

COPY 32

COMMONWEALTH OF AUSTRALIA  
DEPARTMENT OF NATIONAL DEVELOPMENT  
BUREAU OF MINERAL RESOURCES,  
GEOLOGY AND GEOPHYSICS

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GEOPHYSICAL  
OBSERVATORY REPORT

VOL. 12

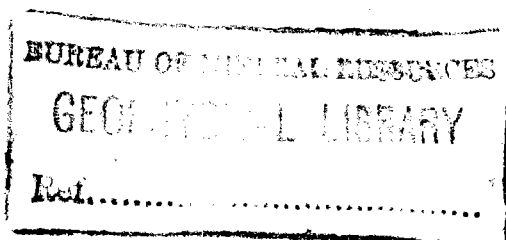
No. 5

MAY

1964

*Issued under the authority of the Hon. D.E. Fairbairn,  
Minister for National Development*

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# DEPARTMENT OF NATIONAL DEVELOPMENT

Minister - Hon. D.E. Fairbairn, D.F.C., M.P.

Secretary - Sir HAROLD RAGGATT, C.B.E.

## BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

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This Report was prepared in the Geophysical Branch;

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Unless otherwise stated all times are given in  
Greenwich Mean Time

The terminology used in this report is that accepted by  
international convention. Should further information be  
required, explanation can be obtained by applying to:-

Assistant Director (Geophysics),  
Bureau of Mineral Resources,  
Geology and Geophysics,  
203 Collins Street,  
MELBOURNE, C.1.,  
A U S T R A L I A.

## CONTRIBUTING OBSERVATORIES

### GNANGARA MAGNETIC OBSERVATORY

P.M. McGregor, Observer in Charge

|                      |         |           |          |
|----------------------|---------|-----------|----------|
| Geographic Latitude  | 31°47'S | Longitude | 115°57'E |
| Geomagnetic Latitude | -43.2°  | Longitude | 185.8°   |

#### Instruments

Askania magnetometer No.508810  
Askania earthinductor No.5111079  
La Cour QHMs No.291, 292, 293  
La Cour BMZ No.120

Eschenhagen D, H & Z recording variometers

|                 |   |               |
|-----------------|---|---------------|
| Sensitivity     | : | D 1.07 min/mm |
|                 |   | H 2.2 Y/mm    |
|                 |   | Z 5.0 Y/mm    |
| Recording speed | : | 20 mm/hour    |

Askania (Eschenhagen type) H variometer with visual recorder

|                 |   |            |
|-----------------|---|------------|
| Sensitivity     | : | 3 Y/mm     |
| Recording speed | : | 20 mm/hour |

### MACQUARIE ISLAND MAGNETIC OBSERVATORY

G.D. Lodwick, Observer in Charge

|                      |         |           |          |
|----------------------|---------|-----------|----------|
| Geographic Latitude  | 54°30'S | Longitude | 158°57'E |
| Geomagnetic Latitude | -60.7°  | Longitude | 243.0°   |

#### Instruments

La Cour QHMs Nos.177, 178, 179

La Cour BMZ No.64

Kew pattern magnetometer No.158

La Cour D, H & Z recording variometers

|                                   |   |              |
|-----------------------------------|---|--------------|
| Standard instrument : Sensitivity | : | D 2.3 min/mm |
|                                   |   | H 24 Y/mm    |
|                                   |   | Z 21 Y/mm    |
| Recording speed                   | : | 15 mm/hour   |

Rapid-run instrument: Sensitivity

|                 |   |              |
|-----------------|---|--------------|
| :               | : | D 1.0 min/mm |
|                 |   | H 5.4 Y/mm   |
|                 |   | Z 6.8 Y/mm   |
| Recording speed | : | 180 mm/hour  |

## CONTRIBUTING OBSERVATORIES

### MAWSON MAGNETIC OBSERVATORY

R.J.S. Cooke, Observer in Charge

|                      |         |           |         |
|----------------------|---------|-----------|---------|
| Geographic Latitude  | 67°36'S | Longitude | 62°63'E |
| Geomagnetic Latitude | -73.2°  | Longitude | 103.1°  |

#### Instruments

La Cour QHMs Nos. 300, 301, 302

La Cour BMZ No. 62

La Cour D, H & Z recording variometers

|                    |   |              |
|--------------------|---|--------------|
| Normal sensitivity | : | D 0.9 min/mm |
|                    |   | H 9.4 Y/mm   |
|                    |   | Z 10.0 Y/mm  |

|                 |   |            |
|-----------------|---|------------|
| Recording speed | : | 15 mm/hour |
|-----------------|---|------------|

|                 |   |              |
|-----------------|---|--------------|
| Low sensitivity | : | D 2.4 min/mm |
|                 |   | H 51 Y/mm    |
|                 |   | Z 50 Y/mm    |

|                 |   |            |
|-----------------|---|------------|
| Recording speed | : | 15 mm/hour |
|-----------------|---|------------|

Bar fluxmeter D magnetograph

|                 |   |             |
|-----------------|---|-------------|
| Recording speed | : | 5 mm/minute |
|-----------------|---|-------------|

### PORT MORESBY MAGNETIC OBSERVATORY

J.A. Brooks, Observer in Charge

|                      |        |           |          |
|----------------------|--------|-----------|----------|
| Geographic Latitude  | 9°24'S | Longitude | 147°09'E |
| Geomagnetic Latitude | -18.7° | Longitude | 218.0°   |

#### Instruments

La Cour QHMs Nos. 187, 188, 189

La Cour BMZ No. 68

Askania declinometer No. 580333

Askania earthinductor No. 5111081

La Cour D, H & Z recording variometers

|                                   |   |              |
|-----------------------------------|---|--------------|
| Standard instrument : Sensitivity | : | D 0.4 min/mm |
|                                   |   | H 2.9 Y/mm   |
|                                   |   | Z 3.1 Y/mm   |

|                 |   |            |
|-----------------|---|------------|
| Recording speed | : | 15 mm/hour |
|-----------------|---|------------|

|                                   |   |               |
|-----------------------------------|---|---------------|
| Rapid-run instrument: Sensitivity | : | D 0.05 min/mm |
|                                   |   | H 1.2 Y/mm    |
|                                   |   | Z 0.3 Y/mm    |

|                 |   |             |
|-----------------|---|-------------|
| Recording speed | : | 180 mm/hour |
|-----------------|---|-------------|

## CONTRIBUTING OBSERVATORIES

### TOOLANGI MAGNETIC OBSERVATORY

C.A. van der Waal, Observer in Charge

|                      |         |           |          |
|----------------------|---------|-----------|----------|
| Geographic Latitude  | 37°32'S | Longitude | 145°28'E |
| Geomagnetic Latitude | -46.7°  | Longitude | 220.8°   |

#### Instruments

Ruska magnetometer No.4813  
Schulze earthinductor No.49  
La Cour QHMs Nos.288, 289, 290  
La Cour BMZ No.119  
La Cour D, H & Z recording variometers

|                 |   |   |             |
|-----------------|---|---|-------------|
| Sensitivity     | : | D | 1.16 min/mm |
|                 |   | H | 4.6 Y/mm    |
|                 |   | Z | 4.4 Y/mm    |
| Recording speed | : |   | 15 mm/hour  |

### WILKES MAGNETIC OBSERVATORY

G.R. Small, Observer in Charge

|                      |         |           |          |
|----------------------|---------|-----------|----------|
| Geographic Latitude  | 66°15'S | Longitude | 110°35'E |
| Geomagnetic Latitude | -77.2°  | Longitude | 179.2°   |

#### Instruments

C.I.W. field magnetometer and theodolite earthinductor No.28  
La Cour QHMs Nos.492, 493, 494  
La Cour BMZ No.236  
Ruska D, H & Z recording variometers

|                                   |   |   |             |
|-----------------------------------|---|---|-------------|
| Standard instrument : Sensitivity | : | D | 10.6 min/mm |
|                                   |   | H | 24 Y/mm     |
|                                   |   | Z | 24 Y/mm     |
| Recording speed                   | : |   | 20 mm/hour  |
| Rapid-run instrument: Sensitivity | : | D | 1.3 min/mm  |
|                                   |   | H | 5.3 Y/mm    |
|                                   |   | Z | 6.3 Y/mm    |
| Recording speed                   | : |   | 240 mm/hour |

# M A W S O N

## MAGNETIC K-INDICES - MAY 1964

Range for lower limit of K=9 is 1500 gammas

| <u>Day</u> | <u>K-Indices</u> |   |   |   |   |   |   |   | <u>K-Sum</u> |
|------------|------------------|---|---|---|---|---|---|---|--------------|
| 1          | 6                | 4 | 6 | 5 | 5 | 4 | 3 | 5 | 38           |
| 2          | 5                | 4 | 5 | 4 | 2 | 2 | 4 | 6 | 32           |
| 3          | 6                | 4 | 2 | 3 | 2 | 2 | 3 | 4 | 26           |
| 4          | 2                | 3 | 2 | 2 | 2 | 1 | 2 | 3 | 17           |
| 5          | 5                | 3 | 3 | 3 | 3 | 1 | 2 | 0 | 20           |
| 6          | 0                | 2 | 2 | 1 | 0 | 1 | 5 | 1 | 12           |
| 7          | 2                | 3 | 2 | 3 | 1 | 0 | 1 | 0 | 12           |
| 8          | 0                | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 02           |
| 9          | 1                | 1 | 1 | 0 | 0 | 2 | 2 | 0 | 07           |
| 10         | 3                | 3 | 2 | 1 | 3 | 3 | 7 | 6 | 28           |
| 11         | 7                | 6 | 4 | 3 | 2 | 1 | 0 | 4 | 27           |
| 12         | 2                | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 09           |
| 13         | 1                | 2 | 1 | 2 | 2 | 5 | 6 | 4 | 23           |
| 14         | 2                | 4 | 4 | 4 | 5 | 5 | 3 | 3 | 30           |
| 15         | 2                | 6 | 6 | 4 | 3 | 3 | 3 | 5 | 32           |
| 16         | 6                | 6 | 5 | 5 | 3 | 3 | 7 | 3 | 38           |
| 17         | 2                | 3 | 4 | 4 | 4 | 3 | 4 | 6 | 30           |
| 18         | 3                | 4 | 3 | 4 | 3 | 1 | 0 | 1 | 19           |
| 19         | 3                | 3 | 3 | 2 | 1 | 2 | 4 | 5 | 23           |
| 20         | 2                | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 13           |
| 21         | 2                | 1 | 2 | 2 | 2 | 2 | 4 | 5 | 20           |
| 22         | 2                | 2 | 2 | 2 | 1 | 1 | 4 | 5 | 19           |
| 23         | 3                | 3 | 3 | 2 | 1 | 0 | 1 | 5 | 18           |
| 24         | 5                | 7 | 5 | 4 | 3 | 4 | 6 | 6 | 40           |
| 25         | 5                | 3 | 4 | 6 | 4 | 7 | 7 | 6 | 42           |
| 26         | 6                | 3 | 2 | 1 | 2 | 2 | 2 | 3 | 21           |
| 27         | 5                | 5 | 6 | 4 | 3 | 2 | 4 | 5 | 34           |
| 28         | 3                | 5 | 2 | 3 | 3 | 3 | 3 | 5 | 27           |
| 29         | 3                | 4 | 3 | 2 | 1 | 1 | 2 | 6 | 22           |
| 30         | 4                | 4 | 2 | 2 | 1 | 2 | 2 | 6 | 23           |
| 31         | 4                | 4 | 2 | 1 | 2 | 1 | 0 | 2 | 16           |

### PRELIMINARY MONTHLY MEAN VALUES

Based on 10 selected quiet days

|      |       |          |        |
|------|-------|----------|--------|
| 1964 | H     | D        | Z      |
|      | Y     | °        | Y      |
| May  | 18348 | 60 58.8W | -48481 |

# W I L K E S

## MAGNETIC K-INDICES - MAY 1964

Range for lower limit of K=9 is 2500 gammas

| <u>Day</u> | <u>K-Indices</u> |   |   |   |   |   |   |   | <u>K-Sum</u> |
|------------|------------------|---|---|---|---|---|---|---|--------------|
| 1          | 3                | 3 | 3 | 4 | 2 | 6 | 3 | 2 | 26           |
| 2          | 2                | 3 | 3 | 1 | 3 | 2 | 1 | 2 | 17           |
| 3          | 3                | 2 | 2 | 1 | 0 | 0 | 1 | 1 | 10           |
| 4          | 2                | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 10           |
| 5          | 2                | 3 | 2 | 2 | 2 | 0 | 1 | 0 | 12           |
| 6          | 1                | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 09           |
| 7          | 2                | 2 | 2 | 1 | 0 | 0 | 0 | 1 | 08           |
| 8          | 0                | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 02           |
| 9          | 1                | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 04           |
| 10         | 2                | 1 | 1 | 0 | 2 | 3 | 2 | 3 | 14           |
| 11         | 3                | 2 | 1 | 1 | 0 | 0 | 0 | 1 | 08           |
| 12         | 1                | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 05           |
| 13         | 0                | 2 | 1 | 1 | 3 | 3 | 3 | 2 | 15           |
| 14         | 2                | 3 | 2 | 2 | 2 | 6 | 2 | 2 | 21           |
| 15         | 3                | 3 | 3 | 2 | 3 | 6 | 1 | 3 | 24           |
| 16         | 3                | 3 | 3 | 2 | 3 | 1 | 5 | 3 | 23           |
| 17         | 1                | 3 | 3 | 2 | 3 | 2 | 1 | 2 | 17           |
| 18         | 2                | 3 | 2 | 2 | 1 | 0 | 1 | 0 | 11           |
| 19         | 1                | 2 | 1 | 0 | 0 | 1 | 3 | 1 | 09           |
| 20         | 1                | 2 | 2 | 1 | 1 | 2 | 0 | 0 | 09           |
| 21         | 1                | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 09           |
| 22         | 1                | 2 | 2 | 1 | 2 | 0 | 1 | 1 | 10           |
| 23         | 2                | 2 | 2 | 1 | 1 | 0 | 0 | 2 | 10           |
| 24         | 3                | 3 | 2 | 2 | 3 | 2 | 2 | 3 | 20           |
| 25         | 3                | 3 | 3 | 4 | 3 | 6 | 4 | 2 | 28           |
| 26         | 3                | 3 | 2 | 1 | 1 | 1 | 0 | 0 | 11           |
| 27         | 2                | 2 | 3 | 2 | 2 | 2 | 1 | 2 | 16           |
| 28         | 2                | 2 | 1 | 2 | 2 | 3 | 2 | 2 | 16           |
| 29         | 3                | 2 | 2 | 1 | 1 | 0 | 1 | 2 | 12           |
| 30         | 1                | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 11           |
| 31         | 1                | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 05           |

### PRELIMINARY MONTHLY MEAN VALUES

Based on 10 selected quiet days

|      |      |          |        |
|------|------|----------|--------|
| 1964 | H    | D        | Z      |
|      | Y    | '        | Y      |
| May  | 9224 | 85 55.0W | -64808 |

# MACQUARIE ISLAND

## MAGNETIC K-INDICES - MAY 1964

Range for lower limit of K=9 is 1500 gammas

| <u>Day</u> | <u>K-Indices</u> |   |   |   |   |   |   |   | <u>K-Sum</u> |
|------------|------------------|---|---|---|---|---|---|---|--------------|
| 1          | 5                | 3 | 3 | 6 | 5 | 4 | 1 | 1 | 28           |
| 2          | 1                | 2 | 4 | 5 | 4 | 3 | 0 | 0 | 19           |
| 3          | 1                | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 06           |
| 4          | 0                | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 02           |
| 5          | 0                | 2 | 0 | 6 | 5 | 2 | 0 | 0 | 15           |
| 6          | 0                | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00           |
| 7          | 0                | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 02           |
| 8          | 0                | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00           |
| 9          | 0                | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 02           |
| 10         | 1                | 1 | 1 | 0 | 5 | 6 | 4 | 4 | 22           |
| 11         | 4                | 3 | 5 | 3 | 1 | 0 | 0 | 0 | 16           |
| 12         | 0                | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 02           |
| 13         | 0                | 0 | 0 | 0 | 6 | 6 | 2 | 2 | 16           |
| 14         | 2                | 1 | 4 | 4 | 8 | 8 | 2 | 2 | 31           |
| 15         | 3                | 5 | 6 | 4 | 4 | 5 | 1 | 3 | 31           |
| 16         | 2                | 2 | 5 | 6 | 5 | 1 | 3 | 1 | 25           |
| 17         | 0                | 1 | 3 | 4 | 0 | 0 | 0 | 1 | 09           |
| 18         | 1                | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 05           |
| 19         | 0                | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 04           |
| 20         | 0                | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 03           |
| 21         | 0                | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 03           |
| 22         | 0                | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 05           |
| 23         | 1                | 1 | 0 | 0 | 0 | - | - | - | --           |
| 24         | 2                | 5 | 5 | 5 | 6 | 3 | 3 | 1 | 30           |
| 25         | 0                | 1 | 5 | 6 | 6 | 6 | 4 | 2 | 30           |
| 26         | 2                | 1 | 0 | 1 | 2 | 1 | 0 | 0 | 07           |
| 27         | 1                | 2 | 4 | 5 | 0 | 2 | 1 | 2 | 17           |
| 28         | 1                | 0 | 1 | 4 | 4 | 3 | 1 | 1 | 15           |
| 29         | 0                | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 03           |
| 30         | 0                | 0 | 1 | 2 | 4 | 1 | 0 | 0 | 08           |
| 31         | 0                | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 02           |

## PRELIMINARY MONTHLY MEAN VALUES

Based on 10 selected quiet days

|      |       |          |        |
|------|-------|----------|--------|
| 1964 | H     | D        | Z      |
|      | Y     | °        | Y      |
| May  | 13180 | 26 13.8E | -64289 |

# T O O L A N G I

## MAGNETIC K-INDICES - MAY 1964

Range for lower limit of K=9 is 500 gammas

| <u>Day</u> | <u>K-Indices</u> |   |   |   |   |   |   |   | <u>K-Sum</u> |
|------------|------------------|---|---|---|---|---|---|---|--------------|
| 1          | 3                | 3 | 3 | 4 | 3 | 3 | 2 | 1 | 22           |
| 2          | 2                | 2 | 4 | 3 | 3 | 1 | 1 | 1 | 17           |
| 3          | 2                | 2 | 1 | 2 | 2 | 0 | 1 | 1 | 11           |
| 4          | 0                | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 04           |
| 5          | 1                | 3 | 2 | 4 | 3 | 1 | 1 | 0 | 15           |
| 6          | 0                | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 06           |
| 7          | 1                | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 04           |
| 8          | 0                | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00           |
| 9          | 0                | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 03           |
| 10         | 3                | 2 | 3 | 2 | 3 | 4 | 4 | 3 | 24           |
| 11         | 3                | 2 | 3 | 2 | 1 | 1 | 0 | 0 | 12           |
| 12         | 0                | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 05           |
| 13         | 0                | 0 | 0 | 1 | 4 | 4 | 4 | 2 | 15           |
| 14         | 2                | 2 | 4 | 3 | 4 | 4 | 3 | 2 | 24           |
| 15         | 2                | 5 | 4 | 3 | 2 | 3 | 2 | 2 | 23           |
| 16         | 2                | 3 | 5 | 4 | 3 | 1 | 3 | 1 | 22           |
| 17         | 1                | 2 | 3 | 4 | 3 | 2 | 1 | 3 | 19           |
| 18         | 2                | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 09           |
| 19         | 1                | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 07           |
| 20         | 0                | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 05           |
| 21         | 0+               | 1 | 2 | 2 | 1 | 0 | 1 | 0 | 07+          |
| 22         | 0                | 1 | 1 | 1 | 2 | 0 | 1 | 0 | 06           |
| 23         | 2                | 1 | 2 | 1 | 1 | 1 | 1 | 3 | 12           |
| 24         | 2                | 4 | 4 | 4 | 4 | 2 | 2 | 2 | 24           |
| 25         | 1                | 1 | 5 | 5 | 3 | 4 | 3 | 2 | 24           |
| 26         | 2                | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 07           |
| 27         | 2                | - | 3 | 4 | 3 | 2 | 1 | 1 | --           |
| 28         | 2                | 2 | 1 | 2 | 3 | 2 | 2 | 1 | 15           |
| 29         | -                | 1 | 2 | 1 | 2 | 1 | 1 | 1 | --           |
| 30         | 1                | 0 | 1 | 1 | 3 | 0 | 1 | 1 | 08           |
| 31         | 1                | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 04           |

# T O O L A N G I

## PRELIMINARY MONTHLY MEAN VALUES

Based on 10 selected quiet days

|      |        |          |        |
|------|--------|----------|--------|
| 1964 | H<br>Y | D<br>Y   | Z<br>Y |
| May  | 22564  | 10 29.1E | -56384 |

## PRINCIPAL MAGNETIC STORMS - MAY 1964

| date | storm time |      | sudden commencements |            |   | act-iv-ity | max. activity |      |   | Ranges |      |     |    |
|------|------------|------|----------------------|------------|---|------------|---------------|------|---|--------|------|-----|----|
|      |            |      |                      |            |   |            | 0 to 9        |      |   |        |      |     |    |
|      | begin      | end  | type                 | amplitudes |   |            | 3-hr          |      |   | D      | H    | Z   |    |
|      | h m        | d h  |                      | D          | H | Z          | day           | per. | K |        |      |     |    |
| 13   | 12..       | 1616 | ...                  |            |   |            | m             | 15   | 2 | 5      | 17.9 | 161 | 40 |
|      |            |      |                      |            |   |            |               | 16   | 3 |        |      |     |    |

## SUDDEN COMMENCEMENTS AND OTHER PHENOMENA - MAY 1964

| Day | Time  | Type  | Sense of Movement |   |   |
|-----|-------|-------|-------------------|---|---|
|     |       |       | H                 | D | Z |
| 01  | 11 05 | bp B  | +                 | - | + |
| 03  | 11 37 | bp C  | +                 | - |   |
| 04  | 18 00 | pi2 C |                   |   |   |
| 09  | 10 45 | pi2 B |                   |   |   |
| 09  | 15 00 | pi2 B |                   |   |   |
| 10  | 00 35 | ssc B | +                 | + |   |
| 10  | 12 30 | pi2 B |                   |   |   |
| 13  | 14 42 | bps B |                   | + |   |
| 23  | 09 20 | pi2 B |                   |   |   |
| 23  | 14 10 | pi2 B |                   |   |   |
| 23  | 22 29 | si B  | +                 |   |   |
| 24  | 08 27 | bp B  | -                 | - | - |
| 29  | 12 05 | pi2 B |                   |   |   |
| 30  | 12 56 | bps C | +                 | - | + |

# G N A N G A R A

## MAGNETIC K-INDICES - MAY 1964

Range for lower limit of K=9 is 350 gammas

| <u>Day</u> | <u>K-Indices</u> |   |   |   |   |   |   |   | <u>K-Sum</u> |
|------------|------------------|---|---|---|---|---|---|---|--------------|
| 1          | 4                | 3 | 2 | 5 | 4 | 3 | 2 | 1 | 24           |
| 2          | 1                | 1 | 3 | 3 | 3 | 1 | 1 | 2 | 15           |
| 3          | 1                | 1 | 0 | 2 | 1 | 0 | 2 | 0 | 07           |
| 4          | 0                | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 03           |
| 5          | 1                | 3 | 2 | 4 | 3 | 1 | 1 | 0 | 15           |
| 6          | 0                | 1 | 2 | 1 | 0 | 1 | 3 | 0 | 08           |
| 7          | 0                | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 03           |
| 8          | 0                | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 01           |
| 9          | 0                | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 04           |
| 10         | 3                | 1 | 3 | 2 | 4 | 4 | 4 | 4 | 25           |
| 11         | 4                | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 15           |
| 12         | 0                | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 02           |
| 13         | 0                | 0 | 2 | 2 | 4 | 4 | 5 | 3 | 20           |
| 14         | 2                | 2 | 3 | 3 | 4 | 4 | 3 | 3 | 24           |
| 15         | 2                | 5 | 4 | 3 | 2 | 3 | 2 | 3 | 24           |
| 16         | 3                | 4 | 4 | 4 | 4 | 2 | 4 | 2 | 27           |
| 17         | 1                | 2 | 3 | 4 | 4 | 2 | 2 | 3 | 21           |
| 18         | 1                | 3 | 2 | 2 | 1 | 1 | 0 | 1 | 11           |
| 19         | 2                | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 07           |
| 20         | 0                | 1 | 1 | 0 | 1 | 2 | 0 | 0 | 05           |
| 21         | 0                | 0 | 1 | 1 | 2 | 1 | 1 | 0 | 06           |
| 22         | 0                | 1 | 1 | 1 | 2 | 0 | 1 | 0 | 06           |
| 23         | 1                | 1 | 1 | 1 | 0 | 1 | 0 | 3 | 08           |
| 24         | 2                | 4 | 4 | 3 | 4 | 3 | 3 | 3 | 26           |
| 25         | 1                | 1 | 5 | 6 | 4 | 4 | 3 | 3 | 27           |
| 26         | 2                | 1 | 1 | 0 | 2 | 2 | 0 | 0 | 08           |
| 27         | 1                | 2 | 3 | 4 | 3 | 3 | 2 | 1 | 19           |
| 28         | 2                | 0 | 0 | 2 | 3 | 2 | 3 | 2 | 14           |
| 29         | 1                | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 07           |
| 30         | 1                | 1 | 0 | 0 | 2 | 0 | 2 | 2 | 08           |
| 31         | 1                | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 02           |

# G N A N G A R A

## PRELIMINARY MONTHLY MEAN VALUES

Based on 5 selected quiet days

|      |        |          |        |
|------|--------|----------|--------|
| 1964 | H<br>Y | ° D<br>, | Z<br>Y |
| May  | 23912  | 2 51.7W  | -53501 |

## PRINCIPAL MAGNETIC STORMS - MAY 1964

NIL

## SUDDEN COMMENCEMENTS AND OTHER PHENOMENA - MAY 1964

| <u>Day</u> | <u>Time</u><br>h m | <u>Type</u> | Sense of<br>Movement |          |          |
|------------|--------------------|-------------|----------------------|----------|----------|
|            |                    |             | <u>H</u>             | <u>D</u> | <u>Z</u> |
| 01         | 23 55              | pc4 B       |                      |          |          |
| 04         | 18 00              | p12 B       |                      |          |          |
| 05         | 03 24              | si B        |                      |          |          |
| 06         | 17 50              | bp B        | +                    | +        | +        |
| 10         | 00 35              | ssc B       | +                    | +        | +        |
| 13         | 14 42              | bps A       | +                    |          | +        |
| 23         | 22 30              | ssc* A      | +                    | +        | +        |
| 31         | 07 45              | pc4 B       |                      |          |          |

P O R T M O R E S B Y

MAGNETIC K-INDICES - MAY 1964

Range for lower limit of K=9 is 300 gammas

| <u>Day</u> | <u>K-Indices</u> |    |   |   |   |   |   |   | <u>K-Sum</u> |
|------------|------------------|----|---|---|---|---|---|---|--------------|
| 1          | 3                | 3  | 2 | 5 | 4 | 3 | 2 | 3 | 25           |
| 2          | 2                | 3  | 4 | 3 | 3 | 1 | 1 | 2 | 19           |
| 3          | 3                | 2  | 0 | 2 | 1 | 1 | 1 | 0 | 10           |
| 4          | 1                | 2  | 1 | 1 | 1 | 0 | 1 | 1 | 08           |
| 5          | 2                | 3+ | 4 | 4 | 3 | 2 | 2 | 2 | 22+          |
| 6          | 1                | 2  | 2 | 2 | 1 | 1 | 2 | 1 | 12           |
| 7          | 1                | 1  | 1 | 1 | 0 | 0 | 1 | 1 | 06           |
| 8          | 1                | 1  | 0 | 0 | 0 | 0 | 0 | 1 | 03           |
| 9          | 1                | 1  | 0 | 1 | 2 | 2 | 1 | 1 | 09           |
| 10         | 3                | 3  | 4 | 3 | 5 | 4 | 3 | 4 | 29           |
| 11         | 5                | 3  | 4 | 3 | 1 | 1 | 1 | 2 | 20           |
| 12         | 1                | 1  | 1 | 1 | 0 | 0 | 0 | 1 | 05           |
| 13         | 1                | 0  | 2 | 2 | 5 | 5 | 5 | 3 | 23           |
| 14         | 3                | 3  | 4 | 4 | 4 | 3 | 2 | 2 | 25           |
| 15         | 3                | 6  | 5 | 4 | 2 | 2 | 2 | 2 | 26           |
| 16         | 2                | 4  | 4 | 5 | 3 | 2 | 2 | 2 | 24           |
| 17         | 1                | 2  | 2 | 3 | 3 | 2 | 1 | 1 | 15           |
| 18         | 1                | 3  | 2 | 2 | 1 | 1 | 2 | 2 | 14           |
| 19         | 0+               | 3  | 2 | 1 | 1 | 1 | 2 | 2 | 12+          |
| 20         | 1                | 1  | 2 | 1 | 2 | 1 | 1 | 1 | 10           |
| 21         | 1                | 2  | 3 | 3 | 3 | 1 | 0 | 3 | 16           |
| 22         | 2                | 3  | 2 | 2 | 2 | 2 | 1 | 2 | 16           |
| 23         | 3                | 2  | 2 | 2 | 1 | 1 | 1 | 4 | 16           |
| 24         | 3                | 5  | 3 | 4 | 4 | 3 | 2 | 3 | 27           |
| 25         | 2                | 2  | 5 | 4 | 4 | 2 | 3 | 3 | 25           |
| 26         | 3                | 2  | 3 | 1 | 2 | 2 | 1 | 2 | 16           |
| 27         | 1                | 2  | 3 | 4 | 3 | 1 | 1 | 2 | 17           |
| 28         | 2                | 2  | 1 | 2 | 3 | 2 | 2 | 1 | 15           |
| 29         | 2                | 2  | 2 | 1 | 1 | 0 | 1 | 2 | 11           |
| 30         | 1                | 1  | 2 | 1 | 1 | 1 | 2 | 2 | 11           |
| 31         | 1                | 2  | 2 | 2 | 0 | 0 | 1 | 1 | 09           |

# P O R T M O R E S B Y

## PRELIMINARY MONTHLY MEAN VALUES

Based on 10 selected quiet days

|      |       |          |        |
|------|-------|----------|--------|
| 1964 | H     | D        | Z      |
|      | Y     | °        | Y      |
| May  | 36353 | 06 07.4E | -22965 |

## PRINCIPAL MAGNETIC STORMS - MAY 1964

| date  | storm time |      | sudden commencements |            |    | act-iv-ity | max. activity 0 to 9 |           |    | Ranges |     |     |    |  |
|-------|------------|------|----------------------|------------|----|------------|----------------------|-----------|----|--------|-----|-----|----|--|
|       | begin      | end  | type                 | amplitudes |    |            | day                  | 3-hr per. | K  | D      | H   | Z   |    |  |
|       | h m        | d h  |                      | D          | H  |            |                      |           |    |        |     |     | Z  |  |
| April |            |      |                      |            |    |            |                      |           |    |        |     |     |    |  |
| 30    | 11..       | 0216 | ..                   | -          | -  | -          | m                    | 01        | 04 | 5      | 4   | 59  | 35 |  |
| May   |            |      |                      |            |    |            |                      |           |    |        |     |     |    |  |
| 10    | 0035       | 1112 | sc                   | 0.1        | 23 | 19         | m                    | 11        | 01 | 5      | 4   | 126 | 45 |  |
| 13    | 0900       | 1614 | ..                   | -          | -  | -          | ms                   | 15        | 02 | 6      | 4.5 | 115 | 45 |  |
| 23    | 2330       | 2609 | ssc                  | 0.4        | 20 | 19         | ms                   | 24        | 02 | 6      | 4   | 112 | 42 |  |

## SUDDEN COMMENCEMENTS AND OTHER PHENOMENA - MAY 1964

| Day | Time<br>h m | Type  | Sense of<br>Movement |   |   |
|-----|-------------|-------|----------------------|---|---|
|     |             |       | H                    | D | Z |
| 01  | 11 04       | bp B  | +                    | - | + |
| 05  | 03 23       | sl B  | -                    | - | - |
| 05  | 11 30       | bp B  | +                    | 0 | + |
| 06  | 17 50       | bp B  | +                    | + | + |
| 10  | 00 35       | ssc B | +                    | - | + |
| 17  | 08 50       | bp B  | +                    | 0 | + |
| 17  | 12 10       | bp B  | +                    | 0 | + |
| 23  | 22 30       | ssc B | +                    | + | + |
| 28  | 11 35       | bp C  | -                    | 0 | - |

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BUREAU OF MINERAL RESOURCES

GEOLOGICAL LIBRARY

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