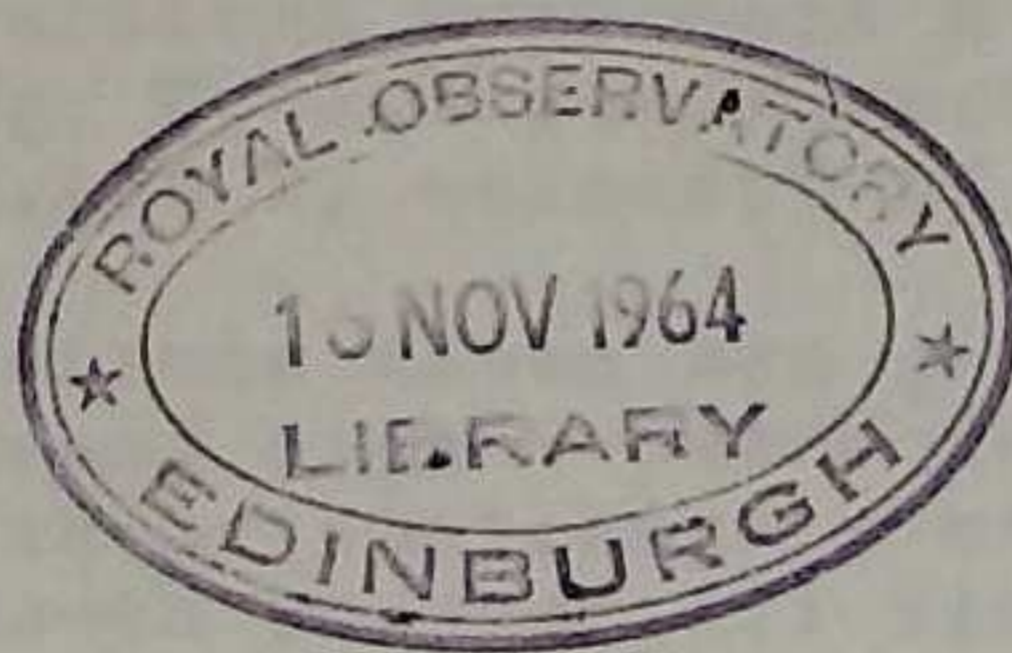


1963

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

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 1963 - December 1963)



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

1963

PRELIMINARY SEISMOLOGICAL BULLETIN

from October 1, to December 31, 1963

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.XI.1963):

Component	T_0	$v:1$	r/T_0^2	V
N-S	4.9	2.7:1	0.021	60
E-W	4.9	2.8:1	0.018	63

Hiller-Stuttgart, vertical component Z with galvanometrical
recording; $T=1.5$ sec, $T_g=1.5$ sec, $D_1=D_2=1$,
 $V_{max} = 10.150^{\circ} x$, 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. "hereever possible time readings up to one tenth of a
second are given.

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- 1 eiZ Pn 17 24 30.1, eiZ 17 24 31.1, eZ Sn 17 26 32,
D=1280 km, USCGS: H=17 21 54.0, 36.1 N, 22.3 E, h about
106 km, South of Greece, M=4.6 (CGS).
- 2 eZ 01 10 23, weak traces, near.
- 2 eiZ PKP2 06 06 58.1, iZ 06 07 09.8, USCGS: H= 05 47
05.5, 20.8 S, 174.1 W, h about 33 km, Tonga Islands, M=5.3

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- 2 (cont.)SD 0.2 (CGS).
- 2 eiZ Pn 21 08 12.4, (e)Z Sn 21 10 (33), USCGS: H= 21 05 14.7, 35.1 N, 23.5 E, h about 72 km, Near west coast of Crete, M=4.5 SD 0.2 (CGS).
- 3 eiZ P 23 37 00.5, iZ 23 37 11.6, USCGS: H= 23 24 34.7, 32.2 N, 131.6 E, h about 33 km, Kyushu, Japan. M=6 1/2 (Pas), 6 (Pal), 5.7 SD 0.2 (CGS).
- 5 iZ+ PKP 02 15 17.7, eiZ 02 15 24.5, USCGS: H= 01 55 35.2, 16.0 S, 173.2 W, h about 79 km, Tonga Islands, M=5.5 SD 0.3 (CGS).
- 5 eiZ Pg 11 58 36.6, eiZ Sg 11 59 17.7, iZ 11 59 39.6, D=345 km.
- 5 eZ P 15 05 34.3, BCIS: H=14 57 46, 11.2 N, 42.9 E, h about 33 km, French coast of Somaliland. Felt: Djibouti, many aftershocks. M=6.2 (Uetta), 5.6 (Pruhonicè), USCGS: H= 14 57 47.4, 11.6 N, 42.8 E, h about 33 km, French Somaliland, felt: Djibouti. M=5.3 (CGS).
- 8 eZ PKP 1 00 36 49.8, eiZ 00 36 59.7, iZ 00 37 06.0, USCGS: H= 00 17 01.1, 15.1 S, 173.2 W, h about 33 km, Samoa Islands region. Felt throughout Samoa Islands and Nandi, Lantoka, Fiji Islands. M=6 (Pas), 5 1/2-5 3/4 (BKS), 5.7 SD 0.4 (CGS).
- 8 eiZ Pn 05 42 27.5, iZ 05 43 15.8, eiZ 05 43 37.8, Z (Sn) 05 44 (00), iZ 05 44 17.2, D=900 km, USCGS: H= 05 40 28.7, 39.0 N, 20.4 E, h about 33 km, Near Ionian coast of Greece, M=4.3 (CGS).
- 9 eZ 21 41 58.6, eiZ! 21 42 06.4, iZ (Sg) 21 42 09.3, iZ 21 42 26.4, eiZ! 21 42 45.7, iZ! 21 42 59.6, eiZ! 21 43 18.2, BCIS: H= 21 41 40 (prov.comp.) 46.3 N, 12.4 E, Vaiont catastrophe. Exceptional development of waves of long period at the beginning of the record.
- 10 iZ+ Pg 19 18 58.3, iZ! Sg 19 19 00.4, D=20 km, Epicentral region: Jevnica-Kresnice, east from Ljubljana, $I_0=3^0$ MCS.
- 12 iZ+P 11 39 10.6, eiZ PP 11 42 29.6, eiZ PPP 11 44 18.5, USCGS: H= 11 26 57.9, 44.8 N, 149.0 E, h about 40 km, Kurile Islands. M=6 3/4-7 (Pas), 7 (BKS), 6 3/4-7 (Pal) D=9000 km.
- 12 eiZ P 12 14 34.6, USCGS: H= 12 02 18.8, 44.4 N, 149.6 E, h about 40 km, Kurile Islands, M=4.6 (CGS).
- 12 eiZ P 13 19 21.7, USCGS: H=13 07 07.9, 44.5 N, 149.4 E, h about 50 km, Kurile Islands, M=4.6 SD 0.3 (CGS).
- 13 iZ+ P 05 30 08.2, eE 05 30 16.3, iZ! 05 30 17.1, iZ! 05 30 57.8, iZ!! 05 31 25.5, eZE PP 05 33 20, eE S 05 40 15, eZ S 05 40 16, eE L 05 47 15, D=9100 km, USCGS: H= 05 17 57.1, 44.8 N, 149.5 E, h about 60 km, Kurile Islands. Felt: Hokkaido, Honshu, Japan. M=8 1/4 (Pas), 7 3/4-8 (Pal).
- 13 eiZ P or PKP 08 55 11.4.
- 13 eiZ P or PKP 09 13 38, eiZ 09 13 53.3.

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- 13 eZ P 10 46 14.3, eiZ (pP) 10 46 29.2, USCGS: H= 10 33 57.3, 44.4 N, 150.3 E, h about 45 km, Kurile Islands, M=4.7 SD 0.2 (CGS).
- 13 eiZ P 12 41 52.9, eiZ 12 41 54.3, USCGS: H= 12 29 39.2, 45.9 N, 151.8 E, h about 30 km, Kurile Islands, M=5.0 SD 0.4 (CGS).
- 13 eiZ+ P 12 54 25.7, iZ 12 54 38.9, eiZ! 12 54 45.3, USCGS: H=12 42 13, 44.4 N, 149.4 E, h about 55 km, Kurile Islands, M=5.2 SD 0.3 (CGS).
- 13 eZ P 13 06 13, USCGS: H=12 53 56.9, 44.6 N, 149.3 E, h about 25 km, Kurile Islands. M=4.6 SD 0.4 (CGS).
- 13 eiZ P 13 10 34.2, eiZ! 13 10 35.1, eiZ!! 13 10 47.0, iZ!! 13 10 49.1, USCGS: H= 12 58 21.6, 45.0 N, 150.1 E, h about 50 km, Kurile Islands, M=5.4 SD 0.4 (CGS).
- 13 eiZ P 13 33 13.2, USCGS: H= 13 21 00.3, 44.5 N, 149.3 E, h about 60 km, Kurile Islands, M=4.5 (CGS).
- 13 eiZ P 14 38 26.1, eiZ (pP) 14 38 38.5, USCGS: H= 14 26 11.9, 44.5 N, 149.5 E, h about 50 km, Kurile Islands, M=5.1 SD 0.4 (CGS).
- 13 iZ+ P 16 12 04.8, eiZ 16 12 28.5, iZ 16 12 40.0, USCGS: H= 15 59 52.9, 45.6 N, 150.5 E, h about 35 km, Kurile Islands, M=6.1 SD 0.3 (CGS).
- 13 eiZ P 17 37 54.0, USCGS: H= 17 25 55.4, 44.5 N, 150.8 E, h about 45 km, Kurile Islands, M=4.6 SD 0.3 (CGS).
- 13 iZ P 17 43 32.7, eZ 17 43 39, USCGS: H= 17 31 18.7, 44.3 N, 149.2 E, h about 45 km, Kurile Islands. M=4.7 SD 0.3 (CGS).
- 13 eiZ P 18 23 12.9, eiZ 18 23 26.4, USCGS: H= 18 10 55.2, 44.0 N, 150.0 E, h about 45 km, Kurile Islands, M=4.7 SD 0.2 (CGS).
- 13 Z 18 26 (00) in minute interruption, eiZ (pP) 18 26 21.0, USCGS: H= 18 13 44.6, 44.2 N, 149.4 E, h about 55 km, Kurile Islands, M=4.7 SD 0.4 (CGS).
- 13 iZ P 19 38 18.0, eiZ 19 38 27.1, USCGS: H=19 26 04.2, 45.7 N, 151.5 E, h about 30 km, Kurile Islands, M=4.6 SD 0.4 (CGS).
- 13 eiZ P 19 39 50.1, USCGS: H= 19 27 38.2, 45.7 N, 151.7 E, h about 45 km, Kurile Islands. M=5.5 SD 0.2 (CGS).
- 13 eZ P 19 53 34, USCGS: H=19 41 20.5, 45.3 N, 151.4 E, h about 45 km, Kurile Islands. M=4.9 SD 0.4 (CGS).
- 13 eiZ P 20 39 53.1, USCGS: H= 20 27 38.2, 45.6 N, 151.7 E, h about 30 km, Kurile Islands, M=4.8 SD 0.4 (CGS).
- 13 eiZ P 21 47 53.7, USCGS: H= 21 35 37.3, 45.3 N, 151.7 E, h about 45 km, Kurile Islands, M=4.7 SD 0.3 (CGS).
- 13 eiZ- P 22 07 17.7, eiZ 22 07 22.8, eZ 22 08 56.4, USCGS: H= 21 55 00.8, 44.7 N, 152.1 E, h about 50 km, Kurile Islands, M=5.5 SD 0.3 (CGS).

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- 13 eiZ P 22 15 12.1, USCGS: H= 22 02 58.1, 45.1 N, 150.9 E, h about 45 km, Kurile Islands, M=4.9 SD 0.4 (CGS).
- 14 eZ P 00 04 39, eiZ 00 04 42.2, eiZ! 00 04 53.3, eiZ 00 05 17.9, USCGS: H= 23 52 22.8, 44.5 N, 150.1 E, h about 50 km, Kurile Islands.
- 14 eiZ- P 03 43 21.9, USCGS: H= 03 31 07.8, 45.9 N, 151.8 E, h about 25 km, Kurile Islands, M=5.0 SD 0.3 (CGS).
- 14 eiZ P 04 18 13.6, eiZ 04 18 38.3, USCGS: H= 04 06 01.7, 44.9 N, 150.2 E, h about 50 km, Kurile Islands, M=5.2 SD 0.3 (CGS).
- 14 eiZ+ P 04 23 29.3, eiZ 04 23 30.8, USCGS: H=04 11 14.0, 44.7 N, 150.6 E, h about 45 km, Kurile Islands, M=5.3 SD 0.3 (CGS).
- 14 iZ P 05 36 18.7, eiZ 05 36 44.4, USCGS: H= 04 24 12.3, 44.5 N, 151.0 E, h about 55 km, Kurile Islands, M=4.9 SD 0.3 (CGS).
- 14 Z P 13 34 (00) in minute interruption, iZ! 13 34 16.2, eiZ 13 34 28.6, eiZ PP 13 37 06, USCGS: H= 13 21 45.2, 44.8 N, 151.0 E, h about 60 km, Kurile Islands, M=5 3/4 (BKS), 5.9 SD 0.3 (CGS), D= about 9000 km.
- 14 Z 14 11-12 weak traces.
- 14 eiZ- P 21 20 27.0, Z! 21 21 (00), USCGS: H= 21 08 00.1, 45.0 N, 150.5 E, h about 45 km, Kurile Islands, M=5.1 SD 0.2 (CGS).
- 14 eiZ Pg 23 44 19.4, iZ Sg 23 44 48.3, D= 245 km, weak.
- 15 iZ P 04 25 41.3, weak traces, USCGS: H=04 13 22, 2.6 N, 98.9 E, h about 137 km, Sumatra.
- 15 eiZ P 10 05 13.8, eiZ 10 05 42.3, BCIS: H=09 59 26, 67.4 N, 17.9 W, h normal, M=5.7 (Pruh), 5.3 (Collm), Determination by electr. calculating machine, Straits of Denamrk, north of Iceland.
- 16 eiZ P 15 51 00, iZ 15 51 02.2, iZ 15 51 17.8, iZ 15 52 01.8, eiZ PP 15 52 46.5, USCGS: H=15 43 00.8, 38.6 N, 73.4 E, h about 33 km, Tadzik SSR, M=5.9 SD 0.2 (CGS), D=4.800 km.
- 17 eiZ 02 44 02.0, iZ Pg 02 44 10.3, eiZ Sg 02 44 53.8, Z 02 45 (00) in minute interruption, D= about 360 km.
- 17 eZ P 23 36 47, iZ! 23 36 50.0, eiZ! 23 37 08.3, USCGS: H= 23 24 34.4, 44.6 N, 149.0 E, h about 45 km, Kurile Islands, M=5.4 SD 0.3 (CGS).
- 18 Z 08 45-49 weak traces.
- 18 eZ P 09 05 47, eZ 09 06 01, USCGS: H=08 53 33.9, 44.8 N, 150.2 E, h about 60 km, Kurile Islands, M=5.0 SD 0.3 (CGS).
- 18 eiZ Pn 15 31 22.7, eiZ 15 31 30.8, iZ Pg 15 31 47.1, eiZ Sn 15 32 23.0, eiZ! 15 32 49.5, eiZ SgSg 15 32 56.8, iZ! 15 33 11.0, D= about 580 km.

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- 19 eiZ P 02 30 48.4, eiZ 02 30 56.3, USCGS: H= 02 18 37.9, 46.8 N, 153.7 E, h about 45 km, Kurile Islands, M=5.2, SD 0.4 (CGS).
- 19 eiZ P 03 46 33.7, eiZ 03 46 34.6, iZ 03 46 50.5, USCGS: H=03 34 19.6, 46.6 N, 153.8 E, h about 33 km, Kurile Islands, M= 5 1/2 (Pal), 5.4 SD 0.4 (CGS).
- 19 eiZ P 03 59 20.7, iZ 03 59 22.8, USCGS: H= 03 47 07.7, 46.8 N, 153.8 E, h about 25 km, Kurile Islands, M=5.2 SD 0.2 (CGS).
- 20 eiZ+ P 01 05 25.4, eiZ 01 05 38.3, iZ! 01 05 57.7, eN 01 06 (00), iZ 01 06 14.6, eE 01 06 28, eiZ PP 01 08 39.0, eZ S 01 15 39, eN S 01 15 41, eN M 01 47 - , D= about 9000 km, USCGS: H= 00 53 07.2, 44.7 N, 150.7 E, h about 25 km, Kurile Islands. Seismic sea waves.
- 20 eiZ P 01 34 50.5, USCGS: H=01 22 35.1, 45.9 N, 153.6 E, h about 40 km, Kurile Islands, M=5.0 (CGS).
- 20 Z P 09 22 (59) in minute interruption, iZ 09 22 10.9, USCGS: H=09 10 43.9, 44.4 N, 150.0 E, h about 40 km, Kurile Islands. M=5.5 SD 0.3 (CGS).
- 20 eiZ+ P 12 04 34.4, eiZ 12 04 41.9, iZ! 12 04 51.1, eiZ 12 05 29.8, USCGS: H=11 52 20.7, 44.7 N, 150.2 E, h about 45 km, Kurile Islands, M=5.1 SD 0.5 (CGS).
- 20 eiZ P 13 05 08.7, iZ 13 05 09.9, eiZ 13 05 14.5, USCGS: H=12 59 58.6, 24.1 N, 5.1 E, h about 0 km, Southern Algeria. M=5.6 SD 0.1 (CGS).
- 20 eiZ P 13 33 26.2, USCGS: H= 13 21 14.1, 45.1 N, 150.5 E, h about 45 km, Kurile Islands, M=5.2 (CGS).
- 20 eiZ P 17 53 42.1, iZ 17 53 53.3, USCGS: H= 17 41 27.3, 44.2 N, 149.6 E, h about 45 km, Kurile Islands, M=4.8 SD 0.3 (CGS).
- 20 eiZ P 18 11 15.1, eiZ! 18 11 26.7, USCGS: H= 17 58 58.7, 44.2 N, 149.6 E, h about 45 km, Kurile Islands, M=5.0 SD 0.3 (CGS).
- 20 eiZ P or PKP 22 38 49.8, eiZ 22 39 04.3.
- 21 eZ P 13 21 19, eiZ 13 21 33.4, USCGS: H= 13 09 05.4, 45.2 N, 151.6 E, h about 45 km, Kurile Islands, M=4.8 SD 0.3 (CGS).
- 21 eZ P 17 33 03, USCGS: H= 17 20 46.0, 44.1 N, 150.3 E, h about 65 km, Kurile Islands, M=5.0 SD 0.4 (CGS).
- 21 Z P 23 31 (00), USCGS: H= 23 18 41.3, 44.0 N, 150.3 E, h about 50 km, Kurile Islands, M=4.9 SD 0.4 (CGS).
- 21 iZ P 23 45 29.0, eiZ 23 45 42.4, USCGS: H= 23 33 16.1, 44.2 N, 149.0 E, h about 55 km, Kurile Islands.
- 22 eiZ+ P 03 29 28.9, iZ 03 29 30.9, eiZ 03 29 42.0, Z! 03 30 (00), USCGS: H= 03 17 15.2, 45.0 N, 150.2 E, h about 45 km, Kurile Islands, M=5.2 SD 0.3 (CGS).
- 22 eiZ P or PKP 22 17 51.3, weak traces.

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- 23 eiZ-P 09 59 25.5, eiZ 09 59 47.6, USCGS: H= 09 47 08.1, 41.2 N, 144.2 E, h about 50 km, East of Honshu, Japan. M=5.4 (CGS).
- 24 eiZ+ P 01 18 42.0, eiZ 01 18 54.8, USCGS: H= 01 06 25.9 44.5 N, 150.3 E, h about 45 km, Kurile Islands. M=5.0 SD 0.4 (CGS).
- 24 eiZ+ P 07 39 30.6, iZ 07 39 38.8, iZ! 07 39 46.4, eiZ PP 07 43 18.2, USCGS: H= 07 26 23.9, 4.9 S, 102.9 E, h about 50 km, Off south coast of Sumatra, M=6.0 (Pal), 6.1 SD 0.3 (CGS), D=10.250 km.
- 25 iZ P 10 30 09.5, weak trace, USCGS: H= 10 17 57.1, 45.3 N, 150.2 E, h about 40 km, Kurile Islands, M=5.0 SD 0.3 (CGS).
- 27 eiZ(Pn) 07 20 54.1, eiZ Sn 07 21 37.3, eiZ 07 21 44.5, Z! 07 22 (00). D= about 400 km.
- 27 iZ! P or PKP 09 04 28.6, eiZ 09 04 35.6.
- 28 eiZ PKP 08 15 12.3, eiZ 08 15 35.2, USCGS: H= 07 55 12.2, 24.3 S, 176.0 W, h about 33 km, Tonga Islands region. M=5 1/4 (BKS), 5.4 SD 0.4 (CGS).
- 28 eiZ P 12 15 11.9, iZ 12 15 25.8, USCGS: H= 12 03 19.8 52.8 N, 159.8 E, h about 33 km, Off coast of Kamchatka. M=5-5 1/4 (BKS), 5 1/4 (Pal), 5.7 SD 0.3 (CGS).
- 29 iZ (Pg) 11 47 10.2, eiZ (Sg) 11 47 16.8, weak, (D= about 50 km), not felt.
- 29 iZ Pn 22 42 05.9, iZ Pb 22 42 10.9, iZ 22 42 13.4, iZ Pg 22 42 17.4, iZ!PgPg 22 42 19.7, iZ Sn 22 42 47.5, iZ (Sb) 22 42 54.9, Z! Sg 22 43 (00), iZ! 22 43 08.8, D=380 km, BCIS: H= 22 41 22, 43.2 N, 17.4 E, Determination by electronic calculating machine. Yugoslavia, east of Makarska.
- 30 iZ Pg 04 06 46.0, iZ Sg 04 07 04.8, D=160 km.
- 31 eiZ+ PKP1 03 37 32.9, eiZ PKP2 03 38 00.7, eZ PP 03 41 33, USCGS: H= 03 17 42.0, 21.8 S, 175.0 W, h about 33 km, Tonga Islands, M=6 1/4 (Pas), 5 1/2 (BKS), 6 1/4 - 6 1/2 (Pal), 5.2 SD 0.3 (CGS). D= about 17.150 km.
- 31 eiZ PKP 09 10 23.7, USCGS: H= 08 51 42, 17.9 S, 178.8 W, h about 637 km, Fiji Islands region, M=4.3 SD 0.4 (CGS).
- 31 eiZ P or PKP 10 04 12.6.
- 31 eiZ+ Pg 11 54 41.7, iZ 11 54 45.1, iZ! Sg 11 54 51.9, iZ! 11 54 53.7. D=85 km.
- 31 eiZ 13 21 45.6, eiZ (Sg) 13 22 09.7, weak traces.
- 31 Z 17 21-22 weak traces.



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- 1 eiZ P 04 04 40.5, USCGS: H= 03 52 25.9, 51.7 N, 159.8 E, h about 33 km, Near east coast of Kamchatka. M=4.4 SD 0.4 (CGS).
- 1 eiZ 04 30 53.9, eiZ 04 31 04.7, weak traces, near.
- 1 eiZ PKP1 21 19 13.0, iZ! 21 19 22.0, eiZ 21 19 26.5, USCGS: H= 20 59 28.1, 22.5 S, 176.8 W, h about 71 km, Tonga Islands. M=5.4 (CGS).
- 1 eiZ+ P 22 53 31.3, USCGS: H= 22 41 23.8, 44.9 N, 148.9 E, h about 60 km, Kurile Islands, M=5.5 SD 0.3 (CGS).
- 3 eiZ+ P 03 23 30.6, iZ! 03 23 33.1, eiZ! 03 23 38.7, eiZ PP 03 26 47, eZ 03 27 13, eZ SP 03 35 37. USCGS: 03 10 12.7, 3.5 S, 77.8 W, h about 33 km, Peru-Ecuador border, M= 6 3/4 (Pas), 6-6 1/4 (BKS), 6.0 (Pal), 6.0 SD 0.3 (CGS). D=about 10.400 km.
- 3 eiZ Pn 14 09 42.8, eiZ 14 11 11.1, eiZ 14 11 39.9, eZ Sn 14 12 44.5, eiZ! 14 13 04.3, eiZ 14 13 11.3, D= about 880 km, weak.
- 3 iZ Pn 14 15 43.0, eiZ Sn 14 17 18.9, eiZ! 14 17 32.9, D=about 900 km.
- 3 iZ Pn 14 33 44.0, eiZ 14 35 12.6, iZ Sn 14 35 28.7, eiZ! 14 36 26.0, D= about 900 km.
- 3 iZ Pn 14 37 59.9, iZ! 14 38 04.5, iZ Sn 14 39 34.1, iZ! 14 39 37.5, eiZ! 14 39 54.7, eiZ SgSg 14 40 28, eZ! 14 41 (00). D= about 900 km. BCIS: H= 14 36 01, 38.9 N, 21.2 E, Northwest of Greece, Gulf of Arta region. USCGS: H= 14 35 59.4, 39.2 N, 21.1 E, h about 29 km, Near west coast of Greece. M=4.3 (CGS).
- 3 eiZ Pn 16 01 11.8, eiZ 16 01 43.2, iZ Sn 16 01 45.3, D=about 950 km, USCGS: H=15 59 04.6, 38.4 N, 20.5 E, Ionian Islands. M=4.1 (CGS).
- 4 eZ P 01 31 44, iZ! (PKP1) 01 32 02.0, eZ! 01 33 45, eZ! PKP2 01 35 40, eE 01 36 28, eZ! PP 01 36 30, eiZ! S 01 44 07.9, eN! S 01 44 08, eE M 02 23 - ; USCGS: H₂: 01 17 08.9, 6.8 S, 129.6 E, h about 80 km, Banda Sea. Slight damage at Darwin; felt throughout Australia, northern Tasmania and Papua. BCIS: H= 01 17 17, 8° S, 129.5 E, h about 100 km, M=6 (Port Moresby), 7 1/2 (Wellington). Timor Sea. Forcibly felt in North Australia and New Guinea. D=about 12.500 km. USCGS: H₁ = 01 14 32.8, 15.1 S, 167.3 E, h about 154 km, New Hebrides. M=6 4/4-7 (Pas), 5.8 (CGS). Two earthquakes registered simultaneously.
- 4 eiZ+ Pn 15 46 34.7, iZ! 15 46 41.9, iZ! Pg 15 46 43.3, iZ Sn 15 47 08.5, eiZ Sg 15 47 22.9. D= 330 km. BCIS: H= 15 45 49, 44.5 N, 11.0 E, Emilia (Italy). Felt in Reggio Emilia. USCGS: H= 15 45 46.8, 44.5 N, 11.0 E, Emilia Romagna (Italy), h about 16 km, M=4.1 (CGS).

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- 4 eiZ Pn 23 15 35.7, iZ Sg 23 16 19.9, iZ! 23 16 28.6, D=300 km.
- 5 eiZ Pg 20 00 56.5, eiZ(Sg) 20 01 14.9, (D=about 150 km).
- 6 eiZ P or PKP 21 11 01.3, eZ 21 12 31, eiZ! 21 13 55, obscured by microseisms.
- 8 iZ PKP 04 44 03.4, eiZ 04 44 09.9, USCGS: H= 04 24 14.4, 23.0 S, 170.9 E, h about 35 km, New Hebrides Islands region. M=4.8 (CGS).
- 8 eiZ Pg 13 41 56.1, iZ Sg 13 42 11.8, eiZ! 13 42 17.6, D= about 125 km.
- 9 iZ Pg 10 03 10.7, iZ Sg 10 03 13.4, D= 22 km, local. Not felt.
- 9 eiZ P 21 27 45.5, iZ 21 27 48.7, eNE 21 27 54, iZ! 21 28 (00), iZ pP 21 29 59.0, iZ 21 30 11.8, eiZ PP 21 31 33.7, iZ 21 31 41.6, eiZ PPP 21 33 41, eiZ! 21 34 40.8, e!NE S 21 37 28, eZ 21 38 13. D= about 10.350 km. USCGS: H=21 15 30.4, 9.0 S, 71.5 W, h about 600 km. Western Brasil. M=6 3/4-7 (Pas), 6 3/4-7 (BKS), 5.9 SD 0.4 (CGS).
- 9 eiZ 21 44 52.5, eiZ 21 45 30.8, traces obscured by previous earthquake.
- 9 iZ P 21 52 57.5, iZ 21 53 01.6, eiZ! pP 21 55 18.6, D= about 10.300 km.
- 10 eZ P 01 12 53.6, iZ 01 12 55.5, eiZ pP 01 15 02.0, iZ 01 15 10.4, eiZ PP 01 16 45.5, D= about 10.350 km, USCGS: H=01 00 38.8, 9.2 S, 71.5 W, h about 600 km, Western Brasil. M=6 1/2-6 3/4 (Pas), 6 1/4 (BKS), 5.6 SD 0.4 (CGS).
- 10 eiZ P 17 29 56.9, Z! 17 30 (00), eiZ! 17 30 11.4, USCGS: H=17 17 42.7, 44.4 N, 149.0 E, h about 40 km, Kurile Islands. M=5.5 SD 0.4 (CGS).
- 10 iZ Pn 18 39 30.1, iZ 18 39 40.7, eiZ 18 40 57.1, iZ Sn 18 41 12.9, eiZ 18 41 29.5, USCGS: H= 18 37 18, 20.9 E, 37.3 N, h about 33 km, Ionian Sea. M=4.5 SD 0.3 (CGS).
- 11 eiZ PKP1 11 48 31.7, iZ! PKP2 11 48 36.8, USCGS: H= 11 29 06.4, 16.9 S, 174.4 W, h about 185 km, Tonga Islands. M=5.2 SD 0.3 (CGS).
- 12 eiZ Pn 07 10 06.6, iZ 07 10 18.8, eiZ 07 10 25.7, eiZ, PgPgPg 07 11 25.5, eZ! 07 13 (00). D= about 1720 km. BCIS: H= 07 06 33, 35.8 N, 29.7 E, Deeper than usual. Determination by electronic calculating machine. Eastern Mediterranean Sea, between Rhodes and Cyprus. USCGS: H= 07 06 31.2, 35.5 N, 29.7 E, h about 69 km. Near southwest coast of Turkey. M= 5.0 SD 0.3 (CGS).
- 13 eiZ Pn 23 13 08.1, eiZ (Sn) 23 14 27.9, Z 23 15 (00), D= about 770 km, weak.
- 14 eZ PKP 04 55 19, iZ 04 55 21.3, eiZ 04 55 57.0, USCGS:

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- 14 (cont.) H= 04 35 48.5, 17.5 S, 167.7 E, h about 33 km, New Hebrides Islands. Felt. M=4.8 SD 0.3 (CGS).
- 14 eiZ P or PKP 14 07 36.1, iZ 14 07 50.8.
- 14 eiZ PKP 14 20 51.0, USCGS: H= 14 01 18.4, 17.4 S, 167.6 E, h about 33 km, New Hebrides Islands. M=4.5 (CGS).
- 14 eiZ PKP 14 25 08.1, eiZ 14 25 13.0, USCGS: H= 14 05 35.6, 17.5 S, 167.7 E, h about 33 km, New Hebrides Islands. M=4.6 (CGS).
- 14 eZ PKP 20 30 38.5, eiZ 20 30 53.4, USCGS: H= 20 11 03.7, 19.0 S, 168.8 E, h about 33 km, New Hebrides Islands. M=4.6 (CGS).
- 14 eiZ PKP 23 57 22.8, iZ 23 57 31.9, weak. USCGS: H= 23 37 49.5, 17.4 S, 167.8 E, h about 33 km, New Hebrides Islands. M=4.5 (CGS).
- 15 iZ+ NE Pg 05 15 49.9, iZ!! Sg 05 15 52.1, iNE!! Sg 05 15 53.5, F 05 21 - ; D=20 km. Macroseismic epicenter: 46° 06' N, 14° 48' E, Litija region, east from Ljubljana, Slight damage. Io=6° MCS. Strongly felt in Litija and Kresnice. Ljubljana felt 4-5° MCS. BCIS: H= 05 15 46, 46° 0' N, 14.8° E. Same epicenter of May 19, 1963, 10 00 Yugoslavia, east from Ljubljana. Felt: Trieste 3° MCS, Zagreb: 2° MCS. USCGS: H= 05 15 46.6, 46.1 N, 14.6 E, h about 35 km, Yugoslavia. M=3.8 (CGS).
- 15 eiZ P 21 18 47.4, iZ 21 18 53.3, eZ PP 21 21 25.7, D= about 9000 km. USCGS: H= 21 06 34.0, 44.3 N, 149.0 E, h about 50 km, Kurile Islands. M=6.0 SD 0.4 (CGS).
- 16 eiZ PKP1 23 03 14.4, eiZ! PKP2 23 03 41.1, obscured by microseisms, USCGS: H= 22 43 26.4, 22.3 S, 175.0 W, h about 33 km, Tonga Islands. M=6 (Pas), 5 1/4-5 1/2 (BKS), 5.6 SD 0.3 (CGS).
- 17 iZ+ P 00 57 58.0, eiZ 00 58 14.8, eZ PP 01 00 06, eiZ 01 00 21.5, USCGS: H= 00 48 02.6, 7.6 N, 37.4 W, h about 33 km, North Atlantic Ocean, M= 6 1/4-6 1/2 (Pas), 5 1/2-5 3/4 (BKS), 6-6 1/4 (Pal), 5.9 SD 0.4 (CGS). D=6450 km.
- 17 eiZ Pn 07 52 10.6, eiZ 07 53 49.0, obscured by microseisms.
- 18 eiZ PKP 14 11 23.1, iZ 14 11 35.9, USCGS: H= 13 51 35.8, 15.9 S, 173.3 W, h about 33 km, Tonga Islands. M=5.1 SD 0.2 (CGS).
- 18 eZ P 14 51 36, eiZ 14 51 38.9, eZ PP 14 55 15, USCGS: H= 14 38 28.9, 29.9 N, 113.6 W, h about 14 km, Gulf of California. M=6 1/2 (Pas), 6 1/2 - 6 3/4 (Pal), 5.7 SD 0.6 (CGS).
- 19 eiZ Pn 04 45 54.5, eZ 04 46 54.5, weak traces.
- 19 iZ Pg 09 50 34.9, iZ 09 50 36.7, iZ Sg 09 50 37.1, iZ 09 50 40.6, iZ! 09 50 44.1, D=21 km. Quarry blast of 1 ton at Kresnice, east from Ljubljana.
- 19 eiZ+ PKP1 11 05 31.5, iZ+! PKP2 11 05 36.6, eiZ 11 05



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- 19 (cont.) 44.6, USCGS: H= 10 45 49.1, 22.5 S, 171.3 E, h about 36 km, Loyalty Islands region. M=5.0 SD 0.4 (CGS).
- 19 eiZ- P 11 13 09.5, eiZ 11 13 19.6, USCGS: H= 11 00 54.3 44.4 N, 149.2 E, h about 33 km, Kurile Islands, M=5.8 SD 0.3 (CGS).
- 19 eiZ+ P 17 50 29.6, eiZ 17 50 50.0, USCGS: H= 17 38 39.7, 53.1 N, 159.6 E, h about 40 km, Off east coast of Kamchatka. M=4.9 SD 0.3 (CGS).
- 20 iZ Pg 02 16 53.0, iZ Sg 02 16 55.3, iNE Sg 02 16 54.0, D=20 km, Litija region. Io=4-5° MCS. Ljubljana felt 3° MCS. BCIS: H= 02 16 49, 46.1 N, 14.8 E,
- 20 eiZ PKP1 12 19 48.9, eiZ! 12 19 59.2, eiZ 12 20 17.0, USCGS: H= 11 59 58.5, 22.2 S, 175.2 W, h about 33 km, Tonga Islands. M=5.6 SD 0.2 (CGS).
- 20 eiZ Pn 22 05 13.4, eiZ 22 05 22.0, iZ Pg 22 05 25.0, iZ PgPg 22 05 28.9, eiZ 22 05 42.7, eiZ Sn 22 05 53.8, iZ! (Sb) 22 05 58.7, eiZ Sg 22 06 09.3, D= 370 km.
- 21 eZ P 18 53 22, eiZ 18 53 26.6, obscured by microseisms. USCGS: H= 18 42 44.8, 13.8 S, 14.5 W, h about 33 km, Ascension Islands region. M=5.1 (CGS).
- 21 Z 21 14-15 weak traces.
- 22 eiZ P 14 58 06.9, eiZ 14 58 21.7, USCGS: H= 14 45 51.7, 44.4 N, 149.0 E, h about 33 km, Kurile Islands. M=5.6 SD 0.4 (CGS).
- 22 eZ P 16 27 35, eiZ 16 27 48.4, USCGS: H= 16 15 54.0, 10.4 N, 94.0 E, h about 33 km, Andaman Islands region. M=5.7 (CGS).
- 22 iZ PKP 17 23 31.8, iZ! 17 23 42.4, Z 17 24 (00), USCGS: H= 17 03 38.9, 17.9 S, 172.8 W, h about 33 km, Tonga Islands region. M=5.2 SD 0.3 (CGS).
- 22 eZ (Pn) 20 18 05, eZ 20 19 18.7, eiZ (Sn) 20 19 31.6, very weak traces.
- 22 Z 20 29-30 weak traces.
- 22 eiZ P 21 44 54.7, very weak traces. USCGS: H= 21 41 31, 37.5 N, 30.0 E, h about 20 km, Southwestern Turkey, M=5.1 (CGS).
- 23 eiZ 00 43 41.7, eiZ 00 43 49.4, weak traces, near.
- 23 eiZ P 19 12 50.0, weak trace, USCGS: H= 19 00 35.6, 45.1 N, 151.5 E, h about 45 km, Kurile Islands. M=4.6 SD 0.4 (CGS).
- 23 eiZ PKP 19 49 13.9, iZ 19 49 15.9, USCGS: H= 19 30 19.4 20.2 S, 178.1 W, h about 515 km, Fiji Islands. M=4.7 SD 0.3 (CGS).
- 24 iZ Pg 02 40 43.9, iZ! NE Sg 02 40 46.7, D= 22 km, Litija region, east from Ljubljana, Io=3° MCS, Ljubljana felt 2° MCS.

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- 24 Z 05 33-34 weak traces.
- 24 eiZ P 11 18 32.5, USCGS: H= 11 05 56.8, 28.2 N, 140.1 E, h about 260 km, South of Honshu, Japan. M=5.2 SD 0.4 (CGS).
- 24 eiZ+ P 18 21 17.2, weak trace, USCGS: H= 18 09 08.7, 46.4 N, 150.0 E, h about 40 km, Kurile Islands. M=4.9 SD 0.4 (CGS).
- 24 Z! Pg 23 11 (00) in minute interruption, iZ! Sg 23 11 05.0, near, weak.
- 25 eiZ P 10 14 38.1, USCGS: H= 10 02 23.8, 44.3 N, 149.5 E, h about 55 km, Kurile Islands. M=4.9 SD 0.4 (CGS).
- 25 iZ Pg 17 50 21.4, iZ Sg 17 50 22.9, D=9 km, weak.
- 26 eiZ PKP1 23 09 47.9, eiZ 23 10 04.0, obscured by microseisms, USCGS: H= 22 50 08.9, 16.6 S, 175.2 E, h about 33 km, Fiji Islands region. M=5.3 SD 0.2 (CGS).
- 28 eiZ (Pn) 22 24 53.5, eiZ 22 25 11.6, eiZ 22 25 19.4, very weak, near.
- 29 iZ-Pn 15 15 35.1, iZ Pg 15 15 48.0, iZ X2 15 15 58.3, iZ! 15 16 04.3, iZ Sn 15 16 22.6, iZ Sg 15 16 42.5, D=420 km, USCGS: H= 15 14 39, 42.5 N, 13.3 E, h about 33 km, Italy. M=4.2 (CGS).
- 30 eiZ P 21 52 18.2, iZ 21 52 31.0, USCGS: H= 21 40 20.3, 6.6 N, 94.2 E, h about 33 km, Nicobar Islands. M=5.3 (CGS).

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- 2 iZ+ Pn 06 49 43.7, iZ- Pg 06 49 48.6, iN 06 49 50, iZ 06 50 04.6, iZ Sn 06 50 12.3, iZNE Sg 06 50 17.7, iZ 06 50 35.4, F=06 57 -; D=245 km, registration obscured by microseisms, BCIS: H= 06 49 00, 47.9 N, 16.4 E (Wien and BCIS). Press: Austria, 40 km south of Wien. Slight damage at Wiener Neustadt. Forcibly felt at Wien and Bratislava. USCGS: H= 06 49 08.7, 47.9 N, 16.5 E, h about 43 km, Austria. Slight damage at Wiener Neustadt and Bratislava. M=4.5 SD 0.3 (CGS).
- 2 iZ+ P 21 02 47.9, eiZ 21 02 55.8, eiZ! PP 21 04 12, USCGS: H= 20 55 58.8, 80.1 N, 0.6 W, h about 33 km, Svalbard region. M=5.1 SD 0.3 (CGS), D=3850 km.
- 3 eiZ 10 40 29.1, weak traces, near.
- 3 iZ Sg 12 55 06.0, weak traces.
- 4 iZ P or PKP 01 02 30.0, eiZ 01 02 51.1.
- 4 eiZ P 01 39 53.2, Z 01 40 (00), USCGS: H= 01 27 34.1, 46.2 N, 153.1 E, h about 20 km, Kurile Islands. M=5.2 SD 0.4 (CGS).
- 4 eiZ P 02 55 45.3, eiZ 02 56 10.8, USCGS: H= 02 43 30.4, 45.9 N, 153.2 E, h about 50 km, Kurile Islands. M=4.8 SD

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- 4 (cont.) 0.3 (CGS).
- 4 Z 11 29-30 traces.
- 5 eiZ (Sg) 23 09 42.8, weak.
- 6 iZ Pn 17 21 39.8, iZ (Px) 17 21 49.1, eiZ Sn 17 22 22.0, eiZ Sg 17 22 39.2, iZ! 17 22 56.0, D=390 km.
- 7 iZ! Pg 10 18 45.8, iZ!!NE Sg 10 18 48.1, D=22 km, Litiya region. Ljubljana felt 4⁰ MCS.
- 7 eiZ Pn 10 40 37.6, eiZ 10 40 58.3, eiZ 10 41 12.7, eiZ Sn 10 41 52.0, iZ 10 42 11.7, eZ Sg 10 42 32, D=about 700 km. BCIS: H=10 39 00, 45° 01' N, 5° 32' E. Vercors, France. Aftershock of April 25, 1962 at 04 44 48, Forcibly felt V-VI⁰ MCS at Correncon, chateau Bernard, IV⁰ MCS at Grenoble.
- 8 eiZ P 08 05 31.6, eiZ 08 05 36.2, USCGS: H=07 53 15.1, 46.4 N, 153.0 E, h about 20 km, Kurile Islands. M=5.2 SD 0.4 (CGS).
- 9 iZ Pn 01 17 52.0, eiZ Sg 01 18 25.8, D= 240 km, weak.
- 9 eiZ Pn 01 31 06.2, eiZ 01 31 22.0, eiZ 01 31 46.4, near, weak.
- 9 iZ PKP1 11 12 46.2, iZ! 11 12 48.0, eiZ PKP2 11 13 04.4, eiZ pPKP1 11 14 34, USCGS: H= 10 53 39.4, 21.1 S, 178.0 W, h about 435 km, Fiji Islands region. M=5.0 (CGS).
- 9 eiZ P 12 34 56.4, USCGS: H= 12 22 42.0, 45.2 N, 151.2 E, h about 50 km, Kurile Islands. M=4.7 (CGS).
- 10 eZ PP 03 50 (01), eZ 03 51 17, eZ! 03 51 59.7, USCGS: H= 03 31 21.1, 6.2 S, 128.1 E, h about 366 km, Banda Sea, felt: Darwin. M=5.6 (CGS).
- 10 eiZ+ Pn 10 20 40.9, eE 10 20 42, iZPx 10 20 48.4, eiZ Pg 10 20 51.9, iZx1 10 21 05.7, iZ Sn 10 21 19.7, eiZ Sb 10 21 27.2, iZ Sg 10 21 34.9, eE 10 21 47, D=350 km. BCIS: H= 10 19 52, 43.0 N, 14.0 E, Central Italy, near Adriatic coast.
- 10 Z 10 33-34, weak traces.
- 11 eiZ PKP1 01 07 33.5, eiZ! PKP2 01 07 46.0, iZ 01 07 55.2, USCGS: H= 00 47 48.3, 15.1 S, 173.6 W, h about 33 km, Tonga Islands region. M=5.6 SD 0.3 (CGS).
- 11 iZ+ PKP 02 50 09.3, eiZ 02 50 12.3, USCGS: H= 02 31 19.4, 17.8 S, 178.6 W, h about 537 km, Fiji Islands region. M=4.9 (CGS).
- 12 iZ Pn 13 26 35.2, eiZ Sn 13 27 45.3, weak, obscured by microseisms. D= about 660 km. BCIS: H= 13 24 57, 45° 0' N, 5° 32' E, Vercors, France. Felt: V-VI⁰ in epicentral zone, IV⁰ at Grenoble.
- 12 iZ+ Pg 19 25 18.9, iZ! 19 25 26.3, iZ!! Sg 19 25 35.2, D= 130 km.
- 13 eZ Pg 06 54 36, iZ Sg 06 54 54, D= about 130 km, obscu-

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- 13 (cont.) red by microseisms.
- 15 iZ- P 19 47 05.8, iZ! 19 47 07.1, iZ 19 47 11.0, iZ 19 47 19.4, eiZ 19 49 26, eiZ 19 50 39.2, iZ!E PP 19 51 08.0, obscured by strong microseisms, USCGS: H= 19 34 45.5, 4.8 S, 108.0 E, h about 650 km, Java Sea. Felt: Djakarta. M=6.4 (CGS), D= about 10700 km.
- 15 Z 23 51-52, weak traces.
- 16 eiZ P 02 04 54.2, iZ! 02 04 57.1, USCGS: H= 01 51 44.6, 2.2 S, 105.9 E, h about 33 km, Sumatra, M=5.7 (CGS).
- 16 iZn Pn 13 50 22.2, iZ 13 50 45.1, iZ 13 51 04.5, eNE Sn 13 52 33, eiZ Sn 13 52 36.4, obscured by microseisms D= about 1100 km. BCIS: H= 13 47 59, 37.3 N, 20.9 E, Ionian Sea, West of Peloponesos, (Determination by electr. calculating machine), USCGS: H= 13 47 56.4, 37.1 N, 20.9 E, h about 15 km, Ionian Sea. M=5.6 SD 0.1 (CGS).
- 18 eiZ PKP1 00 49 54.5, iZ pPKP1 00 50 09.5, iZ 00 50 27.3, (e)E 00 50 (40), eZ PP 00 54 20, eZ PPP 00 57 54, USCGS: H= 00 30 02.6, 24.8 S, 176.6 W, h about 46 km, Tonga Islands. Felt: Tonga, Fiji and Kermadec Islands. M=6.5 SD 0.3 (CGS), D= about 17500 km.
- 18 iZ 06 48 43.0, iZ 06 48 48.4, near, weak.
- 19 eiZ 15 22 07.8, eiZ 15 22 16.8, near, weak.
- 20 eiZ Pn 23 22 57.1, eiZ (Sg) 23 23 51.4, very weak. D=about 325 km, BCIS: H= 23 21 45, 46° 45' N, 9° 10' E, Grisons, Switzerland. Felt: Disentis, Somvix-Rabus.
- 21 eiZ Pn 09 53 30.5, iZ Sn 09 54 02.4, iZ Sg 09 54 13.1, D= 290 km.
- 21 eiZ PKP 12 54 12.6, eiZ! pPKP 12 54 39.7, USCGS: H= 12 34 22.7, 21.2 S, 175.8 W, h about 90 km, Tonga Islands. M=5.1 (CGS).
- 21 eiZ P 13 22 13.2, weak trace, USCGS: H= 13 09 09.6, 16.1 N, 119.7 E, h about 49 km, Near west coast of Luzon, Philippine Islands. Felt: Manila. M=5.6 SD 0.2 (CGS).
- 26 eiZ P 08 04 35.7, eiZ 08 04 38.5, USCGS: H= 07 58 22.4, 76.5 N, 22.4 E, h about 33 km, Svalbard region. M=5.1 (CGS).
- 26 Z 08 14-17 traces, obscured by microseisms.
- 26 eiZ P 20 58 40.5, iZ 20 58 56.8, USCGS: H= 20 50 21.2, 36.4 N, 71.3 E, h about 140 km, Hindu Kush, M=4.9 (CGS).
- 27 eZ PKP 05 41 26, USCGS: H= 05 21 38, 15.1 S, 175.2 W, h about 33 km, Tonga Islands. M=4.5 SD 0.2 (CGS).
- 28 eiZ 06 04 34.9, iZ 06 04 49.5, weak traces.
- 28 eiZ PKP1 09 23 50.6, eiZ 09 24 23.8, USCGS: H= 09 03 52.9, 32.7 S, 178.9 W, h about 33 km, Kermadec Islands, M=5 1/2-5 3/4 (Pal), 5.8 SD 0.4 (CGS).

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- 28 eiZ Pn 19 08 40.0, iZ Sg 19 09 07.6, D=205 km.
- 29 iZ(Pb) 15 32 20.6, iZ Sg 15 33 00.7, D= about 305 km,
BCIS: H= 15 31 27, 46.4 N, 10.4 E, Italy-Switzerland
border, high valley of Valtellina.
- 30 iZ+ P 13 41 36.5, eiZ 13 41 42.4, iZ 13 42 00.8,
USCGS: H= 13 29 25.3, 45.5 N, 150.6 E, h about 40 km,
Kurile Islands. M=5.7 SD 0.2 (CGS).
- 30 eiZ (Pg) 17 58 52.7, iZ Sg 17 59 08.9, (D=about 130 km),
- 30 iZ+ P 22 18 01.4, USCGS: H= 22 06 07.1, 6.9 N, 94.7
E, h about 64 km, Nicobar Islands, M=5.6 (CGS).
- 31 eZ P 15 23 20, eiZ 15 23 25.3, eiZ 15 23 30.9, USCGS:
H= 15 18 08, 38.4 N, 45.3 E, h about 33 km, Northwestern
Iran. M=4.5 (CGS).
- 31 eZ PP 17 56 09, USCGS: H=17 37 32.1, 56.5 S, 26.0 W,
h about 30 km, Sandwich Islands.
- 31 eiZ+ PKPl 19 36 34.3, iZ!+ 19 36 40.0, eiZ 19 36 46.9,
eiZ 19 37 16.1, iZ! 19 37 25.0, USCGS: H= 19 16 54.9,
17.4 S, 174.2 W, h about 80 km, Tonga Islands, felt:
Apia. M=5.4 SD 0.4 (CGS).

Ljubljana, October 27, 1964

V. Ribarič