

mcq



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

203 Collins Street,  
MELBOURNE. VIC.

SEISMOLOGICAL BULLETIN

MACQUARIE ISLAND

JAN.1961-FEB.1962

Latitude : 54° 29' 55"S      Longitude 158° 57' 22"E      Height 14m.

Foundation: Weathered Basaltic Lava

Instruments: Benioff Variable Reluctance Seismometers, 3 components.

Seismometer Periods : 1 sec.

Galvanometer Periods: 0.2 sec.

| No.             | Date<br>1961 | Phase      | Time<br>(G.M.T.)<br>h.m.s. | Per<br>sec.       | Amplitude<br>A <sub>N</sub> A <sub>E</sub> A <sub>Z</sub> | Δ   | Remarks                                                     |
|-----------------|--------------|------------|----------------------------|-------------------|-----------------------------------------------------------|-----|-------------------------------------------------------------|
| <u>JANUARY</u>  |              |            |                            |                   |                                                           |     |                                                             |
| 1               | 24           | eP<br>eL   | ENZ<br>ENZ                 | 08 04 07<br>06.1  |                                                           |     | USCGS; 61.1S, 152.1E<br>Antarctic Ocean,<br>S. of Australia |
| 2               | 28           | eP         | Z                          | 05 19 14          |                                                           |     | USCGS; 21.4S, 169.7E<br>Loyalty Is.                         |
| <u>FEBRUARY</u> |              |            |                            |                   |                                                           |     |                                                             |
| 3               | 6            | eP         | Z                          | 21 53 47          |                                                           |     | USCGS; 6.8S, 155.3E<br>Solomon Is.                          |
| 4               | 7            | e(PcS)     | EN                         | 04 00 09          |                                                           |     | USCGS; 23.6S, 179.7W<br>Fiji Is., Region                    |
| 5               | 8            | iP         | Z                          | 02 44 01          |                                                           |     | USCGS; 15.3S, 167.5E<br>New Hebrides Is.<br>Region.         |
| 6               | 11           | eP<br>iPcP | Z<br>Z                     | 21 07 23<br>10 19 |                                                           |     | USCGS; 28.2S, 177.5W<br>Kermadec Is.                        |
| 7               | 12           | eP         | Z                          | 12 17 08          |                                                           |     | USCGS; 15.0S, 175.2W<br>Samoa Is. Region.                   |
| 8               | 12           | iP         | ENZ                        | 13 04 21          |                                                           |     | USCGS; 13.1S, 171.8E<br>New Hebrides Region.                |
| 9               | 13           | eP         | Z                          | 16 26 47          |                                                           |     | USCGS; 5.1S, 128.7E<br>Banda Sea.                           |
| 10              | 26           | eP<br>ePP  | Z<br>Z                     | 18 23 46<br>27 29 |                                                           |     | USCGS; 31.4N, 131.2E<br>Kyushu, Japan.                      |
| <u>MARCH</u>    |              |            |                            |                   |                                                           |     |                                                             |
| 11              | 7            | eP<br>eLq  | Z<br>ENZ                   | 10 17 04<br>22.3  |                                                           |     | USCGS; 28.2S, 175.7W<br>Kermadec Is.                        |
| 12              | 10           | eP<br>eS   | Z<br>EN                    | 03 01 24<br>01 54 |                                                           | 2.4 | USCGS; 51.9S, 161.6E<br>Macquarie Is.                       |
| 13              | 13           | e(P)       | Z                          | 20 46 21          |                                                           |     | USCGS; 56.2S, 27.2W<br>Sandwich Is.                         |
| 14              | 16           | eP         | Z                          | 13 55 01          |                                                           |     | USCGS; 8.2S, 122.0E<br>Flores Is.                           |

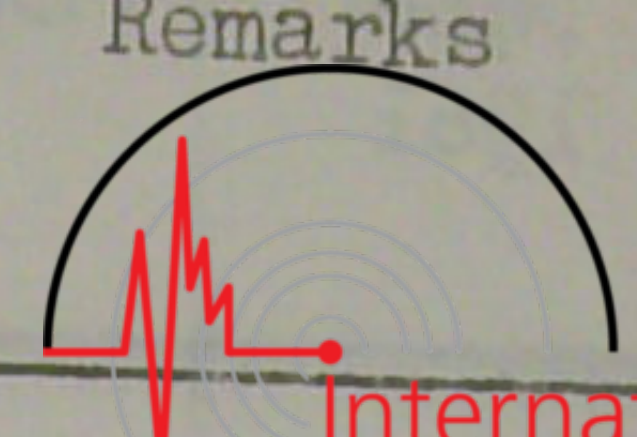




| No.          | Date<br>1961 | Phase                  |                  | Time<br>(G.M.T.)<br>h.m.s. |    |                             | Per.<br>sec. | Amplitude |       |       | $\Delta$ | Remarks                                                                                   |
|--------------|--------------|------------------------|------------------|----------------------------|----|-----------------------------|--------------|-----------|-------|-------|----------|-------------------------------------------------------------------------------------------|
|              |              |                        |                  |                            |    |                             |              | $A_N$     | $A_E$ | $A_Z$ |          |                                                                                           |
| 15           | 18           | eiP<br>eiP             | NZ<br>E          | 14                         | 56 | 13<br>14                    |              |           |       |       |          | USCGS; 49.9S, 163.3E<br>S. of New Zealand.<br>Surface waves lasted<br>$\frac{3}{4}$ hour. |
| 16           | 20           | eP                     | Z                | 16                         | 00 | 45                          |              |           |       |       |          | USCGS; 18.4S, 175.2W<br>Tonga Is.                                                         |
| 17           | 28           | eP<br>e(pP)<br>eX      | Z<br>Z<br>Z      | 09                         | 46 | 10<br>21<br>42              |              |           |       |       |          | USCGS; 0.2N, 123.6E<br>Northern Celebes.                                                  |
| <u>APRIL</u> |              |                        |                  |                            |    |                             |              |           |       |       |          |                                                                                           |
| 18           | 5            | eP<br>eS<br>e(PcP)     | Z<br>EN<br>Z     | 21                         | 30 | 33<br>00<br>50              |              |           |       |       | 2.2      | USCGS; 52.2S, 160.0E<br>Macquarie Is. Region                                              |
| <u>MAY</u>   |              |                        |                  |                            |    |                             |              |           |       |       |          |                                                                                           |
| 19           | 6            | eP                     | Z                | 22                         | 43 | 34                          |              |           |       |       |          | USCGS; 6.3N, 126.3E<br>Near Coast of<br>Mindanao.                                         |
| 20           | 6            | eP                     | Z                | 23                         | 20 | 40                          |              |           |       |       |          | USCGS; 17.2S, 167.9E<br>New Hebrides Is.<br>Region.                                       |
| 21           | 6            | eP<br>eS<br>e(PcP)     | Z<br>EN<br>Z     | 23                         | 41 | 42<br>12<br>04              |              |           |       |       | 2.4      | USCGS; 51.5S, 161.3E<br>Macquarie Is. Region                                              |
| 22           | 7            | eP                     | Z                | 00                         | 34 | 15                          |              |           |       |       |          | USCGS; 6.1S, 154.4E<br>Solomon Is. Region                                                 |
| 23           | 7            | eP                     | Z                | 04                         | 42 | 10                          |              |           |       |       |          | USCGS; 8.6S, 111.4E<br>Near Coast of Java                                                 |
| 24           | 7            | iP<br>eX               | Z<br>Z           | 10                         | 33 | 26<br>11                    |              |           |       |       |          | USCGS; 5.8N, 126.8E<br>Off Coast of<br>Mindanao.                                          |
| 25           | 13           | iP                     | Z                | 14                         | 59 | 50                          |              |           |       |       |          | USCGS; 17.5S, 178.8W<br>Fiji Is. Region.                                                  |
| 26           | 22           | eP                     | Z                | 17                         | 39 | 30                          |              |           |       |       |          | USCGS; 22.8S, 176.1W<br>Tonga Is. Region.                                                 |
| <u>JUNE</u>  |              |                        |                  |                            |    |                             |              |           |       |       |          |                                                                                           |
| 27           | 8            | eP                     | Z                | 15                         | 53 | 33                          |              |           |       |       |          | USCGS; 8.1S, 121.7E<br>Flores Sea.                                                        |
| 28           | 12           | eP<br>eS<br>eS<br>ePcP | Z<br>N<br>E<br>Z | 07                         | 36 | 46<br>45<br>46<br>(35)      |              |           |       |       | 5.2      | USCGS; 49.6S, 163.8E<br>S.W. of South Is.<br>of New Zealand.                              |
| 29           | 21           | iP                     | Z                | 20                         | 35 | 00                          |              |           |       |       |          | USCGS; 7.6S, 110.0E<br>Near N. Coast of<br>Java.                                          |
| 30           | 29           | eP                     | Z                | 09                         | 30 | 39                          |              |           |       |       |          | USCGS; 13.8S, 166.0E<br>New Hebrides Is.                                                  |
| <u>JULY</u>  |              |                        |                  |                            |    |                             |              |           |       |       |          |                                                                                           |
| 31           | 4            | eP<br>eL<br>M<br>ePcP  | Z<br>N<br>N<br>Z | 19                         | 19 | 27<br>20.8<br>21.0<br>26 12 |              |           |       |       |          | USCGS; 55.8S, 147.4E<br>W. of Macquarie Is.                                               |



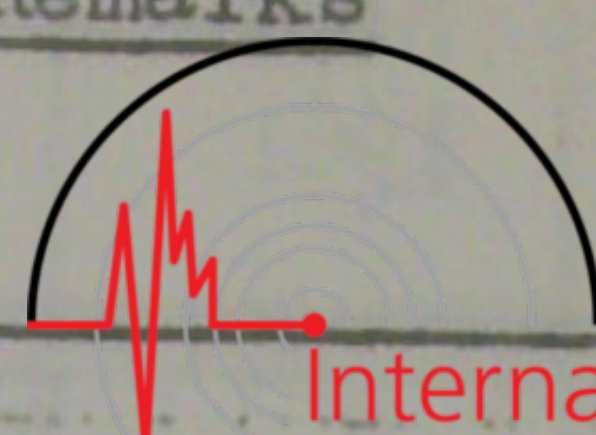
| No.           | Date<br>1961 | Phase                      | Time<br>(G.M.T.)<br>h.m.s. | Per.<br>sec.                                 | Amplitude      |                |                | Remarks                                                 |
|---------------|--------------|----------------------------|----------------------------|----------------------------------------------|----------------|----------------|----------------|---------------------------------------------------------|
|               |              |                            |                            |                                              | A <sub>N</sub> | A <sub>E</sub> | A <sub>Z</sub> |                                                         |
| JULY (Cont'd) |              |                            |                            |                                              |                |                |                |                                                         |
| 32            | 4            | eP<br>eL<br>M<br>ePcP      | Z<br>N<br>N<br>Z           | 20 00 06<br>01.6<br>02.0<br>06 (49)          |                |                |                | USCGS; 55.4S,147.8E<br>W. of Macquarie Is.              |
| 33            | 5            | eP<br>eL<br>M<br>ePcP      | Z<br>N<br>N<br>Z           | 02 30 26<br>31.9<br>32.4<br>37 09            |                |                |                | USCGS; 58.2S,150.4E<br>S.W. of Macquarie Is.            |
| 34            | 6            | eP                         | Z                          | 22 16 20                                     |                |                |                | USCGS; 20.0S,169.0E<br>New Hebrides Is.                 |
| 35            | 7            | e(P)                       | Z                          | 13 19 (42)                                   |                |                |                | USCGS; 5.7S,149.7E<br>New Britain.                      |
| 36            | 18           | eP                         | Z                          | 14 16 22                                     |                |                |                | USCGS; 29.4N,131.6E<br>Northern Ryukyu Is.              |
| 37            | 23           | eP                         | Z                          | 21 58 21                                     |                |                |                | USCGS; 18.3S,168.3E<br>New Hebrides Is.                 |
| 38            | 24           | iP                         | Z                          | 01 37 19                                     |                |                |                | USCGS; 21.1S,179.3W<br>Fiji Is. Region.                 |
| 39            | 26           | eP                         | Z                          | 09 23 41                                     |                |                |                | USCGS; 37.1S,177.3E<br>North Is. of New<br>Zealand.     |
| AUGUST        |              |                            |                            |                                              |                |                |                |                                                         |
| 40            | 1            | eP                         | Z                          | 05 48 04                                     |                |                |                | USCGS; 9.8S,160.5E,<br>Solomon Is. Region.              |
| 41            | 7            | iP<br>eX<br>eX<br>eX<br>eX | ENZ<br>Z<br>EN<br>EN<br>Z  | 16 13 13<br>14 24<br>14 25<br>19 41<br>19 43 |                |                |                | USCGS; 61.1S,160.4E<br>N. of Balleny Is.<br>Compression |
| 42            | 11           | eP                         | Z                          | 22 47 28                                     |                |                |                | USCGS; 2.8S,122.1E<br>Northern Celebes.                 |
| 43            | 18           | eP                         | Z                          | 11 07 (30)                                   |                |                |                | USCGS; 24.0S,179.9W<br>Kermadec Is. Region.             |
| 44            | 20           | eP                         | Z                          | 05 11 06                                     |                |                |                | USCGS; 17.8S,178.8W<br>Fiji Is.                         |
| 45            | 21           | eP                         | Z                          | 16 14 42                                     |                |                |                | USCGS; 17.8S,174.4W<br>Tonga Is.                        |
| SEPTEMBER     |              |                            |                            |                                              |                |                |                |                                                         |
| 46            | 1            | eP<br>epP                  | Z<br>NZ                    | 00 20 16<br>20 49                            |                |                |                | USCGS; 59.3S,27.3W<br>Sandwich Is. Region.              |
| 47            | 2            | eP<br>eL<br>M<br>ePcP      | Z<br>N<br>N<br>NZ          | 03 48 22<br>49.6<br>50.0<br>54 56            |                |                |                | USCGS; 56.6S,147.1E<br>W. of Macquarie Is.              |
| 48            | 8            | eP                         | Z                          | 11 37 28                                     |                |                |                | USCGS; 56.1S,27.3W<br>Sandwich Is. Region.              |



International  
Seismological  
Centre



| No. | Date<br>1961         | Phase                                                             |                                                 | Time<br>(G.M.T.)<br>h.m.s.                                                             | Per.<br>sec. | Amplitude      |                |                | △   | Remarks                                                       |
|-----|----------------------|-------------------------------------------------------------------|-------------------------------------------------|----------------------------------------------------------------------------------------|--------------|----------------|----------------|----------------|-----|---------------------------------------------------------------|
|     |                      |                                                                   |                                                 |                                                                                        |              | A <sub>N</sub> | A <sub>E</sub> | A <sub>Z</sub> |     |                                                               |
| 49  | 17                   | iP                                                                | Z                                               | 23 30 52                                                                               |              |                |                |                |     | USCGS; 5.9S, 147.4E<br>Near East Coast of<br>New Guinea.      |
| 50  | 22                   | e(P)                                                              | Z                                               | 20 10 12                                                                               |              |                |                |                |     | USCGS; 55.2S, 146.0E<br>W. of Macquarie Is.                   |
| 51  | 29                   | e(pP)                                                             | Z                                               | 19 06 53                                                                               |              |                |                |                |     | USCGS; 0.5N, 122.4E<br>Northern Celebes.                      |
| 52  | <u>OCTOBER</u><br>8  | eP                                                                | Z                                               | 23 51 42                                                                               |              |                |                |                |     | USCGS; 1.6N, 127.3E<br>Halmahera.                             |
| 53  | 12                   | iP                                                                | Z                                               | 21 59 12                                                                               |              |                |                |                |     | USCGS; 60.7S, 153.8E<br>S. of Macquarie Is.                   |
| 54  | 13                   | eiP                                                               | Z                                               | 05 10 10                                                                               |              |                |                |                |     | USCGS; 55.9S, 27.2W<br>Sandwich Is.                           |
| 55  | 18                   | eP                                                                | Z                                               | 17 03 57                                                                               |              |                |                |                |     | USCGS; 36.7S, 72.6W<br>Near Coast of Southern<br>Chile.       |
| 56  | 19                   | eP<br>eL                                                          | Z<br>N                                          | 09 14 (07)<br>16.2                                                                     |              |                |                |                |     | USCGS; 55.2S, 146.0E<br>W. of Macquarie Is.                   |
| 57  | 19                   | eP<br>eL<br>eL<br>L-Max<br>L-Max<br>L-Max<br>eX<br>eX<br>eX<br>eX | Z<br>EN<br>Z<br>N<br>Z<br>E<br>Z<br>E<br>Z<br>N | 19 28 16<br>29.7<br>29.8<br>30.7<br>31.0<br>31.4<br>35 (17)<br>35 18<br>37 11<br>37 13 |              |                |                |                |     | USCGS; 55.3S, 146.4E<br>S. of Australia                       |
| 58  | 23                   | eP                                                                | Z                                               | 00 19 (18)                                                                             |              |                |                |                |     | USCGS; 60.4S, 33.4W<br>Sandwich Is. Region.                   |
| 59  | 23                   | eP                                                                | Z                                               | 14 50 12                                                                               |              |                |                |                |     | USCGS; 3.5N, 126.4E<br>Molucca Passage                        |
| 60  | <u>NOVEMBER</u><br>5 | eP<br>eS<br>eX                                                    | Z<br>EN<br>Z                                    | 23 57 54<br>59 02<br>24 05 37                                                          |              |                |                |                | 4.5 | USCGS; 49.4S, 163.3E<br>N.W. of Auckland Is.,<br>New Zealand. |
| 61  | 9                    | eP                                                                | Z                                               | 18 46 38                                                                               |              |                |                |                |     | USCGS; 5.9S, 129.8E<br>Banda Sea                              |
| 62  | 14                   | eP                                                                | Z                                               | 17 24 46                                                                               |              |                |                |                |     | USCGS; 5.7S, 104.3E<br>Near Coast of Sumatra.                 |
| 63  | 19                   | iP                                                                | Z                                               | 23 32 01                                                                               |              |                |                |                |     | USCGS; 0.8N, 124.3E<br>Northern Celebes.                      |
| 64  | 25                   | eP                                                                | Z                                               | 14 19 57                                                                               |              |                |                |                |     | USCGS; 6.3S, 154.8E<br>Solomon Is.                            |
| 65  | 27                   | eP                                                                | Z                                               | 17 20 42                                                                               |              |                |                |                |     | USCGS; 0.6S, 127.1E<br>Halmahera Region.                      |



International  
Seismological  
Centre



| No. | Date<br>1961                  | Phase                                  | Time<br>(G.M.T.)<br>h.m.s.      |                                              |                                            | Per<br>sec. | Amplitude      |                |                | $\Delta$ | Remarks                                                           |
|-----|-------------------------------|----------------------------------------|---------------------------------|----------------------------------------------|--------------------------------------------|-------------|----------------|----------------|----------------|----------|-------------------------------------------------------------------|
|     |                               |                                        |                                 |                                              |                                            |             | A <sub>N</sub> | A <sub>E</sub> | A <sub>Z</sub> |          |                                                                   |
|     | <u>NOVEMBER</u>               | (Cont'd)                               |                                 |                                              |                                            |             |                |                |                |          |                                                                   |
| 66  | 27                            | iP<br>eS<br>iS<br>iS<br>eX<br>eX<br>eX | Z<br>N<br>E<br>Z<br>N<br>E<br>Z | 23<br>32<br>32<br>32<br>33<br>46<br>46<br>46 | 00<br>58<br>59<br>01<br>(21)<br>24<br>(27) |             |                |                |                | 6.5      | USCGS; 60.6S,156.9E<br>Balleny Is. Region.                        |
| 67  | 28                            | eL<br>eL<br>eX<br>eX<br>eX             | N<br>E Z<br>Z<br>N<br>E         | 18<br>37.7<br>38.1<br>42<br>43<br>43         | <br>59<br>(03)<br>(06)                     |             |                |                |                |          | USCGS; 56.9S,143.5E<br>S. of Tasmania                             |
|     | <u>DECEMBER</u>               |                                        |                                 |                                              |                                            |             |                |                |                |          |                                                                   |
| 68  | 5                             | eP<br>M<br>eX<br>eX<br>eX              | Z<br>EN<br>Z<br>E<br>N          | 13<br>03<br>07.9<br>16<br>16<br>16           | 57<br><br>09<br>11<br>21                   |             |                |                |                |          | USCGS; 50.8S,139.8E<br>S.W. of Tasmania                           |
| 69  | 17                            | eP                                     | Z                               | 22                                           | 14 35                                      |             |                |                |                |          | USCGS; 54.5S,143.9E<br>W. of Macquarie Is.                        |
| 70  | 27                            | eP<br>epP                              | Z<br>Z                          | 23<br>52                                     | 12<br>23                                   |             |                |                |                |          | USCGS; 41.2S,175.7E<br>Near Coast of<br>North Is. New<br>Zealand. |
|     | <u>JANUARY</u><br><u>1962</u> |                                        |                                 |                                              |                                            |             |                |                |                |          |                                                                   |
| 1   | 4                             | eP                                     | Z                               | 07                                           | 43 54                                      |             |                |                |                |          | USCGS; 5.0S,130.4E<br>Banda Sea.                                  |
| 2   | 19                            | iP<br>eS<br>eS                         | Z<br>N<br>E                     | 22<br>09<br>10<br>10                         | 14<br>21<br>22                             |             |                |                |                | 4.5      | USCGS; 49.8S,163.0E<br>S.W. of New Zealand                        |
| 3   | 21                            | eP                                     | Z                               | 12                                           | 58 48                                      |             |                |                |                |          | USCGS; 17.7S,178.8W<br>Fiji Is.                                   |
|     | <u>FEBRUARY</u>               |                                        |                                 |                                              |                                            |             |                |                |                |          |                                                                   |
| 4   | 3                             | eP                                     | Z                               | 00                                           | 47 34                                      |             |                |                |                |          | USCGS; 1.2S,137.8E<br>North of New Guinea                         |
| 5   | 4                             | eP                                     | Z                               | 03                                           | 04 39                                      |             |                |                |                |          | USCGS; 4.6S,119.0E<br>Celebes.                                    |
| 6   | 11                            | eP<br>epP                              | Z<br>Z                          | 19<br>04                                     | 18<br>40                                   |             |                |                |                |          | USCGS; 4.5S,153.5E<br>New Ireland Region.                         |
| 7   | 15                            | eP                                     | Z                               | 15                                           | 34 16                                      |             |                |                |                |          | USCGS; 4.4S,153.8E<br>New Ireland Region.                         |
| 8   | 17                            | eP                                     | Z                               | 03                                           | 45 31                                      |             |                |                |                |          | USCGS; 61.6S,162.9E<br>S. of Macquarie Is.<br>Region.             |
| 9   | 21                            | eP                                     | Z                               | 09                                           | 51 52                                      |             |                |                |                |          | USCGS; 56.8S,146.7E<br>W. of Macquarie Is.                        |

