

University of Ljubljana  
Astronomical and Geophysical  
Observatory  
L j u b l j a n a  
Trg revolucije 11, P.O.B. 20  
Yugoslavia

1964

## P R E L I M I N A R Y   S E I S M O L O G I C A L

## B U L L E T I N

(January 1964-March 1964)

University of Ljubljana  
 Astronomical and Geophysical  
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 Ljubljana, Trg revolucije 11,  
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PRELIMINARY SEISMOLOGICAL BULLETIN

from January 1, to March 31, 1964

Station: Ljubljana - Coordinates:  $46^{\circ} 02.6'$  N Lat.  
 $14^{\circ} 32.0'$  E Long.

Geocentric direction cosines:  $a=+ 6743$ ,  $b=+1748$ ,  $c=+7175$ ,  
 $d=- 8$ ,  $h=- 4$ ;

Height: 396 m

Lithologic foundation: sandstone (carbon);

Instruments:

Wiechert, horizontal astatic seismograph,  $M=200$  kg,  
 mechanical registration, 14-16 mm/min;  
 Constants (15.II.1964):

Component	$T_0$	$v:1$	$r/T_0^2$	V
N-S	4.9	2.8:1	0,024	61
E-W	4.8	2.9:1	0.021	57

Hiller-Stuttgart, vertical component Z with galvanometrical  
 recording;  $T_0=1.5$  sec,  $T_g=1.5$  sec,  $D_1=D_2=1$ ,  
 $V_{max}=10.150$  x, velocity of registration: 60 mm/min.

Note: Periods of seismic waves are given in seconds, the  
 amplitudes in microns; sign+ means compression, movement of  
 ground towards north or east, sign - means dilatation or  
 movement towards south or west. All times are given in GMT.  
 Time signals are received one or two times daily from  
 Pontoise, Potsdam or Moscow and are registered on a chrono-  
 graph. Wherever possible time readings up to one tenth of  
 a second are given.

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1 iZ Pg 11 04 44.2, iZ Sg 11 04 (00), D=126 km.

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- 1 eZ P 17 38 56.2, eZ 17 39 46.0, USCGS: H= 17 26 43.5, 45.4 N, 151.9 E, h about 45 km, Kurile Islands, M=6 (Pal) 5.6 SD 0.3 (CGS).
- 2 iZ P 05 13 43.4, eZ 05 14 (00), USCGS: H= 05 01 53.5, 53.0 N, 159.6 E, h about 40 km, Kamchatka, M=4.9 (CGS).
- 2 eiZ Pn 21 55 29.1, eZ 21 55 49.1, eZ 21 56 03.4, iZ Sn 21 56 23.5, D= about 500 km.
- 3 eiZ PKP 21 43 51.9, iZ 21 44 05.3, USCGS: H= 21 24 56.3, 20.4 S, 178.2 W, h about 520 km, Fiji Islands. M=5.3 (CGS).
- 5 eZ P 18 47 03.5, USCGS: H= 18 33 54.7, 8.0 S, 74.5 W, h about 150 km, Peru Central, M=5.2 (CGS).
- 6 eiZ 06 06 08.4, eZ 06 06 38.6, USCGS: H= 05 54 42.7, 27.2 N, 127.3 E, h about 110 km, Riu-kiu Islands, M=5.7 SD 0.4 (CGS).
- 6 eZ P 23 57 21.0, eZ 23 57 34.6, eZ 23 57 45.3, USCGS: H= 23 45 23.4, 50.9 N, 157.3 E, h about 33 km, Southern Kamchatka, M=5.6 SD 0.1 (CGS).
- 8 iZ 05 58 36.3, iZ 05 58 50.3, traces.
- 8 iZ Pg 07 20 32.5, iZ Sg 07 20 37.2, D= 33 km.
- 8 iENZ Pg 16 29 32.5, iZ!! Sg 16 29 33.8, continuation Z underexposed, D=10 km. Ljubljana felt 2° MCS, A=70° (from N to E), macroseismic epicenter: Zalog near Ljubljana (46° 05' N, 14° 36' E).
- 9 iZ P 18 44 06.6, iZ 18 44 16.2, USCGS: H= 18 31 52.4, 45.5 N, 150.9 E, h about 40 km, Kurile Islands, M=5.6 (CGS).
- 10 iZ Pn 03 36 26.9, eiZ Px 03 36 38.4, eZ (Pg) 03 36 56.2 iZ Sn 03 37 59.5, BCIS: H= 03 34 22, 38 3/4 N, 21 E, Ionian Islands. USCGS: H= 03 34 20, 39.0 N, 21.1 E, Northern Greece, M=4.3 SD 0.2 (CGS).
- 10 iZ+ P 05 03 06.3, iZ 05 03 11.9, eZ 05 03 41.8, USCGS: H= 04 50 53.4, 42 N, 142.6 E, h about 33 km, Near south coast of Hokkaido, Japan, M=5.5 SD 0.3 (CGS).
- 10 eiZ P 17 09 35.2, eZ 17 12 22.8, USCGS: H= 16 57 26.5, 45.4 N, 150.0 E, h about 50 km, Kurile Islands, M=5.4 SD 0.2 (CGS).
- 12 eZ P 06 12 26.3, iZ 06 12 46.2, USCGS: H= 06 00 13.2, 53.2 N, 166.3 W, h about 33 km, Fox Islands-Aleutian Islands, M=5.5 SD 0.4 (CGS).
- 12 iZ+ P 12 52 00.4, eZ (S) 12 55 19.9, USCGS: H= 12 45 51.1, 31.6 N, 49.4 E, h about 67 km, Western Iran, felt: Khourestan, M=5.2 (CGS).
- 12 eZ Pn 18 15 11.9, iZ Pg 18 15 19.1, iZ 18 15 21.7, iZ X2 18 15 36.7, iZ Sg 18 15 54.6, D= 285 km.
- 14 eZ Pg 07 20 51.3, eiZ Sg 07 21 07.0, D=130 km.
- 14 eZ Pg 13 45 24.1, eZ Sg 13 45 45.0, D=178 km.
- 14 eiZ PKP 15 56 54.7, iZ 15 56 55.9, USCGS: H= 15 38 13.8,

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- 14 (cont.) 5.2 S, 150.8 E, h about 169 km, Near north coast of New Britain. Felt: Rabaul. M=5.6 SD 0.4 (CGS).
- 14 eZ 22 58 36.2, eiZ 22 58 36.2, eiZ 22 58 41.0, traces.
- 15 iZ 02 35 59.6, traces.
- 15 eiZ P 21 35 53.2, USCGS: H= 21 26 43.2, 23.7 N, 45.0 W, h about 33 km, North Atlantic, M=4.7 (CGS).
- 15 eiZ+P 21 49 01.1, eiZ 21 49 05.9, iZ 21 49 47.7, USCGS H= 21 36 05.0, 29.1 N, 140.8 E, h about 70 km, South of Honshu, Japan, M=6 3/4 (Pas), 6.4 (CGS).
- 18 iZ+ P 12 17 14.6, eiZ PP 12 20 25.4, eiZ 12 21 14.5, eZ S 12 27 33.7, USCGS: H= 12 04 40.0, 23.1 N, 120.5 E, h about 33 km, Taiwan, 110 dead, 479 injured, M=6 3/4 (Pas), 6 3/4-7 (BKS), 6 1/2-6 3/4 (Pal), 6.1 (CGS).
- 18 iZ+ P 22 47 36.8, iZ 22 48 07.7, iZ 22 48 20.1, eE S 22 56 15.1, USCGS: H= 22 36 17.6, 18.8 N, 69.4 W, h about 95 km, Dominican Republic, M=5.3 SD 0.3 (CGS).
- 18 eZ 23 15 20.9, traces.
- 19 eiZ PKP 23 41 18.3, USCGS: H= 23 22 19.1, 18.3 S, 176.9 W, h about 48 km, Fiji Islands, M=4.5 (CGS).
- 20 eZ 16 13 21.4, traces.
- 20 eNE PKP 17 27 58.8, iZ-PKP 17 28 02.2, iZ pPKP1 17 28 38.9, iZ PKP2 17 28 50.6, eN PP 17 31 46.9, USCGS: H= 17 08 37.4, 20.7 S, 169.9 E, h about 141 km, Loyalty Islands, M=6 3/4 (Pas), 6.1 (CGS).
- 20 eZ Pg 20 44 10.0, iZ Sg 20 44 28.9, D= 160 km.
- 22 iZ 08 39 41.2, traces.
- 22 eiZ- P 16 09 33.4, iZ 16 09 38.3, iZ 16 10 17.9, USCGS: H= 15 58 46.5, 22.4 N, 93.6 E, h about 88 km, Burma, M=6.1 SD 0.2 (CGS).
- 23 eZ PKP1 00 19 03.5, eiZ PKP2 00 19 09.8, eZ PP 00 22 (00), eZ PPP 00 25 12.9, USCGS: H= 23 59 43.6, 13.7 S, 165.9 E, h about 33 km, New Hebrides Islands, M=6.0 SD 0.3 (CGS).
- 23 eiZ- P 15 27 29.2, USCGS: H= 15 19 31.6, 36.9 N, 71.2 E, h about 28 km, Hindu Kush region, M=4.4 (CGS).
- 24 iZ Pg 16 59 08.9, iZ Sg 16 59 13.1, D= 30 km.
- 24 eiZ- ! P 17 28 45.4, iZ pP 17 30 46.1, USCGS: H= 17 17 45.5, 38.7 N, 129.4 E, h about 542 km, Near east coast of Korea, M=5.3 SD 0.3 (CGS).
- 24 eZ PKP 21 32 11.5, traces, USCGS: H= 21 12 23.2, 21.7 S, 176.2 W, h about 32 km, Tonga Islands, M=4.8 SD 0.3 (CGS).
- 24 eiZ P 21 43 41.9, traces, USCGS: H= 21 31 24.2, 44.5 N, 150.3 E, h about 33 km, Kurile Islands, M=4.7 SD 0.3 (CGS).
- 25 eZ 01 09 52.4, traces.

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- 25 eiZ 07 23 22.8, traces.
- 25 iZ 23 26 21.1, traces.
- 26 eZ Pg 04 51 24.2, iZ (Sg) 04 51 46.9, (D=appr.190 km).
- 26 iZ- Pg 08 17 40.0, iZ Sg 08 17 45.2, D= 36 km.
- 26 Z P 09 23 (00), iZ PP 09 27 03.6, eZ S 09 33 32.1, USCGS: H= 09 09 33.9, 16.3 S, 71.7 W, h about 116 km, Southern Peru. Slight damage at Arequipa. M=6.1 SD 0.3 (CGS).
- 26 eZ 09 39 28.8, eZ 09 39 57.1, traces.
- 26 eZ 09 47 46.2, traces.
- 26 eZ P 10 14 44.3, slight trace, USCGS: H= 10 02 15.0, 23.1 N, 120.4 E, h about 37 km, Taiwan, M=4.9 (CGS).
- 27 eiZ P 01 21 46.3, iZ PP 01 23 23.9, eZ S 01 28 07.0, USCGS: H= 01 12 23.5, 00.0, 17.9 W, h about 33 km, Mid-Atlantic Ocean, M=5.3 SD 0.3 (CGS).
- 27 eZ 21 04 16.3, iZ(Sg) 21 04 31.5
- 28 eiZ PKP 06 02 18.5, traces, USCGS: H= 05 43 22.1, 6.3 S, 148.7 E, h about 33 km, New Britain region, Felt: Doilene, M=5.1 (CGS).
- 28 iZ+ P 14 16 55.2, iNE+ (P) 14 16 59.3, iZpP 14 17 37.5, iE(pP) 14 17 55.6, iZ PP 14 18 38.6, eE 14 19 16.3, iZ S 14 22 14.4, USCGS: H= 14 09 12, 36.0 N, 71.6 E, Hindu Kush. Felt: northwestern Pakistan. M=6.1 SD 0.4 (CGS).
- 29 iZ Pg 12 49 57.5, iZ Sg 12 50 08.9, D=95 km.
- 30 eiZ Pn 17 49 21.9, eiZ Sn 17 52 15.9, eZ M1 17 54 32.4, eZ M2 17 55 05.1, BCIS: H=17 45 42, 36.5 N, 30.5 E, Southern coast of Turkey (Gulf of Adalia), M=5.5 (Collmberg), USCGS: H= 17 45 54.6, 37.3 N, 29.9 E, h about 41 km, Near coast of Turkey. M=5.3 SD 0.2 (CGS).
- 31 eZ 09 25 45.3, traces.
- 31 eiZ P 09 27 30.5, iZ 09 28 10.1, USCGS: H= 09 23 21, 37.5 N, 23.2 E, h about 75 km, Southern Greece, M=4.3 SD 0.2 (CGS).

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- 1 eiZ Pn 05 45 00.2, traces, 47.6 N, 14.9 E, Eisenerz, Io=5°(MCS), (Wien).
- 1 iZ+ Pg 08 06 43.9, iZ Sg 08 07 00.1, D=130 km.
- 1 iZ P 11 38 23.2, USCGS: H= 11 28 19.4, 27.4 N, 87.8 E, h about 33 km, Eastern Nepal, M=4.8 (CGS).
- 2 eZ P 09 07 20.1, eZ PP 09 10 41.0, USCGS: H= 08 54 48.3, 24.2 N, 122.6 E, h about 28 km, Near east coast of Taiwan, M=5.0 SD 0.2 (CGS).

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- 3 eiZ 13 12 09.3, iZ 13 12 12.9, traces.
- 4 eZ P 10 14 24.6, traces, USCGS: H=10 02 21.4, 48.2 N, 154.4 E, h about 40 km, Kurile Islands, M=4.8 SD 0.3 (CGS).
- 5 eZ+ P 11 42 46.1, iZ pP 11 43 04.1, eZ PP 11 46 04.9, eZ PPP 11 48 08.8, eZ S 11 52 07.3, USCGS: H= 11 30 05.7, 36.5 N, 141.0 E, h about 46 km, Central Honshu, Japan, Felt: Tokyo, M=6 1/4 (Pas), 5.4 SD 0.3 (CGS).
- 5 eiZ+ PKP 11 54 23.7, iZ pPKP 11 56 13.9, USCGS: H=11 35 18.6, 19.7 S, 179.8 W, h about 414 km, Fiji Islands region, M=5.5 SD 0.3 (CGS).
- 5 Pn 21 43 59.9, eiZ Pg 21 44 09.5, iZ PgPg 21 44 18.4, Sn 21 44 34.5, iZ Sg 21 44 48.3, D=344 km, BCIS: H=21 42 59, about 42° N, 14° E, (Approx. epicenter), Abruzzi, Central Italy.
- 6 13 19 22.3, eEN P 13 19 25.9, iZ pP 13 19 29.9, 13 21 19.6, iZ PP 13 22 21.2, USCGS: H=13 07 25.2, 55.7 N, 155.8 W, h about 33 km, Kodiak Islands region, M=6 3/4-7 (Pas), 6 1/2-6 3/4 (Bks), 6 3/4-7 (Pal).
- 6 iZ P 13 25 43.6, eZ 13 26 14.9, USCGS: H= 13 13 45.2, 55.8 N, 155.9 W, h about 33 km, Kodiak Islands region, M=5.4 (CGS).
- 7 iZ (Pg) 04 13 28.2, traces.
- 7 iZ Pn 04 21 14.2, eZ(Sn) 04 22 11.7, traces.
- 7 eZ+ P 13 11 14.6, eiZ 13 11 20.6, iZ pP 13 11 26.2, USCGS: H= 12 58 53.6, 39.8 N, 142.8 E, h about 45 km, Off east coast of Honshu, Japan. M=5.4 SD 0.4 (CGS).
- 8 eZ P 11 29 53.9, USCGS: H= 11 17 46.5, 52.3 N, 175.6 E, h about 60 km, Rat Islands, Aleutian Islands, M=5.4 SD 0.4 (CGS).
- 9 eZ- PKP 02 18 53.1, eiZ!- 02 18 57.9, eZ pPKP 02 20 23.2, iZ(PP) 02 20 31.9, USCGS: H= 02 00 07.3, 16.5 S, 179.2 W, h about 480 km, Fiji Islands region, M=5.3 SD 0.3 (CGS).
- 9 eZ Pn 05 53 38.4, eZ Pb 05 53 46.2, eZ Pg 05 54 03.3, iZ (Sn) 05 54 41.6, eZ (Sg) 05 55 16.5, (D=570 km).
- 9 eZ 06 13 12.1, traces.
- 9 eZ (Pn) 16 20 29.3, eZ 16 20 32.7, traces.
- 9 eZ 21 19 22.3, iZ 21 20 06.4, eZ 21 20 21.2, traces.
- 10 eZ 17 40 10.4, eZ Sx 17 40 29.1, eZ 17 41 16.8, iZ 17 41 31.6, H=17 37 51, approx. epicenter: ab. 50° N, 9° E, Germany, felt: Offenbach (BCIS).
- 11 iZ 17 52 16.7, traces.
- 11 eZ PKP 18 40 54.8, eZ 18 41 08.7, USCGS: H=18 21 05.5, 15.9 S, 173.1 W, h about 33 km, Samoa Islands region, M=5.2 (CGS).

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- 12 eZ (Pg) 19 49 55.7, eZ 19 50 04.7, eZ (Sn) 19 50 23.6, eZ (Sg) 19 50 43.5, (D=410 km).
- 12 eZ PKP 20 50 45.7, eZ PP 20 52 09.4, USCGS: H= 20 31 53.2, 3.5 S, 146.6 E, h about 33 km, Admiralty Islands, M=4.9 (CGS).
- 12 eZ PKP 22 53 42.1, iZ 22 53 53.3, USCGS: H= 22 33 59.2, 15.3 S, 174.4 W, h about 33 km, Samoa Islands region, M=5 3/4 (Bks), 5.0 SD 0.4 (CGS).
- 13 eZ P 14 01 12.8, iZ 14 01 14.2, USCGS: H= 13 53 31.1, 39.4 N, 72.7 E, h about 144 km, Tadzik SSR.
- 13 iZ 20 49 27.1, eZ 20 49 30.0, traces.
- 14 eiZ- PKP 16 48 39.9, eZ 16 48 57.5, eiZ PP 16 49 10.6, USCGS: H= 16 29 45.0, 5.1 S, 151.7 E, h about 55 km, New Britain, felt. M=6 3/4 (Pas), 6.0 SD 0.3 (CGS).
- 14 eZ Pn 20 07 30.3, eZ 20 08 08.1, eZ 20 10 25.3, traces.
- 16 iZ P 00 23 47.0, USCGS: H= 00 17 15.7, 30.1 N, 51.2 E, h about 37 km, Southwestern Iran. M=5.3 (CGS).
- 16 eZ 09 17 15.7, traces.
- 16 eiZ PKP 21 53 23.0, USCGS: H= 21 34 32.4, 5.6 S, 152.0 E, h about 49 km, New Britain. Felt Rabaul. M=5.6 SD 0.3 (CGS).
- 17 eZ Pg 00 24 35.7, iZ Sg 00 25 04.1, D=240 km, BCIS: H= 00 23 56, 47.7 N, 16.2 E, south of Wiener Neustadt, Austria.
- 17 eZ Pn 03 13 11.3, eZ Pb 03 13 16.9, iZ Pg 03 13 24.6, eZ (Sn) 03 13 47.1, eiZ Sb 03 14 05.5, iZ Sg 03 14 14.1, D=420 km.
- 17 eiZ Pn 12 20 08.6, iZ Pb 12 20 13.3, iZ Pg 12 20 24.3, iZ Sb 12 21 11.7, iZ Sg 12 21 20.9, iN Sg 12 21 26.8, D=470 km, BCIS: H= 12 19 01, 46° 57' N, 8° 13' E (Determination by electronic calculating machine), Switzerland, south of Luzern. Felt in Canton of Unterwalden, some damage. USCGS: H= 12 19 02.9, 47.2 N, 8.5 E, h about 33 km, Switzerland, slight damage in Unterwalden, M=4.6 (CGS).
- 17 eZ 16 11 05.3, eiZ Sg 16 12 03.7, traces, aftershock Switzerland, H=16 09 42.0 (BCIS).
- 18 Z P or PKP 05 02 00 (in minute interruption), iZ 05 02 03.2, traces.
- 18 iZ Pn 06 59 31.3, eiZ Pg 06 59 56.6, iZ (Sn) 07 00 29.0, iZ Sb 07 00 46.4, iZ Sg 07 01 01.9, (D=550 km) H= 16 09 41 (BCIS), Switzerland.
- 18 eZ 17 00 28.6, traces.
- 18 eZ 17 15 46.7, iZ 17 18 05.8, BCIS: H= 16 58 06, Switzerland, traces.
- 18 eZ (Pg) 19 41 41.8, eiZ (Sg) 19 42 28.9, traces.
- 18 iZ 21 55 10.8, iZ 21 56 19.9, traces. BCIS: H= 21 53

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- 18 (cont.) 48, Switzerland.
- 19 eiZ Pg 08 09 53.7, iZ Sg 08 10 (00), D=about 50 km.
- 20 eZ P 10 06 05.3, obscured by microseisms, USCGS: H= 09 53 51.1, 44.6 N, 150.0 E, h about 50 km, Kurile Islands, M= 4.8 SD 0.4 (CGS).
- 22 eiZ Pg 02 54 22.3, eiZ Sg 02 54 36.7, D=113 km.
- 22 eZ Pg 12 20 22.1, iZ Sg 12 20 26.4, D=33 km.
- 22 Z 21 29 (00) in minute interruption, traces.
- 22 Z 22 14 (00) in minute interruption, near.
- 23 eZ Pn 22 43 21.8, eNE Pn 22 43 25.4, iZ 22 44 13.6, iZ Sn 22 45 55.3, eE Sn 22 46 (00), iN M 22 47 59.1, BCIS: H= 22 41 04, 39.1 N, 24.1 E, h about 33 km, Aegean Sea, NE of Eubea Island. Strongly felt at Lamia. USCGS: H= 22 41 06.3, 39.2 N, 23.7 E, h about 33 km, Aegean Sea, felt: Athens, Greece. M=4.5 SD 0.2 (CGS).
- 24 eZ 08 39 53.6, traces.
- 24 eiZ P 10 03 35.6, iZ 10 03 48.4, USCGS: H= 09 52 18.7, 7.3 S, 67.8 E, h about 33 km, Chagos Archipelago region, M=5.2 (CGS).
- 24 eZ 11 25 03.9, eiZ 11 25 53.0, eZ 11 26 25.1, traces.
- 24 eZ (Pg) 14 04 37.8, eiZ (Sg) 14 05 10.6, traces. D= about 275 km.
- 24 eZ 15 11 22.4, traces.
- 24 iZ 19 06 18.5, traces.
- 24 eZ (Pg) 19 51 22.8, eZ (Sg) 19 51 05.7, traces. D= 350 km.
- 24 eZ 19 59 56.6, eZ (Sg) 20 00 15.4, traces.
- 24 iZ PKP 20 18 41.2, USCGS: H= 19 59 33.7, 19.2 S, 169.4 E, h about 244 km, New Hebrides Islands, M= 4.7 SD 0.3 (CGS).
- 24 eZ 21 39 30.0, traces.
- 24 eZ 23 11 09.0, traces.
- 24 eZ Pn 23 23 45.3, iZ Pb 23 23 54.5, eiZ Pg 23 24 07.5, eZ Sg 23 24 10.4, D=530 km.
- 24 eZ Pn 23 32 44.9, iZ PP 23 32 54.4, eiZ 23 33 15.9, iZ Sn 23 34 11.8, USCGS: H= 23 30 24.6, 39.2 N, 23.8 E, h about 16 km, Aegean Sea, M=4.4 (CGS), H= 23 30 26, (BCIS), 38.9 N, 23.9 E, h about 33 km, Aegean Sea, (Determination was made by electronic calculating machine).
- 26 eZ (Pn) 19 23 35.8, traces.
- 26 eiZ PKP 21 37 05.7, iZ 21 37 15.8, USCGS: H= 21 17 08.1 20.7 S, 174.4 W, h about 33 km, Tonga Islands, M= 5.0 SD 0.4 (CGS).
- 27 eZ Pn 01 39 40.0, eZ 01 40 07.6, eiZ (Sn) 01 41 20.0,

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- 27 (cont.) , (D= 950 km).
- 27 eZ P 02 42 23.7, USCGS: H= 02 32 23.7, 7.6 S, 39.6 E, h about 33 km, Near coast of Tanganyika, M=4.2 (CGS).
- 27 eiZ 09 10 35.9, traces.
- 27 eiZ- P 15 21 38.1, iZ pP 15 22 03.7, eZ S 15 30 09.4, USCGS: H= 15 10 48.4, 21.7 N, 94.4 E, h about 102 km, Central Burma, M=6.4 SD 0.4 (CGS).
- 28 eZ P or PKP 11 18 22.2
- 28 eZ P 17 58 16.2, eiZ pP 17 58 26.1, USCGS: H= 17 47 05.9, 18.2 N, 94.3 E, h about 43 km, Near west coast of Burma. M=5.3 SD 0.4 (CGS).
- 29 eZ (Pg) 14 34 45.9, iZ 14 35 09.4, traces.
- 29 iZ PKP 20 33 35.2, USCGS: H= 20 13 41.6, 18.2 S, 172.8 W, h about 33 km, Tonga Islands, M=5.1 (CGS).

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- 1 eZ P or PKP 00 03 27.1,
- 1 eZ PP 00 07 35.5, USCGS: H= 23 49 40.8, 8.5 S, 112.7 E, h about 73 km, Near south coast of Java. M=5.8 (CGS).
- 1 iZ PKP 02 59 20.0, USCGS: H= 02 40 21.6, 7.1 S, 155.4 E, h about 100 km, Salomon Islands. Felt: Buin. M=4.8 (CGS).
- 2 eZ-PKP<sub>1</sub> 19 52 18.8, iZ-PKP<sub>2</sub> 19 52 26.0, USCGS: H= 19 32 41.7, 18.9 S, 174.8 W, h about 105 km, Tonga Islands, M=5.3 (CGS).
- 2 eZ (Pg) 23 15 03.1, iZ (Sg) 23 15 15.6, traces, D= about 100 km.
- 3 eiZ Pg 14 15 16.7, iZ (Sg) 14 15 28.8, traces, D= about 100 km.
- 3 eZ 16 18 47.5, traces.
- 4 eZ P or PKP 03 17 45.9, eZ 03 17 57.7, traces.
- 4 eiZ PKP 03 37 04.6, USCGS: H= 03 17 22.7, 20.9 S, 168.6 E, h about 33 km, Loyalty Islands region. M=4.6 SD 0.2 (CGS).
- 4 eiZ P 17 38 40.9, USCGS: H= 17 33 43.3, 43.3 N, 46.1 E, h about 58 km, Eastern Causasus.
- 4 eZ Pn 21 34 41.8, eZ 21 35 35.6, eZ (Sn) 21 37 20.8, eZ 21 37 45.6, USCGS: H= 21 31 49, 34.8 N, 23.9 E, h about 40 km, Off southwest coast of Crete. M=4.2 (CGS).
- 5 eZ (Pn) 14 50 37.3, eiZ (Sn) 14 52 14.4, traces, obscured by microseisms, (D=about 930 km).
- 5 eZ (Pn) 18 20 26.5, iZ 18 20 48.4, BCIS: H= 18 18 30,

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- 5 (cont.) 43.3 N, 8.2 E, Mediterranean Sea, south of Monaco.
- 5 iZ- Pg 18 47 07.7, iZ Sg 18 47 43.8, D=218 km.
- 7 eZ Pg 01 19 (00), BCIS: H=01 18 33, 47.4 N, 15.1 E, Steiermark, Austria, felt: Leoben.
- 7 iZ Pg 04 29 01.8, iZ Sg 04 29 14.2, D=102 km.
- 8 eZ PKP<sub>1</sub> 01 55 53.2, eZ PKP<sub>2</sub> 01 56 39.0, USCGS: H= 01 35 48.1, 44.0 S, 168.4 E, h about 33 km, South Island, New Zealand, M=5.6 (CGS).
- 10 eZ Pn 11 54 15.8, eiZ Pb 11 54 21.0, eZ Pg 11 54 26.3, iZ Sn 11 54 57.7, eZ Sg 11 55 17.2, D=420 km.
- 10 eZ PP 14 18 10.3, USCGS: H= 13 59 54.8, 1.9 N, 127.5 E, h about 117 km, Molucca Passage, M=5.6 (CGS).
- 11 eZ P 00 14 (00), USCGS: H=00 09 02.7, 42.5 N, 45.0 E, h about 29 km, Georgia SSR, M=4.6 (CGS).
- 11 eZ PKP 01 24 06.1, eZ PP 01 26 25.9, USCGS: H= 01 06 00.4, 1.8 N, 127.1 E, h about 58 km, Molucca Passage, M=5.6 (CGS).
- 11 eZ P 18 35 45.7, USCGS: H=18 23 19.6, 31.9 N, 132.4 E, h about 33 km, Near east coast of Kyushu, Japan, M= 4.7 SD 0.2 (CGS).
- 11 eZ Pn 19 20 13.9, eiZ 19 20 18.1, iZ (Pg) 19 20 27.8, iZ Sn 19 21 06.1, iZ 19 21 32.8, iZ Sg 19 21 40.9, D=485 km. BCIS: H=19 19 05, 46.9 N, 8.3 E, Switzerland, south of Lucerne. Strongly felt at Sarnen and Kerns (Obwald).
- 11 eZ P 23 41 40.4, USCGS: H= 23 34 21, 27.7 N, 57.5 E, h about 42 km, Southern Iran.
- 12 eZ P 04 07 40.5, USCGS: H= 03 55 14.0, 23.4 N, 121.6 E, h about 33 km, Near coast of Taiwan, M=5.2 (CGS).
- 12 eiZ Pg 11 43 31.6, iZ 11 43 34.9, iZ! Sg 11 43 36.2, D=33 km.
- 12 eiZ 21 50 18.6, traces.
- 14 iZ+ Pn 02 38 29.8, eE 02 38 35.3, iZ! 02 38 30.8, iZ! 02 38 35.5, iZ! Pg 02 38 45.4, eiZ Sn 02 39 21.8, iZNE! Sg 02 39 43.1, D=485 km. BCIS: H= 02 37 22, 46° 57' N, 8° 17' E (Determination by electronic calculating machine), Switzerland, south of Lucerne, strongly felt at Sarnen, Kerns, Sachseln and Stalden (Obwald), damages. Felt: Switzerland, France (3° MCS at Strasbourg), Germany (5° MCS at Stuttgart), Austria (4°-5° MCS in Tirol) and in northern Italy. USCGS: H= 02 37 24.6, 47.1 N, 8.3 E, h about 33 km, Switzerland, slight damage in central Switzerland, felt: Germany, Austria and Italy. M=4.7 SD 0.4 (CGS).
- 14 eiZ PKP 12 03 46.9, USCGS: H= 11 44 53.8, 20.6 S, 178.5 W, h about 561 km, Fiji Islands, M=4.6 SD 0.5 (CGS).

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- 14 eZ P or PKP 14 27 11.5, iZ 14 27 16.1, traces.
- 14 eZ P 15 23 24.2, iZ 15 23 25.0, USCGS: H= 15 12 22.4, 15.9 N, 60.5 W, h about 31 km, Leeward Islands region, M=5.4 SD 0.2 (CGS).
- 14 iZ PKP 15 24 19.1, iZ 15 24 25.1, eiZ 15 25 11.4, iZ pPKP 15 26 04.4, USCGS: H= 15 05 54.4, 13.7 S, 172.3 E, h about 611 km, New Hebrides Islands region. M= 5.1 SD 0.3 (CGS).
- 14 eiZ P 16 46 12.2, iZ 16 46 14.0, iZ 16 46 18.9, USCGS: H= 16 36 52.1, 1.9 S, 12.9 W, h about 33 km, Mid Atlantic Ocean, M=5.4 (CGS).
- 14 eZ P 18 52 46.8, eZ 18 53 20.8, USCGS: H= 18 43 27.4, 13.2 W, 1.8 S, h about 33 km, Mid Atlantic Ocean, M= 4.7 (CGS).
- 14 eZ (Pn) 20 46 06.5, eZ Sn 20 47 06.6, (D=548 km), H= 20 44 44, Switzerland, aftershock.
- 14 eZ P 23 06 46.8, eZ 23 07 03.9, BCIS: H= 23 02.3, 38.5 N, 40.3 E (prov. epicenter), Eastern Turkey. Istanbul T.U.: Damages at Palu (38° 42' N, 39° 57' E) and Maden (38° 23' N, 39° 40' E). Istanbul Kandilli: felt at Elagir.
- 15 eZ 02 38 17.8, traces, weak.
- 15 eZ Pn 05 24 07.3, iZ Pb 05 24 17.2, iZ Pg 05 24 21.9, iZ Sg 05 25 19.1, D= 485 km, BCIS: H= 05 22 55, aftershock Switzerland, USCGS: H= 05 23 04, 47.6 N, 8.3 E, h about 33 km, Switzerland-Germany border.
- 15 iZ+ P 22 34 51.8, iNE+ P 22 34 52.5, iZ!! 22 34 55.4, iZ 22 35 23.7, iZ S 22 38 31.0, iE S 22 38 33.5, USCGS: H= 22 30 26.0, 36.2 N, 7.6 W, h about 27 km, West of Strait of Gibraltar. Felt: Portugal, Spain, Morocco, Felt strongly by "St. Raphael" at 36.6 N, 7.9 W. M= 6 3/4-7 (Pas), 7-7 1/4 (Bks), 6 1/4-6 1/2 (Pal), 6.2 SD 0.3 (CGS). BCIS: H= 22 30 28, 36.0 N, 7.5 W, Atlantic Ocean, West of Strait of Gibraltar. Strongly felt: Portugal, Spain till Madrid and Morocco till Marrakesh. Felt strongly by "St. Raphael" at 36° 36' N, 07° 53' W. M= 6.6 (Ksara), 6 3/4 (Collm).
- 16 iZ P 08 56 29.7, iZ 08 56 39.8, USCGS: H= 08 44 32.8, 44.8 N, 146.8 E, h about 140 km, Kurile Islands, M= 5.7 SD 0.4 (CGS).
- 16 iZ Pn 13 31 49.9, iZ Pg 13 32 05.3, iZ Sn 13 32 38.9, iZ 13 32 49.1, D= 450 km. USCGS: H= 13 30 35, 47.5 N, 8.3 E, h about 33 km, Switzerland-Germany border. M= 4.2 (CGS).
- 16 iZ! PKP 21 58 34.1, USCGS: H= 21 39 42.5, 20.6 S, 178.7 W, h about 578 km, Fiji Islands, M=4.9 SD 0.3 (CGS).
- 17 iZ P 12 12 15.2, USCGS: H= 12 05 10, 27.0 N, 54.1 E, h about 33 km, Southern Iran.
- 17 eZ 21 36 51.3, traces.

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- 17 eZ 21 51 20.7, eZ (Sn) 21 52 21.2, traces.
- 18 eiZ PKP 00 29 56.5, USCGS: H= 00 10 34.8, 17.3 S, 175.1 W, h about 268 km, Tonga Islands region, M=4.8 SD 0.2 (CGS).
- 18 eZ- P 04 48 21.4, iZ! 04 48 28.6, iZ pP 04 50 04.1, iZ PP 04 51 24.9, eZ S 04 57 29.8, USCGS: H= 04 37 26.9, 52.5 N, 153.6 E, h about 440 km, Sea of Okhotsk, M=5.6 SD 0.2 (CGS).
- 18 iZ Pg 07 58 05.5, iZ! Sg 07 58 11.4, D=45 km.
- 18 iZ!- Pg 16 43 30.3, iZ!!NE Sg 16 43 37.0, iZ! 16 43 48.7, F(Z) 16 51 - ; D= 53 km, Probable epicenter: 45° 30' N, 14° 30' E, Snežnik Mountain region, Io=6° MCS, Ljubljana felt: 3° MCS, Strongly felt in Rijeka, Trieste. Slight damage in region of Ilirska Bistrica and Trieste. BCIS: H= 16 43 23, 45.5 N, 14.5 E, slight damage in Ilirska Bistrica region. Trieste felt 6°-7° MCS. USCGS: H= 16 43 24, 45.7 N, 14.1 E, h about 33 km, Northwestern Yugoslavia. Slight damage in Ilirska Bistrica region and Trieste. Felt: Ljubljana. M=4.6 (CGS).
- 19 eiZ PKP 05 04 40.6, USCGS: H= 04 45 50.9, 21.9 S, 179.5 E, h about 613 km; Fiji Islands, M=4.7 SD 0.3 (CGS).
- 19 eZ 05 31 21.5, eZ (Sg) 05 31 30.5, traces.
- 19 eZ 07 41 46.9, traces.
- 19 eZ 08 14 53.4, traces.
- 19 eZ 08 23 41.5, eZ 08 25 35.3, traces.
- 19 eZ 08 48 56.3, traces.
- 19 eiZ PKP 09 02 38.9, USCGS: H= 08 43 40.5, 20.3 S, 178.3 W, h about 504 km, Fiji Islands, M=4.5 SD 0.3 (CGS).
- 19 eiZ- P 09 51 06.4, iZ pP 09 51 03.2, eZ PP 09 52 42.2, eZ 09 54 52.9, iZ 09 56 56.6, USCGS: H= 09 42 34.9, 14.7 N, 56.3 E, h about 33 km, Arabian Sea.
- 19 eiZ P 12 03 08.9, USCGS: H= 11 50 54.2, 28.4 N, 139.6 E, h about 450 km, Bonin Islands region, M=4.4 SD 0.3 (CGS).
- 19 eZ 19 16 36.6, eZ 19 16 53.5, traces.
- 19 eZ PKP 22 03 47.9, iZ! pPKP 22 03 54.7, iZ 22 04 07.6, USCGS: H= 21 44 03.8, 15.1 S, 172.6 W, h about 33 km, Samoa Islands region. Felt. M=5.6 SD 0.3 (CGS).
- 19 iZ- Pg 22 44 32.8, iZ Sg 22 44 36.3, D= 25.5 km, Litija region, east from Ljubljana.
- 20 iZ- Pg 03 40 30.4, iZ Sg 03 40 33.9, iZ! 03 40 38.2, D= 25.5 km, Litija region, east from Ljubljana.
- 20 eZ P 03 23 23.0, USCGS: H= 03 15 45.6, 28.2 N, 55.0 E, h about 43 km, Southern Iran. M=5.8 (CGS).

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- 20 eZ Pn 15 29 25.6, eZ Pg 15 29 29.5, eZ 15 29 34.4, iZ Sg 15 29 57.2, D= 228 km.
- 21 iZ PKP 04 00 12.4, iZ PP 04 01 04.3, eZ pPKP 04 01 40.5, eZ pPP 04 02 14.8, iZ 04 02 54.2, iZ! 04 03 12.2, USCGS: H= 03 42 19.6, 6.4 S, 127.9 E, h about 367 km, Banda Sea. Felt: Darwin, Australia. M=5.0 (CGS).
- 21 iZ P 10 32 37.5, USCGS: H= 10 25 32.9, 27.1 N, 54.1 E, h about 33 km, Southern Iran.
- 21 iZ P or PKP 16 47 07.2,
- 21 iZ! PKP 16 47 45.3, USCGS: H= 16 27 11.7, 27.6 S, 177.2 W, h about 33 km, Kermadec Islands region. M= 5.6 SD 0.1 (CGS).
- 23 eZ P 09 56 53.4, eZ 09 57 13.3, USCGS: H= 09 43 50, 46.2 N, 149.6 E, h about 33 km, Kurile Islands, M=4.5 (CGS).
- 23 eZ 13 12 33.0, traces.
- 23 iZ P 13 48 20.3, iZ pP 13 48 54.6, iZ 13 49 14.4, iZ 13 49 23.9, USCGS: H= 13 40 26.3, 38.3 N, 73.7 E, h about 120 km, Hindu Kush; M=5.4 (CGS).
- 23 iZ- Pg 20 08 54.8, iZ Sg 20 08 57.0, iZ! 20 09 03.8, D= 25 km, Litija region, east from Ljubljana.
- 25 eZ P 02 55 52.0, eZ 02 56 04.5, USCGS: H= 02 43 23.5, 36.3 N, 140.9 E, h about 67 km, Near east coast of Honshu, Japan. M=4.8 SD 0.3 (CGS).
- 25 eiZ (Pg) 03 25 40.4, traces.
- 25 eZ P or PKP 05 22 41.4, traces.
- 25 iZ P 10 20 37.2, USCGS: H= 10 08 06.8, 7.7 N, 75.3 W, h about 48 km, Northern Colombia. M=4.8 SD 0.2 (CGS).
- 25 eiZ PKP 15 52 06.4, iZ 15 52 15.4, USCGS: H= 15 32 26.0, 20.1 S, 168.8 E, h about 33 km, Loyalty Islands region. M=4.7 (CGS).
- 25 iZ P 20 30 41.1, eiZ 20 30 58.6, USCGS: H= 20 17 24.7, 5.8 S, 104.0 E, h about 33 km, Near south coast of Sumatra. M=5.4 (CGS).
- 26 eZ 04 41 36.1, eZ 04 42 10.1, eZ 04 42 38.0, traces. BCIS: H=04 40 14, 46.9 N, 9 3/4 E, Switzerland.
- 26 eZ P 07 48 09.6, eZ 07 48 20.5, USCGS: H= 07 43 39.1, 39.1 N, 10.7 W, h about 33 km, Near west coast of Portugal. M=4.5 SD 0.4 (CGS), BCIS: H= 07 43 49, 39.4 N, 10.2 W, (Determination by electronic calculating machine). Atlantic Ocean, near coast of Portugal.
- From March 27, 10<sup>h</sup> 12<sup>m</sup> to April 3, 08<sup>h</sup> 42<sup>m</sup> no Z records because of defective Z recorder.
- 28 eEN P 03 47 38.8, iN! 03 48 (00), iN!! 03 49 (00), iN!! S 03 57 46.1, USCGS: H= 03 36 12.7, 61.1 N, 147.6 W, h about 20 km, Prince William Sound, Alaska. M=8.4 (Pas), 8 1/2-8 3/4 (Berk), 8.6 (Pal), 8.5 (CGS), 114 dead or

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- 28 (cont.) missing, many injured and major property damage in Alaska. Extensive damage from seismic sea waves throughout the Gulf of Alaska, along the west coast of North America and in Hawaii.

Ljubljana, January 10, 1965

M. Hržič-Knafeljc



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Yugoslavia

1964

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Ljub*

P R E L I M I N A R Y   S E I S M O L O G I C A L  
B U L L E T I N

(April 1964-June 1964)

University of Ljubljana  
 Astronomical and Geophysical  
 Observatory,  
 Ljubljana, Trg revolucije 11,  
 P.O.B.20 - Yugoslavia

1964

PRELIMINARY SEISMOLOGICAL BULLETIN

from April 1 to June 30, 1964

Station: Ljubljana- Coordinates:  $46^{\circ} 02.6' N$  Lat.  
 $14^{\circ} 32.0' E$  Long.  
 Geocentric direction cosines:  $a=+ 6743$ ,  $b=+1748$ ,  $c=+7175$ ,  
 $d=- 8$ ,  $h=- 4$ ;

Height: 396 m,

Lithologic foundation: sandstone (carbon);

Instruments:

Wiechert, horizontal astatic seismograph,  $M=200$  kg,  
 mechanical registration, 16 mm/min;

Constants (15.V.1964):

Component	$T_0$	$v:1$	$r/T_0^2$	$V$
N-S	4.9	2.8:1	0.025	61
E-W	4.8	2.9:1	0.023	58

Hiller-Stuttgart, vertical component Z with galvanometrical  
 recording;  $T_0=1.5$  sec,  $T_g=1.5$  sec,  $D_1=D_2=1$ ,  
 $V_{max}=10$  150 x, velocity of registration: 60 mm/min;

Note: Periods of seismic waves are given in seconds, the  
 amplitudes in microns; sign + means compression, movement of  
 ground towards north or east, sign - means dilatation or  
 movement towards south or west. All times are given in GMT.  
 Time signals are received one or two times daily from  
 Pontoise, Potsdam or Moscow and are registered on a chrono-  
 graph. Wherever possible time readings up to one tenth of  
 a second are given.

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From April 1 to April 3, 18<sup>h</sup> no Z records.

- 3 iZ P 22 45 03.5, iZ 22 45 19.5, USCGS: H=22 33 42.2,  
 61.6 N, 147.6 W, h about 40 km, Prince William Sound,  
 Alaska, aftershock.  $M=6$  (Pas),  $6 \frac{1}{4}$ - $6 \frac{1}{2}$  (Pal),  $5 \frac{1}{4}$   
 (Brk), 5.7 SD 0.4 (CGS).
- 4 eZ(P) 05 05 31.1, USCGS: H=04 54 01.7, 60.1 N, 146.7  
 W, h about 40 km, Prince William Sound, Alaska, after-  
 shock,  $M=5.6$  SD 0.2 (CGS).
- 4 From 07<sup>h</sup> to 10<sup>h</sup> no time marks.

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- 4 iZ Pg 15 56 38.9, iZ Sg 15 56 43.5, D=35 km;
- 4 iZ P 17 58 04.1, iZ! 17 58 20.7, iZ 17 58 27.8, USCGS: H= 17 46 08.6, 56.3 N, 154.4 W, h about 25 km, Prince William Sound, Alaska, aftershock, M=6 1/2 (Pas), 5 3/4-6 (Brk), 6 1/2-6 3/4 (Pal), 5.7 SD 0.4 (CGS).
- 4 iZ P 18 11 38.3, USCGS: H= 17 59 43.3, 56.4 N, 154.5 W, h about 25 km, Prince William Sound, Alaska, aftershock, M=5 1/4 (Brk), 6 1/2-6 3/4 (Pal), 5.5 SD 0.4 (CGS).
- 5 eZ P 01 34 12.1, iZ! 01 34 17.3, USCGS: H= 01 22 13.3, 56.2 N, 153.5 W, h about 25 km, Prince William Sound, Alaska, aftershock, M=6-6 1/4 (Pal), 5.4 SD 0.4 (CGS).
- 5 iZ+ P 19 39 49.3, eZ PP 19 42 39, USCGS: H= 19 28 18.1, 60.2 N, 146.7 W, h about 15 km, M=5-5 1/4 (Brk), 5 1/2 (Pal), 5.8 SD 0.3 (CGS).
- 6 iZ Pn 02 38 46.7, iZ Pb 02 38 49.7, iZ Pg 02 38 54.4, iZ! Sg 02 39 26.8, D=270 km, USCGS: H= 02 37 57, 46.5 N, 10.1 E, h about 33 km, Northern Italy.
- 7 eiZ PP 13 36 20.0, USCGS: H= 13 18 18.9, 0.1 N, 123.2 E, h about 150 km, Northern Celebes, M=5.9 (CGS).
- 7 eZ 15 18 47.6, eZ (Sn) 15 18 53.8, traces.
- 8 iZ P 14 15 31.1, iZ! PP 14 15 44.7, iZ S 14 17 55.2, iZ SS 14 18 20.4, USCGS: H= 14 12 29.5, 35.1 N, 24.3 E, h about 71 km, Near Crete, M=5.0 SD 0.3 (CGS), BCIS: H= 14 12 33, 35.3 N, 24.3 E, h about 100 km, (Determination by electronic calculating machine), South of Crete Island.
- 8 eZ P 20 01 46.4, USCGS: H= 19 50 16.8, 60.4 N, 145.9 W, h about 10 km, Prince William Sound, Alaska, aftershock, M=5 1/4-5 1/2 (Pal), 5.3 SD 0.3 (CGS).
- 9 eZ P 13 17 49.4, USCGS: H= 13 06 15.2, 56.8 N, 152.0 W, h about 15 km, Prince William Sound, Alaska, aftershock, M=5 1/2-5 3/4 (Pal), 5.1 SD 0.4 (CGS).
- 10 eiZ P 01 19 38.9, USCGS: H= 01 08 00.2, 58.4 N, 150.6 W, h about 15 km, Prince William Sound, Alaska, aftershock, M=5-5 1/4 (Pal), 5.5 SD 0.4 (CGS).
- 10 eZ P 19 17 27.4, USCGS: H= 19 05 52.6, 59.7 N, 148.2 W, h about 15 km, Prince William Sound, Alaska, aftershock, M=5-5 1/2 (Pal), 5.2 SD 0.4 (CGS).
- 10 eZ P 21 55 42.7, eZ 21 55 49.0, eZ PP 21 58 13.8, USCGS: H= 21 44 06.7, 60.1 N, 153.7 W, h about 10 km, Prince William Sound, Alaska, aftershock, M=5 1/2-5 3/4 (Pal), 5.6 SD 0.4 (CGS).
- 11 iZ PKP 01 23 53.7, iZ pPKP 01 24 34.6, USCGS: H= 01 04 30.2, 29.0 S, 178.9 W, h about 302 km, Kermadec Islands, M=5.3 SD 0.4 (CGS).
- 11 iZ!NE Pg 02 48 09.8, iZ!NE Sg 02 48 12.1, D=18 km, Io=3.5° MCS, BCIS: H=02 48 06, Yugoslavia, around Jevnica. Felt 2° MCS at Ljubljana (macroseismic epicen-

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- 11 (cont.)-ter by Ljubljana: 46°05' N, 14° 45' E).
- 11 eZNE Pn 16 02 58.1, iZ! (Pg) 16 03 54.3, iZ! 16 05 53.3 eNE Sn 16 06 02, iZ!! Sx 16 06 16.9, USCGS: H= 16 00 42.8, 40.5 N, 25.0 E, h about 33 km, Aegean Sea, M=5.1 SD 0.4 (CGS). BCIS: H= 16 00 39, 40.0 N, 25.3 E, North Aegean Sea, near Limnos Island (Determination by electronic calculating machine).
- 11 eZ(Pn) 23 08 39.8, eZ 23 09 33.7, eZ 23 10 11.9, traces.
- 12 eZ+ P 01 36 20.3, eiZ pP 01 36 37.2, eZ (PP) 01 39 19.8, USCGS: H= 01 24 31.2, 56.6 N, 152.2 W, h about 22 km, Prince William Sound, Alaska, aftershock. M=5.6 SD 0.4 (CGS).
- 12 eZ PKP 06 20 13.1, USCGS: H=06 00 46.4, 13.6 S, 166.0 E, h about 33 km, New Hebrides Islands. M=5.0 SD 0.4 (CGS).
- 12 eZ(Pn) 08 00 21.0, eZ 08 00 29.7, eZ (Sn) 08 02 07.1, traces.
- 12 eZ PKP 11 30 45.9, eZ 11 31 25.7, USCGS: H= 11 10 54.8, 33.9 S, 179.8 W, h about 89 km, Kermadec Islands, M=5.4 SD 0.4 (CGS).
- 12 iZ P 12 10 56.7, iZ 12 11 04.8, USCGS: H= 12 48 02.2, 56.6 N, 45.2 E, h about 33 km, Eastern Caucasus, M=5.4 SD 0.4 (CGS).
- 12 iZ P or PKP 16 34 03.1, traces.
- 12 eZ P 17 33 31.0, USCGS: H= 17 22 02.2, 60.2 N, 145.6 W, h about 20 km, Prince William Sound, Alaska, aftershock, M=5.0 SD 0.3 (CGS).
- 12 eZ (Pn) 17 48 41.2, eZ 17 49 08.7, traces.
- 12 iZ (Pg) 22 42 21.2, traces.
- 13 iZ P 01 20 24.1, USCGS: H= 01 14 21.1, 40.0 N, 51.9 E, h about 33 km, Caspian Sea, M=4.8 (CGS).
- 13 eiZ P 03 30 15.3, USCGS: H= 03 20 04.5, 27.6 N, 90.2 E, h about 52 km, Bhutan, M=5.4 (CGS).
- 13 eiZ PKP 06 42 17.5, eZ PP 06 44 43.5, USCGS: H= 06 23 34.1, 19.5 S, 177.7 W, h about 574 km, Tonga Islands region, M=4.4 SD 0.2 (CGS).
- 13 iZ+ Pn 08 30 43.1, iZ Pg 08 30 52.0, iNE Sg 08 31 30.0, D=310 km, direction: ESE, BCIS: H= 08 30 05, 45.3 N, 18.2 E, Northern Yugoslavia, M=5.7 (Pruhonice)-Determination was made by using an electronic calculating machine; Damage and injured at Slavonski Brod (45,1N,18,0E), Djakovo (45.3N,18.4 E), Vukovar (45.3 N,19.0 E), Osijek (45.3 N,18.7 E). Felt 4° MCS at Beograd, Topola, Subotica, Novi Sad etc. Strongly felt in Hungary (Segsarad, 46,3 N, 18.7 E) and till Budapest. USCGS: H= 08 30 03.6, 45.3 N, 18.1 E, h about 33 km, Northern Yugoslavia. Two killed and about 100 injured in northern Yugoslavia. Extensive property damage in Northern Yugoslavia and southern Hungary.

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- 13 eZ Pg 09 45 33.5, iZ (Sg) 09 46 03.7, (D=250 km).
- 13 eZ P 12 37 10.7, USCGS: H= 12 25 36, 54.4 N, 143.9 W, h about 40 km, Alaska aftershock. M=4.9 SD 0.3 (CGS).
- 13 eZ P 14 16 47.2, USCGS: H= 14 05 00.0, 57.6 N, 151.2 W, h about 25 km, Prince William Sound, Alaska, aftershock, M=4 3/4 (Berk), 5-5 1/4 (Pal), 5.5 SD 0.2 (CGS).
- 13 eZ P 21 37 21.2, USCGS: H= 21 25 33.0, 57.5 N, 153.9 W, h about 30 km, Prince William Sound, Alaska, aftershock, M=5.5 SD 0.3 (CGS), Felt: Kodiak.
- 13 eZ P 21 54 45.6, USCGS: H= 21 43 16.5, 59.4 N, 143.1 W, h about 33 km, Prince William Sound, Alaska, aftershock, M=5.1 SD 0.2 (CGS).
- 14 eiZ P 01 16 27.9, USCGS: H= 01 04 28.8, 49.4 N, 155.5 E, h about 60 km, Kurile Islands, M=5.2 SD 0.4 (CGS).
- 14 eZ (Pn) 04 09 10.8, iZ (Sn) 04 09 46.7, iZ 04 09 52.3, traces, (D=330 km).
- 14 eiZ- Pn 06 37 11.9, iZ (Pb) 06 37 28.7, eZ Sn 06 38 37.3, D=820 km, USCGS: H= 06 35 30.1, 39.0 N, 14.5 E, h about 306 km, Tyrrhenian Sea, M=4.3 SD 0.4 (CGS).
- 14 eZ PKP 09 18 13.3, iZ 09 18 27.1, USCGS: H=08 58 41.9, 17.5 S, 167.9 E, h about 33 km, New Hebrides Islands, Felt: Vila, Norsup and Epi. M=4.6 SD 0.3 (CGS).
- 14 iZ (Pg) 10 24 25.8, iZ 10 24 58.5, traces.
- 14 eiZ P 16 06 42.3, USCGS: H=15 55 10.9, 61.3 N, 147.3 W, h about 30 km, Prince William Sound, Alaska, aftershock, M=5.4 SD 0.3 (CGS), Felt: Anchorage.
- 14 eZ P 23 07 16.0, USCGS: H= 22 55 31.3, 58.0 N, 152.6 W, h about 30 km, Prince William Sound, Alaska, aftershock, M=5.4 SD 0.3 (CGS).
- 15 iZ Pg 12 54 53.2, iZ Sg 12 54 55.8, D=25 km, Litija region, not felt.
- 15 eZ P 15 42 40.0, iZ 15 42 53.6, eZ PP 15 45 12.1, USCGS: H= 15 30 47.1, 56.5 N, 154.4 W, h about 35 km, Prince William Sound, Alaska, aftershock, M=5.5 SD 0.4 (CGS).
- 15 iZ P 16 46 26.5, iZ pP 16 46 35.4, eZ 16 47 04.6, USCGS: H= 16 35 57.5, 21.7 N, 88.0 E, h about 36 km, India-Pakistan border region, Felt: Eastern India. M=5.5 SD 0.4 (CGS).
- 15 eZ Pn 20 56 43.7, iZ PgPg 20 57 27.3, iZ Sn 20 58 31.4, iZ Sx 20 58 57.4, iZ! 20 59 50.3, D=about 1000 km; USCGS: H= 20 54 40, 40.0 N, 24.7 E, h about 121 km, Aegean Sea, M=4.4 (CGS). BCIS: H= 20 54 37, 40.1 N, 24.8 E, Deeper than normal. Northern Aegean Sea (determination was made by electronic calculating machine).
- 15 eiZ PKP 21 54 54.4, USCGS: H= 21 35 18.2, 19.7 S, 175.6 W, h about 172 km, Tonga Islands, M=4.2 (CGS).
- 15 iZ Pn 22 41 28.4, iZ Px 22 41 33.5, iZ Pg 22 41 37.8,

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- 15 (cont.) iZ Sn 22 42 02.4, D=310 km, aftershock of April 13, 1964, USCGS: H= 22 40 45.5, 45.3 N, 18.1 E, h about 33 km, Northern Yugoslavia. M=4.6 (CGS). BCIS: H=22 40 49, aftershock of April 13, 1964.
- 16 eZ P 01 17 07.8, eZ PP 01 20 45.5, USCGS: H= 01 04 34.5, 37.0 N, 142.7 E, h about 38 km, Off east coast of Honshu Japan, M=5.1 SD 0.4 (CGS).
- 16 eZ PKP 02 55 20.6, iZ! 02 55 23.6, USCGS: H= 02 35 48.9, 21.5 S, 170.5 E, h about 110 km, Loyalty Islands region, M=4.6 (CGS).
- 16 eZ P 13 55 28.5, eZ pP 13 55 39.7, USCGS: H= 13 43 08.9 52.1 N, 169.4 W, h about 33 km, Fox Islands, M=4.9 SD 0.5 (CGS).
- 16 eiZ PKP1 14 24 15.6, iZ PKP2 14 24 27.7, USCGS: H=14 05 14.9, 7.0 S, 155.7 E, h about 78 km, Salomon Isl. Felt: Kiet and Omori, M=5.4 (CGS).
- 16 eZ P 19 38 50.2, iZ 19 39 18.1, eZ PP 19 41 21.9, USCGS: H= 19 26 57.4, 56.4 N, 152.9 W, h about 30 km, Prince William Sound, Alaska, aftershock. M=5.5 SD 0.4 (CGS).
- 17 Z P 04 56 (00) in minute interruption, USCGS: H= 04 44 37, 22.5 S, 10.8 W, h about 33 km, South Atlantic Ocean, M=5.3 (CGS).
- 17 iZ+ P 05 01 24.8, iZ! 05 01 26.4, USCGS: H= 04 49 30.5, 56.4 N, 152.9 W, h about 25 km, Prince William Sound, Alaska, aftershock. M=5.3 SD 0.5 (CGS).
- 17 Z PKP 06 19 (00) in minute interruption, USCGS: H= 06 00 00.2, 6.6 S, 154.9 E, h about 85 km, Salomon Isl. felt: Brini and Omori. M=5.4 (CGS).
- 17 eZ P 09 20 54.3, iZ 09 21 03.6, USCGS: H= 09 09 07.8, 57.7 N, 151.4 W, h about 20 km, Prince William Sound, Alaska, aftershock, M=5.4 SD 0.4 (CGS).
- 17 iZ Pn 18 13 46.9, iZ 18 14 05.4, eZ Sn 18 15 25.9, iZ! 18 15 49.6, D=950 km, USCGS: H= 18 11 45.6, 38.1 N, 20.9 E, h about 45 km, Central Greece, M=4.1 (CGS).
- 18 Z P 05 40 (00), USCGS: H= 05 27 44.6, 45.5 N, 151.1 E, h about 33 km, Kurile Islands, M=5.3 SD 0.2 (CGS).
- 18 Z P 08 11 (00), USCGS: H= 07 58 26.9, 29.0 N, 129.8 E, h about 33 km, Ryukyu Islands, M=4.9 (CGS).
- 19 Z (PKP1) 04 16 (00), eZ PKP2 04 16 17.1, obscured by microseisms, USCGS: H=03 56 13.7, 15.4 S, 173.7 W, h about 51 km, Tonga Islands, M=4.2 (CGS).
- 19 eZ PP 05 33 43.4, USCGS: H= 05 13 01.6, 41.7 S, 83.9 W, h about 33 km, Off coast of southern Chile; M=5.5 SD 0.1 (CGS).
- 19 eZ Pn 11 35 05.6, iZ (PgPg) 11 35 49.5, iZ Sn 11 36 36.1, iZ! 11 37 11.5, D=870 km.
- 19 eZ Pn 17 15 18.2, iZ Px 17 15 44.5, iZ Sn 17 16 36.7,

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- 19 (cont.) iZ Sg 17 17 10.2, D=730 km.
- 20 From 11<sup>h</sup> 01<sup>m</sup> to 13<sup>h</sup> 02<sup>m</sup> no time marks.
- 20 eiZ P 12 08 (05), USCGS: H= 11 56 41.6, 61.4 N, 147.3 W, h about 30 km, Prince William Sound, Alaska, after-shock; M=6 1/2 (Pas), 6 3/4 (Brk), 6-6 1/4 (Pal), 5.7 SD 0.4 (CGS), felt: Anchorage; USC&GSS Surveyor, anchored at 61° 06.4' N, 146° 20.6' W.
- 20 iZ Pn 22 43 35.8, iZ Pg 22 43 44.0, iZ Sn 22 44 12.9, iZ Sg 22 44 34.0, D=340 km.
- 21 eZ P 05 13 06.9, USCGS: H= 05 01 35.7, 61.5 N, 147.4 W, h about 40 km, Prince William Sound, Alaska, after-shock, M=6 (Pas), 4 3/4-5 (Bks), 5.4 SD 0.3 (CGS). Felt: Anchorage; USC&GSS Surveyor, anchored at 61° 06.4' N, 146° 20.6' W.
- 21 eZ (Pn) 23 11 09.3, iZ PgPg 23 11 27.8, iZ Sn 23 11 49.9, iZ Sg 23 12 01.3, (D=370 km).
- 21 iZ Pn 23 13 44.8, iZ Pg 23 13 54.0, iZ (Sn) 23 14 25.7, iZ Sg 23 14 36.6, D=390 km.
- 21 iZ+ Pn 23 19 48.0, iZ Px 23 19 58.1, iZ PgPg 23 20 05.0, iZ Sn 23 20 29.9, iZ Sg 23 20 46.5, D=385 km.
- 22 iZ (Pn) 14 05 17.4, iZ Sn 14 05 37.7, (D=195 km).
- 22 eiZ P 15 08 28.4, USCGS: H= 14 56 53.1, 12.4 N, 95.7 E, h about 33 km, Andaman Islands region, M=5.0 (CGS).
- 22 eZ PKP 19 57 36.2, USCGS: H= 19 37 53.2, 16.1 S, 173.4 W, h about 33 km, Tonga Islands, M=5.0 SD 0.2 (CGS).
- 22 iZ PKP 20 19 37.4, iZ! 20 19 42.2, eiZ PP 20 23 09.6, USCGS: H= 20 00 22.8, 15.5 S, 167.5 E, h about 123 km, New Hebrides Islands, M=5.0 SD 0.4 (CGS).
- 22 eZ PKP 23 23 17.6, eZ PP 23 26 36, USCGS: H= 23 04 13.8, 13.2 S, 167.1 E, h about 218 km, New Hebrides Islands, M=4.0 (CGS).
- 23 eZ 03 47 47, iZ PKP 03 51 31.6, iZ 03 51 46.0, eiZ PP 03 51 28.7, USCGS: H= 03 32 50.3, 5.3 S, 134.0 E, h about 33 km, Arn Islands region. Felt: Darwin, Australia. M=6.4 (CGS).
- 23 eiZ PKP 10 51 49.1, eZ PP 10 54 51, USCGS: H= 10 32 47.9, 6.6 S, 155.1 E, h about 60 km, Salomon Islands, M=5.0 SD 0.4 (CGS).
- 23 eZ P 14 28 32, iZ 14 29 05.9, USCGS: H= 14 23 43.2, 36.9 N, 37.9 E, h about 57 km, Turkey. M=4.8 (CGS).
- 23 eZ P 15 08 20, USCGS: H= 14 56 30.9, 57.3 N, 151.9 W, h about 25 km, Prince William Sound, Alaska, aftershock, M=5.3 SD 0.3 (CGS).
- 24 eZ P 00 54 28, traces, USCGS: H= 00 42 33.9, 52.7 N, 160.9 E, h about 33 km, Near east coast of Kamchatka, M=4.9 SD 0.4 (CGS).
- 24 iZ P or PKP 03 36 25.5;

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- 24 eZ P 03 52 20, eZ S 03 54 07, D=1030 km, USCGS: H= 03 49 57.8, 38.0 N, 21.8 E, h about 92 km, Southern Greece, M=4.1 (CGS).
- 24 eZ 06 11 21, eiZ PKP 06 14 51.5, iZ! 06 14 55.5, iZ PP 06 18 04.2, USCGS: H= 05 56 10.1, 5.1 S, 144.2 E, h about 106 km, Northeast New Guinea. Light damage at Hagen. Felt widely. M=6 1/2-6 3/4 (Bks), 6.3 SD 0.6 (CGS).
- 24 iZ (Sg) 19 49 27.0, traces.
- 25 eiZ (Pg) 10 43 17.5, Z 10 44 (00), traces.
- 25 eiZ P 12 47 38.9, iZ! 12 47 44.7, iZ PP 12 48 00.9, USCGS: H= 12 44 21, 35.2 N, 27.6 E, h about 27 km, Dodecanese Islands region. M=4.5 SD 0.3 (CGS), BCIS: H=12 44 21, 36.5 N, 28.1 E, Eastern Mediterranean Sea, near Rhodos Island (Determination by electronic calculating machine).
- 25 (e)Z Pg 14 59 41, iZ Sg 15 00 (00), (D=about 150 km).
- 25 iZ (Pg) 15 16 24.3, iZ Sg 15 16 30.8, (D=about 50 km).
- 25 iZ (Sg) 16 36 46.9, traces.
- 25 eZ (Pg) 17 34 21, iZ Sg 17 34 27.8, (D=about 50 km).
- 25 iZ 17 53 07.1, iZ (Sg) 17 53 08.8, traces.
- 25 eZ 18 50 44, iZ 18 50 50.7, traces.
- 26 eZ 08 10 02.6, iZ (Sg) 08 10 17.9, traces.
- 26 eZ P 14 12 41, USCGS: H= 13 59 27.7, 5.8 S, 105.0 E, h about 90 km, Southern Sumatra. M=5.6 (CGS).
- 26 eiZ PKP 15 11 08.4, eZ pPKP 15 13 08, USCGS: H= 14 52 07.6, 20.6 S, 178.0 W, h about 490 km, Fiji Islands region. M=5.1 SD 0.3 (CGS).
- 26 iZ Pg 20 56 21.5, iZ (Sg) 20 56 53.8, (D=290 km).
- 26 Z 23 23 (00), traces.
- 27 eiZ P 01 49 49.0, USCGS: H= 01 37 12.1, 0.3 N, 98.1 E, h about 33 km, Off west coast of Sumatra, M=5.3 (CGS).
- 27 eZ PKP 07 04 18.0, iZ! 07 04 40.8, USCGS: H= 06 44 25.1, 60.1 S, 151.0 E, h about 33 km, Balleny Islands region, M=5.0 (CGS).
- 27 eiZ P 12 17 44.9, USCGS: H= 12 07 53, 4.0 N, 31.1 W, h about 33 km, Mid-Atlantic Ocean. M=4.7 SD 0.3 (CGS).
- 27 eZ PKP 14 55 30.7, USCGS: H= 14 36 18, 18.8 S, 170.1 E, h about 27 km, New Hebrides Islands.
- 28 iZ (Pg) 00 15 33.1, iZ Sg 00 15 35.1, (D=about 18 km).
- 28 eiZ Pn 02 26 06.8, iZ Pg 02 26 11.6, iZ Sn 02 26 32.7, iZ! Sg 02 26 39.5, D=235 km.
- 28 eiZ (Pg) 08 27 18.1, iZ Sg 08 27 20.2, (D=about 18 km).
- 28 eZ (Pg) 11 51 20.2, iZ Sg 11 51 26.6, (D=55 km).
- 29 eZ Pn 04 23 23, iZ 04 23 29.3, iZ! Sn 04 25 11.7,

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- 29 (cont.) eNE Sn 04 25 16, iZ!! 04 25 53.0, iZ!! 04 26 32.2, USCGS: H= 04 21 06.7, 39.3 N, 23.7 E, h about 33 km, Aegean Sea-Extensive property damage Skopelos Island. M=5 1/2 (Pal), 5.1 SD 0.2 (CGS), BCIS: H= 04 21 07, 39.1 N, 23.8 E, Aegean Sea, near Eubea Island. (Determination by electronic calculating machine). M=5.4 (Collmberg), Press: Felt in Greece. Athens: 39° 1/4 N, 23° 3/4 E. Felt 6-7° at Klirna (Skopelos Island) and Skiathos (Skiathos Island), 6° MCS at Eubea Island. Macroseismic surface: 170 000 km<sup>2</sup>.
- 29 eZ Pn 17 02 22, iZ Sn 17 04 08.9, eNE 17 04 50, eZ! 17 05 29.0, BCIS: H=17 00 02, aftershock.
- 30 iZ PKP 04 01 04.3, USCGS: H= 03 41 42.3, 15.5 S, 174.7 W, h about 224 km, Tonga Islands. M=4.2 (CGS).
- 30 eiZ PKP 16 22 26.3, iZ pPKP 16 22 35.2, USCGS: H= 16 03 31.4, 4.6 S, 153.2 E, h about 78 km, New Ireland region. Felt: Londolorit, Rabaul. M=5.2 (CGS).

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- 1 eiZ P 01 22 21.0, USCGS: H= 01 10 54, 14.1 N, 93.9 E, h about 33 km, Andaman Islands.
- 1 eZ P 06 13 33, eZ 06 14 12.6, USCGS: H= 06 01 55.4, 60.5 N, 145.6 W, h about 20 km, Prince William Sound, Alaska, aftershock. M=5.4 SD 0.3 (CGS).
- 2 eZ P 05 28 48, USCGS: H= 05 15 51.1, 4.0 S, 102.8 E, h about 106 km, Southern Sumatra, M=5.4 (CGS).
- 2 eZ P 16 23 12, iZ pP 16 23 37.0, eZ PP 16 26 20, eZ PPP 16 28 03, eZ S 16 33 43. USCGS: H= 16 11 00.2, 45.5 N, 150.3 E, h about 35 km, Kurile Islands, M=5.7 SD 0.4 (CGS).
- Lju 2 P eZ 23 28 16, traces.
- 3 eiZ Pg 19 25 54.9, iZ Sg 19 26 09.2, D=about 110 km.
- 4 eZ 16 47 23.3, traces.
- 4 eZ 17 56 47.9, iZ 17 56 59.7, traces.
- 4 eiZ (Sg) 18 30 44.4, traces.
- 5 iZ Pn 00 15 03.1, iZ Pg 00 15 17.9, iZ Sn 00 15 36.5, iZ Sg 00 15 47.5, iZ! 00 15 58.6, D=300 km.
- 5 eZ 03 58 33, traces.
- 5 eZ P or PKP 07 59 10, traces.
- 6 iZ+ PKP 08 30 08.2, eZ 08 33 39, USCGS: H= 08 10 47.5, 11.1 S, 162.2 E, h about 40 km, Salomom Islands, M=5.1 (CGS).
- 6 eZ P 15 38 24, USCGS: H= 15 26 35.5, 56.7 N, 152.1 W, h about 15 km, Prince William Sound, Alaska, aftershock,

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- 6 (cont.) M=5.4 SD 0.3 (CGS).
- 6 eiZ 17 48 50.6, iZ 17 49 00.9, iZ 17 49 10.3, traces.
- 6 eZ P or PKP 20 51 33, traces.
- 7 eiZ PKP 00 54 02.2, iZ! 00 54 07.9, eZ 00 55 27, USCGS: H= 00 34 57.2, 18.2 S, 176.6 W, h about 300 km, Fiji Islands region, M=5.4 SD 0.2 (CGS).
- 7 eZ (Pg) 01 46 24.2, iZ Sg 01 46 35.2, (D=about 73 km).
- 7 eiZ PKP 04 08 45.7, USCGS: H= 03 49 53.8, 4.6 S, 153.5 E, h about 53 km, New Ireland region. M=4.6 (CGS).
- 7 iZ (Sg) 04 46 29.2, traces.
- 7 iZ (Sg) 05 18 18.0, traces.
- 7 iZ Pg 05 20 52.3, iZ! Sg 05 21 07.7, D=126 km.
- 7 eiZ- P 05 54 38.3, eNE 05 54 47, iZ! 05 54 47.9, eZ PP 05 56 45, eZ S 06 02 14, USCGS: H= 05 45 29.5, 4.0 S, 34.9 E, h about 33 km, Tanganyika, 1 killed at Batati, 19 injured at Mbulu. Extensive property damage. M= 6 1/4 - 6 1/2 (Pal), 6.4 SD 0.2 (CGS).
- 7 iZ!+ P 08 10 19.3, eNE+(P) 08 10 38, iZ PP 08 13 28.4, USCGS: H= 07 58 14.3, 40.4 N, 139.0 E, h about 33 km, Off coast of northern Honshu, Japan. Felt: Northern Honshu and Hokkaido. M=7 (Pas), 7 (Brk), 6 1/2-6 3/4 (Pal), 6.2 SD 0.4 (CGS).
- 7 eiZ- P 11 23 04.9, iZ 11 23 31.1, eZ 11 32 45.1, USCGS: H=11 11 04.9, 30.6 N, 137.7 E, h about 469 km, Off coast of Honshu, Japan. M= 5.1 SD 0.3 (CGS).
- 7 eZ (Sg) 12 15 09.6, traces.
- 7 iZ P or PKP 12 24 05.7, traces.
- 7 eZ 12 51 09, iZ 12 51 30.3, traces.
- 7 iZ Sg 13 05 55.8,
- 7 eZ (Sg) 17 52 21, traces.
- 7 eZ 18 14 09, iZ 18 14 15.7, traces, explosion?
- 7 iZ+ P 20 24 00.5, eiZ PP 20 28 06.5, eZ S 20 35 10.8, USCGS: H= 20 12 49.3, 40.5 N, 139.0 E, h about 33 km, Off west coast of Honshu, Japan. Minor damage in Akita Province. M=5.9 SD 0.3 (CGS).
- 7 eZ (Pg) 22 15 51, eZ Sg 22 15 58, D=about 60 km.
- 7 eZ 22 17 23.7, iZ Sg 22 17 24.5, traces.
- 8 iZ Sg 03 00 38.1, traces.
- 8 iZ Pg 04 02 28.3, iZ (Sg) 04 02 38.2, D=about 78 km.
- 8 eZ 06 29 09.2, traces.
- 8 eZ 06 51 24, traces.
- 8 eZ 14 22 32, traces.
- 8 eZ P 16 33 41.8, eZ PP 16 36 39, USCGS: H= 16 21 49.8,

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- 8 (cont.) 56.7 N, 154.0 W, h about 25 km, Prince William Sound, Alaska, aftershock. M=5.3 SD 0.4 (CGS).
- 8 Z P 21 46 (00), USCGS: H= 21 34 40.6, 60.8 N, 143.6 W, h about 35 km, Prince William Sound, Alaska, aftershock. M=5.4 SD 0.3 (CGS).
- 8 Z P 22 05 (00), USCGS: H= 21 59 21.9, 71.1 N, 6.2 W, h about 25 km, Jan Mayen Islands region. M=4.9 SD 0.2 (CGS).
- 8 eZ P 23 53 06, eiZ 23 53 08.2, USCGS: H= 23 40 44.1, 52.2 N, 169.5 W, h about 20 km, Andreanoff Islands, Aleutian Islands, M=5.2 SD 0.3 (CGS).
- 9 eZ P 00 05 39, USCGS: H= 23 53 21.1, 40.4 N, 142.2E, h about 47 km, Off coast of northern Honshu, Japan. M=4.5 SD 0.3 (CGS).
- 9 eZ P 02 14 49, USCGS: H= 02 02 28.8, 52.2 N, 169.6W, h about 25 km, Andreanof Islands, Aleutian Islands. M=5.1 SD 0.4 (CGS).
- 9 eZ 02 50 26, traces.
- 9 iZ+ Pn 05 34 30.4, iZ Pg 05 34 31.6, iZ! Sn 05 34 51.6, iZ! Sg 05 34 53.9, D=200 km.
- 9 eZ P 15 22 23.4, USCGS: H= 15 10 12.1, 40.7 N, 139.0 E, h about 25 km, Sea of Japan. M=5.1 SD 0.2 (CGS).
- 9 eZ 16 18 51, iZ Sg 16 19 06.4, traces.
- 9 eiZ PKP 18 35 36.0, eZ 18 35 43.2, USCGS: H= 18 16 17.5, 13.7 S, 166.6 E, h about 41 km, New Hebrides Islands, M=5.0 SD 0.5 (CGS).
- 9 eZ 22 25 32, iZ (Sg) 22 25 42.2, traces.
- 10 eZ P or PKP 04 05 09, traces.
- 10 eiZ PKP 06 46 41.1, USCGS: H= 06 27 45.6, 4.6 S, 153.2 E, h about 77 km, New Ireland region, Felt: Rabaul. M=4.6 SD 0.2 (CGS).
- 11 eiZ (Sg) 00 16 42.4, traces.
- 11 iZ (Sg) 03 07 10.2, traces.
- 11 eZ P 06 14 56, USCGS: H= 06 07 41.5, 28.3 N, 57.4 E, h about 62 km, Southern Iran, M= 4.9 (CGS).
- 11 eZ PKP 14 58 53, USCGS: H= 14 39 04, 22.5 S, 175.8 W, h about 50 km, Tonga Islands region, M=5.3 SD 0.2 (CGS).
- 12 eZ 09 24 52, iZ (Sg) 09 25 (00), traces.
- 12 eZ 15 31 16.9, traces.
- 12 eZ P 18 28 37, USCGS: H= 18 16 41.9, 56.6 N, 152.4 W, h about 10 km, Alaska aftershock. M=5 1/2-5 3/4 (Brk), 6-6 1/4 (Pal), 5.3 SD 0.3 (CGS).
- 12 eZ PKP 18 36 56, USCGS: H= 18 17 07.7, 19.9 S, 173.9 W, h about 33 km, Tonga Islands, M=5.5 SD 0.3 (CGS). Obscured by preceding shock.

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- 13 eZ PKP 00 26 43, USCGS: H= 00 07 01.8, 14.8 S, 176.7 W, h about 33 km, Samoa Islands region. M=4.7 (CGS).
- 13 eZ 03 45 28, iZ (Sg) 03 45 48.6, traces.
- 13 eZ PKP 05 45 25, eZ 05 45 36, USCGS: H= 05 25 26.1, 32.8 S, 178.3 W, h about 33 km, Kermadec Islands region, M=5.3 SD 0.2 (CGS).
- 13 eZ P or PKP 08 41 38, traces.
- 13 eZ PKP 11 27 33, USCGS: H= 11 06 16.4, 21.8 S, 179.6 W, h about 578 km, West of Tonga Islands. M=4.6 SD 0.4 (CGS).
- 13 eiZ Pg 12 42 39.9, iZ Sg 12 42 54.5, D=120 km.
- 13 eZ P or PKP 13 50 09, traces.
- 13 eZ PKP 17 02 48.5, USCGS: H= 16 42 48.3, 32.7 S, 178.6 W, h about 33 km, Kermadec Islands region. M=5.1 (CGS).
- Lju 13 IP ~~eZ~~ 17 09 33.9, traces.
- 13 eZ PKP 20 58 48.6, USCGS: H= 20 37 54, 32.4 S, 178.3 W, h about 70 km, Kermadec Islands region. M=4.9 (CGS).
- Lju 14 eZ P ~~or PKP~~ 01 08 27.4
- 14 eZ PKP 01 25 18.4, USCGS: H= 01 05 47.6, 32.9 S, 178.8 W, h about 309 km, Kermadec Islands region. M=4.6 (CGS).
- 14 eZ PKP 02 49 29.9, USCGS: H= 02 30 32.2, 4.5 S, 152.9 E, h about 33 km, New Ireland region. Felt. M=4.9 (CGS).
- 14 eZ P 17 02 33.4, iZ S 17 04 16.7, D= about 1000 km.
- 14 eZ Pg 19 12 56.2, iZ Sg 19 13 00.5, D=35 km.
- 14 iZ PKP 20 19 51.0, eZ pPKP 20 22 17.2, USCGS: H=20 01 01.0, 21.3 S, 179.3 W, h about 606 km, Fiji Islands region, M=4.7 SD 0.4 (CGS).
- 15 eZ P 01 15 40.6, iZ 01 17 39.8, eiZ 01 18 05.4, USCGS: H=01 12 40, 33.4 N, 16.0 E, h about 33 km, Near coast of Libya.
- 15 eiZ Pn 02 45 28.6, iZ Sn 02 46 02.6, iZ Sg 02 46 08.9, D=282 km.  
From May 15, 09<sup>h</sup> 46<sup>m</sup> to May 15, 10<sup>h</sup> 34<sup>m</sup> no Z, N, E records.
- 16 eiZ P 06 08 49.6, USCGS: H= 06 00 58.1, 49.9 N, 78.3 E, h about 0 km, Kazakh SSR, M=5.6 SD 0.4 (CGS).
- 16 eiZ P 08 46 45.3, eiZ pP 08 47 22.6, USCGS: H= 08 38 54.0, 36.3 N, 71.5 E, h about 122 km, Hindu Kush, M=5.3 (CGS).
- 16 Z PKP 16 28 (00), USCGS: H= 16 07 46.2, 32.8 S, 178.3 W, h about 32 km, Kermadec Islands region, M=6.0 (Pas), 5.4 (CGS).
- 17 eZ P 01 01 49.6, USCGS: H= 00 50 17.9, 59.4 N, 142.7 W, h about 35 km, Alaska aftershock. M=5 3/4 (Pas), 6-6 1/4 (Brk), 6 1/4-6 1/2 (Pal), 5.1 SD 0.3 (CGS). Obscured by microseisms.  
From May 17, 09<sup>h</sup> 01<sup>m</sup> to May 17, 17<sup>h</sup> 30<sup>m</sup> no Z records.

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- 17 iZ P 19 33 46.5, iZ! 19 33 49.6, eZ PP 19 35 12, eZ PPP 19 35 21, USCGS: H= 19 26 20.6, 35.2 N, 35.9 W, h about 33 km, North Atlantic Ocean. M=6 1/2 (Pas), 5 3/4-6 (Brk), 6-6 1/4 (Pal), 5.6 SD 0.4 (CGS). BCIS: H= 19 26 20, 35.0 N, 35.0 W, Middle Atlantic, SW of Azores Islands.
- 18 iZ Pg 10 39 17.3, iZ Sg 10 39 41.4, D=300 km.
- 18 Z PKP 14 32 (00), iZ 14 32 21.9, USCGS: H= 14 12 10.1, 21.2 S, 174.5 W, h about 33 km, Tonga Islands region, M=4 1/2 (Brk), 5.6 SD 0.3 (CGS).
- 18 iZ (P) 20 07 (00), traces, USCGS: H= 20 03 04, 36.5 N, 24.0 E, h about 33 km, Southern Greece, M=4.6 (CGS).
- 18 eZ P 21 24 16.5, traces, USCGS: H= 21 12 46.2, 59.5 N, 142.7 W, h about 25 km, Alaska aftershock. M=4.9 SD 0.3 (CGS).
- 18 eZ P or PKP 22 23 14.6, traces.
- 19 eZ P 06 15 28.2, eZ 06 26 18.4, BCIS: H= 06 09 05, 77.8 N, 19.0 E (Determination by electronic calculating machine) near Spitzberg, Kirkenes: felt at Longyear (Spitzberg). USCGS: H= 06 09 04.1, 77.7 N, 18.3 E, h about 33 km, Svalbard region, M=4.9 SD 0.3 (CGS).
- 19 eZ+ P 10 51 36.8, USCGS: H= 10 39 24.8, 45.5 N, 150.3 E, h about 33 km, Kurile Islands, M=5.4 SD 0.3 (CGS).
- 19 eZ P 14 54 08.3, USCGS: H= 14 42 40.7, 60.2 N, 146.3 W, h about 33 km, Alaska aftershock. M=4.9 SD 0.4 (CGS).
- 19 eZ P 15 49 26.7, USCGS: H= 15 37 35.9, 57.0 N, 152.8 W, h about 25 km, Alaska aftershock, M=4.9 SD 0.4 (CGS).
- 19 iZ+ P 23 16 56.2, iZ! 23 16 56.9, eZ S 23 27 27, USCGS: H= 23 03 41.8, 0.7 S, 80.2 W, h about 54 km, Near coast of Ecuador. M=5 1/2 (Pal), 5 1/4-5 1/2 (Brk), 5.4 SD 0.4 (CGS).
- 20 iZ Sg 01 06 09.3, traces.
- 20 eZ P or PKP 02 50 17.5.
- 20 eZ (Sg) 04 08 06.5, traces.
- 20 eZ PKP 05 13 29, USCGS: H= 04 53 30.3, 31.4 S, 178.2 W, h about 33 km, Kermadec Islands region, M=4.8 SD 0.3 (CGS).
- 20 eZ PKP 06 19 52.3, eZ 06 20 09.5, USCGS: H= 06 01 14.8, 2.7 S, 139.3 E, h about 61 km, Near north coast of western New Guinea. M=5.8 (CGS).
- 20 eiZ Pg 06 38 17.9, iZ Px 06 38 26.9, iZ Sg 06 38 33.3, D=138 km.
- 20 iZ Pg 12 59 21.6, iZ Sg 12 59 24.4, D=25 km, Litija region, east from Ljubljana.
- 21 eiZ+ Pn 07 30 26.9, iZ Pg 07 30 36.3, iZ! PgPg 07 30 39.9, iZ Sn 07 31 02.4, iZ! Sg 07 31 17.4, D=340 km.
- 21 eZ P 15 47 50.6, eZ PP 15 50 21.4, USCGS: H= 15 36 01.5,

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- 21 (cont.) 59.0 N, 153.5 W, h about 15 km, Alaska aftershock. M=5 3/4-6 (Brk), 5.3 SD 0.3 (CGS).
- 21 eiZ (Sg) 17 07 05.8, traces.
- 22 eZ (Pg) 05 08 16.9, iZ Sg 05 08 47.9, (D=260 km).
- 22 eiZ+ Pn 06 15 42.0, iZ Pg 06 15 53.8, iZ! PgPg 06 15 54.8, iZ Sn 06 16 18.9, iZ! Sg 06 16 32.8, D=340 km, aftershock of May 21, 1964.
- 22 Z Pn 08 52 (00), iZ Pg 08 52 04.4, iZ Sn 08 52 22.0, iZ! Sg 08 52 26.9, (D=about 185 km).
- Lju 22 ~~E~~ ~~Z~~ Pn 12 09 26, iZ Sg 12 09 42.9, (D=about 180 km).
- 22 eZ (Pn) 12 12 43, iZ Sg 12 12 59.9, (D=about 180 km).
- 22 eiZ P or PKP 16 13 46.5, eZ 16 14 24.6.
- 23 eZ P 00 20 24.4, USCGS: H= 00 11 56, 15.0 N, 56.0 E, h about 33 km, Arabian Sea.
- 23 eiZ P 00 25 38.1, iZ pP 00 25 44.6, iZ 00 26 06.6, USCGS: H= 00 17 07.5, 14.6 N, 56.3 E, h about 33 km, Arabian Sea.
- 23 iZ- P 11 34 51.0, USCGS: H= 11 22 33.3, 28.6 N, 139.4 E, h about 409 km, Bonin Islands region. M=5.1 SD 0.3 (CGS).
- 23 eZ (Pg) 23 27 16.9, iZ Sg 23 27 30.5, D=about 110 km.
- 24 eZ P 00 10 13.5, USCGS: H= 00 00 50.2, 30.1 N, 82.1 E, h about 33 km, Nepal. M=5.1 (CGS).
- 24 eiZ PKP1 04 32 57.2, eiZ 04 33 06.6, eiZ PKP2 04 33 24.8, USCGS: H= 04 13 05.3, 22.6 S, 174.1 W, h about 33 km, Tonga Islands region. M=5-5 1/4 (Brk), 5.7 (CGS).
- 24 eZ (Pg) 05 04 04.5, iZ Sg 05 04 20.1, iZ 05 04 22.7, (D=about 130 km).
- 24 eZ P 10 44 05.4, iZ 10 44 15.3, eZ PP 10 47 31.1, USCGS: H= 10 31 24.1, 34.3 N, 141.1 E, h about 33 km, Near east coast of Honshu, Japan. M=5.2 SD 0.4 (CGS).
- 24 eZ PKP1 22 42 11.9, eZ PKP2 22 43 09.0, eiZ pPKP 22 43 50.7, USCGS: H= 22 22 27.6, 37.0 S, 177.8 E, h about 149 km, Near North Island, New Zealand. M=4.8 (CGS).
- 25 iZ Pn 01 38 19.4, iZ Pg 01 38 21.1, iZ Sn 01 38 41.1, iZ! Sg 01 38 42.9, D=180 km, E; Bilogora, Croatia. Max. felt intensity: Io=6<sup>o</sup> MCS. BCIS: H= 01 37 50, 46.0 N, 17.0 E, Bilogora (Croatia). Zagreb: felt 6<sup>o</sup> MCS at Koprivnica.
- 25 eZ Pg 04 53 25.5, iZ! Sg 04 53 48.7, D=180 km, BCIS: H= 04 52 53, aftershock, Bilogora (Croatia).
- 25 eZ 16 08 10, eZ 16 09 36, iZ Sg 16 09 42.0, D=1050 km.
- 25 eZ P 19 56 45.3, iZ 19 56 47.4, eZ PP 20 00 09, USCGS: H= 19 44 07.0, 9.1 S, 88.9 E, h about 33 km, Indian Ocean, M=5.5 (CGS).
- 25 eZ Pn 20 25 42.8, eiZ Sn 20 27 28.0, USCGS: H= 20 23 32.1, 38.0 N, 21.2 E, h about 77 km, Ionian Sea, M=4.1



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- 25 (cont.) (CGS), D=1050 km.
- 26 eZ P 11 13 26.8, iZ 11 14 04.5, eNE 11 17 07, iZ PKP 11 17 29.4, iZ PP 11 17 56.0, eNE S 11 24 47, USCGS: H= 10 59 12.3, 56.2 S, 27.8 W, h about 120 km, Sandwich Islands. M=7 1/2-7 3/4 (Pas), 7 1/2-7 3/4 (Brk), 7-7 1/4 (Pal).
- 27 eZ P or PKP 01 15 20.1.
- 27 eZ (Pg) 02 21 57.1, Z Sg 02 22 (00).
- 27 iZ Pg 05 01 22.5, iZ Sg 05 01 27.0, D=33 km.
- 27 eZ PKP 11 40 20.6, USCGS: H= 11 20 26.8, 18.4 S, 173.1 W, h about 33 km, Tonga Islands region. M=4.6 (CGS).
- 27 eZ 17 58 53.3, iZ Sg 17 58 55.5, traces.
- 27 eZ 18 33 30.7, traces.
- 28 iZ P 02 09 26.9, eiZ 02 09 31.5, USCGS: H= 01 56 58.9, 24.5 N, 122.0 E, h about 41 km. Near east coast of Taiwan, M=5.9 (CGS).
- 28 Z P 12 43 (00), eZ PP 12 45 12, USCGS: H= 12 33 10.2, 0.8 S, 24.7 W, h about 33 km, Mid-Atlantic Ocean, M=5.2 SD 0.3 (CGS).
- 28 eZ P 16 29 47.2, USCGS: H= 16 18 04.2, 58.3 N, 150.6 W, h about 25 km, Alaska aftershock. M=5.4 SD 0.3 (CGS).
- 28 eZ Pn 20 53 08.2, eiZ Pb 20 53 15.9, iZ Pg 20 53 23.1, iZ Sn 20 53 54.3, D=420 km. BCIS: H= 20 52 06, 46° 48' N, 9° 03' E, Determination made by electronic calculating machine. Grisons, Switzerland. Epicenter near the one of the seisms of December 20, 1963, H=23 21 45.
- 28 eZ P or PKP 22 12 19.3.
- 29 eiZ P 05 20 16.5, USCGS: H= 05 08 02.2, 44.7 N, 149.4 E, h about 50 km, Kurile Islands, M=4.7 SD 0.3 (CGS).
- 29 eZ 10 29 11.5, eiZ 10 30 08.4, USCGS: H= 10 17 34.5, 60.2 N, 146.3 W, h about 5 km, Alaska aftershock. M=5 1/2 (Pal), 5.6 (CGS).
- 29 eiZ PKP 12 44 16.7, USCGS: H= 12 25 16.9, 18.6 S, 177.8 W, h about 462 km, Fiji Islands. M=4.2 (CGS).
- 30 eiZ Pg 06 36 41.0, iZ (Sg) 06 36 54.3, (D=110 km).
- 30 eiZ+ P 14 43 17.4, iZ pP 14 43 31.0, eiZ PP 14 46 38.7, eZ PPP 14 48 37.9, USCGS: H= 14 30 45.3, 36.2 N, 141.1 E, h about 49 km, Near east coast of Honshu, Japan. M=5 1/2-5 3/4 (Pal), 5.4 SD 0.2 (CGS).
- 30 eiZ P 17 32 49.3, USCGS: H= 17 20 37.6, 41.3 N, 141.9 E, h about 57 km, Near east coast of Honshu, Japan. M=4.8 SD 0.2 (CGS).
- 30 eZ (Pg) 18 58 40.3, iZ Sg 18 58 47.8, (D=60 km).
- 30 eZ 19 02 43.6, traces.
- 31 iZ+ P 00 52 49.5, eNE P 00 52 51, iZ! 00 52 51.3, Z PP 00 56 (00), NE S 01 03 (00), USCGS: H= 00 40 36.4,

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- 31 (cont.) 43.5 N, 146.8 E, h about 48 km, Kurile Islands, M=6 1/2-6 3/4 (Pal), 6.3 SD 0.4 (CGS).
- 31 iZ P 10 36 30.3, USCGS: H= 10 24 54, 53.7 N, 158.7 E, h about 110 km, Southern Kamchatka. M=4.8 SD 0.3 (CGS).
- 31 eZ PKP 17 34 50.1, USCGS: H= 17 15 26.8, 13.6 S, 172.1 E, h about 73 km, New Hebrides Islands region, M=4 3/4-5 (Brk), (CGS).

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- 1 eiZ PKP 06 24 14.9, eZ pPKP 06 25 04.2, USCGS: H= 06 05 07.6, 14.6 S, 167.4 E, h about 176 km, New Hebrides Islands. M=5.2 (CGS).
- 1 eiZ PKP 13 07 09.7, USCGS: H= 13 17 20.7, 21.0 S, 175.5 W, h about 35 km, Tonga Islands. M=5.2 (CGS).
- 3 eiZ- P 02 59 52.3, iZ pP 03 00 20.7, USCGS: H= 02 49 14.9, 25.9 N, 95.8 E, h about 100 km, Northern Burma, M=5.5 SD 0.4 (CGS).
- 3 eZ PKP 18 14 10.8, USCGS: H= 17 54 14.7, 18.8 S, 173.7 W, h about 33 km, Tonga Islands, M=4.8 (CGS).
- 4 eZ Pn 00 33 25.3, iZ Pg 00 33 44.4, eiZ Sn 00 33 25.3, iZ Sb 00 33 35.4, D=550 km, Roma: felt at Salerno and Potenza provinces. Felt strongly near Padula (Salerno).
- 4 eZ P 03 04 55.8, USCGS: H= 02 57 07.6, 36.4 N, 69.3 E, h about 33 km, Hindu Kush. M=4.9 (CGS).
- 4 eiZ PKP 11 36 07.1, USCGS: H= 11 17 11.8, 6.1 S, 149.9 E, h about 54 km, New Britain. Felt.
- 4 eZ 11 49 40.3, Z Sg 11 50 (00), traces.
- 4 eZ P 11 59 24.3, eZ PP 12 03 21, USCGS: H= 11 46 01.7, 9.6 S, 76.1 W, h about 124 km, Central Peru. M=5.3 SD 0.3 (CGS).
- 4 iZ- Pg 19 08 08.3, iZ! Sg 19 08 12.1, iZ 19 08 16.2, D=29 km, Macroseismic epicenter: Upper valley of Krka river (45° 53' N, 14° 50' E), Io=4<sup>0</sup> MCS. Felt: Muljava, Zagradec. Macroseismic ray: 20 km. BCIS: H=19 08 02.
- 4 eZ Pn 19 44 35.6, eZ Sn 19 46 23.1, D=1020 km.
- 5 eiZ P 00 16 44.9, iZ 00 16 49.5, USCGS: H= 00 11 51.9, 39.3 N, 43.1 E, h about 33 km, Eastern Turkey. M=4.6 (CGS).
- 5 iZ P 02 44 55.8, USCGS: H= 02 36 12.4, 42.5 N, 84.8 E, h about 52 km, Sinkiang Province, China. M=4.9 (CGS).
- 5 eZ P 04 50 43.7, BCIS: H= 04 44 37, 49.5 N, 28 W, Middle Northern Atlantic Ocean. USCGS: H= 04 44 48.6, 47.8 N, 27.3 W, h about 33 km, North Atlantic Ocean. M=4.7 SD 0.4 (CGS).
- 5 iZ P or PKP 05 36 21.3, traces.
- 5 Z PKP 09 33 (00), iZ 09 33 08.4, iZ (pPKP) 09 33 13.9,

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- 5 (cont.) USCGS: H= 09 13 20.0, 16.2 S, 177.3 E, h about 25 km, Fiji Islands region.M=5.2 (CGS).
- 5 eZ P 10 02 04.0, USCGS: H= 09 50 35.0, 60.4 N, 146.0 W, h about 15 km, Alaska aftershock.M=5.2 (CGS).
- 5 eZ P 13 06 24.6, USCGS: H= 13 01 28.2, 43.0 N, 45.4 E, h about 33 km,Eastern Caucasus, M=4.6 (CGS).
- 5 eZ 16 44 14.5, traces.
- 5 eiZ+ P 22 18 39.3, iZ 22 18 45.4, eZ PP 22 21 16.8, USCGS: H= 22 06 53.0, 58.1 N, 152.1 W, h about 15 km, Alaska aftershock.M=5.0 SD 0.4 (CGS).
- 6 iZ Sg 01 13 07.7, traces.
- 6 iZ Pg 01 20 22.8, iZ Sg 01 20 36.6, D=115 km.
- 6 eZ(Pg) 07 35 30.2, iZ Sg 07 35 45.6, (D=120 km).
- 6 eZ Pn 07 37 37.9, iZ 07 37 44.6, iZ PgPg 07 37 51.4, iZ Sn 07 38 15.0, iZ Sg 07 38 26.6, D=340 km.
- 6 eiZ P 08 13 41.9, eZ pP 08 14 19.1, USCGS: H= 08 05 56.4, 37.1 N, 72.1 E, h about 166 km, Hindu Kush region, M=5.0 (CGS).
- 6 eZ 18 34 55.2, traces.
- 6 iZ+ PKP 19 27 10.6, USCGS: H= 19 07 51.4, 26.6 S, 114.4 W, h about 33 km, Easter Islands region.M=5.8 SD 0.3 (CGS).
- 6 eZ Pn 20 48 51.3, iZ Pg 20 48 55.0, iZ Sn 20 49 14.4, iZ Sg 20 49 17.8, D=about 200 km, Zagreb: Bilo Gora, Croatia.
- 7 eZ P 02 56 36.2, iZ 02 57 41.0, traces. Roma: felt at Terni, Italy.
- 7 eiZ P or PKP 07 11 51.5
- 7 eZ PKP 08 40 56.9, USCGS: H= 08 22 55.9, 3.0 S, 130.3 E, h about 33 km (R), Ceram region.M=4.8 (CGS).
- 7 eZ PKP 13 27 47.6, Z pPKP 13 28 (00), USCGS: H= 13 07 53.2, 18.4 S, 173.7 W, h about 33 km, Tonga Islands region.M=4.5 (CGS).
- 7 Z P 15 02 (00), USCGS: H= 14 49 31.2, 36.3 N, 141.0 E, h about 36 km, Near east coast of Honshu, Japan.M=5.0 (CGS).
- 7 eZ P or PKP 17 06 06.2
- 7 Z PP 20 29 (00), USCGS: H= 20 10 15.9, 30.4 S, 67.6 W, h about 29 km, La Rioja Province, Argentina.M=5.2 (CGS).
- 7 eiZ P 20 43 09.1, USCGS: H= 20 30 55.5, 45.3 N, 150.9 E, h about 33 km, Kurile Islands.M=5.0 SD 0.3 (CGS).
- 8 iZ Pg 01 03 36.8, iZ! Sg 01 03 38.4, D=10 km, not felt.
- 8 eiZ PKP 02 45 37.9, USCGS: H= 02 26 42.3, 22.1 S, 179.5 W, h about 554 km, Tonga Islands region.M=4.7 (CGS).

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- 8 eZ P or PKP 02 48 48.1
- 8 eZ P or PKP 16 24 (00), iZ 16 24 05.2.
- 9 eZ P 02 37 16.3, BCIS: H= 02 33 37, 37.6 N, 2.4 W, Spain.Cartuja: Spain, Granada Province.Strongly felt at Huescar.USCGS: H= 02 33 39.4, 38.2 N, 2.5 W, h about 33 km, Southeastern Spain.Slight damage at Huescar.M=4.8 (CGS).Pruhonice: M=4.4.
- 9 iZ PKP 15 21 12.9, USCGS: H= 15 02 21.6, 19.2 S, 177.6 W, h about 556 km, Fiji Islands.M=4.6 SD 0.3 (CGS).
- 10 eiZ PKP 19 33 23.2, iZ 19 33 33.9, iZ 19 34 15.9, USCGS: H=19 13 52, 18.0 S, 167.9 E, h about 47 km, New Hebrides Islands.Felt:Port Vila.M=5.3 (CGS).
- 10 eiZ P 22 30 25.3, iZ 22 30 27.1, iZ pP 22 31 04.4, iZ PP 22 33 42.7, USCGS: H= 22 16 44.8, 5.0 N, 127.4 E, h about 146 km, Taland Islands region.Felt:Gen.Santos and Hinatrian, Philippines.M=5.5 (CGS).
- 11 iZ PKP 01 24 47.4, USCGS: H=01 05 20.2, 19.5 S, 175.4 W, h about 272 km, Tonga Islands.M=4.5 (CGS).
- 11 eZ P 18 04 28.7, USCGS: H= 17 51 51.5, 9.2 S, 89.5 E, h about 33 km, Indian Ocean, 2000 km east of Chagos Archipelago.
- LJU 12 PeZ 04 11 42.5, eZ 04 12 54.6, traces.
- 12 eZ P 16 09 27.2, eZ pP 16 10 20.4, USCGS: H= 15 56 21.3 11.4 N, 124.9 E, h about 183 km, Cebu, Philippine Islands, M=5.5 (CGS).
- 12 eZ PKP<sub>1</sub> 18 31 03.3, iZ PKP<sub>2</sub> 18 31 37.9, USCGS: H= 18 12 20.5, 26.5 S, 178.3 E, h about 648 km, South of Fiji Islands. M=5.3 (CGS).
- 12 eZ Pn 21 44 26.3, iZ Pg 21 44 42.2, eZ Sn 21 45 16.3, iZ Sx 21 45 28.4.D=470 km.
- 13 Z P or PKP 03 30 (00).
- 13 eZ P 04 33 03.6, USCGS: H= 04 20 53.5, 53.6 N, 172.1 E, h about 33 km, Near Islands, Aleutian Islands.M=5.1 (CGS).
- 13 eiZ P 08 35 24.4, eiZ pP 08 35 44.9, USCGS: H= 08 23 45.6, 10.0 N, 93.0 E, h about 33 km, Indian Ocean, 2200 km east of Chagos Archipelago, M=6.1 (CGS).
- 13 eZ Pn 10 15 21.3, iZ Sn 10 15 42.3, iZ Sg 10 15 47.4, D=180 km.
- 13 iZ Pn 11 57 59.0, iZ Pg 11 58 04.7, iZ Sn 11 58 26.4, iZ Sg 11 58 34.9, D=240 km.
- 13 eZ P 17 46 44.8, USCGS: H= 17 35 57.8, 23.0 N, 94.0 E, h about 61 km, Burma.M=5.8 (CGS).
- 13 eZ PKP 22 51 48.8, USCGS: H= 22 31 53.5, 27.6 S, 178.3 W, h about 14 km, Kermadec Islands region.M=5.2 (CGS).
- 14 eZ (Pg) 06 33 03.3, eiZ 06 33 09.9, traces.

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- 14 iZNE- P 12 20 01.2, iZ! 12 20 07.6, iNE S 12 23 44.2, BCIS: H= 12 15 33, 38.0 N, 38.6 E, h about 33 km, (Determination by electronic calculating machine), Eastern Turkey. Istanbul-Kandilli: considerable damage in the regions of Malatya (38° 21' N, 38° 19' E) and Adiyaman (37° 45' N, 38° 16' E). Several villages damaged. One killed, 15 gravely injured, 500 slightly injured; formation of splits 1 km long. Istanbul TU: felt at Kaesery, Elazig, Ereinean, Erzerum, Sivas Ourfa. Strasbourg: M=6, Ksara: M=6.5. USCGS: H= 12 15 31.3, 38.0 N, 38.5 E, h about 8 km, Southern Turkey. One killed and 15 injured, extensive property damage at Malatya and Adiyaman. Fissure about 800 m at Malatya.
- 14 eZ P 12 42 30.4, aftershock, Turkey. BCIS: H= 12 38 02, aftershock eastern Turkey. Ksara: M=5.2, USCGS: H= 12 38 03.7, 38.1 N, 38.3 E, h about 31 km, Southern Turkey. M=4.7 (CGS).
- 14 eZ P or PKP 16 46 03.1,
- 14 eiZ Pn 16 51 40.9, iZ Pg 16 51 50.7, iZ Sn 16 52 23.6, iZ Sg 16 52 37.7, D=390 km.
- 15 eZ+ P 00 17 43.5, iZ 00 17 55.9, USCGS: H= 00 05 31.1, 5.4 N, 97.0 E, h about 33 km, Northern Sumatra, M=5.5 (CGS).
- 15 eZ P or PKP 01 19 16.9.
- 15 eiZ PKP 02 25 12.1, USCGS: H= 02 05 37.1, 17.4 S, 174.9 W, h about 148 km, Tonga Islands region. M=4.5 (CGS).
- 15 eiZ P 11 05 21.6, USCGS: H= 10 53 06.7, 40.1 N, 138.5 E, h about 15 km, Sea of Japan. M=5.2 (CGS).
- 16 eZ+NE P 04 14 01.8, iZ!! 04 14 21.4, eNE S 04 24 24, eNE M 04 55 (00), USCGS: H= 04 01 44.3, 38.3 N, 139.1 E, h about 57 km, Near west coast of Honshu, Japan; 25 killed, many injured and extensive property damage at Niigata; 7 feet tsunami along coastal areas. M=7 1/4-7 1/2 (Pas), 7 1/4 (Pal), 6.1 (CGS).
- 16 eZ P 07 05 27.3, USCGS: H= 06 53 05.0, 38.7 N, 139.0 E, h about 15 km, Near west coast of Honshu, Japan. M=5.6 (CGS).
- 16 eiZ P 07 27 10.4, USCGS: H= 07 14 57.1, 38.5 N, 139.2 E, h about 16 km, Near west coast of Honshu, Japan. M=4.5 (CGS).
- 16 iZ Pg 15 40 35.6, iZ Sg 15 40 39.4, D=30 km.
- 17 eZ P 13 40 15.9, USCGS: H= 13 38 16, 45.7 N, 26.5 E, h about 145 km, Rumania.
- 18 eZ 11 18 02.8, eZ Sn 11 18 17.0.
- 19 eZ Pn 00 53 45.8, eZ Sn 00 56 21.7, eZ 00 58 07.5, BCIS: H= 00 50 23, 40.8 N, 32.8 E, Northern Turkey (north-anatolian cicatrice near Cerkes). Istanbul TU:

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- 19 (cont.) Felt at Ankara and Cankisi. USCGS: H= 00 50 24.4, 40.7 N, 32.9 E, h about 33 km. Turkey. M=4.6 (CGS).
- 19 eZ Pn 05 48 18.8, eZ 05 48 27.3, eZ Sn 05 49 02.6, D=400 km.
- 19 iZ- P 10 17 56.0, eZ PP 10 21 07.6, USCGS: H= 10 05 36.4, 38.8 N, 139.3 E, h about 30 km, Near west coast of Honshu, Japan. M=5 1/2 (Brk), 5.6 (CGS). Felt: Niigata, Japan.
- 19 eZ P 10 47 04.7, USCGS: H= 10 34 33.6, 22.6 N, 121.0 E, h about 33 km, Taiwan. M=5.2 (CGS).
- 19 eiZ P or PKP 16 42 53.8.
- 20 iZ Pg 23 23 05.8, iZ Sg 23 23 08.1, D=16 km.
- 21 eZ P 01 45 07.0, eZ pP 01 45 34.6, eZ PP 01 45 15.7, USCGS: H= 01 33 11.2, 51.0 N, 157.0 E, h about 51 km, Kamchatka. M=5.7 (CGS).
- 21 eZ P 21 26 38.1, USCGS: H= 21 16 32.2, 14.0 N, 46.9 W, h about 51 km, North Atlantic Ocean. M=4.7 (CGS).
- 21 eZ PKP 22 41 06.6, USCGS: H= 22 21 22.7, 16.3 S, 178.0 E, h about 18 km, Fiji Islands. M=5.0 (CGS).
- 21 eiZ PKP 23 16 12.5, USCGS: H= 22 56 00, 20.8 S, 175.6 E, h about 33 km, Fiji Islands region. M=4.7 (CGS).
- 22 eZ PKP 00 36 09.4, USCGS: H= 00 16 27.4, 15.7 S, 172.8 W, h about 33 km, Samoa Islands. M=5.1 (CGS).
- 22 eZ PKP 03 22 50.9, eZ PP 03 25 45.4, USCGS: H= 03 03 37.9, 10.4 S, 161.1 E, h about 70 km, Salomon Islands. M=5.4 (CGS).
- 22 eZ PKP 13 59 50.0, USCGS: H= 13 40 02.8, 25.1 S, 177.4 W, h about 121 km, Fiji Islands region. M=5.7 (CGS).
- 23 iZ+! P 01 38 45.8, eNE 01 38 46, iZ PP 01 41 32.5, iZ PPP 01 43 35.5, eNE S 01 48 47, USCGS: H= 01 26 37.0, 43.3 N, 146.1 E, h about 77 km, Kurile Islands. M=7 (Pas), 6 3/4-7 (Brk), 6 3/4 (Pal), 6.2 (CGS).
- 23 eZ P 04 43 49.3, USCGS: H= 04 32 19, 13.9 N, 94.7 E, h about 33 km, Andaman Sea.
- 23 iZ Pn 06 39 35.3, iZ Pb 06 39 43.5, iZ Sn 06 40 33.7, iZ! 06 40 39.5, D=530 km. BCIS: H= 06 38 55, about 43.5 N, 14.5 E, Adriatic Sea.
- 23 eZ Pn 10 17 08.0, eiZ Sn 10 17 58.5, D=540 km.
- 24 From 04<sup>h</sup> 48<sup>m</sup> to 10<sup>h</sup> 56<sup>m</sup> no time marks.
- 25 iZ Pg 03 40 53.0, iZ Sg 03 41 08.0, D=120 km.
- 25 eZ P or PKP 12 10 37.9, traces.
- 26 eZ P or PKP 13 28 41.4, traces.
- 27 eZ P 02 37 12.3, USCGS: H= 02 28 57.1, 40.4 N, 77.5 E, h about 33 km, Sinkiang Province, China. M=5.0 (CGS).
- 27 iZ Pn 10 01 07.7, iZ Sn 10 01 33.3, D=230 km. BCIS: H= 10 00 37, Premonitory Austro-Hungarian border.

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- 27 eZ P 16 54 12.1, USCGS: H= 16 43 47.0, 11.5 S, 13.8 W, h about 33 km, Ascension Island region. M=4.7 (CGS).
- 28 eZ P 11 19 22.7, USCGS: H= 11 15 22, 34.6 N, 32.2 E, h about 81 km, Eastern Mediterranean Sea.
- 28 eiZ PKP 13 10 31.2, USCGS: H= 12 51 34.6, 1.7 S, 149.6 E, h about 7 km, New Ireland region. Felt. M=5 3/4-6 (Brk), 6.4 (CGS).
- 28 eiZ PKP 15 11 05.9, eiZ! 15 11 13.1, eiZ PP 15 14 30.8, USCGS: H= 14 52 08.4, 13.2 S, 167.1 E, h about 215 km, New Hebrides Islands. M=5.4 (CGS).
- 28 iZ+ P 15 27 57.1, BCIS: H= 15 22 45, about 37 1/4 N, 14 W, Atlantic Ocean, off west coast of Portugal. USCGS: H= 15 22 43, 37.4 N, 14.3 W, h about 33 km, about 400 km off southwest coast of Portugal. M=4.6 (CGS).
- 28 eZ (Pn) 16 57 48.2, eZ Sn 16 58 23.6, (D=about 320 km), traces.
- 28 eZ P 17 17 02.9, USCGS: H= 17 07 07.0, 3.5 N, 32.4 W, h about 33 km, North Atlantic Ocean. M=4.6 (CGS).
- 28 iZ P 17 37 55.0, USCGS: H= 17 27 59.8, 4.0 N, 32.4 W, h about 33 km, North Atlantic Ocean, M=5 1/4-5 1/2 (Pal), 5.3 (CGS).
- 29 eZ PKP 07 32 10.4, USCGS: H= 07 12 06, 17.5 S, 173.5 W, h about 33 km, Tonga Islands, M=4.1 (CGS).
- 29 eiZ P 07 32 49.8, USCGS: H= 07 21 32.8, 62.7 N, 152.0 W, h about 33 km, Southern Alaska. Felt: College, Alaska M=5.6 (CGS).
- 30 eZ Pn 01 38 50.9, iZ Pb 01 39 00.5, iZ Pg 01 39 11.7, iZ Sn 01 39 46.5, iZ Sb 01 40 03.1, iZ! Sg 01 40 12.3, D=510 km, Roma: felt Gargano region at Manfredonia, S. Giovanni, Rotondo Monte, S. Angelo (Foggia).
- 30 iZ Pg 08 25 46.9, iZ Sg 08 25 49.4, D=15 km.
- Lju 30 eiZ {P} 12 14 53.8, traces.
- 30 eiZ-NE Pn 12 30 33.9, iZ! Pg 12 30 38.2, iZNE! Sn 12 31 00.7, D=230 km. BCIS: H= 12 30 02, 47.7 N, 16.0 E, (Determination by electronic calculating machine), Austra-Hungarian border. Wien: largely felt 4-5<sup>o</sup> MCS in Austria (Low Austria, Styria, Burgenland), M=4.7 (Prdhonice), USCGS: H= 12 30 03.3, 47.8 N, 16.0 E, h about 33 km, Eastern Austria. Felt. M=4.6 (CGS).
- Lju 30 iZ {Pg} 12 40 17.9, BCIS: H= 12 39 44, aftershock Austria.
- 30 iZ Pg 12 42 45.2, iZ Sn 12 43 06.2, BCIS: H= 12 42 12, aftershock, Austria.
- 30 iZ Pg 12 47 35.0, BCIS: H= 12 46 57, aftershock Austria.
- 30 eZ P 14 00 17.4, eiZ PKP 14 04 41.5, USCGS: H= 13 46 21.6, 0.8 S, 122.5 E, h about 36 km, Northern Celebes, M=6.3 (CGS).

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- 30 eiZ P 16 00 54.3, eZ PP 16 D3 18.8, USCGS: H= 15 48 43, 45.9 N, 150.4 E, h about 33 km, Kurile Islands. M=6.0 (CGS).
- 30 Z Pg 17 10 (00), iZ Sn 17 10 18.8, BCIS: H= 17 09 21, aftershock of earthquake of June 30, at 12 30 02.
- 30 eiZ+ P 20 19 46.7, USCGS: H= 20 08 28.5, 46.6 N, 144.6 E, h about 383 km, Sea of Okhotsk, M=5.5 (CGS).

Ljubljana, April 3, 1965

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1964

P R E L I M I N A R Y S E I S M O L O G I C A L  
B U L L E T I N

(July 1964 - September 1964)

University of Ljubljana  
 Astronomical and Geophysical  
 Observatory,  
 Ljubljana, Trg revolucije 11,  
 P.O.B.20- Yugoslavia

PRELIMINARY SEISMOLOGICAL BULLETIN  
 from July 1 to September 30,  
 1964

Station: Ljubljana- Coordinates:  $46^{\circ} 02.6' N$  Lat.  
 $14^{\circ} 32.0' E$  Long.

Geocentric direction cosines:  $a=+ 6743$ ,  $b=+1748$ ,  $c=+ 7175$ ,  
 $d=- 8$ ,  $h=- 4$ ;

Height: 396 m;

Lithologic foundation: sandstone (carbon);

Instruments:

Wiechert, horizontal astatic seismograph,  $M=200$  kg,  
 mechanical registration, 16 mm/min;

Constants ( 15.VIII.1964):

Component	$T_0$	$v:1$	$r/T_0^2$	$v$
N-S	4.9	2.9:1	0.029	57
E-W	4.8	2.8:1	0.026	60

Hiller-Stuttgart, vertical component Z with galvanometrical  
 recording;  $T_0=1.5$  sec,  $T_g=1.5$  sec,  $D_1=D_2=1$ ,  
 $V_{max}=10\ 150$  x, velocity of registration: 60 mm/min.

Note: Periods of seismic waves are given in seconds, the  
 amplitudes in microns; sign+ means compression, movement of  
 ground towards north or east, sign - means dilatation, or  
 movement towards south or west. All times are given in GMT.  
 Time signals are received one or two times daily from  
 Pontoise, Potsdam or Moscow and are registered on a chrono-  
 graph. Wherever possible time readings up to one tenth of  
 a second are given.

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- 1 iZ+ P 02 59 36.0, USCGS: H= 02 47 33.9, 46.3 N, 146.9  
 E, h about 33 km, Kurile Islands,  $M=5$  (PAL), 5.4 (CGS).
- 1 Z P 09 59 (00), USCGS: H= 09 46 49.6, 45.2 N, 150.3 E,  
 h about 75 km, Kurile Islands,  $M=5-5\ 1/4$  (PAL), 4.8  
 (CGS).
- 1 eiZ P 20 17 50.1, USCGS: H= 20 09 31.2, 30.9 N, 41.5

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- 1 (cont.) W, h about 33 km, North Atlantic Ocean, M=5.0 (CGS).
- 1 Z P 22 59 (00), USCGS: H= 22 46 18.7, 31.1 N, 139.6 E, h about 147 km, South of Honshu, Japan, M=5.1 (CGS).
- 2 eZ P 01 30 33, USCGS: H= 01 19 02.7, 60.1 N, 146.0 W, h about 14 km, Alaska aftershock. M=5 1/4 (PAL), 5.1 (CGS).
- 3 eZ P 19 26 13, USCGS: H= 19 18 34.0, 11.0 N, 39.3 E, h about 60 km, Central Ethiopia. M=5.0 (CGS).
- 4 iZ+ P 11 03 44.3, eZ PP 11 07 16, USCGS: H=10 49 28.8, 11.7 N, 144.5 E, h about 33 km, Mariana Islands. M=6.0 (CGS).
- 4 eZ- Pn 11 13 12, iZ! 11 13 14.5, iZ 11 13 42.9, iZ 11 14 33.0, eEN 11 14 53, eEN S 11 16 21, BCIS: H= 11 11 20, 42.0 N, 23.5 E, Rhodope, Bulgaria; Sofia: felt VI<sup>0</sup> MCS at Razlog (41° 55' N, 23° 32' E), USCGS: H= 11 11 20.0, 42.2 N, 23.6 E, h about 10 km, Southwestern Bulgaria. Felt: Razlog. M=4.7 (CGS).
- 4 iZ- Pn 15 03 44.4, iZ Sn 15 37 04.3, D=490 km.
- 4 eZ 16 35 44, iZ 16 37 04.3, traces.
- 5 eZ (Pn) 04 55 47, eZ Sn 04 57 19, obscured by microseisms, D=880 km, BCIS: H= 04 53 10, West of Peloponnesos, Ionian Sea.
- 5 eZ Pn 07 14 24, iZ Pg 07 14 29.3, iZ Sn 07 14 48.7, D=210 km.
- 5 eZ(Pg) 23 08 27, iZ Sg 23 08 35.0, (D=60 km).
- 5 iZ+ P 23 48 13.7, iZ PP 23 51 23.0, USCGS: H= 23 36 01.5, 44.8 N, 149.6 E, h about 54 km, Kurile Islands, M=6 1/4 (PAS), 6-6 1/4 (PAL), 5.5 (CGS).
- 6 eEN 02 07 40 traces.
- 6 iZNE- P 07 35 18.0, iZ! 07 35 45.1, iZ pP 07 36 01.5, EN S 07 46 (00), USCGS: H= 07 22 11.7, 18.3 N, 100.4 W, h about 100 km, Guerrero, Mexico. More than 30 killed many injured and considerable property damage in Guerrero. M=6 3/4-7 (Pas), 6 3/4-7 (BRK), 7 1/4-7 1/2 (PAL), 6.3 (CGS).
- 6 iZEN Pg 07 47 27.7, iZNE Sg 07 47 30.4, D=15 km, Felt 4<sup>0</sup> MCS at Laze and in the valley of Sava, east from Ljubljana.
- 6 iZ- P 10 21 44.0, iZ 10 22 (00), iZ PP 10 23 22.6, USCGS: H=10 03 45.2, 37.1 N, 71.4 E, h about 100 km, Hindu Kush. M=5.9 (CGS).
- 6 eiZ PKP 14 38 12.5, USCGS: H= 14 19 46.3, 6.9 S, 129.6 E, h about 100 km, Banda Sea, M=5.8 (CGS).
- 6 eZ PKP 20 10 32, USCGS: H= 19 50 42.1, 21.2 S, 173.8 E, h about 22 km, New Hebrides Islands region. M=4.8 (CGS).

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- 7 iZ+ PKP 07 58 02.1, iZ pPKP 07 58 11.1, eZ PP 08 00 19, USCGS: H= 07 39 04.2, 23.6 S, 179.9 W, h about 492 km, Fiji Islands region. M=5.5 (CGS).
- 7 iZ Pn 13 59 11.1, iZ! Pb 13 59 12.5, iZ! Pg 13 59 17.1, eEN 13 59 17.8, iZ Sn 13 59 42.0, iZ! Sg 13 59 52.7, eEN S 13 59 54.6, D=280 km, BCIS: H= 13 58 32, 43.9 N, 16.0 E, Yugoslavia, Dalmatian coast. Zagreb: felt in Split. USCGS: H= 13 58 31.0, 43.9 N, 16.1 E, h about 36 km, Near coast of Yugoslavia. Felt: Split. M=4.7 (CGS).
- 7 eZ P 21 20 49, USCGS: H=21 12 33.6, 35.8 N, 73.4 E, h about 19 km, Hindu Kush. M=5.2 (CGS).
- 8 eZ 01 37 54, traces, USCGS: H= 01 32 56.3, 34.9 N, 21.7 E, h about 18 km, Eastern Mediterranean Sea, M=4.3 (CGS).
- 8 eZ PKP 01 54 50, USCGS: H= 01 35 02.5, 15.3 S, 173.1 W, h about 33 km, Tonga Islands, M=4.8 (CGS).
- 8 eZ 08 03 09, eZ PP 08 04 12, USCGS: H= 07 45 48.6, 3.2 N, 128.4 E, h about 50 km, Molucca Passage, M=5.5 (CGS).
- 8 eZ P 12 08 21, iZ PKP 12 13 55.0, iZ pPKP 12 14 31.0, iZ PP 12 14 44.4, USCGS: H= 11 55 39, 5.5 S, 129.8 E, h about 165 km, Banda Sea, M=6.5 (CGS).
- 8 eZ Pg 13 10 17, iZ Sg 13 10 20.0, D=25 km.
- 9 eZ P 03 44 55, USCGS: H= 03 38 10.8, 29.3 N, 52.7 E, h about 55 km, Southwestern Iran.
- 9 eZ P 06 00 02, USCGS: H= 05 47 09.2, 15.4 N, 119.8 E, h about 53 km, Near west coast of Luzon, Philippine Islands, Felt: Manila. M=5.5 (CGS).
- 9 eZ PKP 11 41 54, iZ PKP 2 11 42 28.0, eZ PP 11 45 56, USCGS: H= 11 22 05.4, 23.3 S, 175.7 W, h about 43 km, Tonga Islands, M=5 1/2-5 3/4 (BRK), 5.7 (CGS).
- 9 eZ P 12 14 52, USCGS: H= 12 02 11.9, 34.2 N, 140.9 E, h about 49 km, Off east coast of Honshu, Japan. M=5.0 (CGS).
- 9 eZ+ NE PKP 16 59 03, iZ!! 16 59 05.8, iZNE!! PP 17 02 36.5, USCGS: H= 16 39 49.3, 15.5 S, 167.6 E, h about 121 km, New Hebrides Islands. M=7 1/2 (PAS), 7 1/2-7 3/4 (BRK), 6.6 (CGS).
- 10 eZ P 01 27 15, USCGS: H= 01 17 53.3, 0.6 S, 19.8 W, h about 33 km, Mid-Atlantic Ocean, M=4.6 (CGS).
- 11 eZ P 17 50 15, obscured by microseisms, USCGS: H= 17 44 29.8, 66.4 N, 19.7 W, h about 19 km, Northern Iceland. M=4.9 (CGS).
- 11 eZ P 20 38 43, USCGS: H= 20 25 40.3, 59.7 N, 146.2 W, h about 40 km, Alaska aftershock. M=5-5 1/4 (BRK), 5 1/2 - 5 3/4 (PAL), 5.6 (CGS).
- 12 eZ P 01 57 48, eZ PP 01 58 05, USCGS: H= 01 45 25.6,

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- 12 (cont.) 38.6 N, 139.2 E, h about 13 km, Near west coast of Honshu, Japan. Felt. M=5 1/4-5 1/2 (PAL), 6.0 (CGS).
- 12 eZ P 20 26 32, eZ(PP) 20 27 19, USCGS: H= 20 15 59.0, 24.9 N, 95.3 E, h about 155 km, Northwestern Burma. M=6.7 (CBS).
- 12 eZ 23 35 46, eZ 23 36 25, eZ 23 37 10, traces.
- 13 iZ PKP 01 33 25.6, USCGS: H= 01 14 33.5, 20.7 S, 178.7 W, h about 575 km, Fiji Islands. M=4.9 (CGS).
- 13 iZ P 11 09 28.5, iZ pP 11 09 54.9, eZ PP 11 11 13, USCGS: H= 10 58 47.7, 23.7 N, 94.7 E, h about 117 km, Northwestern Burma. M=6.5 (CGS).
- 13 eZ P 12 07 26, USCGS: H= 11 54 50.7, 42.5 N, 126.7 W, h about 33 km, Near coast of Oregon. M=5.6 (CGS).
- 13 iZ PKP 15 13 03.1, USCGS: H= 14 53 27.0, 20.9 S, 169.9 E, h about 89 km, New Hebrides Islands. M=5.1 (CGS).
- 13 eZ P 21 12 18, USCGS: H= 21 02 33.3, 7.7 N, 34.7 W, h about 33 km, North Atlantic Ocean, M=5.2 (CGS).
- 14 eZ P 05 36 56, BCIS: H= 05 33 56, 57.2 N, 07.3 E, North Sea, southwest of Skagerrak. Bergen: felt on extreme point of Norway. USCGS: H= 05 33 55.1, 57.0 N, 7.3 E, h about 33 km, Near south coast of Norway. Felt. M=5.1 (CGS).
- 14 eZ P 10 06 35, USCGS: H= 09 55 24.4, 19.0 N, 66.5 W, h about 46 km, Puerto Rico. Felt. M=4 1/4-4 1/2 (PAL), 4.8 (CGS).
- 14 eZ 10 42 51, traces.
- 14 eZ+ P 14 10 17, iZ 14 10 18.2, USCGS: H= 13 58 28.5, 53.3 N, 159.7 E, h about 40 km, Near east coast of Kamchatka. M=5.5 (CGS).
- 14 eZ 15 49 07, traces.
- 15 eZ 05 01 (00), traces.
- 15 eZ P 07 38 20, USCGS: H= 07 26 01.4, 52.1 N, 170.6 W, h about 30 km, Fox Islands, Aleutian Islands. M=4 3/4-5.
- 15 eZ P 09 52 15, eZ 09 52 39, eZ 09 53 16, BCIS: H=09 49 06, 35 1/2 N, 4 1/4 E, h about 33 km. Determination by electronic calculating machine; USCGS: H= 09 49 05.8, 35.2 N, 4.5 E, h about 39 km, Algeria. Felt. M=4.3 (CGS).
- 15 eZ P 19 08 43, USCGS: H= 18 56 26.0, 44.0 N, 148.1 E, h about 30 km, Kurile Islands. M=5.5 (CGS).
- 16 eZ P 10 49 38, USCGS: H= 10 37 23.1, 44.0 N, 148.3 E, h about 33 km, Kurile Islands. M=4.8 (CGS).
- 16 eZ 13 44 04, traces.
- 16 eZ P 16 17 54, USCGS: H= 16 07 18.3, 0.3 N, 67.0 E, h about 33 km, Indian Ocean, northwest of Chagos Archipelago. M=5.1 (CGS).

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- 17 iZ+ NE Pn 02 36 51.2, iZNE! Sn 02 38 45.0, BCIS: H=02 34 26, 38.0 N, 23.5 E, h about 160 km. North point of Salamina Island, 20 km east from Athene. Press: strong shock felt at Nauplie (120 km to SW from Athenes, 37° 32' N, 22° 50' E) where the inhabitants and tourists were panic-struck. USCGS: H= 02 34 26.9, 38.2 N, 23.7 E, h about 150 km. Southern Greece. Felt. M=5 1/2-5 3/4 (BRK), 5.4 (CGS).
- 17 iZ- P 04 53 10.6, iZ 04 53 29.1, USCGS: H=04 41 05.1, 49.3 N, 158.6 E, h about 50 km, Kurile Islands. M=4 3/4 (BRK). 5.4 (CGS).
- 17 eZ Pn 20 31 39, eZ 20 32 30;
- 17 eZ P 23 06 57, iZ 23 06 58.2, USCGS: H=22 54 42.2, 44.6 N, 149.2 E, h about 33 km, Kurile Islands. M=5 (PAL), 5.4 (CGS).
- 18 eZ P 03 43 20, eZ PP 03 43 31, iZ 03 43 57.1, iZ 03 44 32.7, eZ S 03 45 36, D=1550 km. BCIS: H= 03 40 09, 35.7 N, 26.4 E, h about 33 km, Northeast of Creta. USCGS: H= 03 40 21.5, 36.3 N, 26.1 E, h about 115 km, Dodecanese Islands. M=4.9 (CGS).
- 18 eZ PP 13 03 56, USCGS: H= 12 45 47.7, 0.2 N, 123.5 E, h about 97 km, Northern Celebes. M=5.8 (CGS).
- 19 iZ Pg 00 40 26.5, iZ Sg 00 40 30.0, D=27 km, Litija region, east from Ljubljana.
- 19 eZ 05 23 55, eZ Sn 05 24 25, traces.
- 19 iZ+ P 06 07 50.6, BCIS: H= 05 59 59, 49.7 N, 78.0 E, Kazakhstan, Semipalatinsk region (Determination by electronic calculating machine). Uppsala: underground explosion; USCGS: H= 05 59 58.9, 49.9 N, 78.1 E, h about 0 km. Kazakh SSR, M=5.5 (CGS).
- 19 eZ PKP 07 09 24, USCGS: H= 06 50 22.3, 13.8 S, 167.0 E, h about 232 km, New Hebrides Islands. M=4.6 (CGS).
- 19 eZ PKP 13 59 53, USCGS: H= 13 40 06.6, 15.1 S, 173.4 W, h about 33 km, Tonga Islands region. M=4.7 (CGS).
- 19 Z Pg 23 14 (00), iZ Sg 23 14 01.2, D=20 km. not felt.
- 20 eZ P 13 39 34, USCGS: H= 13 31 14, 14.4 N, 53.5 E, h about 33 km, Gulf of Aden.
- 20 eZ PP 19 07 08, USCGS: H= 18 49 43.5, 19.8 N, 109.0 W, h about 33 km, Revilla Giedo Islands region. M=4 1/2 - 4 3/4 (BRK), 5 (PAL), 5.1 (CGS).
- 21 eZ PKP<sub>1</sub> 04 08 30, iZ! PKP<sub>2</sub> 04 09 03.2, USCGS: H= 03 48 59.1, 26.0 S, 178.0 W, h about 222 km, Fiji Islands region. M=6.5 (PAS), 5 1/4-5 1/2 (BRK), 5.8 (CGS).
- 21 eiZ- P 10 05 39.2, USCGS: H= 09 56 16.6, 72.1 N, 130.2 E, h about 33 km, Laptev Sea. M=5.4 (CGS).
- 21 eZ 10 56 50 traces.
- 21 eZ P 11 54 07, USCGS: H=11 46 54.0, 27.7 N, 56.5 E, h about 50 km, Near coast of Southern Iran.



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- 21 eZ P 13 26 14, eZ PP 13 30 (00), USCGS: H= 13 13 00.2, 10.5 N, 121.9 E, h about 34 km, Panay, Philippine Islands. Felt. D=10 500 km.
- 21 eiZ PKP 21 20 46.6, iZ! 21 20 47.2, USCGS: H= 21 01 49.5, 4.6 S, 153.3 E, h about 60 km, New Britain region. Felt: Rabaul. M=4.9
- 21 eZ Pg 22 01 17.8, eiZ Sg 22 01 34.4, D=130 km.
- 22 eZ 04 49 (00), traces.
- 23 eZ 03 56 15, traces.
- 23 eZ P or PKP 09 31 46.
- 23 eZ P 09 49 49, USCGS: H= 09 40 29.2, 0.7 S, 16.3 W, h about 33 km, About 800 km north of Ascension Islands, M=4.8 (CGS).
- 24 eZ P 07 03 03, iZ! 07 03 07.7, USCGS: H= 06 50 52.8, 46.9 N, 153.9 E, h about 33 km, Kurile Islands. M=6 (PAS), 6 (BRK), 5.9 (CGS).
- 24 eZ+ NE P 08 24 50, iZ! 08 24 53.4, USCGS: H= 08 12 40.0, 47.2 N, 153.8 E, h about 33 km, Kurile Islands. M=6 1/2 (PAS), 5.9 (CGS).
- 24 eZ P 12 48 13, traces.
- 24 eZ Pg 12 58 49, iZ Sg 12 58 52.2, D=25 km. Litiija region, not felt.
- 24 iZ- P 13 37 31.0, USCGS: H=13 25 18.3, 47.0 N, 153.7 E, h about 33 km, Kurile Islands. M=5 3/4-6 (BRK), 5.7 (CGS).
- 24 iZ- PKP 14 06 50.9, USCGS: H= 13 47 48.6, 6.6 S, 154.8 E, h about 62 km, Solomon Islands. M=5.6 (CGS).
- 24 eZ P or PKP 16 46 39, traces.
- 24 eZ+ P 17 14 59, iZ! 17 15 07.7, USCGS: H= 17 02 49.2, 47.1 N, 153.6 E, h about 33 km, Kurile Islands. M=6 1/2 (PAS), 6 (BRK), 5.8 (CGS).
- 25 iZ- PKP 12 39 55.2, USCGS: H= 12 20 22.2, 19.9 S, 176.2 W, h about 205 km, Tonga Islands. M=5.3 (CGS).
- 25 eZ PKP 18 38 11, USCGS: H= 18 18 09, 17.1 S, 172.9 W, h about 33 km, Tonga Islands region. M= 4.6 (CGS).
- 25 eZ 19 45 (00), eZ PP 19 49 44, USCGS: H= 19 31 07.0, 27.9 S, 70.9 W, h about 26 km, Northern Chile. Felt: Copiapo & Vallenar. M=6 1/2 (PAS), 6 (BRK), 6.1 (CGS).
- 25 eZ 21 46 07, eZ PP 21 48 (00), USCGS: H= 21 29 33.2, 2.9 N, 128.2 E, h about 22 km, North of Halmahera. M=5.1 (CGS).
- 26 eZ P 14 08 36, USCGS: H= 13 55 37.4, 2.6 N, 78.5 W, h about 38 km, Ecuador. M=5.2 (CGS).
- 26 eZ 17 12 19, eZ 17 13 47, traces.
- 26 eZ P 18 46 48, USCGS: H= 18 34 34.6, 46.8 N, 153.8 E, h about 33 km, Kurile Islands. M=5.2 (CGS).

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- 26 eZ 20 20 19, eZ 20 21 05, traces.
- 26 eZ 20 23 21, eZ Sn 20 23 48, BCIS: H= 20 21 45, 46.2 N, 7.8 E, h about 20 km, Valais (Switzerland), D=about 500 km.
- 27 eZ P 11 10 46, eZ 11 12 32, BCIS: H= 11 09 15, 46° 45' N, 5° 54' E, h=surface; Strasbourg: Jura, France: artificial seism, underground quarry Rivela la Champagnole (Jura). D=670 km.
- 27 eZ P 23 12 49, USCGS: H= 23 00 36.3, 46.8 N, 153.8 E, h about 33 km, Kurile Islands. M=5.3 (CGS).
- 28 eZ P or PKP 02 05 07.
- 28 eZ P 06 31 45, USCGS: H= 06 19 29.8, 45.4 N, 151.3 E, h about 33 km, Kurile Islands. M=4.7 (CGS).
- 28 eZ PKP 11 05 48, USCGS: H= 10 46 00.6, 16.0 S, 172.6 W, h about 33 km, Samoa Islands region. M=4.6 (CGS).
- 28 eZ PKP 18 59 39, iZ 18 59 42.0, eZ PP 19 03 11, USCGS: H=18 40 04.3, 51.2 S, 139.0 E, h about 33 km, About 1000 km southwest of Tasmania. M=5.3 (CGS).
- 28 iZ- P 21 50 19.2, iZ! 21 50 23.5, iZpP 21 50 24.9, eZ S 21 59 52.0, USCGS: H= 21 38 43.5, 14.3 N, 96.2 E, h about 33 km, Andaman Islands region. M=5.5 (CGS), D= 8200 km.
- 28 eZ P or PKP 22 24 18.
- 28 eiZ- P 22 58 12.8, USCGS: H= 22 46 34.0, 14.1 N, 96.1 E, h about 14 km, Andaman Islands region. M=5.6 (CGS).
- 29 eZ P or PKP 00 10 27.
- 29 eZ P 01 44 55, BCIS: H= 01 42 31, about 46.6 N, 9 1/4 E, h=surface, Grisons (Switzerland).
- 29 eiZ 10 49 23.2, iZ 10 49 50.0, iZ!(Sg) 10 50 02.9,
- 29 eZ P 13 50 27, USCGS: H= 13 38 52.3, 14.3 N, 96.1 E, h about 33 km, Andaman Islands region.
- 30 eZ PKP<sub>1</sub> 01 40 45, iZ PKP<sub>2</sub> 01 40 50.1, USCGS: H= 01 22 10.1, 17.7 S, 178.2 W, h about 643 km, Fiji Islands region. M=4.3 (CGS).
- 30 eZ P or PKP 03 27 - ;
- 30 eZ P 05 28 57, eZ pP 05 29 09, eZ PP 05 32 34, USCGS: H=05 16 03.3, 11.1 N, 86.2 W, h about 42 km, Near west coast of Costa Rica. Felt: Balboa Heights, C.Z., M=5 3/4-6 (PAL), 5.7 (CGS).
- 30 eZ P 23 03 54, USCGS: H= 22 52 19.4, 14.3 N, 96.2 E, h about 33 km, Andaman Islands region.
- 31 eZ P 04 17 24, USCGS: H= 04 05 06.2, 44.6 N, 151.6 E, h about 53 km, Kurile Islands. M=5.5 (CGS).
- 31 eZ PKP 06 11 12, eZ 06 11 35, USCGS: H= 05 52 18.8, 6.1 S, 149.4 E, h about 63 km, New Britain. Felt. M=5.9 (CGS).

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- 31 eZ PKP 06 45 35, obscured by preceding shock. USCGS: H= 06 26 36.7, 25.7 S, 179.6 W, h about 429 km, South of Fiji Islands. M=5.1 (CGS).
- 31 eZ P 21 30 07, eZ PP 21 31 45, USCGS: H= 21 22 24.3, 86.4 N, 38.5 E, h about 33 km, Arctic Ocean. M=4.9 (CGS), D=3850 km.
- 31 iZ P 23 53 41.0, eZ PP 23 55 19, USCGS: H= 23 45 55.2, 86.3 N, 40.5 E, h about 10 km, Arctic Ocean. M=4 3/4-5 (BRK), 5.3 (CGS). D=3900 km.

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- 1 eZ 11 45 48, traces.
- 2 eZ P 08 48 10, USCGS: H= 08 36 16.9, 56.2 N, 149.9 W, h about 31 km, Alaska aftershock. M=6 (PAS), 4 3/4-5 (BRK), 5 1/4 (PAL), 5.4 (CGS).
- 2 iZ- Pn 08 56 42.7, iZ Pg 08 56 52.2, iZ Sn 08 57 12.2, iZ Sg 08 57 21.3, D=270 km.
- 2 iZ-NE Pn 10 41 14.9, iZ! 10 41 16.7, iZ! Pg 10 41 35.8, iZ! Sn 10 41 51.1, eEN Sn 10 41 54.8, D=330 km. BCIS: H= 10 40 26, 43.1 N, 13.0 E, h=surface (Determination by electronic calculating machine). Press: felt at Macerata (43° 17' N, 13° 28' E) and Foligno, Umbria (42° 57' N, 12° 40' E). Central Italy. Rather violent shocks have caused some damage: shipping of ground and splits in the buildings. USCGS: H= 10 40 23.7, 43.0 N, 13.0 E, h about 33 km, Central Italy. Slight damage in Foligno and Macerata. M=4.5 (CGS).
- 2 eZ 19 27 26, iZ (Sg) 19 27 29.7.
- 3 iZ+ P 07 57 18.5, USCGS: H= 07 44 44.3, 22.6 N, 121.3 E, h about 33 km, Near south coast of Taiwan. M=5.4 (CGS).
- 3 Z Pn 13 17 (00), eZ (Sn) 13 17 38, D=about 345 km, aftershock of 2nd August 1964 which occurred in Central Italy.
- 3 eZ 14 49 12, eZ (Sn) 14 49 50, aftershock of 2nd August 1964, Central Italy.
- 3 eZ 19 37 55, eZ (Sn) 19 39 01, traces.
- 4 eZ 00 27 37, eZ (Sn) 00 28 43, traces.
- 4 eZ Pn 01 04 18, iZ Pg 01 04 28.5, iZ Sn 01 04 55.2, aftershock of 2nd August 1964, Central Italy. D=350 km.
- 4 eZ Pn 02 01 28, eZ Pg 02 01 38, eZ Sn 02 02 09, D=370 km.
- 4 eZ 02 27 11, iZ Sn 02 27 57.2, traces.
- 4 eZ 02 30 20, eZ (Sn) 02 31 03, traces.
- 4 eZ Pn 09 48 44, iZ Pg 09 48 55.3, eZ Sn 09 49 19, D=300 km, aftershock of 2nd August 1964, Central Italy.

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- 4 eZ (Sn) 09 58 26, traces.
- 4 eZ Pn 09 59 37, iZ Pg 09 59 48.0, iZ Sn 10 00 14.0, D=320 km.
- 4 eiZ- P 17 36 31, eZ PP 17 39 30, D=8650 km. USCGS: H= 17 24 29.2, 46.5 N, 151.1 E, h about 101 km. Kurile Islands. M=5 1/2-5 3/4 (BRK), 5.9 (CGS).
- 4 eZ Pn 20 53 (00), eZ Pg 20 53 10.6, iZ Sn 20 53 37.8, D=345 km, Aftershock of 2nd August 1964, Central Italy.
- 4 eZ 23 24 30, traces.
- 4 eZ 23 56 15, eZ 23 56 57, traces.
- 4 eZ Pn 23 59 17, iZ Pg 23 59 26.8, iZ Sg 23 59 53.0, aftershock of 2nd August 1964, Central Italy. D=320 km.
- 5 eZ Pn 00 03 40, eZ Sn 00 04 17, D=320 km.
- 5 eZ 02 07 30, traces.
- 5 eZ 04 06 52, traces.
- 5 eZ Pn 04 08 53, iZ Pg 04 09 07.0, iZ Sn 04 09 33.1, aftershock of 2nd August 1964, Central Italy. D=370 km.
- 5 iZ P 04 37 16.2, iZ 04 38 34.8, USCGS: H= 04 24 51.3, 27.1 N, 128.1 E, h about 144 km, Ryukyu Islands. M=5.1 (CGS).
- 5 eZ Pn 10 42 33, iZ Pg 10 42 43, iZ Sn 10 43 04.0, D=300 km.
- 5 eZ+ PKP<sub>1</sub> 11 25 36, eZ PKP<sub>2</sub> 11 26 25, eZ pPKP<sub>2</sub> 11 27 26, iZ PP 11 30 10, USCGS: H=11 06 02.6, 32.1 S, 179.8 E, h about 235 km, South of Kermadec Islands. M=6 3/4 (PAS), 5 1/2 (BRK), 5.8 (CGS).
- 5 eZ 12 03 05, eZ 12 04 33, traces.
- 5 eZ PKP 22 41 57, eZ PP 22 43 08, USCGS: H= 22 23 13.0, 41.1 S, 74.9 W, h about 33 km, Off coast of southern Chile. M= 6 3/4 (PAS), 6 1/2 (BRK), 6.1 (CGS).
- 6 iZ+ P 02 45 45.6, USCGS: H= 02 33 39.5, 31.5 N, 129.9 E, h about 197 km, Southwest of Kyushu, Japan. M=5.5 (CGS).
- 6 Z 11 29 (00), eZ (Sn) 11 29 29, traces.
- 6 eZ Pn 15 26 54, iZ Pg 15 27 03.5, eZ (Sn) 15 27 33, (D=350 km).
- 6 eZ PKP<sub>1</sub> 17 22 22, eZ PKP<sub>2</sub> 17 22 31, USCGS: H= 17 03 28.9, 22.5 S, 179.5 W, h about 504 km, South of Fiji Islands, M=5.3 (CGS).
- 6 eZ P 18 36 35, USCGS: H= 18 24 50.5, 56.9 N, 152.1 W, h about 39 km, Alaska aftershock. M=5.6 (CGS).
- 7 iZ PKP<sub>1</sub> 00 02 22.1, iZ PKP<sub>2</sub> 00 02 33.7, Noumea: H=23 42 43, 19.3 S, 167.7 E, New Hebrides, Tanna Islands region. M=5.
- 7 eZ 15 44 17, traces.

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- 8 eZ Pn 00 01 55, eZ (Sn) 00 03 13, eZ 00 03 58, traces.
- 8 iZ Pg 13 04 35.3, iZ Sg 13 04 38.3, D=20 km.
- 8 eiZ P 15 12 22, eZ PP 15 15 53, USCGS: H= 14 59 41.2, 31.7 N, 140.2 E, h about 110 km, South of Honshu, Japan. M=5.7 (CGS).
- 8 eZ P or PKP 20 18 50.
- 8 iZ+ PKP 21 19 14.2, USCGS: H= 20 59 43.6, 17.5 S, 175.0 W, h about 193 km, Tonga Islands. M=4.8 (CGS).
- 10 eZ P 01 21 24, USCGS: H= 01 10 12.4, 19.1 N, 67.3 W, h about 33 km, Mona Passage, M=5.5 (CGS).
- 10 eZ 14 36 07, traces.
- 10 eiZ- P 17 10 17.0, USCGS: H= 16 58 44.0, 9.2 N, 62.0 W, h about 51 km, Near coast of Venezuela. M=5.5 (CGS).
- 10 eZ P 18 04 16, USCGS: H= 17 52 02.5, 45.1 N, 149.9 E, h about 40 km, Kurile Islands. M=5.3 (CGS).
- 11 eZ P 13 47 19, USCGS: H= 13 35 14, 6.3 N, 97.3 E, h about 33 km, Nicobar Islands region. M=5.1 (CGS).
- 12 eiZ P 07 03 40.6, eZ PP 07 06 40, D=8700 km. USCGS: H= 06 51 49.9, 48.9 N, 153.7 E, h about 127 km. Kurile Islands. M=5.6 (CGS).
- 12 iZ Pg 16 53 44.5, iZ Sg 16 53 48.4, D=30 km.
- 12 eZ+ P 19 32 45, USCGS: H= 19 26 26.1, 31.0 N, 49.8 E, h about 33 km, Western Iran. M=5.1 (CGS).
- 13 iZ- PKP 00 49 34.3, iZ! 00 49 36.6, iZ spPKP 00 51 13.8, USCGS: H= 00 31 14.1, 5.4 S, 154.3 E, h about 383 km, Solomon Islands. M=6.0 (CGS).
- 13 eZ P 10 41 45, USCGS: H= 10 38 05.0, 34.2 N, 25.7 E, h about 33 km, Crete. M=4.4 (CGS), obscured by micro-seisms.
- 13 eZ PKP 11 07 26, USCGS: H= 10 48 34, 19.3 S, 177.6 W, h about 551 km, Fiji Islands region. M=4.3 (CGS).
- 13 eZ 22 44 26, traces.
- 14 eZ P 21 37 36, USCGS: H= 21 27 41.6, 7.4 N, 36.8 W, h about 33 km, Central Mid-Atlantic Ridge. M=4.8 (CGS).
- 14 eZ PKP 22 08 07, USCGS: H= 21 48 31.2, 18.8 S, 168.2 E, h about 26 km, New Hebrides Islands. M=4.6 (CGS).
- 16 eZ 01 12 53, traces.
- 16 eZ P or PKP 15 59 32, traces.
- 16 eZ 17 00 55, iZ 17 01 06.7, iZ (Sn) 17 01 27.9, iZ 17 01 53.4.
- 16 iZ P 21 34 42.9, iZ PP 21 34 55.0, USCGS: H= 21 28 49.1, 39.7 N, 52.6 E, h about 33 km, Caspian Sea. M=4.8 (CGS).
- 17 eZ P 00 21 04, iZ 00 21 40, eZ S 00 23 45, D=1580 km, BCIS: H=00 17 41, 35.3 N, 26.1 E, h=surface, Point SE of

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- 17 (cont.) Creta Island. USCGS: H= 00 17 40.9, 35.0 N, 26.0 E, h about 18 km, Crete. M=4.8 (CGS).
- 17 iZ Pn 07 38 27.2, iZ Pg 07 38 32.0, iZ Sn 07 38 55.5, D=250 km.
- 17 eZ P 09 13 06, USCGS: H= 09 07 03.8, 52.0 N, 30.0 W, h about 42 km. North Atlantic Ridge. M=4.9 (CGS).
- 17 eZ PKP 12 03 32, iZ! 12 03 42.1, USCGS: H= 11 45 01.2, 18.0 S, 178.3 W, h about 648 km. Fiji Islands region. M=5.1 (CGS).
- 17 eZ P 14 53 26.6, USCGS: H= 14 42 56.6, 24.2 N, 94.0 E, h about 184 km, Burma-India border region. M=4.7 (CGS).
- 17 eZ P 15 06 12, USCGS: H= 14 54 01.4, 42.6 N, 142.8 E, h about 33 km, Hokkaido, Japan. M=5.1 (CGS).
- 17 Z P 15 21 (00), eZ 15 21 40, BCIS: H= 15 15 06, 73 N, 1 E, h=surface. North Atlantic. Uppsala: Jan Mayen region. USCGS: H= 15 15 18.9, 72.2 N, 1.7 E, h about 33 km, Norwegian Sea. M=5.4 (CGS).
- 17 eZ (Pg) 16 31 06, iZ Sg 16 31 11.7, (D=45 km.)
- 17 eZ 16 33 25, iZ Sg 16 33 27.5, traces.
- 17 eZ PKP 22 22 56, USCGS: H= 22 02 35.1, 24.5 S, 176.8 W, h about 33 km, South of Fiji Islands. M=4.5 (CGS).
- 17 eZ 22 33 36, eZ (Sn) 22 36 19, BCIS: H= 22 30 12, 35.3 N, 26.1 E, h=surface, Point SE of Creta Island, aftershock of August 17, 1964 at 00<sup>h</sup>.
- 17 eiZ P 22 53 34.9, USCGS: H= 22 47 32.4, 52.1 N, 30.1 W, h=36 km, North Atlantic Ridge. M=5.1 (CGS).
- 18 iZ Pn 00 34 36.1, iZ Pb 00 34 38, iZ PgPg 00 34 47.1, iZ Sn 00 35 05.0, iZ Sb 00 35 08.1, iZ! 00 35 17.5, BCIS: H= 00 33 51, 43 3/4 N, 17.0 E, h=surface. Yugoslavia. USCGS: H= 00 33 55, 44.2 N, 16.4 E, h=33 km. Yugoslavia. M=4.4 (CGS). D=260 km.
- 18 eZ (Pg) 04 41 16, eZ Sg 04 41 27, (D=90 km).
- 18 eZ P 04 59 13, eZ PP 05 03 33, eZ S 05 11 16, eZ 05 14 47, USCGS: H= 04 44 58.0, 26.4 S, 71.5 W, h=8 km, Off coast of northern Chile. M=6 (BRK), 6.4 (CGS).
- 18 eZ P 11 20 19, USCGS: H= 11 09 43.4, 0.5 N, 67.2 E, h=33 km, Carlsberg Ridge, Indian Ocean. M=5.1 (CGS).
- 18 iZ+ P 15 35 42.7, USCGS: H= 15 26 11.4, 5.7 N, 58.0 E, h=33 km, Carlsberg Ridge, Indian Ocean. M=5.4 (CGS).
- 18 eiZ P or PKP 15 39 57
- 19 iZ+ P 09 39 58.0, iZ! 09 40 13.3, USCGS: H=09 33 10.0, 28.2 N, 52.6 E, h=50 km, Southern Iran. M=5.6 (CGS).
- 19 iZ+ P 15 27 02.3, eiZ PP 15 28 37.9, D=5500 km, USCGS: H=15 20 13.9, 28.2 N, 52.7 E, h=52 km, Southern Iran. M=5.6 (CGS).
- 19 iZ+ P 22 47 03.7, USCGS: H= 22 40 17.9, 28.4 N, 52.7 E,

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- 19 (cont.) h=58 km, Southern Iran.
- 20 eZ PP 02 14 03, BCIS: H= 02 08 04, 73 N, 1 E, h=surface, Atlantic Ocean. Uppsala: Jan Mayen region. After-shock of August 17, 1964 at 15 15 06, USCGS: H= 02 08 15.8, 72.1 N, 1.4 E, h=33 km, Norwegian Sea. M=5.1 (CGS).
- 20 eiZ P 04 02 04, BCIS: H= 03 56 28, 63.8 N, 20.6 W, h=surface, Reykjavik: 64 N, 20.4 W, Iceland. Largely felt in Southwest of Iceland. USCGS: H= 03 56 29.2, 63.9 N, 87.2 W, h=33 km, Iceland. M=4.8 (CGS).
- 20 eiZ P 04 30 06, eZ 04 30 21, USCGS: H= 04 18 01, 4.1 N, 95.4 E, h=93 km, Northern Sumatra.
- 20 iZ P 05 15 39.8, USCGS: H= 05 08 50.3, 28.1 N, 52.6 E, h=47 km, Southern Iran. M=5.1 (CGS).
- 20 iZ P 05 46 36.2, iZ 05 46 51.8, eZ PP 05 47 40, D=3800 km, USCGS: H= 05 39 47.7, 28.2 N, 52.6 E, h=52 km, Southern Iran. M=5.5 (CGS).
- 21 iZ P 08 06 03.9, USCGS: H= 07 59 17.0, 28.3 N, 52.5 E, h=54 km, Southern Iran. M=4.9 (CGS).
- 21 eZ (Pg) 12 28 24, iZ Sg 12 28 30.5, (D=50 km).
- 21 eZ P 16 53 44, BCIS: H= 16 49 13, 39.9 N, 40.9 E, Eastern Turkey. Istanbul TU: Eastern Turkey. Damages at Ilica (Erzerum Province), 39° 58' N, 41° 06' E. USCGS: H=16 49 12.9, 40.1 N, 40.9 E, h=44 km, Turkey. M=4.6 (CGS).
- 21 eZ P or PKP 19 21 18, traces.
- 21 eZ P or PKP 23 33 (00), traces.
- 22 eZ P or PKP 02 33 50, traces.
- 22 eZ P 17 10 34, USCGS: H= 17 04 31.2, 51.9 N, 30.0 W, h=33 km, North Atlantic Ridge, M=4.9 (CGS).
- 23 iZ Pg 03 08 42.4, iZ Sg 03 08 46.2, D=33 km.
- 23 eZ 08 58 21, iZ 08 58 24.5, traces.
- 23 eZ 14 29 56, eZ 14 30 03, traces.
- 24 eZ P 10 50 17, USCGS: H= 10 37 23.4, 1.5 S, 78.1 W, h=173 km, Ecuador. M=5.1 (CGS).
- 24 iZ Pn 21 44 20.7, iZ Sn 21 45 49.1, D=850 km.
- 25 eZ P 11 15 20, iZ! 11 15 34.4, iZ 11 16 20.8, eZ S 11 18 10, eNE 11 20 (00), D=1660 km. BCIS: H= 11 11 51, 36.0 N, 29.0 E, (Determination by electronic calculating machine), Eastern Mediterranean Sea, east of Rhodos Island, M=5.4 (Praha), 5.0 (Collberg), USCGS: H= 11 11 53.6, 36.1 N, 28.7 E, h=50 km, Dodecanese Islands, M=4.9 (CGS).
- 25 eZ P 11 46 29, eZ PP 11 47 14, USCGS: H= 11 42 59.9, 35.4 N, 28.9 E, h=33 km, Eastern Mediterranean Sea, M=4.5 (CGS).
- 25 eZ-EN P 13 56 09, iZ! 13 56 10.8, iZ!! 13 56 14.7,

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- 25 (cont.) iZEN PP 13 58 11.2, D=5800 km, USCGS: H= 13 47 20.6, 78.2 N, 126.6 E, h=50 km, East of Severnaya Zemlya. M= 6 1/4-6 1/2 (PAS), 6 1/2 (BRK), 6.1 (CGS).
- 25 eZ P 14 41 05, iZ 14 41 23.3, eZ S 14 44 19, D=1800 km, BCIS: H= 14 37 35, aftershock of August 25, 1964, 11 h 11 m 51 s; USCGS: H= 14 37 32.5, 35.7 N, 29.1 E, h=24 km, Eastern Mediterranean Sea. M=4.8 (CGS).
- LJU 25 PZ 17 59 00 traces.
- 25 eZ (P) 19 23 34, USCGS: H= 19 20 33.0, 33.8 N, 27.9 E, h=132 km, Eastern Mediterranean Sea, M=4.4 (CGS).
- 25 eZ PKP 21 22 43, USCGS: H= 21 03 30, 19.5 S, 176.9 W, h=444 km, Fiji Islands region. M=4.2 (CGS).
- 26 iZ 03 24 47.0, iZ 03 24 53.6, BCIS: H= 03 18 25, 52 1/2 N, 32 1/2 W, Middle Atlantic Ocean, south of Iceland Island. USCGS: H= 03 18 44.1, 52.1 N, 30.1 W, h=33 km, North Atlantic Ridge. M=5.4 (CGS).
- 26 iZ P or PKP 08 37 49.2.
- 27 eZ 06 25 14, traces.
- 27 eZ PKP 08 13 39, iZ! 08 13 48.8, USCGS: H= 07 53 54.8, 17.5 S, 173.0 W, h=33 km, Tonga Islands. M=4 1/2-4 3/4 (BRK), 5.3 (CGS).
- 27 eZ+ P 12 05 46, eZ PP 12 08 07, USCGS: H= 11 58 41.3, 28.2 N, 55.7 E, h=69 km, Southern Iran. M=5.1 (CGS), D=4800 km.
- 27 Z P 13 04 (00), iZ 13 04 30, USCGS: H= 12 56 46.1, 27.5 N, 55.9 E, h=33 km, Southern Iran. M=5.3 (CGS).
- 27 eZ P or PKP 15 50 11;
- 27 eZ Pn 19 35 30, iZ 19 35 43.7, iZ! 19 36 09.0, eZ Sn 19 38 28, D=1780 km. BCIS: H= 19 32 01, 36.0 N, 29.0 E, Mediterranean Sea, east of Rhodos Island. Aftershock of seism of August 25, 1964, 11 h 11 m. M=5 1/2 (Strasbourg), 5.4 (Pruhonic), 4.9 (Collberg). USCGS: H= 19 31 56.9, h=3 km, 35.5 N, 28.7 E, Eastern Mediterranean Sea. M=4.7 (CGS).
- 27 eZ 21 03 54, eZ 21 04 42, traces.
- 28 eZ 02 04 20, traces.
- 28 eZ+ PKP 04 54 07.6, iZ! 04 54 19.9, eZ pPKP 04 56 35, USCGS: H= 04 35 29.3, 19.8 S, 178.2 W, h=580 km, Fiji Islands region. M=5.4 (CGS).
- 28 Z (Sg) 10 50 (00), traces.
- 28 eZ Pn 12 08 26, iZ 12 08 32.3, iZ 12 08 55.2, iZ Sn 12 10 15.2, D=1050 km. USCGS: H= 12 06 18.3, 37.9 N, 19.8 E, h=61 km, Ionian Sea. M=4.5 (CGS).
- 28 eiZ P 13 33 12.8, iZ! 13 34 05.7, USCGS: H= 13 21 13.5, 7.1 N, 95.1 E, h=33 km, Nicobar Islands region. M=5.1 (CGS).
- 28 eZ Pn 14 01 17, eZ 14 02 (00), iZ 14 02 12.4, traces.

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- 29 eZ P 05 26 05, USCGS: H= 05 20 19.8, 71.6 N, 3.7 W, h=33 km, Jan Mayen Island region. M=4.7 (CGS).
- 29 eZ Pn 19 41 28, eZ 19 41 33, BCIS: H= 19 37 59, 36.0 N, 29.0 E, Eastern Mediterranean Sea, east of Rhodes Island, (aftershock of seism of August 25, 1964 at 11 h 11 m), USCGS: H= 19 37 56.0, 35.2 N, 28.6 E, h=63 km, Eastern Mediterranean Sea, M=4.7.
- 29 eZ PKP 21 56 36, USCGS: H= 21 36 50.8, 14.9 S, 172.8 W, h=33 km, Samoa Islands. Felt: Apia. M=4.7 (CGS).
- 30 iZ- P 02 45 13.8, USCGS: H= 02 35 08, 27.6 N, 88.3 E, h=21 km, Sikkim. M=5.2.
- 30 iZ PKP 08 30 28.3, USCGS: H= 08 11 42.5, 15.8 S, 174.9 W, h=286 km, Tonga Islands. M=4.9 (CGS).
- 30 iZ PKP 22 04 25.1, USCGS: H= 21 44 56.9, 19.9 S, 176.0 W, h=253 km, Fiji Islands region. M=5.6 (CGS).
- 31 eZ Pg 14 34 07, iZ Sg 14 34 21.2, D=118 km. Trieste: felt II-III<sup>o</sup> MCS at Udine and Cividale.
- 31 eiZ Pn 19 38 09, iZ (Sn) 19 40 11.5, (D=1100 km).
- ~~31 P eZ 23 51 19 traces.~~

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- 1 Z P 13 33 (00), USCGS: H= 13 22 36.6, 27.2 N, 92.3 E, h=33 km, India-China border region. M=5.7 (CGS).
- 1 eZ P 17 29 11, obscured by microseisms, USCGS: H= 17 16 40.4, 51.2 N, 170.6 W, h=25 km, Fox Islands, Aleutian Islands. M=5.5 (CGS).
- 1 eZ Pn 18 33 47, iZ Sn 18 34 18.3, iZ Sg 18 34 30.6, D=300 km.
- 2 eZ Pn 06 08 51, iZ Sn 06 09 35.0, D=400 km.
- 2 eZ+ PKP 21 51 53, USCGS: H= 21 32 39.6, 18.6 S, 169.4 E, h=218 km, New Hebrides Islands. M=4.9 (CGS).
- 3 eiZ PKP 13 16 10, USCGS: H= 12 57 22.3, 17.9 S, 178.0 W, h=567 km, Fiji Islands region.
- 3 eZ PKP 17 18 40, USCGS: H= 16 58 55.4, 15.2 S, 173.5 W, h=33 km, Tonga Islands, M=5.1 (CGS).
- 4 iZ- P 03 38 30.6, eZ PP 03 40 32, USCGS: H= 03 28 33.1, 7.6 N, 36.9 W, h=22 km, Central Mid-Atlantic Ridge. M=5.4 (CGS).
- 4 iZ P 03 44 06.7, iZpP 03 44 17.8, iZ 03 44 40.4, eZ PP 03 45 05, eZ 03 46 24, USCGS: H= 03 39 36.7, 39.8 N, 40.3 E, h=33 km, Turkey. M=5.0 (CGS).
- 4 eZ 10 52 48, eZ 10 53 36, eZ PP 10 54 31, USCGS: H= 09 36 58.7, 18.3 S, 69.0 W, h=101 km, Northern Chile. M=5.4 (CGS).
- 4 eZ 17 55 51, eZ 17 56 34, traces.

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- 4 eZ P 19 36 51, eZ (Sg) 19 37 35, traces.
- 4 iZ- Pg 20 13 32.4, iZ! Sg 20 13 36.5, iZ! 20 13 41.0, D=33 km, not felt.
- 4 iZ Pg 21 55 09.7, iZ Sg 21 55 12.7, D=20 km.
- 5 eZ PKP 03 12 48, iZ pPKP 03 13 01.5, eZ PP 03 14 28, eZ PS 03 25 50, USCGS: H= 02 53 50.6, 5.8 S, 154.0 E, h=69 km, Solomon Islands. M=6.4 (CGS).
- 5 eZ 10 20 44, eZ Sg 10 20 57, traces.
- 5 eZ PKP 12 15 18, USCGS: H= 11 55 37, 54.0 S, 141.1 E, h=33 km, West of Macquarie Islands.
- 5 eZ+ P 12 37 11, eZ 12 37 35, eZ 12 38 37, USCGS: H= 12 27 22.2, 0.6 N, 25.9 W, h=33 km, Central Mid-Atlantic Ridge, M=4.7 (CGS).
- 5 eZ Pn 14 09 26, eiZ Pg 14 09 37, eiZ Sn 14 10 09, iZ Sg 14 10 26, D=390 km.
- 5 iZ+ Pn 21 09 32.4, iZ 21 09 40.8, iZ Sn 21 10 07.8, iZ 21 10 28.8, D=320 km. BCIS: H= 21 08 44, 44.0 N, 11.5 E, Italy, Etruscan Appenins, Roma: felt in Toscana. M=4.7; USCGS: H= 21 08 49.4, 44.1 N, 11.1 E, h=40 km. Northwestern Italy. Felt Toscana region. M=4.3 (CGS).
- 5 eZ Pn 21 21 16, eZ Sn 21 21 47, D=300 km, aftershock.
- 5 eZ Pn 21 42 30, eZ Sn 21 43 04, D=310 km, aftershock.
- 5 eZ Pn 21 53 47, eZ Sn 21 54 23, D=320 km, aftershock.
- 5 eZ Pn 22 29 26, iZ Pg 22 29 32.8, iZ Sn 22 30 03, D=330 km, aftershock. BCIS: H= 22 28, 7.
- 6 eZ 01 16 07, traces.
- 6 eZ 03 47 24, traces.
- 6 iZ+ P 19 09 13.2, USCGS: H= 18 57 20.4, 7.1 N, 93.7 E, h=46 km, Nicobar Islands region. M=5.2 (CGS).
- 7 eZ P 11 35 20, eiZ 11 35 36, USCGS: H= 11 27 15, 15.7 N, 53.3 E, h=33 km, Arabian Sea. M=4.6 (CGS).
- 7 eZ 23 26 07, eZ 23 26 55, traces.
- 8 eiZ P or PKP 11 01 18.
- 8 eZ Pn 11 25 18, iZ Pg 11 25 28.1, iZ Sn 11 25 51.0, D=300 km.
- 8 eZ PKP 11 35 22, USCGS: H= 11 15 35, 17.4 S, 173.5 W, h=33 km, Tonga Islands. M=5.0 (CGS).
- 8 eZ P 13 53 00, USCGS: H= 13 40 03.5, 29.6 N, 142.0 E, h=77 km, South of Honshu, Japan. M=5.6 (CGS).
- 8 eZ PKP 14 01 20, USCGS: H= 13 41 44.1, 24.1 S, 177.6 W, h=165 km, South of Fiji Islands. M=4.8 (CGS).
- 8 eZ PKP 14 28 50, USCGS: H= 14 09 19.2, 23.8 S, 177.5 W, h=213 km, South of Fiji Islands. M=4.7 (CGS).
- 8 eZ PKP 14 32 14, USCGS: H= 14 12 39.8, 23.9 S, 177.2 W, h=175 km, South of Fiji Islands. M=4.5 (CGS).

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- 8 iZ PKP<sub>1</sub> 17 24 18.9, iZ PKP<sub>2</sub> 17 24 31.2, USCGS: H= 17 05 23.4, 20.4 S, 178.3 W, h=539 km, Fiji Islands region. M=5.4 (CGS).
- 8 eZ Pn 20 25 15.7, eZ Sn 20 26 32.5, D=720 km.
- 9 eZ P 09 43 29, BCIS: H= 09 39 44, 37.3 N, 3.8 W, Spain, near Granada. Cartuja: felt VI-VII<sup>o</sup> Granada. Slight damage. USCGS: 09 39 48.1, 37.5 N, 3.7 W, h=15 km, Spain. Felt. M=4.3 (CGS).
- 9 eZ 13 55 32, traces.
- 9 eiZ P 22 25 13, USCGS: H= 22 19 40.5, 34.5 N, 45.8 E, h=68 km, Iran-Iraq border region. M=4.5 (CGS).
- 11 iZ Pg 08 16 25.5, iZ Sg 08 16 28.5, D=20 km.
- 12 Z 05 12 (00), eZ Sg 05 12 21, traces.
- 12 eZ Pg 05 19 25, iZ Sg 05 19 58.8, D=300 km.
- 12 eZ PKP 11 08 15, USCGS: H= 10 48 19.2, 24.7 S, 170.5 E, h=33 km, Loyalty Islands region. M=4.0 (CGS).
- 12 eiZ+ PKP<sub>1</sub> 13 01 57.1, iZ PKP<sub>2</sub> 13 02 23.5, USCGS: H= 12 43 19.0, 4.4 S, 144.0 E, h=120 km, Near north coast of New Guinea. M=6 1/2 (PAS), 6 1/4- 6 1/2 (BRK), 6.3 (CGS).
- 12 eZ PKP 15 38 04, iZ! 15 38 09.4, eZ pPKP 15 40 30, USCGS: H= 15 19 22.3, 17.4 S, 179.9 W, h=561 km, Fiji Islands region. M=4 1/4-4 1/2 (BRK), 5.8 (CGS).
- 12 eZ P or PKP 18 21 16, traces.
- 12 Z 20 27 (00), traces.
- 12 eZ PKP<sub>1</sub> 22 26 57, eiZ PKP<sub>2</sub> 22 27 41, eZ PP 22 31 24, USCGS: H= 22 07 03.2, 49.1 S, 164.2 E, h=33 km, Auckland Islands region. M=7 1/2 (PAS), 7 1/2 (BRK), 6.9 (CGS).
- 13 Z PKP<sub>1</sub> 00 41 (00), eZ PKP<sub>2</sub> 00 41 40, USCGS: H= 00 21 06.7, 49.3 S, 163.7 E, h=33 km, Auckland Islands region.
- Lju 13 P eZ 07 39 08, traces.
- 13 eiZ Pn 22 54 57.4, iZ 22 55 17.5, iZ Pg 22 55 25.0, iZ Sn 22 56 10.8, iZ Sg 22 56 47.0, D=680 km, BCIS: H= 22 53 30, 42.1 N, 20.5 E, Yugoslavia-Albania border, at 80 km west of Skopje.
- 14 eZ P 10 29 39, USCGS: H= 10 17 46.6, 56.7 N, 157.4 W, h=61 km, Alaska Peninsula. M=5.7 (CGS).
- 14 eZ P 15 28 19, USCGS: H= 15 21 09.0, 28.0 N, 55.8 E, h=33 km, Southern Iran. M=4.8 (CGS).
- 14 iZ Pg 20 03 53.9, iZ Sg 20 03 56.0, D=15 km, not felt.
- 15 eZ PKP 01 19 53, USCGS: H= 01 00 08.0, 15.6 S, 175.9 W, h=9 km, Tonga Islands. M=4.9 (CGS).
- 15 eZ 01 50 16, traces.
- 15 iZ Pg 03 53 34.0, iZ Sg 03 53 35.1, D=10 km, not felt.

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- 15 Z P or PKP 05 56 (00).
- 15 eZ PKP 13 03 56, iZ! 13 04 02, USCGS: H= 12 44 12.2, 16.0 S, 172.9 W, h=33 km, Samoa Islands region. M=5.3 (CGS).
- 15 eZ PKP 13 32 42, USCGS: H= 13 12 54, 15.8 S, 173.1 W, h=33 km, Tonga Islands. M=4.6 (CGS).
- 15 iZ+ P 15 41 16.1, iZ! pP 15 41 36.5, eZ S 15 50 35, USCGS: H= 15 29 32.2, 8.9 N, 93.1 E, h=37 km, Nicobar Islands region. M=5 1/2 (PAL), 6.2 (CGS).
- 15 eZ 17 49 30, traces.
- 15 iZ (Sg) 19 01 55.7, traces.
- 15 eZ (Pg) 20 57 16, iZ 20 57 26.0, traces.
- 15 eZ P or PKP 21 16 22, traces.
- 16 Z P 01 38 (00), iZ! 01 38 03.5, iZ pP 01 38 20.5, USCGS: H= 01 26 26.9, 10.9 N, 93.1 E, h=47 km, Andaman Islands region. M=5.7 (CGS).
- 16 eZ P 02 02 05, USCGS: H= 01 50 33.9, 60.0 N, 147.1 W, h=29 km, Gulf of Alaska. M=5 3/4 (PAS), 5 3/4-6 (PAL), 5.5 (CGS).
- 16 iZ+ PKP 21 06 24.0, USCGS: H= 20 47 16.0, 16.1 S, 176.5 W, h=352 km, Fiji Islands region. M=5.1 (CGS).
- 16 eiZ 22 32 51, iZ! 22 32 53.8, eZ PP 22 36 02, USCGS: H= 22 23 36.3, 22.9 N, 45.1 W, h=33 km, North Atlantic Ridge, M=5 (PAL), 5.4 (CGS).
- 17 iZ+P or PKP 07 44 14, traces.
- 17 iZ+ P 15 08 27.0, iZ pP 15 08 40.4, USCGS: H= 15 02 00.9, 44.5 N, 31.3 W, h=24 km, North Atlantic Ridge. M=5.6 (CGS).
- Lju 17 P eZ 21 11 35.
- Lju 17 P eZ 22 56 02.
- 18 eZ P 00 12 18, iZ 00 12 33.6, eZ S 00 15 36, D=1700 km, BCIS: H= 00 08 50, 36.0 N, 27 3/4 E, Mediterranean Sea, south-west of Rhodes, M=5.2 (Pruhonice). USCGS: H= 00 08 42.6, 35.4 N, 28.8 E, h=18 km, Eastern Mediterranean Sea. M=4.7 (CGS).
- 18 iZ+ P 13 19 16.3, BCIS: H= 13 12 30, 39 N, 31 W, Azores Islands. USCGS: H= 13 12 42.3, 39.8 N, 29.7 W, Azores Islands. M=5.5 (CGS).
- 18 eZ P or PKP 23 44 27.
- 20 eZ P 14 48 10, eZ pP 14 50 01, USCGS: H= 14 36 05.3, 30.0 N, 138.1 E, h=454 km, South of Honshu, Japan. M=4.9 (CGS).
- 20 eZ P or PKP 16 16 34, traces.
- 21 iZ PKP 04 42 04.0, iZ pPKP 04 44 33.4, USCGS: H= 04 23 19.7, 21.8 S, 179.6 W, h=609 km, Fiji Islands region. M=5.4 (CGS).

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- 21 eZ Pn 13 31 56, eZ Sn 13 32 32, D=320 km.
- 22 eiZ Pn 12 47 02.7, eiZ 12 47 06.4, eiZ Pg 12 47 07.6, eiZ Sn 12 47 30.9, iZ Sb 12 47 34.4, iZ (Sg) 12 47 40.1, D= about 250 km.
- 23 eZ P 01 45 10, obscured by microseisms,USCGS: H= 01 41 01, 34.3 N, 32.6 E, h=61 km,Cyprus.M=4.7 (CGS).
- 23 Z P 05 12 (00), eZ 05 12 10, USCGS: H= 04 59 47.4, 53.6 N, 163.9 W, h=29 km,Unimak Island region.M= 5-5 1/2(BRK),5.5 (CGS).
- Lju 24 P eZ 12 39 39, eZ (Sn) 12 40 18 traces.
- 24 iZ Pg 17 03 43.6, iZ Sg 17 03 57.9, D=120 km.
- 25 eZ P or PKP 12 31 57.
- 25 eZ P 15 54 39, USCGS: H= 15 42 17.9,50.3 N, 176.6 E, h=30 km,Rat Islands,Aleutian Islands.M=5.5 (CGS).
- 25 eZ PKP<sub>1</sub> 23 47 00, eZ PKP<sub>2</sub> 23 47 44, USCGS: H= 23 27 49.7, 30.7 S, 179.9 N,h=424 km,Kermadec Islands.M=5.3 (CGS).
- 26 iZ- P 00 55 17.3, eZ PP 00 57 15, USCGS: H= 00 46 02.8, 30.1 N, 80.7 E, h=50 km,Tibet-India border region. M=6.2 (CGS).
- 26 eZ 03 58 25, USCGS: H= 03 38 32.7, 17.7 S, 173.3 W, h=33 km,Tonga Islands.M=5.1 (CGS).
- 26 eZ P or PKP 07 40 08, traces.
- 26 eZ 12 58 50, traces.
- 26 eZ PKP 23 14 15, USCGS: H= 22 55 14.8, 4.9 S, 153.5 E, h=34 km, New Ireland region. M=5.5 (CGS).
- 27 eZ P or PKP 15 42 56,
- 27 eZ P 16 02 46, USCGS: H= 15 50 54.7, 56.6 N, 152.0 W, h=27 km,Kodiak Island region. M= 5 1/4 (BRK),5.4 (CGS).
- 27 eZ P or PKP 20 04 28.
- 27 eZ PKP 22 20 37, USCGS: H= 22 01 40.2, 5.5 S, 151.6 E, h=50 km,New Britain region.M=5.4 (CGS).
- 28 iZ- P 05 14 46.6, eZ 05 15 22, USCGS: H= 05 04 55.5, 1.2 S, 24.1 W, h=37 km,Central Mid-Atlantic Ridge, M=5.5 (CGS).
- 28 iZ- P 06 58 57.9, eZ pP 06 59 29, eZ PP 07 01 12, USCGS: H= 06 51 05.3, 36.3 N, 71.6 E, h=118 km, Afganistan-USSR border region.M=5.5 (CGS).
- 28 eZ P 16 38 33, USCGS: H= 16 25 54.6, 34.0 N, 141.2 E, h=71 km,Off east coast of Honshu,Japan.M=5.0 (CGS).
- 29 eZ 02 29 (00), traces.
- 29 eZ+ PKP 14 20 04, iZ! 14 20 13.0, eZ PP 14 24 01, USCGS: H= 14 00 14.9, 20.4 S, 174.4 W, h=29 km,Tonga Islands.M=6 1/2 (PAS), 5 3/4 (BRK), 5.7 (CGS).
- Lju 29 eZ {P} 17 02 16, eZ 17 04 32, traces.

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- 29 eZ P 22 33 58, eZ 22 35 33, USCGS: H= 22 30 48.4, 34.3 N, 23.0 E, h=33 km,Mediterranean Sea. BCIS: H= 22 30 50, 34.6 N, 23.1 E, nermal depth,Eastern Mediterranean Sea,SW of Creta Island.
- 30 eZ Pn 01 17 08.8, eZ Sn 01 17 32, D=190 km.BCIS: H= 01 16 33, 47.7 N,15.8 E, Austria. Wien: Austria,felt IV in Semmering (Lower Austria).
- 30 eZ P 04 42 50, eZ S 04 45 13, BCIS: H= 04 39 48, 34.7 N, 23.2 E, h=50 km.Eastern Mediterranean Sea,SW of Creta.USCGS: H= 04 39 44.0, 34.5 N, 23.4 E, h=43 km, Creta.M=4.6 (CGS).
- 30 Z P or PKP 09 06 (00).
- 30 eZ P 10 29 30, iZ 10 29 41, eZ (S) 10 31 16, D=1020 km.
- 30 eiZ P 10 51 05, USCGS: H= 10 38 28.9, 0.1 S, 97.8 E, h=33 km,Southwest of Sumatra.

Ljubljana, July 31, 1965

M.Hržič-Knafeljc

LJUBL



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OCT. 1964 - DEC 1964

University of Ljubljana  
Astronomical and Geophysical  
Observatory,  
L j u b l j a n a,  
Trg revolucije 11, P.O.B. 01-20  
Yugoslavia

1964

P R E L I M I N A R Y   S E I S M O L O G I C A L  
B U L L E T I N

(October 1964 - December 1964)



University of Ljubljana  
 Astronomical and Geophysical  
 Observatory,  
 Ljubljana, Trg revolucije 11,  
 P.O.B. 20- Yugoslavia

1964

PRELIMINARY SEISMOLOGICAL BULLETIN  
 from October 1 to December 31  
 1964

Station: Ljubljana - Coordinates:  $46^{\circ} 02.6'$  N Lat.  
 $14^{\circ} 32.0'$  E Long.

Geocentric direction cosines:  $a=+6743$ ,  $b=+1748$ ,  $c=+7175$ ,  
 $d=-8$ ,  $h=-4$ ;

Height: 396 m;

Lithologic foundation: sandstone (carbon);

Instruments:

Wiechert, horizontal astatic seismograph,  $M=200$  kg,  
 mechanical registration, 16 mm/min;

Constants (29.X.1964):

Component	To	v:1	r/T <sub>0</sub> <sup>2</sup>	V
N-S	5.0	2.2:1	0.0043	67
E-W	4.9	2.0:1	0.0099	83

Hiller-Stuttgart, vertical component Z with galvanometrical  
 recording;  $T_0=1.5$  sec,  $T_g=1.5$  sec,  $D_1=D_2=1$ ,  
 $V_{max}=10$  150 x, velocity of registration: 60 mm/min;

Note: Periods of seismic waves are given in seconds, the  
 amplitudes in microns; sign + means compression, movement  
 of ground towards north or east, sign - means dilatation,  
 or movement towards south or west. All times are given in  
 GMT. Time signals are received one or two times daily from  
 Pontoise, Potsdam or Moscow and are registered on a chrono-  
 graph. Wherever possible time readings up to one tenth of  
 a second are given.

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- 1 eZ+ P 02 43 19, eZ PP 02 45 50,  $D=7500$  km, USCGS: H=  
 02 33 03, 10.5 S, 13.3 W,  $h=33$  km, Ascension Island  
 region.  $M=5.1$  (CGS).
- 1 eZ 19 10 36, eZ 19 11 18, traces.
- 2 eZ P 01 10 05, eZ 01 12 39, USCGS: H= 00 58 39.2, 51.9  
 N, 142.9 E,  $h=33$  km, Sakhalin Island.  $M=5.7$  (CGS).
- 2 iZ P or PKP 01 36 54.8
- From Oct. 2, 0905 to Oct. 3, 1845 no time marks.

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- 3 iZ PKP 23 00 40.4, USCGS: H= 22 41 09.0, 20.2 S, 176.3 W, h=219 km, Fiji Islands region. M=4.4 (CGS).
- 4 eiZ P 01 48 31.0, USCGS: H= 01 46 54, 39.4 N, 15.4 E, h=261 km, Southern Italy. M=4.2 (CGS).
- 4 eZ Pn 22 59 11, iZ Sn 23 00 55, iZ 23 01 13.4, D=1000 km, USCGS: H= 22 57 03.4, 37.8 N, 20.9 E, h=90 km, Ionian Sea, M=4.0 (CGS).
- 5 eZ Pn 01 25 34, eZ Sn 01 27 09, D=910 km.
- 5 eiZ- P 03 47 19.3, USCGS: H= 03 35 08.4, 42.6 N, 142.6 E, h=38 km, Hokkaido, Japan region. M=5.0 (CGS).
- 5 iZ PKP 08 50 05.4, USCGS: H= 08 30 15.7, 16.7 S, 173.7 W, h=33 km, Tonga Islands, M=5.1 (CGS).
- 5 eiZ PKP 13 31 49.6, eZ pPKP 13 32 22, USCGS: H= 13 12 15.5, 22.3 S, 171.6 E, h=145 km, Loyalty Islands region. M=4.9 (CGS).
- 5 eZ PKP 14 18 58, USCGS: H= 13 58 56.9, 22.2 S, 175.8 W, h=33 km, Tonga Islands region. M=5.1 (CGS).
- 5 eZ Pn 15 30 05, eZ Sn 15 30 54, D=450 km.
- 6 eZ P 06 23 58, eZ pP 06 24 15, USCGS: H= 06 11 32.6, 18.6 N, 119.6 E, h=33 km, Philippine Islands region. M=6.0 (CGS).
- 6 eZ Pn 14 32 42, BCIS: H= 14 29 57, Premonitory;
- 6 iZ- Pn 14 34 11.9, BCIS: H= 14 31 20, 40.0 N, 28.0 E, (macroseismic epicenter), Western Anatolia around Manyas. M=6 3/4-7 (Uppsala), 6.6-6.9 (Prithonice), 6 1/2-6 3/4 (Strasbourg). Istanbul T.U., Istanbul Kandilli and Bucarest: Felt IX° at Manyas (40° 02' N, 28° 24' E), Susurluk (39° 54' N, 28° 11' E), Gonen (40° 06' N, 27° 39' E), Karaeabey; VII° at Bursa, Balikesir, Bandirma; VI° at Kocaeli, Savastepe, Edremit, Canakhale; V° at Istanbul; Felt at Bucarest-Istanbul-Kandilli: splits and appearance of hot springs in epicentral region. 19 killed, 26 injured, more than 4000 buildings destroyed, 150 aftershocks within 17 hours. USCGS: H= 14 31 19.2, 40.3 N, 28.2 E, h=10 km(R), Turkey. 19 killed, several injured, extensive property damage in western Turkey. Crevasses and hot springs appeared in epicentral area. Felt widely through out Black Sea region. M=6 3/4-7 (Pas), 6.0 (CGS).
- 6 eZ P 20 28 56, USCGS: H= 20 19 34.1, 29.3 N, 80.9 E, h=27 km, Nepal-India border region. M=5.1 (CGS).
- 7 eZ P 23 10 52, eZ S 23 14 25, BCIS: H= 23 07 55, 40.1 N, 28.4 E, Western Anatolia (aftershock), USCGS: H= 23 07 52, 40.1 N, 28.2 E, h=32 km, Turkey. M=4.4 (CGS).
- 9 iZ P 19 38 51.6, eZ 19 39 31, USCGS: H= 19 26 39.7, 6.8 N, 73.0 W, h=157 km, Northern Colombia. Felt: Bagata and Bucaramanga, Medellin. M=5.3 (CGS), Obscured by microseisms.
- 9 iZ PKP 21 53 58.2, USCGS: H= 21 34 09.2, 16.2 S, 171.9

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- 9 (cont.) W, h=33 km, Samoa Islands region. M=5 1/4 (BRK), 5.8 (CGS).
- 11 eZ P 21 32 49, USCGS: H= 21 15 03.9, 0.6 S, 121.7 E, h=33 km, Northern Celebes. M=6 1/4-6 1/2 (PAL), 6.3 (CGS). Obscured by microseisms.
- 13 eZ Pg 03 38 25, iZ Sg 03 38 41.3, D=135 km.
- 13 eiZ P 23 10 17, USCGS: H= 23 02 26, 35.8 N, 71.1 E, h=120 km, West Pakistan. M= 5.8 (CGS).
- 15 iZ+ P 20 39 05.8, USCGS: H= 20 26 53.5, 44.7 N, 149.8 E, h=49 km, Kurile Islands, M=5.2 (CGS).
- 16 eiZ+ P 07 11 55.6, iZ! 07 11 47.0, eZ PP 07 14 28, D=8000 km. USCGS: H= 06 59 38.6, 49.3 N, 149.5 E, h=33 km, Kurile Islands, M=5.5 (CGS).
- 16 eZ P 07 34 01, USCGS: H= 07 21 42.7, 44.2 N, 149.4 E, h=33 km, Kurile Islands, M= 5.2 (CGS).
- 16 eZ P 08 30 43, eZ PP 08 33 33, D=8500 km, USCGS: H= 08 18 28.3, 44.6 N, 149.4 E, h=33 km, Kurile Islands, M=6-6 1/4 (PAL), 5.2 (CGS).
- 16 eZ P 09 30 33, iZ pP 09 30 45.4, USCGS: H= 09 18 16.6, 44.5 N, 149.1 E, h=33 km, Kurile Islands. M=5.4 (CGS).
- 16 eZ P 11 10 47, USCGS: H= 10 58 30.6, 44.1 N, 149.5 E, h=25 km, Kurile Islands. M=4.6 (CGS).
- 16 eZ P 12 49 42, USCGS: H= 12 37 26.8, 44.3 N, 149.4 E, h=33 km, Kurile Islands. M=4.9 (CGS).
- 17 iZ PKP 01 57 38.7, iZ 01 57 49.1, USCGS: H= 01 38 36.0, 7.0 N, 155.8 E, h=58 km, Solomon Islands. Felt. M=4.7 (CGS).
- 17 eiZ PKP<sub>1</sub> 06 15 31.6, iZ! PKP<sub>2</sub> 06 15 45.1, USCGS: H= 05 55 54.4, 22.3 S, 171.5 E, h=116 km, Loyalty Islands region. M=5.3 (CGS).
- 17 eZ P 09 53 48, eZ S 09 56 16, D=1660 km. BCIS: H= 09 50 29, 34.7 N, 25.5 E, h=normal, SE of Crete Island. USCGS: H= 09 50 29.5, 35.0 N, 25.4 E, h=33 km, Crete, M=4.8 (CGS).
- 17 eZ P or PKP 13 33 30, traces.
- 18 eZ P 09 16 43, eZ PP 09 19 (00), D=6700 km. USCGS: H= 09 06 26.0, 2.9 N, 65.7 E, h=33 km, Carlsberg Ridge.
- 18 iZ P 12 45 49.4, eZ PP 12 49 09, iZ! PKP 12 50 01.1, D=11 200 km. USCGS: H= 12 32 24.1, 7.0 S, 124.0 E, h=574 km, Banda Sea. M=5.8 (CGS).
- 18 eZ P 13 26 49, BCIS: H= 13 20 14 (Determination by electronic calculating machine.) 28 3/4 N, 51 1/4 E, Iran, near Persian Gulf. USCGS: H= 13 20 20.3, 29.7 N, 50.8 E, h=33 km, Southern Iran. M=4.9 (CGS).
- 18 eZ P 21 32 52, USCGS: H= 21 25 29.9, 28.0 N, 54.7 E, h=61 km, Southern Iran. M=4.8 (CGS).
- 18 eZ PKP 22 50 18, USCGS: H= 22 31 37.7, 19.4 S, 179.1 W,

October 1964

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- 18 (cont.) h=666 km, Fiji Islands region.M=4.8 (CGS).
- 21 eZ P or PKP 14 54 43, traces.
- 21 eZ P or PKP 16 08 55, traces.
- 21 eZ PKP 21 16 43, USCGS: H= 20 56 59, 15.1 S, 173.0 W, h=33 km, Tonga Islands.M=5.0 (CGS).
- 21 eZ+ P 23 19 45, iZ! 23 19 50.0, eZ PP 23 21 57, eZ S 23 28 16, D=7500 km, USCGS: H= 23 09 18.8, 28.1 N, 93.8 E, h=37 km, India-China border region.M=5.9 (CGS).
- 23 eiZ- P 02 06 27, iZ! 02 06 34.8, eZ 02 08 51, USCGS: H=01 56 03.2, 19.8 N, 56.0 W, h=31 km, North Atlantic Ocean.Felt on board " R.V.Chain", at 19° 57' N, 55° 31' W, M=6 3/4 (PAS), 6 1/2 (BRK), 6.4 (CGS).
- 23 eZ P 21 18 37, USCGS: H= 21 06 24.2, 44.0 N, 147.5 E, h=45 km, Kurile Islands, M=5.9 (CGS).
- 25 eZ Pg 10 06 38.2, iZ Sg 10 06 48.5, D=82 km, Brežice (45° 53' N, 15° 36' E) felt II-III MCS.
- 25 eiZ- PKP 12 27 42.5, iZ 12 27 57.8, USCGS: H= 12 08 46.9, 21.7 S, 179.2 W, h=534 km, Fiji Islands region, M=5.5 (CGS).
- 26 eZ P or PKP 21 46 06, traces.
- 27 iZ- Pn 19 46 43.5, iZ Pg 19 46 45.5, iNE Sg 19 47 10.0, iZ Sg 19 47 10.8, D=195 km, Felt: Maribor III-IV MCS, Ravne III MCS. BCIS: H= 19 46 11, 47° 40' N, 16° 03' E, Austria, south of Wiener Neustadt; epicentral intensity: VI MCS, Wien felt IV-V MCS. USCGS: H= 19 46 12.0, 47.8 N, 16.1 E, h=39 km, Austria, felt: Eastern Austria. M=5.6 (CGS).
- 28 eZ Pn 00 42 18, iZ Pg 00 42 22.3, iZ Sn 00 42 37.8, D=180 km, BCIS: H= 00 41 47, aftershock of October 27, USCGS: H= 00 41 48.2, 47.9 N, 16.2 E, h=33 km, Austria.
- 28 eZ 21 02 17, traces.
- 28 iZ Pn 23 00 12.0, iZ Pg 23 00 15.7, iZ Sn 23 00 36.8, D=210 km, BCIS: H= 22 59 41, aftershock of October 27, Austria, USCGS: H= 22 59 40.5, 47.8 N, 16.1 E, h=33 km, Austria.
- 29 eZ Pn 04 28 36.2, iZ Pg 04 28 40.5, iZ Sg 04 29 (00), D=210 km, BCIS: H= 04 28 03, 47.6 N, 16.1 E, Austria, Southwest of Wiener Neustadt, aftershock of seism on October 27, at 19<sup>h</sup> 46<sup>m</sup>. USCGS: H= 04 28 03.7, 47.6 N, 16.1 E, h=33 km, Austria.
- 29 iZ+ Pn 04 37 12.8, iZ Pg 04 37 30.3, iZ Sn 04 38 14.3, iZ Sg 04 38 42.4, D=550 km, BCIS: H= 04 35 55, 43.1 N, 20.7 E, Yugoslavia (Determination by electronic calculating machine), USCGS: H= 04 36 01, 43.4 N, 19.7 E, h=33 km, Yugoslavia.
- 29 eZ Pn 18 16 42, iZ Pg 18 16 45.6, iZ Sn 18 17 04.8, iZ Sg 18 17 08.6, D=200 km, BCIS: H= 18 16 08, aftershock of October 29, 1964 at 04<sup>h</sup> 28<sup>m</sup>, Austria.
- 30 eZ (Sg) 11 53 50, traces.

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- 31 iZ Pg 20 09 10.1, iZ Sg 20 09 11.8, D=15km, Ljubljana, not felt.

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- 1 eZ PP 12 44 25, USCGS: H= 12 26 06.2, 3.1 N, 128.1 E, h=65 km, North of Halmahera.M=5 3/4-6 (Pal), 6.3 (CGS).
- 1 Z P or PKP 13 06 (00).
- 2 eZ P 07 04 08, USCGS: H= 06 51 08.8, 3.5 S, 76.6 W, h=161 km, Northern Peru, M=5.8 (CGS).
- 2 iZ+ Pn 23 00 19.8, iZ Pg 23 00 24.7, iZ Sn 23 00 48.7, D=260 km, BCIS: H= 22 59 38, 44.3 N, 11.4 E, Italy, Etruscan Apennins (Determination by electronic calculating machine), USCGS: H= 22 59 35.3, 44.3 N, 11.6 E, h=33 km, Northern Italy.M=4.3 (CGS).
- 3 eZ P 02 32 43.7, BCIS: H= 02 25 49, 29.4 N, 51.1 E, Central Iran. USCGS: H= 02 25 50.7, 29.7 N, 51.0 E, h=35 km, Southern Iran.
- 3 eZ P 02 49 40, traces.
- 3 iZ Pg 06 21 38.1, iZ Sg 06 21 40.7, D=20 km, local, not felt.
- 3 Z 13 19 (00), traces.
- 3 eZ P 15 07 58, USCGS: H=14 55 40.1, 44.6 N, 149.0 E, h=20 km, Kurile Islands.M=5.0 (CGS).
- 3 eiZ P or PKP 17 27 29,
- 4 iZ Pn 17 23 37.4, iZ Pg 17 23 51.1, iZ Sn 17 24 19.7, iZ Sg 17 24 38.2, D=400 km.
- 5 Z- P 16 28 (00), Wien: aftershock of seisms on Oct.27, 1964 at 19<sup>h</sup> 46<sup>m</sup>.
- 5 eZ 20 58 51, traces.
- 5 eZ P 21 01 08, eZ 21 02 09, BCIS: H= 20 55 46, 34.6 N, 23.5 E, (Determination by electronic calculating machine), Mediterranean Sea, southwest of Creta. USCGS: H= 20 55 42.9, 35.1 N, 24.2 E, h=10 km, Crete, M=4.2 (CGS).
- 6 eZ P 10 05 34, eZ 10 06 28, USCGS: H= 09 53 22.4, 44.4 N, 149.0 E, h=60 km, Kurile Islands, M=5 1/2-5 3/4 (PAL), 5.7 (CGS).
- 6 iZ Pg 14 14 49.1, iZ Sg 14 14 52.8, D=25 km, not felt.
- 7 eiZ P 01 02 43, eZ (PP) 01 04 52, USCGS: H= 00 50 08, 2.0 N, 99.7 E, h=33 km, Northern Sumatra, M=5.2 (CGS).
- 7 eZ 01 45 18, eZ (Sg) 01 45 33.
- 7 eZ P 15 01 25, USCGS: H= 14 49 13.4, 45.5 N, 150.3 E, h=33 km, Kurile Islands.M=5.6 (CGS).
- 7 iZ- Pg 15 28 11.8, iZ Sg 15 28 20.8, D=80 km, BCIS: H= 15 28 05, 46.7 N, 13.9 E, Austria (Determination by

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- 7 (cont.) electronic calculating machine), Villach region, (Carinthia). Wien: 46.6 N, 14.0 E, Felt IV MCS at Wien.
- 7 iZ- Pg 15 42 49.2, iZ Sg 15 42 58.4, D=80 km, BCIS: H= 15 40 42, aftershock of preceding earthquake.
- 7 eiZ+ P 18 50 16, eZ 18 53 37, USCGS: H= 18 37 43.7, 0.4 N, 100.1 E, h=107 km, Northern Sumatra, M=5.1 (CGS).
- 8 eZ PKP 03 04 53, USCGS: H= 02 43 57, 49.0 S, 163.7 E, h=33 km, Auckland Islands region. M=6 1/2 (PAS), 6 1/4-6 1/2 (PAL).
- 8 eZ P 10 39 59, USCGS: H= 10 33 27.5, 29.7 N, 51.0 E, h=40 km, Southern Iran. Felt. M=4.8 (CGS). BCIS: H= 10 33 26, 29.4 N, 50.7 E, Central Iran (Determination by electronic calculating machine).
- 9 eiZ P 08 11 14, iZ! 08 11 25.4, iZpP 08 11 33.7, BCIS: H= 08 05 44, 40.2 N, 48.6 E, south of Georgia SSR, frontier Iran-USSR (Determination was made by electronic calculating machine). USCGS: H= 08 05 48.8, 39.8 N, 48.4 E, h=65 km, Northwestern Iran-USSR border region. Felt. M=5.1 (CGS). Obscured by microseisms.
- 10 iZ Pg 13 06 29.5, iZ Sg 13 06 31.5, D=16 km.
- 11 eZ P or PKP 03 49 51
- 11 iZ Pg 09 29 27.4, iZ Sg 09 29 36.6, D=70 km.
- 11 eZ P 13 29 12, USCGS: H= 13 17 37.5, 56.6 N, 161.2 E, h=33 km, Near east coast of Kamchatka. M=5.4 (CGS).
- 11 eZ P 15 51 53, USCGS: H= 15 40 18.0, 56.6 N, 161.4 E, h=33 km, Near east coast of Kamchatka. M=5.1 (CGS).
- 11 iZ Pg 16 01 22.5, iZ Sg 16 01 29.9, D=60 km.
- 11 eZ P 17 09 00, USCGS: H= 16 57 24.4, 56.6 N, 161.4 E, h=33 km, Near east coast of Kamchatka. M=5.2 (CGS).
- 11 eZ P 17 40 25, USCGS: H= 17 28 50.5, 56.6 N, 161.4 E, h=33 km, Near east coast of Kamchatka. M=5.1 (CGS).
- 11 eZ P 18 00 15.7, USCGS: H= 18 18 52.7, 56.5 N, 161.3 E, h=33 km, Near east coast of Kamchatka. M= 5.3 (CGS).
- 11 eZ P 19 18 31, eZ 19 21 18, USCGS: H= 19 06 57.1, 56.5 N, 161.3 E, h=33 km, Near east coast of Kamchatka. M= 5.6 (CGS).
- 12 iZ Pg 05 19 05.1, iZ Sg 05 19 06.7, D=10 km.
- 12 eZ PKP<sub>1</sub> 05 53 12, eZ PKP<sub>2</sub> 05 53 19, USCGS: H= 05 33 29, 18.2 S, 176.4 W, h=107 km, Fiji Islands region. M=5.2 (CGS).
- 12 iZ PKP 09 45 23.7, USCGS: H= 09 25 54.1, 16.7 S, 174.6 W, h=190 km, Tonga Islands. M=4.8 (CGS).
- 12 eZ 11 03 32, iZ (Sg) 11 03 39, traces.
- 13 iZ PKP 15 34 13.4, USCGS: H= 15 15 27.4, 18.1 S, 178.4 W, h=574 km, Fiji Islands region. M=4.5 (CGS).
- 14 eZ+ P 04 08 23.2, eZ pP 04 08 49, USCGS: H= 03 56 06.6,

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- 14 (cont.) 33.6 N, 131.6 E, h=60 km, Kyushu, Japan. M=5.3 (CGS).
- 15 eZ P 06 38 52, USCGS: H= 06 33 23.5, 35.6 N, 45.7 E, h=33 km, Iran-Iraq border region. M=4.8 (CGS). BCIS: H= 06 33 26, 35.8 N, 45.5 E, Determination by electronic calculating machine, Kurdistan, frontier Iraq-Iran.
- 15 eZ PKP 07 40 51, USCGS: H= 07 22 08.0, 18.0 S, 178.3 W, h=608 km, Fiji Islands region. M=4.2 (CGS).
- 15 eZ P 09 40 17, BCIS: H= 09 33 43, 29.1 N, 51.0 E, Determination by electronic calculating machine. Central Iran. USCGS: H= 09 33 46.7, 29.9 N, 51.0 E, h=33 km, Southern Iran.
- 15 eiZ P 16 04 51.4, USCGS: H= 15 52 21.5, 24.0 N, 122.2 E, h=42 km, Taiwan region. M=5.4 (CGS).
- 15 eZ+ P 20 08 12, iZ 20 08 17.1, BCIS: H= 20 03 52, Determination by electronic calculating machine, 34.8 N, 5.4 W, Northern Morocco, Ouezzane region. Felt V-VI at Meknes, III at Fez and Tetuan, II at Rabat and Khenifra. M=4 1/4-4 1/2 (Strasbourg), USCGS: H= 20 03 49.6, 34.9 N, 5.2 W, h=3 km, Morocco. Felt. M=5.0 (CGS).
- 16 iZ+ P 05 32 02.1, BCIS: H= 05 27 32, 39.6 N, 39.9 E, Eastern Turkey. (Determination made by electronic calculating machine). USCGS: H= 05 27 33.8, 39.8 N, 39.9 E, h=39 km, Turkey. M=5.1 (CGS).
- 16 iZ P 06 07 50.1, BCIS: H= 06 00 00, 49.7 N, 78.0 E, Kazakhstan, Semipalatinsk region. Uppsala: underground explosion. USCGS: H= 05 59 57.4, 49.7 N, 78.0 E, h=0 km, Eastern Kazakh SSR. M=6.0 (CGS).
- 16 eZ PP 22 58 12, USCGS: H= 22 40 44.0, 1.0 N, 118.8 E, h=33 km, Borneo. M=6.7 (CGS).
- 17 iZ Pg 00 16 34.5, iZ 00 16 42.2, traces.
- 17 eZ PKP<sub>1</sub> 00 21 05, iZ! 00 21 07.2, eZ PKP<sub>2</sub> 00 21 20, USCGS: H= 00 01 17.1, 16.3 S, 173.7 W, h=33 km, Tonga Islands. Felt: Tonga Islands and Apia, Western Samoa. M=5.4 (CGS).
- 17 eZ+ 08 34 36, iZ! 08 34 38.4, eZ PP 08 36 40, eZ PPP 08 38 08, USCGS: H= 08 15 39.3, 5.7 S, 150.7 E, h=45 km, New Britain region. Felt strongly. M=7 1/4 (Pas), 7-7 1/4 (Brk), 6.7 (CGS).
- 17 eZ PKP<sub>1</sub> 11 21 57, eZ PKP<sub>2</sub> 11 22 06, USCGS: H= 11 03 06.8, 23.4 S, 179.9 W, h=549 km, South of Fiji Islands, M=5.5 (CGS).
- 17 eZ P or PKP 11 24 12.
- 17 Z P 22 55 (00), BCIS: H= 22 50 49, 37.0 N, 35.6 E, Determination by electronic calculating machine, Central Turkey, Adana region. USCGS: H= 22 50 53.7, 36.7 N, 35.2 E, h=37 km, Turkey. M=4.5 (CGS).
- 18 eZ 03 46 01, traces.
- 18 eZ PKP 14 53 47, eZ PP 14 54 27, D=12 500 km, USCGS: H=

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- 18 (cont.) 14 34 54.5, 6.0 S, 148.2 E, h=49 km, New Britain region. Felt. M=6.1 (CGS).
- 18 eZ PKP 22 40 52, eZ 22 41 05, eZ PP 22 44 55, D=14 600 km, USCGS: H= 22 21 01.9, 20.2 S, 174.1 W, h=33 km, Tonga Islands, M=5.8 (CGS).
- 19 eiZ PKP 23 54 10.8, iZ! 23 54 22.2, USCGS: H= 23 35 06.6, 6.0 S, 150.8 E, h=3 km, New Britain region. Slight damage at Walindi. M=6 3/4 (PAS), 6 3/4 (BRK), 6.0 (CGS).
- 20 eiZ PKP 00 14 11, USCGS: H= 23 55 06.8, 6.9 S, 149.9 E, h=33 km, New Britain region. M=5.6 (CGS).
- 20 eZ PKP 01 42 27, USCGS: H= 01 23 40.6, 6.2 S, 150.4 E, h=61 km, New Britain region. M=5.2 (CGS).
- 20 iZ P 09 59 48.8, iZ 09 59 54.2, eZ PP 10 00 33, USCGS: H= 09 50 13.5, D=3000 km, 0.2 S, 18.2 W, h=33 km, Central Mid-Atlantic Ridge. M=5.1 (CGS).
- 20 iZ P 23 45 24, eZ 23 45 50, USCGS: H= 23 33 08.9, 44.6 N, 149.7 E, h=33 km, Kurile Islands. M=5.6 (CGS).
- 21 eZ P or PKP 01 03 50.
- 21 eZ P or PKP 03 34 33, eZ 03 35 30.
- 21 eZ P or PKP 05 13 27.
- 21 eZ PKP 13 00 26, USCGS: H=12 41 47.8, 6.2 S, 150.5 E, h=43 km, New Britain region. M=4.9 (CGS).
- 22 eZ P 00 11 45, eZ PP 00 12 39, USCGS: H= 00 02 33.3, 24.0 N, 45.4 W, h=33 km, North Atlantic Ridge. M=4.7 (CGS).
- 22 iZ PKP 02 57 16.8, USCGS: H= 02 38 29.0, 17.9 S, 178.5 W, h=563 km, Fiji Islands region. M=5.0 (CGS).
- 22 eZ+ PKP<sub>1</sub> 03 00 29, iZ! PKP<sub>2</sub> 03 00 34.1, iZ 03 01 10.4, USCGS: H= 02 40 55.9, 22.1 S, 171.1 E, h=106 km, Loyalty Islands region. M=5.3 (CGS).
- 22 eZ PKP 06 05 30, USCGS: H= 05 46 33.3, 6.2 S, 150.4 E, h=47 km, New Britain region. M=5.4 (CGS).
- 22 eZ (Sg) 14 30 59.6, traces.
- 24 eZ PKP 01 57 49, USCGS: H= 01 38 49.6, 6.3 S, 150.7 E, h=33 km, New Britain region. M=5.5 (CGS).
- 24 iZ PKP 06 53 57.3, USCGS: H= 06 35 14.5, 20.2 S, 179.2 W, h=660 km, Fiji Islands region. M=4.8 (CGS).
- 24 eZ P 10 54 51, eZ 10 55 19, USCGS: H= 10 41 33.5, 6.8 S, 107.4 E, h=125 km, Java. M=6.0 (CGS).
- 24 iZ Pg 12 02 42.7, iZ Sg 12 02 57.4, D=120 km.
- 24 eZ P 12 54 12, iZ! 12 54 14.7, eZ PP 12 58 06, D=10 500 km, USCGS: H= 12 40 51.4, 13.1 N, 124.7 E, h=5 km, Luzon, Philippine Islands. M=6.1 (CGS).
- 24 eZ P 13 03 50, eZ PP 13 07 41, USCGS: H= 12 50 40.2, 13.2 N, 124.9 E, h=97 km, Luzon, Philippine Islands. M=4.9 (CGS).
- 24 eZ (P) 22 38 44, eZ 22 39 26, eZ 22 40 (00), traces.

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- 25 eZ 00 11 12, traces.
- 25 eZ P 08 43 38, USCGS: H= 08 32 59.0, 26.6 N, 96.3 E, h=80 km, Burma. M=5.4 (CGS).
- 25 eZ PKP 09 41 26, USCGS: H= 09 24 08.9, 4.3 S, 122.2 E, h=610 km, Celebes. M=6.2 (CGS).
- 25 eZ 23 47 09, eZ 23 47 33, traces.
- 26 eZ 01 10 16, traces.
- 26 eZ 03 11 29, traces.
- 26 iZ P 10 33 34.5, eZ PP 10 36 31, D=8 900 km, USCGS: H= 10 21 07.2, 24.9 N, 122.0 E, h=33 km, Taiwan region. M=6-6 1/4 (PAL), 5.4 (CGS).
- 26 iZ+ Pg 16 33 14.9, iZ 16 33 20.8, iZ! Sg 16 33 26.5, eEN 16 33 27.3, iZ!! 16 33 29.0, F 16 37 - ; D=95 km. BCIS: H= 16 33 01, 46° 25' N, 133° 35' E (macroseismic epicenter). Ljubljana: Julian Alps, Italian-Yugoslav frontier. Felt IV-V in the epicentral region in Bovec, Predil, Log and Rabelj.
- 27 eZ P 07 58 15, USCGS: H= 07 47 07.6, 62.6 N, 151.5 W, h=113 km, Central Alaska. M=5.4 (CGS).
- 27 eZ P 11 11 24, eZ 11 14 14, USCGS: H= 11 03 48.0, 36.3 N, 70.7 E, h=219 km, Hindu Kush region. M=5.2 (CGS).
- 27 Z Pg 13 19 (00), eZ (Sg) 13 19 18.2, (D=140 km).
- 27 eZ P 14 00 02, iZ! 14 00 04.5, iZ 14 00 52.7, eZ 14 03 20, USCGS: H= 13 47 42.7, 37.9 N, 138.3 E, h=36 km, Near west coast of Honshu, Japan. M=5.5 (CGS).
- 27 eZ P 14 37 49, USCGS: H= 14 27 56, 7.7 N, 36.9 W, h=33 km, Central Mid-Atlantic Ridge. M=4.7 (CGS).
- 27 eZ (Pn) 19 02 45, eZ 19 03 13, traces.
- 27 eZ 20 07 (00), traces.
- 28 iZ Sg 00 11 56.7, traces.
- 28 eZ P 13 03 38, USCGS: H= 12 51 07.1, 35.5 N, 140.7 E, h=72 km, Near east coast of Honshu, Japan. M=4.7 (CGS).
- 28 eZ P 16 53 51, USCGS: H= 16 41 33.4, 7.7 S, 71.2 W, h=626 km, Western Brazil. M=5.4 (CGS).
- 28 eZ P 17 01 37, eZ 17 03 57, USCGS: H= 16 49 30.3, 8.0 S, 71.4 W, h=655 km, Western Brazil. M=5.6 (CGS).
- 29 eiZ PKP 06 39 14.3, USCGS: H= 06 20 10, 19.4 S, 169.2 E, h=324 km, New Hebrides Islands. M=4.9 (CGS).
- 29 eZ P or PKP 08 24 25, eZ 08 29 38, obscured by microseisms.
- 29 eZ 08 57 17, obscured by microseisms.
- 29 eZ P or PKP 19 39 14, obscured by strong microseisms.
- From November 30, 1964 at 04<sup>h</sup> 06<sup>m</sup> to December 1, 1964 at 09<sup>h</sup> 09<sup>m</sup> no time marks.

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- 1 eZ (P) 10 23 17, eZ 10 25 01, traces.
- 1 eZ Pn 11 26 27, eZ Pg 11 26 37, iZ Sn 11 27 01.5, iZ Sg 11 27 12.1, D=310 km.
- 2 eZ 03 55 08, iZ 03 55 10.5, traces.
- 2 eZ 07 28 40, traces.
- 2 eZ P 08 29 06, eZ PP 08 31 07, USCGS: H= 08 20 45.6, 30.6 N, 42.0 W, h=33 km, North Atlantic Ridge. M=5.2 (CGS). D=5 800 km.
- 2 eZ 13 22 53, eZ (Sn) 13 23 09, traces.
- 2 eZ(P) 15 30 22, traces.
- 2 eZ Pn 23 23 09, iZ Sn 23 23 52.5, iZ Sg 23 24 09, D=400 km.
- 3 eZ P 04 01 59, USCGS: H= 03 50 01.2, 15.0 S, 66.8 E, h=46 km, Mid-Indian Rise. M=6.1 (CGS).
- 5 iZ Pg 11 23 36.8, iZ Sg 11 23 47.7, D=80 km.
- 7 iZ- Pg 06 36 21.3, iZ Sg 06 36 42.2, D=160 km. BCIS: H=06 36 00, 43.3 N, 12.4 E, Venezian Alps, Italy.
- 7 eZ+ PKP 09 17 48.1, USCGS: H= 08 58 43.8, 5.4 S, 151.3 E, h=54 km. New Britain region. M=5 1/2-5 3/4 (BRK), 6 (PAL), 5.8 (CGS).
- 8 eZ P 18 02 23, USCGS: H= 17 49 46.3, 34.7 N, 139.2 E, h=31 km, Near south coast of Honshu, Japan. M=5.2 (CGS).
- 8 eiZ P 21 06 56.0, USCGS: H= 20 55 55.3, 19.0 N, 64.0 W, h=55 km, Leeward Islands. M=4.5 (CGS).
- 9 eZ 12 16 03, eZ 12 17 17, traces.
- 9 eZ P 13 48 34, eZ PP 13 52 49, USCGS: H= 13 35 42.4, 27.5 S, 63.2 W, h=586 km, Santiago del Estero Province, Argentina. M=5-5 1/4 (BRK), 6 1/4 (PAL), 5.9 (CGS). D=11 000 km.
- 9 iZ- Pn 18 30 17.0, iZ Px 18 30 28.2, iZ(Pg) 18 30 50.4, iZ PgPg 18 30 56.3, iZ! Sn 18 31 39.8, iZ! 18 31 56.7, iZ Sb 18 32 03.8, eNE 18 32 20, iZ!! Sg 18 32 42.4, iZ!! SgSg 18 32 49.6, D= 780 km. BCIS: H= 18 28 37, 41.0 N, 21.0 E, Macedonia. Ljubljana and Skopje: Felt in Macedonia in the region of Bitola, and Ohrid Lake. Maximum intensity: VII<sup>0</sup> MCS. USCGS: H= 18 28 38.2, 41.1 N, 21.0 E, h=30 km, Albania-Yugoslavia border region. Macedonia. M=4.8 (CGS).
- 9 eZ 18 43 41, eZ (Sn) 18 44 29, traces. BCIS: H= 18 40 44, aftershock of preceding earthquake. Felt IV<sup>0</sup> MCS.
- 9 iZ- Pn 19 07 58.2, iZ 19 08 14.6, iZ 19 08 25.6, iZ PgPg 19 08 37.7, iZ 19 08 54.2, iZ 19 09 19.6, iZ Sx 19 09 32.5, eNE 19 09 53, iZ! Sg 19 09 58.1, iZ!!

- 9 (cont.) SgSg 19 10 (00). D=780 km. BCIS: H= 19 06 17, aftershock of earthquake at 18<sup>h</sup> 28<sup>m</sup> 37<sup>s</sup>. Felt VI<sup>0</sup> MCS. Macedonia. USCGS: H= 19 06 16.9. 40.9 N, 20.6 E, h=33 km. Greece-Albania border region. Felt. M=4.9 (CGS).
- 10 eZ P 15 23 17, eZ PP 15 26 21, D=8 900 km. USCGS: H= 15 11 05.5, 40.4 N, 138.9 E, h=33 km, Eastern Sea of Japan. M=6 3/4-7 (BRK), 6 (PAL), 6.0 (CGS).
- 11 eZ 05 37 41, eZ (Sn) 05 38 45, traces.
- 11 eZ P 12 54 52, USCGS: H= 12 48 08.9, 29.0 N, 53.2 E, h=74 km, Southern Iran.
- 11 eiZ! P 16 15 59.0, eiZ pP 16 17 58.2, USCGS: H= 16 04 58.2, 38.9 N, 130.0 E, h=550 km, Sea of Japan. M=5.6 (CGS).
- 11 eZ P or PKP 16 39 28, traces.
- 12 eZ PKP 02 39 36, USCGS: H= 02 19 52.2, 15.0 S, 173.8 W, h=33 km, Tonga Islands. M=5.0 (CGS).
- 12 eZ P or PKP 07 39 00, traces.
- 12 Lju (12) eZ P 13 14 53, eZ (Sn) 13 16 57, USCGS: H= 13 11 50.2, 35.3 N, 23.0 E, h=60 km. Crete. M=4.4 (CGS).
- 13 eZ P 00 44 33, USCGS: H= 00 33 24.7, 64.9 N, 165.7 W, h=15 km, Alaska. Felt: Nome. M=6 (PAL), 5.4 (CGS). Obscured by microseisms.
- 13 eZ- P 13 28 38, USCGS: H= 13 15 49.8, 20.1 N, 122.0 E, h=33 km, Philippine Islands region. M=4.8 (CGS).
- 14 eZ PP 02 16 52, USCGS: H= 01 59 05.6, 54.3 S, 2.4 W, h=33 km, South Atlantic Ridge.
- 15 eZ Pn 08 22 31, eZ Pg 08 23 01, eZ (Sn) 08 23 51, (D=700 km).
- 16 eZ P 04 16 54, USCGS: H= 03 55 17.4, 6.0 N, 125.3 E, h=121 km, Mindanao, Philippine Islands. Felt: Davao. M=5.6 (CGS). Obscured by microseisms!
- 16 eZ P or PKP 21 45 43, iZ! 21 45 55.7.
- 17 eiZ+ P 05 30 49.8, USCGS: H= 05 18 34.8, 45.4 N, 150.1 E, h=17 km. Kurile Islands. M=5.3 (CGS).
- 17 iZ Pg 09 32 46.1, iZ (Sg) 09 33 (00), (D=115 km). BCIS: H= 09 32 21, Wien: 47.4 N, 15.1 E, Steiermark (Austria), Felt: Leoben IV<sup>0</sup> MCS (Steiermark).
- 18 iZ PKP 00 30 29.9, iZ! 00 30 30.4, USCGS: H= 00 10 59.6, 18.8 S, 168.9 E, h=69 km, New Hebrides Islands. Felt: Port Vila. M=4.4 (CGS).
- 18 iZ Pg 01 24 28.9, iZ Sg 01 24 47.4, D=150 km. BCIS: H= 01 24 03, aftershock of December 17, 1964 at 09<sup>h</sup> 32<sup>m</sup> 21<sup>s</sup> Austria.
- 18 iZ Pg 17 14 09.4, iZ Sg 17 14 12.0, D=15 km.
- 18 eZ P or PKP 20 25 16.
- 20 iZ Pg 00 51 17.7, iZ Sg 00 51 21.4, D=25 km.
- 20 iZ Pg 05 37 44.3, iZ! 05 37 48.1, iZ 05 37 56.3, BCIS:

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- 20 (cont.) H=05 37 12, Wien: 47.7 N, 16.1 E, aftershock of the seism on October 27, 1964 at 19<sup>h</sup> 46<sup>m</sup>, Austria. Felt IV<sup>o</sup> MCS in the region of Wienerneustadt, Mürz-zuschlag, Aspang and Semmering.
- 20 eiZ PKP 11 45 34.9, USCGS: H= 11 26 32.6, 20.1 S, 177.7 W, h=463 km, Fiji Islands region. M=4.8 (CGS).
- 20 iZ Pg 12 01 47.1, iZ Sg 12 01 51.2, D=30 km.
- 21 iZ (Pn) 21 45 54.2, iZ 21 46 09.3, traces.
- 21 iZ Pg 23 18 39.3, iZ Sg 23 18 44.1, D=40 km.
- 21 eZ 23 19 51, traces.
- 22 eiZ+ P 04 43 49.2, iZ! 04 43 51.6, eZ PP 04 45 33, D=4 800 km, BCIS: H= 04 36 34, 28.1 N, 56.9 E, h=30 km, South of Iran. USCGS: H= 04 36 34.7, 28.2 N, 57.0 E, h=42 km, Southern Iran. M=5.5 (CGS).
- 22 eZ+ P 08 12 28, eZ pP 08 12 56, USCGS: H= 08 01 12.6, 18.4 N, 68.8 W, h=115 km. Mona Passage. Felt widely in Puerto Rico. M=6 (PAS), 5.6 (CGS).
- 23 iZ Pn 00 11 31.3, iZ Pg 00 11 51.6, iZ Sn 00 12 07.3, BCIS: H= 00 10 50, about 44 1/2 N, 11.0 E, Apennines, south of Modena (Italy). D=320 km.
- 23 eZ Pn 02 25 34, iZ 02 25 14.3, traces.
- 23 eZ P or PKP 10 28 24
- 23 eZ P 20 00 31, USCGS: H= 19 47 59.3, 30.3 N, 131.1 E, h=33 km, Kyushu, Japan. M=5.4 (CGS).
- 23 eZ Pn 21 04 42, eZ Pg 21 05 10, Z Sn 21 06 (00), D=720 km, BCIS: H= 21 03 02, 41.0 N, 21.0 E, aftershock of seism on December 9, 1964 at 18<sup>h</sup> 28<sup>m</sup>. Skopje: felt V<sup>o</sup> MCS in the Ohrid Lake region, Macedonia.
- 24 eZ P 01 16 30, eZ 01 16 53, USCGS: H= 01 08 37.7, 36.2 N, 70.9 E, h=158 km, Hindu Kush region. Felt: Peshawar and Reasalpur. M=5.6 (CGS).
- 24 eiZ PKP<sub>1</sub> 19 04 38, eZ PKP 19 04 58, USCGS: H= 18 45 45.5, 4.4 S, 153.1 E, h=93 km, New Ireland region. Felt: Rabaul and Londolovit. M=6.1 (CGS).
- 24 eiZ P 19 37 39.7, USCGS: H= 19 25 52.5, 3.9 N, 96.9 E, h=141 km, Northern Sumatra. M=5.4 (CGS).
- 28 iZ- PKP<sub>1</sub> 16 34 56.1, iZ!! PKP<sub>2</sub> 16 35 04.9, iZ! pPKP 16 36 22.8, USCGS: H= 16 16 11.0, 22.1 S, 179.6 W, h=611 km, South of Fiji Islands. M=6 1/4-6 1/2 (PAS), 6.2 (CGS).
- 29 iZ Pg 03 44 14.3, iZ Sg 03 44 39.9, D=220 km.
- 29 eZ PKP 23 18 15, USCGS: H= 22 59 22.0, 17.2 S, 178.7 W, h=493 km, Fiji Islands region. M=4.9 (CGS).
- 30 iZ Pn 03 11 01.2, iZ Pg 03 11 10.2, iZ Sg 03 11 48.7, BCIS: H= 03 10 13, Bratislava: 48.4 N, 17.2 E, Czechoslovakia. Wien: felt IV<sup>o</sup> MCS at Bratislava and Marschegg region (Austria). D=350 km.

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- 30 eZ 08 11 38, eZ (Sn) 08 12 31, traces.
- 30 eZ P 15 39 47, USCGS: H= 15 27 25.8, 31.3 N, 138.8 E, h=261 km, South of Honshu, Japan. M=5.4 (CGS).
- 30 eZ PKP 21 52 08, USCGS: H= 21 30 58.8, 23.3 S, 179.9 W, h=547 km, South of Fiji Islands. M=5.2 (CGS).
- 31 Z Pn 16 21 (00), iZ 16 21 10.7, iZ Sn 16 23 26.3, D=1450 km. BCIS: H= 16 18 03, 35.8 N, 25.6 E, h=100 km, Sea of Crete. Felt: Cairo. USCGS: H= 16 18 01.7, 35.8 N, 25.6 E, h=86 km, Crete. Felt: Cairo, Egypt. M=5.1 (CGS).
- 31 eZ PKP 23 32 24, USCGS: H= 23 13 30.9, 4.6 S, 153.0 E, h=77 km, New Britain region. M=5.1 (CGS).

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