

Copied -

**KONINKLIJK NEDERLANDS
METEOROLOGISCH INSTITUUT**

SEISMIC RECORDS
AT DE BILT

VOLUME 45
1957

N.B. Margin for Witterveen + Heerlen readings.

DE BILT - 1962

PRIJS F 1.75

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 45
1957

De Bilt, 1962

Publicatienummer K.N.M.I. 108 - 45

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 headassistant.

The Director in Chief of
the Royal Netherlands Meteo-
rological Institute,

Ir. C.J. Warners.

De Bilt, January 1962

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

SEISMOLOGICAL STATION DE BILT

The geographic coordinates of the seismological station are $52^{\circ}6'.1$ N and $5^{\circ}10'.6$ 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, one astatic horizontal seismograph according to WIECHERT, $M = 200$ kg, two horizontal pendulums according to BOSCH, $M = 25$ kg.

THE GALITZIN SEISMOGRAPHS AT DE BILT. Below are given: the period of the galvanometer T1, the reduced pendulum length l, the distance A1 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 μ and of the multiplying factor k for the year 1957.

	NS comp.	EW comp.	Z comp.
Period of galvanometer T1	24.43 sec	24.96 sec	12.0 sec
Reduced length of pendulum l	123 mm	123 mm	406 mm
Distance A1	1380 mm	1380 mm	1380 mm
Period of pendulum T	25 sec	25 sec	12 sec
Damping constant	0.0	0.0	0.0
Multiplying factor k	11.0	11.0	175

THE WIECHERT AND BOSCH SEISMOGRAPHS AT DE BILT. The mean values of the natural period of the undamped pendulum T, of the damping ratio ϵ and of the static magnification V for the year 1957 are:

	T	ϵ	V
WIECHERT (NS comp.)	5.0 sec	4	170
" (EW comp.)	5.0 sec	4	170
BOSCH (NS comp.)	18.0 sec	4	20
" (EW comp.)	18.0 sec	4	20

SEISMOLOGICAL STATION HEERLEN

The geographic coordinates of the seismological station are: $50^{\circ}53'.0$ N and $5^{\circ}59'.0$ 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 1957 are:

T	ϵ	V	V max.	T max
2	3	400	600	2

SEISMOLOGICAL STATION WITTEVEEN

The geographic coordinates of the seismological station are: $52^{\circ}48'.8$ N and $6^{\circ}40'.1$ 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.

Recording started in April 1951.

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.

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. Only when the earthquake was extraordinarily severe, so that the GALITZIN records could not be analyzed, the records of the WIECHERT and BOSCH seismographs were used. The velocity of the paper of these seismographs is 10 mm and 15 mm per minute respectively. Whenever the WIECHERT and BOSCH records were used, this has been mentioned in the column "remarks".

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:

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

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.

The amplitudes have been omitted when the oscillations were very irregular.

The seismological bulletins of the following stations were available: Algeria, Alicante, Almeria, Athens, Azores, BCIS (Bureau Central International de Séismologie), Beograd, Bogota, Brisbane, Budapest, Coimbra, Columbia-University (Palisades N.Y. and Bermuda), Djakarta, Dublin, Firenze, Geophysics Division (New Zealand), Granada, Harvard University, Helsinki, Hermanus, Huancayo Istanbul, Jena, John Carroll University (Cleveland), JSA (Jesuit Seismological Association), Kew, Kiruna, København Ksara, La Paz, Lisboa, Manila, Melbourne, Paris, Pasadena, Perth, Poona, Praha, Prato, Quetta, Reykjavik, Riverview N.S.W., Roma, Santiago (Chile), Seismographic Stations of the University of California, Seismological Service of Canada, Stuttgart, Tacubaya, Tananarive, Toledo, Tortosa, Trieste, Uppsala, USCGS, (United States Coast and Geodetic Survey), Western Samoa, Weston (Mass.), Wien, Zürich.

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 μ
1	1/2 - 2 "	1 1/4 - 5 "
2	2 - 4 "	5 - 10 "
3	4 "	10 "

THE MICROSEISMIC MOVEMENT DURING THE I.G.Y.

The tables on page 41 - 46 show the microseismic movement determined according to the instructions given in the Instruction Manual No. XII of the International Geophysical Year, Seismological Stations, Publication Committee of CSAGI, London 1956, page 14.

CHARACTER OF THE MICROSEISMIC MOVEMENT

Date 1957	Jan.	Febr.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3 2	3	1	1	1	0 1 0	1 0	0	0 1	1	3	1 2 1
2	2	3	1	1	1	0	0	0	1	1	3 2	1
3	2	3	1	1 2	1	0	0	0	1 0	1	2	1
4	2 3	3	1 2	2 3 2	1	0 1	0	0	0 1	1	2 3 2	1
5	3	3	2 1	2 1	1 2	1	0	0	1	1	2 3 2	1 2 1
6	3	3	1 2	1	2	1	0	0	1	1	2 3 2	1 2
7	3	3	2	1 2 1	2 1	1 0	0 1	0	1 2	1 2	2 1 2	3
8	3	3	2 3	1	1	0 1	1 0	0 1	2 1	2	1 2 1	3
9	3	3	3	1	1 0	1	0 1 0	1	1	2	1	3
10	3	3	3	1	0 1	1	0	1 2	1	2	1 2	3
11	3	3	3 2	1	1	1	0 1	2	1 2	2 1	2	3
12	3	3	2 1	1	1	1	1	2 1	2 3 2	1	2 1	3
13	3	3	1	1 0 1	1	1	1	1 2	2	1	1	3
14	3 2	3	1 2	1 0 1	1	1	1 0	2 1	2	1	1 3	2
15	2	3	2	1 0 1	1	1 0	0	1	2	1 2	1 2	1
16	2 1 3	2 3	2 3	1	1 2	0 1 0	0	1	2 1	2	1 1	2
17	1 2 1	2 1 3	2 1 2	2	2	0 1 0	0 1	1	1	2	1 2	1 2
18	1 2 1	2 2	1 2 3 2	2	1	0	0	1	1	2 1	1 2	2
19	2 3	2	1	2	1	0 1	1 0	1	1	1	2 3 2	2 3
20	3	2	1 2	2 1	1	1	0 1	1	1	1 2	2 1	3
21	3	2	2 3 2	1 2	1	1	1 0	1	1	2	1 3	2
22	3	2	2 3 2	2 1	1	1	0 1	1	1	2 1	1 2	2 3 2
23	3	2 3	2	1	1	1	1 0	1 2	1 2	1 2 1	2 1	2
24	3	3 2	2	1	1	1	0	2	2 3	1 2	1	2
25	3	2 3 2	2 1	1 2	1	1	0 1	2 3	3 1	2 1	1 2	3
26	3	2 1	1 2	2 1	1 2 1	1	1 2 1	3 1	1	1	1 2 1	3 2
27	3	1 2	2 1	1	1	1	1 0	1	1	1 3 2	1 2	2
28	3	2 1	1	1 0	1 0	1	0	1	1	2	2 1	2
29	3		1	0	0	1 2 1	0 1 0	1	1 2 1	2	1 2 1	2 3 2
30	3		1 2 1	0 1	0	1	0 1 0	1	1 2 1	2 1	1	2
31	3		1 2 1		0	1	0	1 0		1 3		2

11t

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
Jan. 1 (1)						(1) W1: eP 1h 07m 53s. USCGS: $53\frac{1}{2}^{\circ}$ N 159° E, H. 0h 56m 40s, h = 150 km. Off east coast of Kamchatka.
Jan. 2 (2)	iP eS eL	0 51 16 0 01.0 1 15				(2) Disturbed by microseisms. F in next shock. W1: e 0h 51m 08s; 0h 51m 14s; 0h 51m 24s. USCGS: 53° N $168\frac{1}{2}^{\circ}$ W, H. 0h 39m 22s. Fox Islands, Aleutian Islands.
Jan. 2 (3)	iP eS eL	2 29 24 2 39 28 2 55				(3) Disturbed by microseisms. F in next shock. W1: e 2h 29m 23s; 2h 29m 25s. USCGS: $52\frac{1}{2}^{\circ}$ N 168° W, H. 2h 17m 35s. Fox Islands, Aleutian Islands.
Jan. 2 (4)						(4) W1: eP 3h 24m 40s; 3h 25m 03s. USCGS: 53° N 168° W, H. 3h 12m 52s. Fox Islands, Aleutian Islands.
Jan. 2 (5)	iP F	4 00 41 7.0				(5) Disturbed by microseisms. W1: eP 4h 00m 33s. USCGS: 53° N 168° W, H. 3h 48m 44s. Fox Islands, Aleutian Islands.
Jan. 2 (6)						(6) W1: eP 4h 15m 14s; 1 14h 15m 16s. USCGS: $52\frac{1}{2}^{\circ}$ N 169° W, H. 4h 03m 26s. Fox Islands, Aleutian Islands.
Jan. 2 (7)	eS eL F	11 11 10 11 34 12 30				(7) Disturbed by microseisms. USCGS: $52\frac{1}{2}^{\circ}$ N 168° W, H. 10h 49m 32s. Fox Islands, Aleutian Islands.
Jan. 3 (8)	eL F	1 20 1 35				(8) Disturbed by microseisms. W1: eP 0h 52m 42s. USCGS: 53° N 168° W, H. 0h 41m 02s. Fox Islands, Aleutian Islands.
Jan. 3 (9)	iP ipP iPP epPP iS eN eE esS eE F	12 59 04 13 01 00 13 02 09 13 03 30 13 07 46 13 08 09 13 08 12 13 11 06 13 11 21 14 15				(9) Disturbed by microseisms. W1: iP 12h 58m 58s; ipP 13h 01m 01s; e 13h 07m 38s. USCGS: 44° N 130° E, H. 12h 48m 27s, h = about 600 km. Southern Manchuria.
Jan. 3 (10)						(10) W1: iP 13h 54m 00s. USCGS: aftershock of (9), H. 13h 43m 29s.
Jan. 9 (11)	eL F	8 30 9 30				(11) Disturbed by microseisms. W1: eP 8h 05m 45s. USCGS: 53° N 167° W, H. 7h 52m 56s. Fox Islands, Aleutian Islands.
Jan. 10 (12)	eL F	5 00 5 30				(12) USCGS: 6° N $95\frac{1}{2}^{\circ}$ E, H. 4h 14m 44s. Northern Sumatra.
Jan. 14 (13)						(13) W1: iP 14h 39m 04s. USCGS: 22° S 179° W, H. 14h 20m 17s, h = about 600 km. Fiji Islands region.
Jan. 17 (14)						(14) W1: iP 22h 38m 45s (-). BCIS: H. 22h 26m 49s. USCGS: 33° N $137\frac{1}{2}^{\circ}$ E, H. 22h 26m 10s. South of Honshu, Japan.
Jan. 19 (15)						(15) W1: ePKP 5h 35m 14s; 1 5h 35m 18s; epPKP 5h 37m 42s. USCGS: $21\frac{1}{2}^{\circ}$ S 179° W, H. 5h 16m 37s, h = about 600 km. Fiji Islands region.

Seismic Records at De Bilt

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
Jan. 22 (16)						(16) W1: iP 11h 28m 40s; i 11h 28m 55s. BCIS: $4\frac{1}{2}^{\circ}$ S $28\frac{1}{2}^{\circ}$ E, H. 11h 18m 23s. USCGS: $4\frac{1}{2}^{\circ}$ S $28\frac{1}{2}^{\circ}$ E, H. 11h 18m 27s. Congo.
Jan. 23 (17)						(17) W1: eP 17h 31.3m. USCGS: 37° N $22\frac{1}{2}^{\circ}$ E, H. 17h 26m 51s. Near west coast of Greece.
Jan. 23 (18)						(18) W1: ePKP 18h 00m 09s. USCGS: 20° S 175° W, H. 17h 40m 19s. Tonga Islands.
Jan. 25 (19)	e F	4 04 5 00				(19) W1: eP 3h 48m 37s; e 3h 49m 09s. USCGS: $51\frac{1}{2}^{\circ}$ N 177° W, H. 3h 36m 47s. Andreanof Islands, Aleutian Islands.
Jan. 30 (20)						(20) W1: ePKP 15h 48m 50s. USCGS: $22\frac{1}{2}^{\circ}$ S 174° W, H. 15h 29m 00s. Tonga Islands.
Feb. 2 (21)	eL F	13 07 13 15				(21) W1: iP 12h 05m 19s. USCGS: $21\frac{1}{2}^{\circ}$ S 170° E, H. 11h 45m 35s. Loyalty Islands region.
Feb. 3 (22)	eL F	18 00 18 40				(22) USCGS: $53\frac{1}{2}^{\circ}$ N 159° E, H. 17h 24m 50s. Kamchatka.
Feb. 3 (23)	eL F	23 40 24 00				(23) USCGS: aftershock of (22); H. 22h 58m 24s.
Feb. 5 (24)						(24) W1: iP 4h 21m 14s -. USCGS: 18° S $176\frac{1}{2}^{\circ}$ W, H. 4h 02m 05s, h = 300 km. Fiji Islands region.
Feb. 5 (25)						(25) W1: iP 4h 59m 59s. USCGS: $25\frac{1}{2}^{\circ}$ N $45\frac{1}{2}^{\circ}$ W, H. 4h 51m 20s. Mid-Atlantic Ocean.
Feb. 5 (26)						(25) W1: eP 17h 25.6m. BCIS: 36° S 29° E, H. 17h 20m 26s. USCGS: $36\frac{1}{2}^{\circ}$ N
Feb. 6 (27)	eL F	13 55 14 10				(27) Disturbed by microseisms.
Feb. 6 (28)	eL F	21 04 21 35				(28) W1: iP 20h 44m 43s. USCGS: 50° N $105\frac{1}{2}^{\circ}$ E, H. 20h 34m 55s. Lake Baikal region.
Feb. 9 (29)						(29) W1: ePKP 18h 15m 50s. USCGS: 19° S 174° W, H. 17h 56m 00s. Tonga Islands.
Feb. 10 (30)	eL F	6 02 6 10				(30) W1: iP 5h 54m 45s; i 5h 54m 50s. BCIS: 36° N 34° W, H. 5h 48m 00s. USCGS: $35\frac{1}{2}^{\circ}$ N 33° W, H. 5h 07m 59s. Azores Islands region.
Feb. 10 (31)	eS eL	22 59 23 25				(31) Disturbed by microseisms. F in next shock. W1: iP 22h 46m 02s; e 22h 46m 12s. USCGS: foreshock of (32), H. 22h 32m 15s.
Feb. 10 (32)	ePS eL F	23 17.8 23 43 1.0				(32) Disturbed by microseisms. W1: eP 23h 04m 38s. BCIS: $10\frac{1}{2}^{\circ}$ N 126° W, H. 22h 50m 53s. USCGS: $10\frac{1}{2}^{\circ}$ N $126\frac{1}{2}^{\circ}$ E, H. 22h 50m 52s. Mindanao, Philippine Islands.



Date 1957	Phase	Time			Direction	Period s	Amplitude μ	Bilt
		h	m	s				Remarks
Feb. 11 (33)	eP eL F	1	39.3				(33) Disturbed by microseisms. After-shock of (32). USCGS: H. 1h 14m 44s.	
Feb. 11 (34)	eL F	4	40				(34) Disturbed by microseisms. After-shock of (32). USCGS: H. 4h 04m 08s.	
Feb. 11 (35)	eL F	15	18				(35) Disturbed by microseisms. After-shock of (32). USCGS: H. 14h 25m 38s.	
Feb. 11 (36)	eP F	15	44	24			(36) Disturbed by microseisms. W1: 1 15h 44m 13s; 1 15h 44m 17s; 1 15h 44m 35s; 1 15h 45m 10s. He: 1 15h 44m 31s; 1 15h 44m 42s; 1 15h 45m 05s; 1 15h 45m 14s; 1 15h 45m 24s; 1 15h 45m 35s. USCGS: 53°N 1°W, H. 15h 42m 57s. Menston on Wharfedale: 52°50'N 1°21'W, H. 15h 43m 00s. Midlands, England.	
Feb. 12 (37)							(37) W1: 1P 9h 04m 38s. USCGS: 48½°N 155°E, H. 8h 52m 48s. Northern Kurile.	
Feb. 13 (38)							(38) W1: 1P 0h 00m 59s. BCIS: after-shock of (36), H. 23h 59m 40s.	
Feb. 13 (39)	eL F	1	22				(39) Disturbed by microseisms. After-shock of (32), H. 0h 29m 48s.	
Feb. 17 (40)							(40) W1: 1P 15h 59m 22s; 1 15h 59m 51s. USCGS: 16°N 96½°W, H. 15h 46m 45s. Oaxaco, Mexico.	
Feb. 18 (41)							(41) W1: eP 14h 58m 08s. USCGS: 25½°N 45½°W, H. 14h 49m 30s. Mid-Atlantic Ocean.	
Feb. 19 (42)	iP eS eL F	7	48	31			(42) Disturbed by microseisms. W1: eP 7h 48m 27s; 1 7h 48m 37s -; 1 7h 48m 48s +. BCIS: 36°5N 21½°E, H. 7h 43m 56s. USCGS: 36½°N 22°E, H. 7h 43m 54s. Near south coast of Greece.	
Feb. 20 (43)	iP iPP eS eL F	4	44	52			(43) Disturbed by microseisms. W1: 1P 4h 45m 02s. BCIS: 36°4N 9°E, H. 4h 48m 59s. USCGS: 36½°N 9°E, H. 4h 41m 00s. Northern Tunisia.	
Feb. 20 (44)							(44) W1: 1P 22h 11m 22s. BCIS and USCGS: 2°N 97°E, H. 21h 58m 23s. Near coast of Sumatra.	
Feb. 21 (45)	eL F	1	40				(45) Disturbed by microseisms. BCIS: 10S 15½°W, H. 1h 09m 17s. Mid-Atlantic Ocean.	
Feb. 21 (46)							(46) W1: 1P 14h 41m 39s -. USCGS: 53°N 171°W, H. 14h 30m 06s, h = 100 km. Fox Islands, Aleutian Islands.	
Feb. 22 (47)							(47) W1: 1P 15h 24m 33s. Foreshock of (49), USCGS: H. 17h 12m 49s.	
Feb. 23 (48)							(48) W1: 1P 3h 46m 35s (-). Foreshock of (49). USCGS: H. 3h 34m 46s.	
Feb. 23 (49)							(49) W1: 1P 5h 09m 32s -. USCGS: 49°N 156°E, H. 4h 57m 46s. Kurile Islands.	

Seismic Records at De Bilt

Date 1957	Phase	Time			Direction	Period s	Amplitude μ	Remarks
		h	m	s				
Feb. 23 (50)	eP epP ePP eS eSS eL F	20	38	59			(50) Disturbed by microseisms. BCIS: 24°N 121½°E, H. 20h 26m 09s. USCGS: 24°N 122°E, H. 20h 26m 12s. Formosa.	
March 2 (51)	iP eS eSS eL F	0	39	06			(51) Disturbed by microseisms. W1: eP 0h 39m 03s. BCIS and USCGS: 18°5N 78°0W, H. 0h 27m 33s. Jamaica.	
March 2 (52)	eL F	9	14				(52) W1: 1PKP 8h 29m 30s, USCGS: 6°S 151°E, H. 8h 10m 24s. Near south coast of New Britain.	
March 3 (53)	eL F	4	00				(53) USCGS: 8½°N 103°W, H. 3h 18m 23s. Off coast of Mexico.	
March 3 (54)	eL F	23	54				(54) BCIS: H. 23h (43.7m). Aegean Sea.	
March 5 (55)	eP eS eSS eL F	12	31.9				(55) W1: eP 12h 32m 0s. BCIS: 32½°N 39½°W, H. 12h 24m 35s. USCGS: 33°N 34½°W, H. 12h 24m 35s. North Atlantic Ocean.	
March 6 (56)	eL F	17	44				(56) BCIS: 35°N 27°E, H. 17h 34m 04s. Near Crete.	
March 7 (57)							(57) W1: 1PKP 11h 06m 07s -. USCGS: 19°S 178½°W, H. 10h 47m 25s, h = about 550 km. Fiji Islands.	
March 8 (58)	iP iS eL F	12	18	28			(58) Disturbed by microseisms. W1: eP 12h 18m 25s; eL 12h 18m 32s. BCIS: 39°5N 22°8E, H. 12h 14m 14s. USCGS: 39½°N 23°E, H. 12h 14m 12s. Thessaly, Greece.	
March 8 (59)							(59) W1: 1PKP 16h 54m 03s (-). USCGS: 23°S 179°E, H. 16h 35m 11s, h = about 600 km. South of Fiji Islands.	
March 8 (60)	eL F	20	47				(60) Disturbed by microseisms. W1: eP 20h 42m 05s. Aftershock of (58). BCIS: 20h 38m 02s. USCGS: 20h 37m 54s.	
March 8 (61)	eP eS eL F	23	39.5				(61) Disturbed by microseisms. W1: eP 23h 39m 25s. Aftershock of (58). BCIS: H. 23h 35m 11s. USCGS: H. 23h 35m 08s.	
March 9 (62)	iP iS F	14	34	26			(62) W1: eP 14h 34m 26s; He: eP 14h 35°0. USCGS: 51°3N 175°8W, H. 14h 22m 27.5s. Andreanof Islands, Aleutian Islands.	
March 9 (63)							(63) W1: eP 15h 53m 47s. Aftershock of (62). USCGS: H. 15h 41m 50s.	
March 9 (64)							(64) W1: eP 16h 18m 00s. Aftershock of (62). BCIS: H. 16h 06m 12s.	
March 9 (65)							(65) W1: 16h 28m 18s. Aftershock of (62). BCIS: H. 16h 16m 26s.	

Seismic Records at De Bilt

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
March 9 (66)						(66) W1: eP 16h 33m 42s. Aftershock of (62). BCIS: 16h 21.8m.
March 9 (67)						(67) W1: eP 16h 44m 28s. Aftershock of (62). USCGS: 16h 32m 30s.
March 9 (68)						(68) W1: eP 16h 51m 05s. Aftershock of (62). BCIS: 16h 39m 18s.
March 9 (69)						(69) W1: eP 16h 57m 35s. Aftershock of (62). USCGS: 16h 45m 27s.
March 9 (70)						(70) W1: eP 17h 22m 03s. Aftershock of (62). USCGS: 17h 10m 30s.
March 9 (71)						(71) W1: eP 18h 03m 51s. Aftershock of (62). BCIS: 17h 52.0m.
March 9 (72)						(72) W1: eP 18h 06m 06s. Aftershock of (62). BCIS: 17h 54.3m.
March 9 (73)						(73) W1: eP 18h 09m 04s. Aftershock of (62). BCIS: 17h 57m 25s.
March 9 (74)						(74) W1: eP 19h 25m 17s. Aftershock of (62). BCIS: H. 19h 13m 33s.
March 9 (75)						(75) W1: eP 19h 31m 09s. Aftershock of (62). BCIS: H. 19h 19.5m.
March 9 (76)						(76) W1: eP 19h 46m 35s. Aftershock of (62). BCIS: H. 19h 34m 54s.
March 9 (77)						(77) W1: eP 19h 49.6m. Aftershock of (62). USCGS: H. 19h 37m 31s.
March 9 (78)						(78) W1: eP 19h 54m 08s. Aftershock of (62). BCIS: H. 19h 42m 24s.
March 9 (79)						(79) W1: 1P 20h 12m 50s. Aftershock of (62). USCGS: H. 20h 00m 56s.
March 9 (80)						(80) W1: eP 20h 18m 54s. Aftershock of (62). BCIS: H. 20h 07m 01s.
March 9 (81)						(81) W1: 1P 20h 33m 52s +. Aftershock of (62). USCGS: H. 20h 22m 02s.
March 9 (82)						(82) W1: 1P 20h 45m 03s. Aftershock of (62). BCIS: H. 20h 33m 12s.
March 9 (83)	eP eS F	20 51 21 01 24.0				(83) Disturbed by microseisms. W1: 1P 20h 51m 05s. USCGS: 52 $\frac{1}{2}$ ^o N 169 $\frac{1}{2}$ ^o W, H. 20h 39m 15s. Fox Islands, Aleutian Islands.
March 9 (84)						(84) W1: 1P 22h 08m 08s. Aftershock of (62). USCGS: 21h 56m 24s.
March 9 (85)						(85) W1: 1P 23h 21m 11s. Aftershock of (62). BCIS: H. 23h 09m 25s.
March 10 (86)						(86) W1: 1P 1h 28m 42s. Aftershock of (62). BCIS: 1h 17m 00s.
March 10 (87)						(87) W1: 1P 1h 33m 53s. Aftershock of (62). USCGS: H. 1h 22m 07s.

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
March 10 (88)						(88) W1: eP 3h 07m 09s. J.M.A.: 41 $\frac{0}{6}$ ^o N 143 $\frac{0}{8}$ ^o E, H. 2h 55m 07s, h = 60 km. Off south coast of Honshu, Japan.
March 10 (89)	1P eS 1PS eSS eSSS eL F	3 18 3 28 3 28 3 33 3 36 3 43 6 30				(89) Disturbed by microseisms. W1: 1P 3h 18m 01s. USCGS: 52 $\frac{0}{N}$ 176 $\frac{0}{W}$, H. 3h 06m 02s. Andreanof Islands, Aleutian Islands.
March 10 (90)						(90) W1: 1P 3h 20m 50s. Aftershock of (62). USCGS: H. 3h 08m 55s.
March 10 (91)						(91) W1: 1 3h 39m 18s. BCIS: 34 $\frac{0}{N}$ 72 $\frac{0}{E}$.
March 10 (92)						(92) W1: eP 4h 06m 08s. Aftershock of (62). BCIS: H. 3h 54m 19s.
March 10 (93)						(93) W1: eP 4h 48m 55s. Aftershock of (62). BCIS: H. 4h 37.2m.
March 10 (94)						(94) W1: eP 6h 35m 34s. Aftershock of (62). BCIS: H. 6h 23m 44s.
March 10 (95)	eP eS eL	11 32.6 11 42.8 12 00				(95) Disturbed by microseisms. W1: eP 11h 32m 37s. F in next shock. USCGS: 52 $\frac{0}{N}$ 171 $\frac{0}{W}$, H. 11h 19m 57s. Fox Islands, Aleutian Islands.
March 10 (96)						(96) W1: eP 11h 47m 25s. Aftershock of (62). BCIS: H. 11h 36.0m.
March 10 (97)						(97) W1: eP 12h 24.5m. Aftershock of (62). USCGS: 12h 12m 18s.
March 10 (98)	eL F	13 14 15.0				(98) Disturbed by microseisms. W1: 1P 12h 48m 00s. Aftershock of (62). USCGS: H. 12h 36m 04s.
March 10 (99)						(99) W1: eP 12h 57m 29s. Aftershock of (62). USCGS: H. 12h 45m 31s.
March 10 (100)						(100) W1: 1P 13h 22m 05s. Aftershock of (62). USCGS: H. 13h 10m 13s.
March 10 (101)						(101) W1: eP 13h 40m 22s. Aftershock of (62). USCGS: H. 13h 28m 30s.
March 10 (102)	1P eS eL F	15 38 15 48 16 04 18 00				(102) Disturbed by microseisms. W1: eP 15h 38m 13s. USCGS: 52 $\frac{0}{N}$ 173 $\frac{0}{W}$, H. 15h 36m 23s. Andreanof Islands, Aleutian Islands.
March 10 (103)						(103) W1: eP 16h 51m 36s. Aftershock of (62). BCIS: H. 16h 39.8m.
March 10 (104)						(104) W1: 1P 19h 30m 27s. Aftershock of (62). USCGS: H. 19h 18m 30s.
March 10 (105)						(105) W1: eP 21h 08m 41s. Aftershock of (62). BCIS: H. 20h 57m 04s.

Seismic Records at De Bilt

Date 1957	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s		s	μ	
March 10 (106)						(106) W1: eP 23h 48m 39s. Aftershock of (62). BCIS: H. 23h 36m 45s.
March 11 (107)						(107) W1: eP 0h 08m 33s. Aftershock of (62). USCGS: 23h 56m 50s.
March 11 (108)						(108) W1: eP 0h 20m 09s. Aftershock of (62). USCGS: H. 0h 08m 07s.
March 11 (109)						(109) W1: eP 2h 02m 57s. Aftershock of (62). USCGS: H. 1h 50m 55s.
March 11 (110)	eP eS eH eL F	3 24 40 3 34.5 3 35.0 3 48 6 30				(110) Disturbed by microseisms. W1: eP 3h 24m 35s. USCGS: 51°N 177°W. Andreanof Islands, Aleutian Islands.
March 11 (111)						(111) W1: eP 4h 07m 32s. Aftershock of (62). USCGS: H. 3h 55m 27s.
March 11 (112)						(112) W1: eP 4h 17m 05s. Aftershock of (62). USCGS: H. 4h 05m 09s.
March 11 (113)						(113) W1: eP 7h 03m 46s. Aftershock of (62). USCGS: H. 6h 51m 56s.
March 11 (114)						(114) W1: iP 8h 54m 54s. Aftershock of (62). USCGS: H. 8h 42m 48s.
March 11 (115)	eS eL F	9 38.9 9 41 9 55				(115) Disturbed by microseisms. BCIS: aftershock of (58), H. 9h 31m 14s.
March 11 (116)	iP iS eL F	10 10 33 10 20 19 10 35 14.0		8	13	(116) Disturbed by microseisms. W1: iP 10h 10m 30s. BCIS: 52 $\frac{3}{4}$ °N 170°W, H. 9h 58m 44s. USCGS: 53°N 164 $\frac{1}{2}$ °W, H. 9h 58m 42s. Fox Islands, Aleutian Islands.
March 11 (117)						(117) W1: eP 12h 22m 08s. BCIS: 1 $\frac{1}{4}$ °N 97 $\frac{1}{4}$ °E, H. 12h 09m 10s. USCGS: 2°N 97°E, H. 12h 09m 10s. Off coast of Sumatra.
March 11 (118)	iP eS eSS eL F	15 07 14 15 17 02 15 22.0 15 32 18 30		9	14	(118) Disturbed by microseisms. W1: iP 15h 07m 10s. USCGS: 51 $\frac{1}{2}$ °N 178 $\frac{1}{2}$ °W, H. 14h 55m 19s. Andreanof Islands, Aleutian Islands.
March 11 (119)						(119) W1: eP 15h 47m 47s. Aftershock of (62). USCGS: H. 15h 35m 50s.
March 11 (120)						(120) W1: eP 23h 44m 13s. Aftershock of (62). USCGS: 23h 32m 03s.
March 12 (121)						(121) W1: eP 0h 29m 49s. Aftershock of (62). USCGS: H. 0h 18m 00s.
March 12 (122)	ePKP	0 49 29				(122) Disturbed by microseisms. W1: ePKP 0h 49m 28s. USCGS: 19°S 175 $\frac{1}{2}$ °W, H. 0h 29m 50s, h = about 100 km. Tonga Islands.

Date 1957	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s		s	μ	
March 12 (123)						(123) W1: eP 1h 14m 24s. Aftershock of (62). USCGS: H. 1h 02m 33s.
March 12 (124)	eL F	1 46 2 10				(124) Disturbed by microseisms. W1: eP 1h 16m 20s. Aftershock of (62). USCGS: H. 1h 04m 24s.
March 12 (125)						(125) W1: eP 2h 34m 45s. Aftershock of (62). BCIS: H. 2h 22m 57s.
March 12 (126)						(126) W1: eP 4h 00m 03s. Aftershock of (62). BCIS: H. 3h 48m 12s.
March 12 (127)						(127) W1: eP 5h 23m 52s. Aftershock of (62). USCGS: H. 5h 12m 08s.
March 12 (128)						(128) W1: eP 6h 14m 39s. Aftershock of (62). USCGS: 6h 02m 47s.
March 12 (129)	iP eS eSS eL F	7 40 42 7 50 35 7 56.0 8 05 10 30				(129) W1: eP 7h 40m 36s. USCGS: 51 $\frac{1}{2}$ °N 173 $\frac{1}{2}$ °W, H. 7h 28m 40s. Andreanof Islands, Aleutian Islands.
March 12 (130)						(130) W1: iP 7h 51m 07s. Aftershock of (62). USCGS: H. 7h 39m 17s.
March 12 (131)						(131) W1: iP 8h 15m 06s. Aftershock of (62). USCGS: 8h 03m 11s.
March 12 (132)	iP eS eSS eL F	11 56 55 12 06 42 12 11.4 12 19 16 30				(132) W1: eP 11h 56m 40s; iP 11h 56m 50s. USCGS: 51°N 177°W, H. 11h 44m 50s. Andreanof Islands, Aleutian Islands.
March 12 (133)						(133) W1: eP 12h 57m 54s. Aftershock of (62). USCGS: H. 12h 46m 12s.
March 12 (134)						(134) W1: eP 14h 44m 11s. Aftershock of (62). USCGS: H. 14h 32m 16s.
March 12 (135)						(135) W1: eP 17h 12m 12s. Aftershock of (62). USCGS: 17h 00m 20s.
March 12 (136)						(136) W1: iPKP 17h 40m 25s. USCGS: 21 $\frac{1}{2}$ °S 179°W, H. 17h 21m 47s, h = about 700 km. Fiji Islands.
March 12 (137)						(137) W1: ePKP 18h 47m 23s. USCGS: 18°S 178 $\frac{1}{2}$ °W, H. 18h 25m 50s, h = about 650 km. Fiji Islands.
March 12 (138)						(138) W1: ePKP 19h 30m 05s. USCGS: 16°S 176 $\frac{1}{2}$ °W, H. 19h 11m 16s. h = about 450 km. Fiji Islands region.
March 12 (139)						(139) W1: eP 20h 12m 07s. USCGS: 54°N 165°W, H. 20h 00m 30s. Near Unimak Island.
March 12 (140)	eS eL F	21 46.5 22 06 22 20				(140) W1: eP 21h 36.5m. USCGS: 1 $\frac{1}{2}$ °S 79 $\frac{1}{2}$ °W, H. 21h 23m 04s. Near coast of Ecuador.

De Bilt

Date 1957	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s		s	μ	
March 13 (141)	eL F	0 30 1 00				(141) W1: 1P 23h 57m 15s. Aftershock of (62). USCGS: H. 23h 45m 25s.
March 13 (142)	eP eS eL F	3 00 3 10 3 27 5 00		20 00		(142) W1: 1P 3h 00m 11s. Aftershock of (62). USCGS: H. 2h 48m 20s.
March 13 (143)						(143) W1: eP 3h 19m 13s. Aftershock of (62). BCIS: H. 3h 07m 17s.
March 13 (144)						(144) W1: 1P 3h 44m 48s. Aftershock of (62). USCGS: H. 3h 32m 58s.
March 13 (145)	eS eL F	9 31 9 44 10 15				(145) W1: 1P 9h 21m 21s. Aftershock of (62). USCGS: H. 9h 09m 34s.
March 13 (146)						(146) W1: ePKP ₁ 9h 30m 57s; ePKP ₂ 9h 31m 52s. USCGS: 38°7' S 175°6' E, H. 9h 11m 30s, h = 270 km. New Zealand, North Island.
March 13 (147)						(147) W1: 1P 11h 49m 42s. Aftershock of (62). USCGS: H. 11h 37m 49s.
March 13 (148)						(148) W1: 1P 12h 09m 48s. Aftershock of (62). USCGS: H. 11h 57m 58s.
March 13 (149)						(149) W1: 1P 15h 14m 52s. Aftershock of (62). BCIS: H. 15h 03.1m.
March 13 (150)	1P ePP eS eL F	15 54 15 56 16 04 16 19 18 00		00 56 00		(150) W1: 1P 15h 53m 57s. Aftershock of (62). USCGS: 51½°N 179°W, H. 15h 42m 05s. Andreanof Islands, Aleutian Islands.
March 13 (151)						(151) W1: 1P 17h 55m 37s. Aftershock of (62). USCGS: H. 17h 43m 40s.
March 13 (152)	1P eS eSS eL F	20 11 20 20 20 36 20 33 21 30		05 35		(152) W1: 1P 20h 11m 00s. Aftershock of (62). USCGS: 54°N 166°W, H. 19h 59m 23s. Fox Islands, Aleutian Islands.
March 14 (153)						(153) W1: 1P 2h 04m 05s. Aftershock of (62). USCGS: 1h 52m 16s.
March 14 (154)						(154) W1: 1P 2h 58m 35s; 1 2h 58m 46s. USCGS: 53½°N 163½°W, H. 2h 46m 55s. Off south coast of Unimak Island.
March 14 (155)						(155) W1: e(P) 10h 14m 16s. BCIS: Himalayan arc.
March 14 (156)	1P eS eL F	14 59 15 09 15 22 19 30	+	6	7	(156) W1: eP 14h 59m 36s; 1 14h 59m 41s. Aftershock of (62). H. 14h 47m 45s.
March 14 (157)						(157) W1: 1P 15h 16m 58s. Aftershock of (62). USCGS: 15h 05m 06s.

Seismic Records at De Bilt

Date 1957	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s		s	μ	
March 15 (158)	1P eS eL F	3 03 3 13 3 26 6 00	+	6	5	(158) W1: 1P 3h 03m 53s. Aftershock of (62). USCGS: 2h 52m 08s.
March 15 (159)						(159) W1: eP 12h 09m 24s. Aftershock of (62). USCGS: H. H. 11h 57m 28s.
March 16 (160)	1P eS ePS ISS eL F	2 46 2 56.0 2 56 3 00 3 10 6 00	+	6	5	(160) W1: 1P 2h 46m 02s. USCGS: 52°N 179°W, H. 2h 34m 12s. Andreanof Islands, Aleutian Islands.
March 17 (161)	eP eL F	8 05 8 39 9 10				(161) Disturbed by microseisms. Aftershock of (62). USCGS: H. 7h 53m 51s.
March 17 (162)						(162) W1: 1P 16h 29m 01s. Aftershock of (62). USCGS: H. 16h 17m 13s.
March 17 (163)	eP eS eL F	22 56 23 06.0 23 16 0 30				(163) Disturbed by microseisms. W1: eP 22h 56m 22s; 22h 56m 24s. USCGS: 54°N 166°W, H. 22h 44m 44s. Fox Islands, Aleutian Islands.
March 18 (164)						(164) W1: eP 2h 37m 12s. Aftershock of (62). USCGS: 2h 25m 56s.
March 18 (165)	eL F	6 02 6 30				(165) Disturbed by microseisms. Aftershock of (62). USCGS: H. 5h 08m 34s.
March 18 (166)						(166) W1: eP 2h 37m 14s. Aftershock of (62). USCGS: H. 2h 25m 56s.
March 18 (167)	ePP ePS eL F	21 35 21 47.0 22 15 22 50			20	(167) Disturbed by microseisms. USCGS: 6°S 152°E, H. 21h 14m 12s. New Britain.
March 18 (168)	eL F	23 27 23 40				(168) Disturbed by microseisms.
March 19 (169)	eP eS eL F	11 40 11 51 12 09 13 00				(169) Disturbed by microseisms. Aftershock of (62). USCGS: H. 11h 28m 50s.
March 19 (170)	1P eS eL F	13 02 13 12 13 27 16.0		5	4	(170) Disturbed by microseisms. W1: eP 13h 03m 23s. USCGS: 51½°N 175°W, H. 12h 50m 51s. Andreanof Islands, Aleutian Islands.
March 19 (171)						(171) W1: eP 17h 16m 13s. Aftershock of (62). USCGS: H. 17h 04m 25s.
March 20 (172)	eL F	0 50 1 40				(172) Disturbed by microseisms. W1: eP 0h 34m 08s. Aftershock of (62). USCGS: H. 0h 22m 25s.
March 20 (173)	eL F	4 17 4 35				(173) Disturbed by microseisms. Aftershock of (62). USCGS: H. 3h 25m 00s.

Seismic Records at De Bilt

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
✓ March 21 (174)	eL F	9 34 9 40				(174) Disturbed by microseisms. Aftershock of (62). USCGS: H. 8h 44m 46s.
March 21 (175)						(175) Wi: 1P 12h 43m 20s. Aftershock of (62). USCGS: 12h 31m 30s.
✓ March 21 (176)	eL F	17 34 18 40				(176) Disturbed by microseisms. Aftershock of (62). USCGS: H. 16h 35m 28s.
March 22 (177)	eL F	11 17 11 30				(177) Disturbed by microseisms.
March 22 (178)						(178) De Bilt, disturbed by visitors. Wi: 1P 14h 32m 43s +; 1 14h 32m 45s. Aftershock of (62). USCGS: H. 14h 21m 06s.
March 22 (179)						(179) Wi: eP 14h 44m 50s. Aftershock of (62). USCGS: 14h 33m 13s.
March 22 (180)	eL F	17 48 18 40				(180) Disturbed by microseisms. Wi: 1P 17h 21m 37s. Aftershock of (62). USCGS: H. 17h 09m 51s.
✓ March 22 (181)	eP eL F	19 56.6 20 26 20 50				(181) Wi: 1P 19h 56m 32s. Aftershock of (62). USCGS: H. 19h 44m 22s.
✓ March 23 (182)	ePP ePS eSS eL F	5 32 16 5 41 42 5 48.2 6 00 8.0				(182) Disturbed by microseisms. Wi: ePKP 5h 31m 02s; ePP 5h 31m 52s. USCGS: 5h 12m 31s, h = about 100 km. Banda Sea.
March 23 (183)						(183) Wi: eP 13h 36m 26s. Aftershock of (62). USCGS: H. 13h 24m 33s.
✓ March 24 (184)	eL F	2 08 2 45				(184) Disturbed by microseisms. BCIS: 29°2' N 30°4' W, H. 1h 50m 50s. Mid-Atlantic Ridge.
✓ March 24 (185)	eL F	8 03 8 31				(185) Disturbed by microseisms. Aftershock of (62). USCGS: H. 7h 29m 15s.
✓ March 24 (186)	eL F	8 55 9 40				(186) Disturbed by microseisms. Change of papers from 8h 31 till 8h 38. USCGS: 51°N 130°W, H. 8h 22m 23s. Near north coast of Vancouver Island.
✓ March 24 (187)	eH eL	11 32 11 47				(187) F in next shock. Wi: eP 11h 17m 57s. Aftershock of (62). USCGS: H. 11h 06m 10s.
✓ March 24 (188)	eL F	12 13 13 00				(188) Disturbed by microseisms. Wi: eP 11h 48m 38s. Aftershock of (62). USCGS: H. 11h 36m 50s.
✓ March 25 (189)	eL F	1 28 2 00				(189) Disturbed by microseisms. Wi: eP 0h 51m 12s. Aftershock of (62). USCGS: H. 0h 39m 22s.

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
March 25 (190)						(190) He: 1 6h 48m 56s. BCIS: 46°03' N 30°27' E, H. 6h 46m 13s. South of Vichy, France.
March 25 (191)						(191) Wi: 1P 14h 25m 13s. Aftershock of (62). USCGS: H. 14h 13m 33s.
✓ March 25 (192)	eL F	22 00 22 50				(192) Disturbed by microseisms. BCIS: 60°S 27°W, H. 21h 06m 12s. Sandwich Islands region.
✓ March 26 (193)	eL F	3 30 4 30				(193) Disturbed by microseisms. Wi: eP 2h 59m 44s. Aftershock of (62). USCGS: H. 2h 47m 50s.
March 26 (194)						(194) Wi: 1P 16h 13m 53s; 16h 14m 04s. Aftershock of (62). USCGS: 16h 01m 53s.
✓ March 26 (195)	e F	23 33 23 40				(195) Disturbed by microseisms. BCIS: 39½°N 23°0' E, H. 23h 23m 30s. Greece.
March 27 (196)						(196) Wi: 1PKP 7h 51m 33s. USCGS: 22°S 177°W, H. 7h 31m 56s, h = about 150 km. Tonga Islands region.
March 27 (197)						(197) Wi: 1PKP 13h 19m 24s. USCGS: 5°S 153½°E, H. 13h 00m 17s, h = about 100 km. Off coast of New-Britain.
✓ March 28 (198)	eP eS eL F	20 20 45 20 30.5 20 55 21 45				(198) Disturbed by microseisms. Aftershock of (62). USCGS: H. 20h 08m 20s.
✓ March 28 (199)	eL F	22 35 22 55				(199) Disturbed by microseisms. BCIS: 39½°N 22½°E, H. 22h 26m 00s. USCGS: 39½°N 22½°E, H. 22h 25m 58s. Greece.
✓ March 29 (200)	1P eS e(PS) eSS eL F	5 22 11 5 31 46 5 32 09 5 37.0 5 48 8 30	+	6	4	(200) Disturbed by microseisms. Wi: 1P 5h 22m 10s +. USCGS: 53½°N 167°W, H. 5h 10m 28s. Fox Islands, Aleutian Islands.
✓ March 29 (201)	eP eS eL F	23 01 40 23 11.5 23 29 0 20				(201) Disturbed by microseisms. Wi: 1P 23h 01m 36s +. USCGS: 53°N 169°W, H. 22h 49m 51s. Fox Islands, Aleutian Islands.
March 30 (202)						(202) Wi: 1P 0h 54m 32s. Aftershock of (62). USCGS: H. 0h 42m 40s.
✓ March 30 (203)	eL F	9 54 10 20				(203) Disturbed by microseisms. Wi: 1P 9h 28m 49s. Aftershock of (62). USCGS: H. 9h 17m 00s.
✓ March 31 (204)	eL F	10 53 11 10				(204) Disturbed by microseisms. Wi: eP 10h 20m 19s. Aftershock of (62). USCGS: 10h 08m 28s.

Seismic Records at De Bilt

Seismic Records at De Bilt

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
March 31 (205)						(205) W1: 1P 17h 34m 20s. USCGS: 54°N 158°E, H. 17h 22m 55s. Kamchatka.
✓ April 1 (206)	iP eS eL F	11 47 31 11 57 20 12 12 13 00	+			(206) W1: 1P 11h 47m 27s. Aftershock of (62). USCGS: H. 11h 35m 30s.
✓ April 2 (207)	iP eS eL F	0 51 42 1 01 30 1 17 2 00	+	8	2	(207) W1: eP 0h 51m 37s. Aftershock of (62). USCGS: H. 0h 39m 42s.
April 2 (208)	eL F	5 05 5 13				(208) BCIS: H. 5h 00m 03s. Greece.
✓ April 2 (209)	eP ePS eL	20 28 56 20 39 35 20 55				(209) F in next shock. W1: eP 20h 28m 52s. Aftershock of (62). USCGS: 20h 16m 57s.
✓ April 2 (210)	eP iz eS eL F	21 39 56 21 39 59 21 49 46 22 05 23 00				(210) W1: eP 21h 39m 52s; 1 21h 40m 07s. Aftershock of (62). USCGS: H. 21h 27m 54s.
April 3 (211)						(211) W1: eP 20h 34m 15s. BCIS: 34½°N 30½°E, H. 20h 28m 46s. Near west coast of Cyprus.
✓ April 4 (212)	eL F	0 32 0 51				(212) W1: eP 0h 23m 59s. USCGS: 58°N 155½°W, H. 0h 13m 08s, h = about 150 km. Near coast of Alaska Peninsula.
April 4 (213)						(213) W1: eP 1h 02m 34s. Aftershock of (62). USCGS: H. 0h 50m 47s.
April 4 (214)						(214) W1: 1P 7h 04m 08s. USCGS: 48°N 155°E, H. 6h 52m 18s. North of Kurile Islands.
✓ April 4 (215)	eL F	12 04 12 10				(215) Disturbed by microseisms. BCIS: 35°S 68°W, H. 11h 00.7m. Southern Mendoza Province, Argentina.
April 4 (216)						(216) W1: 1P 14h 55m 32s. Aftershock of (62). USCGS: H. 14h 43m 49s.
✓ April 5 (217)	eP eS eL F	3 01.5 3 11.3 3 26 4 45				(217) Disturbed by microseisms. W1: eP 3h 01m 30s. Aftershock of (62). USCGS: H. 2h 49m 39s.
✓ April 5 (218)	eSKKS eSSS eL F	8 00 54 8 20 8 43 9 30				(218) Change of papers from 7h 47m till 7h 53m. W1: 1PKP 7h 50m 09s; 1 7h 50m 17s. USCGS: 26½°S 177°W, H. 7h 30m 22s, h = about 100 km. Kermadec Islands region.
April 5 (219)						(219) W1: 1P 15h 16m 09s. Aftershock of (62). USCGS: H. 15h 04m 09s.
✓ April 5 (220)	eL F	16 55 17 05				(220) W1: eP 16h 24m 58s. USCGS: 12½°N 88°W, H. 16h 12m 20s, h = about 100 km. Near coast of Nicaragua.

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
April 5 (221)						(221) W1: 1P 16h 48m 10s. Aftershock of (62). USCGS: H. 16h 36m 20s.
✓ April 7 (222)	ePS ePPS eSS eSSS eL F	10 43.5 10 44.8 10 50 10 54 11 10 12 00				(222) Disturbed by microseisms. USCGS: 1°S 137½°E, H. 10h 14m 08s. Near north coast of New Guinea.
✓ April 8 (223)	eP eS eL F	20 30.6 20 41 20 56 21 45				(223) USCGS: 8½°N 83°W, H. 20h 18m 09s. Panama - Costa Rica border.
✓ April 9 (224)	1P epP 1PP eS eH ePS eSS eL F	0 36 44 0 38 29 0 40 20 0 46 30 0 46 51 0 47 52 0 49 50 0 52 53 1 08 2 00	+			(224) USCGS: 30½°N 138½°E, H. 0h 24m 39s, h = about 450 km. Off coast of Honshu, Japan.
✓ April 9 (225)	eL F	3 07 3 30				(225) USCGS: 22½°N 144½°E, H. 2h 17m 06s. Mariana Islands region.
✓ April 9 (226)	eP eS eL F	11 14 10 11 23 54 11 40 12 30				(226) Aftershock of (62). USCGS: H. 11h 02m 12s.
✓ April 9 (227)	eL F	20 58 22 00				(227) W1: 1P 20h 35m 33s -. Aftershock of (62). USCGS: H. 20h 23m 56s.
✓ April 10 (228)	eL F	4 00 4 30				(228) W1: eP 3h 37m 00s; 1 3h 37m 03s. Aftershock of (62). USCGS: H. 3h 25m 20s.
✓ April 10 (229)	1P 1PP eS 1ScS eSS eL F	5 24 50 5 28 16 5 35 18 5 35 30 5 41 10 5 52 6 50	-	4	3	(229) W1: eP 5h 24m 45s. USCGS: 15½°N 98°W, H. 5h 12m 08s. Near coast of Oaxaca, Mexico.
✓ April 10 (230)	eL F	7 56 8 00				(230) Change of papers from 7h 33m till 7h 40m. USCGS: 14°N 91½°W, H. 7h 28m 03s. Guatemala.
✓ April 10 (231)	1P eS eL F	9 21 21 9 31 16 9 44 10 10				(231) W1: 1P 9h 21m 16s; 1 9h 21m 28s. Aftershock of (62). USCGS: H. 9h 09m 18s.
✓ April 10 (232)	1P 1PP 1PPP 1S eSS eL F	11 41 21 11 44 03 11 45 43 11 50 39 11 55 12 01 16 00	+			(232) W1: 1P 11h 41m 19s. BCIS: 55½°N 153½°W, H. 11h 29m 58s. USCGS: 56°N 154°W, H. 11h 29m 58s. Kodiak Island region.

De Bilt

Seismic Records at De Bilt

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
April 11	eL (233) F	2 31 2 45				(233) Aftershock of (62). BCIS: H. 1h 45m 55s.
April 11	eL (234) F	18 25 18 45				(234) Aftershock of (62). BCIS: H. 17h 40m 37s.
April 13	eS (235) eL F	4 05.0 4 15 4 50				(235) USCGS: $48\frac{1}{2}^{\circ}\text{N } 128^{\circ}\text{W}$, H. 3h 44m 00s. Off coast of Vancouver Island, British Columbia.
April 13	eL (236) F	6 02 6 30				(236) Aftershock of (62). USCGS: H. 5h 13m 32s.
April 13	eL (237) F	10 59 11 30				(237) BCIS: $5\frac{1}{2}^{\circ}\text{N } 126\frac{1}{2}^{\circ}\text{E}$, H. 10h 10m 55s, h = about 100 km. Near south coast of Mindandao, P.I.
April 14	iP (238) eL F	7 22 06 7 40 9 20				(238) Wi: eP 7h 21m 59s; e 7h 22m 01s. BCIS and USCGS: $31^{\circ}\text{N } 84\frac{1}{2}^{\circ}\text{E}$, H. 7h 11m 50s. Southern Tibet. Change of papers from 7h 27m till 7h 32m.
April 14	iPKP (239) ePP eSKKS eSS eL F	19 37 32 19 41.0 19 47 42 19 59 30 20 25 0 30	+			(239) Wi: iP 19h 37m 34s +. BCIS: $15^{\circ}\text{S } 173\frac{1}{2}^{\circ}\text{W}$, H. 19h 18m 00s. USCGS: $15\frac{1}{2}^{\circ}\text{S } 173^{\circ}\text{W}$, H. 19h 17m 57s. Samoa Island.
April 14	iP (240)	21 11 01				(240) Wi: 21h 10m 58s - Aftershock of (62). USCGS: H. 20h 59m 00s.
April 15	iP (241) eS eL F	10 50 30 11 00.3 11 18 12 15	(+)			(241) Wi: iP 10h 50m 28s; Aftershock of (62). USCGS: 11h 38m 37s.
April 15	eP (242) eS eL F	21 44 56 21 54 42 22 15 23 00				(242) Aftershock of (62). USCGS: H. 21h 33m 05s.
April 16	iP (243) epP esP iPP epPP ePPP eSKS e(PS) eSS F	4 16 54 4 19 02 4 19 56 4 21 12 4 22 38 4 23 22 4 26 39 4 29 18 4 35.0 6 30	-			(243) Wi: iP 4h 16m 51s; iPP 4h 21m 04s. USCGS: $4\frac{1}{2}^{\circ}\text{S } 107\frac{1}{2}^{\circ}\text{E}$, H. 4h 04m 04s, h = about 600 km. Western Java Sea.
April 17	e (244) F	2 27 2 30				(244) Disturbed by microseisms. Roma: $43^{\circ}54'\text{N } 11^{\circ}50'\text{E}$, H. 2h 22m 36s. Forli Province, Italy.
April 17	ePKP (245) F	8 27 29 8 30				(245) Wi: iP 8h 27m 27s -; iP 8h 28m 14s. USCGS: $20^{\circ}\text{S } 176^{\circ}\text{W}$, H. 8h 07m 58s. Tonga Islands.
April 17	e (246) F	8 45 8 49				(246) Wi: e 8h 46m 12s. Roma aftershock of (244), H. 8h 40m 37s.

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
April 17	(247)					(247) Wi: iP 9h 39m 43s. Aftershock of (62). USCGS: H. 9h 27m 54s.
April 17	(248)					(248) Wi: eP 13h 36m 45s. Aftershock of (62). USCGS: H. 13h 24m 58s.
April 17	(249)					(249) Wi: iP 15h 19m 02s. USCGS: $54^{\circ}\text{N } 164^{\circ}\text{W}$, H. 15h 07m 24s. South of Unimak Island.
April 17	eL (250) F	18 50 19 15				(250) USCGS: $14\frac{1}{2}^{\circ}\text{N } 92^{\circ}\text{W}$, H. 18h 09m 26s. Mexico - Guatemala border.
April 19	(251)					(251) Wi: iP 15h 56m 46s - Aftershock of (62). USCGS: H. 15h 44m 53s.
April 19	iP (252) ePP iS eL F	22 31 19 22 34.1 22 41 03 22 56 1 30	-	6	15	(252) Wi: iP 22h 31m 15s - USCGS: $52^{\circ}\text{N } 166\frac{1}{2}^{\circ}\text{E}$, H. 22h 19m 26s. Fox Islands, Aleutian Islands.
April 20	ePS (253) eSS eL F	13 01 13 09 13 30 15 00				(253) USCGS: $6^{\circ}\text{S } 147\frac{1}{2}^{\circ}\text{E}$, H. 12h 30m 37s. Near west coast of New Guinea.
April 21	eP (254) iz ePP eS eSS eL F	21 24 21 21 24 30 21 27 20 21 34 05 21 39.0 21 45 36 0	-			(254) Wi: eP 21h 24m 25s; i 21h 24m 28s. USCGS: $7^{\circ}\text{N } 72^{\circ}\text{W}$, H. 21h 12m 26s. Colombia - Venezuela border.
April 23	eL (255) F	22 50 23 30				(255) $27^{\circ}\text{S } 68^{\circ}\text{W}$; H. 21h 58m 35s. Northern Chile - Argentina border.
April 24	iP (256) eS eL F	19 15 11 19 19 28 19 21 22 30	+	6	6	(256) Wi: iP 19h 15m 09s +. BCIS: $36^{\circ}3'\text{N } 29^{\circ}1'\text{E}$, H. 19h 10m 16s. USCGS: $36^{\circ}\text{N } 28\frac{1}{2}^{\circ}\text{E}$, H. 19h 10m 05s. Turkey, foreshock of (257)
April 25	iP (257) eS eL F	2 30 40 2 34 49 2 26 6 00	+	6	22	(257) Wi: iP 2h 30m 37s. BCIS: $36^{\circ}5'\text{N } 28^{\circ}9'\text{E}$, H. 2h 25m 36s. USCGS: $36\frac{1}{2}^{\circ}\text{N } 29^{\circ}\text{E}$, H. 2h 25m 36s. Near south coast of Turkey.
April 25	eH (258) F	7 41 9 00				(258) Disturbed by microseisms. USCGS: $45^{\circ}\text{N } 100^{\circ}\text{E}$, H. 7h 09m 20s. Outer Mongolia.
April 26	eH (259) eL F	6 42.8 6 44 7 20				(259) Wi: eP 6h 38m 52s. BCIS: $36^{\circ}3'\text{N } 29^{\circ}1'\text{E}$, H. 6h 33m 43s. USCGS: $36\frac{1}{2}^{\circ}\text{N } 29^{\circ}\text{E}$, H. 6h 33m 32s. Aftershock of (257). Turkey.
April 26	(260)					(260) Wi: iP 15h 20m 21s. BCIS: $44\frac{3}{4}^{\circ}\text{N } 147\frac{1}{2}^{\circ}\text{E}$, H. 15h 08m 27s. USCGS: $45^{\circ}\text{N } 148^{\circ}\text{E}$, H. 15h 08m 22s. Kurile Islands.

De Bilt

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
April 27 (261)						(261) W1: 1PKP 11h 50m 04s; 1 11m 50m 20s; 1pPKP 11h 50m 33s. USCGS: 20°S 170°E, H. 11h 30m 33s, h = about 100 km. Loyalty Islands.
April 28 (262)	eP ePP eSKS eL F	1 37.7 1 42.0 1 48.5 2 15 3 30				(262) Disturbed by microseisms. W1: 1P 1h 37m 39s. USCGS: 7°N 127°E, H. 1h 23m 40s. Off coast of Mindanao, P.I.
April 28 (263)	eP eS eL F	15 00 42 15 10.5 15 25 16 30				(263) Disturbed by microseisms. W1: 1P 15h 00m 43s (-). Aftershock of (62). H. 14h 48m 52s.
April 29 (264)	eP eS eL F	4 41 50 4 51.5 5 10 5 50				(264) Disturbed by microseisms. Aftershock of (62). USCGS: H. 4h 30m 04s.
April 29 (265)	eL F	21 45 22 30				(265) Disturbed by microseisms. USCGS: 9°S 107°E, H. 20h 55m 57s. Off south coast of Java.
May 1 (266)	eL F	1 11 1 20				(266) USCGS: 41½°N 78½°E, H. 0h 45m 00s. Kirghiz - China border.
May 1 (267)						(267) W1: 1P 23h 39m 46s -. USCGS: 52½°N 171°W, H. 23h 28m 09s. Fox Islands, Aleutian Islands.
May 2 (268)	1P eS eL F	4 02 42 4 08 13 4 12 5 05				(268) W1: 1P 4h 02m 40s (-). USCGS: 72°N 67½°W, H. 3h 55m 34s. Baffin Bay.
May 2 (269)						(269) W1: ePKP 10h 54m 20s. USCGS: 56½°S 123°W, H. 10h 34m 14s. South Pacific Ocean.
May 2 (270)	1P eS	11 41 06 11 50 41				(270) W1: 1P 11h 41m 00s. USCGS: 52½°N 169°W, H. 11h 29m 13s. Fox Islands, Aleutian Islands.
May 2 (271)	1P F	11 50 44 13 30				(271) W1: eP 11h 50m 38s. USCGS: 52½°N 169°W, H. 11h 38m 52s. Fox Islands, Aleutian Islands.
May 2 (272)	ePPP ePS eL F	21 57 22 03 12 22 30 23 00				(272) USCGS: 7½°S 120°E, H. 21h 36m 25s, h = about 600 km. Flores Sea.
May 3 (273)	eL F	15 35 16 05				(273) USCGS: 12½°N 125½°E, H. 14h 43m 03s. Near east coast of Samar Island, Philippine Islands.
May 4 (274)	eL F	15 25 15 50				(274) USCGS: 37°N 96½°E, H. 14h 52m 20s. Chinghai Province, China.
May 6 (275)	eL F	15 30 15 40				(275) BCIS: 36°N 51°E, H. 15h 06m 47s. Northern Iran.

Seismic Records at De Bilt

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
May 7 (276)						(276) W1: 1P 5h 48m 25s. USCGS: 51½°N 179½°E, H. 5h 36m 32s. Andreanof Islands, Aleutian Islands.
May 8 (277)	e F	14 50 15 00				(277) USCGS: 41½°N 75°E, H. 14h 24m 30s. Kirghiz, S.S.R.
May 12 (278)	e eL F	5 17 10 5 43 6 30				(278) USCGS: 60½°S 26°W, H. 4h 47m 44s. Sandwich Islands region.
May 12 (279)	eL F	7 21 7 50				(279) W1: eP 6h 59m 35s. USCGS: 53°N 142°E, H. 6h 48m 27s. Northern Sakhalin Island.
May 12 (280)	e F	8 02.5 8 08				(280) BCIS: 39°5 N 22°7 E, H. 7h 52m 31s. Greece.
May 12 (281)	ez eSKS eL F	11 48 11 54.0 12 22 14 10				(281) Disturbed by microseisms. USCGS: 8½°S 107½°E, H. 11h 29m 07s. Near south coast of Java.
May 13 (282)	eL F	4 46 4 52				(282) BCIS: H. 4h 33.8m. Off coast of Rhodes Island.
May 13 (283)	eL F	6 44 6 50				(283) BCIS: 39°4 N 22°6 E, H. 6h 34m 33s. Greece.
May 15 (284)						(284) W1: 1P 2h 23m 22s; e 2h 23m 55s. USCGS: 17½°N 93½°W, H. 2h 11m 05s, h = about 100 km. Chiapas, Mexico.
May 17 (285)						(285) W1: 1PKP 3h 01m 34.5s +. USCGS: 18°S 176½°W, H. 2h 42m 02s, h = about 60 km. Fiji Islands region.
May 17 (286)	eL F	21 19 21 50				(286) BCIS: 17½°N 108½°W, H. 20h 42m 40s, USCGS: H. 20h 42m 40s. Rivella Gigeo Islands region.
May 18 (287)	eP eS eL F	5 36 02 5 45.9 6 00 7 00				(287) W1: eP 5h 35m 56s. USCGS: 51°N 171°W, H. 5h 24m 01s. Fox Islands, Aleutian Islands.
May 19 (288)						(288) W1: eP 3h 24m 45s. BCIS: 39½°N 20¾°E, H. 3h 20m 44s. Epirus, Greece.
May 19 (289)	eL F	21 36 22 15				(289) W1: 1P 20h 57m 49s -. USCGS: 25°N 125½°E, H. 20h 45m 03s. Ryukyu Islands.
May 20 (290)	eP eS eL F	2 03 2 12.6 2 25 4 00				(290) USCGS: 51°N 180°W, H. 1h 50m 54s. Andreanof Islands, Aleutian Islands.
May 20 (291)	ez eL F	20 01 10 20 05 20 25				(291) Foreshock of (293). BCIS: H. 19h 57m 34s, h = 60 km. USCGS: H. 19h 57m 35s.

De Bilt

Seismic Records at De Bilt

Date 1957	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s		s	μ	
✓ May 21 (292)	ez ePP iSKS isSKS eSS eL F	1 26.0 1 29 35 1 35 57 1 36 48 1 43.5 1 59 3 30				(292) W1: ePP 1h 29m 18s. Disturbed by microseisms. BCIS and USCGS: $21\frac{1}{2}^{\circ}\text{N } 144^{\circ}\text{E}$, H. 1h 11m 58s, h = about 100 km. Mariana Islands region.
✓ May 21 (293)	iP eH eL F	11 47 43 11 50 52 11 51.8 12 15	+			(293) W1: eP 11h 47m 50s; ePP 11h 48m 08s. USCGS: $38\frac{1}{2}^{\circ}\text{N } 140^{\circ}\text{E}$, H. 11h 44m 04s. Near east coast of Sicily, Italy.
✓ May 21 (294)	eP eS eL F	13 28 30 13 31 56 13 33 14 00				(294) BCIS: $39^{\circ}4' \text{N } 22^{\circ}9' \text{E}$, H. 13h 24m 20s. USCGS: $39\frac{1}{2}^{\circ}\text{N } 23^{\circ}\text{E}$, H. 13h 24m 16s. Near east coast of Greece.
✓ May 22 (295)	eP eS eSS eL F	13 41 53 13 51 52 13 56.9 14 07 15 30				(295) W1: eP 13h 41m 44s. USCGS: $50^{\circ}\text{N } 177^{\circ}\text{W}$, H. 13h 29m 44s. Andreanof Islands, Aleutian Islands.
✓ May 24 (296)	iP iS eL	2 50 06 3 00 18 3 16	+			(296) F in next shock. W1: iP 2h 50m 11s +. USCGS: $3^{\circ}\text{N } 76\frac{1}{2}^{\circ}\text{W}$, H. 2h 37m 37s. Colombia.
✓ May 24 (297)	eS eL F	3 58.0 4 15 5 30				(297) USCGS: $53^{\circ}\text{N } 167\frac{1}{2}^{\circ}\text{W}$, H. 3h 36m 33s. Fox Islands, Aleutian Islands.
✓ May 26 (298)	iP iS eL	6 38 20 6 42 18 6 44	-	8	18	(298) W1: 6h 38m 14s - F in next shock. BCIS: $40^{\circ}7' \text{N } 31^{\circ}2' \text{E}$, H. 6h 33m 30s. USCGS: $41^{\circ}\text{N } 31^{\circ}\text{E}$, H. 6h 33m 31s. Bolu Province, Turkey.
May 26 (299)						(299) W1: eP 8h 59m 27s. Aftershock of (298). USCGS: H. 8h 54m 45s.
May 26 (300)						(300) W1: iP 9h 18m 23s. Aftershock of (298). USCGS: H. 9h 13m 43s.
✓ May 26 (301)	iP iS eL F	9 41 21 9 45 18 9 46.5 11 00	(+)			(301) W1: e 9h 41m 16s; iP 9h 41m 19s -. Aftershock of (298). USCGS: H. 9h 36m 33s.
May 27 (302)						(302) W1: iP 6h 25m 07s. Aftershock of (298). USCGS: H. 6h 20m 34s.
✓ May 27 (303)	iP iS iz eL F	11 06 17 11 10 11 11 10 21 11 11.5 12 00	-			(303) W1: eP 11h 06m 09s. Aftershock of (298). USCGS: H. 11h 01m 26s.
✓ May 28 (304)	eS eL F	0 18 30 0 20 0 32				(304) W1: eP 0h 14m 27s. Aftershock of (298). USCGS: H. 0h 09m 45s.
May 28 (305)						(305) W1: eP 1h 31m 12s. USCGS: $53^{\circ}\text{N } 169^{\circ}\text{W}$, H. 1h 19m 26s. Fox Islands, Aleutian Islands.

Date 1957	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s		s	μ	
✓ May 28 (306)	eP eS eL F	6 03 06 6 11.9 6 28 6 45				(306) W1: eP 6h 02m 42s. USCGS: $25\frac{1}{2}^{\circ}\text{N } 95^{\circ}\text{E}$, H. 5h 51m 30s. Pakistan - Burma border.
✓ May 29 (307)	eS eL F	10 26 26 10 28 10 45				(307) W1: iP 10h 22m 24s. Aftershock of (298). USCGS: H. 10h 17m 43s.
✓ May 29 (308)	iP iS F	18 43 46 18 47 18 18 30				(308) W1: iP 18h 43m 43s. BCIS: $37^{\circ}4' \text{N } 24^{\circ}0' \text{E}$, H. 18h 39m 13s. USCGS: H. 18h 39m 09s. Southern Greece.
✓ May 30 (309)	ePKP eSS eL F	0 38 44 1 01.5 1 40 2 40				(309) W1: ePKP 0h 38m 44s. USCGS: $20^{\circ}\text{S } 175^{\circ}\text{W}$, H. 0h 18m 52s. Tonga Islands.
✓ May 31 (310)	iP iPP ePPP ePPS F	2 29 12 2 33 20 2 36 09 2 43.0 4 25				(310) USCGS: $27\frac{1}{2}^{\circ}\text{S } 63^{\circ}\text{W}$, H. 2h 16m 27s, h = about 600 km. Santiago del Estero, Argentina.
✓ May 31 (311)	eP eS eSS	22 10 03 22 20 14 22 24.5				(311) W1: iP 22h 10m 10s. F in next shock. USCGS: $3\frac{1}{2}^{\circ}\text{N } 77^{\circ}\text{W}$, H. 21h 57m 46s, h = about 100 km. Near east coast of Colombia.
✓ May 31 (312)	eP eS eL F	22 29 07 22 38 57 22 58 24 00				(312) W1: eP 22h 29m 03s. USCGS: $51^{\circ}\text{N } 179\frac{1}{2}^{\circ}\text{W}$, H. 22h 17m 10s. Andreanof Islands, Aleutian Islands.
✓ June 1 (313)	eP eS eL F	5 31 39 5 35 34 5 37 6 05				(313) W1: iP 5h 31m 33s. Aftershock of (298). USCGS: H. 5h 26m 50s.
✓ June 1 (314)	eL F	20 19 20 45				(314) USCGS: $1^{\circ}\text{N } 91^{\circ}\text{W}$, H. 19h 35m 08s. Galapagos Islands.
✓ June 1 (315)	eS eL F	21 16 57 21 18.5 21 45				(315) W1: eP 21h 12m 57s. Aftershock of (298). BCIS and USCGS: H. 21h 08m 12s.
✓ June 1 (316)	eL F	23 11 23 30				(316) USCGS: $51\frac{1}{2}^{\circ}\text{N } 175\frac{1}{2}^{\circ}\text{W}$, H. 22h 28m 20s. Andreanof Islands, Aleutian Islands.
✓ June 2 (317)	eP eS eL F	1 16 42 1 20 40 1 22.5 1 45				(317) W1: iP 1h 16m 38s +. Aftershock of (298). BCIS and USCGS: H. 1h 11m 56s.
June 2 (318)						(318) W1: iP 21h 33m 20s. USCGS: $52\frac{1}{2}^{\circ}\text{N } 160^{\circ}\text{E}$, H. 21h 21m 45s. Near east coast of Kamchatka.
June 3 (319)	eL F	18 08 18 10				(319) BCIS: H. 17h 56.3m. Aegean Sea.
June 4 (320)						(320) W1: iPKP 17h 23m 46s +. USCGS: $17\frac{1}{2}^{\circ}\text{S } 178^{\circ}\text{W}$, H. 17h 05m 02s, h = about 550 km. Fiji Islands.

Seismic Records at De Bilt

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
June 5 (321)	eP eS eL F	7 21 34 7 26.0 7 28 8 00				(321) W1: eP 7h 21m (46s). Disturbed by microseisms. USCGS: 52 $\frac{1}{2}$ ^o N 35 ^o W, H. 7h 16m 17s. North Atlantic Ocean.
June 5 (322)	eL F	22 55 23 30				(322) Disturbed by microseisms. BCIS: 36 ^o S 16 ^o W, H. 22h 12m 55s. Tristan da Cunha.
June 6 (323)	e F	1 39 1 45				(323) Disturbed by microseisms. Aftershock of (322). BCIS: H. 0h 51.1m.
June 6 (324)	e F	4 15 4 20				(324) Disturbed by microseisms. USCGS: 52 ^o N 178 ^o W, H. 3h 20m 22s. Andreanof Islands, Aleutian Islands.
June 6 (325)	e F	6 13 6 40				(325) Disturbed by microseisms. USCGS: 52 ^o N 171 $\frac{1}{2}$ ^o W, H. 5h 38m 27s. Fox Islands, Aleutian Islands.
June 6 (326)	eL F	20 44 21 20				(326) Disturbed by microseisms. USCGS: 3 ^o N 126 $\frac{1}{2}$ ^o E, H. 19h 49m 47s. Molucca Passage.
June 7 (327)	e F	0 29 0 36				(327) USCGS: 44 $\frac{1}{2}$ ^o N 81 ^o E, H. 0h 03m 17s. Sinkiang Province, China.
June 8 (328)						(328) W1: 1PKP 17h 31m 42s. USCGS: 16 $\frac{1}{2}$ ^o S 173 $\frac{1}{2}$ ^o W, H. 17h 12m 03s. Tonga Islands.
June 8 (329)						(329) W1: ePKP 22h 45m 57s; e 22h 46m 08s. USCGS: 19 $\frac{1}{2}$ ^o S 168 ^o E, H. 22h 26m 17s. Loyalty Islands.
June 10 (330)	ePKP ePP eSKS eSKKS ePS ePPS eSS eL F	1 18 28 1 19 10 1 25 05 1 26.0 1 28 53 1 29.5 1 34.5 1 54 2 45				(330) W1: ePKP 1h 18m 32s. Disturbed by microseisms. USCGS: 9 ^o S 117 ^o E, H. 59m 54s. Sumbawa Island.
June 10 (331)	ePP epPP ePPS eSS eL F	3 31 38 3 32 20 3 41.5 3 47.3 3 08 3 30				(331) W1: ePP 3h 31m 23s. Disturbed by microseisms. USCGS: 13 $\frac{1}{2}$ ^o N 143 $\frac{1}{2}$ ^o E, 3h 13m 11s. Mariana Islands.
June 11 (332)	ePKP ePP ePPS eL F	15 09 35 15 13 50 15 27.3 16 05 18 00				(332) W1: eP 15h 09m 36s; e 15h 10m 10s. Disturbed by microseisms. USCGS: 30 ^o S 178 ^o W, H. 14h 49m 47s, h = about 100 km. Kermadec Islands.
June 11 (333)	eP ePP eSKS eL F	19 02 29 19 06 16 19 12 58 19 37.5 21 00				(333) W1: 1P 19 02 25 -. Disturbed by microseisms. USCGS: 18 ^o N 120 $\frac{1}{2}$ ^o E, H. 18h 49m 24s. Near coast of Luzon, Philippine Islands.

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
June 11 (334)	eP eS eL F	24 05 52 24 14 53 24 26 25 50				(334) Disturbed by microseisms. USCGS: 52 ^o N 176 ^o W, H. 23h 53m 57s. Andreanof Islands, Aleutian Islands.
June 12 (335)	eP eS eL F	8 40 44 8 50 50 9 06 10 10				(335) W1: 1 8h 40m 39s. Disturbed by microseisms. USCGS: 41 $\frac{1}{2}$ ^o N 142 $\frac{1}{2}$ ^o E, H. 8h 28m 34s. Near south coast of Hokkaido, Japan.
June 13 (336)	1P 1S 1SS eSSS eL F	10 52 34 11 02 22 11 07 42 11 11 42 11 17 14 00	+			(336) W1: 1 10h 52m 31s. USCGS: 51 $\frac{1}{2}$ ^o N 175 ^o W, H. 10h 40m 38s. Andreanof Islands, Aleutian Islands.
June 13 (337)						(337) W1: 1 21h 27m 00s. BCIS: H. 21h 07.3m. Fiji Islands region.
June 14 (338)	eP ePP eS eL F	6 36 10 6 39 13 6 45 56 7 01 8 00				(338) USCGS: 52 ^o N 175 $\frac{1}{2}$ ^o W, H. 6h 24m 20s. Andreanof Islands, Aleutian Islands.
June 14 (339)	eL F	12 05 12 25				(339) USCGS: 32 ^o N 67 ^o E, H. 11h 36m 49s. Southern Afghanistan.
June 15 (340)	eP eSKS ePS eSS eL F	0 57 50 1 08 30 1 10.5 1 16.0 1 30 3 50				(340) USCGS: 34 ^o S 56 ^o E, H. 0h 44m 15s. Indian Ocean.
June 15 (341)	eP eS eL F	18 30 10 18 40 18 18 55 19 45				(341) W1: eP 18h 30m 01s. USCGS: 52 ^o N 171 ^o W, H. 18h 18m 20s. Fox Islands, Aleutian Islands.
June 18 (342)	1P eS eL F	2 24 21 2 34 22 2 53 4 00	-	4	2	(342) W1: 1P 2h 24m 17s -; 1 2h 24m 23s; 1 2h 24m 37s. USCGS: 14 $\frac{1}{2}$ ^o N 96 ^o E, H. 2h 12m 12s. Gulf of Martaban, Burma.
June 18 (343)	eL F	12 03 12 30				
June 18 (344)	1P eS eSS eL F	15 00 30 15 10 30 15 16.0 15 30 17 30	-	4	2	(344) W1: 1P 15h 00m 25s. Aftershock of (342). USCGS: H. 14h 48m 17s.
June 18 (345)	ePKP e{PP} eL F	18 16 00 18 20.0 19 00 20 30				(345) W1: ePKP 18h 16m 01s. USCGS: 25 ^o S 170 ^o E, H. 17h 56m 03s. Loyalty Islands region.
June 19 (346)	ePKP eSS eL F	1 49 40 2 12.5 2 45 3 50				(346) USCGS: 24 ^o S 175 $\frac{1}{2}$ ^o W, H. 1h 29m 48s. Tonga Islands.

De Bilt

Seismic Records at De Bilt

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
June 19 (347)	ePKP eSS eL F	8 21 06 8 43 10 8 59 10 10 30				(347) W1: ePKP 8h 21m 15s. USCGS: 16 $\frac{1}{2}$ ^o S 176 $\frac{1}{2}$ ^o E, H. 8h 01m 30s. Fiji Islands.
June 20 (348)	eL F	1 54 2 15				(348) USCGS: 20 ^o N 145 $\frac{1}{2}$ ^o E, H. 1h 06m 25s. Mariana Islands.
June 21 (349)	eP eS eL F	18 50 02 19 00.0 19 20 19 50	-			(349) W1: 1P 18h 49m 58s -. USCGS: 48 ^o N 155 ^o E, H. 18h 38m 03s. Kurile Islands.
June 22 (350)	eL F	22 49 23 10				
June 22 (351)	1P 1z eS ePS ePPS eSS eL F	6 31 34 6 32 15 6 41 50 6 42 32 6 42 52 6 47.0 6 58.6 8 00	+	5	8	(351) W1: eP 6h 31m 37s; 1 6h 31m 38s -; ePP 6h 34m 28s. Near coast of Chiapas, Mexico.
June 22 (352)	eP ePP ePPP ePS ePPS eSS eL	24 05.4 24 10 18 24 13 07 24 19 55 24 21 25 24 26 40 24 42				(352) W1: ePP 0h 10.0m. F 1n next shock. USCGS: 1 $\frac{1}{2}$ ^o S 137 ^o E, H. 23h 55m 23s. Near north coast of New Guinea.
June 23 (353)	eP eS eL F	3 37 54 3 46 50 4 00 5 50				(353) W1: eP 3h 37m 52s. USCGS: 58 $\frac{1}{2}$ ^o N 137 ^o W, H. 3h 27m 02s. Near coast of south-eastern Alaska.
June 24 (354)	e F	4 41.5 4 50				(354) BCIS: 39 $\frac{1}{2}$ ^o N 24 ^o E, H. 4h 31m 01s. Northern Aegean Sea.
June 24 (355)						(355) W1: 1P 10h 02m 19s -. After-shock of (351). USCGS: H. 9h 49m 47s.
June 26 (356)	eS eL F	3 11 24 3 27 4 00				(356) USCGS: 7 $\frac{1}{2}$ ^o S 85 $\frac{1}{2}$ ^o E, H. 2h 47m 36s. Indian Ocean, east of Chagos Archipelago.
June 27 (357)	1P 1S eL F	0 19 27 0 27 42 0 35 5 00		4	6	(357) W1: 1P 0h 19m (17s); 1 0h 19m (23s). USCGS: 56 $\frac{1}{2}$ ^o N 116 ^o E, H. 0h 09m 28s. North-east of Lake Baikal, U.S.S.R.
June 27 (359)	e F	7 20 7 27				(358) Begin during change of papers. BCIS: 39 ^o 4 N 22 ^o 7 E, H. 7h 10m 55s. Thessaly, Greece.
June 28 (359)						(359) W1: ePKP 19h 12m 34s. BCIS: 21 ^o S 171 ^o E, H. 18h 52m 45s. Loyalty Islands.
June 28 (360)	eL F	21 35 21 45				(360) W1: eP 21h 27.5m. Algeria: 36 ^o 1 N 1 ^o 4 E, H. 21h 23m 20s. USCGS: H. 21h 23m 25s. Algeria.

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
June 29 (361)	eP eS eL F	8 00 05 8 10.0 8 25 9 00				(361) W1: eP 8h 00m 05s. USCGS: 51 $\frac{1}{2}$ ^o N 166 ^o W, H. 7h 48m 18s. Fox Islands, Aleutian Islands.
June 29 (362)	eL F	23 05 23 21				(362) Aftershock of (257). USCGS: H. 22h 33m 52s.
June 29 (363)	eL F	23 55 24 10				(363) Alicante: 36 ^o 30'B 1 ^o 50'4 W, H. 23h 46m 44s, h = 105 km. Off south-east coast of Spain.
July 1 (364)	1P 1PP 1S ePS eSS eH eSSS eL F	19 41 33 19 44 16 19 50 41 19 51 20 19 55 08 19 55 44 19 58 52 20 03 21 30	+			(364) W1: 1P 19h 41m 26s. USCGS: 25 ^o N 94 ^o E, H. 19h 30m 16s. India - Burma border.
July 2 (365)	1P ePP eS eL F	0 49 36 0 50 37 0 55 23 1 00 5 00	+	6	20	(365) BCIS: 36 ^o 1 N 52 ^o 3 E, H. 0h 42m 24s. USCGS: 36 ^o N 53 ^o E, H. 0h 42m 23s. Northern Iran.
July 3 (366)	eL F	2 20 3 00				(366) W1: eP 1h 59m 13s. USCGS: 52 ^o N 159 ^o E, H. 1h 47m 40s. Near south coast of Kamchatka.
July 3 (367)						(367) W1: 1PKP 6h 21m 33s. USCGS: 24 ^o S 180 ^o , H. 6h 02m 37s, h = about 550 km. Fiji Islands region.
July 3 (368)	1P 1S eL F	12 36 42 12 46 40 13 02 14 00				(368) W1: 1P 12h 36m 38s -. USCGS: 50 $\frac{1}{2}$ ^o N 179 ^o W, H. 12h 24m 37s. Andreanof Islands, Aleutian Islands.
July 3 (369)	eL F	21 21 21 30				
July 4 (370)	eL F	13 20 13 40				(370) USCGS: 34 ^o N 137 ^o E, H. 12h 31m 20s. Near south coast of Honshu, Japan.
July 5 (371)	eL F	1 40 2 00				(371) USCGS: 32 ^o N 114 ^o W, H. 0h 58m 00s. Arizona - Mexico border.
July 5 (372)	eL F	15 55 16 00				(372) W1: eP 15h 41m 55s. BCIS: 1 $\frac{1}{2}$ ^o S 26 $\frac{1}{2}$ ^o E, H. 15h 32m 07s. USCGS: H. 15h 32m 00s. Eastern Congo.
July 7 (373)	eP eS eL F	6 04 36 6 09 45 6 12 6 40				(373) W1: 1P 6h 04m 34s. BCIS: 39 ^o 0 N 40 ^o 5 E, H. 5h 58m 48s. USCGS: 38 $\frac{1}{2}$ ^o N 40 ^o E, H. 5h 58m 48s. Turkey.
July 7 (374)	ePKP ePP eL F	16 30 22 16 32 32 17 09 18 00				(374) USCGS: 6 $\frac{1}{2}$ ^o S 156 ^o E, H. 16h 11m 15s. Solomon Islands.

Seismic Records at De Bilt

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
July 9	eL (375) F	10 55 11 30				(375) USCGS: 6°S 104°E, H. 9h 58m 09s, h = about 60 km. Near south coast of Sumatra.
July 9	eL (376) F	20 47.5 20 55				(376) BCIS: about 68°N 20°W, H. 20h 35.0m. 200 miles north of Iceland.
July 9	eL (377) F	21 32 21 40				(377) Aftershock of (376). BCIS: H. 21h 20.3s.
July 9	eL (378) F	22 48 23 08				(378) BCIS: 0°0 lat. 29°0 E, H. 22h 24m 46s. Congo.
July 10	eL (379) F	5 30 5 40				(379) BCIS: 51°N 169°W, H. 4h 46m 43s. USCGS: 52½°N 170°E, H. 4h 46m 48s. Fox Islands, Aleutian Islands.
July 10	eP (380) eS eL F	9 16 9 27.0 9 42 11 10	40			(380) W1: eP 9h 16m 43s. USCGS: 8°N 82½°W, H. 9h 04m 08s. Near coast of Panama.
July 10	ez (381) eL F	23 42.0 23 46 24 00				(381) BCIS: 36°5 N 26°0 E, H. 23h 37m 20s. Near south coast of Greece.
July 13	eL (382) F	1 47 2 00				(382) W1: eP 1h 11m 17s; e 1h 11m 27s. USCGS: 22°N 169½°W, H. 0h 59m 28s. Fox Islands, Aleutian Islands.
July 13	eL (383) F	3 42 3 48				(383) BCIS: 39°3 N 22°7 E, H. 3h 31m 41s. Thessaly, Greece.
July 14	eL (384) F	3 03 3 40				(384) W1: eP 2h 38m 50s. USCGS: 46°N 151½°E, H. 2h 26m 54s. Kurile Islands.
July 14	1PKP1 (385) 1PKP2 1PP eSKSP eL	6 43 6 43 6 47 6 57 7 35	29	-	6 5	(385) F in next shock. W1: 1PKP1 6h 43m 29s; e 6h 43m 38s; ePKP2 6h 43m 51s. USCGS: 27°S 178°W, H. 6h 23m 32s. Kermadec Islands region.
July 14	1PKP (386) ePP eSS eL	8 30 8 33 8 45 9 20	34		54	(386) F in next shock. W1: ePKP 8h 30m 45s. USCGS: 30°S 177°W, H. 8h 10m 45s. Kermadec Islands.
July 14	ePKP (387) F	10 02 12.0				(387) Disturbed by microseisms. W1: ePKP 10h 02m 16s. USCGS: 20°S 174½°W, H. 9h 42m 27s. Tonga Islands.
July 15	e (388) F	9 45 10 00				(388) BCIS and USCGS: 36°N 7½°W, H. 9h 36m 30s. Atlantic Ocean, west of Gibraltar.
July 15	eL (389) F	23 28 24 00				(389) USCGS: 29°N 70°E, H. 23h 08m 08s. West Pakistan.
July 17	1PKP (390) epPKP ePP epPP eSS eL F	11 29 11 30 11 32 11 32 11 50.0 12 17 13 50	30	+	03 15 48	(390) W1: 1PKP 11h 29m 31s. USCGS: 11°S 167°W, H. 11h 10m 10s. Santa Cruz Islands.

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
July 17	ezH (391) eL F	18 57 20 19 09 19 30				(391) W1: eP 18h 49m 10s. USCGS: 10°S 13°W, H. 18h 39m 57s. Mid-Atlantic Ocean.
July 19	eP (392) eS eL F	13 14.5 13 25 13 46 14 25	10			(392) W1: eP 13h 14m 12s. USCGS: 25°N 122½°E, H. 13h 02m 05s. Near north coast of Formosa.
July 20	eL (393) F	10 37 11 10				(393) BCIS: 21½°S 33½°E, H. 9h 55m 37s. USCGS: 22°S 34°E, H. 9h 55m 33s. South of Mozambique.
July 20	eL (394) F	14 50 15 20				(394) USCGS: 43°N 145°E, H. 14h 08m 14s. Near east coast of Hokkaido, Japan.
July 21	eH (395) F	6 45 7 15				(395) USCGS: 14½°N 92°W, H. 6h 04m 11s, h = about 100 km. Near coast of Guatemala.
July 22	ePKP (396) eL F	6 37.0 7 35 8 30				(396) W1: ePKP 6h 37m 06s. USCGS: 33½°S 178°W, H. 6h 16m 52s. Kermadec Islands region.
July 23	eP (397) eS eSS eL F	0 57 00 1 06 55 1 12 10 1 18 4 00				(397) No z-record. W1: 1P 0h 57m 02s. USCGS: 52°N 177°W, H. 0h 45m 12s. Andeanof Islands, Aleutian Islands.
July 24	eH (398) eL F	2 22 2 52 3 30				(398) USCGS: 30°S 70½°W, H. 1h 57m 25s. Central Chile - Argentina border.
July 24	ePKP (399) eL F	11 22 12 12 20 13 30				(399) USCGS: 20°S 169°E, H. 11h 02m 30s. New Hebrides Islands.
July 25	eP (400) eS eL F	7 54 18 8 04.3 8 18 9 30				(400) W1: 1P 7h 54m 17s. USCGS: 51°N 177°W, H. 7h 42m 25s. Andeanof Islands, Aleutian Islands.
July 28	eP (401) ePP ePPP eS eL F	8 52 44 8 56 08 8 58 06 9 03 36 9 22 13 00				(401) W1: eP 8h 52m 45s, e 8h 52m 54s. USCGS: 17°N 99°W, H. 8h 40m 04s. Guerroero, Mexico.
July 29	eP (402) ePP ePS eSS eL F	17 29 06 17 33 04 17 42 10 17 47.8 17 58 20 00				(402) USCGS: 23½°S 71½°W, H. 17h 15m 14s. Near coast of Chile.
Aug. 1	(403)					(403) W1: 1P 16h 30m 36s. USCGS: 52°N 170°W, H. 16h 18m 48s. Fox Islands, Aleutian Islands.

1lt

Seismic Records at De Bilt

Date 1957	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s		s	μ	
✓ Aug. 4 (404)	ePP eSS eSSS eL F	0 59.3 1 16.5 1 21 1 30 3 00				(404) USCGS: $3\frac{1}{2}^{\circ}\text{S } 145^{\circ}\text{E}$, H. 0h 39m 12s. Near north coast of New Guinea.
✓ Aug. 4 (405)	eP ePP eS eL F	6 19 18 6 22 34 6 30 00 6 51 7 30				(405) USCGS: $17^{\circ}\text{N } 100^{\circ}\text{W}$, H. 6h 06m 36s. Aftershock of (401).
✓ Aug. 6 (406)	eP ePP eS eL F	14 29 00 14 32 18 14 39 38 14 58 15 45				(406) USCGS: $17^{\circ}\text{N } 99\frac{1}{2}^{\circ}\text{W}$, H. 14h 16m 18s. Aftershock of (401).
✓ Aug. 6 (407)	eP ePP eSKS ePS eSS eL F	21 22 52 21 26 53 21 33.5 21 35 50 21 41.4 21 53 23 45				(407) USCGS: $45^{\circ}\text{S } 35^{\circ}\text{E}$, H. 21h 08m 51s. Prince Edward Island region.
✓ Aug. 7 (408)	1PKP	19 59 35				(408) W1: 1PKP 19h 59m 33s -. USCGS: $19\frac{1}{2}^{\circ}\text{S } 178^{\circ}\text{W}$, H. 19h 40m 46s, h = about 550 km. Fiji Islands.
✓ Aug. 8 (409)	eP eS eSS eL F	22 43 36 22 51 45 22 55 50 23 00 23 50				(409) USCGS: $7^{\circ}\text{S } 13^{\circ}\text{W}$, H. 22h 33m 02s. Ascencion Island region.
✓ Aug. 9 (410)	ePKP ePS eSS eL F	2 49.2 2 59.0 3 05.5 3 22 5 30				(410) USCGS: $2^{\circ}\text{S } 137^{\circ}\text{W}$, H. 2h 29m 20s. New Guinea.
✓ Aug. 11 (411)	eL F	22 55 23 30				(411) Disturbed by microseisms. BCIS: $17\frac{1}{2}^{\circ}\text{S } 169^{\circ}\text{E}$, H. 21h 38m 05s. New Hebrides Islands.
✓ Aug. 12 (412)	e F	2 57 3 07				(412) Disturbed by microseisms. BCIS and USCGS: $35\frac{3}{4}^{\circ}\text{N } 28^{\circ}\text{E}$, H. 2h 44m 24s. Dodecanese Islands.
✓ Aug. 15 (413)	e F	20 50 20 55				(413) Algiers: $36^{\circ}1' \text{N } 1^{\circ}5' \text{E}$, H. 20h 41.7m. Algeria.
✓ Aug. 15 (414)	ePP F	21 06.0 21 20				(414) Disturbed by microseisms. USCGS: $4\frac{1}{2}^{\circ}\text{S } 155^{\circ}\text{E}$, H. 20h 45m 20s, h = about 500 km. Solomon Islands region.
✓ Aug. 16 (415)	eP ePP eSKS eSS eL F	23 45 10 23 48 35 23 55 50 0 02 46 0 12.0 3 00				(415) Disturbed by microseisms. USCGS: $10\frac{1}{2}^{\circ}\text{N } 104^{\circ}\text{W}$, H. 23h 31m 55s. Pacific Ocean.

Date 1957	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s		s	μ	
✓ Aug. 18 (416)	ePKP ePP F	6 54 16 6 58 00 7 09				(416) USCGS: $57^{\circ}\text{S } 142\frac{1}{2}^{\circ}\text{W}$, H. 6h 34m 16s. South Pacific Ocean.
✓ Aug. 18 (417)	ePP eSKS eSKKS eSS eL F	8 54.6 9 01 16 9 01 42 9 02 03 9 20 11 00				(417) BCIS: $12^{\circ}\text{N } 124\frac{1}{2}^{\circ}\text{E}$, H. 8h 36m 58s. USCGS: $12^{\circ}\text{N } 124^{\circ}\text{E}$, H. 8h 36m 57s. Philippine Islands.
✓ Aug. 18 (418)	eP iz eE eS eSS eL F	21 54 13 21 54 16 22 03.0 22 03 50 22 08.5 22 20 24 00	+	5	3	(418) Disturbed by microseisms. BCIS and USCGS: $50^{\circ}\text{N } 157^{\circ}\text{E}$, H. 21h 42m 30s. Northern Kurile Islands.
✓ Aug. 19 (419)	ePP eL F	11 56.5 12 40 13 40				(419) Disturbed by microseisms. USCGS: foreshock of (422). H. 11h 34m 36s.
✓ Aug. 19 (420)						(420) W1: 1P 21h 43m 48s. USCGS: $51\frac{1}{2}^{\circ}\text{N } 171^{\circ}\text{W}$, H. 21h 31m 55s. Fox Islands, Aleutian Islands.
✓ Aug. 20 (421)	e(PP) e(PKS) eL F	6 48.9 6 50.0 7 23 8 45				(421) Disturbed by microseisms. USCGS: foreshock of (422), H. 6h 27m 07s.
✓ Aug. 20 (422)	ePKS eL F	12 24.5 12 55 14 30				(422) Disturbed by microseisms. No z-record. USCGS: $10^{\circ}\text{S } 161^{\circ}\text{E}$, H. 12h 01m 54s. Solomon Islands.
Aug. 21 (423)						(423) W1: 1P 15h 45m 53s. USCGS: $44\frac{1}{2}^{\circ}\text{N } 147^{\circ}\text{E}$, H. 15h 33m 57s. Kurile Islands.
✓ Aug. 22 (424)	e F	6 58 30 7 01				
✓ Aug. 23 (425)	ePP ePS eSS eL F	2 21 12 2 31 20 2 38 2 57 4 15				(425) Disturbed by microseisms. USCGS: $6^{\circ}\text{S } 154\frac{1}{2}^{\circ}\text{E}$, H. 2h 00m 09s, h = about 60 km. Solomon Islands.
✓ Aug. 26 (426)	eL F	12 08 13 00				(426) Disturbed by microseisms. W1: eP 11h 42m 11s. USCGS: $19^{\circ}\text{S } 63^{\circ}\text{W}$, H. 11h 28m 50s. Southern Bolivia.
✓ Aug. 26 (427)	eP eS eL F	14 11.8 14 22 30 14 42 16 30				(427) Disturbed by microseisms. USCGS: $2^{\circ}\text{S } 81^{\circ}\text{W}$, H. 13h 58m 48s. Near coast of Ecuador.
✓ Aug. 28 (428)	e F	11 59 12 06				(428) Disturbed by microseisms. BCIS: $44^{\circ}3' \text{N } 10^{\circ}9' \text{E}$, H. 11h 54m 42s. Roma: $44^{\circ}3' \text{N } 10^{\circ}94' \text{E}$, H. 11h 54m 40s. Emilia, Italy.
✓ Aug. 28 (429)	eL F	9 47 10 05				(429) Disturbed by microseisms. USCGS: $28\frac{1}{2}^{\circ}\text{S } 175^{\circ}\text{W}$, H. 8h 19m 10s. Kermadec Islands region.

t

Seismic Records at De Bilt

Date 1957	Phase	Time			Direction	Period	Amplitude μ	Remarks
		h	m	s				
✓ Aug. 28 (430)	eSS eL F	23	54				(430) Disturbed by microseisms. USCGS: 21°N 145°E, H. 23h 22m 21s. Mariana Islands.	
✓ Aug. 30 (431)	eP eS eSS eL F	16	26.5				(431) Disturbed by microseisms. BCIS: 39½°N 72½°E, H. 16h 18m 01s. USCGS: 39°N 73°E, H. 16h 17m 56s. Tadshik, S.S.R.	
✓ Aug. 30 (432)	eL F	20	50				(432) Disturbed by microseisms. USCGS: 20½°N 121½°E, H. 20h 04m 01s. Batan Islands region.	
✓ Aug. 31 (433)	e F	12	07				(433) BCIS: 36°N 21½°E, H. 11h 56m 42s. Off south-west coast of Peleponese, Greece.	
✓ Aug. 31 (434)	e F	12	32				(434) USCGS: 49°N 100°E, H. 12h 01m 06s. Outer Mongolia.	
✓ Sep. 1 (435)	eL F	13	17				(435) Disturbed by microseisms. No z-record. USCGS: 39°N 75°E, H. 12h 49m 55s. Western Sinkiang Province, China.	
✓ Sep. 1 (436)	eL F	24	51				(436) Disturbed by microseisms. USCGS: 18°N 147½°E, H. 23h 59m 54s. Mariana Islands.	
Sep. 2 (437)							(437) ✓ Wi: 1P 14h 32m 07s. USCGS: 51½°N 168°W, H. 14h 20m 13s. Fox Islands, Aleutian Islands.	
✓ Sep. 2 (438)	eS eL F	21	42	40			(438) ✓ Wi: eP 21h 35m 49s. Disturbed by microseisms. No z-record. USCGS: 37°N 71°E, H. 21h 27m 36s, h = about 200 km. Hindu Kush.	
Sep. 3 (439)							(439) ✓ Wi: 1PKP 14h 59m 10s. USCGS: H about 14h 39m 34s, h = about 600 km. Fiji Islands region.	
✓ Sep. 3 (440)	eP eS eL F	20	28	30			(440) BCIS: 58°N 36°W, H. 20h 23.3m. Mid-Atlantic Ridge.	
✓ Sep. 4 (441)	eL F	5	22				(441) BCIS: 42½°S 88½°E, H. 4h 33m 52s. USCGS: H. 4h 33m 51s. Indian Ocean, 1000 miles south of Kerguelen Islands.	
✓ Sep. 5 (442)	eP eL F	11	44.1				(442) ✓ Wi: eP 11h 44.1m. BCIS: 28°2' N 53°7' E, H. 11h 36m 04s. USCGS: H. 11h 36m 07s. Southern Iran.	
✓ Sep. 6 (443)	eP eS eL F	5	06	42.30			(443) ✓ Wi: eP 5h 06 34s. USCGS: 51°N 177°E, H. 4h 54m 37s. Andreanof Islands, Aleutian Islands.	
✓ Sep. 6 (444)	eL F	20	31				(444) Disturbed by microseisms. No z-record. BCIS: 40½°N 19¾°E, H. 20h 22m 10s. Albania - Greece border.	

Date 1957	Phase	Time			Direction	Period	Amplitude μ	Remarks
		h	m	s				
✓ Sep. 7 (445)	e F	7	18				(445) Disturbed by microseisms. USCGS: 50°N 156°E, H. 6h 48m 36s. Northern Kurile Islands.	
✓ Sep. 7 (446)	e F	10	44				(446) Disturbed by microseisms. No z-record. Wi: eP 10h 18m 37s. USCGS: 51½°N 178½°W, H. 10h 06m 47s. Andreanof Islands.	
✓ Sep. 9 (447)	eSS eL F	0	52				(447) Disturbed by microseisms. USCGS: 48°S 100°E, H. 0h 13m 30s. South Indian Ocean.	
✓ Sep. 9 (448)	ePKP eL F	9	20.3				(448) Disturbed by microseisms. USCGS: 15°S 176½°W, H. 9h 00m 33s. Fiji Islands region.	
✓ Sep. 10 (449)	eL F	20	25				(449) Disturbed by microseisms. BCIS: 1¾°N 31¾°W, H. 19h 56m 53s. Mid-Atlantic Ridge.	
✓ Sep. 12 (450)	eL F	1	07				(450) Disturbed by microseisms. USCGS: 17½°N 85°W, H. 0h 28m 02s. Gulf of Honduras.	
✓ Sep. 18 (451)	eL F	1	40				(451) Disturbed by microseisms. Wi: eP 1h 10m 51s. USCGS: 52°N 160°E, H. 0h 59m 20s. Near east coast of Kamchatka.	
✓ Sep. 19 (452)	eL F	17	45				(452) USCGS: 79½°N 3°E, H. 17h 29m 02s. Spitzbergen region.	
Sep. 20 (453)							(453) ✓ Wi: 1PKP 19h 06m 16s. USCGS: 20½°S 174½°W, H. 18h 46m 29s. Tonga Islands region.	
✓ Sep. 21 (454)	eP eS eL F	20	22	00			(454) ✓ Wi: eP 20h 21m 52s. USCGS: 40½°N 34½°E, H. 20h 16m 53s. Northern Turkey.	
✓ Sep. 24 (455)	eP ePP ePPP eSKS eS eSS eL F	8	35	25			(455) Disturbed by microseisms. Wi: eP 8h 35m 20s; ePP 8h 39.5m. USCGS: 5½°N 127½°E, H. 8h 21m 05s. Near south coast of Mindanao, Philippine Islands.	
✓ Sep. 25 (456)	eS eSS eL F	6	03	51			(456) Disturbed by microseisms. Wi: eP 5h 58m 16s. BCIS: 35°N 37½°W, H. 6h 50m 54s. USCGS: 34°N 38½°W, H. 6h 50m 56s. Near Azores Islands.	
✓ Sep. 25 (457)	eL F	17	25				(457) Disturbed by microseisms. USCGS: Aftershock of (455), H. 16h 36m 37s.	
✓ Sep. 25 (458)	eL F	23	10				(458) Disturbed by microseisms. USCGS: Aftershock of (455), H. 22h 17m 00s.	

lt

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
✓ Sep. 25 (459)	eL F	24 26 24 55				(459) Disturbed by microseisms. USCGS: Aftershock of (455), H. 23h 33m 30s.
✓ Sep. 26 (460)	eL F	19 40 20 10				(460) Disturbed by microseisms. USCGS: Aftershock of (455), H. 18h 46m 41s.
✓ Sep. 27 (461)	ePP eSS eL F	4 27.5 4 43 5 02 6 00				(461) Disturbed by microseisms. USCGS: 1°S 127°E, H. 4h 08m 23s. Molucca Sea.
Sep. 27 (462)						(462) W1: eP 5h 09m 23s. USCGS: 64°N 178°E, H. 4h 58m 52s. Eastern Siberia.
✓ Sep. 28 (463)	eS esS eL F	0 49.5 0 52.5 1 15 1 40				(463) Disturbed by microseisms. USCGS: 30½°N 137½°E, H. 0h 27m 31s, h = about 500 km. Off south coast of Honshu, Japan.
✓ Sep. 28 (464)	1PKP ipPKP 1PP ePPP eSS F	14 38 39 14 41 00 14 42 02 14 45 23 15 00.5 17.5	-			(464) W1: ePKP 14h 38m 40s. USCGS: 20½°S 178°W, H. 14h 20m 00s, h = about 650 km. Fiji Islands.
✓ Sep. 29 (465)						(465) W1: 1PKP 15h 02m 47s. USCGS: 20½°S 178½°W, H. 14h 44m 02s, h = about 600 km. Fiji Islands.
✓ Sep. 29 (466)	eL F	3 25 4 05				(466) USCGS: 64½°S 172½°W, H. 2h 08m 55s. South Pacific Ocean.
✓ Sep. 29 (467)						(467) W1: 1PKP 8h 32m 15s. USCGS: 25°S 178½°E, H. 8h 13m 22s, h = about 600 km. South of Fiji Islands.
✓ Sep. 29 (468)	eL F	18 30 18 50				(468) USCGS: 4°N 126½°E, H. 17h 34m 16s. Off south-east coast of Min- danao, Philippine Islands.
✓ Sep. 30 (469)	e F	21 19 21 30				(469) USCGS: 24½°N 143°E, H. 20h 21m 30s. Vulcano Islands.
✓ Oct. 2 (470)	eP eS eSSS F	12 38 54 12 47 54 12 56 14 06				(470) W1: 1P 12h 39m 06s -. USCGS: foreshock of (472), H. 12h 57m 55s.
✓ Oct. 2 (471)	e F	21 30 22 30				(471) W1: eP 21h 10m 57s. USCGS: 6½°S 69½°E, H. 20h 58m 39s. Chagos Islands.
✓ Oct. 4 (472)	eP eS eL F	5 37 05 5 46 10 5 55 8 50	(+)			(472) Disturbed by microseisms. W1: 1P 5h 37m 12s +. USCGS: 11°N 63°W, H. 5h 26m 09s, h = about 60 km. Near coast of Venezuela.
✓ Oct. 4 (473)	e F	23 55 0 05				(473) BCIS: 53½°N 112°E, H. 23h 18.7m. Mongolia.

Seismic Records at De Bilt

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
✓ Oct. 5 (474)	eS eL F	11 46 20 11 52 12 05				(474) Disturbed by microseisms. W1: eP 11h 41m 54s. USCGS: 34½°N 26½°E, H. 11h 36m 46s. Off south- east coast of Crete.
✓ Oct. 5 (475)	eL F	23 05 23 15				(475) USCGS: 38°N 69½°E, H. 22h 40m 44s. Afghanistan.-Tadzhik border.
✓ Oct. 6 (476)	e F	1 20 1 50				(476) USCGS: Aftershock of (472), H. 0h 54m 05s.
✓ Oct. 6 (477)	eL F	9 15 9 25				(477) BCIS: 74½°N 54°E, H. 8h 58m 12s. Near west coast of Nova Zembla.
✓ Oct. 7 (478)	eL F	14 00 14 40				(478) W1: 1P 13h 31m 24s +. USCGS: 51°N 159°E, H. 13h 19m 45s. Off south-east coast of Kamchatka.
✓ Oct. 8 (479)	eL F	7 10 7 20				(479) BCIS: 39°N 20½°E, H. 7h 00m 45s. Near west coast of Greece.
Oct. 10 (480)						(480) W1: 1P 3h 50m 56s. USCGS: 52½°N 166½°W, H. 3h 39m 11s. Fox Islands, Aleutian Islands.
Oct. 10 (481)						(481) W1: 1PKP 4h 05m 37s. USCGS: 22°S 178½°E, H. 3h 46m 59s, h = about 700 km. South of Fiji Islands.
Oct. 10 (482)						(482) W1: 1P 7h 50m 08s. USCGS: 52°N 174°W, H. 7h 38m 18s. Andreanof Islands, Aleutian Islands.
✓ Oct. 10 (483)	eL F	19 39 19 50				(483) W1: 1P 19h 06m 36s (-). USCGS: 54°N 166°W, H. 18h 53m 59s. Fox Islands, Aleutian Islands.
✓ Oct. 11 (484)	eL F	7 44 7 50				(484) W1: 1P 7h 37m 36s. BCIS: 40°N 27°E, H. 7h 33m.03s. North-western Turkey.
Oct. 12 (485)	eL F	17 43 17 50				(485) USCGS: 59°S 16°W, H. 16h 46m 30s. Sandwich Islands region.
✓ Oct. 12 (486)	eL F	19 58 20 15				(486) USCGS: 8°S 111°E, H. 18h 57m 02s. Near south coast of Java.
✓ Oct. 12 (487)	eL F	23 10 23 25				
✓ Oct. 13 (488)	eP eS eL F	4 30 54 4 40 30 4 56 6 00				(488) W1: eP 4h 30m 49s. BCIS and USCGS: 52½°N 160°E, H. 4h 19m 17s. Off south-east coast of Kamchatka.
✓ Oct. 12 (489)	eSS eL F	21 17.5 21 50 22 50				(489) USCGS: 60°S 151°E, H. 20h 33m 01s. Antarctic Ocean, south-west of Macquarie Island.
✓ Oct. 15 (490)	eL F	4 45 5 05				(490) W1: eP 4h 14m 39s. USCGS: 9°N 84°W, H. 4h 02m 07s. Near south coast of Costa Rica.

lt

Seismic Records at De Bilt

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
Oct. 17 (491)	eL F	14 40 15 00				(491) Disturbed by microseisms. USCGS: Foreshock of (492), H. 14h 29m 18s.
Oct. 17 (492)						(492) W1: eP 14h 42m 44s. USCGS: 47°N 27½°W, H. 14h 37m 36s. North Atlantic Ocean.
Oct. 17 (493)						(493) W1: eP 17h 41.5m. USCGS: Aftershock of (492).
Oct. 19 (494)	1P ePP 1S eSS eL F	18 41 37 18 44 58 18 52 10 18 58 05 19 08 21 00	+			(494) W1: eP 18h 41m 32s +; 1 18h 41m 42s. USCGS: 23½°N 122°E, H. 18h 28m 50s. Near east coast of Formosa.
Oct. 19 (495)	1P eS 1E eL F	21 53 46 21 03 20 22 03 28 22 14 22 50	+			(495) W1: 1P 21h 53m 40s. USCGS: 44½°N 146°E, H. 21h 41m 59s, h = about 150 km. Off north-east coast of Hokkaido, Japan.
Oct. 20 (496)	eP eS eL F	12 14 07 12 21 56 12 27.5 13 20	(+)			(496) W1: eP 12h 14m 20s: USCGS: 11½°N 42°W, H. 12h 04m 22s. Atlantic Ocean.
Oct. 22 (497)	eL F	21 27 21 40				(497) W1: 1P 20h 56m 40s. USCGS: 43½°N 146°E, H. 20h 44m 38s. Near north-east coast of Hokkaido, Japan.
Oct. 23 (498)	1P eS eL F	6 08 40 6 18.5 6 30 7 45	+			(498) W1: 1P 6h 08m 37s +. USCGS: 5½°N 169½°W, H. 5h 56m 52s. Fox Islands, Aleutian Islands.
Oct. 24 (499)	eL F	1 35 2 05				(499) USCGS: 14½°S 168°E, H. 1h 17m 37s. New Hebrides Islands.
Oct. 24 (500)	eL eScP F	2 44 2 46.2 2 53				(500) Disturbed by microseisms. W1: eP 2h 37.9m. BCIS: 40°3 N 30°0 E, H. 2h 33m 12s. USCGS: 40°N 29½°E, H. 2h 33m 13s. North- western Turkey.
Oct. 24 (501)						(501) W1: 1PKP 9h 26m 19s. USCGS: 20½°S 179°W, H. 9h 07m 30s, h = about 550 km. Fiji Islands.
Oct. 24 (502)	eL F	21 05 21 15				(502) USCGS: 29°S 69°W, H. 20h 07m 15s. La Rioja Province, Argentina.
Oct. 24 (503)	e F	22 15 23 00				(503) 25°N 109½°W, H. 21h 44m 28s. Gulf of California.
Oct. 25 (504)	eL F	2 29 2 40				(504) USCGS: 21½°N 121½°E, H. 1h 42m 52s. Formosa foreshock.
Oct. 25 (505)	eL eF	7 08 7 20				(505) USCGS: 21½°N 121½°E, H. 6h 19m 06s. Off coast of Formosa.

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
Oct. 25 (506)	eP eS ePS eSS eL F	10 15 15 10 24 50 10 25 18 10 29 40 10 40 12 00				(506) W1: eP 10h 15m 10s. USCGS: 50½°N 156½°E, H. 10h 03m 32s. Near south coast of Kamchatka.
Oct. 26 (507)						(507) W1: 1PKP 8h 44m 49s. USCGS: 20½°S 178°W, H. 8h 26m 12s, h = about 600 km. Fiji Islands.
Oct. 26 (508)	1PP ePS eSSS eL F	14 35 25 14 44.6 14 56.5 15 07 16 00				(508) USCGS: 2°S 116°E, H. 14h 16m 57s. Borneo.
Oct. 27 (509)	eP eL F	22 43 41 23.0 23 30	+			(509) Disturbed by microseisms. W1: 1P 22h 43m 37s; 1 22h 44m 13s. USCGS: 56°N 161°E, H. 22h 32m 25s. Kamchatka.
Oct. 30 (510)	eS eL F	1 52 19 1 54 2 20				(510) Disturbed by microseisms. W1: eP 1h 48.1m. BCIS: 35°3 N 27°2 E, H. 1h 43m 01s. USCGS: 36°N 27½°E, H. 1h 43m 03s. Dodecanese Islands.
Oct. 30 (511)	eS eL F	7 39.6 7 41 8 10				(511) Disturbed by microseisms. W1: eP 7h 35.5m. BCIS: 35°3 N 27°8 E, H. 7h 30m 18s. USCGS: 36°N 27½°E, H. 7h 30m 20s. Dodecanese Islands.
Oct. 31 (512)	eP eS eL F	10 20.5 10 30.7 10 47 12 00				(512) Disturbed by microseisms. W1: eP 10h 20m 33s. USCGS: 6½°N 83°W, H. 10h 07m 54s. Off coast of Panama.
Nov. 2 (513)	eL F	19 40 20 10				(513) Disturbed by microseisms. W1: eP 18h 49m 54s. USCGS: 13°S 166½°E, H. 18h 30m 24s. New Hebrides Islands.
Nov. 6 (514)	eL F	13 57 14 07				(514) Disturbed by microseisms. USCGS: 45°N 149½°E, H. 13h 12m 53s. Kurile Islands.
Nov. 7 (515)	eL F	7 48 8 05				(515) Disturbed by microseisms. USCGS: 57½°S 143½°W, H. 6h 21m 56s. South Pacific.
Nov. 9 (516)	e F	24 06 24 10				(516) Disturbed by microseisms. BCIS: 38°4 N 22°1 E, H. 23h 55m 52s. USCGS: 38½°N 22°E, H. 23h 55m 50s. Greece.
Nov. 10 (517)	eL F	3 40 4 10				(517) Disturbed by microseisms. USCGS: 7°S 155½°E, H. 2h 36m 21s. Solomon Islands.
Nov. 10 (518)	eL F	6 50 7 10				(518) Disturbed by microseisms. USCGS: 6½°S 147°E, H. 5h 48m 57s. Near north-east coast of New Guinea.
Nov. 10 (519)						(519) W1: eP 10h 33.3m. USCGS: 8°N 74½°W, H. 10h 21m 14s. Northern Colombia.

lit

Seismic Records at De Bilt

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
Nov. 10 (520)	eL F	20.0 21.0				(520) Disturbed by microseisms. USCGS: 34°N 139½°E, H. 19h 20m 05s. Near east coast of Honshu, Japan.
Nov. 12 (521)						(521) W1: 1PKP 0h 39m 56s. USCGS: 24°S 177°W, H. 0h 20m 03s. Tonga Islands region.
Nov. 12 (522)	eL F	2 44 2 55				(522) Disturbed by microseisms. 6°S 149½°E, H. 1h 31m 40s. New Britain.
Nov. 12 (523)						(523) W1: 1PKP 17h 21m 02s. BCIS: 22°S 178°W, H. 17h 02m 15s, h = about 600 km. Fiji Islands region.
Nov. 13 (524)	1PKP 1PP eSKSP eSS eL F	17 42 44 17 47 05 17 57 23 18 07 18 38 20 30	+	+		(524) Disturbed by microseisms. W1: 1PKP 17h 42m 42s. USCGS: 33°S 179°W, H. 17h 22m 41s. Kermadec Islands region.
Nov. 14 (525)	eL F	14 26 14 31				(525) Disturbed by microseisms. BCIS: 39°8' N 19°7' E, H. 14h 16m 37s. Near north-west coast of Corfu.
Nov. 15 (526)	e F	8 14 8 30				(526) Disturbed by microseisms. USCGS: 8½°N 124°E, H. 7h 52m 25s. Mindanao, Philippine Islands.
Nov. 15 (527)	1P 1S eL F	16 42 07 16 51 40 17 08 18 00	+			(527) Disturbed by microseisms. W1: eP 16h 42m 03s. USCGS: 51½°N 158°E, H. 16h 30m 29s. Near east coast of Kamchatka.
Nov. 16 (528)	eL F	2 25 3 00				(528) Disturbed by microseisms. USCGS: 51½°N 177°W, H. 1h 48m 48s. Andreanof Islands, Aleutian Islands.
Nov. 17 (529)						(529) W1: 1P 6h 08m 50s +. USCGS: 49°N 148½°E, H. 5h 57m 48s, h = about 350 km. Sea of Othotsk.
Nov. 17 (530)	eL F	16 39 17 10				(530) Disturbed by microseisms.
Nov. 18 (531)						(531) W1: 1P 10h 23m 52s. USCGS: 51½°N 179½°W, H. 10h 12m 00s. Andreanof Islands, Aleutian Islands.
Nov. 18 (532)						(532) W1: 1P 15h 24m 57s. USCGS: 44°N 148°E, H. 15h 12m 53s. Kurile Islands.
Nov. 19 (533)						(533) W1: 1P 16h 25m 10s. USCGS: 47°N 152½°E, H. 16h 13m 29s, h = about 100 km. Kurile Islands.
Nov. 20 (534)	1P 1z eS eL F	12 52 03 12 52 05 13 01 41 13 15 14 30	(+)	-		(543) W1: eP 12h 52m 02s; 1 12h 52m 03s -. USCGS: 54°N 165°W, H. 12h 40m 23s. Unimak Island, Aleutian Islands.

Date 1957	Phase	Time h m s	Direction	Period s	Amplitude μ	Remarks
Nov. 23 (535)	e F	1 45 2 00				(535) Disturbed by microseisms. USCGS: 53°N 167½°W, H. 0h 58m 36s. Fox Islands, Aleutian Islands.
Nov. 25 (536)	eL F	19 25 20 00				(536) Disturbed by microseisms. USCGS: 44°N 130°W, H. 18h 55m 12s. Off coast of Oregon, U.S.A.
Nov. 25 (537)	eL F	21 05 21 30				(537) Disturbed by microseisms. USCGS: 44½°S 129½°W, H. 20h 32m 25s. Off coast of Oregon, U.S.A.
Nov. 25 (538)	(eP ePP ePPP ePS eL F	22 49.1 22 53 28 22 55 25 23 02 34 23 25 24 20				(538) Disturbed by microseisms. USCGS: 1½°S 116½°E, H. 22h 35m 00s. Near east coast of Borneo.
Nov. 26 (539)	1PP ePS eL F	5 28 32 5 37.5 6 00 6 40				(539) Disturbed by microseisms. USCGS: 2°S 116°E, H. 5h 10m 00s. Near east coast of Borneo.
Nov. 26 (540)	eL F	8 23 8 33				(540) Disturbed by microseisms. BCIS: H. 8h 15m 22s. USCGS: 40°N 23°E, H. 8h 15m 27s. Near east coast of Greece.
Nov. 26 (541)	e eL F	11 57 11 59.5 13 15				(541) Disturbed by microseisms. Aftershock of (540). BCIS: H. 11h 50m 02s. USCGS: H. 11h 50m 07s.
Nov. 27 (542)	eL F	3 15.5 3 30				(542) Disturbed by microseisms. BCIS: 39½°N 22°8' E, H. 3h 08m 05s. USCGS: 39½°N 22½°E, H. 3h 08m 06s. East coast of Greece.
Nov. 28 (543)	ePKP ePP eSS eL F	21 09 40 21 12 38 21 36.5 22 05 23 00				(543) Disturbed by microseisms. USCGS: 15°S 168½°E, H. 20h 50m 10s. New Hebrides Islands.
Nov. 29 (544)	1P 1pP 1pPP eSKS 1H eH ISS F	22 32 54 22 33 50 22 37 37 22 43 06 22 43 15 22 48.6 22 50 37 2 30	+	+		(544) Disturbed by microseisms. W1: eP 22h 32m 55s; 1 22h 32m 59s; 1pP 22h 33m 53s. USCGS: 21°S 66°W, H. 22h 19m 38s, h = about 200 km. Southern Bolivia.
Nov. 30 (545)	eP eS eL F	22 06 08 22 16.1 22 35 23 30				(545) W1: 1P 22h 06m 06s. USCGS: 47°N 154°E, H. 21h 54m 10s. Kurile Islands.
Dec. 1 (546)	eP	1 12.4				(546) Disturbed by microseisms. W1: eP 1h 12m 20s. USCGS: 47½°N 153½°E, H. 1h 00m 26s. Kurile Islands.
Dec. 1 (547)	eP eS eL F	1 21.0 1 31.5 1 41 2 30				(547) Disturbed by microseisms. W1: eP 1h 20m 25s. USCGS: 47½°N 154°E, H. 1h 09m 00s. Kurile Islands.

.lt

Seismic Records at De Bilt

Date 1957	Phase	Time h m s	Director	Period s	Amplitude μ	Remarks
✓ Dec. 1 (548)						(548) W1: eP 10h 12m 27s. USCGS: 47°N 154°E, H. 10h 00m 05s. Kurile Island.
✓ Dec. 2 (549)	e F	12 58 13 05				(549) USCGS: 37°N 2°E, H. 12h 48m 54s. Near coast of Algeria.
✓ Dec. 4 (550)	iP iPP iS F	3 47 43 3 50 00 3 51 28 3 56 00 9 00	+			(550) W1: iP 3h 47m 35s. BCIS: 45½°N 99°4 E, H. 3h 37m 44s. USCGS: 45½°N 99½°E, H. 3h 37m 45s. Outer Mongolia.
✓ Dec. 4 (551)	e F	11 52 12 05				(551) Disturbed by microseisms. USCGS: Aftershock of (550), H. 11h 19m 30s.
✓ Dec. 4 (552)	eL F	13 49 14 20				(552) Disturbed by microseisms. W1: eP 13h 30m 08s. USCGS: Aftershock of (550), H. 13h 20m 08s.
✓ Dec. 4 (553)	e eE F	20 24.0 20 25.0 20 31.0				(553) BCIS: Near shock.
Dec. 5 (554)						(554) W1: ePKP 10h 53m 04s. BCIS: H. 10h 33.3m. South of Tonga Islands.
✓ Dec. 5 (555)	eL F	10 08 10 20				(555) Disturbed by microseisms. BCIS: 35°6 N 27°9 E, H. 14h 55m 25s. Off south coast of Rhodos Island.
Dec. 5 (556)						(556) W1: eP 14h 09m 05s. USCGS: 72°N 6°E, H. 14h 04m 30s. Jan Mayen Island region.
✓ Dec. 5 (557)	eL F	18 40 18 50				(557) Disturbed by microseisms. USCGS: Aftershock of (550), H. 18h 09m 32s.
✓ Dec. 6 (558)						(558) W1: iP 4h 01m 28s. USCGS: 45°N 150½°E, H. 3h 49m 33s, h = about 60 km. Kurile Islands.
✓ Dec. 6 (559)	eL F	9 20 9 40				(559) Disturbed by microseisms. W1: eP 8h 48m 21s. USCGS: 44½°N 150½°E, H. 8h 36m 21s. Kurile Islands.
Dec. 6 (560)						(560) W1: iPKP 21h 33m 09s. BCIS: H. 21h 13m 15s. Tonga Islands.
✓ Dec. 9 (561)	eL F	22 40 22 55				(561) Disturbed by microseisms. W1: eP 22h 17m 39s. USCGS: 65½°N 133°W, H. 22h 07m 43s. Yukon, U.S.A.
✓ Dec. 10 (562)	eL F	15 30 17 00				(562) Disturbed by microseisms. USCGS: 6°S 154½°E, H. 14h 35m 57s. Solomon Islands.
✓ Dec. 13 (563)	iP	1 44 02	+			(563) W1: iP 1h 44m 07s +. USCGS: 7°N 76°W, H. 1h 31m 57s, h = about 100 km. Colombia.

Date 1957	Phase	Time h m s	Director	Period s	Amplitude μ	Remarks
✓ Dec. 13 (564)	iP iPP eS eL F	1 51 57 1 53 14 1 57 32 2 00 17 3 30				(564) Disturbed by microseisms. W1: iP 1h 51m 51s; iPP 1h 53m 07s. BCIS: 34°6 N 47°8 E, H. 1h 44m 59s. USCGS: 34½°N 48°E, H. 1h 44m 59s. Iran.
✓ Dec. 13 (565)	eL F	21 00 21 30				(565) Disturbed by microseisms. USCGS: 52½°N 170°W, H. 20h 26m 22s. Fox Islands, Aleutian Islands.
✓ Dec. 16 (566)	eL F	18 00 18 30				(566) Disturbed by microseisms. W1: eP 17h 39m 14s. USCGS: 50°N 127°E, H. 17h 27m 47s. Vancouver Island.
✓ Dec. 17 (567)	eP eS eL F	5 21.7 5 31.3 5 46 8 20				(567) Disturbed by microseisms. W1: eP 5h 21m 39s; e 5h 21m 51s. USCGS: 53½°N 162°E, H. 5h 10m 11s. Near east coast of Kamchatka.
✓ Dec. 17 (568)	ePKP iz iPP iSKP iE eE eSS eL F	14 09 20 14 09 32 14 12 14 14 12 47 14 18 34 14 25.5 14 31.2 14 54 17 30				(568) Disturbed by microseisms. W1: ePKP 14h 09m 22s; i 14h 09m 33s. USCGS: 12½°S 166°E, H. 13h 50m 12s, h = about 100 km. Santa Cruz Island.
✓ Dec. 23 (569)	iS eL F	12 46 09 12 49 13 30				(569) Disturbed by microseisms. W1: eP 12h 41.0m. BCIS: 35½°N 35°W, H. 12h 34m 06s. USCGS: 35°N 36½°W, H. 12h 34m 03s. Atlantic Ocean.
Dec. 25 (570)						(570) W1: iP 2h 20m 40s; i 2h 21m 26s. USCGS: 53½°N 162°E, H. 2h 09m 20s. Near east coast of Kamchatka.
✓ Dec. 25 (571)	e F	16 50 17 20				(571) Disturbed by microseisms. USCGS: 10½°N 62½°W, H. 16h 26m 01s. Venezuela.
Dec. 26 (572)						(572) W1: iPKP 12h 29m 13s. USCGS: 33½°S 178°W, H. 12h 09m 11s. Kermadec Islands.
✓ Dec. 27 (573)	eL F	7 58 8 05				(573) Disturbed by microseisms. W1: e 7h 52.0s. BCIS: North Atlantic Ocean, south-west of Iceland.
✓ Dec. 28 (574)	eL F	15 17 15 50				(574) Disturbed by microseisms. W1: eP 14h 50.0m. USCGS: 18°S 64½°W, H. 14h 36m 40s. Bolivia.
✓ Dec. 30 (575)	eL F	14 48 15 00				(575) Disturbed by microseisms. USCGS: 19°N 120½°E, H. 13h 58m 26s. Near north coast of Luzon, Philippine Islands.
✓ Dec. 31 (576)	eP eS eL F	10 26 32 10 30 42 10 32 11 00				(576) Disturbed by microseisms. W1: iP 10h 26m 36s. BCIS: 57½°N 32°W, H. 10h 21m 34s. USCGS: 58°N 32°W, H. 10h 21m 35s. North Atlantic Ocean.



De Bilt

Date 1957	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s		s	μ	
✓ Dec. 31 (577)	eL F	13	19					(577) Disturbed by microseisms. USCGS: 25°N 46°W, H. 13h 02m 20s. North Atlantic Ocean.
✓ Dec. 31 (578)	ePKP ₁ ePKP ₂ ePP eSS eL F	14	48	20				(578) Disturbed by microseisms. -W1: ePKP 14h 49m 18s. USCGS: 45°S 165½°E, H. 14h 28m 15s. Off coast of South Island, New Zealand.
		14	49	22				
		14	53	12				
		15	14					
		15	50					
		17	00					