

# CLEVELAND

SEISMOLOGICAL OBSERVATORY  
JOHN CARROLL UNIVERSITY, CLEVELAND 18, OHIO, U. S. A.

41° 29' 27.90" North, 81° 31' 52.22" West, h = 326 m.

Seismographs: Two Sprengnether long-period horizontal, one Sprengnether vertical.  
Two Sprengnether short-period horizontal.



From the ISC collection scanned by SISMOS



## JANUARY, 1958, BULLETIN

| <u>Date</u> | <u>Phase</u>  | <u>G. M. C. T.</u>                              | <u>Remarks</u>  |
|-------------|---|---|---|
| 3           | eL <sub>E</sub>   | 06 <sup>h</sup> 36 <sup>m</sup> 44 <sup>s</sup> | USCGS: 32°N, 41.5°W H = 06 <sup>h</sup> 24 <sup>m</sup> 31 <sup>s</sup>                                 |
| 12          | eL <sub>E</sub>   | 15 07 19  | USCGS: 31.5°N, 41°W, H = 14 <sup>h</sup> 55 <sup>m</sup> 09 <sup>s</sup>                                |
| 13          | iP <sub>nez</sub><br>ene                                      | 00 12 54<br>00 13 26                            | USCGS: 52.5°N, 177°E<br>H = 00 <sup>h</sup> 02 <sup>m</sup> 24 <sup>s</sup> h = 100 km                  |
| 15          | iP <sub>nez</sub><br>iS <sub>NE</sub>                         | 19 24 19<br>19 32 15                            | USCGS: 16.5°S, 71.5°W H = 19 <sup>h</sup> 14 <sup>m</sup> 29 <sup>s</sup><br>Mag: 7 (Pas); 6 3/4 (Berk) |
| 19          | iP <sub>nez</sub><br>inz<br>i <sub>E</sub><br>iS <sub>E</sub> | 14 15 01<br>14 15 04<br>14 16 50<br>14 21 04    | USCGS: 8.5°S, 79.5°W<br>H = 14 07 23 Ecuador<br>Mag: 7.5 (Pas), (Berk)                                  |
| 19          | eP <sub>z</sub><br>eP <sub>n</sub><br>eP <sub>e</sub>         | 14 51 02<br>14 51 04<br>14 51 05                | Ecuador aftershock<br>H = 14 <sup>h</sup> 43 <sup>m</sup> 24 <sup>s</sup><br>Mag: 6 3/4 (Pas)           |
| 20          | iP <sub>nz</sub>  | 02 31 23  | USCGS: 30.5°S, 71.5°W H = 02 <sup>h</sup> 19 <sup>m</sup> 53 <sup>s</sup>                               |
| 24          | iP <sub>nez</sub><br>e <sub>E</sub>                           | 23 25 47<br>23 35 51                            | USCGS: 60°N, 152°W<br>H = 23 <sup>h</sup> 17 <sup>m</sup> 29 <sup>s</sup> Mag: 6 1/2 (Pas)              |
| 28          | iz<br>iez   | 05 58 49<br>06 00 29                            | Local Shock   |

H. F. Birkenhauer, S.J.  
Director, Seismological Observatory  
John Carroll University  
Cleveland 18, Ohio

USA

## FEBRUARY, 1958, BULLETIN

| <u>Date</u> | <u>Phase</u> | <u>Component</u> | <u>G. M. C. T.</u>  | <u>REMARKS</u>   |
|-------------|--------------|------------------|---|--|
| 1           | eP<br>iS     | n<br>E           | 16 <sup>h</sup> 17 <sup>m</sup> 54 <sup>s</sup><br>16 23 52 | USCGS: 2°N 79°W<br>H = 16 <sup>h</sup> 10 <sup>m</sup> 15 <sup>s</sup> *     |
| 1           | iP<br>iS     | n<br>E           | 18 10 17<br>18 16 16  | USCGS: 2°N 79°W<br>H = 18 <sup>h</sup> 02 <sup>m</sup> 39 <sup>s</sup> *     |
| 1           | iP<br>iS     | n<br>E           | 20 53 26<br>20 59 20  | USCGS: 1½°N 79°W<br>H = 20 <sup>h</sup> 45 <sup>m</sup> 45 <sup>s</sup> *    |
| 11          | iPKP         | e                | 01 05 47  | USCGS: 9°S 107½°E<br>H = 00 <sup>h</sup> 46 <sup>m</sup> 02 <sup>s</sup> *   |
| 12          | iP<br>iS     | n<br>E           | 23 53 58<br>00 02 14  | USCGS: 52°N 175°W<br>H = 23 <sup>h</sup> 43 <sup>m</sup> 45 <sup>s</sup> *   |
| 19          | iPKP         | n                | 19 45 03  | USCGS: 8°S 108° E<br>H = 19 <sup>h</sup> 25 <sup>m</sup> 21 <sup>s</sup> *   |
| 22          | iP<br>iS     | z<br>N           | 11 00 47 d<br>11 09 10                                      | USCGS: 50½° N 175°W<br>H = 10 <sup>h</sup> 50 <sup>m</sup> 23 <sup>s</sup> * |

## MARCH, 1958, BULLETIN

| <u>Date</u> | <u>Phase</u> | <u>Component</u> | <u>G. M. C. T.</u>                                | <u>REMARKS</u>  |
|-------------|--------------|------------------|---|---|
| 11          | iPP          | ne               | 00 <sup>h</sup> 45 <sup>m</sup> 23 <sup>s</sup>   | USCGS: 25 <sup>1</sup> / <sub>2</sub> <sup>o</sup> N 125 <sup>o</sup> E<br>H = 00 <sup>h</sup> 25 <sup>m</sup> 56 <sup>s</sup> *<br>h = 60 km |
| 20          | iP           | z                | 01 <sup>h</sup> 48 <sup>m</sup> 14 <sup>s</sup> d | USCGS: 51 <sup>o</sup> N 173 <sup>o</sup> W<br>H = 01 <sup>h</sup> 38 <sup>m</sup> 04 <sup>s</sup> *  |
|             | iPP          | z                | 01 50 29 d  |   |
|             | iS           | E                | 01 56 22  |   |

## APRIL, 1958, BULLETIN

| <u>Date</u> | <u>Phase</u> | <u>Component</u> | <u>G. M. C. T.</u>                                | <u>Remarks</u>   |
|-------------|--------------|------------------|---|--|
| 7           | iP           | Z                | 15 <sup>h</sup> 39 <sup>m</sup> 13 <sup>s</sup> d | USCGS: 66 $\frac{1}{2}$ <sup>o</sup> N 157 <sup>o</sup> W<br>H = 15 <sup>h</sup> 30 <sup>m</sup> 38 <sup>s</sup> *               |
|             | iS           | N                | 15 46 05  |  |
| 9           | iP           | z                | 06 22 45 d  | USCGS: 56 $\frac{1}{2}$ <sup>o</sup> N 139 <sup>o</sup> W<br>H = 06 <sup>h</sup> 15 <sup>m</sup> 12 <sup>s</sup> *               |
|             | eS           | N                | 06 28 49  |  |
| 12          | iP           | z                | 11 53 00 d  | USCGS: 26 $\frac{1}{2}$ <sup>o</sup> N 111 <sup>o</sup> W<br>H = 11 <sup>h</sup> 46 <sup>m</sup> 58 <sup>s</sup> *               |
| 13          | iP           | z                | 09 15 56 c  | USCGS: 66 <sup>o</sup> N 156 <sup>o</sup> W<br>H = 09 <sup>h</sup> 07 <sup>m</sup> 24 <sup>s</sup> *                             |
| 13          | iP           | z                | 12 38 32 c  | USCGS: 53 <sup>o</sup> N 161 <sup>o</sup> E<br>H = 12 <sup>h</sup> 29 <sup>m</sup> 07 <sup>s</sup> *                             |
| 14          | iP           | z                | 21 40 11 d  | USCGS: 1 <sup>o</sup> N 79 $\frac{1}{2}$ <sup>o</sup> W<br>H = 21 <sup>h</sup> 32 <sup>m</sup> 28 <sup>s</sup> *                 |
|             | iS           | N                | 21 45 57  |  |
| 14          | eP           | z                | 22 56 12 d  | USCGS: 1 <sup>o</sup> N 79 $\frac{1}{2}$ <sup>o</sup> W<br>H = 22 <sup>h</sup> 48 <sup>m</sup> 33 <sup>s</sup> *                 |
|             | eS           | E                | 23 02 18  |  |
| 15          | eP           | z                | 01 38 24 c  | USCGS: 1 <sup>o</sup> N 79 $\frac{1}{2}$ <sup>o</sup> W<br>H = 01 <sup>h</sup> 30 <sup>m</sup> 43 <sup>s</sup> *                 |
|             | iS           | E                | 01 44 30  |  |
| 15          | eP           | z                | 03 59 15 d  | USCGS: 9 <sup>o</sup> N 84 <sup>o</sup> W<br>H = 03 <sup>h</sup> 52 <sup>m</sup> 39 <sup>s</sup> *                               |
|             | iS           | E                | 04 04 36  |  |
| 19          | iP           | n                | 04 09 26  | USCGS: 26 $\frac{1}{2}$ <sup>o</sup> N 110 $\frac{1}{2}$ <sup>o</sup> W<br>H = 04 <sup>h</sup> 03 <sup>m</sup> 26 <sup>s</sup> * |
|             | eS           | E                | 04 14 10  |  |
| 21          | iPKP         | z                | 22 56 48  | USCGS: 4 $\frac{1}{2}$ <sup>o</sup> S 104 <sup>o</sup> E<br>H = 22 <sup>h</sup> 37 <sup>m</sup> 18 <sup>s</sup> *                |
| 28          | iP           | z                | 11 57 02 c  | USCGS: 11 <sup>o</sup> S 74 <sup>o</sup> W<br>H = 11 <sup>h</sup> 47 <sup>m</sup> 40 <sup>s</sup> *                              |
|             | iS           | E                | 12 04 23  |  |

## MAY, 1958, BULLETIN

| <u>Date</u> | <u>Phase</u>             | <u>Component</u> | <u>G. M. C. T.</u>  | <u>REMARKS</u>  |
|-------------|--------------------------|------------------|---|---|
| 9           | iP<br>iS                 | Z<br>E           | 04 <sup>h</sup> 51 <sup>m</sup> 46 <sup>s</sup> d<br>05 00 57 | USCGS: 31°S 65 <sup>1</sup> / <sub>2</sub> °W<br>H = 04 <sup>h</sup> 40 <sup>m</sup> 20 <sup>s</sup> *<br>h = 100 km  |
| 10          | iP<br>iS                 | e<br>E           | 23 03 01<br>23 09 37  | USCGS: 65°N 152 <sup>1</sup> / <sub>2</sub> °W<br>H = 22 <sup>h</sup> 54 <sup>m</sup> 40 <sup>s</sup> *               |
| 11          | iP<br>iS                 | e<br>N           | 05 32 20<br>05 38 54  | USCGS: 65°N 152 <sup>1</sup> / <sub>2</sub> °W<br>H = 05 <sup>h</sup> 23 <sup>m</sup> 54 <sup>s</sup> *               |
| 14          | iP*<br>iPg<br>iSn<br>iS* | z<br>z<br>z<br>N | 17 42 58 c<br>17 43 06 d<br>17 43 41<br>17 44 03              | USCGS: 47°N 77°W<br>H = 17 <sup>h</sup> 41 <sup>m</sup> 18 <sup>s</sup> *   |
| 25          | iP                       | n                | 00 45 49  | USCGS: 51°N 177°W<br>H = 00 <sup>h</sup> 35 <sup>m</sup> 23 <sup>s</sup> *  |
| 25          | iP<br>eS                 | z<br>E           | 15 04 55 d<br>15 13 16  | USCGS: 51 <sup>1</sup> / <sub>2</sub> °N 177°W<br>H = 14 <sup>h</sup> 54 <sup>m</sup> 30 <sup>s</sup> *               |
| 25          | iP<br>iS                 | z<br>E           | 21 19 52 d<br>21 26 25  | USCGS: 3°S 77°W<br>H = 21 <sup>h</sup> 11 <sup>m</sup> 45 <sup>s</sup> *<br>h = 100 km                                |
| 26          | iP<br>eSS                | z<br>E           | 08 57 54 d<br>09 07 49  | USCGS: 3°S 77°W<br>H = 08 <sup>h</sup> 49 <sup>m</sup> 47 <sup>s</sup> *<br>h = 100 km                                |
| 26          | iP                       | z                | 11 06 20 d  | USCGS: 53°N 169 <sup>1</sup> / <sub>2</sub> °W<br>H = 10 <sup>h</sup> 56 <sup>m</sup> 30 <sup>s</sup> *               |
| 30          | iP<br>eS                 | z<br>E           | 18 14 39 c<br>18 22 26  | USCGS: 52 <sup>1</sup> / <sub>2</sub> °N 169°W<br>H = 18 <sup>h</sup> 04 <sup>m</sup> 50 <sup>s</sup> *<br>h = 100 km |
| 31          | ePP<br>ePPP<br>iSKS      | E<br>E<br>E      | 19 52 14<br>19 54 46<br>19 58 08                              | USCGS: 15°S 169°E<br>H = 19 <sup>h</sup> 32 <sup>m</sup> 30 <sup>s</sup> *  |

# CLEVELAND



From the ISC collection scanned by SISMOS

## SEISMOLOGICAL OBSERVATORY JOHN CARROLL UNIVERSITY, CLEVELAND 18, OHIO, U. S. A.

41° 29' 27.90" North, 81° 31' 52.22" West, h = 326 m.

Seismographs: Two Sprengnether long-period horizontal, one Benioff vertical.

Two Sprengnether short-period horizontal.

### JUNE, 1958, BULLETIN

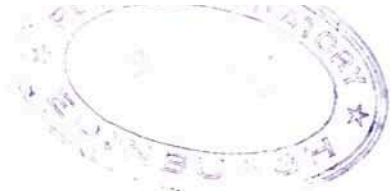
| Date | Phase | Component | G. M. C. T. |    |      | REMARKS  |
|------|-------|-----------|-------------|----|------|--|
|      |       |           | h           | m  | s    |  |
| 1    | e     | E         | 13          | 38 | 36   |  |
| 3    | ePP   | E         | 19          | 51 | 38.9 | USCGS: 15°S 168°E<br>H = 19 <sup>h</sup> 31 <sup>m</sup> 52 <sup>s</sup> *   |
|      | ePS   | E         | 20          | 00 | 50.4 |  |
| 6    | eP    | n         | 19          | 22 | 34.8 | USCGS: 5.5°N 82.5°W<br>H = 19 <sup>h</sup> 15 <sup>m</sup> 28 <sup>s</sup> * |
|      | iPP   | N         | 19          | 23 | 58.3 |  |
|      | iS    | N         | 19          | 28 | 17.3 |  |
| 6    | eP    | E         | 22          | 53 | 10   | USCGS: 8°N 84.5°W<br>H = 22 <sup>h</sup> 46 <sup>m</sup> 20 <sup>s</sup> *   |
| 12   | iP    | n         | 21          | 02 | 38   | USCGS: 53°N 167°W<br>H = 20 <sup>h</sup> 52 <sup>m</sup> 57 <sup>s</sup> *   |
|      | iS    | E         | 21          | 10 | 26.5 |  |
| 19   | iP    | n         | 05          | 29 | 50.3 | USCGS: 49.5°N 156°E<br>H = 05 <sup>h</sup> 18 <sup>m</sup> 00 <sup>s</sup> * |
|      | eS    | N         | 05          | 39 | 27.8 |  |
| 24   | iPKP  | n         | 00          | 28 | 50   | USCGS: 8.5°S 112°E<br>H = 00 <sup>h</sup> 09 <sup>m</sup> 18 <sup>s</sup> *  |
| 27   | iP    | n         | 05          | 50 | 28.5 | USCGS: 13°N 88.5°W<br>H = 05 <sup>h</sup> 44 <sup>m</sup> 28 <sup>s</sup> *  |
|      | eS    | e         | 05          | 55 | 14   |  |





## JULY, 1958, BULLETIN

| <u>Date</u> | <u>Phase</u> | <u>Component</u> | <u>G. M. C. T.</u>  | <u>REMARKS</u>   |
|-------------|--------------|------------------|---|--|
| 1           | iP<br>eS     | n<br>e           | 06 <sup>h</sup> 03 <sup>m</sup> 28 <sup>s</sup><br>06 11 49.6 | USCGS: 51.5°N 176.5°W<br>H = 05 <sup>h</sup> 53 <sup>m</sup> 07 <sup>s</sup> * |
| 6           | e            | N                | 18 46 12  |  |
| 10          | iP<br>iS     | Z<br>E           | 06 23 14d<br>06 29 13   | USCGS: 58.6°N 137.1°W<br>H = 06 <sup>h</sup> 15 <sup>m</sup> 51 <sup>s</sup>   |
| 11          | eP<br>eS     | n<br>E           | 19 20 52.8c<br>19 29 18.8                                     | USCGS: 21°S 69°W<br>H = 19 <sup>h</sup> 10 <sup>m</sup> 20 <sup>s</sup> *      |
| 12          | eP<br>eS     | E<br>E           | 00 57 42.5<br>01 04 50.5                                      | USCGS: 5°S 106.5°W<br>H = 00 <sup>h</sup> 48 <sup>m</sup> 30 <sup>s</sup> *    |
| 13          | eP           | e                | 08 17 23.3  | USCGS: 58.3°N 136.9°W<br>H = 08 <sup>h</sup> 10 <sup>m</sup> 02 <sup>s</sup>   |
| 14          | eSS<br>eSSS  | e<br>N           | 22 15 19.8<br>22 15 53  | USCGS: 61°N 143°W<br>H = 02 <sup>h</sup> 58 <sup>m</sup> 18 <sup>s</sup> *     |
| 17          | eS           | N                | 14 01 56  | USCGS: 57.5°N 137°W<br>H = 13 <sup>h</sup> 48 <sup>m</sup> 45 <sup>s</sup> *   |
| 17          | iP<br>eS     | e<br>E           | 21 09 45<br>21 18 04.5  | USCGS: 51°N 177.5°W<br>H = 20 <sup>h</sup> 59 <sup>m</sup> 17 <sup>s</sup> *   |
| 18          | eP<br>eS     | n<br>E           | 00 49 41.5<br>00 58 09.5                                      | USCGS: 51°N 176.5°W<br>H = 00 <sup>h</sup> 39 <sup>m</sup> 18 <sup>s</sup> *   |
| 21          | eP<br>eS     | e<br>N           | 07 37 29.8<br>07 47 44.5                                      | USCGS: 44.5°N 147.5°E<br>H = 07 <sup>h</sup> 24 <sup>m</sup> 58 <sup>s</sup> * |
| 21          | iP<br>eS     | e<br>E           | 14 47 45.1<br>14 56 08.3                                      | USCGS: 51.5°N 178°W<br>H = 14 <sup>h</sup> 37 <sup>m</sup> 18 <sup>s</sup> *   |
| 22          | iP<br>iS     | e<br>n           | 01 47 24<br>01 47 52.2  |  |
| 26          | eP<br>iS     | e<br>E           | 17 45 54<br>17 52 52  | USCGS: 13.5°S 69°W<br>H = 17 <sup>h</sup> 37 <sup>m</sup> 09 <sup>s</sup> *    |
| 29          | iP           | e                | 21 47 45  | USCGS: 4°N 26.5°W<br>H = 21 <sup>h</sup> 37 <sup>m</sup> 25 <sup>s</sup> *     |



## AUGUST, 1958, BULLETIN

| <u>Date</u> | <u>Phase</u> | <u>Component</u> | <u>G. M. C. T.</u>                              | <u>REMARKS</u>  |
|-------------|--------------|------------------|---|---|
| 6           | eSKS         | E                | 21 <sup>h</sup> 33 <sup>m</sup> 47 <sup>s</sup> | USCGS: 17°S 173°W<br>H = 21 <sup>h</sup> 09 <sup>m</sup> 09 <sup>s</sup> *                |
| 12          | iPKS         | n                | 19 47 47.5                                      | USCGS: 0°N 126.5°E<br>H = 19 <sup>h</sup> 25 <sup>m</sup> 05 <sup>s</sup> *               |
| 15          | iP<br>iS     | e<br>E           | 20 06 59.7<br>20 16 14                          | USCGS: 53°N 160.5°E<br>H = 19 <sup>h</sup> 55 <sup>m</sup> 39 <sup>s</sup>                |
| 15          | ePKP<br>iPKS | e<br>n           | 22 48 17.3<br>22 51 47                          | USCGS: 1.5°N 125°E<br>H = 22 <sup>h</sup> 29 <sup>m</sup> 17 <sup>s</sup> *               |
| 16          | iP<br>iS     | e<br>E           | 13 28 12<br>13 36 33.7                          | USCGS: 51.5°N 176°W<br>H = 13 <sup>h</sup> 17 <sup>m</sup> 52 <sup>s</sup> *              |
| 16          | eP<br>eSKS   | Z<br>E           | 19 26 52.7 d<br>19 37 21                        | USCGS: 34.5°N 48°E<br>H = 19 <sup>h</sup> 13 <sup>m</sup> 45 <sup>s</sup>                 |
| 17          | iP<br>eS     | Z<br>E           | 09 18 55.9 d<br>09 27 17                        | USCGS: 51.5°N 176°W<br>H = 09 <sup>h</sup> 08 <sup>m</sup> 35 <sup>s</sup> *              |
| 18          | eScS         | E                | 06 16 45.8                                      | USCGS: Upper Gulf of California<br>H = 06 <sup>h</sup> 00 <sup>m</sup> 52 <sup>s</sup> ** |
| 18          | eScS         | E                | 06 59 57.8                                      | USCGS: 30.5°N 114°W<br>H = 06 <sup>h</sup> 44 <sup>m</sup> 14 <sup>s</sup> *              |
| 19          | e            | E                | 22 37 45  |   |
| 20          | iSKS         | E                | 04 05 43  | USCGS: 14°S 167°E<br>H = 03 <sup>h</sup> 40 <sup>m</sup> 07 <sup>s</sup> *                |
| 27          | iP<br>iS     | e<br>N           | 15 28 13.5<br>15 37 45                          | USCGS: 38°N 20.5°E<br>H = 15 <sup>h</sup> 16 <sup>m</sup> 35 <sup>s</sup> *               |





## SEPTEMBER, 1958, BULLETIN

| <u>Date</u> | <u>Phase</u> | <u>Component</u> | <u>H. M. C. T.</u>                              | <u>REMARKS</u>  |
|-------------|--------------|------------------|---|---|
| 2           | ePP          | n                | 20 <sup>h</sup> 13 <sup>m</sup> 44 <sup>s</sup> | USCGS: 15°N 92.5°W  |
|             | eS           | N                | 20 17 45.5                                      | H = 20 <sup>h</sup> 07 <sup>m</sup> 04 <sup>s</sup> *                           |
| 3           | eP           | e                | 03 55 45.7                                      | USCGS: 0°N 18°W   |
|             | eS           | E                | 04 05 02.7                                      | H = 03 <sup>h</sup> 44 <sup>m</sup> 24 <sup>s</sup> *                           |
| 4           | iP           | n                | 22 02 58.8                                      | USCGS: 33.5°S 69.5°W  |
|             | iS           | E                | 22 12 43  | H = 21 <sup>h</sup> 51 <sup>m</sup> 08 <sup>s</sup> *                           |
| 14          | iPcP         | n                | 14 33 52.5                                      | USCGS: 57°N 121°E   |
|             | eS           | E                | 14 43 33  | H = 14 <sup>h</sup> 21 <sup>m</sup> 37 <sup>s</sup> *                           |
| 15          | iPP          | e                | 15 06 57  | USCGS: 2.5°N 120.5°E<br>H = 19 <sup>h</sup> 45 <sup>m</sup> 40 <sup>s</sup> *   |
| 22          | ePP          | E                | 19 25 30.7                                      | USCGS: 33.5°S 177.5°W   |
|             | eSKS         | E                | 19 31 14.7                                      | H = 19 <sup>h</sup> 05 <sup>m</sup> 44 <sup>s</sup> *                           |
|             | ePS          | E                | 19 35 11  |   |
| 24          | eP           | N                | 03 52 07.3                                      | USCGS: 59.25°N 143.5°W<br>H = 03 <sup>h</sup> 44 <sup>m</sup> 14 <sup>s</sup> * |
| 25          | iP           | Z                | 07 28 59.5 d                                    | USCGS: 9°N 39.5°W   |
|             | iS           | N                | 07 36 21.5                                      | H = 07 <sup>h</sup> 20 <sup>m</sup> 02 <sup>s</sup> *                           |
| 29          | e            | e                | 23 16 54  |   |
|             | i            | e                | 23 19 26  |   |
| 30          | i            | n                | 18 31 22.5                                      |   |
|             | i            | e                | 18 32 49  |   |



## OCTOBER, 1958, BULLETIN

| <u>Date</u> | <u>Phase</u> | <u>Component</u> | <u>G. M. C. T.</u>  | <u>REMARKS</u>   |
|-------------|--------------|------------------|---|--|
| 10          | iP<br>eS     | n<br>E           | 08 <sup>h</sup> 41 <sup>m</sup> 42 <sup>s</sup><br>08 50 40 | USCGS: 53.5°N 160.5°E<br>H = 08 <sup>h</sup> 30 <sup>m</sup> 26 <sup>s</sup> * |
| 20          | iP           | e                | 01 05 48  | USCGS: 52°N 175°W<br>H = 00 <sup>h</sup> 55 <sup>m</sup> 34 <sup>s</sup> *     |
| 20          | iPKP         | N                | 01 32 12  | USCGS: 9.5°N 112.5°E<br>H = 01 12 30 *   |
| 23          | eP<br>eS     | n<br>n           | 02 30 57.8<br>02 31 55.8                                    | USCGS: 37.5°N 82.5°W<br>H = 02 <sup>h</sup> 29 <sup>m</sup> 47 <sup>s</sup> *  |
| 29          | eP<br>iS     | n<br>N           | 07 54 45<br>08 03 17  | USCGS: 51.5°N 179.5°E<br>H = 07 <sup>h</sup> 44 <sup>m</sup> 10 <sup>s</sup> * |



## NOVEMBER, 1958, BULLETIN

| <u>Date</u> | <u>Phase</u> | <u>Component</u> | <u>G. M. C. T.</u>  | <u>REMARKS</u>  |
|-------------|--------------|------------------|---|---|
| 6           | iP<br>iS     | Z<br>e           | 23 <sup>h</sup> 10 <sup>m</sup> 34 <sup>s</sup> c<br>23 20 48 | U. S. C. G. S. 44.5°N 148.5°E<br>H = 22 <sup>h</sup> 58 <sup>m</sup> 06 <sup>s</sup> *<br>h = 60 km<br>Mag. = 8-8 <sup>1</sup> / <sub>4</sub> |
| 8           | iP<br>iS     | e<br>e           | 02 42 50<br>02 43 50.5  | USCGS. 38.5°N 88°W<br>H = 02 <sup>h</sup> 41 <sup>m</sup> 09 <sup>s</sup> *   |
| 8           | iPcP         | Z                | 09 34 25 d  | USCGS: 52°N 159.5°E<br>H = 09 <sup>h</sup> 22 <sup>m</sup> 53 <sup>s</sup> *  |
| 12          | iP<br>iS     | Z<br>e           | 20 35 56.5 c<br>20 46 16.2                                    | USCGS: 44.5°N 148.5°E<br>H = 20 <sup>h</sup> 23 <sup>m</sup> 26 <sup>s</sup> *<br>Mag. = 6 3/4-7  |
| 13          | iP<br>eSKS   | Z<br>e           | 03 09 01.2 d<br>03 19 00.8                                    | USCGS: 44°N 148.5°E<br>H = 02 <sup>h</sup> 56 <sup>m</sup> 26 <sup>s</sup> *  |
| 13          | iP<br>iPcP   | Z<br>n           | 04 17 09.6 c<br>04 17 21.7                                    | USCGS: 44.5°N 148°E<br>H = 04 <sup>h</sup> 04 <sup>m</sup> 37 <sup>s</sup> *  |
| 14          | eSS          | e                | 06 03 16  | USCGS: 44°N 142°E<br>H = 05 <sup>h</sup> 34 <sup>m</sup> 53 <sup>s</sup> *  |
| 14          | eP           | Z                | 05 52 18.6 d  | USCGS: 14.5°N 91.5°W<br>H = 05 <sup>h</sup> 46 <sup>m</sup> 34 <sup>s</sup> *<br>h = 150 km   |
| 14          | ePP<br>ePKS  | e<br>e           | 14 10 12.4<br>14 11 13.9                                      | USCGS: 6°S 131°E<br>H = 13 <sup>h</sup> 48 <sup>m</sup> 20 <sup>s</sup> *   |
| 15          | iP           | Z                | 09 13 17.1 c  | USCGS: 44°N 149°E<br>H = 09 <sup>h</sup> 00 <sup>m</sup> 45 <sup>s</sup> *<br>Mag. 6 <sup>1</sup> / <sub>2</sub> - 6 3/4                      |
| 19          | iP           | n                | 01 45 27  | USCGS: 27.5°S 63.5°W<br>H = 01 <sup>h</sup> 35 <sup>m</sup> 06 <sup>s</sup> *<br>h = 600 km   |
| 20          | iPcP         | e                | 14 30 25.9  | USCGS: 45°N 149.5°E<br>H = 14 <sup>h</sup> 18 <sup>m</sup> 04 <sup>s</sup> *<br>h = 60 km   |



## DECEMBER, 1958, BULLETIN

| <u>Date</u> | <u>Phase</u> | <u>Component</u> | <u>G. M. C. T.</u>  | <u>Remarks</u>   |
|-------------|--------------|------------------|---|--|
| 6           | iP<br>iS     | n<br>e           | 09 <sup>h</sup> 40 <sup>m</sup> 41.5 <sup>s</sup><br>09 46 10.5 | USCGS: 6.5°N 83°W<br>H = 09 <sup>h</sup> 33 <sup>m</sup> 45 <sup>s</sup> *<br>Mag. = 6-6 <sup>1</sup> / <sub>4</sub>         |
| 7           | eS           | E                | 18 09 28  | USCGS: 18°N 105°W<br>H = 17 <sup>h</sup> 58 <sup>m</sup> 08 <sup>s</sup> *<br>Mag. = 6                                       |
| 10          | iPKP<br>iPP  | Z<br>e           | 07 21 19.4 d<br>07 22 56.2                                      | USCGS: 37°S 176.5°E<br>H = 07 <sup>h</sup> 02 <sup>m</sup> 59 <sup>s</sup> *<br>Mag. = 6 <sup>1</sup> / <sub>2</sub> - 6 3/4 |
| 10          | eS           | N                | 22 00 09.9  | USCGS: 24.5°N 109°W<br>H = 21 <sup>h</sup> 49 <sup>m</sup> 20 <sup>s</sup> *<br>Mag. = 5 3/4                                 |
| 19          | eP<br>eS     | n<br>E           | 11 24 30<br>11 32 24  | USCGS: 16°S 72°W<br>H = 11 <sup>h</sup> 14 <sup>m</sup> 40 <sup>s</sup> *<br>h = 100 km                                      |
| 19          | eP           | e                | 18 46 49.4  | USCGS: 51.5°N 177.5°W<br>H = 18 <sup>h</sup> 36 <sup>m</sup> 23 <sup>s</sup> *   |