

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

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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 headassistant.

The Director in Chief
of the Royal Netherlands
Meteorological Institute,

Ir. C.J. Warners.

De Bilt, June 1958.

INTRODUCTION

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 T_1 , the reduced pendulum length l , the distance A_1 between the mirror of the galvanometer and the rough values for the natural period T of the undamped pendulum, of the damping constant μ and of the multiplying factor k for the year 1953.

	NS comp.	EW comp.	Z comp.
Period of galvanometer T_1	24.43 sec	24.96 sec	12.0 sec
Reduced length of pendulum l	123 mm	123 mm	406 mm
Distance A_1	1380 mm	1380 mm	1380 mm
Period of pendulum T	25 sec	25 sec	12 sec
Damping constant μ	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 and of the static magnification V for the year 1953 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 1953 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 $6^{\circ}40'.1$ N.

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 these 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 waves 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 the 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)

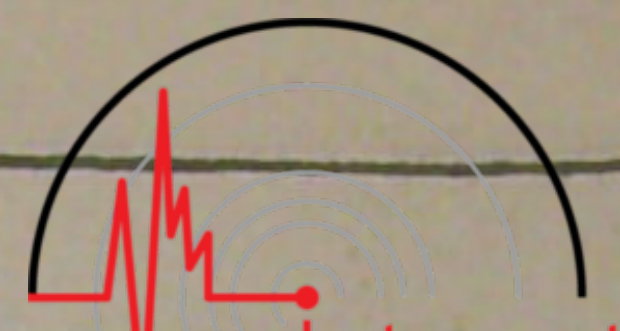
The data given in the column "amplitude" are the maximal amplitudes measured from the medium line. The amplitudes have been calculated by means of the formula:

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

In this formula $A l$ 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 - $\frac{1}{2}$ mm	0 - $1\frac{1}{4}$
1	$\frac{1}{2}$ - 2 "	$1\frac{1}{4}$ - 5 "
2	2 - 4 "	5 - 10 "
3	> 4 "	> 10 "

Seismic Records at De Bilt



CHARACTER OF THE MICROSEISMIC MOVEMENT

Centre

Date 1953	Jan.	Febr.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.									
1	1	3	2	1	1	1	0	0	0	0	1	2	1	2	3	2					
2	1	2	1	2	1	2	1	0	0	1	0	0	1	2	2	1	2	3	2		
3	1	2	1	2	1	2	1	0	1	0	0	0	2	1	1	3	2	2	1		
4	1	1	2	1	1	0	0	0	0	1	1	1	1	2	1	1					
5	1	2	1	1	1	0	0	1	0	0	1	1	0	1	1	2	1	1			
6	1	1	0	1	1	0	0	1	0	0	1	0	0	1	0	1	1		1		
7	1	0	1	0	1	0	0	0	1	0	1	0	1	0	1	0	1	2	1	2	1
8	1	0	0	1	1	0	0	0	1	0	1	0	0	0	2	1	1				
9	0	1	1	3	1	0	1	0	0	1	0	0	1	0	1	1	0	1	1	0	1
10	1	2	3	2	1	0	1	1	0	0	0	1	1	1	0	1	1	0	1	1	2
11	2	1	2	1	1	1	2	0	0	0	1	1	1	1	1	1	2	1			
12	1	1	2	1	1	2	2	1	0	1	0	0	1	0	1	1	1	2	1		
13	1	1	0	2	1	1	0	1	0	0	1	0	1	0	1	0	2	1	1	2	
14	1	0	1	1	1	1	0	1	0	0	0	0	0	0	1	1	2				
15	1	0	1	1	1	1	2	1	0	0	1	0	0	0	1	1	2	2	3		
16	1	1	1	1	1	1	0	0	0	1	0	1	2	2	3	3	2				
17	1	2	1	1	1	1	0	0	0	0	1	0	2	1	3	2	1				
18	2	1	1	0	1	0	1	0	0	0	0	0	1	3	2	1					
19	2	1	1	0	0	0	0	1	0	1	0	0	0	1	2	1	1				
20	1	1	2	0	0	0	1	0	1	0	0	0	1	1	1	1					
21	1	2	0	1	0	0	1	0	0	0	1	1	2	1	0	1	1	2	1	2	1
22	1	2	1	1	0	0	0	0	1	0	1	0	1	2	3	2	1	2	1	1	2
23	1	0	1	2	1	0	0	1	0	0	0	1	0	1	2	2	1	1	2	3	
24	0	1	2	1	0	1	0	1	0	1	0	2	1	1	0	1	1	3			
25	1	2	1	1	1	0	1	0	0	1	1	0	0	1	1	3	2				
26	1	2	2	1	2	1	0	0	1	0	0	0	1	1	2	1	2	2	1		
27	2	2	1	2	1	0	0	0	1	0	0	1	2	2	2	1	2				
28	2	1	2	3	2	1	0	1	0	0	1	0	0	2	2	1	2	2	1		
29	2	2	1	1	0	0	0	0	0	1	2	1	2	1	2	1					
30	2	1	2	2	1	1	0	1	0	0	0	1	0	1	2	1	2	2	3	1	2
31	2	1	0	1	0	0	1	0	0	1	0	2	1	2	1	2	1				

Seismic Records at De Bilt



Date 1953	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s				
Jan. 2 (1)	eL F	03 53 04 15				(1) W1: 1P 3h 31m 20s-. BCIS: 54½°N 162°0E, H. 3h 09m 53s. Off east coast of Kamchatka.
Jan. 3 (2)	eL F	18 45 19 25				(2) BCIS: 3°S 146°E, H. 17h 46.6m. Off northeast coast of New Guinea.
Jan. 4 (3)	eL F	07 15 07 45				(3) USCGS: 48°N 156°E, H. 6h 43m 15s. Kurile Islands.
Jan. 4 (4)	eL F	12 40 13 00				(4) USCGS: H. 11h 16m 24s. About 200 miles northeast of Fiji Islands.
Jan. 5 (5)	eL F	05 40 06 20				(5) W1: eP 5h 04.3m. USCGS: Komandorski Islands, foreshock.
Jan. 5 (6)	1P 1(P P) 1S 1PS 1SS 1E eL	08 00 02 08 03 08 08 09 35 08 10 22 08 14 21 08 19 24 08 24.5	-			(6) F in next shock. W1: 1P 7h 59m 57s-; 1 8h 00m 01s+; 8h 00m 52s-. USCGS: 54°N 170°E, H. 7h 48m 17s. Komandorski Islands region. W1: eP 8h 35m 17s. USCGS: aftershock, H. 8h 23m 46s.
Jan. 5 (7)	1P 1PP 1S eSS eL F	10 18 19 10 21 09 10 28 00 10 33.2 10 45 13 30	+			(7) W1: 1P 18h 18m 11s+. USCGS: 49°N 156°E, H. 10h 06m 25s. Kurile Islands.
Jan. 5 (8)						(8) W1: 1P 10h 28m 10s. USCGS: aftershock of (7), H. 10h 16m 25s.
Jan. 7 (9)	eL F	00 09 00 30				(9) Disturbed by microseisms. W1: e 0h 09m. BCIS: 41°5N 20°0E, H. 0h 01m 27s. Albania, foreshock.
Jan. 7 (10)	eP eL F	01 22.7 01 26.5 01 50				(10) Disturbed by microseisms. W1: eP 1h 22.7m. BCIS: 41°5N 20°0E, H. 1h 18m 57s. USCGS: 42°N 20°E, H. 1h 18m 56s. Albania.
Jan. 7 (11)	eP eS eL F	06 00.6 06 10.3 06 20 07 15				(11) Disturbed by microseisms. W1: eP 6h 00m 25s; e 6h 00m 36s. USCGS: 53½°N 161°E, H. 5h 48m 54s. Off east coast of Kamchatka.
Jan. 7 (12)	eP eL F	12 13.1 12 40 13 05				(12) Disturbed by microseisms. W1: eP 12h 13.0m. USCGS: 9½°N 83°W, H. 12h 00m 30s. Costa Rica.
Jan. 7 (13)	ePP eL F	14 29 09 15 10 16 20				(13) Disturbed by microseisms. W1: ePKP 14h 27m 20s; 1 14h 27m 28s-. USCGS: 5½°S 150½°E, H. 14h 08m 20s. New Britain.
Jan. 9 (14)	e F	17 12 17 40				(14) Disturbed by microseisms. BCIS: Indian Ocean.
Jan. 10 (15)	e F	23 40 23 43				(15) Disturbed by microseisms. W1: eP 23h 33.6m. BCIS: 37°9N 25°6E, H. 23h 29.0m. Aegean Sea.
Jan. 11 (16)	1P eS eN eL F	23 03 31 23 11 39 23 11 54 23 19.5 24 30	+			(16) Disturbed by microseisms. W1: 1P 23h 03m 27s+. BCIS: 65½°N 133½°W, H. 22h 53m 30s. USCGS: 65°N 133°W, H. 22h 53m 30s. Yukon, Canada

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Date 1953	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
Jan. 12 (17)								(17) W1: eP 5h 48m 23s; e 5h 48m 36s; 5h 48m 56s. USCGS: 53°N 161½°E, H. 5h 36m 53s. Near east coast of Kamchatka.
Jan. 12 (18)	iP ipP eS ePPS eSSS eL F	17 17 17 17 17 17 19	35 35 44 46 54.7 57 20	24 46 52 08	+			(18) Disturbed by microseisms. W1: eP 17h 35m 16s; epP 17h 35m 39s. USCGS: 49½°N 156°E, H. 17h 23m 39s, h = about 60 km. Kurile Islands.
Jan. 13 (19)	eL F	11 11	20 30					(19) Disturbed by microseisms. BCIS: Tunisia.
Jan. 14 (20)								(20) W1: 1P 13h 07m 47s+. USCGS: 52½°N 159½°E, H. 12h 56m 17s. Near east coast of Kamchatka.
Jan. 15 (21)								(21) W1: 1P 8h 22m 42s+. USCGS: 53°N 159°E, H. 8h 11m 09s. Near east coast of Kamchatka.
Jan. 15 (22)	eL F	12 13	55 35					(22) Disturbed by microseisms. USCGS: 19°N 156°W, H. 12h 04m 33s. Near southwest coast of Hawaii.
Jan. 15 (23)	eL F	20 20	30 55					(23) Disturbed by microseisms. BCIS: 31.5°N 58°0E, H. 20h 06m 00s. Iran.
Jan. 17 (24)								(24) W1: 1P 17h 41m 26s; epP 17h 42m 00s. USCGS: 50½°N 155°E, H. 17h 30m 03s, h = about 150 km. Kurile Islands.
Jan. 18 (25)								(25) W1: 1P 18h 19m 35s+. USCGS: 53½°N 160½°E, H. 18h 08m 10s. Near east coast of Kamchatka.
Jan. 19 (26)	eS eL F	05 05 06	19.5 35 20					(26) Disturbed by microseisms. W1: 1P 5h 09m 30s-. USCGS: 42°N 143°E, H. 4h 57m 22s. C.M.O. 41°6N 143°8E, H. 4h 57m 29s, h = about 40 km. Near southeast coast of Hokkaido, Japan.
Jan. 20 (27)								(27) W1: 1PKF 2h 55m 59s+. USCGS: 19½°S 169°E, H. 2h 36m 22s. Loyalty Islands.
Jan. 20 (28)	eS eL F	17 18 19	59.5 20 00					(28) Disturbed by microseisms. W1: eP 17h 47m 23s. USCGS: 1½°N 126°E, H. 17h 33m 06s. Molucca Passage.
Jan. 21 (29)	eS eL F	02 02 03	04 17 15	22				(29) Disturbed by microseisms. W1: eP 1h 54m 35s. USCGS: 50°N 156°E, H. 1h 43m 00s, h = about 60 km. BCIS: H. 1h 43m 07s. Kurile Islands.
Jan. 21 (30)								(30) W1: 1P 9h 38m 44s. USCGS: 52½°N 159°E, H. 9h 27m 12s. Near southeast coast of Kamchatka.
Jan. 23 (31)								(31) W1: 1PKF 9h 47m 28s-. USCGS: 17½°S 177½°E, H. 9h 27m 40s. Fiji Islands.
Jan. 24 (32)								(32) W1 1P 22h 48m 38s-; e 22h 48m 51s. USCGS: 55°N 158°E, H. 22h 37m 20s. Central Kamchatka.

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Date 1953	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
Jan. 25 (33)	e eL F	20	15					(33) Disturbed by microseisms. W1: eP 19h 59m 10s. USCGS: 19°N 73½°W, H. 19h 47m 58s. Off west coast of Haiti.
Jan. 26 (34)								(34) W1: 1P 5h 14m 08s+. USCGS: 52½°N 159°E, H. 5h 02m 35s. Near south coast of Kamchatka.
Jan. 27 (35)	eL F	03	45					(35) Disturbed by microseisms. W1: 1P 3h 24m 30s(-). USCGS: 52°N 159½°E, H. 3h 12m 55s. Off east coast of Kamchatka.
Jan. 27 (36)								(36) W1: 1PKP 3h 44m 07s. USCGS: 4½°S 153°E, H. 3h 25m 02s. New Britain region.
Jan. 27 (37)								(37) W1: 1P 4h 18m 03s (-). USCGS: 52°N 160°E, H. 4h 06m 24s. Off southeast coast of Kamchatka.
Jan. 30 (38)								(38) W1: 1P 15h 42m 12s+. USCGS: 52°N 158½°E, H. 15h 30m 40s. Near southeast coast of Kamchatka.
Jan. 30 (39)	1PKP 1PP eSS eL F	22	06	11				(39) W1: ePKP 22h 06m 08s; e 22h 09m 39s. USCGS: 12°S 166½°E, H. 21h 46m 50s, h = about 100 km. Santa Cruz Islands.
Feb. 2 (40)								(40) W1: 1P 9h 41m 44s. USCGS: 49°N 156°E, H. 9h 30m 00s. Kurile Islands.
Feb. 4 (41)	1P eS eL F	10	58	17				(41) Disturbed by microseisms. W1: 1P 10h 58m 29s; 1 10h 58m 54s. USCGS: 37½°N 19½°W, H. 10h 53m 07s. North Atlantic Ocean.
Feb. 5 (42)	eS eL F	22	50	36				(42) Disturbed by microseisms. W1: eP 22h 46m 52s. BCIS: 35½°N 22½°W, H. 22h 42m 05s. Off west coast of Crete.
Feb. 6 (43)	eL F	06	13					(43) W1: eP 5h 45m 00s. USCGS: 51°N 159°E, H. 5h 33m 22s. Near southeast coast of Kamchatka.
Feb. 6 (44)	1P 1PcP ePP eS eScS ePS eL F	13	25	10	+			(44) W1: 1P 13h 25m 03.5s +. USCGS: 42½°N 143½°E, H. 13h 12m 59s. CMO: 42°N 144°E, H. 13h 13m 03s, h = 80km. Near southeast coast of Hokkaido, Japan.
Feb. 7 (45)	1P ePP eS eE eSS eL F	18	35	03				(45) W1: 1P 18h 34m 59s (+). USCGS: 49°N 156°E, H. 18h 23m 12s. Kurile Islands.
Feb. 7 (46)	1P eS ePcP eL F	22	36	04	+			(46) W1: 1P 22h 36m 04s (+). BCIS: 35°N 24½°E, H. 22h 31m 05s. USCGS: 35½°N 24½°E, H. 22h 31m 08s. Near south coast of Crete.

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		h	m	s				
Feb. 9 (47)	eL F	15	30					(47) Disturbed by microseisms.
		16	00					
Feb. 11 (48)	eL F	23	49					(48) Disturbed by microseisms.
		24	00					BCIS: H. 23h 22.3m. Pamir region.
Feb. 12 (49)	1P 1(PP) eS 1ScP 1SS eL F	08	23	02	-	8	9	(49) Disturbed by microseisms.
		08	24	29				W1: 1P 8h 22m 51s-; 1(PP) 8h 24m 18s;
		08	28	54		12	25	1 8h 24m 43s. BCIS: 36½°N 54½°E, H.
		08	29	01				8h 15m 35s. USCGS: 35°N 54½°E, H.
		08	31	39				8h 15m 29s. Northern Iran.
		08	33.4					
		10	15					
Feb. 12 (50)								(50) W1: eP 8h 35m 17s; 1(PP) 8h 36m 15s; BCIS: aftershock of (49), H. 8h 27m 27s.
Feb. 13 (51)	eL F	22	32					(51) BCIS: 42°N 25°W, H. 22h 20.4m. North Atlantic Ocean.
		22	50					
Feb. 14 (52)	eP ePP eS eSS F	08	48	07				(52) W1: eP 8h 48m 07s. BCIS: 35½°N 26½°E, H. 8h 43m 13s, h = about 100 km. USCGS: H. 8h 43m 10s. Dodecanese Islands.
		08	48	41				
		08	52	09				
		08	52	52				
		09	10					
Feb. 14 (53)	ePP eSKS ePPS eSS eL F	22	06	13				(53) W1: ePP 22h 06m 05s. USCGS: 18½°N 146°E, H. 21h 48m 12s, h = about 60 km. Marianas Islands.
		22	12	35				
		22	15	43				
		22	20.5					
		22	35					
		23	30					
Feb. 14 (54)								(54) W1: 1P 22h 22m 52s-. USCGS: 1½°S 77½°W, H. 22h 10m 20s, h = about 200 km. Central Ecuador.
Feb. 15 (55)	eL F	22	28					(55) Lisboa: 38°8'N 28°9'W, H. 22h 16m 30s. North of Fayal Island, Azores.
		22	40					
Feb. 16 (56)								(56) W1: eP 0h 19m 00s. USCGS: 42½°N 143°E, H. 0h 06m 58s. Near south coast of Hokkaido, Japan.
Feb. 16 (57)	eL F	01	35					(57) W1: 1P 1h 12m 00s. USCGS: 29½°N 81°E, H. 1h 02m 02s. Western Nepal.
		01	42					
Feb. 16 (58)	eL F	10	50					(58) W1: 1P 10h 22m 55s+. USCGS: 8½°N 83°W, H. 10h 10m 22s. Near coast of Costa Rica.
		11	00					
Feb. 19 (59)	ePKP1 1PKP2 ePP2 F	13	25.5					(59) Disturbed by microseisms. W1: 1PKP1 13h 25m 32s-; 1 13h 25m 43s; 1PKP2 13h 26m 02s; 1 13h 26m 15s. USCGS: 28°S 179°W, H. 13h 05m 42s. Kermadec Islands region.
		13	26	07				
		13	29	32				
		13	45					
Feb. 19 (60)	1P 1pP ez eS 1PS eSS eSSS eL F	15	27	20				(60) W1: 1P 15h 27m 30s+; 1 15h 27m 34s-; 1 15h 29m 35s. BCIS: 0°0' 17°9'W, H. 15h 17m 43s. USCGS: 0° 18°W, H. 15h 17m 40s. Mid-Atlantic Ocean.
		15	27	47				
		15	28	03				
		15	34	57				
		15	35	09				
		15	35	36				
		15	40.7					
		15	42					
		17	30					

Seismic Records at De Bilt

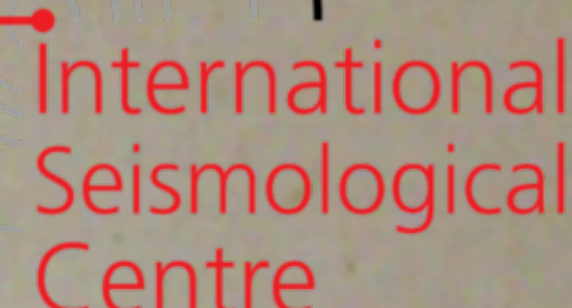


Date 1953	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
Feb. 22 (61)	1Pn eSn 1z 1z F	20	17	06 51 13 34 30		3		(61) Disturbed by microseisms. W1: 1Pn 20h 17m 07s+; 1 20h 17m 16s. BCIS: 50° 9'N 10° 0'E, H. 20h 16m 21s. USCGS: 51° N 10° E, H. 20h 16m 19s. Stuttgart: 50° 51' N 10° 01' E, H. 20h 16m 18.5s. Upper Werra Valley, Germany.
Feb. 22 (62)	(ePn 1z 1z F	20	35	29 29 52 45				(62) Disturbed by microseisms. W1: 1Pn 20h 35m 25s; 1 20h 35m 34s. Aftershock of (61). BCIS and USCGS: H. 20h 34m 36s. Stuttgart: 20h 34m 35.5s.
Feb. 23 (63)	eL F	01	18	30				(63) Disturbed by microseisms. W1: 1P 0h 56m 05s. (-); 1PP oh 58m 16s. USCGS: 29½° N 81° E, H. 0h 46m 08s. Western Nepal.
Feb. 23 (64)	eL F	04	20	05 00				(64) Disturbed by microseisms. W1: 1P 3h 53m 14s(-) USCGS: 53° N 161° E, H. 3h 41m 45s. Off east coast of Kamchatka.
Feb. 25 (65)	1P 1S ePS eL F	21	27	36 50 35 49 30				(65) Disturbed by microseisms. W1: 1P 21h 27m 32s; e(S) 21h 37.0m. USCGS: 56° N 156½° W, H. 21h 16m 18s, h = about 60km. Off south coast of Alaska Peninsula.
Feb. 25 (66)								(66) W1: 1 21h 55m 24s.
Feb. 26 (67)								(67) W1: 1P oh 43m 46s+. USCGS: 51° N 156½° E, H. oh 32m 07s. Near south coast of Kamchatka.
Feb. 26 (68)								(68) W1: 1P 2h 29m 53s. USCGS: H. 2h 18m 20s. Off coast of Kamchatka.
Feb. 26 (69)	ePKP 1z F	10	32	47 58 35				(69) W1: 1PKP 10h 32m 45s-; 1 10h 32m 55s+. USCGS: 20° S 169° E, H. 10h 13m 07s. Loyalty Islands region.
Feb. 26 (70)	ePKP ePP eH eSS eE eL F	12	01.8 04.5 05.1 22 37.5 40 00	23				(70) Disturbed by microseisms. W1: 1PKP 12h 01m 52s; ePP 12h 05.0m. USCGS: 11° S 164½° E, H. 11h 42m 26s. Santa Cruz Islands region.
Feb. 26 (71)	eL F	16	42	17 10				(71) Disturbed by microseisms. W1: eP 16h 20.5m. USCGS: 19° N 73½° W, H. 16h 09m 25s. Gulf of Gonaives, Haiti.
Feb. 28 (72)	eL F	05	07	05 35				(72) USCGS: 18½° N 105° W, H. 4h 24m 33s. Near coast of Colima, Mexico.
Feb. 28 (73)								(73) W1: eP 5h 55m 52s. USCGS: 72° N 0°, H. 5h 50m 48s. Arctic Ocean.
Feb. 28 (74)	eL F	22	35	22 55				(74) USCGS: aftershock of (72), H. 21h 53m 15s.

Seismic Records at De Bilt



Date 1953	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
March 1 (75)	eL F	18	20					(75) Disturbed by microseisms.
March 2 (76)								(76) W1: 1P 21h 08m 09s. BCIS: 52½°N 160°E, H. 20h 56m 36s. Off east coast of Kamchatka.
March 2 (77)								(77) W1: 1P 22h 30m 22s. BCIS: after-shock of (76), H. 22h 18m 49s.
March 2 (78)								(78) W1: 1P 22h 56m 48s+; 1 22h 57m 47s. USCGS: 51°N 159°W, H. 22h 45m 18s. Off southeast coast of Kamchatka.
March 3 (79)	3(1z 1PKP ePS eSSS eL F	11	46	43)				(79) Disturbed by microseisms. W1: 1PKP 11h 46m 36s-; 1 11h 46m 43s-; e 11h 53m 49s. BCIS: 20°45' 169°0'E, H. 1h 26m 59s. USCGS: 20°S 169°E, H. 1h 26m 55s. Loyalty Islands
March 3 (80)								(80) W1: 1PKP 13h 22m 25s-. USCGS: H. 13h 02m 49s. Loyalty Islands region.
March 3 (81)								(81) W1: 1PKP 13h 58m 36s+. USCGS: H. 13h 38m 58s. Loyalty Islands region.
March 3 (82)								(82) W1: 1PKP 14h 00m 58s-. USCGS: 19½°S 168½°E, H. 13h 41m 20s. Loyalty Islands region.
March 3 (83)	eS eL F	23	15.5					(83) Disturbed by microseisms. W1: 1P 23h 05m 46s-. USCGS: 48°N 155°E, H. 22h 53m 54s. CMO: 49°N 157°E, H. 22h 53m 54s. Kurile Islands.
March 4 (84)								(84) W1: 1P 7h 33m 25s(+). BCIS: aftershock of (82), H. 7h 13m 46s.
March 4 (85)	eL F	15	30					(85) W1: 1P 14h 58m 26s. USCGS: 24°N 122°E, H. 14h 45m 48s. Near east coast of Formosa.
March 5 (86)								(86) W1: eP 19h 59m 07s. BCIS: foreshock of (87), H. 19h 47m 35s.
March 5 (87)	1P ePP 1S esS eSS eL F	21	13	00				(87) Disturbed by microseisms. W1: 1P 21h 12m 56s+; 1 21h 13m 56s+. BCIS: 52°0'N 157°0'E, H. 21h 01m 20s. USCGS: 51°N 158°E, H. 21h 01m 23s, h= about 60 km. Near south coast of Kamchatka.
March 5 (88)								(88) W1: 1P 21h 33m 33s. USCGS: 49°N 156°E, H. 21h 21m 45s. (MO: 50°N 158°E. Off south coast of Kamchatka.
March 9 (89)	e eL F	10	36					(89) Disturbed by microseisms. W1: ePKP 10h 23m 05s. USCGS: 4½°S 153½°E H. 10h 03m 41s. New Britain region.
March 10 (90)	eL F	07	12					(90) USCGS: 18½°S 168°E, H. 5h 58m 55s. New Hebrides Islands.
March 10 (91)	eP eS eSS eSSS eL F	22	14	48				(91) BCIS: 37°0'N 16°5' W, H. 22h 01m 31s. West of Tristan da Cunha, South Atlantic Ocean.



Seismic Records at De Bilt						
Date 1953	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s				
March 13 (92)	eL F	05 37 05 45				(92) Disturbed by microseisms. W1: 1P 5h 30m 47s. BCIS: foreshock of (95) H. 5h 25m 43s.
March 13 (93)	ePP ePS eSS eL F	17 18.7 17 28 17 34.0 17 45 18 50				(93) Disturbed by microseisms. USCGS: H. 17h 00m 32s. Manilla: 60°3N 124°2E. Near south coast of Mindanao.
March 15 (94)	e F	03 36.5 03 45				(94) W1: 1P 3h 17m 42s. BCIS: 39°10N 80°10E, H. 3h 08m 50s. Western Sin Kiang Province, China.
March 15 (95)	e F	14 25 14 35				(95) W1: 1P 14h 20m 57s. BCIS: 34°N 25°E, H. 14h 15.9m. Mediterranean Sea, south of Crete.
March 16 (96)	e F	18 01 18 15				(96) BCIS: 41°N 78°E, H. 17h 35.6m USCGS: H. 17h 35m 35s. Western Sin Kiang Province, China.
March 17 (97)	eL F	07 15 07 40				(97) W1: eP 6h 44m 34s. USCGS: 51°N 159°E, H. 6h 32m 52s. Near south coast of Kamchatka.
March 17 (98)	1P 1S eL F	13 16 20 13 25 53 13 42 14 30	-			(98) W1: 1P 13h 16m 15s; 1 13h 18m 20s; 1 13h 18m 20s. USCGS: 50°10N 156°10E, H. 13h 04m 33s. Kurile Islands.
March 18 (99)	1P 1S eL F	19 10 43 19 19 23 19 15.5 23 30	-			(99) W1: 1P 19h 10m 41s-. BCIS: 40°1N 27°3E, H. 19h 06m 13s. USCGS: 40°N 27°10E, H. 19h 6m 11s. Istanbul: 39.9N 27 1/3°E. Western Turkey.
March 18 (100)						(100) W1: eP 21h 23m 35s. USCGS: aftershock of (99), 40°N 27°E, H. 21h 18m 8s.
March 19 (101)	1P 1z 1z 1PPP 1S eN eSS eSSS eL F	08 38 19 08 38 24 08 38 37 08 42 11 08 46 44 08 47 36 08 51 04 08 54.2 08 55 12 00	-			(101) W1: 1P 8h 38m 24s; 1 8h 38m 54s BCIS: 14°N 61°10W, H. 8h 27m 54s, h = about 150km. USCGS: 14°N 61°W, H. 8h 27m 57s, h = about 200 km. Windward Islands.
March 19 (102)						(102) W1: 1pPKP 19h 14m 37s; 1 19h 14m 44s. USCGS: 26°S 178°10E, H. 18h 53m 2s h = about 600 km. South of Fiji Island
March 19 (103)	1P eS eL F	21 18 30 21 22 07 21 24.0 21 35				(103) W1: 1P 21h 18m 22s. USCGS: after shock of (99), H. 21h 13m 58s.
March 20 (104)	e F	06 40 07 05				
March 20 (105)						(105) W1: 1 10h 56m 45s+; 1 10h 56m 51s
March 20 (106)						(106) W1: 1 11h 24m 51s.

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Date 1953	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s				
March 21 (107)	e F	02 14 02 30				
March 21 (108)	eL F	19 41.5 19 48				(108) Disturbed by microseisms. W1: 1 19h 38m 5 s; 1 19h 38m 8s; 1 19h 38m 17s; e 19h 39m 00s; e 19h 41.1m. BCIS: 45°1N 18°7E, H. 19h 35m 19s. Yugoslavia.
March 22 (109)	eL F	20 16 20 30				(109) Disturbed by microseisms. W1: 1P 19h 47m 4s; 1 19h 47m 10s. USCGS: 52½°N 159½°E, H. 19h 35m 35s. Off east coast of Kamchatka.
March 23 (110)						(110) W1: eP 5h 28m 27s. BCIS: 38°6 N 41°0E, H. 5h 22m 40s. Eastern Turkey.
March 23 (111)	e F	13 15 14 00				(111) Disturbed by microseisms. W1: 1P 12h 47m 59s+; 1 12h 48m 13s. USCGS: foreshock of (114), H. 12h 36m 13s.
March 24 (112)	e F	20 31 20 38				(112) Disturbed by microseisms. W1: e 20h 25m 1s. BCIS: aftershock of (99).
March 24 (113)	e eN F	21 28.2 21 30 21 45				(113) Disturbed by microseisms. W1: eP 21h 23m 12s. BCIS: 37°0N 37°0E, H. 21h 17m 32s. USCGS: H. 21h 17m 36s. South Central Turkey.
March 25 (114)	eP eS eL F	06 03.2 06 13.6 06 25 07 20				(114) Disturbed by microseisms. W1: eP 6h 3m 7s. USCGS: 52½°N 169°W, H. 5h 51m 21s. Fox Islands, Aleutian Islands.
March 26 (115)	e F	02 45 03 30				(115) Disturbed by microseisms. W1: 1P 2h 21m 08s. USCGS: 52°N 161°E, H. 2h 09m 35s. Off east coast of Kamchatka.
March 26 (116)						(116) W1: eP 5h 14m 34s. BCIS: aftershock of (115), H. 5h 2m 59s. USCGS: H. 5h 2m 57s.
March 26 (117)						(117) W1: 1 8h 45m 54s+.
March 26 (118)	e F	15 21 15 30				(118) Disturbed by microseisms. BCIS: aftershock of (99), H. 15h 10m 28s.
March 31 (119)	e F	01 03 01 10				(119) Disturbed by microseisms. BCIS: 40°7N 20°1E, H. 0h 55m 45s. Near south coast of Albania.
April 1 (120)	eL F	01 58 02 05				(120) Disturbed by microseisms. BCIS: Aftershock of (99) H. 1h 47m 35s.
April 1 (121)	eL F	11 35 11 25				(121) Disturbed by microseisms. USCGS: 0° 81°W, H. 11h 21m 33s. Near coast of Ecuador.
April 2 (122)	ePP ePS eL F	04 17.0 04 27 04 51 06 00				(122) Disturbed by microseisms. W1: 1PKP 4h 15m 4 s-; 1 4h 15m 21s. USCGS: 5°S 151½°E, H. 3h 56m 06s, h = about 60 km. New Britain.
April 2 (123)	eH F	08 32 08 36				(123) Disturbed by microseisms. BCIS: 38½°N 26°E, H. 8h 21.7m. Aegean Sea.

Seismic Records at De Bilt

Date 1953	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s				
April 3 (124)	eL F	05 44 06 00				(124) Disturbed by microseisms. W1: 1: (PKP) 4h 37m 36s. USCGS: 15 $\frac{1}{2}$ °S 172°W, M. 4h 18m 15s. Samoa Islands region.
April 3 (125)						(125) W1: 1 P 16h 38m 41s. USCGS: 53°N 160°E, M. 16h 27m 15s. Near east coast of Kamchatka.
April 4 (126)	eP eS eL F	06 04 47 06 15.5 06 35 07 20				(126) Disturbed by microseisms. W1: 1P 6h 04m 43s; 1 6h 04m 54s. BCIS: 36°N 141°E, M. 5h 52m 12s. USCGS: 36 $\frac{1}{2}$ °N 141°E, M. 5h 52m 15s. Near east coast of Honshu, Japan.
April 5 (127)	(eP eS eL F	10 28.4) 10 39.0 10 59 11 30				(127) Disturbed by microseisms. USCGS: 22°N 123°E, M. 10h 15m 30s. Off east coast of Formosa.
April 6 (128)	ePP ePS eSS eL F	00 56.3 01 05.9 01 12.5 01 30 02 20				(128) Disturbed by microseisms. W1: 1 PKP 0h 55m 03s+. BCIS: 3°S 131°E, M. 0h 36m 16s. USCGS: 7°S 132°E, M. 0h 36m 12s. Banda Sea.
April 6 (129)	e(SKS) ePS eL F	04 13.5 04 16 04 40 05 10				(129) Disturbed by microseisms. BCIS: 9 $\frac{1}{2}$ °N 125 $\frac{1}{2}$ °E, M. 3h 49m 32s. USCGS: 10 $\frac{1}{2}$ °N 125 $\frac{1}{2}$ °E, M. 3h 49m 32s. Philippine Islands.
April 6 (130)	1P 1(PcP) eS eL F	12 26 21 12 26 42 12 36.2 12 55 13 30				(130) Disturbed by microseisms. W1: 1P 12h 26m 17s+; 1 12h 26m 58s(+). BCIS: 52 $\frac{1}{2}$ °N 160°E, M. 12h 14m 45s. USCGS: 52°N 155°E, M. 12h 14m 41s. Near east coast of Kamchatka.
April 7 (131)	ePKP 1z F	17 47 31 17 49 31 17 55				(131) W1: 1PKP 17h 47m 18s+; 1 17h 47m 28s; 1 17h 49m 35s. USCGS: M. 17h 27m 34s. Wellington: 24°S 179 $\frac{1}{2}$ °E, M. 17h 27m 28s. South of Fiji Islands.
April 7 (132)						(132) W1: 1 20h 52m 52s-. BCIS: Probably, Fiji Islands region.
April 8 (133)	e(PS) eL F	00 25 42 00 49 01 30				(133) BCIS: 3° 0' N 126 $\frac{1}{2}$ °E, M. 23h 58m 13s. Off southeast coast of Mindanao.
April 8 (134)	e F	11 58 12 08				(134) Roma: 39°15' N 20°59' E, M. 11h 50m 7s. Greece-Albania border region.
April 12 (135)						(135) W1: 1P 22h 41m 53s+. USCGS: 53°N 160°E, M. 22h 30m 24s. Off east coast of Kamchatka.
April 13 (136)	e F	13 01.5 13 05				(136) Disturbed by microseisms. BCIS: 39° 0' N 22.6°E, M. 12h 51m 11s. Greece.
April 13 (137)	eL F	23 26 23 30				(137) Disturbed by microseisms. BCIS: 38°N 27°W, M. 23h 15.3m. Near west coast of Turkey.
April 14 (138)	1P 1pP 1z ez ez 1S eSS F	13 41 14 13 43 27 13 44 25 13 46 40 13 47 52 13 50 45 13 55 15 00	-			(138) W1: 1P 13h 41m 20s-; epP 13h 43m 32s. USCGS: 7 $\frac{1}{2}$ °S 71 $\frac{1}{2}$ °W, M. 13h 29m 26s, h = about 650 km. Western Brazil.

Seismic Records at De Bilt



Date 1953	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s				
April 15 (139)	eP eS eL F	01 28.8 01 38.5 01 55 02 30				(139) Disturbed by microseisms. W1: 1P 1h 28m 44s-. USCGS: 49°N 156°E, M. 1h 16m 57s. Kurile Islands.
April 15 (140)						(140) W1: 1P 18h 18m 32s+. USCGS: 53°N 159°E, M. 18h 7m 05s. Near east coast of Kamchatka.
April 16 (141)						(141) W1: 1P 09h 07m 26s-. BCIS: 49½°N 157°E, M. 8h 55m 40s. Northern Kurile Islands.
April 17 (142)	eP eS eL F	00 15.9 00 26.6 00 45 01 40				(142) Disturbed by microseisms. W1: 1P 0h 15m 56s+. USCGS: 5°S 77°W, M. 0h 02m 50s. Northern Peru.
April 17 (143)	eL F	11 58 13 10				(143) W1: e(PKP) 11h 29m 22s. USCGS: foreshock of (153), M. 11h 10m 17s.
April 18 (144)	eL F	04 18 05 25				
April 18 (145)	e F	23 51 01 00				(145) BCIS: 8¼°N 103°0W, M. 23h 25m 29s Tacubaya: 8°30'N 103°30'W, M. 23h 25m 30s. Off south coast of Mexico.
April 19 (146)	eL F	16 41 17 00				(146) USCGS: M. 15h 54m 05s. Off south coast of Kyushu, Japan.
April 19 (147)	eP ez eS eL F	22 59 22 22 59 42 23 10.5 23 30 24 00				(147) Disturbed by microseisms. W1: 1P 22h 59m 39s-. USCGS: 50½°N 179°W, M. 22h 47m 39s. Andreanof Islands, Aleutian Islands.
April 20 (148)	ePP eN eL F	11 25 12 12.8 12 20 13 00				(148) Disturbed by microseisms. USCGS: M. 11h 00m 31s. Kermadec Islands
April 20 (149)	e F	20 38 20 50				(149) BCIS: 3°N 32°W, M. 20h 10m 24s. USCGS: M. 20h 10m 35s. Mid-Atlantic Ocean.
April 21 (150)	eL F	18 25 19 00				(150) BCIS: M. 17h 29.5m. Admiralty Islands region.
April 22 (151)	eL F	11 33 12 10				(151) BCIS: M. 10h 02.7m. Kermadec Islands.
April 23 (152)	eP ePP eS eL F	04 02.0 04 04 36 04 10 52 04 48 05 10				(152) W1: eP 4h 01.8m; ePP 4h 04.4m. USCGS: 31°N 96½°E, M. 3h 50m 58s. Sikang Province, China.
April 23 (153)	e(P) ePKP 1z eSKS eSS eSSS eL F	16 40 18 16 43 43 16 45 04 16 50 44 17 02 17 07 17 17 21 30				(153) W1: ePKP 16h 43m 28s; 1 16h 44m 10s-; 1 10h 45m 03s. USCGS: 4°S 154°E, M. 16h 24m 17s. New Britain region.

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Date 1953	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s				
April 24 (154)	1P 1S eSS eL F	02 15 02 19 02 20 02 21 03 00	+			(154) W1: 1P 2h 15m 02s+; 1 2h 15m 08s+. BCIS: $77\frac{1}{2}^{\circ}\text{N } 6\frac{1}{2}^{\circ}\text{E}$. USCGS: $76\frac{1}{2}^{\circ}\text{N } 6^{\circ}\text{E}$, M. 2h 09m 44s. Off west coast of Spitzbergen.
April 25 (155)	e F	00 04 00 18				(155) Disturbed by microseisms. USCGS: foreshock of (156), M. 23h 38m 33s.
April 25 (156)	e F	16 49 17 05				(156) Disturbed by microseisms. W1: eP 16h 32m 55s. USCGS: $43\frac{1}{2}^{\circ}\text{N } 86^{\circ}\text{E}$, M. 16h 23m 38s. Sinkiang Province, China.
April 29 (157)	e(PP) eL F	03 54 04 34 06 00				(157) Disturbed by microseisms. W1: e(PP) 3h 54m. BCIS: $10^{\circ}\text{S } 159^{\circ}\text{E}$, M. 3h 31m 20s. USCGS: 3h 31m 18s. Solomon Islands region.
April 29 (158)	eL F	21 00 21 25				(158) W1: 1P 20h 33m 00s-. USCGS: $43^{\circ}\text{N } 143^{\circ}\text{E}$, M. 20h 21m 00s. Hokkaido, Japan.
April 30 (159)						(159) W1: eP 1h 20m 55s. BCIS: $53^{\circ}\text{N } 160^{\circ}\text{E}$, M. 1h 09m 23s. Near east coast of Kamchatka.
April 30 (160)	1PKP 1pPKP ePP eL F	06 46 06 47 06 49 07 40 09 00	+	7	16	(160) W1: 1PKP 6h 46m 21s+. USCGS: $20\frac{1}{2}^{\circ}\text{S } 170^{\circ}\text{E}$, M. 6h 26m 40s. Loyalty Islands.
April 30 (161)	eL F	16 02 16 15				(161) USCGS: $42^{\circ}\text{N } 47^{\circ}\text{E}$, M. 15h 45m 29s. Daghestan, East Caucasia.
May 1 (162)	eL F	10 10 10 15				(162) Quetta: $35\frac{1}{2}^{\circ}\text{N } 74\frac{1}{2}^{\circ}\text{E}$, M. 9h 38m 41s. Kashmir.
May 1 (163)	eL F	20 15 20 30				(163) W1: 1P 20h 11m 11s+. BCIS and USCGS: M. 20h 06m 40s. Near west coast of Turkey.
May 1 (164)	eL F	21 48 22 00				(164) USCGS: M. 21h 18m 15s. Quetta: $34^{\circ}\text{N } 72\frac{1}{2}^{\circ}\text{E}$, M. 21h 18m 07s. Northern Pakistan.
May 2 (165)	eL F	05 50 06 05				(165) BCIS: foreshock of (168), M. 5h 41m 51s.
May 2 (166)	eP eL F	10 11 10 17 10 25			18	(166) W1: 1P 10h 11m 15s+; 1 10h 11m 18s. BCIS: foreshock of (168), M. 10h 06m 43s.
May 2 (167)	e F	12 42.0 12 48				(167) W1: e 12h 41m 34s. BCIS: $48^{\circ}\text{N } 169^{\circ}\text{E}$, M. 12h 37m 27s. Austria.
May 2 (168)	eP eS eSS eL	18 42 18 45 18 46 18 48			10 30 00	(168) W1: 1P 18h 42m 09s+. F in next shock. BCIS: $38\frac{1}{2}^{\circ}\text{N } 26\frac{1}{2}^{\circ}\text{E}$, M. 18h 37m 38s. USCGS: M. 18h 37m 42s. Near West coast of Turkey. Series of shocks caused extensive damage at Karaburun and vicinity.
May 2 (169)	eL F	19 18 20 30				(169) W1: 1P 18h 49m 58s (-). BCIS: $52\frac{1}{2}^{\circ}\text{N } 159^{\circ}\text{E}$, M. 18h 38m 11s. USCGS: M. 18h 38m 12s. Off east coast of Katchatka.
May 4 (170)	eL F	00 37 01 00				(170) W1: 1P 0h 08m 46s+. BCIS: $25\frac{1}{2}^{\circ}\text{N } 103\frac{1}{2}^{\circ}\text{E}$, M. 23h 57m 06s. USCGS: M. 23h 57m 05s. Northern Burma. China border.

Seismic Records at De Bilt



Date 1953	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
May 4 (171)								(171) W1: 1P 4h 15m 20s. USCGS: 53 $\frac{1}{2}$ °N 161°E, M. 4h 03m 53s. Off east coast of Kamchatka.
May 4 (172)	1P epP ePP 1S eL F	11 11 11 11 12 13	40 40 43.6 50 05 00	42 55 27	+			(172) W1: 1P 11h 40m 37s+; 1 11h 40m 50s. USCGS: 53 $\frac{1}{2}$ °N 161°E, M. 11h 29m 08s. Near east coast of Kamchatka.
May 4 (173)	1P epP e(SKS) F	15 15 15 16	39 43 49 00	18 26 00				(173) W1: 1P 15h 39m 24s+. USCGS: 28°S 62 $\frac{1}{2}$ °W, M. 15h 26m 30s, h = about 600 km. Santiago del Estero, Argentina.
May 5 (174)	eL F	01 01	10 30					(174) BCIS: South America.
May 6 (175)	1P ePKP 1PP eSKS 1PS eSS eSSS eL F	17 17 17 17 17 17 17 18 22	31 35 36 42 45 51 56.0 10 00	25 19 01 00 37 38	-			(175) W1: ePKP 17h 35.3m; 1PP 17h 36m 02s. USCGS: 36 $\frac{1}{2}$ °S 75°W, M. 17h 16m 48s, h = about 100 km. Central Chile; Several killed and minor property damage in Concepcion and vicinity.
May 7 (176)								(176) W1: ePKP 18h 16m 34s. BCIS: 55°S 130°W, M. 17h 56.6m. South Pacific.
May 10 (177)	eL F	20 20	32 55					(177) BCIS and CMO: 36°3N 141°1E, M. 19h 49m 14s. Honshu, Japan.
May 11 (178)	1PKP ₁ 1PKP ₂ 1PP ePPP eL F	10 10 10 10 11 13	36 36 39 42.7 35 30	23 26 56	-			(178) W1: 1PKP 10h 36m 23s-. USCGS: 21 $\frac{1}{2}$ °S 169°E, M. 10h 16m 36s. Loyalty Islands.
May 13 (179)	eL F	04 05	55 30					(179) W1: 4h 28m 03s-. USCGS: 52°N 174°E, M. 4h 16m 28s, h = about 100 km. Near Islands, Aleutian Islands.
May 13 (180)	ePKP eL F	12 13 14	13.0 15 15					(180) Wellington: 30°S 175 $\frac{1}{2}$ °W, M. 11h 53m 04s. Kermadec Islands region.
May 14 (181)	eL F	13 13	11 18					(181) W1: 1P 13h 04m 56s; 1 13h 05m 00s. BCIS: aftershock of (168), M. 13h 00.4m.
May 17 (182)	eL F	14 14	15 35					
May 17 (183)								(183) W1: 1P 17h 35m 05s+. BCIS: 52°N 195 $\frac{1}{2}$ °E, M. 17h 23m 31s. USCGS: M. 17h 23m 30s. Off Southeast coast of Kamchatka.
May 18 (184)	eL F	08 10	30 00					(184) W1: 1P 8h 20m 25s-; e 8h 20m 34s. Change of papers: 8h 19m- 8h 27m. USCGS: 28 $\frac{1}{2}$ °N 44°W, M. 8h 12m 12s. Mid Atlantic Ocean.

Seismic Records at De Bilt



Date 1953	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
May 18 (185)								(185) W1: 1 21h 59m 22s+; 1 22h 03m 00s+.
May 19 (186)	1P 1z 1S eSS eL F	03 03 03 03 03 06	22 22 32 37 37 15	51 59 30 00 00	+			(186) W1: 1P 3h 22m 45s+; e 3h 22m 54s; 1 3h 26m 03s-. USCGS: 51°N 159°E, H. 3h 11m 06s. Off south coast of Kamchatka.
May 19 (187)								(187) W1: 1P 6h 04m 10s+. USCGS: 52½°N 158½°E, H. 5h 52m 40s. Near east coast of Kamchatka.
May 20 (188)								(188) W1: 1 3h 53m 20s-.
May 20 (189)	ePKP ePP e eL F	08 08 08 08 10	05 09 16.3 55 00	28 10				(189) USCGS: 53°S 134°W, H. 7h 45m 26s. South Pacific Ocean.
May 20 (190)	ePKP eL F	11 11 12	02 37 10	20				(190) BCIS: 0° 125°E, H. 10h 43.9m. h = about 150-200km. USCGS: H. 10h 43m 50s, h = about 200 km. Celebes region.
May 21 (191)								(191) W1: eP 10h 24m 31s. USCGS: 51½°N 179½°E, H. 10h 12m 37s. Andreanof Islands, Aleutian Islands.
May 21 (192)	eL F	13 13	04 25					(192) USCGS: 50°N 130°W, H. 12h 29m 51s. Off coast of Vancouver, British Columbia.
May 22 (193)								(193) W1: ePKP 20h 33m 02s; e 20h 33m 04s; epPKP 20h 35.3m. USCGS: 18°S 178½°W, H. 20h 14m 26s, h + about 600 km. Fiji Islands.
May 23 (194)								(194) W1: ePKP 20h 07m 17s. BCIS: H. 19h 47m 44s, h = about 100km. Loyalty Islands region.
May 24 (195)	ePP eS ePS eSS eSSS eL F	01 01 01 01 01 02 04	38 46.5 48.5 54.5 58 12 00	42 40				(195) USCGS: 51°S 28°W, H. 1h 19m 55s. Sandwich Islands region.
May 25 (196)	eL F	03 03	12 45					(196) W1: eP 2h 42m 35s. USCGS: 47°N 154½°E, H. 2h 30m 40s. Kurile Islands.
May 25 (197)	eL F	13 14	35 05					(197) BCIS and USCGS: 3½°S 101°E, H. 12h 38m 13s. Off south coast of Sumatra.
May 25 (198)	eP eS eL F	17 18 18 19	52 01 11 20	16 57				(198) W1: eP 17h 52m 12s+; e 17h 52m 23s. USCGS: 51°N 159½°E, H. 17h 40m 30s. Off south coast of Kamchatka.

Seismic Records at De Bilt



Date 1953	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s				
May 26 (199)	1P eS eScS eL F	01 55 16 02 05 15 02 05 30 02 20 03 30				(199) W1: 1P 1h 55m 11s+; 1 1h 55m 12s. USCGS: 42°N 142½°E, M. 1h 43m 11s, h = about 60km. CMO: 41°8' N 143°1'E, M. 1h 43m 11s, h = about 40 km. Near south coast of Hokkaido.
May 28 (200)	e F	19 05 19 20				(200) W1: 1PKP 18h 20m 38s+. USCGS: 4½°S 152°E, M. 18h 01m 41s, h = about 100 km. New Britain.
May 31 (201)	ePP eSKS ePS eL F	05 19.3 05 25.5 05 29.0 05 49 07 10				(201) USCGS: 9°S 118°E, M. 5h 00m 15s, h = about 100 km. Flores Sea.
May 31 (202)						(202) W1: 1PKP 19h 54m 47s. BCIS: 13°S 179°W, M. 19h 36.5m, h = about 600 km. Wallis Islands region.
May 31 (203)	eP 1S eScS eSS eSSS eL F	20 09 29 20 18 15 20 19 11 20 22 36 20 26.2 20 29.0 23 00	+			(203) W1: eP 20h 09m 27s. USCGS: 20°N 70½°W, M. 19h 58m 35s. Near north coast of Dominican Republic.
June 1 (204)	e F	20 38 20 34				(204) BCIS: 37½°N 21°0'E, M. 20h 17m 33s. Off west coast of Peloponnesus, Greece.
June 2 (205)	eL F	18 43 19 00				(205) BCIS: M. 17h 50m 09s. USCGS: 30°N 142°E, M. 17h 50m 13s. South of Honshu, Japan.
June 2 (206)	eL F	22 48 25 05				(206) USCGS: 19½°N 70°W, M. 22h 15m 54s. Near the north coast of Dominican Republic.
June 3 (207)	eL F	03 07 03 35				(207) BCIS: 23°N 122°E, M. 2h 21.1m. Near east coast of Formosa.
June 3 (208)	eP eS eL F	16 10 03 16 13 44 16 15 16 40				(208) W1: 1P 16h 10m 08s; 1 16h 10m 31s. BCIS: 40°1'N 28°8'E, M. 16h 05m 23s. USCGS: M. 16h 05m 32s. Northwestern Turkey. Felt Izmir to Istanbul.
June 3 (209)	eL F	17 53 18 02				
June 3 (210)	eL F	18 36 19 00				(210) W1: 1P 18h 03m 22s. USCGS: 52°N 159°E, M. 17h 51m 48s. Near east coast of Kamchatka.
June 6 (211)						(211) W1: eP 1h 22m 17s. BCIS: 10½°N 94½°E, M. 1h 10m 08s. Bay of Bengal.
June 6 (212)	eL F	06 18 06 30				(212) USCGS: 56°N 35°W, M. 6h 06m 15s. North Atlantic Ocean.
June 6 (213)	eL F	11 25 11 35				
June 6 (214)	eL F	12 14 12 32				(214) USCGS: 56°N 35°W, M. 12h 06m 13s. North Atlantic Ocean.

Seismic Records at De Bilt



Date 1953	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s				
June 6 (215)	eL F	17 50 18 20				(215) BCIS: $49\frac{1}{2}^{\circ}\text{N } 156\frac{1}{2}^{\circ}\text{E}$, H. 17h 07m 06s. USCGS: H. 17h 07m 15s. Off south coast of Kamchatka.
June 7 (216)	eP eS eL F	12 34 48 12 43 40 12 54 14 00				(216) W1: eP 12h 34.9m. USCGS: $10^{\circ}\text{N } 70^{\circ}\text{W}$, H. 12h 23m 56s. Near north coast of Dominican Republic.
June 7 (217)	e F	14 03 14 15				(217) BCIS: $36^{\circ}\text{N } 27^{\circ}\text{E}$, H. 13h 52m 49s. Off northwest coast of Karpathos, Mediterranean Sea.
June 8 (218)	1P epP eS eL F	11 52 06 11 52 21 11 01 40 12 17 13 30	+	4	3	(218) W1: 1P 11h 51m 50s+. BCIS: $53^{\circ}3\text{N } 159^{\circ}1\text{E}$, H. 11h 40m 34s, h = about 60km. USCGS: $52^{\circ}\text{N } 159\frac{1}{2}^{\circ}\text{E}$, H. 11h 40m 25s. Near east coast of Kamchatka.
June 9 (219)	eP 1z ePP eS eL F	01 50 36 01 50 40 01 53 22 02 00 10 02 15 03 55				(219) W1: 1P 1h 50m 33s+. BCIS: $53.8^{\circ}\text{N } 160^{\circ}\text{E}$, H. 1h 39m 04s. USCGS: $53^{\circ}\text{N } 160^{\circ}\text{E}$, H. 1h 39m 00s. Near east coast of Kamchatka.
June 9 (220)	eP eL F	16 33.0 16 39 17 00				(220) W1: 1P 16h 32m 59s(-). BCIS: $39^{\circ}5\text{N } 27^{\circ}1\text{E}$, H. 16h 28m 22s. Western Turkey.
June 10 (221)	ePP eL F	18 43.3 19 20 21 00				(221) USCGS: $4^{\circ}\text{S } 128^{\circ}\text{E}$, H. 18h 23m 43s. Near south coast of Ceram Islands.
June 13 (222)	1P eS eL eScP F	18 43 19 18 46 55 18 49.0 18 51 25 19 15	-			(222) W1: eP 18h 43m 17s. BCIS: $38\frac{1}{2}^{\circ}\text{N } 22\frac{1}{2}^{\circ}\text{E}$, H. 18h 38m 58s. Gulf of Corinth, Greece.
June 13 (223)	ePKP F	23 08.2 23 11				(223) W1: 1PKP 23h 08m 08s-. BCIS: $18\frac{1}{2}^{\circ}\text{S } 169^{\circ}\text{E}$, H. 22h 48m 51s, h = about 150 km. USCGS: H. 22h 48m 47s, h = about 150 km. Near Hebrides Islands.
June 14 (224)	eP eL F	04 30.5 04 58 05 25				(224) W1: eP 4h 29m 51s. USCGS: $33^{\circ}\text{N } 115\frac{1}{2}^{\circ}\text{W}$, H. 4h 17m 17.5s. Imperial Valley, California.
June 14 (225)	eL F	10 26 10 37				(225) W1: eP 10h 02m 41s. BCIS: $29\frac{1}{2}^{\circ}\text{N } 93^{\circ}\text{E}$, H. 9h 51m 55s. Tibet.
June 14 (226)						(226) W1: ePKP 11h 07m 15s. BCIS: 10h 47.9s. Tonga Islands region.
June 15 (227)	1P 1PcP 1S ePS eL F	17 58 34 17 58 55 18 07 52 18 08 16 18 18 21 00	+			(227) W1: 1P 17h 58m 31s+. USCGS: $56\frac{1}{2}^{\circ}\text{N } 154^{\circ}\text{W}$, H. 17h 47m 14s. Near south coast of Kodiak.
June 16 (228)	1P ePP 1S eL F	10 06 05 10 09 33 10 16 52 10 37 11 30				(228) W1: eP 10h 05m 59s. USCGS: $31^{\circ}\text{N } 141^{\circ}\text{E}$, H. 9h 53m 06s. South of Honshu, Japan.

Seismic Records at De Bilt



Date 1953	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
June 16 (229)	ePKP F	16	21	43				(229) W1: ePKP 16h 21m 42s; 1 16h 21m 50s-; e 16h 22m 00s. BCIS: 25°S 177°W, H. 16h 02m 00s. USCGS: 16h 01m 57s, h = about 100 km. About 250 miles south of Tonga Islands.
June 16 (230)	1P 1PcP eS ePS eL F	19	59	50				(230) W1: 1P 19h 59m 46s+; e 19h 59m 58s. USCGS: 55½°N 160°W H. 19h 48m 25s. Near south coast of Alaska Peninsula.
June 17 (231)	eL F	11	45					
June 17 (232)	eP eL F	14	22					(232) W1: eP 14h 22m 00s. USCGS: 15½°S 75°W, H. 14h 08m 33s, h = about 60 km. Near coast of Southern Peru.
June 18 (233)								(233) W1: 1P 3h 56m 18s+. USCGS: H. 3h 44m 40s. Near southeast coast of Kamchatka.
June 18 (234)	1P eH eS eL eScP F	05	48	18				(234) W1: eP 5h 48m 11s; 1 5h 48m 13s(-). BCIS: 41½°N 27½°E, H. 5h 43m 58s. Turkey in Europe.
June 18 (235)	1PKP ePP ePKS eL F	10	24	00				(235) W1: 1 PKP 10h 23m 58s. USCGS: 6½°S 155°E, H. 10h 04m 48s. Solomon Islands.
June 18 (236)	eL F	19	13					(236) BCIS: 50°0N 157°0E, H. 18h 29m 07s, h deeper than normal. USCGS: 49°N 157°E, H. 18h 29m 05s. Kurile Islands.
June 19 (237)	e F	05	27					(237) BCIS: 57°8N 114°0E, H. 5h 02m 17s. USCGS: 56½°N 114°E, H. 5h 02m 15s. Northeast of Lake Baikal, USSR.
June 19 (238)								(238) W1: 1P 18h 43m 21s+. BCIS: 29°N 126°E, H. 18h 30.8m. Off west coast of Ryukyu Islands.
June 20 (239)								(239) W1: ePKP 3h 53m 10s. BCIS: H. 3h 33.6m. Tonga Islands.
June 21 (240)	eL F	08	21					(240) e 8h 15.7m. Change of papers from 8.13h till 8.21h. BCIS: 37.6N 20°6E, H. 8h 11m 25s. Off south west coast of Zante Island, Greece.
June 21 (241)								(241) W1: 1PKP 16h 22m 26s-. BCIS: aftershock of (229), H. 16h 02.7m.
June 21 (242)								(242) W1: 1PKP 18h 43m 10s-. BCIS: H. 18h 23m 20s. Tonga Islands region.

Seismic Records at De Bilt



Date 1953	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s				
June 22 (243)	e F	00 40 01 15				(243) BCIS and USCGS: H. 23h 58m 35s. Indian Ocean, about 500 miles off west coast of Sumatra.
June 23 (244)	eP eS F	01 57 57 02 01 53 02 10				(244) W1: eP 1h 57m 55s. BCIS: 36°N 35°E, H. 1h 53m 12s, h = about 100 km. USCGS: H. 1h 53m 06s. South Aegean Sea.
June 23 (245)	1P 1S eL F	14 05 10 14 14 42 14 26 15 30	+			(245) W1: eP 14h 05m 07s. BCIS: 52½°N 157°E, H. 13h 53m 30s. USCGS: 51°N 157½°E, H. 13h 53m 28s. Near south coast of Kamchatka.
June 24 (246)						(246) W1: 1P 21h 30m 35s-. BCIS: 47½°N 151°1E, H. 21h 18m 41s. USCGS: 45°N 151°E, H. 21h 18m 30s. Kurile Islands.
June 25 (247)	eL F	06 50 07 45				(247) BCIS: 8°S 123°E, H. 5h 58.5m. Flores Island region.
June 25 (248)	ePKP ez	08 40 17 08 42 12				(248) W1: 1PKP 8h 40m 16s; 1 8h 42m 10s. BCIS: 21½°S 171½°E, H. 8h 20m 33s. USCGS: H. 8h 20m 42s. New Hebrides Islands region.
June 25 (249)	eP 1PKP ePP ePPP ePS ePPS eSS eSSS eL F	10 49 50 11 03 45 11 04 42 11 07 01 11 14 28 11 15 29 11 20.6 11 24.9 11 40 14 00	-			(249) W1: eP 10h 59m 48s; ePP 11h 04m 27s. USCGS: 8½°S 123½°E, H. 10h 44m 57s. Off east coast of Flores Island.
June 26 (250)	eP 1PP 1PPP 1PS 1PPS eSS eSSS eL F	05 57 45 06 02 34 06 04 56 06 12 09 06 13 20 06 18 06 23 06 34 09 00	+			(250) W1: ePP 6h 02.5m; ePPP 6h 04.8m. USCGS: 8°S 124°E, H. 5h 42m 50s, aftershock of (249)
June 26 (251)						(251) W1: 1PKP 7h 53m 57s. BCIS: foreshock of (253), H. 7h 35m 00s, h = about 550 km.
June 26 (252)	eL F	12 28 12 35				
June 27 (253)	ePKP epPKP	08 01 51 08 04 02				(253) W1: ePKP 8h 01m 51s; 1 8h 01m 57s; epPKP 8h 04.1m. USCGS: 24°S 178½°E, H. 7h 43m 01s, h = about 500 km. South of Fiji Islands.
June 27 (254)	eL F	10 50 11 15				(254) W1: ePKP 10h 07.0m. USCGS: 4½°S 153°E, H. 9h 47m 58s. Solomon Islands.
June 28 (255)	eS eL F	06 00 52 06 24 07 20				(255) W1: no record. USCGS: 31°N 141½°E, H. 5h 37m 05s. CM0: 31°4N 142°1E, H. 5h 37m 15s, h = about 40 km. South of Honshu, Japan.

Seismic Records at De Bilt



Date 1953	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
June 29 (256)	eS F	03 50 04 30						(256) USCGS: 7°N 82½°W, H. 3h 27m 43s. Off coast of Panama.
June 30 (257)								(257) W1: 1P 7h 49m 09s+. BCIS: 54½°N 159½°E, H. 7h 37m 49s, h = about 60 km. USCGS: 54°N 160°E, H. 7h 36m 53s, h = about 60 km. Near east coast of Kamchatka.
June 30 (258)	eL F	23 20 23 55						(258) W1: eP 22h 54m 11s. BCIS: H. 22h 42.4m, h = about 60 km. Off southeast coast of Kamchatka.
July 1 (259)	1P 1PcP ePP eS eSS eL F	03 11 03 11 03 14 03 20 03 25.5 03 34 05 40	14 41 05 48					(259) W1: 1P 3h 11m 08s. BCIS: 51½°N 157°E, H. 2h 59m 34s, h = about 60 km. USCGS: 50½°N 157°E, H. 2h 59m 31s, h = about 60 km. Near south coast of Kamchatka.
July 2 (260)	1PKP 1pPKP 1PP 1PKS eH eH eSS eSSS eH eH F	07 16 07 17 07 19 07 19 07 27.8 07 34.5 07 38.0 07 43.2 07 49.3 07 55 10 30	08 11 25 34		+	7 10	45 40	(260) W1: begin during change of papers; epPKP 7h 17m 07s. BCIS: 19°03' 168½°E, H. 5h 56m 55s, h = about 200 km. USCGS: 18½°S 169°E, H. 5h 56m 51s. h = about 200 km. New Hebrides Islands.
July 2 (261)	eL F	14 19 15 00						(261) BCIS: 15½°S 75½°W, H. 13h 21m 21s, h = about 60 km. USCGS: 15°S 74°W, H. 13h 31m 26s, h = about 60 km. Near coast of southern Peru.
July 2 (262)	eP eL F	22 41.6 23 15 23 15						(262) W1: eP 22h 41m 38s. BCIS: 29°N 131°E, H. 22h 28.7m. USCGA: H. 22h 28m 36s. Ryukyu Islands region.
July 3 (263)	e F	02 47 03 10						(263) Roma: 39°2'N 23.4°E, H. 2h 37m 50s. Aegean Sea, north of Euboea Island, Greece.
July 3 (264)	eS eL F	05 54 06 14 06 45	17					(264) W1: 1P 5h 43m 51s+. BCIS: 30°N 137½°E, H. 5h 31m 00s. Honshu, Japan.
July 3 (265)	ePKP eSS F	18 48.5 19 04.2 20 00						(265) Disturbed by visitors. BCIS: 56½°S 26½°W, H. 18h 29m 20s. Sandwich Islands.
July 5 (266)	eL F	04 15 04 30						(266) W1: eP 4h 08m 22s. BCIS: 36°2'N 3°5'E, H. 4h 04m 20s. USCGS: H. 4h 04m 15s. Algeria
July 6 (267)	eL F	22 58 23 30						(267) BCIS: 6°4'S 147°3'E, H. 21h 55m 30s. Southeastern New Guinea.
July 7 (268)	eP epP eS 1PS F	04 20 04 21 04 30 04 31 05 30	38 33 45 21					(268) W1: eP 4h 20m 32s; epP 4h 21m 31s. BCIS: 1°N 100°E, H. 4h 07m 48s, h = about 250 km. USCGS: 1°N 100°E, H. 4h 07m 23s. Sumatra.

Seismic Records at De Bilt



Date 1953	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s				
July 7 (269)	eL F	18 15 18 45				(269) Disturbed by microseisms. USCGS: 31°N 141½°E, H. 17h 28m 25s. South of Honshu, Japan.
July 9 (270)	eP eS eSS eL F	19 11 11 19 18.3 19 21.7 19 26 20 30				(270) W1: eP 19h 11m 03s. BCIS: 40½°N 78½°E, H. 19h 02m 06s. USCGS: 41°N 77°E, H. 19h 02m 03s. Western Sinkiang province, China.
July 9 (271)	eL	21 09.5				(271) F in next shock. BCIS: afstershock of (270), H. 20h 43m 31s. USCGS: H. 20h 43m 28s.
July 9 (272)	eP ePcP iS eSS eL F	21 31 39 21 33.5 21 38 02 21 41.0 21 43 23 00				(272) W1: 1P 21h 31m 48-; 1 21h 31m 50s. USCGS: 30°N 42½°W, H. 21h 23m 48s. North Atlantic Ocean.
July 10 (273)	e F	15 30 16 10				(273) Disturbed by visitors. BCIS: 6½°S 113½°E, H. 15h 06m 41s. h = about 600 km.
July 12 (274)	e(S) eH F	01 08 30 01 12.5 01 30				(274) W1: eP 1h 01m 33s. BCIS: 36½°N 72°E, H. 0h 53m 09s. USCGS: 0h 52m 55s. Hindu Kush.
July 12 (275)	ePP eSS eL F	07 03 10 07 19 07 40 09 30				(275) USCGS: 2°S 139½°E, H. 6h 43m 05s. Near north coast of New Guinea.
July 13 (276)						(276) W1: 1PKP 13h 39m 38s+. BCIS: H. 19h 19.8m. Tonga Islands region.
July 13 (277)	ePKP	21 48 06				(277) W1: ePKP 21h 48m 02s. USCGS: 18°S 169½°E, H. 21h 28m 35s. New Hebrides Islands.
July 17 (278)						(278) W1: 1PKP 13h 48m 23s. BCIS: South Pacific.
July 19 (279)						(279) W1: 1PKP 15h 04m 30s. BCIS: South Pacific.
July 19 (280)	e F	18 54 19 00				(280) BCIS: 41½°N 16½°E, H. 18h 46m 44s. Italia.
July 20 (281)	ePKP epPKP ez eSKSP eH ePPS eSS eL F	08 27 55 08 28 13 08 28 53 08 41 44 08 41 59 08 44.5 08 51 09 20 10 20				(281) W1: 1PKP 8h 27m 56s; 1pPKP 8h 28m 25s; 1 8h 28m 45s. USCGS: 21°S 177°W, H. 8h 08m 20s, h = about 100 km. Tonga Islands region.
July 21 (282)	1P 1z eS eSS eL F	17 35 23 17 35 39 17 46 00 17 56 18 06 18 45				(282) W1: 1P 17h 35m 19s+. 1 17h 35m 32s-; 1 17h 35m 36s+. BCIS: 26½°N 128°E, H. 17h 22m 35s. USCGS: 27½°N 128°E, H. 17h 22m 39s. Rynkyu Islands.

Seismic Records at De Bilt



Date 1953	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
July 22 (283)	1P 1PP eS ePS eL F	05	22	53	+	6	7	(283) W1: 1P 5h 22m 48s. USCGS: 57°N 157°E, H. 5h 11m 15s, h = about 600km. Near south coast of Kamchatka.
		05	24	40				
		05	32	25				
		05	32	48				
		05	44					
		08	00					
July 22 (284)	eP eL F	13	04.2					(284) W1: eP 13h 04m 15s. BCIS: 42°0N 143½°E, H. 12h 52m 12s, h = about 60 km. USCGS: 42½°N 143°E, H. 12h 52m 12s. Near south coast of Hokkaido.
		13	38					
		14	00					
July 22 (285)	1P ePP eS eL F	15	14	16				(285) W1: eP 15h 14m 10s. BCIS: 39°0N 28°4E, H. 15h 09m 32s. USCGS: 15h 09m 37s. Northwestern Turkey.
		15	14	48				
		15	18	(03)				
		15	20.5					
		15	55					
July 22 (286)	eP eS eL F	18	12	50				(286) W1: eP 18h 13m 00s. USCGS: 26½°N 44½°W, H. 18h 04m 30s. North Atlantic Ocean.
		18	19.6					
		18	25					
		19	05					
July 23 (287)	eL F	01	38					(287) W1: eP 1h 14m 45s. BCIS: 26½°N 65°0E, H. 1h 05m 44s. USCGS: 26½°N 65°E, H. 1h 05m 45s. Southern Pakistan.
		02	00					
July 23 (288)	eP eS ePS eL F	18	36.0					(288) W1: eP 18h 35m 56s. BCIS: 52°N 160°E, H. 18h 24m 16s. USCGS: H. 18h 24m 14s. Off southeast coast of Kamchatka.
		18	45.3					
		18	45.9					
		19	00					
		19	50					
July 24 (289)	eL F	12	03					(289) USCGS: 11°S 166°E, H. 10h 51m 34s. Santa Cruz Islands.
		12	25					
July 25 (290)	eL F	11	18					
		11	30					
July 25 (291)	ePKP eL F	17	47.0					(291) W1: 1PKP 17h 46m 53s. BCIS: H. 17h 27.2m. Tonga Islands region.
		18	55					
		19	23					
July 26 (292)	(1PP 1SKS 1(S) eH eH 1(PS) eSS eL F	17	10	53)				(292) W1: 1PP 17h 10m 50s; epPP 17h 11m 27s; 1PS 17h 19m 38s. Z record disturbed. USCGS: 17½°N 145°E, H. 16h 53m 16s, h = about 200 km. Marianas Islands.
		17	17	13				
		17	17	52				
		17	18	20				
		17	19	02				
		17	19	50				
		17	25					
		17	40					
		19	00					
July 28 (293)	ePKP epPKP ePP eL F	07	58	32				(293) W1: 1PKP 7h 58m 29s; 1 8h 00m 14s; 1pPKP 8h 00m 40s. USCGS: 21°S 178½°W, H. 7h 39m 41s, h = about 550 km. Fiji Islands region.
		08	00	38				
		08	01	32				
		08	32					
		08	40					
July 28 (294)	eL F	18	52					
		19	20					
July 29 (295)	eP eS eL F	13	42	22				(295) W1: eP 13h 42m 24s. BCIS: 2½°S 12½°W, H. 13h 32m 36s. USCGS: 13h 32m 36s. Mid Atlantic Ocean.
		13	50	20				
		14	00					
		15	00					

Seismic Records at De Bilt

Date 1953	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
July 29 (296)	eP eS eL F	18	28	04				(296) USCGS: 13°N 90½°W, H. 18h 15m 34s. Off coast of Guatemala.
July 29 (297)	1PKP ez 1PP ePS eL F	23	37	37				(297) ePKP 23h 37m 36s; ePP 23h 40m 55s. USCGS: 16°S 173°W, H. 23h 18m 02s. Fiji Islands region.
July 30 (298)	ez F	06	22	41				(298) W1: 1 6h 22m 43s. BCIS: Tonga Islands region.
July 30 (299)								(299) W1: eP 6h 40m 45s. USCGS: 52°N 160°E, H. 6h 28m 53s. Off southeast coast of Kamchatka.
July 30 (300)								(300) W1: e 7h 10m 02s. BCIS: H. 6h 50.1m. South of Tonga Islands.
July 30 (301)	eP ePP eH e(S) ez eL F	23	59.0					(301) USCGS: 19°N 145°E, H. 23h 44m 44s. Marionas Islands.
		00	03.1					
		00	08	32				
		00	10.2					
		00	11	05				
		00	30					
		01	20					
July 31 (302)	eL F	23	52					(302) BCIS: 34°S 69½°W, H. 22h 57m 30s. USCGS: H. 22h 57m 33s. Mendoza province, Argentina.
		00	30					
Aug. 1 (303)	1PKP eSS eL F	00	49	52	+			(303) W1: 1PKP 0h 49m 51s+. USCGS: 18½°S 174°W, H. 0h 30m 07s. Tonga Islands
		01	11	26				
		01	45					
		02	30					
Aug. 2 (304)	e F	04	20					(304) BCIS: 49°N 27°W, H. 4h 10m 58s. USCGS: H. 4h 10m 53s. North Atlantic Ocean. About 500 miles north of Azores Islands.
		04	35					
Aug. 2 (305)	1PKP eL F	09	04	38				(305) USCGS: 21°S 170°E, H. 8h 44m 51s. Loyalty Islands.
		10	04					
		10	30					
Aug. 2 (306)	1PKP eSS eL F	17	39	47				(306) W1: 1PKP 17h 39m 45s-. BCIS: 21°S 170°E, H. 17h 19m 57s. USCGS: H. 17h 19m 59s. Loyalty Islands.
		18	02	26				
		18	10					
		19	30					
Aug. 3 (307)	1PKP ez F	14	37	10	+			(307) W1: 1PKP 14h 37m 08s; 1 14h 37m 22s. USCGS: 17½°S 173°W, H. 14h 17m 35s, h = about 60 km. Tonga Islands.
		14	37	23				
		14	38					
Aug. 6 (308)								(308) W1: 1P 9h 12m 21s+. USCGS: 52½°N 159½°E, H. 9h 00m 49s. Off east coast of Kamchatka.
Aug. 6 (309)	e F	19	20					(309) USCGS: 45°N 86°E, H. 18h 55m 42s. Sinkiang province, China.
		19	50					
Aug. 6 (310)	e(S) e F	21	04.0					(310) BCIS: 529°N 159½°E, H. 20h 42m 48s, h = about 60 km. Off southeast coast of Kamchatka.
		21	20					
		22	00					

Seismic Records at De Bilt



Date 1953	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s				
Aug. 8 (311)						(311) W1: 1P 18h 51m 05s. USCGS: 52 $\frac{1}{2}$ °N 159 $\frac{1}{2}$ °E, H. 18h 39m 30s. Off east coast of Kamchatka.
Aug. 9 (312)	1P 1PP 1PPP 1S eL F	07 45 19 07 45 37 07 45 46 07 48 42 07 50 06 09 30	-			W1: eP 7h 45m 20s. BCIS: foreshock of (321), H. 7h 41m 06s. USCGS: H. 7h 41m 05s.
Aug. 10 (313)						(313) W1: 1PKP 1h 33m 00s. BCIS: South Pacific.
Aug. 11 (314)	1P 1z 1z 1S eL F	03 36 32 03 36 37 03 37 39 03 40 00 03 42.0 07 20		3	3	(314) W1: 1P 3h 36m 33s. BCIS: foreshock of (321), H. 3h 32m 20s. USCGS: H. 3h 32m 24s.
Aug. 11 (315)	eP eS eL F	12 47 32 12 51 12 12 53 50 13 10				(315) USCGS: foreshock of (321) H. 12h 43m 24s.
Aug. 11 (316)	eP eL F	13 15 21 13 21 13(30)				(316) USCGS: foreshock of (321), H. 13h 11m 06s.
Aug. 11 (317)						(317) W1: 1PKP 20h 24m 39s-. BCIS: H. 20h 06.1m, h = about 600 km. Fiji Islands region.
Aug. 12 (318)	e F	01 59.1 02 01				
Aug. 12 (319)	eP eS eL F	06 12 11 06 15 36 06 18.4 06 40				(319) W1: eP 6h 12m 12s. USCGS: foreshock of (321), H. 6h 08m 03s.
Aug. 12 (320)						(320) W1: 1PKP 6h 58m 52s-. USCGS: 18 $\frac{1}{2}$ °S 177 $\frac{3}{4}$ °W, H. 6h 40m 16s, h = about 600 km. Fiji Islands region.
Aug. 12 (321)	1S eL	09 31 32 09 32.5				(321) W1: 1P 9h 28m 02.5s. De Bilt: 1P during change of papers. F in next shock. BCIS: 38°1N 20°8E, H. 9h 23m 49s. USCGS: 38 $\frac{1}{2}$ °N 21°E, H. 9h 23m 55s. Near west coast of Greece.
Aug. 12 (322)	1P eS eL	11 37 58 11 41 33 11 43				(322) W1: eP 11h 38m 00s. De Bilt: F in next shock. BCIS: aftershock of (321), H. 11h 33m 42s. USCGS: H. 11h 33m 46s.
Aug. 12 (323)	1P 1S eL	12 09 35 12 12 07 12 13.5	+	5	36	(323) W1: 1P 12h 09m 33s+. BCIS: aftershock of (321) H. 12h 05m 20s. USCGS: H. 12h 05m 22s. De Bilt no records Aug. 12 from 12h 50m till 16h 13m.
Aug. 12 (324)						(324) W1: eP 13h 43.5m. BCIS: aftershock of (321), H. 13h 39m 20s. USCGS: H. 13h 39m 23s.

Seismic Records at De Bilt

Date 1953	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
Aug. 12 (325)								(325) W1: eP 14h 12m 50s. BCIS: aftershock of (321), H. 14h 08m 38s. USCGS: H. 14h 08m 38s.
Aug. 12 (326)	eS eL F	16	16	10				(326) W1: eP 16h 12.7m. BCIS: aftershock of (321), H. 16h 08m 28s. USCGS: H. 16h 08m 32s.
Aug. 12 (327)	ePKP eSKP eSS eL F	17	13	33				(327) W1: ePKP 17h 13m 35s. USCGS: 22°S 175°W, H. 16h 53m 42s. Tonga Islands
Aug. 12 (328)	eL F	22	27.5					(328) BCIS: aftershock of (321)
Aug. 12 (329)	eL F	23	12					(329) BCIS: 17½°N 121°E, H. 22h 26m 27s. Luzon, Philippine Islands.
Aug. 13 (330)	e F	01	58.5					De Bilt, no records Aug. 13 from 7h 22m till 16h 02m.
Aug. 13 (331)	eP eS eL F	03	26	19				(331) W1: eP 3h 26m 15s. BCIS: aftershock of (321) H. 3h 22m 04s. USCGS: 3h 22m 06s.
Aug. 13 (332)								(332) W1: 1PKP 9h 42m 55s-; 1pPKP 9h 43m 42s-. USCGS: 21½°S 170°E, H. 9h 23m 23s, h = about 150 km. Loyalty Islands.
Aug. 14 (333)	eL F	01	33					De Bilt, no records Aug. 14 from 8h 06m till 15h 31m.
Aug. 14 (334)	eS eL F	22	41	44				(334) BCIS: 095S-2093W, H. 22h 23m 57s. Mid-Atlantic Ocean.
Aug. 17 (335)	eP eS eL F	02	16	40				(335) BCIS: aftershock of (321) H. 2h 12m 20s. USCGS: H. 2h 12m 22s.
Aug. 17 (336)	ePKP eL F	03	33.3					(336) USCGS: 7½°S 115°E, H. 3h 14m 33s. Java Sea.
Aug. 17 (337)	eL F	22	10					(337) BCIS: 77°ON 91½°W, H. 21h 47m 17s. USCGS: 176½°ON 92°W, H. 21h 47m 22s. Devon Island, Canada. De Bilt, no records Aug. 18 from 7h 57m till 15h 51m.
Aug. 18 (338)	eL F	18	44					(338) BCIS: probably Mid-Atlantic Ocean, south of Ascension Island.
Aug. 18 (339)	eS eL F	22	51	28				(339) USCGS: aftershock of (321), H. 22h 43m 47s.
Aug. 19 (340)	eH eL F	01	01	30				(340) BCIS: Aftershock of (321)

Seismic Records at De Bilt



Date 1953	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s				
Aug. 19 (341)	eH eL F	03 25.2 03 27.0 03 40				(341) BCIS: Aftershock of (321).
Aug. 20 (342)	eP eS eL F	19 31 32 19 34 50 19 37 19 50				(342) De Bilt, no records Aug. 19 from 7h 23m till 15h 49m. USCGS: aftershock of (321) H. 19h 27m 28s.
Aug. 21 (343)	eL F	14 00 14 30				(343) USCGS: 18°N 67°W, H. 13h 31m 30s. Near west coast of Puerto Rico.
Aug. 21 (344)						(344) W1: 1P 16h 58m 12s. USCGS: 4°N 76½°W, H. 16h 45m 57s, h = about 150 km. Western Colombia.
Aug. 22 (345)	e F	01 12 01 40				(345) USCGS: 6°S 147°E, H. oh 21m 06s. Near east coast of New Guinea.
Aug. 23 (346)	e eL F	07 35 07 41 09 00				(346) Disturbed by microseisms. USCGS: 1°S 14°W, H. 7h 18m 06s. Mid-Atlantic Ocean.
Aug. 25 (347)	ePS eL F	02 35 03 02 05 00				(347) W1: 1PKP 2h 23m 18.5s. Disturbed by microseisms. USCGS: 5°S 152°E, H. 2h 04m 13s. New Britain.
Aug. 27 (348)	eP eS eL F	19 38 29 19 42 05 19 44.5 19 55				(348) BCIS: aftershock of (321)
Aug. 27 (349)	e(S) eL F	21 10 00 21 35 23 30				(349) BCIS: 294N 97°5E, H. 20h 46m 10s. Near northwest coast of Sumatra.
Aug. 27 (350)						(350) W1: 1P 22h 28m 12s+. USCGS: 44°N 142½°E, H. 22h 16m 30s, h = about 100 km. Hokkaido, Japan.
Aug. 27 (351)	ePP ePS eSS eSSS eL eL' F	23 51.8 00 1.6 00 8.0 00 12.3 00 27 01 40 02 15				(351) BCIS: 58°S 28°W, H. 23h 32m 10s. Sandwich Islands.
Aug. 28 (352)	eP eS eL F	20 43.0 20 46 35 20 48.5 21 10				(352) BCIS: aftershock of (321), H. 20h 38m 46s. USCGS: H. 20h 38m 56s.
Aug. 29 (353)	ePP eS ePS eSS eL F	02 12 17 02 16 56 02 17 16 02 21 00 02 32 03 15				(353) W1: 1P 2h 08m 51s+; e 2h 08m 59s; e 2h 09m 27s. BCIS: H. 1h 58m 26s. USCGS: 28°N 82°E, H. 1h 58m 24s. India-Nepal border.
Aug. 29 (354)	eP eH eL F	14 12 43 14 15.8 14 17.2 15 00				(354) BCIS: 35°8N 5°0E, H. 14h 08m 50s. Region of Hodna, Algeria.
Aug. 30 (355)						(355) He: 1 23h 35m 48s. BCIS: 50½°N 69°E, H. 23h 35m 26s. East of Liège province, Belgium.

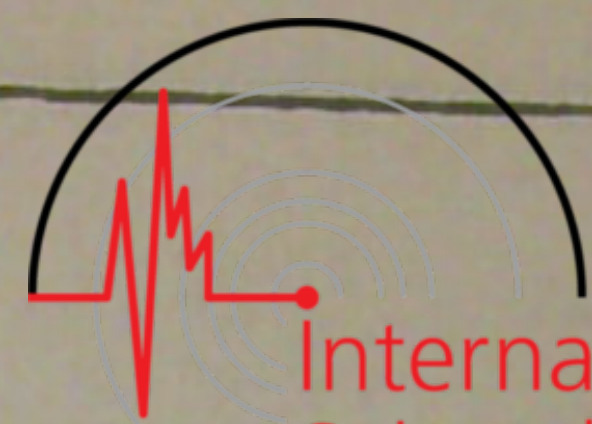
Seismic Records at De Bilt



Date 1953	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
Aug. 31 (356)	eL F	08	30					(356) W1: 1P 8h 04m 09s+. USCGS: 53 $\frac{1}{2}$ °N 160°E, H. 7h 52m 46s, h = about 60 km. Near east coast of Kamchatka.
Aug. 31 (357)	eL F	17	51					(357) W1: eP 17h 21m 35s. USCGS: 53°N 160°E, H. 17h 10m 06s. Near east coast of Kamchatka.
Sept. 1 (358)	ePKP 1PP eL F	17	54.7		+			(358) W1: 1PP 17h 57m 06s+. BCIS: H. 17h 37m 30s. Loyalty Islands region.
		17	57	11				
		18	50					
		19	15					
Sept. 1 (359)	eL F	19	41					(359) USCGS: 47 $\frac{1}{2}$ °N 89 $\frac{1}{2}$ °E, H. 19h 13m 11s. Northern Sinkiang Province, China.
		19	55					
Sept. 1 (360)	eL F	20	20					(360) BCRIS: aftershock of (321), H. 20h 10m 22s.
		20	30					
Sept. 1 (361)	eS eSS eL F	22	51.5					(361) BCIS: 28°S 25°W, H. 22h 27.8m. Mid-Atlantic Ridge.
		22	57.1					
		23	04					
		23	25					
Sept. 2 (362)	eS eL F	00	48					(362) BCIS: 41 $\frac{1}{4}$ °N 47 $\frac{1}{4}$ °E, H. 0h 35m 58s. USCGS: H. 0h 36m 00s. Azerbaijan, S.S.R.
		00	52					
		01	20					
Sept. 4 (363)	e F	02	40.7					
		02	45					
Sept. 4 (364)	1S 1sS eSS eS F	07	44	20				(364) Beginning during change of papers, 7h 29m till 7h 38m. W1: eP 7h 34m 40s. USCGS: 50° 156 $\frac{1}{2}$ °E, H. 7h 23m 05s, h = about 60 km. Kurile Islands.
		07	44	45				
		07	49	00				
		07	56					
		10	30					
Sept. 4 (365)								(365) W1: 1PKP 8h 08m 07s. BCIS: probably South Pacific.
Sept. 4 (366)	eL F	14	55					(366) Disturbed by visitors. USCGS: 32°S 71°W, H. 14h 07m 13s. Near coast of Central Chile.
		15	40					
Sept. 5 (367)	eL F	08	52					(367) BCIS: aftershock of (321), H. 8h 41m 41s.
		09	00					
Sept. 5 (368)	eP 1z 1S eL F	14	23	04	-	5	5	(368) W1: 1P 14h 23m 05s-. BCIS: 37°8N 23°0E, H. 14h 18m 41s. USCGS: 38°N 23°E, H. 14h 18m 41s. Corinth province, Greece.
		14	23	06	+			
		14	26	40				
		14	28					
		15	15					
Sept. 5 (369)	1P eS eSS eL F	19	09	54	+			(369) W1: 1P 3h 09m 49s+. USCGS: 51°N 157°E, H. 18h 58m 09s. Near south coast of Kamchatka.
		19	19	29				
		19	24.2					
		19	35					
		20	30					
Sept. 6 (370)	eL F	01	58					(370) USCGS: 50 $\frac{1}{2}$ °N 90°E, H. 1h 32m 24s. Outer Mongolia.
		02	20					
Sept. 7 (371)	eP 1z 1S eL F	04	03	55	-			(371) W1: eP 4h 03m 48s. BCIS: 41 $\frac{1}{4}$ °N 32 $\frac{3}{4}$ °E, H. 3h 58m 57s. USCGS: 41°N 33°E, H. 3h 58m 56s. Northern Turkey.
		04	03	57	-			
		04	08	02				
		04	09.2					
		06	40					

Seismic Records at De Bilt

Date 1953	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s				
Sept. 9 (372)	eL F	16 40 18 00				(372) USCGS: H. 15h 51m 17s. North central Sumatra.
Sept. 10 (373)	1P 1PP ePcP eS eSS eL F	04 11 36 04 12 28 04 15.0 04 16 06 04 17 05 04 18.0 07 30	+			(373) W1: 1P 7h 11m 31s+; 1 7h 11m 41s+. BCIS: 35°0N 32½°E, H. 4h 06m 03s. USCGS: 35°N 32°E, H. 4h 06m 00s. Near west coast of Cyprus.
Sept. 14 (374)	1PKP ez eSKKS ePS eSS eSSS eL F	00 46 15 00 51 34 00 56 35 01 00 46 01 09 01 14 01 32 03 40	-			(374) W1: 1PKP oh 46m 11s-; 1 Oh 46m 16s. USCGS: 18½°S 178½°E, H. Oh 26m 36s, h = about 60 km. Fiji Islands.
Sept. 14 (375)	ePKP F	10 00.5 10 15				(375) USCGS: H. 9h 41m 17s, h = about 500 km. Fiji Islands.
Sept. 14 (376)	ePP eSS eL	10 32 36 10 47 46 11 04				(376) F in next shock. BCIS: foreshock of (377), H. 10h 14m 00s.
Sept. 14 (377)	ePP eSKS ePPS eSS eL F	11 30 42 11 37 07 11 41 04 11 45 36 12 02 14 00				(377) USCGS: 52½°S 26°E, H. 11h 12m 06s. Indian Ocean.
Sept. 14 (378)	eP 1z eS 1H eL F	15 00 22 15 00 29 15 03 41 15 03 46 15 05.5 16 00	+			(378) BCIS: 38°3N 21°0E, H. 14h 56m 10s. USCGS: 38°N 20½°E, H. 14h 56m 15s. Near west coast of Greece.
Sept. 15 (379)	eP eS eL F	11 42.1 11 45.2 11 46 12 00				(379) BCIS: 38½°N 20½°E, H. 11h 37m 57s. Ionian Islands, Greece.
Sept. 16 (380)	ePKP ₁ ePKP ₂ eL F	02 08 30 02 09 11 03 02 04 30				(380) BCIS: 14½°S 174½°W, H. 1h 48m 43s. USCGS: 15°S 174½°W, H. 1h 48m 42s. Samoa Islands region.
Sept. 16 (381)	eL F	12 14 12 20				(381) BCIS: 38°6N 20°7E, H. 12h 03m 50s. Ionian Islands, Greece.
Sept. 17 (382)	ePKP 1pPKP 1SS eL F	21 31 32 21 32 00 21 54 16 22 20 00 30				(382) Disturbed by microseisms. W1: ePKP 21h 31m 32s. USCGS: 20½°S 174°W, H. 21h 11m 48s, h = about 100 km. Tonga Islands.
Sept. 18 (383)	ePKP eL F	15 28 29 16 30 17 00				(383) BCIS: aftershock of (382), H. 15h 08.3m.
Sept. 18 (384)	eL F	17 35 17 50				(384) BCIS: aftershock of (373), H. 17h 20m 30s.



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Date 1953	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s				
Sept. 18 (385)	ePKP eL F	22 41 34 23 45 00 50				(385) W1: ePKP 22h 41m 31s. BCIS: aftershock of (382), H. 22h 22m 49s, h = about 100km.
Sept. 19 (286)						(386) W1: ePKP 18h 43m 45s. BCIS: aftershock of (382), H. 18h 24.3m.
Sept. 20 (387)	ePP ePS eSS eL F	19 14.2 19 23.5 19 29 19 45 21 00				(387) Disturbed by microseisms. BCIS: 55°S 1½°E, H. 18h 55m 26s. Southwest of Bouvet Islands, South Atlantic Ocean.
Sept. 23 (388)	1P 1S 1PS eL F	02 26 17 02 35 53 02 36 17 02 47 05 30	+			(388) Disturbed by microseisms. W1: 1P 2h 26m 12s. USCGS: 50½°N 156°E, H. 2h 14m 36s, h = about 60 km. Northern Kurile Islands.
Sept. 25 (389)	1PKP F	03 15 43 03 22				(389) BCIS: South Pacific.
Sept. 25 (390)	eL F	12 42 13 05				
Sept. 25 (391)	eP e(PS) eL F	13 54 15 14 06 13 14 28 15 20				(391) USCGS: 28°N 140°E, H. 13h 41m 08s. Bonin Islands.
Sept. 26 (392)	1P 1S eSS eL F	01 14 10 01 23 43 01 28.6 01 38 02 30	+	4	3	(392) W1: 1P 1h 14m 15s+. USCGS: 50°N 157½°E, H. 1h 02m 30s, h = about 60 km. Near south coast of Kamchatka.
Sept. 27 (393)	eP eS eL F	06 15 54 06 24 25 06 32 07 40				(393) Disturbed by microseisms. W1: 1P 6h 16m 02s. USCGS: 14°N 58°W, H. 6h 05m 27s. Windward Islands region.
Sept. 28 (394)	eL F	21 48 21 51				(394) Disturbed by microseisms. BCIS: 41°0N 1½°W, H. 21h 41m 11s. Alicante: 41°02'N 1°30.5'W. Northeastern Spain.
Sept. 29 (395)	ePKP ₁ ePKP ₂ epPKP ₂ ePP ePPP ez ez F	01 56 18 01 57 06 01 58 15 02 00 49 02 04 34 02 06 21 02 09 00 05 00				(395) Disturbed by microseisms. W1: 1PKP ₂ 1h 57m 06s-; ePP 2h 00m 50s. USCGS: 36½°S 177°E, H. 1h 36m 45s, h = about 300 km. Off north coast of North Island, New Zealand.
Sept. 30 (396)	1P eS eSS eL F	23 17 08 23 27 28 23 33.0 23 40 02 00				(396) Disturbed by microseisms. W1: eP 23h 17m 04s. USCGS: 22°N 107½°W, H. 23h 24m 08s. Off coast of Sinaloa, Mexico.
Oct. 1 (397)						(397) W1: e 18h 32m; F 18h 35m. BCIS: 46°0N 15°3E, H. 18h 27m 06s. Northwest of Zagreb, Yugoslavia.
Oct. 2 (398)	e F	02 20 03 05				(398) BCIS: Probably South Pacific, Kermadec Islands region.

Seismic Records at De Bilt



Date 1953	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
Oct. 3 (399)	eL F	13	30					(399) Disturbed by microseisms. BCIS: H. 12h 31.4m. South Atlantic Ocean, Sandwich Islands region.
Oct. 5 (400)	1P 1pP 1PP 1S ess eL F	04	43	11	+			(400) Disturbed by microseisms. W1: 1P 4h 43m 05s+. USCGS: 53½°N 160½°E, H. 4h 31m 40s. CMO: 54°N 161°E. Near east coast of Kamchatka.
		04	43	38				
		04	45	52				
		04	52	31				
		04	53	14				
		05	07					
		06	20					
Oct. 5 (401)	eL F	10	40					(401) USCGS: 51½°N 162°E, H. 9h 56m 40s. Off east coast of Kamchatka.
		11	20					
Oct. 5 (402)	eL F	23	55					(402) BCIS: 9°3S 152°5E, H. 23h 16m 25s. USCGS: 9°S 152½°E, H. 23h 16m 22s. Off east coast of Papua, New Guinea.
		01	30					
Oct. 6 (403)	ePP eSS eL F	21	59.0					(403) Disturbed by microseisms. USCGS: 3½°S 151°S, H. 21h 38m 16s. New Britain region.
		22	15.5					
		22	32					
		01	15					
Oct. 6 (404)								(404) W1: ePKP 23h 13m 23s; 1 23h 13m 38s; 1 23h 13m 48s. USCGS: 23°S 171°E, H. 22h 53m 34s. Loyalty Islands region.
Oct. 8 (405)	e F	16	56					(405) USCGS: 30°N 97½°E, H. 16h 20m 05s. Sikang Province, China.
		17	20					
Oct. 8 (406)	eS eL F	19	29					(406) BCIS and USCGS: 32°N 82½°E, H. 19h 11m 00s. Western Tibet.
		19	39					
		20	40					
Oct. 9 (407)	e F	04	05					(407) BCIS: H. 3h 56.9m Mid-Atlantic Ocean, 500 miles west of Azores.
		04	20					
Oct. 10 (408)	1P 1S eL F	21	33	29				(408) W1: eP 21h 33m 30s. BCIS: 38°3N 21°0E, H. 21h 29m 13s. USCGS: 38½°N 21°E, H. 21h 29m 14s. Near west coast of Greece.
		21	36	59				
		21	38.5					
		22	05					
Oct. 11 (409)	1P 1pP eS ess e(PS) eL F	13	20	19	+	5	7	(409) Disturbed by microseisms. W1: eP 13h 20m 13s; 1 13h 20m 15s. USCGS: 50°N 155½°E, H. 13h 08m 34s h = about 60 km. Northern Kurile Islands.
		13	20	32				
		13	30.0					
		13	30	25				
		13	30	52				
		13	42					
		16	00					
Oct. 11 (410)	eP eS eH eL F	17	18.0					(410) Disturbed by microseisms. W1: 1P 17h 17m 52s. BCIS and USCGS: 31½°N 83°E, H. 17h 08m 00s. Western Tibet.
		17	26.1					
		17	31.5					
		17	36					
		18	50					
Oct. 13 (411)	eL F	(09 48)						(411) No records from 9h till 9h 48m. USCGS: 30°N 113½°W, H. 8h 53m 45s. Northern Gulf of California.
		10	30					
Oct. 14 (412)	eS eL F	15	09	18				(412) Disturbed by microseisms. No Z- and E records from 11h 30m till 15h 35m. BCIS and USCGS: 43°N 144½°E, H. 14h 47m 17s, h = about 100 km. Near west coast of Hokkaido.
		15	26					
		16	00					

Seismic Records at De Bilt

Date 1953	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
Oct. 16 (413)	eL F	10 33 11 00						(413) Disturbed by microseisms. W1: 1P 10h 05m 54s; 1 10h 06m 25s. USCGS: 16°N 96½°W, H. 9h 53m 15s. Oaxaca, Mexico.
Oct. 16 (414)	eL F	21 55 22 03						(414) W1: eP 21h 48m 50s. BCIS: 38½°N 20½°E, H. 21h 44m 40s. USCGS: H. 21h 44m 49s. Ionian Islands, Greece.
Oct. 17 (415)	1P 1PP eS ePS eL F	21 19 21 21 21 28 21 29 21 45 23 00	04 48 37 20					(415) Disturbed by microseisms. W1: eP 21h 18m 58s; 1 21h 59m 00s. BCIS and USCGS: 52°N 159°E, H. 21h 07m 22s. Near southeast coast of Kamchatka.
Oct. 17 (416)								(416) W1: eP 23h 54m 57s. BCIS and USCGA: aftershock of (415), H. 23h 43m 20s.
Oct. 19 (417)	eL F	18 56 19 10						(417) USCGS: 19½°N 65½°W, H. 18h 25m 18s, h = about 60 km. North of Puerto Rico.
Oct. 21 (418)	eL F	04 57 05 30						
Oct. 21 (419)	eP eS eL F	11 35 11 38 11 40.5 12 15	18 38					(419) Disturbed by microseisms. Clock correction doubtful. BCIS and USCGS: foreshock of (422), H. 11h 31m 01s.
Oct. 21 (420)	eL F	12 54 13 02						(420) Clock correction doubtful. BCIS: H. 12h 45.4m. Ionian Islands.
Oct. 21 (421)	eP eS eL F	16 33.5 16 37 16 40 16 45	36					(421) Disturbed by microseisms. Clock correction doubtful. BCIS: foreshock of (422), H. 16h 29m 53s.
Oct. 21 (422)	1P 1S eL F	18 44 18 47 18 48.5 20 30	03 31					(422) Disturbed by microseisms. Clock correction doubtful. W1: 1P 18h 44m 01s. BCIS: 38°3N 20°8E, H. 18h 39m 51s. USCGS: 38°N 20½°E, H. 18h 39m 50s. Near West coast of Greece.
Oct. 21 (423)	eP eS eL F	23 48.2 23 51 23 53 24 10	35					(423) Clock correction doubtful. Aftershock of (422). BCIS: H. 22h 44m 01s. USCGS: H. 22h 44m 00s.
Oct. 22 (424)	eL F	13 40 14 10						(424) W1: eP 13h 14m 10s. BCIS: 50°3N 156°0E, H. 13h 02m 33s, h = about 60 km. USCGS: 51°N 156°E, H. 13h 02m 39s, h = about 60 km. Near south coast of Kamchatka.
Oct. 24 (425)	eL F	05 08 05 30						(425) CMO: 41°8N 144°2E, H. 4h 23m 50s, h = about 100 km. Off southeast coast of Hokkaido, Japan.
Oct. 25 (426)	eL F	00 30 01 30						(426) USCGS: 35½°S 179½°W, H. 23h 19m 40s. Off north coast of North Island, New Zealand.

Seismic Records at De Bilt



Date 1953	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s				
Oct. 25 (427)	eL F	08 30 09 00				(427) USCGS: H. 7h 21m 10s. Easter Island region.
Oct. 27 (428)	eL F	04 16 05 45				(428) Disturbed by microseisms. W1: 1P 3h 52m 49s, 1 3h 53m 07s. BCIS and USCGS: 43°N 145°E, H. 3h 40m 45s. Near east coast of Hokkaido, Japan.
Oct. 27 (429)						(429) W1: 1P 18h 33m 42s. No Galitzin records. USCGS: 19°S 66°W, H. 18h 20m 48s, h = about 200 km, Southern Bolivia.
Oct. 28 (430)	eL F	12 48 13 15				(430) BCIS: 50½°N 155°0E, H. 12h 09m 38s. USCGS: 49°N 156°E, H. 12h 09m 36s. Kurile Islands.
Nov. 1 (431)	eL F	19 01 19 30				(431) BCIS: 23½°N 133½°E, H. 18h 16m 52s. USCGS: 22°N 122°E, H. 18h 16m 50s. Off east coast of Formosa.
Nov. 1 (432)	eL F	21 38 22 00				(432) BCIS: 48½°N 153½°E, H. 20h 55m 39s. USCGS: H 20h 55m 32s. Kurile Islands region.
Nov. 4 (433)	ePKP ePP ePPS eSSS eL F	04 08.5 04 11 04 23 04 35 04 45 07 30				(433) Disturbed by microseisms. W1: ePKP 4h 08.5m USCGS: 12½°S 166½°E, H. 3h 49m 04s. New Hebrides Islands.
Nov. 4 (434)						(434) W1: ePKP 4h 24m 09s. USCGS: aftershock pf (433), H. 4h 04m 44s.
Nov. 4 (435)						(435) W1: 1P 6h 16m 04.5s. BCIS and USCGS: 39°N 129°E, H. 6h 05m 15s. Off east coast of Korea.
Nov. 4 (436)	eSS eL F	13 08 13 24 14 50				(436) Disturbed by microseisms. W1: ePKP 12h 47.1m. BCIS: 12½°S 166½°E, H. 12h 27m 41s. USCGS: 12°S 166½°E, H. 12h 27m 41s. New Hebrides Islands.
Nov. 7 (437)	eL F	14 00 14 30				(437) Disturbed by microseisms. BCIS: ½°S 98½°E, H. 13h 03m 07s. Near west coast of Sumatra.
Nov. 8 (438)	eL F	14 56 15 00				
Nov. 8 (439)						(439) W1: 1 15h 45m 09s. BCIS: South Pacific.
Nov. 9 (440)	1P 1PP eS 1sS eL F	17 37 17 39 17 46.8 17 47 18 03 19 35				(440) Disturbed by microseisms. W1: 1P 17h 37m 09s. USCGS: 52½°N 159°E, H. 17h 25m 42s, h = about 60 km. Near east coast of Kamchatka.

Seismic Records at De Bilt

Date 1953	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s				
Nov. 10 (441)	eP eS eL F	15 14.1 15 18.9 15 21 15 50				(441) USCGS: 39°N 29°W, H. 15h 08m 35s. BCIS: H. 15h 08m 23s. Azores Islands.
Nov. 10 (442)	1P 1pP eS 1sS eSS eL F	23 51 58 23 52 15 24 01 27 24 01 57 24 06.0 23 13 02 30	-			(442) W1: 1P 23h 51m 55s; 1 23h 52m 01s. USCGS: 50½°N 157°E, H. 23h 40m 20s, h = about 60 km. Near south coast of Kamchatka.
Nov. 12 (443)						(443) W1: 1PKP 15h 53m 18s. BCIS: H. 15h 33.3m. Loyalty Islands.
Nov. 13 (444)	eL F	12 04 12 35				(444) BCIS: 11½°N 138½°E, H. 11h 10m 45s. USCGS: 11h 10m 41s. About 400 miles southwest of Guam.
Nov. 13 (445)	eS eL F	16 40 17 00 17 30				(445) Disturbed by microseisms. W1: 1P 16h 30m 03s; 1 16h 30m 07s. BCIS: 3°5'N 96°0'E, H. 16h 17m 05s. USCGS: 3½°N 96°E, H. 16h 17m 02s. Near west coast of Sumatra.
Nov. 13 (446)	1PKP 1pP 1z eSS eSSS eL F	19 34 09 19 37 58 19 42 41 19 56.0 20 01 20 20 22 00				(446) Disturbed by microseisms. USCGS: 13°S 166°E, H. 19h 15m 37s. New Hebrides Islands.
Nov. 14 (447)	1P 1pP eS esS eL F	20 15 08 20 15 21 20 24 41 20 24 58 20 38 22 00				(447) W1: 1P 20h 15m 02s; 1pP 20h 15m 17s. BCIS: 52½°N 160½°E, H. 20h 03m 30s. USCGS: 52°N 160°E, H. 20h 03m 27s. Off south coast of Kamchatka.
Nov. 16 (448)						(448) W1: ePKP 16h 36m 27s. BCIS: 20½°S 167½°E, H. 16h 16m 50s. USCGS: H. 16h 16m 44s. Loyalty Islands.
Nov. 16 (449)						(449) W1: 1PKP 17h 37m 09s; 1 17h 37m 13s; 17h 37m 16s. USCGS: 21½°S 169°E, H. 17h 17m 27s. Loyalty Islands.
Nov. 17 (450)						(450) W1: 1PKP 4h 39m 18s. USCGS: 20°S 168°E, H. 4h 19m 35s. Loyalty Islands.
Nov. 17 (451)						(451) W1: 1PKP 10h 05m 07s. USCGS: 20½°S 168½°E, H. 9h 45m 23s. Loyalty Islands.
Nov. 17 (452)	1P eS eL F	13 42 25 13 52 47 14 08 16 00				(452) Disturbed by microseisms. W1: 1P 13h 42m 29s. BCIS: 13°0'N 92°0'W, H. 13h 29m 51s. USCGS: 14°N 92°W, H. 13h 29m 52s. Near coast of Guatemala.
Nov. 17 (453)						(453) W1: 1P 22h 55m 01s. BCIS: 53°0'N 159½°E, H. 22h 43m 30s. USCGS: H. 22h 43m 30s. Near east coast of Kamchatka.

Seismic Records at De Bilt



Date 1953	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
Nov. 18 (454)								(454) W1: e 10h 26m 57s.
Nov. 20 (455)	eL F	04 05	30 30					(455) BCIS: 55°S 150°E, H. 3h 12.9m West of Macquarie Island.
Nov. 20 (456)	e F	19 19	21.5 33					(456) BCIS: 38°4N 20°8E, H. 19h 13m 57s. Ionian Islands.
Nov. 20 (457)								(457) W1: ePKP 21h 24m 08s. BCIS: 22½°S 176½°W, H. 21h 04m 16s. Tonga Islands region.
Nov. 21 (458)								(458) W1: ePKP 1h 21m 38s. BCIS: After shock of (457), H. 1h 01.9m.
Nov. 25 (459)	1PKP	17	55	39	-			(459) W1: ePKP 17h 55m 37s. BCIS: 18½°S 176½°E, H. 17h 36m 00s. USCGS: H. 17h 35m 58s. Fiji Islands region.
Nov. 25 (460)	1P 1S eL F	18 18 (18 23	01 12 30) 00	31 01	-			(460) W1: 1P 18h 01m 29s. BCIS: 34°1N 141°0E, H. 17h 48m 50s. USCGS: 34°N 141°E, H. 17h 48m 49s. Near south coast of Honshu, Japan.
Nov. 26 (461)	1P eS eL	00 00 00	16 26 43	14 45				(461) W1: eP 0h 16m 09s. F in next shock. USCGS: aftershock of (460), H. 0h 03m 28s.
Nov. 26 (462)	eP eL F	02 02 04	00 26 00					(462) Disturbed. W1: eP 2h 00m 06s. USCGS: aftershock of (460), H. 1h 47m 27s.
Nov. 26 (463)	eP ePP eS eScS 1PS eSS eL F	08 08 08 08 08 08 08 11	26 30 37 37 38 43.0 54 30	56 21 21 28 21				(463) W1: 1P 8h 26m 51s. USCGS: aftershock of (460), H. 8h 14m 12s.
Nov. 26 (464)	eL F	12 13	35 00					(464) USCGS: aftershock of (460), H. 11h 44m 05s.
Nov. 26 (465)	eL F	20 20	20 26					
Nov. 27 (466)	eL F	00 01	46 05					(466) USCGS: aftershock of (460), H. 0h 01m 20s.
Nov. 27 (467)	eL F	12 12	15 40					(467) Disturbed by microseisms. W1: eP 11h 42m 40s; i 11h 42m 55s. BCIS and USCGS: aftershock of (460), H. 11h 30m 06s.
Nov. 27 (468)	eL F	24 01	00 10					(468) Disturbed by microseisms. W1: ePKP 23h 21m 02s. USCGS: 17½°S 176°E, H. 23h 01m 22s. Fiji Islands region.
Nov. 28 (469)	eL F	02 03	58 15					(469) Disturbed by microseisms. USCGS: aftershock of (460), H. 2h 10m 35s.

Seismic Records at De Bilt



Date 1953	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
Nov. 28 (470)	eP eS eL F	20	21.8	17				(470) Disturbed by microseisms. W1: eP-20h 21m 45s. BCIS: 37 $\frac{1}{2}$ $^{\circ}$ N 20 $\frac{1}{2}$ $^{\circ}$ E, H. 20h 17m 31s. USCGS: 37 $^{\circ}$ N 20 $^{\circ}$ E, H. 20h 17m 21s. Off west coast of Greece.
Nov. 29 (471)	eL F	01	01					(471) Disturbed by microseisms. USCGS: 44 $^{\circ}$ N 86 $^{\circ}$ E, H. 0h 35m 40s. Northern Sinkiang Province, China.
Nov. 29 (472)	eL F	04	53					(472) Disturbed by microseisms. USCGS: aftershock of (460), H. 4h 07m 19s.
Nov. 29 (473)	eL F	19	07					(473) Disturbed by microseisms. USCGS: aftershock of (460), H. 18h 21m 07s.
Nov. 30 (474)	eL F	13	30					(474) USCGS: 39 $^{\circ}$ N 21 $\frac{1}{2}$ $^{\circ}$ E, H. 13h 21m 01s. Near west coast of Greece.
Dec. 1 (475)	1P 1PP eSKS ePS eL F	05	21	02	+	4	10	(475) Disturbed by microseisms. W1: 1P 5h 20m 57s; 1 5h 21m 08s; e 5h 21m 53s. BCIS: 29 $^{\circ}$ 0N 128 $^{\circ}$ 6E, H. 5h 08m 44s. USCGS: 29 $^{\circ}$ N 128 $\frac{1}{2}$ $^{\circ}$ E, H. 5h 08m 30s, h = about 60 km. Ryukyu Islands.
Dec. 1 (476)								(476) W1: ePKP 21h 41m 29s. USCGS: 25 $^{\circ}$ S 180 $^{\circ}$, H. 21h 22m 27s. About 450 miles south of Fiji Islands.
Dec. 2 (477)	ePKP ePP e(S) eSS eL F	04	43.8					(477) Disturbed by microseisms. W1: ePP 4h 45m 06s. BCIS: 2 $\frac{1}{2}$ $^{\circ}$ S 141 $\frac{1}{2}$ $^{\circ}$ E, H. 4h 24m 51s. USCGS: 3 $\frac{1}{2}$ $^{\circ}$ S 141 $\frac{1}{2}$ $^{\circ}$ E, H. 4h 24m 50s. Northern New Guinea.
Dec. 3 (478)	eP 1S eL F	15	04	15				(478) Disturbed by microseisms. W1: eP 15h 04.2m. USCGS: 31 $^{\circ}$ N 85 $^{\circ}$ E, H. 14h 54m 03s. Central Tibet.
Dec. 4 (479)	eL F	08	16					(479) BCIS: 40 $^{\circ}$ N 77 $^{\circ}$ E, H. 7h 55m 56s. West of Sin Kiang, China.
Dec. 4 (480)	eL F	12	27					(480) BCIS: 10 $\frac{1}{2}$ $^{\circ}$ S 11 $\frac{1}{2}$ $^{\circ}$ W, H. 11h 56m 01s. Ascension Island region.
Dec. 4 (481)	1P 1z eS eL F	15	06	13				(481) W1: 1P 15h 06m 14s. USCGS: 49 $\frac{1}{2}$ $^{\circ}$ N 129 $^{\circ}$ W, H. 14h 54m 46s. Off coast of Vancouver Island.
Dec. 4 (482)								(482) W1: 1PKP 22h 06m 13s. BCIS: 21 $^{\circ}$ S 179 $^{\circ}$ W, H. 21h 46.5m USCGS: H. 21h 46m 42s. Fiji Islands region.
Dec. 5 (483)	eL F	10	26					(483) W1: 1P 9h 53m 16s. USCGS: aftershock of (460), H. 9h 41m 17s.

Seismic Records at De Bilt



Date 1953	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s				
Dec. (484) 5	eL F	19 30 19 50				(484) USCGS: aftersock of (460), H. 18h 39m 25s.
Dec. (485) 7	eP 1pP 1PP 1SKS 1S 1PS 1SS eL F	02 19.1 02 19 37 02 23 06 02 29 37 02 30 20 02 31 44 02 36 58 02 49 04 50				(485) W1: 1P 2h 19m 10s; epP 2h 19m 39s; ePP 2h 23.0m. USCGS: 22°S 68½°W, H. 2h 05m 37s, h = about 100 km. Northern Chili.
Dec. (486) 7	eL F	14 50 15 30				(486) Disturbed by microseisms. W1: eP 14h 23m 47s. USCGS: 39½°N 141½°E, H. 14h 11m 32s. Near east coast of Honshu, Japan.
Dec. (487) 7	eL F	20 05 21 00				(487) Disturbed by microseisms. W1: ePKP 19h 04m 00s. USCGS: 20½°S 174°W, H. 18h 44m 10s. Fiji Islands.
Dec. (488) 8	eL F	03 00 03 40				(488) USCGS: 29½°N 142°E, H. 2h 10m 47s. Bonin Islands region.
Dec. (489) 12	eL F	09 04 09 20				(489) USCGS: 49°N 129½°W, H. 8h 28m 38s. Off coast of Vancouver Island.
Dec. (490) 12	1P eS eSS eL F	17 44 28 17 55 25 18 01.4 18 13 22 15				(490) Disturbed by microseisms. W1: 1P 17h 44m 35s. USCGS: 3½°S 81°W, H. 17h 31m 22s. Near coast of Peru.
Dec. (491) 13	eS eL F	07 17 30 07 36 08 10				(491) Disturbed by microseisms. W1: 1P 7h 07m 45s-. BCIS: 50°5N 158°0E, H. 6h 55m 59s. USCGS: 50°N 158½°E, H. 6h 56m 00s. Off south coast of Kamchatka.
Dec. (492) 13						(492) W1: eP 19h 42m 55s. BCIS: 41°N 33°E, H. 19h 38m 05s. Northern Turkey.
Dec. (493) 14	eL F	01 30 01 50				(493) Disturbed by microseisms. BCIS: 18½°S 167½°E, H. 0h 12m 08s. New Hebrides Islands.
Dec. (494) 14	eL F	11 25 11 50				(494) Disturbed by microseisms. BCIS: 19°1N 122°3E, H. 10h 37m 02s. USCGS: 19°N 122°E, H. 10h 37m 01s. Off north coast of Luzon, Philippine Islands.
Dec. (495) 14	eL F	14 28 14 55				(495) Disturbed by microseisms. USCGS: 19½°N 122°E, H. 13h 39m 46s. Off north coast of Luzon, Philippine Islands.
Dec. (496) 16	eL F	03 30 03 50				(496) Disturbed by microseisms. BCIS: 54°0S 5°0E, H. 2h 39m 53s. Bouvet Island region. South Atlantic Ocean.
Dec. (497) 20	eL F	07 25 07 50				(497) Disturbed by microseisms. USCGS: 16°N 119°E, H. 6h 34m 48s. Near west coast of Luzon, Philippine Islands.

Seismic Records at De Bilt



Date 1953	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
Dec. 20 (498)	eL F	10	10					(498) Disturbed by microseisms. BCIS: $34\frac{1}{2}^{\circ}\text{S } 70\frac{1}{2}^{\circ}\text{W}$, H. 9h 19m 46s. USCGS: H. 9h 19m 40s. Central Chile.
Dec. 20 (499)	eS ePS eL F	21	43	22				(499) Disturbed by microseisms. W1: eP 21h 32m 47s, 1 21h 32m 59s. USCGS: $34\frac{1}{2}^{\circ}\text{N } 140\frac{1}{2}^{\circ}\text{E}$, H. 21h 20m 14s. Near south coast of Honshu, Japan.
Dec. 21 (500)	eL F	18	17					(500) Disturbed by microseisms. W1: 1P 17h 48m 15s. USCGS: $42^{\circ}\text{N } 141\frac{1}{2}^{\circ}\text{E}$, H. 17h 36m 12s. Near south coast of Hokkaido, Japan.
Dec. 22 (501)								(501) W1: 1PKP 1h 19m 16s(+). BCIS: $21\frac{1}{2}^{\circ}\text{S } 169^{\circ}\text{E}$, H. 0h 59m 34s. Loyalty Islands region.
Dec. 22 (502)	eL F	19	33					(502) Disturbed by microseisms. BCIS: $16^{\circ}\text{N } 119\frac{1}{2}^{\circ}\text{E}$, H. 18h 45m 17s. USCGS: $16^{\circ}\text{N } 119^{\circ}\text{E}$, H. 18h 45m 18s. Near west coast of Luzon.
Dec. 24 (503)	eS eL F	02	55					(503) Disturbed by microseisms. W1: eP 2h 45m 15s. BCIS: $52\frac{1}{2}^{\circ}\text{N } 159\frac{1}{2}^{\circ}\text{E}$, H. 2h 33m 39s. Near east coast of Kamchatka.
Dec. 24 (504)	eS eL F	23	42					(504) Disturbed by microseisms. W1: 1P 23h 32m 45s; 1 23h 32m 55s. USCGS: foreshock of (505), H. 23h 21m 09s.
Dec. 25 (505)	1P eS eL F	02	03	06				(505) Disturbed by microseisms. W1: 1P 2h 03m 02s. BCIS: $53^{\circ}\text{N } 159\frac{1}{2}^{\circ}\text{E}$, H. 1h 51m 29s. USCGS: $52^{\circ}\text{N } 159\frac{1}{2}^{\circ}\text{E}$, H. 1h 51m 26s. Off east coast of Kamchatka.
Dec. 25 (506)	eL F	16	58					(506) Disturbed by microseisms. USCGS: $34\frac{1}{2}^{\circ}\text{N } 141^{\circ}\text{E}$, H. 16h 13m 09s. Off south coast of Honshu, Japan.
Dec. 26 (507)	eL F	13	54					(507) Disturbed by microseisms. W1: 1P 13h 24m 13s; 1 13h 24m 33s. BCIS: aftershock of (506), H. 13h 12m 40s. USCGS: H. 13h 12m 35s.
Dec. 28 (508)	eH eL F	02	46	17				(508) Disturbed by microseisms. BCIS: $38^{\circ}\text{N } 21^{\circ}\text{E}$, H. 2h 38m 43s. USCGS: $38^{\circ}\text{N } 20\frac{1}{2}^{\circ}\text{E}$, H. 2h 38m 42s. Near west coast of Greece.
Dec. 30 (509)								(509) W1: 1PKP 2h 43m 00s. USCGS: $18^{\circ}\text{S } 174^{\circ}\text{W}$, H. 2h 23m 20s. Tonga Islands.