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SEISMIC RECORDS  
AT DE BILT

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1960

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K O N I N K L I J K N E D E R L A N D S  
M E T E O R O L O G I S C H I N S T I T U U T

Seismic Records  
at De Bilt

Volume 48  
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P R E F A C E

This seismic Yearbook was composed under the supervision of Dr. J. Veldkamp, director of the Geophysical Section. The records have been reduced by Mr. J. Oldeman, scientific officer

The Director in Chief of  
the Royal Netherlands Meteorological Institute,

Dr. M.W.F. Schregardus.

De Bilt, December 1967

I N T R O D U C T I O N

SEISMOLOGICAL STATION DE BILT

The geographic coordinates of the seismological station are  $52^{\circ}06'11$  N and  $5^{\circ}10'16$  E. The instruments are placed at a height of 3 m above mean sea-level on a subsoil consisting of sand (pleistocene).

The instruments are: a set of seismographs (two horizontal and one vertical) with galvanometric recording according to GALITZIN.

THE GALITZIN SEISMOGRAPHS AT DE BILT. Below are given: the period of the galvanometer T<sub>1</sub>, the reduced pendulum length l, the distance A<sub>1</sub> between the mirror of the galvanometer and the recording paper, and the rough values for the natural period of the undamped pendulum T, of the damping constant and of the multiplying factor k for the year 1960.

	NS comp.	EW comp.	Z comp.
Period of galvanometer T <sub>1</sub>	24.43 sec	24.96 sec	12.0 sec
Reduced length of pendulum l	123 mm	123 mm	406 mm
Distance A <sub>1</sub>	1380 mm	1380 mm	1380 mm
Period of pendulum T	25 sec	25 sec	12 sec
Damping constant $\mu$	0.0	0.0	0.0
Multiplying factor k	11.0	11.0	175

SEISMOLOGICAL STATION HEERLEN

The geographic coordinates of the seismological station are:  $50^{\circ}53'10$  N and  $5^{\circ}59'10$  E.

The instrument, a horizontal seismograph, M = 450 kg, is placed at a height of 100 m above mean sea-level on a subsoil consisting of loess.

The mean values of the constants for the year 1960 are:

T	E	V	V max.	T max.
2	3	400	600	2

SEISMOLOGICAL STATION WITTEVEEN

The geographic coordinates of the seismological station are:  $52^{\circ}48'18$  N and  $6^{\circ}40'11$  E.

The instrument, a GRENET vertical seismograph with galvanometric record, is placed at a height of 2 m above mean sea-level on a subsoil consisting of pleistocene sand.

The period of the seismograph is 2.3 sec, the period of the galvanometer is 0.8 sec. The maximum amplification is 6500 for a period of about 1 sec.

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EXPLANATION OF THE TABLES

The data given in this Yearbook have mostly been obtained from the GALITZIN records. The velocity of the recording paper is 30 mm per minute, allowing a good time-accuracy. In a few cases the data from the seismograph at Heerlen are mentioned. The time is Greenwich mean time. In the column "direction" + means an upward movement of the soil (compression), - means a downward movement (dilatation). Uncertain data have been given in parentheses. The following symbols were used for the phases.

- P = normal first phase, or first longitudinal tremor.
- pP = P-wave once reflected at the earth's surface near the epicentre.
- PP = P-wave reflected halfway between epicentre and station.
- PPP = P-wave two times reflected at the earth's surface.
- PPPP = P-wave three times reflected.
- S = second phase, arrival of the transversal tremor.
- sS = S-wave reflected at the earth's surface near the epicentre.
- PS = wave changed from longitudinal to transversal oscillation through reflection at the earth's surface.
- PPS = wave twice reflected, having been transversal on one branch of the path.
- SS = S-wave reflected halfway between epicentre and station.
- SSS = S-wave two times reflected at the earth's surface.
- SSSS = S-wave three times reflected at the earth's surface.
- PcP = P-wave reflected at the core boundary.
- ScS = S-wave reflected at the core boundary.
- P' = PKP = wave having penetrated the core.
- S' = SKS = transversal wave, having been longitudinal within the core.
- PKS = alternating wave having penetrated the core.
- pp' = P'-wave reflected near the epicentre.
- ss' = S'-wave reflected near the epicentre.
- SKKS = alternating wave which has been reflected within the core.
- L = long wave or surface waves.
- M = maximum of the surface waves.
- L' = surface waves travelling around the major arc.
- M' = maximum of these waves.
- i = sudden beginning of the phase.
- e = gradual beginning of the phase.
- F = end of discernable movement.
- H = time of the shock at point of origin.
- h = depth of the origin.
- Δ = distance of epicentre.

The indices H, N, E and Z refer to horizontal, north-south, east-west and vertical components of the movement.

The distance of the epicentre and the depth of origin have been calculated by means of curves constructed with the aid of the time tables of Jeffreys and Bullen (1940).

The data given in the column "amplitude" are the maximal amplitudes measured from the medium line. The amplitudes have been calculated by means of the formula:

$$V = \frac{A_1 k T_b}{\pi l} \frac{1}{\left\{ 1 + \left( \frac{T_b}{T} \right)^2 \right\}^2}$$

In this formula  $A_1$  is the distance between galvanometer mirror and recording paper,  $k$  is the multiplying factor,  $T_b$  the period of the wave,  $l$  the reduced length of the pendulum,  $T$  the free period of the undamped seismograph, and  $V$  the magnification. The period of the galvanometer is assumed to be equal to the free period of the undamped seismograph.

For the horizontal components of the GALITZIN records the following mean values were used:  $k = 11,0$  and  $T = 24,5$  sec, and for the vertical component  $k = 175$  and  $T = 12,0$  sec.

Whenever it was possible the amplitudes and periods of the first P- and S-waves have been given. As the movement of these waves is irregular in general, the accuracy of these data is small. The amplitudes of the maxima of L-waves have been calculated in case of very strong earthquakes.

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THE MICROSEISMIC ACTIVITY

The table on page 1 shows the character of the microseismic activity (see also 1915 p. 101 and 1916 p. 101). The numbers 0, 1, 2 and 3 mean:

- 0 = very weak and weak
- 1 = moderate
- 2 = strong
- 3 = very strong

For measuring the microseismic activity the records of the GALITZIN seismograph were used. The table below gives the amplitudes of the oscillations (measured from the medium line) and the corresponding amplitudes of the movement of the surface.

Character	Ampl. record	Ampl. surface
0	0 - 1/2 mm	0 - 1 1/4 "
1	1/2 - 2 "	1 1/4 - 5 "
2	2 - 4 "	5 - 10 "
3	> 4 "	> 10 "



Seismic Records at De Bilt

Date 1960	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
Jan. 2 (1)						(1) Wi: iP 2h 04m 09s. USCGS: 54°N 157½°E, H. 1h 52m 18s. Kamchatka.
Jan. 2 (2)	eL F	13 12 13 50				(2) Disturbed by microseisms. BCIS: 56°S 2°W, H. 12h 21m 50s. USCGS: H. 12h 21m 51s. South Atlantic Ocean, west of Bouvet Island.
Jan. 3 (3)						(3) Disturbed by microseisms. Wi: eP 11h 33m 08s; i 11h 33m 20s. USCGS: 44°N 84½°E, H. 11h 24m 00s. Sinkiang Province, China.
Jan. 3 (4)	eL eS F	20 23 37 20 25 29 20 38				(4) Disturbed by microseisms. Wi: eP 20h 22m 34s. BCIS: 39°15'N 15°15'E, H. 20h 19m 34s, h about 290 km. USCGS: 39½°N 15½°E, H. 20h 19m 30s, h about 250 km. Tyrrhenian Sea.
Jan. 4 (5)						(5) Wi: iP 12h 55m 40s (-). BCIS: 45°5N 27°E, H. 12h 51m 52s. Carpathian Mountains, Romania.
Jan. 5 (6)						(6) Wi: iP 6h 10m 56s +. BCIS: 46°ON 26°9E, H. 6h 07m 33s, h about 160 km. Vrancea, Romania.
Jan. 7 (7)	e(S) eL F	13 56.5 14 15 15.5				(7) Disturbed by microseisms. BCIS: 56°S 27½°W, H. 13h 28m 13s. USCGS: H. 13h 28m 16s. Sandwich Islands.
Jan. 8 (8)	eL F	0 00 0 35				(8) Disturbed by microseisms. USCGS: 6½°N 94½°E, H. 23h 17m 18s. Nicobar Islands.
Jan. 9 (9)	eL F	15 31 16 15				(9) Disturbed by microseisms. Aftershock of (7). BCIS: H. 14h 45m 55s. USCGS: H. 14h 45m 53s.
Jan. 9 (10)	eL F	4 10 4 20				(10) Disturbed by microseisms. BCIS: 37°2N 29°0E, H. 3h 58m 48s. USCGS: H. 3h 58m 45s. Southwestern Turkey.
Jan. 9 (11)	eL F	7 40 8 00				(11) Disturbed by microseisms. Change of papers 7h32 - 7h40, BCIS: 36°5N 70°E, H. 7h 24m 04s, h about 200 km. USCGS: 36°N 69°E, H. 7h 23m 50s, h about 150 km. Hindu Kush.
Jan. 11 (12)	eL F	3 55 4 10				(12) Disturbed by microseisms. USCGS: 16°N 96½°E, H. 3h 10m 14s. Near south coast of Burma.
Jan. 12 (13)	eL F	2 38 2 45				(13) Disturbed by microseisms. USCGS: 23½°N 122°E, H. 1h 52m 37s. Near east coast of Formosa.
Jan. 12 (14)	eL F	4 09 4 18				(14) Disturbed by microseisms. USCGS: 55½°S 27°W, H. 3h 09m 10s. Sandwich Islands region.

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Date 1960	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
Jan. 13 (15)	iP ePP epPP iS iSS eSSS eL F	15 53 46 15 57 16 15 58.1 16 04 53 16 11 27 16 15.1 16 21 19.0				(15) Disturbed by microseisms. Wi: eP 15h 53m 47s, epP 15h 54m 25s. USCGS: 16°S 72°W, H. 15h 40m 34s, h about 200 km. Prof. Silgado (Peru) 15°46'S 72°45'W, H. 15h 40m 30s, h about 120 km. Southern Peru.
Jan. 13 (16)						(16) Wi: iP 16h 41m 33s +. USCGS: 51½°N 180°, H. 16h 29m 14s. Andreanof Islands, Aleutian Islands.
Jan. 14 (17)						(17) Wi: eP 10h 38m 15s. USCGS: 37°N 140°E, H. 10h 25m 52s. Honshu, Japan.
Jan. 15 (18)	iP eZ eSKS ePS eL F	9 43 42 9 47 26 9 54 47 9 56.0 10 12 12 30				(18) Disturbed by microseisms. Wi: eP 9h 43m 47s. USCGS: 15°S 75°W, H. 9h 30m 24s, h about 150 km. Near coast of southern Peru.
Jan. 16 (19)						(19) Wi: iPKP 12h 49m 39s (-). USCGS: 20½°S 178°W, H. 12h 30m 56s, h about 600 km. Fiji Islands region.
Jan. 16 (20)						(20) Wi: eP 20h 59m 52s. USCGS: 63°N 151°W, H. 20h 49m 31s, h about 150 km. Alaska.
Jan. 19 (21)						(21) Wi: iP 2h 28m 28s +. USCGS: 52°N 158°E, H. 2h 16m 52s. Near southeast coast of Alaska.
Jan. 19 (22)						(22) Wi: ePKP 9h 33m 54s. USCGS: 13°S 180°, H. 9h 15m 04s, h about 600 km. South of Fiji Islands.
Jan. 23 (23)	ePP ePS eSS eSSS eL F	5 00 38 5 10 00 5 16.3 5 20.5 5 38 6.5				(23) Disturbed by microseisms. USCGS: 4°S 127½°E, H. 4h 40m 56s. Ceram Island region.
Jan. 23 (24)						(24) Wi: iPKP 6h 43m 02s (-). USCGS: 17S 177W, H. 6h 24m 08s, h about 400 km. Fiji Islands region.
Jan. 23 (25)	ePP ePS eSSS eL F	7 50 43 8 00.5 8 10.6 8 27 9.5				(25) Disturbed by microseisms. Wi: ePP 7h 50.6m. Aftershock of (23) USCGS: H. 7h 31m 14s.
Jan. 23 (26)	ePP ePS eL F	18 16 18 25.5 18 53 19.5				(26) Disturbed by microseisms. Aftershock of (23). USCGS: H. 17h 56m 30s.

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Date 1960	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
Jan. 24 (27)	ez ePP eSS eL F	4 42.5 4 44.6 5 03.5 5 29 7.0				(27) Disturbed by microseisms. USCGS: 15 $\frac{1}{2}$ <sup>o</sup> S 179 <sup>o</sup> W, H. 4h 21m 42s. Fiji Islands.
Jan. 25 (28)	eL F	17 35 18 35				(28) Disturbed by microseisms. USCGS: 16 <sup>o</sup> S 179 <sup>o</sup> W, H. 16h 29m 26s. Fiji Islands.
Jan. 26 (29)	eL F	10 05 10 15				(29) Wi: iP 9h 57m 38s +. BCIS: 40 <sup>o</sup> N 39 <sup>o</sup> E, H. 9h 52m 10s. USCGS: 39 $\frac{1}{2}$ <sup>o</sup> N 39 $\frac{1}{2}$ <sup>o</sup> E, H. 9h 52m 00s. Turkey.
Jan. 26 (30)	eL F	13 17 13 25				(30) Wi: eP 13h 10m 35s. BCIS: 36 $\frac{3}{4}$ <sup>o</sup> N 29 $\frac{1}{4}$ <sup>o</sup> E, H. 13h 05m 38s. USCGS: 38 <sup>o</sup> N 29 <sup>o</sup> E, H. 13h 05m 40s. Turkey.
Jan. 26 (31)						(31) Wi: i 20h 30m 25s +; i 20h 30m 29s -. BCIS: 46 <sup>o</sup> N 26 <sup>o</sup> 9E, H. 20h 27m 05s. USCGS: 46 <sup>o</sup> N 26 $\frac{1}{2}$ <sup>o</sup> E, H. 20h 27m 05s. Vrancea, Romania.
Jan. 31 (32)	eL F	5 50 6 30				(32) Disturbed by microseisms. USCGS: 33 $\frac{1}{2}$ <sup>o</sup> N 134 $\frac{1}{2}$ <sup>o</sup> E, H. 5h 08m 18s. Near east coast of Shikoku, Japan.
Feb. 1 (33)	eP eS eL F	12 04 29 12 08.5 12 11.5 12 20				(33) Disturbed by microseisms. Wi: eP 12h 04.5m. BCIS: 35.0N 22.8E, H. 11h 59m 39s. Near west coast of Greece.
Feb. 3 (34)	eL F	0 29 0 34				(34) Disturbed by microseisms. USCGS: 34 $\frac{1}{2}$ <sup>o</sup> N 104 $\frac{1}{2}$ <sup>o</sup> E, H. 23h 51m 57s. Kansu Province, China.
Feb. 3 (35)						(35) Wi: ePKP 14h 48.5m. USCGS: 19 <sup>o</sup> S 173 $\frac{1}{2}$ <sup>o</sup> W, H. 14h 28m 39s. Tonga Islands.
Feb. 4 (36)	ePKP ePP eSS eL F	4 05.5 4 07 32 4 23 4 45 6 20				(36) Disturbed by microseisms. Wi: e 4h 06m. USCGS: 4 $\frac{1}{2}$ <sup>o</sup> S 153 $\frac{1}{2}$ <sup>o</sup> E, H. 3h 46m 30s. New Ireland region.
Feb. 4 (37)	eS eL F	17 13 17 30 18.5				(37) Disturbed by microseisms. Wi: iP 17h 02m 47s. USCGS: 39 <sup>o</sup> N 143 <sup>o</sup> E, H. 16h 50m 30s. Off east coast of Honshu, Japan.
Feb. 4 (38)	eL F	21 45 22 00				(38) Disturbed by microseisms. Wi: iPKP 20h 56m 58s -. USCGS: 18 $\frac{1}{2}$ <sup>o</sup> S 178 <sup>o</sup> W, H. 20h 38m 20s, h about 600 km. Fiji Islands.
Feb. 4 (39)						(39) Wi: iP 21h 10m 12s. USCGS: 39 $\frac{1}{2}$ <sup>o</sup> N 142 $\frac{1}{2}$ <sup>o</sup> E, H. 20h 57m 55s. Near east coast of Honshu, Japan.
Feb. 6 (40)						(40) Wi: ePKP 2h 19m 34s. BCIS: 18 <sup>o</sup> S 173 <sup>o</sup> W, H. 1h 59.9m. Tonga Islands region.

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Date 1960	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
Feb. 8 (41)	ePP ePS eSS eL F	13 06.2 13 16.4 13 23 13 37 15.				(41) Disturbed by microseisms. Wi: ePKP 13h 04m 43s. USCGS: 58 <sup>o</sup> S 67 <sup>o</sup> W, H. 12h 45m 34s. Drake Passage.
Feb. 10 (42)	ePP ePS eSS eL F	0 15.5 0 25 0 31 0 50 2 30				(42) Disturbed by microseisms. Wi: ePP 0h 15.0m. USCGS: 4 <sup>o</sup> S 128 <sup>o</sup> E, H. 23h 55m 49s. Ceram.
Feb. 18 (43)						(43) Wi: eP 19h 33m 20s. USCGS: 52 $\frac{1}{2}$ <sup>o</sup> N 159 <sup>o</sup> E, H. 19h 21m 49s. Near east coast of Kamchatka.
Feb. 18 (44)						(44) Wi: eP 21h 46m 41s. USCGS: aftershock of (43), H. 21h 35m 11s.
Feb. 19 (45)						(45) Wi: eP 2h 32m 20s. BCIS: 45 <sup>o</sup> 6N 10 <sup>o</sup> 5E, H. 2h 30m 15s. Lago di Garda region, Italy.
Feb. 19 (46)	eP ePP eS eSS F	10 45 12 10 45 58 10 51 58 10 53.2 10 56 12.0	5	5		(46) Disturbed by microseisms. Wi: iP 10h 45m 07s; iP 10h 45m 52s. BCIS: 36 <sup>o</sup> 5N 70 <sup>o</sup> 5E, H. 10h 36m 52s. USCGS: 36 <sup>o</sup> N 70 $\frac{1}{2}$ <sup>o</sup> E, H. 10h 36m 46s, h about 200 km. Hindu Kush.
Feb. 21 (47)						(47) Wi: iPKP 1h 07m 57s. USCGS: 42 <sup>o</sup> S 173 <sup>o</sup> E, H. 0h 46m 56s, h about 60 km. South Island, New Zealand.
Feb. 21 (48)						(48) Wi: e 8h 17m 41s. BCIS: 36 <sup>o</sup> 0N 4.1E, H. 8h 13m 32s. USCGS: 36 <sup>o</sup> N 4 $\frac{1}{2}$ <sup>o</sup> E, H. 8h 13m 31s. Algeria.
Feb. 21 (49)						(49) Wi: iPKP 9h 58m 08s. USCGS: 20 <sup>o</sup> S 178 $\frac{1}{2}$ <sup>o</sup> W, H. 9h 39m 26s, h about 600 km. Fiji Islands.
Feb. 22 (50)						(50) Wi: iPKP 1h 13m 11s. Aftershock of (49). USCGS: H. 0h 54m 30s.
Feb. 22 (51)	eL F	21 14 21 20				(51) Disturbed by microseisms. Foreshock of (53). BCIS: H. 21h 04m 16s. USCGS: H. 21h 04m 09s.
Feb. 23 (52)	eL F	0 40.5 0 50				(52) Disturbed by microseisms. Fore-shock of (53). BCIS: H. 0h 31m 00s. USCGS: H. 0h 30m 52s.
Feb. 23 (53)	eL F	7 43.5 8 10				(53) Disturbed by microseisms. Change of papers 7h 45m - 7h 56m. BCIS: 39 <sup>o</sup> 0N 20 <sup>o</sup> 8E, H. 7h 34m 33s. USCGS: 39 <sup>o</sup> N 20 <sup>o</sup> E, H. 7h 34m 30s. Greece.
Feb. 23 (54)						(54) Wi: iPKP 11h 49m 53s. USCGS: 19 <sup>o</sup> S 178 <sup>o</sup> W, H. 11h 31m 04s, h about 500 km. Fiji Islands.



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Date 1960	Phase	Time			Direction	Period s	Amplitude μ	Remarks
		h	m	s				
Feb. 24 (55)	ePS eL F	22	06.5				(55) Disturbed by microseisms. Wi: iPKP 21h 56m 15s. USCGS: 7½°S 156°E, H. 21h 37m 04s. Solomon Islands.	
Feb. 26 (56)							(56) Wi: ePKP 6h 52m 24s. USCGS: 20°S 174°W, H. 6h 32m 36s. Tonga Islands.	
Feb. 27 (57)	eL F	0	15				(57) Disturbed by microseisms. Wi: eP 23h 41m 17s. USCGS: 51½°N 178°W, H. 23h 29m 25s. Andreanof Islands, Aleutian Islands.	
Feb. 29 (58)	eH iH eL F	23	46.0				(58) Disturbed by microseisms. No Z-record. Wi: eP 23h 45m 47s. BCIS: 30°27'N 9°37'W, H. 23h 40m 14s. USCGS: 30°N 9°W, H. 23h 40m 12s. Agadir, Morocco.	
Mar. 1 (59)							(59) Wi: iPKP 20h 19m 25s. USCGS: 22°S 175°W, H. 19h 59m 33s. Tonga Islands.	
Mar. 2 (60)	eL F	22	05				(60) Disturbed by microseisms. Wi: iP 22h 01m 25s. BCIS and USCGS: 50°N 31°W, H. 21h 56m 08s. Mid Atlantic crust.	
Mar. 4 (61)							(61) Wi: iP 2h 57m 56s. USCGS: 50½°N 177°W, H. 2h 15m 56s. Andreanof Islands. Aleutian Islands.	
Mar. 4 (62)	eL F	4	35				(62) Disturbed by microseisms. Wi: eP 4h 05m 23s. BCIS: 31°N 131°E, H. 3h 53m 10s, h about 150 km. USCGS: 31°N 129°E, H. 3h 53m 00s, h about 100 km. Near east coast of Kyushu, Japan.	
Mar. 4 (63)							(63) Wi: eP 16h 29m 25s. BCIS: 72°N 0°E, H. 16h 25m 27s. USCGS: 72°N 1½°W, H. 16h 25m 25s. Jan Mayen Island.	
Mar. 4 (64)	eL F	21	50				(64) Disturbed by microseisms. Wi: iP 21h 18m 15s. USCGS: 7½°N 94°E, H. 21h 05m 45s. Nicobar Islands.	
Mar. 5 (65)	eL F	11	58				(65) Disturbed by microseisms. Wi: eP 11h 35m 00s. USCGS: 29°N 81°E, H. 11h 25m 00s. Nepal.	
Mar. 5 (66)	eSKS eSKKS eL F	14	14.9				(66) Disturbed by microseisms. Wi: ePKP 14h 08.0m. USCGS: 1°N 129°E, H. 13h 49m 16s. Halmahera.	
Mar. 6 (67)	eL F	3	15				(67) Disturbed by microseisms. After-shock of (66). USCGS: H. 2h 22m 06s.	
Mar. 6 (68)	eL F	4	50				(68) Disturbed by microseisms. USCGS: 24°N 108°W, H. 4h 11m 54s. Gulf of California.	

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Date 1960	Phase	Time			Direction	Period s	Amplitude	Remarks
		h	m	s				
Mar. 7 (69)							(69) Wi: iP 6h 22m 54s. USCGS: 52°N 153°E, H. 6h 11m 38s, h about 100 km. Sea of Othotsk.	
Mar. 8 (70)	iPKP iPP iPPP F	16	52	42	10	15	(70) Disturbed by microseisms. Wi: iPKP 16h 52m 38s. He: iPKP 16h 52m 52s, i 16h 54m 23s. USCGS: 16½°S 168½°E, H. 16h 33m 38s, h about 250 km. New Hebrides Islands.	
Mar. 10 (71)	eL F	0	30				(71) Disturbed by microseisms. Wi: iPKP 0h 07m 44s. USCGS: 16°S 72°W, H. 23h 54m 20s, h about 150 km. Southern Peru.	
Mar. 10 (72)	eL F	2	10				(72) Disturbed by microseisms. USCGS: 61°S 155°E, H. 0h 40m 34s. About 400 miles northwest of Balleny Islands.	
Mar. 10 (73)							(73) Wi: iP 14h 44m 22s. USCGS: 47°N 152°E, H. 14h 32m 39s, h about 100 km. Kurile Islands.	
Mar. 11 (74)							(74) Wi: iPKP 11h 44m 57s. USCGS: 17½°S 178½°W, H. 11h 26m 20s, h about 600 km. Fiji Islands.	
Mar. 12 (75)							(75) Wi: iPKP 2h 33m 48s. USCGS: 4°S 152½°E, H. 2h 14m 56s, h about 150 km. Near coast of New Britain.	
Mar. 12 (76)	eP eS eL F	11	57	39			(76) Wi: eP 11h 57m 40s. BCIS: 42°N 21°E, H. 11h 54m 01s, USCGS: 42°N 21°E, H. 11h 54m 00s. Southern Yugoslavia.	
Mar. 12 (77)	ePKP iZ ePP ePKS ePPS eSS eL F	20	49	51			(77) Wi: iP 20h 49m 42s; i 20h 49m 58.5s. USCGS: 6°S 152°E, H. 20h 30m 39s. New Britain.	
Mar. 13 (78)	eL F	5	23				(78) BCIS: 36°56'N 3°11'E, H. 5h 15m 04s. Mediterranean Sea, off coast of Algeria.	
Mar. 14 (79)							(79) Wi: iP 0h 05m 44s. USCGS: 7½°N 77°W, H. 23h 53m 32s, h about 60 km. Panama-Colombia border.	
Mar. 14 (80)							(80) Wi: iP 1h 04m 58s. USCGS: 42½°N 143°E, H. 0h 52m 57s. Hokkaido, Japan.	
Mar. 15 (81)							(81) Wi: iP 9h 32m 53s. USCGS: 51°N 174½°W, H. 9h 20m 56s. Andreanof Islands, Aleutian Islands.	

Seismic Records at De Bilt

Date 1960	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
Mar.15 (82)						(82) Wi: iPKP 19h 50m 34s. USCGS: 20 $\frac{1}{2}$ <sup>o</sup> S 179 <sup>o</sup> W, H. 19h 31m 50s, h about 600 km. Fiji Islands.
Mar.16 (83)	ePKP eSS eL F	17 59.0 18 21 18 52 19 15				(83) USCGS: 15 $\frac{1}{2}$ <sup>o</sup> S 173 $\frac{1}{2}$ <sup>o</sup> W, H. 17h 39m 16s. Samoa Islands region.
Mar.18 (84)						(84) Wi: iPKP 12h 35m 40s. USCGS: 4 $\frac{1}{2}$ <sup>o</sup> S 152 <sup>o</sup> E, H. 12h 16m 51s, h about 150 km. New Britain.
Mar.19 (85)	eL F	20 14 20 35				(85) USCGS: 3 <sup>o</sup> S 138 <sup>o</sup> E, H. 19h 15m 37s. New Guinea.
Mar.20 (86)						(86) Wi: iP 13h 49m 05s. USCGS: 40 <sup>o</sup> N 143 $\frac{1}{2}$ <sup>o</sup> E, H. 13h 36m 54s, h about 60 km. Off northeast coast of Honshu, Japan.
Mar.20 (87)	iP iZ iPP iS eL F	17 19 48 17 19 53 17 23 02 17 30 00 17 48 22.0	+			(87) Wi: iP 17h 19m 41s +; i 17h 19m 43s -. He: eL 17h 48m. USCGS: 40 <sup>o</sup> N 143 $\frac{1}{2}$ <sup>o</sup> E, H. 17h 07m 30s, h about 60 km. Off northeast coast of Honshu, Japan.
Mar.21 (88)	eZ iZ ePP ePPP eS eL F	0 46 50 0 47 10 0 50 16 0 52 06 0 57 15 1 14 2.0	+			(88) Wi: iP 0h 47m 06s. USCGS: 39 $\frac{1}{2}$ <sup>o</sup> N 143 <sup>o</sup> E. Near east coast of Honshu, Japan.
Mar.21 (89)	eP eS eL F	9 30 45 9 41.0 10 00 10 40				(89) Wi: iP 9h 30m 36.5s. USCGS: 40 <sup>o</sup> N 143 <sup>o</sup> E, H. 9h 18m 22s. Near east coast of Honshu, Japan.
Mar.22 (90)	e F	3 30 4 30				(90) USCGS: 61 $\frac{1}{2}$ <sup>o</sup> S 154 <sup>o</sup> E, H. 2h 31m 17s. 400 miles northwest of Balleny Islands.
Mar.23 (91)	eP ePP eS eSS eL F	0 35 41 0 38 29 0 46 05 0 51.5 1 02 3.5	-	7	4	(91) Wi: iP 0h 35m 39s (-). BCIS and USCGS: 39 $\frac{1}{2}$ <sup>o</sup> N 143 <sup>o</sup> E, H. 0h 23m 22s. Near east coast of Honshu, Japan.
Mar.23 (92)						(92) Wi: iP 1h 19m 33s. USCGS: 39 $\frac{1}{2}$ <sup>o</sup> N 143 <sup>o</sup> E, H. 1h 07m 15s. Near coast of Honshu, Japan.
Mar.23 (93)						(93) Wi: iP 2h 03m 58s. USCGS: 39 $\frac{1}{2}$ <sup>o</sup> N 143 <sup>o</sup> E, H. 1h 51m 37s. Near east coast of Honshu, Japan.
Mar.23 (94)	eL F	9 35 9 40				(94) Wi: eP 8h 58m 59s. USCGS: 40 <sup>o</sup> N 142 $\frac{1}{2}$ <sup>o</sup> E, H. 8h 46m 44s. Near east coast of Honshu, Japan.

Seismic Records at De Bilt

Date 1960	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
Mar.23 (95)	eL F	11 15 11 30				(95) USCGS: 39 $\frac{1}{2}$ <sup>o</sup> N 143 <sup>o</sup> E, H. 10h 29m 01s. Near east coast of Honshu, Japan.
Mar.23 (96)	eL F	12 40 12 55				(96) USCGS: 39 $\frac{1}{2}$ <sup>o</sup> N 143 <sup>o</sup> E, H. 11h 51m 00s. Near east coast of Honshu, Japan.
Mar.23 (97)						(97) Wi: iP 21h 46m 36s. USCGS: 39 $\frac{1}{2}$ <sup>o</sup> N 143 $\frac{1}{2}$ <sup>o</sup> E, H. 21h 34m 19s. Near east coast of Honshu, Japan.
Mar.23 (98)	eP ePP eS eL F	22 34 59 22 38.0 22 45 17 23 03 23 50				(98) Wi: iP 22h 34m 55s. USCGS: 39 $\frac{1}{2}$ <sup>o</sup> N 143 <sup>o</sup> E, H. 22h 22m 36s. Near east coast of Honshu, Japan.
Mar.23 (99)						(99) Wi: i 23h 10m 28s +; i 23h 11m 07s. BCIS: 46 <sup>o</sup> 29'N 8 <sup>o</sup> 06'E, H. 23h 08m 53s. USCGS: 46 $\frac{1}{2}$ <sup>o</sup> N 8 <sup>o</sup> E, H. 23h 08m 49s. Switzerland.
Mar.24 (100)						(100) Wi: iP 6h 06m 21s. USCGS: 47 <sup>o</sup> N 152 $\frac{1}{2}$ <sup>o</sup> E, H. 5h 54m 26s. Kurile Islands.
Mar.25 (101)						(101) Wi: iPKP 2h 47m 56s -. USCGS: 19 <sup>o</sup> S 177 $\frac{1}{2}$ <sup>o</sup> W, H. 2h 28m 56s, h about 400 km. Fiji Islands.
Mar.27 (102)	eSS F	4 29.1 5 30				(102) Wi: eP 4h 07m 19s. No z-record. USCGS: 13 $\frac{1}{2}$ <sup>o</sup> S 166 <sup>o</sup> E, H. 3h 48m 27s. New Hebrides Islands.
Mar.27 (103)	ePKP eZ ePP eSS eL F	9 17 21 9 19 53 9 20 21 9 38.5 10 05 11.0				(103) USCGS: 13 $\frac{1}{2}$ <sup>o</sup> S 166 $\frac{1}{2}$ <sup>o</sup> E, H. 8h 57m 53s. New Hebrides Islands.
Mar.27 (104)	eL F	20 57 21 15				(104) USCGS: 19 <sup>o</sup> N 105 <sup>o</sup> W, H. 20h 15m 45s. Jalisco, Mexico.
Mar.27 (105)						(105) Wi: iPKP 23h 48m 58s -; i 23h 50m 19s; iPP 23h 52m 42s. USCGS: 38 $\frac{1}{2}$ <sup>o</sup> S 175 <sup>o</sup> E, H. 23h 28m 25s, h about 250 km. Off coast of North Island, New Zealand.
Mar.28 (106)	iS eL F	0 36 28 0 53 1 45				(106) Wi: eP 0h 26m 07s. No z-record. USCGS: 7 $\frac{1}{2}$ <sup>o</sup> N 82 <sup>o</sup> W, H. 0h 13m 38s. Off south coast of Panama.
Mar.28 (107)						(107) Wi: iPKP 12h 57m 43s +. USCGS: 23 <sup>o</sup> S 176 <sup>o</sup> W, H. 12h 37m 50s. Tonga Islands region.
Mar.28 (108)	eL F	20 59 21 06				(108) Wi: eP 20h 53m 45s. BCIS: 57 $\frac{3}{4}$ <sup>o</sup> N 32 <sup>o</sup> W, H. 20h 48m 45s. USCGS: 58 <sup>o</sup> N 31 $\frac{1}{2}$ <sup>o</sup> W, H. 20h 48m 45s. North Atlantic Ocean.

Seismic Records at De Bilt

Date 1960	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
Mar.29 (109)	iSS eSSS F	7	12	26			(109) Wi: ePKP 6h 50m 30s. No z-record. USCGS: 17°S 167°E, H. 6h 30m 54s. New Hebrides Islands.	
Mar.29 (110)	eL F	23	10				(110) USCGS: 6°S 147°E, H. 22h 10m 20s. East coast of New Guinea.	
Mar.30 (111)	ePKP ePP eS eL F	11	09	20			(111) USCGS: 13½°S 166°E, H. 10h 49m 47s. New Hebrides Islands.	
Mar.30 (112)	eP eS eL F	13	03	34			(112) USCGS: 69°N 17°W, H. 12h 58m 57s. Off east coast of Greenland.	
Mar.30 (113)	ePKP ePP eL F	15	39	25			(113) USCGS: 22½°S 174°E, H. 15h 19m 30s. Loyalty Islands region.	
Mar.31 (114)	eL F	3	48				(114) Wi: eP 3h 14m 20s. USCGS: 39½°N 143°E, H. 3h 02m 03s. Off northeast coast of Honshu, Japan.	
Mar.31 (115)	eZ eS eL F	20	11	48			(115) Wi: eP 20h 08m 7s. USCGS: 26°N 110°W, H. 19h 56m 14s. Gulf of California.	
Apr. 1 (116)							(116) Wi: iPKP <sub>1</sub> 3h 13m 48.5s -; iPKP <sub>2</sub> 3h 14m 16s. USCGS: 22°S 179½°W, H. 2h 55m 04s, h about 650 km. Fiji Islands region.	
Apr. 1 (117)	eSSS eL F	14	42				(117) USCGS: 49°N 129½°W, H. 14h 12m 05s. Off coast of Vancouver Island.	
Apr. 1 (118)							(118) Wi: iPKP 23h 21m 15s +. USCGS: 17½°S 180°, H. 23h 02m 31s, h about 550 km. Fiji Islands.	
Apr. 5 (119)	e F	8	10				(119) USCGS: 61°S 26°W, H. 7h 17m 45s. Sandwich Islands.	
Apr. 7 (120)							(120) Wi: iPKP 14h 06m 28s -. USCGS: 24°S 179½°W, H. 13h 47m 28s, h about 500 km. Fiji Islands region.	
Apr. 8 (121)							(121) Wi: iPKP 0h 15m 22s; epPKP 0h 16m 14s. USCGS: 21°S 177°W, H. 23h 55m 54s, h about 200 km. Tonga Islands.	
Apr.10 (122)	e F	0	55				(122) USCGS: 36°N 142°E, H. 0h 04m 43s. Near east coast of Honshu, Japan.	

Seismic Records at De Bilt

Date 1960	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
Apr.10 (123)							(123) Wi: eP 20h 37m 56s. USCGS: 53°N 167½°W, H. 20h 26m 12s. Fox Islands, Aleutian Islands.	
Apr.10 (124)							(124) Wi: e 22h 10m 14s. BCIS: 37°8'N 27°6' E, H. 22h 05m 25s. USCGS: 38°N 27½°E, H. 22h 05m 29s. Western Turkey.	
Apr.13 (125)	eL F	8	40				(125) Disturbed by microseisms. BCIS and USCGS: 44½°N 127°E, H. 7h 57m 46s. Manchuria.	
Apr.15 (126)	eL F	12	20				(126) Disturbed by microseisms. Wi: iP 11h 50m 55s +. USCGS: 40½°N 142°E, H. 11h 39m 01s, h about 150 km. Near north coast of Honshu, Japan.	
Apr.15 (127)	ePKP ePP eL F	22	24	34			(127) Disturbed by microseisms. USCGS: 13½°S 166°E, H. 22h 05m 06s. New Hebrides Islands.	
Apr.17 (128)							(128) Wi: ePKP 16h 00.0m. USCGS: 21°S 175½°W, H. 15h 40m 02s. Tonga Islands.	
Apr.17 (129)							(129) Wi: iPKP 22h 08m 20s (+). USCGS: 20°S 180°, H. 21h 49m 24s, h about 500 km. Fiji Islands.	
Apr.18 (130)							(130) Wi: iP 8h 19m 20s. USCGS: 28°N 139½°E, H. 8h 07m 07s, h about 450 km. Bonin Islands region.	
Apr.22 (131)	iPKP F	20	45	49			(131) Disturbed by microseisms. Wi: iPKP 20h 45m 46s. USCGS: 17½°S 174½°W, H. 20h 26m 28s, h about 200 km. Tonga Islands.	
Apr.24 (132)	eP eSKS ePS eSS eSSS F	3	40	10			(132) Disturbed by microseisms. Wi: ePKP 3h 39m 45s; i 3h 39m 46s -. USCGS: 6° 113½°E, H. 3h 22m 23s, h about 600 km. Java Sea.	
Apr.24 (133)	eP eS eSS eL F	12	22	40			(133) Disturbed by microseisms. Wi: iP 12h 22m 32s. USCGS: 28°N 54½°E, H. 12h 14m 26s. Gerash and Lar, Southern Iran.	
Apr.25 (134)	e F	16	39.0				(134) BCIS: 38°5'N 25°2'E, H. 16h 28m 34s. USCGS: 38½°N 25°E, H. 16h 28m 32s. Aegean Sea.	
Apr.27 (135)	eL F	23	33				(135) USCGS: 18°N 120°E, H. 22h 43m 49s. Off coast of Luzon, P.I.	
Apr.28 (136)	eL F	6	10				(136) USCGS: 3½°S 144½°E, H. 5h 08m 07s. Near coast of New Guinea.	

Seismic Records at De Bilt

Date 1960	Phase	Time			Direction	Period	Amplitude	Remarks													
		h	m	s																	
Apr. 29 (137)	iPP eSKS ePPS eSS eL F	19	50	56	+	6	6	(137) Wi: e 19h 50m 20s; e 19h 50m 47s; e 19h 51m 37s. USCGS: 0° 122°E, H. 19h 32m 12s. Celebes.													
Apr. 30 (138)	iPP eH ePPS eL F	4	20	15					(138) Wi: ePP 4h 20.0m. USCGS: 0° 122°E, H. 4h 01m 32s. Celebes												
Apr. 30 (139)	eL F	10	26	15						(139) BCIS: 36 $\frac{3}{4}$ °N 27 1/4°E, H. 10h 12m 42s. Dodecanese Islands.											
May 2 (140)	e F	1	27	15							(140) USCGS: 44°N 84 $\frac{1}{2}$ °E, H. 1h 00m 00s. Sinkiang Province, China.										
May 2 (141)	eL F	18	49	15								(141) BCIS: 36°9N 26°8E, H. 18h 37m 32s. USCGS: 37°N 27°E, H. 18h 37m 35s. Dodecanese Islands.									
May 3 (142)	eL F	8	35	15									(142) Wi: eP 8h 06m 18s. USCGS: 29°N 99 $\frac{1}{2}$ °E, H. 7h 55m 07s. China.								
May 3 (143)		8	35	15										(143) Wi: iPKP 8h 15m 42s -. USCGS: 24°S 179°W, H. 7h 55m 54s. Tonga Islands region.							
May 3 (144)		8	35	15											(144) Wi: iP 22h 35m 12s +. USCGS: 32°N 140°E, H. 22h 22m 41s, h about 150 km. South of Honshu, Japan.						
May 4 (145)		8	35	15												(145) Wi: iPKP 0h 16m 19s +. USCGS: 19 $\frac{1}{2}$ °S 178 $\frac{1}{2}$ °W, H. 22h 57m 37s, h about 600 km. Fiji Islands.					
May 4 (146)		8	35	15													(146) Wi: ePKP 18h 49m 24s. USCGS: 20°S 173°W, H. 18h 29m 40s. Loyalty Islands region.				
May 5 (147)		8	35	15														(147) Wi: iPKP 1h 22m 34s. USCGS: 21 $\frac{1}{2}$ °S 179°W, H. 1h 03m 43s, h about 600 km. Fiji Islands region.			
May 5 (148)	e F	12	05	15															(148) Wi: iP 11h 37m 32s -. BCIS and USCGS: 52 $\frac{1}{2}$ °S 158 $\frac{1}{2}$ °E, H. 11h 26m 00s. Near east coast of Kamchatka.		
May 6 (149)		12	05	15																(149) Wi: iP 18h 58m 52s (+). USCGS: 54°N 161°E, H. 18h 47m 26s. Near east coast of Kamchatka.	
May 8 (150)		12	05	15																	(150) Wi: iP 14h 41m 11s. BCIS: 45°N 151°E, H. 14h 29m 25s, h about 100 km. USCGS: 45 $\frac{1}{2}$ °N 151°E, H. 14h 29m 14s. Kurile Islands.
May 8 (151)		12	05	15																	

Seismic Records at De Bilt

Date 1960	Phase	Time			Direction	Period	Amplitude	Remarks													
		h	m	s																	
May 9 (152)					+	6	5	(152) Wi: iP 0h 23m 40s +. BCIS: 30°N 129 $\frac{1}{2}$ °E, H. 0h 11m 27s, h about 150 km USCGS: 30 $\frac{1}{2}$ °N 129 $\frac{1}{2}$ °E, H. 0h 11m 10s, Ryukyu Islands.													
May 11 (153)	ePKP ePS eL F	18	55.6						(153) BCIS and USCGS: 3°S 131°E, H. 18h 36m 00s, Ceram Sea.												
May 12 (154)	iP eS eL F	22	44	55						(154) USCGS: 7 $\frac{1}{2}$ °N 81°W, H. 22h 32m 32s. Panama.											
May 13 (155)	iP ePcP eS eL	16	18	45							(155) Wi: iP 16h 18m 40s. BCIS and USCGS: 55°N 161 $\frac{1}{2}$ °W, H. 16h 07m 12s. Alaska Peninsula										
May 13 (156)		16	19	00								(156) Wi: e 21h 07m 15s; e 21h 07m 30s. USCGS: 32 $\frac{1}{2}$ °S 179°W, H. 20h 46m 35s. Kermadec Islands region.									
May 14 (157)	eL F	23	00										(157) Wi: iP 22h 31m 21s +. USCGS: 53 $\frac{1}{2}$ °N 159 $\frac{1}{2}$ °E, H. 22h 19m 55s. Kamchatka.								
May 15 (158)	eL F	23	15											(158) USCGS: 24°N 121 $\frac{1}{2}$ °E, H. 13h 30m 20s. Near east coast of Formosa.							
May 15 (159)		14	15												(159) Wi: eP 21h 48m 42s. USCGS: 54 $\frac{1}{2}$ °N 164 $\frac{1}{2}$ °W, H. 21h 37m 08s. Alaska Peninsula.						
May 17 (160)		14	30													(160) Wi: ePKP 16h 03m 21s. USCGS: 23 $\frac{1}{2}$ °S 176°W, H. 15h 43m 33s, h about 60 km. Tonga Islands region.					
May 18 (161)	iP iPcP iPP iS ePPS eSS eSSS eL F	6	47	44													(161) Wi: eP 6h 47m 38s; e 6h 47m 40s USCGS: 29°N 130°E, H. 6h 35m 09s. Ryukyu Islands.				
May 19 (162)	iP epP ePP iS eSS F	6	48	00														(162) Wi: iP 2h 15m 20.5s. USCGS: 36°N 71°E, H. 2h 07m 00s, h about 200 km. Hindu Kush.			
May 19 (163)	eP eS eL F	6	51	05															(163) Wi: eP 10h 25.0m. USCGS: 17°S 66°E, H. 10h 11m 51s. Mascarene Islands region.		
		6	58	08																	
		6	59	40																	
		7	04.3																		
		7	08.5																		
		7	19																		
		7	30																		
		2	15	30																	
		2	16	00																	
		2	17	22																	
		2	22	26																	
		2	25	53																	
		2	50																		
		10	25.0																		
		10	35.3																		
		10	48.0																		
		12.0																			

Seismic Record at De Bilt

Date	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s		s	$\mu$	
May 20 (164)	iPKP <sub>1</sub> ePKP <sub>1</sub> eL <sub>2</sub> F	11 32 26 11 32 46 12 25 14.0				(164) Wi: iPKP <sub>1</sub> 11h 32m 23s. USCGS: 28°S 167½°E, H. 11h 12m 31s. Norfolk Islands.
May 21 (165)	eP iPP eS ePS eSS eL F	10 17 36 10 22 18 10 30 20 10 32 06 10 37 45 10 54 16.0				(165) Wi: eP 10h 18.0m; iPKP 10h 21m 24s. USCGS: 37½°S 73½°W, H. 10h 02m 50s. Near coast of Chile.
May 22 (166)	e F	4 45 5 05				(166) USCGS: 37°S 73°W, H. 4h 15m 45s. Chile.
May 22 (167)	e F	7 01 7 25				(167) USCGS: 38°S 73½°W, H. 6h 01m 36s. Chile.
May 22 (168)	e F	8 45 9 30				(168) USCGS: 37½°S 73°W, H. 8h 10m 53s. Chile.
May 22 (169)	eP iPP	10 45 25 10 50 03				(169) USCGS: 38°S 73½°W, H. 10h 30m 39s. Near coast of Chile. F in next shock.
May 22 (170)	eP ePP eSKP ePS eSS eSSS F	10 47 28 10 52.0 10 55 00 11 02 00 11 07.3 11 12.0 15.				(170) Wi: e 10h 51m USCGS: 37½°S 73°W, H. 10h 32m 43s. Near coast of Chile.
May 22 (171)	eP ePP ePS eSS	19 10 42 19 15 25 19 25 13 19 31 35	+			(171) Wi: ePKP 19h 14m 32s; iPP 19h 15m 28s. He: eSS 19h 31m; eL 19h 41m. USCGS: 38°S 73½°W, H. 18h 55m 57s. Near coast of Chile.
May 22 (172)	eP ePP	19 26 00 19 30 40				(172) USCGS: 39°S 74½°W, H. 19h 11m 17s. Near coast of Chile.
May 23 (173)						(173) Wi: eSKP 0h 47m 51s. BCIS: 38½°S 73½°W, H. 0h 25m 43s. USCGS: 38½°S 75°W, H. 0h 25m 44s. Near coast of Chile.
May 23 (174)	ePP	3 06 15				(174) USCGS: 41½°S 73½°W, H. 2h 46m 30s. Southern Chile.
May 23 (175)	ePP	3 16 18				(175) USCGS: 43°S 75½°W, H. 2h 56m 17s. Near coast of Chile.
May 23 (176)	ePP eL	5 33.0 6 05				(176) USCGS: 38°S 73½°W, H. 5h 13m 35s. Near coast of Chile.

Seismic Records at De Bilt

Date	Phase	Time	Direction	Period	Amplitude	Remarks
1960		h m s		s	$\mu$	
May 24 (177)	ePKP <sub>1</sub> ez ePKP <sub>2</sub> ez ePP ez eSS eSSS eL F	15 06 48 15 06 58 15 07 52 15 08 00 15 11 37 15 11 49 15 32.5 15 38.5 15 57 17.0				(177) USCGS: 44½°S 167½°E, H. 14h 46m 34s. South Island, New Zealand
May 24 (178)	eL F	21 28 22 15				(178) USCGS: 50½°S 74°W, H. 20h 32m 43s. Southern Chile.
May 25 (179)	eL F	1 24 1 32				(179) USCGS: 45°S 76°W, H. 0h 19m 20s. Off coast of Chile.
May 25 (180)	eL F	5 37 6 10				(180) USCGS: 47°S 75°W, H. 4h 44m 14s. Southern Chile.
May 25 (181)	ePKP ePP ePS eSS eSSS eL F	8 53 32 8 54 52 9 04.7 9 11 16 9 16.0 9 25 11.5				(181) USCGS: 45°S 76°W, H. 8h 34m 33s. Off coast of Chile.
May 25 (182)						(182) Wi: iPKP 15h 18m 02s. USCGS: 22°S 179½°W, H. 14h 59m 12s, h about 600 km. Fiji Islands.
May 26 (183)	iP iS eL F	5 14 00 5 16 59 5 18.0 6 30	-			(183) Wi: eP 5h 14m 01s. BCIS: 40°6N 20°6E, H. 5h 10m 11s. USCGS: 40°N 20°E, H. 5h 10m 05s. Albania.
May 26 (184)	eL F	21 00 21 10				(184) Wi: iP 20h 16m 03s; i 20h 16m 23s. USCGS: 27°N 93°E, H. 20h 05m 07s. Eastern India.
May 27 (185)	eL F	23 59 1 00				(185) USCGS: 44°S 77°W, H. 23h 20m 37s. Chile.
May 28 (186)	eL F	4 08 4 30				(186) BCIS and USCGS: 39½°S 74½°W, H. 3h 05m 53s. Chile.
May 28 (187)	eSS eL F	11 45.8 11 55 12 30				(187) USCGS: 38°S 73°W, H. 11h 05m 40s. Chile.
May 29 (188)	iPP ePS eSS eL F	7 58 54 8 08 30 8 15.0 8 34 9 30				(188) USCGS: 38°S 72½°W, H. 7h 39m 29s. Chile.
May 29 (189)	eL F	15 09 15 25				(189) USCGS: 37½°S 73°W, H. 14h 05m 25s. Near coast of Chile.

Seismic Records at De Bilt

Date 1960	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
May 29 (190)	eL F	22	15				(190) USCGS: 43°S 77°W, H. 21h 23m 54s. Chile.	
May 31 (191)	ePP eSKP ePS eSSS eL F	2	59.5				(191) USCGS: 39½°S 75°W, h. 2h 40m 00s.	
May 31 (192)	iP iS eSS eL F	11	12	48	+		(192) Wi: iP 11h 12m 47s +. USCGS: 18°N 62°W, H. 11h 02m 20s. Leeward Islands, West Indies.	
Jun. 1 (193)	ePS eL F	5	32.2				(193) USCGS: 38°S 73°W, H. 5h 02m 56s. Chile.	
Jun. 2 (194)	eSKKS eSS eL F	6	28.1				(194) Wi: iPKP 6h 16m 58s. USCGS: 46½°S 74°W, H. 5h 58m 03s. Chile.	
Jun. 2 (195)							(195) Wi: iPKP 7h 38m 40s (+); ipPKP 7h 39m 17s. USCGS: 19°S 175°E, H. 7h 19m 10s, h about 150 km. Tonga Islands.	
Jun. 2 (196)	ePP ePPP ePS ePPS eSS eSSS eL F	8	08	08			(196) Wi: iPKP 8h 06m 16s. BCIS and USCGS: 5½°S 151½°E, H. 7h 47m 11s. New Britain,	
Jun. 2 (197)							(197) Wi: iP 12h 49m 43s. BCIS and USCGS: 33½°N 49°E, H. 12h 42m 38s. Iran.	
Jun. 2 (198)							(198) Wi: ePKP 19h 17m 53s. BCIS and USCGS: 20½°S 178½°W, H. 18h 59m 05s, h about 550 km. Fiji Islands.	
Jun. 2 (199)							(199) Wi: iPKP 20h 07m 17s. USCGS: 20½°S 178½°W, H. 19h 48m 29s, h about 550 km. Fiji Islands.	
Jun. 3 (200)	ePKP	13	42	16			(200) Wi: iPKP 13h 42m 13s; USCGS: 17½°S 179°W, H. 13h 23m 37s, h about 600 km. Fiji Islands.	
Jun. 3 (201)	eL F	16	55				(201) Wi: eP 16h 30m 01s. USCGS: 41½°N 141½°E, H. 16h 18m 04s, h about 100 km. Near coast of Hokkaido, Japan.	
Jun. 4 (202)	eL F	3	00				(202) Wi: eP 2h 39m 50s. USCGS: 20°N 104½°W, H. 2h 27m 06s. Near coast of Jalisco, Mexico.	
Jun. 4 (203)	eL F	4	05				(203) USCGS: 39°S 73½°W, H. 3h 02m 49s. Near coast of Chile.	

Seismic Records at De Bilt

Date	Phase	Time			Direction	Period	Amplitude	Remarks.
		h	m	s				
Jun. 4 (204)	eP eS eL F	11	11.1				(204) USCGS: 39½°N 30½°W, H. 11h 05m 03s. Azores Islands region.	
Jun. 5 (205)	eL F	21	00				(205) USCGS: 31½°S 177°W, H. 19h 30m 30s. Kermadec Islands.	
Jun. 6 (206)	iP iz ePP eS eSS eL F	1	29	52	(-)		(206) Wi: iP 1h 29m 53s, iPP 1h 32m 42s. BCIS and USCGS: 41°N 125°W, H. 1h 17m 48s. Off coast of northern California.	
Jun. 6 (207)	eP ePKP ePP eSKS eSS eL F	6	11.0				(207) Wi: ePKP 6h 14m 40s.	
Jun. 7 (208)	eP	13	08	48			(208) Wi: 13h 08m 42s +. USCGS: 53°N 158½°E, H. 12h 57m 15s. Near east coast of Kamchatka.	
Jun. 8 (209)	iP ePP iS eL F	16	26	28			(209) Wi: eP 16h 26m 38s. BCIS and USCGS: 35°N 35°W, H. 16h 19m 48s. North Atlantic Ocean.	
Jun. 9 (210)	eL F	8	32.5				(210) BCIS: 40°5N 20°2E, H. 8h 24m 01s. USCGS: 39½°N 19°E, H. 8h 23m 59s. Albania.	
Jun. 9 (211)	iPKP iPP eSS eL F	11	43	31			(211) USCGS: 18°S 169°E, H. 11h 23m 51s. New Hebrides Islands.	
Jun. 9 (212)	iP eS eL F	17	53	19			(212) Wi: eP 17h 53m 30s. BCIS and USCGS: 38°N 26°W, H. 17h 47m 41s. Azores Islands.	
Jun. 10 (213)	ePKP ePP eSS eL F	21	31	45			(213) BCIS and USCGS: 13½°S 174°W, H. 21h 12m 05s. Samoa Islands.	
Jun. 11 (214)							(214) Wi: iP 0h 47m 51s +. USCGS: 21°S 64½°E, H. 0h 34m 48s. Southern Bolivia.	

Seismic Records at De Bilt

Date 1960	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
Jun.11 (215)	ePKP ePP iPKS ePPP ePS ePPS eSS eSSS eL	15	33	25			(215) Wi: iPKP 15h 33m 22s. F in next shock. BCIS and USCGS: 9°S 152½°E, H. 15h 14m 07s. Entrecasteaux Islands.	
Jun.11 (216)	ePP ePS ePPS eL F	16	59	19			(216) Wi: ePKP 16h 57.0s. BCIS and USCGS: 9½°S 152½°E, H. 16h 37m 40s. Entrecasteaux Islands.	
Jun.12 (217)							(217) Wi: iPKP 4h 15m 32s. USCGS: 22½°S 179°E, H. 3h 56m 44s, h about 600 km. South of Fiji Islands.	
Jun.13 (218)	eL F	6	48				(218) USCGS: 44½°S 76½°W, H. 5h 47m 05s. Off coast of southern Chile.	
Jun.14 (219)	eL F	3	55				(219) USCGS: 43°S 73°W, H. 2h 54m 13s. Near coast of southern Chile.	
Jun.15 (220)	iP iPP eH eS eL F	15	49	05			(220) Wi: iP 15h 49m 01s. USCGS: 41°N 142½°E, H. 15h 36m 51s. Near east coast of Honshu, Japan.	
Jun.15 (221)	ePP eSS eL	23	47.2				(221) USCGS: ½°S 133°E, H. 23h 27m 40s. Western New Guinea.	
Jun.15 (222)	ePKP <sub>1</sub> ePKP <sub>2</sub> ePP ePS F	23	51	23			(222) Wi: e 23h 52.0m. USCGS: 26°S 178½°E, H. 23h 32m 35s, h about 600 km. South of Fiji Islands.	
Jun.17 (223)							(223) Wi: iP 5h 21m 13s -. USCGS: 18°S 178°W, H. 5h 02m 34s, h about 600 km. Fiji Islands.	
Jun.17 (224)	iP ePS eSSS eL F	16	47	27			(224) Wi: iP 16h 47m 25s. USCGS: 52½°N 173½°W, H. 16h 35m 32s. Andreanof Islands, Aleutian Islands.	
Jun.18 (225)							(225) Wi: iP 2h 09m 18s. BCIS: 34°4N 26°2E, H. 2h 04m 05s. USCGS: 33°N 24½°E, H. 2h 04m 06s, h about 150 km. Crete Island region.	
Jun.19 (226)							(226) Wi: iP 12h 46m 37s. BCIS and USCGS: 44½°N 149°E, H. 12h 34m 34s. Kurile Islands.	

Seismic Records at De Bilt

Date 1960	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
Jun.20 (227)	eP ePKP ePP ePPP eSKS ePPS eSS eSSS eL F	2	15	55			(227) Wi: ePP 2h 20m 39s. BCIS and USCGS: 38°S 73½°W, H. 2h 01m 08s. Near coast of Chile.	
Jun.20 (228)	eP ePKP ePP eSKS ePS eSS eSSS eL F	13	14	30			(228) BCIS and USCGS: 39½°S 73°W, H. 12h 59m 40s. Chile.	
Jun.20 (229)	eL F	18	00				(229) USCGS: 38½°S 74°W, H. 16h 59m 35s. Off coast of Chile.	
Jun.21 (230)	ePKP ePP ePS eL F	21	52	28			(230) BCIS and USCGS: 61°S 21°W, H. 21h 33m 45s. Sandwich Islands.	
Jun.22 (231)	eL F	7	40				(231) USCGS: 39°S 74½°W, H. 6h 40m 15s, h about 60 km. Near coast of Chile.	
Jun.22 (232)							(232) Wi: eP 16h 21m 55s. USCGS: 12°N 57½°E, H. 16h 12m 00s. Arabian Sea.	
Jun.22 (233)							(233) Wi: iP 23h 40m 37s. BCIS and USCGS: 52°N 173°W, H. 23h 28m 50s. Andreanof Islands, Aleutian Islands.	
Jun.25 (234)	e F	3	27				(234) BCIS and USCGS: 30½°S 177°W, H. 2h 02m 35s. Kermadec Islands.	
Jun.25 (235)	eS e	14	29	48			(235) Wi: iP 14h 29m 48.5s; iS 14h 30m 12s. He: iP 14h 29m 26.5s. De Bilt: 51°2N 5°5E, H. 14h 29m 17s. BCIS: 51°5N 5°7E, H. 14h 29m 13s. Limbourg Province, Belgium.	
Jun.25 (236)	ePS eSS eL F	15	16.7				(236) USCGS: 30½°S 177°W, H. 14h 41m 42s. Kermadec Islands.	
Jun.25 (237)	eL F	20	20				(237) USCGS: 28°S 68°W, H. 19h 35m 27s, h about 100 km. Catamarca Province, Argentina.	
Jun.27 (238)	eL F	18	20				(238) Disturbed by microseisms. USCGS: 32½°S 178°W, H. 16h 50m 24s. Kermadec Islands.	

Seismic Records at De Bilt

Date 1960	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
Jun.29 (239)	eL F	2 59 3 25				(239) Disturbed by microseisms. BCIS and USCGS: 43°S 74°W, H. 1h 57m 16s. Near coast of southern Chile.
Jun.29 (240)						(240) Wi: eP 10h 28m 07s. BCIS: 47 1/4°N 27°0'W, H. 10h 23m 00s. USCGS: 47 1/2°N 27°W, H. 10h 23m 02s. Atlantic Ocean.
Jul. 1 (241)	eL F	8 40 9 05				(241) USCGS: 56°N 165°E, H. 7h 58m 58s. Komandorski Islands.
Jul. 2 (242)	ePP ePS eL F	12 15.0 12 14.5 12 48 13 05				(242) USCGS: 56°S 27°W, H. 11h 55m 41s. Sandwich Islands.
Jul. 3 (243)	iP iS eSS eL F	20 32 50 20 42 47 20 48.0 20 58 23	-	4	7	(243) USCGS: 50 1/2°N 177°W, H. 20h 20m 46s. Andreanof Islands. Aleutian Islands.
Jul. 3 (244)	iP	23 04 28				(244) Wi: iP 23h 04m 22s. USCGS: Aftershock of (243), H. 22h 52m 24s.
Jul. 4 (245)	eP iz ePP iS eSS eSSS eL F	4 39 50 4 39 56 4 42.7 4 49 11 4 53.5 4 57.5 5 00 7.5	+			(245) Wi: eP 4h 40.0m. BCIS and USCGS: 52°N 131 1/2°W, H. 4h 28m 33s. Queen Charlotte Islands, west of British Columbia.
Jul. 4 (246)	eS eL F	13 30 43 13 43 14 30				(246) USCGS: aftershock of (245), H. 13h 10m 05s.
Jul. 4 (247)	eL F	22 30 22 50				(247) USCGS: 43°S 74°W, H. 21h 39m 25s, h about 60 km. Southern Chile.
Jul. 5 (248)	eL F	6 40 7 30				(248) USCGS: 38 1/2°S 73 1/2°W, H. 5h 45m 30s. Near coast of Chile.
Jul. 6 (249)	eP eS F	5 25.0 5 31 52 6.0				(249) Wi: eP 5h 24m 59s. BCIS: 36°5'N 70°5'E, H. 5h 16m 45s, h about 220 km. USCGS: 36 1/2°N 70 1/2°E, H. 5h 16m 44s, h about 200 km. Hindu Kush.
Jul. 8 (250)						(250) Wi: iP 13h 03m 50s. USCGS: 30 1/2°N 130 1/2°E, H. 12h 51m 27s. Near south coast of Honshu, Japan.
Jul. 9 (251)	eL F	1 25 2.0				(251) USCGS: 25 1/2°N 125 1/2°E, H. 0h 42m 29s. Ryukyu Islands.
Jul. 9 (252)	eL F	22 50 23.0				(252) BCIS: 41°0'N 21°0'E, H. 22h 42m 54s. USCGS: 40 1/2°N 21°E, H. 22h 42m 54s. Southern Yugoslavia.

Seismic Records at De Bilt

Date 1960	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
Jul.10 (253)	eP ePP iS iH eL F	0 18 32 0 22 10 0 29 28 0 29 48 0 50 3.0				(253) Wi: eP 0h 18m 29s. BCIS and USCGS: 1°N 98 1/2°E, H. 0h 05m 38s, h about 150 km. Off west coast of Sumatra.
Jul.12 (254)	eH eL F	23 04 23 07 52 23 10				(254) BCIS: Eastern Belgium.
Jul.13 (255)	ePP eL F	8 15.0 8 45 9.5				(255) USCGS: 54°S 1°E, H. 7h 55m 58s. Bouvet Islands region.
Jul. (256)	eP eS eL F	13 05 08 13 08 25 13 10 13 30				(256) Wi: eP 13h 05.1m. BCIS: 40°6'N 23°4'E, H. 13h 01m 00s. USCGS: 41°N 23 1/2°E, H. 13h 01m 00s. Greece.
Jul.13 (257)	eL F	21 15 21 30				(257) USCGS: 34°N 139°E, H. 20h 27m 46s. Off south coast of Honshu, Japan.
Jul.14 (258)	eL F	2 55 3 30				(258) USCGS: 25°N 124 1/2°E, H. 2h 07m 21s, h about 200 km. Ryukyu Islands.
Jul.14 (259)	ePS eL F	10 54 40 11 20 12.0				(259) BCIS: 5°6'N 127 1/2°E, H. 10h 27m 07s, h about 100 km. USCGS: 5°N 127 1/2°E, H. 10h 26m 58s. Molucca Passage.
Jul.14 (260)	eL F	19 07 19 30				(260) BCIS and USCGS: 7°N 38 1/2°E, H. 18h 39m 34s. Etiopia.
Jul.15 (261)						(261) Wi: iP 5h 13m 34s. USCGS: 12°S 45°E, H. 5h 02m 09s, h about 60 km. Off northeast coast of Madagascar.
Jul.15 (262)	eL F	23 53 20 05				(262) BCIS: 55°N 35°W, H. 23h 43m 34s. North Atlantic Ocean.
Jul.16 (263)						(263) Wi: iP 21h 30m 01s. USCGS: 65 1/2°N 167 1/2°W, H. 21h 19m 37s. Seward Peninsula, Alaska.
Jul.17 (264)	eSS eL F	5 32.8 5 39 6.0				(264) BCIS and USCGS: 36°N 69°E, H. 5h 14m 56s, h about 200 km. Hindu Kush.
Jul.17 (265)	eL F	20 19 20 30				(265) USCGS: 10°S 13°W, H. 19h 42m 38s. Ascension Island region.
Jul.18 (266)	eSS eL F	2 22 2 44 3.5				(266) Wi: ePKP 2h 02m 14s. BCIS and USCGS: 4 1/2°S 151°E, H. 1h 43m 29s, h about 200 km. New Britain region.
Jul.20 (267)						(267) Wi: iP 3h 00m 13s. USCGS: 18 1/2°S 175°W, H. 2h 40m 39s. Tonga Islands.
Jul.20 (268)	eP eS eL F	9 42 35 9 52 23 10 13 10 40				(268) Wi: eP 9h 42m 28s. BCIS and USCGS: 49°N 157 1/2°E, H. 9h 30m 38s. Kurile Islands region.



## Seismic Records at De Bilt

Date 1960	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
Jul.20 (269)	iPKP eSS eL F	21 18 50 21 41.4 22 07 23.5				(269) Wi: iPKP 21h 18m 46s. USCGS: 20½°S 169°E, H. 20h 59m 25s. h about 200 km. New Hebrides Islands.
Jul.22 (270)	eL F	6 46 7 00				(270) BCIS: 54°N 37½°W, H. 6h 35.1m. North Atlantic Ocean.
Jul.23 (271)						(271) Wi: iPKP 7h 50m 22s +. USCGS: 21½°S 179½°W, H. 7h 31m 38s, h about 600 km. Fiji Islands.
Jul.24 (272)	eP eS eL F	10 00.3 10 09 30 10 21 12.0				(272) Wi: eP 10h 00m 10s. USCGS: 56°N 164°E, H. 9h 48m 56s. Near coast of Kamchatka.
Jul.25 (273)	ez iP ePP iS eSS eL F	3 52 30 3 52 32 3 55.1 4 01 50 4 06 25 4 16 5.5	-			(273) Wi: iP 3h 52m 24s. USCGS: 55°N 163°E, H. 3h 41m 05s. Near coast of Kamchatka.
Jul.25 (274)	iP iPP ePP epP iS isS eSS eL F	11 23 21 11 23 58 11 25 56 11 26 34 11 32 39 11 33 33 11 37 48 11 47 14.0	-	5	30	(274) Wi: iP 11h 23m 14s; i 11h 23m 15s. USCGS: 54°N 159°E, H. 11h 20m 00s, h about 100 km. Kamchatka.
Jul.25 (275)						(275) Wi: iP 15h 41m 48s. USCGS: 53½°N 159°E, H. 15h 30m 24s. Near east coast of Kamchatka.
Jul.26 (276)	iP eS F	12 41 45 12 46 18 13.0				(276) Wi: iP 12h 41m 28s. BCIS: 40°5'N 37°0'E, H. 12h 36m 19s. USCGS: 44°10'N 37°E, H. 12h 36m 20s. Turkey.
Jul.27 (277)	ePP ez eSKS ePS eSS eL F	10 24 36 10 25 05 10 27 38 10 30 44 10 35 00 10 41.5 10 56 12.5				(277) USCGS: 44½°S 76°W, H. 10h 05m 07s, h about 150 km. Near coast of southern Chile.
Jul.28 (278)						(278) Wi: iPKP 1h 38m 39s. BCIS: 21°S 178°E, H. 1h 18m 51s. South of Fiji Islands.
Jul.29 (279)	iPKP ePP eSS eL F	0 43 53 0 47.2 1 03.6 1 35 2.6	-	5	5	(279) Wi: iPKP 0h 43m 51s. USCGS: 19½°S 170½°E, H. 0h 24m 06s. Loyalty Islands.

## Seismic Records at De Bilt

Date 1960	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
Jul.29 (280)	eL F	11 17 11 30				(280) USCGS: 26½°N 90½°E, H. 10h 42m 43s. India.
Jul.29 (281)	eL F	15 00 15.5				(281) USCGS: 32°N 67½°E, H. 14h 32m 40s. Eastern Afghanistan.
Jul.29 (282)	iP iPP eS eH eSS eL F	17 43 52 17 46 58 17 53 57 17 54 18 18 00.5 18 09 20 35	+	6	8	(282) Wi: iP 17h 43m 47s; i 17h 43m 49s. USCGS: 40°N 142½°E, H. 17h 31m 45s, h about 100 km. Honshu, Japan.
Jul.30 (283)	eL F	14 39 15 20				(283) USCGS: 56°N 164°E, H. 14h 12m 34s. Near coast of Kamchatka.
Jul.31 (284)	ePKP ePP ePS ePPS eSS eL F	3 14 46 3 16 43 3 27 00 3 28 10 3 34.0 3 54 6.0				(284) Wi: iPKP 3h 14m 44s. USCGS: 6°S 150°E, H. 2h 55m 51s, h about 100 km. New Britain.
Jul.31 (285)	eL F	8 00 8 45				(285) USCGS: 6°N 150°E, H. 7h 04m 36s, h about 100 km. New Britain.
Jul.31 (286)	eL F	15 46 16 30				(286) USCGS: 43½°S 75°W, H. 14h 54m 59s. Near coast of central Chile.
Jul.31 (287)	eL F	22 50 23 05				(287) USCGS: 28°N 55°E, H. 22h 26m 49s. Southern Iran.
Aug. 1 (288)	eP ePcP eS eScS eL F	2 28 52 2 30 42 2 35 22 2 39 05 2 44 3 15				(288) Wi: iP 2h 28m 46s. USCGS: 29°7'N 54°2'E, H. 2h 20m 52.4s, h about 111 km. Southern Iran.
Aug. 2 (289)	iPKP ePP eSKS eSS F	5 26 59 5 30 32 5 33 50 5 49.8 7.0	-			(289) USCGS: 22°2'S 171°4'E, H. 5h 07m 24.5s, h about 104 km. Loyalty Islands region.
Aug. 2 (290)	eL F	11.0 11.5				(290) USCGS: 28°5'S 177°0'W, H. 9h 30m 36.5s, h about 124 km. Kermadec Islands.
Aug. 2 (291)	ez eH eL F	20 58.5 20 02.9 20 07 21 15				(291) USCGS: 84°2'N 2°3'E, H. 20h 51m 03.8s, h about 40 km. North Polar region.
Aug. 4 (292)	iP eS ePS eSS eL F	7 46 44 7 56 30 7 57.2 8 01 35 8 12 9.5	+			(292) Wi: eP 7h 46m 39s. USCGS: 51°2'N 179°E, H. 7h 34m 48.5, h about 20 km. Rat Islands, Aleutian Islands.

Seismic Records at De Bilt

Date 1960	Phase	Time			Direction	Period s	Amplitude μ	Remarks
		h	m	s				
Aug. 5 (293)	eP eS eL F	23	39	33			(293) Wi: eP 22h 39m 28s. USCGS: 51°2N 178°7E, H. 22h 27m 39.7s, h about 46 km. Rat Islands, Aleutian Islands.	
Aug. 8 (294)	eH F	12	50				(294) USCGS: 12°1N 44°6E, H. 12h 28m 08.5s, h about 15 km. Gulf of Aden.	
Aug. 9 (295)							(295) Wi: eP 6h 33m 03s; i 6h 33m 11s. USCGS: 56°2N 164°3E, H. 6h 21m 52.1s, h about 32 km. Off east coast of Kamchatka.	
Aug. 9 (296)	eP ePP iS ePS eL F	7	51	33			(296) Wi: iP 7h 51m 30s. USCGS: 40°4N 126°8W, H. 7h 39m 19.0s, h about 17 km. Off coast of northern California.	
Aug. 9 (297)	ePKP ePP ePS eSS eL F	17	06	20			(297) Wi: iPKP 17h 06m 15s -. USCGS: 24°6S 177°3W, H. 16h 46m 33.5s, h about 121 km. Tonga Islands region	
Aug. 10 (298)	e F	0	46				(298) USCGS: 11°6S 166°1E, H. 23h 36m 50.3s, h about 35 km. Santa Cruz Islands.	
Aug. 12 (299)	eL F	13	56				(299) Wi: iP 13h 24m 55s. USCGS: 36°3N 141°3E, H. 13h 12m 34.1s, h about 61 km. Near east coast of Honshu, Japan.	
Aug. 13 (300)	eS eL F	7	33.6				(300) Wi: iP 7h 23m 10s +. Change of papers 7h 12m - 7h 29m. USCGS: 40°4N 142°4E, H. 7h 11m 05.9s, h about 54 km. Near east coast of northern Honshu, Japan.	
Aug. 13 (301)	eP ePKP ePP eSKS ePS eL F	14	29	53			(301) Wi: ePKP 14h 33m 37s. USCGS: 40°4S 74°9W, H. 14h 14m 56.6s, h about 56 km. Near south coast of Chile.	
Aug. 14 (302)							(302) Wi: iP 4h 12m 45s. USCGS: 45°9N 151°0E, H. 4h 00m 56.0s, h about 67 km. Kurile Islands.	
Aug. 14 (303)	e F	23	01				(303) Wi: eP 22h 59m 27s. USCGS: 23°7S 66°6W, H. 22h 46m 08.3s, h about 226 km. Argentina.	

Seismic Records at De Bilt

Date 1960	Phase	Time			Direction	Period s	Amplitude μ	Remarks
		h	m	s				
Aug. 14 (304)							(304) Wi: e 15h 29m 10s; i 15h 29m 51s. He: i 15h 28m 44s; i 15h 28m 57s; i 15h 29m 00s; i 15h 29m 10s; 15h 29m 23s. BCIS: 49°2N 7°E, H. 15h 28.1m. Bensberg: 49°41'5N 7°12'E, H. 15h 28m 07s. Birkenfeld, Germany.	
Aug. 18 (305)							(305) Wi: iP 20h 59m 00s. BCIS and USCGS: 44°2N 147°8E, H. 20h 47m 06.2s, h about 69 km. Hokkaido, Japan.	
Aug. 19 (306)							(306) Wi: eP 12h 54m 04s. USCGS: 27°1N 140°2E, H. 12h 41m 48.1s, h about 431 km. Bonin Islands region.	
Aug. 20 (307)	eS eSS eL F	20	32.2				(307) Wi: eP 20h 21m 47s. USCGS: 35°7S 15°4W, H. 20h 08m 41.2s, h about 45 km. Tristan de Cunha region.	
Aug. 21 (308)							(308) Wi: iPKP 0h 36m 51s. USCGS: 4°4S 143°5E, H. 0h 18m 03.5s, h about 38 km. New Guinea.	
Aug. 23 (309)	eL F	9	29				(309) Wi: eP 9h 06m 25s. USCGS: 29°1N 59°8E, H. 8h 58m 11.2s, h about 64 km. Southern Iran.	
Aug. 23 (310)	eL F	14	34				(310) BCIS and USCGS: 0°9N 25°9W, H. 14h 08m 15.5s, h about 24 km. Mid Atlantic Ocean.	
Aug. 23 (311)	ePKP ePP eSS eL F	23	04.5				(311) USCGS: 14°6S 176°4W, H. 22h 44m 51.5s, h about 56 km. Fiji Islands region.	
Aug. 24 (312)	eS eSS eL F	2	04	44			(312) Wi: eP 1h 55m 32s. USCGS: 56°2N 164°1E, H. 1h 44m 12.5s, h about 45 km. Near east coast of Kamchatka.	
Aug. 24 (313)	ePKP	6	08	46			(313) Wi: ePKP 6h 08m 45s. USCGS: 19°1S 174°1W, H. 5h 49m 01.1s, h about 42 km. Tonga Islands.	
Aug. 25 (314)	eP eS eL F	17	53	44			(314) USCGS: 52°5N 169°2W, H. 17h 41m 56.8s, h about 22 km. Rat Islands, Aleutian Islands.	
Aug. 26 (315)	eL F	0	06				(315) USCGS: 38°3S 74°1W, H. 23h 02m 18.0s, h about 20 km. Near coast of Chile.	
Aug. 26 (316)	eL F	1	14				(316) USCGS: 38°0S 74°3W, H. 0h 14m 05.8s, h about 25 km. Near coast of Chile.	

Seismic Records at De Bilt

Date 1960	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s		s	F	
Aug.27 (317)	eP eS F	10 22 24 10 26 30 10 45				(317) Wi: eP 10h 22.5m. BCIS and USCGS: 34°4N 26°2E, H. 10h 17m 16.4s, h about 40 km. Crete Island region.
Aug.27 (318)						(318) Wi: eP 18h 27m 30s. USCGS: 50°1N 154°0E, H. 18h 16m 15.1s, h about 190 km. Kurile Islands.
Aug.29 (319)	eL F	18 10.0 18 20				(319) USCGS: 35°3N 26°8E, H. 18h 00m 40.5s, h about 71 km. Crete.
Sep. 1 (320)	ePKP ePP eSS eL F	9 47 50 9 51 00 10 09 40 10 40 12.0				(320) USCGS: 16°8S 167°E, H. 9h 28m 19.5s, h about 63 km. New Hebrides Islands.
Sep. 1 (321)	eP eS eL F	15 48 33 15 57 52 16 13 17 15				(321) Wi: iP 15h 48m 29s. USCGS: 56°1N 153°7W, H. 15h 37m 14.4s, h about 24 km. Kodiak Island, Alaska.
Sep. 1 (322)	eL F	21 22 21 40				(322) USCGS: 16°1S 179°W, H. 20h 02m 12.8s, h about 183 km. Fiji Islands.
Sep. 2 (323)	eS eL F	14 06.5 14 23 15.0				(323) USCGS: 28°7N 98°3E, H. 13h 46m 10.0s, h about 48 km. Tibet.
Sep. 2 (324)	iP eS eL F	22 14 41 22 24 20 22 35 24 00				(324) Disturbed by microseisms. Wi: eP 22h 14m 34s. USCGS: 52°0N 171°4W, H. 22h 02m 48.9s, h about 49 km. Fox Islands, Aleutian Islands.
Sep. 3 (325)						(325) Wi: ePKP 12h 59m 53s. USCGS: 6°1S 154°5E, H. 12h 41m 34.9s, h about 457km. Solomon Islands.
Sep. 3 (326)	eP eS eL F	23 58 30 0 08 28 0 23 1 30				(326) Disturbed by microseisms. Wi: iP 23h 58m 23s. USCGS: 44°6N 149°1E, H. 23h 46m 23.9s, h about 27 km. Kurile Islands.
Sep. 6 (327)	iPKP iPP	14 22 36 14 26 15				(327) Wi: iP 14h 22m 34s +. USCGS: 20°4S 169°4E, H. 14h 03m 01.8s, h about 35 km. Loyalty Islands.
Sep. 6 (328)						(328) Wi: iP 15h 36m 35s (-). USCGS: 41°9N 142°5E, H. 15h 24m 40.5s, h about 15 km. Near south coast of Hokkaido, Japan.
Sep. 7 (329)	iP eS eSS eL F	1 30 44 1 41 48 1 47 40 2 04 2 20				(329) USCGS: 37°2S 16°1W, H. 1h 17m 39.1s, h about 25 km. Tristan da Cunha region.
Sep. 7 (330)	eL F	12 30 12 50				(330) Wi: iP 11h 56m 52s. USCGS: 44°3N 149°1E, H. 11h 44m 56.6s, h about 89 km. Kurile Islands.

Seismic Records at De Bilt

Date 1960	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s		s	M	
Sep. 8 (331)						(331) Wi: iP 14h 43m 27s +. USCGS: 52°5N 158°8E, H. 14h 32m 00.3s, h about 29 km. Kamchatka.
Sep. 9 (332)	eL F	16 29 16 50				(332) USCGS: 71°5N 2°4W, H. 16h 19m 15.9s, h about 23 km. Jan Mayen Island region.
Sep. 9 (333)	eP eS eL F	20 09.0 20 13.0 20 15.0 20 25				(333) Disturbed by microseisms. Wi: eP 20h 09m 03s. USCGS: 71°7N 1°3W, H. 20h 04m 32.7s, h about 23 km. Jan Mayen Island region.
Sep.10 (334)	eP eS eL F	0 24.3 0 28 36 0 32 0 50				(334) Disturbed by microseisms. Wi: eP 0h 24.1m. USCGS: 34°4N 26°4E, H. 0h 19m 08.4s, h about 10 km. Crete.
Sep.10 (335)	e F	10 09 10 25				(335) BCIS: 39°N 37°W, H. 9h 55.7m. Mid Atlantic crust.
Sep.10 (336)	ePP ePPS eL F	11 02 18 11 12 11 33 12 10				(336) USCGS: 4°0N 122°6E, H. 10h 44m 51.2s, h about 629 km. Celebes Sea.
Sep.12 (337)	iP eS eL F	12 29 52 12 40.5 13 04 13.5				(337) Disturbed by microseisms. Wi: eP 12h 29m 47s. USCGS: 27°3N 128°4E, H. 12h 17m 08.1s, h about 48 km. Ryukyu Islands.
Sep.13 (338)						(338) Wi: iP 3h 21m 29s. USCGS: 27°0N 140°2E, H. 3h 09m 09.7s, h about 439km. Bonin Islands region.
Sep.14 (339)						(339) Wi: eP 23h 38.5m. USCGS: 20°9S 174°1W, H. 23h 18m 35.1s, h about 25 km. Tonga Islands.
Sep.17 (340)	iP eS eL F	8 17 16 8 27 00 8 38 9.5				(340) Disturbed by microseisms. USCGS: 49°6N 155°2E, H. 8h 05m 29.5s, h about 28 km. Kurile Islands
Sep.17 (341)	ePKP eSS eL F	20 16 00 20 38.2 21 19 22 15				(341) Wi: ePKP 20h 16m 04s. BCIS and USCGS: 20°9S 174°5W, H. 19h 56m 11.1s, h about 28 km. Tonga Islands.
Sep.19 (342)	eP eSKS eS ePS eH eL F	3 52 43 4 03 20 4 03.7 4 04.9 4 10.1 4 25 5.4				(342) USCGS: 15°8N 119°4E, H. 3h 39m 37.6s, h about 74 km. Luzon Island, Philippine Islands.
Sep.19 (343)	iP eS ePS eL F	19 13 39 19 23 43 19 24 22 19 39 21.0				(343) Wi: eP 19h 13m 40s; i 19h 13m 42s. USCGS: 6°9N 77°5W, H. 19h 01m 25.4s, h about 66 km. Colombia Panama border.

Seismic Records at De Bilt

Date 1960	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
Sep.20 (344)	eL F	4 32 4 40				(344) USCGS: 50°1N 88°4E, H. 4h 05m 36.9s, h about 29 km. SSR-Outer Mongolia border.
Sep.21 (345)						(345) Wi: iP 16h 20m 29s. BCIS and USCGS: 26°7N 124°8E, H. 16h 08m 14.7s, h about 207 km. East China Sea,
Sep.22 (346)	eS eL F	5 56.4 6 05 7 00				(346) Disturbed by microseisms, Wi: eP 5h 48m 16s; i 5h 48m 18s. BCIS: foreshock of (347), H. 5h 38m 15s. USCGS: 3°4S 29°1E, H. 5h 38m 14.4s, h about 29 km. Belgian Congo.
Sep.22 (347)	iP	9 15 36				(347) Disturbed by microseisms. F in next shock. Wi: eP 9h 15m 39s. USCGS: 3°3S 29°3E, H. 9h 05m 36.8s, h about 28 km. Belgian Congo.
Sep.22 (348)	iP ePP eS F	9 25 00 9 28 40 9 33.0 12.5	(-)			(348) Wi: iP 9h 25m 00s. USCGS: 2°8S 29°8E, H. 9h 14m 58.0s, h about 20 km. Belgian Congo.
Sep.24 (349)	eL F	0 26 0 33				(349) Wi: ePKP 23h 22m 14s; i 23h 22m 16s. USCGS: 22°3S 174°8W, H. 23h 02m 24.3s, h about 39 km. Tonga Islands.
Sep.25 (350)						(350) Wi: ePKP 15h 58m 55s. USCGS: 17°4S 173°4W, H. 15h 39m 27.4s, h about 132 km. Tonga Islands region.
Sep.28 (351)	eL F	6 05 6 15				(351) USCGS: 32°5N 95°8E, H. 5h 29m 32.1s, h about 18 km. Western China.
Sep.28 (352)	e F	20 52 20 56				
Sep.29 (353)	eP ePP iPS eSS eL F	11 31 54 11 36.1 11 44 32 11 50.0 12 06 13.0				(353) BCIS and USCGS: 19°0N 144°7E, H. 11h 18m 52.9s, h about 469 km. Mariana Islands.
Sep.29 (354)	eL F	19 36 20 00				(354) USCGS: 15°3N 90°0W, H. 18h 54m 27.3s, h about 86 km. Guatemala.
Oct. 1 (355)	eP eS eSS eSSS eL F	16 22 50 16 32 35 16 37.5 16 41.5 16 47 18.0				(355) Wi: iP 16h 22m 42s. USCGS: 52°2N 172°6W, H. 16h 10m 56.9s, h about 41 km. Fox Islands, Aleutian Islands.
Oct. 3 (356)	eL F	20 53 21 15				(356) BCIS and USCGS: 5°7S 103°0E, H. 19h 50m 48.8s, h about 51 km. Off coast of Sumatra.
Oct. 6 (357)	eL F	16 50 17 02				(357) USCGS: 52°2N 107°E, H. 16h 19m 15.4s, h about 46 km. Lake Baikal region.

Seismic Records at De Bilt

Date 1960	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
Oct. 6 (358)	eP iz iS iPcP eL F	20 00 35 20 00 40 20 04 46 20 05 13 20 06 20 20 45	-			(358) Wi: iP 20h 00m 38s. USCGS: 58°2N 31°6W, H. 19h 55m 42.2s, h about 63 km. North Atlantic Ocean.
Oct. 7 (359)	eP eS eL F	3 20 26 3 24 36 3 26.2 3 50				(359) Wi: eP 3h 20m 28s; e 3h 20m 34s. BCIS and USCGS: 58°1N 31°9W, H. 3h 15m 34.9s, h about 71 km. North Atlantic Ocean.
Oct. 7 (360)	ePKP iPP iz iSKS iSKKS iPS ePPS eSS eL F	15 37 16 15 38 18 15 38 34 15 44 09 15 45 29 15 48 08 15 49 20 15 54 42 16 11 18.0				(360) Wi: ePKP 15h 37m 21s; ePP 15h 38m 23s. USCGS: 7°4S 130°7E, H. 15h 18m 30.8s, h about 45 km. Banda Sea.
Oct. 7 (361)	eL F	21.0 21.5				(361) USCGS: 20°4S 113°7W, H. 20h 01m 32.6s, h about 203km. Easter Island region.
Oct. 8 (362)						(362) Wi: eP 2h 04m 25s. BCIS and USCGS: 16°7N 97°9W, H. 1h 51m 51.2s, h about 74 km. Oaxaca, Mexico.
Oct. 8 (363)	iP ipP isP iPPP ez is iH eH iH F	6 03 55 6 05 59 6 07 00 6 08 55 6 10.0 6 12 51 6 13 30 6 16.0 6 21.0 8.0	-			(363) Wi: iP 6h 03m 48s; i 6h 03m 52s; epP 6h 06m 01s. BCIS and USCGS: 40°0N 129°7E, H. 5h 53m 01.1s, h about 608 km. Sea of Japan.
Oct. 8 (364)	eP eS eL F	20 52.5 21 02 46 21 21 22 30				(364) BCIS and USCGS: 7°9N 92°9E, H. 20h 40m 06.6s, h about 84 km. Nicobar Islands.
Oct. 9 (365)	eP is ePS eSSS eL F	9 12 41 9 22 38 9 23 10 9 33.0 9 37 10 30	-			(365) Disturbed by microseisms. Wi: iP 9h 12m 34s -. BCIS and USCGS: 40°8N 141°2E, H. 9h 00m 42.0s, h about 155 km. Near coast of northern Honshu, Japan.
Oct.13 (366)						(366) Wi: eP 2h 24m 51s. BCIS and USCGS: 45°2N 25°8E, H. 2h 21m 12.7s, h about 63 km. Romania.
Oct.13 (367)	iP eS ePS eL F	15 04 00 15 13 18 15 14 06 15 26 16 30	(-)			(367) Wi: eP 15h 03m 50s; i 15h 03m 53s. BCIS and USCGS: 54°8N 161°2E, H. 14h 52m 34.7s, h about 35 km. Kamchatka.

Seismic Records at De Bilt

Date 1960	Phase	Time			Direction	Period s	Amplitude μ	Remarks
		h	m	s				
Oct.14 (368)	eL F	18 19	49 07				(368) BCIS and USCGS: 38°9S 73°5W, H. 17h 48m 27.7s, h about 19 km. Off coast of Chile.	
Oct.14 (369)	eP ez eS eSS eL	21 21 21 21 21	30 31 40 46 58	50 00 42 20			(369) Wi: eP 21h 30m 59s. F in next shock. BCIS and USCGS: 51°9N 172°1W, H. 21h 19m 11.4s, h about 50 km. Fox Islands, Aleutian Islands.	
Oct.14 (370)	iP eS eL F	23 23 23 24	00 05.0 07.0 20	55	+		(370) Wi: eP 23h 01m 00s. BCIS and USCGS: 55°7N 35°2W, H. 22h 55m 41.7s, h about 40 km. North Atlantic Ocean.	
Oct.15 (371)	eS eL F	2 2 2	03 07 20	45			(371) BCIS: aftershock of (370), H. 1h 54m 20s. USCGS: 55°8N 35°6W, H. 1h 54m 09.2s, h about 37 km.	
Oct.17 (372)	eL F	9 10	55 01				(372) BCIS and USCGS: 14°9N 91°2W, H. 9h 34m 44.7s, h about 135 km. Off coast of Nicaragua.	
Oct.17 (373)	eL F	19 19	21 30				(373) Wi: eP 19h 09m 55s. USCGS: 31°5N 40°8W, H. 19h 02m 15.7s, h about 19 km. North Atlantic Ocean.	
Oct.17 (374)	eL F	22 23.5	56				(374) USCGS: 14°7N 92°8W, H. 22h 15m 32.0s, h about 128 km. Mexico Guatemala border.	
Oct.20 (375)	ePKP ePP eL F	11 11 12 13.0	25.3 28 16	00			(375) BCIS and USCGS: 11°1S 64°9E, H. 11h 05m 57.6s, h about 37 km. Santa Cruz Islands region.	
Oct.23 (376)	eL F	6 7	50 00				(376) USCGS: 31°5N 40°7W, H. 6h 32m 20.0s, h about 18 km. Atlantic Ocean.	
Oct.24 (377)	eL F	18 18	14 30				(377) USCGS: 6°1S 150°0E, H. 17h 09m 14.4s, h about 122 km. New Britian region.	
Oct.27 (378)	eS eL F	15 15 16	47.8 49.5 05				(378) BCIS and USCGS: 71°4N 8°6W, H. 15h 39m 20.3s, h about 42 km. Jan Mayen Island region.	
Oct.27 (379)							(379) Wi: ePKP 22h 47m 00s. BCIS and USCGS: 15°3S 175°0W, H. 22h 27m 55.1s, h about 253 km. Samoa Islands region.	
Oct.28 (380)	iP iS eL F	4 4 4 5.7	23 27 28.8	21 12	+	6	(380) Wi: iP 4h 23m 14s. USCGS: 71°4N 8°6W, H. 4h 18m 41.9s, h about 48 km. Jan Mayen Island.	
Oct.28 (381)	eP eS eL F	7 7 7 8	51 55.2 57 10	13			(381) Wi: eP 7h 51m 07s. USCGS: 71°4N 8°4W, H. 7h 46m 38.5s, h about 61 km. Jan Mayen Island.	

Seismic Records at De Bilt

Date 1960	Phase	Time			Direction	Period s	Amplitude μ	Remarks
		h	m	s				
Oct.28 (382)	iP epP iPP epPP iS ePS eSSS eL F	13 13 13 13 13 13 13 13 13	29 30 32 33 39 39 48.5 52 52	43 16 27 00 09 40 5	-	5	15	(382) Wi: eP 13h 29m 39s; epP 13h 30m 09s. USCGS: 52°2N 157°4E, H. 13h 18m 14.3s, h about 96 km. Kamchatka.
Oct.28 (383)	eP eS eL F	22 22 23 24.0	42 52 10	00 26				(383) USCGS: 34°6N 141°1E, H. 22h 29m 26.6s, h about 96 km. Near west coast of Honshu, Japan.
Oct.29 (384)	eH F	0 0	13.0 20					(384) BCIS: 44°0N 11°3E, H. 0h 08m 39s. USCGS: 44°2N 11°5E, H. 0h 08m 41.4s, h about 45 km. Italy.
Oct.29 (385)	eL F	4 4	43 50					(385) USCGS: 15°5N 46°4W, H. 4h 17m 02.1s, h about 38 km. North Atlantic Ocean.
Oct.29 (386)	eH F	12 12	04 09					(386) USCGS: 47°6N 27°6W, H. 11h 54m 17.4s, h about 25 km. North Atlantic Ocean.
Oct.29 (387)	eP eS eL F	13 13 13 13	31 35 36.5 50	00 10				(387) Wi: eP 13h 31m 10s. BCIS: aftershock of (386), H. 13h 26m 10s.
Oct.30 (388)	e F	8 9	47 00					(388) Begin during change of papers. USCGS: 47°7N 28°7W, H. 8h 32m 39.1s, h about 25 km. North Atlantic Ocean.
Oct.30 (389)	eS ePS eL F	12 12 12 14.0	40.1 40 56	52				(389) Disturbed by microseisms. BCIS and USCGS: 23°4S 70°3W, H. 12h 14m 36.1s, h about 76 km. Near coast of Chile.
Nov. 1 (390)	ePP eSKS ePS eSS eL F	9 9 9 9 9 9	05.5 11 15.5 21.0 39 39	25				(390) No z-record. BCIS and USCGS: 38°5S 75°1W, H. 8h 45m 59.3s, h about 55 km. Near coast of Chile.
Nov. 2 (391)	e F	18 18	20 50					(391) Disturbed by microseisms. BCIS and USCGS: 45°0S 80°2E, H. 18h 09m 48.8s, h about 23 km. Indian Ocean.
Nov. 5 (392)	iP iS eL F	20 20 20 21	24 28 30.2 15	52 14	-			(392) BCIS and USCGS: 39°4N 20°5E, H. 20h 20m 53.7s, h about 49 km. Near coast of Greece.
Nov. 6 (393)	iP eS ePS eL F	4 4 5 5 5	49 59 00.1 15 55	50 16	+	4	7	(393) Wi: iP 4h 49m 43.5s +. BCIS and USCGS: 53°2N 159°8E, H. 4h 38m 16.7s, h about 32 km. Near east coast of Kamchatka.

Seismic Records at De Bilt

Date 1960	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
Nov. 6 (394)	ePKP ePP eSS eL F	6 35.9 6 39.2 6 59.1 7 40 8 40				(394) Disturbed by microseisms. BCIS and USCGS: 31°1S 177°7W, H. 6h 14m 53.4s, h about 69 km. Kermadec Islands.
Nov. 6 (395)	eP eS eL F	22 21.8 22 31 22 49 23 30				(395) Disturbed by microseisms. Wi: iP 22h 21m 47s. BCIS and USCGS: 52°9N 168°W, H. 22h 10m 06.4s, h about 43 km. Fox Islands, Aleutian Islands.
Nov. 8 (396)	eL F	12 12 12 30				(396) Disturbed by microseisms. USCGS: 45°1N 125°2W, H. 11h 36m 27.2s, h about 44 km. Near coast of Oregon.
Nov. 9 (397)	ePP iPS eSS eSSS eL F	3 37 52 3 47 26 3 53.7 3 58.0 4 07 5.8				(397) Disturbed by microseisms. BCIS and USCGS: 60°9S 24°8W, H. 3h 17m 58.5s, h about 37 km. Sandwich Islands.
Nov. 9 (398)	eS eSSS eL F	11 04.0 11 11.8 11 16 12.3				(398) Disturbed by microseisms. BCIS and USCGS: 32°8N 103°4E, H. 10h 43m 40.8s, h about 31 km. Szechwan Province, China.
Nov. 9 (399)	eSKS eS ePS eE eL F	20 30.8 20 31.8 20 33.1 20 38.9 20 52 21 40				(399) Disturbed by microseisms. BCIS and USCGS: 23°4S 70°6W, H. 20h 06m 16.2s, h about 52 km. Near coast of Chile.
Nov. 13 (400)	eH eL F	7 11.0 7 29 8.0				(400) Disturbed by microseisms. BCIS and USCGS: 1°4N 127°3E, H. 6h 37m 06.2s, h about 60 km. Molucca Passage.
Nov. 13 (401)	iP iS eSS eSSS eL F	9 32 27 9 42 16 9 47.0 9 51 9 56 12.5	-	7	35	(401) Disturbed by microseisms. Wi: iP 9h 32m 25s. BCIS and USCGS: 51°4N 168°8W, H. 9h 20m 32.3s, h about 32 km. Fox Islands, Aleutian Islands.
Nov. 19 (402)	eL F	12 24 12 36				(402) Disturbed by microseisms.
Nov. 20 (403)	iP eSKS ePS eL F	22 15 11 22 25 50 22 28 10 22 44 1.5				(403) Disturbed by microseisms. Wi: eP 22h 15.5m. BCIS and USCGS: 6°8S 81°0W, H. 22h 01m 56.4s, h about 55 km. Near coast of Peru.
Nov. 22 (404)						(404) Wi: ePKP 3h 51.7m. USCGS: 19°8S 172°6W, H. 3h 31m 58.8s, h about 70 km. Tonga Islands.

Seismic Records at De Bilt

Date 1960	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
Nov. 22 (405)	ePS eL F	6 48.3 7 11 7 35				(405) Disturbed by microseisms. USCGS: 36°1S 52°3E, H. 6h 21m 45.0s, h about 21 km. Indian Ocean, North of Crozet Islands.
Nov. 22 (406)	ePS eSS eSSS eL F	12 58 30 13 04.5 13 08.5 13 21 14.5				(406) Disturbed by microseisms. USCGS: 40°3S 73°9W, H. 12h 28m 54.8s, h about 49 km. Near coast of southern Chile.
Nov. 23 (407)	iPKP ePP e(PS) eL F	14 32 23 14 36 08 14 46.6 15 20 16.7	-	6	5	(407) Disturbed by microseisms. Wi: ePKP 14h 32m 12s; e 14h 32m 21s. BCIS and USCGS: 24°4S 176°1W, H. 14h 12m 21.1s, h about 28 km. South of Tonga Islands region.
Nov. 23 (408)						(408) Wi: ePKP 18h 16.5m. USCGS: 24°4S 176°2W, H. 17h 56m 37.2s, h about 44 km. South of Tonga Islands region.
Nov. 24 (409)	ePKP <sub>1</sub> ePKP <sub>2</sub> ePP eSS eSSS eL F	7 12 28 7 13 10 7 16 25 7 37 7 41 7 59 9 30				(409) Disturbed by microseisms. Change of papers from 7h 26m till 7h 34m. BCIS and USCGS: 24°4S 176°1W, H. 6h 52m 41.1s, h about 23 km. South of Tonga Islands region.
Nov. 27 (410)	eL F	22 29 22 36				(410) Disturbed by microseisms. USCGS: 37°2S 73°4W, H. 21h 24m 30.7s, h about 61 km. Near coast of Chile.
Nov. 28 (411)	eL F	19 58 20 03				(411) Disturbed by microseisms. USCGS: 47°5N 27°5W, H. 19h 47m 16.5s, h about 38 km. Azores, North Atlantic Ocean.
Dec. 1 (412)	eP eSS eL F	21 02.0 21 15 21 19 22.0				(412) Disturbed by microseisms. USCGS: 49°0N 129°3W, H. 20h 49m 45.5s, h about 15 km. Off coast of Vancouver Island.
Dec. 2 (413)	eP ePP eSKS ePS eSS eSSS eL F	9 24 43 9 28 38 9 35 30 9 38.0 9 42.5 9 45 10 00 12.5				(413) Disturbed by microseisms. BCIS and USCGS: 24°6S 69°7W, H. 9h 10m 39.1s, h about 19 km. Near coast of Chile.
Dec. 3 (414)	iP ePP eS iPS eL F	4 34 42 4 38 37 4 43.5 4 44 06 4 58 6.0		6	7	(414) Disturbed by microseisms. Wi: iP 4h 34m 34s -. BCIS and USCGS:

Seismic Records at De Bilt

Date 1960	Phase	Time			Direction	Period s	Amplitude µ	Remarks
		h	m	s				
Dec. 5 (415)							(415) Wi: iPKP 0h 14m 28s +. USCGS: 21°2S 179°0W, H. 23h 55m 39.3s, h about 633 km. Fiji Islands region.	
Dec. 5 (416)							(416) Wi: iP 18h 01m 04s. BCIS and USCGS: 54°9N 161°4E, H. 17h 49m 41.2s, h about 19 km. Near east coast of Kamchatka.	
Dec. 5 (417)							(417) Wi: iP 18h 18m 48s. USCGS: 54°5N 161°5E, H. 18h 07m 30.2s, h about 40 km. Near east coast of Kamchatka.	
Dec. 5 (418)	eL F	21	30				(418) Wi: eP 21h 26m 18s. USCGS: 35°9N 6°5W, H. 21h 21m 51.7s, h about 66 km. Strait of Gibraltar.	
Dec. 6 (419)	e F	4	10				(419) USCGS: 43°1N 104°5E, H. 3h 35m 30.6s, h about 55 km. Outer Mongolia.	
Dec. 6 (420)	e eL F	9	37				(420) Disturbed by microseisms. Wi: eP 9h 09.8m. USCGS: 21°4S 69°2W, H. 8h 56m 09s, h about 28 km. Northern Chile.	
Dec. 6 (421)							(421) Wi: iPKP 12h 36m 20s. USCGS: 20°6S 178°8W, H. 12h 17m 38.7s, h about 616 km. Fiji Islands region.	
Dec. 8 (422)							(422) Wi: iPKP 1h 42m 58s +; ePP 1h 45m 18s. USCGS: 21°7S 179°4W, H. 1h 24m 15.7s, h about 600 km. Fiji Islands region.	
Dec. 11 (423)	eL F	1	35				(423) Wi: ePKP 0h 20m 41s, USCGS: 22°3S 171°5E, H. 0h 01m 07.6s, h about 90 km. Loyalty Islands region.	
Dec. 11 (424)	eL F	20	00				(424) Disturbed by microseisms. Wi: ePKP 19h 12.5m. USCGS: 15°7S 167°E, H. 18h 53m 03.2s, h about 57 km. New Hebrides Islands region.	
Dec. 13 (425)	e(PKP <sub>1</sub> ) eL F	7	56.5				(425) Disturbed by microseisms. Wi: ePKP <sub>2</sub> 7h 57.0m. USCGS: 52°7S 159°1E, H. 7h 36m 16.4s, h about 25 km. Macquarie Islands region.	
Dec. 15 (426)	e(S) eSS eL F	0	17 26				(426) Disturbed by microseisms. Wi: eP 0h 05m 40s. USCGS: 3°0N 126°3E, H. 23h 51m 31.5s, h about 78 km. Molucca Passage.	
Dec. 16 (427)	eP eS eL F	18	26 49				(427) Wi: eP 18h 27.0m. BCIS and USCGS: 44°0N 28°9W, H. 18h 21m 31.7s, h about 21 km. North Atlantic Ocean.	
Dec. 17 (428)	eS F	13	24 08				(428) USCGS: 44°7N 30°9W, H. 13h 14m 32.0s, h about 25 km. North of Azores.	

Seismic Records at De Bilt

Date 1960	Phase	Time			Direction	Period s	Amplitude µ	Remarks
		h	m	s				
Dec. 17 (429)							(429) Wi: iP 16h 56m 40s. USCGS: 47°4N 153°7E, H. 16h 44m 44.6s, h about 19 km. Kurile Islands.	
Dec. 18 (430)	eL F	19	10				(430) BCIS and USCGS: 8°6N 125°9E, H. 18h 20m 43.3s, h about 36 km. Mindanao, Philippine Islands.	
Dec. 21 (431)							(431) Wi: iPKP 14h 50m 28s. BCIS and USCGS: 61°5N 152°8W, H. 14h 39m 48.0s, h about 125 km. South of Central Alaska.	
Dec. 22 (432)	eL F	0	00				(432) USCGS: 62°7S 167°1E, H. 22h 29m 54.9s, h about 29 km. North of Balleny Islands.	
Dec. 22 (433)	eL F	15	42				(433) USCGS: 53°9N 168°1W, H. 14h 27m 40.3s, h about 57 km. Fox Islands, Aleutian Islands.	
Dec. 22 (434)	eSS eL	21	40				(434) USCGS: 6°9S 155°3E, H. 21h 02m 41.2s, h about 469 km. Solomon Islands.	
Dec. 25 (435)							(435) Wi: iP 20h 38m 53s. USCGS: 54°8N 161°6E, H. 20h 27m 34.1s, h about 37 km. Near east coast of Kamchatka.	
Dec. 27 (436)	eL F	11	13				(436) USCGS: 41°5N 125°0W, H. 10h 35m 27.4s, h about 61 km. Off coast of northern California.	
Dec. 29 (437)	eL F	11	30				(437) USCGS: 45°0S 75°6W, H. 10h 36m 38.1s, h about 17 km. Near coast of southern Chile.	