +018 |
| 185 | 011 | 27 | 267 | 035 | +001 | +018 |
| 200 | 010 | 26 | 270 | 029 | +000 | +015 |
| 218 | 009 | 25 | 270 | 021 | +000 | +011 |
| 237 | 009 | 24 | 264 | 018 | +001 | +009 |
| 256 | 008 | 23 | 276 | 018 | +001 | +009 |
| 280 | 007 | 22 | 263 | 016 | +001 | +008 |
| 305 | 006 | 21 | 252 | 012 | +002 | +006 |
| 333 | 005 | 20 | 278 | 014 | -001 | +007 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 5712 | +00.2 | 00.332 | 00.423 | 331 | | | | |
| 5517 | +03.3 | 00.421 | 00.530 | 333 | | | | |
| 5395 | +01.6 | 00.488 | 00.619 | 332 | 259 | 156 | +015 | +079 |
| 5258 | -07.6 | 00.579 | 00.760 | 327 | 255 | 147 | +020 | +073 |
| 5154 | -01.6 | 00.659 | 00.846 | 330 | 248 | 157 | +030 | +075 |
| 5121 | -01.0 | 00.687 | 00.879 | 331 | 248 | 160 | +031 | +076 |
| 4944 | +00.9 | 00.854 | 01.086 | 332 | 252 | 174 | +028 | +085 |
| 4889 | +04.8 | 00.913 | 01.145 | 334 | 253 | 173 | +026 | +085 |
| 4785 | +04.3 | 01.036 | 01.301 | 334 | 247 | 167 | +034 | +079 |
| 4694 | +09.9 | 01.156 | 01.423 | 337 | 245 | 168 | +037 | +078 |
| 4520 | +09.8 | 01.422 | 01.750 | 337 | 250 | 155 | +027 | +075 |
| 4282 | +03.8 | 01.893 | 02.381 | 334 | 253 | 134 | +020 | +066 |
| 4042 | -14.1 | 02.561 | 03.444 | 323 | 264 | 113 | +006 | +058 |
| 4014 | -15.0 | 02.656 | 03.584 | 322 | 265 | 107 | +005 | +055 |
| 3965 | -20.8 | 02.834 | 03.912 | 318 | 265 | 098 | +004 | +050 |
| 3892 | -21.0 | 03.124 | 04.317 | 318 | 267 | 086 | +002 | +044 |
| 3810 | -29.0 | 03.493 | 04.984 | 313 | 269 | 086 | +001 | +044 |
| 3761 | -27.8 | 03.737 | 05.307 | 314 | 269 | 084 | +001 | +043 |
| 3722 | -32.0 | 03.945 | 05.699 | 311 | 267 | 082 | +002 | +042 |
| 3679 | -30.1 | 04.189 | 06.004 | 313 | 267 | 080 | +002 | +041 |
| 3639 | -33.5 | 04.430 | 06.440 | 310 | 269 | 078 | +001 | +040 |
| 3627 | -40.8 | 04.507 | 06.757 | 306 | 269 | 078 | +001 | +040 |
| 3587 | -42.4 | 04.778 | 07.213 | 305 | 269 | 078 | +001 | +040 |
| 3545 | -39.9 | 05.079 | 07.586 | 306 | 269 | 080 | +001 | +041 |
| 3484 | -40.3 | 05.549 | 08.302 | 306 | 269 | 082 | +001 | +042 |
| 3469 | -43.8 | 05.672 | 08.615 | 304 | 269 | 080 | +001 | +041 |
| 3435 | -42.0 | 05.962 | 08.986 | 305 | 269 | 080 | +001 | +041 |
| 3377 | -45.2 | 06.494 | 09.924 | 303 | 269 | 076 | +001 | +039 |
| 3350 | -44.7 | 06.759 | 10.307 | 303 | 268 | 072 | +001 | +037 |
| 3310 | -47.3 | 07.173 | 11.065 | 301 | 268 | 068 | +001 | +035 |
| 3295 | -47.2 | 07.336 | 11.311 | 301 | 268 | 066 | +001 | +034 |
| 3274 | -44.1 | 07.569 | 11.512 | 303 | 268 | 064 | +001 | +033 |
| 3191 | -46.4 | 08.561 | 13.153 | 302 | 266 | 060 | +002 | +031 |
| 3109 | -44.8 | 09.671 | 14.754 | 303 | 266 | 055 | +002 | +028 |
| 2862 | -52.4 | 14.033 | 22.145 | 298 | 267 | 037 | +001 | +019 |
| 2765 | -51.3 | 16.278 | 25.561 | 299 | 267 | 035 | +001 | +018 |
| 2701 | -55.0 | 17.964 | 28.687 | 296 | 267 | 035 | +001 | +018 |
| 2542 | -54.8 | 22.994 | 36.685 | 296 | 270 | 025 | +000 | +013 |
| 2426 | -57.6 | 27.563 | 44.547 | 294 | 264 | 020 | +001 | +010 |
| 2399 | -54.6 | 28.758 | 45.828 | 296 | 264 | 018 | +001 | +009 |
| 2316 | -59.6 | 32.751 | 53.427 | 293 | 276 | 018 | -001 | +009 |
| 2274 | -57.6 | 34.999 | 56.565 | 294 | 270 | 017 | -000 | +009 |
| 2225 | -60.7 | 37.826 | 62.026 | 292 | 263 | 016 | +001 | +008 |
| 2000 | -61.0 | 54.200 | 89.001 | 292 | | | | |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 2051 | -60.9 | 50.000 | 82.074 | 292 | 261 | 012 | +001 | +006 |
| 2364 | -56.2 | 30.000 | 48.164 | 295 | 270 | 017 | +000 | +009 |
| 2626 | -54.9 | 20.000 | 31.926 | 296 | 270 | 031 | +000 | +016 |
| 3075 | -45.4 | 10.000 | 15.294 | 303 | 266 | 055 | +002 | +028 |
| 3310 | -46.2 | 07.000 | 10.746 | 302 | 268 | 070 | +001 | +036 |
| 3536 | -40.6 | 05.000 | 07.489 | 306 | 269 | 080 | +001 | +041 |
| 4216 | +00.9 | 02.000 | 02.542 | 332 | 255 | 131 | +017 | +065 |
| 4780 | +04.4 | 01.000 | 01.255 | 334 | 248 | 168 | +033 | +080 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1021.6 | 0000 | 230 | 003 | +001 | +001 | 70 | +08.9 |
| 0802.0 | 0200 | 304 | 031 | -009 | +013 | 16 | +04.1 |
| 0624.0 | 0400 | 281 | 043 | -004 | +022 | 24 | -09.3 |
| 0478.0 | 0600 | 288 | 064 | -010 | +031 | 57 | -21.2 |
| 0364.0 | 0800 | 296 | 052 | -012 | +024 | 39 | -35.1 |
| 0270.0 | 1000 | 284 | 062 | -008 | +031 | | -51.3 |
| 0197.0 | 1200 | 290 | 101 | -018 | +049 | | -63.4 |
| 0144.0 | 1400 | 290 | 080 | -014 | +039 | | -57.6 |
| 0105.0 | 1600 | 285 | 074 | -010 | +037 | | -62.9 |
| 0075.2 | 1800 | 279 | 056 | -005 | +028 | | -65.0 |
| 0054.2 | 2000 | 292 | 054 | -010 | +026 | | -62.6 |
| 0039.4 | 2200 | 206 | 045 | +021 | +010 | | -59.9 |
| 0028.7 | 2400 | 156 | 077 | +036 | -016 | | -57.2 |
| 0021.2 | 2600 | 256 | 018 | +002 | +009 | | -54.7 |
| 0015.5 | 2800 | 212 | 014 | +006 | +004 | | -52.1 |
| 0011.4 | 3000 | 266 | 046 | +002 | +024 | | -48.1 |
| 0008.5 | 3200 | 262 | 060 | +004 | +031 | | -44.5 |
| 0006.3 | 3400 | 266 | 044 | +002 | +023 | | -41.6 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 136 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 116 DEG. AZIMUTH 75.4 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 1,250 METERS ALTITUDE
MOTOR TRACK DROPPED.. 136 SECONDS 59,742 METERS ALTITUDE
PAYLOAD ACQUISITION.. 136 SECONDS 59,742 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,160 SECONDS 18,898 METERS ALTITUDE
APOGEE.. 128 SECONDS 60,260 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 15 FT. DIAMETER PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1,685 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 162 SEC. 57,120 METERS ALTITUDE
TO 1,995 SEC. 19,995 METERS ALTITUDE

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 54.2 MB
ALTITUDE 20,000 METERS
TEMPERATURE -62.6 DEG. C

RADIOSONDE AND BALLOON DATA

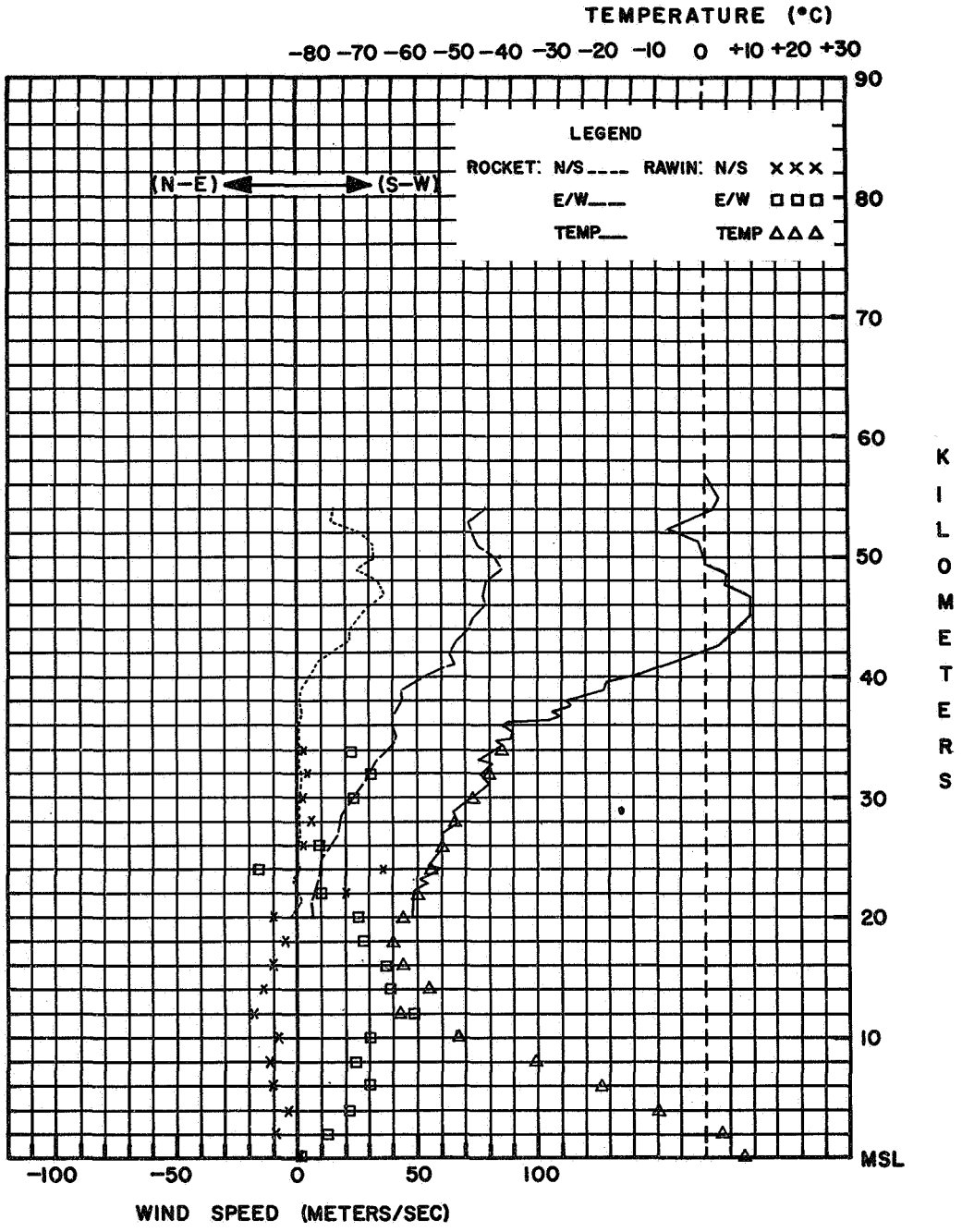
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,600 GRAMS
ASCENSION RATES.. SFC-400MB = 296 M/MINUTE
400MB-TOP = 388 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,021.6 MB
TEMPERATURE.. 8.9 DEG. C
RELATIVE HUMIDITY.. 70%
VISIBILITY.. 11 KM
SURFACE WIND.. 230 DEG. 3 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 8 OCTAS
LOW.. NONE
MIDDLE.. AC 7 OCTAS
HIGH.. CS 1 OCTAS
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 278 DEG/9 KTS, 50 FT. 254 DEG/7 KTS
100 FT. 263 DEG/8 KTS, 150 FT. 263 DEG/8 KTS,
200 FT. 270 DEG/8 KTS, 250 FT. 270 DEG/9 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA
DATE: 1 FEBRUARY 1967

ROCKET TIME: 1338 LST 1838 GCT
ROCKET MOTOR TYPE: ARCAS

PAYLOAD TYPE: ARCASONDE-1A
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | | | |
| 72402 | 37°51' N 75°29' W ALT. 3 M | FEBRUARY 9, 1967 | 1501 | 1115 |

# TABULATED DATA

ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 027 | 083 | 65 | 263 | 245 | +015 | +125 |
| 029 | 083 | 64 | 260 | 249 | +022 | +126 |
| 031 | 083 | 63 | 262 | 231 | +016 | +118 |
| 033 | 067 | 62 | 263 | 217 | +013 | +111 |
| 036 | 056 | 61 | 263 | 225 | +014 | +115 |
| 039 | 056 | 60 | 260 | 235 | +021 | +119 |
| 042 | 056 | 59 | 255 | 239 | +031 | +119 |
| 045 | 048 | 58 | 254 | 234 | +033 | +116 |
| 049 | 048 | 57 | 262 | 228 | +016 | +116 |
| 052 | 042 | 56 | 264 | 229 | +012 | +117 |
| 057 | 033 | 55 | 260 | 225 | +020 | +114 |
| 062 | 033 | 54 | 254 | 202 | +029 | +100 |
| 067 | 033 | 53 | 252 | 200 | +032 | +098 |
| 072 | 030 | 52 | 253 | 216 | +033 | +106 |
| 078 | 030 | 51 | 251 | 218 | +037 | +106 |
| 083 | 030 | 50 | 249 | 196 | +037 | +094 |
| 089 | 028 | 49 | 243 | 194 | +045 | +089 |
| 095 | 026 | 48 | 245 | 196 | +043 | +091 |
| 102 | 026 | 47 | 249 | 181 | +033 | +087 |
| 108 | 026 | 46 | 253 | 177 | +027 | +087 |
| 115 | 022 | 45 | 252 | 170 | +027 | +083 |
| 123 | 021 | 44 | 252 | 147 | +023 | +072 |
| 131 | 019 | 43 | 260 | 140 | +013 | +071 |
| 141 | 019 | 42 | 263 | 133 | +008 | +068 |
| 149 | 020 | 41 | 260 | 119 | +011 | +060 |
| 158 | 020 | 40 | 262 | 104 | +007 | +053 |
| 166 | 019 | 39 | 269 | 089 | +001 | +046 |
| 176 | 016 | 38 | 269 | 082 | +001 | +042 |
| 187 | 017 | 37 | 277 | 076 | -005 | +039 |
| 196 | 018 | 36 | 284 | 072 | -009 | +036 |

ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|

RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1026.2 | 0000 | 360 | 003 | -002 | +000 | 81 | -03.9 |
| 0798.0 | 0200 | 267 | 027 | +001 | +014 | 29 | -02.8 |
| 0619.0 | 0400 | 254 | 062 | +009 | +031 | 30 | -10.6 |
| 0474.0 | 0600 | 271 | 096 | -001 | +049 | 43 | -21.0 |
| 0360.0 | 0800 | 245 | 134 | +029 | +063 | 48 | -32.7 |
| 0269.0 | 1000 | | | | | | -48.5 |
| 0196.0 | 1200 | | | | | | -63.6 |
| 0142.5 | 1400 | | | | | | -61.4 |
| 0103.5 | 1600 | | | | | | -65.0 |
| 0074.4 | 1800 | | | | | | -62.4 |
| 0053.8 | 2000 | | | | | | -62.3 |
| 0038.9 | 2200 | | | | | | -60.4 |
| 0028.6 | 2400 | | | | | | -58.6 |
| 0020.9 | 2600 | | | | | | -56.7 |
| 0015.3 | 2800 | | | | | | -54.8 |
| 0011.2 | 3000 | | | | | | -52.9 |
| 0008.3 | 3200 | | | | | | -50.4 |
| 0006.1 | 3400 | | | | | | -47.2 |
| 0004.6 | 3600 | | | | | | -44.1 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 95 SEC. ACTUAL.. 105 SEC.
TYPE OF LAUNCHER 12.5 FT. TUBULAR
LAUNCHER SETTING.. 130 DEG. AZIMUTH 80.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 19 SECONDS 20,330 METERS ALTITUDE
MOTOR TRACK DROPPED.. 105 SECONDS 69,343 METERS ALTITUDE
PAYLOAD ACQUISITION.. 105 SECONDS 69,343 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 1,200 SECONDS 35,510 METERS ALTITUDE
APOGEE.. 120 SECONDS 69,983 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

SOUNDING TERMINATED AT 1,200 SECONDS DUE TO EXTREME DISPERSION OF CHAFF PAYLOAD.
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

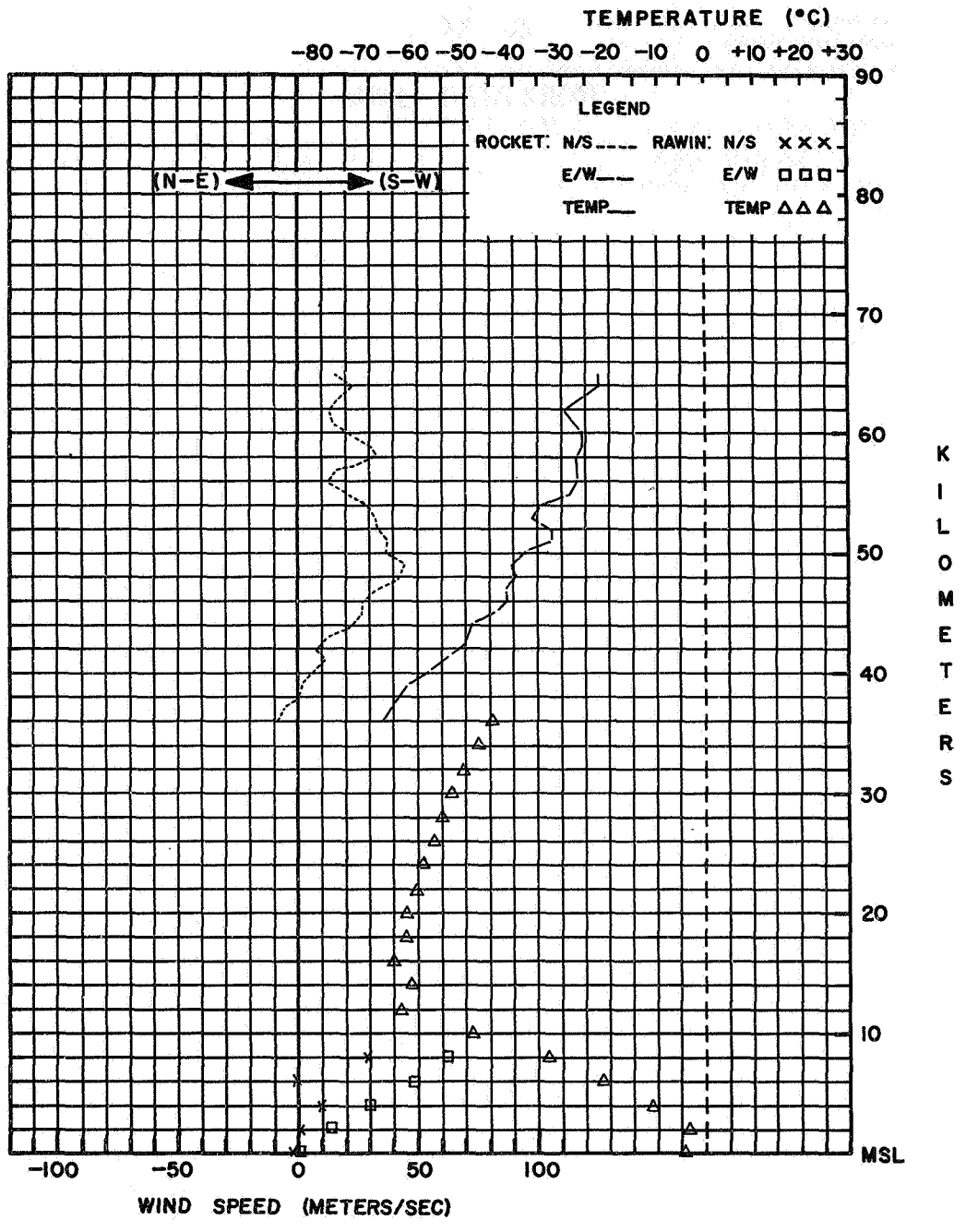
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,500 GRAMS
ASCENSION RATES.. SFC-400MB = 283 M/MINUTE
400MB-TOP = 359 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,026.2 MB
TEMPERATURE.. -3.9 DEG. C
RELATIVE HUMIDITY.. 81%
VISIBILITY.. 16 KM
SURFACE WIND.. 360 DEG. 3 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 5 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. 5 OCTAS/CI
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH..

SFC. 011 DEG/13 KTS, 50 FT. 005 DEG/11 KTS,
100 FT. 005 DEG/11 KTS, 150 FT. 010 DEG/11 KTS,
200 FT. 010 DEG/11 KTS, 250 FT. 010 DEG/11 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA

**DATE:** 9 FEBRUARY 1967

**ROCKET TIME:** 1001 LST 1501 GCT

**ROCKET MOTOR TYPE:** JUDI

**PAYLOAD TYPE:** CHAFF

**RADIOSONDE TYPE:** 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (CNIE) CHAMICAL, ARGENTINA | Z | Z | Z |
| 87320 | 30°22' S 66°17' W ALT. 457 M | FEBRUARY 15, 1967 | 1401 | 1155 |

# TABULATED DATA

ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 022 | 111 | 67 | 229 | 039 | +013 | +015 |
| 023 | 111 | 66 | 225 | 044 | +016 | +016 |
| 025 | 111 | 65 | 213 | 046 | +020 | +013 |
| 026 | 111 | 64 | 189 | 047 | +024 | +004 |
| 028 | 083 | 63 | 180 | 045 | +023 | +000 |
| 030 | 083 | 62 | 224 | 054 | +020 | +019 |
| 032 | 067 | 61 | 247 | 076 | +015 | +036 |
| 035 | 067 | 60 | 257 | 088 | +010 | +044 |
| 037 | 067 | 59 | 261 | 095 | +008 | +048 |
| 040 | 056 | 58 | 258 | 103 | +011 | +052 |
| 043 | 048 | 57 | 257 | 122 | +014 | +061 |
| 047 | 048 | 56 | 259 | 131 | +013 | +066 |
| 050 | 048 | 55 | 258 | 133 | +014 | +067 |
| 054 | 026 | 54 | 263 | 120 | +008 | +061 |
| 063 | 017 | 53 | 260 | 091 | +008 | +046 |
| 074 | 021 | 52 | 260 | 091 | +008 | +046 |
| 079 | 028 | 51 | 265 | 111 | +005 | +057 |
| 086 | 024 | 50 | 263 | 094 | +006 | +048 |
| 093 | 024 | 49 | 265 | 088 | +004 | +045 |
| 100 | 022 | 48 | 266 | 078 | +003 | +040 |
| 108 | 021 | 47 | 265 | 066 | +003 | +034 |
| 116 | 021 | 46 | 266 | 060 | +002 | +031 |
| 124 | 020 | 45 | 260 | 057 | +005 | +029 |
| 133 | 020 | 44 | 245 | 056 | +012 | +026 |
| 141 | 019 | 43 | 246 | 062 | +013 | +029 |
| 151 | 019 | 42 | 256 | 062 | +008 | +031 |
| 159 | 020 | 41 | 255 | 052 | +007 | +026 |
| 168 | 017 | 40 | 264 | 061 | +003 | +031 |
| 179 | 015 | 39 | 274 | 060 | -002 | +031 |
| 190 | 016 | 38 | 272 | 060 | -001 | +031 |
| 200 | 016 | 37 | 266 | 055 | +002 | +028 |
| 211 | 014 | 36 | 264 | 053 | +003 | +027 |
| 224 | 014 | 35 | 266 | 051 | +002 | +026 |
| 235 | 014 | 34 | 261 | 051 | +004 | +026 |
| 248 | 013 | 33 | 258 | 048 | +005 | +024 |
| 261 | 013 | 32 | 273 | 039 | -001 | +020 |
| 273 | 012 | 31 | 284 | 032 | -004 | +016 |
| 289 | 011 | 30 | 262 | 029 | +002 | +015 |
| 304 | 011 | 29 | 249 | 038 | +007 | +018 |
| 318 | 010 | 28 | 259 | 030 | +003 | +015 |
| 338 | 010 | 27 | 261 | 024 | +002 | +012 |
| 353 | 010 | 26 | 270 | 017 | +000 | +009 |

ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M$^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|

RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 0953.9 | 0046 | 160 | 005 | +002 | -001 | 42 | +23.2 |
| 0799.0 | 0200 | | | | | 57 | +15.9 |
| 0628.0 | 0400 | 227 | 016 | +006 | +006 | 56 | +01.9 |
| 0485.0 | 0600 | 252 | 035 | +006 | +017 | 09 | -11.9 |
| 0372.0 | 0800 | 258 | 068 | +007 | +034 | 05 | -20.1 |
| 0282.0 | 1000 | 264 | 085 | +005 | +044 | 05 | -32.1 |
| 0211.0 | 1200 | 255 | 084 | +011 | +042 | | -45.0 |
| 0156.0 | 1400 | 266 | 072 | +003 | +037 | | -57.1 |
| 0112.0 | 1600 | 266 | 054 | +002 | +028 | | -69.4 |
| 0080.0 | 1800 | 276 | 020 | -001 | +010 | | -70.6 |
| 0057.2 | 2000 | 268 | 010 | +000 | +005 | | -67.4 |
| 0040.8 | 2200 | 079 | 017 | -002 | -009 | | -62.0 |
| 0029.9 | 2400 | 065 | 020 | -004 | -009 | | -51.0 |
| 0022.3 | 2600 | 093 | 016 | +000 | -008 | | -41.2 |
| 0016.6 | 2800 | 100 | 026 | +002 | -013 | | -38.4 |
| 0012.4 | 3000 | 066 | 034 | -007 | -016 | | -36.0 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. PRYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 90 SEC. ACTUAL.. 82 SEC.
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 40.0 DEG. AZIMUTH 86.5 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 5 SECONDS 3,658 METERS ALTITUDE
MOTOR TRACK DROPPED.. 113 SECONDS 68,580 METERS ALTITUDE
PAYLOAD ACQUISITION.. 113 SECONDS 68,580 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,280 SECONDS 23,806 METERS ALTITUDE
APOGEE.. 99 SECONDS 69,190 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

*NONE*
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

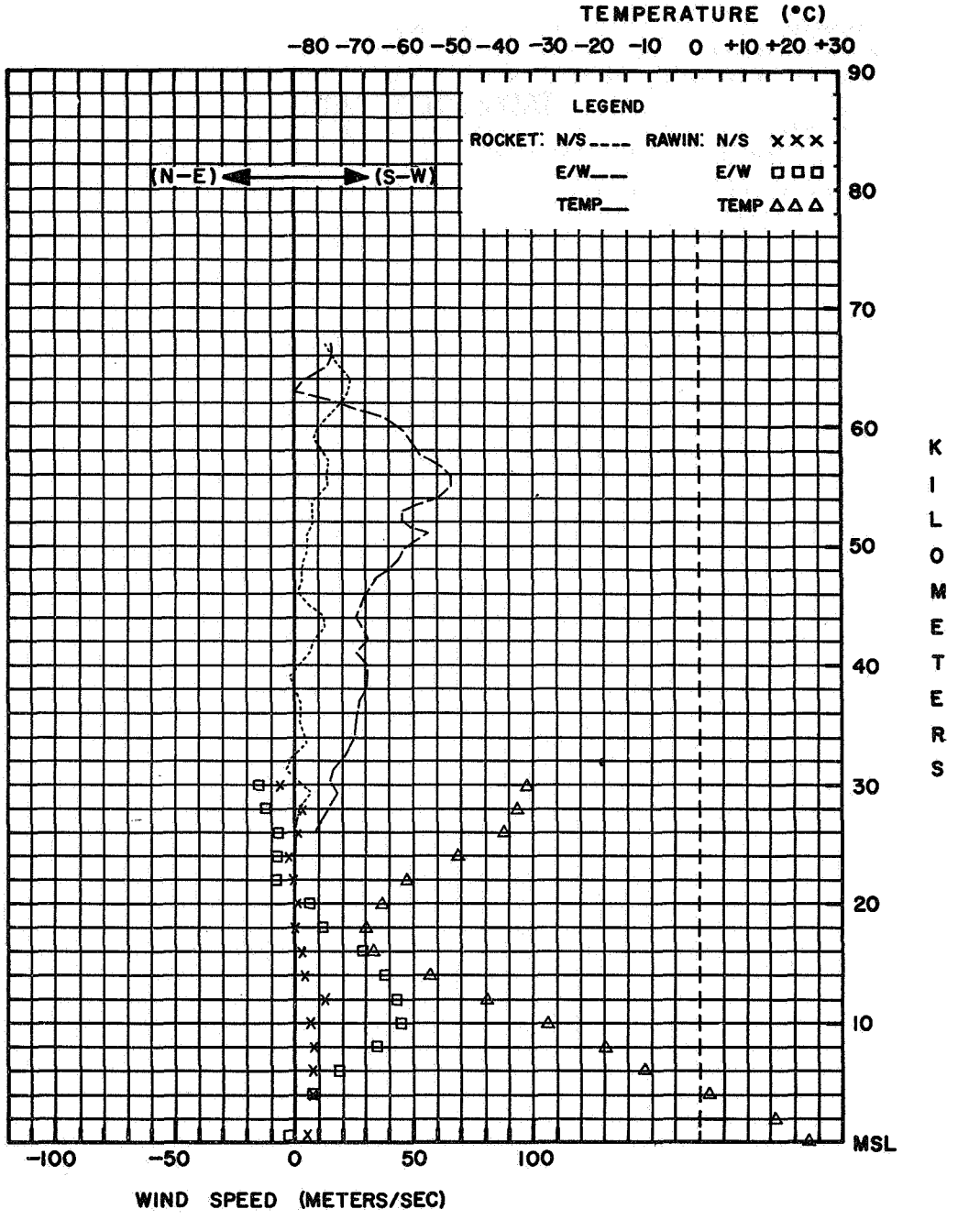
RADIOSONDE MANUFACTURER.. VAISALA
RADIOSONDE TYPE.. VAISALA
TEMPERATURE ELEMENT TYPE.. BIMETAL
PRESSURE SENSOR TYPE.. ANEROID
GROUND EQUIPMENT TYPE.. VAISALA + MPS-19 RADAR
BALLOON TYPE.. TOTEX
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,500 GRAMS
ASCENSION RATES.. SFC-400 MB = 381 M/MINUTE
400 MB-TOP = 467 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 953.9 MB
TEMPERATURE.. 23.2 DEG. C
RELATIVE HUMIDITY.. 42%
VISIBILITY.. 20 KM
SURFACE WIND.. 160 DEG. 5 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 0 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 070 DEG./08 KTS.




STATION: (CNIE) CHAMICAL, ARGENTINA
DATE: 15 FEBRUARY 1967

ROCKET TIME: 1001 LST 1401 GCT
ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF
RADIOSONDE TYPE: VAISALA

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (CNAE) NATAL, BRAZIL | | | |
| 82599 | 5°55' S 35°10' W ALT. 43 M | FEBRUARY 15, 1967 | 1500 | 1612 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 023 | 056 | 62 | 285 | 030 | -004 | +015 |
| 026 | 056 | 61 | 295 | 032 | -007 | +015 |
| 029 | 056 | 60 | 294 | 043 | -009 | +020 |
| 032 | 048 | 59 | 303 | 058 | -016 | +025 |
| 036 | 042 | 58 | 307 | 051 | -016 | +021 |
| 040 | 042 | 57 | 310 | 048 | -016 | +019 |
| 044 | 037 | 56 | 318 | 050 | -019 | +017 |
| 049 | 033 | 55 | 321 | 040 | -016 | +013 |
| 054 | 033 | 54 | 312 | 029 | -010 | +011 |
| 059 | 030 | 53 | 346 | 016 | -008 | +002 |
| 065 | 028 | 52 | 067 | 015 | -003 | -007 |
| 071 | 028 | 51 | 108 | 031 | +005 | -015 |
| 077 | 026 | 50 | 109 | 041 | +007 | -020 |
| 084 | 024 | 49 | 098 | 055 | +004 | -028 |
| 091 | 024 | 48 | 093 | 070 | +002 | -036 |
| 098 | 024 | 47 | 091 | 089 | +001 | -046 |
| 105 | 021 | 46 | 092 | 099 | +002 | -051 |
| 114 | 020 | 45 | 095 | 088 | +004 | -045 |
| 122 | 020 | 44 | 097 | 078 | +005 | -040 |
| 131 | 018 | 43 | 103 | 072 | +008 | -036 |
| 141 | 017 | 42 | 087 | 076 | -002 | -039 |
| 151 | 018 | 41 | 089 | 078 | -001 | -040 |
| 160 | 018 | 40 | 090 | 084 | +000 | -043 |
| 170 | 017 | 39 | 092 | 091 | +002 | -047 |
| 180 | 017 | 38 | 094 | 103 | +004 | -053 |
| 190 | 016 | 37 | 092 | 101 | +002 | -052 |
| 201 | 014 | 36 | 094 | 080 | +003 | -041 |
| 213 | 014 | 35 | 089 | 076 | -001 | -039 |
| 225 | 014 | 34 | 089 | 078 | -001 | -040 |
| 236 | 013 | 33 | 096 | 072 | +004 | -037 |
| 251 | 012 | 32 | 095 | 064 | +003 | -033 |
| 264 | 012 | 31 | 088 | 051 | -001 | -026 |
| 279 | 011 | 30 | 073 | 041 | -006 | -020 |
| 294 | 011 | 29 | 063 | 039 | -009 | -018 |
| 310 | 011 | 28 | 124 | 014 | +004 | -006 |
| 325 | 011 | 27 | 108 | 012 | +002 | -006 |
| 341 | 010 | 26 | 027 | 004 | -002 | -001 |
| 358 | 010 | 25 | 090 | 002 | +000 | -001 |
| 376 | 009 | 24 | 315 | 003 | -001 | +001 |
| 395 | 009 | 23 | 342 | 006 | -003 | +001 |
| 415 | 008 | 22 | 045 | 005 | -002 | -002 |
| 438 | 008 | 21 | 090 | 006 | +000 | -003 |
| 458 | 007 | 20 | 149 | 011 | +005 | -003 |
| 483 | 007 | 19 | 166 | 008 | +004 | -001 |
| 507 | 007 | 18 | 099 | 012 | +001 | -006 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M$^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1003.0 | 0004 | 050 | 012 | -004 | -005 | 68 | +30.0 |
| 0801.0 | 0200 | 257 | 009 | +001 | +005 | 76 | +15.0 |
| 0629.0 | 0400 | 055 | 018 | -005 | -008 | 64 | +03.8 |
| 0490.0 | 0600 | 078 | 018 | -002 | -009 | | -07.1 |
| 0377.0 | 0800 | 083 | 015 | -001 | -008 | | -21.1 |
| 0285.5 | 1000 | 235 | 002 | +001 | +001 | | -36.7 |
| 0211.0 | 1200 | 183 | 028 | +014 | +001 | | -53.2 |
| 0153.0 | 1400 | 168 | 042 | +021 | -004 | | -67.9 |
| 0108.2 | 1600 | 116 | 022 | +005 | -010 | | -80.9 |
| 0076.2 | 1800 | 090 | 010 | -000 | -005 | | -76.2 |
| 0054.5 | 2000 | 119 | 015 | +004 | -007 | | -68.0 |
| 0039.3 | 2200 | 335 | 008 | -004 | +002 | | -60.3 |
| 0028.4 | 2400 | 202 | 006 | +003 | +001 | | -56.2 |
| 0020.8 | 2600 | 245 | 006 | +001 | +003 | | -51.4 |
| 0015.3 | 2800 | 086 | 025 | -001 | -013 | | -47.1 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PRDICTED.. 110 SEC. ACTUAL.. 90 SEC.
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 030 DEG. AZIMUTH 83.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 4 SECONDS 4,572 METERS ALTITUDE
MOTOR TRACK DROPPED.. 103 SECONDS 63,917 METERS ALTITUDE
PAYLOAD ACQUISITION.. 103 SECONDS 63,917 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 3,240 SECONDS 16,642 METERS ALTITUDE
APOGEE.. 103 SECONDS 63,917 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S RAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. NONE
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

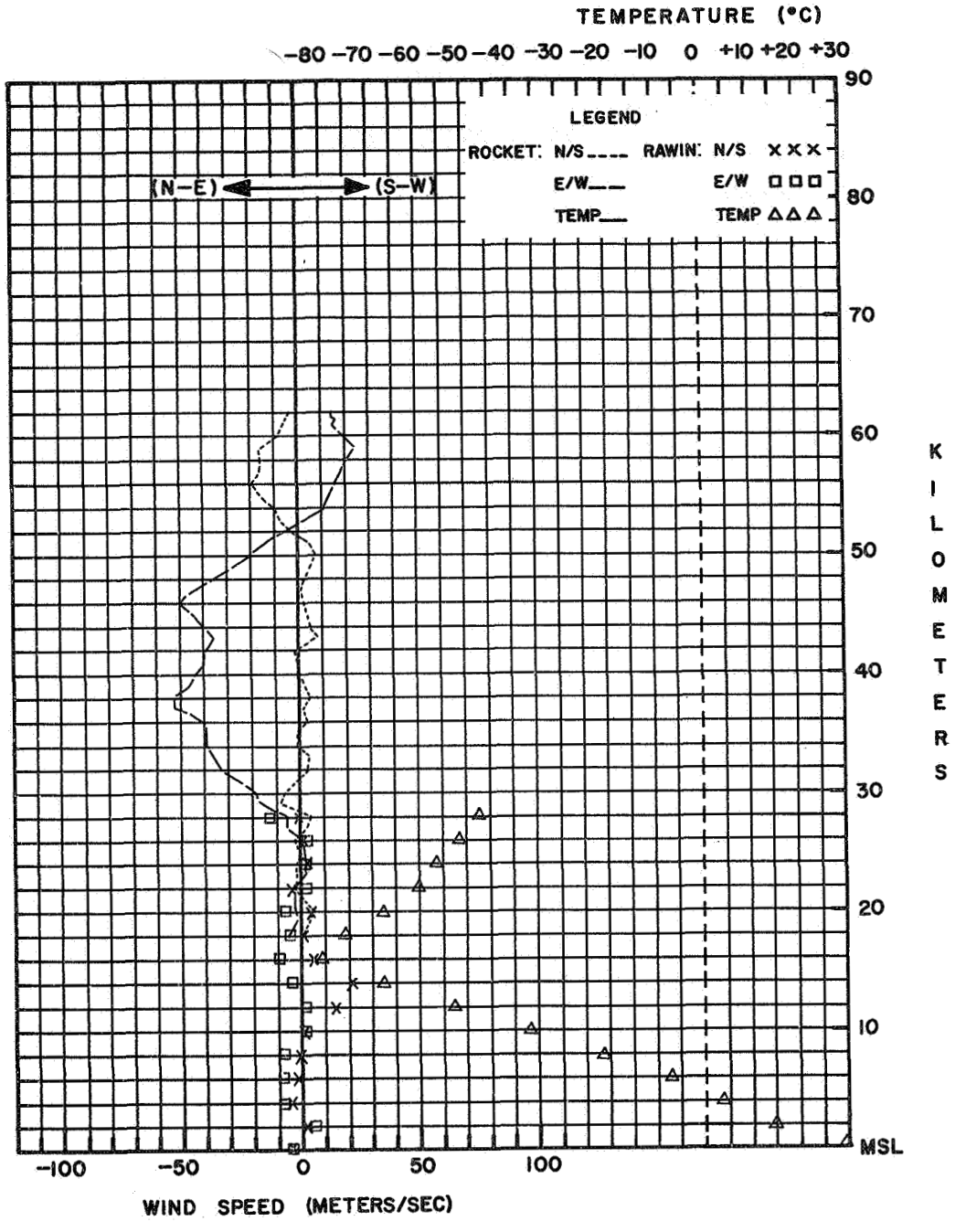
RADIOSONDE MANUFACTURER.. BENDIX
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID
GROUND EQUIPMENT TYPE.. GMD-1A
BALLOON TYPE.. KAYSAM
BALLOON SIZE.. 1,000
FREE LIFT.. 1,500 GRAMS
ASCENSION RATES.. SFC-400 MB = 312 M/MINUTE
400 MB-TOP = 360 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,003.0 MB
TEMPERATURE.. 30.0 DEG. C
RELATIVE HUMIDITY.. 68%
VISIBILITY.. 20 KM
SURFACE WIND.. 50 DEG. 12 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 2 OCTAS
LOW.. 2 OCTAS/CU
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

21 FT. 70 DEG/02 KTS
29 FT. 40 DEG/08 KTS, 51 FT. 20 DEG/12 KTS,
82 FT. 20 DEG/12 KTS, 133 FT. 30 DEG/12 KTS




STATION: (CNAE) NATAL, BRAZIL
DATE: 15 FEBRUARY 1967

ROCKET TIME: 1200 LST 1500 GCT
ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | Z | Z | Z |
| 72402 | 37°51' N 75°29' W ALT. 3 M | FEBRUARY 15, 1967 | 1651 | 1755 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 032 | 083 | 55 | 241 | 187 | +047 | +084 |
| 034 | 083 | 54 | 241 | 171 | +043 | +077 |
| 036 | 083 | 53 | 245 | 189 | +041 | +088 |
| 038 | 083 | 52 | 247 | 190 | +038 | +090 |
| 040 | 083 | 51 | 242 | 174 | +042 | +079 |
| 042 | 067 | 50 | 236 | 190 | +055 | +081 |
| 045 | 067 | 49 | 232 | 177 | +056 | +072 |
| 047 | 067 | 48 | 231 | 174 | +056 | +070 |
| 050 | 056 | 47 | 234 | 167 | +050 | +070 |
| 053 | 056 | 46 | 237 | 142 | +040 | +061 |
| 056 | 056 | 45 | 243 | 139 | +032 | +064 |
| 059 | 048 | 44 | 249 | 133 | +024 | +064 |
| 063 | 042 | 43 | 255 | 131 | +017 | +065 |
| 067 | 042 | 42 | 257 | 134 | +016 | +067 |
| 071 | 042 | 41 | 252 | 123 | +020 | +060 |
| 075 | 037 | 40 | 251 | 097 | +016 | +047 |
| 080 | 033 | 39 | 254 | 083 | +012 | +041 |
| 085 | 030 | 38 | 253 | 071 | +011 | +035 |
| 091 | 028 | 37 | 257 | 062 | +007 | +031 |
| 097 | 028 | 36 | 272 | 064 | -001 | +033 |
| 103 | 024 | 35 | 274 | 055 | -002 | +028 |
| 111 | 022 | 34 | 266 | 057 | +002 | +029 |
| 118 | 022 | 33 | 258 | 056 | +006 | +028 |
| 126 | 021 | 32 | 243 | 039 | +009 | +018 |
| 134 | 015 | 31 | 238 | 025 | +007 | +011 |
| 148 | 014 | 30 | 241 | 020 | +005 | +009 |
| 157 | 017 | 29 | 252 | 018 | +003 | +009 |
| 168 | 013 | 28 | 252 | 018 | +003 | +009 |
| 183 | 011 | 27 | 257 | 018 | +002 | +009 |
| 198 | 011 | 26 | 261 | 012 | +001 | +006 |
| 214 | 010 | 25 | 243 | 009 | +002 | +004 |
| 232 | 009 | 24 | 243 | 004 | +001 | +002 |
| 250 | 007 | 23 | 270 | 008 | +000 | +004 |
| 283 | 006 | 22 | 270 | 008 | +000 | +004 |
| 310 | 006 | 21 | 270 | 014 | +000 | +007 |
| 340 | 006 | 20 | 270 | 019 | +000 | +010 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 5864 | -02.9 | 00.278 | 00.358 | 330 | | | | |
| 5523 | -09.0 | 00.426 | 00.562 | 326 | | | | |
| 5471 | -08.7 | 00.455 | 00.600 | 326 | 241 | 183 | +046 | +082 |
| 5422 | -04.5 | 00.484 | 00.628 | 329 | 241 | 176 | +044 | +079 |
| 5243 | -07.0 | 00.606 | 00.793 | 327 | 246 | 189 | +039 | +089 |
| 5200 | -09.9 | 00.640 | 00.847 | 325 | 247 | 190 | +038 | +090 |
| 4935 | -06.8 | 00.896 | 01.172 | 327 | 233 | 182 | +056 | +075 |
| 4816 | -03.1 | 01.041 | 01.342 | 329 | 231 | 174 | +056 | +070 |
| 4755 | -02.0 | 01.123 | 01.442 | 330 | 233 | 171 | +053 | +070 |
| 4401 | -08.4 | 01.752 | 02.305 | 326 | 249 | 133 | +024 | +064 |
| 4273 | -15.6 | 02.066 | 02.795 | 322 | 256 | 132 | +017 | +066 |
| 4228 | -14.3 | 02.191 | 02.949 | 323 | 256 | 132 | +016 | +066 |
| 4127 | -20.3 | 02.503 | 03.449 | 319 | 253 | 136 | +019 | +062 |
| 4112 | -17.9 | 02.554 | 03.485 | 320 | 252 | 125 | +020 | +061 |
| 3993 | -21.7 | 02.992 | 04.146 | 318 | 251 | 097 | +016 | +047 |
| 3968 | -20.6 | 03.094 | 04.268 | 319 | 252 | 092 | +015 | +045 |
| 3706 | -30.0 | 04.421 | 06.334 | 313 | 257 | 062 | +007 | +031 |
| 3627 | -32.7 | 04.937 | 07.152 | 311 | 268 | 062 | +001 | +032 |
| 3612 | -31.7 | 05.041 | 07.274 | 311 | 270 | 064 | -000 | +033 |
| 3584 | -35.0 | 05.244 | 07.671 | 309 | 272 | 062 | -001 | +032 |
| 3566 | -33.6 | 05.380 | 07.823 | 310 | 272 | 060 | -001 | +031 |
| 3444 | -35.5 | 06.394 | 09.373 | 309 | 270 | 056 | +000 | +029 |
| 3353 | -33.1 | 07.273 | 10.555 | 311 | 262 | 057 | +004 | +029 |
| 3078 | -37.9 | 10.757 | 15.929 | 307 | 238 | 025 | +007 | +011 |
| 3048 | -36.8 | 11.230 | 16.552 | 308 | 239 | 023 | +006 | +010 |
| 2896 | -44.1 | 14.009 | 21.306 | 303 | 252 | 018 | +003 | +009 |
| 2813 | -42.8 | 15.832 | 23.943 | 304 | 252 | 018 | +003 | +009 |
| 2682 | -50.5 | 19.258 | 30.132 | 299 | 256 | 016 | +002 | +008 |
| 2414 | -49.6 | 28.935 | 45.090 | 300 | 252 | 006 | +001 | +003 |
| 2371 | -53.0 | 30.900 | 48.897 | 297 | 252 | 006 | +001 | +003 |
| 2252 | -50.7 | 37.083 | 58.073 | 299 | 270 | 008 | +000 | +004 |
| 2103 | -55.0 | 46.648 | 74.494 | 296 | 270 | 014 | +000 | +007 |
| 2030 | -53.3 | 52.237 | 82.772 | 297 | 270 | 017 | +000 | +009 |
| 2000 | -55.2 | 54.724 | 87.470 | 296 | | | | |
| 1862 | -59.6 | 68.000 | | 293 | | | | |

CONSTANT PRESSURE LEVEL DATA
(HEIGHT IN GEOPOTENTIAL METERS)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2052 | -54.0 | 50.000 | 79.474 | 297 | 270 | 016 | +000 | +008 |
| 2382 | -51.4 | 30.000 | 47.139 | 298 | 243 | 004 | +001 | +002 |
| 2650 | -50.4 | 20.000 | 31.283 | 299 | 256 | 016 | +002 | +008 |
| 3123 | -36.9 | 10.000 | 14.743 | 308 | 240 | 031 | +008 | +014 |
| 3363 | -33.8 | 07.000 | 10.190 | 310 | 264 | 057 | +003 | +029 |
| 3598 | -32.1 | 05.000 | 07.226 | 311 | 270 | 064 | +000 | +033 |
| 4271 | -14.1 | 02.000 | 02.689 | 323 | 255 | 131 | +017 | +065 |
| 4812 | -04.1 | 01.000 | 01.295 | 329 | 232 | 176 | +056 | +071 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1015.8 | 0000 | 230 | 018 | +006 | +007 | 39 | +15.6 |
| 0801.0 | 0200 | 256 | 052 | +006 | +026 | 26 | +08.1 |
| 0625.0 | 0400 | 265 | 046 | +002 | +024 | 33 | -04.9 |
| 0480.0 | 0600 | 269 | 048 | +000 | +025 | 60 | -22.1 |
| 0363.0 | 0800 | 281 | 056 | -006 | +028 | 45 | -35.9 |
| 0269.0 | 1000 | | | | | | -51.5 |
| 0196.0 | 1200 | 304 | 054 | -016 | +023 | | -59.8 |
| 0144.0 | 1400 | 277 | 054 | -003 | +028 | | -57.8 |
| 0104.0 | 1600 | | | | | | -62.5 |
| 0075.0 | 1800 | 288 | 026 | -004 | +013 | | -63.4 |
| 0054.0 | 2000 | 260 | 021 | +002 | +011 | | -55.5 |
| 0040.0 | 2200 | 263 | 017 | +001 | +009 | | -54.4 |
| 0029.0 | 2400 | 256 | 008 | +001 | +004 | | -53.1 |
| 0021.5 | 2600 | 128 | 015 | +005 | -006 | | -52.0 |
| 0015.8 | 2800 | 248 | 023 | +004 | +011 | | -48.3 |
| 0011.5 | 3000 | 247 | 038 | +008 | +018 | | -44.0 |
| 0008.7 | 3200 | 257 | 038 | +004 | +019 | | -42.2 |
| 0006.4 | 3400 | 275 | 068 | -003 | +035 | | -40.9 |
| 0004.8 | 3600 | 264 | 067 | +004 | +034 | | -37.1 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 137 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 080 DEG. AZIMUTH 71.5 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 12 SECONDS 1,524 METERS ALTITUDE
MOTOR TRACK DROPPED.. 137 SECONDS 60,564 METERS ALTITUDE
PAYLOAD ACQUISITION.. 137 SECONDS 60,564 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,280 SECONDS 18,624 METERS ALTITUDE
APOGEE.. 131 SECONDS 60,808 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 15 FT. DIAMETER PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1,682 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 157 SEC. 58,644 METERS ALTITUDE
TO 2,280 SEC. 18,624 METERS ALTITUDE

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 68.0 MB
ALTITUDE 18,620 METERS
TEMPERATURE -61.4 DEG. C

RADIOSONDE AND BALLOON DATA

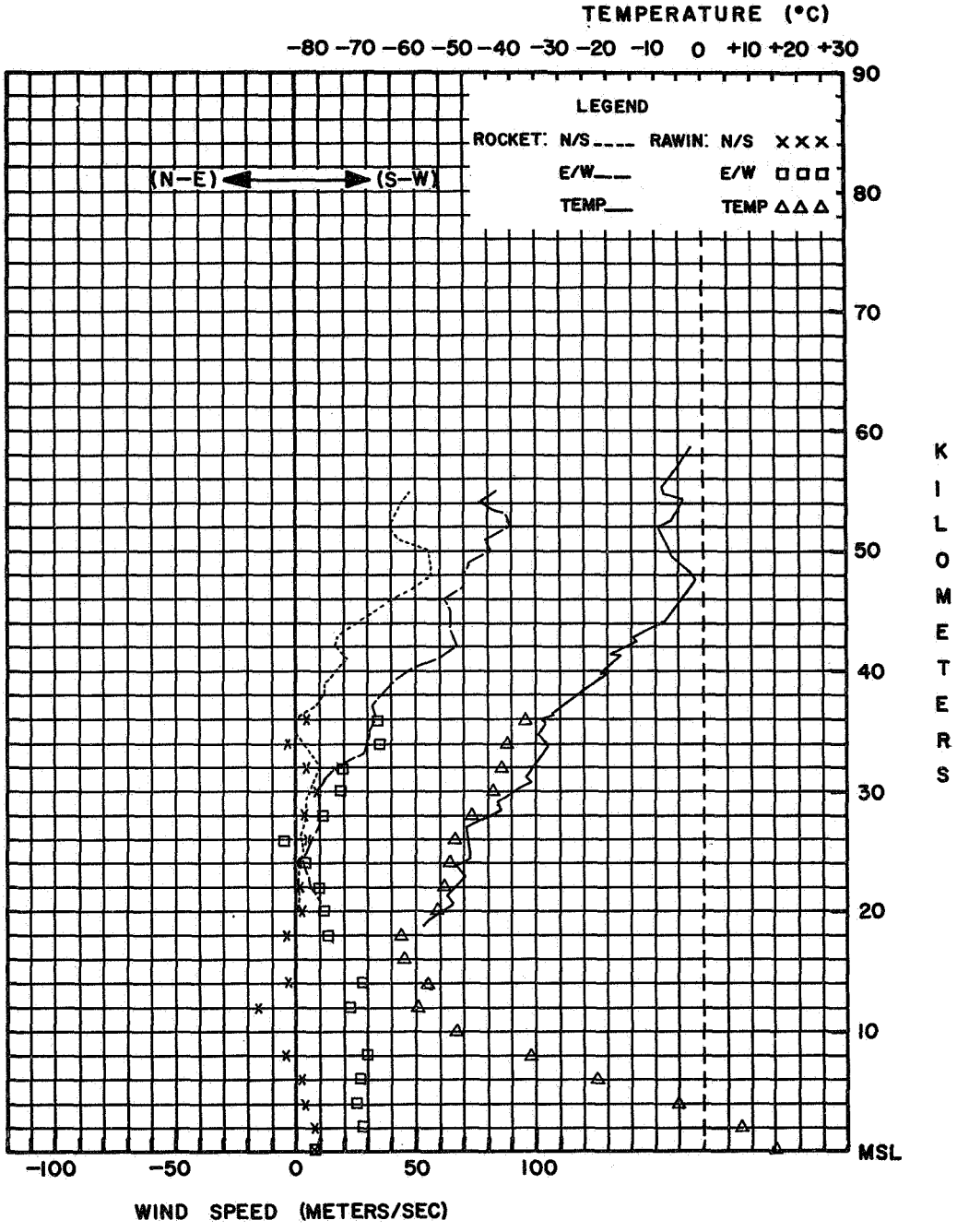
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,600 GRAMS
ASCENSION RATES.. SFC-400 MB = 265 M/MINUTE
400 MB-TOP = 376 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,015.8 MB
TEMPERATURE.. 15.6 DEG. C
RELATIVE HUMIDITY.. 39%
VISIBILITY.. 11 KM
SURFACE WIND.. 230 DEG. 18 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 7 OCTAS
LOW.. NONE
MIDDLE.. 5 OCTAS/AC
HIGH.. 2 OCTAS/CI
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 235 DEG/21 KTS, 50 FT. 220 DEG/17 KTS,
100 FT. 227 DEG/18 KTS, 150 FT. 221 DEG/20 KTS,
200 FT. 227 DEG/19 KTS, 250 FT. 233 DEG/20 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA ROCKET TIME: 1151 LST 1651 GCT PAYLOAD TYPE: ARCASONDE-1A

DATE: 15 FEBRUARY 1967 ROCKET MOTOR TYPE: ARCAS RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (CNAE) NATAL, BRAZIL | | | |
| 82599 | 5°55' S 35°10' W ALT. 43 M | FEBRUARY 22, 1967 | 1500 | 1110 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 042 | 042 | 57 | 347 | 042 | -021 | +005 |
| 046 | 042 | 56 | 342 | 031 | -015 | +005 |
| 050 | 042 | 55 | 013 | 018 | -009 | -002 |
| 054 | 033 | 54 | 077 | 042 | -005 | -021 |
| 060 | 028 | 53 | 073 | 047 | -007 | -023 |
| 066 | 030 | 52 | 059 | 052 | -014 | -023 |
| 071 | 028 | 51 | 045 | 047 | -017 | -017 |
| 078 | 026 | 50 | 048 | 058 | -020 | -022 |
| 084 | 024 | 49 | 057 | 058 | -016 | -025 |
| 092 | 024 | 48 | 076 | 062 | -008 | -031 |
| 098 | 024 | 47 | 093 | 084 | +002 | -043 |
| 106 | 021 | 46 | 095 | 092 | +004 | -047 |
| 114 | 021 | 45 | 083 | 114 | -007 | -058 |
| 122 | 021 | 44 | 085 | 102 | -005 | -052 |
| 130 | 019 | 43 | 088 | 101 | -002 | -052 |
| 140 | 018 | 42 | 089 | 099 | -001 | -051 |
| 149 | 018 | 41 | 090 | 091 | +000 | -047 |
| 159 | 018 | 40 | 093 | 084 | +002 | -043 |
| 168 | 018 | 39 | 093 | 080 | +002 | -041 |
| 178 | 016 | 38 | 097 | 098 | +006 | -050 |
| 189 | 015 | 37 | 094 | 093 | +003 | -048 |
| 200 | 014 | 36 | 091 | 084 | +001 | -043 |
| 212 | 014 | 35 | 093 | 074 | +002 | -038 |
| 223 | 015 | 34 | 098 | 069 | +005 | -035 |
| 234 | 014 | 33 | 099 | 065 | +005 | -033 |
| 247 | 013 | 32 | 097 | 065 | +004 | -033 |
| 260 | 011 | 31 | 094 | 053 | +002 | -027 |
| 276 | 011 | 30 | 099 | 065 | +005 | -033 |
| 290 | 011 | 29 | 086 | 031 | -001 | -016 |
| 305 | 011 | 28 | 060 | 031 | -008 | -014 |
| 320 | 010 | 27 | 074 | 036 | -005 | -018 |
| 337 | 010 | 26 | 265 | 021 | +001 | +011 |
| 354 | 009 | 25 | 274 | 027 | -001 | +014 |
| 373 | 009 | 24 | 281 | 032 | -003 | +016 |
| 392 | 009 | 23 | 333 | 009 | -004 | +002 |
| 412 | 008 | 22 | 315 | 003 | -001 | +001 |
| 432 | 008 | 21 | 000 | 000 | +000 | +000 |
| 455 | 007 | 20 | 252 | 006 | +001 | +003 |
| 477 | 007 | 19 | 248 | 010 | +002 | +005 |
| 502 | 007 | 18 | 090 | 012 | +000 | -006 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1005.2 | 0004 | 140 | 011 | +004 | -004 | 75 | +28.2 |
| 0802.0 | 0200 | 100 | 012 | +001 | -006 | 60 | +13.9 |
| 0630.0 | 0400 | 106 | 010 | +001 | -005 | 31 | +03.8 |
| 0489.0 | 0600 | 086 | 018 | -001 | -009 | | -07.6 |
| 0377.0 | 0800 | 141 | 012 | +005 | -004 | 28 | -19.6 |
| 0285.0 | 1000 | 254 | 006 | +001 | +003 | 44 | -36.5 |
| 0211.2 | 1200 | 009 | 019 | -010 | -002 | | -53.2 |
| 0153.4 | 1400 | 281 | 016 | -002 | +008 | | -71.7 |
| 0108.2 | 1600 | 036 | 020 | -008 | -006 | | -78.9 |
| 0076.5 | 1800 | 150 | 005 | +002 | -001 | | -70.3 |
| 0054.7 | 2000 | 277 | 009 | -001 | +005 | | -65.1 |
| 0039.6 | 2200 | 084 | 007 | -000 | -004 | | -57.0 |
| 0028.9 | 2400 | 315 | 014 | -005 | +005 | | -55.8 |
| 0021.2 | 2600 | 240 | 024 | +006 | +011 | | -55.3 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 110 SEC. ACTUAL.. UNKNOWN
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 050 DEG. AZIMUTH 82.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. UNKNOWN
MOTOR TRACK DROPPED.. UNKNOWN
PAYLOAD ACQUISITION.. 202 SECONDS 58,980 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 3,240 SECONDS 16,459 METERS ALTITUDE
APOGEE.. UNKNOWN

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. NONE
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NO DART ACQUISITION.
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

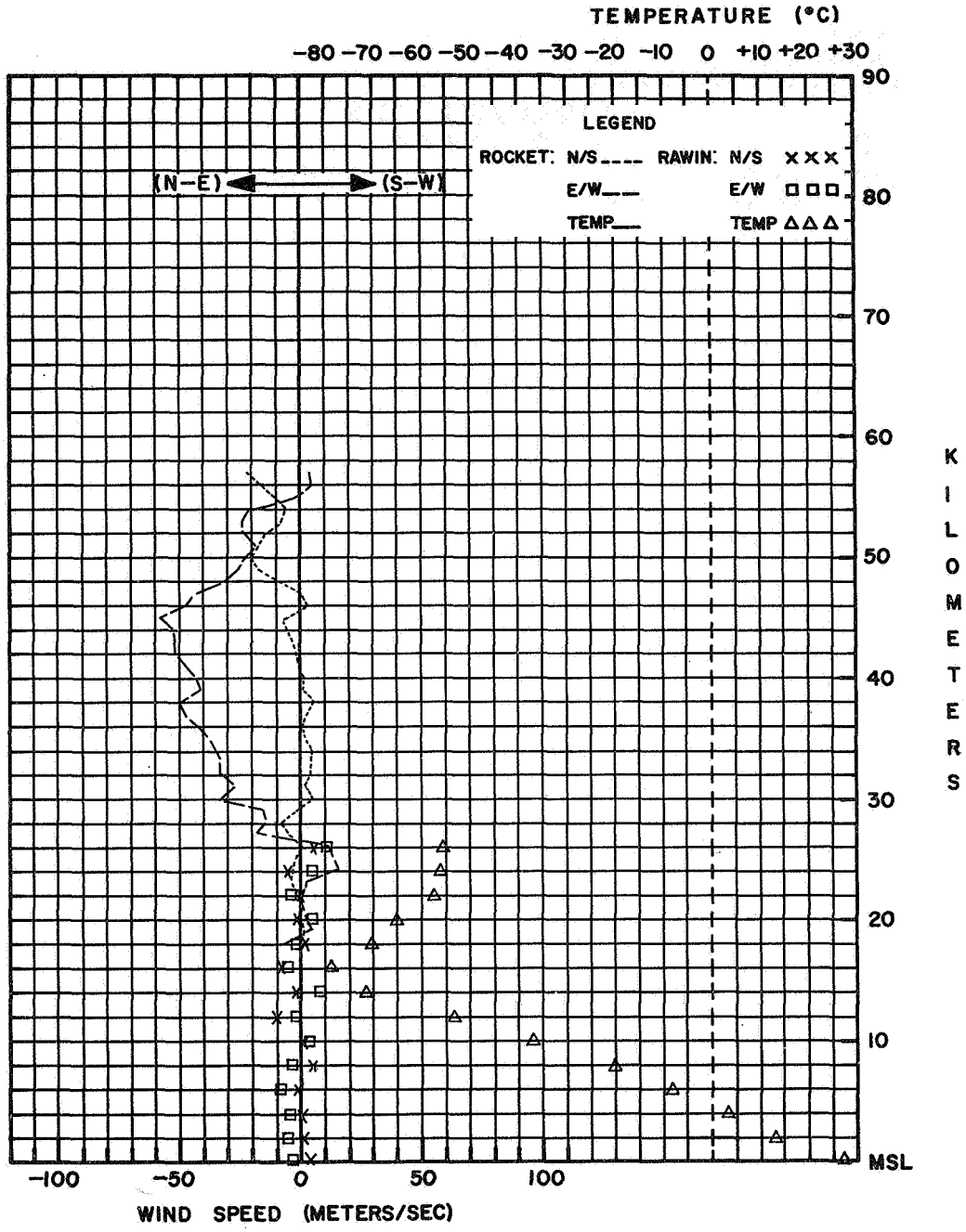
RADIOSONDE MANUFACTURER.. BENDIX
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID
GROUND EQUIPMENT TYPE.. GMD-1A
BALLOON TYPE.. KAYSAM
BALLOON SIZE.. 600 GRAMS
FREE LIFT.. 1,100 GRAMS
ASCENSION RATES.. SFC-400 MB = 287 M/MINUTE
400 MB-TOP = 315 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,005.2 MB
TEMPERATURE.. 28.2 DEG. C
RELATIVE HUMIDITY.. 75%
VISIBILITY.. 20 KM
SURFACE WIND.. 140 DEG. 11 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 3 OCTAS
LOW.. 1 OCTAS/CU
MIDDLE.. NONE
HIGH.. 8 OCTAS/CI
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

29 FT. 120 DEG/08 KTS. 51 FT. 110 DEG/08 KTS.
82 FT. 120 DEG/12 KTS. 133 FT. 120 DEG/12 KTS




**STATION:** (CNAE) NATAL, BRAZIL

**DATE:** 22 FEBRUARY 1967

**ROCKET TIME:** 1200 LST 1500 GCT

**ROCKET MOTOR TYPE:** JUDI

**PAYLOAD TYPE:** CHAFF

**RADIOSONDE TYPE:** 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (CNAE) NATAL, BRAZIL | | | |
| 82599 | 5°55' S 35°10' W ALT. 43 M | MARCH 1, 1967 | 1500 | 1143 |

# TABULATED DATA

ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 029 | 048 | 61 | 082 | 071 | -005 | -036 |
| 032 | 048 | 60 | 045 | 041 | -015 | -015 |
| 036 | 048 | 59 | 018 | 031 | -015 | -005 |
| 039 | 048 | 58 | 045 | 030 | -011 | -011 |
| 043 | 037 | 57 | 030 | 031 | -014 | -008 |
| 048 | 037 | 56 | 039 | 025 | -010 | -008 |
| 052 | 033 | 55 | 073 | 026 | -004 | -013 |
| 058 | 033 | 54 | 090 | 012 | +000 | -006 |
| 062 | 033 | 53 | 135 | 005 | +002 | -002 |
| 068 | 026 | 52 | 076 | 008 | -001 | -004 |
| 075 | 026 | 51 | 081 | 026 | -002 | -013 |
| 081 | 026 | 50 | 094 | 031 | +001 | -016 |
| 088 | 022 | 49 | 109 | 035 | +006 | -017 |
| 096 | 024 | 48 | 095 | 045 | +002 | -023 |
| 102 | 026 | 47 | 069 | 058 | -011 | -028 |
| 109 | 022 | 46 | 064 | 063 | -014 | -029 |
| 117 | 020 | 45 | 067 | 064 | -013 | -030 |
| 126 | 020 | 44 | 061 | 073 | -018 | -033 |
| 134 | 020 | 43 | 067 | 078 | -016 | -037 |
| 143 | 019 | 42 | 080 | 077 | -007 | -039 |
| 152 | 019 | 41 | 089 | 076 | -001 | -039 |
| 161 | 017 | 40 | 091 | 082 | +001 | -042 |
| 172 | 015 | 39 | 093 | 086 | +002 | -044 |
| 183 | 016 | 38 | 091 | 088 | +001 | -045 |
| 193 | 017 | 37 | 095 | 082 | +004 | -042 |
| 203 | 016 | 36 | 094 | 080 | +003 | -041 |
| 214 | 014 | 35 | 091 | 078 | +001 | -040 |
| 227 | 013 | 34 | 090 | 074 | +000 | -038 |
| 240 | 013 | 33 | 087 | 064 | -002 | -033 |
| 253 | 013 | 32 | 084 | 061 | -003 | -031 |
| 266 | 013 | 31 | 090 | 056 | +000 | -029 |
| 278 | 013 | 30 | 085 | 049 | -002 | -025 |
| 292 | 011 | 29 | 071 | 041 | -007 | -020 |
| 307 | 010 | 28 | 073 | 033 | -005 | -016 |
| 325 | 010 | 27 | 079 | 010 | -001 | -005 |
| 341 | 010 | 26 | 270 | 002 | +000 | +001 |
| 359 | 009 | 25 | 225 | 005 | +002 | +002 |
| 377 | 009 | 24 | 252 | 012 | +002 | +006 |
| 396 | 009 | 23 | 264 | 018 | +001 | +009 |
| 415 | 009 | 22 | 270 | 014 | +000 | +007 |
| 434 | 008 | 21 | 360 | 004 | -002 | +000 |
| 458 | 007 | 20 | 360 | 006 | -003 | +000 |
| 483 | 007 | 19 | 045 | 005 | -002 | -002 |
| 508 | 007 | 18 | 072 | 006 | -001 | -003 |

ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|

RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1004.4 | 0004 | 140 | 008 | +003 | -003 | 72 | +28.5 |
| 0802.0 | 0200 | 112 | 014 | +003 | -007 | 30 | +16.4 |
| 0630.0 | 0400 | 093 | 011 | +000 | -006 | | +06.3 |
| 0491.0 | 0600 | 094 | 014 | +001 | -007 | | -05.0 |
| 0379.0 | 0800 | 096 | 020 | +001 | -010 | | -17.7 |
| 0306.5 | 1000 | 193 | 013 | +007 | +002 | | -25.4 |
| 0213.5 | 1200 | 222 | 021 | +008 | +007 | | -50.8 |
| 0155.0 | 1400 | 241 | 020 | +005 | +009 | | -68.4 |
| 0110.3 | 1600 | 332 | 006 | -003 | +001 | | -78.1 |
| 0077.3 | 1800 | 300 | 010 | -003 | +004 | | -77.0 |
| 0055.2 | 2000 | 360 | 008 | -004 | +000 | | -64.1 |
| 0040.0 | 2200 | 300 | 012 | -003 | +005 | | -59.3 |
| 0029.3 | 2400 | 272 | 012 | -000 | +006 | | -55.9 |
| 0021.4 | 2600 | 225 | 009 | +003 | +003 | | -52.1 |
| 0015.7 | 2800 | 080 | 037 | -003 | -019 | | -50.3 |
| 0011.6 | 3000 | 080 | 045 | -004 | -023 | | -45.8 |
| 0008.7 | 3200 | 085 | 065 | -003 | -033 | | -42.0 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 110 SEC. ACTUAL.. 90 SEC.
TYPE OF LAUNCHER 8.5 FT. TUBULAR
LAUNCHER SETTING.. 050 DEG. AZIMUTH 83.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 7 SECONDS 9,114 METERS ALTITUDE
MOTOR TRACK DROPPED.. 59 SECONDS 51,267 METERS ALTITUDE
PAYLOAD ACQUISITION.. 158 SECONDS 61,816 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 3,240 SECONDS 16,703 METERS ALTITUDE
APOGEE.. 105 SECONDS 64,983 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

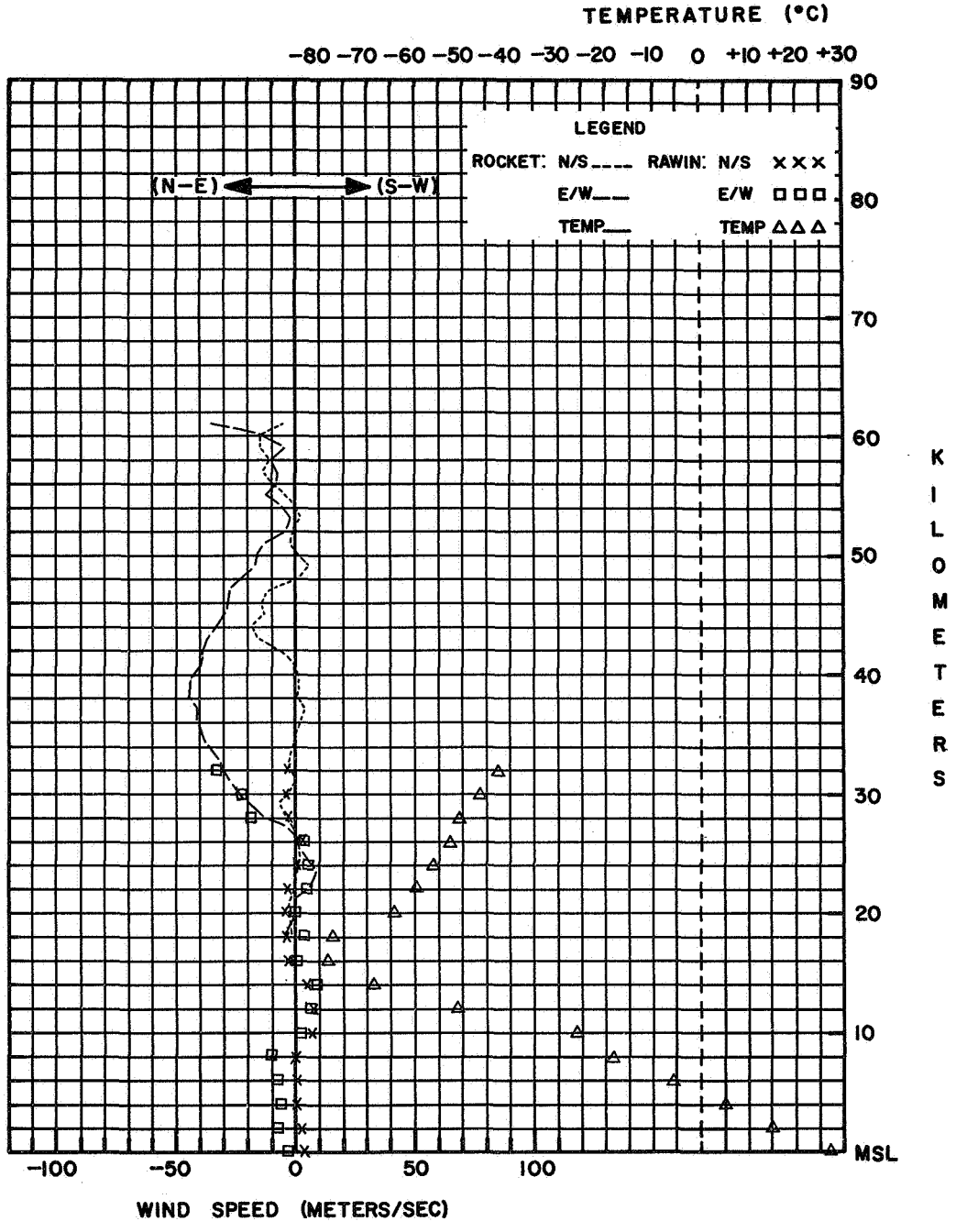
RADIOSONDE MANUFACTURER.. BENDIX
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID
GROUND EQUIPMENT TYPE.. GMD-1A
BALLOON TYPE.. KAYSAM
BALLOON SIZE.. 600 GRAMS
FREE LIFT.. 1,100 GRAMS
ASCENSION RATES.. SFC-400 MB = 308 M/MINUTE
400 MB-TOP = 347 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,004.4 MB
TEMPERATURE.. 28.5 DEG. C
RELATIVE HUMIDITY.. 72%
VISIBILITY.. 20 KM
SURFACE WIND.. 140 DEG. 08 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 8 OCTAS
LOW.. CU
MIDDLE.. NONE
HIGH.. CS
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

29 FT. 120 DEG/11 KTS. 51 FT. 130 DEG/11 KTS.
82 FT. 110 DEG/14 KTS. 133 FT. 120 DEG/16 KTS




STATION: (CNAE) NATAL, BRAZIL
DATE: 1 MARCH 1967

ROCKET TIME: 1200 LST 1500 GCT
ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | Z | Z | Z |
| 72402 | 37°51' N 75°29' W ALT. 3 M | MARCH 3, 1967 | 1648 | 1715 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 025 | 155 | 64 | 257 | 141 | +016 | +071 |
| 026 | 111 | 63 | 249 | 177 | +032 | +085 |
| 028 | 067 | 62 | 253 | 197 | +030 | +097 |
| 031 | 056 | 61 | 249 | 199 | +036 | +096 |
| 034 | 056 | 60 | 246 | 179 | +038 | +084 |
| 037 | 048 | 59 | 246 | 156 | +033 | +073 |
| 041 | 048 | 58 | 248 | 132 | +025 | +063 |
| 044 | 042 | 57 | 253 | 122 | +018 | +060 |
| 049 | 037 | 56 | 254 | 127 | +018 | +063 |
| 053 | 037 | 55 | 252 | 135 | +021 | +066 |
| 058 | 037 | 54 | 251 | 136 | +023 | +066 |
| 062 | 033 | 53 | 256 | 142 | +018 | +071 |
| 068 | 028 | 52 | 263 | 149 | +010 | +076 |
| 074 | 030 | 51 | 265 | 146 | +006 | +075 |
| 079 | 030 | 50 | 264 | 150 | +008 | +077 |
| 085 | 026 | 49 | 264 | 152 | +008 | +078 |
| 092 | 024 | 48 | 264 | 150 | +008 | +077 |
| 099 | 024 | 47 | 262 | 145 | +010 | +074 |
| 106 | 024 | 46 | 259 | 141 | +014 | +071 |
| 113 | 024 | 45 | 253 | 136 | +021 | +067 |
| 120 | 022 | 44 | 252 | 131 | +021 | +064 |
| 128 | 020 | 43 | 254 | 117 | +017 | +058 |
| 137 | 017 | 42 | 259 | 109 | +011 | +055 |
| 148 | 018 | 41 | 261 | 097 | +008 | +049 |
| 156 | 019 | 40 | 264 | 090 | +005 | +046 |
| 166 | 018 | 39 | 267 | 082 | +002 | +042 |
| 175 | 018 | 38 | 275 | 074 | -003 | +038 |
| 185 | 015 | 37 | 278 | 071 | -005 | +036 |
| 197 | 014 | 36 | 273 | 070 | -002 | +036 |
| 208 | 013 | 35 | 263 | 063 | +004 | +032 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1013.0 | 0000 | 250 | 016 | +003 | +008 | 40 | +18.3 |
| 0796.0 | 0200 | 266 | 037 | +001 | +019 | 28 | +05.1 |
| 0620.0 | 0400 | 275 | 048 | -002 | +025 | 33 | -07.2 |
| 0477.0 | 0600 | 276 | 068 | -004 | +035 | 28 | -20.4 |
| 0361.0 | 0800 | 275 | 091 | -004 | +047 | 31 | -34.7 |
| 0267.0 | 1000 | 277 | 099 | -006 | +051 | | -51.1 |
| 0196.0 | 1200 | 279 | 095 | -008 | +048 | | -59.5 |
| 0144.0 | 1400 | 282 | 076 | -008 | +038 | | -56.3 |
| 0104.0 | 1600 | 290 | 044 | -008 | +021 | | -61.2 |
| 0075.0 | 1800 | 279 | 048 | -004 | +024 | | -61.7 |
| 0055.0 | 2000 | 290 | 024 | -004 | +012 | | -58.0 |
| 0040.2 | 2200 | 288 | 018 | -003 | +009 | | -58.1 |
| 0029.1 | 2400 | 000 | 000 | -000 | -000 | | -55.6 |
| 0021.8 | 2600 | 262 | 010 | +001 | +005 | | -53.1 |
| 0016.0 | 2800 | 278 | 010 | -001 | +005 | | -50.7 |
| 0011.7 | 3000 | 256 | 018 | +002 | +009 | | -48.5 |
| 0008.7 | 3200 | 269 | 068 | +001 | +035 | | -45.7 |
| 0006.5 | 3400 | 270 | 087 | +000 | +045 | | -43.0 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. MECHANICAL
FUSE DELAY TIME.. PREDICTED.. 90 SEC. ACTUAL.. 96 SEC.
TYPE OF LAUNCHER.. 12 FT. TUBULAR
LAUNCHER SETTING.. 130 DEG. AZIMUTH 80.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 19 SECONDS 20,330 METERS ALTITUDE
MOTOR TRACK DROPPED.. 96 SECONDS 65,930 METERS ALTITUDE
PAYLOAD ACQUISITION.. 96 SECONDS 65,930 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 1,320 SECONDS 33,920 METERS ALTITUDE
APOGEE.. 108 SECONDS 67,210 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

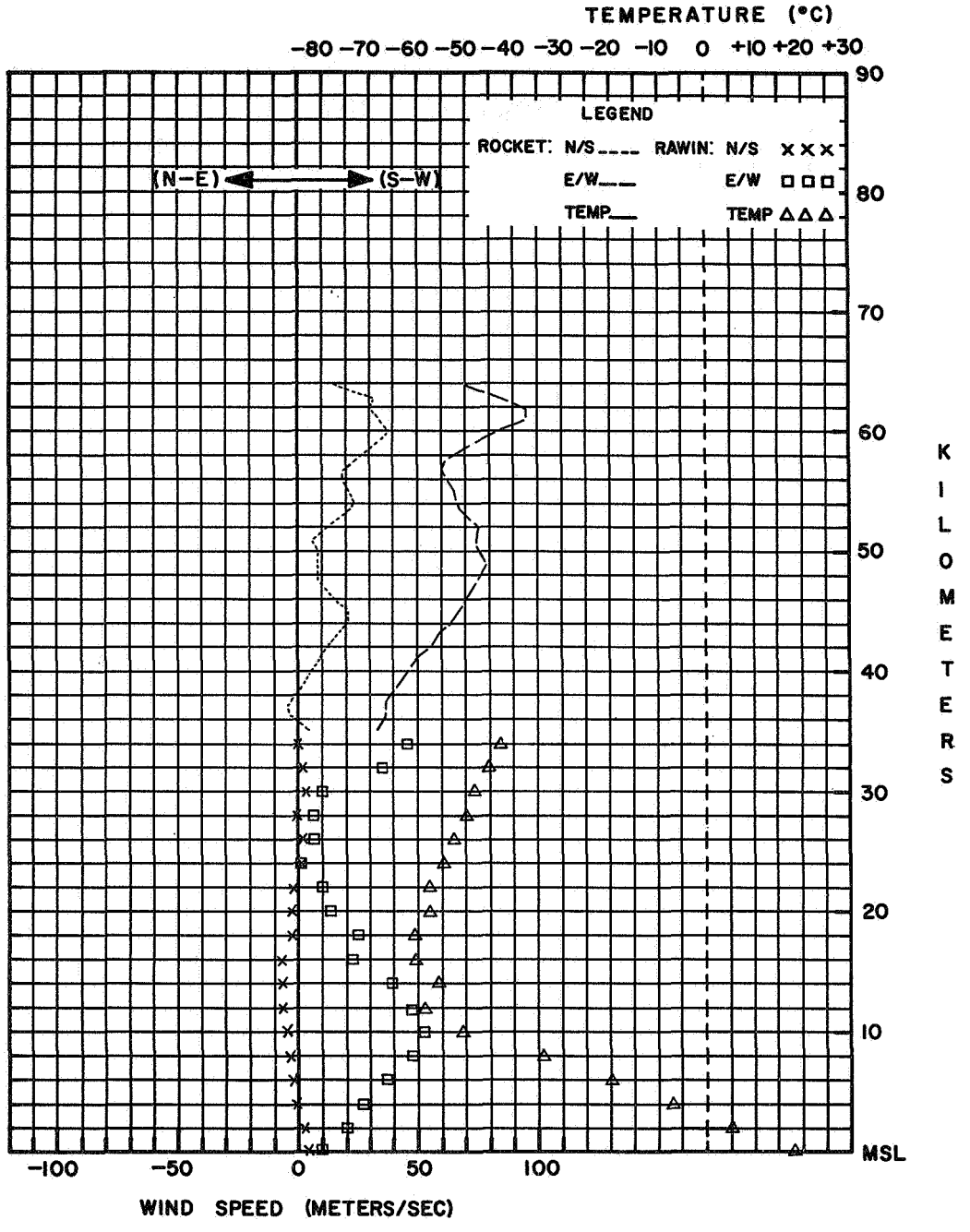
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,500 GRAMS
ASCENSION RATES.. SFC-400 MB = 278 M/MINUTE
400 MB-TOP = 402 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,013.0 MB
TEMPERATURE.. 18.3 DEG. C
RELATIVE HUMIDITY.. 40%
VISIBILITY.. 24 KM
SURFACE WIND.. 250 DEG. 16 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 0 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 259 DEG/19 KTS, 50 FT. 229 DEG/21 KTS,
100 FT. 236 DEG/22 KTS, 150 FT. 229 DEG/23 KTS,
200 FT. 238 DEG/23 KTS, 250 FT. 238 DEG/23 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA

**DATE:** 3 MARCH 1967

**ROCKET TIME:** 1148 LST 1648 GCT

**ROCKET MOTOR TYPE:** JUDI

**PAYLOAD TYPE:** CHAFF

**RADIOSONDE TYPE:** 1680 MHZ

RP STATION NAME

(NASA) WALLOPS ISLAND, VIRGINIA

72402 37°51' N 75°29' W ALT. 3 M

DATE Z | ROCKET RAWINSONDE LAUNCH TIME Z | RELEASE TIME Z

MARCH 8, 1967 | 1521 | 1715

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 029 | 083 | 55 | 269 | 113 | +001 | +058 |
| 031 | 083 | 54 | 271 | 103 | -001 | +053 |
| 033 | 083 | 53 | 267 | 097 | +003 | +050 |
| 035 | 083 | 52 | 266 | 107 | +004 | +055 |
| 037 | 067 | 51 | 266 | 107 | +004 | +055 |
| 040 | 067 | 50 | 269 | 088 | +001 | +045 |
| 042 | 067 | 49 | 265 | 074 | +003 | +038 |
| 045 | 056 | 48 | 282 | 075 | -008 | +038 |
| 048 | 067 | 47 | 289 | 072 | -012 | +035 |
| 050 | 067 | 46 | 293 | 064 | -013 | +030 |
| 053 | 048 | 45 | 298 | 050 | -012 | +023 |
| 057 | 048 | 44 | 283 | 036 | -004 | +018 |
| 060 | 048 | 43 | 288 | 012 | -002 | +006 |
| 064 | 042 | 42 | 000 | 014 | -007 | +000 |
| 068 | 037 | 41 | 000 | 012 | -006 | +000 |
| 073 | 033 | 40 | 000 | 010 | -005 | +000 |
| 078 | 033 | 39 | 000 | 012 | -006 | +000 |
| 083 | 033 | 38 | 009 | 012 | -006 | -001 |
| 088 | 028 | 37 | 008 | 014 | -007 | -001 |
| 095 | 024 | 36 | 352 | 014 | -007 | +001 |
| 102 | 024 | 35 | 330 | 016 | -007 | +004 |
| 109 | 022 | 34 | 301 | 011 | -003 | +005 |
| 117 | 021 | 33 | 000 | 000 | +000 | +000 |
| 125 | 019 | 32 | 076 | 008 | -001 | -004 |
| 135 | 017 | 31 | 076 | 008 | -001 | -004 |
| 145 | 015 | 30 | 090 | 006 | +000 | -003 |
| 157 | 014 | 29 | 090 | 002 | +000 | -001 |
| 168 | 013 | 28 | 000 | 000 | +000 | +000 |
| 182 | 011 | 27 | 135 | 003 | +001 | -001 |
| 198 | 010 | 26 | 153 | 004 | +002 | -001 |
| 215 | 009 | 25 | 207 | 004 | +002 | +001 |
| 235 | 008 | 24 | 243 | 009 | +002 | +004 |
| 257 | 007 | 23 | 270 | 014 | +000 | +007 |
| 282 | 007 | 22 | 264 | 020 | +001 | +010 |
| 307 | 006 | 21 | 257 | 026 | +003 | +013 |
| 335 | 006 | 20 | 255 | 030 | +004 | +015 |
| 365 | 006 | 19 | 257 | 042 | +005 | +021 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M$^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 5578 | -07.0 | 00.409 | 00.536 | 327 | | | | |
| 5435 | -09.3 | 00.491 | 00.648 | 326 | 270 | 107 | -000 | +055 |
| 5264 | -01.3 | 00.608 | 00.779 | 331 | 267 | 101 | +003 | +052 |
| 5127 | -05.2 | 00.721 | 00.938 | 328 | 266 | 107 | +004 | +055 |
| 4959 | -02.9 | 00.890 | 01.147 | 330 | 267 | 082 | +002 | +042 |
| 4913 | -06.3 | 00.942 | 01.230 | 327 | 266 | 076 | +003 | +039 |
| 4837 | -05.0 | 01.037 | 01.347 | 328 | 276 | 074 | -004 | +038 |
| 4703 | -07.2 | 01.228 | 01.608 | 327 | 289 | 072 | -012 | +035 |
| 4663 | -09.1 | 01.292 | 01.704 | 326 | 290 | 068 | -012 | +033 |
| 4609 | -06.9 | 01.384 | 01.810 | 327 | 293 | 064 | -013 | +030 |
| 4563 | -08.2 | 01.467 | 01.928 | 326 | 296 | 058 | -013 | +027 |
| 4520 | -11.4 | 01.550 | 02.062 | 324 | 297 | 052 | -012 | +024 |
| 4438 | -14.8 | 01.723 | 02.324 | 322 | 289 | 041 | -007 | +020 |
| 4383 | -15.0 | 01.851 | 02.498 | 322 | 284 | 032 | -004 | +016 |
| 4298 | -18.1 | 02.070 | 02.828 | 320 | 288 | 012 | -002 | +006 |
| 4255 | -16.9 | 02.191 | 02.978 | 321 | 323 | 010 | -004 | +003 |
| 4188 | -19.7 | 02.394 | 03.290 | 319 | 000 | 014 | -007 | +000 |
| 4170 | -18.9 | 02.452 | 03.359 | 320 | 000 | 014 | -007 | +000 |
| 4118 | -21.6 | 02.628 | 03.639 | 318 | 000 | 012 | -006 | +000 |
| 4066 | -18.2 | 02.816 | 03.848 | 320 | 000 | 012 | -006 | +000 |
| 4048 | -17.6 | 02.884 | 03.932 | 320 | 000 | 010 | -005 | +000 |
| 4008 | -19.9 | 03.041 | 04.184 | 319 | 000 | 010 | -005 | +000 |
| 3993 | -22.5 | 03.103 | 04.313 | 317 | 000 | 010 | -005 | +000 |
| 3956 | -23.8 | 03.262 | 04.557 | 317 | 000 | 010 | -005 | +000 |
| 3923 | -22.1 | 03.410 | 04.732 | 318 | 000 | 012 | -006 | +000 |
| 3904 | -25.2 | 03.499 | 04.916 | 316 | 000 | 012 | -006 | +000 |
| 3862 | -26.5 | 03.706 | 05.234 | 315 | 000 | 012 | -006 | -000 |
| 3844 | -25.1 | 03.798 | 05.334 | 316 | 009 | 012 | -006 | -001 |
| 3807 | -28.2 | 03.995 | 05.682 | 314 | 009 | 012 | -006 | -001 |
| 3770 | -26.5 | 04.203 | 05.937 | 315 | 009 | 012 | -006 | -001 |
| 3466 | -36.7 | 06.430 | 09.474 | 308 | 326 | 014 | -006 | +004 |
| 3405 | -37.1 | 07.016 | 10.355 | 308 | 301 | 011 | -003 | +005 |
| 3331 | -41.1 | 07.808 | 11.722 | 305 | 297 | 004 | -001 | +002 |
| 3304 | -37.6 | 08.119 | 12.007 | 308 | | | | |
| 3283 | -40.4 | 08.369 | 12.526 | 306 | 090 | 002 | -000 | -001 |
| 3210 | -40.9 | 09.306 | 13.959 | 306 | 076 | 008 | -001 | -004 |
| 3149 | -43.5 | 10.176 | 15.437 | 304 | 076 | 008 | -001 | -004 |
| 3036 | -42.4 | 12.015 | 18.139 | 305 | 090 | 006 | -000 | -003 |
| 3002 | -45.0 | 12.632 | 19.289 | 303 | 090 | 006 | -000 | -003 |
| 2890 | -48.4 | 14.935 | 23.149 | 301 | 090 | 002 | +000 | -001 |
| 2783 | -47.0 | 17.538 | 27.017 | 301 | | | | |
| 2505 | -51.8 | 26.718 | 42.050 | 298 | 207 | 004 | +002 | +001 |
| 2438 | -51.5 | 29.604 | 46.528 | 298 | 236 | 007 | +002 | +003 |
| 2149 | -57.1 | 46.331 | 74.705 | 295 | 261 | 024 | +002 | +012 |
| 2079 | -55.9 | 51.700 | 82.903 | 295 | 257 | 026 | +003 | +013 |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 2094 | -56.3 | 50.000 | 80.317 | 295 | 257 | 026 | +003 | +013 |
| 2422 | -51.6 | 30.000 | 47.179 | 298 | 236 | 007 | +002 | +003 |
| 2697 | -48.3 | 20.000 | 30.985 | 301 | 135 | 003 | +001 | -001 |
| 3145 | -43.0 | 10.000 | 15.135 | 304 | 076 | 008 | -001 | -004 |
| 3389 | -37.1 | 07.000 | 10.330 | 308 | 301 | 011 | -003 | +005 |
| 3640 | -30.1 | 05.000 | 07.168 | 312 | 000 | 014 | -007 | -000 |
| 4296 | -17.1 | 02.000 | 02.721 | 321 | 288 | 018 | -003 | +009 |
| 4830 | -05.5 | 01.000 | 01.302 | 328 | 272 | 074 | -001 | +038 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1025.6 | 0000 | 080 | 004 | -000 | -002 | 73 | +03.3 |
| 0798.0 | 0200 | 254 | 033 | +005 | +016 | 80 | -06.7 |
| 0615.0 | 0400 | 247 | 058 | +012 | +027 | 33 | -15.1 |
| 0469.0 | 0600 | 246 | 105 | +022 | +049 | 28 | -26.0 |
| 0355.0 | 0800 | 247 | 132 | +027 | +063 | 28 | -35.7 |
| 0264.0 | 1000 | | | | | | -48.3 |
| 0195.0 | 1200 | | | | | | -49.8 |
| 0143.0 | 1400 | | | | | | -55.1 |
| 0104.5 | 1600 | | | | | | -60.5 |
| 0076.0 | 1800 | | | | | | -57.9 |
| 0059.2 | 2000 | | | | | | -59.6 |
| 0040.3 | 2200 | 213 | 002 | +001 | +001 | | -56.9 |
| 0029.6 | 2400 | 213 | 002 | +001 | +001 | | -54.0 |
| 0021.7 | 2600 | 213 | 002 | +001 | +001 | | -51.3 |
| 0016.0 | 2800 | 213 | 002 | +001 | +001 | | -48.6 |
| 0011.9 | 3000 | 214 | 004 | +002 | +001 | | -45.9 |
| 0008.3 | 3200 | 248 | 025 | +005 | +012 | | -42.5 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATOR SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 131 SEC.
TYPE OF LAUNCHER ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 104 DEG AZIMUTH 79.1 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 1,280 METERS ALTITUDE
MOTOR TRACK DROPPED.. 131 SECONDS 58,830 METERS ALTITUDE
PAYLOAD ACQUISITION.. 131 SECONDS 58,830 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,280 SECONDS 18,380 METERS ALTITUDE
APOGEE.. 126 SECONDS 58,860 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 16 FT. DIAM. DISC-GAP-BAND PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1,696 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 168 SEC. 55,780 METERS ALTITUDE
TO 1,860 SEC. 20,790 METERS ALTITUDE

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 51.7
ALTITUDE 2,079
TEMPERATURE -58.5 DEG. C

RADIOSONDE AND BALLOON DATA

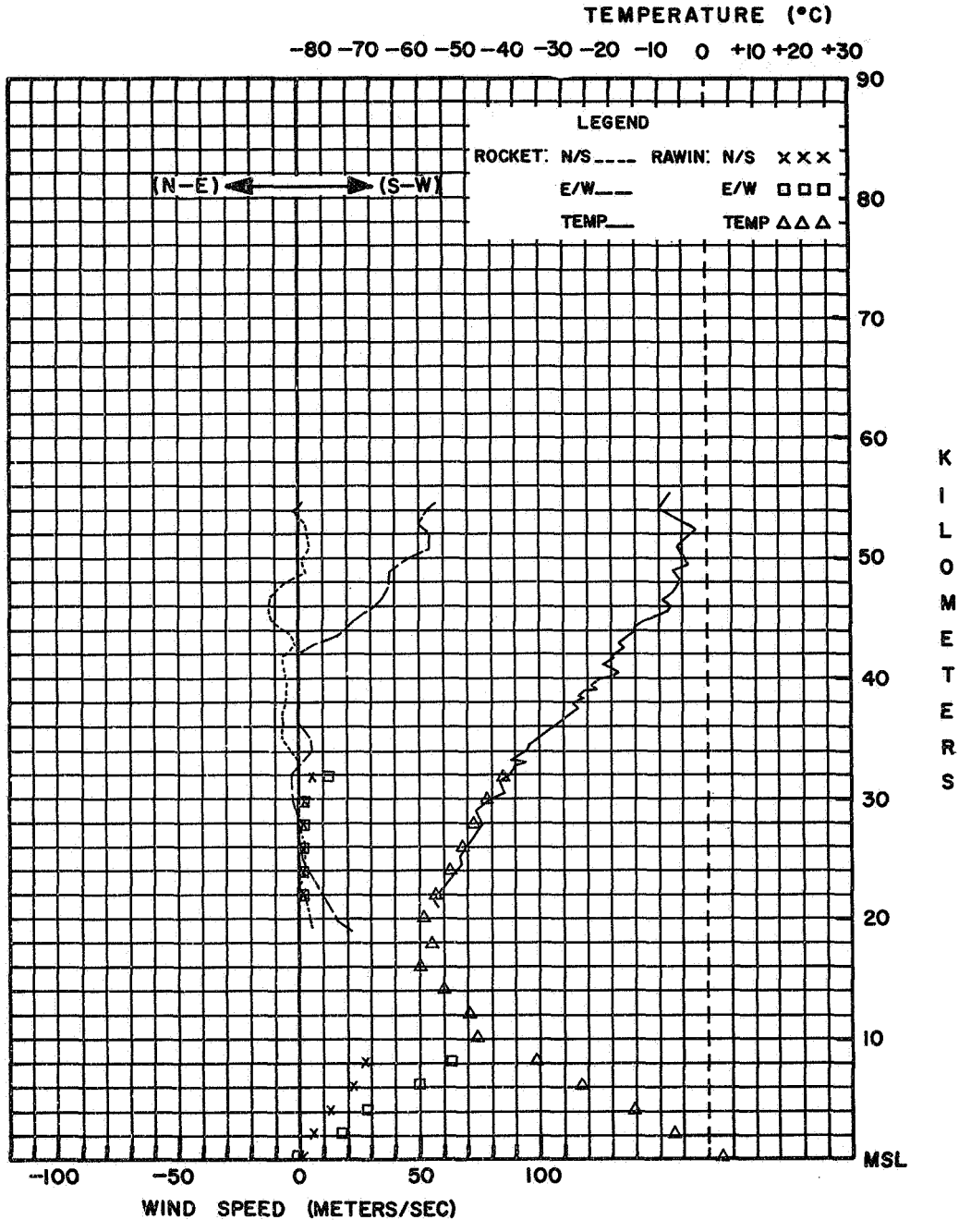
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANERIOD AND HYPOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 306 M/MINUTE
400 MB-TOP = 438 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,025.6 MB
TEMPERATURE.. 3.3 DEG. C
RELATIVE HUMIDITY.. 73%
VISIBILITY.. 11 KM
SURFACE WIND.. 080 DEG. 4 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 8 OCTAS
LOW.. NONE
MIDDLE.. 8 OCTAS AC
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 035 DEG/6 KTS
50 FT. 009 DEG/6 KTS, 100 FT. 018 DEG/6 KTS
150 FT. 018 DEG/6 KTS 200 FT. 031 DEG/6 KTS
250 FT. 045 DEG/4 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA

DATE: 8 MARCH 1967

ROCKET TIME: 1021 LST 1521 GCT

ROCKET MOTOR TYPE: ARCAS

PAYLOAD TYPE: ARCASONDE-1A

RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET RAWINSONDE LAUNCH TIME Z | RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | | | |
| 72402 | 37°51' N 75°29' W ALT. 3 M | MARCH 16, 1967 | 1429 | 1715 |

# TABULATED DATA

## ROCKET WINDS

| TIME OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 029 | 099 | 50 | 325 | 024 | -010 | +007 |
| 031 | 083 | 49 | 328 | 030 | -013 | +008 |
| 033 | 067 | 48 | 317 | 032 | -012 | +011 |
| 036 | 067 | 47 | 300 | 027 | -007 | +012 |
| 038 | 067 | 46 | 331 | 020 | -009 | +005 |
| 041 | 067 | 45 | 006 | 018 | -009 | -001 |
| 043 | 056 | 44 | 360 | 017 | -009 | +000 |
| 047 | 042 | 43 | 342 | 018 | -009 | +003 |
| 051 | 042 | 42 | 332 | 029 | -013 | +007 |
| 055 | 042 | 41 | 315 | 030 | -011 | +011 |
| 059 | 037 | 40 | 290 | 029 | -005 | +014 |
| 064 | 037 | 39 | 278 | 027 | -002 | +014 |
| 068 | 037 | 38 | 279 | 024 | -002 | +012 |
| 073 | 033 | 37 | 299 | 024 | -006 | +011 |
| 078 | 033 | 36 | 284 | 016 | -002 | +008 |
| 083 | 030 | 35 | 270 | 010 | +000 | +005 |
| 089 | 030 | 34 | 310 | 015 | -005 | +006 |
| 094 | 028 | 33 | 306 | 017 | -005 | +007 |
| 101 | 024 | 32 | 286 | 014 | -002 | +007 |
| 108 | 022 | 31 | 270 | 006 | +000 | +003 |
| 116 | 021 | 30 | 180 | 002 | +001 | +000 |
| 124 | 019 | 29 | 000 | 000 | +000 | +000 |
| 134 | 019 | 28 | 270 | 002 | +000 | +001 |
| 142 | 018 | 27 | 256 | 008 | +001 | +004 |
| 153 | 016 | 26 | 247 | 015 | +003 | +007 |
| 163 | 014 | 25 | 247 | 015 | +003 | +007 |
| 176 | 012 | 24 | 259 | 010 | +001 | +005 |
| 190 | 012 | 23 | 270 | 012 | +000 | +006 |
| 204 | 011 | 22 | 263 | 016 | +001 | +008 |
| 219 | 010 | 21 | 259 | 020 | +002 | +010 |
| 238 | 009 | 20 | 264 | 020 | +001 | +010 |
| 258 | 009 | 19 | 261 | 024 | +002 | +012 |
| 276 | 009 | 18 | 263 | 033 | +002 | +017 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M$^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 5553 | +17.3 | 00.406 | 00.487 | 342 | | | | |
| 4694 | -06.3 | 01.145 | 01.495 | 327 | 300 | 027 | -007 | +012 |
| 4648 | -05.3 | 01.213 | 01.578 | 328 | 315 | 022 | -008 | +008 |
| 4429 | -14.4 | 01.606 | 02.162 | 322 | 360 | 017 | -009 | -000 |
| 4258 | -16.0 | 02.008 | 02.720 | 321 | 336 | 023 | -011 | +005 |
| 3816 | -31.1 | 03.648 | 05.251 | 312 | 279 | 024 | -002 | +012 |
| 3764 | -29.9 | 03.922 | 05.617 | 313 | 284 | 024 | -003 | +012 |
| 3703 | -32.3 | 04.271 | 06.177 | 311 | 299 | 024 | -006 | +011 |
| 3533 | -37.2 | 05.434 | 08.023 | 308 | 279 | 012 | -001 | +006 |
| 3356 | -39.2 | 07.009 | 10.437 | 307 | 310 | 015 | -005 | +006 |
| 3216 | -36.8 | 08.572 | 12.635 | 308 | 286 | 014 | -002 | +007 |
| 3127 | -40.9 | 09.748 | 14.621 | 306 | 284 | 008 | -001 | +004 |
| 3100 | -40.3 | 10.138 | 15.168 | 306 | 270 | 006 | +000 | +003 |
| 2987 | -45.8 | 11.971 | 18.344 | 302 | 180 | 002 | +001 | +000 |
| 2880 | -45.0 | 14.035 | 21.430 | 303 | | | | |
| 2804 | -47.0 | 15.718 | 24.213 | 301 | 270 | 002 | +000 | +001 |
| 2704 | -45.5 | 18.249 | 27.926 | 302 | 256 | 008 | +001 | +004 |
| 2664 | -47.5 | 19.373 | 29.909 | 301 | 248 | 010 | +002 | +005 |
| 2630 | -47.7 | 20.388 | 31.505 | 301 | 252 | 012 | +002 | +006 |
| 2518 | -51.2 | 24.159 | 37.919 | 299 | 247 | 015 | +003 | +007 |
| 2438 | -53.3 | 27.314 | 43.281 | 297 | 252 | 012 | +002 | +006 |
| 2417 | -51.7 | 28.210 | 44.378 | 298 | 259 | 010 | +001 | +005 |
| 2396 | -52.6 | 29.134 | 46.018 | 298 | 259 | 010 | +001 | +005 |
| 2338 | -51.9 | 31.847 | 50.144 | 298 | 270 | 012 | +000 | +006 |
| 2259 | -54.9 | 35.977 | 57.425 | 296 | 270 | 014 | +000 | +007 |
| 2198 | -52.3 | 39.533 | 62.359 | 298 | 263 | 016 | +001 | +008 |
| 2118 | -56.4 | 44.755 | 71.931 | 295 | 259 | 020 | +002 | +010 |
| 2057 | -53.9 | 49.214 | 78.196 | 297 | 259 | 020 | +002 | +010 |
| 2000 | -58.3 | 53.802 | 87.238 | 294 | 264 | 020 | +001 | +010 |
| 1972 | -61.1 | 56.253 | 92.415 | 292 | 265 | 021 | +001 | +011 |
| 1948 | -58.1 | 58.441 | 94.671 | 294 | 260 | 022 | +002 | +011 |
| 1881 | -62.1 | 65.027 | | 291 | 261 | 026 | +002 | +013 |
| 1817 | -58.9 | 72.027 | | 293 | 263 | 031 | +002 | +016 |
| 1800 | -60.1 | 74.000 | | 293 | | | | |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 2040 | -54.7 | 50.000 | 79.719 | 296 | 264 | 020 | +001 | +010 |
| 2368 | -52.4 | 30.000 | 47.338 | 298 | 259 | 010 | +001 | +005 |
| 2632 | -47.6 | 20.000 | 30.894 | 301 | 252 | 012 | +002 | +006 |
| 3095 | -40.5 | 10.000 | 14.975 | 306 | 270 | 006 | -000 | +003 |
| 3339 | -39.2 | 07.000 | 10.423 | 307 | 310 | 015 | -005 | +006 |
| 3576 | -35.4 | 05.000 | 07.326 | 309 | 284 | 016 | -002 | +008 |
| 4233 | -16.0 | 02.000 | 02.709 | 321 | 336 | 023 | -011 | +005 |
| 4826 | -01.7 | 01.000 | 01.283 | 330 | 325 | 031 | -013 | +009 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1023.8 | 0000 | 315 | 021 | -008 | +008 | 46 | +02.8 |
| 0901.0 | 0200 | 330 | 039 | -017 | +010 | 41 | -08.0 |
| 0611.0 | 0400 | 337 | 064 | -030 | +013 | 20 | -21.8 |
| 0461.0 | 0600 | 332 | 064 | -029 | +015 | 22 | -37.2 |
| 0343.0 | 0800 | 295 | 072 | -016 | +034 | | -45.1 |
| 0254.0 | 1000 | 273 | 072 | -002 | +037 | | -43.8 |
| 0188.0 | 1200 | 262 | 076 | +005 | +039 | | -46.8 |
| 0139.0 | 1400 | 264 | 066 | +004 | +034 | | -55.0 |
| 0102.0 | 1600 | 263 | 057 | +004 | +029 | | -57.5 |
| 0074.0 | 1800 | 261 | 041 | +003 | +021 | | -60.1 |
| 0054.0 | 2000 | 262 | 027 | +002 | +014 | | -55.0 |
| 0039.5 | 2200 | 263 | 018 | +001 | +009 | | -52.3 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. WOX-3A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 90 SEC. ACTUAL.. 106 SEC.
TYPE OF LAUNCHER.. 12 FT. TUBULAR
LAUNCHER SETTING.. 130 DEG. AZIMUTH 80.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 8,230 METERS ALTITUDE
MOTOR TRACK DROPPED.. 106 SECONDS 58,950 METERS ALTITUDE
PAYLOAD ACQUISITION.. 106 SECONDS 58,950 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 1,740 SECONDS 17,370 METERS ALTITUDE
APOGEE.. 106 SECONDS 58,950 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 6 FT. SQUARE PARACHUTE
TEMPERATURE SENSOR.. 0.014 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. 403 MHZ PORTABLE RECEIVER-RECORDER
TELEMETRY FREQUENCY.. 402 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 137 SEC. 55,530 METERS ALTITUDE
TO 1,650 SEC. 18,000 METERS ALTITUDE

REMARKS

THIS WAS A SPECIAL TEST OF THE WOX-3A PAYLOAD TELEMETRY DATA IS EQUIVALENT TO THE WOX-1A.
THERMODYNAMICS BASE DATA.. PRESSURE 74.0 MB
ALTITUDE 18,000 METERS
TEMPERATURE -60.1 DEG. C

RADIOSONDE AND BALLOON DATA

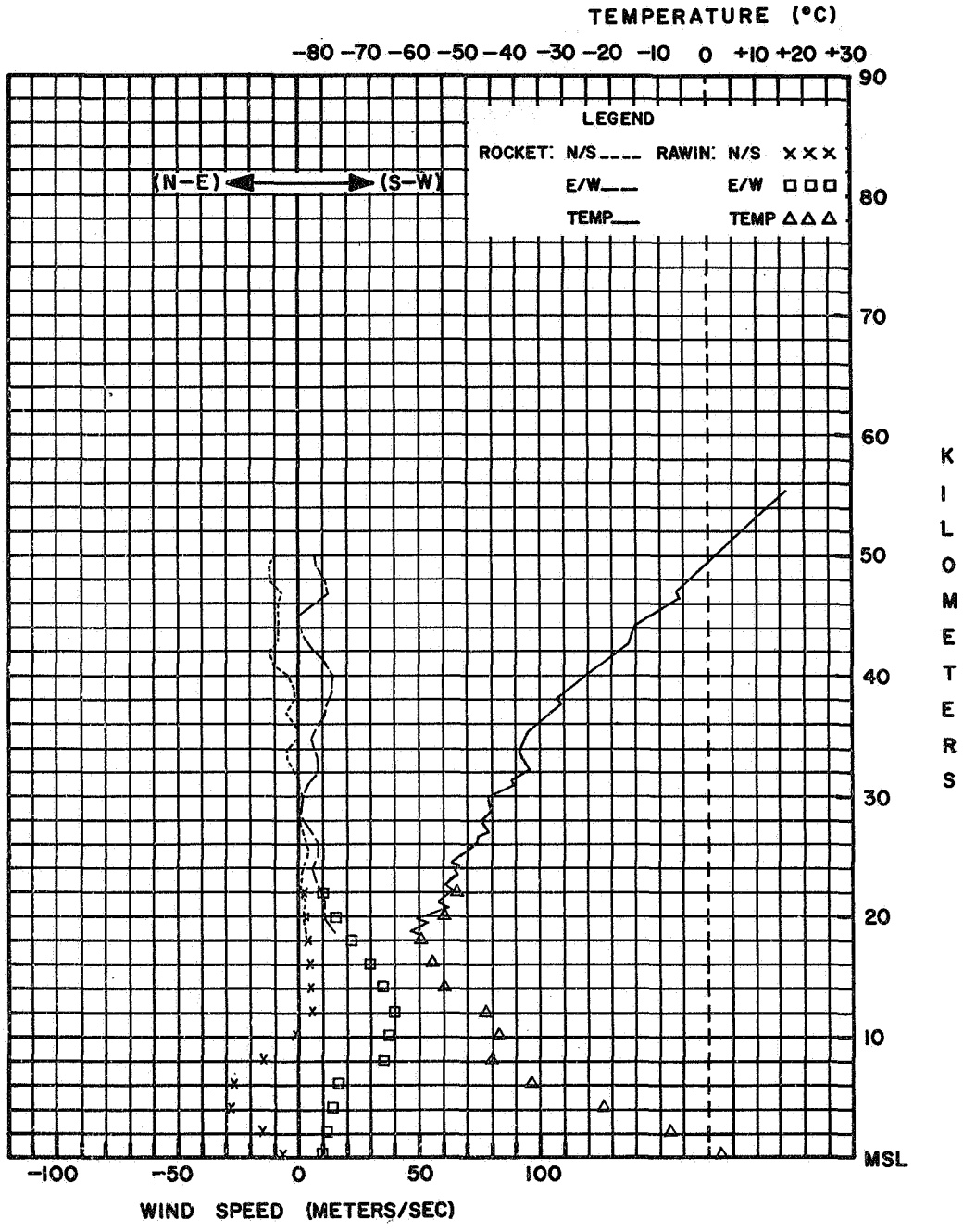
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,000 GRAMS
FREE LIFT.. 1,600 GRAMS
ASCENSION RATES.. SFC-400 MB = 278 M/MINUTE
400 MB-TOP = 433 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,023.8 MB
TEMPERATURE.. 2.8 DEG. C
RELATIVE HUMIDITY.. 46%
VISIBILITY.. 12 KM
SURFACE WIND.. 315 DEG. 21 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 6 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 320 DEG/27 KTS, 50 FT. 320 DEG/21 KTS,
100 FT. 326 DEG/23 KTS, 150 FT. 324 DEG/24 KTS,
200 FT. 316 DEG/25 KTS, 250 FT. 320 DEG/26 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA
DATE: 16 MARCH 1967

ROCKET TIME: 0929 LST 1429 GCT
ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: WOX-3A
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (CNAE) NATAL, BRAZIL | Z | Z | Z |
| 82599 | 5°55' S 35°10' W ALT. 43 M | MARCH 22, 1967 | 1500 | 1150 |

# TABULATED DATA

ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 056 | 028 | 52 | 315 | 011 | -004 | +004 |
| 062 | 026 | 51 | 243 | 013 | +003 | +006 |
| 069 | 024 | 50 | 270 | 008 | +000 | +004 |
| 076 | 026 | 49 | 309 | 012 | -004 | +005 |
| 082 | 024 | 48 | 257 | 018 | +002 | +009 |
| 090 | 021 | 47 | 229 | 018 | +006 | +007 |
| 098 | 022 | 46 | 189 | 012 | +006 | +001 |
| 105 | 021 | 45 | 207 | 009 | +004 | +002 |
| 114 | 019 | 44 | 027 | 004 | -002 | -001 |
| 123 | 019 | 43 | 061 | 024 | -006 | -011 |
| 132 | 018 | 42 | 080 | 043 | -004 | -022 |
| 142 | 018 | 41 | 093 | 064 | +002 | -033 |
| 151 | 018 | 40 | 097 | 075 | +005 | -038 |
| 161 | 017 | 39 | 093 | 068 | +002 | -035 |
| 171 | 017 | 38 | 092 | 062 | +001 | -032 |
| 181 | 015 | 37 | 090 | 070 | +000 | -036 |
| 193 | 014 | 36 | 092 | 070 | +001 | -036 |
| 205 | 014 | 35 | 093 | 068 | +002 | -035 |
| 217 | 014 | 34 | 094 | 062 | +002 | -032 |
| 229 | 013 | 33 | 094 | 057 | +002 | -029 |
| 242 | 013 | 32 | 084 | 059 | -003 | -030 |
| 255 | 012 | 31 | 080 | 057 | -005 | -029 |
| 269 | 012 | 30 | 086 | 051 | -002 | -026 |
| 283 | 011 | 29 | 085 | 043 | -002 | -022 |
| 299 | 010 | 28 | 073 | 033 | -005 | -016 |
| 315 | 010 | 27 | 097 | 016 | +001 | -008 |
| 331 | 010 | 26 | 189 | 012 | +006 | +001 |
| 348 | 009 | 25 | 262 | 014 | +001 | +007 |
| 367 | 009 | 24 | 277 | 016 | -001 | +008 |
| 386 | 009 | 23 | 288 | 012 | -002 | +006 |
| 406 | 008 | 22 | 315 | 008 | -003 | +003 |
| 428 | 008 | 21 | 297 | 004 | -001 | +002 |
| 449 | 007 | 20 | 262 | 014 | +001 | +007 |
| 474 | 007 | 19 | 281 | 020 | -002 | +010 |
| 499 | 007 | 18 | 301 | 011 | -003 | +005 |

ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M$^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|

RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1005.5 | 0004 | 100 | 004 | +000 | -002 | 73 | +28.3 |
| 0804.0 | 0200 | 149 | 010 | +004 | -003 | 50 | +15.6 |
| 0631.0 | 0400 | 061 | 011 | -003 | -005 | 61 | +04.5 |
| 0491.0 | 0600 | 091 | 018 | +000 | -009 | 46 | -07.0 |
| 0377.0 | 0800 | 113 | 008 | +002 | -004 | | -20.1 |
| 0285.4 | 1000 | 078 | 027 | -003 | -014 | | -34.9 |
| 0211.8 | 1200 | 090 | 036 | -000 | -019 | | -52.2 |
| 0154.0 | 1400 | 142 | 030 | +012 | -010 | | -67.8 |
| 0108.9 | 1600 | 093 | 020 | +001 | -010 | | -84.7 |
| 0076.9 | 1800 | 308 | 006 | -002 | +002 | | -76.4 |
| 0054.8 | 2000 | 248 | 016 | +003 | +008 | | -68.5 |
| 0039.5 | 2200 | 342 | 010 | -005 | +002 | | -58.4 |
| 0028.7 | 2400 | 272 | 010 | -000 | +005 | | -53.3 |
| 0021.2 | 2600 | 220 | 015 | +006 | +005 | | -56.3 |
| 0015.6 | 2800 | 075 | 034 | -005 | -017 | | -47.9 |
| 0011.4 | 3000 | 084 | 056 | -003 | -029 | | -45.0 |
| 0008.6 | 3200 | 075 | 058 | -008 | -029 | | -41.1 |
| 0006.4 | 3400 | | | | | | -36.7 |
| 0004.8 | 3600 | | | | | | -33.6 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 110 SEC. ACTUAL.. UNKNOWN
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 050 DEG. AZIMUTH 83.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 4 SECONDS 4,877 METERS ALTITUDE
MOTOR TRACK DROPPED.. 59 SECONDS 48,067 METERS ALTITUDE
PAYLOAD ACQUISITION.. 280 SECONDS 53,645 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 3,180 SECONDS 16,764 METERS ALTITUDE
APOGEE.. UNKNOWN

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. NONE
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

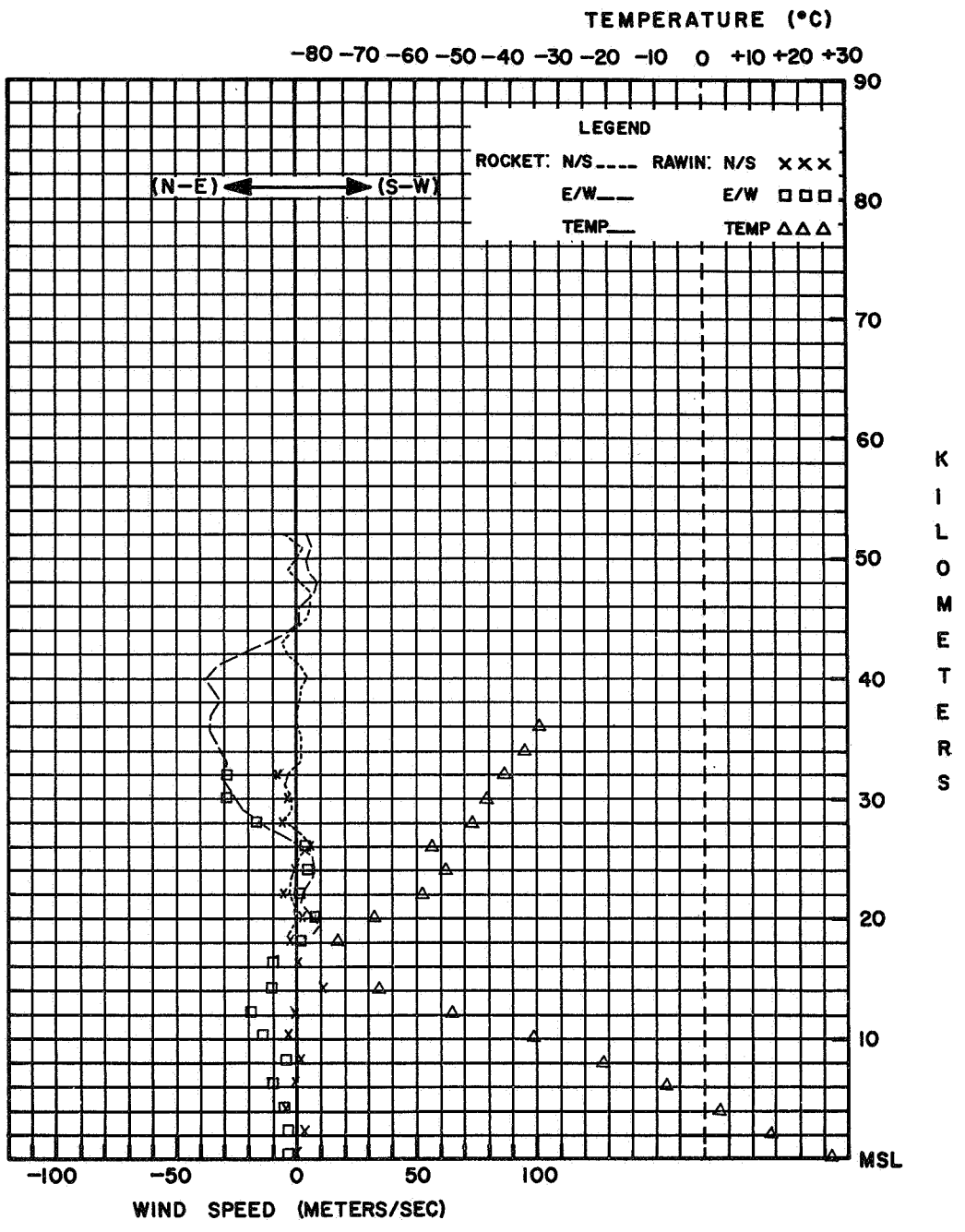
RADIOSONDE MANUFACTURER.. BENDIX
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID
GROUND EQUIPMENT TYPE.. GMD-1A
BALLOON TYPE.. KAYSAM
BALLOON SIZE.. 1,000 GRAMS
FREE LIFT.. 1,100 GRAMS
ASCENSION RATES.. SFC-400 MB = 251 M/MINUTE
400 MB-TOP = 327 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,005.5 MB
TEMPERATURE.. 28.3 DEG. C
RELATIVE HUMIDITY.. 73%
VISIBILITY.. 20 KM
SURFACE WIND.. 100 DEG. 4 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 7 OCTAS
LOW.. 2 OCTAS/CU
MIDDLE.. 5 OCTAS/AC
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

21 FT. 090 DEG/06 KTS. 29 FT. 070 DEG/08 KTS.
51 FT. 080 DEG/06 KTS. 82 FT. 080 DEG/08 KTS.
133 FT. 110 DEG/06 KTS




STATION: (CNAE) NATAL, BRAZIL
DATE: 22 MARCH 1967

ROCKET TIME: 1200 LST 1500 GCT
ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | Z | Z | Z |
| 72402 | 37°51' N 75°29' W ALT. 3 M | MARCH 22, 1967 | 1845 | 1723 |

# TABULATED DATA

## ROCKET WINDS

| TIME OF A MINUTE | FALL VEL | ALT | WIND POLAR | | WIND COMPONENTS MPS | |
|---|---|---|---|---|---|---|
| TENTHS | M/S | KM | DEG | KTS | N-S | E-W |
| 029 | 111 | 65 | 263 | 065 | +004 | +033 |
| 031 | 111 | 64 | 258 | 074 | +008 | +037 |
| 032 | 111 | 63 | 254 | 083 | +012 | +041 |
| 034 | 083 | 62 | 248 | 073 | +014 | +035 |
| 036 | 083 | 61 | 249 | 066 | +012 | +032 |
| 038 | 048 | 60 | 252 | 094 | +015 | +046 |
| 043 | 033 | 59 | 252 | 098 | +016 | +048 |
| 048 | 037 | 58 | 257 | 102 | +012 | +051 |
| 052 | 037 | 57 | 257 | 108 | +012 | +054 |
| 057 | 042 | 56 | 256 | 108 | +013 | +054 |
| 060 | 037 | 55 | 254 | 115 | +016 | +057 |
| 066 | 030 | 54 | 253 | 112 | +017 | +055 |
| 071 | 033 | 53 | 249 | 102 | +019 | +049 |
| 076 | 030 | 52 | 249 | 087 | +016 | +042 |
| 082 | 028 | 51 | 256 | 090 | +011 | +045 |
| 088 | 024 | 50 | 265 | 103 | +005 | +053 |
| 096 | 024 | 49 | 261 | 106 | +009 | +054 |
| 102 | 024 | 48 | 253 | 101 | +015 | +050 |
| 110 | 021 | 47 | 249 | 100 | +018 | +048 |
| 118 | 022 | 46 | 248 | 094 | +018 | +045 |
| 125 | 022 | 45 | 248 | 090 | +017 | +043 |
| 133 | 020 | 44 | 256 | 096 | +012 | +048 |
| 142 | 020 | 43 | 258 | 095 | +010 | +048 |
| 150 | 019 | 42 | 261 | 079 | +006 | +040 |
| 160 | 017 | 41 | 260 | 081 | +007 | +041 |
| 170 | 017 | 40 | 253 | 075 | +011 | +037 |
| 180 | 017 | 39 | 261 | 059 | +005 | +030 |
| 190 | 017 | 38 | 274 | 060 | -002 | +031 |
| 200 | 015 | 37 | 272 | 066 | -001 | +034 |
| 212 | 014 | 36 | 265 | 062 | +003 | +032 |
| 223 | 014 | 35 | 266 | 058 | +002 | +030 |
| 235 | 014 | 34 | 264 | 055 | +003 | +028 |
| 247 | 013 | 33 | 261 | 051 | +004 | +026 |
| 260 | 013 | 32 | 260 | 043 | +004 | +022 |
| 273 | 012 | 31 | 255 | 038 | +005 | +019 |
| 288 | 011 | 30 | 254 | 028 | +004 | +014 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1020.1 | 0000 | 325 | 015 | -006 | +004 | 55 | +06.9 |
| 0793.0 | 0200 | 322 | 029 | -012 | +009 | 49 | -09.7 |
| 0614.0 | 0400 | 286 | 057 | -008 | +028 | 25 | -26.1 |
| 0470.0 | 0600 | 282 | 060 | -006 | +030 | | -42.7 |
| 0352.0 | 0800 | 277 | 074 | -005 | +038 | | -51.0 |
| 0261.0 | 1000 | 263 | 062 | +004 | +032 | | -51.0 |
| 0192.0 | 1200 | 263 | 048 | +003 | +025 | | -51.2 |
| 0142.0 | 1400 | 253 | 038 | +006 | +019 | | -53.0 |
| 0103.0 | 1600 | 279 | 037 | -003 | +019 | | -58.5 |
| 0076.0 | 1800 | 242 | 029 | +007 | +013 | | -57.8 |
| 0055.5 | 2000 | 240 | 012 | +003 | +005 | | -56.3 |
| 0040.4 | 2200 | 250 | 010 | +002 | +005 | | -54.9 |
| 0025.7 | 2400 | 191 | 008 | +004 | +001 | | -53.4 |
| 0022.2 | 2600 | 245 | 014 | +003 | +007 | | -51.8 |
| 0016.2 | 2800 | 261 | 018 | +001 | +009 | | -48.7 |
| 0012.0 | 3000 | 253 | 027 | +004 | +013 | | -44.8 |
| 0008.9 | 3200 | 258 | 036 | +004 | +018 | | -39.6 |
| 0006.6 | 3400 | 266 | 052 | +002 | +027 | | -34.0 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 90 SEC. ACTUAL.. 101 SEC.
TYPE OF LAUNCHER.. 12 FT. TUBULAR
LAUNCHER SETTING.. 140 DEG. AZIMUTH 80.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 8,686 METERS ALTITUDE
MOTOR TRACK DROPPED.. 101 SECONDS 70,134 METERS ALTITUDE
PAYLOAD ACQUISITION.. 101 SECONDS 70,134 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 1,800 SECONDS 28,960 METERS ALTITUDE
APOGEE.. 112 SECONDS 71,570 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. FPS-16
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

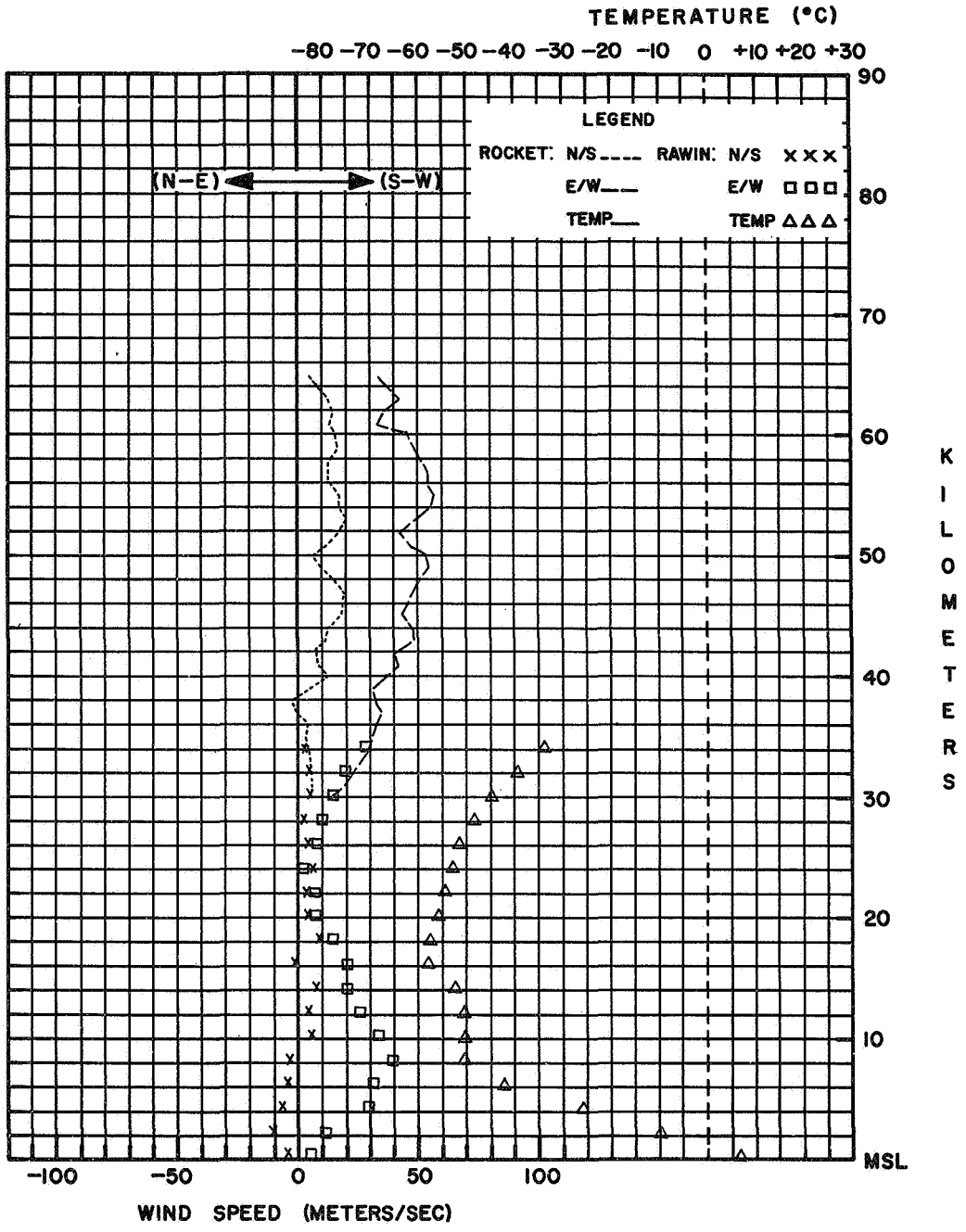
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 290 M/MINUTE
400 MB-TOP = 386 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,020.1 MB
TEMPERATURE.. 6.9 DEG. C
RELATIVE HUMIDITY.. 55%
VISIBILITY.. 12 KM
SURFACE WIND.. 325 DEG. 15 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 7 OCTAS
LOW.. 7 OCTAS/CU
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 315 DEG/21 KTS, 50 FT. 298 DEG/19 KTS,
100 FT. 307 DEG/20 KTS, 150 FT. 304 DEG/22 KTS,
200 FT. 304 DEG/22 KTS, 250 FT. 299 DEG/23 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA
DATE: 22 MARCH 1967

ROCKET TIME: 1345 LST 1845 GCT
ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (CNAE) NATAL, BRAZIL | Z | Z | Z |
| 82599 | 5°55' S 35°10' W ALT. 43 M | MARCH 29, 1967 | 1627 | 1333 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 021 | 099 | 66 | 245 | 101 | +022 | +047 |
| 022 | 083 | 65 | 258 | 087 | +009 | +044 |
| 025 | 067 | 64 | 276 | 086 | -005 | +044 |
| 027 | 067 | 63 | 269 | 111 | +001 | +057 |
| 030 | 067 | 62 | 262 | 104 | +007 | +053 |
| 032 | 056 | 61 | 275 | 096 | -004 | +049 |
| 036 | 048 | 60 | 285 | 083 | -011 | +041 |
| 039 | 048 | 59 | 269 | 078 | +001 | +040 |
| 043 | 042 | 58 | 269 | 076 | +001 | +039 |
| 047 | 037 | 57 | 267 | 072 | +002 | +037 |
| 052 | 037 | 56 | 276 | 072 | -004 | +037 |
| 056 | 037 | 55 | 275 | 074 | -003 | +038 |
| 061 | 030 | 54 | 268 | 066 | +001 | +034 |
| 067 | 030 | 53 | 258 | 058 | +006 | +029 |
| 072 | 028 | 52 | 265 | 043 | +002 | +022 |
| 079 | 028 | 51 | 290 | 023 | -004 | +011 |
| 084 | 026 | 50 | 288 | 025 | -004 | +012 |
| 092 | 021 | 49 | 282 | 028 | -003 | +014 |
| 100 | 022 | 48 | 281 | 030 | -003 | +015 |
| 107 | 024 | 47 | 275 | 041 | -002 | +021 |
| 114 | 022 | 46 | 262 | 041 | +003 | +021 |
| 122 | 020 | 45 | 240 | 038 | +010 | +017 |
| 131 | 020 | 44 | 238 | 037 | +010 | +016 |
| 139 | 020 | 43 | 261 | 012 | +001 | +006 |
| 148 | 019 | 42 | 063 | 022 | -005 | -010 |
| 157 | 018 | 41 | 084 | 053 | -003 | -027 |
| 167 | 017 | 40 | 081 | 063 | -005 | -032 |
| 177 | 016 | 39 | 079 | 059 | -006 | -030 |
| 188 | 016 | 38 | 086 | 053 | -002 | -027 |
| 198 | 015 | 37 | 090 | 062 | +000 | -032 |
| 210 | 014 | 36 | 094 | 062 | +002 | -032 |
| 222 | 014 | 35 | 097 | 061 | +004 | -031 |
| 233 | 014 | 34 | 106 | 057 | +008 | -028 |
| 246 | 013 | 33 | 107 | 055 | +008 | -027 |
| 258 | 013 | 32 | 098 | 053 | +004 | -027 |
| 272 | 012 | 31 | 088 | 053 | -001 | -027 |
| 285 | 012 | 30 | 086 | 051 | -002 | -026 |
| 299 | 011 | 29 | 079 | 040 | -004 | -020 |
| 315 | 011 | 28 | 063 | 026 | -006 | -012 |
| 330 | 010 | 27 | 050 | 015 | -005 | -006 |
| 348 | 010 | 26 | 027 | 009 | -004 | -002 |
| 365 | 010 | 25 | 333 | 004 | -002 | +001 |
| 382 | 009 | 24 | 259 | 010 | +001 | +005 |
| 402 | 008 | 23 | 252 | 012 | +002 | +006 |
| 423 | 008 | 22 | 256 | 008 | +001 | +004 |
| 444 | 008 | 21 | 281 | 010 | -001 | +005 |
| 467 | 007 | 20 | 276 | 018 | -001 | +009 |
| 491 | 007 | 19 | 270 | 017 | +000 | +009 |
| 513 | 007 | 18 | 270 | 008 | +000 | +004 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1004.7 | 0004 | 060 | 009 | -002 | -004 | 72 | +29.4 |
| 0802.0 | 0200 | 190 | 003 | +002 | +000 | 78 | +13.7 |
| 0629.0 | 0400 | 100 | 011 | +001 | -006 | 67 | +03.6 |
| 0490.0 | 0600 | 050 | 007 | -002 | -003 | 53 | -07.4 |
| 0376.0 | 0800 | 080 | 011 | -001 | -006 | 35 | -21.3 |
| 0285.5 | 1000 | 100 | 016 | +001 | -008 | | -36.7 |
| 0210.8 | 1200 | 060 | 014 | -004 | -006 | | -53.3 |
| 0152.8 | 1400 | 260 | 005 | +000 | +003 | | -68.9 |
| 0108.5 | 1600 | 300 | 006 | -002 | +003 | | -82.4 |
| 0076.0 | 1800 | 240 | 013 | +003 | +006 | | -78.0 |
| 0054.2 | 2000 | 270 | 016 | +000 | +008 | | -69.2 |
| 0039.0 | 2200 | 250 | 017 | +003 | +008 | | -58.8 |
| 0028.4 | 2400 | 210 | 011 | +005 | +003 | | -55.8 |
| 0020.7 | 2600 | 110 | 007 | +001 | -003 | | -56.2 |
| 0015.3 | 2800 | 080 | 029 | -003 | -015 | | -46.7 |
| 0011.1 | 3000 | 060 | 033 | -008 | -015 | | -46.7 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 110 SEC. ACTUAL.. 90 SEC.
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 030 DEG. AZIMUTH 83.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 5 SECONDS 4,359 METERS ALTITUDE
MOTOR TRACK DROPPED.. 59 SECONDS 49,256 METERS ALTITUDE
PAYLOAD ACQUISITION.. 100 SECONDS 66,752 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 3,270 SECONDS 16,764 METERS ALTITUDE
APOGEE.. 108 SECONDS 66,965 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. NONE
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

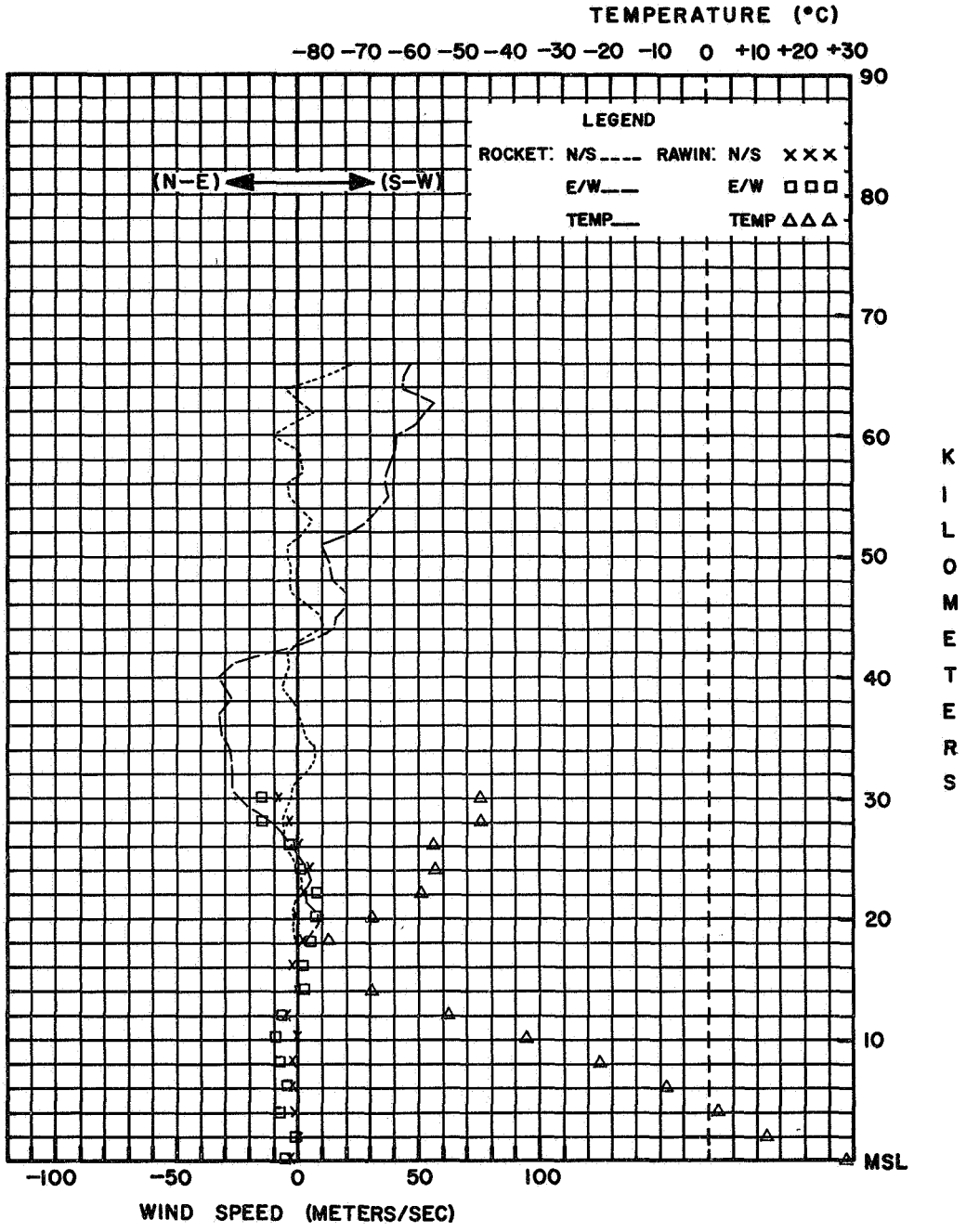
RADIOSONDE MANUFACTURER.. BENDIX
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID
GROUND EQUIPMENT TYPE.. GMD-1A
BALLOON TYPE.. KAYSAM
BALLOON SIZE.. 1,000 GRAMS
FREE LIFT.. 1,100 GRAMS
ASCENSION RATES.. SFC-400 MB = 254 M/MINUTE
400 MB-TOP = 325 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,004.7 MB
TEMPERATURE.. 29.4 DEG. C
RELATIVE HUMIDITY.. 72%
VISIBILITY.. 20 KM
SURFACE WIND.. 070 DEG. 8 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 4 OCTAS
LOW.. 4 OCTAS/CU
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

21 FT. 080 DEG/06 KTS. 29 FT. 060 DEG/08 KTS,
51 FT. 070 DEG/08 KTS. 82 FT. 060 DEG/08 KTS,
133 FT. 070 DEG/08 KTS




STATION: (CNAE) NATAL, BRAZIL
DATE: 29 MARCH 1967

ROCKET TIME: 1327 LST 1627 GCT
ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | | | |
| 72402 | 37°51' N 75°29' W ALT. 3 M | MARCH 29, 1967 | 1952 | 1715 |

# TABULATED DATA

ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 029 | 099 | 63 | 249 | 083 | +015 | +040 |
| 030 | 083 | 62 | 256 | 088 | +011 | +044 |
| 033 | 067 | 61 | 255 | 084 | +011 | +042 |
| 035 | 067 | 60 | 249 | 075 | +014 | +036 |
| 038 | 042 | 59 | 246 | 081 | +017 | +038 |
| 043 | 037 | 58 | 257 | 078 | +009 | +039 |
| 047 | 037 | 57 | 284 | 072 | -009 | +036 |
| 052 | 037 | 56 | 291 | 081 | -015 | +039 |
| 056 | 037 | 55 | 284 | 082 | -010 | +041 |
| 061 | 033 | 54 | 273 | 074 | -002 | +038 |
| 066 | 030 | 53 | 263 | 076 | +005 | +039 |
| 072 | 028 | 52 | 246 | 087 | +018 | +041 |
| 078 | 028 | 51 | 237 | 093 | +026 | +040 |
| 084 | 028 | 50 | 242 | 090 | +022 | +041 |
| 090 | 026 | 49 | 252 | 082 | +013 | +040 |
| 097 | 022 | 48 | 263 | 076 | +005 | +039 |
| 105 | 021 | 47 | 274 | 080 | -003 | +041 |
| 113 | 022 | 46 | 279 | 090 | -007 | +046 |
| 120 | 022 | 45 | 272 | 090 | -002 | +046 |
| 128 | 021 | 44 | 265 | 088 | +004 | +045 |
| 136 | 021 | 43 | 260 | 089 | +008 | +045 |
| 144 | 019 | 42 | 259 | 083 | +008 | +042 |
| 154 | 018 | 41 | 258 | 077 | +008 | +039 |
| 163 | 018 | 40 | 258 | 074 | +008 | +037 |
| 173 | 017 | 39 | 263 | 068 | +004 | +035 |
| 183 | 017 | 38 | 267 | 064 | +002 | +033 |
| 193 | 016 | 37 | 270 | 060 | +000 | +031 |
| 204 | 015 | 36 | 264 | 057 | +003 | +029 |
| 215 | 014 | 35 | 260 | 053 | +005 | +027 |
| 228 | 014 | 34 | 261 | 051 | +004 | +026 |
| 238 | 014 | 33 | 261 | 047 | +004 | +024 |

ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|

RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1021.0 | 0000 | 350 | 010 | -005 | +001 | 96 | +09.4 |
| 0800.0 | 0200 | 315 | 017 | -006 | +006 | 52 | +03.2 |
| 0621.0 | 0400 | 275 | 023 | -001 | +012 | 33 | -07.2 |
| 0477.0 | 0600 | 281 | 023 | -002 | +012 | 23 | -21.3 |
| 0362.0 | 0800 | 279 | 033 | -003 | +017 | 23 | -36.5 |
| 0267.0 | 1000 | 272 | 040 | -001 | +021 | | -52.3 |
| 0195.0 | 1200 | 287 | 027 | -004 | +013 | | -57.8 |
| 0143.0 | 1400 | 316 | 023 | -009 | +008 | | -57.2 |
| 0105.0 | 1600 | 310 | 011 | -004 | +004 | | -59.0 |
| 0076.0 | 1800 | 312 | 010 | -003 | +004 | | -58.4 |
| 0055.5 | 2000 | 021 | 004 | -002 | -001 | | -57.5 |
| 0040.7 | 2200 | 261 | 005 | +000 | +003 | | -54.8 |
| 0029.8 | 2400 | 177 | 005 | +003 | -000 | | -52.0 |
| 0022.0 | 2600 | 196 | 011 | +005 | +002 | | -49.2 |
| 0016.4 | 2800 | 240 | 019 | +005 | +008 | | -44.8 |
| 0012.3 | 3000 | 249 | 023 | +004 | +011 | | -39.9 |
| 0009.1 | 3200 | 258 | 037 | +004 | +019 | | -36.0 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 90 SEC. ACTUAL.. 98 SEC.
TYPE OF LAUNCHER.. 12 FT. TUBULAR
LAUNCHER SETTING.. 130 DEG. AZIMUTH 80.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 7 SECONDS 7,380 METERS ALTITUDE
MOTOR TRACK DROPPED.. 98 SECONDS 67,120 METERS ALTITUDE
PAYLOAD ACQUISITION.. 98 SECONDS 67,120 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 1,500 SECONDS 32,060 METERS ALTITUDE
APOGEE.. 110 SECONDS 68,460 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. MPS-19
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

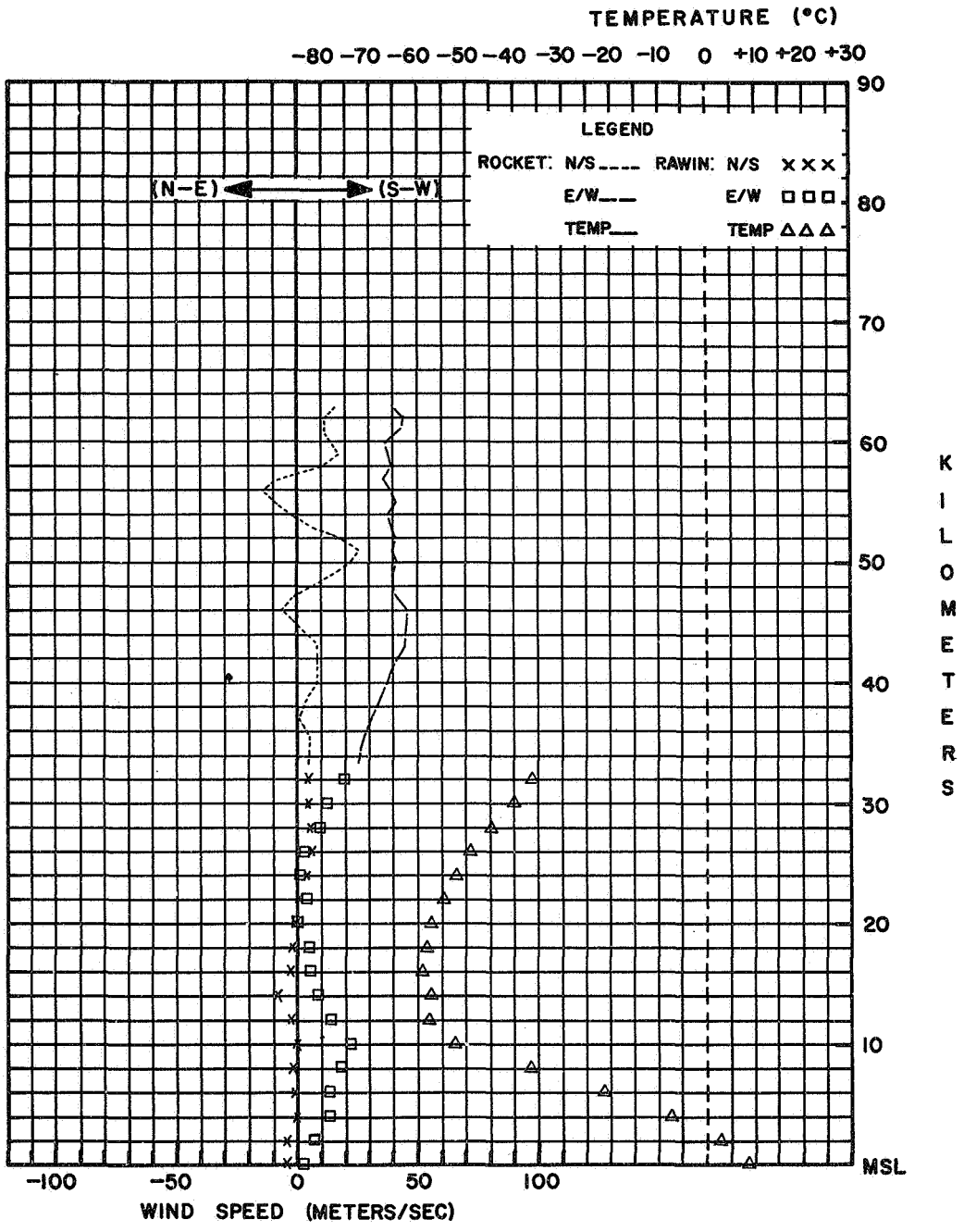
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 289 M/MINUTE
400 MB-TOP = 423 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,021.0 MB
TEMPERATURE.. 9.4 DEG. C
RELATIVE HUMIDITY.. 94%
VISIBILITY..12 KM
SURFACE WIND.. 350 DEG. 10 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 8 OCTAS
LOW.. 8 OCTAS/ST
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 360 DEG/12 KTS, 50 FT. 359 DEG/9 KTS,
100 FT. 009 DEG/11 KTS, 150 FT. 001 DEG/12 KTS,
200 FT. 359 DEG/13 KTS, 250 FT. 356 DEG/14 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA
**DATE:** 29 MARCH 1967

**ROCKET TIME:** 1452 LST 1952 GCT
**ROCKET MOTOR TYPE:** JUDI

**PAYLOAD TYPE:** CHAFF
**RADIOSONDE TYPE:** 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | | | |
| 72402 | 37°51' N 75°29' W ALT. 3 M | APRIL 6, 1967 | 2143 | 2315 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 026 | 139 | 60 | 286 | 142 | -020 | +070 |
| 027 | 111 | 59 | 281 | 127 | -013 | +064 |
| 029 | 083 | 58 | 272 | 101 | -002 | +052 |
| 031 | 111 | 57 | 265 | 090 | +004 | +046 |
| 032 | 111 | 56 | 260 | 087 | +008 | +044 |
| 034 | 083 | 55 | 243 | 087 | +020 | +040 |
| 036 | 083 | 54 | 236 | 073 | +021 | +031 |
| 038 | 067 | 53 | 249 | 054 | +010 | +026 |
| 041 | 067 | 52 | 257 | 062 | +007 | +031 |
| 043 | 067 | 51 | 267 | 076 | +002 | +039 |
| 046 | 067 | 50 | 273 | 076 | -002 | +039 |
| 048 | 056 | 49 | 267 | 078 | +002 | +040 |
| 052 | 048 | 48 | 267 | 074 | +002 | +038 |
| 055 | 056 | 47 | 271 | 076 | -001 | +039 |
| 058 | 048 | 46 | 277 | 078 | -005 | +040 |
| 062 | 042 | 45 | 287 | 087 | -013 | +043 |
| 066 | 042 | 44 | 285 | 099 | -013 | +049 |
| 070 | 037 | 43 | 282 | 107 | -011 | +054 |
| 075 | 033 | 42 | 276 | 104 | -006 | +053 |
| 080 | 033 | 41 | 266 | 092 | +003 | +047 |
| 085 | 033 | 40 | 256 | 090 | +011 | +045 |
| 090 | 028 | 39 | 250 | 085 | +015 | +041 |
| 097 | 026 | 38 | 250 | 068 | +012 | +033 |
| 103 | 026 | 37 | 268 | 066 | +001 | +034 |
| 110 | 022 | 36 | 277 | 078 | -005 | +040 |
| 118 | 021 | 35 | 273 | 076 | -002 | +039 |
| 126 | 020 | 34 | 270 | 072 | +000 | +037 |
| 135 | 018 | 33 | 270 | 064 | +000 | +033 |
| 145 | 017 | 32 | 266 | 055 | +002 | +028 |
| 155 | 017 | 31 | 265 | 047 | +002 | +024 |
| 165 | 015 | 30 | 267 | 043 | +001 | +022 |
| 177 | 013 | 29 | 270 | 041 | +000 | +021 |
| 190 | 012 | 28 | 270 | 029 | +000 | +015 |
| 204 | 011 | 27 | 260 | 022 | +002 | +011 |
| 220 | 010 | 26 | 257 | 018 | +002 | +009 |
| 238 | 010 | 25 | 286 | 014 | -002 | +007 |
| 254 | 010 | 24 | 284 | 008 | -001 | +004 |
| 273 | 008 | 23 | 304 | 007 | -002 | +003 |
| 295 | 008 | 22 | 329 | 011 | -005 | +003 |
| 317 | 007 | 21 | 329 | 011 | -005 | +003 |
| 345 | 006 | 20 | 315 | 011 | -004 | +004 |
| 373 | 005 | 19 | 323 | 010 | -004 | +003 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 5447 | -09.6 | 00.479 | 00.633 | 325 | 239 | 079 | +021 | +035 |
| 5212 | -05.1 | 00.645 | 00.838 | 328 | 257 | 060 | +007 | +030 |
| 5090 | -07.2 | 00.752 | 00.984 | 327 | 267 | 076 | +002 | +039 |
| 5038 | -07.4 | 00.803 | 01.052 | 327 | 270 | 076 | -000 | +039 |
| 4816 | -02.8 | 01.061 | 01.367 | 330 | 267 | 074 | +002 | +038 |
| 4511 | +01.3 | 01.546 | 01.963 | 332 | 286 | 087 | -012 | +043 |
| 4420 | -04.7 | 01.731 | 02.246 | 328 | 285 | 097 | -013 | +048 |
| 4246 | -06.7 | 02.155 | 02.818 | 327 | 279 | 104 | -008 | +053 |
| 4154 | -12.3 | 02.425 | 03.238 | 324 | 272 | 097 | -002 | +050 |
| 4069 | -16.7 | 02.709 | 03.680 | 321 | 264 | 090 | +005 | +046 |
| 3901 | -15.0 | 03.376 | 04.556 | 322 | 250 | 085 | +015 | +041 |
| 3749 | -25.0 | 04.135 | 05.805 | 316 | 260 | 067 | +006 | +034 |
| 3487 | -30.6 | 05.931 | 08.519 | 312 | 273 | 076 | -002 | +039 |
| 3280 | -31.5 | 07.919 | 11.416 | 312 | 270 | 062 | +000 | +032 |
| 3170 | -36.0 | 09.250 | 13.588 | 309 | 266 | 053 | +002 | +027 |
| 3018 | -42.3 | 11.524 | 17.390 | 305 | 267 | 043 | +001 | +022 |
| 2865 | -47.3 | 14.457 | 22.300 | 301 | 270 | 037 | +000 | +019 |
| 2743 | -49.7 | 17.376 | 27.091 | 300 | 266 | 025 | +001 | +013 |
| 2673 | -49.6 | 19.321 | 30.109 | 300 | 259 | 020 | +002 | +010 |
| 2573 | -52.0 | 22.502 | 35.446 | 298 | 263 | 016 | +001 | +008 |
| 2429 | -52.3 | 28.063 | 44.267 | 298 | 281 | 010 | -001 | +005 |
| 2195 | -56.7 | 40.344 | 64.932 | 295 | 329 | 011 | -005 | +003 |
| 2118 | -57.0 | 45.524 | 73.371 | 295 | 329 | 011 | -005 | +003 |
| 2060 | -60.5 | 49.902 | 81.750 | 292 | 329 | 011 | -005 | +003 |
| 2000 | -56.6 | 54.870 | 88.271 | 295 | 315 | 011 | -004 | +004 |
| 1951 | -59.7 | 59.285 | 96.757 | 293 | 315 | 011 | -004 | +004 |
| 1832 | -61.5 | 71.700 | | 292 | | | | |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 2052 | -60.4 | 50.000 | 81.881 | 292 | 329 | 011 | -005 | +003 |
| 2383 | -53.0 | 30.000 | 47.471 | 297 | 284 | 008 | -001 | +004 |
| 2641 | -50.1 | 20.000 | 31.238 | 299 | 259 | 020 | +002 | +010 |
| 3105 | -38.1 | 10.000 | 14.820 | 307 | 265 | 049 | +002 | +025 |
| 3358 | -31.1 | 07.000 | 10.074 | 312 | 270 | 070 | +000 | +036 |
| 3603 | -27.7 | 05.000 | 07.096 | 314 | 276 | 076 | -004 | +039 |
| 4281 | -06.0 | 02.000 | 02.608 | 328 | 282 | 107 | -011 | +054 |
| 4831 | -03.9 | 01.000 | 01.294 | 329 | 267 | 076 | +002 | +039 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1008.0 | 0000 | 180 | 010 | +005 | -000 | 90 | +11.4 |
| 0797.0 | 0200 | 000 | 000 | +000 | +000 | 48 | +10.2 |
| 0624.0 | 0400 | 286 | 038 | -005 | +019 | 82 | -02.8 |
| 0482.0 | 0600 | 281 | 066 | -006 | +033 | 65 | -17.3 |
| 0367.0 | 0800 | 284 | 069 | -009 | +034 | 45 | -30.6 |
| 0274.0 | 1000 | 289 | 083 | -014 | +040 | | -46.0 |
| 0200.0 | 1200 | 293 | 077 | -015 | +036 | | -63.2 |
| 0144.0 | 1400 | 293 | 046 | -009 | +022 | | -65.3 |
| 0104.0 | 1600 | 295 | 040 | -009 | +019 | | -64.5 |
| 0075.0 | 1800 | 332 | 019 | -009 | +005 | | -62.8 |
| 0054.0 | 2000 | 320 | 010 | -004 | +003 | | -60.7 |
| 0039.5 | 2200 | 324 | 016 | -007 | +005 | | -58.6 |
| 0028.5 | 2400 | 283 | 008 | -001 | +004 | | -56.4 |
| 0021.3 | 2600 | 278 | 019 | -001 | +010 | | -54.3 |
| 0015.6 | 2800 | 273 | 031 | -001 | +016 | | -50.5 |
| 0011.6 | 3000 | 273 | 037 | -001 | +019 | | -45.7 |
| 0008.6 | 3200 | 273 | 054 | -001 | +028 | | -41.7 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. FAIR
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 129 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 090.0 DEG. AZIMUTH 74.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 13 SECONDS 3,050 METERS ALTITUDE
MOTOR TRACK DROPPED.. 129 SECONDS 61,480 METERS ALTITUDE
PAYLOAD ACQUISITION.. 129 SECONDS 61,480 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,340 SECONDS 18,320 METERS ALTITUDE
APOGEE.. 129 SECONDS 61,480 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 16 FT. DIAMETER DISC-GAP-BAND PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1,688 MHZ
TELEMETRY QUALITY.. FAIR
TELEMETRY DATA RECEIVED FROM.. 210 SEC. 54,559 METERS ALTITUDE
TO 2,340 SEC. 18,320 METERS ALTITUDE

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 71.7 MB
ALTITUDE 18,320 METERS
TEMPERATURE -62.5 DEG. C

RADIOSONDE AND BALLOON DATA

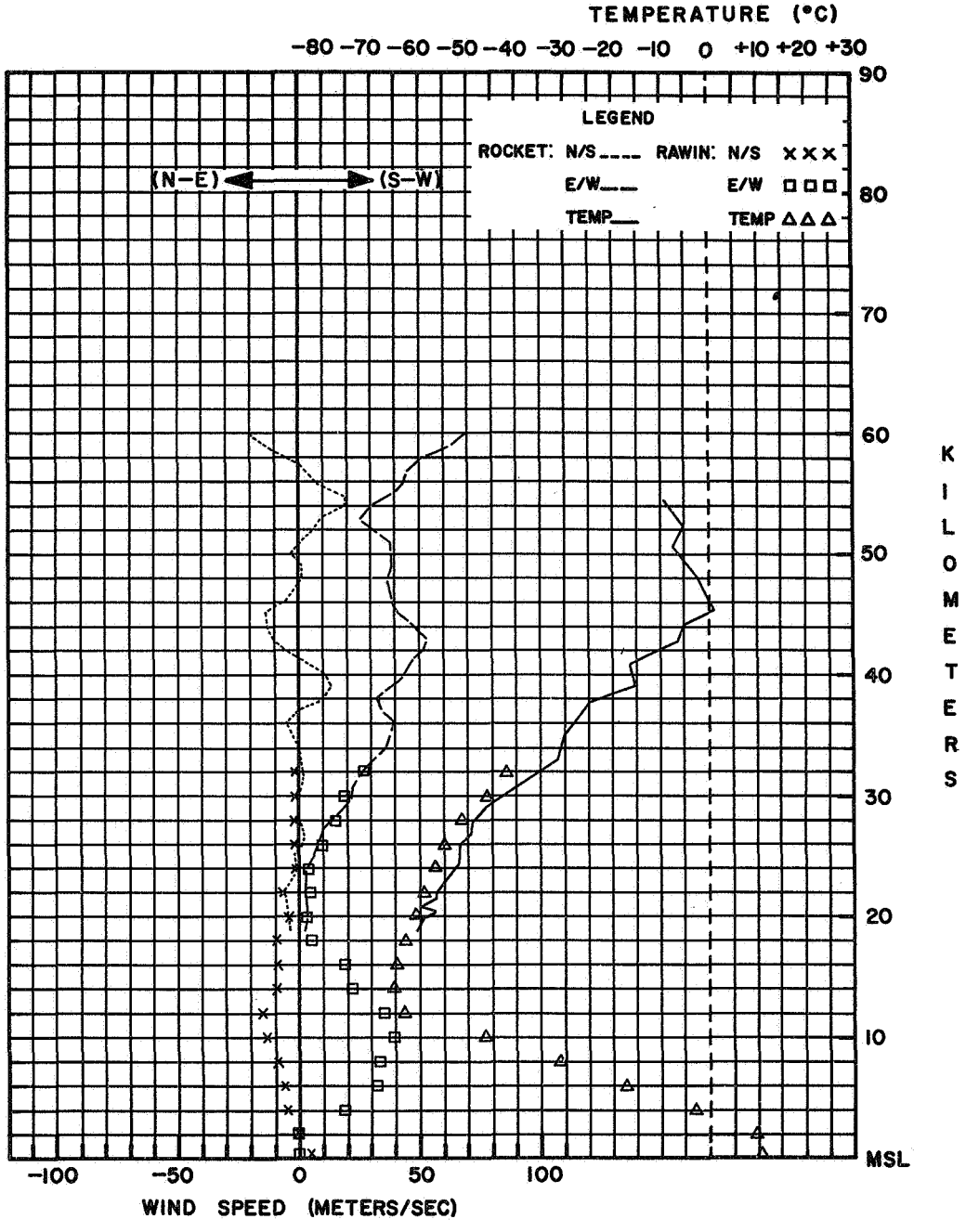
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 305 M/MINUTE
400 MB-TOP = 394 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,008.0 MB
TEMPERATURE.. 11.4 DEG. C
RELATIVE HUMIDITY.. 90%
VISIBILITY.. 12 KM
SURFACE WIND.. 180 DEG. 10 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 8 OCTAS
LOW..NONE
MIDDLE.. 3 OCTAS/AC
HIGH.. 8 OCTAS/CS
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 234 DEG/12 KTS, 50 FT. 220 DEG/07 KTS,
100 FT. 233 DEG/09 KTS, 150 FT. 236 DEG/10 KTS,
200 FT. 236 DEG/10 KTS, 250 FT. 239 DEG/10 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA **ROCKET TIME:** 1643 LST 2143 GCT **PAYLOAD TYPE:** ARCASONDE 1A

**DATE:** 6 APRIL, 1967 **ROCKET MOTOR TYPE:** ARCAS **RADIOSONDE TYPE:** 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (CNIE) CHAMICAL, ARGENTINA | | | |
| 87320 | 30°22' S 66°17' W ALT. 457 M | APRIL 12, 1967 | 1445 | 1221 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 023 | 167 | 69 | 220 | 112 | +044 | +037 |
| 024 | 167 | 68 | 224 | 087 | +032 | +031 |
| 025 | 167 | 67 | 237 | 060 | +017 | +026 |
| 026 | 111 | 66 | 259 | 051 | +005 | +026 |
| 028 | 083 | 65 | 270 | 049 | +000 | +025 |
| 030 | 111 | 64 | 268 | 058 | +001 | +030 |
| 031 | 111 | 63 | 278 | 088 | -006 | +045 |
| 033 | 067 | 62 | 300 | 098 | -025 | +044 |
| 036 | 067 | 61 | 295 | 064 | -014 | +030 |
| 038 | 083 | 60 | 263 | 065 | +004 | +033 |
| 040 | 067 | 59 | 270 | 078 | +000 | +040 |
| 043 | 056 | 58 | 265 | 072 | +003 | +037 |
| 046 | 048 | 57 | 256 | 066 | +008 | +033 |
| 050 | 048 | 56 | 259 | 061 | +006 | +031 |
| 053 | 048 | 55 | 272 | 054 | -001 | +028 |
| 057 | 037 | 54 | 265 | 041 | +002 | +021 |
| 062 | 033 | 53 | 248 | 046 | +009 | +022 |
| 067 | 033 | 52 | 270 | 049 | +000 | +025 |
| 072 | 033 | 51 | 287 | 053 | -008 | +026 |
| 077 | 030 | 50 | 295 | 051 | -011 | +024 |
| 083 | 030 | 49 | 299 | 040 | -010 | +018 |
| 088 | 030 | 48 | 281 | 040 | -004 | +020 |
| 094 | 028 | 47 | 289 | 035 | -006 | +017 |
| 100 | 026 | 46 | 297 | 026 | -006 | +012 |
| 107 | 020 | 45 | 290 | 039 | -007 | +019 |
| 117 | 019 | 44 | 302 | 037 | -010 | +016 |
| 125 | 021 | 43 | 287 | 020 | -003 | +010 |
| 133 | 021 | 42 | 238 | 025 | +007 | +011 |
| 141 | 022 | 41 | 254 | 028 | +004 | +014 |
| 148 | 026 | 40 | 249 | 027 | +005 | +013 |
| 154 | 019 | 39 | 270 | 037 | +000 | +019 |
| 166 | 018 | 38 | 270 | 043 | +000 | +022 |
| 173 | 020 | 37 | 272 | 049 | -001 | +025 |
| 183 | 017 | 36 | 275 | 049 | -002 | +025 |
| 193 | 018 | 35 | 286 | 049 | -007 | +024 |
| 202 | 019 | 34 | 299 | 044 | -011 | +020 |
| 211 | 018 | 33 | 290 | 039 | -007 | +019 |
| 221 | 015 | 32 | 287 | 033 | -005 | +016 |
| 233 | 012 | 31 | 279 | 026 | -002 | +013 |
| 249 | 012 | 30 | 288 | 025 | -004 | +012 |
| 260 | 014 | 29 | 297 | 026 | -006 | +012 |
| 273 | 014 | 28 | 281 | 020 | -002 | +010 |
| 284 | 012 | 27 | 270 | 016 | +000 | +008 |
| 301 | 011 | 26 | 301 | 011 | -003 | +005 |
| 314 | 011 | 25 | 333 | 009 | -004 | +002 |
| 330 | 010 | 24 | 018 | 006 | -003 | -001 |
| 348 | 009 | 23 | 079 | 010 | -001 | -005 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 0959.6 | 0046 | 160 | 005 | +002 | -001 | 52 | +23.3 |
| 0801.0 | 0200 | 356 | 010 | -005 | +000 | 67 | +16.0 |
| 0630.0 | 0400 | 360 | 015 | -008 | +000 | 22 | +03.4 |
| 0508.0 | 0600 | 295 | 004 | -001 | +002 | 12 | -12.0 |
| 0374.0 | 0800 | 217 | 014 | +006 | +004 | 10 | -26.5 |
| 0281.0 | 1000 | 232 | 021 | +007 | +009 | 09 | -40.0 |
| 0209.0 | 1200 | 246 | 029 | +006 | +014 | | -51.4 |
| 0152.0 | 1400 | 242 | 043 | +010 | +020 | | -61.8 |
| 0111.0 | 1600 | 261 | 049 | +004 | +025 | | -66.2 |
| 0079.5 | 1800 | 268 | 015 | +000 | +008 | | -62.8 |
| 0058.8 | 2000 | 123 | 009 | +003 | -004 | | -52.9 |
| 0042.7 | 2200 | 160 | 011 | +005 | -002 | | -50.0 |
| 0031.8 | 2400 | 136 | 005 | +002 | -002 | | -46.0 |
| 0023.9 | 2600 | 288 | 013 | -002 | +006 | | -36.2 |
| 0017.8 | 2800 | 285 | 020 | -003 | +010 | | -34.4 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 100 SEC. ACTUAL.. 97 SEC.
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 037.0 DEG. AZIMUTH 85.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 5 SECONDS 5,182 METERS ALTITUDE
MOTOR TRACK DROPPED.. 94 SECONDS 69,037 METERS ALTITUDE
PAYLOAD ACQUISITION.. 120 SECONDS 69,677 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,160 SECONDS 21,488 METERS ALTITUDE
APOGEE.. 110 SECONDS 70,439 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

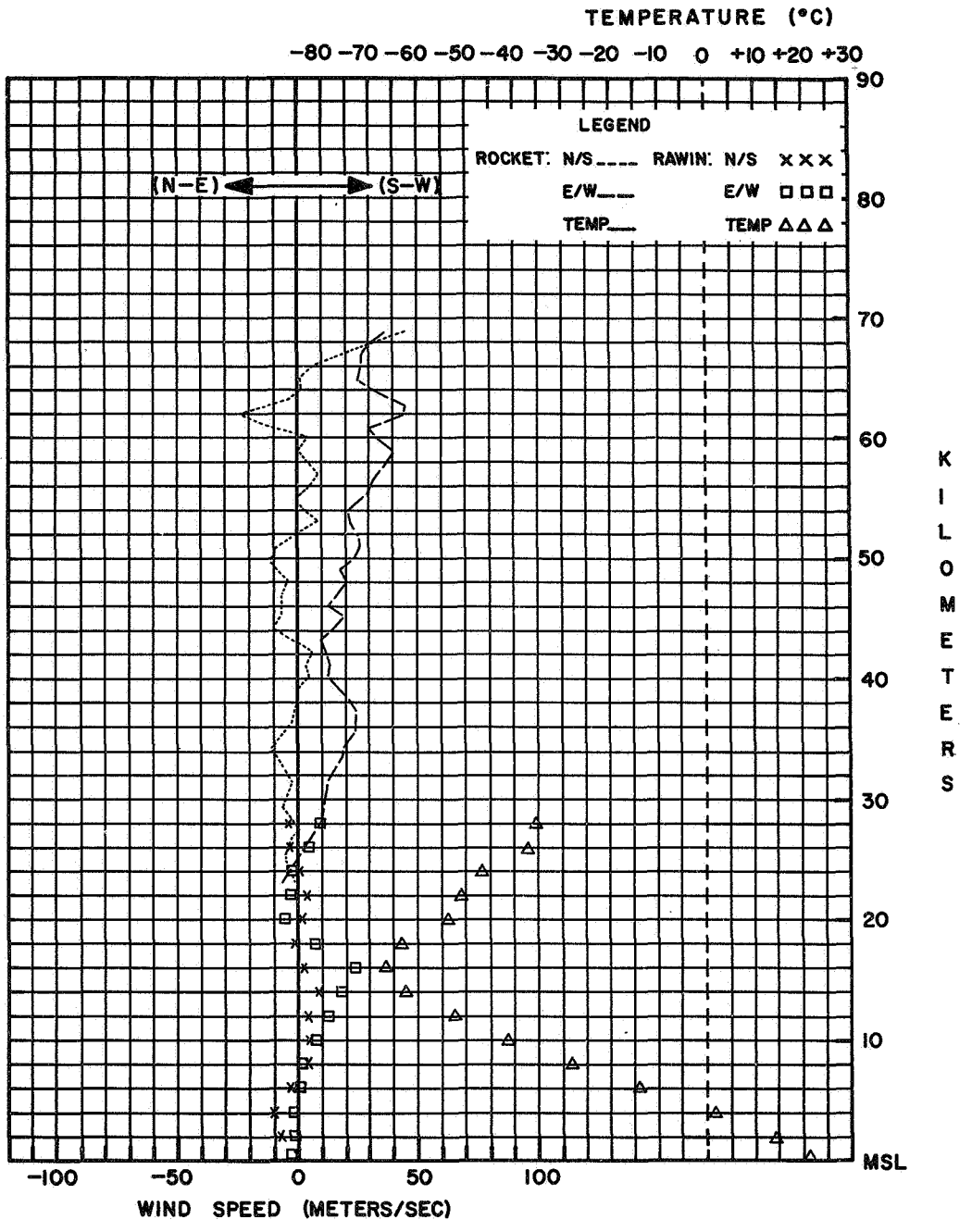
RADIOSONDE MANUFACTURER.. VAISALA
RADIOSONDE TYPE.. VAISALA
TEMPERATURE ELEMENT TYPE.. RESISTANCE WIRE
PRESSURE SENSOR TYPE.. DOUBLE ANEROID
GROUND EQUIPMENT TYPE.. VAISALA + MPS-19 RADAR
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,800 GRAMS
ASCENSION RATES.. SFC-400 MB = 299 M/MINUTE
400 MB-TOP = 381 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 959.6 MB
TEMPERATURE.. 23.3 DEG. C
RELATIVE HUMIDITY.. 52%
VISIBILITY.. 50 KM
SURFACE WIND.. 160 DEG. 5 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 0 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 060 DEG/01 KTS




STATION: (CNIE) CHAMICAL, ARGENTINA

DATE: 12 APRIL, 1967

ROCKET TIME: 1045 LST 1445 GCT

ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF

RADIOSONDE TYPE: VAISALA

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | | | |
| 72402 | 37°51' N 75°29' W ALT. 3 M | APRIL 12, 1967 | 1509 | 1846 |

# TABULATED DATA

## ROCKET WINDS

| TIME OF A MINUTE | FALL VEL TENTHS M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 027 | 083 | 56 | 255 | 054 | +007 | +027 |
| 029 | 083 | 55 | 249 | 048 | +009 | +023 |
| 031 | 083 | 54 | 252 | 037 | +006 | +018 |
| 033 | 083 | 53 | 270 | 029 | +000 | +015 |
| 035 | 083 | 52 | 295 | 045 | -010 | +021 |
| 037 | 083 | 51 | 297 | 048 | -011 | +022 |
| 039 | 067 | 50 | 288 | 039 | -006 | +019 |
| 042 | 056 | 49 | 280 | 057 | -005 | +029 |
| 045 | 067 | 48 | 268 | 070 | +001 | +036 |
| 047 | 056 | 47 | 254 | 073 | +010 | +036 |
| 051 | 048 | 46 | 253 | 073 | +011 | +036 |
| 054 | 056 | 45 | 254 | 071 | +010 | +035 |
| 057 | 048 | 44 | 246 | 070 | +015 | +033 |
| 061 | 042 | 43 | 241 | 069 | +017 | +031 |
| 065 | 042 | 42 | 243 | 055 | +013 | +025 |
| 069 | 037 | 41 | 251 | 035 | +006 | +017 |
| 074 | 033 | 40 | 273 | 033 | -001 | +017 |
| 079 | 033 | 39 | 278 | 041 | -003 | +021 |
| 084 | 030 | 38 | 275 | 047 | -002 | +024 |
| 090 | 028 | 37 | 272 | 049 | -001 | +025 |
| 096 | 026 | 36 | 267 | 039 | +001 | +020 |
| 103 | 024 | 35 | 263 | 033 | +002 | +017 |
| 110 | 022 | 34 | 270 | 025 | +000 | +013 |
| 118 | 019 | 33 | 274 | 025 | -001 | +013 |
| 128 | 017 | 32 | 270 | 023 | +000 | +012 |
| 138 | 017 | 31 | 256 | 016 | +002 | +008 |
| 148 | 016 | 30 | 243 | 009 | +002 | +004 |
| 159 | 014 | 29 | 270 | 004 | +000 | +002 |
| 172 | 012 | 28 | 214 | 007 | +003 | +002 |
| 186 | 011 | 27 | 135 | 008 | +003 | -003 |
| 203 | 010 | 26 | 068 | 010 | -002 | -005 |
| 221 | 009 | 25 | 056 | 014 | -004 | -006 |
| 242 | 007 | 24 | 059 | 011 | -003 | -005 |
| 267 | 007 | 23 | 076 | 008 | -001 | -004 |
| 292 | 006 | 22 | 056 | 007 | -002 | -003 |
| 320 | 006 | 21 | 016 | 014 | -007 | -002 |
| 350 | 006 | 20 | 349 | 020 | -010 | +002 |
| 380 | 006 | 19 | 326 | 021 | -009 | +006 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY -3 G M | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|
| 5602 | -01.0 | 00.386 | 00.494 | 331 | | | | |
| 5422 | +00.2 | 00.482 | 00.614 | 331 | 250 | 039 | +007 | +019 |
| 5304 | +04.9 | 00.556 | 00.697 | 334 | 270 | 029 | +000 | +015 |
| 5182 | +00.6 | 00.646 | 00.822 | 332 | 295 | 045 | -010 | +021 |
| 5063 | +02.3 | 00.747 | 00.945 | 333 | 293 | 044 | -009 | +021 |
| 4941 | +00.2 | 00.867 | 01.105 | 331 | 281 | 050 | -005 | +025 |
| 4825 | +02.3 | 01.000 | 01.265 | 333 | 272 | 066 | -001 | +034 |
| 4724 | -01.1 | 01.132 | 01.450 | 331 | 257 | 072 | +008 | +036 |
| 4691 | -01.5 | 01.179 | 01.512 | 330 | 254 | 073 | +010 | +036 |
| 4529 | -10.5 | 01.446 | 01.919 | 325 | 254 | 071 | +010 | +035 |
| 4374 | -08.5 | 01.763 | 02.321 | 326 | 243 | 070 | +016 | +032 |
| 4252 | -11.6 | 02.062 | 02.746 | 324 | 242 | 062 | +015 | +028 |
| 4206 | -15.0 | 02.188 | 02.953 | 322 | 243 | 055 | +013 | +025 |
| 4133 | -17.6 | 02.408 | 03.283 | 320 | 248 | 042 | +008 | +020 |
| 4002 | -23.8 | 02.869 | 04.009 | 317 | 273 | 033 | -001 | +017 |
| 3965 | -22.7 | 03.016 | 04.195 | 317 | 276 | 035 | -002 | +018 |
| 3895 | -24.8 | 03.316 | 04.651 | 316 | 278 | 041 | -003 | +021 |
| 3859 | -24.3 | 03.482 | 04.874 | 316 | 278 | 043 | -003 | +022 |
| 3767 | -31.0 | 03.951 | 05.685 | 312 | 275 | 047 | -002 | +024 |
| 3758 | -30.8 | 04.001 | 05.752 | 312 | 275 | 047 | -002 | +024 |
| 3731 | -33.5 | 04.156 | 06.041 | 310 | 272 | 049 | -001 | +025 |
| 3606 | -32.0 | 04.953 | 07.156 | 311 | 267 | 039 | +001 | +020 |
| 3517 | -37.8 | 05.620 | 08.318 | 308 | 264 | 035 | +002 | +018 |
| 3466 | -39.0 | 06.048 | 08.998 | 307 | 266 | 031 | +001 | +016 |
| 3438 | -37.8 | 06.297 | 09.320 | 308 | 266 | 029 | +001 | +015 |
| 3283 | -42.6 | 07.885 | 11.914 | 304 | 274 | 025 | -001 | +013 |
| 3252 | -42.0 | 08.251 | 12.435 | 305 | 274 | 025 | -001 | +013 |
| 3203 | -45.9 | 08.870 | 13.597 | 302 | 270 | 023 | -000 | +012 |
| 3194 | -42.4 | 08.989 | 13.570 | 305 | 270 | 023 | +000 | +012 |
| 3139 | -47.4 | 09.752 | 15.049 | 301 | 264 | 020 | +001 | +010 |
| 3100 | -47.6 | 10.339 | 15.969 | 301 | 256 | 016 | +002 | +008 |
| 3091 | -45.0 | 10.479 | 16.000 | 303 | 256 | 016 | +002 | +008 |
| 3063 | -48.0 | 10.926 | 16.906 | 301 | 254 | 014 | +002 | +007 |
| 3021 | -45.0 | 11.633 | 17.763 | 303 | 248 | 010 | +002 | +005 |
| 2987 | -46.4 | 12.237 | 18.800 | 302 | 243 | 009 | +002 | +004 |
| 2957 | -46.1 | 12.797 | 19.635 | 302 | 252 | 006 | +001 | +003 |
| 2905 | -50.9 | 13.840 | 21.693 | 299 | 270 | 004 | +000 | +002 |
| 2853 | -48.5 | 14.974 | 23.221 | 300 | 243 | 004 | +001 | +002 |
| 2786 | -52.8 | 16.582 | 26.216 | 298 | 198 | 006 | +003 | +001 |
| 2713 | -51.2 | 18.543 | 29.105 | 299 | 146 | 007 | +003 | -002 |
| 2600 | -53.1 | 22.051 | 34.909 | 297 | 068 | 010 | -002 | -005 |
| 2524 | -55.9 | 24.808 | 39.780 | 295 | 056 | 014 | -004 | -006 |
| 2365 | -54.8 | 31.774 | 50.694 | 296 | 068 | 010 | -002 | -005 |
| 2256 | -59.4 | 37.704 | 61.449 | 293 | 076 | 008 | -001 | -004 |
| 2185 | -58.6 | 42.193 | 68.509 | 294 | 045 | 008 | -003 | -003 |
| 2124 | -57.7 | 46.457 | 75.117 | 294 | 018 | 012 | -006 | -002 |
| 2000 | -60.5 | 56.552 | 92.644 | 292 | 349 | 020 | -010 | +002 |
| 1923 | -62.3 | 63.984 | | 291 | 331 | 020 | -009 | +005 |
| 1868 | -61.6 | 69.900 | | 292 | | | | |

CONSTANT PRESSURE LEVEL DATA
(HEIGHT IN GEOPOTENTIAL METERS)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2073 | -58.7 | 50.000 | 81.217 | 294 | 007 | 016 | -008 | -001 |
| 2396 | -55.1 | 30.000 | 47.925 | 296 | 059 | 011 | -003 | -005 |
| 2655 | -52.0 | 20.000 | 31.504 | 298 | 104 | 008 | +001 | -004 |
| 3108 | -47.5 | 10.000 | 15.437 | 301 | 257 | 018 | +002 | +009 |
| 3351 | -39.9 | 07.000 | 10.456 | 306 | 270 | 025 | -000 | +013 |
| 3540 | -32.4 | 05.000 | 07.235 | 311 | 267 | 039 | +001 | +020 |
| 4248 | -11.0 | 02.000 | 02.657 | 325 | 242 | 066 | +016 | +030 |
| 4789 | +02.3 | 01.000 | 01.265 | 333 | 272 | 066 | -001 | +034 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1026.6 | 0000 | 010 | 010 | -005 | -001 | 33 | +06.1 |
| 0801.0 | 0200 | 352 | 041 | -021 | +003 | 19 | +00.3 |
| 0622.0 | 0400 | 338 | 041 | -020 | +008 | 18 | -08.4 |
| 0476.0 | 0600 | 323 | 070 | -029 | +022 | 30 | -21.3 |
| 0362.0 | 0800 | 310 | 089 | -029 | +035 | 43 | -32.3 |
| 0271.0 | 1000 | 323 | 114 | -047 | +035 | | -46.0 |
| 0198.0 | 1200 | 304 | 066 | -019 | +028 | | -57.7 |
| 0146.0 | 1400 | 305 | 078 | -023 | +033 | | -53.6 |
| 0106.0 | 1600 | | | | | | -57.0 |
| 0077.0 | 1800 | | | | | | -60.3 |
| 0056.0 | 2000 | 323 | 029 | -012 | +009 | | -62.2 |
| 0041.0 | 2200 | 089 | 008 | -000 | -004 | | -57.3 |
| 0029.5 | 2400 | 089 | 008 | -000 | -004 | | -54.5 |
| 0021.8 | 2600 | 292 | 008 | -002 | +004 | | -52.7 |
| 0016.0 | 2800 | 292 | 008 | -002 | +004 | | -50.3 |
| 0011.7 | 3000 | 281 | 010 | -001 | +005 | | -45.0 |
| 0008.8 | 3200 | 285 | 011 | -001 | +005 | | -41.3 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. FAIR
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 144 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 135.0 DEG. AZIMUTH 72.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 1,220 METERS ALTITUDE
MOTOR TRACK DROPPED.. 144 SECONDS 57,390 METERS ALTITUDE
PAYLOAD ACQUISITION.. 144 SECONDS 57,390 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,340 SECONDS 18,680 METERS ALTITUDE
APOGEE.. 128 SECONDS 58,613 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 15 FT. DIAMETER PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1,678 MHZ
TELEMETRY QUALITY.. FAIR
TELEMETRY DATA RECEIVED FROM.. 161 SEC. 56,020 METERS ALTITUDE
TO 2,340 SEC. 18,680 METERS ALTITUDE

REMARKS

NONE.
THERMODYNAMICS BASE DATA.. PRESSURE 69.9 MB
ALTITUDE 18,680 METERS
TEMPERATURE -61.0 DEG. C

RADIOSONDE AND BALLOON DATA

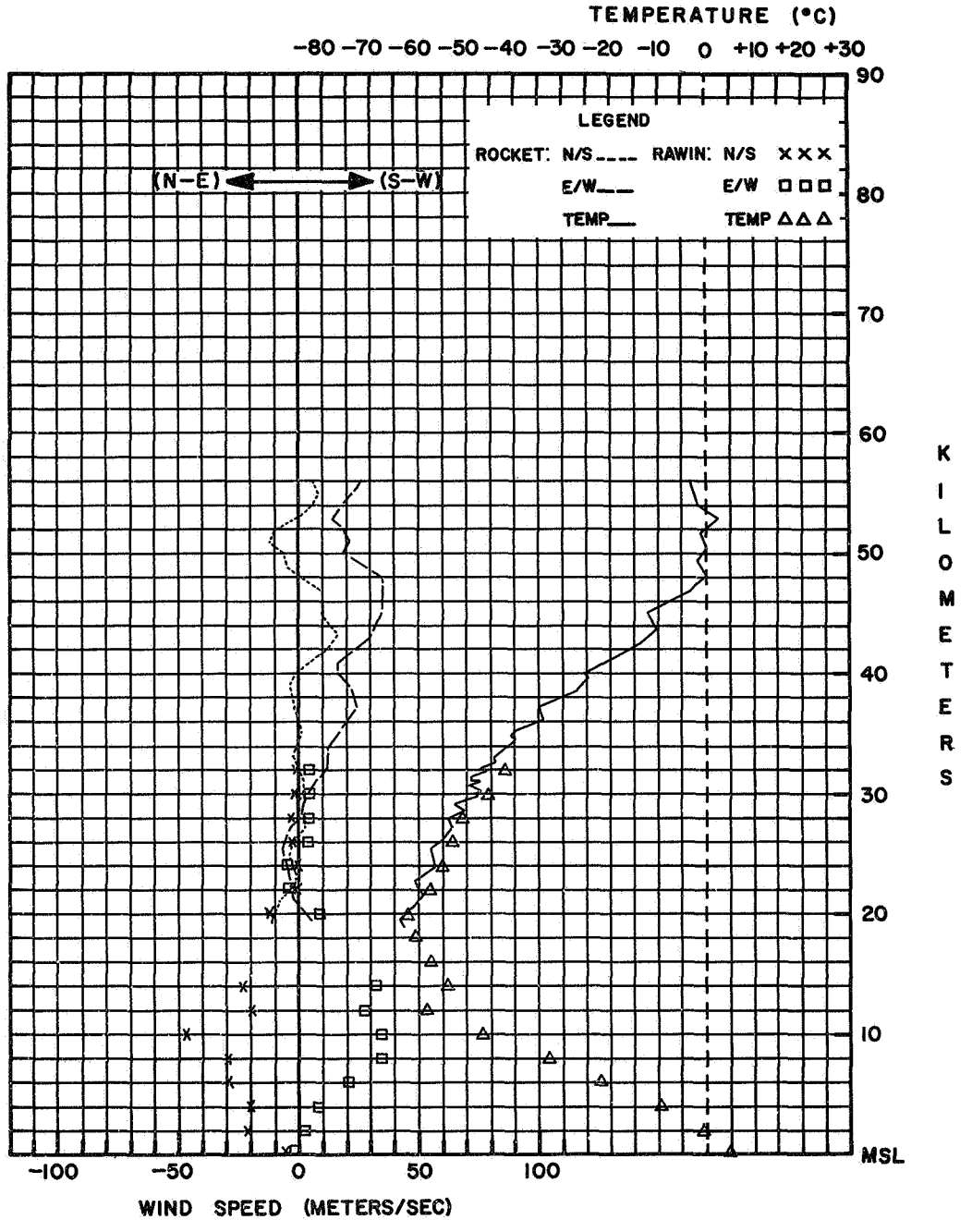
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,800 GRAMS
ASCENSION RATES.. SFC-400 MB = 262 M/MINUTE
400 MB-TOP = 400 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,026.6 MB
TEMPERATURE.. 6.1 DEG. C
RELATIVE HUMIDITY.. 33 %
VISIBILITY.. 12 KM
SURFACE WIND.. 010 DEG. 10 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 0 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 330 DEG/11 KTS, 50 FT. 312 DEG/11 KTS,
100 FT. 324 DEG/12 KTS, 150 FT. 332 DEG/13 KTS,
200 FT. 324 DEG/12 KTS, 250 FT. 321 DEG/12 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA
DATE: 12 APRIL, 1967

ROCKET TIME: 1009 LST 1509 GCT
ROCKET MOTOR TYPE: ARCAS

PAYLOAD TYPE: ARCASONDE 1A
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | Z | Z | Z |
| 72402 | 37°51' N 75°29' W ALT. 3 M | APRIL 20, 1967 | 1806 | 1930 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 032 | 111 | 57 | 228 | 029 | +010 | +011 |
| 034 | 111 | 56 | 214 | 028 | +012 | +008 |
| 035 | 111 | 55 | 201 | 033 | +016 | +006 |
| 037 | 083 | 54 | 189 | 024 | +012 | +002 |
| 039 | 083 | 53 | 207 | 009 | +004 | +002 |
| 041 | 083 | 52 | 236 | 014 | +004 | +006 |
| 043 | 067 | 51 | 248 | 021 | +004 | +010 |
| 046 | 067 | 50 | 255 | 022 | +003 | +011 |
| 048 | 067 | 49 | 255 | 022 | +003 | +011 |
| 051 | 056 | 48 | 254 | 028 | +004 | +014 |
| 054 | 056 | 47 | 243 | 030 | +007 | +014 |
| 057 | 056 | 46 | 241 | 024 | +006 | +011 |
| 060 | 056 | 45 | 250 | 023 | +004 | +011 |
| 063 | 048 | 44 | 254 | 028 | +004 | +014 |
| 067 | 048 | 43 | 257 | 034 | +004 | +017 |
| 070 | 042 | 42 | 259 | 030 | +003 | +015 |
| 075 | 037 | 41 | 241 | 020 | +005 | +009 |
| 079 | 037 | 40 | 236 | 014 | +004 | +006 |
| 084 | 030 | 39 | 270 | 019 | +000 | +010 |
| 090 | 030 | 38 | 276 | 020 | -001 | +010 |
| 095 | 028 | 37 | 276 | 020 | -001 | +010 |
| 102 | 024 | 36 | 276 | 018 | -001 | +009 |
| 109 | 026 | 35 | 270 | 010 | +000 | +005 |
| 115 | 024 | 34 | 270 | 008 | +000 | +004 |
| 123 | 019 | 33 | 225 | 003 | +001 | +001 |
| 133 | 018 | 32 | 112 | 010 | +002 | -005 |
| 142 | 020 | 31 | 099 | 012 | +001 | -006 |
| 150 | 019 | 30 | 090 | 012 | +000 | -006 |
| 160 | 013 | 29 | 086 | 027 | -001 | -014 |
| 175 | 012 | 28 | 096 | 037 | +002 | -019 |
| 188 | 010 | 27 | 100 | 043 | +004 | -022 |
| 207 | 010 | 26 | 105 | 046 | +006 | -023 |
| 223 | 009 | 25 | 102 | 038 | +004 | -019 |
| 245 | 008 | 24 | 098 | 029 | +002 | -015 |
| 265 | 007 | 23 | 099 | 026 | +002 | -013 |
| 290 | 006 | 22 | 090 | 021 | +000 | -011 |
| 318 | 006 | 21 | 083 | 016 | -001 | -008 |
| 350 | 005 | 20 | 063 | 009 | -002 | -004 |
| 385 | 004 | 19 | 011 | 010 | -005 | -001 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M$^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|
| 5834 | -07.3 | 00.305 | 00.400 | 327 | | | | |
| 5596 | -03.8 | 00.411 | 00.532 | 329 | 214 | 028 | +012 | +008 |
| 5529 | -03.8 | 00.447 | 00.578 | 329 | 205 | 032 | +015 | +007 |
| 5364 | -00.8 | 00.548 | 00.701 | 331 | 193 | 018 | +009 | +002 |
| 5102 | +02.1 | 00.756 | 00.957 | 333 | 248 | 021 | +004 | +010 |
| 4929 | +02.6 | 00.934 | 01.180 | 333 | 255 | 022 | +003 | +011 |
| 4740 | +00.0 | 01.178 | 01.502 | 331 | 247 | 030 | +006 | +014 |
| 4551 | -00.3 | 01.487 | 01.898 | 331 | 246 | 023 | +005 | +011 |
| 4462 | -03.6 | 01.660 | 02.146 | 329 | 252 | 025 | +004 | +012 |
| 4398 | -00.7 | 01.798 | 02.299 | 331 | 254 | 028 | +004 | +014 |
| 4365 | -02.9 | 01.873 | 02.415 | 330 | 255 | 030 | +004 | +015 |
| 4228 | -05.0 | 02.224 | 02.889 | 328 | 259 | 032 | +003 | +016 |
| 4115 | -11.7 | 02.568 | 03.422 | 324 | 243 | 022 | +005 | +010 |
| 4048 | -12.9 | 02.800 | 03.748 | 323 | 240 | 016 | +004 | +007 |
| 4005 | -17.8 | 02.962 | 04.041 | 320 | 236 | 014 | +004 | +006 |
| 3840 | -20.4 | 03.688 | 05.084 | 319 | 276 | 020 | -001 | +010 |
| 3801 | -19.5 | 03.885 | 05.336 | 319 | 276 | 020 | -001 | +010 |
| 3780 | -22.8 | 03.996 | 05.561 | 317 | 276 | 020 | -001 | +010 |
| 3639 | -28.5 | 04.844 | 06.897 | 314 | 276 | 018 | -001 | +009 |
| 3554 | -26.0 | 05.444 | 07.673 | 315 | 278 | 014 | -001 | +007 |
| 3496 | -32.0 | 05.899 | 08.521 | 311 | 270 | 010 | +000 | +005 |
| 3395 | -32.7 | 06.797 | 09.847 | 311 | 270 | 008 | +000 | +004 |
| 3353 | -38.8 | 07.216 | 10.726 | 307 | 270 | 006 | +000 | +003 |
| 3322 | -38.6 | 07.546 | 11.207 | 307 | 243 | 004 | +001 | +002 |
| 3292 | -35.2 | 07.877 | 11.532 | 309 | 225 | 003 | +001 | +001 |
| 3203 | -37.5 | 08.944 | 13.223 | 308 | 112 | 010 | +002 | -005 |
| 3194 | -40.5 | 09.061 | 13.568 | 306 | 112 | 010 | +002 | -005 |
| 3103 | -45.8 | 10.359 | 15.873 | 302 | 099 | 012 | +001 | -006 |
| 3018 | -42.6 | 11.746 | 17.748 | 304 | 090 | 012 | +000 | -006 |
| 2926 | -48.7 | 13.469 | 20.904 | 300 | 085 | 023 | -001 | -012 |
| 2804 | -53.5 | 16.222 | 25.729 | 297 | 096 | 037 | +002 | -019 |
| 2713 | -51.9 | 18.656 | 29.375 | 298 | 100 | 043 | +004 | -022 |
| 2667 | -53.7 | 20.024 | 31.787 | 297 | 103 | 044 | +005 | -022 |
| 2554 | -50.6 | 23.812 | 37.273 | 299 | 103 | 042 | +005 | -021 |
| 2469 | -55.0 | 27.138 | 43.337 | 296 | 099 | 035 | +003 | -018 |
| 2298 | -54.1 | 35.381 | 56.269 | 297 | 099 | 026 | +002 | -013 |
| 2268 | -55.8 | 37.070 | 59.416 | 296 | 095 | 023 | +001 | -012 |
| 2152 | -57.9 | 44.468 | 71.968 | 294 | 090 | 019 | -000 | -010 |
| 2000 | -58.3 | 56.524 | 91.651 | 294 | 063 | 009 | -002 | -004 |
| 1792 | -59.5 | 78.600 | | 293 | | | | |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 2075 | -58.1 | 50.000 | 80.991 | 294 | 082 | 014 | -001 | -007 |
| 2401 | -54.7 | 30.000 | 47.839 | 296 | 098 | 029 | +002 | -015 |
| 2657 | -53.7 | 20.000 | 31.745 | 297 | 103 | 044 | +005 | -022 |
| 3113 | -44.3 | 10.000 | 15.225 | 303 | 099 | 012 | +001 | -006 |
| 3357 | -35.7 | 07.000 | 10.268 | 309 | 270 | 006 | +000 | +003 |
| 3597 | -27.8 | 05.000 | 07.101 | 314 | 276 | 018 | -001 | +009 |
| 4286 | -03.7 | 02.000 | 02.585 | 329 | 257 | 034 | +004 | +017 |
| 4841 | +01.9 | 01.000 | 01.267 | 332 | 256 | 024 | +003 | +012 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1019.0 | 0000 | 300 | 015 | -004 | +007 | 41 | +16.7 |
| 0800.0 | 0200 | 343 | 025 | -012 | +004 | 20 | +06.0 |
| 0623.0 | 0400 | 318 | 018 | -007 | +006 | 18 | -05.7 |
| 0480.0 | 0600 | 323 | 037 | -015 | +011 | 18 | -20.1 |
| 0364.0 | 0800 | 351 | 042 | -021 | +003 | 21 | -35.7 |
| 0271.0 | 1000 | 340 | 070 | -034 | +012 | | -50.9 |
| 0198.0 | 1200 | 332 | 060 | -027 | +015 | | -52.6 |
| 0145.0 | 1400 | 310 | 041 | -014 | +016 | | -55.4 |
| 0106.0 | 1600 | 320 | 029 | -011 | +010 | | -58.2 |
| 0077.5 | 1800 | 338 | 014 | -007 | +003 | | -57.5 |
| 0057.5 | 2000 | 046 | 006 | -002 | -002 | | -56.3 |
| 0041.7 | 2200 | 072 | 015 | -002 | -007 | | -54.0 |
| 0030.5 | 2400 | 100 | 027 | +002 | -014 | | -51.0 |
| 0022.8 | 2600 | 110 | 047 | +008 | -023 | | -48.0 |
| 0016.7 | 2800 | 096 | 033 | +002 | -017 | | -47.5 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 145 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 102.0 DEG. AZIMUTH 80.7 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 1,006 METERS ALTITUDE
MOTOR TRACK DROPPED.. 145 SECONDS 62,423 METERS ALTITUDE
PAYLOAD ACQUISITION.. 145 SECONDS 62,423 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,520 SECONDS 17,920 METERS ALTITUDE
APOGEE.. 132 SECONDS 63,400 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 15 FT. DIAMETER PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1,685 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 179 SEC. 58,064 METERS ALTITUDE
TO 2,520 SEC. 17,920 METERS ALTITUDE

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 78.6 MB
ALTITUDE 17,920 METERS
TEMPERATURE -57.5 DEG. C

RADIOSONDE AND BALLOON DATA

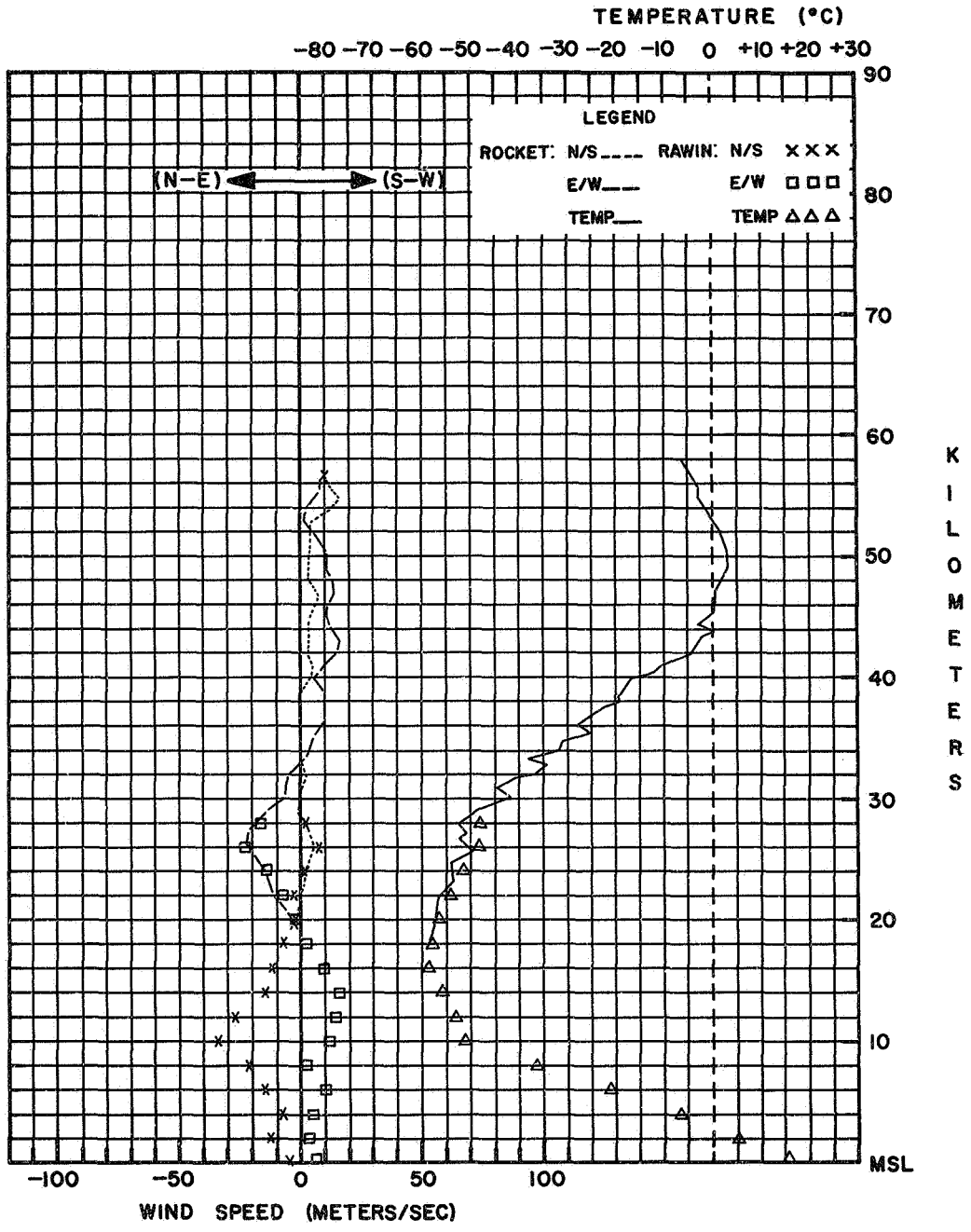
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 281 M/MINUTE
400 MB-TOP = 422 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,019.0 MB
TEMPERATURE.. 16.7 DEG. C
RELATIVE HUMIDITY.. 41%
VISIBILITY.. 16 KM
SURFACE WIND.. 300 DEG. 15 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 0 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 171 DEG/11 KTS. 50 FT. 162 DEG/11 KTS,
100 FT. 163 DEG/10 KTS, 150 FT. 171 DEG/11 KTS,
200 FT. 175 DEG/11 KTS, 250 FT. 180 DEG/10 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA
**DATE:** 20 APRIL, 1967

**ROCKET TIME:** 1306 LST 1806 GCT
**ROCKET MOTOR TYPE:** ARCAS

**PAYLOAD TYPE:** ARCASONDE 1A
**RADIOSONDE TYPE:** 1680 MHZ

RP STATION NAME

(NASA) WALLOPS ISLAND, VIRGINIA

72402 37°51' N 75°29' W ALT. 3 M

| DATE Z | ROCKET RAWINSONDE LAUNCH TIME Z | RELEASE TIME Z |
|---|---|---|
| APRIL 26, 1967 | 1451 | 1128 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 032 | 083 | 50 | 256 | 023 | +004 | +016 |
| 034 | 083 | 49 | 222 | 023 | +009 | +008 |
| 036 | 083 | 48 | 198 | 025 | +012 | +004 |
| 038 | 067 | 47 | 221 | 021 | +008 | +007 |
| 041 | 056 | 46 | 248 | 021 | +004 | +010 |
| 044 | 056 | 45 | 274 | 025 | -001 | +013 |
| 047 | 056 | 44 | 275 | 023 | -001 | +012 |
| 050 | 056 | 43 | 283 | 026 | -003 | +013 |
| 053 | 048 | 42 | 274 | 025 | -001 | +013 |
| 057 | 048 | 41 | 257 | 026 | +003 | +013 |
| 060 | 048 | 40 | 254 | 028 | +004 | +014 |
| 064 | 037 | 39 | 266 | 027 | +001 | +014 |
| 069 | 033 | 38 | 277 | 031 | -002 | +016 |
| 074 | 033 | 37 | 270 | 031 | +000 | +016 |
| 079 | 030 | 36 | 261 | 026 | +002 | +013 |
| 085 | 026 | 35 | 266 | 025 | +001 | +013 |
| 092 | 024 | 34 | 265 | 023 | +001 | +012 |
| 099 | 024 | 33 | 225 | 011 | +004 | +004 |
| 106 | 021 | 32 | 207 | 004 | +002 | +001 |
| 115 | 020 | 31 | 270 | 004 | +000 | +002 |
| 123 | 019 | 30 | 270 | 004 | +000 | +002 |
| 133 | 017 | 29 | 225 | 003 | +001 | +001 |
| 143 | 015 | 28 | 180 | 004 | +002 | +000 |
| 155 | 013 | 27 | 146 | 007 | +003 | -002 |
| 168 | 013 | 26 | 135 | 008 | +003 | -003 |
| 181 | 011 | 25 | 090 | 008 | +000 | -004 |
| 197 | 010 | 24 | 090 | 006 | +000 | -003 |
| 213 | 010 | 23 | 108 | 006 | +001 | -003 |
| 230 | 009 | 22 | 090 | 008 | +000 | -004 |
| 250 | 008 | 21 | 063 | 004 | -001 | -002 |
| 270 | 008 | 20 | 090 | 002 | +000 | -001 |
| 292 | 007 | 19 | 304 | 007 | -002 | +003 |
| 316 | 006 | 18 | 299 | 020 | -005 | +009 |
| 345 | 006 | 17 | 300 | 031 | -008 | +014 |
| 375 | 005 | 16 | 293 | 044 | -009 | +021 |
| 407 | 004 | 15 | 280 | 057 | -005 | +029 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M $^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 5383 | +19.0 | 00.475 | 00.566 | 343 | | | | |
| 5044 | +15.2 | 00.703 | 00.850 | 340 | | | | |
| 4874 | +08.4 | 00.860 | 01.064 | 336 | 215 | 024 | +010 | +007 |
| 4718 | +06.6 | 01.036 | 01.291 | 335 | 214 | 021 | +009 | +006 |
| 4645 | +03.0 | 01.132 | 01.428 | 333 | 236 | 021 | +006 | +009 |
| 4581 | +04.4 | 01.224 | 01.536 | 334 | 255 | 022 | +003 | +011 |
| 4493 | +03.9 | 01.362 | 01.713 | 334 | 274 | 025 | -001 | +013 |
| 4359 | -06.9 | 01.608 | 02.104 | 327 | 279 | 024 | -002 | +012 |
| 4221 | -08.7 | 01.916 | 02.525 | 326 | 274 | 025 | -001 | +013 |
| 3984 | -19.3 | 02.609 | 03.580 | 319 | 254 | 028 | +004 | +014 |
| 3926 | -19.8 | 02.818 | 03.875 | 319 | 262 | 027 | +002 | +014 |
| 3901 | -19.4 | 02.914 | 04.000 | 319 | 266 | 027 | +001 | +014 |
| 3819 | -23.0 | 03.252 | 04.529 | 317 | 274 | 031 | -001 | +016 |
| 3731 | -23.4 | 03.662 | 05.108 | 317 | 274 | 031 | -001 | +016 |
| 3536 | -33.0 | 04.792 | 06.952 | 311 | 266 | 025 | +001 | +013 |
| 3133 | -49.1 | 08.619 | 13.402 | 300 | 243 | 004 | +001 | +002 |
| 3051 | -46.6 | 09.749 | 14.991 | 302 | 270 | 004 | +000 | +002 |
| 3021 | -49.6 | 10.199 | 15.893 | 300 | 270 | 004 | +000 | +002 |
| 2420 | -55.8 | 25.681 | 41.161 | 296 | 090 | 006 | +000 | -003 |
| 2134 | -57.8 | 40.211 | 65.049 | 294 | 072 | 006 | -001 | -003 |
| 2094 | -55.8 | 42.815 | 68.624 | 296 | 063 | 004 | -001 | -002 |
| 2000 | -59.0 | 49.640 | 80.751 | 293 | 090 | 002 | +000 | -001 |
| 1692 | -63.9 | 81.366 | | 290 | 298 | 033 | -008 | +015 |
| 1500 | -62.1 | =1.000 | | 291 | | | | |

CONSTANT PRESSURE LEVEL DATA
(HEIGHT IN GEOPOTENTIAL METERS)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1991 | -59.1 | 50.000 | 81.358 | 293 | 090 | 002 | -000 | -001 |
| 2326 | -56.4 | 30.000 | 48.216 | 295 | 108 | 006 | +001 | -003 |
| 2630 | -53.5 | 20.000 | 31.724 | 297 | 135 | 008 | +003 | -003 |
| 3020 | -48.3 | 10.000 | 15.492 | 301 | 270 | 004 | +000 | +002 |
| 3287 | -42.3 | 07.000 | 10.563 | 305 | 225 | 011 | +004 | +004 |
| 3495 | -33.9 | 05.000 | 07.280 | 310 | 266 | 025 | +001 | +013 |
| 4165 | -10.0 | 02.000 | 02.647 | 325 | 274 | 025 | -001 | +013 |
| 4715 | +07.0 | 01.000 | 01.244 | 336 | 211 | 023 | +010 | +006 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1025.6 | 0000 | 225 | 004 | +001 | +001 | 77 | +08.3 |
| 0801.0 | 0200 | 278 | 021 | -002 | +011 | 60 | -02.4 |
| 0620.0 | 0400 | 283 | 045 | -005 | +023 | 100 | -08.8 |
| 0477.0 | 0600 | 304 | 053 | -015 | +023 | 43 | -20.7 |
| 0362.0 | 0800 | 282 | 092 | -010 | +046 | 53 | -33.2 |
| 0270.0 | 1000 | 288 | 136 | -022 | +067 | | -45.9 |
| 0199.0 | 1200 | 292 | 136 | -026 | +065 | | -61.4 |
| 0145.0 | 1400 | 291 | 045 | -008 | +022 | | -55.8 |
| 0106.0 | 1600 | 290 | 053 | -009 | +026 | | -59.3 |
| 0077.0 | 1800 | 283 | 027 | -003 | +014 | | -62.7 |
| 0056.0 | 2000 | 308 | 006 | -002 | +002 | | -57.0 |
| 0041.0 | 2200 | 105 | 014 | +002 | -007 | | -54.9 |
| 0030.0 | 2400 | 107 | 008 | +001 | -004 | | -53.6 |
| 0022.0 | 2600 | 088 | 004 | -000 | -002 | | -51.6 |
| 0016.4 | 2800 | 200 | 004 | +002 | +001 | | -48.3 |
| 0012.1 | 3000 | 200 | 004 | +002 | +001 | | -45.0 |
| 0009.0 | 3200 | 200 | 004 | +002 | +001 | | -41.0 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 129 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 86.0 DEG. AZIMUTH 79.8 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 7 SECONDS 1,040 METERS ALTITUDE
MOTOR TRACK DROPPED.. 129 SECONDS 58,220 METERS ALTITUDE
PAYLOAD ACQUISITION.. 129 SECONDS 58,220 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,440 SECONDS 15,000 METERS ALTITUDE
APOGEE.. 126 SECONDS 58,400 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 16 FT. DIAMETER DISC-GAP-BAND PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1,685 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 160 SEC. 53,830 METERS ALTITUDE
TO 2,440 SEC. 15,000 METERS ALTITUDE

REMARKS

ROCKET TEMPERATURE FROM 53,830 METERS TO 47,180 METERS ARE QUESTIONABLE.
THERMODYNAMICS BASE DATA.. PRESSURE 111.0 MB
ALTITUDE 15,000 METERS
TEMPERATURE -57.6 DEG. C

RADIOSONDE AND BALLOON DATA

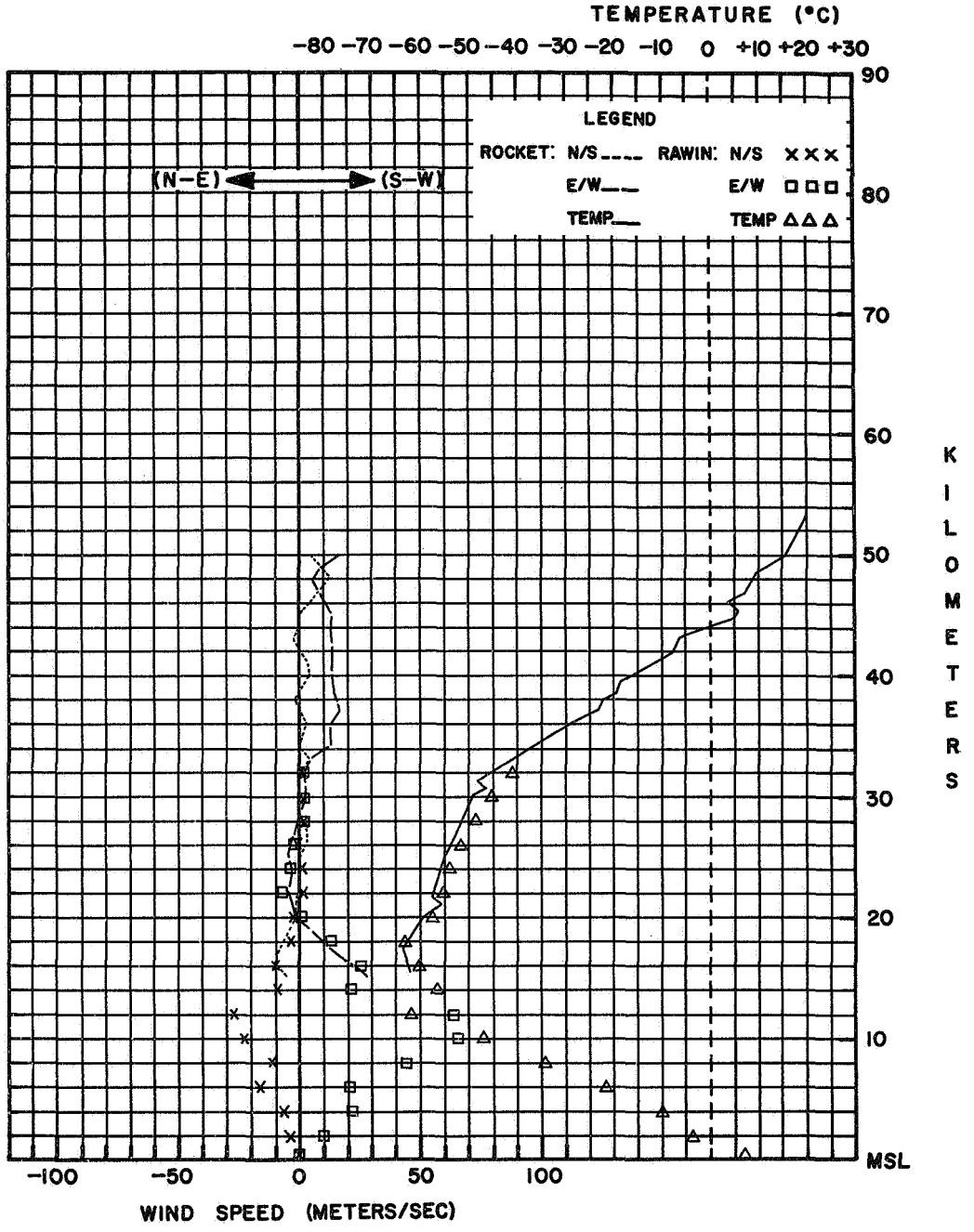
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,700 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 297 M/MINUTE
400 MB-TOP = 353 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,025.6 MB
TEMPERATURE.. 8.3 DEG. C.
RELATIVE HUMIDITY.. 77%
VISIBILITY.. 10 KM
SURFACE WIND.. 225 DEG. 4 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 8 OCTAS
LOW.. NONE
MIDDLE.. 8 OCTAS/AC
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 182 DEG/11 KTS, 50 FT. 171 DEG/11 KTS,
100 FT. 176 DEG/12 KTS, 150 FT. 172 DEG/13 KTS,
200 FT. 172 DEG/13 KTS, 250 FT. 176 DEG/14 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA
**DATE:** 26 APRIL, 1967

**ROCKET TIME:** 0951 LST 1451 GCT
**ROCKET MOTOR TYPE:** ARCAS

**PAYLOAD TYPE:** ARCASONDE 1A
**RADIOSONDE TYPE:** 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | Z | Z | Z |
| 72402 | 37°51' N 75°29' W ALT. 3 M | MAY 3, 1967 | 1407 | 1123 |

# TABULATED DATA

ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 031 | 083 | 55 | 138 | 026 | +010 | -009 |
| 033 | 083 | 54 | 133 | 037 | +013 | -014 |
| 035 | 083 | 53 | 130 | 058 | +019 | -023 |
| 037 | 083 | 52 | 119 | 049 | +012 | -022 |
| 039 | 083 | 51 | 110 | 029 | +005 | -014 |
| 041 | 067 | 50 | 099 | 012 | +001 | -006 |
| 044 | 067 | 49 | 117 | 017 | +004 | -008 |
| 046 | 067 | 48 | 118 | 029 | +007 | -013 |
| 049 | 067 | 47 | 115 | 028 | +006 | -013 |
| 051 | 067 | 46 | 117 | 026 | +006 | -012 |
| 054 | 048 | 45 | 135 | 011 | +004 | -004 |
| 058 | 048 | 44 | 162 | 006 | +003 | -001 |
| 061 | 048 | 43 | 233 | 019 | +006 | +008 |
| 065 | 042 | 42 | 222 | 026 | +010 | +009 |
| 069 | 042 | 41 | 238 | 025 | +007 | +011 |
| 073 | 037 | 40 | 259 | 030 | +003 | +015 |
| 078 | 033 | 39 | 257 | 036 | +004 | +018 |
| 083 | 033 | 38 | 257 | 036 | +004 | +018 |
| 088 | 033 | 37 | 257 | 034 | +004 | +017 |
| 093 | 028 | 36 | 270 | 033 | +000 | +017 |
| 100 | 024 | 35 | 279 | 039 | -003 | +020 |
| 107 | 024 | 34 | 273 | 039 | -001 | +020 |
| 114 | 022 | 33 | 262 | 043 | +003 | +022 |
| 122 | 020 | 32 | 257 | 042 | +005 | +021 |
| 131 | 019 | 31 | 254 | 036 | +005 | +018 |
| 140 | 019 | 30 | 259 | 032 | +003 | +016 |
| 149 | 017 | 29 | 254 | 028 | +004 | +014 |
| 160 | 014 | 28 | 255 | 022 | +003 | +011 |
| 172 | 014 | 27 | 261 | 012 | +001 | +006 |
| 184 | 013 | 26 | 315 | 005 | -002 | +002 |
| 198 | 011 | 25 | 297 | 004 | -001 | +002 |
| 214 | 010 | 24 | 180 | 004 | +002 | +000 |
| 230 | 010 | 23 | 162 | 006 | +003 | -001 |
| 248 | 009 | 22 | 180 | 006 | +003 | +000 |
| 268 | 008 | 21 | 162 | 006 | +003 | -001 |
| 288 | 008 | 20 | 180 | 010 | +005 | +000 |
| 312 | 008 | 19 | 196 | 014 | +007 | +002 |

ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 5855 | -03.5 | 00.298 | 00.385 | 329 | | | | |
| 5651 | -00.3 | 00.383 | 00.489 | 331 | | | | |
| 5523 | +01.6 | 00.448 | 00.568 | 332 | | | | |
| 5282 | +02.0 | 00.602 | 00.762 | 333 | 128 | 057 | +018 | -023 |
| 5212 | +03.7 | 00.655 | 00.825 | 334 | 121 | 050 | +013 | -022 |
| 5115 | +04.0 | 00.737 | 00.927 | 334 | 112 | 031 | +006 | -015 |
| 5063 | +05.0 | 00.785 | 00.983 | 334 | 110 | 023 | +004 | -011 |
| 5023 | +04.9 | 00.824 | 01.032 | 334 | 104 | 016 | +002 | -008 |
| 4987 | +02.2 | 00.861 | 01.089 | 333 | 099 | 012 | +001 | -006 |
| 4795 | +00.2 | 01.089 | 01.388 | 331 | 118 | 029 | +007 | -013 |
| 4657 | +03.3 | 01.290 | 01.626 | 333 | 115 | 028 | +006 | -013 |
| 4572 | -03.9 | 01.433 | 01.854 | 329 | 117 | 022 | +005 | -010 |
| 4535 | -04.1 | 01.501 | 01.943 | 329 | 126 | 017 | +005 | -007 |
| 4438 | -08.1 | 01.696 | 02.229 | 326 | 146 | 007 | +003 | -002 |
| 4285 | -06.6 | 02.059 | 02.691 | 327 | 229 | 021 | +007 | +008 |
| 4197 | -09.7 | 02.303 | 03.045 | 325 | 222 | 026 | +010 | +009 |
| 4142 | -08.1 | 02.470 | 03.247 | 326 | 231 | 025 | +008 | +010 |
| 4057 | -14.6 | 02.756 | 03.714 | 322 | 249 | 027 | +005 | +013 |
| 3990 | -13.6 | 03.008 | 04.037 | 323 | 259 | 030 | +003 | +015 |
| 3910 | -16.3 | 03.339 | 04.529 | 321 | 257 | 036 | +004 | +018 |
| 3877 | -17.1 | 03.487 | 04.745 | 321 | 257 | 036 | +004 | +018 |
| 3828 | -22.3 | 03.722 | 05.169 | 317 | 257 | 036 | +004 | +018 |
| 3758 | -23.0 | 04.091 | 05.697 | 317 | 257 | 036 | +004 | +018 |
| 3581 | -31.9 | 05.217 | 07.534 | 311 | 273 | 035 | -001 | +018 |
| 3566 | -31.9 | 05.328 | 07.694 | 311 | 273 | 035 | -001 | +018 |
| 3505 | -28.0 | 05.799 | 08.241 | 314 | 279 | 039 | -003 | +020 |
| 3484 | -31.1 | 05.971 | 08.593 | 312 | 279 | 039 | -003 | +020 |
| 3432 | -35.0 | 06.424 | 09.397 | 309 | 276 | 039 | -002 | +020 |
| 3301 | -41.4 | 07.757 | 11.660 | 305 | 262 | 043 | +003 | +022 |
| 3274 | -40.0 | 08.067 | 12.054 | 306 | 260 | 043 | +004 | +022 |
| 3225 | -39.3 | 08.661 | 12.902 | 307 | 257 | 042 | +005 | +021 |
| 3197 | -42.0 | 09.021 | 13.595 | 305 | 257 | 042 | +005 | +021 |
| 3082 | -42.0 | 10.674 | 16.087 | 305 | 254 | 036 | +005 | +018 |
| 3027 | -44.2 | 11.574 | 17.610 | 303 | 257 | 034 | +004 | +017 |
| 2996 | -43.6 | 12.116 | 18.387 | 304 | 259 | 032 | +003 | +016 |
| 2923 | -47.7 | 13.506 | 20.869 | 301 | 254 | 028 | +004 | +014 |
| 2780 | -48.0 | 16.744 | 25.907 | 301 | 253 | 020 | +003 | +010 |
| 2765 | -46.5 | 17.125 | 26.321 | 302 | 257 | 018 | +002 | +009 |
| 2743 | -49.5 | 17.701 | 27.372 | 300 | 256 | 016 | +002 | +008 |
| 2259 | -56.7 | 37.306 | 60.043 | 295 | 162 | 006 | +003 | -001 |
| 2173 | -54.9 | 42.666 | 68.103 | 296 | 180 | 006 | +003 | -000 |
| 2000 | -56.9 | 55.907 | 90.062 | 295 | 180 | 010 | +005 | +000 |
| 1929 | -58.1 | 62.519 | | 294 | 189 | 012 | +006 | +001 |
| 1908 | -60.6 | 64.639 | | 292 | 196 | 014 | +007 | +002 |
| 1814 | -60.0 | 75.100 | | 293 | | | | |

CONSTANT PRESSURE LEVEL DATA
(HEIGHT IN GEOPOTENTIAL METERS)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2070 | -56.0 | 50.000 | 80.216 | 295 | 162 | 006 | +003 | -001 |
| 2430 | -54.0 | 30.000 | 47.693 | 297 | 225 | 003 | +001 | +001 |
| 2675 | -50.3 | 20.000 | 31.271 | 299 | 259 | 010 | +001 | +005 |
| 3114 | -42.0 | 10.000 | 15.071 | 305 | 255 | 038 | +005 | +019 |
| 3357 | -37.8 | 07.000 | 10.360 | 308 | 270 | 041 | +000 | +021 |
| 3595 | -30.2 | 05.000 | 07.169 | 312 | 267 | 033 | +001 | +017 |
| 4281 | -06.8 | 02.000 | 02.616 | 327 | 229 | 018 | +006 | +007 |
| 4833 | +01.0 | 01.000 | 01.271 | 332 | 117 | 022 | +005 | -010 |

RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1018.6 | 0000 | 315 | 012 | -004 | +004 | 93 | +10.6 |
| 0798.0 | 0200 | 272 | 035 | -001 | +018 | 16 | +07.5 |
| 0622.0 | 0400 | 243 | 053 | +012 | +024 | 16 | -02.7 |
| 0481.0 | 0600 | 246 | 049 | +010 | +023 | 20 | -16.9 |
| 0366.0 | 0800 | 251 | 057 | +010 | +028 | 26 | -33.7 |
| 0273.0 | 1000 | 253 | 072 | +011 | +035 | | -50.3 |
| 0199.0 | 1200 | 253 | 066 | +010 | +032 | | -60.3 |
| 0145.0 | 1400 | 230 | 043 | +014 | +017 | | -59.8 |
| 0105.0 | 1600 | 231 | 035 | +011 | +014 | | -61.9 |
| 0076.5 | 1800 | 232 | 017 | +005 | +007 | | -59.2 |
| 0055.8 | 2000 | 007 | 012 | -006 | -001 | | -57.5 |
| 0041.0 | 2200 | 239 | 008 | +002 | +004 | | -54.4 |
| 0030.0 | 2400 | 198 | 006 | +003 | +001 | | -53.0 |
| 0022.0 | 2600 | 332 | 006 | -003 | +001 | | -49.2 |
| 0016.4 | 2800 | 278 | 016 | -001 | +008 | | -48.4 |
| 0012.2 | 3000 | 265 | 023 | +001 | +012 | | -43.5 |
| 0009.0 | 3200 | 252 | 037 | +006 | +018 | | -39.5 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 138 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 135.0 DEG. AZIMUTH 73.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 7 SECONDS 1,100 METERS ALTITUDE
MOTOR TRACK DROPPED.. 138 SECONDS 60,015 METERS ALTITUDE
PAYLOAD ACQUISITION.. 138 SECONDS 60,015 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 1,980 SECONDS 18,140 METERS ALTITUDE
APOGEE.. 128 SECONDS 60,500 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 16 FT. DIAMETER DISC-GAP-BAND PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1,685 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 156 SEC. 58,550 METERS ALTITUDE
TO 1,980 SEC. 18,140 METERS ALTITUDE

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 75.1 MB
ALTITUDE 18,140 METERS
TEMPERATURE -59.1 DEG. C

RADIOSONDE AND BALLOON DATA

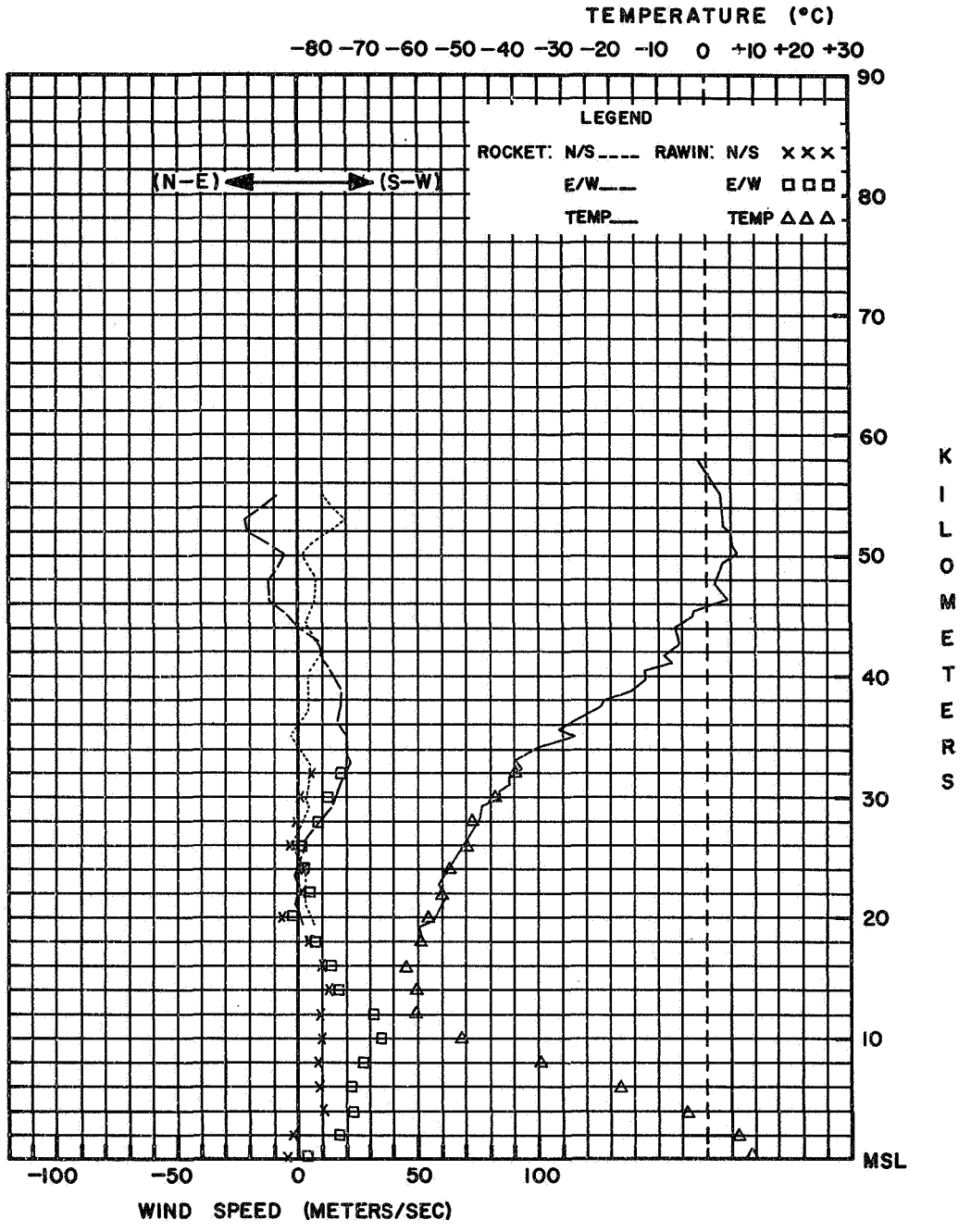
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 294 M/MINUTE
400 MB-TOP = 430 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,018.6 MB
TEMPERATURE.. 10.6 DEG. C
RELATIVE HUMIDITY.. 93%
VISIBILITY.. 16 KM
SURFACE WIND.. 315 DEG. 12 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 1 OCTAS
LOW.. 1 OCTAS/CU
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 330 DEG/19 KTS. 50 FT. 312 DEG/12 KTS.
100 FT. 326 DEG/12 KTS. 150 FT. 320 DEG/13 KTS.
200 FT. 313 DEG/14 KTS. 250 FT. 310 DEG/15 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA **ROCKET TIME:** 0907 LST 1407 GCT **PAYLOAD TYPE:** ARCASONDE 1A

**DATE:** 3 MAY, 1967 **ROCKET MOTOR TYPE:** ARCAS **RADIOSONDE TYPE:** 1680 MHZ

| RP | STATION NAME | DATE Z | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | | | |
| 72402 | 37°51' N 75°29' W ALT. 3 M | MAY 10, 1967 | 1758 | 1520 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 030 | 083 | 55 | 153 | 013 | +006 | -003 |
| 032 | 083 | 54 | 196 | 014 | +007 | +002 |
| 034 | 083 | 53 | 175 | 023 | +012 | -001 |
| 036 | 083 | 52 | 173 | 031 | +016 | -002 |
| 038 | 067 | 51 | 166 | 032 | +016 | -004 |
| 041 | 067 | 50 | 137 | 032 | +012 | -011 |
| 043 | 067 | 49 | 125 | 031 | +009 | -013 |
| 046 | 067 | 48 | 108 | 025 | +004 | -012 |
| 048 | 067 | 47 | 105 | 022 | +003 | -011 |
| 051 | 056 | 46 | 117 | 022 | +005 | -010 |
| 054 | 056 | 45 | 104 | 024 | +003 | -012 |
| 057 | 048 | 44 | 076 | 016 | -002 | -008 |
| 061 | 042 | 43 | 059 | 011 | -003 | -005 |
| 065 | 037 | 42 | 045 | 014 | -005 | -005 |
| 070 | 037 | 41 | 342 | 006 | -003 | +001 |
| 074 | 037 | 40 | 214 | 014 | +006 | +004 |
| 079 | 033 | 39 | 186 | 018 | +009 | +001 |
| 084 | 033 | 38 | 158 | 010 | +005 | -002 |
| 089 | 028 | 37 | 063 | 004 | -001 | -002 |
| 096 | 024 | 36 | 315 | 008 | -003 | +003 |
| 103 | 026 | 35 | 248 | 021 | +004 | +010 |
| 109 | 022 | 34 | 225 | 022 | +008 | +008 |
| 118 | 021 | 33 | 202 | 010 | +005 | +002 |
| 125 | 021 | 32 | 194 | 008 | +004 | +001 |
| 134 | 018 | 31 | 198 | 012 | +006 | +002 |
| 144 | 016 | 30 | 180 | 012 | +006 | +000 |
| 155 | 014 | 29 | 169 | 010 | +005 | -001 |
| 168 | 013 | 28 | 180 | 006 | +003 | +000 |
| 180 | 012 | 27 | 214 | 007 | +003 | +002 |
| 195 | 010 | 26 | 198 | 012 | +006 | +002 |
| 213 | 010 | 25 | 180 | 010 | +005 | +000 |
| 230 | 008 | 24 | 180 | 006 | +003 | +000 |
| 253 | 007 | 23 | 207 | 004 | +002 | +001 |
| 275 | 007 | 22 | 252 | 006 | +001 | +003 |
| 300 | 006 | 21 | 243 | 009 | +002 | +004 |
| 330 | 006 | 20 | 207 | 009 | +004 | +002 |
| 360 | 006 | 19 | 180 | 008 | +004 | +000 |
| 390 | 006 | 18 | 124 | 007 | +002 | -003 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M$^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 5749 | -04.8 | 00.370 | 00.481 | 328 | | | | |
| 5505 | -03.2 | 00.502 | 00.648 | 329 | | | | |
| 5435 | -00.1 | 00.547 | 00.698 | 331 | 180 | 014 | +007 | +000 |
| 5197 | +00.9 | 00.733 | 00.932 | 332 | 173 | 031 | +016 | -002 |
| 5160 | +03.2 | 00.767 | 00.967 | 333 | 169 | 032 | +016 | -003 |
| 5035 | +01.7 | 00.893 | 01.132 | 332 | 145 | 031 | +013 | -009 |
| 4877 | +04.8 | 01.083 | 01.357 | 334 | 122 | 030 | +008 | -013 |
| 4770 | +01.7 | 01.233 | 01.563 | 332 | 108 | 025 | +004 | -012 |
| 4633 | +05.2 | 01.457 | 01.823 | 334 | 112 | 021 | +004 | -010 |
| 4481 | +02.1 | 01.753 | 02.219 | 333 | 100 | 022 | +002 | -011 |
| 4420 | +03.2 | 01.889 | 02.381 | 333 | 084 | 018 | -001 | -009 |
| 4319 | +00.2 | 02.138 | 02.724 | 331 | 063 | 013 | -003 | -006 |
| 4188 | -08.7 | 02.519 | 03.319 | 326 | 039 | 012 | -005 | -004 |
| 4017 | -11.3 | 03.136 | 04.173 | 324 | 217 | 010 | +004 | +003 |
| 3965 | -16.0 | 03.356 | 04.546 | 321 | 203 | 015 | +007 | +003 |
| 3801 | -20.3 | 04.169 | 05.744 | 319 | 158 | 010 | +005 | -002 |
| 3664 | -21.3 | 05.008 | 06.927 | 318 | 000 | 004 | -002 | -000 |
| 3609 | -19.7 | 05.390 | 07.409 | 319 | 315 | 008 | -003 | +003 |
| 3492 | -23.8 | 06.308 | 08.813 | 317 | 248 | 021 | +004 | +010 |
| 3402 | -29.7 | 07.137 | 10.213 | 313 | 225 | 022 | +008 | +008 |
| 3216 | -31.9 | 09.251 | 13.359 | 311 | 194 | 008 | +004 | +001 |
| 3121 | -36.1 | 10.582 | 15.551 | 309 | 198 | 012 | +006 | +002 |
| 2938 | -38.8 | 13.762 | 20.457 | 307 | 169 | 010 | +005 | -001 |
| 2896 | -41.6 | 14.628 | 22.008 | 305 | 169 | 010 | +005 | -001 |
| 2835 | -41.1 | 15.991 | 24.007 | 305 | 180 | 008 | +004 | -000 |
| 2792 | -44.6 | 17.035 | 25.965 | 303 | 180 | 006 | +003 | +000 |
| 2682 | -47.5 | 20.072 | 30.988 | 301 | 207 | 009 | +004 | +002 |
| 2551 | -46.1 | 24.421 | 37.469 | 302 | 189 | 012 | +006 | +001 |
| 2350 | -49.7 | 33.048 | 51.523 | 300 | 198 | 006 | +003 | +001 |
| 2289 | -48.4 | 36.244 | 56.179 | 301 | 207 | 004 | +002 | +001 |
| 2234 | -51.2 | 39.401 | 61.844 | 299 | 243 | 004 | +001 | +002 |
| 2164 | -49.1 | 43.829 | 68.149 | 300 | 252 | 006 | +001 | +003 |
| 2076 | -51.8 | 50.119 | 78.880 | 298 | 243 | 009 | +002 | +004 |
| 2073 | -50.2 | 50.350 | 78.673 | 299 | 225 | 008 | +003 | +003 |
| 2045 | -53.3 | 52.558 | 83.282 | 297 | 225 | 008 | +003 | +003 |
| 2000 | -53.1 | 56.338 | 89.191 | 297 | 207 | 009 | +004 | +002 |
| 1948 | -50.2 | 61.013 | 95.335 | 299 | 194 | 008 | +004 | +001 |
| 1908 | -53.4 | 64.874 | | 297 | 180 | 008 | +004 | +000 |
| 1768 | -52.2 | 80.500 | | 298 | | | | |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 2071 | -51.7 | 50.000 | 78.673 | 298 | 243 | 009 | +002 | +004 |
| 2412 | -48.4 | 30.000 | 46.507 | 301 | 180 | 006 | +003 | +000 |
| 2674 | -47.4 | 20.000 | 30.867 | 301 | 214 | 007 | +003 | +002 |
| 3147 | -34.3 | 10.000 | 14.583 | 310 | 191 | 010 | +005 | +001 |
| 3399 | -28.7 | 07.000 | 09.977 | 313 | 229 | 021 | +007 | +008 |
| 3644 | -21.3 | 05.000 | 06.916 | 318 | 000 | 004 | -002 | -000 |
| 4345 | +01.9 | 02.000 | 02.534 | 332 | 074 | 014 | -002 | -007 |
| 4908 | +03.4 | 01.000 | 01.259 | 333 | 130 | 030 | +010 | -012 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1013.0 | 0000 | 320 | 016 | -006 | +005 | 40 | +14.4 |
| 0791.0 | 0200 | 314 | 027 | -010 | +010 | 41 | -04.6 |
| 0612.0 | 0400 | 310 | 035 | -012 | +014 | 22 | -15.3 |
| 0466.0 | 0600 | 315 | 058 | -021 | +021 | 18 | -27.2 |
| 0351.0 | 0800 | 326 | 086 | -037 | +025 | 17 | -39.8 |
| 0261.0 | 1000 | 325 | 080 | -034 | +024 | | -51.3 |
| 0191.0 | 1200 | 307 | 058 | -018 | +024 | | -51.0 |
| 0141.0 | 1400 | 302 | 051 | -014 | +022 | | -53.6 |
| 0104.0 | 1600 | 295 | 019 | -004 | +009 | | -54.2 |
| 0076.0 | 1800 | 310 | 004 | -001 | +002 | | -53.3 |
| 0055.5 | 2000 | 000 | 000 | -000 | -000 | | -52.3 |
| 0035.1 | 2200 | 136 | 006 | +002 | -002 | | -50.4 |
| 0029.9 | 2400 | 192 | 012 | +006 | +001 | | -48.9 |
| 0022.6 | 2600 | 194 | 012 | +006 | +001 | | -46.2 |
| 0016.6 | 2800 | 227 | 012 | +004 | +005 | | -43.4 |
| 0012.4 | 3000 | 248 | 004 | +001 | +002 | | -40.3 |
| 0009.3 | 3200 | 273 | 016 | -000 | +008 | | -37.5 |
| 0007.0 | 3400 | 305 | 016 | -005 | +007 | | -35.0 |
| 0005.3 | 3600 | | | | | | -32.7 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 133 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 105 DEG. AZIMUTH 71.5 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 1,158 METERS ALTITUDE
MOTOR TRACK DROPPED.. 133 SECONDS 59,527 METERS ALTITUDE
PAYLOAD ACQUISITION.. 133 SECONDS 59,527 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,400 SECONDS 17,680 METERS ALTITUDE
APOGEE.. 128 SECONDS 59,740 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 16 FT. DIAMETER DISC-GAP-BAND PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1,680 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 159 SEC. 57,490 METERS ALTITUDE
TO 2,400 SEC. 17,680 METERS ALTITUDE

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 80.5 MB
ALTITUDE 17,680 METERS
TEMPERATURE -53.4 DEG. C

RADIOSONDE AND BALLOON DATA

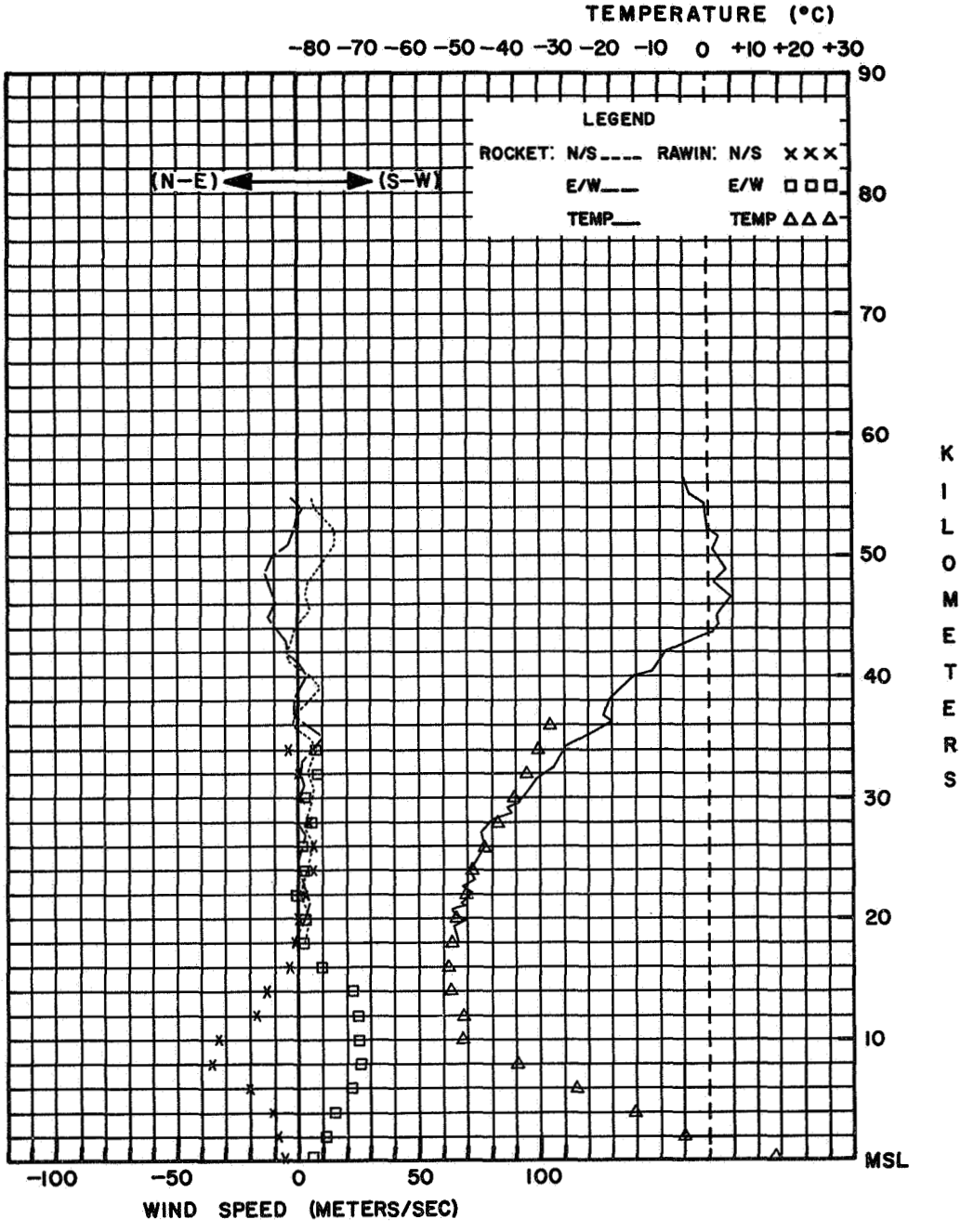
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 278 M/MINUTE
400 MB-TOP = 479 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,013.0 MB
TEMPERATURE.. 14.4 DEG. C
RELATIVE HUMIDITY.. 40%
VISIBILITY.. 10 KM
SURFACE WIND.. 320 DEG. 16 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 3 OCTAS
LOW.. 3 OCTAS/SC
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 268 DEG/17 KTS, 50 FT. 252 DEG/22 KTS,
100 FT. 252 DEG/19 KTS, 150 FT. 244 DEG/22 KTS,
200 FT. 253 DEG/21 KTS, 250 FT. 250 DEG/24 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA
DATE: 10 MAY, 1967

ROCKET TIME: 1258LST 1758GCT
ROCKET MOTOR TYPE: ARCAS

PAYLOAD TYPE: ARCASONDE 1A
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | | | |
| 72402 | 37°51' N 75°29' W ALT. 3 M | MAY 17, 1967 | 1429 | 1115 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 031 | 067 | 52 | 126 | 036 | +011 | -015 |
| 033 | 067 | 51 | 119 | 044 | +011 | -020 |
| 036 | 067 | 50 | 118 | 046 | +011 | -021 |
| 038 | 067 | 49 | 119 | 040 | +010 | -018 |
| 041 | 067 | 48 | 108 | 031 | +005 | -015 |
| 043 | 067 | 47 | 100 | 022 | +002 | -011 |
| 046 | 056 | 46 | 119 | 024 | +006 | -011 |
| 049 | 056 | 45 | 102 | 028 | +003 | -014 |
| 052 | 056 | 44 | 090 | 025 | +000 | -013 |
| 055 | 048 | 43 | 101 | 020 | +002 | -010 |
| 059 | 037 | 42 | 111 | 017 | +003 | -008 |
| 064 | 042 | 41 | 104 | 016 | +002 | -008 |
| 067 | 067 | 40 | 119 | 024 | +006 | -011 |
| 069 | 067 | 39 | 122 | 025 | +007 | -011 |
| 072 | 056 | 38 | 108 | 012 | +002 | -006 |
| 075 | 033 | 37 | 090 | 008 | +000 | -004 |
| 082 | 030 | 36 | 104 | 008 | +001 | -004 |
| 086 | 037 | 35 | 127 | 010 | +003 | -004 |
| 091 | 030 | 34 | 108 | 012 | +002 | -006 |
| 097 | 028 | 33 | 074 | 014 | -002 | -007 |
| 103 | 028 | 32 | 053 | 010 | -003 | -004 |
| 109 | 024 | 31 | 090 | 008 | +000 | -004 |
| 117 | 020 | 30 | 099 | 012 | +001 | -006 |
| 126 | 016 | 29 | 076 | 008 | -001 | -004 |
| 138 | 013 | 28 | 045 | 005 | -002 | -002 |
| 152 | 012 | 27 | 135 | 003 | +001 | -001 |
| 166 | 011 | 26 | 153 | 004 | +002 | -001 |
| 181 | 010 | 25 | 180 | 002 | +001 | +000 |
| 198 | 010 | 24 | 000 | 000 | +000 | +000 |
| 215 | 010 | 23 | 153 | 004 | +002 | -001 |
| 233 | 009 | 22 | 000 | 000 | +000 | +000 |
| 252 | 010 | 21 | 284 | 008 | -001 | +004 |
| 268 | 009 | 20 | 277 | 016 | -001 | +008 |
| 288 | 008 | 19 | 265 | 021 | +001 | +011 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M $^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 5325 | +05.4 | 00.616 | 00.770 | 335 | | | | |
| 5273 | +05.0 | 00.656 | 00.822 | 334 | | | | |
| 5197 | +06.9 | 00.719 | 00.894 | 335 | 126 | 036 | +011 | -015 |
| 5100 | +04.9 | 00.808 | 01.012 | 334 | 119 | 044 | +011 | -020 |
| 4974 | +05.2 | 00.941 | 01.177 | 334 | 119 | 044 | +011 | -020 |
| 4846 | +01.9 | 01.099 | 01.392 | 332 | 114 | 034 | +007 | -016 |
| 4804 | +03.0 | 01.157 | 01.460 | 333 | 108 | 031 | +005 | -015 |
| 4724 | +01.4 | 01.276 | 01.619 | 332 | 104 | 024 | +003 | -012 |
| 4657 | +06.0 | 01.384 | 01.728 | 335 | 110 | 023 | +004 | -011 |
| 4500 | +05.5 | 01.673 | 02.092 | 335 | 102 | 028 | +003 | -014 |
| 4353 | +02.9 | 02.000 | 02.524 | 333 | 095 | 023 | +001 | -012 |
| 4267 | -02.1 | 02.224 | 02.858 | 330 | 103 | 018 | +002 | -009 |
| 4200 | -03.6 | 02.418 | 03.125 | 329 | 111 | 017 | +003 | -008 |
| 4127 | -07.2 | 02.651 | 03.472 | 327 | 104 | 016 | +002 | -008 |
| 4081 | -06.2 | 02.810 | 03.667 | 328 | 108 | 018 | +003 | -009 |
| 3874 | -12.9 | 03.662 | 04.902 | 323 | 121 | 023 | +006 | -010 |
| 3776 | -12.7 | 04.158 | 05.562 | 324 | 108 | 012 | +002 | -006 |
| 3597 | -20.5 | 05.263 | 07.257 | 319 | 104 | 008 | +001 | -004 |
| 3569 | -19.1 | 05.463 | 07.492 | 320 | 117 | 009 | +002 | -004 |
| 3533 | -24.7 | 05.734 | 08.040 | 316 | 117 | 009 | +002 | -004 |
| 3493 | -26.4 | 06.056 | 08.550 | 315 | 127 | 010 | +003 | -004 |
| 3484 | -25.5 | 06.131 | 08.624 | 315 | 127 | 010 | +003 | -004 |
| 3359 | -32.4 | 07.289 | 10.547 | 311 | 090 | 012 | +000 | -006 |
| 3313 | -30.0 | 07.773 | 11.136 | 313 | 082 | 014 | -001 | -007 |
| 3292 | -32.6 | 08.004 | 11.592 | 311 | 074 | 014 | -002 | -007 |
| 3277 | -30.8 | 08.174 | 11.750 | 312 | 072 | 012 | -002 | -006 |
| 3082 | -42.9 | 10.806 | 16.350 | 304 | 090 | 008 | +000 | -004 |
| 3054 | -42.7 | 11.260 | 17.022 | 304 | 090 | 010 | +000 | -005 |
| 2900 | -48.3 | 14.157 | 21.934 | 301 | 076 | 008 | -001 | -004 |
| 2807 | -48.9 | 16.288 | 25.304 | 300 | 045 | 005 | -002 | -002 |
| 2725 | -46.3 | 18.423 | 28.291 | 302 | 090 | 002 | +000 | -001 |
| 2591 | -51.1 | 22.553 | 35.382 | 299 | 153 | 004 | +002 | -001 |
| 2393 | -51.2 | 30.514 | 47.894 | 299 | 000 | 000 | +000 | -000 |
| 2137 | -52.9 | 45.193 | 71.482 | 298 | 288 | 006 | -001 | +003 |
| 2063 | -56.1 | 50.694 | 81.365 | 295 | 281 | 010 | -001 | +005 |
| 2000 | -54.9 | 55.928 | 89.272 | 296 | 277 | 016 | -001 | +008 |
| 1890 | -54.2 | 66.350 | | 297 | | | | |
| 1829 | -58.3 | 73.000 | | 294 | | | | |

CONSTANT PRESSURE LEVEL DATA
(HEIGHT IN GEOPOTENTIAL METERS)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2065 | -55.7 | 50.000 | 80.101 | 296 | 281 | 010 | -001 | +005 |
| 2397 | -51.2 | 30.000 | 47.086 | 299 | 000 | 000 | -000 | +000 |
| 2663 | -48.1 | 20.000 | 30.964 | 301 | 135 | 003 | +001 | -001 |
| 3127 | -39.2 | 10.000 | 14.890 | 307 | 076 | 008 | -001 | -004 |
| 3372 | -30.7 | 07.000 | 10.057 | 312 | 108 | 012 | +002 | -006 |
| 3619 | -18.6 | 05.000 | 06.844 | 320 | 104 | 008 | +001 | -004 |
| 4323 | +02.9 | 02.000 | 02.524 | 333 | 095 | 023 | +001 | -012 |
| 4888 | +04.0 | 01.000 | 01.257 | 334 | 118 | 042 | +010 | -019 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1025.4 | 0000 | 300 | 004 | -001 | +002 | 89 | +07.2 |
| 0803.0 | 0200 | 273 | 025 | -001 | +013 | 52 | -02.7 |
| 0622.0 | 0400 | 277 | 029 | -002 | +015 | 24 | -11.3 |
| 0476.0 | 0600 | 276 | 048 | -003 | +025 | 24 | -25.0 |
| 0358.0 | 0800 | 264 | 070 | +004 | +036 | | -41.1 |
| 0265.0 | 1000 | 261 | 104 | +008 | +053 | | -49.7 |
| 0195.0 | 1200 | 262 | 090 | +006 | +046 | | -51.1 |
| 0144.0 | 1400 | 258 | 064 | +007 | +032 | | -53.6 |
| 0105.0 | 1600 | 258 | 061 | +007 | +031 | | -57.1 |
| 0076.0 | 1800 | 264 | 038 | +002 | +019 | | -60.6 |
| 0055.5 | 2000 | 263 | 020 | +001 | +010 | | -54.1 |
| 0041.0 | 2200 | 060 | 004 | -001 | -002 | | -52.7 |
| 0030.3 | 2400 | 060 | 002 | -001 | -001 | | -51.3 |
| 0022.2 | 2600 | 055 | 004 | -001 | -002 | | -49.9 |
| 0016.5 | 2800 | 058 | 005 | -001 | -002 | | -46.6 |
| 0012.3 | 3000 | 100 | 008 | +001 | -004 | | -43.0 |
| 0009.2 | 3200 | | | | | | -37.6 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 130 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 118 DEG. AZIMUTH 78.8 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 9 SECONDS 1,740 METERS ALTITUDE
MOTOR TRACK DROPPED.. 130 SECONDS 57,970 METERS ALTITUDE
PAYLOAD ACQUISITION.. 130 SECONDS 57,970 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 1,800 SECONDS 18,290 METERS ALTITUDE
APOGEE.. 128 SECONDS 58,220 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 16 FT. DIAMETER DISC-GAP-BAND PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1,688 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 173 SEC. 53,250 METERS ALTITUDE
TO 1,800 SEC. 18,290 METERS ALTITUDE

REMARKS

TEMPERATURE FROM 53250 METERS TO 34840 METERS CONSIDERED QUESTIONABLE.
THERMODYNAMICS BASE DATA.. PRESSURE 73.0 MB
ALTITUDE 18,290 METERS
TEMPERATURE -59.7 DEG. C

RADIOSONDE AND BALLOON DATA

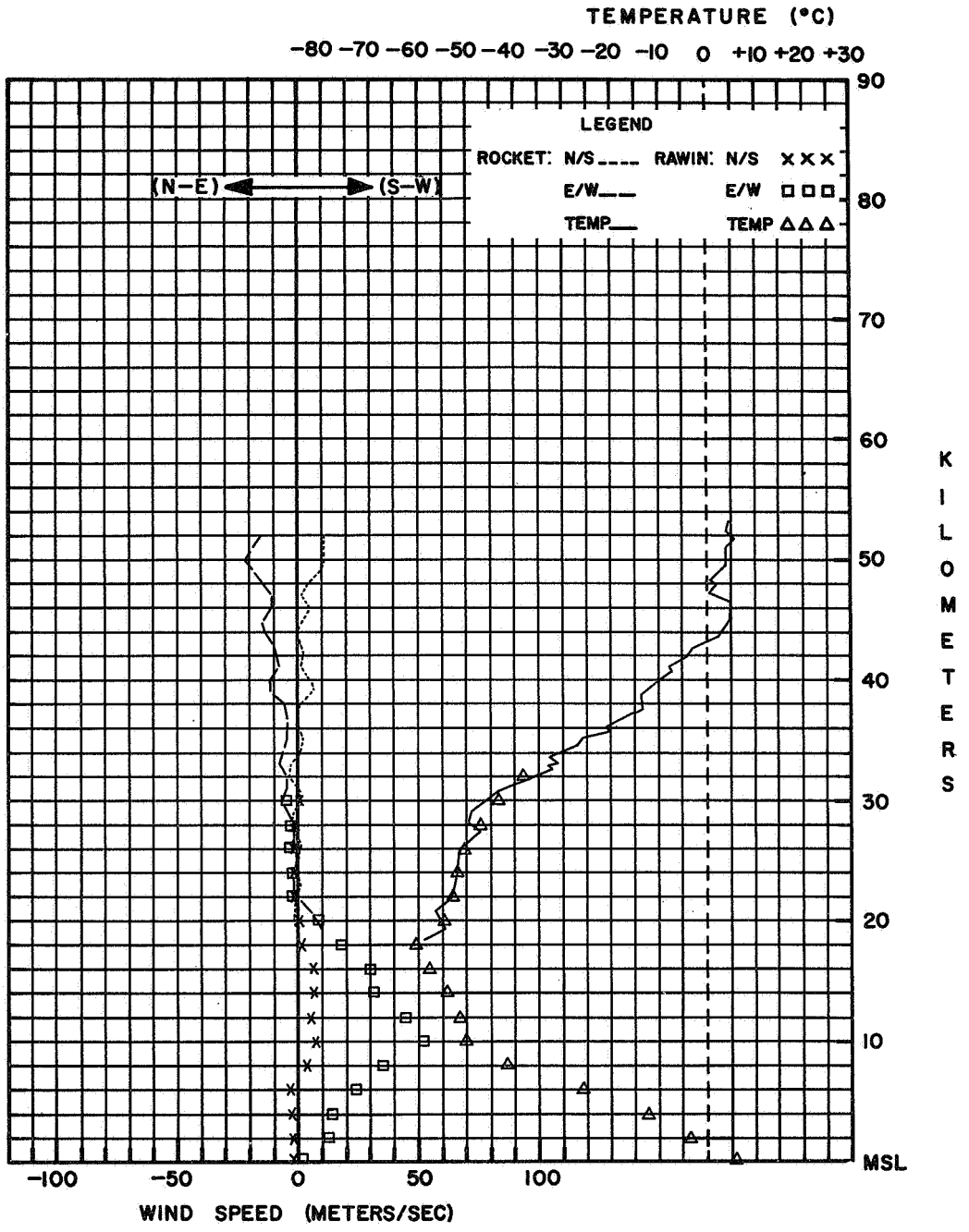
RADIOSONDE MANUFACTURER.. BENDIX CORP.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,700 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 290 M/MINUTE
400 MB-TOP = 358 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,025.4 MB
TEMPERATURE.. 7.2 DEG. C
RELATIVE HUMIDITY.. 89%
VISIBILITY.. 16 KM
SURFACE WIND.. 300 DEG. 4 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 0 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 148 DEG/05 KTS, 50 FT. 149 DEG/05 KTS,
100 FT. 158 DEG/05 KTS, 150 FT. 162 DEG/05 KTS,
200 FT. 180 DEG/05 KTS, 250 FT. 180 DEG/06 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA **ROCKET TIME:** 0929 LST 1429 GCT **PAYLOAD TYPE:** ARCASONDE 1A

**DATE:** 17 MAY, 1967 **ROCKET MOTOR TYPE:** ARCAS **RADIOSONDE TYPE:** 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (CNIE) CHAMICAL, ARGENTINA | Z | Z | Z |
| 87320 | 30°22′ S 66°17′ W ALT. 457 M | MAY 17, 1967 | 1615 | 1710 |

# TABULATED DATA

ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 087 | 026 | 36 | 286 | 036 | -005 | +018 |
| 093 | 028 | 35 | 285 | 030 | -004 | +015 |
| 099 | 030 | 34 | 288 | 031 | -005 | +015 |
| 104 | 026 | 33 | 297 | 022 | -005 | +010 |
| 112 | 022 | 32 | 315 | 025 | -009 | +009 |
| 119 | 019 | 31 | 337 | 015 | -007 | +003 |
| 130 | 017 | 30 | 360 | 010 | -005 | +000 |
| 139 | 017 | 29 | 027 | 004 | -002 | -001 |
| 150 | 016 | 28 | 180 | 002 | +001 | +000 |
| 160 | 017 | 27 | 315 | 003 | -001 | +001 |
| 170 | 015 | 26 | 304 | 007 | -002 | +003 |
| 182 | 013 | 25 | 326 | 007 | -003 | +002 |
| 196 | 010 | 24 | 333 | 009 | -004 | +002 |
| 214 | 010 | 23 | 297 | 009 | -002 | +004 |
| 230 | 009 | 22 | 259 | 010 | +001 | +005 |
| 250 | 009 | 21 | 279 | 012 | -001 | +006 |
| 269 | 008 | 20 | 326 | 007 | -003 | +002 |
| 292 | 007 | 19 | 310 | 015 | -005 | +006 |
| 316 | 006 | 18 | 307 | 051 | -016 | +021 |

ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M$^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|

RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 0952.0 | 0046 | 000 | 000 | -000 | -000 | 55 | +27.0 |
| 0795.0 | 0200 | 050 | 004 | -001 | -002 | 34 | +19.0 |
| 0637.0 | 0400 | 308 | 030 | -010 | +012 | 42 | +04.0 |
| 0499.0 | 0600 | 307 | 037 | -011 | +015 | 13 | -10.3 |
| 0375.0 | 0800 | 291 | 042 | -008 | +020 | 07 | -25.2 |
| 0282.0 | 1000 | 275 | 070 | -003 | +036 | | -39.3 |
| 0209.0 | 1200 | 276 | 098 | -005 | +050 | | -53.5 |
| 0152.0 | 1400 | 285 | 075 | -010 | +037 | | -59.8 |
| 0110.0 | 1600 | 287 | 079 | -012 | +039 | | -67.3 |
| 0079.0 | 1800 | 301 | 052 | -014 | +023 | | -71.6 |
| 0057.3 | 2000 | 259 | 015 | +001 | +008 | | -63.5 |
| 0042.7 | 2200 | 260 | 012 | +001 | +006 | | -53.8 |
| 0030.3 | 2400 | 349 | 010 | -005 | +001 | | -48.0 |
| 0022.0 | 2600 | 264 | 009 | +000 | +005 | | -44.2 |
| 0016.7 | 2800 | | | | | | -40.1 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-2B
*PAYLOAD PERFORMANCE.. POOR*
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 130 SEC. ACTUAL.. 122 SEC.
TYPE OF LAUNCHER.. ARCAS
LAUNCHER SETTING.. 010 DEG. AZIMUTH 86.5 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 10 *SECONDS* 3,195 *METERS ALTITUDE*
MOTOR TRACK DROPPED.. 134 SECONDS 69,647 METERS ALTITUDE
PAYLOAD ACQUISITION.. 134 SECONDS 69,647 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,520 SECONDS 13,929 METERS ALTITUDE
APOGEE.. 134 SECONDS 69,647 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 15 FT. DIAMETER PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. ABOVE NOMINAL
GROUND EQUIPMENT TYPE.. GMD-2B
*TELEMETRY FREQUENCY.. 1,680 MHZ*
TELEMETRY QUALITY.. POOR
TELEMETRY DATA RECEIVED FROM.. NOT RECEIVED

REMARKS

UNDEPLOYED PARACHUTE FROM PAYLOAD EJECTION TO 420 SECONDS.
TELEMETRY DATA NOT RECEIVED DUE TO LOW SIGNAL STRENGTH.
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
*ALTITUDE* N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

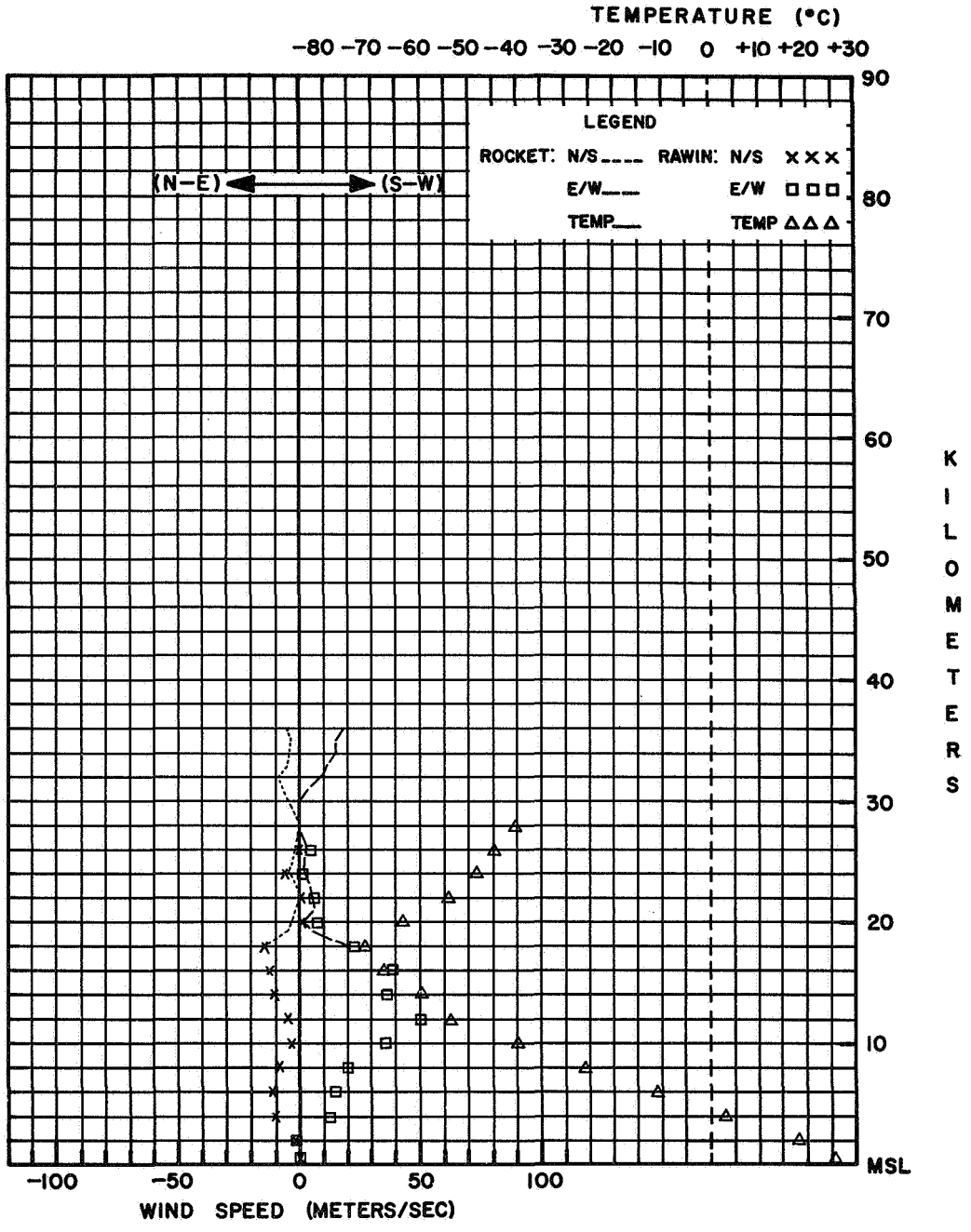
RADIOSONDE MANUFACTURER.. VAISALA
RADIOSONDE TYPE.. VAISALA
TEMPERATURE ELEMENT TYPE.. RESISTANCE WIRE
PRESSURE SENSOR TYPE.. DOUBLE ANEROID
GROUND EQUIPMENT TYPE.. VAISALA + MPS-19 RADAR
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,600 GRAMS
ASCENSION RATES.. SFC-400 MB = 309 M/MINUTE
400 MB-TOP = 343 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

*STATION PRESSURE.. 951.9 MB*
TEMPERATURE.. 27.0 DEG. C
RELATIVE HUMIDITY.. 55%
VISIBILITY.. 15 KM
SURFACE WIND.. 0 DEG. 0 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 0 OCTAS
LOW.. NONE
*MIDDLE.. NONE*
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 135 DEG/05 KTS




STATION: (CNIE) CHAMICAL, ARGENTINA

DATE: 17 MAY, 1967

ROCKET TIME: 1215 LST 1615 GCT

ROCKET MOTOR TYPE: ARCAS

PAYLOAD TYPE: ARCASONDE 2B

RADIOSONDE TYPE: VAISALA

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | Z | Z | Z |
| 72402 | 37°51' N 75°29' W ALT. 3 M | MAY 25, 1967 | 1849 | 2125 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 027 | 083 | 52 | 138 | 029 | +011 | -010 |
| 029 | 083 | 51 | 133 | 045 | +016 | -017 |
| 031 | 083 | 50 | 128 | 064 | +020 | -026 |
| 033 | 067 | 49 | 114 | 057 | +012 | -027 |
| 036 | 067 | 48 | 076 | 032 | -004 | -016 |
| 038 | 067 | 47 | 082 | 014 | -001 | -007 |
| 041 | 067 | 46 | 117 | 013 | +003 | -006 |
| 043 | 056 | 45 | 112 | 010 | +002 | -005 |
| 047 | 042 | 44 | 090 | 002 | +000 | -001 |
| 051 | 048 | 43 | 158 | 010 | +005 | -002 |
| 054 | 048 | 42 | 163 | 020 | +010 | -003 |
| 058 | 037 | 41 | 144 | 017 | +007 | -005 |
| 063 | 033 | 40 | 113 | 015 | +003 | -007 |
| 068 | 033 | 39 | 090 | 017 | +000 | -009 |
| 073 | 033 | 38 | 082 | 014 | -001 | -007 |
| 078 | 026 | 37 | 090 | 010 | +000 | -005 |
| 086 | 022 | 36 | 090 | 014 | +000 | -007 |
| 093 | 024 | 35 | 090 | 019 | +000 | -010 |
| 100 | 022 | 34 | 104 | 016 | +002 | -008 |
| 108 | 020 | 33 | 101 | 010 | +001 | -005 |
| 117 | 019 | 32 | 098 | 014 | +001 | -007 |
| 126 | 017 | 31 | 090 | 010 | +000 | -005 |
| 137 | 015 | 30 | 090 | 006 | +000 | -003 |
| 148 | 014 | 29 | 072 | 006 | -001 | -003 |
| 160 | 013 | 28 | 072 | 006 | -001 | -003 |
| 173 | 011 | 27 | 037 | 010 | -004 | -003 |
| 190 | 009 | 26 | 063 | 009 | -002 | -004 |
| 210 | 008 | 25 | 074 | 014 | -002 | -007 |
| 231 | 008 | 24 | 059 | 011 | -003 | -005 |
| 253 | 007 | 23 | 360 | 004 | -002 | +000 |
| 278 | 006 | 22 | 045 | 003 | -001 | -001 |
| 307 | 006 | 21 | 360 | 002 | -001 | +000 |
| 338 | 005 | 20 | 315 | 003 | -001 | +001 |
| 370 | 004 | 19 | 360 | 004 | -002 | +000 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M$^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 5294 | +04.3 | 00.674 | 00.847 | 334 | | | | |
| 4810 | +03.5 | 01.213 | 01.528 | 333 | 083 | 033 | -002 | -017 |
| 4776 | +01.6 | 01.265 | 01.604 | 332 | 078 | 028 | -003 | -014 |
| 4679 | +01.0 | 01.425 | 01.810 | 332 | 090 | 014 | -000 | -007 |
| 4627 | -01.1 | 01.519 | 01.945 | 331 | 108 | 012 | +002 | -006 |
| 4496 | +02.7 | 01.784 | 02.254 | 333 | 112 | 010 | +002 | -005 |
| 4392 | +00.7 | 02.027 | 02.579 | 332 | 090 | 002 | +000 | -001 |
| 4340 | +01.7 | 02.161 | 02.739 | 332 | 146 | 007 | +003 | -002 |
| 4319 | +03.1 | 02.217 | 02.796 | 333 | 153 | 009 | +004 | -002 |
| 4228 | +03.5 | 02.477 | 03.119 | 333 | 162 | 018 | +009 | -003 |
| 4011 | -07.4 | 03.245 | 04.253 | 327 | 113 | 015 | +003 | -007 |
| 3941 | -07.6 | 03.546 | 04.652 | 327 | 097 | 016 | +001 | -008 |
| 3800 | -11.7 | 04.248 | 05.661 | 324 | 082 | 014 | -001 | -007 |
| 3697 | -16.9 | 04.859 | 06.606 | 321 | 090 | 010 | +000 | -005 |
| 3597 | -21.2 | 05.550 | 07.674 | 318 | 090 | 014 | +000 | -007 |
| 3295 | -28.6 | 08.372 | 11.927 | 313 | 101 | 010 | +001 | -005 |
| 3237 | -28.8 | 09.072 | 12.934 | 313 | 099 | 012 | +001 | -006 |
| 3164 | -33.7 | 10.047 | 14.617 | 310 | 099 | 012 | +001 | -006 |
| 3109 | -33.9 | 10.859 | 15.812 | 310 | 090 | 010 | +000 | -005 |
| 3088 | -36.3 | 11.188 | 16.456 | 309 | 090 | 010 | +000 | -005 |
| 3039 | -37.8 | 12.002 | 17.765 | 308 | 090 | 008 | +000 | -004 |
| 3027 | -40.9 | 12.212 | 18.318 | 306 | 090 | 008 | +000 | -004 |
| 3000 | -39.5 | 12.701 | 18.936 | 306 | 090 | 006 | +000 | -003 |
| 2908 | -43.3 | 14.527 | 22.018 | 304 | 072 | 006 | -001 | -003 |
| 2865 | -43.8 | 15.478 | 23.510 | 304 | 072 | 006 | -001 | -003 |
| 2850 | -42.8 | 15.824 | 23.931 | 304 | 072 | 006 | -001 | -003 |
| 2822 | -45.0 | 16.492 | 25.182 | 303 | 072 | 006 | -001 | -003 |
| 2783 | -44.4 | 17.474 | 26.611 | 303 | 056 | 007 | -002 | -003 |
| 2667 | -47.9 | 20.776 | 32.132 | 301 | 045 | 008 | -003 | -003 |
| 2637 | -46.8 | 21.732 | 33.448 | 302 | 053 | 010 | -003 | -004 |
| 2500 | -52.2 | 26.747 | 42.171 | 298 | 074 | 014 | -002 | -007 |
| 2259 | -53.5 | 38.759 | 61.472 | 297 | 000 | 004 | -002 | -000 |
| 2131 | -56.0 | 47.286 | 75.860 | 295 | 000 | 002 | -001 | -000 |
| 2033 | -54.0 | 55.075 | 87.548 | 297 | 315 | 003 | -001 | +001 |
| 2000 | -54.9 | 57.969 | 92.530 | 296 | 315 | 003 | -001 | +001 |
| 1900 | -55.1 | 67.732 | | 296 | | | | |
| 1850 | -53.7 | 73.200 | | 297 | | | | |

CONSTANT PRESSURE LEVEL DATA
(HEIGHT IN GEOPOTENTIAL METERS)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2090 | -55.3 | 50.000 | 79.957 | 296 | 000 | 002 | -001 | +000 |
| 2426 | -52.6 | 30.000 | 47.376 | 298 | 063 | 013 | -003 | -006 |
| 2683 | -47.1 | 20.000 | 30.819 | 301 | 037 | 010 | -004 | -003 |
| 3152 | -33.5 | 10.000 | 14.534 | 310 | 099 | 012 | +001 | -006 |
| 3424 | -25.0 | 07.000 | 09.827 | 316 | 096 | 018 | +001 | -009 |
| 3656 | -17.8 | 05.000 | 06.821 | 320 | 090 | 010 | +000 | -005 |
| 4374 | +00.9 | 02.000 | 02.542 | 332 | 090 | 002 | +000 | -001 |
| 4963 | +03.8 | 01.000 | 01.258 | 334 | 128 | 064 | +020 | -026 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1013.0 | 0000 | 010 | 012 | -006 | -001 | 50 | +17.8 |
| 0795.0 | 0200 | | | | | 66 | -00.2 |
| 0620.0 | 0400 | | | | | 18 | -06.0 |
| 0484.0 | 0600 | | | | | 19 | -18.8 |
| 0360.0 | 0800 | | | | | 22 | -33.1 |
| 0270.0 | 1000 | | | | | | -48.2 |
| 0199.0 | 1200 | | | | | | -47.7 |
| 0147.0 | 1400 | | | | | | -53.2 |
| 0107.5 | 1600 | 299 | 010 | -002 | +005 | | -56.6 |
| 0078.6 | 1800 | 248 | 004 | +001 | +002 | | -56.3 |
| 0057.2 | 2000 | 275 | 004 | -000 | +002 | | -55.7 |
| 0042.0 | 2200 | 329 | 006 | -003 | +002 | | -54.7 |
| 0030.8 | 2400 | 038 | 009 | -004 | -003 | | -53.5 |
| 0022.7 | 2600 | 043 | 015 | -006 | -005 | | -50.5 |
| 0016.9 | 2800 | 073 | 014 | -002 | -007 | | -46.1 |
| 0012.5 | 3000 | 076 | 012 | -001 | -006 | | -41.7 |
| 0009.4 | 3200 | | | | | | -37.0 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 134 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 136 DEG. AZIMUTH 72.5 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 1,310 METERS ALTITUDE
MOTOR TRACK DROPPED.. 134 SECONDS 54,193 METERS ALTITUDE
PAYLOAD ACQUISITION.. 134 SECONDS 54,193 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,280 SECONDS 18,500 METERS ALTITUDE
APOGEE.. 122 SECONDS 54,740 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 16 FT. DIAMETER DISC-GAP-BAND PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1,688 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 150 SEC. 52,940 METERS ALTITUDE
TO 2,280 SEC. 18,500 METERS ALTITUDE

REMARKS

RAWINSONDE WIND DATA MISSING FROM 2,000-14,000 METERS ALTITUDE.

THERMODYNAMICS BASE DATA.. PRESSURE 73.2 MB
ALTITUDE 18,500 METERS
TEMPERATURE -56.1 DEG. C

RADIOSONDE AND BALLOON DATA

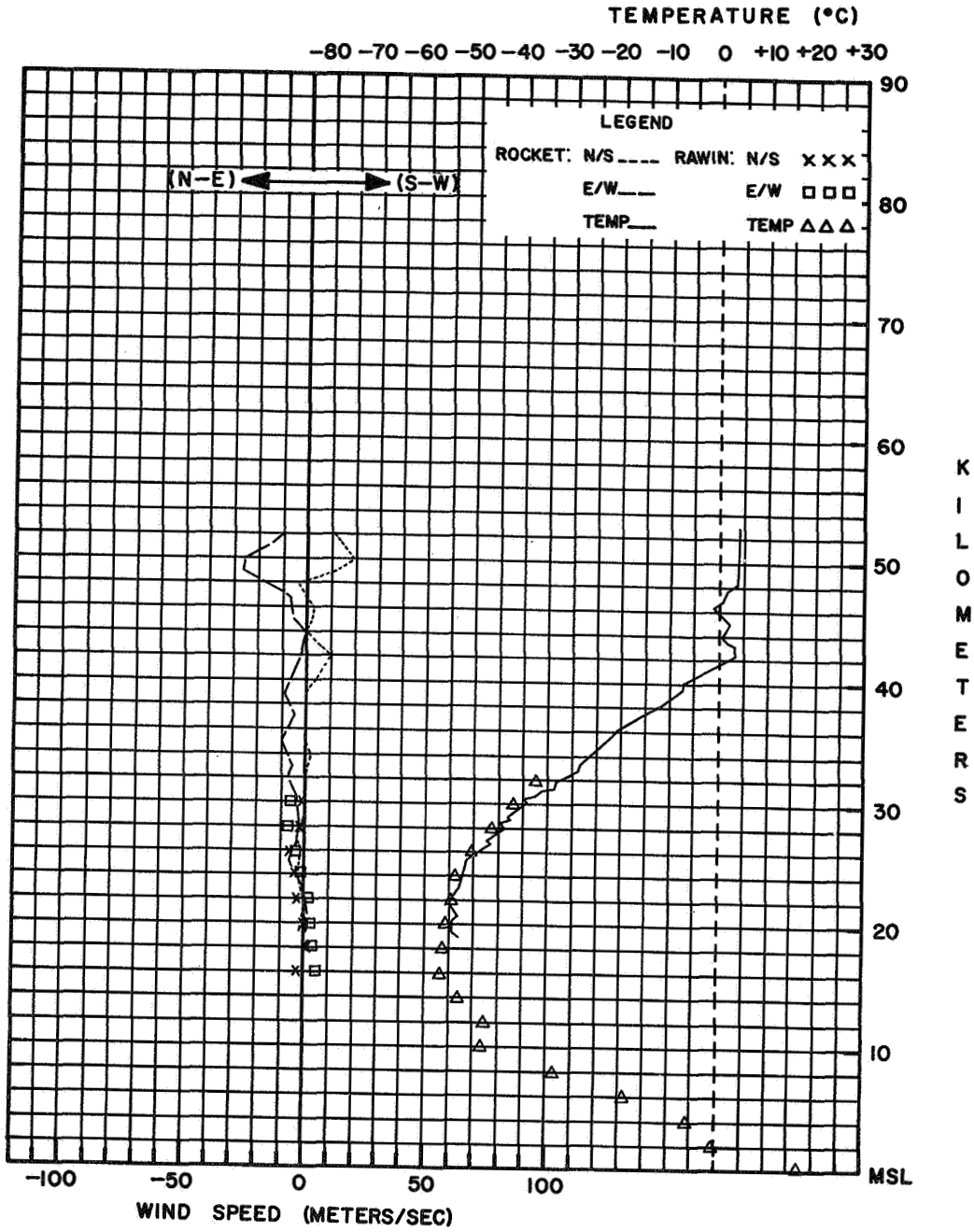
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 310 M/MINUTE
400 MB-TOP = 369 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,013.0 MB
TEMPERATURE.. 17.8 DEG. C
RELATIVE HUMIDITY.. 50%
VISIBILITY.. 16 KM
SURFACE WIND.. 010 DEG. 12 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 0 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 343 DEG/19 KTS. 50 FT. 335 DEG/15 KTS.
100 FT. 343 DEG/15 KTS, 150 FT. 339 DEG/15 KTS,
200 FT. 326 DEG/16 KTS, 250 FT. 338 DEG/16 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA
**DATE:** 25 MAY, 1967

**ROCKET TIME:** 1349 LST 1849 GCT
**ROCKET MOTOR TYPE:** ARCAS

**PAYLOAD TYPE:** ARCASONDE 1A
**RADIOSONDE TYPE:** 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | Z | Z | Z |
| 72402 | 37°51' N 75°29' W ALT. 3 M | JUNE 2, 1967 | 1846 | 1715 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 028 | 111 | 57 | 086 | 057 | -002 | -029 |
| 030 | 111 | 56 | 086 | 058 | -002 | -030 |
| 031 | 111 | 55 | 081 | 059 | -005 | -030 |
| 033 | 083 | 54 | 090 | 058 | +000 | -030 |
| 035 | 067 | 53 | 098 | 053 | +004 | -027 |
| 038 | 067 | 52 | 102 | 046 | +005 | -023 |
| 040 | 083 | 51 | 111 | 048 | +009 | -023 |
| 042 | 067 | 50 | 108 | 045 | +007 | -022 |
| 045 | 056 | 49 | 103 | 044 | +005 | -022 |
| 048 | 056 | 48 | 097 | 031 | +002 | -016 |
| 051 | 056 | 47 | 108 | 025 | +004 | -012 |
| 054 | 056 | 46 | 125 | 031 | +009 | -013 |
| 057 | 048 | 45 | 119 | 036 | +009 | -016 |
| 061 | 048 | 44 | 107 | 041 | +006 | -020 |
| 064 | 048 | 43 | 103 | 044 | +005 | -022 |
| 068 | 037 | 42 | 100 | 034 | +003 | -017 |
| 073 | 037 | 41 | 094 | 031 | +001 | -016 |
| 077 | 037 | 40 | 087 | 037 | -001 | -019 |
| 082 | 030 | 39 | 086 | 029 | -001 | -015 |
| 088 | 030 | 38 | 108 | 025 | +004 | -012 |
| 093 | 028 | 37 | 114 | 023 | +005 | -011 |
| 100 | 024 | 36 | 090 | 016 | +000 | -008 |
| 107 | 022 | 35 | 076 | 016 | -002 | -008 |
| 115 | 021 | 34 | 079 | 010 | -001 | -005 |
| 123 | 021 | 33 | 104 | 008 | +001 | -004 |
| 131 | 019 | 32 | 117 | 004 | +001 | -002 |
| 141 | 015 | 31 | 117 | 004 | +001 | -002 |
| 153 | 015 | 30 | 108 | 006 | +001 | -003 |
| 163 | 015 | 29 | 090 | 012 | +000 | -006 |
| 175 | 013 | 28 | 090 | 010 | +000 | -005 |
| 189 | 010 | 27 | 104 | 008 | +001 | -004 |
| 207 | 010 | 26 | 090 | 006 | +000 | -003 |
| 224 | 008 | 25 | 045 | 003 | -001 | -001 |
| 247 | 007 | 24 | 180 | 002 | +001 | +000 |
| 269 | 007 | 23 | 153 | 004 | +002 | -001 |
| 292 | 007 | 22 | 108 | 006 | +001 | -003 |
| 320 | 006 | 21 | 090 | 002 | +000 | -001 |
| 348 | 006 | 20 | 315 | 003 | -001 | +001 |
| 380 | 005 | 19 | 315 | 005 | -002 | +002 |
| 413 | 004 | 18 | 323 | 010 | -004 | +003 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 5377 | +01.3 | 00.606 | 00.770 | 332 | 092 | 056 | +001 | -029 |
| 5300 | +00.3 | 00.666 | 00.849 | 331 | 098 | 053 | +004 | -027 |
| 4947 | +02.5 | 01.027 | 01.298 | 333 | 105 | 044 | +006 | -022 |
| 4776 | +06.3 | 01.263 | 01.575 | 335 | 098 | 029 | +002 | -015 |
| 4542 | +06.1 | 01.675 | 02.089 | 335 | 121 | 034 | +009 | -015 |
| 4420 | +02.8 | 01.942 | 02.452 | 333 | 110 | 039 | +007 | -019 |
| 4295 | +03.0 | 02.262 | 02.854 | 333 | 103 | 044 | +005 | -022 |
| 4240 | +00.0 | 02.420 | 03.087 | 331 | 102 | 038 | +004 | -019 |
| 4151 | +00.1 | 02.701 | 03.444 | 331 | 097 | 033 | +002 | -017 |
| 4011 | -09.9 | 03.221 | 04.263 | 325 | 087 | 037 | -001 | -019 |
| 3956 | -08.7 | 03.456 | 04.553 | 326 | 087 | 033 | -001 | -017 |
| 3944 | -11.7 | 03.509 | 04.676 | 324 | 087 | 033 | -001 | -017 |
| 3908 | -12.0 | 03.677 | 04.904 | 324 | 086 | 029 | -001 | -015 |
| 3807 | -17.1 | 04.195 | 05.707 | 321 | 108 | 025 | +004 | -012 |
| 3786 | -17.1 | 04.312 | 05.867 | 321 | 108 | 025 | +004 | -012 |
| 3770 | -19.5 | 04.405 | 06.050 | 319 | 108 | 025 | +004 | -012 |
| 3737 | -17.4 | 04.602 | 06.268 | 321 | 114 | 023 | +005 | -011 |
| 3673 | -20.1 | 05.010 | 06.897 | 319 | 112 | 021 | +004 | -010 |
| 3658 | -17.8 | 05.111 | 06.972 | 320 | 107 | 020 | +003 | -010 |
| 3642 | -20.9 | 05.221 | 07.210 | 318 | 103 | 018 | +002 | -009 |
| 3615 | -20.0 | 05.412 | 07.448 | 319 | 097 | 016 | +001 | -008 |
| 3569 | -22.5 | 05.757 | 08.001 | 317 | 083 | 016 | -001 | -008 |
| 3469 | -25.0 | 06.592 | 09.254 | 316 | 074 | 014 | -002 | -007 |
| 3338 | -25.5 | 07.881 | 11.087 | 315 | 090 | 008 | +000 | -004 |
| 3206 | -31.2 | 09.458 | 13.617 | 312 | 117 | 004 | +001 | -002 |
| 3194 | -35.3 | 09.619 | 14.089 | 309 | 117 | 004 | +001 | -002 |
| 3164 | -34.4 | 10.037 | 14.646 | 310 | 117 | 004 | +001 | -002 |
| 3112 | -39.8 | 10.814 | 16.144 | 306 | 117 | 004 | +001 | -002 |
| 2862 | -38.6 | 15.526 | 23.060 | 307 | 090 | 012 | +000 | -006 |
| 2798 | -43.7 | 17.046 | 25.881 | 304 | 090 | 010 | +000 | -005 |
| 2597 | -49.2 | 23.018 | 35.806 | 300 | 090 | 006 | +000 | -003 |
| 2533 | -47.6 | 25.350 | 39.154 | 301 | 063 | 004 | -001 | -002 |
| 2295 | -49.8 | 36.318 | 56.647 | 300 | 153 | 004 | +002 | -001 |
| 2090 | -54.9 | 49.766 | 79.436 | 296 | 090 | 002 | -000 | -001 |
| 2000 | -54.8 | 57.242 | 91.327 | 296 | 315 | 003 | -001 | +001 |
| 1957 | -52.9 | 61.182 | 96.772 | 298 | 315 | 003 | -001 | +001 |
| 1859 | -59.9 | 71.336 | | 293 | 326 | 007 | -003 | +002 |
| 1780 | -59.8 | 80.900 | | 293 | | | | |

CONSTANT PRESSURE LEVEL DATA
(HEIGHT IN GEOPOTENTIAL METERS)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2080 | -54.9 | 50.000 | 79.808 | 296 | 090 | 002 | -000 | -001 |
| 2423 | -48.5 | 30.000 | 46.528 | 300 | 000 | 000 | +000 | -000 |
| 2688 | -46.4 | 20.000 | 30.730 | 302 | 104 | 008 | +001 | -004 |
| 3151 | -34.5 | 10.000 | 14.596 | 310 | 117 | 004 | +001 | -002 |
| 3410 | -25.2 | 07.000 | 09.833 | 316 | 081 | 012 | -001 | -006 |
| 3654 | -20.0 | 05.000 | 06.882 | 319 | 112 | 021 | +004 | -010 |
| 4367 | +02.8 | 02.000 | 02.525 | 333 | 107 | 041 | +006 | -020 |
| 4934 | +02.3 | 01.000 | 01.265 | 333 | 105 | 044 | +006 | -022 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH. % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1025.6 | 0000 | 170 | 008 | +004 | -001 | 81 | +16.7 |
| 0810.0 | 0200 | 120 | 018 | +005 | -008 | 32 | +06.8 |
| 0628.0 | 0400 | 082 | 008 | -001 | -004 | 16 | -04.0 |
| 0456.0 | 0600 | 116 | 013 | +003 | -006 | 18 | -24.7 |
| 0369.0 | 0800 | 238 | 006 | +002 | +003 | 22 | -31.7 |
| 0274.0 | 1000 | 252 | 017 | +003 | +008 | | -41.1 |
| 0202.0 | 1200 | 262 | 031 | +002 | +016 | | -57.2 |
| 0147.0 | 1400 | 281 | 035 | +003 | +018 | | -58.9 |
| 0107.0 | 1600 | 306 | 025 | -008 | +010 | | -60.2 |
| 0078.0 | 1800 | 357 | 008 | -004 | +000 | | -59.3 |
| 0057.0 | 2000 | 003 | 002 | -001 | -000 | | -53.2 |
| 0042.0 | 2200 | 132 | 006 | +002 | -002 | | -51.3 |
| 0031.0 | 2400 | 180 | 004 | +002 | -000 | | -49.8 |
| 0022.5 | 2600 | 077 | 008 | -001 | -004 | | -47.9 |
| 0017.0 | 2800 | 089 | 008 | -000 | -004 | | -45.3 |
| 0012.7 | 3000 | 093 | 012 | +000 | -006 | | -39.0 |
| 0009.5 | 3200 | 090 | 006 | -000 | -003 | | -37.4 |
| 0007.1 | 3400 | 108 | 006 | +001 | -003 | | -28.0 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 132 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 126 DEG. AZIMUTH 82.5 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 1,310 METERS ALTITUDE
MOTOR TRACK DROPPED.. 132 SECONDS 59,832 METERS ALTITUDE
PAYLOAD ACQUISITION.. 132 SECONDS 59,832 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,520 SECONDS 17,800 METERS ALTITUDE
APOGEE.. 127 SECONDS 59,954 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 16 FT. DIAMETER DISC-GAP-BAND PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1,690 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 203 SEC. 53,675 METERS ALTITUDE
TO 2,520 SEC. 17,800 METERS ALTITUDE

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 80.9 MB
ALTITUDE 17,800 METERS
TEMPERATURE -59.4 DEG. C

RADIOSONDE AND BALLOON DATA

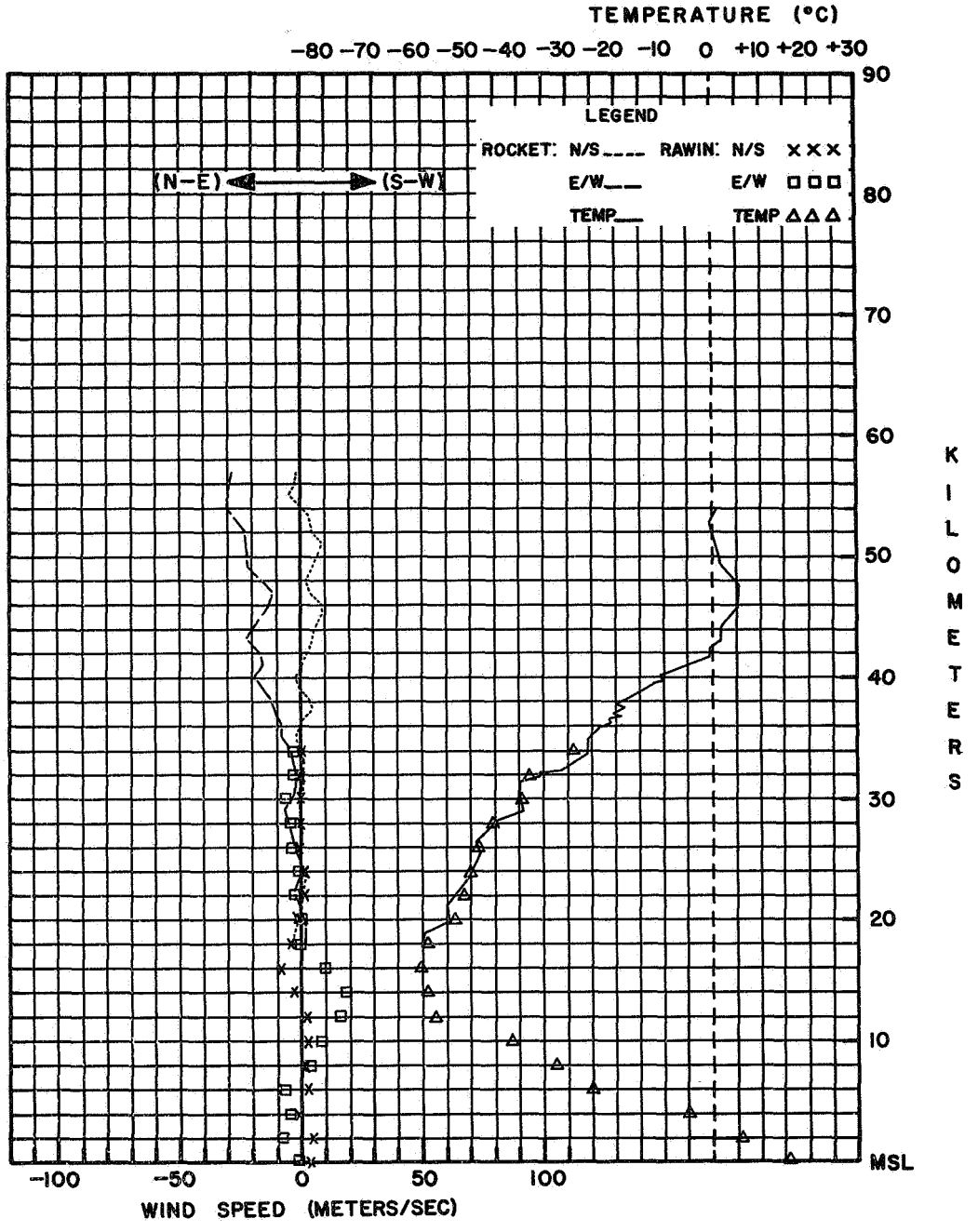
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 283 M/MINUTE
400 MB-TOP = 371 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,025.6 MB
TEMPERATURE.. 16.7 DEG. C
RELATIVE HUMIDITY.. 81%
VISIBILITY.. 16 KM
SURFACE WIND.. 170 DEG. 8 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 2 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. 2 OCTAS/CI
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 175 DEG/06 KTS, 50 FT. 172 DEG/06 KTS,
100 FT. 168 DEG/08 KTS, 150 FT. 168 DEG/08 KTS,
200 FT. 166 DEG/07 KTS, 250 FT. 166 DEG/07 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA
**DATE:** 2 JUNE, 1967

**ROCKET TIME:** 1346 LST 1846 GCT
**ROCKET MOTOR TYPE:** ARCAS

**PAYLOAD TYPE:** ARCASONDE 1A
**RADIOSONDE TYPE:** 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | Z | Z | Z |
| 72402 | 37°51' N 75°29' W ALT. 3 M | JUNE 7, 1967 | 1432 | 1115 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 029 | 099 | 56 | 098 | 071 | +005 | -036 |
| 030 | 083 | 55 | 104 | 074 | +009 | -037 |
| 033 | 067 | 54 | 102 | 066 | +007 | -033 |
| 035 | 083 | 53 | 104 | 064 | +008 | -032 |
| 037 | 083 | 52 | 102 | 056 | +006 | -028 |
| 039 | 067 | 51 | 095 | 041 | +002 | -021 |
| 042 | 056 | 50 | 106 | 028 | +004 | -014 |
| 045 | 067 | 49 | 125 | 040 | +012 | -017 |
| 047 | 067 | 48 | 121 | 052 | +014 | -023 |
| 050 | 048 | 47 | 104 | 056 | +007 | -028 |
| 054 | 048 | 46 | 092 | 062 | +001 | -032 |
| 057 | 056 | 45 | 088 | 056 | -001 | -029 |
| 060 | 048 | 44 | 088 | 053 | -001 | -027 |
| 064 | 048 | 43 | 085 | 049 | -002 | -025 |
| 067 | 042 | 42 | 085 | 041 | -002 | -021 |
| 072 | 033 | 41 | 081 | 035 | -003 | -018 |
| 077 | 033 | 40 | 090 | 031 | +000 | -016 |
| 082 | 033 | 39 | 108 | 039 | +006 | -019 |
| 087 | 030 | 38 | 108 | 045 | +007 | -022 |
| 093 | 026 | 37 | 099 | 035 | +003 | -018 |
| 100 | 024 | 36 | 086 | 027 | -001 | -014 |
| 107 | 024 | 35 | 085 | 021 | -001 | -011 |
| 114 | 022 | 34 | 096 | 020 | +001 | -010 |
| 122 | 019 | 33 | 103 | 018 | +002 | -009 |
| 132 | 018 | 32 | 126 | 017 | +005 | -007 |
| 141 | 018 | 31 | 120 | 016 | +004 | -007 |
| 151 | 016 | 30 | 105 | 022 | +003 | -011 |
| 162 | 015 | 29 | 100 | 022 | +002 | -011 |
| 173 | 013 | 28 | 082 | 014 | -001 | -007 |
| 187 | 011 | 27 | 063 | 013 | -003 | -006 |
| 203 | 009 | 26 | 068 | 010 | -002 | -005 |
| 223 | 008 | 25 | 076 | 008 | -001 | -004 |
| 243 | 008 | 24 | 072 | 006 | -001 | -003 |
| 266 | 007 | 23 | 072 | 006 | -001 | -003 |
| 290 | 006 | 22 | 090 | 004 | +000 | -002 |
| 323 | 005 | 21 | 104 | 008 | +001 | -004 |
| 353 | 005 | 20 | 076 | 008 | -001 | -004 |
| 387 | 005 | 19 | 076 | 008 | -001 | -004 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|
| 5502 | +00.5 | 00.518 | 00.659 | 332 | 104 | 074 | +009 | -037 |
| 5398 | +01.6 | 00.588 | 00.746 | 332 | 102 | 066 | +007 | -033 |
| 5215 | +00.5 | 00.736 | 00.937 | 332 | 102 | 058 | +006 | -029 |
| 5054 | +03.2 | 00.896 | 01.130 | 333 | 099 | 035 | +003 | -018 |
| 4953 | +00.1 | 01.014 | 01.293 | 331 | 118 | 033 | +008 | -015 |
| 4645 | +04.5 | 01.478 | 01.854 | 334 | 098 | 059 | +004 | -030 |
| 4618 | +02.3 | 01.527 | 01.931 | 333 | 094 | 060 | +002 | -031 |
| 4255 | +02.0 | 02.381 | 03.015 | 333 | 085 | 045 | -002 | -023 |
| 4093 | -04.6 | 02.911 | 03.777 | 329 | 081 | 035 | -003 | -018 |
| 3993 | -05.7 | 03.302 | 04.301 | 328 | 090 | 031 | +000 | -016 |
| 3917 | -15.1 | 03.640 | 04.915 | 322 | 106 | 036 | +005 | -018 |
| 3831 | -14.6 | 04.073 | 05.488 | 322 | 108 | 043 | +007 | -021 |
| 3636 | -22.7 | 05.276 | 07.339 | 317 | 090 | 029 | +000 | -015 |
| 3499 | -21.8 | 06.345 | 08.794 | 318 | 085 | 021 | -001 | -011 |
| 3304 | -26.7 | 08.269 | 11.688 | 315 | 103 | 018 | +002 | -009 |
| 3277 | -30.3 | 08.583 | 12.312 | 312 | 108 | 018 | +003 | -009 |
| 3219 | -28.2 | 09.302 | 13.229 | 314 | 120 | 016 | +004 | -007 |
| 3146 | -29.0 | 10.290 | 14.683 | 313 | 120 | 016 | +004 | -007 |
| 3121 | -33.8 | 10.656 | 15.510 | 310 | 120 | 016 | +004 | -007 |
| 2990 | -32.5 | 12.818 | 18.556 | 311 | 105 | 022 | +003 | -011 |
| 2972 | -35.8 | 13.149 | 19.300 | 309 | 105 | 022 | +003 | -011 |
| 2929 | -33.2 | 13.976 | 20.291 | 311 | 100 | 022 | +002 | -011 |
| 2893 | -34.0 | 14.706 | 21.421 | 310 | 100 | 022 | +002 | -011 |
| 2844 | -40.0 | 15.776 | 23.572 | 306 | 090 | 017 | +000 | -009 |
| 2667 | -47.3 | 20.485 | 31.598 | 301 | 063 | 013 | -003 | -006 |
| 2371 | -51.2 | 32.066 | 50.330 | 299 | 072 | 006 | -001 | -003 |
| 2134 | -54.5 | 46.189 | 73.591 | 296 | 108 | 006 | +001 | -003 |
| 2000 | -55.7 | 56.902 | 91.160 | 296 | 076 | 008 | -001 | -004 |
| 1798 | -60.8 | 78.300 | | 292 | | | | |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 2079 | -54.9 | 50.000 | 79.819 | 296 | 104 | 008 | +001 | -004 |
| 2415 | -50.5 | 30.000 | 46.940 | 299 | 072 | 006 | -001 | -003 |
| 2674 | -46.5 | 20.000 | 30.747 | 302 | 063 | 013 | -003 | -006 |
| 3151 | -28.8 | 10.000 | 14.255 | 313 | 126 | 017 | +005 | -007 |
| 3415 | -23.5 | 07.000 | 09.767 | 317 | 090 | 019 | +000 | -010 |
| 3660 | -20.8 | 05.000 | 06.904 | 318 | 097 | 033 | +002 | -017 |
| 4387 | +02.1 | 02.000 | 02.531 | 333 | 088 | 053 | -001 | -027 |
| 4927 | +00.5 | 01.000 | 01.273 | 332 | 115 | 032 | +007 | -015 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1022.5 | 0000 | 110 | 002 | +000 | -001 | 100 | +16.1 |
| 0808.0 | 0200 | 108 | 008 | +001 | -004 | 37 | +08.0 |
| 0632.0 | 0400 | 121 | 006 | +002 | -003 | 29 | +00.5 |
| 0489.0 | 0600 | 136 | 004 | +001 | -001 | 30 | -13.2 |
| 0372.0 | 0800 | 036 | 006 | -002 | -002 | 34 | -30.0 |
| 0280.0 | 1000 | 269 | 007 | +000 | +004 | | -42.7 |
| 0206.0 | 1200 | 297 | 009 | -002 | +004 | | -58.7 |
| 0149.0 | 1400 | 336 | 025 | -012 | +005 | | -63.3 |
| 0108.0 | 1600 | 314 | 011 | -004 | +004 | | -63.4 |
| 0078.0 | 1800 | 018 | 013 | -006 | -002 | | -61.4 |
| 0057.0 | 2000 | 051 | 009 | -003 | -004 | | -58.0 |
| 0041.2 | 2200 | 094 | 015 | +001 | -008 | | -54.6 |
| 0030.3 | 2400 | 099 | 007 | +001 | -004 | | -51.1 |
| 0022.5 | 2600 | 086 | 009 | -000 | -005 | | -47.1 |
| 0016.7 | 2800 | 058 | 009 | -002 | -004 | | -43.0 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. FAIR
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 134 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 123 DEG. AZIMUTH 82.5 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 1,280 METERS ALTITUDE
MOTOR TRACK DROPPED.. 134 SECONDS 59,435 METERS ALTITUDE
PAYLOAD ACQUISITION.. 134 SECONDS 59,435 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,520 SECONDS 17,980 METERS ALTITUDE
APOGEE.. 128 SECONDS 59,740 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 15 FT. DIAMETER PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1,689 MHZ
TELEMETRY QUALITY.. FAIR
TELEMETRY DATA RECEIVED FROM.. 182 SEC. 55,020 METERS ALTITUDE
TO 2,520 SEC. 17,980 METERS ALTITUDE

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 78.3 MB
ALTITUDE 17,980 METERS
TEMPERATURE -61.4 DEG. C

RADIOSONDE AND BALLOON DATA

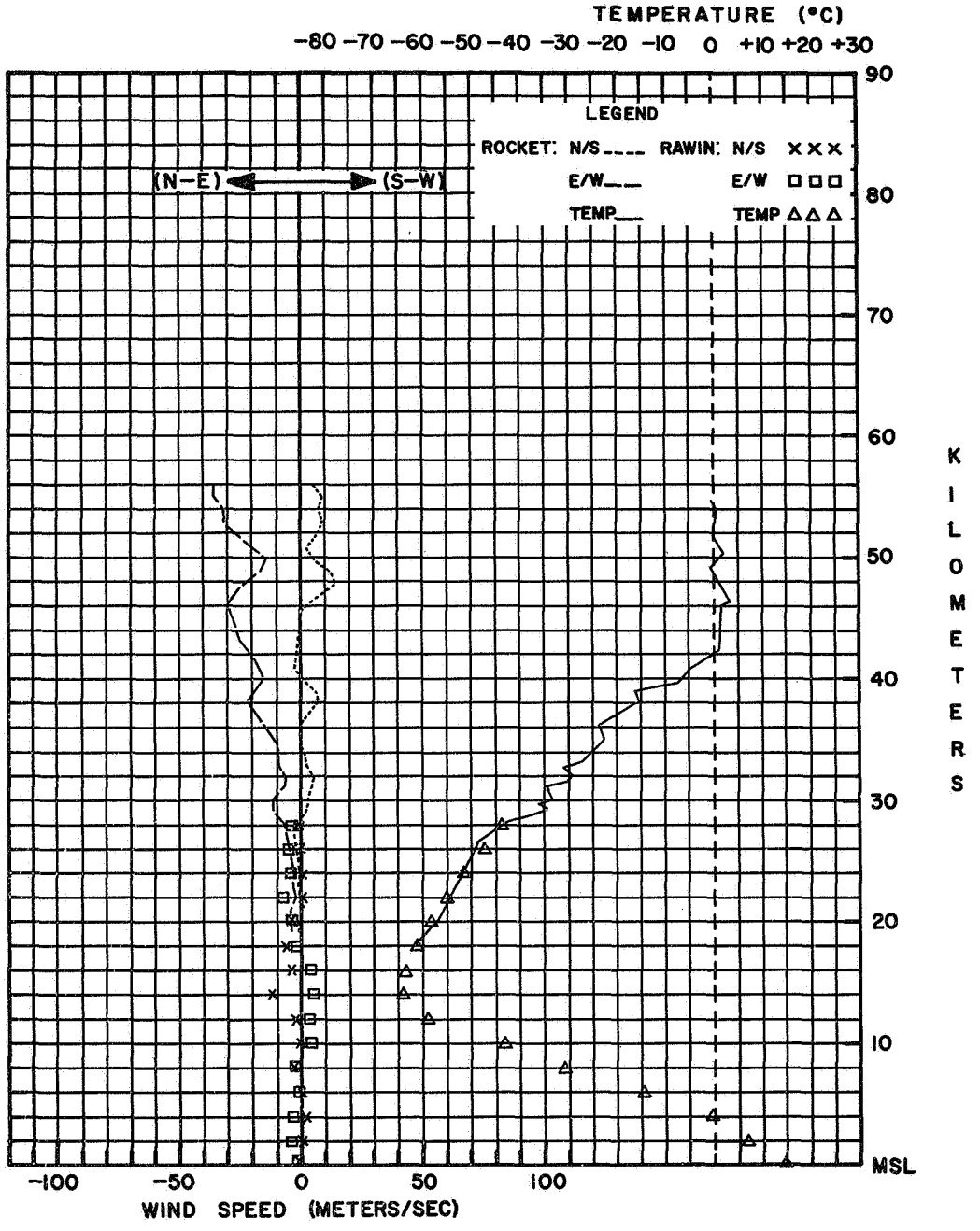
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 253 M/MINUTE
400 MB-TOP = 330 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,022.5 MB
TEMPERATURE.. 16.1 DEG. C
RELATIVE HUMIDITY.. 100 %
VISIBILITY.. 12 KM
SURFACE WIND.. 110 DEG. 2 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 2 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. 2 OCTAS/CI
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 165 DEG/04 KTS, 50 FT. 162 DEG/03 KTS,
100 FT. 153 DEG/02 KTS, 150 FT. 180 DEG/02 KTS,
200 FT. 180 DEG/03 KTS, 250 FT. 180 DEG/04 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA

DATE: 7 JUNE, 1967

ROCKET TIME: 0932 LST 1432 GCT

ROCKET MOTOR TYPE: ARCAS

PAYLOAD TYPE: ARCASONDE 1A

RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (CNAE) NATAL, BRAZIL | | | |
| 82599 | 5°55' S 35°10' W ALT. 43 M | JUNE 14, 1967 | 1511 | 1257 |

# TABULATED DATA

ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 019 | 054 | 60 | 311 | 021 | -007 | +008 |
| 022 | 048 | 59 | 293 | 030 | -006 | +014 |
| 026 | 042 | 58 | 275 | 045 | -002 | +023 |
| 030 | 042 | 57 | 251 | 041 | +007 | +020 |
| 034 | 037 | 56 | 249 | 044 | +008 | +021 |
| 039 | 033 | 55 | 257 | 036 | +004 | +018 |
| 044 | 033 | 54 | 262 | 029 | +002 | +015 |
| 049 | 037 | 53 | 274 | 031 | -001 | +016 |
| 053 | 033 | 52 | 294 | 023 | -005 | +011 |
| 059 | 026 | 51 | 276 | 018 | -001 | +009 |
| 066 | 026 | 50 | 344 | 034 | -017 | +005 |
| 072 | 026 | 49 | 343 | 020 | -010 | +003 |
| 079 | 022 | 48 | 014 | 008 | -004 | -001 |
| 087 | 021 | 47 | 009 | 012 | -006 | -001 |
| 095 | 022 | 46 | 135 | 008 | +003 | -003 |
| 102 | 022 | 45 | 135 | 005 | +002 | -002 |
| 110 | 019 | 44 | 124 | 021 | +006 | -009 |
| 120 | 016 | 43 | 126 | 033 | +010 | -014 |
| 131 | 016 | 42 | 135 | 033 | +012 | -012 |
| 141 | 018 | 41 | 158 | 031 | +015 | -006 |
| 150 | 018 | 40 | 160 | 029 | +014 | -005 |
| 160 | 016 | 39 | 175 | 021 | +011 | -001 |
| 171 | 016 | 38 | 173 | 016 | +008 | -001 |
| 181 | 015 | 37 | 171 | 012 | +006 | -001 |
| 193 | 013 | 36 | 124 | 007 | +002 | -003 |
| 206 | 013 | 35 | 063 | 017 | -004 | -008 |
| 218 | 014 | 34 | 076 | 024 | -003 | -012 |
| 230 | 014 | 33 | 087 | 035 | -001 | -018 |
| 242 | 012 | 32 | 079 | 051 | -005 | -026 |
| 257 | 011 | 31 | 080 | 055 | -005 | -028 |
| 271 | 012 | 30 | 088 | 056 | -001 | -029 |
| 284 | 011 | 29 | 092 | 047 | +001 | -024 |
| 300 | 010 | 28 | 087 | 039 | -001 | -020 |
| 316 | 010 | 27 | 079 | 040 | -004 | -020 |
| 334 | 009 | 26 | 081 | 037 | -003 | -019 |
| 352 | 009 | 25 | 098 | 027 | +002 | -014 |
| 370 | 009 | 24 | 072 | 005 | -001 | -003 |
| 391 | 009 | 23 | 321 | 012 | -005 | +004 |
| 408 | 009 | 22 | 000 | 008 | -004 | +000 |
| 430 | 007 | 21 | 180 | 002 | +001 | +000 |
| 453 | 007 | 20 | 225 | 011 | +004 | +004 |
| 477 | 007 | 19 | 207 | 004 | +002 | +001 |
| 503 | 007 | 18 | 063 | 009 | -002 | -004 |

ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY -3 G M | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|

RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1008.1 | 0004 | 140 | 009 | +004 | -003 | 64 | +28.1 |
| 0802.0 | 0200 | 073 | 020 | -003 | -010 | 64 | +12.9 |
| 0630.2 | 0400 | 090 | 014 | -000 | -007 | | +05.6 |
| 0490.8 | 0600 | 087 | 019 | -001 | -010 | | -07.2 |
| 0377.7 | 0800 | 065 | 024 | -005 | -011 | | -21.3 |
| 0285.1 | 1000 | 069 | 026 | -005 | -012 | | -36.4 |
| 0211.9 | 1200 | 078 | 026 | -003 | -013 | | -52.9 |
| 0153.8 | 1400 | 030 | 008 | -004 | -002 | | -66.8 |
| 0109.8 | 1600 | 136 | 011 | +004 | -004 | | -73.9 |
| 0077.3 | 1800 | 034 | 018 | -008 | -005 | | -76.1 |
| 0055.3 | 2000 | 218 | 013 | +005 | +004 | | -66.4 |
| 0039.9 | 2200 | 046 | 011 | -004 | -004 | | -57.1 |
| 0029.2 | 2400 | 061 | 013 | -003 | -006 | | -58.9 |
| 0021.4 | 2600 | 089 | 036 | -000 | -019 | | -46.3 |
| 0015.8 | 2800 | 083 | 042 | -003 | -021 | | -45.6 |
| 0011.8 | 3000 | 051 | 055 | -018 | -022 | | -41.2 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 110 SEC. ACTUAL.. 80 SEC.
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 030 DEG. AZIMUTH 75.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. NO TRACK
MOTOR TRACK DROPPED.. NO TRACK
PAYLOAD ACQUISITION.. 90 SECONDS 60,777 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 3,217 SECONDS 16,764 METERS ALTITUDE
APOGEE.. 97 SECONDS 60,960 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

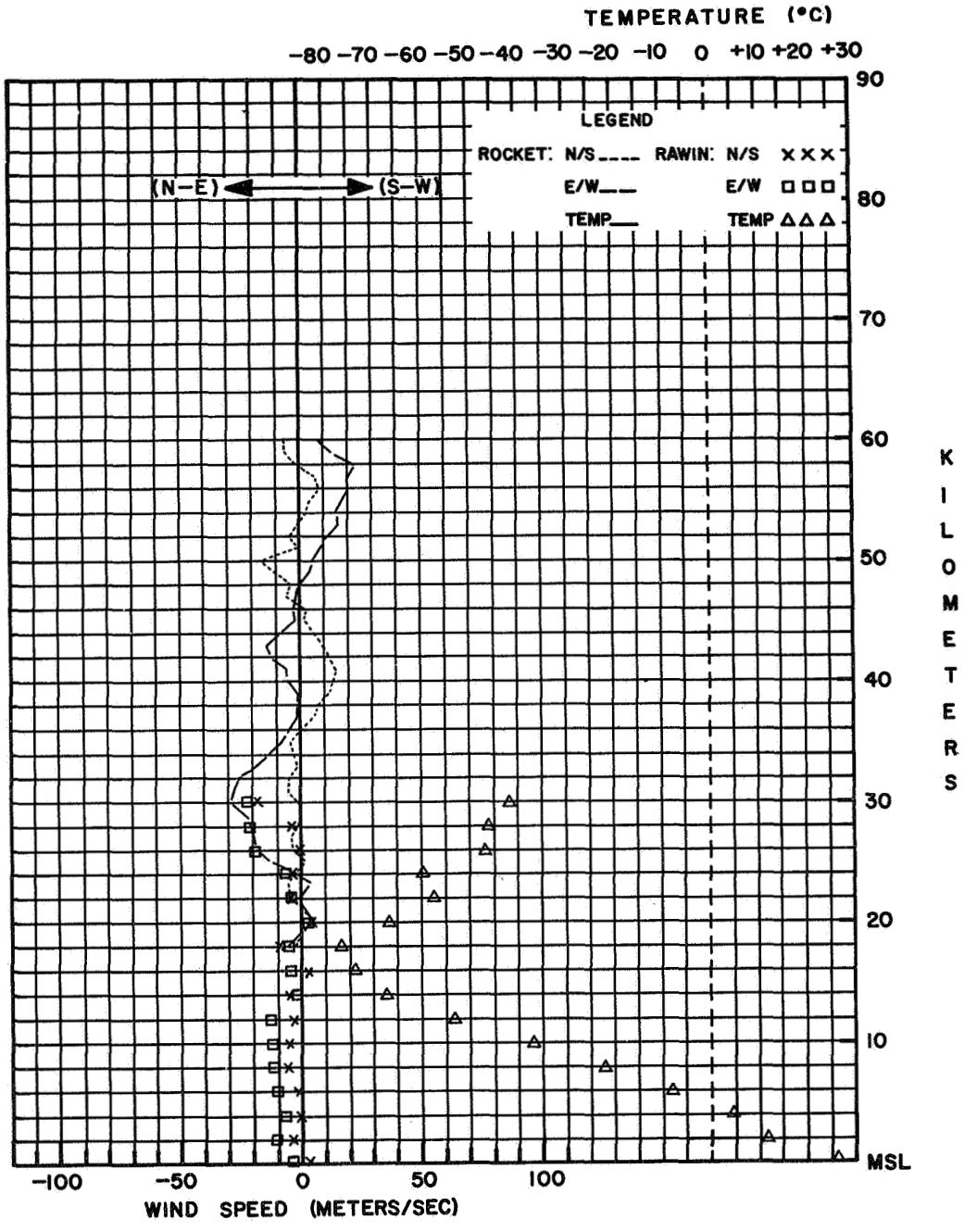
RADIOSONDE MANUFACTURER.. BENDIX
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID
GROUND EQUIPMENT TYPE.. GMD-1A
BALLOON TYPE.. KAYSAM
BALLOON SIZE.. 1,000 GRAMS
FREE LIFT.. 1,100 GRAMS
ASCENSION RATES.. SFC-400 MB = 300 M/MINUTE
400 MB-TOP = 345 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,008.1 MB
TEMPERATURE.. 28.1 DEG. C
RELATIVE HUMIDITY.. 64%
VISIBILITY.. 20 KM
SURFACE WIND.. 140 DEG. 9 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 4 OCTAS
LOW.. CU
MIDDLE.. AC
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

21 FT. 120 DEG/06 KTS, 29 FT. 130 DEG/08 KTS,
51 FT. 150 DEG/10 KTS, 82 FT. 120 DEG/12 KTS,
133 FT. 140 DEG/12 KTS




STATION: (CNAE) NATAL, BRAZIL
DATE: 14 JUNE, 1967

ROCKET TIME: 1211 LST 1511 GCT
ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (CNIE) CHAMICAL, ARGENTINA | Z | Z | Z |
| 87320 | 30°22' S 66°17' W ALT. 457 M | JUNE 14, 1967 | 1640 | 0900 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 034 | 111 | 63 | 249 | 262 | +048 | +124 |
| 036 | 111 | 62 | 262 | 244 | +018 | +121 |
| 037 | 167 | 61 | 268 | 210 | +003 | +108 |
| 038 | 167 | 60 | 269 | 206 | +002 | +106 |
| 039 | 111 | 59 | 270 | 220 | +000 | +113 |
| 041 | 111 | 58 | 270 | 208 | +000 | +107 |
| 042 | 111 | 57 | 270 | 192 | +000 | +099 |
| 044 | 083 | 56 | 277 | 194 | -012 | +099 |
| 046 | 083 | 55 | 280 | 193 | -017 | +098 |
| 048 | 111 | 54 | 276 | 193 | -010 | +099 |
| 049 | 111 | 53 | 276 | 196 | -011 | +100 |
| 051 | 067 | 52 | 274 | 158 | -006 | +081 |
| 054 | 067 | 51 | 275 | 168 | -007 | +086 |
| 056 | 067 | 50 | 275 | 166 | -007 | +085 |
| 059 | 056 | 49 | 275 | 158 | -007 | +081 |
| 062 | 056 | 48 | 270 | 138 | +000 | +071 |
| 065 | 048 | 47 | 266 | 138 | +005 | +071 |
| 069 | 048 | 46 | 274 | 140 | -005 | +072 |
| 072 | 048 | 45 | 276 | 129 | -007 | +066 |
| 076 | 042 | 44 | 274 | 127 | -005 | +065 |
| 080 | 042 | 43 | 270 | 132 | +000 | +068 |
| 084 | 042 | 42 | 279 | 120 | -010 | +061 |
| 088 | 033 | 41 | 279 | 095 | -008 | +048 |
| 094 | 028 | 40 | 274 | 051 | -002 | +026 |
| 100 | 030 | 39 | 265 | 074 | +003 | +038 |
| 105 | 030 | 38 | 274 | 062 | -002 | +032 |
| 111 | 030 | 37 | 276 | 055 | -003 | +028 |
| 116 | 026 | 36 | 278 | 057 | -004 | +029 |
| 124 | 020 | 35 | 277 | 047 | -003 | +024 |
| 133 | 019 | 34 | 268 | 047 | +001 | +024 |
| 142 | 018 | 33 | 265 | 062 | +003 | +032 |
| 152 | 018 | 32 | 267 | 033 | +001 | +017 |
| 161 | 016 | 31 | 273 | 033 | -001 | +017 |
| 173 | 013 | 30 | 282 | 056 | -006 | +028 |
| 187 | 012 | 29 | 287 | 055 | -008 | +027 |
| 200 | 011 | 28 | 276 | 059 | -003 | +030 |
| 218 | 009 | 27 | 276 | 053 | -003 | +027 |
| 236 | 009 | 26 | 294 | 047 | -010 | +022 |
| 255 | 008 | 25 | 300 | 043 | -011 | +019 |
| 276 | 007 | 24 | 300 | 031 | -008 | +014 |
| 301 | 006 | 23 | 302 | 025 | -007 | +011 |
| 330 | 006 | 22 | 302 | 025 | -007 | +011 |
| 353 | 006 | 21 | 301 | 023 | -006 | +010 |
| 385 | 005 | 20 | 288 | 025 | -004 | +012 |
| 422 | 004 | 19 | 283 | 050 | -006 | +025 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 0966.9 | 0046 | 090 | 013 | -000 | -007 | 25 | +09.4 |
| 0801.0 | 0200 | 023 | 010 | -005 | -002 | 58 | -06.0 |
| 0622.5 | 0400 | 278 | 025 | -002 | +013 | 12 | -07.0 |
| 0480.0 | 0600 | 271 | 036 | -000 | +019 | 10 | -20.8 |
| 0361.7 | 0800 | 280 | 064 | -006 | +032 | 10 | -33.1 |
| 0269.7 | 1000 | 277 | 088 | -006 | +045 | 10 | -50.2 |
| 0168.6 | 1200 | 282 | 116 | -012 | +058 | | -61.9 |
| 0144.2 | 1400 | 280 | 098 | -009 | +050 | | -64.0 |
| 0104.1 | 1600 | 293 | 063 | -013 | +030 | | -63.3 |
| 0075.8 | 1800 | 279 | 056 | -005 | +028 | | -61.8 |
| 0055.0 | 2000 | 305 | 031 | -009 | +013 | | -57.5 |
| 0040.8 | 2200 | 298 | 038 | -009 | +017 | | -55.0 |
| 0029.7 | 2400 | 299 | 044 | -011 | +020 | | -49.8 |
| 0022.0 | 2600 | 291 | 048 | -009 | +023 | | -46.4 |
| 0016.4 | 2800 | 300 | 058 | -015 | +026 | | -45.3 |
| 0012.3 | 3000 | 268 | 069 | +001 | +035 | | -42.3 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-2B
PAYLOAD PERFORMANCE.. POOR
*FUSE TYPE.. GAS GENERATED SEPARATION DEVICE*
FUSE DELAY TIME.. PREDICTED.. 130 SEC. ACTUAL.. 135 SEC.
TYPE OF LAUNCHER.. ARCAS
LAUNCHER SETTING.. 019 DEG. AZIMUTH 86.5 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 16 SECONDS 4,250 METERS ALTITUDE
MOTOR TRACK DROPPED.. 107 SECONDS 68,000 METERS ALTITUDE
PAYLOAD ACQUISITION.. 205 SECONDS 63,000 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,728 SECONDS 19,000 METERS ALTITUDE
APOGEE.. 135 SECONDS 72,000 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 15 FT. DIAMETER PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-2
TELEMETRY FREQUENCY.. 1680 MHZ
TELEMETRY QUALITY.. POOR
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

SIGNAL STRENGTH TOO LOW TO CARRY METEOROLOGICAL INFORMATION.
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

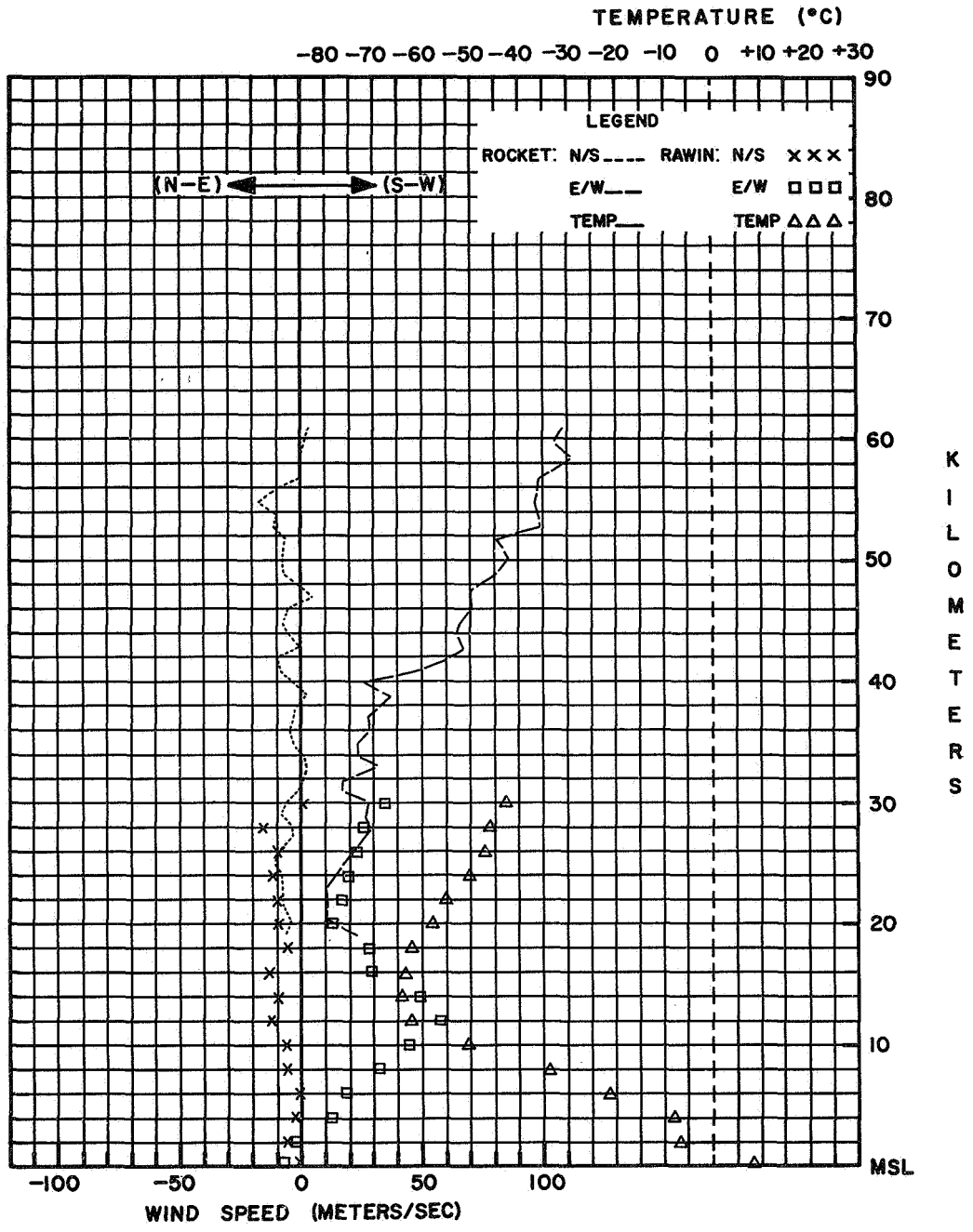
RADIOSONDE MANUFACTURER.. VAISALA
RADIOSONDE TYPE.. VAISALA
TEMPERATURE ELEMENT TYPE.. RESISTANCE WIRE
PRESSURE SENSOR TYPE.. DOUBLE ANEROID
GROUND EQUIPMENT TYPE.. VAISALA + MPS-19 RADAR
BALLOON TYPE.. TOTEX
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 2,400 GRAMS
ASCENSION RATES.. SFC-400 MB = UNKNOWN M/MINUTE
400 MB-TOP = UNKNOWN M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 966.9 MB
TEMPERATURE.. 9.4 DEG. C.
RELATIVE HUMIDITY.. 25 %
VISIBILITY.. 20 KM
SURFACE WIND.. 069 DEG. 13 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 0 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 182 DEG/09 KTS




**STATION:** (CNIE) CHAMICAL, ARGENTINA
**DATE:** 14 JUNE, 1967

**ROCKET TIME:** 1240 LST 1640 GCT
**ROCKET MOTOR TYPE:** ARCAS

**PAYLOAD TYPE:** ARCASONDE 2B
**RADIOSONDE TYPE:** VAISALA

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | | | |
| 72402 | 37°51' N 75°29' W ALT. 3 M | JUNE 15, 1967 | 1742 | 1532 |

# TABULATED DATA

ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 028 | 078 | 50 | 110 | 074 | +013 | -036 |
| 030 | 067 | 49 | 119 | 087 | +022 | -039 |
| 033 | 056 | 48 | 118 | 077 | +019 | -035 |
| 036 | 048 | 47 | 109 | 072 | +012 | -035 |
| 040 | 048 | 46 | 106 | 069 | +010 | -034 |
| 043 | 056 | 45 | 104 | 066 | +008 | -033 |
| 046 | 048 | 44 | 099 | 059 | +005 | -030 |
| 050 | 042 | 43 | 104 | 040 | +005 | -020 |
| 054 | 037 | 42 | 119 | 036 | +009 | -016 |
| 059 | 033 | 41 | 115 | 041 | +009 | -019 |
| 064 | 037 | 40 | 103 | 044 | +005 | -022 |
| 068 | 033 | 39 | 090 | 039 | +000 | -020 |
| 074 | 028 | 38 | 072 | 037 | -006 | -018 |
| 080 | 028 | 37 | 069 | 033 | -006 | -016 |
| 086 | 026 | 36 | 080 | 034 | -003 | -017 |
| 093 | 022 | 35 | 090 | 029 | +000 | -015 |
| 101 | 021 | 34 | 100 | 022 | +002 | -011 |
| 109 | 020 | 33 | 119 | 020 | +005 | -009 |
| 118 | 018 | 32 | 101 | 020 | +002 | -010 |
| 128 | 017 | 31 | 072 | 018 | -003 | -009 |
| 138 | 016 | 30 | 084 | 020 | -001 | -010 |
| 149 | 013 | 29 | 081 | 024 | -002 | -012 |
| 163 | 011 | 28 | 072 | 018 | -003 | -009 |
| 178 | 010 | 27 | 082 | 014 | -001 | -007 |
| 195 | 010 | 26 | 104 | 016 | +002 | -008 |
| 213 | 009 | 25 | 111 | 017 | +003 | -008 |
| 233 | 008 | 24 | 103 | 018 | +002 | -009 |
| 255 | 007 | 23 | 097 | 016 | +001 | -008 |
| 283 | 006 | 22 | 104 | 016 | +002 | -008 |
| 310 | 006 | 21 | 083 | 016 | -001 | -008 |
| 343 | 005 | 20 | 054 | 017 | -005 | -007 |
| 378 | 004 | 19 | 030 | 016 | -007 | -004 |

ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M$^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|
| 5121 | +10.8 | 00.818 | 01.003 | 338 | | | | |
| 4913 | +11.6 | 01.046 | 01.280 | 338 | 118 | 086 | +021 | -039 |
| 4791 | +09.0 | 01.209 | 01.493 | 337 | 117 | 077 | +018 | -035 |
| 4700 | +03.0 | 01.349 | 01.702 | 333 | 109 | 072 | +012 | -035 |
| 4362 | -03.3 | 02.047 | 02.643 | 329 | 101 | 051 | +005 | -026 |
| 4292 | -08.2 | 02.236 | 02.940 | 326 | 104 | 040 | +005 | -020 |
| 4200 | -06.7 | 02.513 | 03.286 | 327 | 119 | 036 | +009 | -016 |
| 3892 | -17.1 | 03.740 | 05.089 | 321 | 090 | 039 | -000 | -020 |
| 3837 | -15.7 | 04.021 | 05.441 | 322 | 078 | 038 | -004 | -019 |
| 3627 | -23.1 | 05.317 | 07.408 | 317 | 077 | 034 | -004 | -017 |
| 3581 | -23.1 | 05.658 | 07.883 | 317 | 083 | 033 | -002 | -017 |
| 3420 | -32.1 | 07.061 | 10.205 | 311 | 099 | 024 | +002 | -012 |
| 3380 | -32.2 | 07.469 | 10.799 | 311 | 105 | 022 | +003 | -011 |
| 3356 | -35.6 | 07.726 | 11.331 | 309 | 107 | 020 | +003 | -010 |
| 3283 | -37.6 | 08.576 | 12.684 | 308 | 114 | 019 | +004 | -009 |
| 3066 | -36.2 | 11.701 | 17.203 | 309 | 077 | 018 | -002 | -009 |
| 2975 | -38.5 | 13.334 | 19.795 | 307 | 085 | 021 | -001 | -011 |
| 2935 | -33.2 | 14.116 | 20.495 | 311 | 080 | 022 | -002 | -011 |
| 2874 | -41.9 | 15.410 | 23.214 | 305 | 080 | 022 | -002 | -011 |
| 2832 | -45.8 | 16.396 | 25.123 | 302 | 073 | 020 | -003 | -010 |
| 2777 | -44.3 | 17.791 | 27.082 | 303 | 072 | 018 | -003 | -009 |
| 2640 | -46.1 | 21.808 | 33.460 | 302 | 097 | 016 | +001 | -008 |
| 2591 | -44.9 | 23.458 | 35.802 | 303 | 104 | 016 | +002 | -008 |
| 2350 | -53.1 | 33.774 | 53.468 | 297 | 103 | 018 | +002 | -009 |
| 2265 | -52.4 | 38.493 | 60.747 | 298 | 097 | 016 | +001 | -008 |
| 2198 | -56.3 | 42.707 | 68.609 | 295 | 104 | 016 | +002 | -008 |
| 2000 | -59.7 | 58.365 | 95.255 | 293 | 054 | 017 | -005 | -007 |
| 1829 | -63.5 | 76.800 | | 290 | | | | |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 2099 | -57.9 | 50.000 | 80.915 | 294 | 083 | 016 | -001 | -008 |
| 2429 | -50.1 | 30.000 | 46.855 | 299 | 103 | 018 | +002 | -009 |
| 2691 | -45.3 | 20.000 | 30.577 | 303 | 082 | 014 | -001 | -007 |
| 3168 | -37.0 | 10.000 | 14.750 | 308 | 096 | 020 | +001 | -010 |
| 3409 | -31.7 | 07.000 | 10.100 | 311 | 095 | 023 | +001 | -012 |
| 3657 | -21.3 | 05.000 | 06.916 | 318 | 073 | 033 | -005 | -016 |
| 4355 | -02.9 | 02.000 | 02.578 | 330 | 100 | 057 | +005 | -029 |
| 4917 | +11.4 | 01.000 | 01.224 | 338 | 115 | 079 | +017 | -037 |

RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1021.0 | 0000 | 140 | 004 | +002 | -001 | 81 | +20.6 |
| 0808.0 | 0200 | 024 | 008 | -004 | -002 | 52 | +13.2 |
| 0634.0 | 0400 | 036 | 008 | -003 | -002 | 20 | +01.8 |
| 0492.0 | 0600 | 032 | 008 | -003 | -002 | 10 | -09.8 |
| 0378.0 | 0800 | 072 | 021 | -003 | -010 | 11 | -22.3 |
| 0285.0 | 1000 | 070 | 021 | -004 | -010 | 12 | -37.3 |
| 0212.0 | 1200 | 076 | 035 | -004 | -017 | | -53.8 |
| 0154.0 | 1400 | 076 | 021 | -003 | -010 | | -66.8 |
| 0111.0 | 1600 | 019 | 015 | -007 | -003 | | -63.7 |
| 0080.0 | 1800 | 001 | 006 | -003 | -000 | | -65.1 |
| 0058.0 | 2000 | 054 | 015 | -005 | -006 | | -60.8 |
| 0042.0 | 2200 | 082 | 014 | -001 | -007 | | -56.0 |
| 0031.0 | 2400 | 109 | 017 | +003 | -008 | | -50.8 |
| 0023.0 | 2600 | 107 | 017 | +003 | -008 | | -47.7 |
| 0017.0 | 2800 | 084 | 021 | -001 | -011 | | -45.1 |
| 0012.5 | 3000 | 092 | 023 | +000 | -012 | | -39.1 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 127 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 125 DEG. AZIMUTH 82.0 DEG. ELEVATION

*RADAR DATA*

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 1,250 METERS ALTITUDE
MOTOR TRACK DROPPED.. 127 SECONDS 52,550 METERS ALTITUDE
PAYLOAD ACQUISITION.. 127 SECONDS 52,550 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,400 SECONDS 18,290 METERS ALTITUDE
APOGEE.. 120 SECONDS 52,730 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 15 FT. DIAMETER PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
*GROUND EQUIPMENT TYPE.. GMD-1B*
TELEMETRY FREQUENCY.. 1,685 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 149 SEC. 51,210 METERS ALTITUDE
TO 2,400 SEC. 18,290 METERS ALTITUDE

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 76.8 MB
ALTITUDE 18,290 METERS
TEMPERATURE -64.5 DEG. C

RADIOSONDE AND BALLOON DATA

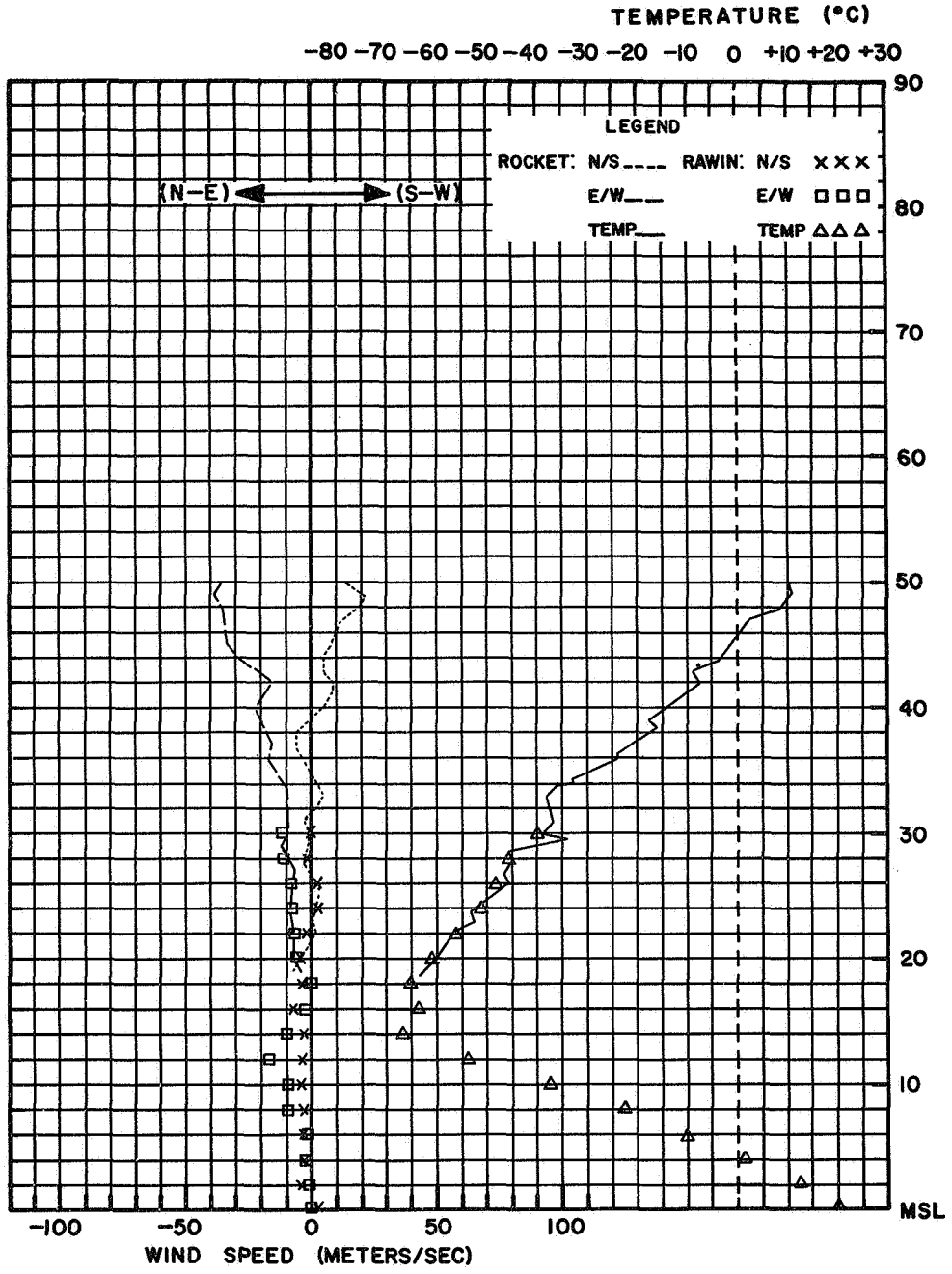
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
*GROUND EQUIPMENT TYPE.. GMD-1B*
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 292 M/MINUTE
400 MB-TOP = 443 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,021.0 MB
TEMPERATURE.. 20.6 DEG. C
RELATIVE HUMIDITY.. 81%
VISIBILITY.. 8 KM
*SURFACE WIND*.. 140 DEG. 4 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 4 OCTAS
LOW.. 4 OCTAS/CF
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC, 132 DEG/08 KTS, 50 FT, 120 DEG/07 KTS,
100 FT, 120 DEG/07 KTS, 150 FT, 122 DEG/08 KTS,
200 FT, 117 DEG/08 KTS, 250 FT, 135 DEG/08 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA
**DATE:** 15 JUNE, 1967

**ROCKET TIME:** 1242 LST 1742 GCT
**ROCKET MOTOR TYPE:** ARCAS

**PAYLOAD TYPE:** ARCASONDE 1A
**RADIOSONDE TYPE:** 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | Z | | |
| 72402 | 37°51' N 75°29' W ALT. 3 M | JUNE 21, 1967 | 1414 | 1338 |

# TABULATED DATA

ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 027 | 067 | 53 | 091 | 101 | +001 | -052 |
| 029 | 067 | 52 | 094 | 101 | +006 | -052 |
| 032 | 067 | 51 | 099 | 104 | +008 | -053 |
| 034 | 083 | 50 | 103 | 104 | +012 | -052 |
| 036 | 067 | 49 | 104 | 098 | +012 | -049 |
| 039 | 056 | 48 | 107 | 079 | +012 | -039 |
| 042 | 056 | 47 | 109 | 066 | +011 | -032 |
| 045 | 056 | 46 | 098 | 069 | +005 | -035 |
| 048 | 048 | 45 | 096 | 070 | +004 | -036 |
| 052 | 042 | 44 | 104 | 062 | +008 | -031 |
| 056 | 042 | 43 | 102 | 058 | +006 | -029 |
| 060 | 042 | 42 | 092 | 053 | +001 | -027 |
| 064 | 033 | 41 | 085 | 045 | -002 | -023 |
| 070 | 037 | 40 | 077 | 042 | -005 | -021 |
| 073 | 037 | 39 | 063 | 030 | -007 | -014 |
| 079 | 030 | 38 | 076 | 032 | -004 | -016 |
| 084 | 030 | 37 | 093 | 039 | +001 | -020 |
| 090 | 026 | 36 | 096 | 039 | +002 | -020 |
| 097 | 022 | 35 | 087 | 037 | -001 | -019 |
| 105 | 021 | 34 | 079 | 030 | -003 | -015 |
| 113 | 020 | 33 | 081 | 024 | -002 | -012 |
| 122 | 020 | 32 | 103 | 026 | +003 | -013 |
| 130 | 019 | 31 | 117 | 026 | +006 | -012 |
| 140 | 015 | 30 | 108 | 025 | +004 | -012 |
| 152 | 012 | 29 | 090 | 027 | +000 | -014 |
| 167 | 013 | 28 | 086 | 029 | -001 | -015 |
| 178 | 012 | 27 | 085 | 021 | -001 | -011 |
| 195 | 010 | 26 | 083 | 016 | -001 | -008 |
| 213 | 009 | 25 | 079 | 010 | -001 | -005 |
| 233 | 008 | 24 | 101 | 010 | +001 | -005 |
| 255 | 007 | 23 | 106 | 014 | +002 | -007 |
| 280 | 006 | 22 | 097 | 016 | +001 | -008 |
| 310 | 006 | 21 | 103 | 018 | +002 | -009 |
| 340 | 005 | 20 | 098 | 014 | +001 | -007 |
| 375 | 004 | 19 | 079 | 010 | -001 | -005 |

ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M $^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 4734 | -01.3 | 01.313 | 01.683 | 331 | 108 | 069 | +011 | -034 |
| 4526 | +00.4 | 01.698 | 02.162 | 332 | 096 | 070 | +004 | -036 |
| 4346 | -04.0 | 02.123 | 02.748 | 329 | 103 | 060 | +007 | -030 |
| 4246 | -04.1 | 02.406 | 03.116 | 329 | 096 | 055 | +003 | -028 |
| 4145 | -09.6 | 02.735 | 03.615 | 325 | 088 | 049 | -001 | -025 |
| 4060 | -08.6 | 03.048 | 04.014 | 326 | 082 | 043 | -003 | -022 |
| 4011 | -11.7 | 03.246 | 04.325 | 324 | 077 | 042 | -005 | -021 |
| 3895 | -13.8 | 03.773 | 05.068 | 323 | 063 | 030 | -007 | -014 |
| 3764 | -12.1 | 04.471 | 05.967 | 324 | 083 | 033 | -002 | -017 |
| 3682 | -17.4 | 04.977 | 06.780 | 321 | 093 | 039 | +001 | -020 |
| 3597 | -18.3 | 05.570 | 07.613 | 320 | 096 | 039 | +002 | -020 |
| 3517 | -25.0 | 06.202 | 08.706 | 316 | 090 | 037 | -000 | -019 |
| 3475 | -24.5 | 06.566 | 09.200 | 316 | 084 | 035 | -002 | -018 |
| 3402 | -29.0 | 07.258 | 10.356 | 313 | 079 | 030 | -003 | -015 |
| 3231 | -31.5 | 09.208 | 13.275 | 312 | 094 | 025 | +001 | -013 |
| 3191 | -30.5 | 09.737 | 13.980 | 312 | 103 | 026 | +003 | -013 |
| 3118 | -35.4 | 10.792 | 15.813 | 309 | 113 | 025 | +005 | -012 |
| 2975 | -40.8 | 13.259 | 19.879 | 306 | 103 | 026 | +003 | -013 |
| 2789 | -42.8 | 17.406 | 26.324 | 304 | 086 | 029 | -001 | -015 |
| 2643 | -48.0 | 21.628 | 33.464 | 301 | 084 | 018 | -001 | -009 |
| 2472 | -49.3 | 27.998 | 43.572 | 300 | 090 | 010 | -000 | -005 |
| 2167 | -53.1 | 44.621 | 70.640 | 297 | 097 | 016 | +001 | -008 |
| 2000 | -56.1 | 57.833 | 92.822 | 295 | 098 | 014 | +001 | -007 |
| 1811 | -61.1 | 78.000 | | 292 | | | | |

CONSTANT PRESSURE LEVEL DATA
(HEIGHT IN GEOPOTENTIAL METERS)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2092 | -54.3 | 50.000 | 79.598 | 297 | 103 | 018 | +002 | -009 |
| 2426 | -49.8 | 30.000 | 46.783 | 300 | 090 | 010 | +000 | -005 |
| 2688 | -46.0 | 20.000 | 30.672 | 302 | 085 | 021 | -001 | -011 |
| 3157 | -31.7 | 10.000 | 14.429 | 311 | 107 | 026 | +004 | -013 |
| 3411 | -27.3 | 07.000 | 09.920 | 314 | 083 | 031 | -002 | -016 |
| 3658 | -17.4 | 05.000 | 06.812 | 321 | 093 | 039 | +001 | -020 |
| 4368 | -02.7 | 02.000 | 02.576 | 330 | 104 | 062 | +008 | -031 |

RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1014.0 | 0000 | 240 | 004 | +001 | +002 | 100 | +18.9 |
| 0801.0 | 0200 | 308 | 017 | -005 | +007 | 76 | +09.4 |
| 0628.0 | 0400 | 302 | 019 | -005 | +008 | 18 | +01.7 |
| 0487.0 | 0600 | 289 | 027 | -005 | +013 | 18 | -10.8 |
| 0373.0 | 0800 | 337 | 026 | -012 | +005 | 17 | -25.8 |
| 0281.0 | 1000 | 333 | 035 | -016 | +008 | | -41.1 |
| 0208.0 | 1200 | 329 | 041 | -018 | +011 | | -57.2 |
| 0151.0 | 1400 | 307 | 017 | -005 | +007 | | -60.0 |
| 0109.0 | 1600 | 318 | 019 | -007 | +007 | | -61.0 |
| 0079.2 | 1800 | 335 | 004 | -002 | +001 | | -61.4 |
| 0057.8 | 2000 | 077 | 013 | -002 | -007 | | -58.1 |
| 0042.3 | 2200 | 080 | 015 | -001 | -008 | | -54.7 |
| 0031.0 | 2400 | 098 | 021 | +002 | -011 | | -50.7 |
| 0022.8 | 2600 | 088 | 014 | -000 | -007 | | -47.3 |
| 0017.1 | 2800 | 077 | 018 | -002 | -009 | | -43.4 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 130 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 115 DEG. AZIMUTH 76.8 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 1,220 METERS ALTITUDE
MOTOR TRACK DROPPED.. 130 SECONDS 55,320 METERS ALTITUDE
PAYLOAD ACQUISITION.. 130 SECONDS 55,320 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,400 SECONDS 18,200 METERS ALTITUDE
APOGEE.. 125 SECONDS 55,530 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 15 FT. DIAMETER PARACHUTE
*TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR*
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1,685 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 248 SEC. 47,340 METERS ALTITUDE
TO 2,400 SEC. 18,200 METERS ALTITUDE

REMARKS

NONE
*THERMODYNAMICS BASE DATA.. PRESSURE 78.0 MB*
ALTITUDE 18,110 METERS
TEMPERATURE -61.2 DEG. C

RADIOSONDE AND BALLOON DATA

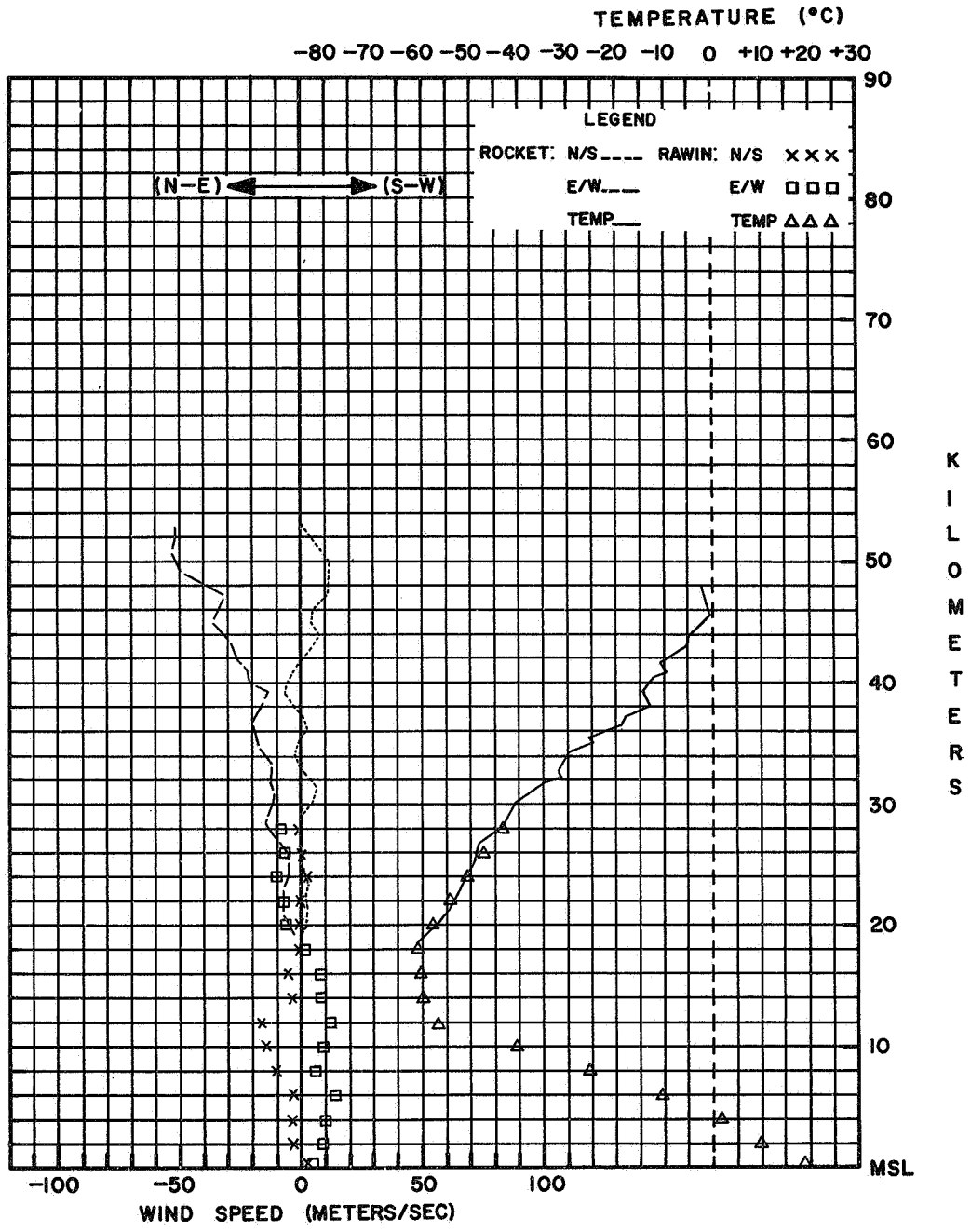
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
*BALLOON TYPE.. NEOPRENE*
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 286 M/MINUTE
400 MB-TOP = 369 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,014.0 MB
TEMPERATURE.. 18.9 DEG. C
RELATIVE HUMIDITY.. 100 %
*VISIBILITY.. 3 KM*
SURFACE WIND.. 240 DEG. 4 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 8 OCTAS
LOW.. 3 OCTAS/CU
MIDDLE.. NONE
HIGH.. 5 OCTAS/CI
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. GROUND FOG

WIND AT ROCKET LAUNCH

*SFC. 265 DEG/11 KTS. 50 FT. 264 DEG/09 KTS.*
100 FT. 270 DEG/09 KTS. 150 FT. 259 DEG/09 KTS.
200 FT. 264 DEG/08 KTS. 250 FT. 252 DEG/08 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA
DATE: 21 JUNE, 1967

ROCKET TIME: 0914 LST 1414 GCT
ROCKET MOTOR TYPE: ARCAS

PAYLOAD TYPE: ARCASONDE 1A
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | 7 | | |
| 72402 | 37°51' N 75 29' W ALT. 3 M | JUNE 28, 1967 | 1501 | 1148 |

# TABULATED DATA

## ROCKET WINDS

| TIME OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | F-W |
|---|---|---|---|---|---|---|
| 027 | 155 | 56 | 092 | 103 | +002 | -053 |
| 028 | 111 | 55 | 086 | 105 | -004 | -054 |
| 030 | 067 | 54 | 082 | 094 | -007 | -048 |
| 033 | 067 | 53 | 082 | 098 | -007 | -050 |
| 035 | 083 | 52 | 085 | 098 | -004 | -050 |
| 037 | 083 | 51 | 085 | 090 | -004 | -046 |
| 039 | 067 | 50 | 087 | 080 | -002 | -041 |
| 042 | 056 | 49 | 088 | 068 | -001 | -035 |
| 045 | 056 | 48 | 087 | 064 | -002 | -033 |
| 048 | 056 | 47 | 082 | 067 | -005 | -034 |
| 051 | 056 | 46 | 075 | 066 | -009 | -033 |
| 054 | 048 | 45 | 080 | 065 | -006 | -033 |
| 058 | 042 | 44 | 095 | 066 | +003 | -034 |
| 062 | 042 | 43 | 098 | 067 | +005 | -034 |
| 066 | 037 | 42 | 092 | 058 | +001 | -030 |
| 071 | 033 | 41 | 086 | 057 | -002 | -029 |
| 076 | 037 | 40 | 082 | 059 | -004 | -030 |
| 080 | 033 | 39 | 092 | 054 | +001 | -028 |
| 086 | 028 | 38 | 092 | 053 | +001 | -027 |
| 092 | 028 | 37 | 088 | 051 | -001 | -026 |
| 098 | 024 | 36 | 090 | 041 | +000 | -021 |
| 106 | 022 | 35 | 087 | 033 | -001 | -017 |
| 113 | 021 | 34 | 079 | 030 | -003 | -015 |
| 122 | 020 | 33 | 087 | 033 | -001 | -017 |
| 130 | 019 | 32 | 099 | 037 | +003 | -019 |
| 140 | 017 | 31 | 105 | 030 | +004 | -015 |
| 150 | 014 | 30 | 095 | 023 | +001 | -012 |
| 163 | 013 | 29 | 085 | 023 | -001 | -012 |
| 175 | 012 | 28 | 085 | 023 | -001 | -012 |
| 190 | 010 | 27 | 090 | 023 | +000 | -012 |
| 208 | 009 | 26 | 100 | 022 | +002 | -011 |
| 227 | 009 | 25 | 100 | 022 | +002 | -011 |
| 247 | 008 | 24 | 095 | 021 | +001 | -011 |
| 268 | 008 | 23 | 097 | 016 | +001 | -008 |
| 287 | 006 | 22 | 079 | 010 | -001 | -005 |
| 320 | 005 | 21 | 063 | 009 | -002 | -004 |
| 350 | 005 | 20 | 090 | 008 | +000 | -004 |
| 390 | 005 | 19 | 090 | 008 | +000 | -004 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M $^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 5307 | +04.9 | 00.664 | 00.832 | 334 | 082 | 098 | -007 | -050 |
| 5100 | +04.9 | 00.852 | 01.068 | 334 | 085 | 090 | -004 | -046 |
| 4898 | +05.1 | 01.088 | 01.363 | 334 | 088 | 068 | -001 | -035 |
| 4767 | +01.1 | 01.277 | 01.622 | 332 | 085 | 064 | -003 | -033 |
| 4688 | +01.7 | 01.406 | 01.783 | 332 | 082 | 067 | -005 | -034 |
| 4526 | +02.4 | 01.715 | 02.168 | 333 | 078 | 066 | -007 | -033 |
| 4462 | +01.2 | 01.855 | 02.355 | 332 | 085 | 064 | -003 | -033 |
| 4380 | +02.8 | 02.051 | 02.589 | 333 | 095 | 066 | +003 | -034 |
| 4051 | -12.3 | 03.100 | 04.140 | 324 | 084 | 057 | -003 | -029 |
| 3962 | -12.0 | 03.478 | 04.640 | 324 | 086 | 057 | -002 | -029 |
| 3807 | -16.1 | 04.256 | 05.768 | 321 | 092 | 053 | +001 | -027 |
| 3719 | -21.5 | 04.783 | 06.622 | 318 | 088 | 051 | -001 | -026 |
| 3642 | -20.6 | 05.303 | 07.315 | 319 | 090 | 045 | -000 | -023 |
| 3493 | -24.5 | 06.483 | 09.083 | 316 | 087 | 033 | -001 | -017 |
| 3344 | -30.9 | 07.960 | 11.446 | 312 | 083 | 031 | -002 | -016 |
| 3322 | -31.1 | 08.208 | 11.813 | 312 | 087 | 033 | -001 | -017 |
| 3261 | -33.9 | 08.942 | 13.021 | 310 | 093 | 035 | +001 | -018 |
| 3231 | -32.4 | 09.328 | 13.498 | 311 | 096 | 035 | +002 | -018 |
| 3176 | -35.3 | 10.083 | 14.767 | 309 | 099 | 035 | +003 | -018 |
| 3121 | -34.4 | 10.901 | 15.907 | 310 | 104 | 032 | +004 | -016 |
| 3109 | -36.0 | 11.089 | 16.289 | 309 | 105 | 030 | +004 | -015 |
| 3097 | -33.3 | 11.279 | 16.383 | 310 | 105 | 030 | +004 | -015 |
| 3078 | -36.3 | 11.588 | 17.044 | 309 | 102 | 028 | +003 | -014 |
| 3066 | -34.9 | 11.787 | 17.236 | 309 | 102 | 028 | +003 | -014 |
| 2987 | -39.4 | 13.201 | 19.674 | 306 | 095 | 023 | +001 | -012 |
| 2957 | -38.5 | 13.786 | 20.467 | 307 | 090 | 023 | +000 | -012 |
| 2896 | -42.5 | 15.066 | 22.755 | 304 | 085 | 023 | -001 | -012 |
| 2774 | -42.3 | 18.020 | 27.193 | 305 | 085 | 023 | -001 | -012 |
| 2621 | -45.6 | 22.592 | 34.587 | 302 | 100 | 022 | +002 | -011 |
| 2518 | -45.4 | 26.336 | 40.283 | 303 | 100 | 022 | +002 | -011 |
| 2500 | -47.6 | 27.054 | 41.786 | 301 | 100 | 022 | +002 | -011 |
| 2277 | -49.0 | 37.869 | 58.856 | 300 | 098 | 014 | +001 | -007 |
| 2182 | -52.0 | 43.768 | 68.945 | 298 | 079 | 010 | -001 | -005 |
| 2000 | -54.9 | 57.978 | 92.543 | 296 | 090 | 008 | +000 | -004 |
| 1954 | -54.0 | 62.269 | 98.985 | 297 | 090 | 008 | +000 | -004 |
| 1814 | -57.7 | 77.500 | | 294 | | | | |

CONSTANT PRESSURE LEVEL DATA
(HEIGHT IN GEOPOTENTIAL METERS)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2095 | -53.3 | 50.000 | 79.218 | 297 | 063 | 009 | -002 | -004 |
| 2430 | -48.0 | 30.000 | 46.414 | 301 | 095 | 021 | +001 | -011 |
| 2697 | -43.7 | 20.000 | 30.369 | 304 | 090 | 023 | -000 | -012 |
| 3166 | -35.0 | 10.000 | 14.627 | 309 | 099 | 035 | +003 | -018 |
| 3423 | -26.7 | 07.000 | 09.896 | 315 | 083 | 031 | -002 | -016 |
| 3666 | -21.1 | 05.000 | 06.911 | 318 | 088 | 049 | -001 | -025 |
| 4371 | +02.4 | 02.000 | 02.529 | 333 | 095 | 066 | +003 | -034 |
| 4935 | +05.0 | 01.000 | 01.252 | 334 | 087 | 076 | -002 | -039 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1021.5 | 0000 | 030 | 004 | -002 | -001 | 78 | +18.3 |
| 0806.0 | 0200 | 077 | 010 | -001 | -005 | 27 | +06.0 |
| 0632.0 | 0400 | 266 | 013 | +000 | +007 | 24 | +00.5 |
| 0489.0 | 0600 | 271 | 027 | -000 | +014 | 26 | -11.7 |
| 0374.0 | 0800 | 271 | 037 | -000 | +019 | 41 | -27.2 |
| 0282.0 | 1000 | 284 | 041 | +005 | +020 | | -40.9 |
| 0207.0 | 1200 | 280 | 046 | +004 | +023 | | -57.4 |
| 0150.0 | 1400 | 284 | 053 | -007 | +026 | | -61.7 |
| 0109.0 | 1600 | 274 | 025 | -001 | +013 | | -61.2 |
| 0079.0 | 1800 | 315 | 013 | -005 | +005 | | -60.3 |
| 0058.0 | 2000 | 083 | 008 | -001 | -004 | | -53.7 |
| 0042.0 | 2200 | 094 | 011 | +000 | -006 | | -51.5 |
| 0031.0 | 2400 | 081 | 017 | -001 | -009 | | -49.2 |
| 0023.5 | 2600 | 081 | 017 | -001 | -009 | | -46.7 |
| 0017.0 | 2800 | 089 | 027 | -000 | -014 | | -42.9 |
| 0012.7 | 3000 | 091 | 027 | +000 | -014 | | -39.2 |
| 0009.6 | 3200 | 083 | 037 | -002 | -019 | | -35.7 |
| 0007.2 | 3400 | 093 | 033 | +001 | -017 | | -32.9 |
| 0005.5 | 3600 | | | | | | -22.8 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 128 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 117 DEG. AZIMUTH 83.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 7 SECONDS 1,100 METERS ALTITUDE
MOTOR TRACK DROPPED.. 128 SECONDS 58,090 METERS ALTITUDE
PAYLOAD ACQUISITION.. 128 SECONDS 58,090 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,460 SECONDS 18,200 METERS ALTITUDE
APOGEE.. 124 SECONDS 58,220 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 15 FT. DIAMETER PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1,682 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 195 SEC. 53,070 METERS ALTITUDE
TO 2,460 SEC. 18,200 METERS ALTITUDE

REMARKS

NONE

THERMODYNAMICS BASE DATA.. PRESSURE 77.5 MB
ALTITUDE 18,140 METERS
TEMPERATURE -59.8 DEG. C

RADIOSONDE AND BALLOON DATA

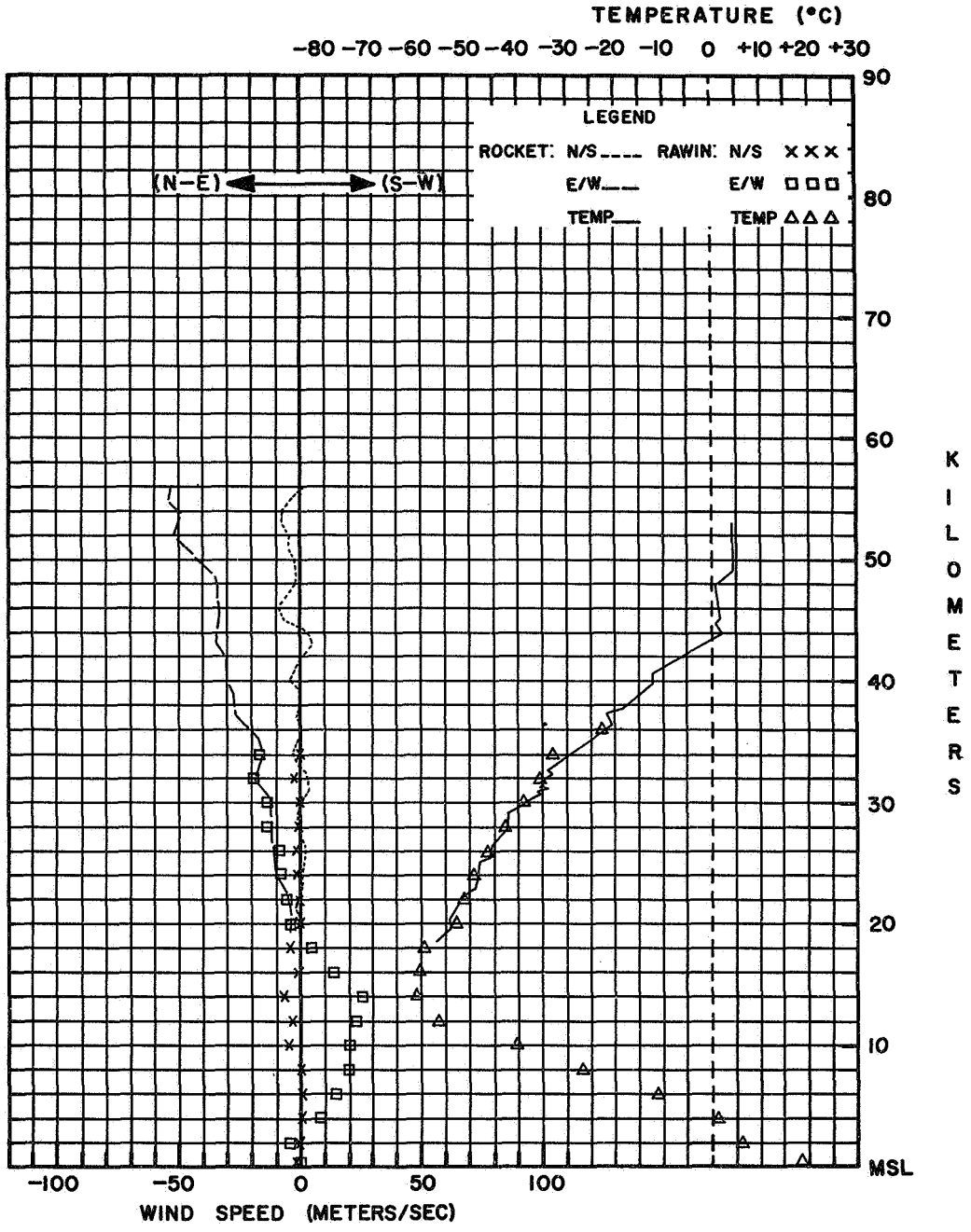
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,700 GRAMS
FREE LIFT.. 2,300 GRAMS
ASCENSION RATES.. SFC-400 MB = 258 M/MINUTE
400 MB-TOP = 341 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1,021.5 MB
TEMPERATURE.. 18.3 DEG. C
RELATIVE HUMIDITY.. 78%
VISIBILITY.. 16 KM
SURFACE WIND.. 030 DEG. 4 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 3 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. 3 OCTAS/CI
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 084 DEG/08 KTS, 50 FT. 067 DEG/07 KTS,
100 FT. 063 DEG/06 KTS, 150 FT. 067 DEG/07 KTS,
200 FT. 067 DEG/07 KTS, 250 FT. 069 DEG/07 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA
**DATE:** 28 JUNE, 1967

**ROCKET TIME:** 1001 LST 1501 GCT
**ROCKET MOTOR TYPE:** ARCAS

**PAYLOAD TYPE:** ARCASONDE 1A
**RADIOSONDE TYPE:** 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | Z | Z | Z |
| 72402 | 37°51' N 75°29' W ALT. 3 M | JULY 5, 1967 | 1442 | 1225 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 031 | 111 | 60 | 095 | 092 | +004 | -047 |
| 033 | 111 | 59 | 093 | 088 | +002 | -045 |
| 034 | 111 | 58 | 090 | 091 | +000 | -047 |
| 036 | 083 | 57 | 091 | 089 | +001 | -046 |
| 038 | 111 | 56 | 089 | 089 | -001 | -046 |
| 039 | 111 | 55 | 085 | 088 | -004 | -045 |
| 041 | 067 | 54 | 090 | 080 | +000 | -041 |
| 044 | 067 | 53 | 102 | 084 | +009 | -042 |
| 046 | 067 | 52 | 109 | 084 | +014 | -041 |
| 049 | 067 | 51 | 111 | 092 | +017 | -044 |
| 051 | 067 | 50 | 113 | 093 | +019 | -044 |
| 054 | 067 | 49 | 107 | 087 | +013 | -043 |
| 056 | 056 | 48 | 097 | 094 | +006 | -048 |
| 060 | 048 | 47 | 086 | 086 | -003 | -044 |
| 063 | 056 | 46 | 087 | 074 | -002 | -038 |
| 066 | 048 | 45 | 093 | 072 | +002 | -037 |
| 070 | 042 | 44 | 090 | 070 | +000 | -036 |
| 074 | 037 | 43 | 087 | 068 | -002 | -035 |
| 079 | 033 | 42 | 098 | 059 | +004 | -030 |
| 084 | 033 | 41 | 103 | 060 | +007 | -030 |
| 089 | 033 | 40 | 099 | 063 | +005 | -032 |
| 094 | 030 | 39 | 094 | 055 | +002 | -028 |
| 100 | 028 | 38 | 094 | 053 | +002 | -027 |
| 106 | 026 | 37 | 088 | 053 | -001 | -027 |
| 113 | 024 | 36 | 085 | 045 | -002 | -023 |
| 120 | 022 | 35 | 093 | 035 | +001 | -018 |
| 128 | 020 | 34 | 096 | 035 | +002 | -018 |
| 137 | 018 | 33 | 093 | 033 | +001 | -017 |
| 147 | 016 | 32 | 094 | 031 | +001 | -016 |
| 158 | 016 | 31 | 093 | 035 | +001 | -018 |
| 168 | 014 | 30 | 090 | 031 | +000 | -016 |
| 181 | 012 | 29 | 094 | 025 | +001 | -013 |
| 195 | 011 | 28 | 086 | 025 | -001 | -013 |
| 211 | 010 | 27 | 080 | 022 | -002 | -011 |
| 229 | 009 | 26 | 090 | 019 | +000 | -010 |
| 248 | 008 | 25 | 103 | 018 | +002 | -009 |
| 270 | 007 | 24 | 107 | 020 | +003 | -010 |
| 295 | 006 | 23 | 096 | 018 | +001 | -009 |
| 323 | 006 | 22 | 090 | 012 | +000 | -006 |
| 355 | 005 | 21 | 099 | 012 | +001 | -006 |
| 387 | 005 | 20 | 117 | 009 | +002 | -004 |
| 425 | 005 | 19 | 162 | 006 | +003 | -001 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 6157 | -15.4 | 00.222 | 00.301 | 322 | | | | |
| 5959 | -06.4 | 00.287 | 00.374 | 327 | 094 | 090 | +003 | -046 |
| 5593 | -06.1 | 00.454 | 00.592 | 328 | 089 | 089 | -001 | -046 |
| 5395 | -04.8 | 00.582 | 00.755 | 328 | 090 | 080 | +000 | -041 |
| 5276 | -02.0 | 00.675 | 00.867 | 330 | 103 | 084 | +010 | -042 |
| 5090 | -00.9 | 00.850 | 01.087 | 331 | 111 | 092 | +017 | -044 |
| 4895 | +03.5 | 01.079 | 01.359 | 333 | 107 | 087 | +013 | -043 |
| 4788 | +00.7 | 01.230 | 01.564 | 332 | 096 | 094 | +005 | -048 |
| 4612 | +00.3 | 01.527 | 01.945 | 331 | 087 | 076 | -002 | -039 |
| 4499 | -04.1 | 01.757 | 02.275 | 329 | 093 | 072 | +002 | -037 |
| 4401 | -04.9 | 01.987 | 02.580 | 328 | 090 | 070 | +000 | -036 |
| 4362 | -08.5 | 02.087 | 02.747 | 326 | 088 | 070 | -001 | -036 |
| 4295 | -06.6 | 02.272 | 02.970 | 327 | 087 | 068 | -002 | -035 |
| 4185 | -10.9 | 02.615 | 03.473 | 325 | 098 | 059 | +004 | -030 |
| 4118 | -12.0 | 02.850 | 03.802 | 324 | 101 | 059 | +006 | -030 |
| 4087 | -14.9 | 02.967 | 04.003 | 322 | 103 | 060 | +007 | -030 |
| 4020 | -13.3 | 03.238 | 04.341 | 323 | 099 | 063 | +005 | -032 |
| 3749 | -22.5 | 04.633 | 06.440 | 317 | 090 | 052 | +000 | -027 |
| 3679 | -21.9 | 05.091 | 07.059 | 318 | 088 | 051 | -001 | -026 |
| 3539 | -27.4 | 06.158 | 08.730 | 314 | 090 | 039 | -000 | -020 |
| 3490 | -27.0 | 06.587 | 09.322 | 315 | 093 | 035 | +001 | -018 |
| 3350 | -30.0 | 07.993 | 11.451 | 313 | 096 | 035 | +002 | -018 |
| 3292 | -34.4 | 08.670 | 12.651 | 310 | 093 | 033 | +001 | -017 |
| 3225 | -32.9 | 09.531 | 13.820 | 311 | 094 | 031 | +001 | -016 |
| 3085 | -36.8 | 11.626 | 17.136 | 308 | 093 | 035 | +001 | -018 |
| 2957 | -37.6 | 13.969 | 20.659 | 308 | 090 | 029 | +000 | -015 |
| 2877 | -41.4 | 15.686 | 23.579 | 305 | 094 | 025 | +001 | -013 |
| 2612 | -46.6 | 23.207 | 35.685 | 302 | 090 | 019 | -000 | -010 |
| 2000 | -55.0 | 59.027 | 94.261 | 296 | 117 | 009 | +002 | -004 |
| 1829 | -58.6 | 77.200 | | 294 | | | | |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 2147 | -52.9 | 50.000 | 79.079 | 298 | 090 | 012 | +000 | -006 |
| 2486 | -48.2 | 30.000 | 46.458 | 301 | 103 | 018 | +002 | -009 |
| 2713 | -44.4 | 20.000 | 30.456 | 303 | 081 | 024 | -002 | -012 |
| 3178 | -33.8 | 10.000 | 14.553 | 310 | 094 | 031 | +001 | -016 |
| 3430 | -27.9 | 07.000 | 09.943 | 314 | 096 | 035 | +002 | -018 |
| 3672 | -22.0 | 05.000 | 06.936 | 318 | 088 | 053 | -001 | -027 |
| 4366 | -05.4 | 02.000 | 02.802 | 328 | 090 | 070 | -000 | -036 |
| 4924 | +02.0 | 01.000 | 01.266 | 333 | 111 | 092 | +017 | -044 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1021.0 | 0000 | 310 | 011 | -004 | +004 | 68 | +17.8 |
| 0806.0 | 0200 | 287 | 019 | -003 | +009 | 30 | +07.3 |
| 0630.0 | 0400 | 253 | 048 | +007 | +024 | 10 | -00.8 |
| 0488.0 | 0600 | 239 | 068 | +018 | +030 | 10 | -12.4 |
| 0374.0 | 0800 | 256 | 088 | +011 | +044 | 12 | -25.5 |
| 0281.0 | 1000 | 246 | 096 | +020 | +045 | | -40.6 |
| 0208.5 | 1200 | 241 | 115 | +029 | +052 | | -53.7 |
| 0190.0 | 1259 | 250 | 105 | +019 | +050 | | -57.0 |
| 0152.1 | 1400 | 250 | 068 | +012 | +033 | | -57.9 |
| 0110.4 | 1600 | 241 | 032 | +008 | +014 | | -59.3 |
| 0080.4 | 1800 | 124 | 011 | +003 | -005 | | -58.7 |
| 0058.4 | 2000 | 070 | 009 | -002 | -004 | | -55.6 |
| 0042.8 | 2200 | 089 | 011 | -000 | -006 | | -52.5 |
| 0031.7 | 2400 | 091 | 015 | +000 | -008 | | -49.4 |
| 0023.3 | 2600 | 090 | 013 | -000 | -007 | | -46.3 |
| 0017.4 | 2800 | 088 | 019 | -000 | -010 | | -42.8 |
| 0013.1 | 3000 | 087 | 029 | -001 | -015 | | -38.5 |
| 0009.8 | 3200 | 089 | 020 | -000 | -010 | | -34.6 |
| 0007.5 | 3390 | | | | | | -33.7 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 136 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 125 DEG. AZIMUTH 74.5 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 9 SECONDS 1,280 METERS ALTITUDE
MOTOR TRACK DROPPED.. 136 SECONDS 65,075 METERS ALTITUDE
PAYLOAD ACQUISITION.. 136 SECONDS 65,075 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,700 SECONDS 18,290 METERS ALTITUDE
APOGEE.. 136 SECONDS 65,075 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 15 FT. DIAMETER PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1685 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 175 SEC. 61,570 METERS ALTITUDE
TO 2,700 SEC. 18,290 METERS ALTITUDE

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 77.2 MB
ALTITUDE 18,290 METERS
TEMPERATURE -58.3 DEG. C

RADIOSONDE AND BALLOON DATA

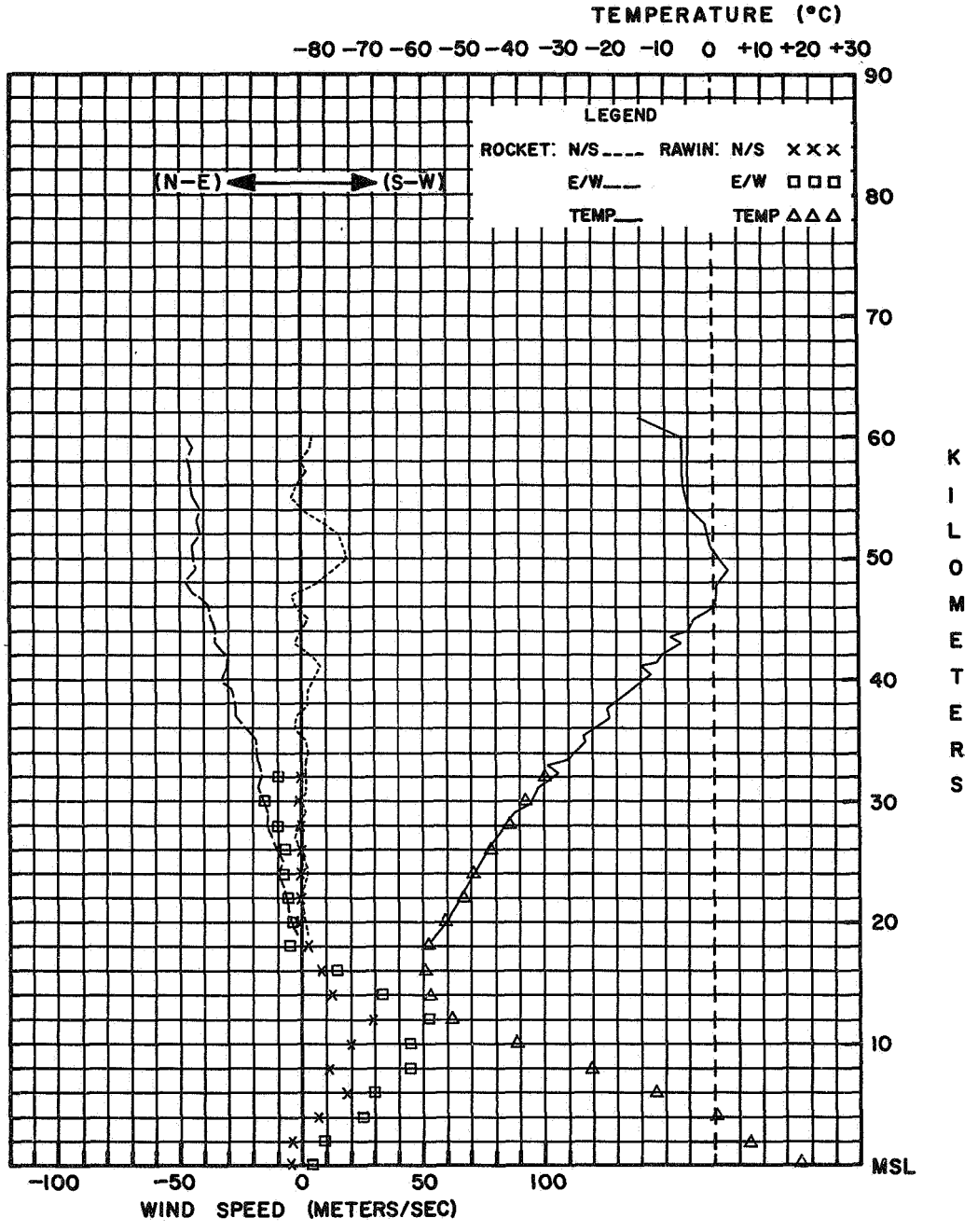
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 307 M/MINUTE
400 MB-TOP = 438 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1021.0 MB
TEMPERATURE.. 17.8 DEG. C
RELATIVE HUMIDITY.. 68%
VISIBILITY.. 12 KM
SURFACE WIND.. 310 DEG. 12 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 0 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 315 DEG/11 KTS, 50 FT. 285 DEG/10 KTS,
100 FT. 294 DEG/11 KTS, 150 FT. 288 DEG/11 KTS,
200 FT. 293 DEG/12 KTS, 250 FT. 291 DEG/12 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA
DATE: 5 JULY, 1967

ROCKET TIME: 0942 LST 1442 GCT
ROCKET MOTOR TYPE: ARCAS

PAYLOAD TYPE: ARCASONDE-1A
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET RAWINSONDE LAUNCH TIME Z | RELEASE TIME Z |
|---|---|---|---|---|
| | (CNAÉ) NATAL, BRAZIL | Z | | |
| 82599 | 5°55' S 35°10' W ALT. 43 M | JULY 5, 1967 | 1500 | 1212 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 018 | 051 | 66 | 233 | 080 | +025 | +033 |
| 021 | 067 | 65 | 223 | 045 | +017 | +016 |
| 023 | 083 | 64 | 144 | 017 | +007 | -005 |
| 025 | 067 | 63 | 146 | 028 | +012 | -008 |
| 028 | 067 | 62 | 187 | 033 | +017 | +002 |
| 030 | 056 | 61 | 216 | 033 | +014 | +010 |
| 034 | 048 | 60 | 209 | 040 | +018 | +010 |
| 037 | 048 | 59 | 209 | 049 | +022 | +012 |
| 041 | 042 | 58 | 209 | 040 | +018 | +010 |
| 045 | 042 | 57 | 220 | 033 | +013 | +011 |
| 049 | 037 | 56 | 229 | 044 | +015 | +017 |
| 054 | 033 | 55 | 225 | 027 | +010 | +010 |
| 059 | 033 | 54 | 259 | 032 | +003 | +016 |
| 064 | 033 | 53 | 248 | 042 | +008 | +020 |
| 069 | 030 | 52 | 243 | 052 | +012 | +024 |
| 075 | 026 | 51 | 237 | 032 | +009 | +014 |
| 082 | 024 | 50 | 114 | 019 | +004 | -009 |
| 089 | 022 | 49 | 084 | 039 | -002 | -020 |
| 097 | 024 | 48 | 077 | 042 | -005 | -021 |
| 103 | 024 | 47 | 095 | 041 | +002 | -021 |
| 111 | 021 | 46 | 100 | 034 | +003 | -017 |
| 119 | 020 | 45 | 095 | 021 | +001 | -011 |
| 128 | 021 | 44 | 119 | 020 | +005 | -009 |
| 135 | 020 | 43 | 141 | 012 | +005 | -004 |
| 145 | 013 | 42 | 270 | 002 | +000 | +001 |
| 160 | 018 | 41 | 349 | 010 | -005 | +001 |
| 164 | 022 | 40 | 360 | 012 | -006 | +000 |
| 175 | 018 | 39 | 333 | 009 | -004 | +002 |
| 183 | 017 | 38 | 329 | 011 | -005 | +003 |
| 195 | 014 | 37 | 000 | 014 | -007 | +000 |
| 206 | 014 | 36 | 347 | 018 | -009 | +002 |
| 218 | 014 | 35 | 260 | 022 | +002 | +011 |
| 230 | 013 | 34 | 239 | 011 | +003 | +005 |
| 244 | 012 | 33 | 085 | 021 | -001 | -011 |
| 257 | 012 | 32 | 095 | 047 | +002 | -024 |
| 271 | 013 | 31 | 097 | 047 | +003 | -024 |
| 283 | 013 | 30 | 095 | 047 | +002 | -024 |
| 297 | 011 | 29 | 090 | 047 | +000 | -024 |
| 314 | 010 | 28 | 090 | 049 | +000 | -025 |
| 329 | 010 | 27 | 090 | 047 | +000 | -024 |
| 346 | 010 | 26 | 088 | 045 | -001 | -023 |
| 364 | 009 | 25 | 088 | 045 | -001 | -023 |
| 383 | 009 | 24 | 082 | 029 | -002 | -015 |
| 402 | 008 | 23 | 117 | 004 | +001 | -002 |
| 423 | 009 | 22 | 254 | 014 | +002 | +007 |
| 441 | 008 | 21 | 276 | 020 | -001 | +010 |
| 463 | 007 | 20 | 276 | 018 | -001 | +009 |
| 487 | 006 | 19 | 261 | 012 | +001 | +006 |
| 516 | 005 | 18 | 315 | 003 | -001 | +001 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY -3 G M | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1009.1 | 0004 | 130 | 009 | +003 | -003 | 92 | +23.5 |
| 0801.0 | 0200 | 132 | 026 | +009 | -010 | 90 | +13.1 |
| 0630.0 | 0400 | 069 | 015 | -003 | -007 | 79 | +02.4 |
| 0489.0 | 0600 | 054 | 017 | -005 | -007 | | -11.4 |
| 0376.0 | 0800 | 038 | 007 | -003 | -002 | | -21.9 |
| 0283.0 | 1000 | 317 | 020 | -008 | +007 | | -37.7 |
| 0210.0 | 1200 | 298 | 040 | -010 | +018 | | -53.1 |
| 0152.8 | 1400 | 301 | 042 | -011 | +019 | | -67.9 |
| 0108.2 | 1600 | 140 | 010 | +004 | -003 | | -76.7 |
| 0100.0 | 1650 | 069 | 023 | -004 | -011 | | -77.7 |
| 0077.0 | 1800 | 231 | 008 | +003 | +003 | | -67.7 |
| 0055.4 | 2000 | 300 | 022 | -006 | +010 | | -61.8 |
| 0040.2 | 2200 | 233 | 013 | +004 | +005 | | -61.7 |
| 0029.2 | 2400 | 086 | 026 | -001 | -013 | | -55.9 |
| 0021.5 | 2600 | 092 | 049 | +001 | -025 | | -50.8 |
| 0015.8 | 2800 | 086 | 047 | -002 | -024 | | -44.9 |
| 0011.7 | 3000 | 093 | 049 | +001 | -025 | | -45.3 |
| 0009.7 | 3139 | 077 | 040 | -005 | -020 | | -42.4 |
| 0009.0 | 3193 | | | | | | -42.2 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 90 SEC. ACTUAL.. 90 SEC.
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 030 DEG. AZIMUTH 78.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 4 SECONDS 4,663 METERS ALTITUDE
MOTOR TRACK DROPPED.. 62 SECONDS 52,822 METERS ALTITUDE
PAYLOAD ACQUISITION.. 94 SECONDS 65,228 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 3,269 SECONDS 16,764 METERS ALTITUDE
APOGEE.. 107 SECONDS 66,081 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH 'S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

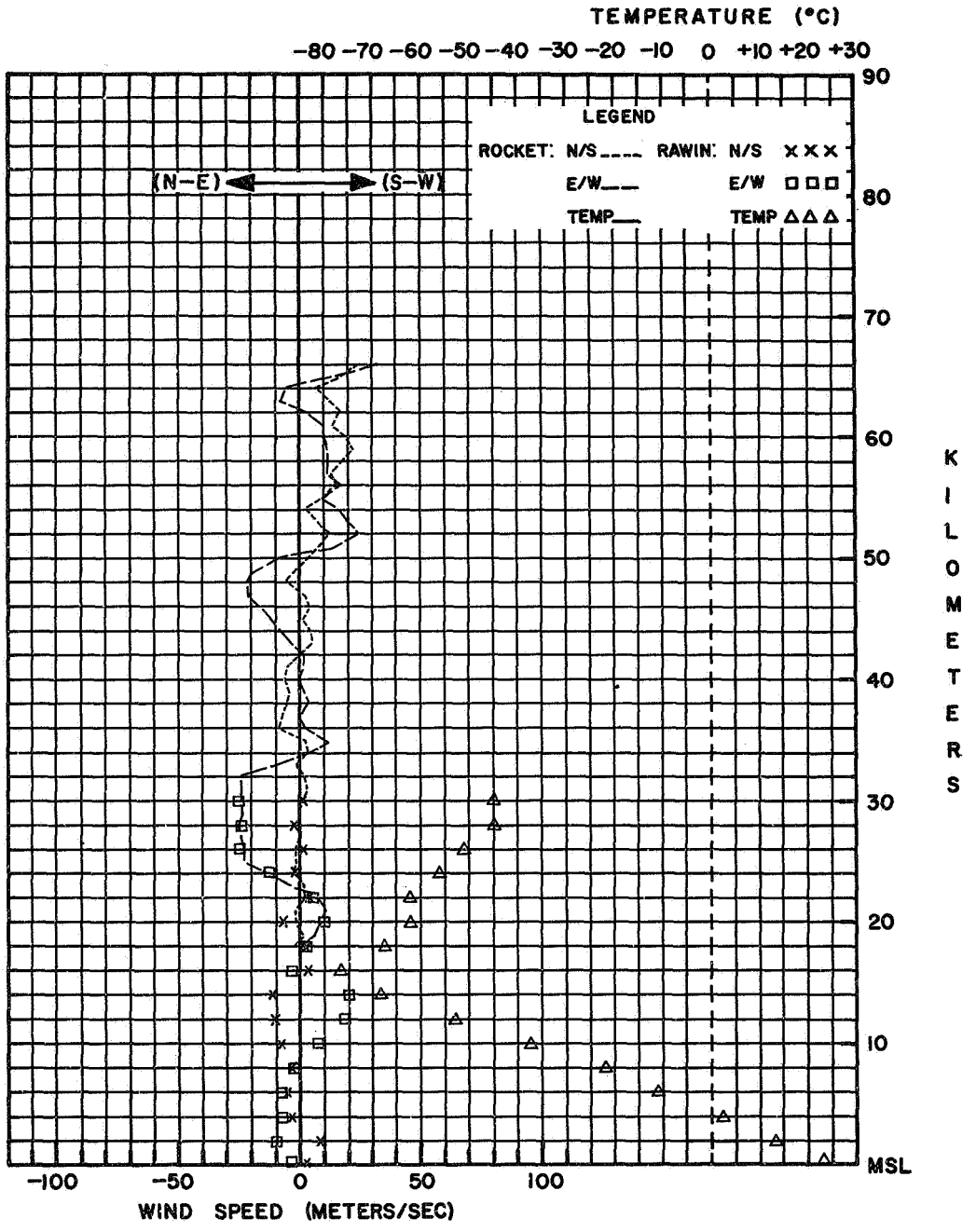
RADIOSONDE MANUFACTURER.. BENDIX
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID
GROUND EQUIPMENT TYPE.. GMD-1A
BALLOON TYPE.. DAREX
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,200 GRAMS
ASCENSION RATES.. SFC-400 MB = 297 M/MINUTE
400 MB-TOP = 353 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1009.1 MB
TEMPERATURE.. 23.5 DEG. C
RELATIVE HUMIDITY.. 92 %
VISIBILITY.. 10 KM
SURFACE WIND.. 130 DEG. 8 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 8 OCTAS
LOW.. SC
MIDDLE.. AS
HIGH.. NONE
TYPE OF PRECIPITATION.. RAIN
OBSTRUCTIONS TO VISION.. RAIN

WIND AT ROCKET LAUNCH

21 FT. 120 DEG/10 KTS, 29 FT. 150 DEG/10 KTS,
51 FT. 140 DEG/12 KTS, 82 FT. 130 DEG/16 KTS,
133 FT. 140 DEG/18 KTS




STATION: (CNAE) NATAL, BRAZIL

DATE: 5 JULY, 1967

ROCKET TIME: 1200 LST 1500 GCT

ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF

RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (CNAE) NATAL, BRAZIL | | | |
| 82599 | 5°55' S 35°10' W ALT. 43 M | JULY 12, 1967 | 1658 | 1208 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 020 | 083 | 66 | 276 | 109 | -006 | +056 |
| 022 | 083 | 65 | 293 | 084 | -017 | +040 |
| 024 | 083 | 64 | 326 | 070 | -030 | +020 |
| 026 | 083 | 63 | 270 | 047 | +000 | +024 |
| 028 | 067 | 62 | 247 | 078 | +016 | +037 |
| 031 | 056 | 61 | 252 | 069 | +011 | +034 |
| 034 | 056 | 60 | 260 | 043 | +004 | +022 |
| 037 | 048 | 59 | 254 | 071 | +010 | +035 |
| 041 | 042 | 58 | 249 | 066 | +012 | +032 |
| 045 | 042 | 57 | 261 | 059 | +005 | +030 |
| 049 | 037 | 56 | 261 | 079 | +006 | +040 |
| 054 | 033 | 55 | 253 | 081 | +012 | +040 |
| 059 | 037 | 54 | 278 | 055 | -004 | +028 |
| 063 | 033 | 53 | 286 | 034 | -005 | +017 |
| 069 | 028 | 52 | 307 | 042 | -013 | +017 |
| 075 | 028 | 51 | 340 | 023 | -011 | +004 |
| 081 | 024 | 50 | 069 | 027 | -005 | -013 |
| 089 | 022 | 49 | 087 | 039 | -001 | -020 |
| 096 | 024 | 48 | 104 | 040 | +005 | -020 |
| 103 | 022 | 47 | 110 | 046 | +008 | -022 |
| 111 | 021 | 46 | 103 | 052 | +006 | -026 |
| 119 | 021 | 45 | 126 | 036 | +011 | -015 |
| 127 | 021 | 44 | 126 | 067 | +020 | -028 |
| 135 | 019 | 43 | 125 | 061 | +018 | -026 |
| 145 | 017 | 42 | 109 | 047 | +008 | -023 |
| 155 | 017 | 41 | 090 | 052 | +000 | -027 |
| 165 | 017 | 40 | 093 | 041 | +001 | -021 |
| 175 | 017 | 39 | 097 | 031 | +002 | -016 |
| 185 | 017 | 38 | 098 | 027 | +002 | -014 |
| 195 | 016 | 37 | 112 | 021 | +004 | -010 |
| 206 | 015 | 36 | 108 | 018 | +003 | -009 |
| 217 | 014 | 35 | 141 | 012 | +005 | -004 |
| 229 | 013 | 34 | 164 | 014 | +007 | -002 |
| 242 | 012 | 33 | 117 | 017 | +004 | -008 |
| 256 | 012 | 32 | 093 | 035 | +001 | -018 |
| 269 | 013 | 31 | 095 | 049 | +002 | -025 |
| 282 | 012 | 30 | 101 | 050 | +005 | -025 |
| 297 | 011 | 29 | 095 | 047 | +002 | -024 |
| 313 | 010 | 28 | 085 | 047 | -002 | -024 |
| 330 | 010 | 27 | 090 | 045 | +000 | -023 |
| 347 | 010 | 26 | 095 | 045 | +002 | -023 |
| 365 | 009 | 25 | 090 | 045 | +000 | -023 |
| 383 | 009 | 24 | 079 | 032 | -003 | -016 |
| 403 | 009 | 23 | 124 | 007 | +002 | -003 |
| 422 | 008 | 22 | 257 | 018 | +002 | +009 |
| 443 | 008 | 21 | 270 | 017 | +000 | +009 |
| 466 | 007 | 20 | 236 | 014 | +004 | +006 |
| 491 | 007 | 19 | 225 | 008 | +003 | +003 |
| 516 | 007 | 18 | 027 | 004 | -002 | -001 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1009.6 | 0004 | 160 | 008 | +004 | -001 | 81 | +26.2 |
| 0804.0 | 0200 | 104 | 016 | +002 | -008 | 55 | +13.9 |
| 0631.0 | 0400 | 094 | 010 | +000 | -005 | | +03.8 |
| 0491.0 | 0600 | 107 | 010 | +002 | -005 | | -07.4 |
| 0377.5 | 0800 | 151 | 025 | +011 | -006 | | -21.3 |
| 0284.8 | 1000 | 190 | 024 | +012 | +002 | | -38.1 |
| 0210.5 | 1200 | 241 | 014 | +003 | +006 | | -54.4 |
| 0152.9 | 1400 | 281 | 021 | -002 | +011 | | -67.6 |
| 0108.3 | 1600 | 250 | 029 | +005 | +014 | | -78.5 |
| 0106.0 | 1616 | 244 | 025 | +006 | +011 | | -79.0 |
| 0076.7 | 1800 | 004 | 009 | -005 | -000 | | -69.3 |
| 0055.2 | 2000 | 228 | 018 | +006 | +007 | | -66.0 |
| 0039.9 | 2200 | 241 | 014 | +003 | +006 | | -59.8 |
| 0029.0 | 2400 | 078 | 024 | -003 | -012 | | -55.7 |
| 0021.3 | 2600 | 094 | 025 | +001 | -013 | | -51.6 |
| 0019.0 | 2685 | 099 | 051 | +004 | -026 | | -51.2 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 90 SEC. ACTUAL.. 92 SEC.
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 035 DEG. AZIMUTH 77.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 4 SECONDS 4,755 METERS ALTITUDE
MOTOR TRACK DROPPED.. 64 SECONDS 54,103 METERS ALTITUDE
PAYLOAD ACQUISITION.. 92 SECONDS 65,228 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 3,280 SECONDS 16,764 METERS ALTITUDE
APOGEE.. 110 SECONDS 66,447 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

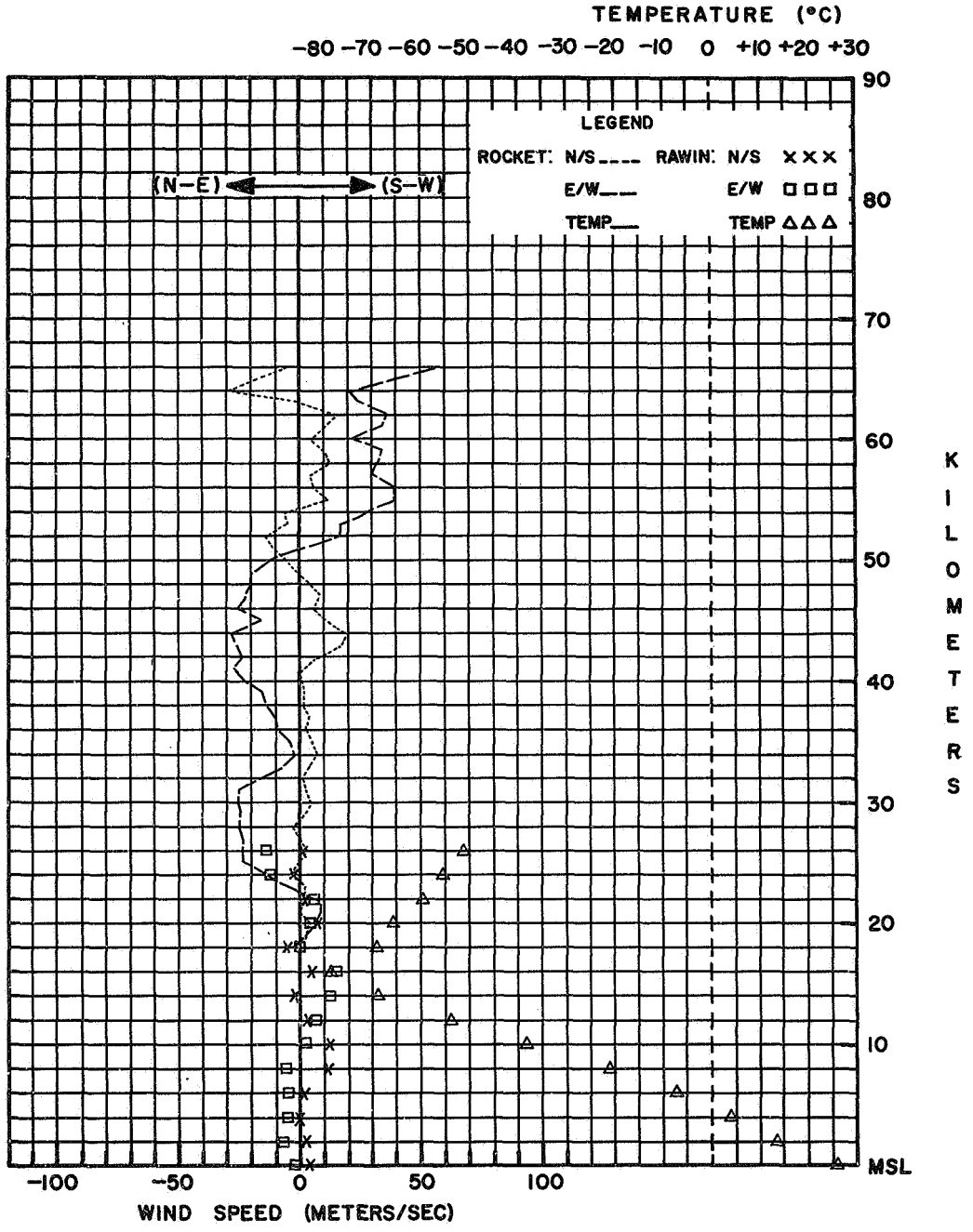
RADIOSONDE MANUFACTURER.. BENDIX
RADIOSONDE TYPE.. 1640 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID
GROUND EQUIPMENT TYPE.. GMD-1A
BALLOON TYPE.. DAREX
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,200 GRAMS
ASCENSION RATES.. SFC-400 MB = 266 M/MINUTE
400 MB-TOP = 322 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1009.6 MB
TEMPERATURE.. 26.2 DEG. C
RELATIVE HUMIDITY.. 81 %
VISIBILITY.. 20 KM
SURFACE WIND.. 160 DEG. 8 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 3 OCTAS
LOW.. 3 OCTAS/CU
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

21 FT. 140 DEG/06 KTS. 29 FT. 140 DEG/10 KTS.
51 FT. 150 DEG/14 KTS. 82 FT. 140 DEG/10 KTS.
133 FT. 140 DEG/18 KTS




STATION: (CNAE) NATAL, BRAZIL

DATE: 12 JULY, 1967

ROCKET TIME: 1358 LST 1658 GCT

ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF

RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | Z | Z | Z |
| 72402 | 37°51' N 75°29' W ALT. 3 M | JULY 20, 1967 | 2011 | 1715 |

# TABULATED DATA

ROCKET WINDS

| TIME OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 029 | 083 | 55 | 085 | 105 | -005 | -054 |
| 031 | 083 | 54 | 092 | 109 | +002 | -056 |
| 033 | 083 | 53 | 092 | 105 | +002 | -054 |
| 035 | 067 | 52 | 091 | 091 | +001 | -047 |
| 038 | 067 | 51 | 089 | 086 | -001 | -044 |
| 040 | 067 | 50 | 094 | 084 | +003 | -043 |
| 043 | 067 | 49 | 099 | 083 | +007 | -042 |
| 045 | 067 | 48 | 099 | 075 | +006 | -038 |
| 048 | 056 | 47 | 104 | 066 | +008 | -033 |
| 051 | 048 | 46 | 117 | 063 | +015 | -029 |
| 055 | 048 | 45 | 111 | 060 | +011 | -029 |
| 058 | 042 | 44 | 088 | 062 | -001 | -032 |
| 063 | 037 | 43 | 079 | 063 | -006 | -032 |
| 067 | 037 | 42 | 086 | 058 | -002 | -030 |
| 072 | 033 | 41 | 092 | 051 | +001 | -026 |
| 077 | 037 | 40 | 095 | 043 | +002 | -022 |
| 081 | 033 | 39 | 103 | 044 | +005 | -022 |
| 087 | 028 | 38 | 103 | 050 | +006 | -025 |
| 093 | 028 | 37 | 094 | 053 | +002 | -027 |
| 099 | 024 | 36 | 086 | 051 | -002 | -026 |
| 107 | 022 | 35 | 092 | 045 | +001 | -023 |
| 114 | 022 | 34 | 095 | 041 | +002 | -021 |
| 122 | 021 | 33 | 099 | 039 | +003 | -020 |
| 130 | 019 | 32 | 096 | 039 | +002 | -020 |
| 140 | 015 | 31 | 090 | 035 | +000 | -018 |
| 152 | 014 | 30 | 090 | 033 | +000 | -017 |
| 163 | 014 | 29 | 086 | 031 | -001 | -016 |
| 176 | 011 | 28 | 082 | 029 | -002 | -015 |
| 192 | 011 | 27 | 094 | 029 | +001 | -015 |
| 206 | 010 | 26 | 090 | 023 | +000 | -012 |
| 226 | 008 | 25 | 084 | 020 | -001 | -010 |
| 247 | 008 | 24 | 096 | 018 | +001 | -009 |
| 269 | 007 | 23 | 100 | 022 | +002 | -011 |
| 295 | 006 | 22 | 100 | 022 | +002 | -011 |
| 324 | 006 | 21 | 104 | 016 | +002 | -008 |
| 353 | 005 | 20 | 082 | 014 | -001 | -007 |
| 390 | 004 | 19 | 090 | 008 | +000 | -004 |

ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|

RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1024.0 | 0000 | 120 | 006 | +002 | -003 | 93 | +21.7 |
| 0811.0 | 0200 | 249 | 004 | +001 | +002 | 60 | +12.3 |
| 0636.0 | 0400 | 247 | 010 | +002 | +005 | 33 | +00.0 |
| 0494.0 | 0600 | 228 | 017 | +006 | +007 | 16 | -11.2 |
| 0379.0 | 0800 | 214 | 035 | +015 | +010 | 20 | -25.1 |
| 0286.0 | 1000 | 217 | 048 | +020 | +015 | 19 | -38.9 |
| 0211.0 | 1200 | 193 | 052 | +026 | +006 | | -55.7 |
| 0189.0 | 1270 | 200 | 055 | +026 | +010 | | -62.0 |
| 0154.0 | 1400 | 215 | 029 | +012 | +009 | | -58.5 |
| 0112.0 | 1600 | 184 | 006 | +003 | +000 | | -60.0 |
| 0082.0 | 1800 | 144 | 010 | +004 | -003 | | -59.2 |
| 0059.0 | 2000 | 089 | 010 | -000 | -005 | | -56.7 |
| 0043.0 | 2200 | 100 | 015 | +001 | -008 | | -53.2 |
| 0032.0 | 2400 | 087 | 023 | -001 | -012 | | -51.0 |
| 0023.8 | 2600 | 103 | 023 | +003 | -012 | | -47.4 |
| 0017.5 | 2800 | 084 | 029 | -002 | -015 | | -43.8 |
| 0013.1 | 3000 | 091 | 033 | +000 | -017 | | -40.2 |
| 0009.8 | 3200 | 099 | 040 | +003 | -020 | | -36.7 |
| 0008.0 | 3323 | 106 | 047 | +007 | -023 | | -33.0 |
| 0007.4 | 3397 | | | | | | -31.6 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. UNSATISFACTORY
FUSE TYPE.. GAS GENERATED SEPERATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 124 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 145 DEG. AZIMUTH 82.5 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 1,220 METERS ALTITUDE
MOTOR TRACK DROPPED.. 124 SECONDS 58,825 METERS ALTITUDE
PAYLOAD ACQUISITION.. 124 SECONDS 58,825 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,460 SECONDS 18,300 METERS ALTITUDE
APOGEE.. 124 SECONDS 58,825 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 15 FT. DIAMETER PARACHUTE
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1690 MHZ
TELEMETRY QUALITY.. POOR
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

TELEMETRY FAILURE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

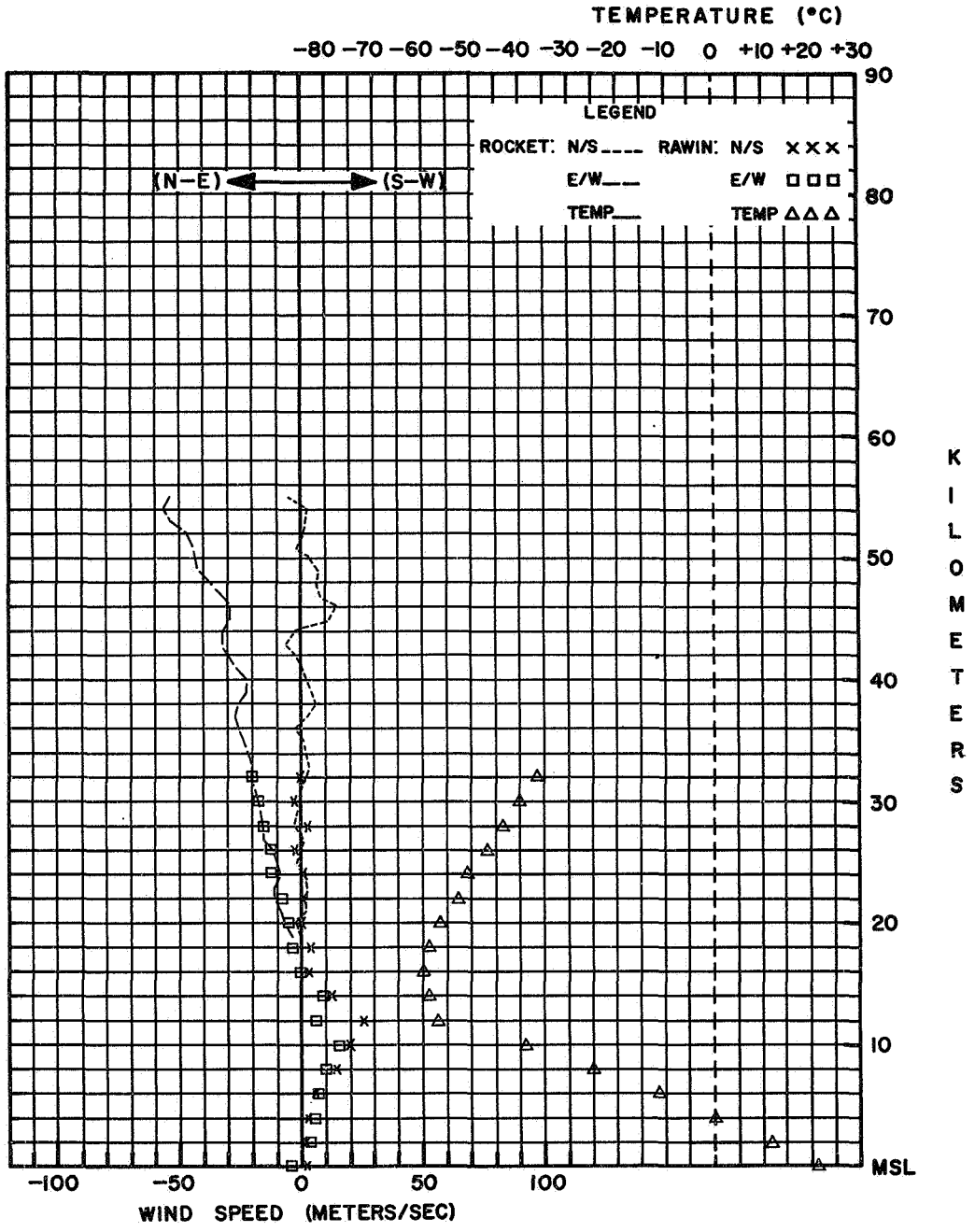
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1,680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
*FREE LIFT.. 1,400 GRAMS*
ASCENSION RATES.. SFC-400 MB = 261 M/MINUTE
400 MB-TOP = 398 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1024.0 MB
TEMPERATURE.. 21.7 DEG. C
RELATIVE HUMIDITY.. 93%
VISIBILITY.. 13 KM
SURFACE WIND.. 120 DEG. 6 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 7 OCTAS
LOW.. 5 OCTAS/CU
MIDDLE.. NONE
HIGH.. 2 OCTAS/CS
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 107 DEG/09 KTS, 50 FT. 089 DEG/07 KTS,
100 FT. 088 DEG/07 KTS, 150 FT. 090 DEG/07 KTS,
200 FT. 097 DEG/07 KTS, 250 FT. 104 DEG/07 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA
DATE: 20 JULY, 1967

ROCKET TIME: 1711 LST 2011 GCT
ROCKET MOTOR TYPE: ARCAS

PAYLOAD TYPE: ARCASONDE-1A
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | Z | Z | Z |
| 72402 | 37°51' N 75°29' W ALT. 3 M | JULY 26, 1967 | 1414 | 1115 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 031 | 055 | 59 | 095 | 074 | +003 | -038 |
| 033 | 083 | 58 | 110 | 074 | +013 | -036 |
| 035 | 111 | 57 | 113 | 080 | +016 | -038 |
| 036 | 111 | 56 | 112 | 084 | +016 | -040 |
| 038 | 083 | 55 | 111 | 094 | +017 | -045 |
| 040 | 083 | 54 | 107 | 092 | +014 | -045 |
| 042 | 083 | 53 | 103 | 092 | +011 | -046 |
| 044 | 067 | 52 | 095 | 107 | +005 | -055 |
| 047 | 067 | 51 | 095 | 113 | +005 | -058 |
| 049 | 067 | 50 | 095 | 098 | +004 | -050 |
| 052 | 056 | 49 | 085 | 088 | -004 | -045 |
| 055 | 056 | 48 | 077 | 086 | -010 | -043 |
| 058 | 056 | 47 | 081 | 085 | -007 | -043 |
| 061 | 056 | 46 | 088 | 090 | -002 | -046 |
| 064 | 048 | 45 | 084 | 086 | -005 | -044 |
| 068 | 042 | 44 | 075 | 076 | -010 | -038 |
| 072 | 037 | 43 | 075 | 066 | -009 | -033 |
| 077 | 037 | 42 | 086 | 060 | -002 | -031 |
| 081 | 037 | 41 | 094 | 053 | +002 | -027 |
| 086 | 033 | 40 | 092 | 045 | +001 | -023 |
| 091 | 030 | 39 | 090 | 043 | +000 | -022 |
| 097 | 026 | 38 | 095 | 047 | +002 | -024 |
| 104 | 026 | 37 | 106 | 050 | +007 | -025 |
| 110 | 024 | 36 | 107 | 053 | +008 | -026 |
| 118 | 021 | 35 | 102 | 056 | +006 | -028 |
| 126 | 021 | 34 | 094 | 053 | +002 | -027 |
| 134 | 020 | 33 | 090 | 051 | +000 | -026 |
| 143 | 019 | 32 | 082 | 043 | -003 | -022 |
| 152 | 016 | 31 | 081 | 035 | -003 | -018 |
| 164 | 013 | 30 | 087 | 039 | -001 | -020 |
| 177 | 013 | 29 | 090 | 037 | +000 | -019 |
| 189 | 012 | 28 | 083 | 033 | -002 | -017 |
| 204 | 010 | 27 | 086 | 027 | -001 | -014 |
| 222 | 009 | 26 | 099 | 026 | +002 | -013 |
| 243 | 008 | 25 | 099 | 026 | +002 | -013 |
| 263 | 008 | 24 | 094 | 027 | +001 | -014 |
| 285 | 007 | 23 | 090 | 025 | +000 | -013 |
| 314 | 006 | 22 | 084 | 020 | -001 | -010 |
| 345 | 005 | 21 | 097 | 016 | +001 | -008 |
| 380 | 005 | 20 | 099 | 012 | +001 | -006 |
| 415 | 005 | 19 | 090 | 008 | +000 | -004 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|
| 6050 | -16.7 | 00.255 | 00.346 | 321 | | | | |
| 5861 | -12.8 | 00.326 | 00.436 | 323 | 101 | 073 | +007 | -037 |
| 5764 | -04.7 | 00.368 | 00.478 | 328 | 111 | 077 | +014 | -037 |
| 5691 | -02.4 | 00.403 | 00.519 | 330 | 113 | 080 | +016 | -038 |
| 5584 | -02.5 | 00.461 | 00.593 | 330 | 111 | 086 | +016 | -041 |
| 5538 | +00.3 | 00.487 | 00.621 | 331 | 112 | 090 | +017 | -043 |
| 5349 | +03.0 | 00.614 | 00.775 | 333 | 105 | 092 | +012 | -046 |
| 5093 | +00.7 | 00.840 | 01.068 | 332 | 095 | 111 | +005 | -057 |
| 4849 | -03.4 | 01.136 | 01.467 | 329 | 081 | 087 | -007 | -044 |
| 4810 | -02.1 | 01.192 | 01.532 | 330 | 078 | 085 | -009 | -043 |
| 4761 | -05.0 | 01.268 | 01.647 | 328 | 078 | 085 | -009 | -043 |
| 4730 | -03.7 | 01.318 | 01.704 | 329 | 079 | 085 | -008 | -043 |
| 4542 | -05.4 | 01.668 | 02.170 | 328 | 085 | 088 | -004 | -045 |
| 4481 | -11.0 | 01.802 | 02.395 | 325 | 082 | 084 | -006 | -043 |
| 4328 | -09.9 | 02.193 | 02.902 | 325 | 075 | 068 | -009 | -034 |
| 4237 | -11.3 | 02.465 | 03.279 | 324 | 081 | 063 | -005 | -032 |
| 4179 | -10.6 | 02.656 | 03.524 | 325 | 088 | 058 | -001 | -030 |
| 3972 | -12.0 | 03.467 | 04.626 | 324 | 092 | 045 | +001 | -023 |
| 3880 | -15.9 | 03.909 | 05.293 | 322 | 090 | 043 | +000 | -022 |
| 3850 | -13.8 | 04.065 | 05.460 | 323 | 092 | 045 | +001 | -023 |
| 3584 | -21.8 | 05.779 | 08.009 | 318 | 107 | 053 | +008 | -026 |
| 3505 | -22.0 | 06.426 | 08.914 | 318 | 102 | 056 | +006 | -028 |
| 3493 | -24.7 | 06.532 | 09.158 | 316 | 102 | 056 | +006 | -028 |
| 3472 | -23.7 | 06.720 | 09.385 | 317 | 100 | 055 | +005 | -028 |
| 3292 | -31.1 | 08.698 | 12.390 | 312 | 090 | 051 | -000 | -026 |
| 3203 | -31.8 | 09.750 | 14.073 | 311 | 082 | 043 | -003 | -022 |
| 3130 | -35.1 | 10.808 | 15.817 | 309 | 081 | 037 | -003 | -019 |
| 3091 | -34.6 | 11.423 | 16.682 | 310 | 081 | 035 | -003 | -018 |
| 2859 | -43.1 | 15.971 | 24.186 | 304 | 087 | 035 | -001 | -018 |
| 2722 | -42.7 | 19.537 | 29.534 | 304 | 086 | 029 | -001 | -015 |
| 2661 | -46.8 | 21.347 | 32.916 | 302 | 090 | 027 | +000 | -014 |
| 2560 | -45.0 | 24.863 | 37.964 | 303 | 099 | 026 | +002 | -013 |
| 2502 | -47.2 | 27.112 | 41.801 | 301 | 099 | 026 | +002 | -013 |
| 2408 | -45.9 | 31.206 | 47.838 | 302 | 094 | 027 | +001 | -014 |
| 2219 | -53.1 | 41.563 | 65.800 | 297 | 085 | 021 | -001 | -011 |
| 2131 | -52.1 | 47.589 | 74.999 | 298 | 090 | 017 | +000 | -009 |
| 2000 | -56.1 | 58.300 | 93.572 | 295 | 099 | 012 | +001 | -006 |
| 1800 | -60.9 | 80.000 | | 292 | | | | |

CONSTANT PRESSURE LEVEL DATA

(HEIGHT IN GEOPOTENTIAL METERS)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2095 | -53.0 | 50.000 | 79.121 | 297 | 097 | 016 | +001 | -008 |
| 2427 | -46.3 | 30.000 | 46.067 | 302 | 094 | 027 | +001 | -014 |
| 2696 | -43.7 | 20.000 | 30.369 | 304 | 086 | 027 | -001 | -014 |
| 3170 | -32.6 | 10.000 | 14.481 | 311 | 082 | 041 | -003 | -021 |
| 3426 | -24.8 | 07.000 | 09.819 | 316 | 098 | 053 | +004 | -027 |
| 3684 | -18.2 | 05.000 | 06.831 | 320 | 106 | 050 | +007 | -025 |
| 4374 | -10.4 | 02.000 | 02.652 | 325 | 075 | 076 | -010 | -038 |
| 4923 | -01.5 | 01.000 | 01.283 | 330 | 091 | 093 | +001 | -048 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1013.0 | 0000 | 220 | 004 | +002 | +001 | 96 | +20.0 |
| 0803.0 | 0200 | 261 | 017 | +001 | +009 | 52 | +14.5 |
| 0630.0 | 0400 | 256 | 033 | +004 | +016 | 50 | +01.6 |
| 0488.0 | 0600 | 239 | 031 | +008 | +014 | 75 | -09.9 |
| 0374.0 | 0800 | 254 | 039 | +006 | +019 | 76 | -23.0 |
| 0284.0 | 1000 | 267 | 049 | +001 | +025 | 40 | -38.5 |
| 0209.0 | 1200 | 269 | 060 | +001 | +031 | | -53.6 |
| 0152.0 | 1400 | 286 | 033 | -005 | +016 | | -61.5 |
| 0122.0 | 1540 | 240 | 014 | +004 | +006 | | -66.9 |
| 0110.0 | 1600 | 255 | 017 | +002 | +008 | | -66.9 |
| 0080.0 | 1800 | 329 | 002 | -001 | +001 | | -63.6 |
| 0057.8 | 2000 | 081 | 012 | -001 | -006 | | -59.0 |
| 0042.5 | 2200 | 082 | 017 | -001 | -009 | | -54.5 |
| 0031.2 | 2400 | 085 | 023 | -001 | -012 | | -50.1 |
| 0022.8 | 2600 | 084 | 027 | -001 | -014 | | -45.8 |
| 0017.2 | 2800 | 082 | 031 | -002 | -016 | | -46.5 |
| 0012.6 | 3000 | 082 | 041 | -003 | -021 | | -42.3 |
| 0009.5 | 3200 | 081 | 045 | -004 | -023 | | -37.7 |
| 0007.3 | 3388 | 088 | 039 | -001 | -020 | | -34.6 |
| 0007.1 | 3400 | | | | | | -34.4 |
| 0006.8 | 3435 | | | | | | -33.8 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPERATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 131 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 117 DEG. AZIMUTH 76.8 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 7 SECONDS 1,160 METERS ALTITUDE
MOTOR TRACK DROPPED.. 131 SECONDS 64,310 METERS ALTITUDE
PAYLOAD ACQUISITION.. 131 SECONDS 64,310 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,700 SECONDS 18,000 METERS ALTITUDE
APOGEE.. 129 SECONDS 64,557 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 15 FT. DIAMETER PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1687 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 175 SEC. 60,500 METERS ALTITUDE
TO 2,700 SEC. 18,000 METERS ALTITUDE

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 80.0 MB
ALTITUDE 18,000 METERS
TEMPERATURE -63.6 DEG. C

RADIOSONDE AND BALLOON DATA

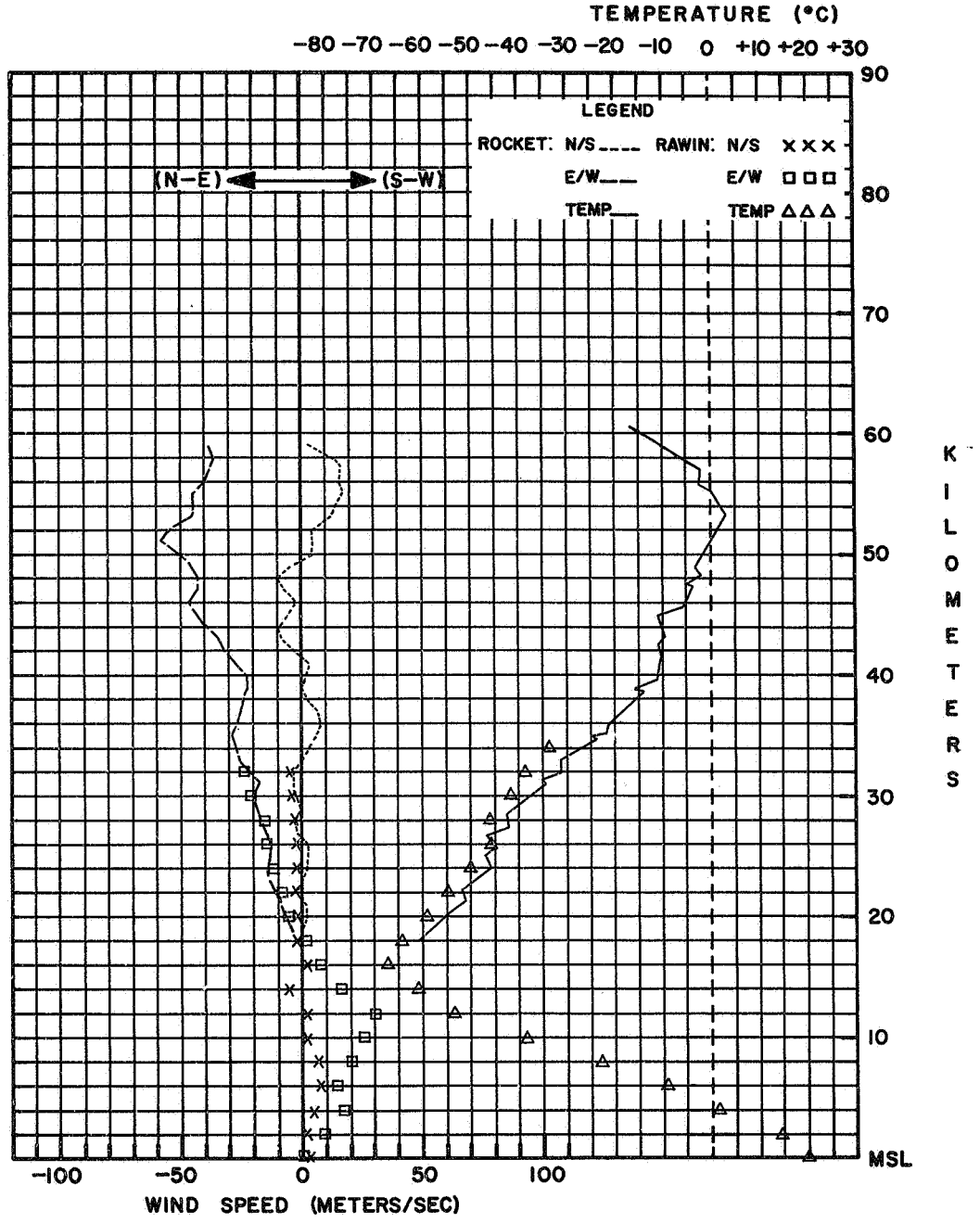
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,700 GRAMS
FREE LIFT.. 2,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 292 M/MINUTE
400 MB-TOP = 353 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1013.0 MB
TEMPERATURE.. 20.0 DEG. C
RELATIVE HUMIDITY.. 96 %
VISIBILITY.. 12 KM
SURFACE WIND.. 220 DEG. 4 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 6 OCTAS
LOW.. NONE
MIDDLE.. 5 OCTAS/CU
HIGH.. 1 OCTAS/CI
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 264 DEG/10 KTS. 50 FT. 263 DEG/07 KTS.
100 FT. 264 DEG/08 KTS. 150 FT. 264 DEG/09 KTS.
200 FT. 264 DEG/09 KTS. 250 FT. 253 DEG/09 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA
**DATE:** 26 JULY, 1967

**ROCKET TIME:** 0914 LST 1414 GCT
**ROCKET MOTOR TYPE:** ARCAS

**PAYLOAD TYPE:** ARCASONDE-1A
**RADIOSONDE TYPE:** 1680 MHZ

| RP | STATION NAME | DATE | ROCKET RAWINSONDE LAUNCH TIME Z | RELEASE TIME Z |
|---|---|---|---|---|
| | (CNAE) NATAL, BRAZIL | Z | | |
| 82599 | 5°55' S 35°10' W ALT. 43 M | AUGUST 2, 1967 | 1500 | 1222 |

# TABULATED DATA

## ROCKET WINDS

| TIME OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 019 | 083 | 65 | 279 | 163 | -013 | +083 |
| 021 | 083 | 64 | 278 | 071 | -005 | +036 |
| 023 | 083 | 63 | 275 | 047 | -002 | +024 |
| 025 | 067 | 62 | 312 | 029 | -010 | +011 |
| 028 | 056 | 61 | 051 | 037 | -012 | -015 |
| 031 | 056 | 60 | 053 | 061 | -019 | -025 |
| 034 | 048 | 59 | 074 | 057 | -008 | -028 |
| 038 | 042 | 58 | 045 | 005 | -002 | -002 |
| 042 | 042 | 57 | 276 | 039 | -002 | +020 |
| 046 | 037 | 56 | 267 | 033 | +001 | +017 |
| 051 | 033 | 55 | 275 | 043 | -002 | +022 |
| 056 | 033 | 54 | 265 | 043 | +002 | +022 |
| 061 | 033 | 53 | 259 | 040 | +004 | +020 |
| 066 | 028 | 52 | 273 | 039 | -001 | +020 |
| 073 | 024 | 51 | 290 | 039 | -007 | +019 |
| 080 | 024 | 50 | 323 | 019 | -008 | +006 |
| 087 | 024 | 49 | 008 | 014 | -007 | -001 |
| 094 | 024 | 48 | 018 | 006 | -003 | -001 |
| 101 | 022 | 47 | 045 | 005 | -002 | -002 |
| 109 | 022 | 46 | 022 | 010 | -005 | -002 |
| 116 | 021 | 45 | 090 | 006 | +000 | -003 |
| 125 | 020 | 44 | 135 | 011 | +004 | -004 |
| 133 | 019 | 43 | 100 | 022 | +002 | -011 |
| 143 | 017 | 42 | 105 | 030 | +004 | -015 |
| 153 | 018 | 41 | 062 | 033 | -008 | -015 |
| 162 | 018 | 40 | 074 | 028 | -004 | -014 |
| 172 | 018 | 39 | 090 | 025 | +000 | -013 |
| 181 | 017 | 38 | 085 | 021 | -001 | -011 |
| 192 | 014 | 37 | 098 | 014 | +001 | -007 |
| 204 | 014 | 36 | 090 | 016 | +000 | -008 |
| 216 | 013 | 35 | 090 | 019 | +000 | -010 |
| 229 | 013 | 34 | 072 | 018 | -003 | -009 |
| 241 | 013 | 33 | 066 | 034 | -007 | -016 |
| 254 | 012 | 32 | 088 | 051 | -001 | -026 |
| 268 | 012 | 31 | 090 | 052 | +000 | -027 |
| 281 | 012 | 30 | 084 | 057 | -003 | -029 |
| 296 | 011 | 29 | 090 | 054 | +000 | -028 |
| 311 | 010 | 28 | 092 | 056 | +001 | -029 |
| 328 | 010 | 27 | 088 | 054 | -001 | -028 |
| 346 | 009 | 26 | 088 | 051 | -001 | -026 |
| 364 | 009 | 25 | 085 | 047 | -002 | -024 |
| 382 | 009 | 24 | 087 | 035 | -001 | -018 |
| 401 | 009 | 23 | 108 | 012 | +002 | -006 |
| 420 | 008 | 22 | 256 | 016 | +002 | +008 |
| 442 | 007 | 21 | 279 | 026 | -002 | +013 |
| 465 | 007 | 20 | 281 | 032 | -003 | +016 |
| 489 | 007 | 19 | 274 | 025 | -001 | +013 |
| 514 | 007 | 18 | 326 | 007 | -003 | +002 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1010.0 | 0004 | 130 | 009 | +003 | -004 | 71 | +26.8 |
| 0802.0 | 0200 | 149 | 017 | +008 | -005 | 62 | +11.4 |
| 0631.0 | 0400 | 051 | 018 | -006 | -007 | 12 | +04.4 |
| 0440.0 | 0600 | 056 | 013 | -004 | -006 | | -07.6 |
| 0377.0 | 0800 | 097 | 010 | +001 | -005 | | -20.7 |
| 0285.0 | 1000 | 225 | 037 | +013 | +013 | | -36.4 |
| 0211.5 | 1200 | 253 | 041 | +006 | +020 | | -52.9 |
| 0153.9 | 1400 | 236 | 042 | +012 | +018 | | -68.6 |
| 0109.5 | 1600 | 013 | 009 | -005 | -001 | | -73.8 |
| 0095.0 | 1688 | 105 | 016 | +002 | -008 | | -77.7 |
| 0077.9 | 1800 | 323 | 015 | -006 | +005 | | -64.3 |
| 0056.3 | 2000 | 283 | 029 | -003 | +015 | | -65.2 |
| 0040.7 | 2200 | 272 | 022 | -000 | +011 | | -60.8 |
| 0029.7 | 2400 | 088 | 032 | -001 | -016 | | -56.3 |
| 0021.7 | 2600 | 089 | 053 | -000 | -027 | | -50.4 |
| 0016.0 | 2800 | 083 | 061 | -004 | -031 | | -44.7 |
| 0011.9 | 3000 | 086 | 054 | -002 | -028 | | -39.4 |
| 0008.9 | 3200 | 089 | 045 | -000 | -023 | | -38.9 |
| 0008.0 | 3287 | 063 | 019 | -005 | -009 | | -41.0 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 90 SEC. ACTUAL.. 90 SEC.
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 050 DEG. AZIMUTH 80.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. UNKNOWN
MOTOR TRACK DROPPED.. UNKNOWN
PAYLOAD ACQUISITION.. 95 SECONDS 65,472 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 3,278 SECONDS 16,764 METERS ALTITUDE
APOGEE.. 101 SECONDS 65,653 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

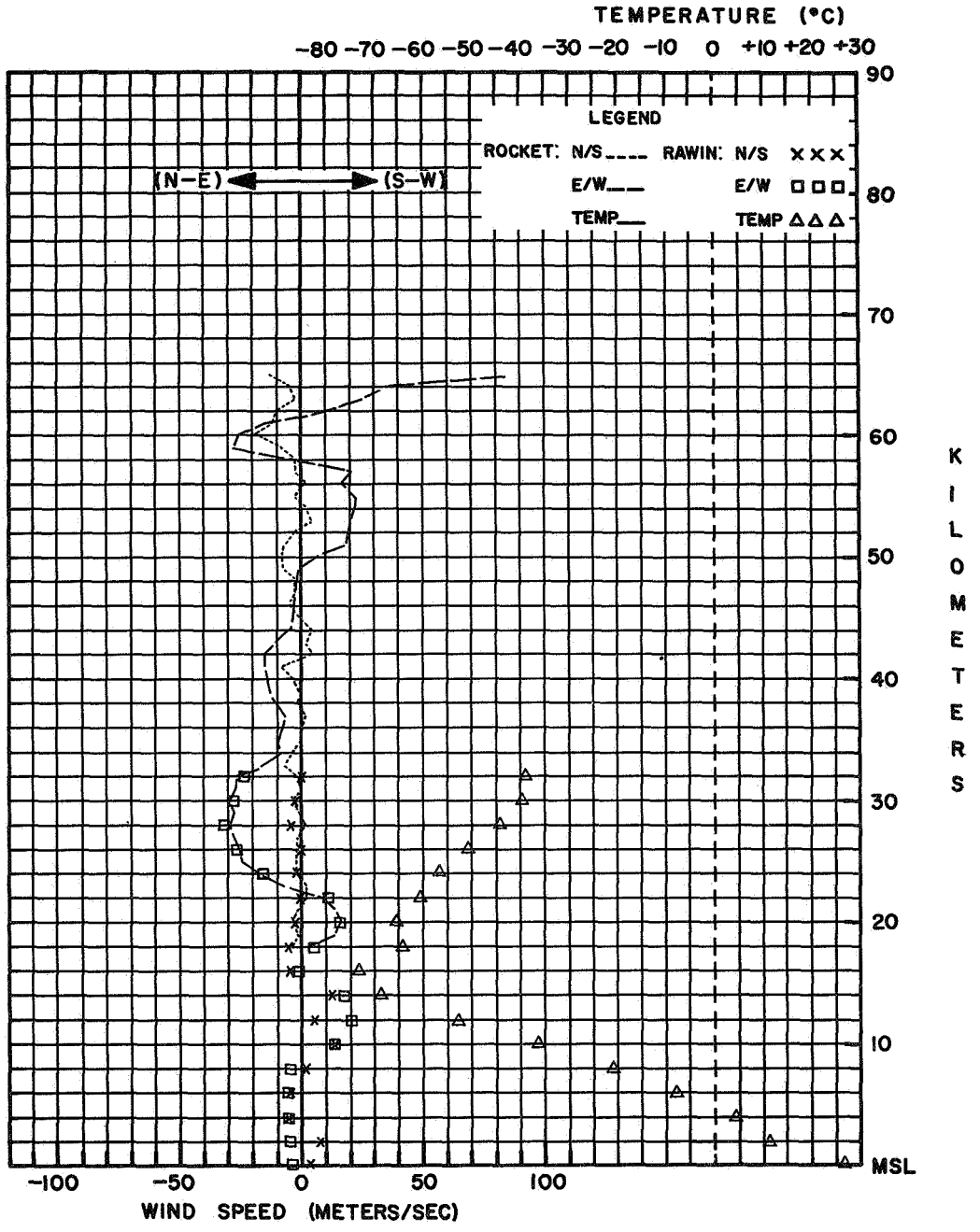
RADIOSONDE MANUFACTURER.. BENDIX
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID
GROUND EQUIPMENT TYPE.. GMD-1A
BALLOON TYPE.. KAYSAM
BALLOON SIZE.. 600 GRAMS
FREE LIFT.. 900 GRAMS
ASCENSION RATES.. SFC-400 MB = 267 M/MINUTE
400 MB-TOP = 319 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1010.0 MB
TEMPERATURE.. 26.8 DEG. C
RELATIVE HUMIDITY.. 71 %
VISIBILITY.. 20 KM
SURFACE WIND.. 130 DEG. 9 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 4 OCTAS
LOW.. CU
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

21 FT. 140 DEG/08 KTS, 29 FT. 150 DEG/14 KTS,
51 FT. 120 DEG/18 KTS, 82 FT. 120 DEG/18 KTS,
133 FT. 140 DEG/20 KTS




STATION: (CNAE) NATAL, BRAZIL
DATE: 2 AUGUST, 1967

ROCKET TIME: 1200 LST 1500 GCT
ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | Z | Z | Z |
| 72402 | 37°51' N 75°29' W ALT. 3 M | AUGUST 9, 1967 | 0130 | 0255 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 028 | 099 | 45 | 105 | 044 | +006 | -022 |
| 030 | 083 | 44 | 110 | 052 | +009 | -025 |
| 032 | 067 | 43 | 097 | 065 | +004 | -033 |
| 035 | 067 | 42 | 088 | 068 | -001 | -035 |
| 037 | 067 | 41 | 087 | 072 | -002 | -037 |
| 040 | 056 | 40 | 080 | 067 | -006 | -034 |
| 043 | 056 | 39 | 081 | 061 | -005 | -031 |
| 046 | 056 | 38 | 086 | 060 | -002 | -031 |
| 049 | 056 | 37 | 084 | 057 | -003 | -029 |
| 052 | 048 | 36 | 073 | 047 | -007 | -023 |
| 056 | 048 | 35 | 070 | 039 | -007 | -019 |
| 059 | 048 | 34 | 081 | 035 | -003 | -018 |
| 063 | 042 | 33 | 086 | 031 | -001 | -016 |
| 067 | 042 | 32 | 094 | 029 | +001 | -015 |
| 071 | 042 | 31 | 099 | 035 | +003 | -018 |
| 075 | 042 | 30 | 096 | 039 | +002 | -020 |
| 079 | 037 | 29 | 087 | 035 | -001 | -018 |
| 084 | 033 | 28 | 083 | 031 | -002 | -016 |
| 089 | 033 | 27 | 086 | 031 | -001 | -016 |
| 094 | 037 | 26 | 090 | 033 | +000 | -017 |
| 098 | 033 | 25 | 086 | 025 | -001 | -013 |
| 104 | 028 | 24 | 085 | 021 | -001 | -011 |
| 110 | 026 | 23 | 072 | 018 | -003 | -009 |
| 117 | 024 | 22 | 076 | 016 | -002 | -008 |
| 124 | 022 | 21 | 074 | 014 | -002 | -007 |
| 132 | 022 | 20 | 074 | 014 | -002 | -007 |
| 139 | 022 | 19 | 090 | 014 | +000 | -007 |
| 147 | 022 | 18 | 081 | 012 | -001 | -006 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|
| 4676 | +00.0 | 01.372 | 01.750 | 331 | | | | |
| 4487 | +02.1 | 01.731 | 02.190 | 333 | 105 | 044 | +006 | -022 |
| 4447 | +00.4 | 01.818 | 02.315 | 332 | 108 | 049 | +008 | -024 |
| 4295 | -02.7 | 02.194 | 02.827 | 330 | 097 | 065 | +004 | -033 |
| 4215 | -07.5 | 02.427 | 03.182 | 327 | 090 | 068 | -000 | -035 |
| 4054 | -13.5 | 02.984 | 04.003 | 323 | 084 | 070 | -004 | -036 |
| 3990 | -13.5 | 03.243 | 04.351 | 323 | 080 | 067 | -006 | -034 |
| 3923 | -17.8 | 03.540 | 04.830 | 320 | 081 | 063 | -005 | -032 |
| 3886 | -18.0 | 03.718 | 05.076 | 320 | 081 | 061 | -005 | -031 |
| 3685 | -25.0 | 04.868 | 06.834 | 316 | 082 | 055 | -004 | -028 |
| 3584 | -27.9 | 05.590 | 07.941 | 314 | 072 | 045 | -007 | -022 |
| 3450 | -33.2 | 06.737 | 09.781 | 311 | 075 | 038 | -005 | -019 |
| 3088 | -35.0 | 11.243 | 16.446 | 309 | 099 | 035 | +003 | -018 |
| 2938 | -40.3 | 13.947 | 20.867 | 306 | 090 | 037 | +000 | -019 |
| 2679 | -48.0 | 20.457 | 31.652 | 301 | 086 | 031 | -001 | -016 |
| 2545 | -47.6 | 25.023 | 38.649 | 301 | 086 | 029 | -001 | -015 |
| 2213 | -56.0 | 41.612 | 66.758 | 295 | 076 | 016 | -002 | -008 |
| 2085 | -55.0 | 50.804 | 81.129 | 296 | 074 | 014 | -002 | -007 |
| 2000 | -55.7 | 58.000 | 92.919 | 296 | 074 | 014 | -002 | -007 |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 2089 | -55.1 | 50.000 | 79.878 | 296 | 074 | 014 | -002 | -007 |
| 2436 | -50.1 | 30.000 | 46.859 | 299 | 085 | 023 | -001 | -012 |
| 2686 | -47.5 | 20.000 | 30.871 | 301 | 086 | 031 | -001 | -016 |
| 3172 | -34.5 | 10.000 | 14.598 | 310 | 094 | 029 | +001 | -015 |
| 3411 | -33.3 | 07.000 | 10.167 | 310 | 077 | 036 | -004 | -018 |
| 3646 | -25.5 | 05.000 | 07.034 | 315 | 082 | 053 | -004 | -027 |
| 4343 | -01.1 | 02.000 | 02.561 | 331 | 107 | 055 | +008 | -027 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1017.7 | 0000 | 000 | 000 | -000 | -000 | 90 | +21.1 |
| 0806.0 | 0200 | 331 | 014 | -006 | +003 | 44 | +11.4 |
| 0631.0 | 0400 | 002 | 010 | -005 | -000 | 89 | -01.0 |
| 0489.0 | 0600 | 329 | 008 | -004 | +002 | 57 | -12.8 |
| 0374.0 | 0800 | 321 | 014 | -006 | +005 | 24 | -24.9 |
| 0284.0 | 1000 | 014 | 062 | -031 | -008 | 13 | -36.3 |
| 0209.0 | 1200 | 009 | 068 | -035 | -005 | | -49.8 |
| 0167.0 | 1349 | 021 | 058 | -028 | -010 | | -59.7 |
| 0153.0 | 1400 | 016 | 033 | -016 | -005 | | -60.5 |
| 0111.5 | 1600 | 001 | 012 | -006 | -000 | | -63.3 |
| 0080.5 | 1800 | 089 | 008 | -000 | -004 | | -64.1 |
| 0058.0 | 2000 | 071 | 017 | -003 | -008 | | -59.6 |
| 0042.5 | 2200 | 079 | 019 | -002 | -010 | | -55.0 |
| 0031.3 | 2400 | 107 | 025 | +004 | -012 | | -51.4 |
| 0023.0 | 2600 | 103 | 027 | +003 | -014 | | -49.3 |
| 0017.2 | 2800 | 085 | 029 | -001 | -015 | | -47.4 |
| 0012.8 | 3000 | 091 | 041 | +000 | -021 | | -42.5 |
| 0009.5 | 3200 | 084 | 039 | -002 | -020 | | -37.5 |
| 0007.1 | 3400 | 073 | 022 | -003 | -011 | | -37.5 |
| 0006.0 | 3496 | 071 | 045 | -008 | -022 | | -35.3 |

# TECHNICAL DATA

VEHICLE DATA

*MOTOR TYPE.. ARCAS*
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPERATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 135 SEC.
TYPE OF LAUNCHER.. ARCAS WITHOUT GAS GENERATOR
LAUNCHER SETTING.. 145 DEG. AZIMUTH 82.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 1,130 METERS ALTITUDE
*MOTOR TRACK DROPPED.. 135 SECONDS 47,425 METERS ALTITUDE*
PAYLOAD ACQUISITION.. 135 SECONDS 47,425 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 930 SECONDS 17,130 METERS ALTITUDE
APOGEE.. 116 SECONDS 48,980 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 16 FT. DIAMETER DISC-GAP-BAND PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. ABOVE NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1688 MHZ
TELEMETRY QUALITY.. GOOD
*TELEMETRY DATA RECEIVED FROM.. 146 SEC. 46,760 METERS ALTITUDE*
*TO 930 SEC. 17,130 METERS ALTITUDE*

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 58.0 MB
ALTITUDE 20,000 METERS
TEMPERATURE -59.6 DEG. C

RADIOSONDE AND BALLOON DATA

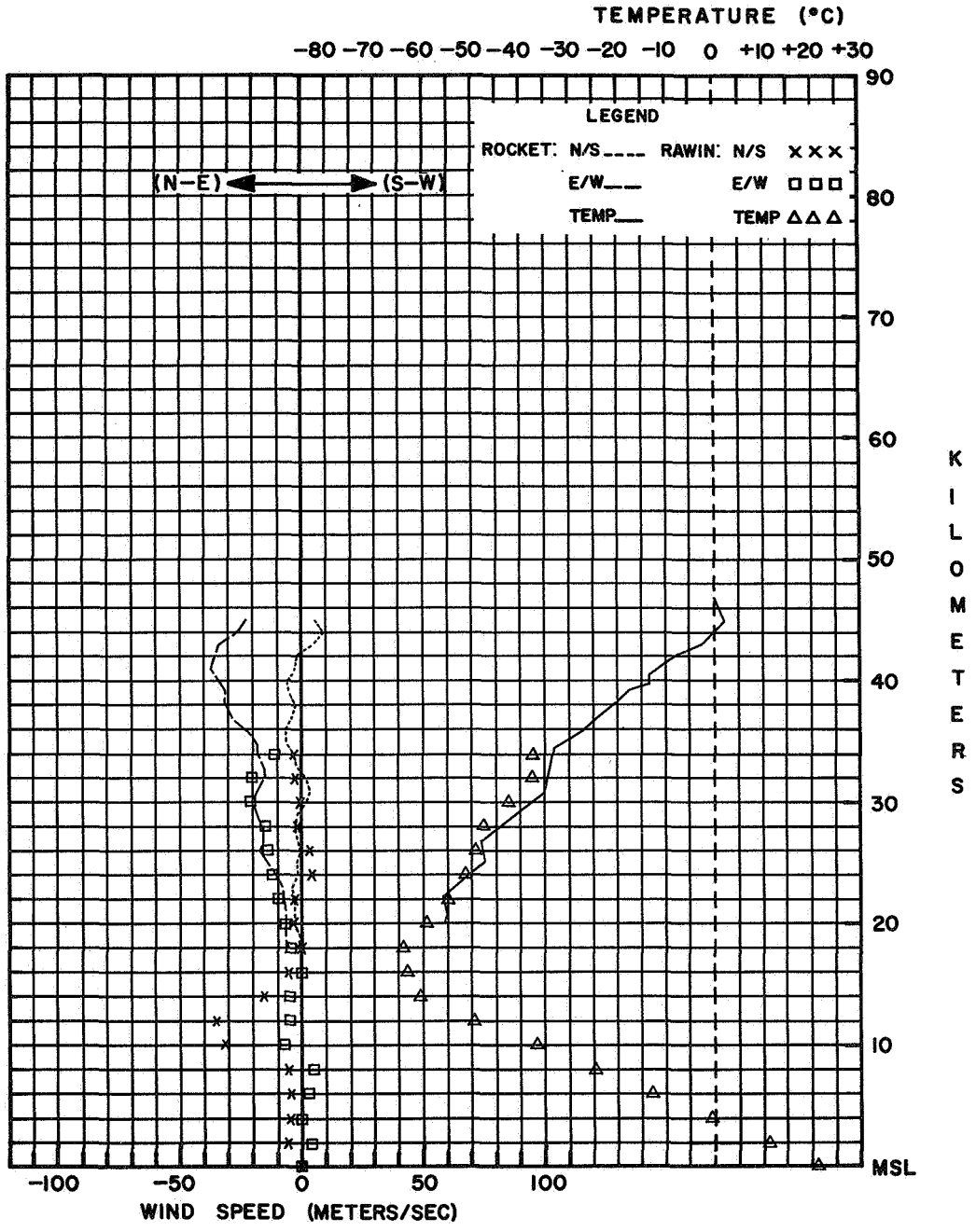
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
*RADIOSONDE TYPE.. 1680 MHZ*
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 266 M/MINUTE
400 MB-TOP = 381 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1017.7 MB
TEMPERATURE.. 21.1 DEG. C
RELATIVE HUMIDITY.. 90 %
VISIBILITY.. 11 KM
SURFACE WIND.. 000 DEG. 0 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 0 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 070 DEG/05 KTS, 50 FT. 051 DEG/05 KTS,
100 FT. 045 DEG/06 KTS, 150 FT. 050 DEG/07 KTS,
200 FT. 060 DEG/08 KTS, 250 FT. 060 DEG/08 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA **ROCKET TIME** 2030 **LST** 0130 **GCT** **PAYLOAD TYPE:** ARCASONDE-1A

**DATE:** 9 AUGUST, 1967 **ROCKET MOTOR TYPE:** ARCAS **RADIOSONDE TYPE:** 1680 MHZ

| RP | STATION NAME | DATE | ROCKET RAWINSONDE LAUNCH TIME Z | RELEASE TIME Z |
|---|---|---|---|---|
| | (CNIE) CHAMICAL, ARGENTINA | | | |
| 87320 | 30°22' S 66°17' W ALT. 456 M | AUGUST 16, 1967 | 1425 | 1500 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 024 | 111 | 65 | 220 | 079 | +031 | +026 |
| 026 | 111 | 64 | 233 | 110 | +034 | +045 |
| 027 | 111 | 63 | 220 | 145 | +057 | +048 |
| 029 | 083 | 62 | 235 | 124 | +037 | +052 |
| 031 | 083 | 61 | 252 | 098 | +016 | +048 |
| 033 | 067 | 60 | 239 | 084 | +022 | +037 |
| 036 | 056 | 59 | 230 | 081 | +027 | +032 |
| 039 | 067 | 58 | 238 | 073 | +020 | +032 |
| 041 | 056 | 57 | 258 | 074 | +008 | +037 |
| 045 | 037 | 56 | 266 | 051 | +002 | +026 |
| 050 | 042 | 55 | 264 | 035 | +002 | +018 |
| 053 | 056 | 54 | 277 | 031 | -002 | +016 |
| 056 | 042 | 53 | 270 | 037 | +000 | +019 |
| 061 | 037 | 52 | 258 | 058 | +006 | +029 |
| 065 | 042 | 51 | 293 | 059 | -012 | +028 |
| 069 | 033 | 50 | 330 | 054 | -024 | +014 |
| 075 | 028 | 49 | 354 | 035 | -018 | +002 |
| 081 | 028 | 48 | 303 | 020 | -005 | +008 |
| 087 | 028 | 47 | 240 | 032 | +008 | +015 |
| 093 | 011 | 46 | 242 | 049 | +012 | +023 |
| 118 | 010 | 45 | 256 | 049 | +005 | +026 |
| 127 | 020 | 44 | 271 | 041 | -001 | +023 |
| 135 | 022 | 43 | 284 | 072 | -009 | +036 |
| 142 | 021 | 42 | 285 | 075 | -010 | +037 |
| 151 | 017 | 41 | 291 | 065 | -012 | +031 |
| 162 | 018 | 40 | 280 | 053 | -005 | +027 |
| 170 | 017 | 39 | 273 | 043 | -001 | +022 |
| 182 | 018 | 38 | 274 | 029 | -001 | +015 |
| 189 | 019 | 37 | 246 | 023 | +005 | +011 |
| 200 | 013 | 36 | 250 | 023 | +004 | +011 |
| 215 | 013 | 35 | 261 | 012 | +001 | +006 |
| 226 | 015 | 34 | 270 | 012 | +000 | +006 |
| 237 | 014 | 33 | 281 | 010 | -001 | +005 |
| 249 | 012 | 32 | 270 | 016 | +000 | +008 |
| 264 | 011 | 31 | 250 | 029 | +005 | +014 |
| 279 | 014 | 30 | 270 | 019 | +000 | +010 |
| 288 | 014 | 29 | 289 | 035 | -006 | +017 |
| 302 | 011 | 28 | 288 | 025 | -004 | +012 |
| 317 | 011 | 27 | 297 | 035 | -008 | +016 |
| 332 | 010 | 26 | 286 | 042 | -006 | +021 |
| 349 | 008 | 25 | 263 | 033 | +002 | +017 |
| 373 | 008 | 24 | 263 | 031 | +002 | +016 |
| 389 | 010 | 23 | 274 | 025 | -001 | +013 |
| 406 | 007 | 22 | 275 | 023 | -001 | +012 |
| 434 | 004 | 21 | 239 | 023 | +006 | +010 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 0965.6 | 0046 | 050 | 010 | -003 | -004 | 18 | +21.4 |
| 0808.3 | 0200 | 055 | 022 | -006 | -009 | 18 | +09.4 |
| 0633.2 | 0400 | 235 | 029 | +009 | +012 | 05 | +03.7 |
| 0492.0 | 0600 | 217 | 052 | +021 | +016 | 05 | -10.7 |
| 0375.8 | 0800 | 227 | 052 | +018 | +020 | 05 | -25.6 |
| 0283.4 | 1000 | 252 | 050 | +008 | +024 | | -40.0 |
| 0210.0 | 1200 | 248 | 063 | +012 | +030 | | -51.2 |
| 0152.7 | 1400 | 252 | 066 | +010 | +032 | | -62.6 |
| 0109.3 | 1600 | 253 | 053 | +008 | +026 | | -71.2 |
| | 1800 | 246 | 045 | +009 | +021 | | |
| | 2000 | 233 | 040 | +012 | +016 | | |
| | 2200 | 244 | 038 | +009 | +018 | | |
| | 2400 | 282 | 022 | -002 | +011 | | |
| | 2600 | 267 | 030 | +001 | +015 | | |
| | 2800 | 310 | 038 | -013 | +015 | | |
| | 3000 | 233 | 025 | +008 | +010 | | |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 90 SEC. ACTUAL.. 84 SEC.
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 040 DEG. AZIMUTH 85.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 9 SECONDS 9,150 METERS ALTITUDE
MOTOR TRACK DROPPED.. 84 SECONDS 66,142 METERS ALTITUDE
PAYLOAD ACQUISITION.. 120 SECONDS 64,000 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,700 SECONDS 19,500 METERS ALTITUDE
APOGEE.. 103 SECONDS 68,245 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

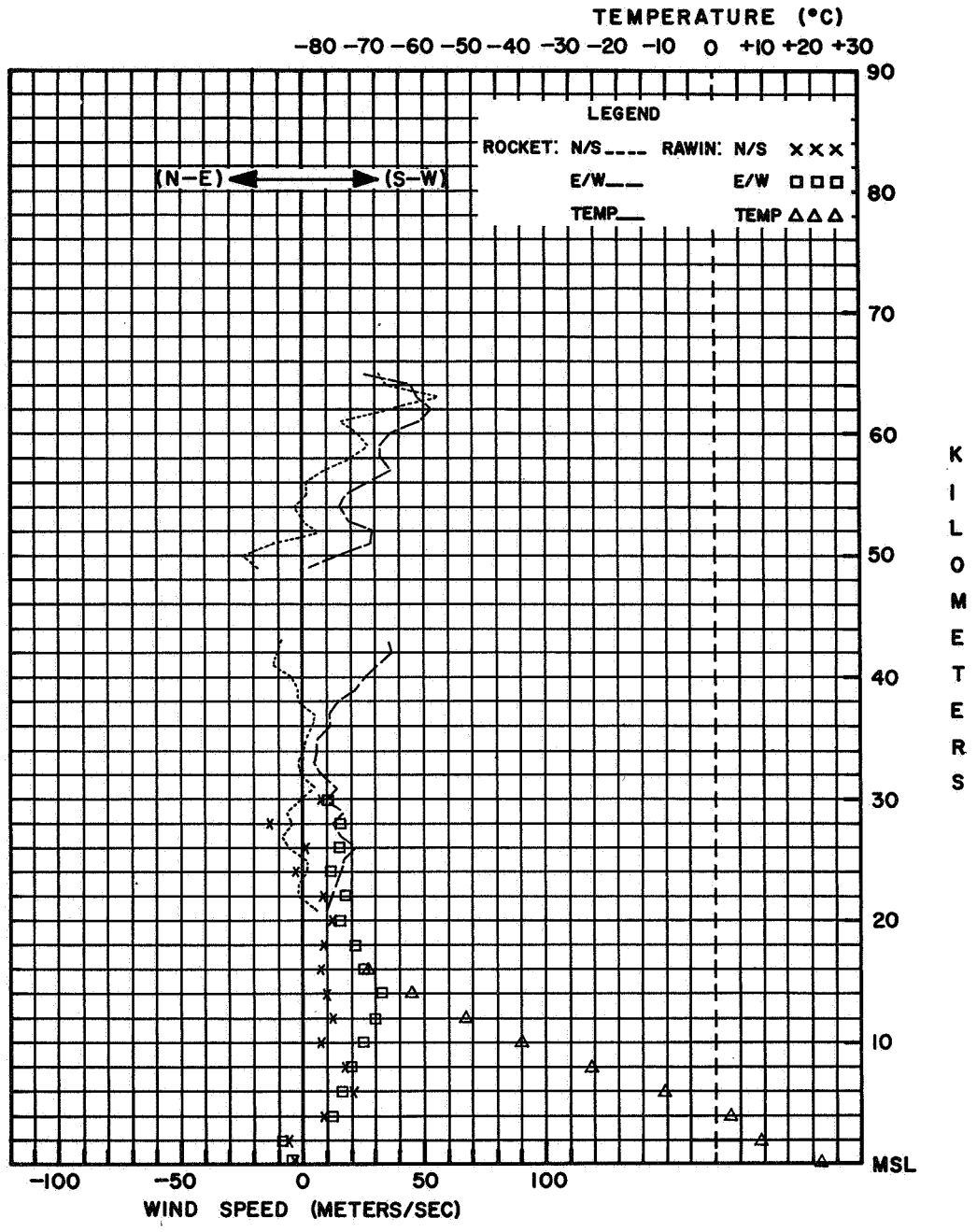
RADIOSONDE MANUFACTURER.. VAISALA
RADIOSONDE TYPE.. VAISALA
TEMPERATURE ELEMENT TYPE.. RESISTANCE WIRE
PRESSURE SENSOR TYPE.. DOUBLE ANEROID
GROUND EQUIPMENT TYPE.. VAISALA + MPS-19 RADAR
BALLOON TYPE.. TOTEX
BALLOON SIZE.. 800 GRAMS
FREE LIFT.. 1,200 GRAMS
ASCENSION RATES.. SFC-400 MB = 379 M/MINUTE
400 MB-TOP = 414 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 965.6 MB
TEMPERATURE.. 21.4 DEG. C
RELATIVE HUMIDITY.. 18%
VISIBILITY.. 6 KM
SURFACE WIND.. 050 DEG. 10 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 0 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 060 DEG/01 KTS




STATION: (CNIE) CHAMICAL, ARGENTINA
DATE: 16 AUGUST, 1967

ROCKET TIME: 1025 LST 1425 GCT
ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF
RADIOSONDE TYPE: VAISALA

| RP | STATION NAME | DATE | ROCKET RAWINSONDE LAUNCH TIME | RELEASE TIME |
|---|---|---|---|---|
| | (CNAE) NATAL, BRAZIL | Z | Z | Z |
| 82599 | 5°55' S 35°10' W ALT. 43 M | AUGUST 16, 1967 | 1500 | 1152 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | POLAR KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 024 | 099 | 65 | 281 | 030 | -003 | +015 |
| 026 | 083 | 64 | 338 | 010 | -005 | +002 |
| 028 | 067 | 63 | 016 | 014 | -007 | -002 |
| 031 | 067 | 62 | 063 | 013 | -003 | -006 |
| 033 | 067 | 61 | 072 | 039 | -006 | -019 |
| 036 | 056 | 60 | 060 | 043 | -011 | -019 |
| 039 | 048 | 59 | 236 | 014 | +004 | +006 |
| 043 | 042 | 58 | 230 | 015 | +005 | +006 |
| 047 | 042 | 57 | 198 | 006 | +003 | +001 |
| 051 | 037 | 56 | 243 | 004 | +001 | +002 |
| 056 | 033 | 55 | 198 | 006 | +003 | +001 |
| 061 | 030 | 54 | 158 | 021 | +010 | -004 |
| 067 | 028 | 53 | 076 | 024 | -003 | -012 |
| 073 | 028 | 52 | 047 | 034 | -012 | -013 |
| 079 | 028 | 51 | 011 | 020 | -010 | -002 |
| 085 | 026 | 50 | 034 | 007 | -003 | -002 |
| 092 | 024 | 49 | 127 | 010 | +003 | -004 |
| 099 | 024 | 48 | 129 | 012 | +004 | -005 |
| 106 | 021 | 47 | 135 | 014 | +005 | -005 |
| 115 | 021 | 46 | 166 | 016 | +008 | -002 |
| 122 | 021 | 45 | 167 | 018 | +009 | -002 |
| 131 | 019 | 44 | 141 | 012 | +005 | -004 |
| 140 | 019 | 43 | 060 | 016 | -004 | -007 |
| 149 | 019 | 42 | 069 | 033 | -006 | -016 |
| 158 | 018 | 41 | 074 | 034 | -005 | -017 |
| 168 | 017 | 40 | 090 | 021 | +000 | -011 |
| 178 | 018 | 39 | 131 | 018 | +006 | -007 |
| 187 | 016 | 38 | 117 | 009 | +002 | -004 |
| 199 | 014 | 37 | 135 | 011 | +004 | -004 |
| 210 | 014 | 36 | 127 | 010 | +003 | -004 |
| 222 | 013 | 35 | 083 | 016 | -001 | -008 |
| 235 | 013 | 34 | 082 | 027 | -002 | -014 |
| 247 | 013 | 33 | 084 | 037 | -002 | -019 |
| 261 | 013 | 32 | 084 | 053 | -003 | -027 |
| 273 | 013 | 31 | 085 | 049 | -002 | -025 |
| 287 | 012 | 30 | 090 | 047 | +000 | -024 |
| 301 | 011 | 29 | 092 | 054 | +001 | -028 |
| 318 | 010 | 28 | 090 | 052 | +000 | -027 |
| 334 | 010 | 27 | 081 | 051 | -004 | -026 |
| 352 | 009 | 26 | 084 | 057 | -003 | -029 |
| 370 | 009 | 25 | 094 | 055 | +002 | -028 |
| 388 | 009 | 24 | 096 | 039 | +002 | -020 |
| 408 | 009 | 23 | 131 | 021 | +007 | -008 |
| 427 | 008 | 22 | 216 | 017 | +007 | +005 |
| 449 | 008 | 21 | 270 | 021 | +000 | +011 |
| 471 | 007 | 20 | 279 | 024 | -002 | +012 |
| 496 | 007 | 19 | 288 | 012 | -002 | +006 |
| 521 | 007 | 18 | 090 | 006 | +000 | -003 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | POLAR KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | POLAR KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1011.3 | 0004 | 150 | 008 | +004 | -002 | 77 | +26.1 |
| 0805.0 | 0200 | 100 | 022 | +002 | -011 | 78 | +12.0 |
| 0633.0 | 0400 | 120 | 018 | +005 | -008 | 14 | +02.5 |
| 0482.5 | 0600 | 120 | 024 | +006 | -011 | 14 | -06.3 |
| 0380.0 | 0800 | 090 | 037 | -000 | -019 | 14 | -19.4 |
| 0287.5 | 1000 | 110 | 013 | +002 | -006 | 15 | -34.7 |
| 0213.0 | 1200 | 080 | 017 | -002 | -009 | 17 | -52.7 |
| 0155.5 | 1400 | 090 | 026 | -000 | -013 | | -65.7 |
| 0115.0 | 1582 | 060 | 007 | -002 | -003 | | -75.8 |
| 0111.3 | 1600 | 100 | 010 | +001 | -005 | | -73.8 |
| 0078.3 | 1800 | 070 | 007 | -001 | -003 | | -66.7 |
| 0056.5 | 2000 | 300 | 025 | -006 | +011 | | -59.7 |
| 0041.2 | 2200 | 250 | 016 | +003 | +004 | | -60.6 |
| 0030.2 | 2400 | 090 | 034 | -000 | -018 | | -52.7 |
| 0022.3 | 2600 | 100 | 062 | +006 | -031 | | -46.3 |
| 0016.6 | 2800 | 080 | 050 | -004 | -025 | | -44.8 |
| 0012.2 | 3000 | 090 | 049 | -000 | -025 | | -43.4 |
| 0009.2 | 3200 | 090 | 058 | -000 | -030 | | -41.4 |
| 0007.0 | 3287 | 090 | 057 | +000 | -029 | | -37.4 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 90 SEC. ACTUAL.. 90 SEC.
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 065 DEG. AZIMUTH 80.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 5 SECONDS 5,486 METERS ALTITUDE
MOTOR TRACK DROPPED.. 59 SECONDS 52,365 METERS ALTITUDE
PAYLOAD ACQUISITION.. 90 SECONDS 65,472 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 3,309 SECONDS 16,764 METERS ALTITUDE
APOGEE.. 111 SECONDS 67,270 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

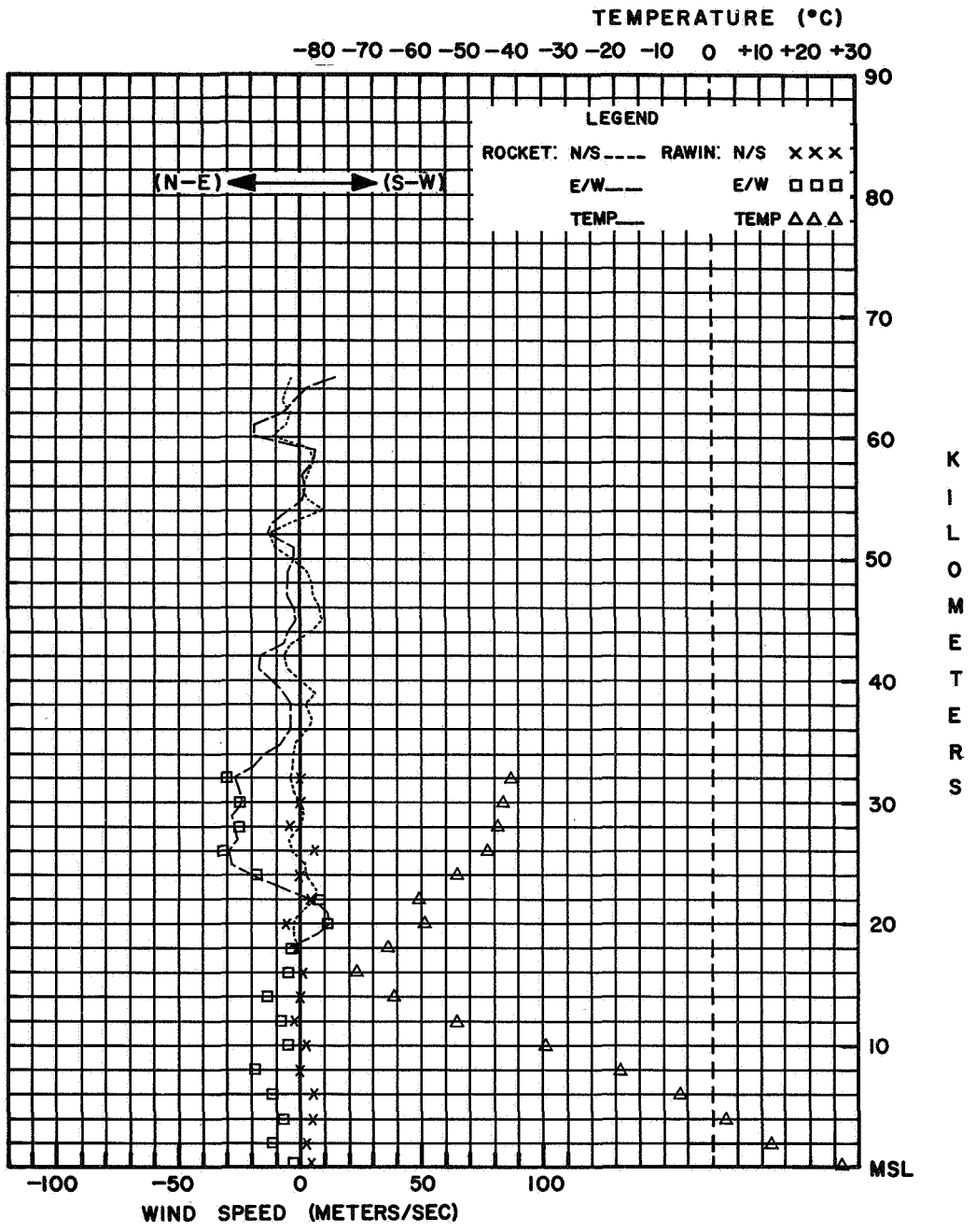
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID
GROUND EQUIPMENT TYPE.. GMD-1A
BALLOON TYPE.. KAYSAM
BALLOON SIZE.. 600 GRAMS
FREE LIFT.. 900 GRAMS
ASCENSION RATES.. SFC-400 MB = 283 M/MINUTE
400 MB-TOP = 324 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1011.3 MB
TEMPERATURE.. 26.1 DEG. C
RELATIVE HUMIDITY.. 77 %
VISIBILITY.. 10 KM
SURFACE WIND.. 150 DEG. 8 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 8 OCTAS
LOW.. CU/SC
MIDDLE.. AC
HIGH.. NONE
TYPE OF PRECIPITATION.. RAIN
OBSTRUCTIONS TO VISION.. RAIN

WIND AT ROCKET LAUNCH

21 FT. 130 DEG/12 KTS. 29 FT. 140 DEG/10 KTS.
51 FT. 140 DEG/10 KTS. 82 FT. 120 DEG/10 KTS.
133 FT. 140 DEG/12 KTS




STATION: (CNAE) NATAL, BRAZIL

DATE: 16 AUGUST, 1967

ROCKET TIME: 1200 LST 1500 GCT

ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF

RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | | | |
| 72402 | 37°51' N 75°29' W ALT. 3 M | AUGUST 16, 1967 | 1730 | 1834 |

# TABULATED DATA

ROCKET WINDS

| TIME OF A MINUTE | FALL VEL | ALT | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| | M/S | KM | | | | |
| 027 | 111 | 59 | 135 | 016 | +006 | -006 |
| 029 | 111 | 58 | 135 | 014 | +005 | -005 |
| 030 | 111 | 57 | 137 | 048 | +018 | -017 |
| 032 | 083 | 56 | 134 | 083 | +032 | -028 |
| 034 | 083 | 55 | 125 | 107 | +032 | -045 |
| 036 | 083 | 54 | 117 | 124 | +029 | -057 |
| 038 | 083 | 53 | 109 | 113 | +019 | -055 |
| 040 | 083 | 52 | 103 | 102 | +012 | -051 |
| 042 | 083 | 51 | 098 | 098 | +007 | -050 |
| 044 | 083 | 50 | 097 | 106 | +007 | -054 |
| 046 | 067 | 49 | 096 | 090 | +005 | -046 |
| 049 | 056 | 48 | 094 | 078 | +003 | -040 |
| 052 | 056 | 47 | 090 | 076 | +000 | -039 |
| 055 | 056 | 46 | 088 | 072 | -001 | -037 |
| 058 | 048 | 45 | 093 | 070 | +002 | -036 |
| 062 | 042 | 44 | 094 | 060 | +002 | -031 |
| 066 | 042 | 43 | 096 | 053 | +003 | -027 |
| 070 | 037 | 42 | 103 | 054 | +006 | -027 |
| 075 | 033 | 41 | 103 | 050 | +006 | -025 |
| 080 | 033 | 40 | 102 | 048 | +005 | -024 |
| 085 | 030 | 39 | 103 | 044 | +005 | -022 |
| 091 | 026 | 38 | 103 | 036 | +004 | -018 |
| 098 | 026 | 37 | 100 | 034 | +003 | -017 |
| 104 | 028 | 36 | 106 | 034 | +005 | -017 |
| 110 | 022 | 35 | 093 | 033 | +001 | -017 |
| 119 | 019 | 34 | 097 | 031 | +002 | -016 |
| 128 | 018 | 33 | 106 | 034 | +005 | -017 |
| 138 | 017 | 32 | 093 | 037 | +001 | -019 |
| 148 | 017 | 31 | 079 | 032 | -003 | -016 |
| 158 | 015 | 30 | 075 | 022 | -003 | -011 |
| 170 | 012 | 29 | 108 | 018 | +003 | -009 |
| 185 | 012 | 28 | 117 | 022 | +005 | -010 |
| 198 | 011 | 27 | 112 | 021 | +004 | -010 |
| 216 | 009 | 26 | 108 | 018 | +003 | -009 |
| 237 | 008 | 25 | 101 | 020 | +002 | -010 |
| 258 | 008 | 24 | 101 | 020 | +002 | -010 |
| 280 | 006 | 23 | 098 | 014 | +001 | -007 |
| 310 | 006 | 22 | 079 | 010 | -001 | -005 |
| 340 | 006 | 21 | 104 | 008 | +001 | -004 |
| 370 | 005 | 20 | 090 | 006 | +000 | -003 |
| 407 | 004 | 19 | 076 | 008 | -001 | -004 |

ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|
| 5560 | -09.4 | 00.456 | 00.603 | 326 | 132 | 092 | +032 | -035 |
| 5456 | -10.1 | 00.521 | 00.690 | 325 | 122 | 114 | +031 | -050 |
| 5328 | -06.9 | 00.613 | 00.802 | 327 | 111 | 117 | +022 | -056 |
| 5273 | -07.4 | 00.657 | 00.861 | 327 | 107 | 110 | +017 | -054 |
| 5233 | -03.9 | 00.691 | 00.894 | 329 | 105 | 105 | +014 | -052 |
| 5000 | -02.1 | 00.923 | 01.146 | 330 | 097 | 106 | +007 | -054 |
| 4633 | -03.0 | 01.457 | 01.879 | 329 | 088 | 074 | -001 | -038 |
| 4389 | -07.8 | 01.980 | 02.600 | 327 | 094 | 060 | +002 | -031 |
| 4252 | -14.0 | 02.362 | 03.175 | 323 | 098 | 053 | +004 | -027 |
| 4151 | -16.6 | 02.695 | 03.659 | 321 | 103 | 052 | +006 | -026 |
| 4023 | -15.1 | 03.187 | 04.303 | 322 | 102 | 048 | +005 | -024 |
| 3685 | -23.3 | 04.995 | 06.965 | 317 | 100 | 034 | +003 | -017 |
| 3645 | -22.3 | 05.272 | 07.321 | 317 | 103 | 034 | +004 | -017 |
| 3627 | -24.5 | 05.402 | 07.568 | 316 | 103 | 034 | +004 | -017 |
| 3569 | -25.9 | 05.846 | 08.237 | 315 | 103 | 034 | +004 | -017 |
| 3523 | -27.9 | 06.227 | 08.845 | 314 | 097 | 033 | +002 | -017 |
| 3475 | -27.2 | 06.652 | 09.422 | 314 | 093 | 033 | +001 | -017 |
| 3447 | -28.6 | 06.914 | 09.849 | 313 | 097 | 031 | +002 | -016 |
| 3429 | -28.1 | 07.088 | 10.076 | 314 | 097 | 031 | +002 | -016 |
| 3368 | -28.5 | 07.710 | 10.979 | 314 | 101 | 032 | +003 | -016 |
| 3216 | -27.7 | 09.551 | 14.132 | 308 | 096 | 037 | +002 | -019 |
| 3167 | -38.3 | 10.249 | 15.202 | 307 | 090 | 035 | -000 | -018 |
| 3149 | -34.8 | 10.516 | 15.370 | 309 | 087 | 033 | -001 | -017 |
| 3100 | -40.6 | 11.283 | 16.902 | 306 | 079 | 032 | -003 | -016 |
| 2960 | -41.3 | 13.837 | 20.790 | 305 | 084 | 020 | -001 | -010 |
| 2621 | -48.0 | 22.868 | 35.384 | 301 | 108 | 018 | +003 | -009 |
| 2557 | -47.5 | 25.178 | 38.871 | 301 | 108 | 018 | +003 | -009 |
| 2332 | -52.2 | 35.431 | 55.863 | 298 | 097 | 016 | +001 | -008 |
| 2000 | -57.1 | 59.333 | 95.671 | 295 | 090 | 006 | +000 | -003 |
| 1829 | -60.6 | 77.800 | | 292 | | | | |

CONSTANT PRESSURE LEVEL DATA
(HEIGHT IN GEOPOTENTIAL METERS)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2123 | -55.2 | 50.000 | 79.914 | 296 | 090 | 008 | +000 | -004 |
| 2442 | -49.7 | 30.000 | 46.773 | 300 | 101 | 020 | +002 | -010 |
| 2717 | -45.9 | 20.000 | 30.656 | 302 | 112 | 021 | +004 | -010 |
| 3168 | -38.1 | 10.000 | 14.820 | 307 | 090 | 037 | +000 | -019 |
| 3420 | -28.4 | 07.000 | 09.962 | 314 | 097 | 031 | +002 | -016 |
| 3663 | -23.3 | 05.000 | 06.971 | 317 | 100 | 034 | +003 | -017 |
| 4352 | -08.1 | 02.000 | 02.629 | 326 | 094 | 058 | +002 | -030 |
| 4909 | -02.2 | 01.000 | 01.286 | 330 | 097 | 098 | +006 | -050 |

RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1025.0 | 0000 | 080 | 012 | -001 | -006 | 64 | +23.9 |
| 0812.0 | 0200 | 090 | 004 | -000 | -002 | 41 | +13.0 |
| 0697.0 | 0400 | 196 | 008 | +004 | +001 | 13 | +03.4 |
| 0496.0 | 0600 | 244 | 008 | +002 | +004 | 14 | -07.9 |
| 0380.0 | 0800 | 272 | 023 | -000 | +012 | 18 | -22.0 |
| 0289.0 | 1000 | 282 | 039 | -004 | +020 | 13 | -37.4 |
| 0214.0 | 1200 | 288 | 026 | -004 | +013 | | -53.6 |
| 0155.0 | 1400 | 280 | 043 | -004 | +022 | | -66.5 |
| 0153.0 | 1408 | 280 | 042 | -004 | +021 | | -66.9 |
| 0112.0 | 1600 | 258 | 015 | +002 | +008 | | -64.5 |
| 0081.0 | 1800 | 004 | 004 | -002 | -000 | | -60.6 |
| 0059.0 | 2000 | 098 | 008 | +001 | -004 | | -58.5 |
| 0042.8 | 2200 | 086 | 012 | -000 | -006 | | -55.5 |
| 0031.4 | 2400 | 100 | 015 | +001 | -008 | | -52.5 |
| 0028.0 | 2481 | 092 | 015 | +000 | -008 | | -51.3 |
| 0025.0 | 2551 | | | | | | -50.2 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 133 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 147 DEG. AZIMUTH 83.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 7 SECONDS 1,100 METERS ALTITUDE
MOTOR TRACK DROPPED.. 133 SECONDS 61,570 METERS ALTITUDE
PAYLOAD ACQUISITION.. 133 SECONDS 61,570 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,580 SECONDS 18,290 METERS ALTITUDE
APOGEE.. 127 SECONDS 61,690 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 15 FT. DIAMETER PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1675 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 195 SEC. 55,600 METERS ALTITUDE
TO 2,580 SEC. 18,290 METERS ALTITUDE

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 77.8 MB
ALTITUDE 18,290 METERS
TEMPERATURE -60.3 DEG. C

RADIOSONDE AND BALLOON DATA

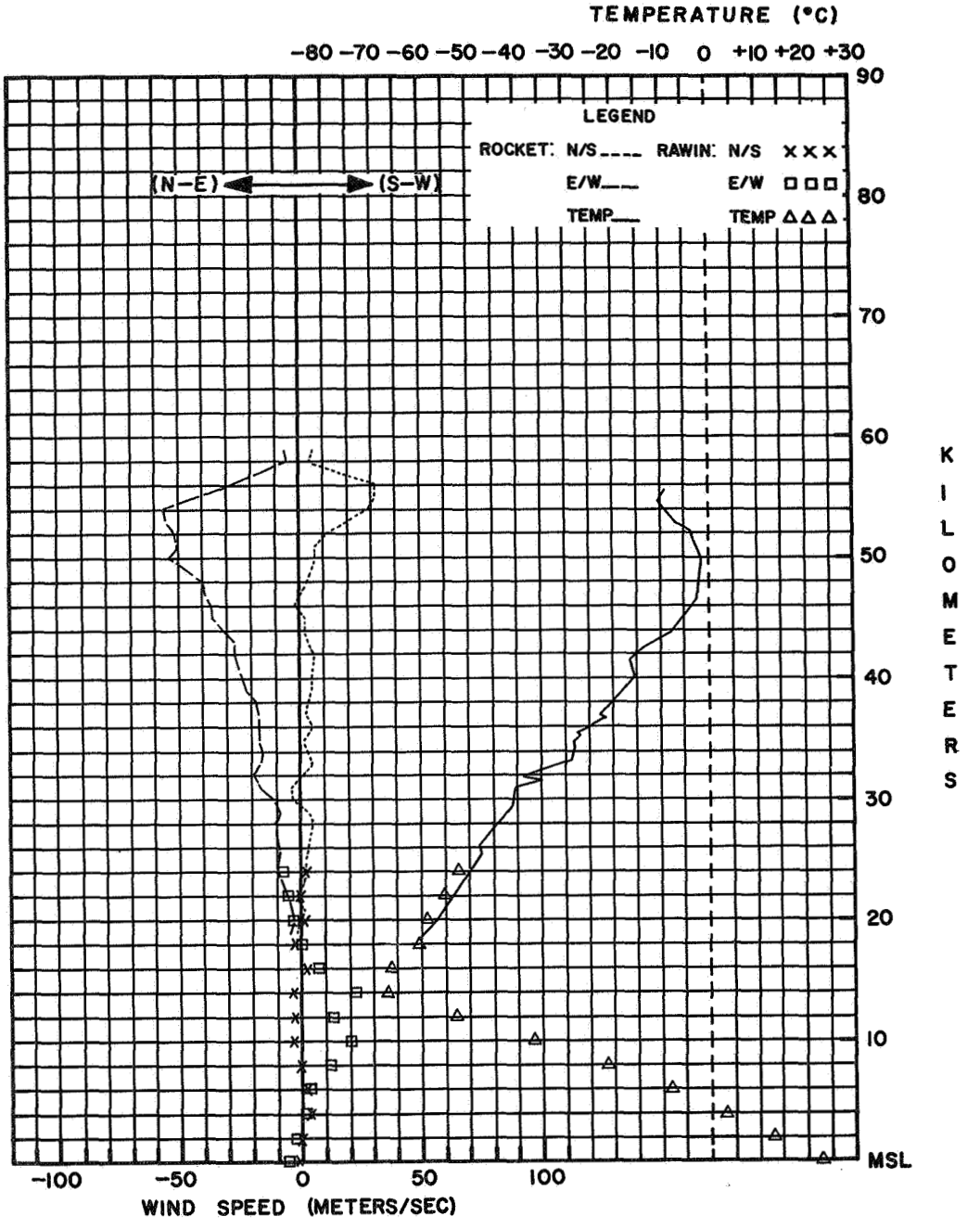
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 282 M/MINUTE
400 MB-TOP = 382 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1025.0 MB
TEMPERATURE.. 23.9 DEG. C
RELATIVE HUMIDITY.. 64%
VISIBILITY.. 11 KM
SURFACE WIND.. 080 DEG. 12 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 3 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. 3 OCTAS/CI
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 080 DEG/12 KTS, 50 FT. 061 DEG/09 KTS,
100 FT. 057 DEG/11 KTS, 150 FT. 060 DEG/12 KTS,
200 FT. 062 DEG/13 KTS, 250 FT. 070 DEG/13 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA
DATE: 16 AUGUST, 1967

ROCKET TIME: 1230 LST 1730 GCT
ROCKET MOTOR TYPE: ARCAS

PAYLOAD TYPE: ARCASONDE-1A
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | Z | Z | Z |
| 72402 | 37°51' N 75°29' W ALT. 3 M | AUGUST 25, 1967 | 1417 | 1115 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 032 | 067 | 53 | 109 | 076 | +013 | -037 |
| 034 | 067 | 52 | 095 | 088 | +004 | -045 |
| 037 | 067 | 51 | 085 | 068 | -003 | -035 |
| 039 | 067 | 50 | 083 | 033 | -002 | -017 |
| 042 | 056 | 49 | 113 | 025 | +005 | -012 |
| 045 | 067 | 48 | 126 | 043 | +013 | -018 |
| 047 | 056 | 47 | 124 | 052 | +015 | -022 |
| 051 | 048 | 46 | 121 | 050 | +013 | -022 |
| 054 | 056 | 45 | 110 | 052 | +009 | -025 |
| 057 | 042 | 44 | 103 | 054 | +006 | -027 |
| 062 | 037 | 43 | 096 | 039 | +002 | -020 |
| 066 | 037 | 42 | 084 | 037 | -002 | -019 |
| 071 | 037 | 41 | 079 | 040 | -004 | -020 |
| 075 | 037 | 40 | 084 | 037 | -002 | -019 |
| 080 | 030 | 39 | 090 | 031 | +000 | -016 |
| 086 | 026 | 38 | 090 | 025 | +000 | -013 |
| 093 | 024 | 37 | 103 | 026 | +003 | -013 |
| 100 | 024 | 36 | 106 | 028 | +004 | -014 |
| 107 | 021 | 35 | 101 | 030 | +003 | -015 |
| 116 | 021 | 34 | 098 | 029 | +002 | -015 |
| 123 | 020 | 33 | 094 | 025 | +001 | -013 |
| 133 | 017 | 32 | 080 | 022 | -002 | -011 |
| 143 | 017 | 31 | 079 | 020 | -002 | -010 |
| 153 | 015 | 30 | 084 | 018 | -001 | -009 |
| 165 | 012 | 29 | 103 | 018 | +002 | -009 |
| 180 | 011 | 28 | 108 | 018 | +003 | -009 |
| 195 | 010 | 27 | 096 | 020 | +001 | -010 |
| 213 | 010 | 26 | 084 | 020 | -001 | -010 |
| 230 | 008 | 25 | 085 | 021 | -001 | -011 |
| 255 | 007 | 24 | 084 | 020 | -001 | -010 |
| 275 | 007 | 23 | 083 | 016 | -001 | -008 |
| 305 | 006 | 22 | 072 | 012 | -002 | -006 |
| 335 | 005 | 21 | 063 | 009 | -002 | -004 |
| 370 | 005 | 20 | 076 | 008 | -001 | -004 |
| 405 | 005 | 19 | 063 | 004 | -001 | -002 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|
| 5386 | -00.7 | 00.543 | 00.695 | 331 | | | | |
| 5255 | +00.3 | 00.638 | 00.813 | 331 | 102 | 082 | +009 | -041 |
| 5124 | -05.0 | 00.751 | 00.976 | 328 | 088 | 072 | -001 | -037 |
| 4417 | -06.6 | 01.829 | 02.390 | 327 | 105 | 054 | +007 | -027 |
| 4353 | -10.8 | 01.984 | 02.635 | 325 | 099 | 047 | +004 | -024 |
| 4115 | -15.6 | 02.702 | 03.654 | 322 | 079 | 040 | -004 | -020 |
| 4026 | -15.0 | 03.035 | 04.096 | 322 | 081 | 037 | -003 | -019 |
| 3850 | -25.3 | 03.838 | 05.395 | 316 | 090 | 029 | +000 | -015 |
| 3597 | -29.1 | 05.433 | 07.755 | 313 | 106 | 028 | +004 | -014 |
| 3466 | -29.6 | 06.514 | 09.318 | 313 | 101 | 030 | +003 | -015 |
| 3325 | -37.7 | 07.948 | 11.760 | 308 | 094 | 027 | +001 | -014 |
| 3167 | -38.2 | 09.976 | 14.791 | 307 | 080 | 022 | -002 | -011 |
| 3057 | -40.9 | 11.699 | 17.547 | 306 | 079 | 020 | -002 | -010 |
| 2902 | -36.8 | 14.634 | 21.570 | 308 | 103 | 018 | +002 | -009 |
| 2853 | -44.6 | 15.717 | 23.957 | 303 | 103 | 018 | +002 | -009 |
| 2280 | -54.9 | 37.487 | 59.835 | 296 | 083 | 016 | -001 | -008 |
| 2188 | -52.6 | 43.217 | 68.263 | 298 | 072 | 012 | -002 | -006 |
| 2134 | -56.0 | 46.991 | 75.387 | 295 | 068 | 010 | -002 | -005 |
| 2000 | -56.7 | 57.960 | 93.285 | 295 | 076 | 008 | -001 | -004 |
| 1829 | -61.0 | 76.000 | | 292 | | | | |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 2090 | -56.2 | 50.000 | 80.285 | 295 | 063 | 009 | -002 | -004 |
| 2467 | -51.4 | 30.000 | 47.121 | 299 | 085 | 021 | -001 | -011 |
| 2728 | -46.6 | 20.000 | 30.758 | 302 | 101 | 020 | +002 | -010 |
| 3149 | -38.2 | 10.000 | 14.830 | 307 | 080 | 022 | -002 | -011 |
| 3400 | -32.3 | 07.000 | 10.127 | 311 | 098 | 029 | +002 | -015 |
| 3645 | -28.1 | 05.000 | 07.107 | 314 | 103 | 026 | +003 | -013 |
| 4319 | -10.9 | 02.000 | 02.657 | 325 | 100 | 045 | +004 | -023 |
| 4923 | -05.4 | 01.000 | 01.301 | 328 | 094 | 029 | +001 | -015 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1024.3 | 0000 | 205 | 002 | +001 | +000 | 98 | +20.8 |
| 0811.0 | 0200 | 223 | 016 | +006 | +006 | 81 | +12.1 |
| 0637.0 | 0400 | 233 | 021 | +007 | +009 | 48 | +02.0 |
| 0494.0 | 0600 | 233 | 021 | +007 | +009 | 84 | -09.8 |
| 0379.0 | 0800 | 247 | 021 | +004 | +010 | 62 | -22.7 |
| 0286.0 | 1000 | 267 | 021 | +001 | +011 | 32 | -38.1 |
| 0211.0 | 1200 | 294 | 031 | -006 | +015 | | -55.2 |
| 0156.0 | 1391 | 302 | 031 | -008 | +014 | | -69.1 |
| 0153.0 | 1400 | 261 | 024 | +002 | +012 | | -67.9 |
| 0110.0 | 1600 | 280 | 018 | -002 | +009 | | -65.4 |
| 0079.0 | 1800 | 047 | 002 | -001 | -001 | | -62.5 |
| 0058.0 | 2000 | 085 | 016 | -001 | -008 | | -57.5 |
| 0042.4 | 2200 | 065 | 010 | -002 | -005 | | -55.1 |
| 0031.1 | 2400 | 074 | 019 | -003 | -009 | | -52.7 |
| 0022.6 | 2600 | 090 | 020 | -000 | -010 | | -50.1 |
| 0017.0 | 2800 | 089 | 025 | -000 | -013 | | -46.3 |
| 0012.3 | 3000 | 091 | 024 | +000 | -012 | | -42.9 |
| 0010.0 | 3161 | 045 | 014 | -005 | +005 | | -40.2 |
| 0009.4 | 3200 | 089 | 016 | -000 | -008 | | -39.8 |
| 0007.3 | 3378 | | | | | | -37.4 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. FAIR
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 138 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 100 DEG. AZIMUTH.. 81.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 1,250 METERS ALTITUDE
MOTOR TRACK DROPPED.. 138 SECONDS 57,760 METERS ALTITUDE
PAYLOAD ACQUISITION.. 138 SECONDS 57,760 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,580 SECONDS 18,290 METERS ALTITUDE
APOGEE.. 125 SECONDS 58,400 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 15 FT. DIAMETER PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1680 MHZ
TELEMETRY QUALITY.. FAIR
TELEMETRY DATA RECEIVED FROM.. 180 SEC. 53,860 METERS ALTITUDE
TO 2,580 SEC. 18,290 METERS ALTITUDE

REMARKS

NONE

THERMODYNAMICS BASE DATA.. PRESSURE 76.0 MB
ALTITUDE 18,290 METERS
TEMPERATURE -61.8 DEG. C

RADIOSONDE AND BALLOON DATA

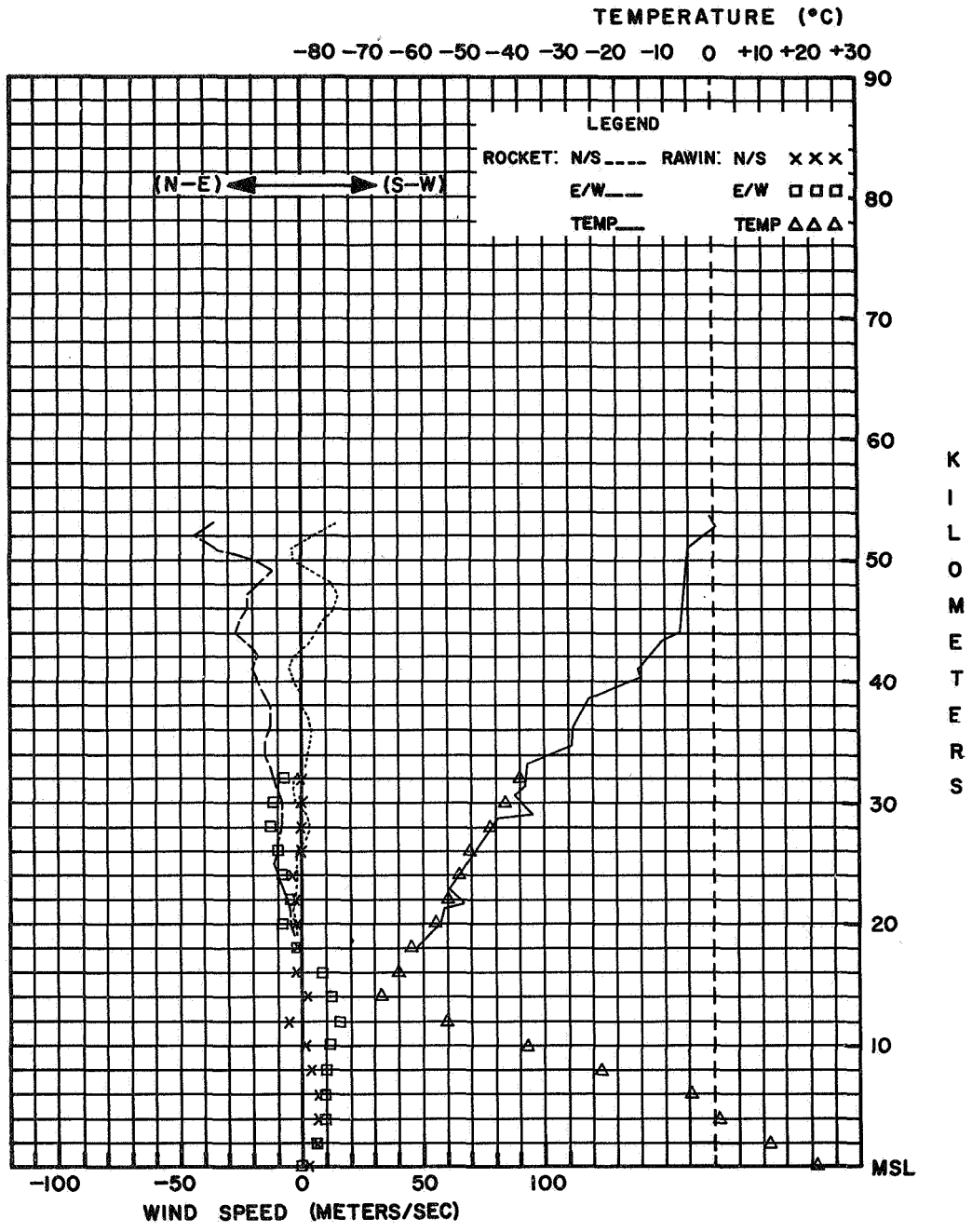
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 294 M/MINUTE
400 MB-TOP = 382 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1024.3 MB
TEMPERATURE.. 20.8 DEG. C
RELATIVE HUMIDITY.. 98%
VISIBILITY.. 11 KM
SURFACE WIND.. 205 DEG. 2 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 8 OCTAS
LOW.. NONE
MIDDLE.. 2 OCTAS/AC
HIGH.. 6 OCTAS/CI
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 165 DEG/05 KTS. 50 FT. 153 DEG/06 KTS.
100 FT. 168 DEG/08 KTS. 150 FT. 170 DEG/10 KTS.
200 FT. 180 DEG/10 KTS. 250 FT. 189 DEG/11 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA **ROCKET TIME:** 0917 LST 1417 GCT **PAYLOAD TYPE:** ARCASONDE-1A

**DATE:** 25 AUGUST, 1967 **ROCKET MOTOR TYPE:** ARCAS **RADIOSONDE TYPE:** 1680 MHZ

| RP | STATION NAME | DATE | ROCKET RAWINSONDE LAUNCH TIME | RELEASE TIME |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | Z | Z | Z |
| 72402 | 37°51' N 75°29' W ALT. 3 M | AUGUST 30, 1967 | 1818 | 1530 |

# TABULATED DATA

## ROCKET WINDS

| TIME OF A MINUTE | FALL VEL | ALT | WIND POLAR | | WIND COMPONENTS MPS | |
|---|---|---|---|---|---|---|
| TENTHS | M/S | KM | DEG | KTS | N-S | E-W |
| 028 | 099 | 54 | 094 | 053 | +002 | -027 |
| 030 | 083 | 53 | 092 | 064 | +001 | -033 |
| 032 | 067 | 52 | 094 | 060 | +002 | -031 |
| 035 | 067 | 51 | 108 | 051 | +008 | -025 |
| 037 | 083 | 50 | 112 | 042 | +008 | -020 |
| 039 | 067 | 49 | 111 | 038 | +007 | -018 |
| 042 | 056 | 48 | 113 | 049 | +010 | -023 |
| 045 | 056 | 47 | 117 | 048 | +011 | -022 |
| 048 | 048 | 46 | 111 | 038 | +007 | -018 |
| 052 | 048 | 45 | 094 | 031 | +001 | -016 |
| 055 | 048 | 44 | 086 | 029 | -001 | -015 |
| 059 | 042 | 43 | 100 | 034 | +003 | -017 |
| 063 | 037 | 42 | 105 | 038 | +005 | -019 |
| 068 | 037 | 41 | 114 | 038 | +008 | -018 |
| 072 | 033 | 40 | 119 | 040 | +010 | -018 |
| 078 | 030 | 39 | 118 | 042 | +010 | -019 |
| 083 | 030 | 38 | 112 | 042 | +008 | -020 |
| 089 | 028 | 37 | 099 | 035 | +003 | -018 |
| 095 | 024 | 36 | 086 | 031 | -001 | -016 |
| 103 | 022 | 35 | 076 | 024 | -003 | -012 |
| 110 | 022 | 34 | 072 | 018 | -003 | -009 |
| 118 | 020 | 33 | 090 | 019 | +000 | -010 |
| 127 | 018 | 32 | 100 | 022 | +002 | -011 |
| 137 | 016 | 31 | 099 | 024 | +002 | -012 |
| 148 | 014 | 30 | 100 | 022 | +002 | -011 |
| 160 | 013 | 29 | 095 | 021 | +001 | -011 |
| 173 | 012 | 28 | 096 | 020 | +001 | -010 |
| 188 | 010 | 27 | 101 | 020 | +002 | -010 |
| 205 | 010 | 26 | 108 | 018 | +003 | -009 |
| 223 | 008 | 25 | 106 | 014 | +002 | -007 |
| 245 | 007 | 24 | 101 | 010 | +001 | -005 |
| 268 | 007 | 23 | 124 | 007 | +002 | -003 |
| 295 | 006 | 22 | 149 | 011 | +005 | -003 |
| 322 | 006 | 21 | 149 | 011 | +005 | -003 |
| 354 | 005 | 20 | 153 | 009 | +004 | -002 |
| 389 | 004 | 19 | 146 | 007 | +003 | -002 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | WIND COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 5517 | -05.4 | 00.469 | 00.610 | 328 | | | | |
| 5435 | -06.0 | 00.519 | 00.677 | 328 | | | | |
| 5358 | -04.2 | 00.572 | 00.741 | 329 | 094 | 058 | +002 | -030 |
| 5127 | -03.7 | 00.763 | 00.987 | 329 | 103 | 054 | +006 | -027 |
| 4965 | -07.2 | 00.935 | 01.225 | 327 | 113 | 040 | +008 | -019 |
| 4859 | -07.0 | 01.069 | 01.400 | 327 | 112 | 042 | +008 | -020 |
| 4682 | -02.7 | 01.335 | 01.720 | 330 | 115 | 045 | +010 | -021 |
| 4478 | -04.5 | 01.723 | 02.234 | 329 | 094 | 031 | +001 | -016 |
| 4365 | -02.7 | 01.984 | 02.556 | 330 | 090 | 031 | +000 | -016 |
| 4337 | -03.3 | 02.055 | 02.653 | 329 | 097 | 031 | +002 | -016 |
| 4261 | -07.6 | 02.261 | 02.967 | 327 | 103 | 036 | +004 | -018 |
| 4209 | -12.4 | 02.417 | 03.229 | 324 | 105 | 038 | +005 | -019 |
| 4033 | -14.9 | 03.038 | 04.099 | 322 | 117 | 039 | +009 | -018 |
| 3932 | -18.4 | 03.470 | 04.745 | 320 | 118 | 042 | +010 | -019 |
| 3911 | -21.2 | 03.569 | 04.934 | 318 | 118 | 042 | +010 | -019 |
| 3719 | -22.7 | 04.619 | 06.425 | 317 | 103 | 036 | +004 | -018 |
| 3575 | -30.7 | 05.627 | 08.085 | 312 | 082 | 029 | -002 | -015 |
| 3500 | -34.9 | 06.252 | 09.142 | 309 | 076 | 024 | -003 | -012 |
| 3383 | -33.5 | 07.378 | 10.725 | 310 | 077 | 018 | -002 | -009 |
| 3325 | -34.0 | 08.007 | 11.664 | 310 | 084 | 020 | -001 | -010 |
| 3240 | -40.7 | 09.045 | 13.556 | 306 | 095 | 021 | +001 | -011 |
| 3136 | -39.4 | 10.519 | 15.677 | 306 | 099 | 024 | +002 | -012 |
| 2932 | -43.9 | 14.174 | 21.538 | 304 | 095 | 021 | +001 | -011 |
| 2881 | -43.3 | 15.281 | 23.160 | 304 | 095 | 021 | +001 | -011 |
| 2539 | -50.0 | 25.485 | 39.785 | 299 | 104 | 016 | +002 | -008 |
| 2500 | -49.0 | 27.036 | 42.019 | 300 | 106 | 014 | +002 | -007 |
| 2192 | -54.4 | 43.331 | 69.005 | 296 | 149 | 011 | +005 | -003 |
| 2000 | -55.7 | 58.419 | 93.590 | 296 | 153 | 009 | +004 | -002 |
| 1804 | -60.3 | 79.600 | | 292 | | | | |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 2100 | -55.0 | 50.000 | 79.837 | 296 | 149 | 011 | +005 | -003 |
| 2435 | -50.0 | 30.000 | 46.830 | 299 | 099 | 012 | +001 | -006 |
| 2711 | -46.4 | 20.000 | 30.727 | 302 | 101 | 020 | +002 | -010 |
| 3157 | -39.9 | 10.000 | 14.933 | 306 | 100 | 022 | +002 | -011 |
| 3404 | -34.0 | 07.000 | 10.196 | 310 | 073 | 020 | -003 | -010 |
| 3644 | -25.7 | 05.000 | 07.040 | 315 | 097 | 033 | +002 | -017 |
| 4329 | -02.8 | 02.000 | 02.577 | 330 | 094 | 031 | +001 | -016 |
| 4876 | -07.1 | 01.000 | 01.309 | 327 | 111 | 038 | +007 | -018 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | WIND COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1019.6 | 0000 | 170 | 006 | +003 | -001 | 82 | +24.4 |
| 0807.0 | 0200 | 240 | 010 | +003 | +004 | 44 | +12.4 |
| 0633.0 | 0400 | 228 | 015 | +005 | +006 | 35 | +02.4 |
| 0493.0 | 0600 | 211 | 014 | +006 | +004 | 35 | -10.5 |
| 0377.0 | 0800 | 236 | 019 | +005 | +008 | 35 | -25.5 |
| 0275.0 | 1000 | 242 | 041 | +010 | +019 | 34 | -38.6 |
| 0211.0 | 1200 | 247 | 025 | +005 | +012 | | -52.4 |
| 0155.0 | 1400 | 236 | 015 | +004 | +006 | | -60.4 |
| 0127.0 | 1520 | 234 | 015 | +005 | +006 | | -64.0 |
| 0112.0 | 1600 | 244 | 015 | +003 | +007 | | -63.4 |
| 0080.0 | 1800 | 182 | 010 | +005 | +000 | | -61.3 |
| 0059.0 | 2000 | 112 | 004 | +001 | -002 | | -56.4 |
| 0043.4 | 2200 | 140 | 013 | +005 | -004 | | -52.8 |
| 0031.8 | 2400 | 140 | 008 | +003 | -003 | | -50.5 |
| 0023.5 | 2600 | 101 | 012 | +001 | -006 | | -47.2 |
| 0017.5 | 2800 | 098 | 015 | +001 | -008 | | -44.9 |
| 0013.0 | 3000 | 106 | 027 | +004 | -013 | | -44.0 |
| 0009.8 | 3200 | 093 | 029 | +001 | -015 | | -39.2 |
| 0007.2 | 3400 | 110 | 019 | +003 | -009 | | -36.3 |
| 0005.5 | 3600 | 088 | 017 | -000 | -009 | | -32.0 |
| 0004.6 | 3738 | 103 | 023 | +003 | -012 | | -28.8 |
| 0004.3 | 3800 | | | | | | -27.4 |
| 0004.0 | 3827 | | | | | | -26.7 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 132 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 077 DEG. AZIMUTH 80.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 7 SECONDS 915 METERS ALTITUDE
MOTOR TRACK DROPPED.. 132 SECONDS 56,965 METERS ALTITUDE
PAYLOAD ACQUISITION.. 132 SECONDS 56,965 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,520 SECONDS 18,045 METERS ALTITUDE
APOGEE.. 127 SECONDS 57,120 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 15 FT. DIAMETER PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1680 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 156 SEC. 55,170 METERS ALTITUDE
TO 2,520 SEC. 18,045 METERS ALTITUDE

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 79.6 MB
ALTITUDE 18,040 METERS
TEMPERATURE -61.2 DEG. C

RADIOSONDE AND BALLOON DATA

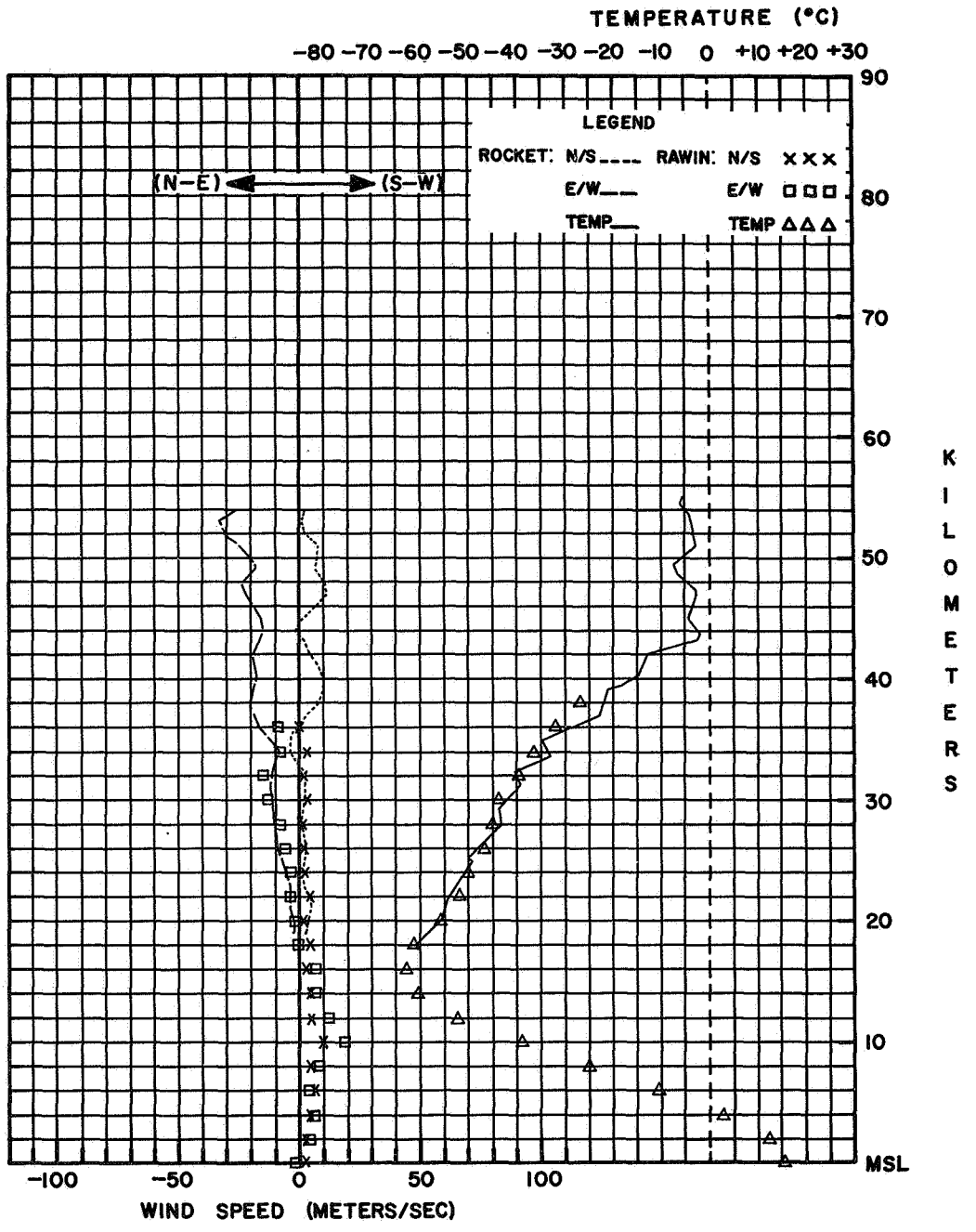
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 237 M/MINUTE
400 MB-TOP = 384 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1019.6 MB
TEMPERATURE.. 24.4 DEG. C
RELATIVE HUMIDITY.. 82%
VISIBILITY.. 8 KM
SURFACE WIND.. 170 DEG. 6 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 2 OCTAS
LOW.. 2 OCTAS/CU
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. HAZE

WIND AT ROCKET LAUNCH

SFC. 170 DEG/10 KTS, 50 FT. 171 DEG/10 KTS,
100 FT. 178 DEG/12 KTS, 150 FT. 176 DEG/13 KTS,
200 FT. 180 DEG/13 KTS, 250 FT. 183 DEG/15 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA

**DATE:** 30 AUGUST, 1967

**ROCKET TIME:** 1318 LST 1818 GCT

**ROCKET MOTOR TYPE:** ARCAS

**PAYLOAD TYPE:** ARCASONDE-1A

**RADIOSONDE TYPE:** 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | Z | Z | Z |
| 72402 | 37°51' N 75°29' W ALT. 3 M | SEPTEMBER 6, 1967 | 1435 | 1800 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 029 | 078 | 51 | 139 | 039 | +015 | -013 |
| 031 | 067 | 50 | 119 | 036 | +009 | -016 |
| 034 | 056 | 49 | 108 | 049 | +008 | -024 |
| 037 | 067 | 48 | 104 | 058 | +007 | -029 |
| 039 | 056 | 47 | 101 | 051 | +005 | -026 |
| 043 | 048 | 46 | 092 | 049 | +001 | -025 |
| 046 | 056 | 45 | 092 | 047 | +001 | -024 |
| 049 | 048 | 44 | 096 | 039 | +002 | -020 |
| 053 | 042 | 43 | 098 | 029 | +002 | -015 |
| 057 | 037 | 42 | 102 | 028 | +003 | -014 |
| 062 | 033 | 41 | 108 | 025 | +004 | -012 |
| 067 | 037 | 40 | 117 | 030 | +007 | -014 |
| 071 | 033 | 39 | 115 | 037 | +008 | -017 |
| 077 | 028 | 38 | 094 | 031 | +001 | -016 |
| 083 | 028 | 37 | 083 | 031 | -002 | -016 |
| 089 | 024 | 36 | 085 | 023 | -001 | -012 |
| 097 | 021 | 35 | 090 | 016 | +000 | -008 |
| 105 | 021 | 34 | 098 | 014 | +001 | -007 |
| 113 | 020 | 33 | 090 | 012 | +000 | -006 |
| 122 | 019 | 32 | 098 | 014 | +001 | -007 |
| 131 | 017 | 31 | 099 | 012 | +001 | -006 |
| 142 | 015 | 30 | 090 | 014 | +000 | -007 |
| 153 | 013 | 29 | 106 | 014 | +002 | -007 |
| 167 | 012 | 28 | 121 | 011 | +003 | -005 |
| 180 | 011 | 27 | 117 | 009 | +002 | -004 |
| 198 | 009 | 26 | 104 | 008 | +001 | -004 |
| 217 | 008 | 25 | 101 | 010 | +001 | -005 |
| 238 | 008 | 24 | 090 | 010 | +000 | -005 |
| 260 | 007 | 23 | 068 | 010 | -002 | -005 |
| 285 | 007 | 22 | 068 | 010 | -002 | -005 |
| 310 | 006 | 21 | 063 | 009 | -002 | -004 |
| 343 | 005 | 20 | 018 | 006 | -003 | -001 |
| 375 | 004 | 19 | 338 | 010 | -005 | +002 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 5197 | -03.0 | 00.701 | 00.904 | 329 | | | | |
| 5075 | -04.8 | 00.816 | 01.060 | 328 | 135 | 038 | +014 | -014 |
| 4849 | -04.5 | 01.084 | 01.405 | 329 | 105 | 054 | +007 | -027 |
| 4755 | +00.0 | 01.218 | 01.553 | 331 | 102 | 056 | +006 | -028 |
| 4642 | -05.0 | 01.402 | 01.821 | 328 | 097 | 049 | +003 | -025 |
| 4572 | -04.9 | 01.530 | 01.987 | 328 | 092 | 049 | +001 | -025 |
| 4389 | -11.0 | 01.931 | 02.566 | 325 | 096 | 037 | +002 | -019 |
| 4331 | -10.7 | 02.080 | 02.761 | 325 | 097 | 033 | +002 | -017 |
| 4200 | -14.5 | 02.464 | 03.319 | 322 | 102 | 028 | +003 | -014 |
| 4118 | -11.9 | 02.741 | 03.655 | 324 | 108 | 025 | +004 | -012 |
| 3999 | -15.0 | 03.199 | 04.317 | 322 | 117 | 030 | +007 | -014 |
| 3898 | -21.9 | 03.657 | 05.071 | 318 | 115 | 037 | +008 | -017 |
| 3862 | -21.4 | 03.838 | 05.311 | 318 | 106 | 034 | +005 | -017 |
| 3743 | -30.3 | 04.515 | 06.477 | 312 | 086 | 031 | -001 | -016 |
| 3627 | -31.9 | 05.308 | 07.666 | 311 | 086 | 025 | -001 | -013 |
| 3548 | -30.6 | 05.928 | 08.514 | 312 | 090 | 019 | -000 | -010 |
| 3392 | -30.9 | 07.368 | 10.595 | 312 | 098 | 014 | +001 | -007 |
| 3331 | -33.6 | 08.026 | 11.672 | 310 | 090 | 012 | +000 | -006 |
| 3170 | -36.5 | 10.088 | 14.851 | 308 | 098 | 014 | +001 | -007 |
| 2993 | -44.4 | 13.050 | 19.873 | 303 | 090 | 014 | +000 | -007 |
| 2786 | -44.2 | 17.725 | 26.970 | 303 | 121 | 011 | +003 | -005 |
| 2487 | -50.8 | 27.770 | 43.508 | 299 | 101 | 010 | +001 | -005 |
| 2164 | -56.2 | 45.727 | 73.425 | 295 | 068 | 010 | -002 | -005 |
| 2000 | -56.7 | 59.119 | 95.149 | 295 | 018 | 006 | -003 | -001 |
| 1826 | -57.2 | 77.700 | | 295 | | | | |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 2105 | -56.4 | 50.000 | 80.347 | 295 | 063 | 009 | -002 | -004 |
| 2438 | -51.5 | 30.000 | 47.145 | 298 | 090 | 010 | +000 | -005 |
| 2706 | -45.7 | 20.000 | 30.632 | 302 | 117 | 009 | +002 | -004 |
| 3161 | -36.4 | 10.000 | 14.713 | 308 | 098 | 014 | +001 | -007 |
| 3414 | -30.8 | 07.000 | 10.063 | 312 | 098 | 014 | +001 | -007 |
| 3651 | -31.3 | 05.000 | 07.202 | 312 | 082 | 029 | -002 | -015 |
| 4332 | -10.9 | 02.000 | 02.656 | 325 | 096 | 035 | +002 | -018 |
| 4882 | -04.6 | 01.000 | 01.297 | 329 | 110 | 046 | +008 | -022 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1021.0 | 0000 | 190 | 002 | +001 | +000 | 68 | +23.3 |
| 0808.0 | 0200 | 329 | 014 | -006 | +004 | 21 | +11.6 |
| 0632.0 | 0400 | 330 | 014 | -006 | +004 | 18 | +00.6 |
| 0491.0 | 0600 | 319 | 016 | -006 | +005 | 18 | -12.4 |
| 0375.0 | 0800 | 353 | 014 | -007 | +001 | 22 | -26.4 |
| 0282.0 | 1000 | 336 | 021 | -010 | +004 | | -41.7 |
| 0209.0 | 1200 | 340 | 027 | -013 | +005 | | -56.9 |
| 0191.0 | 1255 | 340 | 038 | -018 | +007 | | -61.5 |
| 0152.0 | 1400 | 321 | 027 | -011 | +009 | | -61.3 |
| 0109.0 | 1600 | 311 | 021 | -007 | +008 | | -61.6 |
| 0079.5 | 1800 | 319 | 014 | -005 | +005 | | -59.1 |
| 0058.0 | 2000 | 121 | 004 | +001 | -002 | | -57.0 |
| 0042.3 | 2200 | 069 | 006 | -001 | -003 | | -54.6 |
| 0031.4 | 2400 | 074 | 006 | -001 | -003 | | -51.1 |
| 0023.0 | 2600 | 098 | 006 | +000 | -003 | | -47.7 |
| 0019.8 | 2800 | 139 | 006 | +002 | -002 | | -46.0 |
| 0014.8 | 3000 | 102 | 006 | +001 | -003 | | -42.6 |
| 0011.0 | 3200 | 103 | 010 | +001 | -005 | | -39.5 |
| 0007.6 | 3361 | 106 | 016 | +002 | -008 | | -36.9 |
| 0007.2 | 3400 | | | | | | -36.6 |
| 0007.0 | 3414 | | | | | | -36.5 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 134 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 137 DEG. AZIMUTH 77.5 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 1,190 METERS ALTITUDE
MOTOR TRACK DROPPED.. 134 SECONDS 53,919 METERS ALTITUDE
PAYLOAD ACQUISITION.. 134 SECONDS 53,919 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,400 SECONDS 18,260 METERS ALTITUDE
APOGEE.. 121 SECONDS 54,712 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 15 FT. DIAMETER PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1683 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 158 SEC. 51,970 METERS ALTITUDE
TO 2,400 SEC. 18,260 METERS ALTITUDE

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 77.7 MB
ALTITUDE 18,260 METERS
TEMPERATURE -58.8 DEG. C

RADIOSONDE AND BALLOON DATA

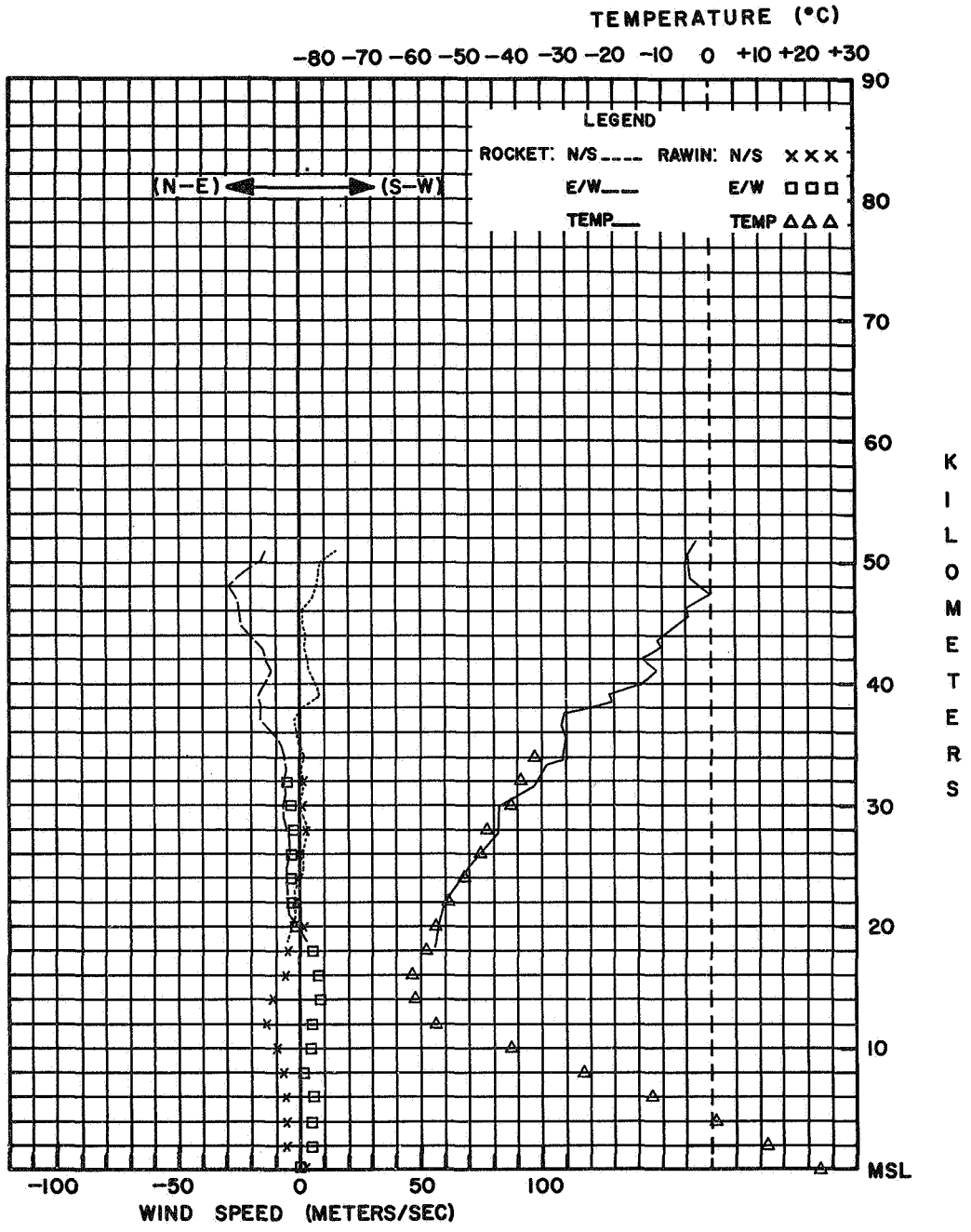
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 290 M/MINUTE
400 MB-TOP = 383 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1021.0 MB
TEMPERATURE.. 23.3 DEG. C
RELATIVE HUMIDITY.. 68%
VISIBILITY.. 10 KM
SURFACE WIND.. 190 DEG. 2 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 0 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. HAZE

WIND AT ROCKET LAUNCH

SFC. 007 DEG/02 KTS, 50 FT. 018 DEG/03 KTS,
100 FT. 004 DEG/03 KTS, 150 FT. 002 DEG/03 KTS,
200 FT. 360 DEG/01 KTS, 250 FT. 014 DEG/03 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA
DATE: 6 SEPTEMBER, 1967

ROCKET TIME: 0935 LST 1435 GCT
ROCKET MOTOR TYPE: ARCAS

PAYLOAD TYPE: ARCASONDE-1A
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (CNAE) NATAL, BRAZIL | Z | Z | Z |
| 82599 | 5°55' S 35°10' W ALT. 43 M | SEPTEMBER 13, 1967 | 1500 | 1207 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 018 | 067 | 64 | 261 | 026 | +002 | +013 |
| 021 | 067 | 63 | 152 | 046 | +021 | -011 |
| 023 | 067 | 62 | 167 | 044 | +022 | -005 |
| 026 | 056 | 61 | 188 | 027 | +014 | +002 |
| 029 | 048 | 60 | 210 | 031 | +014 | +008 |
| 033 | 048 | 59 | 210 | 016 | +007 | +004 |
| 036 | 042 | 58 | 108 | 006 | +001 | -003 |
| 041 | 037 | 57 | 083 | 016 | -001 | -008 |
| 045 | 042 | 56 | 075 | 030 | -004 | -015 |
| 049 | 033 | 55 | 082 | 029 | -002 | -015 |
| 055 | 030 | 54 | 117 | 009 | +002 | -004 |
| 060 | 030 | 53 | 225 | 003 | +001 | +001 |
| 066 | 028 | 52 | 225 | 003 | +001 | +001 |
| 072 | 028 | 51 | 281 | 010 | -001 | +005 |
| 078 | 026 | 50 | 315 | 016 | -006 | +006 |
| 085 | 024 | 49 | 315 | 022 | -008 | +008 |
| 092 | 026 | 48 | 304 | 021 | -006 | +009 |
| 098 | 024 | 47 | 281 | 020 | -002 | +010 |
| 106 | 020 | 46 | 261 | 024 | +002 | +012 |
| 115 | 020 | 45 | 252 | 025 | +004 | +012 |
| 123 | 021 | 44 | 261 | 026 | +002 | +013 |
| 131 | 020 | 43 | 274 | 027 | -001 | +014 |
| 140 | 019 | 42 | 270 | 017 | +000 | +009 |
| 149 | 017 | 41 | 236 | 007 | +002 | +003 |
| 160 | 017 | 40 | 202 | 010 | +005 | +002 |
| 169 | 017 | 39 | 225 | 005 | +002 | +002 |
| 180 | 016 | 38 | 315 | 008 | -003 | +003 |
| 190 | 016 | 37 | 300 | 016 | -004 | +007 |
| 201 | 014 | 36 | 293 | 015 | -003 | +007 |
| 213 | 013 | 35 | 333 | 013 | -006 | +003 |
| 226 | 013 | 34 | 039 | 012 | -005 | -004 |
| 239 | 014 | 33 | 087 | 033 | -001 | -017 |
| 250 | 012 | 32 | 090 | 045 | +000 | -023 |
| 266 | 011 | 31 | 090 | 047 | +000 | -024 |
| 279 | 013 | 30 | 085 | 047 | -002 | -024 |
| 292 | 011 | 29 | 080 | 043 | -004 | -022 |
| 308 | 010 | 28 | 080 | 053 | -005 | -027 |
| 324 | 010 | 27 | 080 | 055 | -005 | -028 |
| 340 | 010 | 26 | 083 | 051 | -003 | -026 |
| 359 | 009 | 25 | 095 | 041 | +002 | -021 |
| 376 | 009 | 24 | 094 | 025 | +001 | -013 |
| 395 | 008 | 23 | 117 | 009 | +002 | -004 |
| 416 | 008 | 22 | 252 | 012 | +002 | +006 |
| 438 | 008 | 21 | 259 | 020 | +002 | +010 |
| 460 | 007 | 20 | 254 | 014 | +002 | +007 |
| 485 | 007 | 19 | 284 | 008 | -001 | +004 |
| 510 | 007 | 18 | 288 | 006 | -001 | +003 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M$^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1009.7 | 0004 | 150 | 007 | +003 | -002 | 77 | +27.4 |
| 0804.0 | 0200 | 097 | 017 | +001 | -009 | 58 | +11.0 |
| 0630.7 | 0400 | 088 | 012 | -000 | -006 | 18 | +04.7 |
| 0490.8 | 0600 | 163 | 008 | +004 | -001 | 17 | -09.0 |
| 0378.0 | 0800 | 153 | 019 | +009 | -004 | 19 | -21.3 |
| 0285.2 | 1000 | 090 | 019 | -000 | -010 | 20 | -37.2 |
| 0211.8 | 1200 | 024 | 014 | -007 | -003 | | -53.7 |
| 0153.1 | 1400 | 262 | 022 | +002 | +011 | | -67.5 |
| 0111.0 | 1590 | 300 | 010 | -003 | +004 | | -76.9 |
| 0109.2 | 1600 | 291 | 009 | -002 | +004 | | -76.9 |
| 0077.4 | 1800 | 304 | 010 | -003 | +004 | | -72.8 |
| 0055.8 | 2000 | 266 | 015 | +001 | +008 | | -63.2 |
| 0040.4 | 2200 | 267 | 018 | +000 | +009 | | -63.0 |
| 0029.2 | 2400 | 072 | 023 | -004 | -011 | | -58.9 |
| 0021.6 | 2600 | 087 | 054 | -001 | -028 | | -50.5 |
| 0015.9 | 2800 | 078 | 053 | -006 | -027 | | -45.0 |
| 0011.8 | 3000 | 092 | 045 | +001 | -023 | | -46.4 |
| 0008.8 | 3200 | 084 | 045 | -002 | -023 | | -42.8 |
| 0008.0 | 3263 | 088 | 040 | -001 | -021 | | -40.8 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 90 SEC. ACTUAL.. 84 SEC.
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 065 DEG. AZIMUTH 80.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 5 SECONDS 5,425 METERS ALTITUDE
MOTOR TRACK DROPPED.. 62 SECONDS 54,315 METERS ALTITUDE
PAYLOAD ACQUISITION.. 84 SECONDS 63,642 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 3,260 SECONDS 16,764 METERS ALTITUDE
APOGEE.. 98 SECONDS 64,526 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

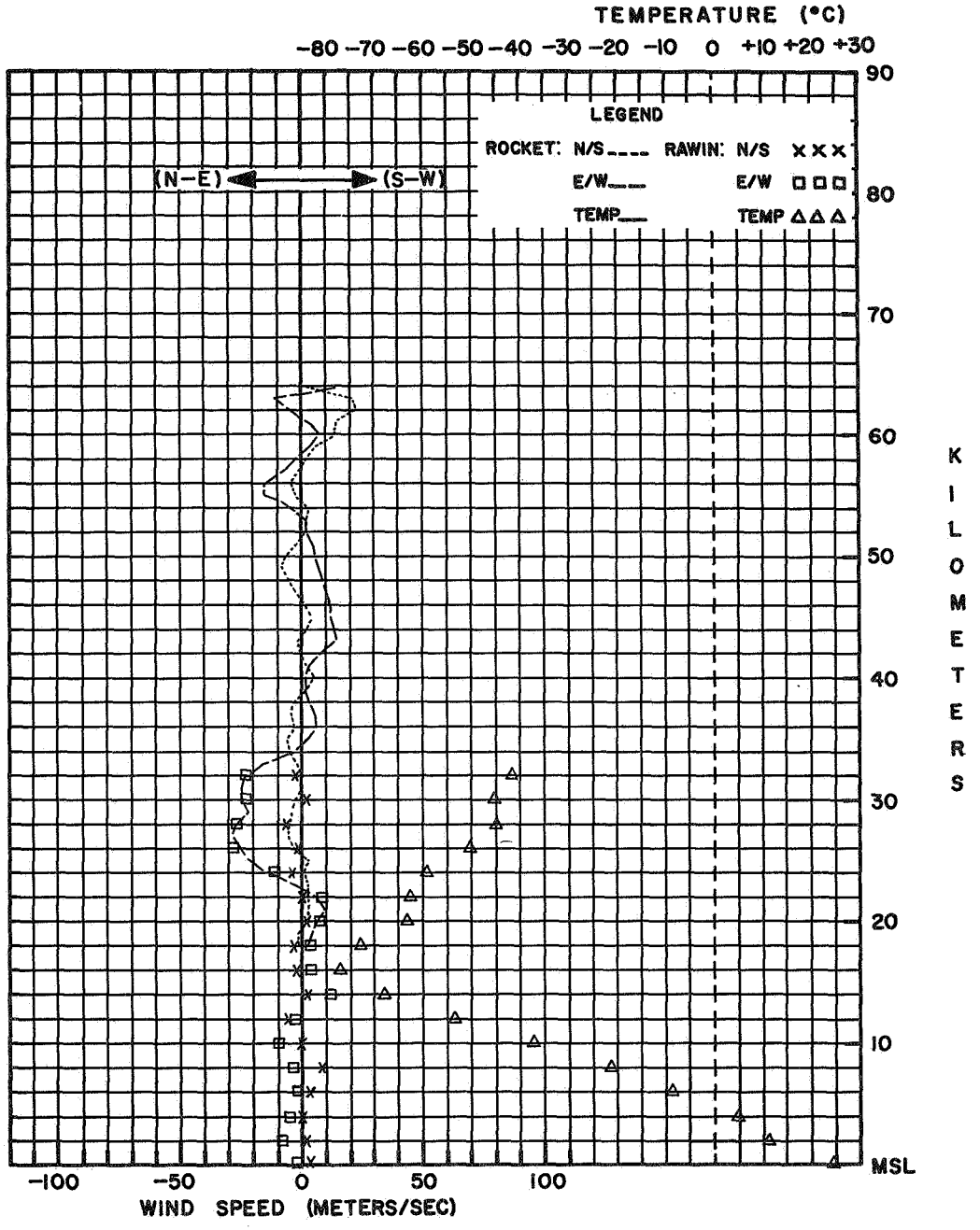
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID
GROUND EQUIPMENT TYPE.. GMD-1A
BALLOON TYPE.. KAYSAM
BALLOON SIZE.. 600 GRAMS
FREE LIFT.. 900 GRAMS
ASCENSION RATES.. SFC-400 MB = 264 M/MINUTE
400 MB-TOP = 400 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1009.7 MB
TEMPERATURE.. 27.4 DEG. C
RELATIVE HUMIDITY.. 77 %
VISIBILITY.. 20 KM
SURFACE WIND.. 150 DEG. 7 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 4 OCTAS
LOW.. 4 OCTAS/CU
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

21 FT. 130 DEG/08 KTS, 29 FT. 120 DEG/08 KTS,
51 FT. 120 DEG/08 KTS, 82 FT. 120 DEG/08 KTS,
133 FT. 140 DEG/12 KTS




STATION: (CNAE) NATAL, BRAZIL

DATE: 13 SEPTEMBER, 1967

ROCKET TIME: 1200 LST 1500 GCT

ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF

RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (CNIE) CHAMICAL, ARGENTINA | | | |
| 87320 | 30°22' S 66°17' W ALT. 457 M | SEPTEMBER 13, 1967 | 2030 | 1500 |

# TABULATED DATA

ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 023 | 111 | 68 | 293 | 070 | -014 | +033 |
| 025 | 111 | 67 | 298 | 070 | -017 | +032 |
| 026 | 111 | 66 | 282 | 066 | -007 | +033 |
| 028 | 083 | 65 | 270 | 062 | +000 | +032 |
| 030 | 111 | 64 | 261 | 037 | +003 | +019 |
| 031 | 056 | 63 | 249 | 077 | +014 | +037 |
| 036 | 048 | 62 | 255 | 092 | +012 | +046 |
| 038 | 067 | 61 | 276 | 072 | -004 | +037 |
| 041 | 056 | 60 | 275 | 064 | -003 | +033 |
| 044 | 048 | 59 | 284 | 062 | -008 | +031 |
| 048 | 037 | 58 | 283 | 062 | -007 | +031 |
| 053 | 037 | 57 | 281 | 071 | -007 | +036 |
| 057 | 037 | 56 | 272 | 070 | -001 | +036 |
| 062 | 030 | 55 | 272 | 066 | -001 | +034 |
| 068 | 030 | 54 | 268 | 066 | +001 | +034 |
| 073 | 028 | 53 | 276 | 072 | -004 | +037 |
| 080 | 026 | 52 | 295 | 090 | -020 | +042 |
| 086 | 028 | 51 | 305 | 078 | -023 | +033 |
| 092 | 028 | 50 | 291 | 066 | -012 | +032 |
| 098 | 024 | 49 | 293 | 070 | -014 | +033 |
| 106 | 020 | 48 | 291 | 066 | -012 | +032 |
| 115 | 021 | 47 | 270 | 054 | +000 | +028 |
| 122 | 022 | 46 | 270 | 060 | +000 | +031 |
| 130 | 021 | 45 | 279 | 061 | -005 | +031 |
| 138 | 021 | 44 | 289 | 047 | -008 | +023 |
| 146 | 018 | 43 | 279 | 047 | -004 | +024 |
| 157 | 016 | 42 | 262 | 053 | +004 | +027 |
| 167 | 016 | 41 | 265 | 045 | +002 | +023 |
| 178 | 017 | 40 | 267 | 039 | +001 | +020 |
| 187 | 017 | 39 | 263 | 033 | +002 | +017 |
| 198 | 015 | 38 | 266 | 027 | +001 | +014 |
| 209 | 014 | 37 | 262 | 029 | +002 | +015 |
| 221 | 013 | 36 | 264 | 037 | +002 | +019 |
| 234 | 013 | 35 | 278 | 029 | -002 | +015 |
| 247 | 014 | 34 | 287 | 020 | -003 | +010 |
| 258 | 013 | 33 | 304 | 007 | -002 | +003 |
| 273 | 012 | 32 | 243 | 009 | +002 | +004 |
| 285 | 012 | 31 | 243 | 013 | +003 | +006 |
| 300 | 011 | 30 | 236 | 007 | +002 | +003 |
| 315 | 010 | 29 | 243 | 009 | +002 | +004 |
| 334 | 009 | 28 | 259 | 020 | +002 | +010 |

ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|

RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 0968.0 | 0046 | 140 | 005 | +002 | -002 | 28 | +18.8 |
| 0896.0 | 0200 | 301 | 004 | -001 | +002 | 27 | +10.0 |
| 0628.0 | 0400 | 238 | 016 | +004 | +007 | 21 | -02.5 |
| 0485.6 | 0600 | 207 | 034 | +016 | +008 | 15 | -13.4 |
| 0370.0 | 0800 | 213 | 044 | +019 | +012 | 14 | -27.2 |
| 0280.0 | 1000 | 210 | 045 | +020 | +012 | | -41.0 |
| 0207.0 | 1200 | 227 | 042 | +015 | +016 | | -54.3 |
| 0152.5 | 1400 | 242 | 043 | +010 | +020 | | -55.0 |
| 0112.0 | 1600 | 244 | 025 | +006 | +012 | | -58.4 |
| 0081.5 | 1800 | 278 | 018 | -001 | +009 | | -60.0 |
| 0059.5 | 2000 | 291 | 006 | -001 | +003 | | -72.2 |
| | 2200 | 270 | 006 | +000 | +003 | | |
| | 2400 | 274 | 026 | -001 | +013 | | |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 90 SEC. ACTUAL.. 82 SEC.
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 040 DEG. AZIMUTH 85.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 5 SECONDS 5,639 METERS ALTITUDE
MOTOR TRACK DROPPED.. 75 SECONDS 63,703 METERS ALTITUDE
PAYLOAD ACQUISITION.. 120 SECONDS 67,513 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,160 SECONDS 24,300 METERS ALTITUDE
APOGEE.. 106 SECONDS 69,037 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

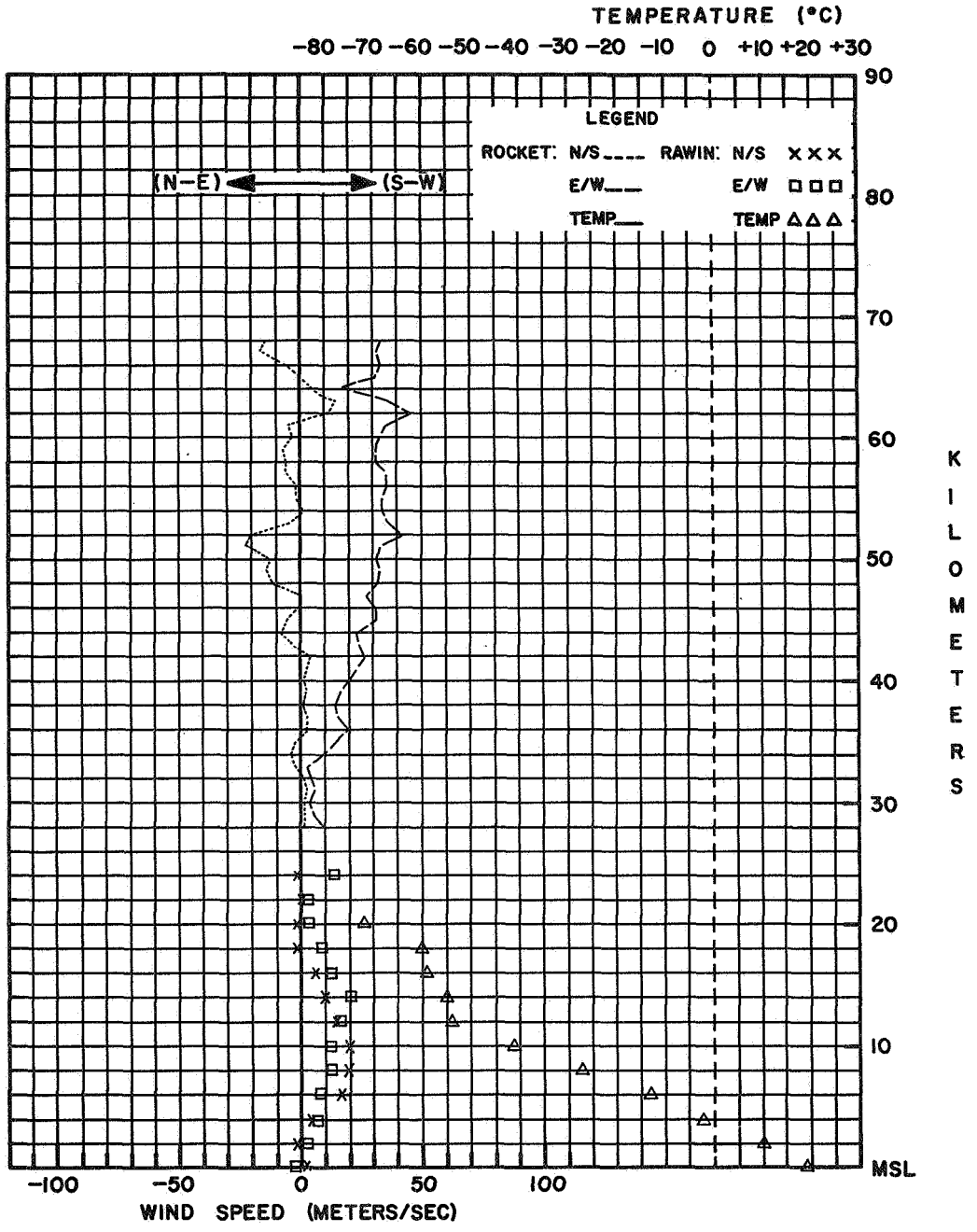
RADIOSONDE MANUFACTURER.. VAISALA
RADIOSONDE TYPE.. VAISALA
TEMPERATURE ELEMENT TYPE.. RESISTANCE WIRE
PRESSURE SENSOR TYPE.. DOUBLE ANEROID
GROUND EQUIPMENT TYPE.. VAISALA + MPS-19 RADAR
BALLOON TYPE.. TOTEX
BALLOON SIZE.. 2,000 GRAMS
FREE LIFT.. 2,200 GRAMS
ASCENSION RATES.. SFC-400 MB = 375 M/MINUTE
400 MB-TOP = 441 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 968.0 MB
TEMPERATURE.. 18.0 DEG. C
RELATIVE HUMIDITY.. 28%
VISIBILITY.. 20 KM
SURFACE WIND.. 140 DEG. 5 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 0 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 035 DEG/01 KTS




STATION: (CNIE) CHAMICAL, ARGENTINA
DATE: 13 SEPTEMBER, 1967

ROCKET TIME: 1630 LST 2030 GCT
ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF
RADIOSONDE TYPE: VAISALA

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | | Z | Z |
| 72402 | 37°51' N 75°29' W ALT. 3 M | SEPTEMBER 15, 1967 | 1345 | 1115 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 027 | 056 | 48 | 180 | 012 | +006 | +000 |
| 030 | 056 | 47 | 124 | 007 | +002 | -003 |
| 033 | 056 | 46 | 117 | 004 | +001 | -002 |
| 036 | 056 | 45 | 117 | 004 | +001 | -002 |
| 039 | 048 | 44 | 076 | 008 | -001 | -004 |
| 043 | 048 | 43 | 076 | 008 | -001 | -004 |
| 046 | 042 | 42 | 090 | 004 | +000 | -002 |
| 051 | 037 | 41 | 117 | 004 | +001 | -002 |
| 055 | 042 | 40 | 090 | 006 | +000 | -003 |
| 059 | 037 | 39 | 180 | 002 | +001 | +000 |
| 064 | 033 | 38 | 090 | 002 | +000 | -001 |
| 069 | 030 | 37 | 360 | 002 | -001 | +000 |
| 075 | 030 | 36 | 104 | 008 | +001 | -004 |
| 080 | 028 | 35 | 121 | 011 | +003 | -005 |
| 087 | 024 | 34 | 135 | 003 | +001 | -001 |
| 094 | 022 | 33 | 270 | 006 | +000 | +003 |
| 102 | 021 | 32 | 270 | 006 | +000 | +003 |
| 110 | 020 | 31 | 000 | 000 | +000 | +000 |
| 119 | 017 | 30 | 045 | 003 | -001 | -001 |
| 130 | 016 | 29 | 117 | 004 | +001 | -002 |
| 140 | 017 | 28 | 135 | 008 | +003 | -003 |
| 150 | 013 | 27 | 108 | 006 | +001 | -003 |
| 165 | 012 | 26 | 072 | 006 | -001 | -003 |
| 178 | 012 | 25 | 079 | 010 | -001 | -005 |
| 193 | 010 | 24 | 079 | 010 | -001 | -005 |
| 210 | 010 | 23 | 063 | 009 | -002 | -004 |
| 228 | 009 | 22 | 072 | 006 | -001 | -003 |
| 248 | 008 | 21 | 072 | 006 | -001 | -003 |
| 271 | 007 | 20 | 076 | 008 | -001 | -004 |
| 294 | 006 | 19 | 090 | 004 | +000 | -002 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M$^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|
| 4892 | -05.2 | 01.010 | 01.314 | 328 | | | | |
| 4673 | -04.5 | 01.330 | 01.724 | 329 | 124 | 007 | +002 | -003 |
| 4606 | -07.1 | 01.447 | 01.895 | 327 | 117 | 004 | +001 | -002 |
| 4520 | -04.9 | 01.613 | 02.094 | 328 | 117 | 004 | +001 | -002 |
| 4246 | -10.1 | 02.283 | 03.023 | 325 | 090 | 006 | -000 | -003 |
| 4200 | -16.6 | 02.423 | 03.290 | 321 | 090 | 004 | +000 | -002 |
| 4093 | -15.1 | 02.788 | 03.764 | 322 | 117 | 004 | +001 | -002 |
| 3947 | -21.0 | 03.382 | 04.672 | 318 | 135 | 003 | +001 | -001 |
| 3900 | -19.7 | 03.601 | 04.949 | 319 | 180 | 002 | +001 | +000 |
| 3877 | -23.0 | 03.714 | 05.172 | 317 | 180 | 002 | +001 | -000 |
| 3840 | -22.5 | 03.903 | 05.425 | 317 | 090 | 002 | +000 | -001 |
| 3792 | -19.3 | 04.162 | 05.712 | 319 | 090 | 002 | -000 | -001 |
| 3761 | -21.2 | 04.338 | 05.999 | 318 | 090 | 002 | -000 | -001 |
| 3725 | -26.7 | 04.555 | 06.439 | 315 | 000 | 002 | -001 | -000 |
| 3673 | -28.5 | 04.893 | 06.967 | 314 | 090 | 002 | -000 | -001 |
| 3627 | -26.7 | 05.212 | 07.368 | 315 | 090 | 006 | +000 | -003 |
| 3441 | -30.1 | 06.738 | 09.658 | 313 | 124 | 007 | +002 | -003 |
| 3289 | -37.3 | 08.351 | 12.336 | 308 | 270 | 006 | +000 | +003 |
| 3210 | -35.8 | 09.350 | 13.723 | 309 | 270 | 006 | +000 | +003 |
| 2957 | -43.6 | 13.491 | 20.474 | 304 | 090 | 002 | -000 | -001 |
| 2713 | -45.2 | 19.360 | 29.587 | 303 | 108 | 006 | +001 | -003 |
| 2646 | -48.1 | 21.401 | 33.127 | 301 | 090 | 006 | -000 | -003 |
| 2542 | -46.7 | 25.016 | 38.485 | 302 | 076 | 008 | -001 | -004 |
| 2408 | -51.6 | 30.641 | 48.180 | 298 | 079 | 010 | -001 | -005 |
| 2060 | -56.5 | 52.518 | 84.448 | 295 | 072 | 006 | -001 | -003 |
| 2000 | -60.7 | 57.748 | 94.693 | 292 | 076 | 008 | -001 | -004 |
| 1801 | -61.1 | 79.400 | | 292 | | | | |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 2093 | -55.9 | 50.000 | 80.190 | 295 | 072 | 006 | -001 | -003 |
| 2414 | -51.0 | 30.000 | 47.054 | 299 | 079 | 010 | -001 | -005 |
| 2681 | -46.1 | 20.000 | 30.688 | 302 | 108 | 006 | +001 | -003 |
| 3154 | -37.0 | 10.000 | 14.754 | 308 | 270 | 004 | +000 | +002 |
| 3398 | -31.3 | 07.000 | 10.082 | 312 | 117 | 004 | +001 | -002 |
| 3637 | -27.9 | 05.000 | 07.102 | 314 | 090 | 004 | -000 | -002 |
| 4332 | -07.9 | 02.000 | 02.627 | 326 | 076 | 008 | -001 | -004 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1020.0 | 0000 | 010 | 004 | -002 | -000 | 86 | +12.2 |
| 0806.0 | 0200 | 031 | 012 | -005 | -003 | 34 | +10.3 |
| 0634.0 | 0400 | 046 | 017 | -006 | -006 | 17 | +00.1 |
| 0487.0 | 0600 | 055 | 014 | -004 | -006 | 17 | -13.0 |
| 0373.0 | 0800 | 081 | 006 | -000 | -003 | 18 | -28.5 |
| 0280.0 | 1000 | 100 | 008 | +001 | -004 | | -43.4 |
| 0206.0 | 1200 | 128 | 010 | +003 | -004 | | -53.3 |
| 0151.0 | 1400 | 173 | 006 | +003 | -000 | | -58.2 |
| 0112.0 | 1586 | 110 | 004 | +001 | -002 | | -64.9 |
| 0107.0 | 1600 | 106 | 002 | +000 | -001 | | -64.5 |
| 0079.5 | 1800 | 058 | 004 | -001 | -002 | | -61.9 |
| 0057.5 | 2000 | 068 | 008 | -002 | -004 | | -59.0 |
| 0041.8 | 2200 | 064 | 006 | -001 | -003 | | -55.9 |
| 0030.7 | 2400 | 034 | 008 | -003 | -002 | | -52.6 |
| 0022.6 | 2600 | 044 | 006 | -002 | -002 | | -49.3 |
| 0016.8 | 2800 | 086 | 004 | -000 | -002 | | -45.8 |
| 0014.5 | 3000 | 111 | 004 | +001 | -002 | | -44.1 |
| 0009.6 | 3200 | 095 | 008 | +000 | -004 | | -39.4 |
| 0008.4 | 3274 | 103 | 015 | +002 | -008 | | -38.7 |
| 0008.0 | 3308 | | | | | | -38.5 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 141 SEC.
TYPE OF LAUNCHER.. ARCAS WITHOUT GAS GENERATOR
LAUNCHER SETTING.. 155 DEG. AZIMUTH 76.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 10 SECONDS 1,495 METERS ALTITUDE
MOTOR TRACK DROPPED.. 131 SECONDS 50,110 METERS ALTITUDE
PAYLOAD ACQUISITION.. 131 SECONDS 50,110 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 1,920 SECONDS 18,015 METERS ALTITUDE
APOGEE.. 122 SECONDS 50,690 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 16 FT. DIAMETER DISC-GAP-BAND PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1680 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 150 SEC. 48,920 METERS ALTITUDE
TO 1,920 SEC. 18,015 METERS ALTITUDE

REMARKS

TOWER WINDS AT ROCKET LAUNCH MISSING.
THERMODYNAMICS BASE DATA.. PRESSURE 79.4 MB
ALTITUDE 18,010 METERS
TEMPERATURE -61.9 DEG. C

RADIOSONDE AND BALLOON DATA

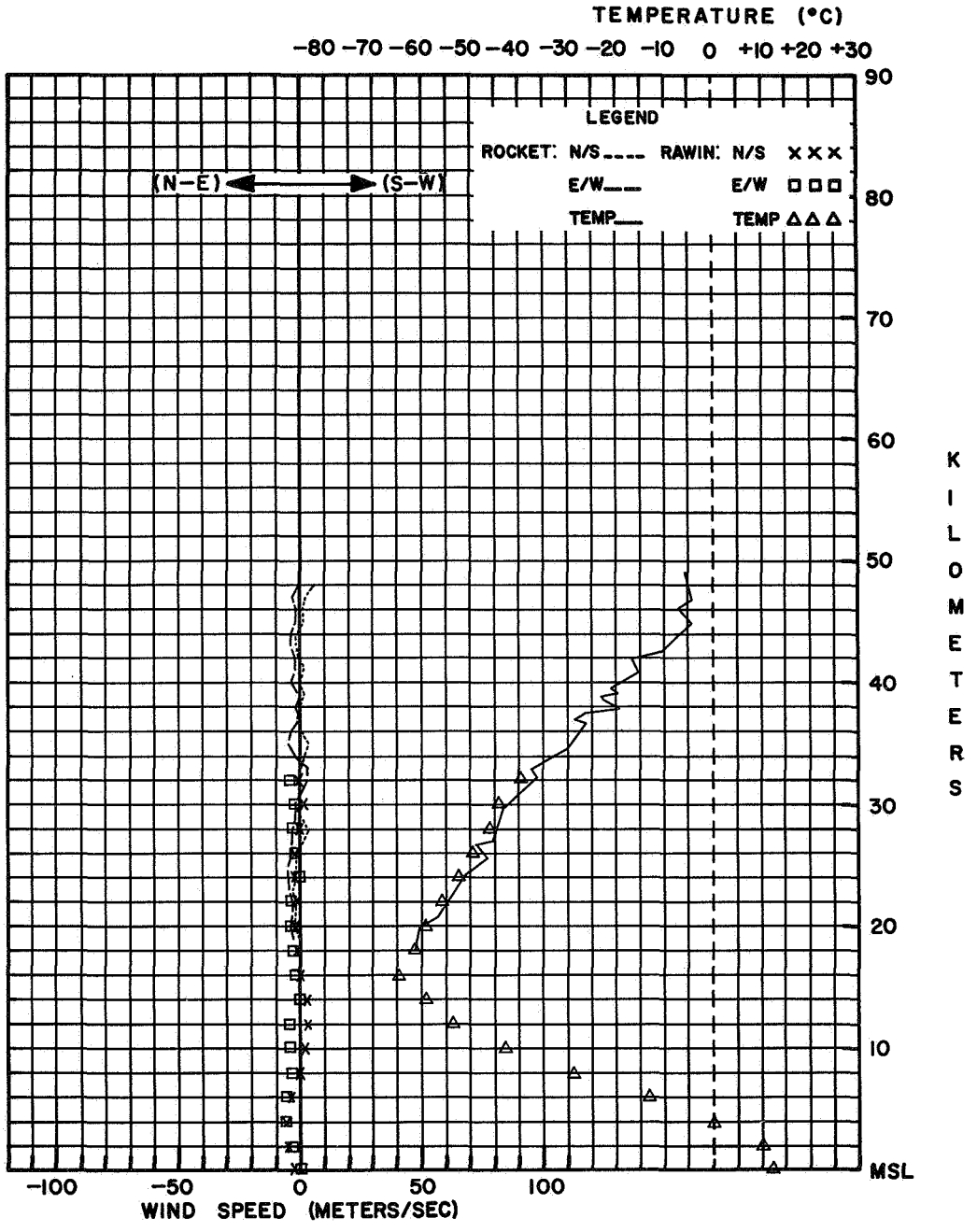
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 296 M/MINUTE
400 MB-TOP = 402 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1020.0 MB
TEMPERATURE.. 12.2 DEG. C
RELATIVE HUMIDITY.. 86%
VISIBILITY.. 16 KM
SURFACE WIND.. 010 DEG. 4 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 1 OCTAS
LOW.. NONE
MIDDLE.. 1 OCTAS/AC
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 008 DEG/14 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA
DATE: 15 SEPTEMBER, 1967

ROCKET TIME: 0845 LST 1345 GCT
ROCKET MOTOR TYPE: ARCAS

PAYLOAD TYPE: ARCASONDE-1A
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE Z | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | | | |
| 72402 | 37°51' N 75°29' W ALT. 3 M | SEPTEMBER 20, 1967 | 1529 | 1115 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 029 | 067 | 50 | 098 | 029 | +002 | -015 |
| 031 | 067 | 49 | 086 | 025 | -001 | -013 |
| 034 | 067 | 48 | 093 | 033 | +001 | -017 |
| 036 | 067 | 47 | 097 | 051 | +003 | -026 |
| 039 | 067 | 46 | 085 | 047 | -002 | -024 |
| 041 | 056 | 45 | 087 | 039 | -001 | -020 |
| 045 | 048 | 44 | 082 | 027 | -002 | -014 |
| 048 | 056 | 43 | 081 | 012 | -001 | -006 |
| 051 | 048 | 42 | 120 | 016 | +004 | -007 |
| 055 | 037 | 41 | 090 | 023 | +000 | -012 |
| 060 | 037 | 40 | 086 | 029 | -001 | -015 |
| 064 | 042 | 39 | 101 | 032 | +003 | -016 |
| 068 | 037 | 38 | 101 | 020 | +002 | -010 |
| 073 | 033 | 37 | 104 | 016 | +002 | -008 |
| 078 | 028 | 36 | 103 | 018 | +002 | -009 |
| 085 | 026 | 35 | 090 | 010 | +000 | -005 |
| 091 | 026 | 34 | 090 | 002 | +000 | -001 |
| 098 | 022 | 33 | 180 | 004 | +002 | +000 |
| 106 | 021 | 32 | 108 | 006 | +001 | -003 |
| 114 | 021 | 31 | 108 | 012 | +002 | -006 |
| 122 | 019 | 30 | 108 | 006 | +001 | -003 |
| 132 | 017 | 29 | 360 | 002 | -001 | +000 |
| 142 | 018 | 28 | 000 | 000 | +000 | +000 |
| 151 | 017 | 27 | 225 | 003 | +001 | +001 |
| 162 | 015 | 26 | 225 | 005 | +002 | +002 |
| 173 | 014 | 25 | 225 | 005 | +002 | +002 |
| 185 | 013 | 24 | 217 | 010 | +004 | +003 |
| 198 | 012 | 23 | 202 | 010 | +005 | +002 |
| 213 | 011 | 22 | 198 | 006 | +003 | +001 |
| 229 | 010 | 21 | 360 | 002 | -001 | +000 |
| 247 | 009 | 20 | 333 | 004 | -002 | +001 |
| 268 | 008 | 19 | 315 | 005 | -002 | +002 |
| 290 | 007 | 18 | 315 | 008 | -003 | +003 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|
| 5151 | -00.7 | 00.752 | 00.962 | 331 | | | | |
| 5090 | -00.7 | 00.811 | 01.037 | 331 | | | | |
| 5000 | -03.7 | 00.907 | 01.172 | 329 | 098 | 029 | +002 | -015 |
| 4834 | +00.6 | 01.114 | 01.417 | 332 | 090 | 031 | +000 | -016 |
| 4734 | -00.8 | 01.260 | 01.611 | 331 | 095 | 045 | +002 | -023 |
| 4636 | -05.7 | 01.423 | 01.854 | 328 | 090 | 049 | -000 | -025 |
| 4417 | -09.4 | 01.879 | 02.482 | 326 | 082 | 029 | -002 | -015 |
| 4270 | -08.5 | 02.267 | 02.984 | 326 | 099 | 012 | +001 | -006 |
| 4188 | -13.0 | 02.519 | 03.373 | 323 | 117 | 017 | +004 | -008 |
| 4078 | -15.1 | 02.906 | 03.924 | 322 | 090 | 025 | -000 | -013 |
| 4014 | -13.5 | 03.159 | 04.239 | 323 | 086 | 029 | -001 | -015 |
| 3780 | -24.1 | 04.309 | 06.028 | 316 | 101 | 020 | +002 | -010 |
| 3706 | -23.6 | 04.764 | 06.650 | 317 | 104 | 016 | +002 | -008 |
| 3539 | -32.0 | 05.995 | 08.661 | 311 | 098 | 014 | +001 | -007 |
| 3447 | -32.0 | 06.820 | 09.852 | 311 | 090 | 006 | +000 | -003 |
| 3371 | -29.9 | 07.583 | 10.860 | 313 | 135 | 003 | +001 | -001 |
| 3325 | -32.5 | 08.086 | 11.706 | 311 | 180 | 004 | +002 | -000 |
| 3203 | -33.3 | 09.601 | 13.946 | 310 | 108 | 006 | +001 | -003 |
| 3136 | -37.9 | 10.563 | 15.642 | 307 | 112 | 010 | +002 | -005 |
| 2987 | -42.1 | 13.113 | 19.771 | 305 | 108 | 006 | +001 | -003 |
| 2954 | -39.8 | 13.759 | 20.540 | 306 | 090 | 004 | +000 | -002 |
| 2621 | -49.3 | 22.533 | 35.068 | 300 | 225 | 005 | +002 | +002 |
| 2502 | -45.7 | 26.943 | 41.267 | 302 | 225 | 005 | +002 | +002 |
| 2380 | -50.0 | 32.373 | 50.538 | 299 | 217 | 010 | +004 | +003 |
| 2295 | -49.1 | 36.827 | 57.261 | 300 | 202 | 010 | +005 | +002 |
| 2000 | -56.3 | 57.994 | 93.166 | 295 | 333 | 004 | -002 | +001 |
| 1765 | -61.9 | 84.200 | | 291 | | | | |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 2104 | -53.6 | 50.000 | 79.330 | 297 | 360 | 002 | -001 | +000 |
| 2424 | -48.1 | 30.000 | 46.443 | 301 | 225 | 008 | +003 | +003 |
| 2705 | -46.6 | 20.000 | 30.748 | 302 | 225 | 003 | +001 | +001 |
| 3159 | -35.2 | 10.000 | 14.641 | 309 | 104 | 008 | +001 | -004 |
| 3411 | -31.5 | 07.000 | 10.092 | 312 | 090 | 004 | +000 | -002 |
| 3653 | -25.2 | 05.000 | 07.025 | 316 | 104 | 016 | +002 | -008 |
| 4341 | -09.1 | 02.000 | 02.639 | 326 | 081 | 024 | -002 | -012 |
| 4887 | -01.8 | 01.000 | 01.284 | 330 | 090 | 027 | -000 | -014 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1019.8 | 0000 | 280 | 002 | -000 | +001 | 100 | +16.7 |
| 0806.0 | 0200 | | | | | 48 | +10.8 |
| 0632.0 | 0400 | 324 | 012 | -005 | +004 | 36 | -01.5 |
| 0488.0 | 0600 | 315 | 024 | -009 | +009 | 74 | -15.9 |
| 0372.0 | 0800 | 330 | 056 | -025 | +014 | 35 | -27.0 |
| 0280.0 | 1000 | 326 | 052 | -022 | +015 | | -44.1 |
| 0206.0 | 1200 | 330 | 058 | -026 | +015 | | -57.8 |
| 0170.0 | 1319 | 330 | 041 | -018 | +011 | | -62.8 |
| 0150.0 | 1400 | 324 | 030 | -012 | +009 | | -60.5 |
| 0109.0 | 1600 | 314 | 013 | -005 | +005 | | -63.6 |
| 0079.0 | 1800 | 322 | 010 | -004 | +003 | | -62.6 |
| 0056.5 | 2000 | 284 | 006 | -001 | +003 | | -58.7 |
| 0041.5 | 2200 | 233 | 004 | +001 | +002 | | -55.2 |
| 0030.5 | 2400 | 233 | 004 | +001 | +002 | | -51.6 |
| 0022.7 | 2600 | 233 | 004 | +001 | +002 | | -48.0 |
| 0016.8 | 2800 | 233 | 004 | +001 | +002 | | -46.0 |
| 0015.0 | 2875 | | | | | | -40.5 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 131 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATER
LAUNCHER SETTING.. 127 DEG. AZIMUTH 80.6 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 7 SECONDS 1,070 METERS ALTITUDE
MOTOR TRACK DROPPED.. 131 SECONDS 53,340 METERS ALTITUDE
PAYLOAD ACQUISITION.. 131 SECONDS 53,340 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 1,800 SECONDS 17,650 METERS ALTITUDE
APOGEE.. 121 SECONDS 53,889 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 16 FT. DIAMETER DISC-GAP-BAND PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1672 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 153 SEC. 51,664 METERS ALTITUDE
TO 1,800 SEC. 17,650 METERS ALTITUDE

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 84.2 MB
ALTITUDE 17,650 METERS
TEMPERATURE -62.8 DEG. C

RADIOSONDE AND BALLOON DATA

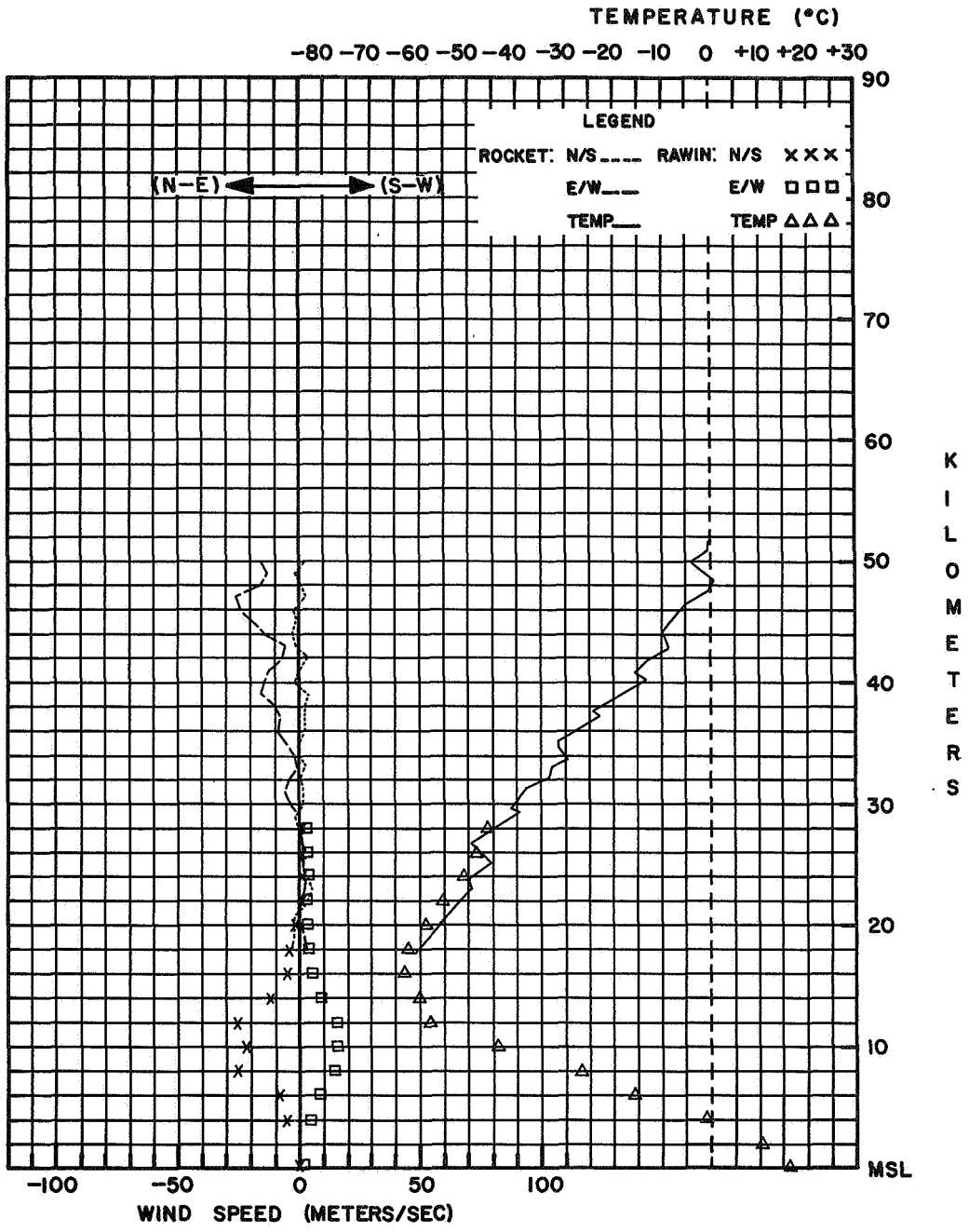
RADIOSONDE MANUFACTURER.. BENDIX
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,700 GRAMS
FREE LIFT.. 2,000 GRAMS
ASCENSION RATES.. SFC-400 MB = 290 M/MINUTE
400 MB-TOP = 420 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1019.8 MB
TEMPERATURE.. 16.7 DEG. C
RELATIVE HUMIDITY..100%
VISIBILITY.. 4 KM
SURFACE WIND.. 280 DEG. 2 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 2 OCTAS
LOW.. NONE
MIDDLE.. 2 OCTAS/AC
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. GROUND FOG

WIND AT ROCKET LAUNCH

SFC. 132 DEG/05 KTS. 50 FT. 112 DEG/04 KTS.
100 FT. 112 DEG/04 KTS. 150 FT. 127 DEG/04 KTS.
200 FT. 135 DEG/03 KTS. 250 FT. 170 DEG/03 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA **ROCKET TIME:** 1029 LST 1529 GCT **PAYLOAD TYPE:** ARCASONDE-1A

**DATE:** 20 SEPTEMBER, 1967 **ROCKET MOTOR TYPE:** ARCAS **RADIOSONDE TYPE:** 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | | | |
| 72402 | 37°51' N 75°29' W ALT. 3 M | SEPTEMBER 27, 1967 | 1445 | 1715 |

# TABULATED DATA

## ROCKET WINDS

| TIME OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 026 | 111 | 51 | 308 | 035 | -011 | +014 |
| 028 | 111 | 50 | 305 | 031 | -009 | +013 |
| 029 | 111 | 49 | 284 | 024 | -003 | +012 |
| 031 | 083 | 48 | 261 | 024 | +002 | +012 |
| 033 | 083 | 47 | 214 | 007 | +003 | +002 |
| 035 | 067 | 46 | 100 | 022 | +002 | -011 |
| 038 | 056 | 45 | 099 | 024 | +002 | -012 |
| 041 | 056 | 44 | 079 | 020 | -002 | -010 |
| 044 | 056 | 43 | 079 | 010 | -001 | -005 |
| 047 | 048 | 42 | 135 | 008 | +003 | -003 |
| 051 | 042 | 41 | 072 | 012 | -002 | -006 |
| 055 | 042 | 40 | 045 | 011 | -004 | -004 |
| 059 | 037 | 39 | 270 | 006 | +000 | +003 |
| 064 | 033 | 38 | 198 | 018 | +009 | +003 |
| 069 | 030 | 37 | 180 | 014 | +007 | +000 |
| 075 | 030 | 36 | 108 | 006 | +001 | -003 |
| 080 | 030 | 35 | 072 | 012 | -002 | -006 |
| 086 | 026 | 34 | 037 | 010 | -004 | -003 |
| 093 | 024 | 33 | 027 | 004 | -002 | -001 |
| 100 | 022 | 32 | 056 | 007 | -002 | -003 |
| 108 | 020 | 31 | 045 | 008 | -003 | -003 |
| 117 | 018 | 30 | 034 | 007 | -003 | -002 |
| 127 | 016 | 29 | 063 | 004 | -001 | -002 |
| 138 | 016 | 28 | 108 | 006 | +001 | -003 |
| 148 | 013 | 27 | 090 | 006 | +000 | -003 |
| 163 | 012 | 26 | 090 | 006 | +000 | -003 |
| 175 | 013 | 25 | 124 | 007 | +002 | -003 |
| 188 | 011 | 24 | 124 | 007 | +002 | -003 |
| 205 | 010 | 23 | 108 | 006 | +001 | -003 |
| 223 | 009 | 22 | 090 | 004 | +000 | -002 |
| 243 | 009 | 21 | 225 | 003 | +001 | +001 |
| 260 | 007 | 20 | 252 | 006 | +001 | +003 |
| 288 | 005 | 19 | 252 | 006 | +001 | +003 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|
| 5066 | -01.3 | 00.780 | 00.999 | 331 | 306 | 033 | -010 | +014 |
| 4959 | +01.4 | 00.890 | 01.129 | 332 | 298 | 029 | -007 | +013 |
| 4910 | -00.9 | 00.945 | 01.209 | 331 | 288 | 025 | -004 | +012 |
| 4782 | +01.7 | 01.106 | 01.402 | 332 | 259 | 020 | +002 | +010 |
| 4596 | -05.9 | 01.393 | 01.816 | 328 | 100 | 022 | +002 | -011 |
| 4508 | -15.9 | 01.560 | 02.113 | 322 | 099 | 024 | +002 | -012 |
| 4420 | -13.3 | 01.750 | 02.346 | 323 | 084 | 020 | -001 | -010 |
| 4285 | -18.6 | 02.088 | 02.858 | 320 | 090 | 010 | -000 | -005 |
| 4206 | -18.0 | 02.318 | 03.165 | 320 | 135 | 008 | +003 | -003 |
| 4115 | -19.5 | 02.616 | 03.592 | 319 | 081 | 012 | -001 | -006 |
| 4005 | -26.3 | 03.034 | 04.281 | 315 | 045 | 011 | -004 | -004 |
| 3853 | -26.7 | 03.735 | 05.279 | 315 | 217 | 010 | +004 | +003 |
| 3834 | -28.7 | 03.834 | 05.464 | 313 | 207 | 013 | +006 | +003 |
| 3776 | -27.7 | 04.153 | 05.894 | 314 | 193 | 018 | +009 | +002 |
| 3667 | -29.1 | 04.827 | 06.890 | 313 | 169 | 010 | +005 | -001 |
| 3621 | -27.2 | 05.143 | 07.284 | 314 | 135 | 005 | +002 | -002 |
| 3380 | -38.8 | 07.219 | 10.731 | 307 | 037 | 010 | -004 | -003 |
| 3240 | -39.3 | 08.836 | 13.164 | 307 | 045 | 005 | -002 | -002 |
| 3188 | -37.3 | 09.524 | 14.067 | 308 | 056 | 007 | -002 | -003 |
| 3008 | -43.6 | 12.373 | 18.777 | 304 | 034 | 007 | -003 | -002 |
| 2938 | -43.6 | 13.718 | 20.819 | 304 | 045 | 005 | -002 | -002 |
| 2877 | -46.3 | 15.017 | 23.062 | 302 | 063 | 004 | -001 | -002 |
| 2847 | -45.0 | 15.703 | 23.977 | 303 | 090 | 006 | +000 | -003 |
| 2393 | -50.0 | 31.050 | 48.473 | 299 | 124 | 007 | +002 | -003 |
| 2316 | -53.2 | 34.934 | 55.329 | 297 | 108 | 006 | +001 | -003 |
| 2271 | -51.4 | 37.433 | 58.807 | 299 | 108 | 006 | +001 | -003 |
| 2170 | -54.2 | 43.731 | 69.580 | 297 | 090 | 002 | +000 | -001 |
| 2000 | -55.3 | 56.955 | 91.077 | 296 | 252 | 006 | +001 | +003 |
| 1811 | -61.6 | 76.800 | | 292 | | | | |

CONSTANT PRESSURE LEVEL DATA
(HEIGHT IN GEOPOTENTIAL METERS)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2082 | -54.7 | 50.000 | 79.744 | 296 | 225 | 003 | +001 | +001 |
| 2415 | -49.7 | 30.000 | 46.762 | 300 | 124 | 007 | +002 | -003 |
| 2708 | -46.4 | 20.000 | 30.727 | 302 | 090 | 006 | +000 | -003 |
| 3142 | -38.4 | 10.000 | 14.837 | 307 | 056 | 007 | -002 | -003 |
| 3387 | -37.6 | 07.000 | 10.352 | 308 | 037 | 010 | -004 | -003 |
| 3621 | -28.1 | 05.000 | 07.107 | 314 | 153 | 009 | +004 | -002 |
| 4291 | -17.2 | 02.000 | 02.722 | 321 | 081 | 012 | -001 | -006 |
| 4829 | -00.0 | 01.000 | 01.275 | 331 | 275 | 023 | -001 | +012 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1020.0 | 0000 | 170 | 010 | +005 | -001 | 80 | +20.6 |
| 0806.0 | 0200 | 237 | 016 | +004 | +007 | 46 | +09.6 |
| 0631.0 | 0400 | 204 | 025 | +012 | +005 | 19 | +01.1 |
| 0490.0 | 0600 | 236 | 019 | +005 | +008 | 24 | -11.7 |
| 0374.0 | 0800 | 236 | 033 | +009 | +014 | 31 | -26.0 |
| 0282.0 | 1000 | 249 | 044 | +008 | +021 | | -41.7 |
| 0208.0 | 1200 | 244 | 042 | +009 | +019 | | -56.2 |
| 0151.0 | 1400 | 249 | 041 | +008 | +020 | | -63.1 |
| 0115.0 | 1566 | 260 | 023 | +002 | +012 | | -69.9 |
| 0109.0 | 1600 | 255 | 021 | +003 | +010 | | -69.1 |
| 0078.0 | 1800 | 246 | 008 | +002 | +004 | | -62.0 |
| 0057.0 | 2000 | 225 | 010 | +004 | +004 | | -54.7 |
| 0041.5 | 2200 | 207 | 012 | +006 | +003 | | -54.8 |
| 0030.6 | 2400 | 074 | 006 | -001 | -003 | | -52.2 |
| 0022.4 | 2600 | 006 | 004 | -002 | -000 | | -49.9 |
| 0016.8 | 2800 | 093 | 004 | +000 | -002 | | -47.0 |
| 0012.5 | 3000 | 073 | 008 | -001 | -004 | | -44.1 |
| 0009.3 | 3200 | 198 | 014 | +007 | +002 | | -41.0 |
| 0006.9 | 3400 | 130 | 002 | +001 | -001 | | -35.7 |
| 0005.4 | 3600 | | | | | | -30.8 |
| 0005.0 | 3635 | | | | | | -29.8 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 134 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 077 DEG. AZIMUTH 80.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 1,310 METERS ALTITUDE
MOTOR TRACK DROPPED.. 134 SECONDS 53,040 METERS ALTITUDE
PAYLOAD ACQUISITION.. 134 SECONDS 53,040 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 1,860 SECONDS 18,105 METERS ALTITUDE
APOGEE.. 124 SECONDS 53,890 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 16 FT. DIAMETER DISC-GAP-BAND PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1680 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 159 SEC. 50,660 METERS ALTITUDE
TO 1,860 SEC. 18,105 METERS ALTITUDE

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 76.8 MB
ALTITUDE 18,110 METERS
TEMPERATURE -61.6 DEG. C

RADIOSONDE AND BALLOON DATA

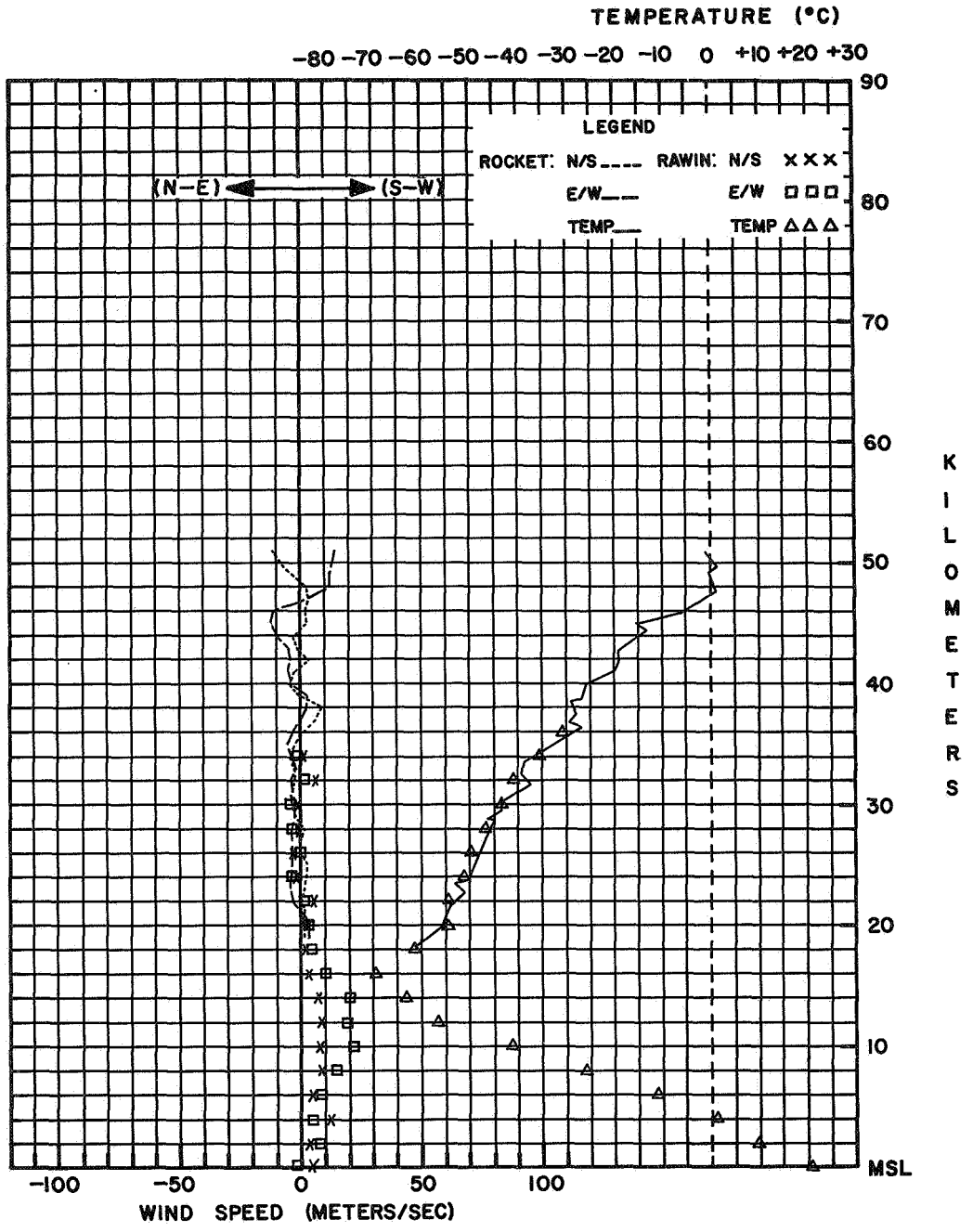
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,600 GRAMS
ASCENSION RATES.. SFC-400 MB = 281 M/MINUTE
400 MB-TOP = 417 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1020.0 MB
TEMPERATURE.. 20.6 DEG. C
RELATIVE HUMIDITY.. 80%
VISIBILITY.. 16 KM
SURFACE WIND.. 170 DEG. 10 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 8 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. 8 OCTAS/CI
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 176 DEG/09 KTS, 50 FT. 174 DEG/08 KTS,
100 FT. 175 DEG/10 KTS, 150 FT. 175 DEG/10 KTS,
200 FT. 180 DEG/11 KTS, 250 FT. 184 DEG/13 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA **ROCKET TIME:** 0945 LST 1445 GCT **PAYLOAD TYPE:** ARCASONDE-1A

**DATE:** 27 SEPTEMBER, 1967 **ROCKET MOTOR TYPE:** ARCAS **RADIOSONDE TYPE:** 1680 MHZ

| PP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | | | |
| 72402 | 37°51' N 75°29' W ALT. 3 M | OCTOBER 5, 1967 | 0007 | 0515 |

# TABULATED DATA

ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 025 | 083 | 52 | 264 | 057 | +003 | +029 |
| 027 | 083 | 51 | 272 | 051 | -001 | +026 |
| 029 | 083 | 50 | 284 | 058 | -007 | +029 |
| 031 | 083 | 49 | 283 | 072 | -008 | +036 |
| 033 | 067 | 48 | 278 | 067 | -005 | +034 |
| 036 | 067 | 47 | 279 | 063 | -005 | +032 |
| 038 | 067 | 46 | 283 | 060 | -007 | +030 |
| 041 | 056 | 45 | 281 | 059 | -006 | +030 |
| 044 | 048 | 44 | 263 | 049 | +003 | +025 |
| 048 | 048 | 43 | 254 | 036 | +005 | +018 |
| 051 | 048 | 42 | 243 | 039 | +009 | +018 |
| 055 | 042 | 41 | 225 | 044 | +016 | +016 |
| 059 | 042 | 40 | 231 | 037 | +012 | +015 |
| 063 | 037 | 39 | 236 | 035 | +010 | +015 |
| 068 | 033 | 38 | 248 | 036 | +007 | +017 |
| 073 | 030 | 37 | 259 | 042 | +004 | +021 |
| 079 | 028 | 36 | 257 | 036 | +004 | +018 |
| 085 | 026 | 35 | 274 | 029 | -001 | +015 |
| 092 | 024 | 34 | 281 | 032 | -003 | +016 |
| 099 | 022 | 33 | 274 | 029 | -001 | +015 |
| 107 | 021 | 32 | 275 | 023 | -001 | +012 |
| 115 | 021 | 31 | 280 | 022 | -002 | +011 |
| 123 | 019 | 30 | 287 | 026 | -004 | +013 |
| 133 | 017 | 29 | 270 | 025 | +000 | +013 |
| 143 | 015 | 28 | 257 | 018 | +002 | +009 |
| 155 | 013 | 27 | 262 | 014 | +001 | +007 |
| 168 | 013 | 26 | 279 | 012 | -001 | +006 |
| 180 | 012 | 25 | 297 | 013 | -003 | +006 |
| 195 | 011 | 24 | 307 | 010 | -003 | +004 |
| 211 | 010 | 23 | 304 | 007 | -002 | +003 |
| 228 | 009 | 22 | 279 | 012 | -001 | +006 |
| 248 | 008 | 21 | 281 | 010 | -001 | +005 |
| 268 | 008 | 20 | 297 | 009 | -002 | +004 |
| 291 | 008 | 19 | 301 | 011 | -003 | +005 |

ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY -3 G M | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 5090 | -03.4 | 00.723 | 00.934 | 329 | 274 | 051 | -002 | +026 |
| 4874 | -00.4 | 00.945 | 01.207 | 331 | 281 | 069 | -007 | +035 |
| 4371 | -16.6 | 01.793 | 02.434 | 321 | 260 | 045 | +004 | +023 |
| 4234 | -15.0 | 02.145 | 02.895 | 322 | 246 | 038 | +008 | +018 |
| 4115 | -15.7 | 02.506 | 03.392 | 322 | 227 | 043 | +015 | +016 |
| 4014 | -21.9 | 02.866 | 03.973 | 318 | 229 | 039 | +013 | +015 |
| 3874 | -22.7 | 03.460 | 04.812 | 317 | 241 | 036 | +009 | +016 |
| 3810 | -27.8 | 03.775 | 05.359 | 314 | 248 | 036 | +007 | +017 |
| 3780 | -27.1 | 03.933 | 05.569 | 314 | 252 | 037 | +006 | +018 |
| 3728 | -32.0 | 04.227 | 06.107 | 311 | 256 | 040 | +005 | +020 |
| 3615 | -31.1 | 04.951 | 07.125 | 312 | 257 | 036 | +004 | +018 |
| 3548 | -36.2 | 05.441 | 08.000 | 309 | 266 | 031 | +001 | +016 |
| 3423 | -40.7 | 06.514 | 09.763 | 306 | 281 | 032 | -003 | +016 |
| 3203 | -39.5 | 08.964 | 13.365 | 306 | 275 | 023 | -001 | +012 |
| 3112 | -44.5 | 10.241 | 15.603 | 303 | 280 | 022 | -002 | +011 |
| 3021 | -43.7 | 11.714 | 17.786 | 304 | 287 | 026 | -004 | +013 |
| 2804 | -51.4 | 16.223 | 25.486 | 299 | 257 | 018 | +002 | +009 |
| 2697 | -50.0 | 19.094 | 29.808 | 299 | 262 | 014 | +001 | +007 |
| 2377 | -57.3 | 31.295 | 50.508 | 295 | 307 | 010 | -003 | +004 |
| 2316 | -55.7 | 34.431 | 55.160 | 296 | 304 | 007 | -002 | +003 |
| 2164 | -58.0 | 43.700 | 70.758 | 294 | 279 | 012 | -001 | +006 |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 2402 | -56.5 | 30.000 | 48.245 | 295 | 307 | 010 | -003 | +004 |
| 2662 | -50.5 | 20.000 | 31.299 | 299 | 270 | 014 | +000 | +007 |
| 3114 | -43.6 | 10.000 | 15.173 | 304 | 280 | 022 | -002 | +011 |
| 3361 | -40.5 | 07.000 | 10.480 | 306 | 281 | 032 | -003 | +016 |
| 3588 | -31.6 | 05.000 | 07.211 | 312 | 257 | 036 | +004 | +018 |
| 4261 | -15.7 | 02.000 | 02.706 | 322 | 254 | 036 | +005 | +018 |
| 4805 | -01.4 | 01.000 | 01.282 | 330 | 280 | 069 | -006 | +035 |

RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1018.7 | 0000 | 240 | 004 | +001 | +002 | 90 | +16.7 |
| 0807.0 | 0200 | 256 | 006 | +001 | +003 | 21 | +13.7 |
| 0634.0 | 0400 | 342 | 012 | -006 | +002 | 34 | +02.7 |
| 0491.0 | 0600 | 338 | 008 | -004 | +002 | 33 | -10.5 |
| 0376.0 | 0800 | 004 | 012 | -006 | -000 | 18 | -24.6 |
| 0284.0 | 1000 | 019 | 012 | -006 | -002 | | -41.1 |
| 0208.0 | 1200 | 027 | 018 | -008 | -004 | | -57.1 |
| 0151.0 | 1400 | 005 | 016 | -008 | -001 | | -71.5 |
| 0150.0 | 1405 | 005 | 016 | -008 | -001 | | -71.6 |
| 0108.0 | 1600 | 323 | 010 | -004 | +003 | | -69.6 |
| 0078.0 | 1800 | 298 | 014 | -003 | +006 | | -64.8 |
| 0056.0 | 2000 | 277 | 018 | -001 | +009 | | -62.7 |
| 0041.0 | 2200 | 278 | 006 | -000 | +004 | | -59.5 |
| 0029.5 | 2400 | 276 | 010 | -001 | +005 | | -56.1 |
| 0022.0 | 2600 | 273 | 010 | -000 | +005 | | -53.0 |
| 0016.3 | 2800 | 271 | 021 | -000 | +011 | | -49.2 |
| 0012.0 | 3000 | 255 | 020 | +003 | +010 | | -45.6 |
| 0008.9 | 3200 | 257 | 029 | +003 | +015 | | -44.6 |
| 0008.0 | 3304 | 257 | 028 | +003 | +014 | | -45.0 |
| 0007.2 | 3324 | | | | | | -47.3 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
*PAYLOAD TYPE.. ARCASONDE-1A*
PAYLOAD PERFORMANCE.. FAIR
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 112 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 105 DEG. AZIMUTH 78.5 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPQ-6
MOTOR ACQUISITION.. 16 SECONDS 4,570 METERS ALTITUDE
*MOTOR TRACK DROPPED.. 112 SECONDS 53,950 METERS ALTITUDE*
PAYLOAD ACQUISITION.. 112 SECONDS 53,950 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 1,860 SECONDS 18,165 METERS ALTITUDE
APOGEE.. 120 SECONDS 54,254 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 16 FT. DIAMETER DISC-GAP-BAND PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
*TELEMETRY FREQUENCY.. 1684 MHZ*
TELEMETRY QUALITY.. FAIR
TELEMETRY DATA RECEIVED FROM.. 161 SEC. 50,900 METERS ALTITUDE
TO 1,400 SEC. 21,640 METERS ALTITUDE

REMARKS

T/M FAIR DUE TO CONSIDERABLE RF DROPOUT.

THERMODYNAMICS BASE DATA.. PRESSURE 43.7 MB
ALTITUDE 21,640 METERS
*TEMPERATURE -60.1 DEG. C*

RADIOSONDE AND BALLOON DATA

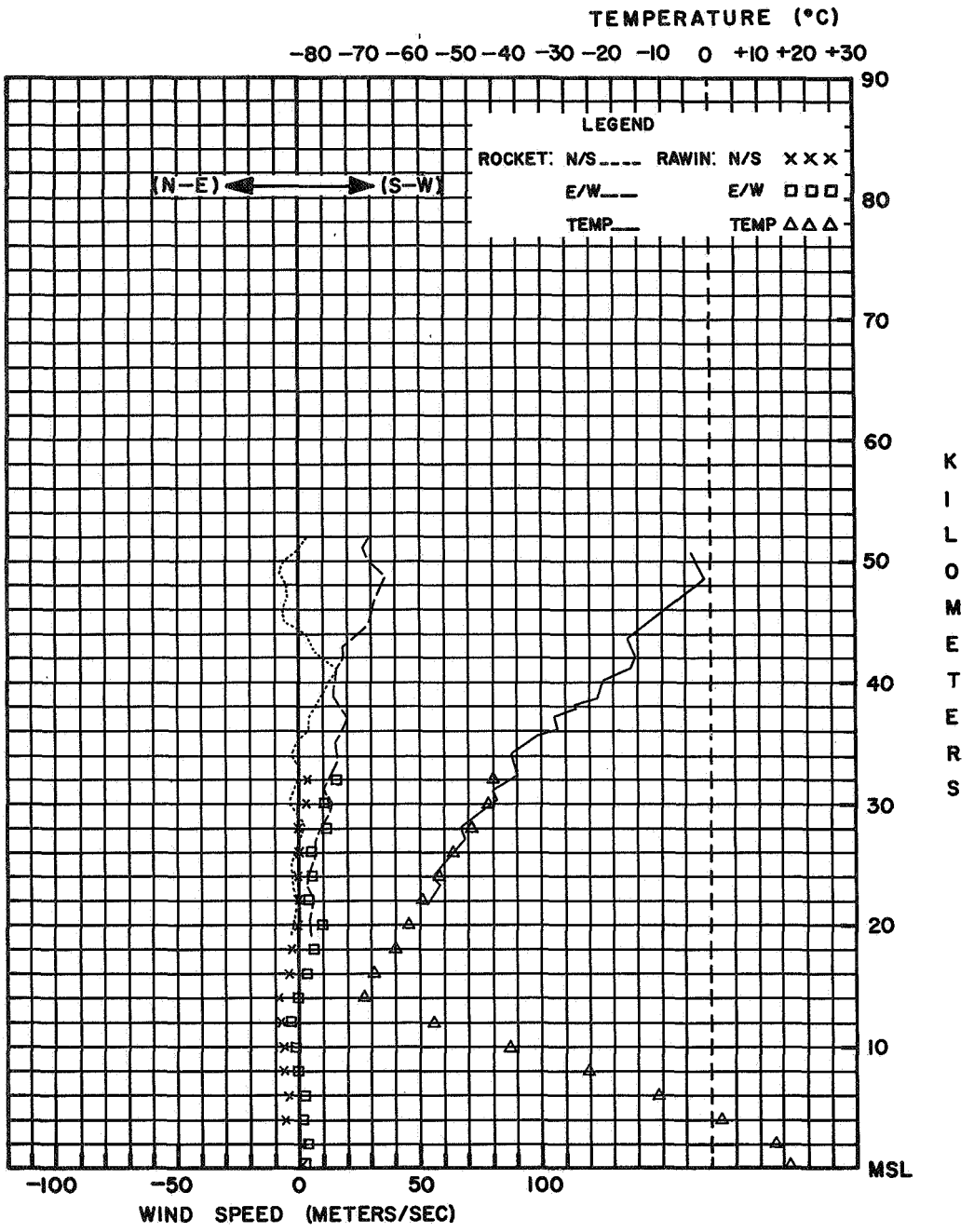
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,500 GRAMS
*ASCENSION RATES.. SFC-400 MB ≈ 270 M/MINUTE*
*400 MB-TOP ≈ 384 M/MINUTE*

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1018.7 MB
TEMPERATURE.. 16.7 DEG. C
RELATIVE HUMIDITY.. 90%
VISIBILITY.. 10 KM
SURFACE WIND.. 240 DEG. 4 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 0 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. HAZE

WIND AT ROCKET LAUNCH

SFC. 238 DEG/05 KTS, 50 FT. 225 DEG/07 KTS,
100 FT. 232 DEG/06 KTS, 150 FT. 228 DEG/11 KTS,
200 FT. 225 DEG/11 KTS, 250 FT. 235 DEG/10 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA

DATE: 5 OCTOBER, 1967

ROCKET TIME: 1907 LST 0007 GCT

ROCKET MOTOR TYPE: ARCAS

PAYLOAD TYPE: ARCASONDE-1A

RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET RAWINSONDE LAUNCH TIME Z | RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | | | |
| 72402 | 37°51' N 75°29' W ALT. 3 M | OCTOBER 12, 1967 | 1530 | 1115 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 028 | 083 | 46 | 270 | 049 | +000 | +025 |
| 030 | 083 | 45 | 277 | 043 | -002 | +017 |
| 032 | 083 | 44 | 275 | 023 | -001 | +012 |
| 034 | 083 | 43 | 270 | 016 | +000 | +008 |
| 036 | 083 | 42 | 276 | 020 | -001 | +010 |
| 038 | 067 | 41 | 273 | 037 | -001 | +019 |
| 041 | 067 | 40 | 276 | 037 | -002 | +019 |
| 043 | 067 | 39 | 270 | 031 | +000 | +016 |
| 046 | 056 | 38 | 229 | 021 | +007 | +008 |
| 049 | 056 | 37 | 230 | 015 | +005 | +006 |
| 052 | 056 | 36 | 288 | 025 | -004 | +012 |
| 055 | 056 | 35 | 301 | 023 | -006 | +010 |
| 058 | 048 | 34 | 283 | 018 | -002 | +009 |
| 062 | 042 | 33 | 261 | 026 | +002 | +013 |
| 066 | 048 | 32 | 249 | 017 | +003 | +008 |
| 069 | 048 | 31 | 270 | 023 | +000 | +012 |
| 073 | 042 | 30 | 270 | 029 | +000 | +015 |
| 077 | 037 | 29 | 246 | 019 | +004 | +009 |
| 082 | 033 | 28 | 254 | 014 | +002 | +007 |
| 087 | 033 | 27 | 270 | 014 | +000 | +007 |
| 092 | 033 | 26 | 297 | 013 | -003 | +006 |
| 097 | 030 | 25 | 300 | 016 | -004 | +007 |
| 103 | 030 | 24 | 292 | 010 | -002 | +005 |
| 108 | 028 | 23 | 225 | 008 | +003 | +003 |
| 115 | 024 | 22 | 248 | 010 | +002 | +005 |
| 122 | 026 | 21 | 248 | 010 | +002 | +005 |
| 128 | 024 | 20 | 231 | 012 | +004 | +005 |
| 136 | 021 | 19 | 246 | 019 | +004 | +009 |
| 144 | 018 | 18 | 253 | 026 | +004 | +013 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY $10^{-3}$ G M | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|
| 4734 | -05.5 | 01.135 | 01.477 | 328 | | | | |
| 4630 | -03.3 | 01.293 | 01.669 | 329 | | | | |
| 4474 | -07.0 | 01.573 | 02.059 | 327 | 277 | 031 | -002 | +016 |
| 4426 | -06.6 | 01.671 | 02.185 | 327 | 274 | 025 | -001 | +013 |
| 4121 | -19.9 | 02.483 | 03.415 | 319 | 273 | 033 | -001 | +017 |
| 4078 | -17.9 | 02.628 | 03.587 | 320 | 273 | 037 | -001 | +019 |
| 3950 | -24.8 | 03.120 | 04.377 | 316 | 273 | 035 | -001 | +018 |
| 3901 | -22.7 | 03.334 | 04.637 | 317 | 270 | 031 | -000 | +016 |
| 3795 | -21.7 | 03.845 | 05.327 | 318 | 229 | 021 | +007 | +008 |
| 3658 | -29.4 | 04.635 | 06.624 | 313 | 264 | 018 | +001 | +009 |
| 3432 | -33.2 | 06.355 | 09.227 | 311 | 288 | 018 | -003 | +009 |
| 3368 | -35.5 | 06.958 | 10.199 | 309 | 276 | 020 | -001 | +010 |
| 3313 | -40.2 | 07.530 | 11.261 | 306 | 265 | 023 | +001 | +012 |
| 3246 | -39.1 | 08.297 | 12.350 | 307 | 253 | 020 | +003 | +010 |
| 3216 | -40.2 | 08.666 | 12.959 | 306 | 252 | 018 | +003 | +009 |
| 3154 | -38.2 | 09.342 | 13.852 | 307 | 257 | 018 | +002 | +009 |
| 3072 | -43.9 | 10.683 | 16.234 | 304 | 270 | 025 | +000 | +013 |
| 3042 | -42.7 | 11.165 | 16.879 | 304 | 270 | 027 | +000 | +014 |
| 2966 | -46.9 | 12.497 | 19.242 | 302 | 266 | 025 | +001 | +013 |
| 2822 | -49.0 | 15.517 | 24.116 | 300 | 254 | 014 | +002 | +007 |
| 2780 | -47.9 | 16.531 | 25.567 | 301 | 254 | 014 | +002 | +007 |
| 2752 | -48.9 | 17.243 | 26.787 | 300 | 262 | 014 | +001 | +007 |
| 2722 | -48.0 | 18.041 | 27.915 | 301 | 270 | 014 | +000 | +007 |
| 2624 | -53.0 | 20.942 | 33.139 | 297 | 288 | 012 | -002 | +006 |
| 2432 | -52.5 | 28.136 | 44.421 | 298 | 297 | 013 | -003 | +006 |
| 2326 | -56.2 | 33.159 | 53.245 | 295 | 243 | 009 | +002 | +004 |
| 2219 | -54.9 | 39.178 | 62.535 | 296 | 248 | 010 | +002 | +005 |
| 2088 | -54.0 | 48.121 | 78.281 | 293 | 248 | 010 | +002 | +005 |
| 2000 | -58.9 | 55.323 | 89.954 | 293 | 231 | 012 | +004 | +005 |
| 1963 | -60.8 | 58.679 | 96.264 | 292 | 236 | 014 | +004 | +006 |
| 1932 | -57.1 | 61.634 | 99.381 | 295 | 243 | 017 | +004 | +008 |
| 1798 | -58.3 | 76.131 | | 294 | | | | |
| 1728 | -60.9 | 85.100 | | 292 | | | | |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 2058 | -59.0 | 80.000 | 81.327 | 293 | 239 | 011 | +003 | +005 |
| 2384 | -53.9 | 30.000 | 47.661 | 297 | 292 | 010 | -002 | +005 |
| 2645 | -51.4 | 20.000 | 31.416 | 299 | 278 | 014 | -001 | +007 |
| 3104 | -41.0 | 10.000 | 15.006 | 305 | 265 | 021 | +001 | +011 |
| 3346 | -35.8 | 07.000 | 10.276 | 309 | 276 | 020 | -001 | +010 |
| 3590 | -30.2 | 05.000 | 07.170 | 312 | 285 | 022 | -003 | +011 |
| 4273 | -12.0 | 02.000 | 02.668 | 324 | 270 | 016 | -000 | +008 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1023.8 | 0000 | 015 | 008 | -004 | -001 | 76 | +09.4 |
| 0806.0 | 0200 | 250 | 023 | +004 | +011 | 88 | +02.4 |
| 0627.0 | 0400 | 338 | 035 | -017 | +007 | 50 | -03.3 |
| 0486.0 | 0600 | 239 | 045 | +012 | +020 | 44 | -15.8 |
| 0369.0 | 0800 | 237 | 053 | +015 | +023 | 70 | -31.8 |
| 0277.0 | 1000 | 230 | 066 | +022 | +026 | | -47.6 |
| 0208.8 | 1180 | 230 | 062 | +020 | +024 | | -62.1 |
| 0202.0 | 1200 | 232 | 064 | +020 | +026 | | -62.3 |
| 0147.0 | 1400 | 232 | 050 | +016 | +020 | | -60.7 |
| 0103.0 | 1600 | 245 | 034 | +007 | +016 | | -60.8 |
| 0075.0 | 1800 | 245 | 026 | +006 | +012 | | -61.3 |
| 0056.0 | 2000 | 245 | 012 | +003 | +006 | | -57.4 |
| 0040.9 | 2200 | 275 | 008 | -000 | +004 | | -57.0 |
| 0030.0 | 2400 | 281 | 017 | -002 | +009 | | -55.2 |
| 0022.0 | 2600 | 268 | 021 | +000 | +011 | | -53.3 |
| 0016.3 | 2800 | 280 | 023 | -002 | +012 | | -49.2 |
| 0012.0 | 3000 | 257 | 027 | +003 | +014 | | -45.3 |
| 0008.9 | 3200 | 275 | 031 | -001 | +016 | | -41.0 |
| 0006.7 | 3400 | 260 | 031 | +003 | +016 | | -36.3 |
| 0006.0 | 3477 | 354 | 031 | -016 | +002 | | -34.4 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. FAIR
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. FAIR
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 133 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 115 DEG. AZIMUTH 79.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 7 SECONDS 1,010 METERS ALTITUDE
MOTOR TRACK DROPPED.. 133 SECONDS 49,020 METERS ALTITUDE
PAYLOAD ACQUISITION.. 133 SECONDS 49,020 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 900 SECONDS 17,310 METERS ALTITUDE
APOGEE.. 118 SECONDS 50,080 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 16 FT. DIAMETER DISC-GAP-BAND PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. ABOVE NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1682 MHZ
TELEMETRY QUALITY.. FAIR
TELEMETRY DATA RECEIVED FROM.. 153 SEC. 47,340 METERS ALTITUDE
TO 900 SEC. 17,310 METERS ALTITUDE

REMARKS

REASON FOR ABOVE NOMINAL FALL RATE UNKNOWN.

THERMODYNAMICS BASE DATA.. PRESSURE 85.1 MB
ALTITUDE 17,280 METERS
TEMPERATURE -60.3 DEG. C

RADIOSONDE AND BALLOON DATA

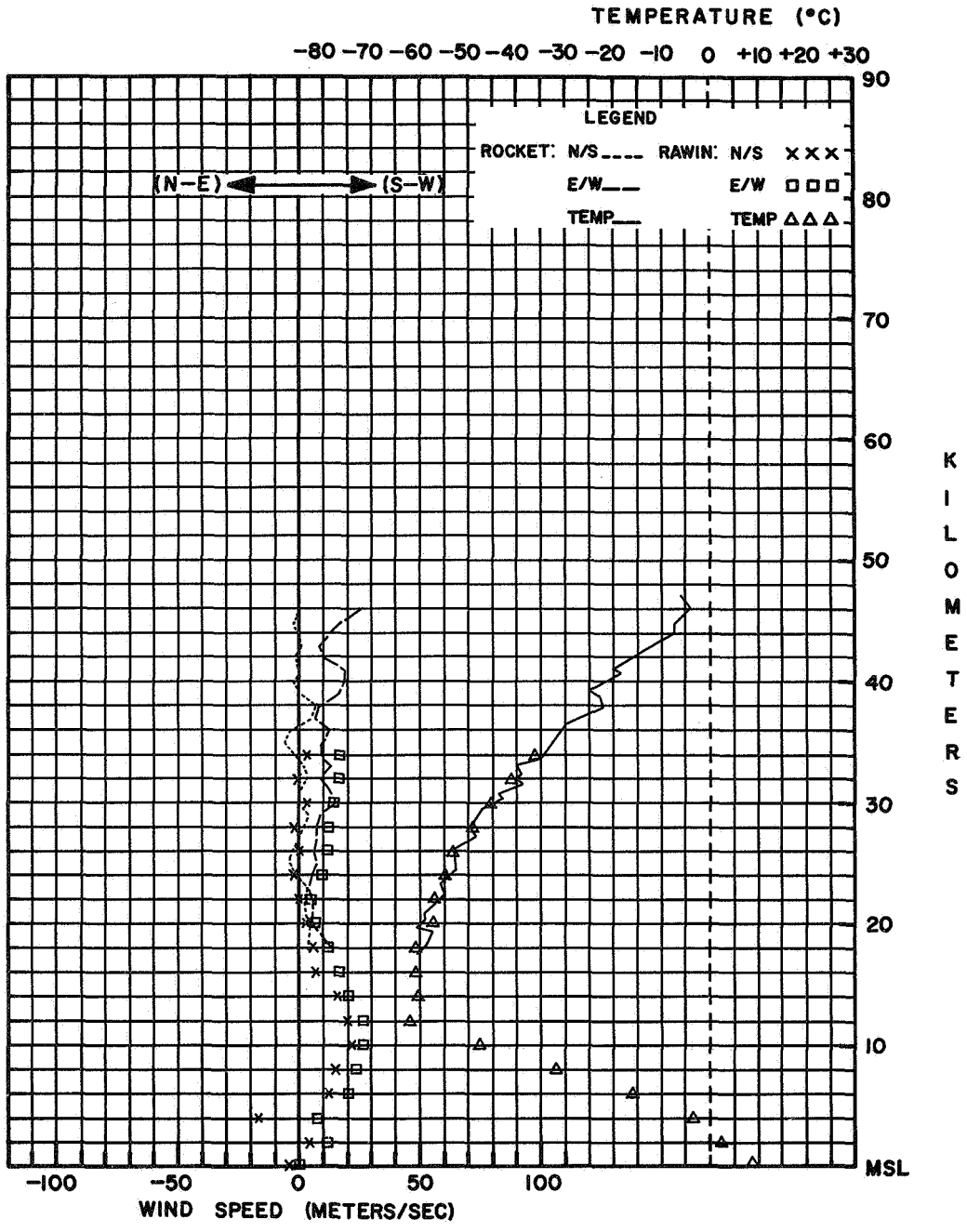
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 304 M/MINUTE
400 MB-TOP = 394 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1023.8 MB
TEMPERATURE.. 9.4 DEG. C
RELATIVE HUMIDITY.. 76%
VISIBILITY.. 11 KM
SURFACE WIND.. 015 DEG. 8 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 5 OCTAS
LOW.. NONE
MIDDLE.. 2 OCTAS/AC
HIGH.. 3 OCTAS/CI
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 045 DEG/06 KTS, 50 FT. 016 DEG/06 KTS,
100 FT. 014 DEG/07 KTS, 150 FT. 021 DEG/08 KTS,
200 FT. 030 DEG/08 KTS, 250 FT. 045 DEG/08 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA
DATE: 12 OCTOBER. 1967

ROCKET TIME: 1030 LST 1530 GCT
ROCKET MOTOR TYPE: ARCAS

PAYLOAD TYPE: ARCASONDE-1A
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (CNIE) CHAMICAL, ARGENTINA | Z | Z | Z |
| 87320 | 30°22' S 66°17' W ALT. 457 M | OCTOBER 18, 1967 | 2103 | 1753 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 021 | 139 | 66 | 159 | 058 | +028 | -011 |
| 022 | 111 | 65 | 182 | 119 | +061 | +002 |
| 024 | 083 | 64 | 183 | 103 | +053 | +003 |
| 026 | 083 | 63 | 038 | 069 | -028 | -022 |
| 028 | 067 | 62 | 035 | 159 | -067 | -047 |
| 031 | 067 | 61 | 043 | 077 | -029 | -027 |
| 033 | 067 | 60 | 024 | 090 | -042 | -019 |
| 036 | 056 | 59 | 007 | 047 | -024 | -003 |
| 039 | 056 | 58 | 338 | 046 | -022 | +009 |
| 042 | 048 | 57 | 319 | 054 | -021 | +018 |
| 046 | 042 | 56 | 346 | 058 | -029 | +007 |
| 050 | 042 | 55 | 337 | 030 | -014 | +006 |
| 054 | 042 | 54 | 302 | 025 | -007 | +011 |
| 058 | 042 | 53 | 323 | 049 | -020 | +015 |
| 062 | 037 | 52 | 356 | 051 | -026 | +002 |
| 067 | 033 | 51 | 352 | 106 | -054 | +008 |
| 072 | 030 | 50 | 002 | 090 | -046 | -002 |
| 078 | 030 | 49 | 297 | 039 | -009 | +018 |
| 083 | 030 | 48 | 260 | 101 | +009 | +051 |
| 089 | 022 | 47 | 270 | 068 | +000 | +035 |
| 098 | 026 | 46 | 241 | 089 | +022 | +040 |
| 102 | 030 | 45 | 211 | 106 | +047 | +028 |
| 109 | 024 | 44 | 236 | 066 | +019 | +028 |
| 116 | 026 | 43 | 270 | 078 | +000 | +040 |
| 122 | 022 | 42 | 253 | 055 | +008 | +027 |
| 131 | 019 | 41 | 251 | 041 | +007 | +020 |
| 140 | 020 | 40 | 321 | 025 | -010 | +008 |
| 148 | 010 | 39 | 262 | 043 | +003 | +022 |
| 172 | 007 | 38 | 263 | 049 | +003 | +025 |
| 197 | 009 | 37 | 290 | 023 | -004 | +011 |
| 209 | 015 | 36 | 254 | 028 | +004 | +014 |
| 219 | 016 | 35 | 299 | 020 | -005 | +009 |
| 230 | 014 | 34 | 315 | 014 | -005 | +005 |
| 242 | 013 | 33 | 250 | 023 | +004 | +011 |
| 256 | 012 | 32 | 248 | 021 | +004 | +010 |
| 270 | 012 | 31 | 022 | 010 | -005 | -002 |
| 283 | 011 | 30 | 045 | 011 | -004 | -004 |
| 299 | 011 | 29 | 261 | 024 | +002 | +012 |
| 314 | 011 | 28 | 216 | 017 | +007 | +005 |
| 329 | 011 | 27 | 243 | 017 | +004 | +008 |
| 345 | 010 | 26 | 204 | 019 | +009 | +004 |
| 363 | 009 | 25 | 210 | 016 | +007 | +004 |
| 383 | 008 | 24 | 270 | 004 | +000 | +002 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M$^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 958.6 | 0046 | 320 | 015 | -006 | +005 | 50 | +25.2 |
| 803.5 | 0200 | 015 | 008 | -004 | -001 | 74 | +06.5 |
| 629.3 | 0400 | 269 | 058 | +001 | +030 | 30 | -01.0 |
| 452.8 | 0600 | 276 | 082 | -004 | +042 | 35 | -20.8 |
| 368.0 | 0800 | 283 | 097 | -011 | +049 | 45 | -33.1 |
| 275.0 | 1000 | 300 | 093 | -024 | +041 | | -48.4 |
| 202.7 | 1200 | 270 | 120 | +000 | +062 | | -52.4 |
| 148.2 | 1400 | 282 | 087 | -009 | +044 | | -58.6 |
| 108.0 | 1600 | 270 | 076 | +000 | +039 | | -63.3 |
| 077.8 | 1800 | 314 | 043 | -015 | +016 | | -66.1 |
| 056.0 | 2000 | 279 | 017 | -001 | +009 | | -65.0 |
| 040.9 | 2200 | 045 | 019 | -007 | -007 | | -60.0 |
| 029.8 | 2400 | 104 | 027 | +003 | -013 | | -55.9 |
| 023.6 | 2600 | 059 | 019 | -005 | -008 | | -57.2 |
| 015.4 | 2800 | | | | | | -53.8 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 90 SEC. ACTUAL.. 84 SEC.
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 040 DEG. AZIMUTH 83.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 8 SECONDS 11,250 METERS ALTITUDE
MOTOR TRACK DROPPED.. 84 SECONDS 66,300 METERS ALTITUDE
PAYLOAD ACQUISITION.. 105 SECONDS 67,513 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,403 SECONDS 22,900 METERS ALTITUDE
APOGEE.. 102 SECONDS 67,574 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

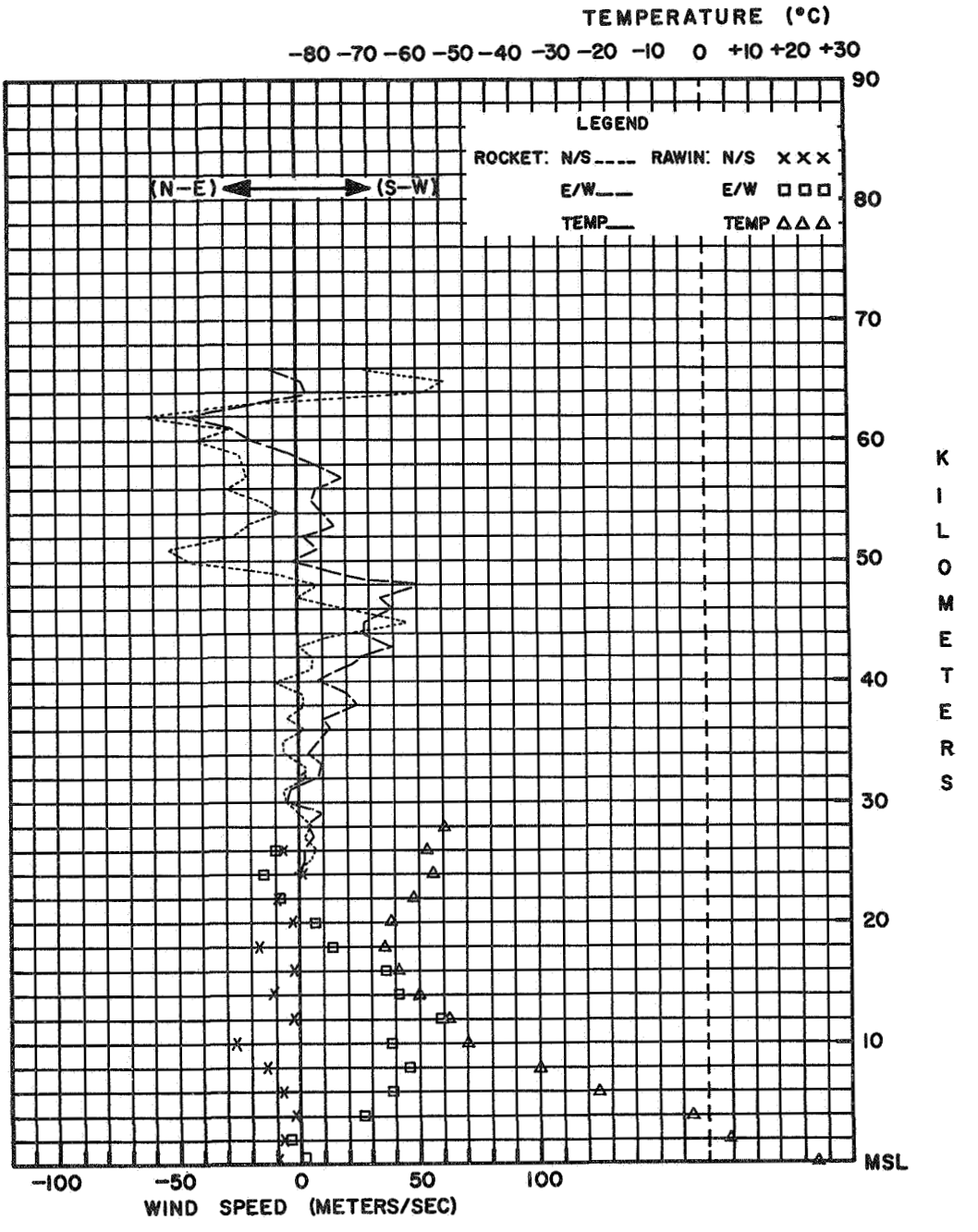
RADIOSONDE MANUFACTURER.. VAISALA
RADIOSONDE TYPE.. VAISALA
TEMPERATURE ELEMENT TYPE.. RESISTANCE WIRE
PRESSURE SENSOR TYPE.. DOUBLE ANEROID
GROUND EQUIPMENT TYPE.. VAISALA + MPS-19 RADAR
BALLOON TYPE.. TOTEX
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 2,100 GRAMS
ASCENSION RATES.. SFC-400 MB = 410 M/MINUTE
400 MB-TOP = 447 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 958.6 MB
TEMPERATURE.. 25.2 DEG. C
RELATIVE HUMIDITY.. 50%
VISIBILITY.. 30 KM
SURFACE WIND.. 320 DEG. 15 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 5 OCTAS
LOW.. NONE
MIDDLE.. 2 OCTAS
HIGH.. 3 OCTAS
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 060 DEG/01 KTS




STATION: (CNIE) CHAMICAL, ARGENTINA

DATE: 18 OCTOBER, 1967

ROCKET TIME: 1703 LST 2103 GCT

ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF

RADIOSONDE TYPE: VAISALA

| RP | STATION NAME | DATE | ROCKET RAWINSONDE LAUNCH TIME Z | RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | 7 | 7 | 7 |
| 72402 | 37°51' N 75°29' W ALT. 3 M | OCTOBER 28, 1967 | 1350 | 1115 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 028 | 078 | 50 | 262 | 067 | +005 | +034 |
| 030 | 067 | 49 | 264 | 070 | +004 | +036 |
| 033 | 056 | 48 | 265 | 070 | +003 | +036 |
| 036 | 067 | 47 | 268 | 054 | +001 | +028 |
| 038 | 067 | 46 | 275 | 049 | -002 | +025 |
| 041 | 048 | 45 | 276 | 053 | -003 | +027 |
| 045 | 048 | 44 | 274 | 053 | -002 | +027 |
| 048 | 048 | 43 | 270 | 043 | +000 | +022 |
| 052 | 037 | 42 | 253 | 026 | +004 | +013 |
| 057 | 037 | 41 | 252 | 031 | +005 | +015 |
| 061 | 037 | 40 | 252 | 045 | +007 | +022 |
| 066 | 033 | 39 | 249 | 038 | +007 | +018 |
| 071 | 030 | 38 | 257 | 034 | +004 | +017 |
| 077 | 026 | 37 | 259 | 040 | +004 | +020 |
| 084 | 026 | 36 | 253 | 033 | +005 | +016 |
| 090 | 024 | 35 | 250 | 029 | +005 | +014 |
| 098 | 020 | 34 | 266 | 027 | +001 | +014 |
| 107 | 019 | 33 | 293 | 025 | -005 | +012 |
| 116 | 019 | 32 | 283 | 026 | -003 | +013 |
| 125 | 018 | 31 | 270 | 025 | +000 | +013 |
| 135 | 017 | 30 | 261 | 024 | +002 | +012 |
| 145 | 017 | 29 | 253 | 020 | +003 | +010 |
| 155 | 017 | 28 | 263 | 016 | +001 | +008 |
| 165 | 018 | 27 | 248 | 010 | +002 | +005 |
| 174 | 020 | 26 | 252 | 006 | +001 | +003 |
| 182 | 019 | 25 | 281 | 010 | -001 | +005 |
| 192 | 019 | 24 | 259 | 010 | +001 | +005 |
| 200 | 021 | 23 | 214 | 007 | +003 | +002 |
| 208 | 021 | 22 | 180 | 008 | +004 | +000 |
| 216 | 022 | 21 | 180 | 006 | +003 | +000 |
| 223 | 021 | 20 | 166 | 008 | +004 | -001 |
| 232 | 020 | 19 | 194 | 008 | +004 | +001 |
| 240 | 021 | 18 | 243 | 017 | +004 | +008 |
| 248 | 019 | 17 | 255 | 022 | +003 | +011 |
| 258 | 017 | 16 | 266 | 027 | +001 | +014 |
| 268 | 015 | 15 | 276 | 035 | -002 | +018 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 5072 | +00.7 | 00.743 | 00.946 | 332 | | | | |
| 4755 | -03.2 | 01.100 | 01.420 | 329 | 266 | 062 | +002 | +032 |
| 4606 | -04.8 | 01.328 | 01.750 | 326 | 275 | 049 | -002 | +025 |
| 4353 | -15.8 | 01.841 | 02.492 | 322 | 272 | 049 | -001 | +025 |
| 4231 | -16.7 | 02.160 | 02.935 | 321 | 259 | 032 | +003 | +016 |
| 4148 | -20.0 | 02.411 | 03.318 | 319 | 250 | 029 | +005 | +014 |
| 4100 | -19.3 | 02.570 | 03.527 | 319 | 252 | 031 | +005 | +015 |
| 3932 | -26.3 | 03.223 | 04.549 | 315 | 250 | 039 | +007 | +019 |
| 3749 | -24.5 | 04.147 | 05.929 | 313 | 258 | 038 | +004 | +019 |
| 3667 | -33.7 | 04.650 | 06.766 | 310 | 258 | 038 | +004 | +019 |
| 3591 | -35.5 | 05.179 | 07.591 | 309 | 253 | 033 | +005 | +016 |
| 3536 | -34.0 | 05.598 | 08.155 | 310 | 252 | 031 | +005 | +015 |
| 3435 | -37.9 | 06.465 | 09.573 | 307 | 262 | 027 | +002 | +014 |
| 3179 | -38.1 | 09.342 | 13.845 | 307 | 279 | 026 | -002 | +013 |
| 3130 | -41.7 | 10.030 | 15.096 | 305 | 274 | 025 | -001 | +013 |
| 3030 | -44.9 | 11.629 | 17.735 | 303 | 265 | 023 | +001 | +012 |
| 2963 | -43.6 | 12.830 | 19.472 | 304 | 260 | 022 | +002 | +011 |
| 2697 | -52.0 | 19.135 | 30.142 | 298 | 248 | 010 | +002 | +005 |
| 2594 | -58.6 | 22.395 | 35.055 | 299 | 252 | 006 | +001 | +003 |
| 2295 | -56.7 | 35.539 | 57.199 | 295 | 214 | 007 | +003 | +002 |
| 2000 | -55.6 | 56.371 | 90.268 | 296 | 166 | 008 | +004 | -001 |
| 1634 | -60.7 | | | 292 | 261 | 026 | +002 | +013 |
| 1585 | -65.0 | | | 289 | 266 | 029 | +001 | +015 |
| 1500 | -62.6 | | | 291 | | | | |
| 1448 | -65.0 | | | 289 | | | | |
| 1265 | -58.2 | | | 294 | | | | |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 2083 | -55.9 | 50.000 | 80.190 | 295 | 180 | 006 | +003 | -000 |
| 2412 | -54.1 | 30.000 | 47.717 | 297 | 259 | 010 | +001 | +005 |
| 2659 | -51.6 | 20.000 | 31.452 | 298 | 243 | 009 | +002 | +004 |
| 3117 | -41.5 | 10.000 | 15.041 | 305 | 274 | 025 | -001 | +013 |
| 3369 | -37.9 | 07.000 | 10.368 | 307 | 270 | 027 | +000 | +014 |
| 3597 | -34.9 | 05.000 | 07.311 | 309 | 254 | 034 | +005 | +017 |
| 4263 | -16.2 | 02.000 | 02.712 | 321 | 270 | 041 | +000 | +021 |
| 4807 | -02.1 | 01.000 | 01.285 | 330 | 265 | 070 | +003 | +036 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1025.0 | 0000 | 290 | 002 | -000 | +001 | 85 | +03.9 |
| 0800.0 | 0200 | 306 | 021 | -006 | +009 | 18 | -01.2 |
| 0620.0 | 0400 | 334 | 047 | -022 | +011 | 18 | -04.9 |
| 0479.0 | 0600 | 325 | 056 | -024 | +017 | 19 | -16.1 |
| 0365.0 | 0800 | 314 | 060 | -021 | +022 | 21 | -32.0 |
| 0273.0 | 1000 | 310 | 057 | -019 | +022 | | -47.2 |
| 0200.0 | 1200 | 303 | 064 | -018 | +028 | | -54.0 |
| 0146.0 | 1400 | 299 | 051 | -013 | +023 | | -59.7 |
| 0110.0 | 1577 | 270 | 040 | +000 | +020 | | -64.5 |
| 0107.0 | 1600 | 280 | 035 | -003 | +018 | | -64.1 |
| 0077.0 | 1800 | 247 | 019 | +004 | +009 | | -59.4 |
| 0056.0 | 2000 | 244 | 010 | +002 | +005 | | -56.3 |
| 0041.0 | 2200 | 360 | 006 | -003 | +000 | | -56.8 |
| 0030.0 | 2400 | 190 | 006 | +003 | +001 | | -57.1 |
| 0022.0 | 2600 | 287 | 018 | -003 | +009 | | -53.3 |
| 0016.2 | 2800 | 260 | 015 | +001 | +008 | | -49.3 |
| 0012.0 | 3000 | 264 | 017 | +001 | +009 | | -42.0 |
| 0008.9 | 3200 | 272 | 025 | -000 | +013 | | -41.2 |
| 0008.2 | 3250 | 273 | 027 | -001 | +014 | | -41.0 |
| 0008.0 | 3276 | | | | | | -40.7 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 138 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 118 DEG. AZIMUTH 77.5 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 1,280 METERS ALTITUDE
MOTOR TRACK DROPPED.. 138 SECONDS 52,180 METERS ALTITUDE
PAYLOAD ACQUISITION.. 138 SECONDS 52,180 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 1,740 SECONDS 12,650 METERS ALTITUDE
APOGEE.. 121 SECONDS 53,490 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 16 FT. DIAMETER DISC-GAP-BAND PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. ABOVE NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1678 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 153 SEC. 50,720 METERS ALTITUDE
TO 1,740 SEC. 12,650 METERS ALTITUDE

REMARKS

REASON FOR ABOVE-NOMINAL FALL RATE UNKNOWN.
THERMODYNAMICS BASE DATA.. PRESSURE 182.4 MB
ALTITUDE 12,650 METERS
TEMPERATURE -61.1 DEG. C

RADIOSONDE AND BALLOON DATA

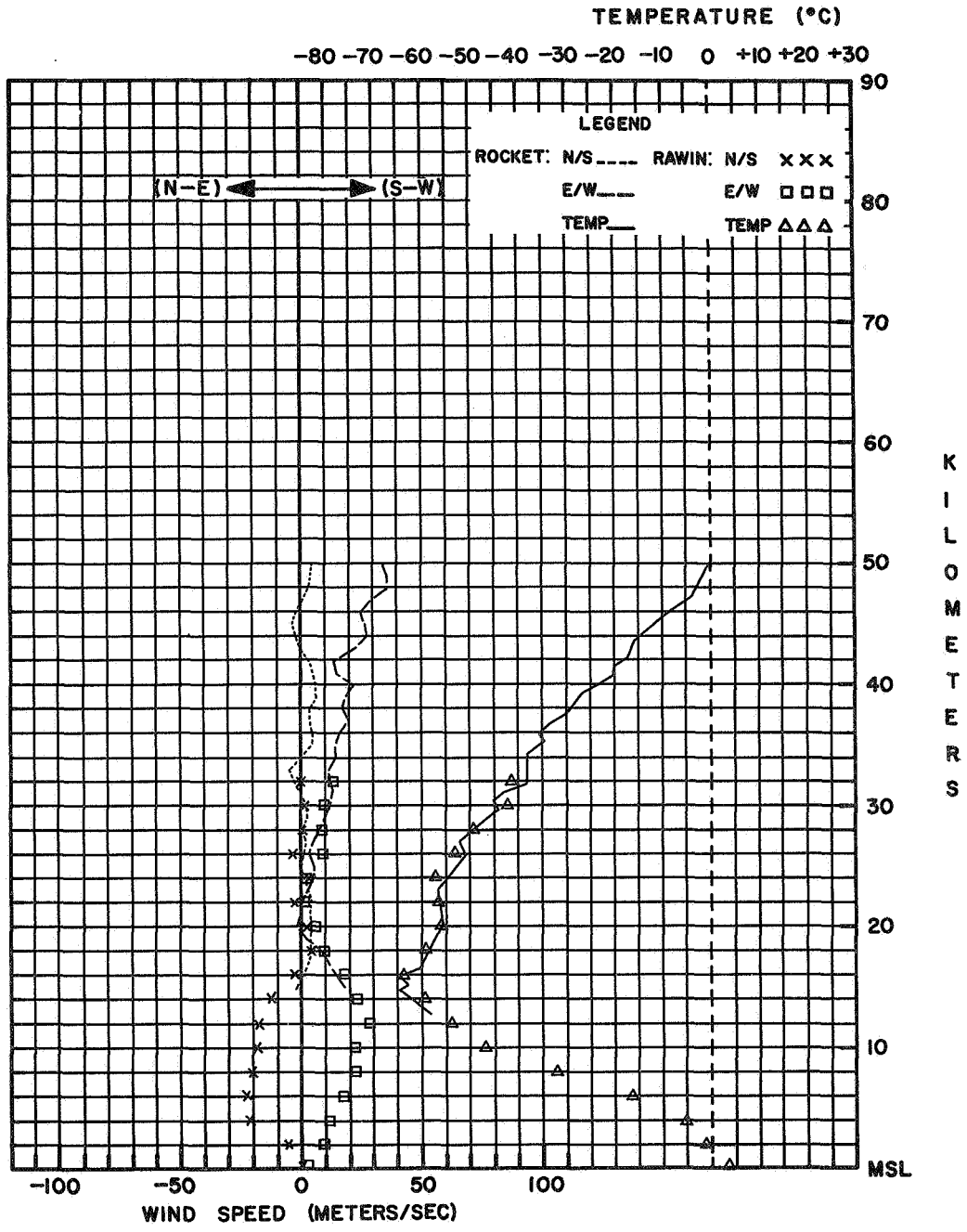
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 281 M/MINUTE
400 MB-TOP = 418 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1025.0 MB
TEMPERATURE.. 3.9 DEG. C
RELATIVE HUMIDITY.. 85%
VISIBILITY.. 16 KM
SURFACE WIND.. 290 DEG. 2 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 0 OCATS
LOW.. NONE
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 328 DEG/06 KTS, 50 FT. 351 DEG/07 KTS,
100 FT. 351 DEG/07 KTS, 150 FT. 342 DEG/06 KTS,
200 FT. 333 DEG/06 KTS, 250 FT. 343 DEG/07 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA
DATE: 20 OCTOBER, 1967

ROCKET TIME: 0850 LST 1350 GCT
ROCKET MOTOR TYPE: ARCAS

PAYLOAD TYPE: ARCASONDE-1A
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET RAWINSONDE LAUNCH TIME Z | RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | | | |
| 72402 | 37°51' N 75°29' W ALT. 3 M | OCTOBER 25, 1967 | 1417 | 1115 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 028 | 083 | 52 | 287 | 073 | -011 | +036 |
| 030 | 083 | 51 | 272 | 072 | -001 | +037 |
| 032 | 083 | 50 | 259 | 061 | +006 | +031 |
| 034 | 067 | 49 | 253 | 067 | +010 | +033 |
| 037 | 067 | 48 | 263 | 090 | +006 | +046 |
| 039 | 067 | 47 | 271 | 111 | -001 | +057 |
| 042 | 056 | 46 | 278 | 114 | -008 | +058 |
| 045 | 056 | 45 | 281 | 105 | -010 | +053 |
| 048 | 056 | 44 | 284 | 072 | -009 | +036 |
| 051 | 048 | 43 | 287 | 055 | -008 | +027 |
| 055 | 048 | 42 | 285 | 058 | -008 | +029 |
| 058 | 048 | 41 | 278 | 043 | -003 | +022 |
| 062 | 037 | 40 | 273 | 043 | -001 | +022 |
| 067 | 037 | 39 | 277 | 051 | -003 | +026 |
| 071 | 033 | 38 | 274 | 053 | -002 | +027 |
| 077 | 030 | 37 | 270 | 047 | +000 | +024 |
| 082 | 030 | 36 | 284 | 040 | -005 | +020 |
| 088 | 026 | 35 | 290 | 039 | -007 | +019 |
| 095 | 024 | 34 | 273 | 037 | -001 | +019 |
| 102 | 024 | 33 | 270 | 031 | +000 | +016 |
| 109 | 022 | 32 | 274 | 025 | -001 | +013 |
| 117 | 020 | 31 | 266 | 027 | +001 | +014 |
| 126 | 019 | 30 | 253 | 026 | +004 | +013 |
| 135 | 017 | 29 | 252 | 018 | +003 | +009 |
| 146 | 014 | 28 | 256 | 008 | +001 | +004 |
| 158 | 015 | 27 | 270 | 004 | +000 | +002 |
| 168 | 013 | 26 | 270 | 006 | +000 | +003 |
| 183 | 011 | 25 | 315 | 003 | -001 | +001 |
| 198 | 011 | 24 | 342 | 006 | -003 | +001 |
| 213 | 010 | 23 | 329 | 011 | -005 | +003 |
| 230 | 009 | 22 | 284 | 008 | -001 | +004 |
| 250 | 008 | 21 | 180 | 004 | +002 | +000 |
| 270 | 008 | 20 | 180 | 004 | +002 | +000 |
| 292 | 007 | 19 | 256 | 008 | +001 | +004 |
| 316 | 007 | 18 | 219 | 012 | +005 | +004 |
| 342 | 007 | 17 | 201 | 017 | +008 | +003 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 5400 | -04.2 | 00.482 | 00.625 | 329 | | | | |
| 5172 | -06.1 | 00.642 | 00.837 | 328 | 283 | 072 | -008 | +036 |
| 5032 | -03.2 | 00.765 | 00.987 | 329 | 263 | 065 | +004 | +033 |
| 4758 | -06.2 | 01.078 | 01.407 | 328 | 267 | 099 | +003 | +051 |
| 4682 | -03.7 | 01.186 | 01.534 | 329 | 272 | 111 | -002 | +057 |
| 4572 | -05.4 | 01.362 | 01.772 | 328 | 279 | 112 | -009 | +057 |
| 4508 | -12.3 | 01.477 | 01.973 | 324 | 281 | 105 | -010 | +053 |
| 4432 | -12.0 | 01.630 | 02.174 | 324 | 282 | 082 | -009 | +041 |
| 4359 | -17.1 | 01.792 | 02.438 | 321 | 286 | 065 | -009 | +032 |
| 4240 | -21.7 | 02.099 | 02.908 | 318 | 286 | 057 | -008 | +028 |
| 4154 | -17.3 | 02.353 | 03.204 | 321 | 283 | 052 | -006 | +026 |
| 4054 | -20.0 | 02.687 | 03.698 | 319 | 275 | 043 | -002 | +022 |
| 3962 | -26.6 | 03.042 | 04.299 | 315 | 275 | 047 | -002 | +024 |
| 3819 | -24.0 | 03.696 | 05.168 | 316 | 274 | 053 | -002 | +027 |
| 3572 | -29.7 | 05.186 | 07.421 | 313 | 287 | 041 | -006 | +020 |
| 3435 | -42.1 | 06.304 | 09.505 | 305 | 279 | 037 | -003 | +019 |
| 3325 | -41.3 | 07.402 | 11.123 | 305 | 270 | 033 | -000 | +017 |
| 2850 | -51.9 | 15.047 | 23.693 | 298 | 254 | 014 | +002 | +007 |
| 2658 | -50.4 | 20.169 | 31.543 | 299 | 270 | 004 | +000 | +002 |
| 2417 | -56.6 | 29.254 | 47.061 | 295 | 342 | 006 | -003 | +001 |
| 2000 | -56.8 | 56.241 | 90.559 | 295 | 180 | 004 | +002 | +000 |
| 1862 | -56.3 | 69.825 | | 295 | 233 | 010 | +003 | +004 |
| 1800 | -59.4 | 77.000 | | 293 | 219 | 012 | +005 | +004 |
| CONSTANT PRESSURE LEVEL DATA (HEIGHT IN GEOPOTENTIAL METERS) | | | | | | | | |
| 2089 | -56.8 | 50.000 | 80.493 | 295 | 180 | 004 | +002 | +000 |
| 2396 | -56.6 | 30.000 | 48.263 | 295 | 342 | 006 | -003 | +001 |
| 2653 | -50.4 | 20.000 | 31.286 | 299 | 270 | 004 | +000 | +002 |
| 3148 | -44.9 | 10.000 | 15.263 | 303 | 270 | 025 | -000 | +013 |
| 3347 | -41.6 | 07.000 | 10.531 | 305 | 273 | 035 | -001 | +018 |
| 3583 | -29.0 | 05.000 | 07.134 | 313 | 284 | 040 | -005 | +020 |
| 4249 | -20.2 | 02.000 | 02.755 | 319 | 287 | 055 | -008 | +027 |
| 4790 | -05.5 | 01.000 | 01.301 | 328 | 261 | 085 | +007 | +043 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1018.0 | 0000 | 130 | 012 | +004 | -005 | 80 | +15.6 |
| 0801.0 | 0200 | 178 | 019 | +010 | -000 | 73 | +04.8 |
| 0626.0 | 0400 | 195 | 023 | +011 | +003 | 14 | -02.9 |
| 0483.0 | 0600 | 205 | 025 | +012 | +005 | 34 | -17.4 |
| 0367.0 | 0800 | 227 | 029 | +010 | +011 | 20 | -32.6 |
| 0275.0 | 1000 | 253 | 029 | +004 | +014 | | -47.9 |
| 0202.0 | 1200 | 258 | 021 | +002 | +011 | | -57.0 |
| 0192.0 | 1229 | 250 | 020 | +004 | +010 | | -59.5 |
| 0147.0 | 1400 | 242 | 025 | +006 | +011 | | -60.4 |
| 0106.0 | 1600 | 242 | 021 | +005 | +010 | | -65.7 |
| 0077.0 | 1800 | 207 | 014 | +006 | +003 | | -63.8 |
| 0055.0 | 2000 | 254 | 006 | +001 | +003 | | -61.8 |
| 0040.0 | 2200 | 308 | 010 | -003 | +004 | | -59.8 |
| 0029.0 | 2400 | 295 | 008 | -002 | +004 | | -57.7 |
| 0022.0 | 2600 | 292 | 006 | -001 | +003 | | -54.9 |
| 0016.0 | 2800 | 265 | 010 | +000 | +005 | | -52.0 |
| 0011.5 | 3000 | 236 | 023 | +007 | +010 | | -49.2 |
| 0008.6 | 3200 | 264 | 029 | +002 | +015 | | -45.8 |
| 0006.4 | 3400 | 273 | 023 | -001 | +012 | | -41.7 |
| 0005.6 | 3496 | 270 | 023 | +000 | +012 | | -39.8 |
| 0005.3 | 3531 | | | | | | -39.0 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
*PAYLOAD PERFORMANCE.. GOOD*
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 134 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 085 DEG. AZIMUTH 83.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 1,160 METERS ALTITUDE
MOTOR TRACK DROPPED.. 134 SECONDS 54,680 METERS ALTITUDE
*PAYLOAD ACQUISITION.. 134 SECONDS 54,680 METERS ALTITUDE*
PAYLOAD TRACK DROPPED.. 2,160 SECONDS 16,370 METERS ALTITUDE
APOGEE.. 122 SECONDS 55,470 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 16 FT. DIAMETER DISC-GAP-BAND PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1682 MHZ
*TELEMETRY QUALITY.. GOOD*
TELEMETRY DATA RECEIVED FROM.. 148 SEC. 54,010 METERS ALTITUDE
TO 1,895 SEC. 18,000 METERS ALTITUDE

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 77.0 MB
ALTITUDE 18,000 METERS
TEMPERATURE -63.8 DEG. C

RADIOSONDE AND BALLOON DATA

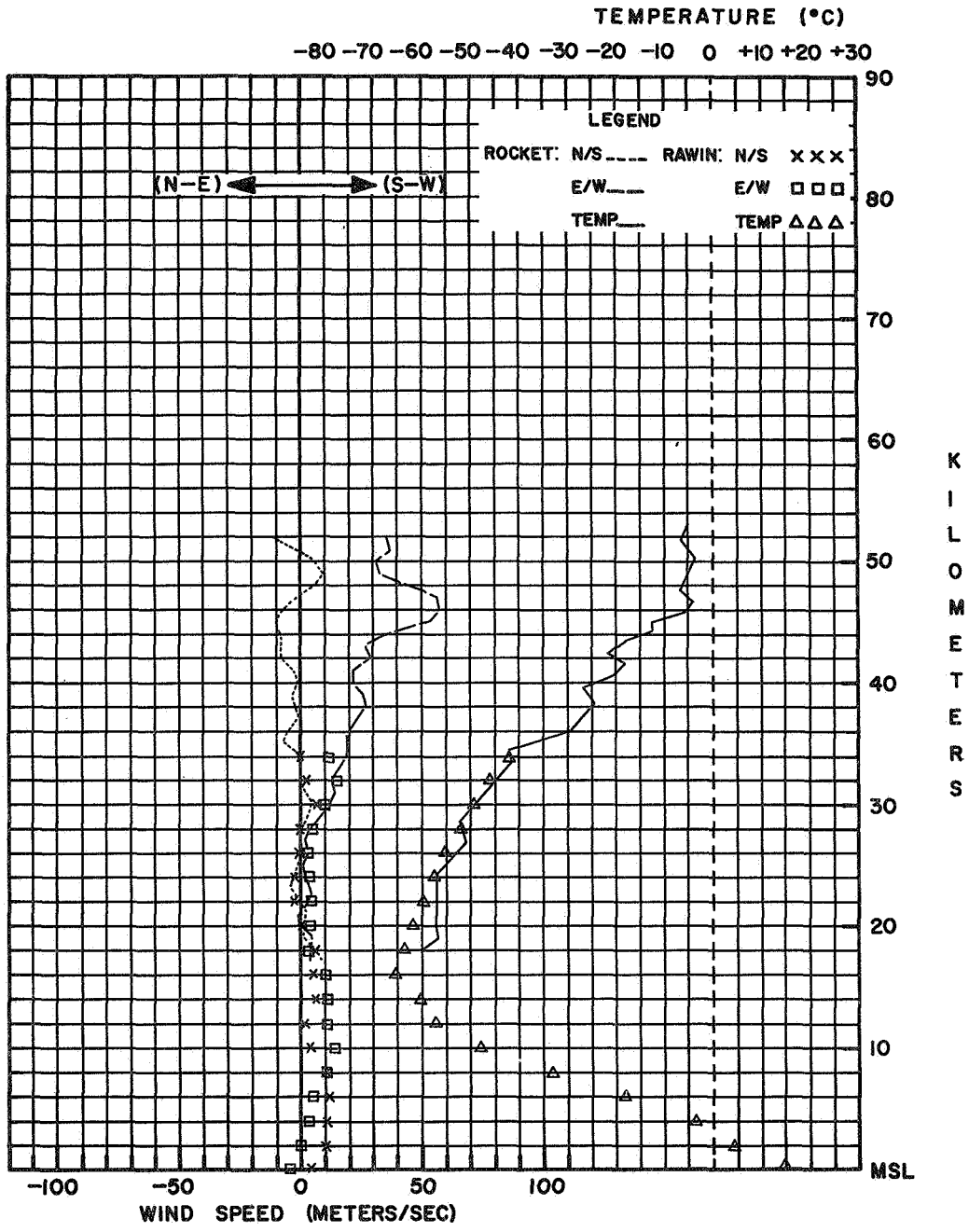
RADIOSONDE MANUFACTURER.. *BENDIX*
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,700 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 276 M/MINUTE
*400 MB-TOP = 376 M/MINUTE*

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1018.0 MB
TEMPERATURE.. 15.6 DEG. C
RELATIVE HUMIDITY.. 80%
VISIBILITY.. 16 KM
SURFACE WIND.. 130 DEG. 12 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 2 OCTAS
LOW.. 1 OCTAS/SC
*MIDDLE.. NONE*
HIGH.. 1 OCTAS/CI
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 145 DEG/13 KTS, 50 FT. 132 DEG/12 KTS,
100 FT. 135 DEG/14 KTS, 150 FT. 139 DEG/16 KTS,
200 FT. 139 DEG/17 KTS, 250 FT. 150 DEG/19 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA
**DATE:** 25 OCTOBER, 1967

**ROCKET TIME:** 0917 LST 1417 GCT
**ROCKET MOTOR TYPE:** ARCAS

**PAYLOAD TYPE:** ARCASONDE-1A
**RADIOSONDE TYPE:** 1680 MHZ

| PP | STATION NAME | DATE | ROCKET RAWINSONDE LAUNCH TIME | RELEASE TIME |
|---|---|---|---|---|
| | (CNAE) NATAL, BRAZIL | Z | Z | Z |
| 82599 | 5°55' S 35°10' W ALT. 43 M | OCTOBER 25, 1967 | 1630 | 1323 |

# TABULATED DATA

ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 019 | 078 | 63 | 267 | 080 | +002 | +041 |
| 021 | 067 | 62 | 279 | 079 | -006 | +040 |
| 024 | 056 | 61 | 299 | 069 | -017 | +031 |
| 027 | 056 | 60 | 305 | 057 | -017 | +024 |
| 030 | 048 | 59 | 301 | 052 | -014 | +023 |
| 034 | 042 | 58 | 306 | 043 | -013 | +018 |
| 038 | 037 | 57 | 319 | 036 | -014 | +012 |
| 043 | 033 | 56 | 011 | 020 | -010 | -002 |
| 048 | 033 | 55 | 016 | 014 | -007 | -002 |
| 053 | 033 | 54 | 020 | 023 | -011 | -004 |
| 058 | 030 | 53 | 342 | 025 | -012 | +004 |
| 064 | 028 | 52 | 305 | 024 | -007 | +010 |
| 070 | 028 | 51 | 311 | 018 | -006 | +007 |
| 076 | 024 | 50 | 298 | 042 | -010 | +019 |
| 084 | 022 | 49 | 304 | 045 | -013 | +019 |
| 091 | 024 | 48 | 297 | 039 | -009 | +018 |
| 098 | 022 | 47 | 286 | 036 | -005 | +018 |
| 106 | 022 | 46 | 294 | 043 | -009 | +020 |
| 113 | 021 | 45 | 304 | 035 | -010 | +015 |
| 122 | 019 | 44 | 297 | 035 | -008 | +016 |
| 131 | 019 | 43 | 290 | 046 | -008 | +022 |
| 140 | 018 | 42 | 282 | 038 | -004 | +019 |
| 150 | 018 | 41 | 264 | 039 | +002 | +020 |
| 159 | 019 | 40 | 247 | 030 | +006 | +014 |
| 168 | 016 | 39 | 266 | 057 | +002 | +029 |
| 180 | 014 | 38 | 277 | 049 | -003 | +025 |
| 191 | 014 | 37 | 274 | 025 | -001 | +013 |
| 203 | 014 | 36 | 259 | 010 | +001 | +005 |
| 214 | 014 | 35 | 117 | 009 | +002 | -004 |
| 227 | 013 | 34 | 101 | 032 | +003 | -016 |
| 240 | 013 | 33 | 101 | 040 | +004 | -020 |
| 252 | 013 | 32 | 099 | 049 | +004 | -025 |
| 265 | 012 | 31 | 095 | 064 | +003 | -033 |
| 279 | 012 | 30 | 092 | 060 | +001 | -031 |
| 293 | 011 | 29 | 079 | 061 | -006 | -031 |
| 310 | 010 | 28 | 077 | 068 | -008 | -034 |
| 325 | 010 | 27 | 085 | 066 | -003 | -034 |
| 343 | 010 | 26 | 088 | 056 | -001 | -029 |
| 360 | 010 | 25 | 092 | 045 | +001 | -023 |
| 377 | 009 | 24 | 083 | 033 | -002 | -017 |
| 397 | 008 | 23 | 066 | 023 | -005 | -011 |
| 417 | 008 | 22 | 056 | 007 | -002 | -003 |
| 438 | 008 | 21 | 225 | 003 | +001 | +001 |
| 461 | 007 | 20 | 315 | 003 | -001 | +001 |
| 486 | 007 | 19 | 360 | 010 | -005 | +000 |
| 510 | 007 | 18 | 360 | 008 | -004 | +000 |

ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|

RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1010.1 | 0004 | 140 | 016 | +006 | -005 | 64 | +28.4 |
| 0804.3 | 0200 | 103 | 027 | +003 | -014 | 67 | +11.0 |
| 0634.0 | 0400 | 080 | 013 | -001 | -007 | 18 | +04.1 |
| 0492.6 | 0600 | 246 | 012 | +003 | +006 | 14 | -05.7 |
| 0379.9 | 0800 | 266 | 020 | +001 | +010 | 15 | -19.4 |
| 0287.9 | 1000 | 241 | 012 | +003 | +005 | 15 | -35.0 |
| 0212.9 | 1200 | 230 | 025 | +008 | +010 | 16 | -51.7 |
| 0155.7 | 1400 | 236 | 031 | +009 | +013 | | -66.6 |
| 0110.9 | 1600 | 273 | 023 | -001 | +012 | | -78.2 |
| 0100.0 | 1658 | 258 | 020 | +002 | +010 | | -80.3 |
| 0078.5 | 1800 | 310 | 006 | -002 | +002 | | -74.1 |
| 0055.9 | 2000 | 030 | 008 | -004 | -002 | | -72.2 |
| 0040.1 | 2200 | 143 | 010 | +004 | -003 | | -59.8 |
| 0029.4 | 2400 | 077 | 024 | -003 | -012 | | -55.2 |
| 0021.7 | 2600 | 095 | 053 | +002 | -027 | | -47.8 |
| 0016.1 | 2800 | 081 | 066 | -005 | -034 | | -41.5 |
| 0012.2 | 3000 | 093 | 066 | +002 | -034 | | -38.3 |
| 0009.0 | 3200 | 097 | 057 | +004 | -029 | | -36.5 |
| 0006.7 | 3400 | 105 | 055 | +007 | -027 | | -34.4 |
| 0006.0 | 3490 | 110 | 032 | +006 | -015 | | -30.2 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 90 SEC. ACTUAL.. 87 SEC.
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 085 DEG. AZIMUTH 79.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 4 SECONDS 4,572 METERS ALTITUDE
MOTOR TRACK DROPPED.. 63 SECONDS 53,157 METERS ALTITUDE
PAYLOAD ACQUISITION.. 87 SECONDS 62,850 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 3,253 SECONDS 16,764 METERS ALTITUDE
APOGEE.. 95 SECONDS 63,612 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

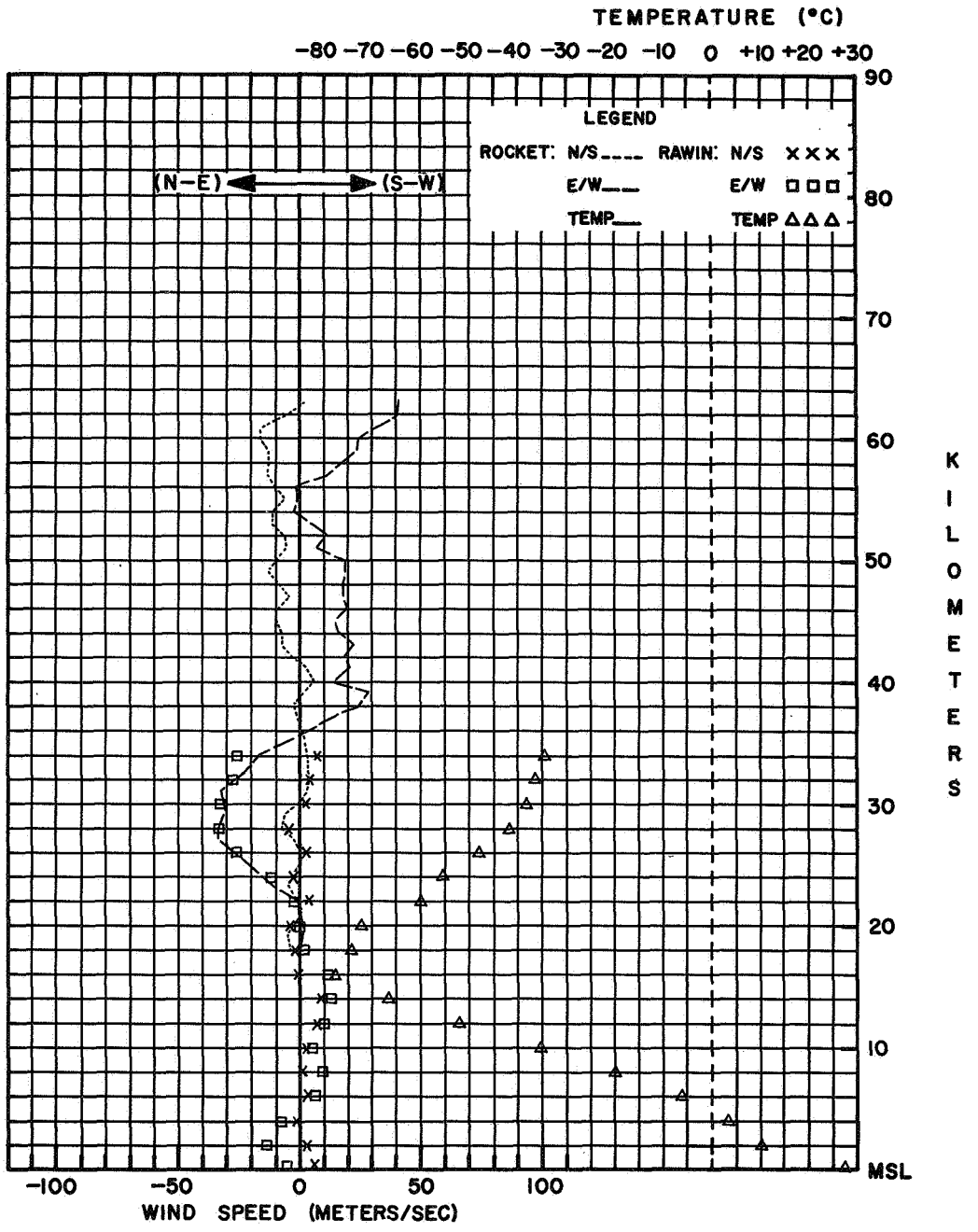
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID
GROUND EQUIPMENT TYPE.. GMD-1A
BALLOON TYPE.. KAYSAM
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,200 GRAMS
ASCENSION RATES.. SFC-400 MB = 270 M/MINUTE
400 MB-TOP = 335 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1010.1 MB
TEMPERATURE.. 28.4 DEG. C
RELATIVE HUMIDITY.. 64%
VISIBILITY.. 20 KM
SURFACE WIND.. 140 DEG. 16 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 4 OCTAS
LOW.. CU
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

21 FT. 110 DEG/10 KTS, 29 FT. 120 DEG/12 KTS,
51 FT. 120 DEG/14 KTS, 82 FT. 120 DEG/20 KTS,
133 FT. 120 DEG/20 KTS




STATION: (CNAE) NATAL, BRAZIL

DATE: 25 OCTOBER, 1967

ROCKET TIME: 1330 LST 1630 GCT

ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF

RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | 7 | | |
| 72402 | 37°51' N 75°29' W ALT. 3 M | NOVEMBER 3, 1967 | 1726 | 1115 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 028 | 111 | 56 | 247 | 160 | +032 | +076 |
| 029 | 111 | 55 | 249 | 152 | +028 | +073 |
| 031 | 111 | 54 | 250 | 156 | +028 | +075 |
| 032 | 111 | 53 | 250 | 156 | +028 | +075 |
| 034 | 111 | 52 | 251 | 144 | +024 | +070 |
| 035 | 083 | 51 | 252 | 129 | +021 | +063 |
| 038 | 067 | 50 | 254 | 140 | +020 | +069 |
| 040 | 083 | 49 | 252 | 153 | +024 | +075 |
| 042 | 083 | 48 | 251 | 136 | +023 | +066 |
| 044 | 067 | 47 | 252 | 123 | +020 | +060 |
| 047 | 056 | 46 | 253 | 110 | +017 | +054 |
| 050 | 067 | 45 | 254 | 103 | +015 | +051 |
| 052 | 056 | 44 | 255 | 107 | +014 | +053 |
| 056 | 048 | 43 | 257 | 106 | +012 | +053 |
| 059 | 048 | 42 | 255 | 100 | +013 | +050 |
| 063 | 042 | 41 | 254 | 093 | +013 | +046 |
| 067 | 042 | 40 | 255 | 083 | +011 | +041 |
| 071 | 042 | 39 | 256 | 072 | +009 | +036 |
| 075 | 037 | 38 | 261 | 073 | +006 | +037 |
| 080 | 033 | 37 | 258 | 066 | +007 | +033 |
| 085 | 030 | 36 | 254 | 050 | +007 | +025 |
| 091 | 026 | 35 | 258 | 056 | +006 | +028 |
| 098 | 024 | 34 | 253 | 061 | +009 | +030 |
| 105 | 022 | 33 | 261 | 049 | +004 | +025 |
| 113 | 022 | 32 | 256 | 032 | +004 | +016 |
| 120 | 022 | 31 | 262 | 029 | +002 | +015 |
| 128 | 019 | 30 | 267 | 037 | +001 | +019 |
| 138 | 017 | 29 | 263 | 031 | +002 | +016 |
| 148 | 015 | 28 | 257 | 026 | +003 | +013 |
| 160 | 013 | 27 | 264 | 020 | +001 | +010 |
| 173 | 013 | 26 | 261 | 012 | +001 | +006 |
| 185 | 012 | 25 | 278 | 014 | -001 | +007 |
| 200 | 011 | 24 | 301 | 011 | -003 | +005 |
| 215 | 011 | 23 | 288 | 006 | -001 | +003 |
| 230 | 010 | 22 | 225 | 005 | +002 | +002 |
| 250 | 009 | 21 | 198 | 006 | +003 | +001 |
| 268 | 008 | 20 | 252 | 012 | +002 | +006 |
| 290 | 007 | 19 | 234 | 017 | +005 | +007 |
| 315 | 007 | 18 | 236 | 021 | +006 | +009 |
| 340 | 007 | 17 | 240 | 031 | +008 | +014 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY -3 G M | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 5547 | -07.5 | 00.374 | 00.491 | 327 | 248 | 155 | +030 | +074 |
| 5489 | -07.5 | 00.403 | 00.528 | 327 | 249 | 152 | +028 | +073 |
| 5398 | -06.0 | 00.452 | 00.589 | 328 | 250 | 156 | +028 | +075 |
| 5328 | -08.3 | 00.494 | 00.649 | 326 | 250 | 156 | +028 | +075 |
| 5163 | -09.4 | 00.609 | 00.804 | 326 | 251 | 138 | +023 | +067 |
| 5105 | -07.3 | 00.655 | 00.859 | 327 | 252 | 129 | +021 | +063 |
| 4919 | -04.9 | 00.828 | 01.076 | 328 | 253 | 151 | +023 | +074 |
| 4865 | -05.0 | 00.886 | 01.151 | 328 | 252 | 148 | +024 | +072 |
| 4785 | -07.1 | 00.980 | 01.284 | 327 | 251 | 134 | +023 | +065 |
| 4712 | -06.6 | 01.075 | 01.405 | 327 | 252 | 125 | +020 | +061 |
| 4478 | -09.2 | 01.447 | 01.910 | 326 | 254 | 103 | +015 | +051 |
| 4398 | -13.1 | 01.604 | 02.148 | 323 | 255 | 107 | +014 | +053 |
| 4228 | -16.7 | 02.002 | 02.720 | 321 | 256 | 102 | +013 | +051 |
| 4157 | -24.9 | 02.201 | 03.089 | 316 | 255 | 097 | +013 | +048 |
| 4103 | -24.6 | 02.369 | 03.320 | 316 | 254 | 093 | +013 | +046 |
| 3968 | -30.7 | 02.852 | 04.097 | 312 | 256 | 078 | +010 | +039 |
| 3776 | -29.6 | 03.723 | 05.326 | 313 | 261 | 071 | +006 | +036 |
| 3734 | -35.0 | 03.949 | 05.777 | 309 | 258 | 067 | +007 | +034 |
| 3661 | -33.6 | 04.378 | 06.367 | 310 | 257 | 060 | +007 | +030 |
| 3597 | -37.3 | 04.795 | 07.083 | 308 | 254 | 050 | +007 | +025 |
| 3530 | -38.3 | 05.279 | 07.831 | 307 | 257 | 054 | +006 | +027 |
| 3246 | -47.7 | 08.012 | 12.380 | 301 | 259 | 040 | +004 | +020 |
| 3191 | -47.2 | 08.700 | 13.414 | 301 | 256 | 032 | +004 | +016 |
| 2438 | -59.8 | 27.778 | 45.357 | 293 | 288 | 012 | -002 | +006 |
| 2249 | -57.0 | 37.439 | 60.340 | 295 | 243 | 004 | +001 | +002 |
| 2000 | -59.0 | 55.450 | 90.202 | 293 | 252 | 012 | +002 | +006 |
| 1800 | -63.4 | 76.396 | | 290 | 236 | 021 | +006 | +009 |
| 1677 | -60.2 | 93.100 | | 293 | | | | |

CONSTANT PRESSURE LEVEL DATA
(HEIGHT IN GEOPOTENTIAL METERS)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2068 | -58.4 | 50.000 | 81.108 | 294 | 214 | 007 | +003 | +002 |
| 2386 | -59.2 | 30.000 | 48.838 | 293 | 301 | 011 | -003 | +005 |
| 2733 | -54.7 | 20.000 | 31.889 | 296 | 260 | 022 | +002 | +011 |
| 3125 | -48.1 | 10.000 | 15.477 | 301 | 259 | 030 | +003 | +015 |
| 3333 | -44.2 | 07.000 | 10.652 | 303 | 256 | 056 | +007 | +028 |
| 3549 | -37.7 | 05.000 | 07.399 | 308 | 255 | 052 | +007 | +026 |
| 4201 | -16.7 | 02.000 | 02.717 | 321 | 256 | 102 | +013 | +051 |
| 4735 | -07.0 | 01.000 | 01.309 | 327 | 251 | 132 | +022 | +064 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1012.7 | 0000 | 300 | 002 | -001 | +001 | 100 | +08.6 |
| 0798.0 | 0200 | 234 | 021 | +006 | +009 | 17 | +09.6 |
| 0623.0 | 0400 | 223 | 025 | +009 | +009 | 18 | +00.6 |
| 0484.0 | 0600 | 229 | 045 | +015 | +017 | 19 | -13.7 |
| 0370.0 | 0800 | 232 | 047 | +015 | +019 | 22 | -29.5 |
| 0277.0 | 1000 | 231 | 047 | +015 | +019 | | -45.7 |
| 0203.0 | 1200 | 241 | 053 | +013 | +024 | | -55.0 |
| 0172.0 | 1305 | 240 | 061 | +016 | +027 | | -61.2 |
| 0148.5 | 1400 | 253 | 047 | +007 | +023 | | -62.6 |
| 0103.5 | 1600 | 241 | 035 | +009 | +016 | | -64.1 |
| 0076.5 | 1800 | 230 | 025 | +008 | +010 | | -64.4 |
| 0055.5 | 2000 | 230 | 014 | +005 | +006 | | -60.8 |
| 0040.6 | 2200 | 271 | 010 | -000 | +005 | | -58.8 |
| 0029.3 | 2400 | 308 | 010 | -003 | +004 | | -60.5 |
| 0021.6 | 2600 | 290 | 019 | -003 | +009 | | -58.1 |
| 0015.7 | 2800 | 282 | 009 | -001 | +005 | | -54.1 |
| 0014.8 | 2835 | 283 | 015 | -002 | +008 | | -53.5 |
| 0013.5 | 2899 | | | | | | -52.2 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 127 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 077 DEG. AZIMUTH 80.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 1,341 METERS ALTITUDE
MOTOR TRACK DROPPED.. 127 SECONDS 59,650 METERS ALTITUDE
PAYLOAD ACQUISITION.. 127 SECONDS 59,650 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,100 SECONDS 16,765 METERS ALTITUDE
APOGEE.. 127 SECONDS 59,650 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 16 FT. DIAMETER DISC-GAP-BAND PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1678 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 170 SEC. 55,470 METERS ALTITUDE
TO 2,100 SEC. 16,765 METERS ALTITUDE

REMARKS

50 FOOT LEVEL ON WIND TOWER INOPERATIVE.
THERMODYNAMICS BASE DATA.. PRESSURE 93.1 MB
ALTITUDE 16,770 METERS
TEMPERATURE -64.2 DEG. C

RADIOSONDE AND BALLOON DATA

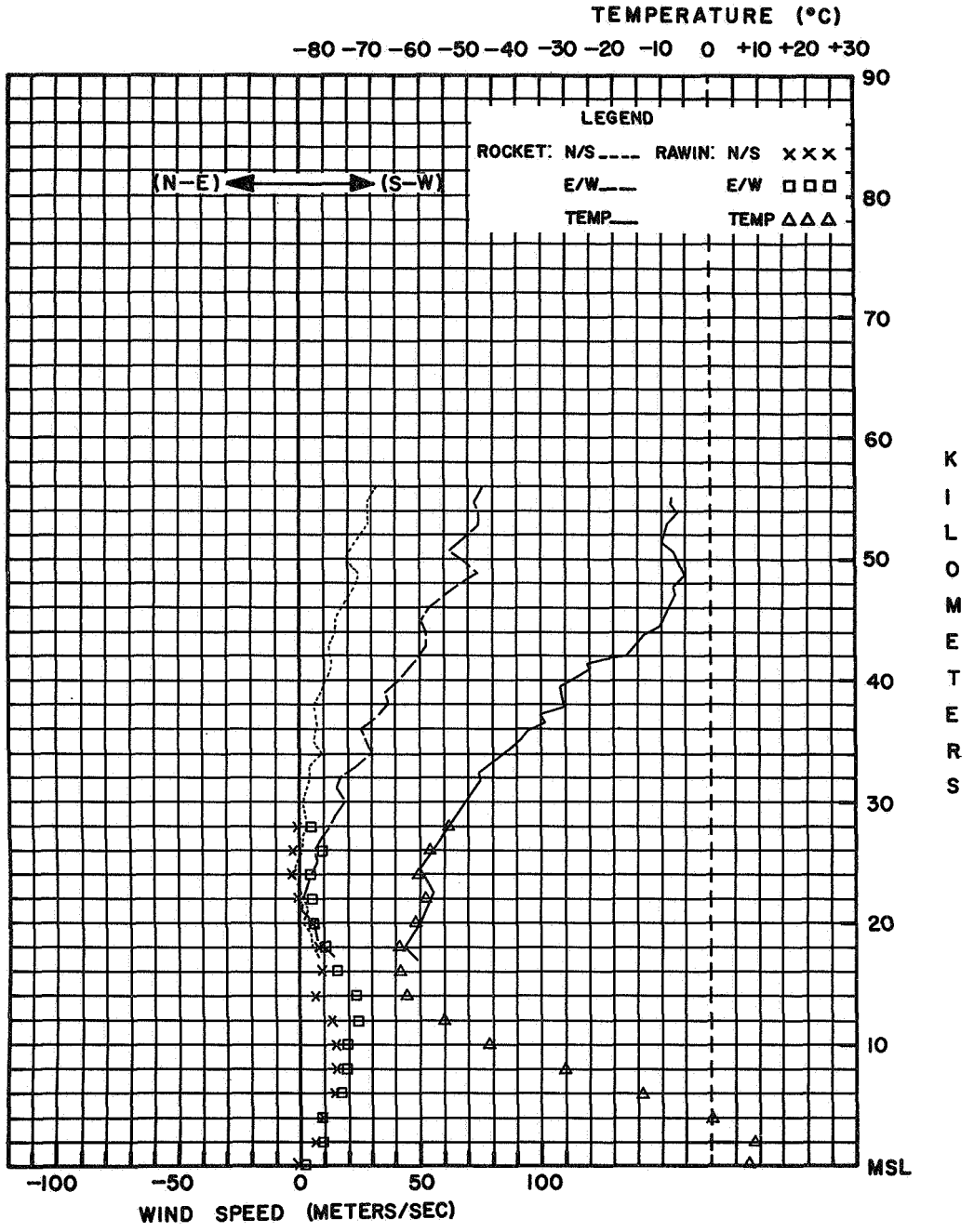
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. RCD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 253 M/MINUTE
400 MB-TOP = 358 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1012.7 MB
TEMPERATURE.. 8.6 DEG. C
RELATIVE HUMIDITY.. 100%
VISIBILITY.. 11 KM
SURFACE WIND.. 300 DEG. 2 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 1 OCTAS
LOW.. 0 OCTAS/SC
MIDDLE.. NONE
HIGH.. 1 OCTAS/CI
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 138 DEG/03 KTS, 100 FT. 000 DEG/00 KTS,
150 FT. 117 DEG/02 KTS, 200 FT. 094 DEG/01 KTS,
250 FT. 117 DEG/02 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA
**DATE:** 3 NOVEMBER, 1967

**ROCKET TIME:** 1226 **LST** 1726 **GCT**
**ROCKET MOTOR TYPE:** ARCAS

**PAYLOAD TYPE:** ARCASONDE-1A
**RADIOSONDE TYPE:** 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (CNAF) NATAL, BRAZIL | / | Z | Z |
| 82599 | 5°55' S 35°10' W ALT. 43 M | NOVEMBER 15, 1967 | 1400 | 1023 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 021 | 083 | 66 | 252 | 068 | +011 | +033 |
| 023 | 083 | 65 | 227 | 048 | +017 | +018 |
| 025 | 083 | 64 | 076 | 008 | -001 | -004 |
| 027 | 067 | 63 | 051 | 037 | -012 | -015 |
| 030 | 067 | 62 | 036 | 056 | -023 | -017 |
| 032 | 056 | 61 | 033 | 053 | -023 | -015 |
| 036 | 048 | 60 | 034 | 049 | -021 | -014 |
| 039 | 056 | 59 | 030 | 043 | -019 | -011 |
| 042 | 042 | 58 | 039 | 040 | -016 | -013 |
| 047 | 037 | 57 | 036 | 036 | -015 | -011 |
| 051 | 037 | 56 | 050 | 046 | -015 | -018 |
| 056 | 033 | 55 | 083 | 051 | -003 | -026 |
| 061 | 030 | 54 | 098 | 057 | +004 | -029 |
| 067 | 028 | 53 | 098 | 057 | +004 | -029 |
| 073 | 028 | 52 | 118 | 042 | +010 | -019 |
| 079 | 026 | 51 | 110 | 023 | +004 | -011 |
| 086 | 026 | 50 | 084 | 020 | -001 | -010 |
| 092 | 026 | 49 | 090 | 008 | +000 | -004 |
| 099 | 024 | 48 | 252 | 006 | +001 | +003 |
| 106 | 024 | 47 | 306 | 017 | -005 | +007 |
| 113 | 022 | 46 | 312 | 026 | -009 | +010 |
| 121 | 020 | 45 | 282 | 028 | -003 | +014 |
| 130 | 019 | 44 | 279 | 024 | -002 | +012 |
| 139 | 019 | 43 | 292 | 021 | -004 | +010 |
| 148 | 018 | 42 | 278 | 027 | -002 | +014 |
| 158 | 018 | 41 | 273 | 039 | -001 | +020 |
| 167 | 018 | 40 | 277 | 045 | -003 | +023 |
| 177 | 016 | 39 | 273 | 043 | -001 | +022 |
| 188 | 016 | 38 | 262 | 029 | +002 | +015 |
| 198 | 015 | 37 | 249 | 017 | +003 | +008 |
| 210 | 014 | 36 | 246 | 019 | +004 | +009 |
| 221 | 014 | 35 | 284 | 008 | -001 | +004 |
| 233 | 014 | 34 | 326 | 014 | -006 | +004 |
| 244 | 013 | 33 | 045 | 003 | -001 | -001 |
| 259 | 011 | 32 | 090 | 023 | +000 | -012 |
| 274 | 011 | 31 | 083 | 047 | -003 | -024 |
| 289 | 011 | 30 | 083 | 063 | -004 | -032 |
| 303 | 011 | 29 | 088 | 066 | -001 | -034 |
| 320 | 010 | 28 | 090 | 068 | +000 | -035 |
| 335 | 010 | 27 | 088 | 062 | -001 | -032 |
| 352 | 010 | 26 | 090 | 054 | +000 | -028 |
| 369 | 010 | 25 | 085 | 045 | -002 | -023 |
| 386 | 009 | 24 | 086 | 029 | -001 | -015 |
| 406 | 008 | 23 | 067 | 015 | -003 | -007 |
| 426 | 008 | 22 | 333 | 004 | -002 | +001 |
| 446 | 008 | 21 | 263 | 016 | +001 | +008 |
| 469 | 008 | 20 | 304 | 007 | -002 | +003 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1008.7 | 0004 | 120 | 010 | +003 | -004 | 66 | +26.7 |
| 0803.0 | 0200 | 106 | 012 | +002 | -006 | 23 | +16.3 |
| 0632.0 | 0400 | 063 | 008 | -002 | -004 | 25 | +04.8 |
| 0492.0 | 0600 | 073 | 006 | -001 | -003 | 32 | -08.9 |
| 0378.0 | 0800 | 322 | 031 | -013 | +010 | 21 | -20.8 |
| 0284.8 | 1000 | 337 | 035 | -017 | +007 | 31 | -40.1 |
| 0213.3 | 1200 | 334 | 024 | -011 | +005 | 27 | -52.7 |
| 0153.8 | 1400 | 317 | 052 | -020 | +018 | | -64.9 |
| 0109.6 | 1600 | 278 | 037 | -003 | +019 | | -79.9 |
| 0106.0 | 1620 | 280 | 032 | -003 | +016 | | -80.7 |
| 0077.1 | 1800 | 132 | 004 | +001 | -002 | | -75.6 |
| 0055.2 | 2000 | 179 | 007 | +004 | -000 | | -64.8 |
| 0039.9 | 2200 | 358 | 011 | -006 | +000 | | -61.0 |
| 0029.0 | 2400 | 097 | 038 | +002 | -019 | | -57.4 |
| 0021.3 | 2600 | 095 | 054 | +002 | -028 | | -54.4 |
| 0015.7 | 2800 | 097 | 061 | +004 | -031 | | -44.9 |
| 0011.7 | 3000 | 092 | 061 | +001 | -031 | | -42.1 |
| 0008.8 | 3200 | 092 | 041 | +001 | -021 | | -32.0 |
| 0006.7 | 3400 | 076 | 008 | -001 | -004 | | -28.7 |
| 0005.1 | 3600 | 252 | 017 | +003 | +008 | | -27.9 |
| 0005.0 | 3606 | 242 | 017 | +004 | +008 | | -27.8 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 90 SEC. ACTUAL.. 90 SEC.
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 090 DEG. AZIMUTH 80.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 7 SECONDS 6,553 METERS ALTITUDE
MOTOR TRACK DROPPED.. 63 SECONDS 53,828 METERS ALTITUDE
PAYLOAD ACQUISITION.. 90 SECONDS 66,355 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 3,060 SECONDS 18,410 METERS ALTITUDE
APOGEE.. 110 SECONDS 66,965 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. BELOW NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

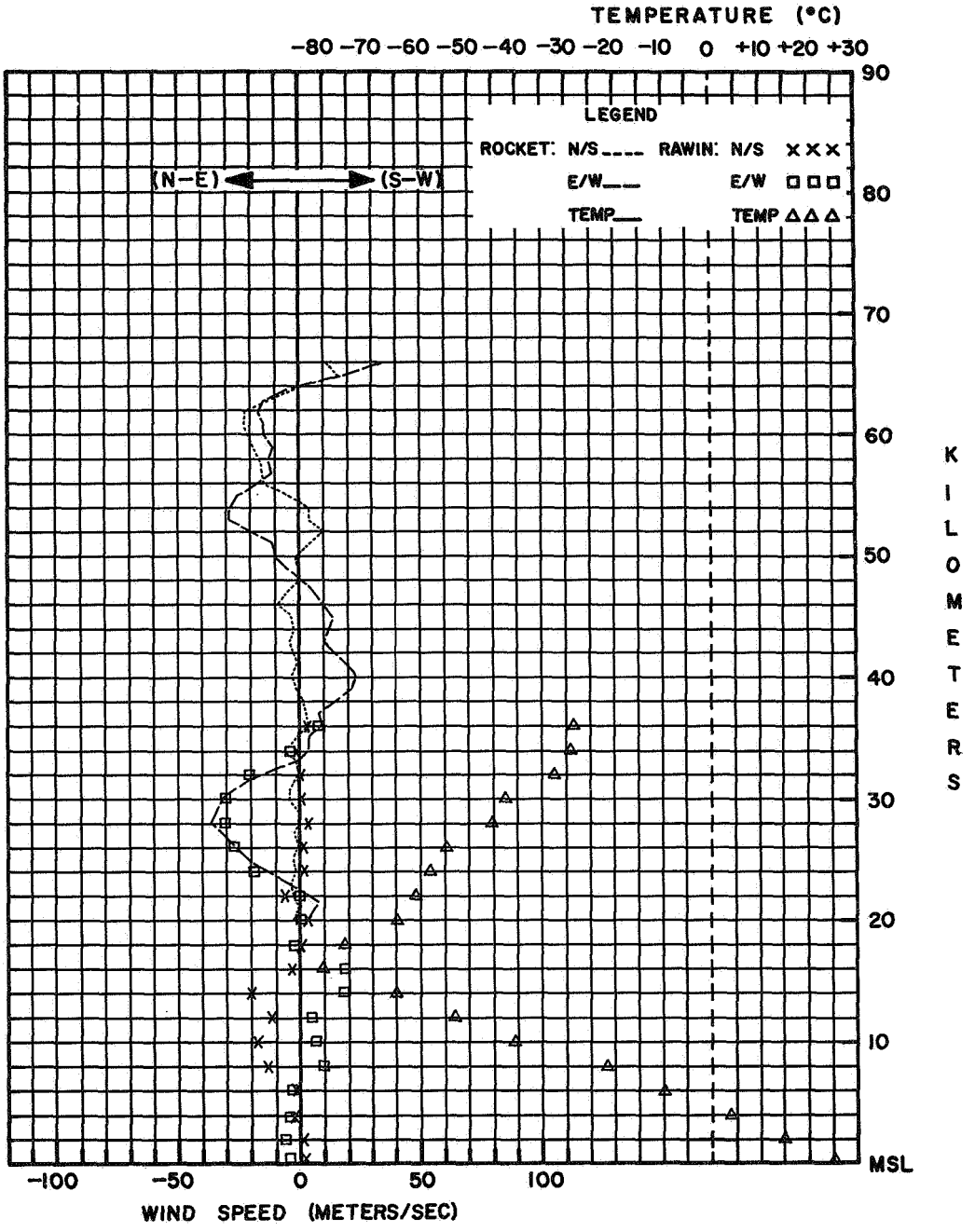
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID
GROUND EQUIPMENT TYPE.. GMD-1A
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,300 GRAMS
ASCENSION RATES.. SFC-400 MB = 278 M/MINUTE
400 MB-TOP = 358 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1008.7 MB
TEMPERATURE.. 26.7 DEG. C
RELATIVE HUMIDITY.. 66%
VISIBILITY.. 20 KM
SURFACE WIND.. 120 DEG. 10 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 3 OCTAS
LOW.. 3 OCTAS/CU
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

21 FT. 120 DEG/08 KTS. 29 FT. 120 DEG/10 KTS.
51 FT. 140 DEG/12 KTS. 82 FT. 120 DEG/14 KTS.
133 FT. 130 DEG/14 KTS




STATION: (CNAE) NATAL, BRAZIL

DATE: 15 NOVEMBER, 1967

ROCKET TIME: 1100 LST 1400 GCT

ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF

RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (CNIE) CHAMICAL, ARGENTINA | Z | Z | Z |
| 87320 | 30°22' S 66°17' W ALT. 457 M | NOVEMBER 15, 1967 | 1557 | 1210 |

# TABULATED DATA

ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 037 | 083 | 57 | 058 | 044 | -012 | -019 |
| 039 | 083 | 56 | 054 | 033 | -010 | -014 |
| 041 | 083 | 55 | 068 | 036 | -007 | -017 |
| 043 | 111 | 54 | 078 | 056 | -006 | -028 |
| 044 | 111 | 53 | 079 | 063 | -006 | -032 |
| 046 | 083 | 52 | 080 | 043 | -004 | -022 |
| 048 | 067 | 51 | 070 | 046 | -008 | -022 |
| 051 | 067 | 50 | 073 | 041 | -006 | -020 |
| 053 | 067 | 49 | 086 | 055 | -002 | -028 |
| 056 | 056 | 48 | 086 | 053 | -002 | -027 |
| 059 | 056 | 47 | 073 | 026 | -004 | -013 |
| 062 | 067 | 46 | 045 | 025 | -009 | -009 |
| 064 | 067 | 45 | 048 | 029 | -010 | -011 |
| 067 | 048 | 44 | 066 | 023 | -005 | -011 |
| 071 | 042 | 43 | 052 | 032 | -010 | -013 |
| 075 | 042 | 42 | 054 | 043 | -013 | -018 |
| 079 | 042 | 41 | 065 | 037 | -008 | -017 |
| 083 | 033 | 40 | 082 | 027 | -002 | -014 |
| 089 | 037 | 39 | 081 | 026 | -002 | -013 |
| 092 | 037 | 38 | 034 | 014 | -006 | -004 |
| 098 | 028 | 37 | 347 | 018 | -009 | +002 |
| 104 | 026 | 36 | 037 | 010 | -004 | -003 |
| 111 | 024 | 35 | 135 | 008 | +003 | -003 |
| 118 | 022 | 34 | 174 | 018 | +009 | -001 |
| 126 | 020 | 33 | 207 | 013 | +006 | +003 |
| 135 | 020 | 32 | 225 | 008 | +003 | +003 |
| 143 | 018 | 31 | 270 | 004 | +000 | +002 |
| 154 | 016 | 30 | 288 | 006 | -001 | +003 |
| 164 | 015 | 29 | 225 | 011 | +004 | +004 |
| 176 | 014 | 28 | 180 | 006 | +003 | +000 |
| 188 | 012 | 27 | 117 | 004 | +001 | -002 |
| 203 | 011 | 26 | 063 | 004 | -001 | -002 |
| 219 | 009 | 25 | 090 | 004 | +000 | -002 |
| 239 | 008 | 24 | 074 | 014 | -002 | -007 |
| 259 | 007 | 23 | 081 | 012 | -001 | -006 |
| 284 | 007 | 22 | 117 | 009 | +002 | -004 |
| 310 | 006 | 21 | 360 | 002 | -001 | +000 |
| 339 | 006 | 20 | 346 | 008 | -004 | +001 |
| 370 | 005 | 19 | 315 | 005 | -002 | +002 |
| 403 | 005 | 18 | 247 | 015 | +003 | +007 |
| 438 | 005 | 17 | 256 | 032 | +004 | +016 |

ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M$^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|

RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 0968.3 | 0046 | 020 | 005 | -002 | -001 | 75 | +21.4 |
| 0808.7 | 0200 | 019 | 022 | -011 | -004 | 79 | +09.9 |
| 0631.5 | 0400 | 141 | 005 | +002 | -002 | 78 | -01.9 |
| 0489.5 | 0600 | 251 | 018 | +003 | +009 | 30 | -14.4 |
| 0372.9 | 0800 | 288 | 035 | -006 | +017 | 16 | -28.8 |
| 0259.0 | 1000 | 278 | 054 | -004 | +028 | | -42.6 |
| 0206.8 | 1200 | 279 | 070 | -006 | +036 | | -53.4 |
| 0150.6 | 1400 | 270 | 060 | +000 | +031 | | -61.3 |
| | 1600 | 275 | 060 | -003 | +031 | | |
| | 1800 | 174 | 020 | +010 | -001 | | |
| | 2000 | 036 | 011 | -005 | -003 | | |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-28
PAYLOAD PERFORMANCE.. UNSATISFACTORY
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 130 SEC. ACTUAL.. 131 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 038 DEG. AZIMUTH 83.4 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 4 SECONDS 1,680 METERS ALTITUDE
MOTOR TRACK DROPPED.. 141 SECONDS 70,000 METERS ALTITUDE
PAYLOAD ACQUISITION.. 223 SECONDS 59,000 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,866 SECONDS 16,000 METERS ALTITUDE
APOGEE.. 141 SECONDS 70,000 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 15 FT. DIAMETER PARACHUTE
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-28
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. UNSATISFACTORY
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NO TELEMETRY SIGNAL DUE TO UNSATISFACTORY PAYLOAD PERFORMANCE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

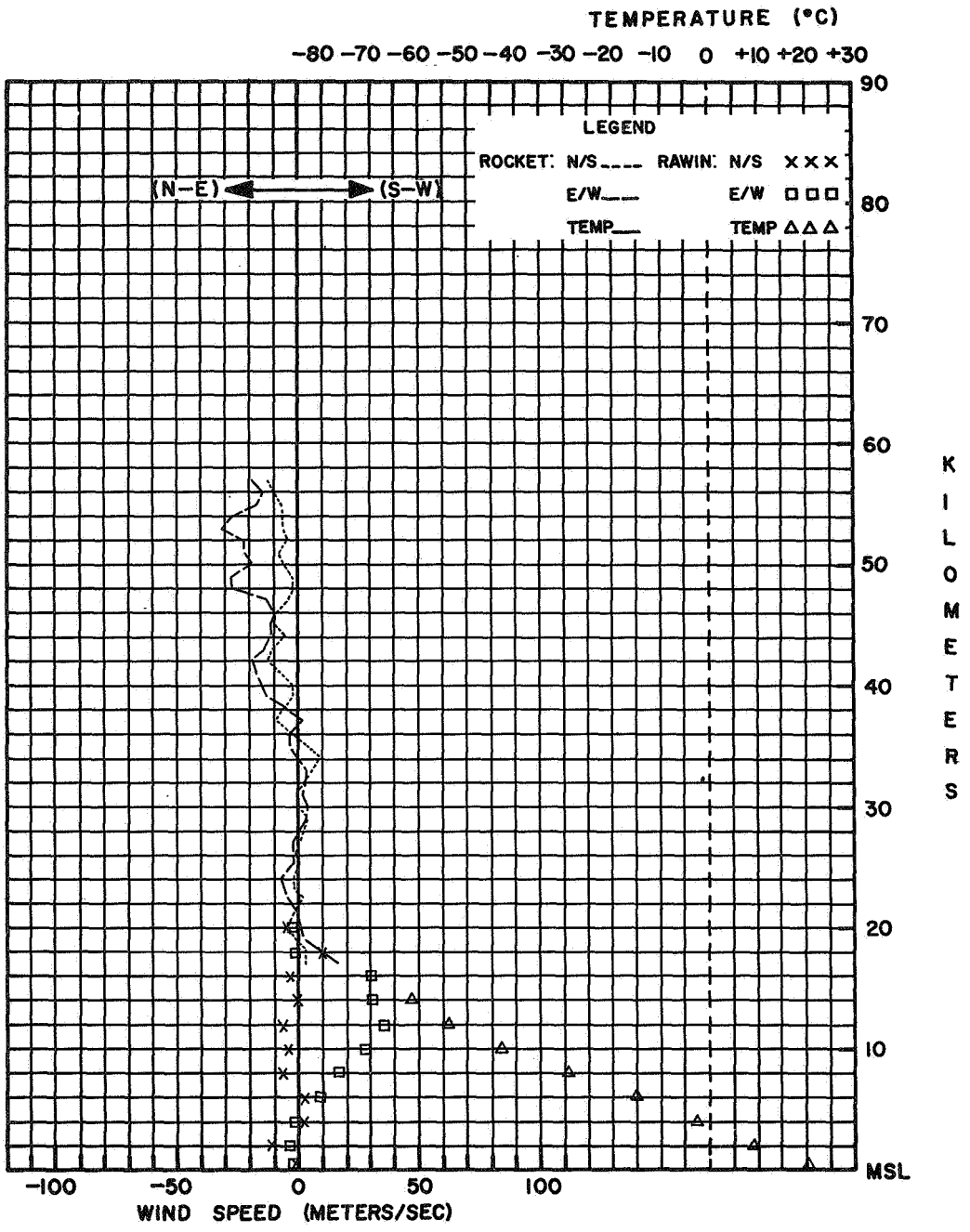
RADIOSONDE MANUFACTURER.. VAISALA
RADIOSONDE TYPE.. VAISALA
TEMPERATURE ELEMENT TYPE.. RESISTANCE WIRE
PRESSURE SENSOR TYPE.. DOUBLE ANEROID
GROUND EQUIPMENT TYPE.. VAISALA + MPS-19 RADAR
BALLOON TYPE.. TOTEX
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 2,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 413 M/MINUTE
400 MB-TOP = 489 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 968.3 MB
TEMPERATURE.. 21.4 DEG. C
RELATIVE HUMIDITY.. 75 %
VISIBILITY.. 20 KM
SURFACE WIND.. 020 DEG. 05 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 6 OCTAS
LOW.. CU
MIDDLE.. AC
HIGH.. CI
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

UNKNOWN




**STATION:** (CNIE) CHAMICAL, ARGENTINA
**DATE:** 15 NOVEMBER, 1967

**ROCKET TIME:** 1157 **LST** 1557 **GCT**
**ROCKET MOTOR TYPE:** ARCAS

**PAYLOAD TYPE:** ARCASONDE-2B
**RADIOSONDE TYPE:** VAISALA

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | | | |
| 72402 | 37°51' N 75°29' W ALT. 3 M | NOVEMBER 15, 1967 | 1744 | 1715 |

# TABULATED DATA

ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 027 | 139 | 65 | 256 | 213 | +027 | +106 |
| 028 | 111 | 64 | 249 | 204 | +037 | +098 |
| 030 | 083 | 63 | 246 | 196 | +041 | +092 |
| 032 | 083 | 62 | 247 | 199 | +040 | +094 |
| 034 | 067 | 61 | 247 | 192 | +039 | +091 |
| 037 | 056 | 60 | 244 | 189 | +043 | +087 |
| 040 | 056 | 59 | 242 | 181 | +044 | +082 |
| 043 | 048 | 58 | 245 | 183 | +040 | +085 |
| 047 | 048 | 57 | 251 | 194 | +033 | +094 |
| 050 | 042 | 56 | 256 | 195 | +025 | +097 |
| 055 | 037 | 55 | 256 | 196 | +024 | +098 |
| 059 | 042 | 54 | 251 | 210 | +036 | +102 |
| 063 | 037 | 53 | 249 | 203 | +038 | +097 |
| 068 | 033 | 52 | 249 | 187 | +034 | +090 |
| 073 | 033 | 51 | 249 | 187 | +034 | +090 |
| 078 | 028 | 50 | 249 | 203 | +038 | +097 |
| 085 | 026 | 49 | 247 | 200 | +040 | +095 |
| 091 | 026 | 48 | 250 | 195 | +035 | +094 |
| 098 | 026 | 47 | 252 | 186 | +029 | +090 |
| 104 | 026 | 46 | 250 | 168 | +030 | +081 |
| 111 | 024 | 45 | 247 | 165 | +033 | +078 |
| 118 | 024 | 44 | 248 | 159 | +030 | +076 |
| 125 | 022 | 43 | 254 | 148 | +021 | +073 |
| 133 | 020 | 42 | 255 | 151 | +020 | +075 |
| 142 | 020 | 41 | 249 | 143 | +026 | +069 |
| 150 | 020 | 40 | 253 | 124 | +019 | +061 |
| 159 | 019 | 39 | 260 | 114 | +010 | +058 |
| 168 | 018 | 38 | 260 | 109 | +010 | +055 |
| 178 | 017 | 37 | 256 | 108 | +013 | +054 |
| 188 | 016 | 36 | 261 | 102 | +008 | +052 |
| 199 | 015 | 35 | 263 | 094 | +006 | +048 |
| 210 | 016 | 34 | 265 | 092 | +004 | +047 |
| 220 | 017 | 33 | 266 | 099 | +004 | +051 |

ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|

RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1015.9 | 0000 | 330 | 029 | -013 | +007 | 56 | +03.3 |
| 0787.0 | 0200 | 297 | 039 | -009 | +018 | 23 | -10.9 |
| 0604.0 | 0400 | 282 | 076 | -008 | +038 | 20 | -14.8 |
| 0463.0 | 0600 | 257 | 076 | +009 | +038 | 22 | -25.5 |
| 0349.0 | 0800 | 270 | 085 | +000 | +044 | | -41.0 |
| 0268.0 | 0975 | 280 | 069 | -006 | +035 | | -51.5 |
| 0258.0 | 1000 | 280 | 068 | -006 | +034 | | -51.7 |
| 0191.0 | 1200 | 268 | 058 | +001 | +030 | | -47.6 |
| 0141.0 | 1400 | 266 | 060 | +002 | +031 | | -55.4 |
| 0103.0 | 1600 | 273 | 050 | -001 | +026 | | -59.2 |
| 0074.5 | 1800 | 256 | 023 | +003 | +011 | | -56.7 |
| 0054.5 | 2000 | 273 | 025 | -001 | +013 | | -58.4 |
| 0039.5 | 2200 | 267 | 023 | +001 | +012 | | -58.0 |
| 0029.0 | 2400 | 248 | 019 | +004 | +009 | | -56.9 |
| 0021.5 | 2600 | 257 | 037 | +004 | +019 | | -55.9 |
| 0015.5 | 2800 | 254 | 052 | +007 | +026 | | -54.9 |
| 0012.5 | 2932 | 259 | 058 | +006 | +030 | | -54.1 |
| 0011.5 | 2993 | | | | | | -53.8 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 90 SEC. ACTUAL.. 123 SEC.
TYPE OF LAUNCHER.. 12 FT. TUBULAR
LAUNCHER SETTING.. 130 DEG. AZIMUTH 75.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. NO TRACK
MOTOR TRACK DROPPED.. NO TRACK
PAYLOAD ACQUISITION.. 123 SECONDS 69,555 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 1,380 SECONDS 32,310 METERS ALTITUDE
APOGEE.. 119 SECONDS 69,645 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

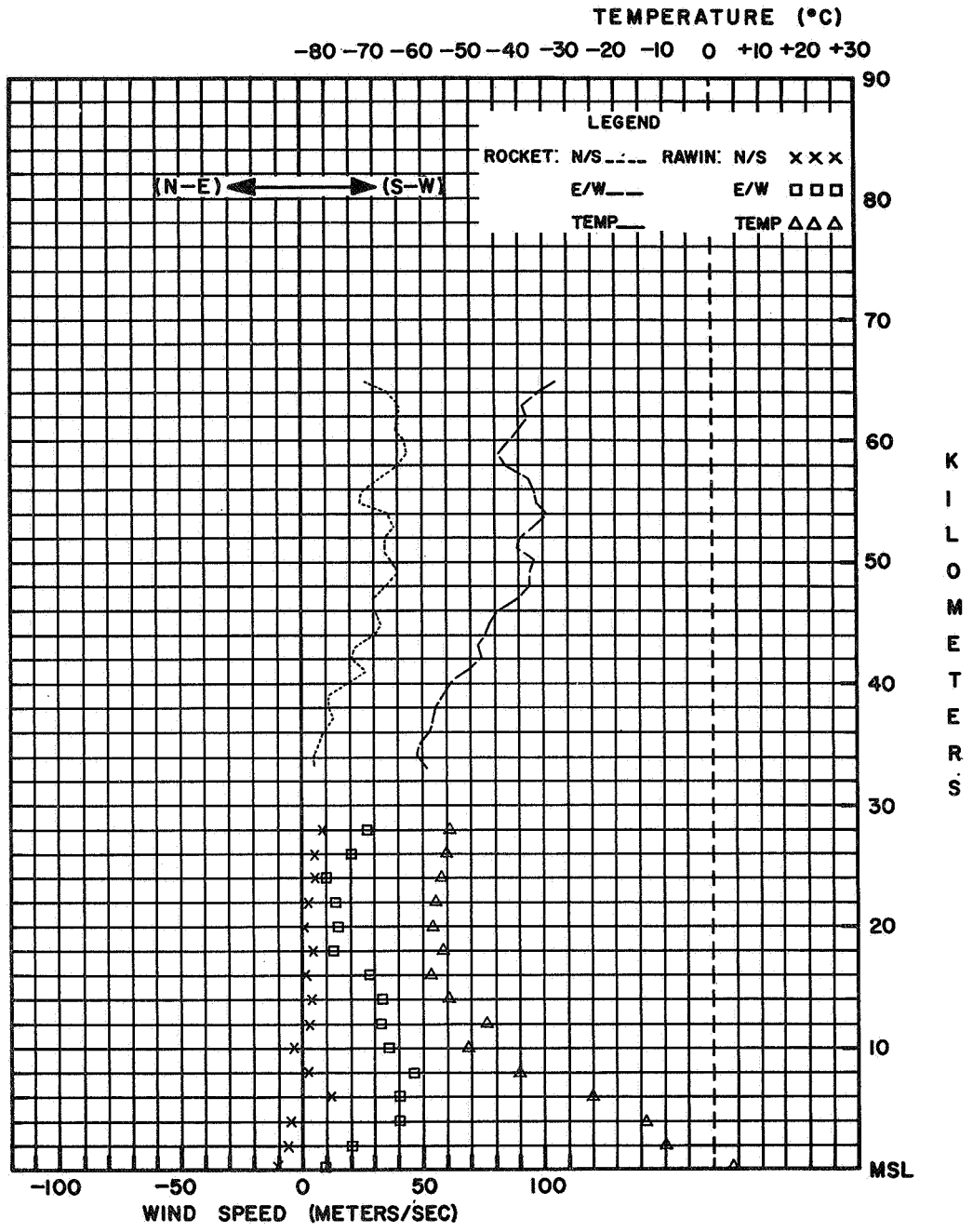
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPHENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 326 M/MINUTE
400 MB-TOP = 393 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1015.9 MB
TEMPERATURE.. 3.3 DEG. C
RELATIVE HUMIDITY.. 56%
VISIBILITY.. 16 KM
SURFACE WIND.. 330 DEG. 29 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 2 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. 2 OCTAS/CI
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 330 DEG/24 KTS, 50 FT. 312 DEG/23 KTS,
100 FT. 316 DEG/25 KTS, 150 FT. 310 DEG/27 KTS,
200 FT. 307 DEG/27 KTS, 250 FT. 307 DEG/27 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA
DATE: 15 NOVEMBER, 1967

ROCKET TIME: 1244 LST 1744 GCT
ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME Z | RAWINSONDE RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | | | |
| 72402 | 37°51' N 75°29' W ALT. 3 M | NOVEMBER 21, 1967 | 1515 | 1115 |

# TABULATED DATA

## ROCKET WINDS

| TIME OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | COMPONENTS MPS N-S | COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 026 | 056 | 49 | 266 | 177 | +007 | +091 |
| 029 | 067 | 48 | 267 | 164 | +005 | +084 |
| 031 | 067 | 47 | 270 | 130 | +000 | +067 |
| 034 | 056 | 46 | 270 | 105 | +000 | +054 |
| 037 | 056 | 45 | 275 | 092 | -004 | +047 |
| 040 | 048 | 44 | 277 | 090 | -006 | +046 |
| 044 | 042 | 43 | 284 | 074 | -009 | +037 |
| 048 | 042 | 42 | 300 | 058 | -015 | +026 |
| 052 | 042 | 41 | 302 | 044 | -012 | +019 |
| 056 | 037 | 40 | 309 | 025 | -008 | +010 |
| 061 | 033 | 39 | 344 | 028 | -014 | +004 |
| 066 | 030 | 38 | 336 | 047 | -022 | +010 |
| 072 | 028 | 37 | 328 | 044 | -019 | +012 |
| 078 | 028 | 36 | 335 | 037 | -017 | +008 |
| 084 | 024 | 35 | 332 | 042 | -019 | +010 |
| 092 | 024 | 34 | 336 | 047 | -022 | +010 |
| 098 | 021 | 33 | 342 | 045 | -022 | +007 |
| 108 | 017 | 32 | 360 | 035 | -018 | +000 |
| 118 | 017 | 31 | 013 | 034 | -017 | -004 |
| 128 | 017 | 30 | 013 | 034 | -017 | -004 |
| 138 | 014 | 29 | 004 | 029 | -015 | -001 |
| 152 | 012 | 28 | 005 | 023 | -012 | -001 |
| 165 | 012 | 27 | 009 | 026 | -013 | -002 |
| 180 | 010 | 26 | 005 | 021 | -011 | -001 |
| 198 | 008 | 25 | 018 | 018 | -009 | -003 |
| 220 | 008 | 24 | 007 | 016 | -008 | -001 |
| 240 | 007 | 23 | 329 | 011 | -005 | +003 |
| 265 | 006 | 22 | 321 | 012 | -005 | +004 |
| 293 | 006 | 21 | 320 | 015 | -006 | +005 |
| 320 | 006 | 20 | 307 | 019 | -006 | +008 |
| 350 | 005 | 19 | 308 | 022 | -007 | +009 |
| 388 | 004 | 18 | 304 | 028 | -008 | +012 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M$^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | COMPONENTS MPS N-S | COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|
| 5020 | -03.0 | 00.731 | 00.943 | 329 | | | | |
| 4846 | -10.2 | 00.911 | 01.207 | 325 | 266 | 170 | +006 | +087 |
| 4730 | -10.3 | 01.057 | 01.400 | 325 | 268 | 140 | +002 | +072 |
| 4599 | -16.5 | 01.252 | 01.700 | 321 | 270 | 105 | -000 | +054 |
| 4404 | -20.1 | 01.620 | 02.231 | 319 | 277 | 090 | -006 | +046 |
| 4362 | -17.8 | 01.713 | 02.337 | 320 | 279 | 085 | -007 | +043 |
| 4221 | -26.3 | 02.070 | 02.921 | 315 | 297 | 061 | -014 | +028 |
| 4182 | -32.3 | 02.185 | 03.160 | 311 | 299 | 056 | -014 | +025 |
| 4139 | -30.5 | 02.320 | 03.330 | 312 | 301 | 050 | -013 | +022 |
| 4023 | -34.4 | 02.729 | 03.982 | 310 | 307 | 029 | -009 | +012 |
| 3959 | -29.8 | 02.985 | 04.273 | 313 | 321 | 025 | -010 | +008 |
| 3871 | -29.1 | 03.372 | 04.813 | 313 | 339 | 033 | -016 | +006 |
| 3749 | -36.0 | 04.001 | 05.878 | 309 | 331 | 044 | -020 | +011 |
| 3548 | -35.0 | 05.324 | 07.788 | 309 | 333 | 039 | -018 | +009 |
| 3511 | -32.0 | 05.609 | 08.103 | 311 | 332 | 042 | -019 | +010 |
| 3222 | -49.0 | 08.537 | 13.267 | 300 | 354 | 037 | -019 | +002 |
| 3103 | -44.7 | 10.199 | 15.552 | 303 | 013 | 034 | -017 | -004 |
| 3021 | -47.6 | 11.525 | 17.800 | 301 | 013 | 034 | -017 | -004 |
| 2975 | -44.3 | 12.342 | 18.788 | 303 | 010 | 034 | -017 | -003 |
| 2950 | -44.3 | 12.811 | 19.848 | 301 | 011 | 032 | -016 | -003 |
| 2643 | -51.4 | 20.407 | 32.060 | 299 | 005 | 023 | -012 | -001 |
| 2277 | -50.7 | 35.679 | 55.875 | 299 | 329 | 011 | -005 | +003 |
| 2231 | -54.7 | 38.296 | 61.071 | 296 | 321 | 012 | -005 | +004 |
| 2094 | -52.2 | 47.320 | 74.609 | 298 | 320 | 015 | -006 | +005 |
| 2000 | -56.0 | 54.740 | 87.818 | 295 | 307 | 019 | -006 | +008 |
| 1737 | -58.6 | 82.800 | | 294 | | | | |

CONSTANT PRESSURE LEVEL DATA
(HEIGHT IN GEOPOTENTIAL METERS)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2053 | -53.6 | 50.000 | 79.327 | 297 | 315 | 016 | -006 | +006 |
| 2404 | -51.0 | 30.000 | 47.037 | 299 | 007 | 016 | -008 | -001 |
| 2648 | -51.2 | 20.000 | 31.396 | 299 | 009 | 024 | -012 | -002 |
| 3102 | -45.2 | 10.000 | 15.284 | 303 | 010 | 034 | -017 | -003 |
| 3356 | -40.1 | 07.000 | 10.463 | 306 | 338 | 046 | -022 | +009 |
| 3577 | -35.2 | 05.000 | 07.322 | 309 | 335 | 037 | -017 | +008 |
| 4221 | -24.6 | 02.000 | 02.804 | 316 | 291 | 065 | -012 | +031 |
| 4739 | -10.3 | 01.000 | 01.325 | 325 | 267 | 156 | +004 | +080 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | COMPONENTS MPS N-S | COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1023.0 | 0000 | 030 | 004 | -002 | -001 | 67 | +02.2 |
| 0796.0 | 0200 | 268 | 037 | +001 | +019 | 26 | -03.8 |
| 0617.0 | 0400 | 276 | 047 | -003 | +024 | 99 | -11.3 |
| 0352.6 | 0600 | 275 | 056 | -003 | +029 | 97 | -22.1 |
| 0355.0 | 0800 | 301 | 064 | -017 | +028 | | -41.5 |
| 0263.0 | 1000 | 285 | 060 | -008 | +030 | | -53.2 |
| 0245.0 | 1044 | 280 | 068 | -006 | +035 | | -55.4 |
| 0192.5 | 1200 | 273 | 075 | -002 | +039 | | -53.7 |
| 0140.2 | 1400 | 280 | 071 | -006 | +036 | | -58.3 |
| 0101.8 | 1600 | 282 | 058 | -006 | +029 | | -62.4 |
| 0074.0 | 1800 | 295 | 035 | -008 | +016 | | -60.3 |
| 0054.0 | 2000 | 348 | 019 | -010 | +002 | | -57.6 |
| 0047.0 | 2087 | 360 | 017 | -009 | +000 | | -53.8 |
| 0039.6 | 2200 | 352 | 014 | -007 | +001 | | -55.0 |
| 0028.7 | 2400 | 349 | 020 | -010 | +002 | | -55.8 |
| 0025.0 | 2494 | 242 | 020 | +005 | +009 | | -50.5 |
| 0021.3 | 2600 | 352 | 010 | -005 | +001 | | -52.0 |
| 0015.7 | 2800 | 340 | 030 | -015 | +005 | | -51.4 |
| 0011.7 | 3000 | 354 | 035 | -018 | +002 | | -49.5 |
| 0009.0 | 3166 | 354 | 047 | -024 | +002 | | -48.3 |
| 0008.6 | 3200 | | | | | | -48.0 |
| 0007.7 | 3270 | | | | | | -47.8 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 125 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 090 DEG. AZIMUTH 81.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 8 SECONDS 1,200 METERS ALTITUDE
MOTOR TRACK DROPPED.. 125 SECONDS 50,810 METERS ALTITUDE
PAYLOAD ACQUISITION.. 125 SECONDS 50,810 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,460 SECONDS 17,370 METERS ALTITUDE
APOGEE.. 125 SECONDS 50,810 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 15 FT. DIAMETER PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1670 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 135 SEC. 50,400 METERS ALTITUDE
TO 2,460 SEC. 17,370 METERS ALTITUDE

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 82.8 MB
ALTITUDE 17,370 METERS
TEMPERATURE -61.0 DEG. C

RADIOSONDE AND BALLOON DATA

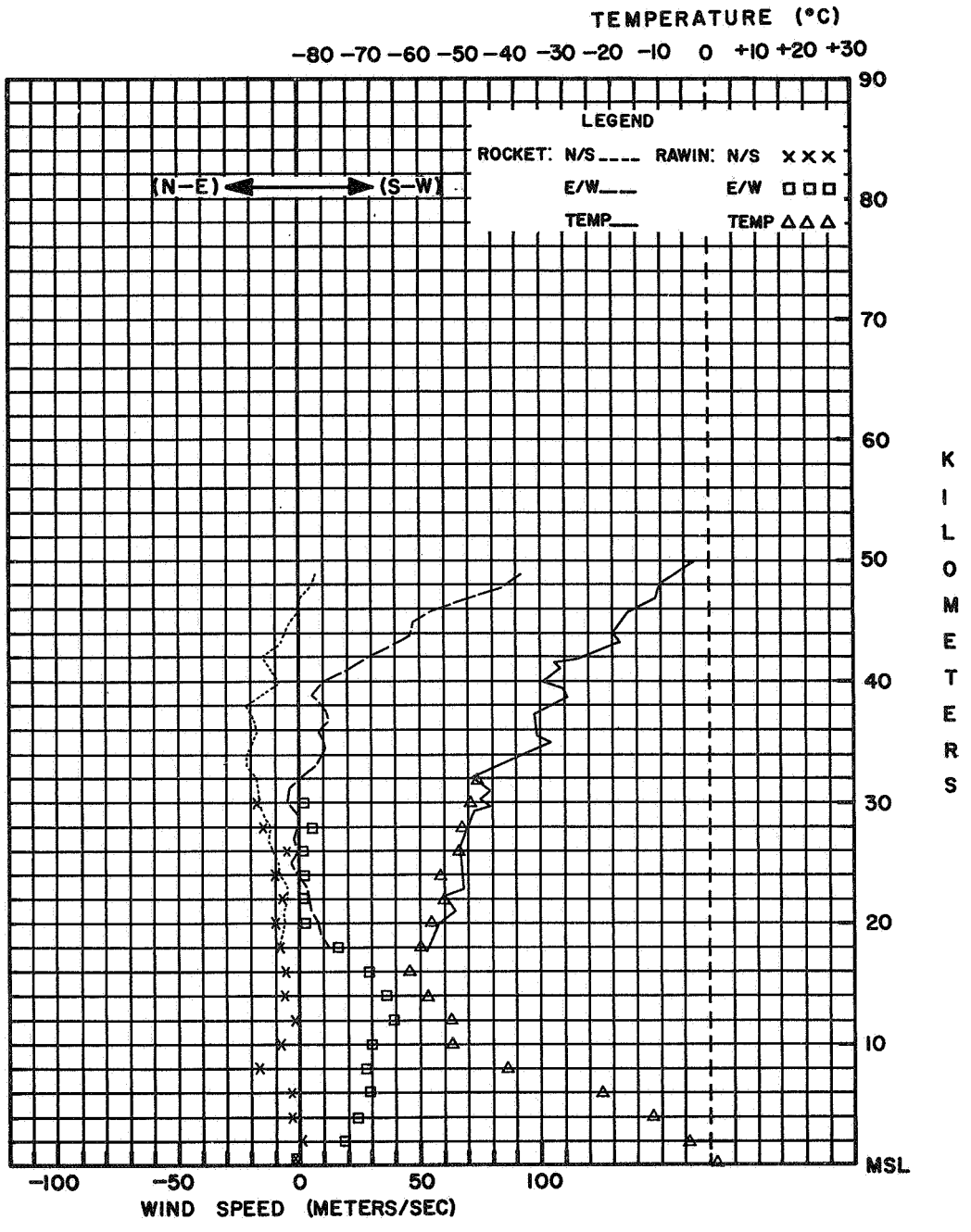
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 269 M/MINUTE
400 MB-TOP = 378 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1023.0 MB
TEMPERATURE.. 2.2 DEG. C
RELATIVE HUMIDITY.. 67 %
VISIBILITY.. 16 KM
SURFACE WIND.. 030 DEG. 4 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 8 OCTAS
LOW.. NONE
MIDDLE.. 8 OCTAS/AC
HIGH.. UNKNOWN
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 115 DEG/08 KTS, 50 FT. 090 DEG/10 KTS,
100 FT. 085 DEG/10 KTS, 150 FT. 089 DEG/10 KTS,
200 FT. 081 DEG/10 KTS, 250 FT. 110 DEG/10 KTS




**STATION:** (NASA) WALLOPS ISLAND, VIRGINIA
**DATE:** 21 NOVEMBER, 1967

**ROCKET TIME:** 1015 **LST** 1515 **GCT**
**ROCKET MOTOR TYPE:** ARCAS

**PAYLOAD TYPE:** ARCASONDE-1A
**RADIOSONDE TYPE:** 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | / | Z | Z |
| 72402 | 37°51' N 75°29' W ALT. 3 M | NOVEMBER 29, 1967 | 1953 | 1215 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 032 | 099 | 52 | 267 | 166 | +005 | +085 |
| 033 | 083 | 51 | 266 | 158 | +006 | +081 |
| 036 | 067 | 50 | 266 | 154 | +006 | +079 |
| 038 | 067 | 49 | 264 | 139 | +008 | +071 |
| 041 | 067 | 48 | 262 | 122 | +009 | +062 |
| 043 | 056 | 47 | 262 | 124 | +009 | +063 |
| 047 | 056 | 46 | 261 | 126 | +010 | +064 |
| 049 | 056 | 45 | 259 | 111 | +011 | +056 |
| 053 | 048 | 44 | 256 | 098 | +012 | +049 |
| 056 | 048 | 43 | 256 | 088 | +011 | +044 |
| 060 | 042 | 42 | 259 | 073 | +007 | +037 |
| 064 | 037 | 41 | 260 | 065 | +006 | +033 |
| 069 | 033 | 40 | 250 | 056 | +010 | +027 |
| 074 | 033 | 39 | 236 | 035 | +010 | +015 |
| 079 | 030 | 38 | 252 | 031 | +005 | +015 |
| 085 | 024 | 37 | 257 | 026 | +003 | +013 |
| 093 | 026 | 36 | 261 | 026 | +002 | +013 |
| 098 | 024 | 35 | 277 | 016 | -001 | +008 |
| 105 | 022 | 34 | 270 | 010 | +000 | +005 |
| 113 | 019 | 33 | 254 | 014 | +002 | +007 |
| 123 | 020 | 32 | 257 | 018 | +002 | +009 |
| 130 | 019 | 31 | 261 | 012 | +001 | +006 |
| 141 | 014 | 30 | 225 | 005 | +002 | +002 |
| 153 | 014 | 29 | 000 | 000 | +000 | +000 |
| 164 | 013 | 28 | 135 | 003 | +001 | -001 |
| 179 | 011 | 27 | 117 | 004 | +001 | -002 |
| 194 | 010 | 26 | 360 | 006 | -003 | +000 |
| 211 | 009 | 25 | 360 | 006 | -003 | +000 |
| 233 | 008 | 24 | 297 | 004 | -001 | +002 |
| 255 | 007 | 23 | 333 | 004 | -002 | +001 |
| 280 | 006 | 22 | 315 | 005 | -002 | +002 |
| 310 | 006 | 21 | 315 | 008 | -003 | +003 |
| 333 | 006 | 20 | 311 | 018 | -006 | +007 |
| 365 | 005 | 19 | 288 | 031 | -005 | +015 |
| 400 | 005 | 18 | 285 | 038 | -005 | +019 |
| 430 | 005 | 17 | 283 | 042 | -005 | +021 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY -3 G M | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|
| 5578 | +04.9 | 00.371 | 00.465 | 334 | | | | |
| 5398 | +07.7 | 00.461 | 00.572 | 336 | | | | |
| 5197 | +00.2 | 00.588 | 00.750 | 331 | 267 | 166 | +005 | +085 |
| 4961 | +02.0 | 00.805 | 01.019 | 333 | 265 | 144 | +007 | +074 |
| 4785 | -06.4 | 00.977 | 01.276 | 327 | 262 | 122 | +009 | +062 |
| 4670 | -06.5 | 01.130 | 01.476 | 327 | 262 | 124 | +009 | +063 |
| 4606 | -10.7 | 01.226 | 01.627 | 325 | 261 | 126 | +010 | +064 |
| 4469 | -10.9 | 01.463 | 01.944 | 325 | 258 | 107 | +011 | +054 |
| 4240 | -25.2 | 01.977 | 02.778 | 316 | 257 | 080 | +009 | +040 |
| 4191 | -25.0 | 02.114 | 02.967 | 316 | 259 | 073 | +007 | +037 |
| 4148 | -27.9 | 02.242 | 03.184 | 314 | 260 | 069 | +006 | +035 |
| 4103 | -26.8 | 02.384 | 03.372 | 315 | 260 | 065 | +006 | +033 |
| 3965 | -32.0 | 02.886 | 04.169 | 311 | 247 | 049 | +010 | +023 |
| 3874 | -30.1 | 03.276 | 04.696 | 313 | 239 | 034 | +009 | +015 |
| 3767 | -37.6 | 03.810 | 05.635 | 308 | 254 | 028 | +004 | +014 |
| 3719 | -37.6 | 04.082 | 06.037 | 308 | 257 | 026 | +003 | +013 |
| 3624 | -42.3 | 04.684 | 07.068 | 305 | 261 | 026 | +002 | +013 |
| 3539 | -39.3 | 05.300 | 07.895 | 307 | 270 | 019 | +000 | +010 |
| 3380 | -45.2 | 06.689 | 10.222 | 303 | 270 | 010 | +000 | +005 |
| 3307 | -43.6 | 07.451 | 11.307 | 304 | 254 | 014 | +002 | +007 |
| 3194 | -46.7 | 08.810 | 13.553 | 302 | 257 | 018 | +002 | +009 |
| 3133 | -44.9 | 09.647 | 14.724 | 303 | 262 | 014 | +001 | +007 |
| 3005 | -47.5 | 11.676 | 18.025 | 301 | 225 | 005 | +002 | +002 |
| 2597 | -49.8 | 21.696 | 33.699 | 300 | 360 | 006 | -003 | +000 |
| 2423 | -53.9 | 28.204 | 44.813 | 297 | 297 | 004 | -001 | +002 |
| 2377 | -52.1 | 30.275 | 47.712 | 298 | 297 | 004 | -001 | +002 |
| 2304 | -55.1 | 33.888 | 54.142 | 296 | 333 | 004 | -002 | +001 |
| 2277 | -54.4 | 35.340 | 56.280 | 296 | 333 | 004 | -002 | +001 |
| 2167 | -54.8 | 41.920 | 66.881 | 296 | 315 | 005 | -002 | +002 |
| 2076 | -58.3 | 48.344 | 78.387 | 294 | 315 | 011 | -004 | +004 |
| 2039 | -55.6 | 51.235 | 82.044 | 296 | 315 | 014 | -005 | +005 |
| 2000 | -57.0 | 54.461 | 87.775 | 295 | 311 | 018 | -006 | +007 |
| 1981 | -60.1 | 56.123 | 91.769 | 293 | 304 | 021 | -006 | +009 |
| 1875 | -59.0 | 66.424 | | 293 | 287 | 033 | -005 | +016 |
| 1795 | -60.2 | 75.438 | | 293 | 285 | 038 | -005 | +019 |
| 1777 | -58.2 | 77.625 | | 294 | 285 | 038 | -005 | +019 |
| 1682 | -58.1 | 90.200 | | 294 | | | | |

CONSTANT PRESSURE LEVEL DATA

(HEIGHT IN GEOPOTENTIAL METERS)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2048 | -56.8 | 50.000 | 80.493 | 295 | 309 | 012 | -004 | +005 |
| 2374 | -52.3 | 30.000 | 47.330 | 298 | 297 | 004 | -001 | +002 |
| 2652 | -49.4 | 20.000 | 31.143 | 300 | 090 | 002 | -000 | -001 |
| 3096 | -45.4 | 10.000 | 15.293 | 303 | 261 | 012 | +001 | +006 |
| 3332 | -44.5 | 07.000 | 10.667 | 303 | 261 | 012 | +001 | +006 |
| 3560 | -40.8 | 05.000 | 07.495 | 306 | 265 | 023 | +001 | +012 |
| 4204 | -25.2 | 02.000 | 02.810 | 316 | 258 | 077 | +008 | +039 |
| 4733 | -06.4 | 01.000 | 01.306 | 327 | 262 | 122 | +009 | +062 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1028.0 | 0000 | 320 | 006 | -002 | +002 | 23 | -00.6 |
| 0798.0 | 0200 | 312 | 039 | -013 | +015 | 22 | -09.0 |
| 0615.0 | 0400 | 294 | 057 | -012 | +027 | 34 | -15.2 |
| 0468.0 | 0600 | 295 | 074 | -016 | +035 | 56 | -28.8 |
| 0352.0 | 0800 | 291 | 111 | -020 | +053 | | -41.0 |
| 0261.0 | 1000 | 294 | 135 | -028 | +063 | | -50.3 |
| 0238.0 | 1061 | 294 | 135 | -028 | +063 | | -53.2 |
| 0226.0 | 1095 | 294 | 135 | -028 | +063 | | -52.3 |
| 0192.0 | 1200 | | | | | | -52.0 |
| 0140.5 | 1400 | | | | | | -59.2 |
| 0101.5 | 1600 | | | | | | -61.9 |
| 0073.9 | 1800 | | | | | | -61.4 |
| 0053.6 | 2000 | | | | | | -60.2 |
| 0039.0 | 2200 | | | | | | -57.5 |
| 0028.6 | 2400 | | | | | | -54.9 |
| 0025.0 | 2487 | | | | | | -53.8 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 132 SEC.
*TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR*
LAUNCHER SETTING.. 103 DEG. AZIMUTH 75.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 9 SECONDS 975 METERS ALTITUDE
MOTOR TRACK DROPPED.. 132 SECONDS 56,630 METERS ALTITUDE
PAYLOAD ACQUISITION.. 132 SECONDS 56,630 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,640 SECONDS 16,820 METERS ALTITUDE
APOGEE.. 128 SECONDS 56,875 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

*WIND SENSOR*.. 15 FT. DIAMETER PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1680 MHZ
TELEMETRY QUALITY.. FAIR
TELEMETRY DATA RECEIVED FROM.. 145 SEC. 55,780 METERS ALTITUDE
*TO* 2,640 SEC. 16,820 *METERS ALTITUDE*

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE 90.2 MB
ALTITUDE 16,820 METERS
TEMPERATURE -61.7 DEG. C

RADIOSONDE AND BALLOON DATA

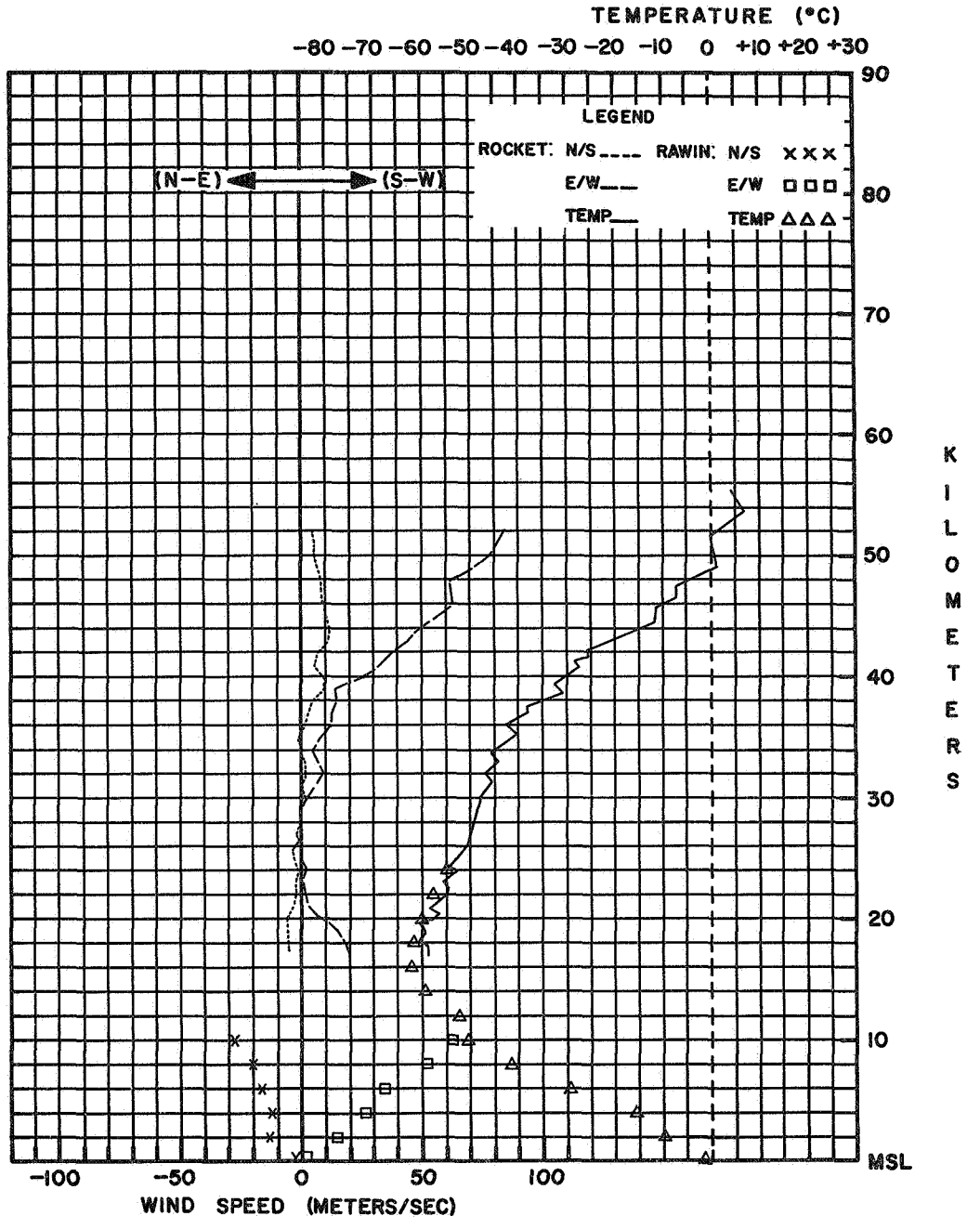
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. BOD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
*GROUND EQUIPMENT TYPE.. GMD-1B*
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 335 M/MINUTE
400 MB-TOP = 428 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

*STATION PRESSURE*.. 1028.0 MB
TEMPERATURE.. -0.6 DEG. C
RELATIVE HUMIDITY.. 23%
VISIBILITY.. 11 KM
SURFACE WIND.. 320 DEG. 6 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 0 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
*OBSTRUCTIONS TO VISION.. NONE*

WIND AT ROCKET LAUNCH

SFC. 312 DEG/07 KTS, 50 FT. 291 DEG/08 KTS,
100 FT. 291 DEG/08 KTS, 150 FT. 288 DEG/09 KTS,
200 FT. 294 DEG/09 KTS, 250 FT. 288 DEG/09 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA
DATE: 29 NOVEMBER, 1967

ROCKET TIME: 1453 LST 1953 GCT
ROCKET MOTOR TYPE: ARCAS

PAYLOAD TYPE: ARCASONDE-1A
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | Z | Z | Z |
| 72402 | 37°51' N 75°29' W ALT. 3 M | DECEMBER 6, 1967 | 1945 | 2315 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 027 | 064 | 62 | 310 | 091 | -030 | +036 |
| 029 | 056 | 61 | 302 | 089 | -024 | +039 |
| 033 | 048 | 60 | 294 | 081 | -017 | +038 |
| 036 | 048 | 59 | 290 | 068 | -012 | +033 |
| 040 | 042 | 58 | 298 | 066 | -016 | +030 |
| 044 | 042 | 57 | 299 | 060 | -015 | +027 |
| 048 | 037 | 56 | 291 | 058 | -011 | +028 |
| 053 | 033 | 55 | 291 | 058 | -011 | +028 |
| 058 | 033 | 54 | 285 | 052 | -007 | +026 |
| 063 | 030 | 53 | 274 | 053 | -002 | +027 |
| 069 | 028 | 52 | 274 | 053 | -002 | +027 |
| 075 | 026 | 51 | 283 | 052 | -006 | +026 |
| 082 | 026 | 50 | 279 | 059 | -005 | +030 |
| 088 | 026 | 49 | 278 | 071 | -005 | +036 |
| 095 | 024 | 48 | 283 | 072 | -008 | +036 |
| 102 | 022 | 47 | 287 | 073 | -011 | +036 |
| 110 | 021 | 46 | 288 | 076 | -012 | +037 |
| 118 | 020 | 45 | 285 | 075 | -010 | +037 |
| 127 | 020 | 44 | 273 | 064 | -002 | +033 |
| 135 | 020 | 43 | 266 | 051 | +002 | +026 |
| 144 | 018 | 42 | 265 | 041 | +002 | +021 |
| 154 | 018 | 41 | 252 | 039 | +006 | +019 |
| 163 | 019 | 40 | 254 | 042 | +006 | +021 |
| 172 | 017 | 39 | 267 | 041 | +001 | +021 |
| 183 | 016 | 38 | 264 | 039 | +002 | +020 |
| 193 | 016 | 37 | 261 | 037 | +003 | +019 |
| 204 | 015 | 36 | 260 | 034 | +003 | +017 |
| 215 | 016 | 35 | 267 | 039 | +001 | +020 |
| 225 | 014 | 34 | 265 | 041 | +002 | +021 |
| 238 | 012 | 33 | 249 | 033 | +006 | +016 |
| 253 | 012 | 32 | 246 | 023 | +005 | +011 |
| 265 | 012 | 31 | 264 | 018 | +001 | +009 |
| 280 | 012 | 30 | 253 | 020 | +003 | +010 |
| 293 | 012 | 29 | 236 | 021 | +006 | +009 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1023.1 | 0000 | 090 | 004 | -000 | -002 | 96 | +05.6 |
| 0802.0 | 0200 | 265 | 012 | +001 | +006 | 46 | +05.1 |
| 0624.0 | 0400 | 268 | 035 | +001 | +018 | 21 | -05.1 |
| 0482.0 | 0600 | 271 | 039 | -000 | +020 | 66 | -20.3 |
| 0364.0 | 0800 | 266 | 045 | +002 | +023 | 42 | -33.9 |
| 0272.0 | 1000 | 272 | 068 | -001 | +035 | | -49.6 |
| 0226.0 | 1119 | 270 | 068 | +000 | +035 | | -59.2 |
| 0198.0 | 1200 | 270 | 066 | +000 | +034 | | -59.6 |
| 0144.0 | 1400 | 269 | 052 | +000 | +027 | | -60.6 |
| 0105.0 | 1600 | 265 | 024 | +001 | +012 | | -66.9 |
| 0075.0 | 1800 | 301 | 012 | -003 | +005 | | -66.9 |
| 0057.5 | 2000 | 256 | 004 | +000 | +002 | | -54.0 |
| 0038.5 | 2200 | 245 | 010 | +002 | +005 | | -61.3 |
| 0028.0 | 2400 | 299 | 012 | -003 | +005 | | -58.9 |
| 0021.0 | 2600 | 270 | 013 | +000 | +007 | | -56.3 |
| 0015.0 | 2800 | 258 | 017 | +002 | +009 | | -53.7 |
| 0011.2 | 3000 | 265 | 033 | +001 | +017 | | -49.9 |
| 0008.2 | 3200 | 267 | 031 | +001 | +016 | | -43.5 |
| 0007.2 | 3302 | 268 | 037 | +001 | +019 | | -43.1 |
| 0007.0 | 3319 | | | | | | -43.4 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 90 SEC. ACTUAL.. 92 SEC.
TYPE OF LAUNCHER.. 12 FT. TUBULAR
LAUNCHER SETTING.. 125 DEG. AZIMUTH 80.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 5 SECONDS 4,875 METERS ALTITUDE
MOTOR TRACK DROPPED.. 92 SECONDS 65,595 METERS ALTITUDE
PAYLOAD ACQUISITION.. 92 SECONDS 65,595 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 1,800 SECONDS 28,530 METERS ALTITUDE
APOGEE.. 101 SECONDS 66,205 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE.. N.A.

RADIOSONDE AND BALLOON DATA

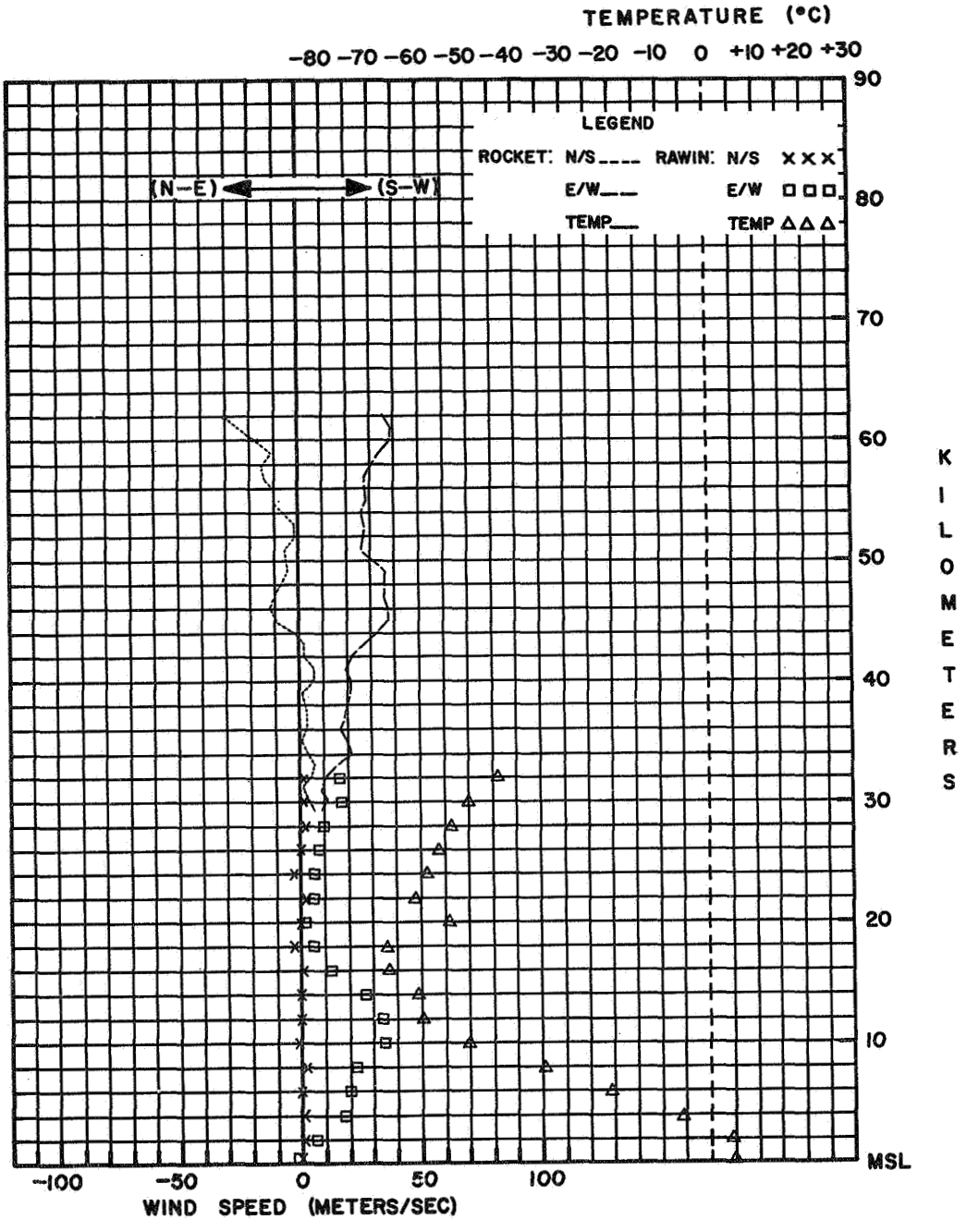
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,800 GRAMS
ASCENSION RATES.. SFC-400 MB = 260 M/MINUTE
400 MB-TOP = 373 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1023.1 MB
TEMPERATURE.. 5.6 DEG. C
RELATIVE HUMIDITY.. 96%
VISIBILITY.. 8 KM
SURFACE WIND.. 090 DEG. 4 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 6 OCTAS
LOW.. NONE
MIDDLE.. 5 OCTAS/AC
HIGH.. 1 OCTAS/CS
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. HAZE

WIND AT ROCKET LAUNCH

SFC. 092 DEG/02 KTS, 50 FT. 063 DEG/03 KTS,
100 FT. 053 DEG/04 KTS, 150 FT. 068 DEG/04 KTS,
200 FT. 063 DEG/03 KTS, 250 FT. 079 DEG/04 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA
DATE: 6 DECEMBER, 1967

ROCKET TIME: 1545 LST 1945 GCT
ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF
RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET LAUNCH TIME | RAWINSONDE RELEASE TIME |
|---|---|---|---|---|
| | (CNIF) CHAMICAL, ARGENTINA | 7 | Z | Z |
| 87320 | 30°22' S 66°17' W ALT. 457 M | DECEMBER 13, 1967 | 1355 | 1210 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 032 | 067 | 62 | 105 | 075 | +010 | -037 |
| 035 | 067 | 61 | 095 | 082 | +004 | -042 |
| 037 | 067 | 60 | 088 | 095 | -002 | -049 |
| 040 | 056 | 59 | 084 | 098 | -005 | -050 |
| 043 | 056 | 58 | 074 | 099 | -014 | -049 |
| 046 | 048 | 57 | 063 | 096 | -022 | -044 |
| 050 | 042 | 56 | 046 | 065 | -023 | -024 |
| 054 | 042 | 55 | 072 | 108 | -017 | -053 |
| 058 | 028 | 54 | 087 | 156 | -004 | -080 |
| 066 | 024 | 53 | 090 | 124 | +000 | -064 |
| 072 | 028 | 52 | 087 | 105 | -003 | -054 |
| 078 | 026 | 51 | 082 | 104 | -007 | -053 |
| 085 | 026 | 50 | 082 | 104 | -007 | -053 |
| 091 | 026 | 49 | 083 | 096 | -006 | -049 |
| 098 | 024 | 48 | 084 | 074 | -004 | -038 |
| 105 | 018 | 47 | 088 | 072 | -001 | -037 |
| 117 | 020 | 46 | 087 | 074 | -002 | -038 |
| 122 | 028 | 45 | 092 | 054 | +001 | -028 |
| MISSING DATA (SEE REMARKS) | | | | | | |
| 146 | 017 | 42 | 081 | 071 | -006 | -036 |
| 156 | 017 | 41 | 094 | 055 | +002 | -028 |
| 166 | 017 | 40 | 103 | 052 | +006 | -026 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY ~3 G M | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 0961.8 | 0046 | 200 | 012 | +006 | +002 | 45 | +29.0 |
| 0806.8 | 0200 | 054 | 004 | -001 | -002 | 43 | +17.3 |
| 0636.6 | 0400 | 180 | 012 | +006 | -000 | 44 | +03.7 |
| 0493.2 | 0600 | 262 | 023 | +002 | +012 | 39 | -11.0 |
| 0377.6 | 0800 | 280 | 034 | -003 | +017 | 20 | -24.5 |
| 0284.5 | 1000 | 280 | 029 | -003 | +015 | 11 | -38.1 |
| 0211.3 | 1200 | 290 | 048 | -008 | +023 | | -49.8 |
| 0155.0 | 1400 | 280 | 042 | -004 | +021 | | -60.9 |
| 0150.0 | 1424 | 280 | 042 | -007 | +021 | | -62.2 |
| 0112.3 | 1600 | 270 | 032 | +000 | +016 | | -64.9 |
| 0080.9 | 1800 | 185 | 017 | +009 | +001 | | -67.9 |
| 0058.2 | 2000 | 118 | 022 | +005 | -010 | | -65.5 |
| 0042.3 | 2200 | 096 | 019 | +001 | -010 | | -55.4 |
| 0031.1 | 2400 | 081 | 022 | -002 | -011 | | -50.9 |
| 0023.0 | 2600 | 076 | 027 | -003 | -013 | | -49.4 |
| 0017.0 | 2800 | 113 | 029 | +006 | -014 | | -44.5 |
| 0012.6 | 3000 | | | | | | -39.8 |
| 0011.0 | 3095 | | | | | | -37.5 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 90 SEC. ACTUAL.. 110 SEC.
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 030 DEG. AZIMUTH 83.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. UNKNOWN
MOTOR TRACK DROPPED.. UNKNOWN
PAYLOAD ACQUISITION.. 180 SECONDS 62,271 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 1,020 SECONDS 38,800 METERS ALTITUDE
APOGEE.. UNKNOWN

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND COPPER CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

MISSING WIND DATA.. CHAFF DISPERSION
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

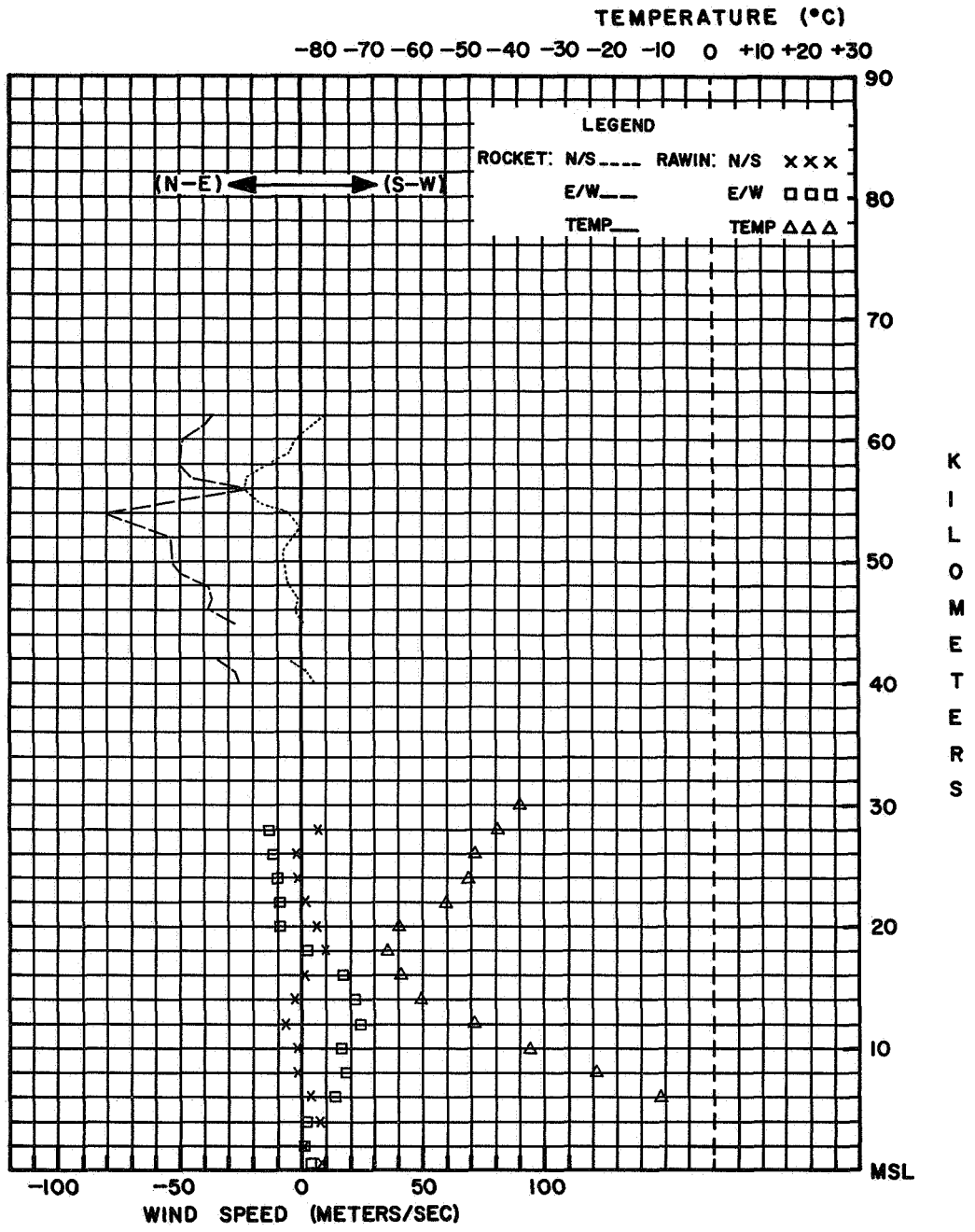
RADIOSONDE MANUFACTURER.. VAISALA
RADIOSONDE TYPE.. VAISALA
TEMPERATURE ELEMENT TYPE.. RESISTANCE WIRE
PRESSURE SENSOR TYPE.. DOUBLE ANEROID
GROUND EQUIPMENT TYPE.. VIASALA* MPS-19 RADAR
BALLOON TYPE.. TOTEX
BALLOON SIZE.. 800 GRAMS
FREE LIFT.. 1,200 GRAMS
ASCENSION RATES.. SFC-400 MB = 335 M/MINUTE
400 MB-TOP = 525 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 961.8 MB
TEMPERATURE.. 29.0 DEG. C
RELATIVE HUMIDITY.. 45%
VISIBILITY.. 15 KM
SURFACE WIND.. 200 DEG. 12 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 1 OCTAS
LOW.. 1 OCTAS
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 130 DEG/01 KTS




STATION: (CNIE) CHAMICAL, ARGENTINA
DATE: 13 DECEMBER, 1967

ROCKET TIME: 0955 LST 1355 GCT
ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF
RADIOSONDE TYPE: VAISALA

| RP | STATION NAME | DATE | ROCKET RAWINSONDE LAUNCH TIME Z | RELEASE TIME Z |
|---|---|---|---|---|
| | (CNAE) NATAL, BRAZIL | 7 | | |
| 82599 | 5°55' S 35°10' W ALT. 43 M | DECEMBER 13, 1967 | 1500 | 1101 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|
| 020 | 078 | 63 | 232 | 044 | +014 | +018 |
| 023 | 067 | 62 | 063 | 004 | -001 | -002 |
| 025 | 056 | 61 | 990 | 052 | +000 | -027 |
| 029 | 048 | 60 | 088 | 056 | -001 | -029 |
| 032 | 048 | 59 | 087 | 039 | -001 | -020 |
| 036 | 042 | 58 | 078 | 064 | -007 | -032 |
| 040 | 042 | 57 | 075 | 092 | -012 | -046 |
| 044 | 037 | 56 | 073 | 106 | -016 | -052 |
| 049 | 037 | 55 | 072 | 114 | -018 | -056 |
| 053 | 033 | 54 | 073 | 112 | -017 | -055 |
| 059 | 030 | 53 | 078 | 113 | -012 | -057 |
| 064 | 030 | 52 | 085 | 111 | -005 | -057 |
| 070 | 028 | 51 | 094 | 093 | +003 | -048 |
| 076 | 026 | 50 | 098 | 081 | +006 | -041 |
| 083 | 024 | 49 | 104 | 058 | +007 | -029 |
| 090 | 024 | 48 | 106 | 049 | +007 | -024 |
| 097 | 022 | 47 | 102 | 038 | +004 | -019 |
| 105 | 021 | 46 | 100 | 022 | +002 | -011 |
| 113 | 021 | 45 | 084 | 018 | -001 | -009 |
| 121 | 020 | 44 | 072 | 025 | -004 | -012 |
| 130 | 019 | 43 | 067 | 025 | -005 | -012 |
| 139 | 019 | 42 | 061 | 024 | -006 | -011 |
| 148 | 019 | 41 | 081 | 024 | -002 | -012 |
| 157 | 017 | 40 | 090 | 027 | +000 | -014 |
| 168 | 016 | 39 | 107 | 026 | +004 | -013 |
| 178 | 017 | 38 | 126 | 017 | +005 | -007 |
| 188 | 015 | 37 | 117 | 013 | +003 | -006 |
| 200 | 014 | 36 | 084 | 020 | -001 | -010 |
| 212 | 014 | 35 | 085 | 021 | -001 | -011 |
| 224 | 014 | 34 | 104 | 024 | +003 | -012 |
| 236 | 013 | 33 | 110 | 039 | +007 | -019 |
| 250 | 012 | 32 | 095 | 043 | +002 | -022 |
| 263 | 012 | 31 | 083 | 049 | -003 | -025 |
| 277 | 012 | 30 | 086 | 055 | -002 | -028 |
| 291 | 011 | 29 | 083 | 067 | -004 | -034 |
| 307 | 010 | 28 | 081 | 073 | -006 | -037 |
| 323 | 010 | 27 | 085 | 062 | -003 | -032 |
| 340 | 009 | 26 | 086 | 055 | -002 | -028 |
| 359 | 009 | 25 | 081 | 051 | -004 | -026 |
| 377 | 009 | 24 | 078 | 038 | -004 | -019 |
| 397 | 008 | 23 | 079 | 020 | -002 | -010 |
| 417 | 008 | 22 | 090 | 004 | +000 | -002 |
| 438 | 008 | 21 | 270 | 008 | +000 | +004 |
| 461 | 007 | 20 | 304 | 007 | -002 | +003 |
| 485 | 007 | 19 | 045 | 005 | -002 | -002 |
| 510 | 007 | 18 | 108 | 006 | +001 | -003 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M$^{-3}$ | SPEED OF SOUND M/S | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W |
|---|---|---|---|---|---|---|---|---|

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | WIND POLAR KTS | WIND COMPONENTS MPS N-S | WIND COMPONENTS MPS E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1007.7 | 0004 | 050 | 010 | -003 | -004 | 67 | +27.7 |
| 0802.0 | 0200 | 067 | 011 | -002 | -005 | 42 | +12.8 |
| 0629.0 | 0400 | 037 | 007 | -003 | -002 | 35 | +02.4 |
| 0490.0 | 0600 | 122 | 005 | +001 | -002 | 39 | -10.0 |
| 0376.0 | 0800 | 192 | 015 | +008 | +002 | 46 | -22.8 |
| 0284.3 | 1000 | 165 | 027 | +013 | -004 | 34 | -37.4 |
| 0210.9 | 1200 | 182 | 032 | +016 | +001 | | -49.7 |
| 0152.0 | 1400 | 183 | 051 | +026 | +001 | | -71.1 |
| 0124.0 | 1521 | 165 | 029 | +015 | -004 | | -80.0 |
| 0108.2 | 1600 | 156 | 024 | +011 | -005 | | -78.6 |
| 0076.5 | 1800 | 087 | 014 | -000 | -007 | | -80.1 |
| 0054.4 | 2000 | 315 | 015 | -005 | +005 | | -67.5 |
| 0039.0 | 2200 | 185 | 004 | +002 | +000 | | -67.3 |
| 0027.9 | 2400 | 091 | 036 | +000 | -019 | | -57.9 |
| 0020.8 | 2600 | 087 | 058 | -002 | -030 | | -50.0 |
| 0015.4 | 2800 | 078 | 071 | -008 | -036 | | -48.9 |
| 0011.5 | 3000 | 084 | 062 | -003 | -032 | | -43.3 |
| 0008.6 | 3200 | 082 | 051 | -004 | -026 | | -39.1 |
| 0006.4 | 3400 | 096 | 026 | +001 | -013 | | -33.2 |
| 0004.9 | 3600 | 059 | 028 | -007 | -012 | | -31.3 |
| 0003.7 | 3800 | 152 | 014 | +006 | -003 | | -30.0 |
| 0003.0 | 3948 | 154 | 013 | +006 | -003 | | -27.5 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. JUDI
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. CHAFF
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. ELECTRICALLY ACTIVATED PYROTECHNIC
FUSE DELAY TIME.. PREDICTED.. 110 SEC. ACTUAL.. 90 SEC.
TYPE OF LAUNCHER.. 8.5 FT. TUBULAR
LAUNCHER SETTING.. 070 DEG. AZIMUTH 81.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. MPS-19
MOTOR ACQUISITION.. 5 SECONDS 4,845 METERS ALTITUDE
MOTOR TRACK DROPPED.. 64 SECONDS 52,485 METERS ALTITUDE
PAYLOAD ACQUISITION.. 90 SECONDS 63,185 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 3,254 SECONDS 16,765 METERS ALTITUDE
APOGEE.. 102 SECONDS 68,855 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 0.005 INCH S BAND CHAFF
TEMPERATURE SENSOR.. N.A.
SENSOR FALL RATE.. BELOW NOMINAL
GROUND EQUIPMENT TYPE.. N.A.
TELEMETRY FREQUENCY.. N.A.
TELEMETRY QUALITY.. N.A.
TELEMETRY DATA RECEIVED FROM.. N.A.

REMARKS

NONE
THERMODYNAMICS BASE DATA.. PRESSURE N.A.
ALTITUDE N.A.
TEMPERATURE N.A.

RADIOSONDE AND BALLOON DATA

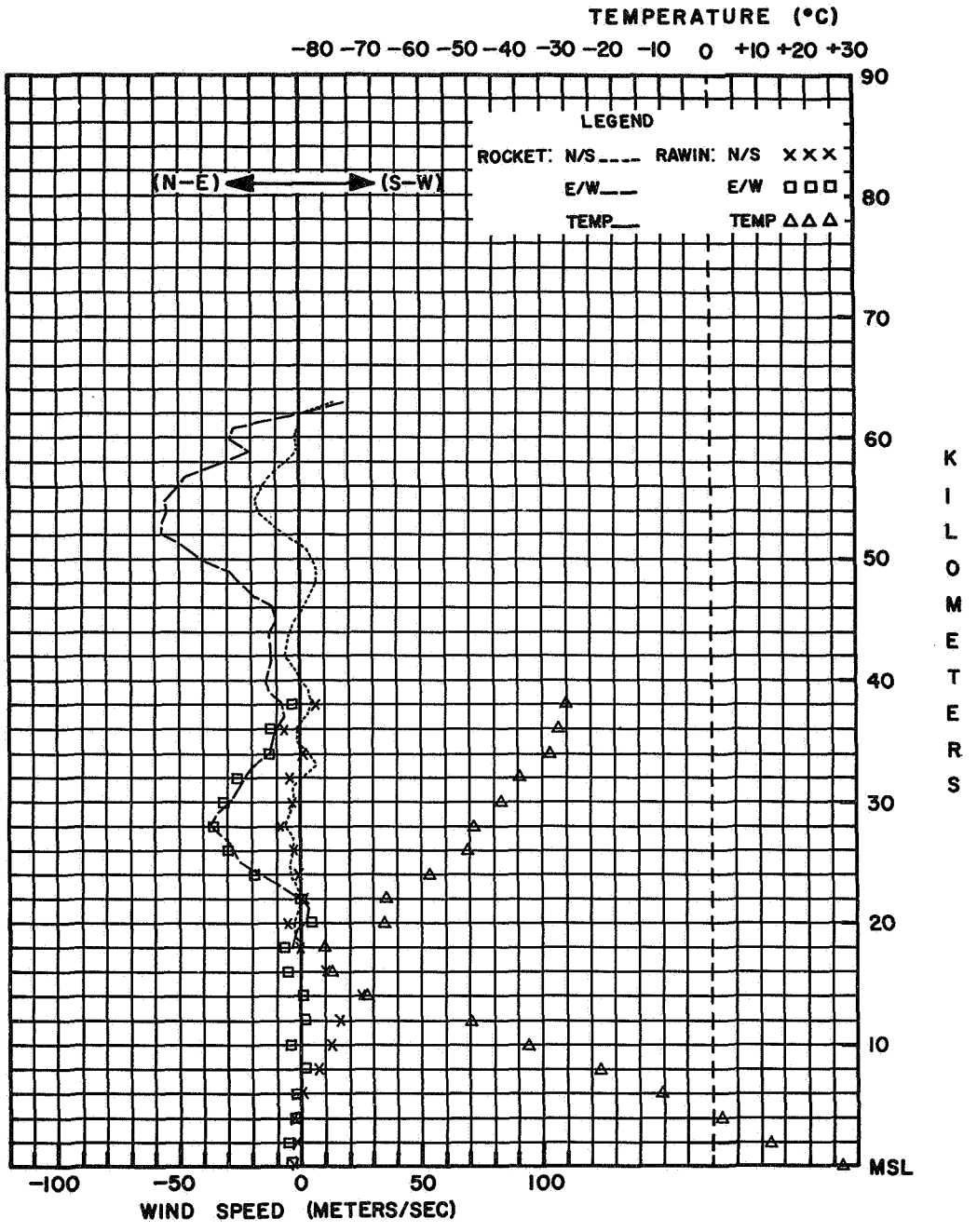
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID
GROUND EQUIPMENT TYPE.. GMD-1A
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,200 GRAMS
FREE LIFT.. 1,300 GRAMS
ASCENSION RATES.. SFC-400 MB = 263 M/MINUTE
400 MB-TOP = 377 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1007.7 MB
TEMPERATURE.. 27.7 DEG. C
RELATIVE HUMIDITY.. 67%
VISIBILITY.. 20 KM
SURFACE WIND.. 050 DEG. 10 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 5 OCTAS
LOW.. 2 OCTAS/CU
MIDDLE.. 3 OCTAS/AC
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

21 FT. 090 DEG/10 KTS, 29 FT. 060 DEG/10 KTS,
51 FT. 060 DEG/08 KTS, 82 FT. 050 DEG/10 KTS,
133 FT. 060 DEG/10 KTS




STATION: (CNAE) NATAL, BRAZIL

DATE: 13 DECEMBER, 1967

ROCKET TIME: 1200 LST 1500 GCT

ROCKET MOTOR TYPE: JUDI

PAYLOAD TYPE: CHAFF

RADIOSONDE TYPE: 1680 MHZ

| RP | STATION NAME | DATE | ROCKET RAWINSONDE LAUNCH TIME Z | RELEASE TIME Z |
|---|---|---|---|---|
| | (NASA) WALLOPS ISLAND, VIRGINIA | | | |
| 72402 | 37°51' N 75°29' W ALT. 3 M | DECEMBER 13, 1967 | 1816 | 1430 |

# TABULATED DATA

## ROCKET WINDS

| TIME TENTHS OF A MINUTE | FALL VEL M/S | ALT KM | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|
| 027 | 067 | 50 | 242 | 128 | +031 | +058 |
| 030 | 067 | 49 | 234 | 134 | +040 | +056 |
| 032 | 067 | 48 | 234 | 139 | +042 | +058 |
| 035 | 067 | 47 | 231 | 142 | +046 | +057 |
| 037 | 066 | 46 | 240 | 150 | +038 | +067 |
| 041 | 068 | 45 | 249 | 154 | +028 | +074 |
| 044 | 066 | 44 | 254 | 162 | +023 | +080 |
| 047 | 068 | 43 | 257 | 170 | +020 | +085 |
| 051 | 062 | 42 | 256 | 174 | +021 | +087 |
| 055 | 062 | 41 | 254 | 176 | +025 | +087 |
| 059 | 057 | 40 | 250 | 178 | +032 | +086 |
| 064 | 053 | 39 | 249 | 175 | +032 | +084 |
| 069 | 050 | 38 | 249 | 166 | +030 | +080 |
| 075 | 028 | 37 | 249 | 160 | +029 | +077 |
| 081 | 028 | 36 | 254 | 158 | +022 | +078 |
| 087 | 026 | 35 | 254 | 156 | +022 | +077 |
| 094 | 022 | 34 | 254 | 148 | +021 | +073 |
| 102 | 020 | 33 | 254 | 135 | +019 | +067 |
| 111 | 019 | 32 | 253 | 128 | +019 | +063 |
| 120 | 019 | 31 | 254 | 117 | +017 | +058 |
| 129 | 018 | 30 | 257 | 100 | +012 | +050 |
| 139 | 014 | 29 | 261 | 087 | +007 | +044 |
| 153 | 012 | 28 | 264 | 080 | +004 | +041 |
| 167 | 011 | 27 | 265 | 066 | +003 | +034 |
| 183 | 010 | 26 | 265 | 049 | +002 | +025 |
| 202 | 009 | 25 | 273 | 035 | -001 | +018 |
| 220 | 008 | 24 | 286 | 028 | -004 | +014 |
| 244 | 007 | 23 | 286 | 028 | -004 | +014 |
| 270 | 006 | 22 | 291 | 027 | -005 | +013 |
| 298 | 006 | 21 | 291 | 027 | -005 | +013 |
| 324 | 006 | 20 | 270 | 025 | +000 | +013 |
| 358 | 006 | 19 | 266 | 027 | +001 | +014 |

## ROCKET THERMODYNAMICS

| ALT TENS OF METERS | TEMP DEG C | PRESSURE MB | DENSITY G M -3 | SPEED OF SOUND M/S | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W |
|---|---|---|---|---|---|---|---|---|
| 5084 | +04.2 | 00.762 | 00.958 | 334 | | | | |
| 4877 | +09.3 | 00.978 | 01.206 | 337 | 234 | 134 | +040 | +056 |
| 4767 | +16.0 | 01.113 | 01.341 | 341 | 233 | 140 | +043 | +058 |
| 4602 | +11.9 | 01.350 | 01.650 | 338 | 240 | 150 | +038 | +067 |
| 4538 | +11.6 | 01.457 | 01.782 | 338 | 246 | 151 | +032 | +071 |
| 4432 | +04.2 | 01.654 | 02.077 | 334 | 252 | 159 | +025 | +078 |
| 4334 | +05.0 | 01.863 | 02.333 | 334 | 256 | 166 | +021 | +083 |
| 4161 | -08.6 | 02.309 | 03.041 | 326 | 255 | 175 | +023 | +087 |
| 4090 | -09.4 | 02.528 | 03.340 | 326 | 253 | 177 | +026 | +087 |
| 3929 | -17.2 | 03.116 | 04.241 | 321 | 249 | 177 | +032 | +085 |
| 3904 | -17.4 | 03.221 | 04.387 | 321 | 249 | 175 | +032 | +084 |
| 3840 | -19.5 | 03.506 | 04.815 | 319 | 249 | 170 | +031 | +082 |
| 3667 | -30.0 | 04.435 | 06.354 | 313 | 251 | 159 | +027 | +077 |
| 3530 | -29.3 | 05.364 | 07.663 | 313 | 254 | 156 | +022 | +077 |
| 3499 | -32.5 | 05.601 | 08.108 | 311 | 254 | 156 | +022 | +077 |
| 3447 | -33.2 | 06.026 | 08.748 | 311 | 254 | 151 | +021 | +075 |
| 3408 | -38.4 | 06.370 | 09.452 | 307 | 254 | 148 | +021 | +073 |
| 3380 | -38.1 | 06.631 | 09.829 | 307 | 254 | 146 | +021 | +072 |
| 3344 | -39.9 | 06.985 | 10.433 | 306 | 254 | 142 | +020 | +070 |
| 3286 | -38.9 | 07.597 | 11.297 | 307 | 254 | 134 | +019 | +066 |
| 3130 | -43.0 | 09.535 | 14.432 | 304 | 253 | 122 | +018 | +060 |
| 3100 | -40.9 | 09.962 | 14.943 | 306 | 254 | 117 | +017 | +058 |
| 3078 | -43.5 | 10.289 | 15.608 | 304 | 254 | 113 | +016 | +056 |
| 2640 | -57.8 | 20.037 | 32.413 | 294 | 266 | 057 | +002 | +029 |
| 2612 | -55.0 | 20.934 | 33.429 | 296 | 266 | 051 | +002 | +026 |
| 2292 | -62.8 | 34.734 | 57.523 | 291 | 286 | 028 | -004 | +014 |
| 2000 | -63.8 | 55.695 | 92.679 | 290 | 270 | 025 | +000 | +013 |
| 1811 | -66.0 | 75.800 | | 289 | | | | |

CONSTANT PRESSURE LEVEL DATA

(HEIGHT IN GEOPOTENTIAL METERS)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2072 | -63.5 | 50.000 | 83.094 | 290 | 287 | 026 | -004 | +013 |
| 2393 | -60.1 | 30.000 | 49.060 | 293 | 286 | 028 | -004 | +014 |
| 2631 | -57.7 | 20.000 | 32.345 | 294 | 266 | 057 | +002 | +029 |
| 3042 | -41.2 | 10.000 | 15.019 | 305 | 254 | 117 | +017 | +058 |
| 3326 | -29.9 | 07.000 | 10.454 | 306 | 254 | 142 | +020 | +070 |
| 3564 | -29.6 | 05.000 | 07.151 | 313 | 254 | 158 | +022 | +078 |
| 4252 | +00.8 | 02.000 | 02.543 | 332 | 257 | 170 | +020 | +085 |
| 4822 | +10.4 | 01.000 | 01.229 | 338 | 234 | 136 | +041 | +057 |

## RAWINSONDE

| PRESSURE MB | ALT TENS OF METERS | WIND POLAR DEG | KTS | COMPONENTS MPS N-S | E-W | RH % | TEMP DEG C |
|---|---|---|---|---|---|---|---|
| 1026.0 | 0000 | 210 | 006 | +003 | +002 | 41 | +06.7 |
| 0806.0 | 0200 | 260 | 036 | +003 | +018 | 12 | +05.0 |
| 0629.0 | 0400 | 257 | 042 | +005 | +021 | 10 | -02.8 |
| 0486.0 | 0600 | 258 | 052 | +006 | +026 | 11 | -15.0 |
| 0370.0 | 0800 | 258 | 053 | +006 | +027 | 15 | -31.2 |
| 0276.0 | 1000 | 260 | 061 | +005 | +031 | | -44.0 |
| 0205.0 | 1200 | 249 | 084 | +015 | +040 | | -52.2 |
| 0150.0 | 1400 | 259 | 060 | +006 | +030 | | -63.2 |
| 0109.0 | 1592 | 263 | 068 | +004 | +035 | | -70.1 |
| 0108.0 | 1600 | 261 | 063 | +005 | +032 | | -70.0 |
| 0077.0 | 1800 | 257 | 038 | +004 | +019 | | -67.8 |
| 0055.4 | 2000 | 266 | 013 | +000 | +007 | | -66.0 |
| 0040.0 | 2200 | 274 | 033 | -001 | +017 | | -65.6 |
| 0029.0 | 2400 | 274 | 041 | -001 | +021 | | -63.5 |
| 0021.0 | 2600 | 276 | 043 | -002 | +022 | | -60.6 |
| 0018.0 | 2800 | 261 | 085 | +007 | +043 | | -59.0 |
| 0013.1 | 3000 | 252 | 108 | +017 | +053 | | -53.1 |
| 0009.4 | 3124 | 256 | 098 | +012 | +049 | | -44.8 |
| 0008.4 | 3200 | | | | | | -42.3 |
| 0008.0 | 3228 | | | | | | -41.4 |

# TECHNICAL DATA

VEHICLE DATA

MOTOR TYPE.. ARCAS
MOTOR PERFORMANCE.. GOOD
PAYLOAD TYPE.. ARCASONDE-1A
PAYLOAD PERFORMANCE.. GOOD
FUSE TYPE.. GAS GENERATED SEPARATION DEVICE
FUSE DELAY TIME.. PREDICTED.. 128 SEC. ACTUAL.. 135 SEC.
TYPE OF LAUNCHER.. ARCAS WITH GAS GENERATOR
LAUNCHER SETTING.. 127 DEG. AZIMUTH 81.0 DEG. ELEVATION

RADAR DATA

RADAR TYPE.. FPS-16
MOTOR ACQUISITION.. 9 SECONDS 1,340 METERS ALTITUDE
MOTOR TRACK DROPPED.. 135 SECONDS 52,030 METERS ALTITUDE
PAYLOAD ACQUISITION.. 135 SECONDS 52,030 METERS ALTITUDE
PAYLOAD TRACK DROPPED.. 2,340 SECONDS 18,105 METERS ALTITUDE
APOGEE.. 124 SECONDS 52,790 METERS ALTITUDE

SENSOR AND TELEMETRY DATA

WIND SENSOR.. 15 FT. DIAMETER PARACHUTE
TEMPERATURE SENSOR.. 0.010 INCH BEAD THERMISTOR
SENSOR FALL RATE.. NOMINAL
GROUND EQUIPMENT TYPE.. GMD-1B
TELEMETRY FREQUENCY.. 1660 MHZ
TELEMETRY QUALITY.. GOOD
TELEMETRY DATA RECEIVED FROM.. 151 SEC. 50,840 METERS ALTITUDE
TO 2,340 SEC. 18,105 METERS ALTITUDE

REMARKS

NONE

THERMODYNAMICS BASE DATA.. PRESSURE 75.8 MB
ALTITUDE 18,110 METERS
TEMPERATURE -67.7 DEG. C

RADIOSONDE AND BALLOON DATA

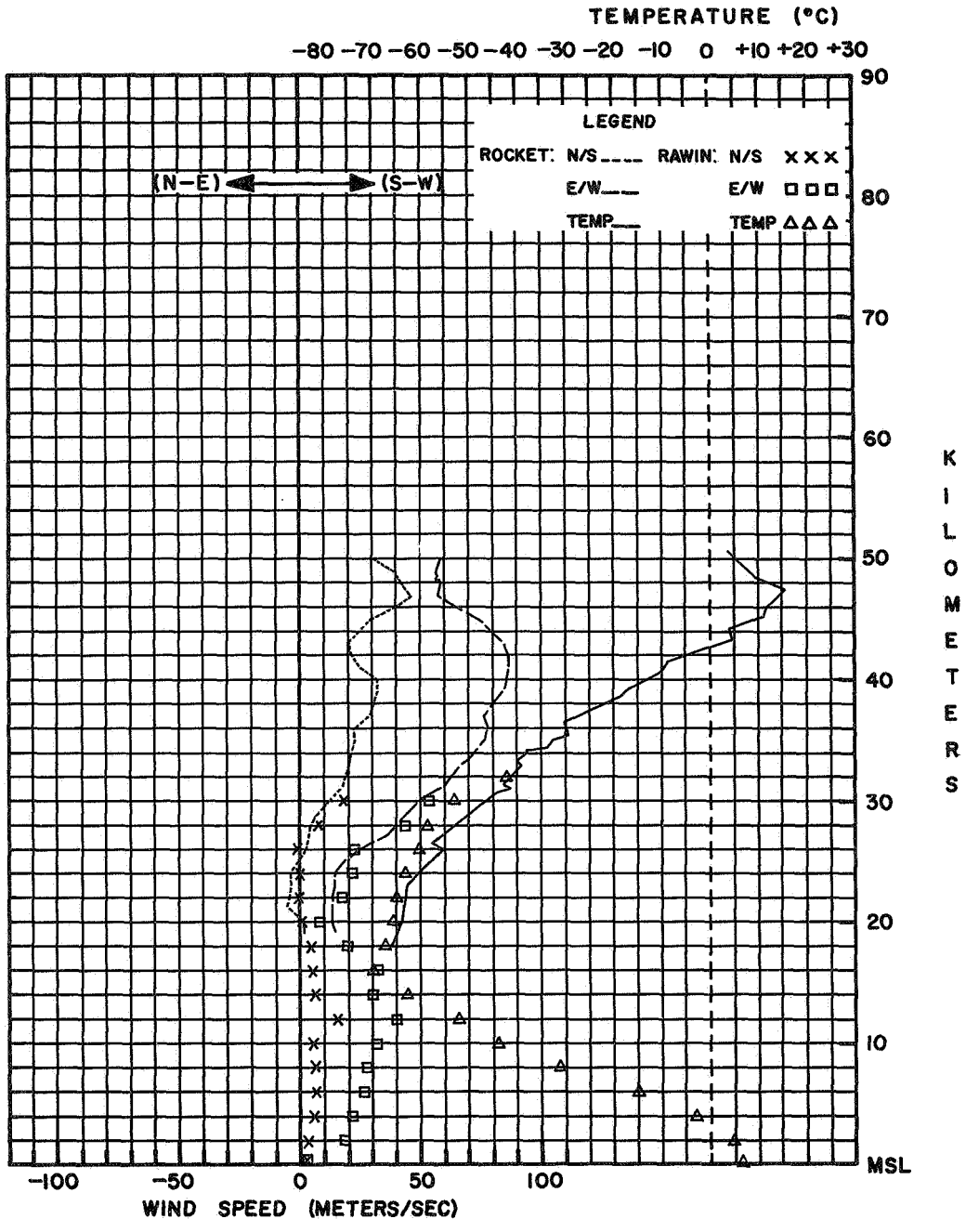
RADIOSONDE MANUFACTURER.. MOLDED INSULATION CO.
RADIOSONDE TYPE.. 1680 MHZ
TEMPERATURE ELEMENT TYPE.. ROD THERMISTOR
PRESSURE SENSOR TYPE.. ANEROID AND HYPSOMETER
GROUND EQUIPMENT TYPE.. GMD-1B
BALLOON TYPE.. NEOPRENE
BALLOON SIZE.. 1,700 GRAMS
FREE LIFT.. 1,400 GRAMS
ASCENSION RATES.. SFC-400 MB = 335 M/MINUTE
400 MB-TOP = 377 M/MINUTE

WEATHER OBSERVATION AT RAWINSONDE RELEASE

STATION PRESSURE.. 1026.0 MB
TEMPERATURE.. 6.7 DEG. C
RELATIVE HUMIDITY.. 41%
VISIBILITY.. 11 KM
SURFACE WIND.. 210 DEG. 6 KTS
CLOUD TYPE AND AMOUNT.. TOTAL.. 3 OCTAS
LOW.. NONE
MIDDLE.. NONE
HIGH.. NONE
TYPE OF PRECIPITATION.. NONE
OBSTRUCTIONS TO VISION.. NONE

WIND AT ROCKET LAUNCH

SFC. 115 DEG/05 KTS, 50 FT. 115 DEG/05 KTS,
100 FT. 117 DEG/05 KTS, 150 FT. 117 DEG/05 KTS,
200 FT. 117 DEG/05 KTS, 250 FT. 135 DEG/05 KTS




STATION: (NASA) WALLOPS ISLAND, VIRGINIA
DATE: 13 DECEMBER, 1967

ROCKET TIME: 1316 LST 1816 GCT
ROCKET MOTOR TYPE: ARCAS

PAYLOAD TYPE: ARCASONDE-1A
RADIOSONDE TYPE: 1680 MHZ

# APPENDIX A

# APPENDIX A
# DISCUSSION AND DESCRIPTION OF METEOROLOGICAL ROCKET SOUNDING DATA

The data presented in this report have undergone reasonable quality control and verification procedures to assure data which will adequately meet the needs of researchers. The Experimental InterAmerican Meteorological Rocket Network (EXAMETNET) standard data reduction procedures are used to present wind and thermodynamic data in the form shown. These existing data reduction procedures will be published as part of the EXAMETNET publications process.

The meteorological parameters obtained from the rocket observations are those of wind and temperature. Wind data are given in polar and component form for every kilometer, and temperature data are given at points of significant change of the temperature lapse rate; wind data, included for the same altitude with the significant temperature data, will aid the atmospheric researcher performing analysis to construct isotherms and temperature fields. The derived rocket thermodynamic values of pressure, density, and speed of sound are produced through computer processing, as is the constant pressure level data using geopotential altitudes. These derived values are determined using the equation of state and hydrostatic relationships; initial computational data are obtained from a supporting rawinsonde. All supporting rawinsonde observations are made within ±4 hours of the rocket observation.

Summarized technical data includes numerous advantages for the technical qualification of the observation. One of the more obvious advantages, for example, is that a rapid assessment of wind and temperature data representativeness can be made in the vicinity of payload deployment. This can be done by comparison of the launch azimuth, apogee, payload ejection altitude, and the results of the first data level reported.

A simplified graphical presentation was designed which would provide convenient size and acceptable resolution, yet relatively uncluttered of disturbing nonessential detail. Note that separation of the profiles of rocket data from the supporting rawinsonde data was maintained. The distinction that rocketsonde data is primary is obvious; however, the separation of data profiles allows the user to quickly determine the compatibility of the data and thus filter out observations to suit his needs.

No interpolation of missing data in the tabular or graphical data presentation is made, nor are corrections made to wind and temperature data at this time. Satisfactory correction values have not been determined for routine EXAMETNET use. As appropriate correction methods become available, they will be included as addenda or within separate publications. It is expected that these correction schemes and procedures will normally apply to the systems used by EXAMETNET participants.

In summary, this publication represents an up-to-date, state-of-the-art data format. This format will be found to complement data obtained elsewhere in the Northern and Southern Hemispheres, and also satisfy recommendations made by the Committee on Space Research (COSPAR), and other special committees of the International Committee of Scientific Unions (ICSU) for data exchange arrangements through the World Data Centers.

A detailed discussion and description of the EXAMETNET reports will be found in the annual publications. If any errors are noted or inquiries concerning the format are to be made, they can be directed to the EXAMETNET Scientific Coordinator, NASA, Wallops Station, Wallops Island, Virginia.

# APPENDIX B

# APPENDIX B
# A FEASIBILITY STUDY FOR DETERMINING THE HEIGHT OF A METEOROLOGICAL ROCKET INSTRUMENT IN THE EVENT OF TRACKING-RADAR FAILURE

Alvin J. Miller and Harold M. Woolf

Environmental Science Services Administration

Weather Bureau

## ABSTRACT

Analytical representations of the average fall rates of the WOX-1A and Arcasonde-1A instruments at Chamical, Argentina; Natal, Brazil; and Wallops Island, Virginia are presented. Integration of the fall velocity curves from a given initial height and time determines a height versus time relationship that can be utilized as a substitute whenever any portion of the radar track is missing. For certain applications, the height errors associated with downward integration are quite tolerable, but care must be exercised whenever upward integration is attempted.

## INTRODUCTION

While the meteorological rocket data obtained to date have significantly increased our knowledge of the upper atmosphere, the scientific community has come to realize that still greater frequency and spatial density of observations are needed. Accordingly, more and more nations are participating in the current meteorological rocket sounding programs. Funding limitations, however, occasionally preclude the extensive capital outlays needed for multiple data-acquisition systems at new or temporary sites. Consequently, when an occasional malfunction of equipment occurs during a sounding, redundant equipment is not available and some or all of the data may be lost. Since these stations do not, in general, have the extensive launch schedules that some of the older stations have, every effort should be made to recover this "lost" data.

The radar position and telemetered temperature information of most current meteorological rocket instruments are the outputs of two distinct and independent instrument systems. Consequently, the occasional malfunction of one of these components does not interfere with the acquisition of data by the other. Should the telemetry system not perform satisfactorily, winds may still be determined from the radar-positional information. Should the radar lose its target for any length of time, however, the telemetered temperature-versus-time data are of little practical utility unless height-versus-time information is also available.

The most obvious solution to this problem is simply to derive a mean height-versus-time curve from all soundings made to date at each station and employ the resulting relationship whenever needed. Unfortunately, as will be demonstrated below, the variability in deployment altitude of the instrument packages is so great that intolerable height errors are introduced by this method.

The deficiency of such an approach suggests an alternate procedure of deriving a mean fall rate curve which can then be integrated with respect to time from a given initial point. This, in essence, allows for the variability in deployment altitude mentioned above and permits a better interpolation to be obtained for each sounding. While the requirement for an initial point is a shortcoming, it should not prove too serious since it is the authors' experience that most soundings have radar information during some portion of the flight while only comparatively few have no radar data at all.

Since members of the Experimental InterAmerican Meteorological Rocket Network (EXAMETNET) occasionally experience the aforementioned problem, this office, in its capacity as the Office of the U.S. EXAMETNET Experimenter, was asked to determine the feasibility of applying the above approach at the EXAMETNET stations. The present paper describes the results of our analysis as applied to data from the three current EXAMETNET stations: Chamical, Argentina ($30^{o}22'S$, $67^{o}17'W$); Natal, Brazil ($05^{o}45'S$, $35^{o}10'W$); and Wallops Island, Virginia ($37^{o}50'N$, $75^{o}29'W$).

While it is recognized that the data samples for the individual stations are generally too small to allow statistically reliable results, it must be remembered that it is for this very reason that this study is required. In this context our analysis should be construed only as a feasibility study. During the period of study, Chamical employed only the WOX-1A instrument while Natal and Wallops Island used both the WOX-1A and Arcasonde-1A systems. The deceleration device employed on the WOX-1A is a 6 foot square, metalized silk parachute while that employed on the Arcasonde-1A is a 15 foot diameter parachute metalized on 50% of its panels.

## PROCEDURE

Fall rates of the WOX-1A instrument at Chamical and both the WOX-1A and Arcasonde-1A instruments at Natal and Wallops Island (figs. 1-5) were computed for 2-km layers from the height-time data presented in the EXAMETNET Data Report Series (ref. 1). The results were then plotted as a function of height. After visual inspection and some numerical experimentation, it was found that the general trend of the plotted data (no seasonal variation was evident in these small samples) could be represented rather well by a curve of the form:

$$V_F = A\, e^{(hZ+b)^{1/2}}$$

where $V_F$ = fall velocity, $-\frac{dZ}{dt}$ (km-sec$^{-1}$)

$Z$ = geometric altitude (km)

$A, h, b$ = constants (1)

It is noted that equation (1) is similar in form to the expression derived by Wagner (ref. 2).

Equation (1) takes the following forms, determined by least-squares techniques, for each station and instrument:

Chamical, WOX-1A

$$V_F = 7.7(\exp\,(0.78207\,Z + 7.3)^{1/2})\,10^{-5} \quad (2a)$$

Natal, WOX-1A

$$V_F = 7.5(\exp\,(0.78207\,Z + 7.3)^{1/2})\,10^{-5} \quad (2b)$$

Natal, Arcasonde-1A

$$V_F = 9.073(\exp\ (0.89125\ Z)^{1/2})\ 10^{-5} \tag{2c}$$

Wallops Island, WOX-1A

$$V_F = 8.25(\exp\ (0.78207\ Z + 7.3)^{1/2})\ 10^{-5} \tag{2d}$$

Wallops Island, Arcasonde-1A

$$V_F = 9.073(\exp\ (0.89125\ Z)^{1/2})\ 10^{-5} \tag{2e}$$

The computed fall rates (open circles) and our analytic representation (solid curves) for each station and instrument are presented in Figures 1-5. It is worthy of note that in each case the scatter about the mean curve tends to increase with height. Also, the goodness of fit for all of the approximations (eqs. 2a-2e) is generally quite comparable. The slight discrepancy exhibited in Figure 5a is a result of our requirement that the values of h and b in equation (3) remain fixed for each instrument type. This restriction was applied primarily to limit the computational effort of this feasibility study to a reasonable level. Further refinements may be necessary as more data become available.

The overall similarity in the representativeness of the mean curves suggests that the results of our computations at each station should also be similar. Such is indeed the case, and for the sake of brevity we describe in this study the complete extrapolation procedure for only the WOX-1A instrument at Chamical, Argentina. Error statistics are presented for the entire network, however.

$$\text{Setting } \frac{dZ}{dt} = -A\ e^{(hZ+b)^{1/2}} \tag{3}$$

we make the transformation:

$$u = (hZ+b)^{1/2} \tag{4}$$

Then

$$\frac{dZ}{dt} = \frac{2u}{h}\ \frac{du}{dt} \tag{5}$$

and

$$ue^{-u}\ \frac{du}{dt} = \frac{-Ah}{2} \tag{6}$$

Now integrating (5) from a known initial point $(Z_o,\ t_o)$ to $(Z,\ t)$ we finally arrive at:

$$e^{-(hZ+b)^{1/2}} \left\{ (hZ+b)^{1/2}+1 \right\} = e^{(hZ_o+b)^{1/2}} \left\{ (hZ_o+b)^{1/2}+1 \right\} + \frac{Ah}{2}\ (t-t_o) \tag{7}$$

Unfortunately, equation (7) is transcendental and is best solved by graphical techniques. As the values of the constants h and b are identical for each instrument type we are able to plot the function $\exp\left[-(hZ+b)^{1/2}\right]\left\{(hZ+b)^{1/2}+1\right\}$ versus Z in Figure 6 for both the WOX-1A and Arcasonde-1A instruments. Given a value of the right hand side of equation (7) it is then relatively easy to determine the corresponding height from Figure 6.

For a sounding in which radar tracking is available initially, but then lost, $Z_o$ and $t_o$ are known and equation (6) can be integrated downward. If there is no initial tracking, but radar data do become available later in the sounding, equation (6) can then be integrated upward (backward in time) from the

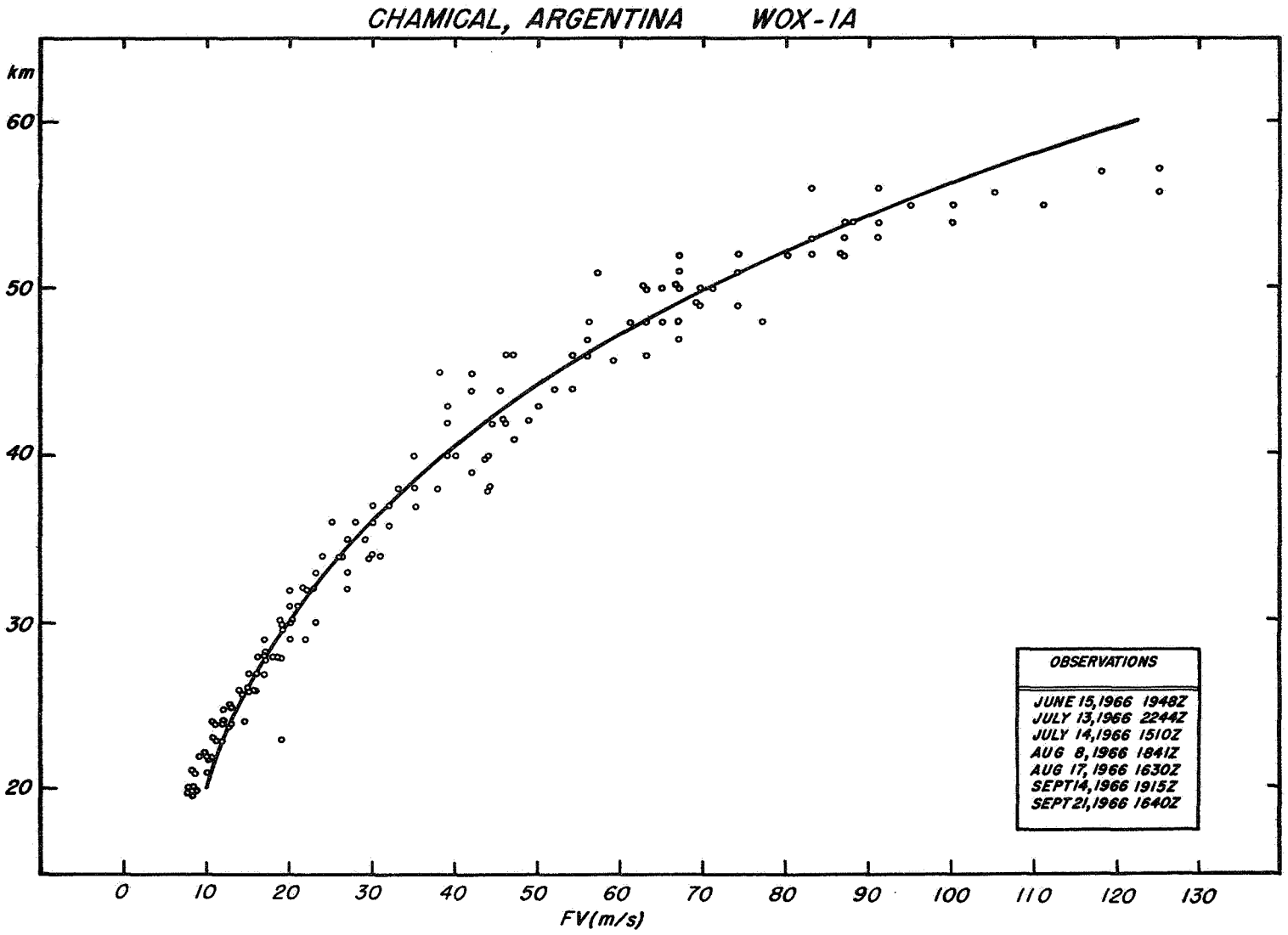



Figure 1. Computed fall rates (open circles) and our analytic representation (solid curve) of the mean fall rate as a function of altitude for the WOX-1A instrument at Chamical, Argentina. Observations employed in computations are listed in insert.



B-4

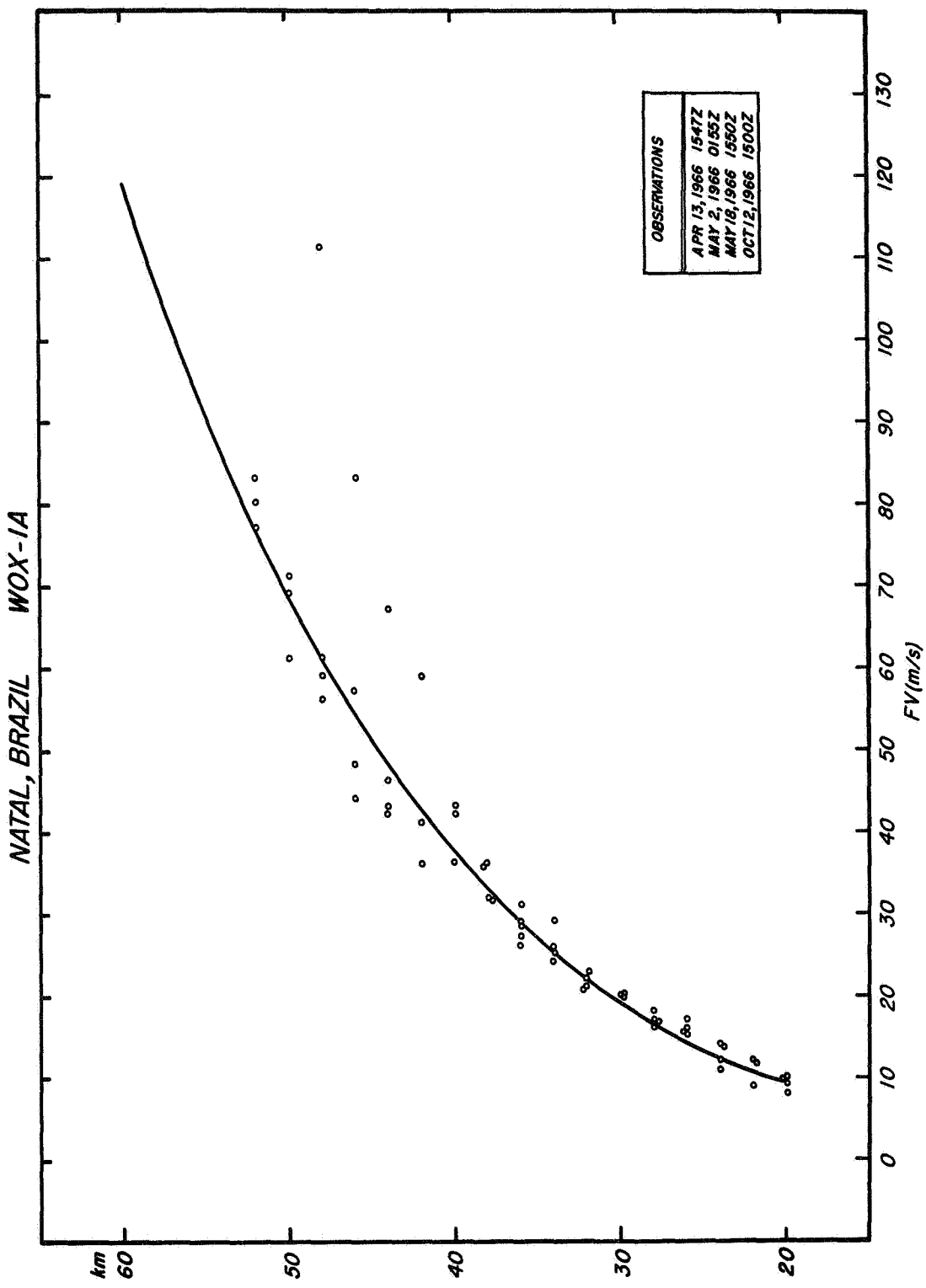



Figure 2. Same as Fig. 1 for the WOX-1A instrument at Natal, Brazil.

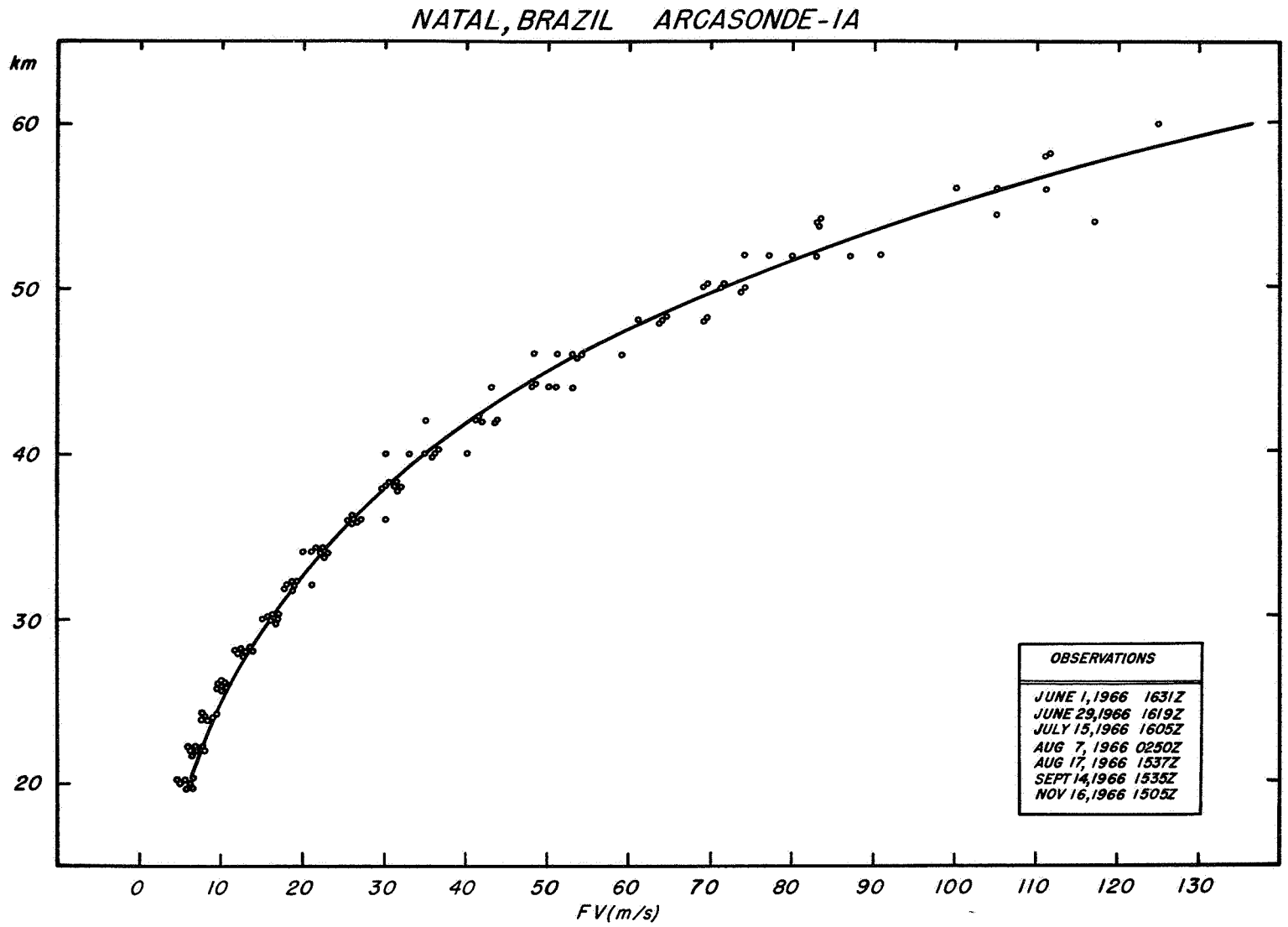



Figure 3. Same as Fig. 1 for the Arcasonde-1A instrument at Natal, Brazil.

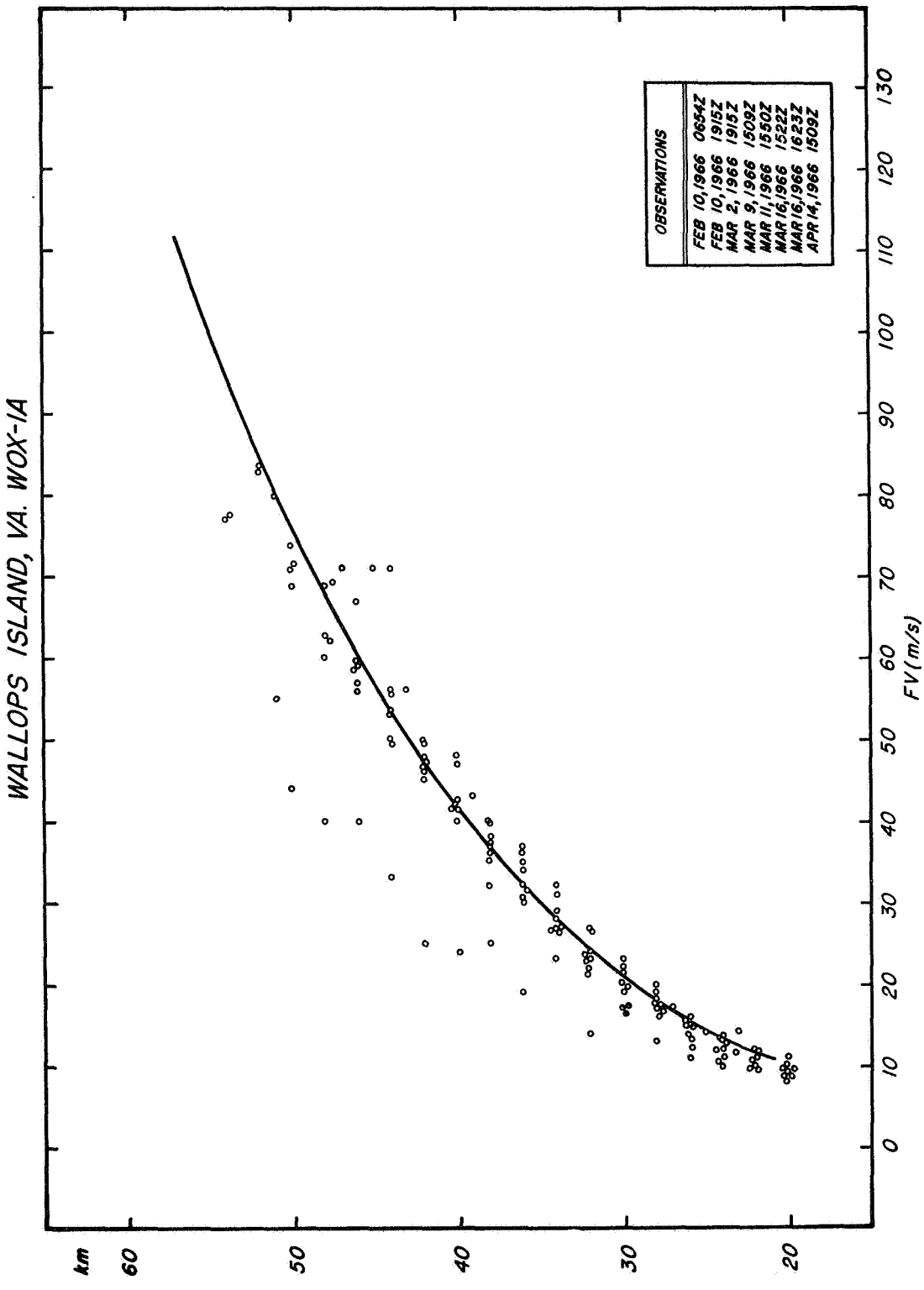



Figure 4. Same as Fig. 1 for the WOX-1A instrument at Wallops Island, Va.

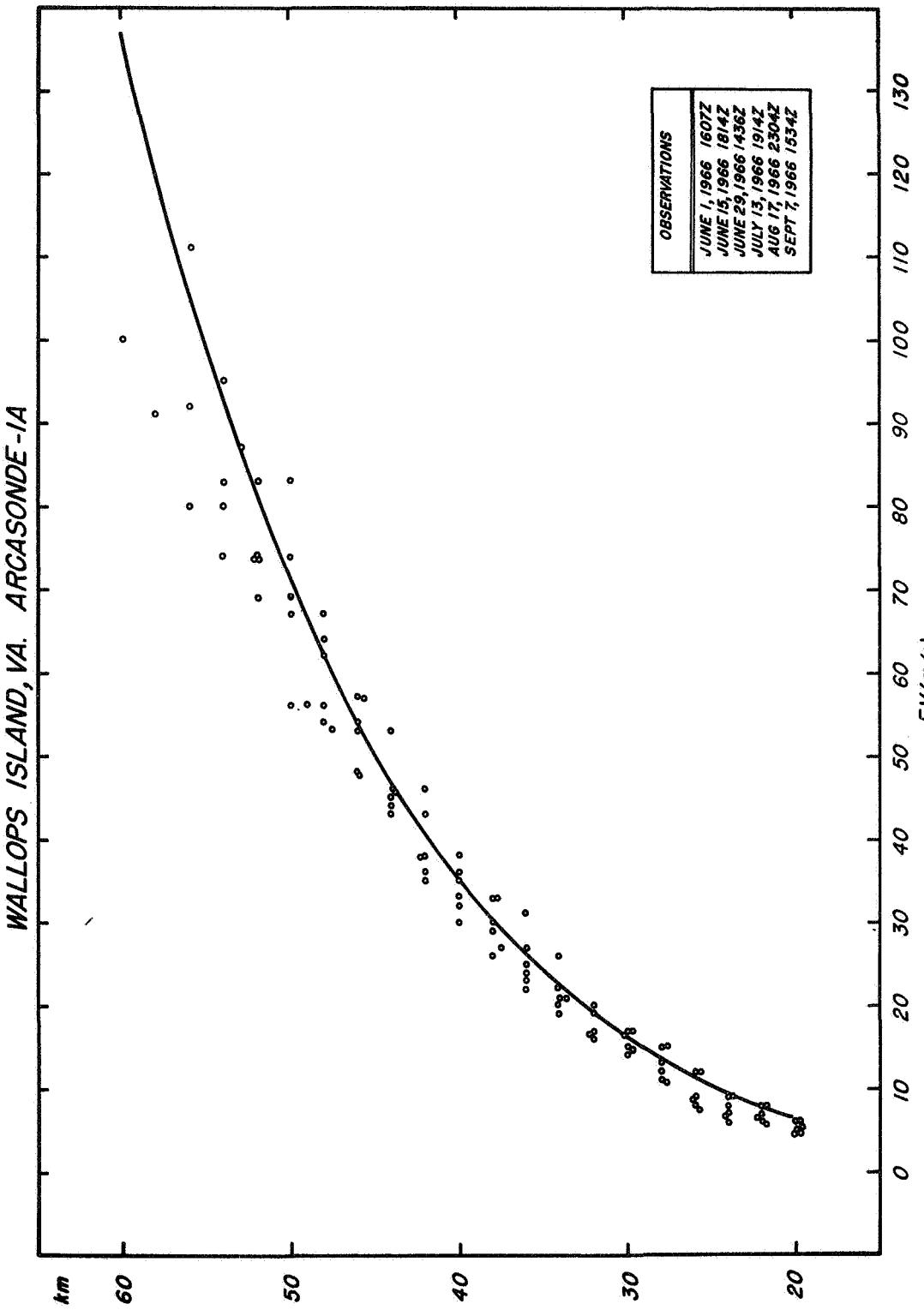



Figure 5a. Same as Fig. 1 for the Arcasonde-1A instrument at Wallops Island, Va.

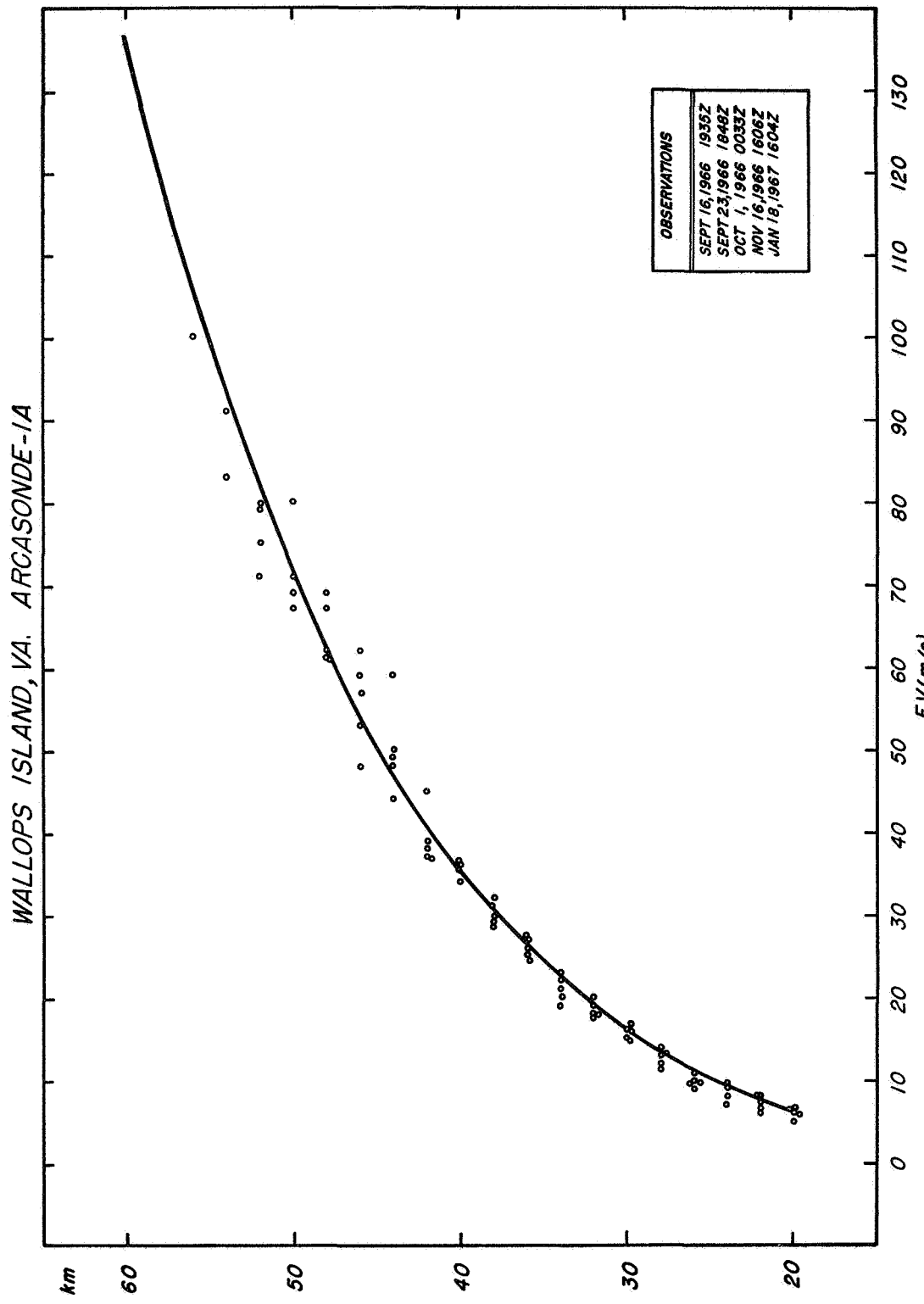



Figure 5b. Same as Fig. 1 for the Arcasonde-1A instrument at Wallops Island, Va.

point at which tracking begins. Similarly, if the track is missed in the middle of the sounding, either extrapolation is possible. The situation that presents the greatest difficulty is that in which no radar data are available at all. Figure 7 presents a plot of data acquisition height versus elapsed time from liftoff for all data at Chamical. As mentioned earlier, the scatter is too great to permit a ($Z_o$, $t_o$) to be predetermined effectively.

DISCUSSION

The procedure described above would give highly satisfactory results if each sonde were to descend at the rate given by our mean curve. In fact, the fall velocities only rarely correspond exactly to our assumed values, and the errors in the height computation depend on the "goodness of fit" of each sounding. If the measured fall rate for an individual sounding oscillates about the mean, the height errors will exhibit some tendency for cancellation. Should the fall rate be entirely slower or faster than the mean, then the height errors will tend to increase. In essence, this means that we require not just one initial point, but several, in order to compute the fall velocity of the package at several points and determine the adequacy of our approximation.

To obtain an indication of the effect on a height determination of a particular sonde's actual fall velocity departing from our mean value, we integrated a fall velocity profile similar in shape to the mean, but 1.5 times as great, i.e.

$$\frac{dZ}{dt} = -1.5\,Ae^{(hZ+b)^{1/2}} \tag{8}$$

Figure 8 presents height-time curves determined by the integration of equations (2a) and (8) with the initial point set at 55 km and 0.0 seconds. It is worthy of note that the vertical separation between the two curves does not increase as rapidly at the lower levels as it does at the higher levels. This results from the exponential nature of equation (7) as depicted in Figure 6. This suggests that even if the actual fall rate is one and one half times our mean rate our method may still be utilized effectively at the lower levels.

The height inaccuracies that occur are, for our purposes, important only insofar as they result in temperature errors. If the stratosphere is isothermal, uncertainties in altitude are meaningless. On the other hand, in regions of large lapse rate, small height discrepancies can result in rather large temperature errors. The conclusion, then, is that each sounding must be scrutinized subjectively to determine the appropriateness of using the above extrapolation procedure.

As an indication of the magnitude of the actual discrepancies involved, we have integrated equation (7) for the five soundings at Chamical when both telemetry and radar data were available as reference (Figures 9-13). In all cases, the integrations were carried out both downward and upward, using the highest and lowest $Z_o$, $t_o$ respectively.

Before considering the results, it is helpful to assess for our data sample the error pattern that will result from the inherent scatter about the mean curve. As noted above, the scatter in Figure 1 tends to increase with altitude, and so, therefore, does the "error" in the coefficients. We might except, then, that integrating downward from the top point, when the largest errors in the coefficients are multiplied by the smallest time separations (see (7)) and the smallest errors by the largest time separations, will give better results than integrating upward, when the opposite is true. Also, the exponential nature of the solutions, as mentioned in the discussion of Figure 8, suggests that an error in the determination of the right-hand side of equation (7) results in a much larger height error as the altitude increases.

The foregoing appraisal is substantiated by our results, shown in Figures 9-13. It should be noted that the absence of a particular curve, or any portion thereof, implies that the temperature differences between it and the curve into which it merges are too small to be differentiated on this scale. The exception is in Figure 10, in which the reference curve is missing between 30.24 and 43.28 km, owing to radar malfunction.

As stated above, the temperature lapse rate is critical in determining the temperature error. Figure 13, for example, shows that in the 35-40 km region (working down) the discrepancy is as large as 6°C while in the regions of less steep lapse rates the errors are generally less than 3°C. With upward integration the inaccuracies tend to be larger. The latter feature is borne out by Table 1, which presents the root mean square temperature errors at 5-km intervals for all available data at the three EXAMETNET stations. This in turn, suggests that a filter might be applied to the calculated values to reduce the large temperature errors associated with relatively small height errors.

Our experience in this subject, however, indicates that choice of smoothing procedure is dependent on the final application of the data and is often rather subjective. We have applied a 3-point running mean $T_Z = \frac{1}{3}(T_{Z+2km} + T_{Z-2km} + T_Z)$ at 2-km intervals to the curves in Figures 9-13, and the results are shown in Figures 14-18. This is done merely to demonstrate what smoothing might accomplish, and we do not suggest that this is the optimum procedure. In general, the resultant curves are smoother and the errors considerably smaller. Figure 18, in particular, indicates that the 6°C discrepancies mentioned above for the unsmoothed curves (Figure 13) have been reduced to less than 3°C.

## FINAL REMARKS

While it is recognized that the sample sizes involved in the preceding analyses are not very large, the relative similarity of results for all the stations suggests that future refinements will not invalidate the overall results of this feasibility study. For certain applications (e.g. synoptic analyses) the temperature errors associated with downward integration are quite tolerable, but for certain detailed work (e.g. study of gravity waves) the true variations may be less than our measured errors and therefore not detectable.

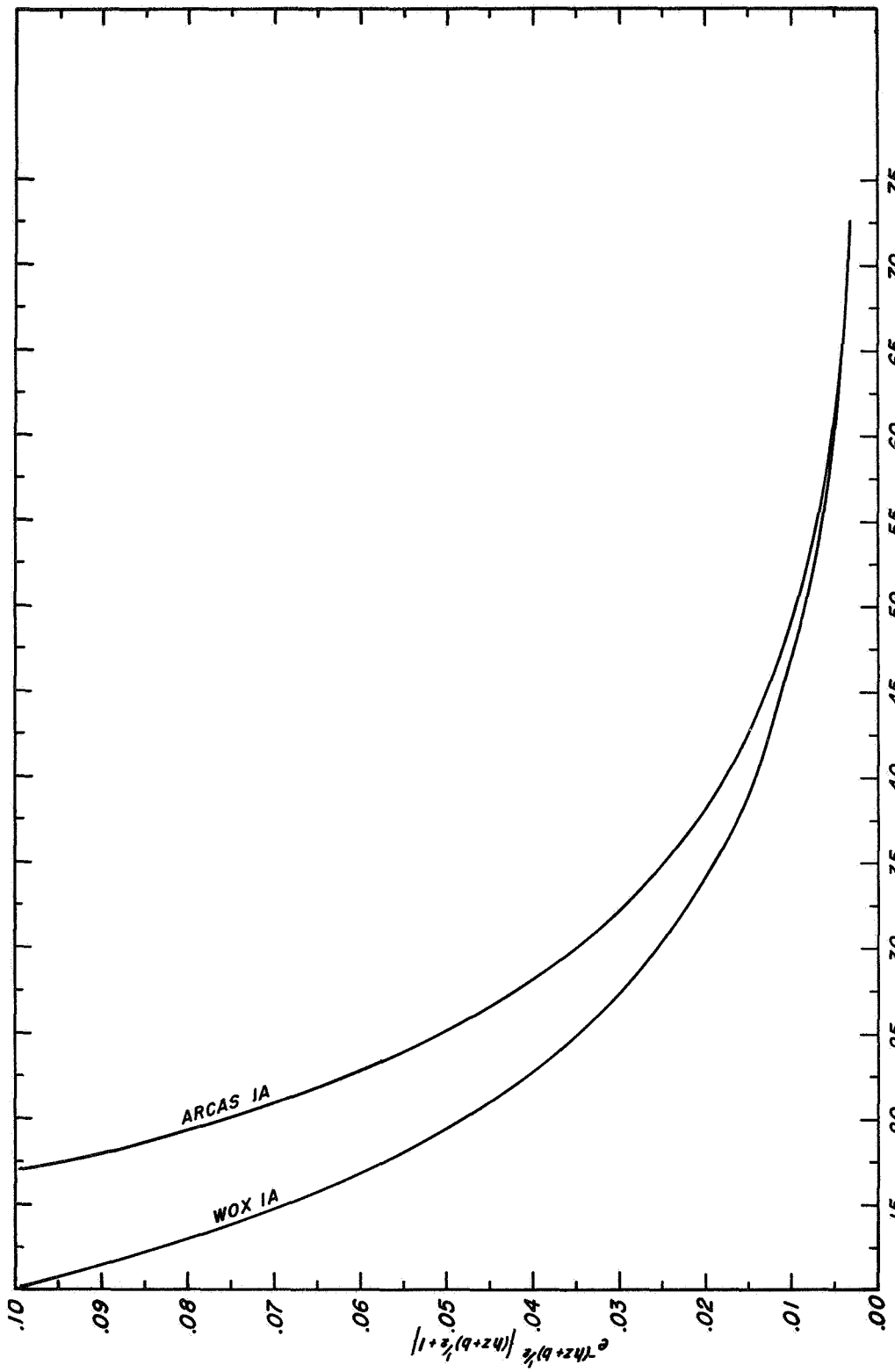



Figure 6. Graph of function $\exp\left[-(hZ+b)^{1/2}\right]\left\{(hZ+b)^{1/2}+1\right\}$ versus height for the WOX-1A and Arcasonde-1A instruments.

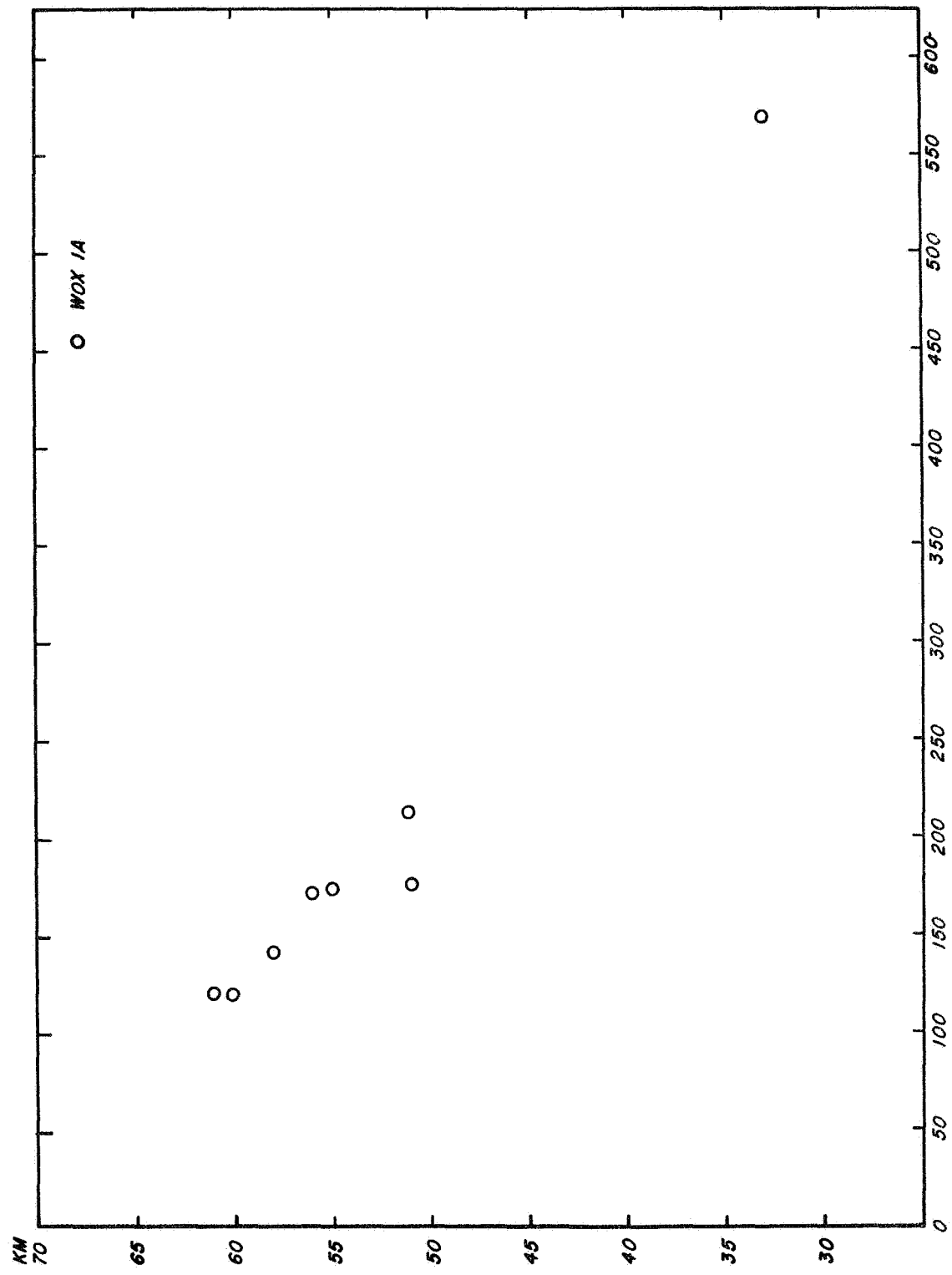



Figure 7. Data acquisition height versus elapsed time from liftoff for all WOX-1A soundings at Chamical.

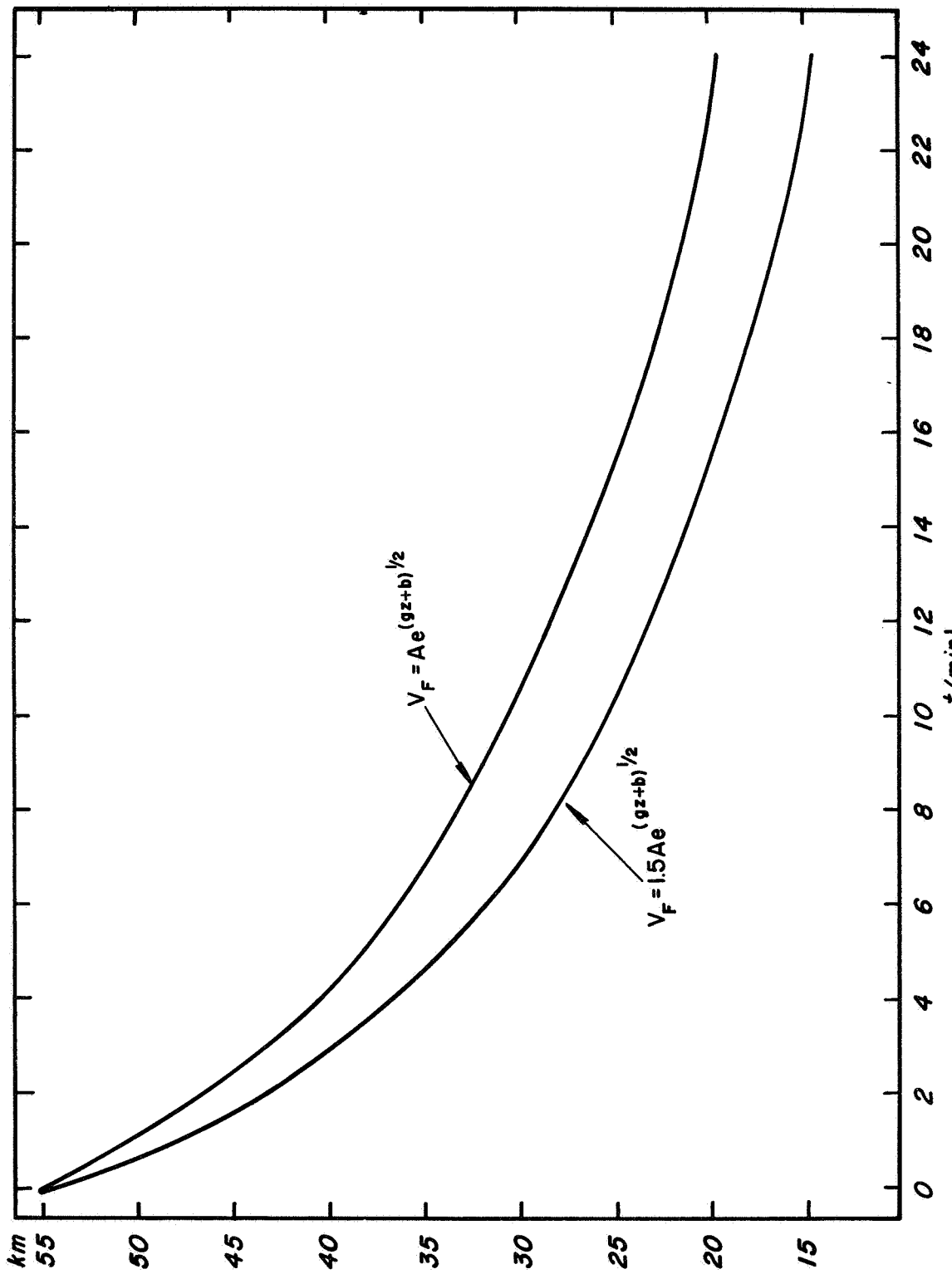



Figure 8. Height-time curves determined by integration of equations (2a) and (8) with initial conditions of 55 km and 0.0 sec.

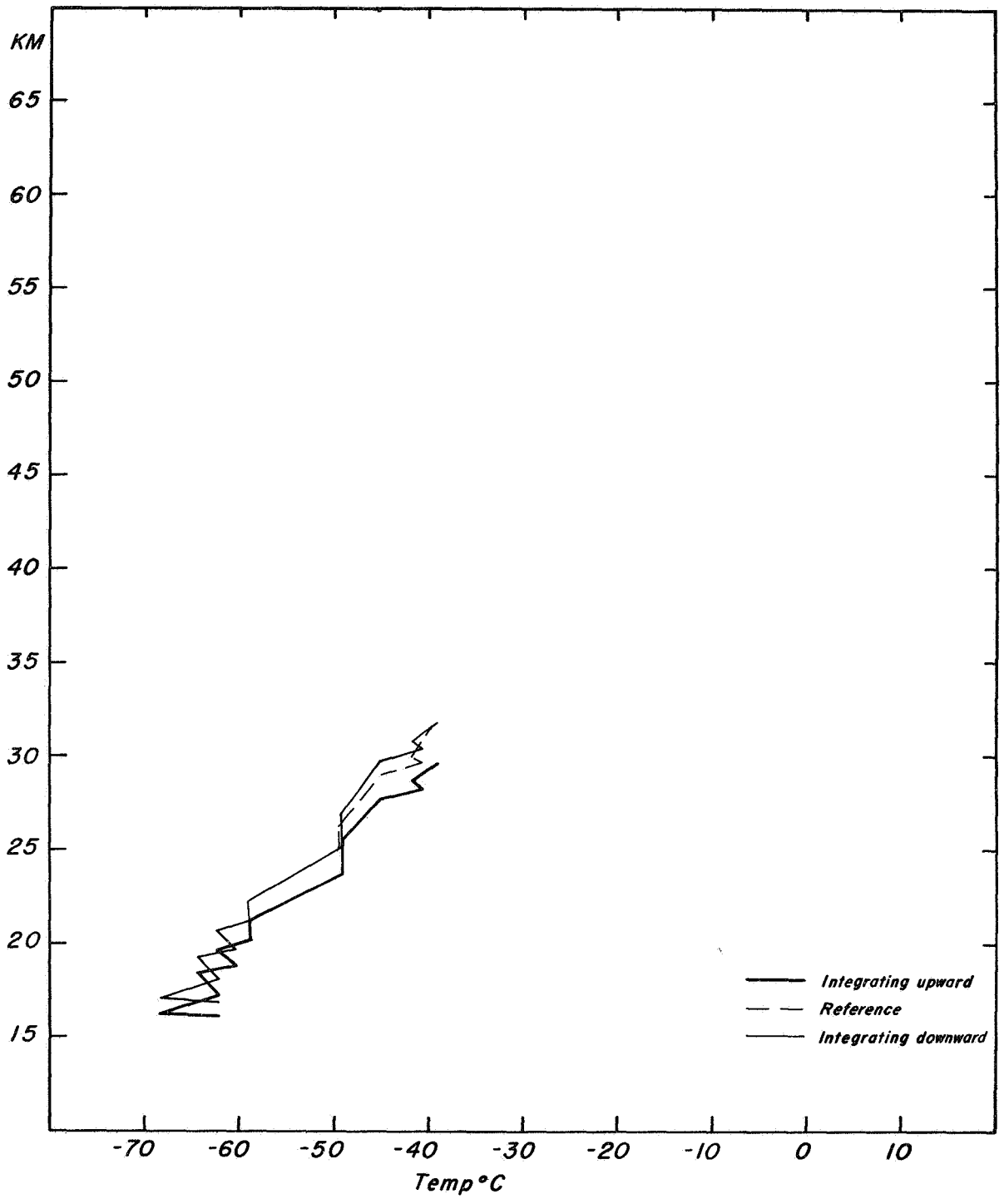



Figure 9. Vertical temperature profiles for 2022 GMT May 18, 1966, at Chamical. Measured values are indicated by dashed line, those determined by upward integration, by heavy solid line; and those obtained by downward integration, by thin solid line.

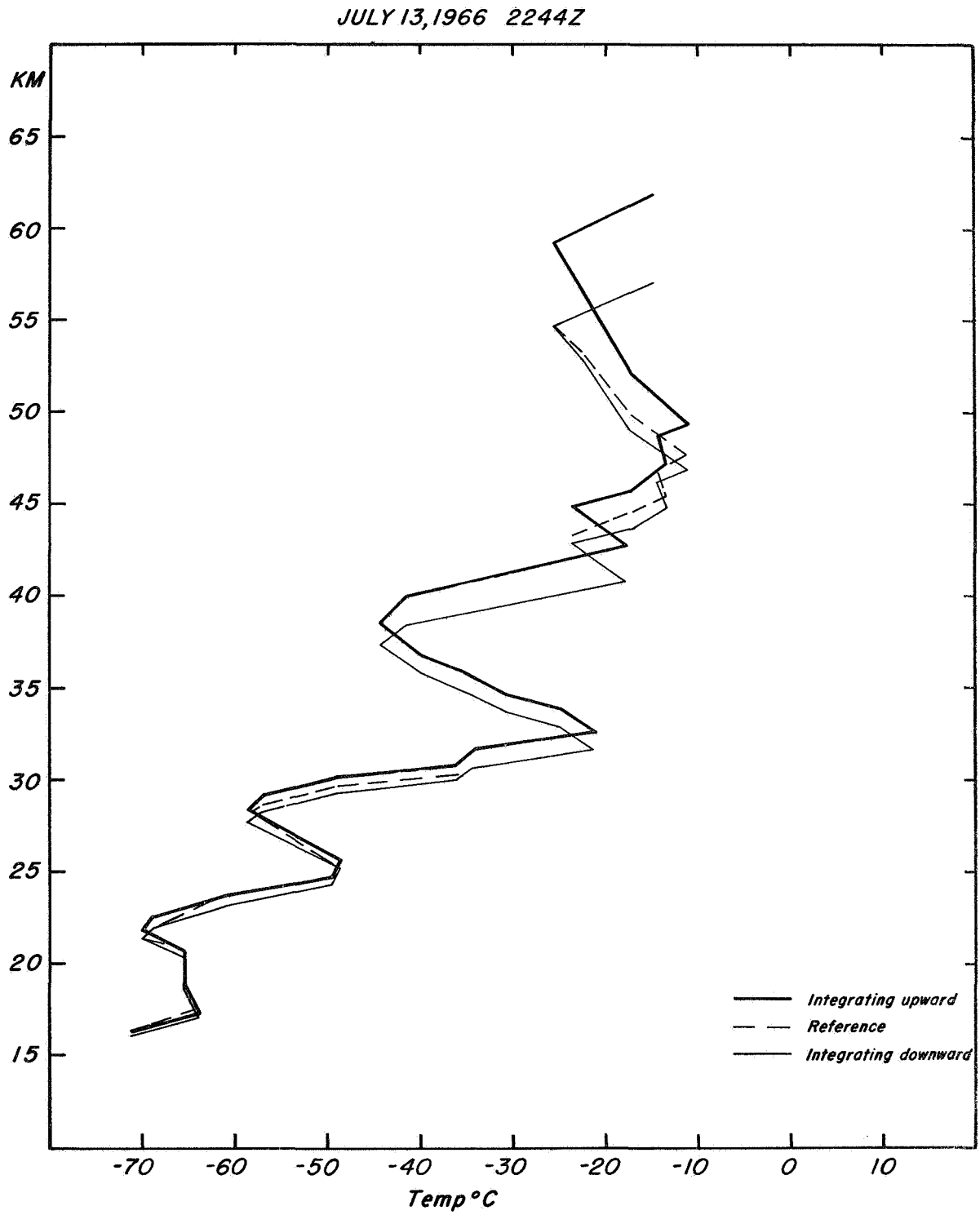



Figure 10. Same as Fig. 9 for 2244 GMT July 13, 1966.
(Note: reference missing between 30.24 and 43.28 km.)

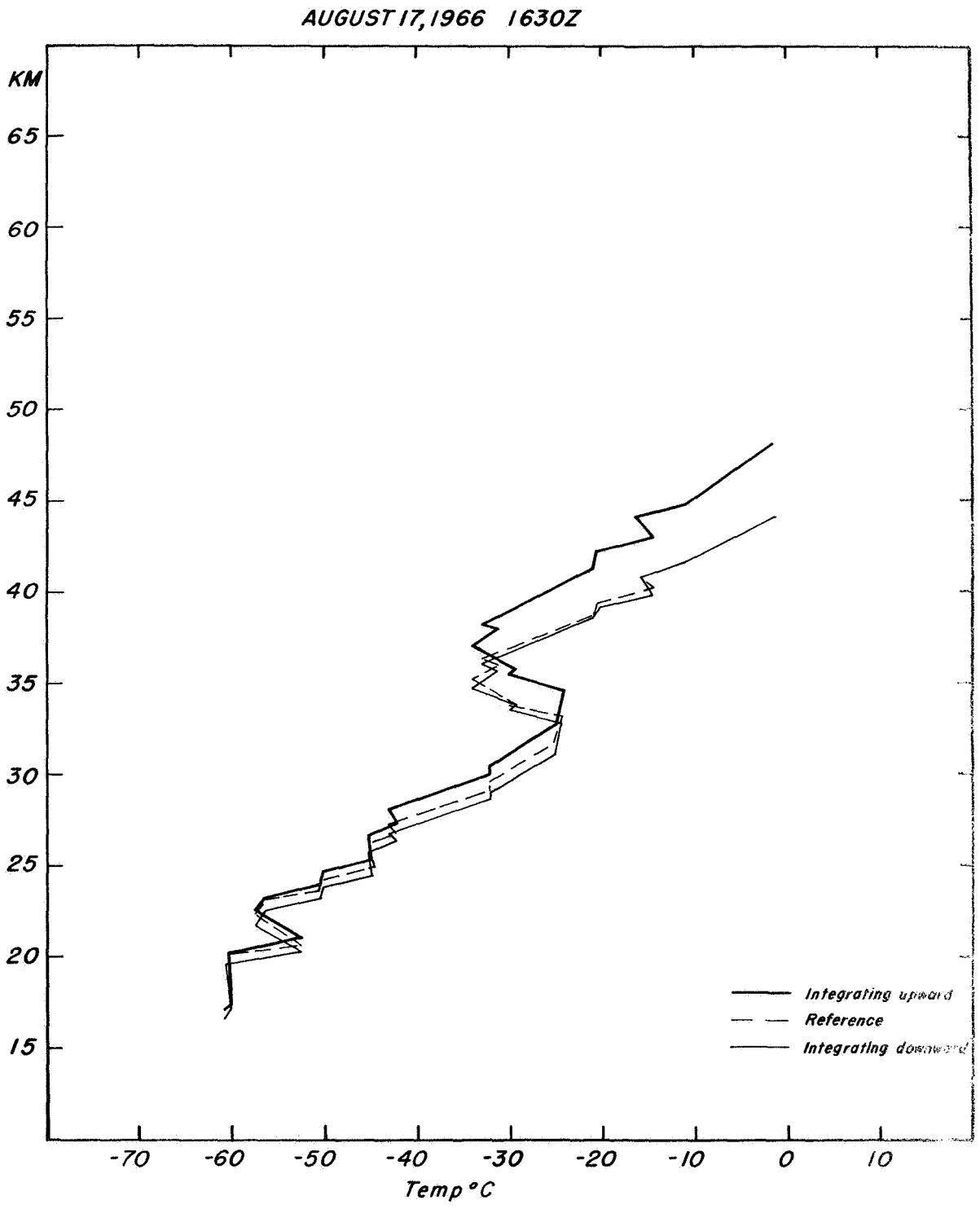



Figure 11. Same as Fig. 9 for 1630 GMT August 17, 1966. 65.

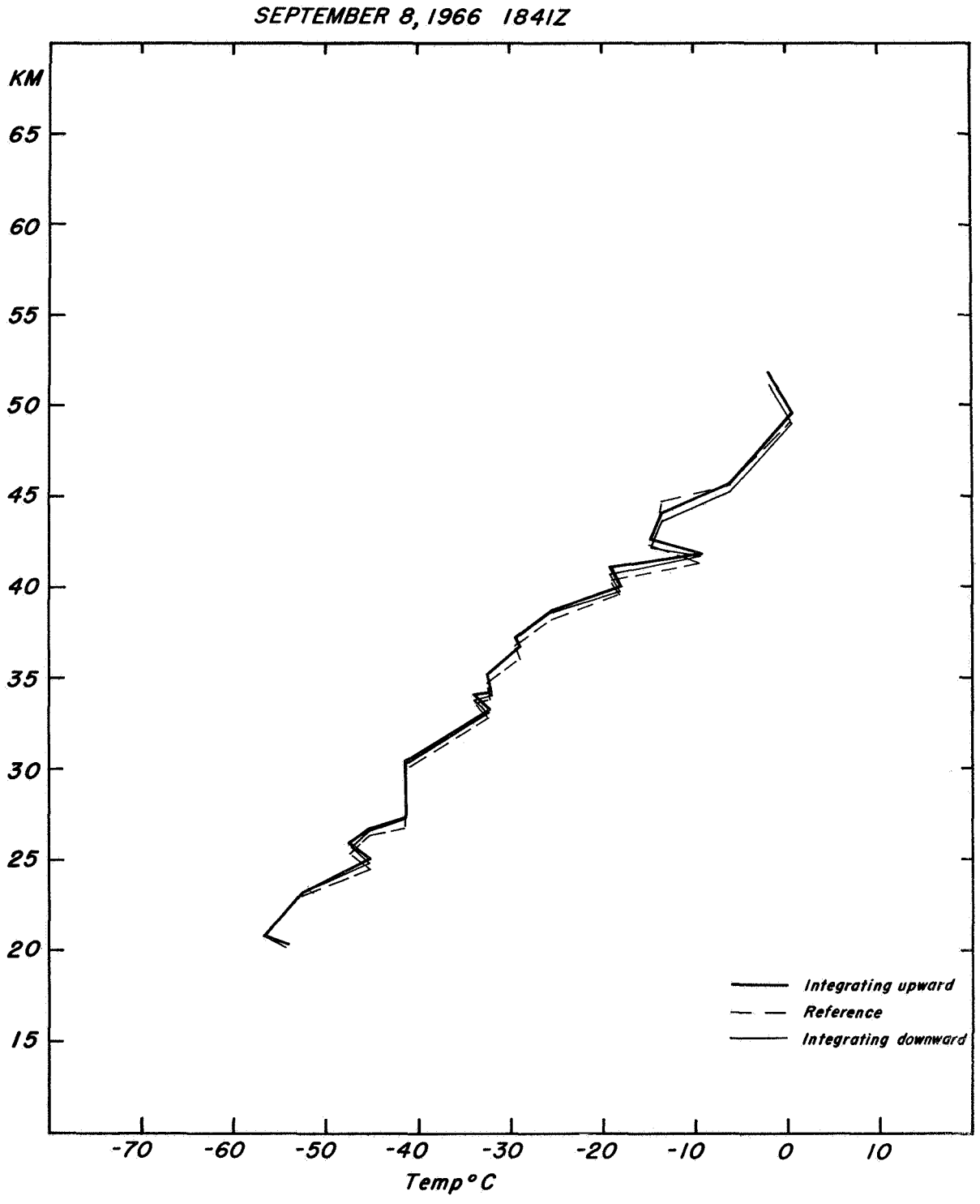



Figure 12. Same as Fig. 9 for 1841 GMT September 8, 1966.

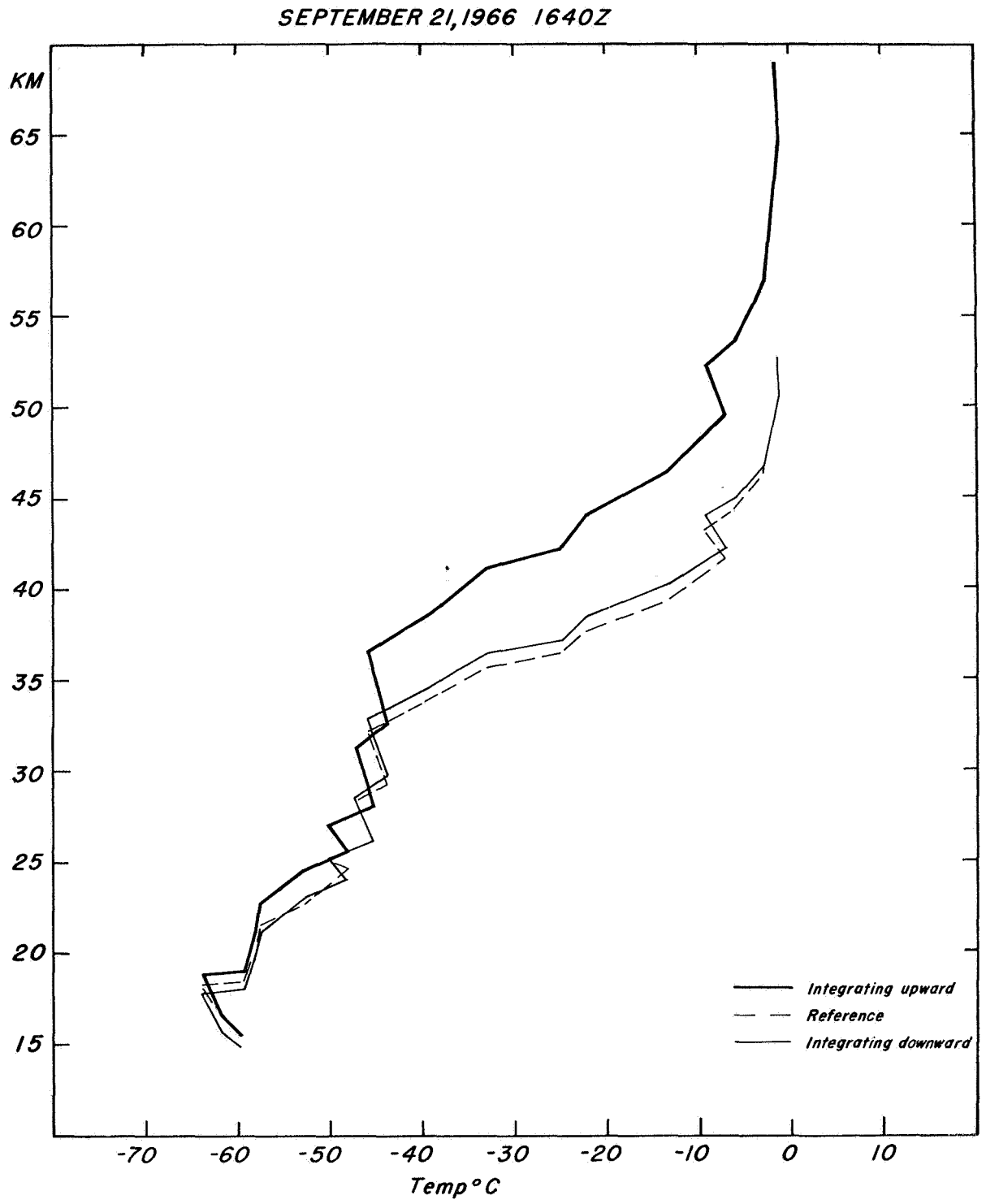



Figure 13. Same as Fig. 9 for 1640 GMT September 21, 1966.

Table 1. Root Mean Square Temperature Error (°C) at 5-km intervals

| Height (KM) | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
|---|---|---|---|---|---|---|---|---|---|
| CHAMICAL WOX-1A | | | | | | | | | |
| Integrating downward | 2.3 | 0.4 | 2.6 | 1.4 | 2.0 | 2.5 | 0.6 | 0.0 | |
| No. of observations | 4 | 5 | 5 | 3 | 3 | 3 | 3 | 1 | |
| Integrating upward | 0.3 | 1.6 | 4.5 | 6.6 | 15.0 | 8.9 | 4.5 | 3.5 | |
| No. of observations | 4 | 5 | 4 | 3 | 3 | 3 | 3 | 1 | |
| NATAL WOX-1A | | | | | | | | | |
| Integrating downward | 2.0 | 1.2 | 2.0 | 1.1 | 2.4 | 1.3 | 0.3 | | |
| No. of observations | 3 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| Integrating upward | 0.7 | 1.2 | 5.4 | 4.8 | 2.5 | 1.2 | 0.1 | | |
| No. of observations | 3 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| WALLOPS I. WOX-1A | | | | | | | | | |
| Integrating downward | 2.0 | 0.6 | 2.0 | 0.3 | 0.8 | 2.0 | 0.5 | | |
| No. of observations | 1 | 1 | 1 | 1 | 1 | 1 | 2 | | |
| Integrating upward | 0.0 | 1.7 | 0.8 | 7.6 | 11.0 | 10.2 | 12.6 | | |
| No. of observations | 1 | 1 | 1 | 1 | 1 | 1 | 2 | | |
| NATAL ARCASONDE-1A | | | | | | | | | |
| Integrating downward | 1.8 | 1.4 | 0.2 | 1.0 | 2.2 | 0.5 | 0.4 | 1.2 | 1.7 |
| No. of observations | 4 | 5 | 4 | 4 | 5 | 4 | 4 | 2 | 2 |
| Integrating upward | 0.5 | 2.3 | 4.3 | 9.6 | 4.5 | 11.1 | 7.8 | 4.8 | 9.1 |
| No. of observations | 4 | 5 | 4 | 4 | 5 | 4 | 4 | 2 | 2 |
| WALLOPS I. ARCASONDE-1A | | | | | | | | | |
| Integrating downward | 2.6 | 1.7 | 2.8 | 1.2 | 2.6 | 2.2 | 0.0 | 0.7 | |
| No. of observations | 8 | 9 | 9 | 9 | 9 | 9 | 8 | 3 | |
| Integrating upward | 0.1 | 0.8 | 4.7 | 8.9 | 10.9 | 19.5 | 18.1 | 17.4 | |
| No. of observations | 9 | 9 | 9 | 9 | 9 | 9 | 6 | 3 | |
| Height (KM) | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |

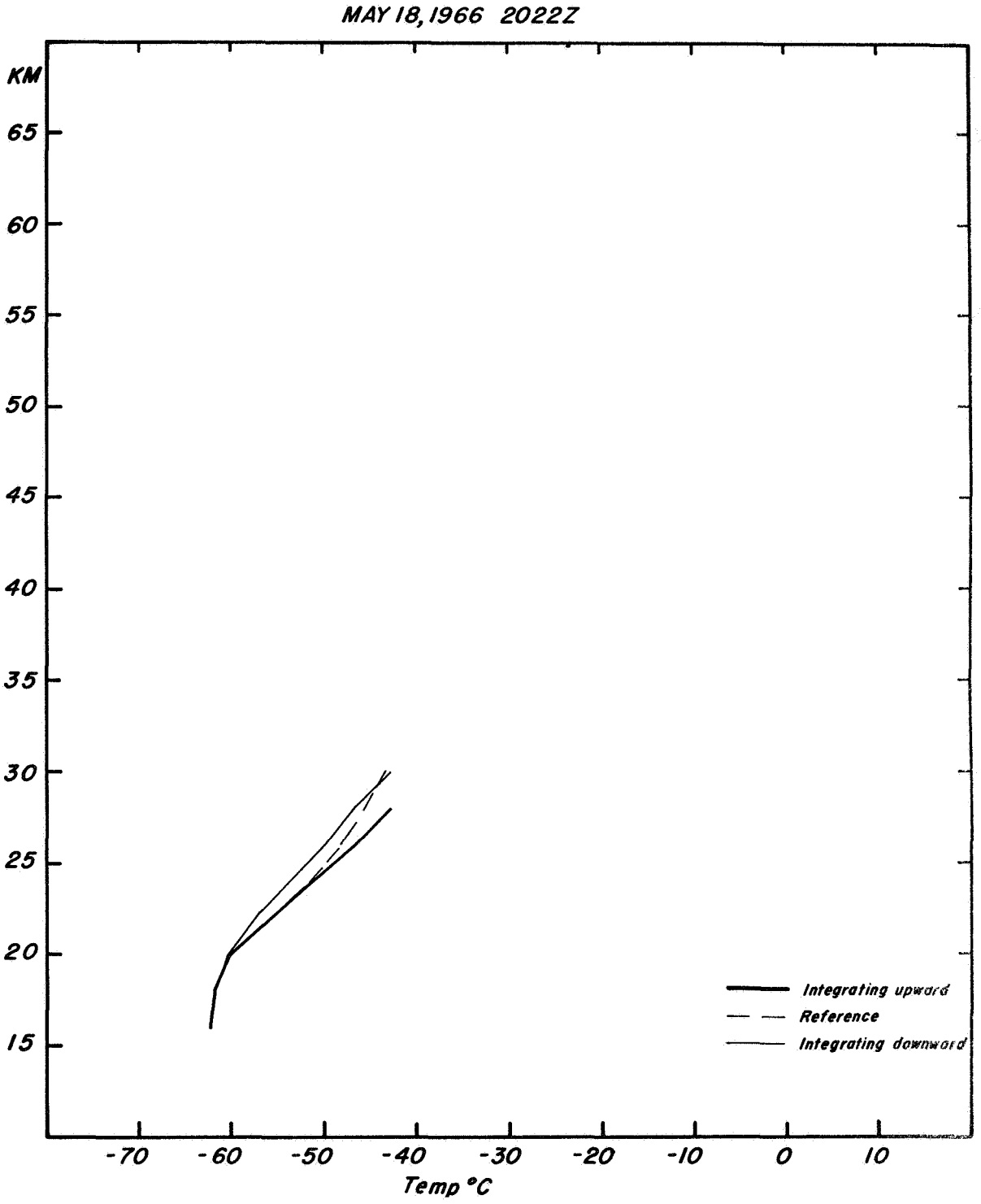



Figure 14. Smoothed representation (3-point running mean) of information contained in Fig. 9.

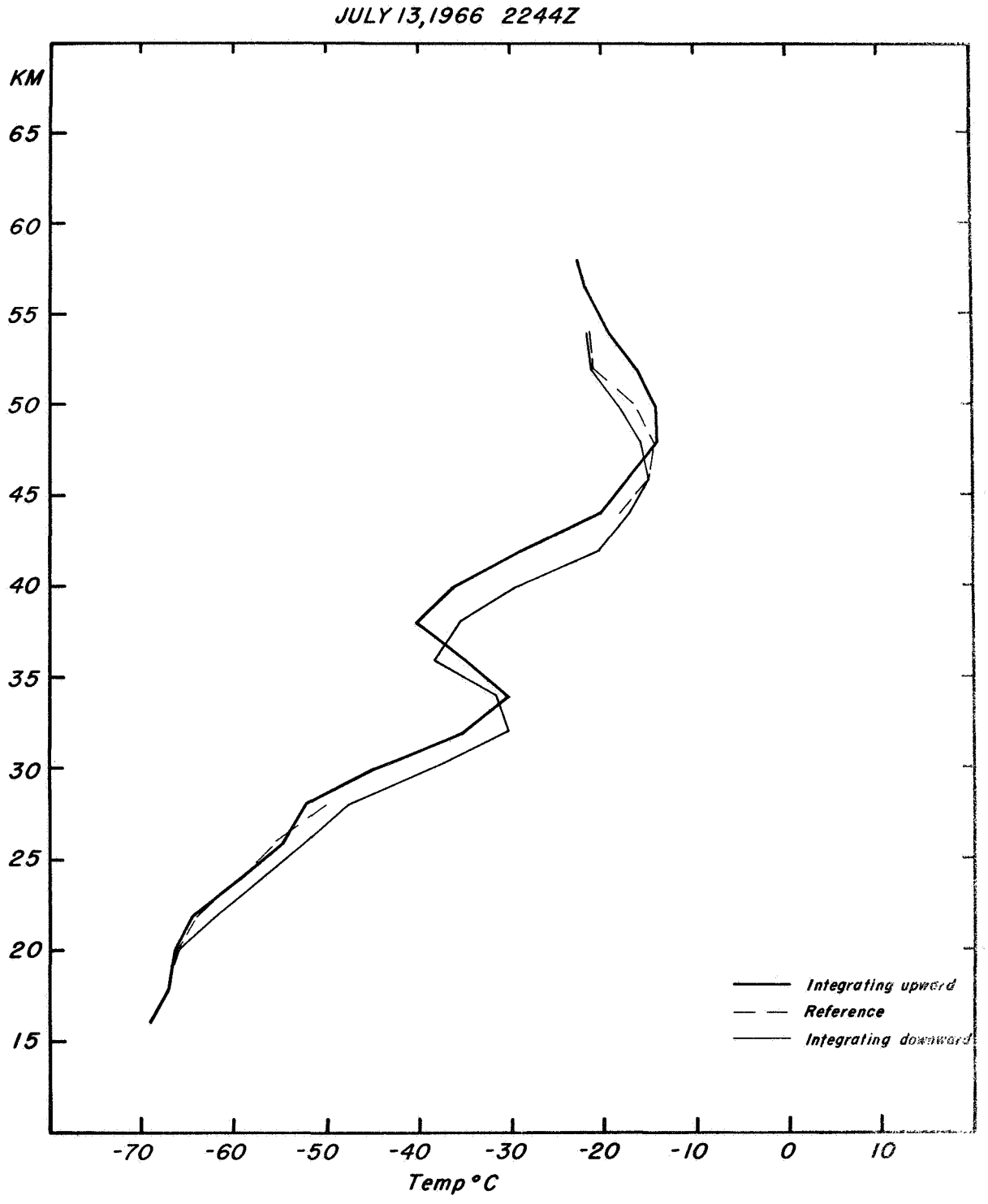



Figure 15. Smoothed representation of information in Fig. 10.

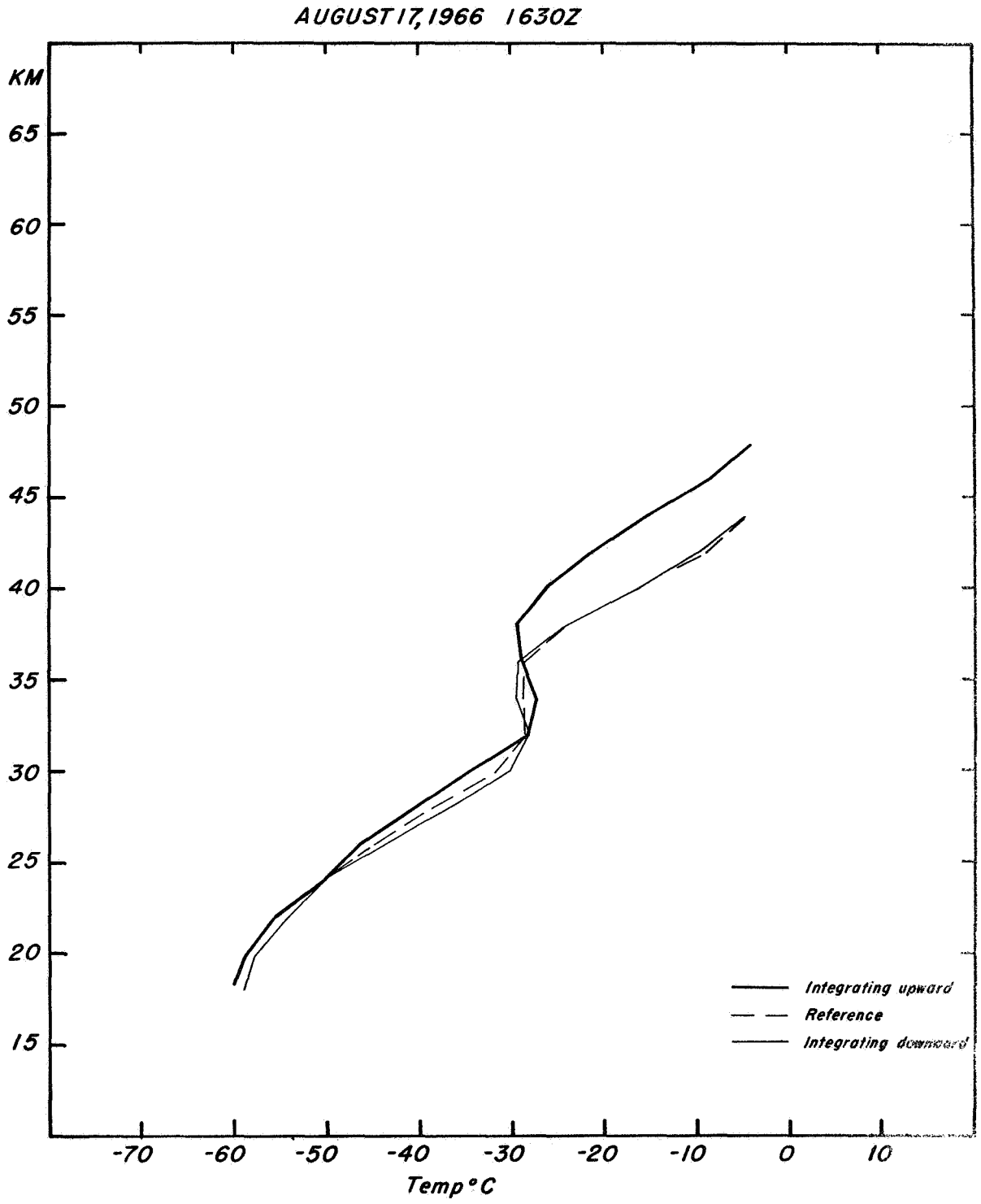



Figure 16. Smoothed representation of information in Fig. 11.

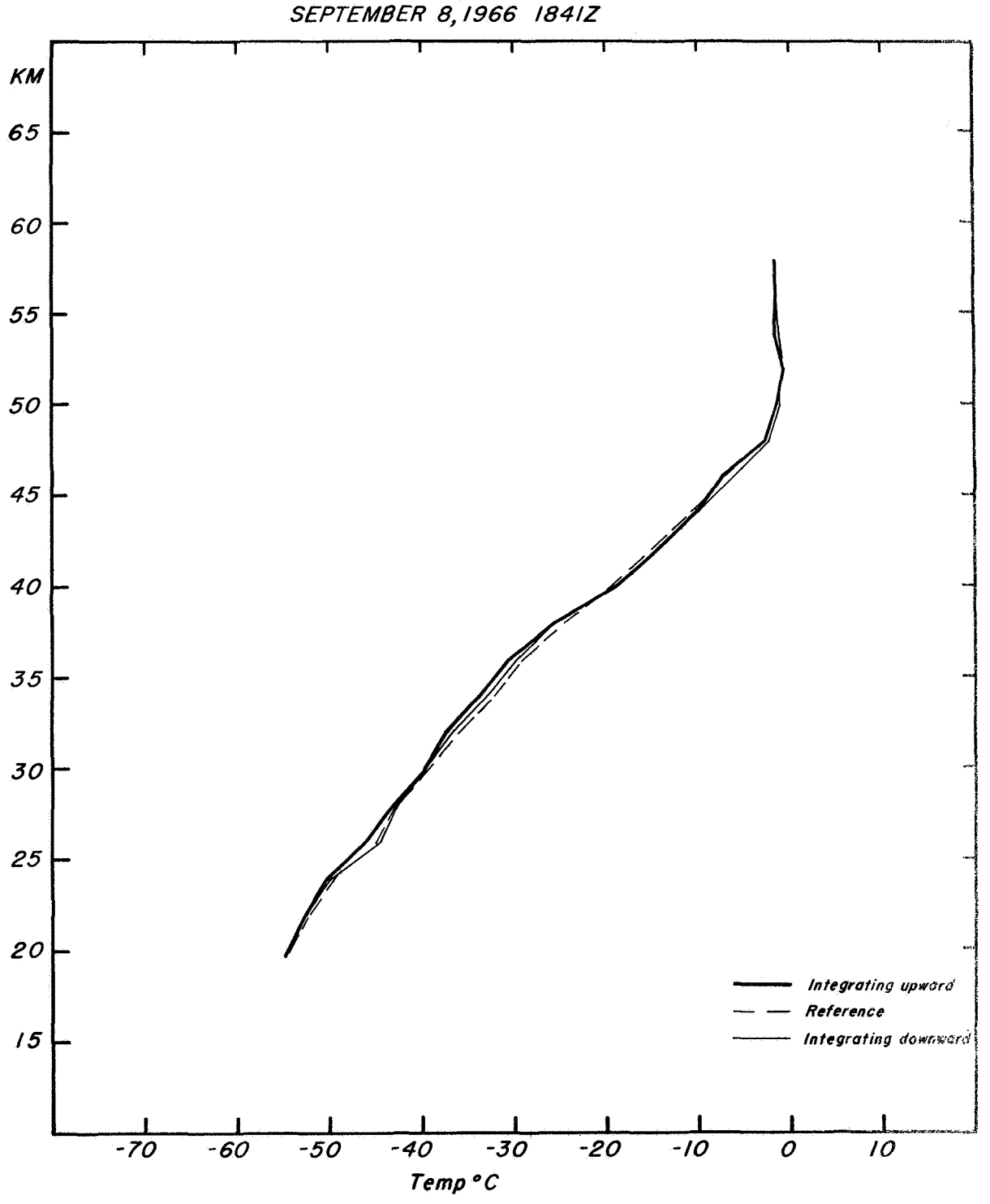



Figure 17. Smoothed representation of information in Fig. 12.

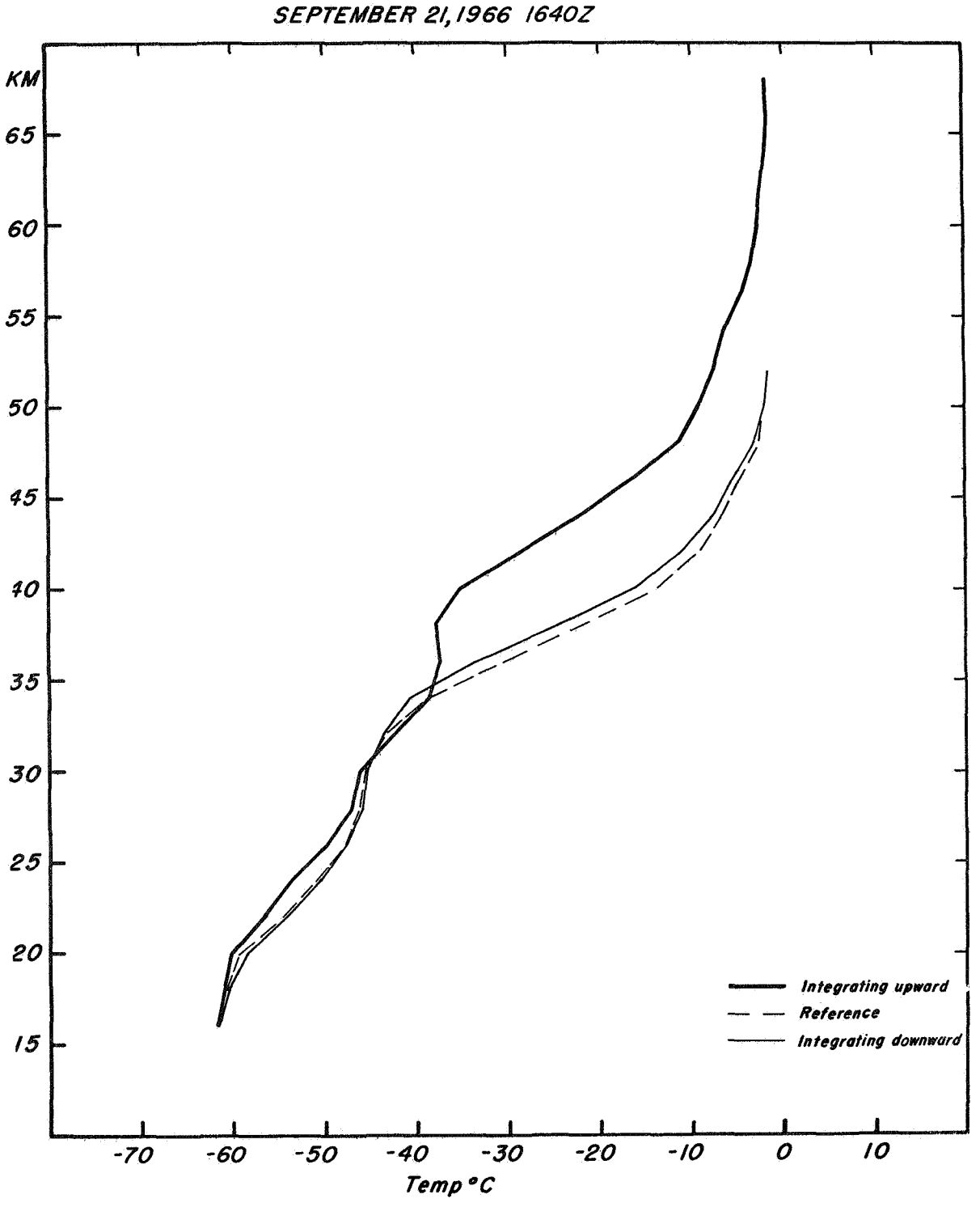



Figure 18. Smoothed representation of information in Fig. 13.

## REFERENCES


1. EXAMETNET Data Report Series, Reports No. 66-101, 66-102, 66-103. Prepared by Schellenger Research Laboratories, University of Texas at El Paso (Contract No. NAS 6-1296).

2. Wagner, N.K.: Theoretical Accuracy of a Meteorological Rocketsonde Thermistor. J. Appl. Meteor., 3, 1964, Pages 461-469.

ACKNOWLEDGMENTS

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# APPENDIX C

## APPENDIX C
## EXAMETNET AND RELATED PUBLICATIONS, REPORTS AND HANDBOOKS

1. "EXAMETNET Data Report Series," by EXAMETNET Executive Committee, 1966 and 1967 Quarter Reports, Numbers 66-101, 66-102, 66-103, 66-104, 67-101, 67-102, 67-103, and 67-104.

2. "Graphical Method for Determining Atmospheric Pressure from Rocketsonde Observations," by F. J. Schmidlin, published in Monthly Weather Review, Volume 94, No. 8, 529-533, August 1966.

3. "NASA, Wallops Station, Wallops Island, Virginia EXAMETNET Participant," NASA Wallops Station, September 1966.

4. "An Experiment Designed to Determine the Diurnal Temperature and Wind Variations and to Detect Possible Errors in Rocketsonde Temperature Measurements in the Upper Stratosphere," by F. G. Finger and H. M. Woolf, NASA TM X-1298, November 1966.

5. "Chamical Rocket Range and Summary Information on the Atlantic Range," CNIE, January 1967.

6. "The Reversal of the Stratospheric Circulation over Chamical During the Spring of 1966," by E. R. Lichtenstein, V. R. Barros and M. W. Vargas, CNIE-PE-12, 1967.

7. "The Establishment of the Experimental Inter-American Meteorological Rocket Network (EXAMETNET)," by J. F. Bettle, J. F. Spurling and F. J. Schmidlin, presented at American Institute of Aeronautics and Astronautics (AIAA) Sounding Rocket Vehicle Technology Specialist Conference, Williamsburg, Virginia, February 27 - March 1, 1967.

8. "Southern Hemisphere Stratospheric Circulation as Indicated by Shipboard Meteorological Rocket Observations," by F. G. Finger and H. M. Woolf, NASA TM X-1346, March 1967. Also published in Journal of the Atmospheric Sciences, July 1967.

9. "An Extrapolation Procedure for Determining the Height of a Meteorological Rocket Instrument in the Event of Tracking-Radar Failure," by A. J. Miller and H. M. Woolf, published as Appendix in EXAMETNET Data Report Series No. 67-102.

10. "A Note on the Semi-Annual Wind Variation in the Equatorial Stratosphere," by R. S. Quiroz and A. J. Miller, published in the Monthly Weather Review, September 1967.

11. "Argentine Activity Report to EXAMETNET Executive Committee at San Jose dos Campos, Brazil," October 1967.

12. "Meteorological Sounding Rocket Program at Natal," by J. A. M. Salgado, U. Belculfine, C. Girardi, M. Del Tedesco, and F. De Mendonca, CNAE Report LAFE-62, October 1967.

13. "United States Activity Report to EXAMETNET Executive Committee at San Jose dos Campos, Brazil," October 1967.

14. "Meteorological Rocket Facility Handbook," January 1968 published by NASA Wallops Station.

15. "EXAMETNET Data Preparation and Guidance Procedures Manual," January 1968, published by NASA Wallops Station for EXAMETNET.

16. "Synoptic Density Maps for Post-Reentry Altitudes," by Quiroz, presented at Third Conference on Aerospace Meteorology, New Orleans, La., May 1968.

17. "Small-Scale Wind Temperatures as evidenced by Meteorological Rocket Systems," by Miller, Woolf, and Finger presented at Third Conference on Aerospace Meteorology, New Orleans, La., May 1968. Also published in Journal of Applied Meteorology, June, 1968.

18. "On the Computation of Solar Elevation Angles and the Determination of Sunrise and Sunset Times," by H. M. Woolf, NASA TM X-1646, September 1968.

19. "The Japan-United States Meteorological Rocket Project," by J. F. Spurling and N. Arizumi, presented at the Seventh International Symposium on Space Technology and Science, Tokyo, Japan, 1967.

20. "The Japan-United States Meteorological Rocket Project Data Report," by the Japanese Science and Technology Agency, Japanese Meteorological Agency and the United States National Aeronautics and Space Administration, 1967.

21. "CONIE-NASA Data Report 1966," by the Spanish Comision Nacional de Investigacion del Espacio (CNIE) and the United States National Aeronautics and Space Administration (NASA), May 1968.

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