KONINKLIJK NEDERLANDS METEOROLOGISCH INSTITUUT

SEISMIC RECORDS
AT DE BILT

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1969

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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 Drs. D. van Sabben, director of the Geophysical Section. The records have been reduced by Mr. G. Houtgast, Scientific assistant, and Mr. J.A. van Bodegraven, assistant.

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

Dr. M.W.F. Schregardus.

De Bilt, february 1973

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°06'06.0"N and 5°10'36.0"E. The instruments are placed at a height of 3 m above mean sealevel on a subsoil consisting of sand (pleistocene).

The instruments are: two sets of seismographs (two horizontal and one vertical) with galvanometric recording according to GALITZIN and PRESS-EWING.

Below are given: the period of the galvanometer Tg, the reduced pendulum length l, the distance A between the mirror of the galvanometer and the recording paper, and the rough values for the natural period of the undamped pendulum T, of the damping constant and of the multiplying factor k for the year 1969.

GALITZIN seismographs	NS comp.	EW comp.	Z comp.
Period of galvanometer Tg	24.43 sec	24.96 sec	12.0 sec
Reduced length of pendulum l	123 mm	123 mm	406 mm
Distance A	1380 mm	1380 mm	1380 mm
Period of pendulum Ts	25 sec	25 sec	12 sec
Damping constant	0.0	0.0	0.0
Multiplying factor k	11.0	11.0	175

PRESS-EWING seismographs	NS, EW, Z comp.
Period of galvanometer Tg	90 sec
Reduced length of pendulum l	360 mm
Distance A	1000 mm
Period of pendulum Ts	30 sec
Damping constant galvanometer	0.025
Damping constant pendulum	0.470
Multiplying factor k	147

SEISMOLOGICAL STATION HEERLEN (HEE)

The geographic coordinates of the seismological station are: 50°53'09.7"N and 5°58'57.4"E.

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

The mean values of the constants for the year 1969 are:

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

SEISMOLOGICAL STATION WITTEVEEN (WIT)

The geographic coordinates of the seismological station are: 52°48'48.0"N and 6°40'06.0"E.

The instruments, a GRENET vertical seismograph with galvanometric record, and one vertical and one horizontal WILLMORE seismograph, are placed at a height of 17 m above mean sealevel on a subsoil consisting of pleistocene sand.

The period of the GRENET 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. T seismograph 2 sec, T galvanometer 0,25 sec. The maximum amplification is 30.000 for a period of about 0.4 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.

The data from the seismographs at Heerlen and Witteveen are also mentioned.

The time is Greenwich mean time.

In the column "first motion" + 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.
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.
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 the discernable movement.
H = time of the shock at point of origin.
h = depth of the origin.

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 maximum amplitudes measured from the medium line (Galitzin records). The amplitudes have been calculated by means of the formula:

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

In this formula A 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 waves have been given. As the movement of these waves is irregular in general, the accuracy of these data is small. The amplitudes and periods of the maxima of L-waves have been given in case of strong earthquakes.

The magnitudes have been calculated by means of the formula:

$$M = \log\left(\frac{A}{T}\right) + 1.66 \log\Delta + 3.3$$

A = maximum amplitude of the l-wave in microns (measured from the medium line)
T = the period of the concerning L-wave in seconds
Δ = distance in degrees.

THE MICROSEISMIC ACTIVITY

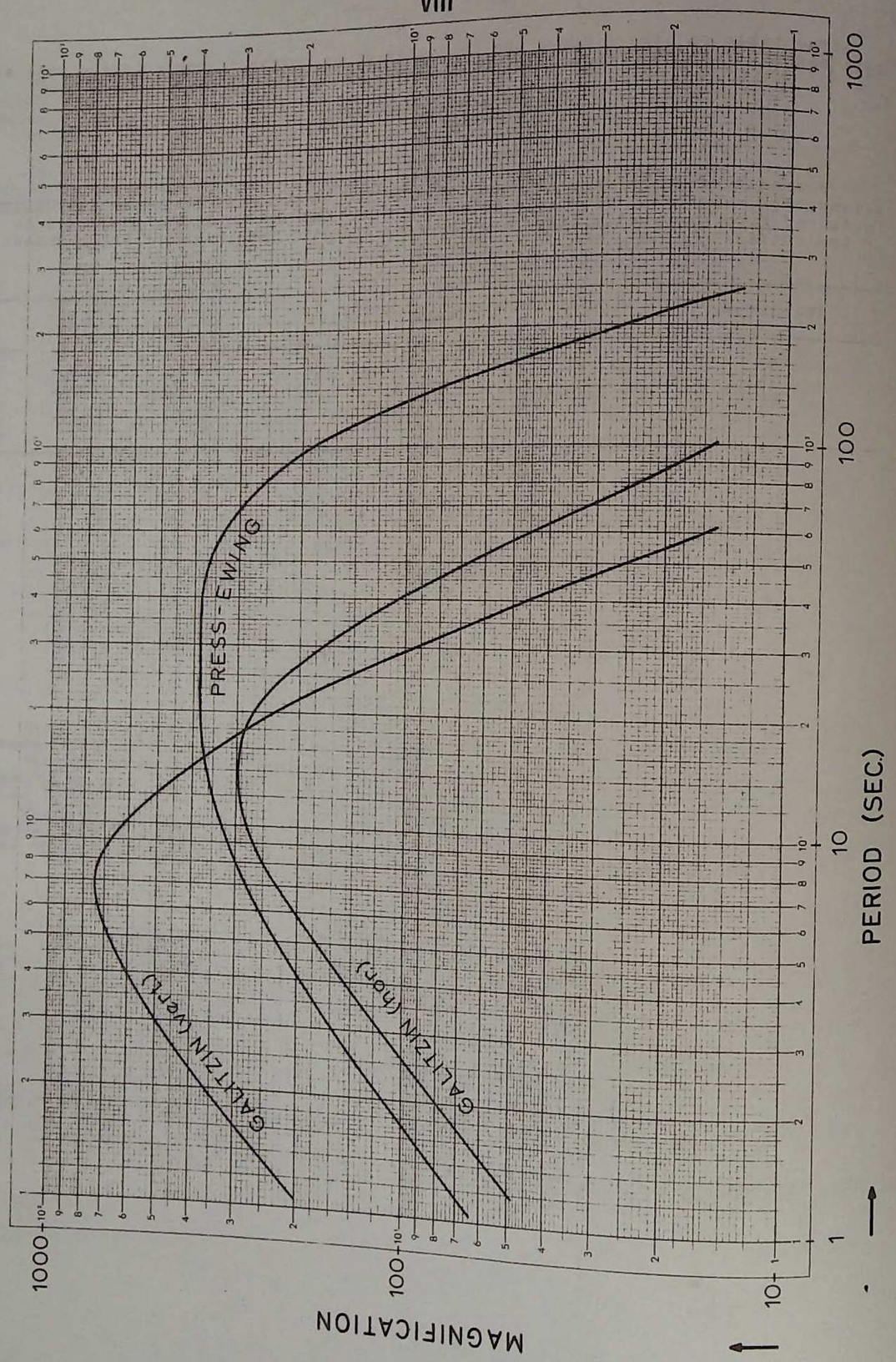
The table on page 1 shows the character of the microseismic activity (see also 1915 page 101 and 1916 page 101). The numbers 0, 1, 2 and 3 mean:

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

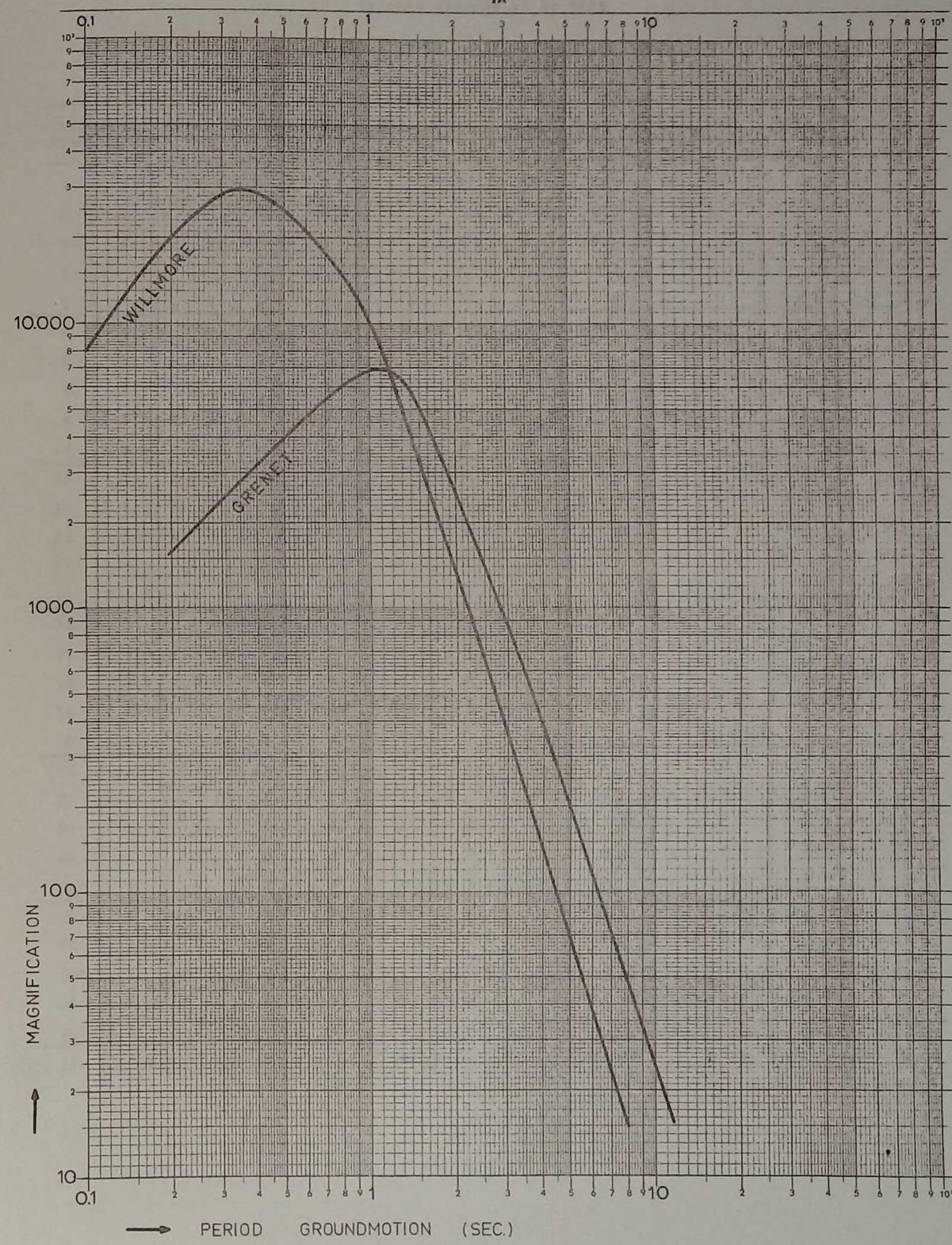
For measuring the microseismic activity the records of the horizontal GALITZIN seismograph were used. The table below gives the amplitudes of the oscillations (measured from the medium line) and the corresponding amplitudes of the movement of the surface.

Character	Ampl. record	Ampl. surface
0	0 - ½ mm	0 - 1½ μ
1	½ - 2 mm	1½ - 5 μ
2	2 - 4 mm	5 - 10 μ
3	> 4 mm	> 10 μ

VIII



IX



Seismic Records at De Bilt

Character of the microseismic movement

Date 1969	Jan.	Febr.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1	2	1	1	1	0	0	1 0 0	1	1	1	1
2	1	2	1	1	1	0 1	0 1	0	1 1 0	1 2	1 2	1
3	1	2 1	1	1	1	1 2 1	1	0	0	2	2 3	1
4	1 2	1	1	1 2	1	1	1	0 1	0	2 1 1	3 2	1
5	2	1 2	1	2	1 0 0	1	1	1 1 0	0	1	2 1 1	1
6	2 1 1	2	1	2 1	0 1	1 0	1	0	0	1 2 3	1 2	1
7	1	2	1	1	1	0	1 2 1	0	0 1	3 3 2	2 3	1
8	1	2	1 2	1	1	0	1	0	1	2 2 1	3	1
9	1 2 2	2 1	2 3	1 2 2	1	0	1 0	0	1	1	3	1
10	2 1 1	1	3 2	2	1	0	0	0	1	1	3 2	1 2
11	1	1 2 3	2	2 1 2	1	0	0	0	1	1 0	2	2 1
12	1 2 3	3 2	2 1	2	1	0	0	0 0 1	1	0 1	2 3 2	1
13	3	2 1	1 2	2 2 1	1	0 0 1	0	1 0	1 0	1	2 1	1 2
14	3	1	2	1	1	1	0	0	0	1	1 2	2 3
15	3 3 2	1	2 3 3	1	1	1	0	0	0 1	1	2	3
16	2	1	3 2 2	1	1	1	0	0	1	1	2	3 2 1
17	2 3 3	1	2	1	1	1	0	0	1	1	2 3 2	1
18	3 3 2	1 2 3	2	1	1	1	0 1 1	0 1 1	1 2 2	1	2 3 2	1 1 2
19	2 2 1	3	2 1 1	1	1	1	1	1	-	1	2	2 3
20	1	3 2	1	1	1	1	1 0	1	-	1	2 2 1	3 2
21	1	2 1 2	1	1 2 2	1	1	0	1	-	1	1	2
22	1	2 1	1	2 1	1	1 0	0	1	-	1	1	2
23	1	1	1 1 0	1	1	0	0	1 2	1	1 2 3	1	2 1
24	1	1	0	1	1	0	0	2 2 1	1	3 2 2	1	1 2
25	1	1	0	1	1	0 1 1	0 1 1	1	1	2	1	2
26	1	1 0	0	1	1 2 1	1	1	1	1	2 3 2	1	2 1
27	1	0	0	1	1 0	1	1	1	1 2	2 1	1 1 2	1
28	1	0 1	0 0 1	1	0	1 0 0	1	1	2 3 3	1	2 3	1 2 3
29	1		1	1	0	0	1	1 2 1	3 2 1	1 2 2	3 2 1	3
30	1 2 3		1	1	0	0	1	1 0	1	2 2 1	1	3 2
31	3 2		1		0		1	0 1		1		2 1 0

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Date without indication are from USCGS; d.b.m. means disturbed by microseisms
Jan. 1	WIT: iP	09	18	52.2							51.2N 179.4W, H: 09 07 04.3, h 34 km. Mb 5.4. Andreanof Islands, Aleutian Islands.
Jan. 3	eP	03	24	06							37.1N 57.9E, H: 03 16 38.1, h 11 km. Mb 5.6, Ms 5.2. Iran-USSR border region.
	ePP	03	25	45							
	eL	03	36.0								
	F	04.1									
Jan. 3	WIT: iP	13	40	01							51.2N 179.4W, H: 13 28 12.8, h 29 km. Mb 5.8, Ms 5.2. Andreanof Islands, Aleutian Islands.
Jan. 5	iPKP	13	45	48							8.0S 158.9E, H: 13 26 39.9, h 47 km. Mb 6.4, Ms 7.1. Solomon Islands.
	ePP	13	48	00							
	iSKP	13	49	13							
	eSS	14	06.0								
	eL	14.4				24		123		7.5	
	F	16.0									
	WIT: iPKP	13	45	48.0	(-)						
	ePP	13	47	56.5							
Jan. 6	WIT: iPKP	12	47	56.5							22.5S 179.2E, H: 12 29 12.5, h 586 km. Mb 4.5. South of Fiji Islands.
Jan. 6	WIT: ePKP	15	50.7								30.2S 178.0W, H: 15 30 29.7, h 137 km. Mb 5.2. Kermadec Islands region.
Jan. 6	ePKP	15	58	24							10.5S 164.5E, H: 15 39 00.9, h 32 km. Mb 6.2, Ms 6.8. Santa Cruz Islands region.
	ePP	16	00	52							
	eSS	16	19.0								
	eSSS	16	24.0								
	eL	16	40			23		36	7.0		
	F	19.1									
	WIT: ePKP	15	58	19							
Jan. 7	HEE: i	13	25	55							Local shock.
Jan. 9	WIT: ePKP	19	11	56.5							25.2S 178.4E, H: 18 53 03.5, h 550 km. Mb 5.0. South of Fiji Islands.
Jan. 10	eL	04	08								29.0N 130.6E, H: 03 20 54.9, h N. Mb 5.5. Ryukyu Islands.
	F	04.5									
	WIT: eP	03	33.5								
Jan. 11	eL	05	46								28.4S 177.0W, H: 04 26 26.8, h 68 km. Mb 5.4. Kermadec Islands.
	F	07.0									
	WIT: ePKP	04	46.6								
Jan. 11	WIT: ePKP	06	46	06.5							17.7S 178.8W, H: 06 27 29.0, h 529 km. Mb 4.6. Fiji Islands region.
Jan. 11	eL	12	29								10.2S 13.2W, H: 11 58 46.8, h N. Mb 4.9, Ms 5.0. Ascension Island region.
	F	12	42								
Jan. 12	WIT: ePKP	04	28	02.5							23.3S 179.6E, H: 04 09 24.3, h 697 km. Mb 4.2. South of Fiji Islands.
Jan. 13	eL	07	34								d.b.m. 37.1S 73.6W, H: 06 36 37.0, h N. Mb 4.9, Ms 5.6. Near coast of central Chile.
	F	08.2									

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Date without indication are from USCGS; d.b.m. means disturbed by microseisms
Jan. 14	iP	23	17	25							d.b.m. 36.2N 29.2E, H: 23 12 07.9, h N. Mb 5.5, Ms 6.0. Turkey.
	ePP	23	17	51							
	eS	23	21.6								
	eL	23	24			20		200		6.5	
	F	23.9									
	WIT: iP	23	17	12.8							
	HEE: eP	23	17	14							
Jan. 15	WIT: iP	08	49	56.9	-						45.6N 26.4E, H: 08 46 29.4, h 135 km. Mb 4.5. Rumania.
Jan. 15	WIT: iP	19	42	00.0	+						37.2N 116.2W, H: 19 30 00.0, h 0 km. Mb 5.3. Southern Nevada.
Jan. 16	WIT: iPKP	11	26	25							23.6S 176.1W, H: 11 06 35.7, h 45 km. Mb 5.1, Ms 5.1. South of Fiji Islands.
Jan. 18	eL	04	47								3.0S 118.9E, H: 03 49 55.5, h N. Mb 5.3. Celebes.
	F	05	14								
Jan. 19	iP	07	13	35	+						d.b.m. 45.0N 143.2E, H: 07 02 04.4, h 204 km. Mb 6.4. Hokkaido, Japan region.
	iPP	07	16	32							
	iS	07	23	02							
	eL	07	35			20		64	7.0		
	F	09.0									
	WIT: iP	07	13	29.8	+						
	eS	07	22.8								
	HEE: eP	07	13	41							
	eS	07	23	07							
Jan. 19	ePKP	19	10	08	+						14.9S 167.2E, H: 18 50 52.1, h 112 km. Mb 6.2. New Hebrides Islands.
	epPKP	19	10	52							
	ePP	19	13	14							
	iSKS	19	17	18							
	eSKKS	19	19	53							
	eSS	19	31	32							
	eSSS	19	36.5								
	eL	19	50			28		20		6.7	
	F	21.5									
	WIT: iPKP	19	10	00.0	+						
	i	19	10	08.5							
Jan. 20	ePP	12	46.6								10.3S 164.6E, H: 12 24 35.2, h 4 km. Mb 5.6, Ms 5.8. Santa Cruz Islands region.
	eL	13	30								
	F	14.0									
Jan. 20	iP	14	31	36	+						54.9N 166.0E, H: 14 20 11.5, h 23 km. Mb 6.1, Ms 5.6. Komandorsky Islands region.
	eL	15.0									
	F	15.6									
	WIT: iP	14	31	31.3	+						
Jan. 21	eP	08	13	48							28.7N 43.6W, H: 08 05 40.1, h N. Mb 5.2, Ms 5.6. North Atlantic Ridge.
	eL	08	25								
	F	08.9									
Jan. 21	eL	15	00								38.3N 69.7E, H: 14 37 15.1, h 52 km. Mb 5.1. Tadzhik SSR.
	F	15	15								
Jan. 21	WIT: ePKP	20	57	42							21.9S 169.9E, H: 20 38 00.7, h 33 km. Mb 4.9, Ms 5.2. Loyalty Islands region.
Jan. 22	eL	01.3									55.9N 163.0E, H: 00 42 30.0, h N. Mb 5.5, Ms 5.0. Off east coast of Kamchatka.
	F	01.9									
	WIT: iP	00	53	40							

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Date without indication are from USCGS; d.b.m. means disturbed by microseisms
Jan. 22	eL	17	54								49.4N 155.5E, H: 17 14 42.8,
	F	18	23								h 50 km. Mb 5.4, Ms 4.7.
	WIT: eP	17	26	20.5							Kuril Islands.
Jan. 24	iPKP	02	51	42	-						21.9S 179.6W, H: 02 33 03.5,
	ipPKP	02	54	04							h 595 km. Mb 5.9.
	eSKKS	03	01	21							Fiji Islands region.
	eSP	03	04	48							
	eSS	03	13.9								
	F	04.2									
	WIT: ePKP	02	51	41							
	i	02	51	46.5	-						
	ipPKP	02	54	08.5							
Jan. 25	eL	06	15								0.8N 126.1E, H: 05 19 17.1,
	F	06.6									h 24 km. Mb 5.9, Ms 5.7.
	WIT: ePKP	05	38	41							Molucca Passage.
Jan.	eL	00	10								22.9N 92.3E, H: 23 34 28.4,
	F	00	32								h 50 km. Mb 5.2.
	WIT: eP	23	45.8								India-East Pakistan border region.
Jan. 26	eL	14	35								35.6N 6.0E, H: 14 26 17.2,
	F	14	40								h 31 km. Mb 4.7. Algeria.
Jan. 26	eP	15	16	47							55.8N 162.9E, H: 15 05 32.7,
	eL	15	46								h 16 km. Mb 5.5, Ms 5.5.
	F	16.5									Near east coast of Kamchatka.
	WIT: eP	15	16	41							
Jan. 26	WIT: eP	16	56	25							56.0N 163.1E, H: 16 45 15.1,
											h N. Mb 4.9.
											Off east coast of Kamchatka.
Jan. 26	WIT: eP	17	00	05							55.9N 163.0E, H: 16 48 52.7,
											h 21 km. Mb 5.0.
											Off east coast of Kamchatka.
Jan. 27	eL	04	21								30.6S 177.2W, H: 03 09 16.0,
	F	05.6									h 24 km. Mb 5.0.
											Kermadec Islands region.
Jan. 27	WIT: ePKP2	10	21	02.5							30.9S 179.7W, H: 10 01 05.7,
											h 300 km. Mb 4.9.
											Kermadec Islands.
Jan. 27	ePP	13	34.2								8.8N 137.7E, H: 13 15 24.4,
	ePS	13	43.8								h 5 km. Mb 5.5, Ms 5.6.
	ePPS	13	44.5								West Caroline Islands.
	eSS	13	49.6								
	eL	14	10			18		10		6.2	
	F	14.9									
Jan. 27	WIT: eP	14	53	03.5	(+)						12.5N 114.4E, H: 14 39 58.3,
											h N. Mb 5.3.
											South China Sea.
Jan. 28	eL	01	41								14.8S 173.4W, H: 00 27 31.2,
	F	02.4									h 13 km. Mb 5.2, Ms 5.4.
											Samoa Islands region.
Jan. 28	WIT: iPKP	11	48	24.5	+						21.9S 179.7W, H: 11 29 44.7,
											h 640 km. Mb 4.5.
											Fiji Islands region.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Jan. 29	ePKP	18	04	06	+						17.2S 171.6W, H: 17 44 31.1,
	ePP	18	07	15							h N. Mb 6.0, Ms 5.6.
	eL	19.1									Tonga Islands region.
	F	19.5									
	WIT: iPKP	18	04	05.5	-						
Jan. 30	eP	10	43	46							d.b.m. 4.8N 127.4E, H: 10 29
	ePP	10	48.0								40.4, h 70 km. Mb 5.9.
	eSKS	10	54.5								Talaud Islands.
	eL	11.5				20		340		7.7	
	F	14.0									
	WIT: eP	10	43	48							
	ePP	10	48								
	HEE: eL	11	25								
	F	11	54								
Jan. 31	eL	01	38								d.b.m. 4.2N 128.1E, H: 00 44
	F	02.5									13.3, h N. Mb 5.7, Ms 6.3.
											North of Halmahera.
Jan. 31	WIT: iP	04	21	33.8	-						53.5N 158.7E, H: 04 10 26.3,
											h 145 km. Mb 5.2.
											Near east coast of Kamchatka.
Jan. 31	eL	14.7									d.b.m. 4.3N 128.1E, H: 13 48
	F	15.4									22.2, h N. Mb 5.4, Ms 5.7.
											North of Halmahera.
Jan. 31	WIT: iPKP	23	51	06.5	(+)						32.1S 179.6E, H: 23 31 16.2,
											h 391 km. Mb 5.2.
											South of Kermadec Islands.
Feb. 1	eL	17	14								d.b.m. 4.0N 128.1E, H: 16 19
	F	17.7									13.3, h N. Mb 5.2, Ms 5.5.
											North of Halmahera.
Feb. 1	eL	20	30								d.b.m. 7.2N 34.0W, H: 20 03
	F	20	43								26.8, h N. Mb 4.8.
											Central Mid-Atlantic Ridge.
Feb. 2	eL	02	33								d.b.m. 3.9N 128.2E, H: 01 38
	F	03.1									44.2, h N. Mb 5.4, Ms 5.8.
											North of Halmahera.
Feb. 3	ePKP	08	10	12							25.8S 178.1E, H: 07 51 25.4,
	WIT: ipPKP	08	12	34.0							h 629 km. Mb 5.3.
											South of Fiji Islands.
Feb. 3	WIT: iPKP	08	37	00							25.7S 178.3E, H: 08 18 14.7,
											h 654 km. Mb 5.3.
											South of Fiji Islands.
Feb. 3	eL	19	56								4.4N 128.1E, H: 19 01 29.4,
	F	20.3									h N. Mb 5.2, Ms 5.5.
											North of Halmahera.
Feb. 3	eP	21	55	50	+						4.9S 127.4E, H: 21 41 41.9,
	ePP	22	00	13							h N. Mb 6.1, Ms 6.4.
	eSKS	22	06	26							Talaud Islands.
	eS	22	07	47							
	ePS	22	09	17							
	ePPS	22	10	32							
	eL	22	30			30		80		7.2	
	F	24.1									
	WIT: eP	21	55	48							
	ePP	22	00	08.5							

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Feb. 4	iPP	01	57	06	+						0.6S 121.7E, H: 01 38 26.2,
	eS	02	04	28							h N. Mb 4.8, Ms 6.1.
	eSS	02	12	12							Northern Celebes.
	eL	02	30			20		14		6.5	
	F	03.3									
Feb. 4	eP	04	23	40	-						8.2S 80.2W, H: 04 10 13.3,
	eS	04	34	36							h 16 km. Mb 6.0, Ms 5.9.
	eL	04	55			28			16	6.5	Off coast of northern Peru.
	F	05.5									
	WIT: iP	04	23	36.0							
Feb. 4	WIT: iPKP	11	47	20.0	+						19.8S 178.9W, H: 11 28 44.5,
											h 623 km. Mb 5.0.
											Fiji Islands region.
Feb. 5	eL	11	32								3.8N 128.6E, H: 10 36 24.5,
	F	12.1									h 35 km. Mb 5.2.
											North of Halmahera.
Feb. 6	eL	00	13								0.7N 29.7W, H: 23 45 21.4,
	F	00	30								h N. Mb 4.9.
											Central Mid-Atlantic Ridge.
Feb. 8	WIT: eP	23	31	03.5							29.9N 51.0E, H: 23 23 34.9,
											h 52 km. Mb 5.1.
											Southern Iran.
Feb. 9	eL	16	16								21.7N 101.3E, H: 15 34 44.4,
	F	16.5									h N. Mb 5.0, Ms 4.9.
											Burma-China border region.
Feb. 10	iPKP1	23	16	40	-						22.7S 178.6E, H: 22 58 05.8,
	iPKP2	23	16	59							h 673 km. Mb 6.0.
	ipPKP1	23	19	16							South of Fiji Islands.
	iPP	23	20	25							
	iPPP	23	23	55							
	eSKKS	23	26	18							
	ePS	23	30	49							
	ePPS	23	33	48							
	eSS	23	38	58							
	F	01.3									
	WIT: iPKP1	23	16	37.0	(+)						
	HEE: iPKP2	23	16	56	-						
Feb. 10	WIT: iPKP1	23	21	35.5							23.1S 178.8E, H: 23 02 57.5,
											h 670 km. Mb 5.8.
											South of Fiji Islands.
Feb. 10	WIT: i	23	49	29.3							
Feb. 11	iP	22	17	51	-						41.4N 79.2E, H: 22 08 54.7,
	eS	22	25.4								h N. Mb 5.8.
	eSS	22	28.9								Kirgiz-Sinkiang border region.
	eL	22	33			12			40	6.5	
	F	24.0									
	WIT: eP	22	17	38							
	i	22	17	43.2							
	HEE: eP	22	17	54							
Feb. 11	WIT: ePP	22	34	08							6.7S 126.8E, H: 22 16 13.5,
											h 450 km. Mb 6.0.
											Banda Sea.
Feb. 12	WIT: eP	15	51	06							55.9N 162.9E, H: 15 39 54.6,
											h 44 km. Mb 5.1.
											Near east coast of Kamchatka.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Feb. 12	WIT: iPKP	18	59	35.8							22.7S 179.4W, H: 18 40 38.3,
											h 470 km. Mb 4.6.
											South of Fiji Islands
Feb. 13	eL	11	17								5.0N 126.9E, H: 10 22 31.1,
	F	12.0									h N. Mb 4.9, Ms 5.3.
											Mindanao, Philippine Islands.
Feb. 13	WIT: eP	11	20	22							25.0N 62.9E, H: 11 11 25.5,
											h N. Mb 5.2.
											Western Pakistan.
Feb. 14	eL	01	26								8.3S 80.1W, H: 00 40 31.3,
	F	01	56								h 22 km. Mb 4.8, Ms 5.2.
											Off coast of northern Peru.
Feb. 15	WIT: ePKP	09	02	28							24.1S 180.0W, H: 08 45 34.4,
											h 550 km. Mb 5.0.
											South of Fiji Islands.
Feb. 15	WIT: ePKP	14	08	16.0							13.6S 167.2E, H: 13 49 13.6,
											h 205 km. Mb 5.3.
											New Hebrides Islands.
Feb. 15	WIT: ePKP	15	22	56.0							26.0S 178.1E, H: 15 03 12.3,
											h 680 km. Mb 4.6.
											South of Fiji Islands.
Feb. 17	ePP	01	01	20							3.8N 128.4E, H: 00 42 59.5,
	eSS	01	16.8								h 14 km. Mb 5.6, Ms 6.5.
	eL	01	33			20		11		6.5	North of Halmahera.
	F	03.0									
Feb. 18	WIT: ePKP1	05	34	40.0							24.0S 176.7W, H: 05 14 55.9.
	iPKP2	05	35	07.7	+						h 99 km. Mb 5.4.
											South of Fiji Islands.
Feb. 18	WIT: iPKP	21	01	48.4	(+)						17.9S 178.6W, H: 20 43 13.6,
											h 569 km. Mb 5.2.
											Fiji Islands region.
Feb. 19	WIT: ePKP	03	41	31.0							22.6S 176.5W, H: 03 21 59.3,
											h 162 km. Mb 4.8.
											South of Fiji Islands.
Feb. 20	ePKKP	10	25.6								d.b.m. 3.5N 128.2E, H: 09 55
	eL	10	48			24		19		6.5	33.8, h 33 km. Mb 5.7, Ms 6.4.
	F	in next shock									North of Halmahera.
Feb. 20	ePP	10	49	07							d.b.m. 3.5N 128.4E, H: 10 30
	eL	11	24			22		15		6.-	22.1, h 77 km. Mb 6.0.
	F	12.1									North of Halmahera.
Feb. 20	WIT: ePKP	13	20	45.0							19.9S 177.7W, H: 13 02 04.1,
											h 579 km. Mb 5.0.
											Fiji Islands region.
Feb. 20	eL	17	54			18		10		6.5	d.b.m. 3.7N 128.2E, H: 16 58
	F	18.5									13.8, h 48 km. Mb 5.3, Ms 5.8.
											North of Halmahera.
Feb. 22	WIT: iPKP	18	30	41	(+)						24.8S 177.0W, H: 18 11 01.2,
											h 138 km. Mb 5.0.
											South of Fiji Islands.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Feb. 23	eP	00	51	14	+						3.1S 118.9E, H: 00 36 56.6, h 13 km. Mb 6.1, Ms 6.9. Celebes. 64 Killed.
	iPP	00	55	44							
	ePPP	00	58	00							
	eSKS	01	02.0								
	eS	01	03.3								
	ePS	01	04	56							
	iSS	01	10	54							
	eSSS	01	15.3								
	eL	01	26			22		120		7.5	
	F	04.0									
WIT:	ePP	00	55.6								
Feb. 23	eL	07	01								3.4S 119.0E, H: 06 03 47.0, h 7 km. Mb 5.3, Ms 5.6. Celebes.
	F	07.6									
Feb. 24	ePP	00	28	35							6.2S 131.0E, H: 00 08 45.6, h 38 km. Mb 5.8, Ms 5.9. Tanimbar Islands region.
	ePS	00	38.1								
	eSS	00	44	38							
	eL	01	07								
	F	01.7									
Feb. 24	eL	05.2									3.2S 119.0E, H: 04 18 03.7, h N. Mb 5.1, Ms 4.8. Celebes.
	F	05.7									
Feb. 25	eL	02	32								5.2N 126.3E, H: 01 35 03.0, h 65 km. Mb 5.5. Mindanao, Philippine Islands.
	F	02	54								
Feb. 25	eP	07	51	12							15.2N 87.5W, H: 07 39 00.6, h 15 km. Mb 5.4, Ms 5.0. Honduras.
	eL	08	19								
	F	08	55								
WIT:	eP	07	51	14							
Feb. 25	eL	14	42								19.3S 12.1W, H: 14 05 59.8, h N. Mb 5.3. South Atlantic Ridge.
	F	15	12								
Feb. 26	eSn	01	30	09							48.4N 9.1E, H: 01 28 01.3, h 27 km. Mb 4.4. Germany.
	eSg	01	30	31							
	eL	01	31.0								
	F	01	38								
WIT:	ePn	01	29	16							
	iPn	01	29	23							
	i	01	29	38							
Feb. 28	iP	02	45	01.0	+						36.0N 10.6W, H: 02 40 32.5, h 22 km. Mb 7.3, Ms 8.0. North Atlantic Ocean. 13 Killed. Felt by ship "Caltex Naples", position 34°16'N 14°01'W, at 02 h 40 m G.M.T. during 3 minutes.
	iS	02	48	36							
	eL	02	50								
	F	08.0								>8.0	
WIT:	iP	02	45	14.5							
Feb. 28	WIT: iP	04	30	15.5	(+)						36.2N 10.5W, H: 04 25 36.9, h N. Mb 5.7. North Atlantic Ocean.
Feb. 28	eL	14	18								3.4S 119.0E, H: 13 18 07.4, h 51 km. Mb 5.3. Celebes.
	F	14	42								
Mar. 2	eL	14	55								3.2S 118.8E, H: 13 57 24.6, h 48 km. Mb 5.1, Ms 5.4. Celebes.
	F	15	30								
Mar. 2	eL	23	12								12.9N 120.8E, H: 22 23 17.4, h 80 km. Mb 5.0. Mindoro, Philippine Islands.
	F	23.7									

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Mar. 3	iP	01	03	42	-						40.1N 27.4E, H: 00 59 10.5, h 4 km. Mb 5.6, Ms 5.3. N.W.-Turkey.
	eS	01	07	21							
	eSS	01	08	11							
	eL	01	09			20		36		5.7	
	F	02.0									
WIT:	eP	01	03	36	-						
Mar. 3	WIT: eP	06	30	06.5	(-)						30.2N 79.9E, H: 06 20 21.8, h 20 km. Mb 5.3. Tibet-India border region.
Mar. 3	iP	15	01	06	+						51.6N 159.3E, H: 14 49 28.0, h 12 km. Mb 5.3. Off east coast of Kamchatka.
	eS	15	10.6								
	eL	15	30								
	F	16.2									
WIT:	iP	15	01	03.0	+						
Mar. 3	ePKP	16	49	52							16.9S 172.5W, H: 16 30 13.8, h N. Mb 5.1, Ms 5.5. Samoa Islands region.
	eL	17	56								
	F	18.6									
Mar. 3	eL	21	18								3.6N 128.5E, H: 20 22 07.3, h 72 km. Mb 4.8. North of Halmahera.
	F	21.8									
Mar. 4	WIT: iPKP	06	42	45.0							23.8S 179.1E, H: 06 23 22.8, h 534 km. Mb 4.7. South of Fiji Islands.
Mar. 5	eP	14	06	18							4.0N 128.2E, H: 13 52 04.9, h 48 km. Mb 5.7, Ms 5.8. North of Halmahera.
	ePP	14	10	44							
	eSKS	14	17.0								
	eL	14	46								
	F	15.7									
Mar. 5	ePP	16	29.9								4.1N 128.4E, H: 16 11 12.2, h 49 km. Mb 5.1, Ms 5.6. North of Halmahera.
	eL	17	06								
	F	18.0									
Mar. 5	iP	19	41	42.0	+	4	6				36.4N 70.7E, H: 19 33 23.0, h 208 km. Mb 5.9. Hindu Kush region.
	iS	19	48	25							
	F	20.7									
WIT:	eP	19	41	33.0	+						
	i	19	41	34.5							
Mar. 6	eL	02	02								4.2N 128.3E, H: 01 06 01.2, h 39 km. Mb 5.1. North of Halmahera.
	F	03.0									
Mar. 6	eL	19	33.0								36.0N 10.6W, H: 19 23 44.1, h N. Mb 4.8. North Atlantic Ocean.
	F	19.7									
WIT:	eP	19	28	24							
Mar. 7	WIT: iPKP	02	03	34.6	+						17.8S 175.4W, H: 01 44 26.7, h 264 km. Mb 4.5. Tonga Islands.
Mar. 7	WIT: eP	08	35	01							49.8N 78.1E, H: 08 26 57.5, h 0 km. Mb 5.5. Eastern Kazakh SSR.
Mar. 8	WIT: iP	10	31	49.8	(-)						41.3N 139.6E, H: 10 20 09.3, h 169 km. Mb 5.7. Hokkaido, Japan region.
Mar. 9	eSS	14	24	20							d.b.m. 4.1S 135.5E, H: 13 47 59.4, h 14 km. Mb 5.5, Ms 6.6. West New Guinea region.
	eL	14	42			20		14		6.5	
	F	16.3									
Mar. 10	WIT: iPKP	07	12	51.0							5.6S 147.2E, H: 06 54 17.6, h 206 km. Mb 5.8. East New Guinea region.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Mar. 10	WIT: eP	19	12	15.5	-						36.4N 71.0E, H: 19 04 02.9, h 201 km. Mb 5.1. Afghanistan-USSR border region.
Mar. 13	eL	23	06								d.b.m. 8.0S 80.1W, H: 22 19 37.2, h 38 km. Mb 5.4, Ms 5.1. Off coast of northern Peru.
	F	23.4									
Mar. 14	eP	08	59	12							d.b.m. 12.9N 86.8W, H: 08 47 16.3, h 178 km. Mb 5.6. Nicaragua.
	epP	08	59	54							
	ePP	09	02	27							
	eL	09	25								
	F	10.0									
Mar. 15	WIT: eP	13	47	20							51.2N 179.1W, H: 13 35 35.3, h 46 km. Mb 5.6, Ms 5.2. Andreanof Islands, Aleutian Islands.
Mar. 16	eL	16	37								38.5N 142.7E, H: 15 54 17.2, h 40 km. Mb 5.4, Ms 5.5. Near east coast of Honshu, Japan.
	F	17.0									
	WIT: iP	16	06	32.2	-						
Mar. 17	WIT: iPKP	01	14	35.5	+						17.7S 179.9E, H: 00 56 06.2, h 614 km. Mb 5.4. Fiji Islands.
Mar. 17	WIT: iPKP	01	20	24							17.8S 180.0E, H: 01 01 55.6, h 625 km. Mb 4.5. Fiji Islands.
Mar. 17	WIT: iPKP	01	48	36.5	(-)						17.6S 179.8E, H: 01 30 07.3, h 615 km. Mb 4.8. Fiji Islands.
Mar. 18	WIT: ePKP	03	45	19							21.4S 171.1E, H: 03 25 31.8, h 15 km. Mb 5.5. Loyalty Islands region.
Mar. 18	eL	04	43								21.4S 170.9E, H: 03 32 50.8, h N. Mb 5.3, Ms 5.8. Loyalty Islands region.
	F	05.6									
	WIT: ePKP	03	52	38							
Mar. 18	eL	17.0									44.1N 151.0E, H: 16 16 39.6, h 44 km. Mb 5.7. Kuril Islands region.
	F	17.3									
	WIT: iP	16	28	38.5	+						
Mar. 18	eL	21	07								50.1N 130.0W, H: 20 31 27.3, h N. Mb 5.0. Vancouver Island region.
	F	21	25								
Mar. 18	WIT: ePKP	22	55	35.5							24.0N 176.0W, H: 22 35 30.2, h 68 km. Mb 5.4. South of Fiji Islands.
Mar. 19	eL	00	06								50.7N 156.7E, H: 23 30 41.2, h 90 km. Mb 4.7. Kuril Islands.
	F	00	21								
Mar. 19	eP	14	11	45							28.8N 128.2E, H: 13 59 22.7, h 136 km. Mb 5.8. Ryukyu Islands.
	ipP	14	12	22							
	eS	14	22	06							
	F	15.1									
	WIT: eP	14	11	40							
	epP	14	12	22							

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Mar. 20	eP	08	29.9								31.3N 114.3W, H: 08 17 41.9, h 20 km. Mb 5.4, Ms 5.7. Gulf of California.
	eL	08	58								
	F	09.7									
	WIT: eP	08	30.0								
Mar. 20	eP	16	32	52							8.7N 127.3E, H: 16 18 56.4, h N. Mb 6.1, Ms 6.1. Philippine Islands region.
	iPP	16	37	06							
	eSKS	16	43	28							
	eS	16	44	32							
	eL	17	12								
	F	18.5									
	WIT: iP	16	32	44.0	+						
Mar. 21	eP	03	17	28							40.3N 143.7E, H: 03 05 11.9, h N. Mb 5.3. Off east coast of Honshu, Japan.
	eL	03	47								
	F	04.3									
	WIT: eP	03	17	20							
Mar. 21	eL	04	35								31.2N 114.3W, H: 03 53 42.4, h N. Mb 5.3. Ms 5.0. Gulf of California.
	F	05.0									
Mar. 21	iP	05	08	35	-						31.2N 114.2W, H: 04 56 20.3, h N. Mb 5.4., Ms 5.5. Gulf of California.
	eL	05	38								
	F	06.3									
	WIT: eP	05	08	39							
Mar. 21	iP	06	46	43	-						31.1N 114.3W, H: 06 34 22.2, h 4 km. Mb 5.5, Ms 5.4. Gulf of California.
	eL	07	16								
	F	08.0									
	WIT: eP	06	46	47							
Mar. 21	eL	08	03								31.3N 114.2W, H: 07 21 11.6, h N Mb 5.1, Ms 5.2. Gulf of California.
	F	08.7									
Mar. 21	eP	10	22	31							31.2N 114.3W, H: 10 10 10.7, h 5 km. Mb 5.4, Ms 4.9. Gulf of California.
	eL	10	52								
	F	11.3									
Mar. 21	eL	17	10								31.3N 114.1W, H: 16 29 40.4, h N. Mb 4.7,Ms 4.7. Gulf of California.
	F	17	39								
Mar. 21	eL	18	42								31.1N 114.3W, H: 18 00 20.6, h N. Mb 5.2. Gulf of California.
	F	19.1									
Mar. 22	eL	05	20								38.9N 70.6E, H: 04 52 32.6, h 8 km. Mb 5.3. Afghanistan-USSR border region.
	F	05	35								
	WIT: eP	05	00	51							
Mar. 22	eL	07	04								15.5S 176.1W, H: 05 43 57.5, h N. Mb 5.4. Fiji Islands region.
	F	07.5									
Mar. 22	eL	08	08								31.4N 114.1W, H: 07 25 35.6, h N. Mb 5.1, Ms 5.1. Gulf of California.
	F	08	40								
Mar. 23	eP	12	10	55							0.9N 26.0W, H: 12 01 01.5, h N. Mb 4.9. Central Mid-Atlantic Ridge.
	eS	12	18	34							
	eL	12	26								
	F	13.0									
Mar. 23	eL	16	19								31.5N 114.1W, H: 15 39 01.1, h 16 km. Mb 4.7, Ms 4.7. Gulf of California.
	F	16	45								

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Mar. 23	iP	21	13	25	-						39.2N 28.5E, H: 21 08 42.6,
	iS	21	17	18							h 12 km. Mb 5.6, Ms 5.6.
	eL	21	18			18		60		6.0	N.W.-Turkey.
	F	22.2									
	WIT: iP	21	13	20.5	-						
	HEE: eP	21	13	29							
Mar. 24	eP	02	04	12							39.1N 28.5E, H: 01 59 30.6,
	eS	02	08	16							h 6 km. Mb 5.0.
	eL	02	10								N.W -Turkey.
	F	02.6									
	WIT: eP	02	04	10							
Mar. 24	eL	09	43								31.3N 114.2W, H: 09 02 32.1,
	F	10.1									h 25 km. Mb 4.9, Ms 4.8.
											Gulf of California.
Mar. 24	eL	12	08								27.5N 33.8E, H: 11 54 15.5,
	F	12	40								h 21 km. Mb 5.2.
											United Arab Republic.
Mar. 25	iP	13	26	13	-						39.2N 28.4E, H: 13 21 32.4,
	iPP	13	26	53							h 23 km. Mb 5.6, Ms 5.5.
	eS	13	30	04							N.W.-Turkey.
	eL	13	31			16		75		6.0	
	F	14.7									
	WIT: iP	13	26	08.5	-						
	HEE: eP	13	26	10							
Mar. 25	WIT: iPKP	13	32	21							23.5S 177.8W, H: 13 13 01.4,
											h 291 km. Mb 5.4.
											South of Fiji Islands.
Mar. 26	eL	16	15								16.2N 122.2E, H: 15 27 40.6,
	F	16.8									h 36 km. Mb 5.0.
											Luzon, Philippine Islands.
Mar. 27	eP	05	00	44							3.9N 128.5E, H: 04 46 26.1,
	ePP	05	05	05							h N. Mb 5.7, Ms 5.7.
	eL	05	40								North of Halmahera.
	F	07.0									
Mar. 27	eP	12	55	46	+						4.8N 127.5E, H: 12 41 35.9,
	ePKP	12	59	56							h 32 km. Mb 6.1, Ms 6.7.
	ePP	13	00	22							Talaud Islands.
	eSKS	13	06	34							
	ePS	13	09.6								
	eSS	13	15.5								
	eSSS	13	19.5								
	eL	13.5				26			58	7.0	
	F	15.6									
	WIT: eP	12	55	45							
	ePP	13	00	19							
Mar. 28	iP	01	53	17	-	6	5				38.6N 28.4E, H: 01 48 30.4,
	eS	01	57	13							h 9 km. Mb 6.0, Ms 6.4.
	eL	01	57.5			20		250		6.5	W.-Turkey.
	F	05.6									
	WIT: eP	01	53	09.5							
	i	01	53	16.0							
	HEE: iP	01	53	16							
Mar. 28	eP	10	06	56							39.1N 28.4E, H: 10 02 16.7,
	eS	10	10	56							h N. Mb 4.9.
	eL	10	13								W -Turkey.
	F	10.4									
	WIT: iP	10	06	52.1	(+)						
Mar. 28	eL	16	00								31.5N 114.3W, H: 15 19 40.4,
	F	16.5									h N. Mb 5.0, Ms 5.2.
											Gulf of California.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Date without indication are from USCGS; d.b.m. means disturbed by microseisms
Mar. 28	eP	23	00	55							57.8N 32.7W, H: 22 55 59.1,
	eS	23	05	08							h N. Mb 4.6.
	eL	23	06.5								North Atlantic Ocean.
	F	23.4									
	WIT: eP	23	01.1								
Mar. 29	WIT: iP	01	46	48.0							40.0N 15.2E, H: 01 43 39.0,
											h 310 km. Mb 4.6.
											Southern Italy.
Mar. 29	iP	09	24	42	-						12.0N 41.2E, H: 09 15 54.1,
	ePP	09	26	42							h N. Mb 5.8, Ms 6.3.
	eS	09	31	56							Ethiopia.
	eSS	09	35.6								
	eL	09	43			18		25		6.2	
	F	in next shock									
	WIT: eP	09	24	41	-						
Mar. 29	iP	11	13	42	+						12.0N 41.3E, H: 11 04 47.9,
	WIT: iP	11	13	41	(+)						h 4 km. Mb 5.6.
											Ethiopia.
Mar. 29	iP	11	16	21							12.0N 41.2E, H: 11 07 30.0,
	F	12.5									h N. Mb 5.8.
	WIT: eP	11	16	18							Ethiopia.
Mar. 29	WIT: iP	13	17	05.0	(+)						11.9N 41.5E, H: 13 08 11.4,
											h 4 km. Mb 5.1.
											Ethiopia.
Mar. 29	iP	13	58	54	+						10.4N 56.8E, H: 13 48 57.6,
	eS	14	07	04							h N. Mb 5.6.
	eL	14	18								Carlsberg Ridge.
	F	14.8									
	WIT: iP	13	58	51.2	(+)						
Mar. 30	eL	08	36								4.4N 128.0E, H: 07 55 07.5,
	F	09.5									h N. Mb 5.4, Ms 5.2.
											North of Halmahera.
Mar. 31	iP	07	22	25	-	7	15				27.7N 34.0E, H: 07 15 54.4,
	eS	07	27.8								h N. Mb 6.0, Ms 6.8.
	eL	07	31			24		115		6.5	Red Sea.
	F	10.0									
	WIT: iP	07	22	23	-						
	HEE: eP	07	22	25							
Mar. 31	iP	19	36	54	-						d.b.m. 38.3N 134.6E, H: 19 25
	ipP	19	38	23							27.2, h 417 km. Mb 5.9.
	isP	19	39	04							Sea of Japan.
	iS	19	46	21							
	eL	19.9									
	F	20.7									
	WIT: eP	19	36	45.5							
	i	19	36	48	-						
Apr. 1	eL	04	20								66.4N 17.7W, H: 04 10 45.8,
	F	04	30								h N. Mb 4.5.
	WIT: eP	04	14	57							Iceland region.
Apr. 1	WIT: ePKP	05	01	55.0	+						17.7S 178.9W, H: 04 43 22.6,
											h 600 km. Mb 4.4.
											Fiji Islands region.
Apr. 3	eL	11	41								31.6N 114.1W, H: 10 55 53.3,
	F	12.0									h N. Mb 4.6.
											Gulf of California.
Apr. 3	eP	22	16	00							40.7N 19.9E, H: 22 12 23.8,
	eL	22	20.0			20		36		5.5	h N. Mb 5.1, Ms 5.5.
	F	22.9									Albania.
	WIT: eP	22	15	58							

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Apr. 4	eL	09	24								51.2N 173.7E, H: 08 45 18.7,
	F	10.1									h N. Mb 5.6, Ms 5.3.
	WIT: iP	08	57	03.7	-						Near Islands, Aleutian Is.
Apr. 4	eL	13	42								1.2N 85.2W, H: 12 58 24.1,
	F	14	00								h N. Mb 5.3, Ms 5.6.
											Off coast of Ecuador.
Apr. 4	eL	14	42								22.9N 120.0E, H: 13 56 03.2,
	F	14	55								h 46 km. Mb 5.2.
											Taiwan.
Apr. 4	eL	16	55								24.4N 109.8W, H: 16 16 17.2,
	F	17.5									h 31 km. Mb 5.6.
											Gulf of California.
Apr. 4	WIT: iP	23	08	41	(+)						54.5N 169.4E, H: 22 57 16.8,
											h 27 km. Mb 5.4.
											Komandorsky Islands region.
Apr. 5	iP	02	27	23	+	4	6				12.2N 41.2E, H: 02 18 29.9,
	iPP	02	29	23							h 17 km. Mb 6.2, Ms 6.1,
	eS	02	34	33							Ethiopia.
	eSS	02	38.0								
	eL	02	42			20		21		6.0	
	F	04.0									
	WIT: eP	02	27	19							
Apr. 5	WIT: eP[x]	19	11	18							57.1N 7.2E, H: 19 09 49.2,
											h N. Mb 4.5.
											North Sea.
Apr. 5	iP	23	39	08	-						d.b.m. 1.2N 85.2W, H: 23 26
	ePP	23	42	34							11.5, h 31 km. Mb 5.8, Ms 6.2.
	eS	23	50	00							Off coast of Ecuador.
	ePS	23	51.0								
	eSS	23	56.0								
	eSSS	23	59.5								
	eL	24	07			24		16		6.2	
	F	01.0									
	WIT: eP	23	39	18							
Apr. 6	iP	03	54	15	+						d.b.m. 38.5N 26.4E, H: 03 49
	eS	03	58	06							33.5, h 14 km. Mb 5.5, Ms 5.5.
	eL	03	59.5			15		36		5.7	Aegean Sea.
	F	04.5									
	WIT: iP	03	54	06.5	-						
Apr. 6	eP	17	00	37							12.0N 41.1E, H: 16 51 45.5,
	eL	17.3									h 20 km. Mb 5.2, Ms 5.4.
	F	17.8									Ethiopia.
	WIT: eP	17	00	34							
Apr. 7	eL	04	34								4.4N 127.9E, H: 03 39 47.7,
	F	05	00								h 70 km. Mb 5.1.
											Talaud Islands.
Apr. 7	eP	20	35	00							76.5N 130.8E, H: 20 26 29.9,
	ePP	20	36	56							h N. Mb 5.5, Ms 5.5.
	eS	20	42	00							Laptev Sea.
	eL	20	53			16		8		5.7	
	F	21.5									
	WIT: eP	20	34	54							
Apr. 8	eL	10	49								27.5N 33.7E, H: 10 31 52.2,
	F	11.1									h 15 km. Mb 5.2.
											United Arab Republic.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Apr. 8	eL	15	57								40.7N 19.8E, H: 15 48 51.8,
	F	16	03								h N. Mb 5.1. Albania.
Apr. 9	WIT: iP	13	09	32.5	+						36.8N 139.6E, H: 12 57 24.8,
											h 116 km. Mb 5.5.
											Honshu, Japan.
Apr. 10	WIT: iP	15	04	45.0	-						42.0N 130.9E, H: 14 54 03.9,
											h 555 km. Mb 5.6.
											E. Russia-NE. China border region.
Apr. 10	WIT: iP	22	10	02.5	+						25.8N 124.9E, H: 21 57 40.4,
											h 141 km. Mb 5.3.
											NE of Taiwan.
Apr. 12	eL	20	46								d.b.m. 45.3N 25.0E, H: 20 38
	F	20.9									39.6, h 8 km. Mb 5.2.
											Rumania.
Apr. 13	eL	15	55			20		18		6.2	17.9N 80.6E, H: 15 24 55.6,
	F	16.5									h N. Mb 5.3, Ms 5.7.
	WIT: eP	15	35	47							India.
Apr. 13	ePP	23	52	40							d.b.m. 6.1S 129.9E, H: 23 33
	ipPP	23	53	43							15.4, h 152 km. Mb 5.9.
	eL	24	30								Banda Sea.
	F	01.1									
Apr. 14	eL	05	21								39.1N 21.8E, H: 05 11 45.8,
	F	05	25								h N. Mb 4.6. Greece.
Apr. 15	eP	17	43	12							39.8N 143.4E, H: 17 30 55.8,
	eL	18	13								h 20 km. Mb 5.3.
	F	18.9									Off east coast of Honshu,
	WIT: eP	17	43	09	(-)						Japan.
Apr. 16	ePP	01	43.5								d.b.m. 3.5S 151.0E, H: 01 22
	ePPP	01	46.1								47.5, h 39 km. Mb 5.7, Ms 6.5.
	eSS	02	00.5								New Ireland region.
	eL	02	17			24		14		6.5	
	F	03.6									
	WIT: ePKP	01	41	48							
Apr. 16	eS	05	03	36							35.2N 27.9E, H: 04 54 06.3,
	eL	05	06								h 8 km. Mb 4.8.
	F	05.4									Dodecanese Islands.
Apr. 16	WIT: ePKP	12	38	48							13.6S 166.9E, H: 12 19 40.1,
											h 153 km. Mb 5.7.
											New Hebrides Islands.
Apr. 16	eP	23	00	52							35.3N 27.9E, H: 22 55 37.2,
	eS	23	05.0								h 25 km. Mb 5.2.
	eL	23	08								Dodecanese Islands.
	F	23	24								
Apr. 16	eP	23	26	10							35.3N 27.8E, H: 23 21 04.9,
	eS	23	30	22							h 45 km. Mb 5.2.
	eL	23	34								Dodecanese Islands.
	F	23.9									
Apr. 17	eS	01	04.2								35.1N 27.7E, H: 00 54 35.7,
	eL	01	07.5								h 54 km. Mb 4.8.
	F	01.4									Dodecanese Islands.
Apr. 17	eL	05	41								39.5N 143.4E, H: 04 56 15.9,
	F	06	12								h 33 km. Mb 5.0, Ms 5.1.
											Off east coast of Honshu,
											Japan.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Apr. 19	WIT: iPKP	06	26	34.0	-						17.7S 178.7W, H: 06 08 02.6, h 605 km. Mb 4 7. Fiji Islands region.
Apr. 19	eL	09	36								6.2S 103.9E, H: 08 45 16.0, h 40 km. Mb 5.7. Southwest of Sumatra.
	F	10	14								
Apr. 19	eL	20	00								60.3N 146.0W, H: 19 26 17.3, h 21 km. Mb 5.1. Southern Alaska.
	F	20	17								
Apr. 21	eP	02	31.5								14.1N 91.0W, H: 02 19 07.1, h 82 km. Mb 5.5. Guatemala.
	eS	02	41	34							
	esS	02	42.3								
	eSS	02	47.0								
	eL	02	57								
	F	03.6									
	WIT: eP	02	31.6								
Apr. 21	eP	07	31	54	+						32.2N 131.9E, H: 07 19 27.5, h 41 km. Mb 6.1, Ms 6.3. Kyushu, Japan.
	eS	07	41	30							
	eL	07	57			20		107		7.2	
	F	09.5									
	WIT: eP	07	31	49							
Apr. 21	eL	20	47								39.5N 25.2E, H: 20 36 43.3, h N. Mb 4.8. Aegean Sea.
	F	20	56								
Apr. 21	WIT: eP	22	32	47							74.2N 9.7E, H: 22 27 59.5, h N. Mb 5.0. Greenland Sea.
Apr. 22	eL	05	38								26.7S 114.2W, H: 04 38 03.0, h N. Mb 5.3, Ms 5.7. Easter Island region.
	F	06.1									
Apr. 22	eL	07	32								26.8S 114.1W, H: 06 31 57.5, h N. Mb 5.6, Ms 6.2. Easter Island region.
	F	in next shock									
Apr. 22	eL	08	52								39.8N 143.0E, H: 08 11 21.6, h 36 km. Mb 5.5. Off east coast of Honshu, Japan.
	F	09.5									
	WIT: iP	08	23	31.0	+						
Apr. 22	eL	23	04								13.0N 58.2E, H: 22 34 38.4, h 33 km. Mb 5.7. Arabian Sea.
	F	23.5									
	WIT: iP	22	44	23.1	+						
Apr. 24	WIT: ePKP	06	44	26.5							20.4S 178.3W, H: 06 25 42.0, h 540 km. Mb 4.6. Fiji Islands region.
Apr. 24	WIT: iPKP	07	45	39.5	+						21.2S 177.0W, H: 07 26 20.4, h 250 km. Mb 4.9. Fiji Islands region.
Apr. 25	WIT: ePKP	01	51	11.0							22.2S 179.5W, H: 01 32 22.9, h 542 km. Mb 4.6. South of Fiji Islands.
Apr. 25	eL	04	08								7.5N 82.1W, H: 03 34 17.7, h 25 km. Mb 5.4, Ms 5.4. South of Panama.
	F	04.6									
	WIT: eP	03	46	49							
Apr. 25	eL	22	18								1.3N 120.4E, H: 21 20 22.7, h 27 km. Mb 5.2. Northern Celebes.
	F	22	42								

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Apr. 26	eP	06	17	01	(+)						30.6S 71.5W, H: 06 02 49.0, h N. Mb 5.9, Ms 6.3. Near coast of central Chile.
	ePP	06	21	22							
	ePS	06	30.5								
	eL	06	50			20			18	6.5	
	F	09.0									
Apr. 27	eL	02	36								0.9N 120.1E, H: 01 37 14.5, h 12 km. Mb 5.4, Ms 4.9. Northern Celebes.
	F	03.0									
Apr. 27	eL	11	11								36.5N 28.4E, H: 10 58 22.0, h 15 km. Mb 4.7. Dodecanese Islands.
	F	11	18								
	WIT: eP	11	03	20							
Apr. 27	eL	13	57								57.7S 25.4W, H: 12 59 07.3, h 42 km. Mb 5.7, Ms 5.5. South Sandwich Is. region.
	F	14.5									
Apr. 28	eL	01	38								13.3N 145.1E, H: 00 46 25.6, h 51 km. Mb 5.3. Mariana Islands.
	F	02	12								
Apr. 28	WIT: ePKP	07	44	41							22.4S 177.7W, H: 07 25 29.7, h 296 km. Mb 5.9. South of Fiji Islands.
	i	07	44	46							
	i	07	45	13							
Apr. 28	WIT: eP	13	01	17.5							25.9N 95.3E, H: 12 50 15.2, h 50 km. Mb 5.2. Burma-India border region.
Apr. 28	eL	20	42								7.9S 158.8E, H: 19 39 05.5, h 77 km. Mb 5.7. Solomon Islands.
	F	21	10								
	WIT: ePKP	19	58	08.5							
	epPKP	19	58	27.0							
Apr. 28	iP	23	33	02	-						33.4N 116.4W, H: 23 20 42.9, h 20 km. Mb 5.7, Ms 5.2. Southern California.
	eS	23	43	16							
	eL	23	59								
	F	24.6									
	WIT: iP	23	33	03.5	+						
Apr. 29	eL	05	00								29.6N 51.5E, H: 04 37 40.7, h 36 km. Mb 5.6. Southern Iran.
	F	05	12								
	WIT: iP	04	45	15.0	+						
Apr. 29	eP	21	30	02							46.5N 153.1E, H: 21 18 09.3, h N. Mb 5.1. Kuril Islands.
	eL	21	58								
	F	22	30								
	WIT: eP	21	30	01							
Apr. 30	WIT: eP	17	12	00							37.1N 116.0W, H: 17 00 00.0, h 0 km. Mb 5.3. Southern Nevada.
Apr. 30	iP	20	25	17	+						39.2N 28.6E, H: 20 20 31.8, h 9 km. Mb 5.1. Western Turkey.
	iS	20	29	08							
	eL	20	31.0			12		13		5.2	
	F	21.0									
	WIT: iP	20	25	12	+						
May 1	eL	03	56								50.0S 114.3W, H: 02 45 05.0, h N. Mb 4.9. Easter Island Cordillera.
	F	04	25								

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
May 1	eL	04	26								21.0S 174.6W, H: 03 11 58.3, h N. Mb 5.0, Ms 5.6. Tonga Islands.
	F	05.1									
	WIT: ePKP	03	31	44							
May 1	eP	18	07	20	(+)						35.4N 27.7E, H: 18 02 14.6, h 37 km. Mb 5.2. Dodecanese Islands.
	eS	18	11.7								
	eL	18	15								
	F	18	32								
	WIT: eP	18	07	16							
May 1	iPKP	19	24	39.0	-	3	6				16.8S 174.7W, H: 19 05 24.7, h 205 km. Mb 6.0. Tonga Islands.
	ePS	19	39	14							
	eSS	19	48.6								
	F	in next shock									
	WIT: iPKP	19	24	36.0	-						
May 1	eP	20	11	40							35.3N 27.6E, H: 20 06 40.9, h 32 km. Mb 4.7. Dodecanese Islands.
	eS	20	16.0								
	eL	20	18								
	F	20.7									
May 2	eL	18	52								34.3N 26.2E, H: 18 38 13.0, h 21 km. Mb 4.3. Crete.
	F	19	00								
May 4	ePKP	07	26	38							17.6S 178.9W, H: 07 08 01.4, h 578 km. Mb 5.0. Fiji Islands region.
	WIT: iPKP	07	26	35.0	(+)						
May 4	ePKP	12	56.2								17.4S 168.9E, H: 12 36 33.4, h 11 km. Mb 5.5, Ms 5.6. New Hebrides Islands.
	eL	13.8									
	F	14.8									
	WIT: ePKP	12	56	13							
May 5	eP	02	54.5								11.9N 41.3E, H: 02 45 38.9, h 35 km. Mb 5.2, Ms 5.0. Ethiopia.
	eL	03	11								
	F	04.3									
	WIT: eP	02	54.5								
May 5	iP	05	38	52	+						36.0N 10.4W, H: 05 34 23.5, h 29 km. Mb 5.5, Ms 4.9. North Atlantic Ocean.
	iS	05	42	34							
	eL	05	43.5			17	12			5.2	
	F	06.5									
	WIT: eP	05	39	04	+						
	HEE: eS	05	42	01							
May 5	eSP	14	20	36							30.8S 71.8W, H: 13 52 39.6, h 38 km. Mb 5.3, Ms 5.5. Near coast of central Chile.
	eL	14	48								
	F	15.2									
May 5	eP	21	51	48	(-)						66.8N 18.2W, H: 21 47 31.7, h N. Mb 5.2, Ms 4.9. Iceland region.
	eS	21	55	16							
	eL	21	56.5			18		27	5.5		
	F	23.0									
	WIT: eP	21	51	48							
May 7	WIT: ePKP2	09	41	31.5	-						31.2S 179.2W, H: 09 21 18.2, h 158 km. Mb 4.9. Kermadec Islands.
May 7	eL	14.5									37.3N 116.5W, H: 13 45 00.0, h 0 km. Mb 5.8. Southern Nevada.
	F	14.7									
	WIT: iP	13	56	59							
May 8	eL	02.8									13.3N 144.9E, H: 01 50 02.7, h 51 km. Mb 5.1. Mariama Islands.
	F	03.2									
May 10	WIT: eP	09	34	27							27.5N 34.2E, H: 09 27 57.0, h N. Mb 4.8. Red Sea.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
May 11	WIT: eP	00	28.2								14.3N 56.7E, H: 00 18 41.9, h 32 km. Mb 5.1. Arabian Sea.
May 11	eL	15.7									21.8S 175.1W, H: 14 17 11.9, h N. Mb 5.1, Ms 5.1. Tonga Islands.
	F	16.0									
	WIT: iPKP	14	36	58.5	(+)						
May 13	iP	14	29	04	+						11.5N 86.4W, H: 14 16 52.8, h 79 km. Mb 5.6. Near coast of Nicaragua.
	iS	14	39	40							
	ePS	14	40.5								
	eSS	14	45.1								
	eL	14	56			18			34	6.7	
	F	17.5									
	WIT: eP	14	29	09							
May 13	WIT: iP	14	32	01.0	+						36.4N 140.5E, H: 14 19 44.8, h 75 km. Mb 5.4. Near east coast of Honshu, Japan.
May 13	WIT: ePKP	14	47	46							7.2S 120.9E, H: 14 30 19.6, h 616 km. Mb 5.6. Flores Sea.
May 13	eL	18	23								11.8N 86.2W, H: 17 38 28.5, h 46 km. Mb 4.9, Ms 5.2. Near coast of Nicaragua.
	F	18.9									
May 14	eP	10	10	22							35.3N 27.8E, H: 10 05 15.8, h 34 km. Mb 5.1. Dodecanese Islands.
	eS	10	14	36							
	eL	10	17.5								
	F	10.7									
	WIT: eP	10	10	18							
May 14	eL	14	29								11.5N 86.2W, H: 13 49 03.1, h 62 km. Mb 4.8. Near coast of Nicaragua.
	F	15.0									
May 14	iP	19	44	47	+	10	12				51.3N 179.9W, H: 19 32 54.2, h 21 km. Mb 6.2, Ms 7.0. Andreanof Islands, Aleutian Is.
	iS	19	54	33							
	eSS	19	59.5								
	eL	20	12			19			60	7.0	
	F	23.5									
	WIT: iP	19	44	43.0	+						
May 14	WIT: eP	20	22	29							51.3N 179.9W, H: 20 10 39.3, h 15 km. Mb 5.3. Andreanof Islands, Aleutian Is.
May 14	WIT: eP	20	46	08							43.3N 146.5E, H: 20 34 09.7, h N. Mb 5.0. Kuril Islands.
May 15	eL	08.7									16.1N 121.9E, H: 07 53 03.8, h 57 km. Mb 5.2. Luzon, Philippine Islands.
	F	09.1									
May 15	eL	12	17								35.4N 27.8E, H: 12 05 55.5, h 32 km. Mb 4.9. Dodecanese Islands.
	F	12	30								
	WIT: eP	12	10.1								
May 15	WIT: eP	20	48	26							34.6N 70.9E, H: 20 39 45.0, h 22 km. Mb 5.6. Afghanistan.

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Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
May 15	eP	20	54	02	(-)						16.8N 61.3W, H: 20 43 33.4,
	iS	21	02	20							h 50 km. Mb 5.7, Ms 5.6.
	eSS	21	06.2								Leeward Islands.
	eL	21	12.5			24			10	6.0	
	F	22.0									
	WIT: eP	20	54	02							
	i	20	54	10.5							
May 16	WIT: eP	04	11	01.0							49.8N 78.1E, H: 04 02 57.1,
											h 0 km. Mb 5.3.
											Eastern Kazakh SSR.
May 16	eP	07	31	04							39.2N 21.8E, H: 07 26 58.7,
	eL	07	36								h 20 km. Mb 5.2.
	F	07	50								Greece.
	WIT: eP	07	31	01.0							
May 16	eL	08.4									27.5S 176.6W, H: 07 03 22.2,
	F	09.2									h 50 km. Mb 5.4, Ms 5.4.
	WIT: ePKP	07	23	08.0							Kermadec Islands.
May 18	eL	09.3									60.3N 146.0W, H: 08 44 03.6,
	F	09.8									h 6 km. Mb 5.4, Ms 5.2.
	WIT: eP	08	54	48.0							Southern Alaska.
May 21	eP	03	10.6								11.7N 125.8E, H: 02 56 49.2,
	ePP	03	14.5								h 26 km. Mb 5.2, Ms 5.0.
	eS	03	21.1								Samar, Philippine Islands.
	eL	03	52								
	F	04.8									
May 23	eP	13	16	12							53.4N 160.2W, H: 13 04 36.6,
	eS	13	25	49							h 32 km. Mb 5.6, Ms 5.3.
	eL	13	41								South of Alaska.
	F	15.0									
	WIT: eP	13	16	10							
May 25	WIT: ePKP1	20	38	20							32.0S 178.8W, H: 20 18 30.0,
	ePKP2	20	39	16	+						h 70 km. Mb 5.4.
											South of Kermadec Islands.
May 25	eL	23	25								57.7S 25.2W, H: 22 30 43.0,
	F	23.7									h N. Mb 5.6, Ms 5.0.
											South Sandwich Is. region.
May 26	WIT: eP	06	06	48							15.8N 94.4W, H: 05 54 18.4,
											h 34 km. Mb 5.1, Ms 4.8.
											Near coast of Oaxaca, Mexico.
May 26	eL	16	32								11.8N 125.8E, H: 15 37 16.8,
	F	17.2									h 14 km. Mb 5.2, Ms 5.2.
											Samar, Philippine Islands.
May 27	eL	13	17								59.9S 26.5W, H: 12 18 45.6,
	F	13	54								h 19 km. Mb 5.1, Ms 5.3.
											South Sandwich Is. region.
May 28	eP	04	02	09							73.5N 8.2E, H: 03 57 19.4,
	eL	04	08.0								h N. Mb 4.9.
	F	04.4									Greenland Sea.
May 28	eL	04	34								11.8N 125.8E, H: 03 41 01.8,
	F	05.0									h 6 km. Mb 5.3.
											Samar, Philippine Islands.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
May 28	iP	13	42	35	+						2.1S 76.9W, H: 13 30 08.9,
	epP	13	43.1								h 177 km. Mb 5.5.
	ePP	13	46.0								Peru-Ecuador border region.
	eS	13	52	48							
	eL	14	13								
	F	14.8									
	WIT: iP	13	42	39.5	+						
	ePP	13	46	08							
May 29	eL	08.5									15.0S 173.3W, H: 07 17 26.8,
	F	09.2									h 33 km. Mb 4.9, Ms 4.8.
											Tonga Islands.
May 29	WIT: iPKP	10	41	25.5	+						20.3S 177.7W, H: 10 22 38.0,
											h 510 km. Mb 4.6.
											Fiji Islands region.
May 29	WIT: ePKP	11	41	22.0							20.2S 177.7W, H: 11 22 35.0,
											h 510 km. Mb 4.5.
											Fiji Islands region.
May 30	WIT: iPKP	15	34	53.5	-						21.1S 178.8W, H: 15 16 10.6,
											h 583 km. Mb 4.8.
											Fiji Islands region.
May 30	ePKP1	16	15	32							32.2S 178.1W, H: 15 55 37.1,
	ePP	16	19	52							h 34 km. Mb 5.2, Ms 5.9.
	eSS	16	40.1								South of Kermadec Islands.
	eL	17.3									
	F	in next shock									
	WIT: ePKP2	16	16	10							
May 30	ePKP1	16	42	43							32.3S 178.1W, H: 16 22 47.8,
	ePKP2	16	43.4								h N. Mb 5.5, Ms 6.2.
	ePP	16	47	04							South of Kermadec Islands.
	eSKKS	16	54.0								
	eSS	17	07.2								
	eL	17.7				20			9	6.5	
	F	19.0									
	WIT: ePKP2	16	43.4								
May 31	WIT: eP	11	19	50.5							1.8S 77.7W, H: 11 07 17.1,
											h 172 km. Mb 5.1.
											Ecuador.
May 31	ePKP	22	44	06							16.0S 172.9W, H: 22 24 32.0,
	eL	23	38								h 15 km. Mb 5.2, Ms 5.4.
	F	24.9									Samoa Islands region.
June 1	eL	00	59								4.9S 154.2E, H: 23 56 21.6,
	F	01	22								h 403 km. Mb 5.5.
	WIT: ePKP	00	14	37							Solomon Islands.
June 1	eL	14	50								3.3N 126.6E, H: 13 49 06.8,
	F	15	16								h 46 km. Mb 5.3, Ms 4.9.
											Talaud Islands.
June 1	eL	19	36								8.7N 102.6W, H: 18 50 54.0,
	F	20.1									h N. Mb 4.6.
											Off coast of Mexico.
June 1	eSg	23	24.5								47.1N 14.3E, H: 23 20 30.7,
	F	23	30								h N. Mb 4.4.
	WIT: eP^x	23	22	32							Austria.
June 2	eSg	04	01	36							47.0N 14.3E, H: 03 57 30.1,
	F	04	05								h 29 km. Mb 4.1.
	WIT: eP^x	03	59.5								Austria.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
June 2	eP	09	58	47	+						59.5N 144.7W, H: 09 47 59.4, h N. Mb 4.7. Gulf of Alaska.
	eS	10	07.7								
	eL	10.4									
	F	11.4									
June 3	eL	04	46								19.1N 107.5W, H: 03 58 01.5, h N. Mb 5.1, Ms 5.1. Off coast of Jalisco, Mexico.
	F	05.2									
June 5	eP	20	49.6								10.7N 41.0W, H: 20 39 58.9, h N. Mb 5.2, Ms 4.8. North Atlantic Ridge.
	eS	20	57.4								
	eL	21	06								
	F	21.5									
June 6	eL	05.0									56.6N 152.5W, H: 04 19 15.2, h 16 km. Mb 4.8. Kodiak Island region.
	F	05.2									
June 6	eL	17.0									12.5N 88.0W, H: 16 16 01.7, h 48 km. Mb 5.0, Ms 4.5. Off coast of Central America.
	F	17.3									
June 7	eP	15	35	20	(+)						38.0N 20.1E, H: 15 31 12.4, h 39 km. Mb 4 6. Greece.
	eS	15	38	44							
	eL	15	40.5								
	F	16.2									
	WIT: eP	15	35.3								
June 7	eL	23.5									52.5N 169.1W, H: 22 47 15.4, h 42 km. Mb 5.2. Fox Islands, Aleutian Is.
	F	23.8									
	WIT: eP	22	58	55							
June 8	eP	15	00	55	+						53.3N 159.7E, H: 14 49 31.6, h 60 km. Mb 5.4. Near east coast of Kamchatka.
	WIT: iP	15	00	50.8	+						
June 8	WIT: ePKP	21	59	22.0							25.3S 179.6W, H: 21 40 13.4, h 412 km. Mb 5.0. South of Fiji Islands.
June 9	eL	02.7									23.7N 120.9E, H: 01 55 00.4, h 46 km. Mb 5.0. Taiwan.
	F	03.1									
June 9	eL	07	53								3.2S 142.9E, H: 06 51 16.1, h 17 km. Mb 5.2, Ms 5.3. Near north coast of New Guinea.
	F	08	23								
June 9	ePKP	22	12.8								23.5S 175.0W, H: 21 53 01.8, h N. Mb 5.5, Ms 5.6. Tonga Islands region.
	ePP	22	16.4								
	eL	23	13								
	F	24.2									
	WIT: ePKP	22	12	47	(+)						
June 9	WIT: eP	23	21	40	(+)						44.0N 148.9E, H: 23 09 43.6, h 50 km. Mb 5.1. Kuril Islands.
June 10	eL	18	07								13.2N 121.4E, H: 17 15 29.4, h 37 km. Mb 5.4, Ms 4.6. Mindoro, Philippine Islands.
	F	18.6									
June 10	eP	23	00.3								36.4N 70.7E, H: 22 52 12.1, h 203 km. Mb 5.4. Hindu Kush region.
	WIT: eP	23	00	22							

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
June 10	eP	23	39.1		(+)						36.3N 70.4E, H: 23 30 53.7, h 213 km. Mb 5.2. Hindu Kush region.
	F	24.1									
	WIT: eP	23	39	02							
June 11	eP	01	09	01	+						59.6N 144.8W, H: 00 58 10.1, h 5 km. Mb 5.3. Gulf of Alaska.
	eS	01	17	50							
	eL	01	35								
	F	02.5									
	WIT: eP	01	08	57							
June 11	WIT: eP	01	15	52							59.6N 144.8W, H: 01 05 01.3, h 12 km. Mb 4.9. Gulf of Alaska.
June 11	eL	07	21								2.5S 12.2W, H: 06 51 10.9, h N. Mb 5.0. North of Ascension Island.
	F	07.6									
June 11	WIT: eP	15	23	25.5	+						24.7N 139.9E, H: 15 11 17.4, h 500 km. Mb 4.8. Bonin Islands region.
June 11	WIT: ePKP	23	31	47							17.8S 179.9W, H: 23 13 17.7, h 609 km. Mb 4.5. Fiji Islands region.
June 12	eP	07	53	38							40.3N 143.7E, H: 07 41 25.1, h N. Mb 5.1, Ms 5.1. Off east coast of Honshu, Japan.
	eL	08	24								
	F	09.1									
	WIT: eP	07	53	33							
	e	07	53	42							
June 12	iP	15	18	33	+	4	11				34.4N 25.1E, H: 15 13 31.1, h 25 km. Mb 5.8, Ms 5.8. Crete.
	iS	15	22	41		16			70	6.2	
	eL	15	24								
	F	16.5									
	WIT: iP	15	18	30.5	+						
	HEE: eP	15	18	24							
June 12	eL	19	46								24.0N 122.4E, H: 18 59 08.1, h N. Mb 5.3. Taiwan region.
	F	20	10								
	WIT: eP	19	11	43							
June 12	eL	21	25								56.5S 25.3W, H: 20 28 31.9, h 9 km. Mb 5.5, Ms 5.4. South Sandwich Is. region.
	F	22.1									
June 13	eL	01	36								34.3N 25.1E, H: 01 23 13.8, h 38 km. Mb 4.4. Crete.
	F	01	44								
	WIT: eP	01	28	12							
June 13	iP	09	00	10	+						49.4N 155.5E, H: 08 48 29.5, h 64 km. Mb 5.9. Kuril Islands.
	eS	09	09	45							
	eSS	09	15.0			22			23	6.5	
	eL	09	22								
	F	12.0									
	WIT: iP	09	00	50.0	+						
June 14	eL	01	02								51.3N 179.7W, H: 00 23 11.4, h 38 km. Mb 4.9, Ms 4.6. Andreanof Is., Aleutian Is.
	F	01.4									
June 14	WIT: eP	03	38	56							31.7N 94.6E, H: 03 28 29.6, h N. Mb 5.3. Tibet.

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June 14	ePKP	03	42	03							7.9S 159.0E, H: 03 22 56.8,
	ePP	03	44	20							h 62 km. Mb 6.0.
	ePKS	03	45	53							Solomon Islands.
	eL	04	28								
	F	05.0									
	WIT: iPKP	03	42	02.3							
June 14	eP	13	52.5								34.3N 25.1E, H: 13 47 24.2,
	eS	13	56.6								h 9 km. Mb 5.0.
	eL	14	00								Crete.
	F	14.2									
	WIT: iP	13	52	27.0	+						
June 14	eL	18	01								41.4N 43.2E, H: 17 45 01.8,
	F	18	18								h 26 km. Mb 4.7.
											Turkey-USSR border region.
June 15	WIT: eP	06	03	43							34.3N 25.2E, H: 05 58 41.8,
											h 24 km. Mb 4.5.
											Crete.
June 15	eL	17.9									4.7S 102.2E, H: 16 56 32.0,
	F	18.2									h 38 km. Mb 5.3.
											Southern Sumatra.
June 16	eP	16	10	28							38.2N 20.1E, H: 16 06 25.5,
	eS	16	13	52							h 42 km. Mb 4.5.
	eL	16	15								Greece.
	F	16	30								
	WIT: eP	16	10	27							
June 17	eS	05	26	14							38.5N 20.2E, H: 05 18 46.5,
	eL	05	28								h N. Mb 4.5.
	F	05	40								Greece.
June 17	eP	19	39	56							19.0N 145.5E, H: 19 26 28.9,
	epP	19	40	43							h 206 km. Mb 5.8.
	ePP	19	44	06							Mariana Islands.
	iSKS	19	50	15							
	iSP	19	52	47							
	eL	20	14								
	F	21.4									
June 17	eS	23	35.5								43.2N 45.3E, H: 23 24 41.7,
	eL	23	39.5								h 6 km. Mb 5.1.
	F	24.1									Eastern Caucasus.
	WIT: eP	23	30	31							
June 18	ePKP1	00	18.1								52.6S 159.7E, H: 23 58 10.1,
	ePKP2	00	19	07							h N. Mb 6.1, Ms 6.6.
	ePP	00	22.9								Macquarie Islands region.
	ePPP	00	26.6								
	eSKSP	00	33.3								
	eSS	00	43.5								
	eL	01.1				23		22		7.0	
	F	03.0									
	WIT: ePKP2	00	19.1								
June 18	WIT: eP	01	49	32							59.5N 145.0W, H: 01 38 46.4,
											h N. Mb 5.2.
											Gulf of Alaska.
June 18	eL	21	40								0.5N 126.1E, H: 20 43 19.2,
	F	22.2									h 5 km. Mb 5.3.
											Molucca Passage.

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June 18	eP	23	55	55							52.6N 167.9W, H: 23 44 11.2,
	eS	24	05	42							h 18 km. Mb 5.4, Ms 5.6.
	eL	24.4									Fox Islands, Aleutian Is.
	F	01.2									
	WIT: eP	23	55	52							
June 19	eL	07	52								28.1N 130.0E, H: 07 03 04.9,
	F	08	05								h 45 km. Mb 5.5, Ms 4.9.
	WIT: iP	07	15	39.5							Ryukyu Islands.
June 19	WIT: iPKP	13	55	23.3	-						18.0S 178.3W, H: 13 36 45.9,
											h 545 km. Mb 5.0.
											Fiji Islands region.
June 19	WIT: iP	19	08	09.2	+						53.3N 159.9E, H: 18 56 46.9,
											h 41 km. Mb 5.2.
											Near east coast of Kamchatka.
June 20	eP	02	49	27	-						53.2N 162.4W, H: 02 37 51.5,
	eS	02	59	06							h 44 km. Mb 5.7, Ms 5.1.
	eL	03.4									South of Alaska.
	F	04.0									
	WIT: iP	02	49	24.5	-						
June 20	eL	07	22								38.6N 141.8E, H: 06 41 06.2,
	F	07	36								h 86 km. Mb 5.4.
	WIT: eP	06	53	35							Near east coast of Honshu,
											Japan.
June 20	eL	16	18								40.8N 142.1E, H: 15 37 50.2,
	F	16	46								h 67 km. Mb 5.4.
	WIT: iP	15	49	50.5	-						Near east coast of Honshu,
											Japan.
June 21	eL	07.6									11.3N 125.3E, H: 06 36 43.1,
	F	08.5									h 73 km. Mb 5.3.
											Samar, Philippine Islands.
June 21	eL	08.6									13.3N 122.8E, H: 07 47 24.4,
	F	09.2									h 23 km. Mb 5.2, Ms 5.4.
											Luzon, Philippine, Islands.
June 21	eL	16	58								27.4N 57.5E, H: 16 35 08.3,
	F	17.3									h 65 km. Mb 5.3.
	WIT: eP	16	43	21							Southern Iran.
June 22	eL	02	02								30.6N 79.4E, H: 01 33 24.1,
	F	02	15								h 19 km. Mb 5.4.
	WIT: eP	01	43	04							Tibet-India border region.
June 22	eP	02	45	42							49.2N 158.5E, H: 02 33 52.8,
	ePP	02	48	38							h N. Mb 5.6, Ms 5.1.
	eS	02	55.5								Kuril Islands region.
	eL	03	18								
	F	03.7									
	WIT: eP	02	45	36							
June 22	eL	05	18.7								55.6N 35.2W, H: 05 07 08.8,
	F	05	28								h N. Mb 4.7.
											North Atlantic Ocean.
June 22	iP	10	57	12.5	+						51.5N 179.9W, H: 10 45 24.5,
	ePPP	11	02.0								h 56 km. Mb 6.1.
	eS	11	06	55							Andreanof Is., Aleutian Is.
	eL	11	22								
	F	12.2									
	WIT: iP	10	57	08.1	+						

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
June 23	ePKP1	00	38	00							49.3S 164.2E, H: 00 17 56.5, h 27 km. Mb 5.3., Ms 5.3. Auckland Islands region.
	ePKP2	00	39	03							
	eL	01.7									
	F	02.5									
June 23	WIT: iP	06	09	25.7	(-)						37.4N 141.5E, H: 05 57 06.9, h N. Mb 5.0. Near east coast of Honshu, Japan.
June 23	eP	07	21.2								18.4N 104.5W, H: 07 08 27.7, h 36 km. Mb 5.3, Ms 5.1. Near coast of Jalisco, Mexico.
	eL	07.8									
	F	08.2									
	WIT: eP	07	21.2								
June 24	eP	00	47	12							11.7N 85.7W, H: 00 35 05.5, h 100 km. Mb 5.3. Nicaragua.
	ePP	00	50	20							
	eL	01	13								
	F	01	31								
	WIT: eP	00	47	19							
June 24	eL	04	30								5.8S 146.8E, H: 03 29 17.3, h 113 km. Mb 5.6. East New Guinea region.
	F	05.0									
June 24	eL	08	00								5.1N 82.4W, H: 07 20 33.2, h 11 km. Mb 4.8. South of Panama.
	F	08	19								
June 24	eL	11	46								13.3N 123.0E, H: 10 58 07.3, h 42 km. Mb 5.1, Ms. 5.1. Luzon, Philippine Islands.
	F	12.4									
June 24	eL	13	30								44.9N 10.2E, H: 13 25 20.3, h 45 km. Mb 4.2. Northern Italy.
	F	13	34								
June 25	eSKS	00	32	52							13.5N 120.3E, H: 00 08 55.3, h 53 km. Mb 5.1. Mindoro, Philippine Islands.
	eL	00	58								
	F	01.6									
June 25	eL	06	25.0								35.9N 27.5E, H: 06 11 50.8, h 38 km. Mb 4.7. Dodecanese Islands.
	F	06	30								
June 25	eL	08	08								4.5N 96.7E, H: 07 24 49.4, h N. Mb 5.3, Ms 5.2. Northern Sumatra.
	F	09.0									
	WIT: eP	07	37	33							
June 25	eL	22	36								2.1N 90.5W, H: 21 53 30.7, h N. Mb 4.8, Ms 5.2. Galapagos Islands region.
	F	23.0									
June 26	eL	03	14								2.0N 90.5W, H: 02 30 58.4, h N. Mb 5.0, Ms 5.3. Galapagos Islands region.
	F	03.7									
June 27	eP	02	27	44							42.4N 142.9E, H: 02 15 46.3, h 32 km. Mb 4.9, Ms 4.7. Hokkaido, Japan.
	eS	02	38.0								
	eL	02	54								
	F	03.5									
	WIT: eP	02	27	43							
June 27	WIT: iPKP	15	49	49.3							19.9S 178.3W, H: 15 31 07.8, h 562 km. Mb 5.0. Fiji Islands region.
June 28	eP	04	47	04							12.8N 89.2W, H: 04 34 42.6, h 69 km. Mb 5.2. Off coast of Central America.
	eL	05	15								
	F	06.0									
June 28	e	18	33								
	F	18	48								

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
June 28	WIT: iPKP	21	44	32.5	-						22.3S 170.6E, H: 21 24 50.7, h 33 km. Mb 4.8. Loyalty Islands region.
June 28	eL	22	56								32.3N 56.1E, H: 22 32 16.2, h N. Mb 4.7 Iran.
	F	23.2									
June 29	eL	04	06								41.1N 75.8E, H: 03 40 12.9, h 39 km. Mb 5.1. Kirgiz SSR.
	F	04	13								
June 29	WIT: iPKP	08	15	44.0	+						17.7S 178.7W, H: 07 57 11.2, h 585 km. Mb 5.1. Fiji Islands region.
June 29	ePKP	10	54	00							30.5S 178.2W, H: 10 34 06.5, h 43 km. Mb 5.6, Ms 5.6. Kermadec Islands region.
	ePP	10	58	09							
	eL	11.9									
	F	12.7									
	WIT: ePKP	10	54	15							
June 29	ePKP	17	29.3								62.8S 166.3E, H: 17 09 13.9, h N. Mb 5.5, Ms 6.0. Balleny Islands region.
	eL	18.5									
	F	20.0									
June 30	eL	19	06								20.0N 64.1W, H: 18 36 24.2, h 17 km. Mb 5.3. North Atlantic Ocean.
	F	19.7									
June 30	eL	20	52								16.1S 73.8W, H: 20 03 23.6, h 66 km. Mb 4.6. Near coast of Peru.
	F	21.1									
July 2	eL	00	41								6.8S 11.6W, H: 00 10 27.6, h N. Mb 4.8. Ascension Island region.
	F	in next shock									
July 2	eL	00	59								7.1S 12.0W, H: 00 28 13.4, h N. Mb 4.8. Ascension Island region.
	F	01	16								
July 2	eL	08	01.8								42.3N 12.1E, H: 07 55 45.5, h N. Mb 4.4. Central Italy.
	F	08	05								
July 2	eL	10	41								20.7N 99.4E, H: 09 59 53.4, h N. Mb 5.0. Burma.
	F	10.9									
July 2	eL	18	57								28.3S 176.5W, H: 17 27 15.7, h 8 km. Mb 4.8, Ms 4.9. Kermadec Islands.
	F	19.4									
July 3	eL	09	52.0								38.5N 22.1E, H: 09 42 02.3, h 26 km. Mb 4.6. Greece.
	F	10	00								
July 3	eL	17	45								16.7N 98.5W, H: 16 59 06.9, h 26 km. Mb 5.2, Ms 4.8. Near coast of Guerrero, Mexico.
	F	18.1									
	WIT: eP	17	11	46.5							
July 4	WIT: iP	02	55	01.3							49.7N 78.2E, H: 02 46 57.0, h 0 km. Mb 5.3. Eastern Kazakh SSR.
July 4	eL	07	16								4.1S 80.9W, H: 06 32 43.4, h N. Mb 4.5, Ms 5.0. Peru-Ecuador border region.
	F	08.1									

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
July 4	eL	11	54								7.4N 82.7W, H: 11 16 01.0, h N. Mb 5.2, Ms 4.9. South of Panama.
	F	12.3									
July 5	eL	00	09								55.9S 147.2E, H: 22 54 18.0, h N. Mb 4.9, Ms 5.6. West of Macquarie Island.
	F	01.2									
July 5	WIT: iPKP	01	52	11 2	-						19 3S 175.9W, H: 01 32 50.8, h 187 km. Mb 4.6. Tonga Islands.
July 5	eL	02	42								3.8S 131.5E, H: 01 44 01 1, h N. Mb 5.3, Ms 5.2. West New Guinea region
	F	03.5									
July 5	eL	05	39								5 6S 77.2W, H: 04 55 33.7, h 37 km. Mb 5.2, Ms 5 1 Northern Peru.
	F	06 1									
July 5	WIT: iPKP	06	27	32.7	+						21.2S 178.8W, H: 06 08 42.4, h 500 km. Mb 4.7. Fiji Islands region.
July 5	eL	12	04								18 6N 147.0E, H: 11 12 43 6, h 57 km. Mb 5.0. Mariana Islands region.
	F	12.5									
July 6	eL	12	26								26 7N 128.7E, H: 11 35 52 7, h N Mb 4.9. Ryukyu Islands.
	F	12	39								
July 6	WIT: iP	12	54	20.0	-						1 6N 79 3W, H: 12 41 40.1, h 47 km. Mb 4.5. Near coast of Ecuador
July 6	eL	15	42								15.3S 173.4W, H: 14 31 16 7, h N Mb 5.3, Ms 5.2. Tonga Islands.
	F	16	10								
July 7	ePP	05	01	40							16.5N 147.3E, H: 04 43 15.4. h 38 km Mb 5.7, Ms 5.5 Mariana Islands region
	eSP	05	10	43							
	eL	05.6									
	F	06.5									
	WIT: ePP	05	01.5								
July 8	iP	08	13	28	+	6	7				37 6N 20 3E, H: 08 09 17.5, h N Mb 5.4, Ms 5.4. Ionian Sea.
	iPP	08	13	48							
	iS	08	16	56							
	eL	08	18.5			20			32	5 5	
	F	09.0									
	WIT: eP	08	13	29							
July 9	eL	02	33								51 6N 174.8E, H: 01 55 39 8, h 22 km. Mb 5.0, Ms 5 0. Near Islands, Aleutian Is.
	F	03.2									
	WIT: eP	02	07	24.0							
	epP	02	07	36.5							
July 9	eL	04	29								34 2S 178.9W, H: 03 02 58.0, h 37 km. Mb 5.1., Ms 5.2 South of Kermadec Islands
	F	05.3									
July 10	eL	19	52								49 3N 155.3E, H: 19 13 20 9, h 33 km. Mb 5.2 Kuril Islands.
	F	20	07								
July 11	eL	06	37								10.2N 85.5W, H: 05 57 12.6, h 30 km. Mb 4.7. Costa Rica.
	F	07	03								

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
July 12	iP	13	12	38	+						46.5N 153.3E, H: 13 00 36.9, h 12 km Mb 5.3. Kuril Islands.
	eS	13	22	30							
	eL	13	42								
	F	14.5									
	WIT: iP	13	12	32.8	(+)						
July 12	WIT: ePKP2	13	35	54.5							26.1S 178.3E, H: 13 16 55.4, h 603 km. Mb 5.0 South of Fiji Islands.
	e	13	35	58.5							
July 12	eP	19	28	44							39.7N 143.5E, H: 19 16 31 6, h N. Mb 5.2, Ms 5.6. Off east coast of Honshu, Japan.
	ePP	19	32	00							
	eS	19	39	00							
	eL	19	57			18			14	6.2	
	F	21.5									
	WIT: eP	19	28	44							
July 14	eL	16	43								39.7N 143.6E, H: 15 55 55.3, h 46 km. Mb 4.7. Off east coast of Honshu, Japan.
	F	17	00								
July 15	eL	01	30								57.5N 154.9W, H: 00 53 13.5, h 73 km. Mb 4.2. Kodiak Island region.
	F	01	44								
July 16	eL	05.7									5.3N 126.8E, H: 04 47 37.2, h 75 km. Mb 5.4. Mindanao, Philippine Islands.
	F	06.5									
July 16	iP	08	28	22	+						52.2N 159.0E, H: 08 16 53.3, h 69 km. Mb 5.8. Off east coast of Kamchatka.
	iS	08	37	50							
	eL	08	54			24			12	6.2	
	F	09.8									
	WIT: iP	08	28	16.7							
July 16	eL	13	44								13.0N 144.9E, H: 12 54 16.7, h 92 km. Mb 5.0. Mariana Islands.
	F	14.7									
July 16	WIT: iP	15	07	00.0	+						37.1N 116.1W, H: 14 55 00.0, h 0 km. Mb 5.6. Southern Nevada.
July 16	eL	22	42								32.2S 13.1W, H: 21 59 19.9, h N. Mb 4.9, Ms 4.9. South Atlantic Ridge.
	F	22	51								
July 16	eL	23	58								59.2S 25.3W, H: 22 59 09.3, h N. Mb 4.8, Ms 5.0. South Sandwich Is. region.
	F	24	15								
July 17	WIT: eP	04	15	23							51.4N 179.9W, H: 04 03 36.4, h 34 km. Mb 4.9. Andreanof Is., Aleutian Is.
July 18	eL	00	18								29.7N 42.9W, H: 00 00 47.4, h N. Mb 5.0. North Atlantic Ridge.
	F	00.8									
	WIT: eP	00	08	45							
July 18	iP	05	36	19	+						38.3N 119.4E, H: 05 24 48.0, h N. Mb 6.2, Ms 7.3. Northeastern China.
	iPP	05	39	08							
	iPPP	05	40	52							
	iS	05	45	54							
	eSS	05	50	42							
	eL	06.0								>8.0	
	F	10.0									
	WIT: iP	05	36	11.7	(+)						
	HEE: eP	05	36	28							

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
July 18	eL	14	13								38 1N 119 4E, H: 13 33 48.4, h 32 km Mb 5 0. Northeastern China.
	F	14.5									
	WIT: eP	13	45	21							
July 18	eL	24	01								18 2S 63 3W, H: 23 17 10 6, h 19 km. Mb 5 6 Bolivia
	F	24.9									
	WIT: eP	23	30	24							
July 19	eL	02	30								38 9N 119.4E, H: 01 52 09.5, h N Mb 4 9. Northeastern China.
	F	02.8									
	WIT: eP	02	03	31							
July 19	iP	05	08	16	+						17.3S 72.5W, H: 04 54 54.1, h 54 km. Mb 5.9. Near coast of Peru.
	ePP	05	12	09							
	eSKS	05	18	52							
	ePS	05	21	00							
	eL	05	40			28			22	6 7	
	F	06.5									
	WIT: iP	05	08	22	+						
July 19	WIT: iPKP	05	30	19.3	+						21 5S 179 5W, H: 05 11 43.4, h 659 km Mb 5 0. Fiji Islands region.
July 20	eL	05	01								39.8N 77 8E, H: 04 34 14.9, h N. Mb 5.0. Southern Sinkiang Province, China.
	F	05	15								
July 20	eL	11	11								7 2N 34.3W, H: 10 46 11.7, h N. Mb 4 3. Central Mid-Atlantic Ridge.
	F	11.5									
July 20	eL	16	01								37.9N 20 2E, H: 15 51 54.1, h 19 km Mb 4 7 Greece, Ionian Sea.
	F	16.2									
July 20	ePKP	20	09.4								19.2S 176.4W, H: 19 49 42.0, h 20 km. Mb 5 2, Ms 5.2. Fiji Islands region.
	eL	20	58								
	F	in next shock									
	WIT: ePKP	20	09	25							
July 20	ePP	20	27.0								15.6S 167.8E, H: 20 04 46.7, h 196 km, Mb 5 3 New Hebrides Islands.
	eL	21	13								
	F	21.5									
	WIT: ePP	20	27	10							
July 21	eL	00	35								38.4N 119.3E, H: 23 54 31.2, h N Mb 4 4. North eastern China
	F	01.0									
July 21	WIT: ePKP	02	41	47							19.2S 176.5W, H: 02 22 06.4, h N. Mb 4 8. Fiji Islands region
July 21	ePKP	07	20	46							17.6S 173.1W, H: 07 01 07.9, h N Mb 4.7, Ms 5.1 Tonga Islands.
	WIT: ePKP	07	20	43							
July 21	eL	07	35								21 0N 45.7W, H: 07 10 18.3, h 22 km. Mb 4 7 North Atlantic Ridge
	F	07	46								
July 21	eP	17	45	34							35.2N 35.9W, H: 17 38 28.8, h N. Mb 4 9, Ms 4 8 North Atlantic Ridge
	eS	17	50	32							
	eL	17	53.5								
	F	18 2									

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
July 21	eL	20.5									39.4N 143.0E, H: 19 44 13.5, h N. Mb 5.0. Off east coast of Honshu, Japan.
	F	20.9									
	WIT: eP	19	56	26	(-)						
July 21	eL	22	59								2.9N 124.7E, H: 22 06 56.9, h 220 km. Mb 5.6. Celebes Sea.
	F	23.4									
	WIT: eP	22	20	38							
July 22	WIT: iP	02	55	01.7	+						49.9N 78.3E, H: 02 46 58.1, h 0 km. Mb 5.5. Eastern Kazakh SSR.
July 22	WIT: iPKP	11	11	15.5							18.3S 177.7W, H: 10 52 40.8, h 576 km. Mb 4.5. Fiji Islands region.
July 22	WIT: iPKP	14	08	14							18.1S 172.5W, H: 13 48 36.5, h 30 km. Mb 5.4. Tonga Islands region.
July 22	WIT: ePKP	17	33	19.5							11.8S 166.5E, H: 17 14 13.0, h 144 km. Mb 5.4. Santa Cruz Islands.
July 22	WIT: e	20	04	24							
July 22	WIT: iPKP	23	41	02							18.9S 178.7W, H: 23 22 26.7, h 562 km. Mb 4.6. Fiji Islands region.
July 23	WIT: iP	02	55	01.7	+						49.9N 78.3E, H: 02 46 58.1, h 0 km. Mb 5.5. Eastern Kazakh SSR.
July 23	WIT: ePKP	08	20	35							23.7S 179.2E, H: 08 01 50.6, h 545 km. Mb 5.0. South of Fiji Islands.
	i	08	20	42	+						
July 23	eP	13	26	56							37.3N 141.5E, H: 13 14 35.1, h 53 km. Mb 5.2. Near east coast of Honshu, Japan.
	eL	13	57								
	F	14.4									
	WIT: eP	13	26	52							
July 23	WIT: i	21	51	39.0	-						
July 24	eP	03	12	40							11.9S 75.1W, H: 02 59 21.0, h 1 km. Mb 5.9, Ms 5.7. Peru.
	eSKS	03	23	24							
	eL	03	38								
	F	05.0									
July 24	eL	06.0									1.6N 126.5E, H: 05 03 26.7, h 41 km. Mb 5.4. Molucca Passage.
	F	06.4									
July 24	ePP	12	59	32							45.4S 35.0E, H: 12 41 40.2, h N. Mb 5.7, Ms 5.9. Prince Edward Islands region.
	eSKS	13	06	15							
	ePS	13	08	46							
	eL	13	27				16		10	6.2	
	F	14.5									
July 25	eP	06	19	16	(-)						25.6S 63.3W, H: 06 06 42.4, h 579 km. Mb 5.5. Salta Province, Argentina.
	epP	06	21	26							
	ePP	06	23	20							
	epPP	06	25	16							
	iSKS	06	29	00							
	F	07.5									

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
July 25	eP	13	06	04							53.3N 167.0W, H: 12 54 27.6, h 42 km. Mb 5.0, Ms 5.2. Fox Islands, Aleutian Is.
	eL	13	31								
	F	14	20								
July 25	eL	14	30								2.6N 126.6E, H: 13 34 09.8, h N. Mb 5.6, Ms 4.9. Molucca Passage.
	F	15.0									
July 25	iP	23	02	05	+						21.6N 111.9E, H: 22 49 41.3, h N. Mb 5.4, Ms 5.9. Eastern China.
	ePP	23	05	16							
	eS	23	12	20		14		16		6.2	
	eL	23	30								
	F	24.5									
	WIT: eP	23	02	01	+						
July 26	eL	08	01								12.6N 87.8W, H: 07 21 00.2, h 84 km. Mb 4.8. Near coast of Nicaragua.
	F	08.3									
July 26	eL	12	32.7								43.7N 14.6W, H: 12 24 29.5, h N. Mb 4.8. North Atlantic Ocean.
	F	12	40								
	WIT: eP	12	28	23							
July 26	eL	18	11								56.4S 25.9W, H: 17 17 16.2, h 38 km. Mb 5.5, Ms 5.0. South Sandwich Is. region.
	F	18	26								
July 27	eL	03.4									19.4S 168.8E, H: 02 14 28.1, h 70 km. Mb 5.4. New Hebrides Islands.
	F	03.9									
	WIT: ePKP	02	33	55	-						
July 27	WIT: eP	10	46.2								43.8N 148.9E, H: 10 23 02.7, h N. Mb 4.3. Kuril Islands region.
July 27	eP	21	32	30							59.4N 145.3W, H: 21 21 40.6, h N. Mb 5.3, Ms 5.3. Gulf of Alaska.
	ePP	21	35	00							
	eS	21	41	23							
	eL	21	59								
	F	22.7									
	WIT: eP	21	32	25							
July 27	WIT: eP	22	39	19							24.9N 122.5E, H: 22 26 54.2, h 105 km. Mb 5.4. Taiwan region.
July 28	eL	13	49								30.7N 132.5E, H: 13 03 17.6, h 24 km. Mb 5.6. Southeast of Shikoku, Japan.
	F	14.2									
	WIT: iP	13	15	50.0	+						
July 29	eL	02	58								3.4S 144.8E, H: 01 55 20.4, h 6 km. Mb 5.5. Near north coast of New Guinea.
	F	03	22								
July 29	WIT: ePKP	06	43	32							14.8S 167.2E, H: 06 24 21.6, h 124 km. Mb 5.4. New Hebrides Islands.
July 30	eL	04	15								22.4N 142.8E, H: 03 23 37.6, h 20 km. Mb 5.3. Volcano Islands region.
	F	04	33								
July 30	eL	05.1									28.5N 142.6E, H: 04 18 44.5, h N. Mb 5.1. Bonin Islands region.
	F	05.5									
July 31	eP	11	34	40							53.0N 170.1W, H: 11 23 01.2, h 37 km. Mb 5.3, Ms 5.3. Fox Islands, Aleutian Is.
	ePP	11	37	04							
	eL	11	59								
	F	13.0									
Aug. 1	WIT: iPKP	12	25	05.2							23.4S 177.5W, H: 12 05 34.6, h 189 km. Mb 5.0. South of Fiji Islands.

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Aug. 1	eL	13	37								18.8N 64.4W, H: 13 06 49.1, h 47 km. Mb 5.0. Virgin Islands.
	F	14.0									
Aug. 1	iP	23	55	43	+						45.6N 150.9E, H: 23 43 44.9, h 38 km. Mb 5.6, Ms 5.9. Kuril Islands.
	eS	24	05	40							
	eL	24	26			20		14		6.2	
	F	02.0									
	WIT: eP	23	55	38							
Aug. 2	WIT: eP	00	46	13							45.3N 151.1E, H: 00 34 16.9, h 21 km. Mb 5.3, Ms 5.7. Kuril Islands.
Aug. 2	eL	05	30								6.5S 146.9E, H: 04 30 29.2, h 17 km. Mb 5.3. East New Guinea region.
	F	06.0									
Aug. 2	eL	21.1									2.6S 126.6E, H: 20 12 44.4, h 28 km. Mb 5.6. Ceram Sea.
	F	21.6									
Aug. 3	ePKP	00	41.3								4.2S 153.0E, H: 00 22 32.0, h 65 km. Mb 5.3. New Ireland region.
	ePP	00	43.3								
	eL	01.4									
	F	02.0									
	WIT: ePKP	00	41	26							
Aug. 3	eL	05	05								24.9N 123.2E, H: 04 19 41.4, h 62 km. Mb 5.3. Southwest of Ryukyu Islands.
	F	05	17								
	WIT: eP	04	32	12							
Aug. 3	eL	08	30								45.4N 151.8E, H: 07 48 11.4, h 13 km. Mb 5.3, Ms 4.9. Kuril Islands.
	F	09.0									
	WIT: eP	08	00	10	-						
	iPcP	08	00	23.0	-						
Aug. 4	WIT: ePKP	01	37	36.5	+						23.6S 179.7E, H: 01 18 49.4, h 590 km. Mb 4.2. South of Fiji Islands.
Aug. 4	iP	10	35	17	+						51.4N 179.6W, H: 10 23 28.9, h 41 km. Mb 5.3, Ms 5.2. Andreanof Is., Aleutian Is.
	eSS	10	50.7								
	eL	11	12								
	F	11.6									
	WIT: iP	10	35	15.1	(+)						
Aug. 4	eL	14	02								35.7N 36.7W, H: 13 47 00.7, h N. Mb 4.5. North Atlantic Ridge.
	F	14	11								
Aug. 4	ePP	17	37.2								5.7S 125.3E, H: 17 19 19.6, h 521 km. Mb 6.2. Banda Sea.
	epPP	17	40	38							
	iSKS	17	44	00							
	iSKKS	17	44	46							
	iPS	17	46	32							
	ePPS	17	47	44							
	eSS	17	53	04							
	eSSS	17	57.3								
	eL	18	16								
	F	18.9									
	WIT: iPP	17	36	56.2							
Aug. 4	eL	22	41								26.9S 70.9W, H: 21 50 02.3, h N. Mb 5.3, Ms 5.3. Near coast of northern Chile.
	F	23	19								

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h m s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
									1.3N 126.2E, H: 02 13 09.6,
Aug. 5	eP	02 27 24	+						h 34 km. Mb 6.1, Ms 7.0.
	ePP	02 32 04							Molucca Passage.
	eSKS	02 38 12							
	ePS	02 41.2							
	eSS	02 47.2		22		110		7.5	
	eL	03.1							
	F	05.5							
	WIT: eP	02 27 22							
									1.3N 126.3E, H: 06 51 32.8,
Aug. 5	eL	07.8							h 37 km. Mb 5.2.
	F	08.3							Molucca Passage.
									1.3N 126.4E, H: 13 03 23.3,
Aug. 5	ePP	13 22 18							h 18 km. Mb 5.2, Ms 5.4.
	ePS	13 31 34							Molucca Passage.
	eL	13 56							
	F	15.0							
									5.2S 153.8E, H: 16 32 25.8,
Aug. 5	ePKP	16 51 22							h 69 km. Mb 5.4.
	ePP	16 53 20							New Ireland region.
	eL	17 28							
	F	19.5							
	WIT: ePKP	16 51 23							
									20.6S 169.4E, H: 17 44 01.1,
Aug. 5	WIT: iPKP1	18 03 32							h 66 km. Mb 4.7.
	iPKP2	18 03 44							New Hebrides Islands.
									10.8N 43.2W, H: 15 41 50.4,
Aug. 6	eP	15 51 34							h N. Mb 5.2, Ms 4.7.
	eS	15 59.5							North Atlantic Ridge.
	eL	16 07							
	F	16.8							
	WIT: eP	15 51 40							
									5.3S 154.1E, H: 01 49 33.2,
Aug. 7	ePKP	02 08 22							h 116 km. Mb 5.2.
	ePP	02 10 24							Solomon Islands.
	eL	02 47							
	F	03.9							
									52.2N 158.9E, H: 06 46 08.3,
Aug. 7	WIT: iP	06 57 32.5	(-)						h 69 km. Mb 5.1.
									Near east coast of Kamchatka.
Aug. 8	iP	06 39 15	+	4	3.3				36.4N 70.9E, H: 06 30 57.1,
	ipP	06 39 58							h 198 km. Mb 5.8.
	iS	06 46 00							Hindu Kush region.
	eL	06 49.5							
	F	07.6							
	WIT: eP	06 39 08.5	+						
	ipP	06 39 53							
									47.7S 15.8W, H: 11 08 14.8,
Aug. 8	ePP	11 26 14							h N. Mb 5.9, Ms 6.0.
	eSKS	11 32 47							South Atlantic Ridge.
	ePS	11 35 22							
	eSS	11 40 37							
	eL	11 50							
	F	14.0							
									26.6S 70.8W, H: 16 10 59.3,
Aug. 8	eL	17 03							h 34 km. Mb 4.8, Ms 5.0.
	F	17.5							Near coast of northern Chile.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h m s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
									6.1S 129.7E, H: 20 44 21.0,
Aug. 8	epP	20 59 40							h 196 km. Mb 5.9.
	ePP	21 03 44							Banda Sea.
	epPP	21 04 30							
	iSKS	21 09 10							
	isSKS	21 10 24							
	eSP	21 13 00							
	eL	21 38		30			16	6.7	
	F	23.4							
	WIT: ePKP	21 02 40							
									19.8S 178.0W, H: 05 17 36.8,
Aug. 9	WIT: ePKP	05 36 16.5	+						h 571 km. Mb 5.1.
									Fiji Islands region.
									44.2N 11.9E, H: 09 21 07.0,
Aug. 9	eL	09 26.0							h N. Mb 4.1.
	F	09 30							Northern Italy.
									42.4N 19.4E, H: 16 25 35.2,
Aug. 9	eL	16 32.5							h 25 km. Mb 5.0.
	F	16 42							Yugoslavia.
	WIT: eP	16 28 59							
									42.2N 19.3E, H: 17 01 01.3,
Aug. 9	eL	17 08.4							h 20 km. Mb 4.6.
	F	17 12							Yugoslavia.
									43.2N 12.4E, H: 13 55 12.3,
Aug. 11	eL	14 00.9							h N. Mb 4.6.
	F	in next shock							Central Italy.
									1.0N 28.5W, H: 13 33 04.1.
Aug. 11	eL	14 08.0							h N. Mb 5.0. Central Mid-
	F	14.5							Atlantic Ridge.
									43.4N 147.9E, H: 21 26 37.6,
Aug. 11	iP	21 38 42	+						h 43 km. Mb 5.7.
	F	in next shock							Kuril Islands.
	WIT: iP	21 38 36.0	+						
									43.6N 147.8E, H: 21 27 25.8,
Aug. 11	WIT: iP	21 39 24.8	+						h 14 km. Mb 5.9.
									Kuril Islands.
									43.5N 147.8E, H: 21 27 36.0,
Aug. 11	WIT: iP	21 39 34.0							h 45 km. Mb 6.2.
									Kuril Islands.
									43.5N 147.4E, H: 21 27 39.4,
Aug. 11	iP	21 39 38	+	6	10				h 28 km. Mb 7.1, Ms 7.8.
	iPP	21 41 43							Kuril Islands.
	iS	21 49 42						>8.0	
	eL	22.0							
	F	02.1							
	WIT: iP	21 39 37.0	+						
	eS	21 49.4							
	HEE: iP	21 39 51							
Aug. 11	WIT: i	21 48 07.0							
									43.8N 147.5E, H: 21 40 55.4,
Aug. 11	WIT: iP	21 52 53	+						h N. Mb 6.0.
	i	21 53 08	+						Kuril Islands.
									44.0N 145.7E, H: 21 55 35.3,
Aug. 11	WIT: iP	22 07 25							h 66 km. Mb 5.5.
									Hokkaido, Japan.
									43.5N 147.3E, H: 22 01 17.9,
Aug. 11	WIT: iP	22 13 16.5	-						h N. Mb 5.3.
									Kuril Islands.

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Aug. 11	WIT: iP	22	39	48.5	-						42.7N 147.4E, H: 22 27 44.7, h N. Mb 5.0. Off coast of Hokkaido, Japan.
Aug. 11	WIT: eP	22	54.0								42.7N 147.2E, H: 22 42 00.3, h N. Mb 5.1. Off coast of Hokkaido, Japan.
Aug. 11	WIT: e	23	01	32							
Aug. 11	WIT: iP	23	05	54.6	-						44.0N 148.3E, H: 22 54 00.4, h 59 km. Mb 5.4. Kuril Islands.
Aug. 11	WIT: e	23	11	09							
Aug. 11	WIT: eP	23	14	55							43.1N 147.8E, H: 23 02 53.8, h N. Mb 5.5. Kuril Islands.
Aug. 11	WIT: eP	23	31	01							43.4N 148.3E, H: 23 19 00.2, h N. Mb 5.1. Kuril Islands region.
	e	23	31	15							
Aug. 11	WIT: eP	23	33	43							43.4N 147.5E, H: 23 21 43.1, h N. Mb 5.2. Kuril Islands.
	i	23	33	54							
Aug. 11	WIT: eP	23	46	09							43.3N 148.0E, H: 23 34 08.4, h 32 km. Mb 5.1. Kuril Islands.
	e	23	46	20							
Aug. 11	WIT: eP	23	51	29							42.9N 146.7E, H: 23 39 29.0, h N. Mb 5.0. Off coast of Hokkaido, Japan.
Aug. 11	WIT: iP	23	54	01.0	-						43.7N 147.8E, H: 23 42 03.5, h 43 km. Mb 5.6. Kuril Islands.
Aug. 11	WIT: iP	24	00	09							
Aug. 11	WIT: eP	24	00	47							43.7N 147.9E, H: 23 48 48.9, h N. Mb 5.3. Kuril Islands.
Aug. 12	WIT: eP	00	07	13							1.7N 126.5E, H: 23 52 56.9, h 34 km. Mb 6.1, Ms 7.0. Molucca Passage.
Aug. 12	WIT: eP	00	37	41							44.5N 148.7E, H: 00 25 45.4, h 36 km. Mb 5.1. Kuril Islands.
Aug. 12	WIT: eP	01	05	36							43.4N 147.3E, H: 00 53 36.0, h 30 km. Mb 5.0. Kuril Islands.
Aug. 12	WIT: eP	01	15	07							43.5N 147.2E, H: 01 03 07.3, h N. Mb 4.8. Kuril Islands region.
Aug. 12	WIT: eP	01	40	25							43.0N 147.7E, H: 01 28 22.0, h N. Mb 4.8. Kuril Islands.
Aug. 12	WIT: eP	02	48	50							43.9N 148.3E, H: 02 36 51.5, h N. Mb 5.1. Kuril Islands region.

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Aug. 12	eP	03	45	46							43.1N 147.6E, H: 03 33 37.2, h N. Mb 5.5. Kuril Islands.
	eS	03	55	50							
	eL	04	15								
	F	in next shock									
	WIT: eP	03	45	38							
Aug. 12	WIT: eP	04	24	45							43.3N 146.7E, H: 04 12 52.2, h 86 km. Mb 4.8. Kuril Islands.
Aug. 12	WIT: eP	05	00	24							43.0N 147.8E, H: 04 48 25.1, h N. Mb 5.0. Kuril Islands.
Aug. 12	WIT: iP	05	05	36.5	-						43.3N 147.5E, H: 04 53 36.5, h N. Mb 5.7. Kuril Islands.
Aug. 12	iP	05	15	33	+						43.6N 148.0E, H: 05 03 26.9, h N. Mb 6.0, Ms 6.5. Kuril Islands region.
	iS	05	25	32							
	eL	05	40			28			110	7.2	
	F	in next shock									
	WIT: iP	05	15	26.5	+						
Aug. 12	WIT: iP	05	20	59.0							43.2N 147.0E, H: 05 08 59.0, h N. Mb 5.4. Kuril Islands.
Aug. 12	eL	06	30								43.7N 148.5E, H: 05 53 28.2, h N. Mb 5.4., Ms 6.2. Kuril Islands region.
	F	in next shock									
	WIT: eP	06	05	27							
	e	06	05	42							
Aug. 12	WIT: iP	06	50	50.0	+						43.1N 147.5E, H: 06 38 49.0, h N. Mb 5.3. Kuril Islands.
Aug. 12	WIT: iP	07	22	40.5							43.7N 147.9E, H: 07 10 41.4, h N. Mb 5.3. Kuril Islands.
Aug. 12	eP	09	37	44							43.1N 147.6E, H: 09 25 38.7, h N. Mb 5.3., Ms 5.4. Kuril Islands.
	eS	09	47	46							
	eL	10	03								
	F	11.0									
	WIT: eP	09	37	39							
	e	09	37	53							
Aug. 12	eP	09	45	48							43.6N 147.5E, H: 09 33 43.2, h 34 km. Mb 5.6. Kuril Islands.
	WIT: eP	09	45	42							
Aug. 12	iP	11	33	28	+	8	3.4				43.9N 148.7E, H: 11 21 21.6, h 29 km. Mb 5.4, Ms 6.3. Kuril Islands.
	eS	11	43	24							
	eSS	11	49	36							
	eL	11	58			20		46		6.7	
	F	15.0									
	WIT: iP	11	33	21.5	+						
Aug. 12	WIT: iP	11	44	29.5							43.2N 147.6E, H: 11 32 24.3, h 10 km. Mb 5.2. Kuril Islands.
Aug. 12	WIT: eP	12	08	52							43.9N 147.7E, H: 11 56 54.9, h N. Mb 5.0. Kuril Islands.

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Aug. 12	WIT: iP	13	30	08.0	+						43.5N 148.0E, H: 13 18 08.2, h N. Mb 5.6. Kuril Islands.
Aug. 12	eP	21	28	20							42.9N 146.5E, H: 21 16 11.3, h N. Mb 5.4. Off coast of Hokkaido, Japan.
	eL	21	56								
	F	22.5									
	WIT: iP	21	28	12.0	+						
Aug. 12	eP	23	18	00							43.3N 147.7E, 23 05 57.1, h N. Mb 5.0, Ms 5.2. Kuril Islands.
	eL	23	44								
	F	24.5									
	WIT: eP	23	17	58							
Aug. 13	eL	02	50								43.8N 148.7E, H: 02 07 07.3, h 35 km. Mb 4.8. Kuril Islands region.
	F	03.3									
	WIT: eP	02	19	07							
Aug. 13	eL	04	10								43.5N 147.4E, H: 03 29 14.1, h N. Mb 5.5. Kuril Islands.
	F	04.7									
	WIT: iP	03	41	13.0	+						
Aug. 13	eL	05	09								43.5N 148.0E, H: 04 28 18.0, h N. Mb 5.2. Kuril Islands region.
	F	05	31								
	WIT: iP	04	40	17.5	-						
Aug. 13	iP	08	43	35	±						44.0N 147.7E, H: 08 31 32.2, h N. Mb 5.6, Ms 5.6. Kuril Islands.
	iS	08	53	32							
	eL	09	08								
	F	10.0									
	WIT: iP	08	43	28.8	+						
Aug. 13	eL	17	50								42.8N 146.6E, H: 17 07 13.8, h N. Mb 4.7. Off coast of Hokkaido, Japan.
	F	18.3									
Aug. 13	WIT: iP	19	45	34.0	-						43.9N 147.8E, H: 19 33 41.2, h 73 km. Mb 5.1. Kuril Islands.
Aug. 13	eP	23	09	08	+						44.0N 148.1E, H: 22 57 07.4, h N. Mb 5.6, Ms 6.1. Kuril Islands.
	eS	23	19	18							
	eL	23	33			25		17	6.3		
	F	02.0									
	WIT: iP	23	09	04.5	+						
Aug. 14	WIT: eP	03	19	43.5							43.0N 147.5E, H: 03 07 29.5, h N. Mb 4.7. Kuril Islands.
Aug. 14	eL	12	02								5.4S 152.0E, H: 10 58 01.7, h N. Mb 5.6. New Britain region.
	F	13.0									
Aug. 14	iP	14	31	07	+						43.1N 147.5E, H: 14 19 01.6, h N. Mb 6.1, Ms 6.5. Kuril Islands.
	iS	14	41	11							
	eL	15	00			17		83	7.0		
	F	18.0									
	WIT: iP	14	31	02.5	+						
Aug. 14	WIT: eP	16	39	36							43.9N 148.4E, H: 16 27 37.8, h N. Mb 5.2. Kuril Islands region.
Aug. 14	WIT: eP	17	10	54							43.1N 147.6E, H: 16 58 40.1, h N. Mb 4.8. Kuril Islands.
Aug. 14	WIT: eP	18	33	51							43.0N 147.6E, H: 18 21 36.5, h N. Mb 4.7. Kuril Islands.

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Aug. 14	WIT: eP	20	27	43							42.9N 147.5E, H: 20 15 41.8, h 46 km. Mb 4.6. Off coast of Hokkaido, Japan.
Aug. 14	eL	22	00								39.6N 27.8E, H: 21 51 04.1, h 21 km. Mb 4.6. Turkey.
	F	22	13								
	WIT: eP	21	55	36							
Aug. 14	eL	22	52								43.9N 148.6E, H: 22 12 22.0, h N. Mb 5.2. Kuril Islands region.
	F	23	30								
	WIT: eP	22	24	21							
Aug. 15	eL	00	30								52.2N 160.5E, H: 23 48 36.0, h N. Mb 4.8. Off east coast of Kamchatka.
	F	01.0									
	WIT: eP	00	00	05							
Aug. 15	iP	04	44	08	+						43.0N 147.9E, H: 04 32 00.4, h N. Mb 5.6, Ms 5.5. Kuril Islands.
	iS	04	54	10							
	eL	05	10			27		14	6.2		
	F	06.7									
	WIT: iP	04	44	02							
Aug. 15	eL	06	58								43.3N 147.8E, H: 06 18 36.5, h 42 km. Mb 4.8. Kuril Islands.
	F	07.7									
Aug. 15	WIT: eP	07	33	49							43.6N 148.5E, H: 07 21 47.6, h 21 km. Mb 4.9. Kuril Islands region.
Aug. 15	eP	08	54	56	+						21.6N 143.0E, H: 08 41 54.9, h 319 km. Mb 6.1. Mariana Islands region.
	ePP	08	59	00							
	eSKS	09	05	06							
	ePS	09	07	22							
	eH	09	08	48							
	eL	09.6									
	F	10.2									
	WIT: eP	08	54	50							
Aug. 15	WIT: eP	09	59	56.5							43.9N 147.5E, H: 09 48 00.1, h N. Mb 4.8. Kuril Islands.
Aug. 15	eP	10	14	26							43.1N 148.3E, H: 10 02 17.9, h N. Mb 4.7. Kuril Islands region.
	eS	10	24	32							
	eL	10	45								
	F	12.6									
	WIT: eP	10	14	22							
Aug. 15	WIT: ePKP	19	23	02.5							23.5S 180.0W, H: 19 04 09.5, h 518 km. Mb 5.0. South of Fiji Islands.
Aug. 15	WIT: eP	20	59	44							43.2N 147.1E, H: 20 47 47.1, h 51 km. Mb 5.0. Kuril Islands.
Aug. 15	eL	23	25								42.9N 147.6E, H: 22 43 45.5, h N. Mb 5.1. Off coast of Hokkaido, Japan.
	F	24.0									
	WIT: eP	22	55	49							
Aug. 16	WIT: eP	08	59	49							43.2N 147.6E, H: 08 47 51.0, h 48 km. Mb 4.9. Kuril Islands.
Aug. 16	eL	09	40								43.9N 148.5E, H: 09 03 13.9, h 40 km. Mb 5.2. Kuril Islands region.
	F	10.2									
	WIT: iP	09	15	11.5							
Aug. 16	iP	15	27	34	+						43.3N 147.6E, H: 15 15 32.7, h 60 km. Mb 5.7. Kuril Islands.
	eS	15	37	34							
	eL	16	00								
	F	16.5									
	WIT: iP	15	27	30.0	+						

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Date without indication are from USCGS; d.b.m. means disturbed by microseisms
											43.2N 147.7E, H: 17 13 44.0, h 53 km. Mb 5.4. Kuril Islands.
Aug. 16	eL	17	55								
	F	18.4									
	WIT: eP	17	25	40							
	ipP	17	25	56.5							7.0S 155.6E, H: 10 10 29.8, h 66 km. Mb 5.1. Solomon Islands.
Aug. 17	WIT: ePKP	10	29	30							42.7N 141.4E, H: 11 54 54.9, h 130 km. Mb 5.6. Hokkaido, Japan.
Aug. 17	eP	12	07	08							
	eS	12	16	28							
	F	13.0									
	WIT: iP	12	06	36.5	+						18.0S 178.5W, H: 16 07 43.7, h 610 km. Mb 4.9. Fiji Islands region.
Aug. 17	WIT: ePKP	16	26	15							25.3N 109.2W, H: 20 13 08.2, h N. Mb 5.6. Gulf of California.
Aug. 17	eP	20	25	38	(-)						
	eS	20	36	06							
	F	in next shock									
	WIT: eP	20	25	41							25.0N 109.5W, H: 20 14 58.9, h N. Mb 6.1, Ms 6.6. Gulf of California.
Aug. 17	eP	20	27	32	(-)						
	iS	20	38	00		18			122	7.2	
	eL	20	50								
	F	24.0									
	WIT: eP	20	27	33							25.4N 109.2W; H: 20 27 25.2, h 18 km. Mb 6.1, Ms 6.6. Gulf of California.
Aug. 17	WIT: eP	20	40	04							56.0S 123.4W, H: 01 04 04.7, h N. Mb 5.1., Ms 6.4. Easter Island Cordillera.
Aug. 18	ePKP	01	23	54							
	eL	02.2									
	F	03.5									
	WIT: ePKP	01	23	57							24.9N 109.0W, H: 03 21 54.0, h 22 km. Mb 5.3, Ms 5.5. Gulf of California.
Aug. 18	eP	03	34	28							
	eL	04	00								
	F	05.7									
	WIT: eP	03	34	29							56.0S 122.7W, H: 02 55 31.1, h N. Mb 5.2, Ms 5.8. Easter Island Cordillera.
Aug. 18	eL	03	58								
	F	05.7									
	WIT: ePKP	03	15	20							24.8N 109.1W, H: 03 54 49.8, h N. Mb 5.3, Ms 5.2. Gulf of California.
Aug. 18	WIT: eP	04	07	24							
Aug. 18	eL	08	31								24.8N 109.1W, H: 07 51 06.9, h 29 km. Mb 4.8, Ms 4.8. Gulf of California.
	F	09.2									
Aug. 18	eP	11	55	35							43.8N 148.6E, H: 11 43 30.5, h 39 km. Mb 5.4, Ms 5.1. Kuril Islands region.
	eL	12	26								
	F	13.0									
	WIT: eP	11	55	29							21.8S 179.7W, H: 01 05 29.9, h 649 km. Mb 4.4. Fiji Islands region.
Aug. 19	WIT: iPKP	01	24	07.5	(-)						
Aug. 19	eL	02	29								6.1S 105.3E, H: 01 39 08.3, h 50 km. Mb 5.1, Ms 5.4. Sunda Strait.
	F	03.3									

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Date without indication are from USCGS; d.b.m. means disturbed by microseisms
Aug. 19	WIT: iPKP	08	12	43.5	+						20.4S 177.8W, H: 07 53 59.3, h 549 km. Mb 4.7. Fiji Islands region.
Aug. 19	iP	09	01	59	-						43.8N 148.2E, H: 08 49 54.8, h 39 km. Mb 5.7, Ms 5.8. Kuril Islands region.
	iS	09	11	58							
	eSS	09	17.0								
	eL	09	28			19		20		6.5	
	F	11.0									
	WIT: iP	09	01	53.0	-						56.7S 142.1W, H: 17 26 07.3, h N. Mb 4.4, Ms 5.5. South Pacific Cordillera.
Aug. 19	eL	18.7									
	F	19.5									
Aug. 20	iP	08	01	51	+						47.9N 153.6E, H: 07 50 05.5, h 73 km. Mb 5.8. Kuril Islands.
	iPP	08	04	42							
	iS	08	11	30							
	eL	08	30								
	F	09.1									
	WIT: iP	08	01	45.0	(+)						5.3S 149.7E, H: 17 22 13.7, h 27 km. Mb 4.8, Ms 5.2. New Britain region.
Aug. 20	eL	18	25								
	F	19	00								
Aug. 21	eL	01	07								43.2N 148.2E, H: 00 28 36.8, h 50 km. Mb 4.8. Kuril Islands region.
	F	01	45								
	WIT: eP	00	40.6								43.0N 147.3E, H: 02 44 01.3, h 36 km. Mb 5.0. Kuril Islands.
Aug. 21	WIT: eP	02	56	03							43.2N 147.0E, H: 03 32 11.5, h 35 km. Mb 5.1., Ms 5.2. Kuril Islands.
Aug. 21	eP	03	44	18							
	eL	04	13								
	F	04.9									
	WIT: eP	03	44	12							43.6N 148.1E, H: 13 24 01.9, h 44 km. Mb 5.5, Ms 5.4. Kuril Islands region.
Aug. 21	eL	14	05								
	F	14.5									
	WIT: eP	13	36	04							23.2N 110.6W, H: 14 25 51.5, h 15 km. Mb 5.3, Ms 5.2. Baja California.
Aug. 21	eL	15	09								
	F	15.7									
Aug. 22	eL	05	22								43.1N 148.3E, H: 04 40 26.1, h 60 km. Mb 4.8. Kuril Islands region.
	F	06.1									
Aug. 22	WIT: iPKP	07	59	57.5							20.9S 178.7W, H: 07 41 17.3, h 592 km. Mb 4.8. Fiji Islands region.
Aug. 22	eS	10	28.0								23.3N 110.4W, H: 10 04 36.4, h 11 km. Mb 5.1, Ms 5.3. Baja California.
	eL	10	45								
	F	11.5									
Aug. 24	eL	22	44								39.8N 144.3E, H: 22 03 03.8, h 32 km. Mb 5.4, Ms 5.0. Off east coast of Honshu, Japan.
	F	23.2									
	WIT: eP	22	15.3								41.8N 20.1E, H: 02 15 38.8, h 42 km. Mb 4.9. Albania.
Aug. 26	eL	02	23.0								
	F	02	30								

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Date without indication are from USCGS; d.b.m. means disturbed by microseisms
	eL	18	02								5.8S 151.2E, H: 16 58 02.3,
Aug. 26	F	18.7									h 59 km. Mb 5.6.
	WIT: iPKP	17	16	58.0	-						New Britain region.
	eL	22	56.6								66.3N 17.7W, H: 22 47 25.9,
Aug. 26	F	23	04								h N. Mb 4.8.
	WIT: eP	22	51	36							Iceland region.
	eL	01	50								43.6N 147.5E, H: 01 10 30.1,
Aug. 27	F	02.3									h 60 km. Mb 5.0.
											Kuril Islands.
	eL	04	06								43.7N 147.6E, H: 03 26 16.1,
Aug. 27	F	04.6									h 50 km. Mb 5.0, Ms 4.8.
	WIT: eP	03	38	13							Kuril Islands.
	eSS	04	17.7								d.b.m. 39.1N 73.6E, H: 03 58
Aug. 28	eL	04	23			18		27		6.2	34.8, h 20 km. Mb 5.1.
	F	05.0									Tadzhik-Sinkiang border region.
	ePKP	14	14	33							31.5S 177.9W, H: 13 54 11.0,
Aug. 28	ePP	14	18	25							h 29 km. Mb 5.3, Ms 5.9.
	eL	15.3									Kermadec Islands.
	F	16.5									
Aug. 28	eL	18.2									31.8S 177.8W, H: 16 49 56.8,
	F	19.0									h 23 km. Mb 5.1, Ms 5.4.
											Kermadec Islands.
Aug. 28	eL	22	15								43.5N 147.7E, H: 21 35 23.4,
	F	22.8									h 52 km. Mb 4.9.
											Kuril Islands.
Aug. 29	eL	10.7									26.3N 96.1E, H: 10 02 49.6,
	F	11.0									h 73 km, Mb 5.4. Burma.
Aug. 30	eL	02	12								1.1S 90.8W, H: 01 26 29.5,
	F	02.5									h 33 km. Mb 5.5, Ms 5.1.
											Galapagos Islands.
	iP	07	23	44	+						43.7N 147.8E, H: 07 11 39.5,
Aug. 30	eS	07	33	43							h N. Mb 5.4.
	eL	07	48			27		23		6.5	Kuril Islands.
	F	in next shock									
	WIT: 07	23	39								
Aug. 30	WIT: iP	08	06	26.7	-						43.4N 146.5E, H: 07 54 29.5,
											h 43 km. Mb 5.5.
											Kuril Islands.
	eL	09	05								
Aug. 30	F	10.0				26		16		6.2	43.6N 147.8E, H: 08 28 06.5,
	WIT: eP	08	40	07							h N. Mb 5.4, Ms 5.8.
											Kuril Islands.
Sep. 1	eL	00.4									17.7N 101.5W, H: 23 46 33.4,
	F	01.0									h 72 km. Mb 5.0. Near coast of
											Guerrero, Mexico.
Sep. 1	eL	09.5									58.9S 149.1E, H: 08 14 55.1,
	F	10.4									h N. Mb 5.1, Ms 5.6.
											West of Macquarie Island.
Sep. 1	eL	10.5									43.1N 147.6E, H: 09 49 52.0,
	F	11.0									h N. Mb 5.3, Ms 4.9.
	WIT: eP	10	01	53							Kuril Islands.
Sep. 2	eSKS	04	11	08							27.7S 66.5W, H: 03 47 09.1,
	ePS	04	13	32							h 174 km. Mb 5.5.
	F	05.1									Catamarca Prov., Argentina.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
	eL	08	13								
Sep. 2	F	08	30								30.3N 131.0E, H: 07 22 49.4,
											h 15 km. Mb 4.8.
											Kyushu, Japan.
	eL	13.9									
Sep. 2	F	14.2									30.2N 57.7E, H: 13 30 03.5,
											h 20 km. Mb 5.3.
											Iran.
	eP	16	33	14							
	eSKS	16	43	56							31.5N 140.2E, H: 16 20 21.5,
Sep. 3	eS	16	44	10							h 16 km. Mb 5.3.
	eL	17	06								South of Honshu, Japan.
	F	18.0									
	WIT: eP	16	33	09.5							
	iP	03	20	50	+						
	iS	03	30	43							46.6N 153.5E, H: 03 08 52.0,
Sep. 4	eSS	03	35	48							h N. Mb 5.4., Ms 5.7.
	eL	03	50			18			10	6.0	Kuril Islands.
	F	05.3									
	WIT: eP	03	20	43	+						
	eL	17	35								
Sep. 4	F	17	47								35.3N 39.1E, H: 17 18 48.8,
											h N. Mb 4.7.
											Jordan-Syria border region.
	eL	19	38								
Sep. 4	F	19	47								35.1N 27.2E, H: 19 25 26.0,
											h N. Mb 4.9.
											Dodecanese Islands.
	eP	21	24	39	+						
	eS	21	34	36							43.8N 147.4E, H: 21 12 39.5,
Sep. 4	eL	21	50								h 60 km. Mb 5.6.
	F	22.5									Kuril Islands.
	WIT: iP	21	24	33.6	+						
	eP	11	55	00							
	eL	12	26			20			11	6.2	22.7N 121.7E, H: 11 42 14.0,
Sep. 5	F	13.5									h 33 km. Mb 5.6, Ms 5.1.
	WIT: eP	11	54	53							Taiwan region.
	iP	07	55	33	+						
	eL	08	20								43.7N 147.3E, H: 07 43 29.8,
Sep. 6	F	09.0									h N. Mb 5.5, Ms 5.2.
	WIT: iP	07	55	26.5	(+)						Kuril Islands.
	iP	14	35	04	+						
	iS	14	38	46							36.9N 11.9W, H: 14 30 39.5,
Sep. 6	eL	14	40			20			39	5.7	h N. Mb 5.7, Ms 6.0.
	F	in next shock									North Atlantic Ocean.
	WIT: eP	14	35	17	+						
	HEE: eP	14	35	04							
	ePKP	15	09	18							
	ePKS	15	12	40							8.8S 157.8E, H: 14 49 55.9,
Sep. 6	eSS	15	29.1								h 15 km. Mb 5.8, Ms 6.1.
	eL	15	48								Solomon Islands.
	F	17.5									
	WIT: ePKP	15	09	15							
Sep. 6	WIT: eP	16	29	59.0	+						30.0N 140.6E, H: 16 17 15.5,
											h 89 km, Mb 5.3.
											South of Honshu, Japan.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Sep. 6	ePKP	17	27.3								8.9S 157.9E, H: 17 08 03.2, h 10 km. Mb 5.8, Ms 5.7. Solomon Islands.
	ePKS	17	30	46							
	eSS	17	47.3								
	eL	18.2									
	F	19.5									
	WIT: ePKP	17	27	16.5							
Sep. 6	eS	20	39	48							36.8N 28.4E, H: 20 30 39.6, h 67 km. Mb 5.1. Turkey.
	eL	20	42								
	F	20	53								
	WIT: eP	20	35	30	(-)						
Sep. 7	eL	04	15								8.9S 157.7E, H: 03 06 02.2, h N. Mb 5.6. Solomon Islands.
	F	04.7									
Sep. 7	WIT: ePKP	08	59	21.5	(-)						6.6S 155.8E, H: 08 40 34.3, h 173 km. Mb 5.3. Solomon Islands.
Sep. 7	eL	19	24								43.4N 148.1E, H: 18 43 37.8, h N. Mb 4.9. Kuril Islands region.
	F	20.0									
	WIT: eP	18	55	39							
Sep. 8	WIT: eP	05	05	48							57.4N 55.1E, H: 04 59 56.1, h 0 km. Mb 4.9. Ural Mountains region.
Sep. 8	eL	13.8									5.1S 153.4E, H: 12 45 34.6, h 47 km. Mb 5.2, Ms 5.4. New Ireland region.
	F	14.9									
	WIT: iPKP	13	04	33.7	(-)						
Sep. 9	eP	05	28	02							d.b.m. 35.7N 137.0E, H: 05 15 37.7, h 29 km. Mb 5.5, Ms 6.0. Honshu, Japan.
	eS	05	38.4								
	eL	05.9				14		60		7.0	
	F	08.0									
	WIT: eP	05	27	56							
Sep. 9	eL	16	14								4.4S 105.9W, H: 15 23 10.8, h N. Mb 5.2, Ms 5.3. Northern Easter Island Cordillera.
	F	16.7									
Sep. 10	eP	12	19	45							39.2N 41.4E, H: 12 14 00.4, h 50 km. Mb 5.2. Turkey.
	eS	12	24.6								
	eSS	12	26	09							
	eL	12	30								
	F	13.0									
	WIT: eP	12	19	44							
Sep. 11	eL	04	03								26.1N 128.5E, H: 03 17 00.1, h 25 km. Mb 5.3. Ryukyu Islands.
	F	04.6									
	WIT: iP	03	29	46.7							
Sep. 12	WIT: iPKP	03	34	10.5	-						18.6S 134.9W, H: 03 14 44.9, h 134 km. Mb 5.1. Tonga Islands.
Sep. 12	WIT: iP	07	27	36.5	-						51.3N 179.2W, H: 07 15 50.0, h 44 km. Ms 5.0. Andreanof Is., Aleutian Is.
Sep. 12	WIT: eP	08	17	54.5							51.1N 179.2W, H: 08 06 08.8, h 55 km. Mb 5.0. Andreanof Is., Aleutian Is.
Sep. 12	WIT: iP	08	21	10.8							51.1N 179.2W, H: 08 09 24.4, h 46 km. Mb 5.1, Ms 5.3. Andreanof Is., Aleutian Is.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Sep. 12	iP	09	08	58	+						51.2N 179.2W, H: 08 57 07.3, h 48 km. Mb 6.0, Ms 6.6. Andreanof Is., Aleutian Is.
	iS	09	18	46							
	eSS	09	24.1								
	eSSS	09	27.1								
	eL	09	30			20			36	6.7	
	F	12.0									
	WIT: iP	09	08	53.0	+						
Sep. 12	eP	15	12	07							51.3N 179.2W, H: 15 00 18.8, h 53 km. Mb 5.6. Andreanof Is., Aleutian Is.
	eS	15	22	13							
	eL	15	37								
	F	16.3									
	WIT: iP	15	12	03.5							
Sep. 13	WIT: iPKP	00	53	29	(-)						24.5S 179.9E, H: 00 34 38.4, h 579 km. Mb 4.9. South of Fiji Islands.
Sep. 13	WIT: eP	11	31	37							33.8N 141.6E, H: 11 19 03.0, h 35 km. Mb 5.0. Off east coast of Honshu, Japan.
Sep. 13	eL	12	35								43.5N 147.6E, H: 11 52 15.3, h 52 km. Mb 5.5. Kuril Islands.
	F	13.0									
	WIT: iP	12	04	12.2	+						
Sep. 14	eP	06	24	04							43.5N 147.7E, H: 06 11 55.8, h N. Mb 4.4. Kuril Islands.
	eL	06	53								
	F	07.5									
Sep. 14	eL	10	58								6.3N 125.3E, H: 10 02 20.2, h 35 km. Mb 5.3. Mindanao, Philippine Islands.
	F	11	19								
Sep. 14	WIT: iP	13	01	10							43.5N 147.6E, H: 12 49 12.2, h 53 km. Mb 4.9. Kuril Islands.
	ipP	13	01	23							
Sep. 14	WIT: ePKP	14	46	38.5							22.1S 179.7W, H: 14 27 55.1, h 600 km. Mb 4.7. South of Fiji Islands.
Sep. 14	eP	14	57.0								39.6N 74.9E, H: 14 46 21.1, h N. Mb 5.1, Ms 4.9. Southern Sinkiang Prov., China.
	eL	15	11			18		10		5.7	
	F	15.7									
	WIT: eP	14	57.0								
Sep. 14	eP	16	24	05	+						39.7N 74.9E, H: 16 15 24.8, h N. Mb 5.5, Ms 5.6. Southern Sinkiang Prov., China.
	ePP	16	25	56							
	eS	16	31	12							
	eSS	16	34.5								
	eL	16	40			20		32		6.2	
	F	17.6									
	WIT: eP	16	23	57							
Sep. 15	eL	15	22								51.9N 175.5E, H: 14 45 42.0, h 50 km. Mb 5.2, Ms 5.1. Rat Islands, Aleutian Is.
	F	16.0									
	WIT: eP	14	57	22							
Sep. 15	eL	19	29								45.5N 151.6E, H: 18 47 41.3, h 44 km. Mb 5.3. Kuril Islands.
	F	20	00								
	WIT: eP	18	59	35							
Sep. 16	eS	01	39.1								45.6N 151.6E, H: 01 17 14.6, h 60 km. Mb 5.0. Kuril Islands.
	eL	01	53								
	F	02.5									
	WIT: iP	01	29	06.3	+						
Sep. 16	WIT: iP	08	13	03.0	+						27.2N 127.3E, H: 08 00 35.8, h 94 km. Mb 5.1. Ryukyu Islands.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
											37.3N 116.5W, H: 30 00.0, h 3800 feet. Mb 6.2, Ms 5.1. Southern Nevada. 1 MT explosion.
Sep. 16	iP	14	41	57	+						
	eL	15	11								
	F	15.8									
	WIT: iP	14	41	58.5	+						31.1N 131.3E, H: 18 40 45.8, h 8 km. Mb 6.2, Ms 5.9. Kyushu, Japan.
Sep. 17	iP	18	53	20	+						
	ePP	18	56	36							
	eS	19	03	44							
	ePPS	19	05.0								
	eSS	19	09.5								
	eSSS	19	13.5			18		58		7.0	
	eL	19	20								
	F	20.5									
	WIT: eP	18	53	15.5	+						
Sep. 17	WIT: eP	19	03	36							31.2N 131.4E, H: 18 51 07.8, h 23 km. Mb 5.5. Kyushu, Japan.
Sep. 19	ePP	01	57	38							d.b.m. 6.1N 125.4E, H: 01 29 37.4, h 95 km. Mb 5.7. Mindanao, Philippine Islands.
	eL	02	20								
	F	03.0									
Sep. 19	eL	21	04.8								58.4N 32.3W, H: 20 54 12.4, h N. Mb 4.5. North Atlantic Ocean.
	F	21.3									
	WIT: eP	20	59	10							
Sep. 19	eL	21	34.0								
	F	21	48								
	WIT: eP	21	28.8								
Sep. 19	eL	23	33								58.4N 32.3W, H: 23 21 59.1, h N. Mb 4.6. North Atlantic Ocean.
	F	23	38								
	WIT: eP	23	26	59							
Sep. 20	eL	00	31								58.4N 32.1W, H: 00 20 50.4, h N. Mb 4.4. North Atlantic Ocean.
	F	00	37								
Sep. 20	eS	01	05	55							58.1N 32.2W, H: 00 56 51.3, h N. Mb 5.0. North Atlantic Ocean.
	eL	01	07								
	F	in next shock									
	WIT: eP	01	01	49							
Sep. 20	eS	01	16	42							58.2N 32.1W, H: 01 07 38.4, h N. Mb 5.0. North Atlantic Ocean.
	eL	01	18								
	F	in next shock									
	WIT: eP	01	12	36							
Sep. 20	eL	01	24								58.1N 32.1W, H: 01 13 04.6, h N. Mb 5.2. North Atlantic Ocean.
	F	02.0									
	WIT: eP	01	18	01	+						
Sep. 20	iP	05	13	48	+						58.3N 32.2W, H: 05 08 57.6, h N. Mb 5.6, Ms 6.0. North Atlantic Ocean.
	iS	05	17	56	+						
	eL	05	19								
	F	07.4									
	WIT: eP	05	13	33	+						
Sep. 20	eL	14	33								38.4N 69.8E, H: 14 07 57.8, h 52 km. Mb 5.1. Tadzhik SSR.
	F	14	43								
Sep. 20	eP	15	40	20							1.8N 101.0W, H: 15 26 41.5, h N. Mb 5.5, Ms 5.7. East central Pacific Ocean.
	eL	16.3									
	F	17.0									
Sep. 21	WIT: iPKP	07	31	04.0	+						17.5S 174.7W, H: 07 11 53.6, h 235 km. Mb 5.5. Tonga Islands.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Sep. 22	eL	02	35								d.b.m. 2.9N 95.9E, H: 01 46 13.5, h N. Mb 5.3, Ms 5.8. Off west coast of northern Sumatra.
	F	03.1									
	WIT: eP	01	59	05.5							
Sep. 22	eL	04.7									d.b.m. 2.9N 95.9E, H: 03 52 37.4, h N. Mb 5.3, Ms 5.6. Off west coast of northern Sumatra.
	F	05.0									
Sep. 22	eP	13	57	27							5.0N 32.6W, H: 13 47 52.2, h N. Mb 5.7, Ms 5.4. Central Mid-Atlantic Ridge.
	eS	14	05.4								
	eL	14	14								
	F	14.5									
	WIT: eP	13	57	37.5							
Sep. 22	eL	22	28								0.5N 26.2W, H: 22 02 08.3, h N. Mb 4.8. Central Mid-Atlantic Ridge.
	F	23.0									
Sep. 23	eL	02	13								27.3S 113.4W, H: 01 22 03.3, h N. Mb 5.3, Ms 5.6. Easter Island region.
	F	03.5									
Sep. 23	eS	23	01	16							18.7N 107.1W, H: 22 37 22.6, h N. Mb 4.9, Ms 5.6. Off coast of Jalisco, Mexico.
	eSS	23	07.0								
	eL	23	13.5								
	F	23.8									
Sep. 24	iP	04	03	58	+						52.5N 31.8W, H: 03 58 56.5, h N. Mb 5.2, Ms 5.2. North Atlantic Ridge.
	eS	04	08	00							
	eL	04	08.5			15		23		5.5	
	F	05.0									
	WIT: eP	04	04	04							
Sep. 24	WIT: eP	04	25	57.5							52.6N 31.8W, H: 04 20 52.9, h N. Mb 5.2. North Atlantic Ridge.
Sep. 24	iP	18	12	46	+	6	5.5				15.2N 45.8W, H: 18 03 19.0, h N. Mb 5.6, Ms 6.4. North Atlantic Ridge.
	iPP	18	15	00							
	eS	18	20	28							
	eL	18	27			18		75	6.7		
	F	22.0									
	WIT: iP	18	12	54.0	+						
Sep. 24	WIT: ePKP	20	39	59							18.2S 178.0W, H: 20 21 14.6, h 475 km. Mb 4.7. Fiji IsLands region.
Sep. 26	eL	05	17								16.4N 41.0E, H: 04 54 35.7, h 25 km. Mb 5.1, Ms 5.3. Red Sea.
	F	06.0									
Sep. 26	WIT: iP	07	05	16.6							45.9N 42.5E, H: 06 59 55.8, h 0 km. Mb 5.6. Southwestern Russia.
Sep. 26	WIT: iPKP	20	47	14.5							22.3S 171.1E, H: 20 27 44.7, h 120 km. Mb 4.7. Loyalty Islands region.
Sep. 27	WIT: eP	04	14	10							43.9N 147.0E, H: 04 02 16.3, h 47 km. Mb 5.4. Kuril Islands.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
						20		7		6.2	d.b.m. 60.9S 56.0W, H: 09 04 02.8, h N. Mb 5.8, Ms 5.9. South Shetland Islands.
Sep. 27	eL	10.0									
	F	10.6									
											23.8S 176.7W, H: 10 17 08.3, h 78 km. Mb 5.0. South of Fiji Islands.
Sep. 28	WIT: iPKP	10	36	53.3	+						
											d.b.m. 34.3N 25.1E, H: 22 54 06.6, h 19 km. Mb 5.4, Ms 5.5. Crete.
Sep. 28	iP	22	59	15							
	iS	23	03	32							
	eL	23	06								
	F	23.5									
	WIT: iP	22	59	11							
Sep. 29	eL	09	10								
	F	09.4									
											43.4N 147.7E, H: 17 58 38.8, h 32 km. Mb 5.4, Ms 5.3. Kuril Islands.
Sep. 29	eL	18	39								
	F	19.1									
	WIT: iP	18	10	39	(+)						
											d.b.m. 32.9S 19.7E, H: 20 03 32.8, h N. Mb 5.9, Ms 6.3. Republic of South Africa. 12 dead.
Sep. 29	eP	20	16	11	(+)						
	ePP	20	19	23							
	eS	20	26	40							
	ePS	20	27	50							
	eSS	20	32.5								
	eSSS	20	36.0								
	eL	20	42			20			46	6.7	
	F	23.0									
	WIT: eP	20	16	14							
											31.9S 177.9W, H: 04 11 16.1, h N. Mb 5.4, Ms 5.5. Kermadec Islands.
Sep. 30	eL	05	33								
	F	06.5									
											d.b.m. 31.9S 178.0W, H: 17 51 41.8, h N. Mb 5.4, Ms 6.1. Kermadec Islands.
Sep. 30	ePKP	18	11	40							
	ePP	18	16.0								
	eL	19	20								
	F	20.5									
											49.8N 78.2E, H: 04 02 57.6, h 0 km. Mb 5.3. Eastern Kazakh SSR.
Oct. 1	WIT: eP	04	11	01.5							
											d.b.m. 11.9S 75.1W, H: 05 05 43.2, h 4 km. Mb 5.9, Ms 6.2. Peru.
Oct. 1	eP	05	19.1								
	eSKS	05	29	40							
	eS	05	30	22							
	eL	05.7				30			24	6.5	
	F	08.0									
	WIT: eP	05	19.1								
											d.b.m. 0.8N 85.0W, H: 17 10 56.5, h N. Mb 5.5, Ms 5.9. Off coast of Ecuador.
Oct. 1	iP	17	23	55	+						
	iS	17	34	47							
	ePS	17	35	53							
	eSS	17	40.5								
	eSSS	17	44	14							
	eL	17	50			20			12	6.2	
	F	18.5									
											d.b.m. 60.8S 19.7W, H: 19 53 15.7, h N. Mb 5.6, Ms 6.0. Southwestern Atlantic Ocean.
Oct. 1	eSP	20	22.6								
	eSS	20	29.0								
	eSSS	20	33.0								
	eL	20	40								
	F	21.4									

Seismic Records at De Bilt

Date 1969	Phase.	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Oct. 2	eL	05.6									
	F	05.9									
											38.5N 122.7W, H: 04 56 45.5, h 2 km. Mb 5.2, Ms 4.8. Northern California.
Oct. 2	eL	07.0									
	F	07.3									
											38.5N 122.7W, H: 06 19 56.0, h 2 km. Mb 5.1. Northern California.
Oct. 2	eL	22.7									
	F	23.3									
	WIT: iP	22	17	46.0	+						
	iPcP	22	17	56.3							51.4N 179.2E, H: 22 06 00,0 h 1 km. Mb 6.5, Ms 5.0. Rat Islands, Aleutian Is. Explosion.
Oct. 3	WIT: iP	02	03	17.5	+						
											51.9N 157.8E, H: 01 51 55.4, h 91 km. Mb 5.3. Near east coast of Kamchatka.
Oct. 3	eL	02.9									
	F	03.4									
											32.9S 178.0W, H: 01 33 19.8, h 26 km. Mb 5.7. South of Kermadec Islands.
Oct. 3	e	18	29								
	F	19.0									
Oct. 5	WIT: iPKP	13	29	27.8	+						20.9S 178.7W, H: 13 10 42.6, h 550 km. Mb 4.6. Fiji Islands region.
Oct. 5	WIT: iPKP	21	06	04							21.8S 170.7E, H: 20 46 32.5, h 107 km. Mb 5.3. Loyalty Islands region.
Oct. 6	eL	13.6									
	F	14.0									
	WIT: iP	13	01	08	-						15.0N 120.1E, H: 12 48 05.0, h 59 km. Mb 5.6. Luzon, Philippine Islands.
Oct. 7	eL	05	19.5								
	F	05	30								d.b.m. 39.2N 28.4E, H: 05 09 11.3, h 14 km. Mb 5.0. Turkey.
	WIT: iP	05	13	48.5	+						
Oct. 7	WIT: e	07	50.1								
Oct. 7	WIT: eP	22	24	25							51.2N 179.6W, H: 22 12 39.1, h 45 km. Mb 4.8. Andreanof Is., Aleutian Is.
Oct. 8	WIT: eP	14	42	00							37.3N 116.4W, H: 14 30 00.0, h 0 km. Mb 5.5. Southern Nevada. Test site "Pipkin".
Oct. 8	WIT: iPKP	16	00	11.0	(-)						21.3S 179.5W, H: 15 41 33.4, h 639 km. Mb 4.7. Fiji Islands region.
Oct. 9	WIT: eP	08	11	27.0							52.3N 169.5W, H: 07 59 41.3, h 22 km. Mb 5.1, Ms 5.3. Fox Islands, Aleutian Is.
Oct. 9	eL	08.4									
	F	09.0									43.7N 127.4W, H: 07 45 16.3, h 10 km. Mb 4.8, Ms 5.5. Off coast of Oregon.
Oct. 9	WIT: eP	14	19	41							43.5N 147.5E, H: 14 07 40.7, h 30 km. Mb 4.8. Kuril Islands.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Oct. 10	eL	04	50								13.2N 89.7W, H: 04 06 24.1, h 71 km. Mb 4.6. El Salvador.
	F	05.1									
Oct. 10	eL	18	00								29.3N 130.3E, H: 17 09 57.5, h 15 km. Mb 4.9. Ryukyu Islands.
	F	18	14								
Oct. 11	eL	12.6									27.0S 176.5W, H: 11 12 34.9, h 83 km. Mb 4.6. Kermadec Islands.
	F	13.5									
Oct. 12	iP	13	38	16							39.7N 20.4E, H: 13 34 15.8, h 14 km. Mb 5.1. Greece-Albania border region.
	eS	13	41	20							
	eL	13	43.0								
	F	14.0									
	WIT: eP	13	38	(24)							
Oct. 13	iP	01	06	19	+						39.9N 20.6E, H: 01 02 28.5, h 8 km. Mb 5.6, Ms 5.0. Greece-Albania border region.
	eS	01	09	24							
	eL	01	10.5			10		3.3		5.6	
	F	02.0									
	WIT: eP	01	06	20							
Oct. 13	iPKP	07	15	09	+						18.9S 169.3E, H: 06 56 01.6, h 246 km. Mb 5.9. New Hebrides Islands.
	ipPKP	07	16	17							
	iPP	07	18	33							
	eSS	07	37.1								
	esSS	07	38.4								
	eSSS	07	42.5								
	esSSS	07	44.0								
	F	09.4									
	WIT: iPKP	07	15	06.0	+						
	ipPKP	07	16	09.5							
	iPP	07	18	26.5							
	HEE: iPKP	07	15	20							
Oct. 13	WIT: ePKP	09	48	11							18.8S 173.4W, H: 09 28 33.0, h 33 km. Mb 5.0. Tonga Islands.
Oct. 14	WIT: iPKP	00	52	34.2	+						21.9S 170.5E, H: 00 33 00.6, h 79 km. Mb 4.8. Loyalty Islands region.
Oct. 14	eL	03	15								46.0N 27.6W, H: 13 03 50.3, h N. Mb 4.4. North Atlantic Ridge.
	F	03	23								
Oct. 14	iP	07	06	16	+						73.4N 54.8E, H: 07 00 06.2, h 0 km. Mb 6.1. Novaya Zemlya. Underground nuclear explosion.
	eL	07	15								
	F	07	30								
	WIT: iP	07	06	06.4	+						
Oct. 14	WIT: eP	20	50	38							37.9N 135.1E, H: 20 39 11.6, h 371 km. Mb 4.7. Sea of Japan.
Oct. 14	WIT: eP	22	57	45.5							52.6N 162.7W, H: 22 46 04.8, h 15 km. Mb 5.1. South of Alaska.
Oct. 15	eL	01.4									27.0S 176.5W, H: 23 59 26.0, h 61 km. Mb 5.3. Kermadec Islands.
	F	02.2									
Oct. 16	WIT: e	09	16	54							

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Oct. 16	WIT: ePKP	21	04	51							19.7S 174.6W, H: 20 45 09.8, h N. Mb 4.8. Tonga Islands.
Oct. 17	iP	01	36	24	-						23.1N 94.7E, H: 01 25 12.4, h 134 km. Mb 6.0. Burma-India border region.
	ipP	01	37	00							
	ePP	01	39	04							
	epPP	01	39	40							
	iS	01	45	32							
	eL	02.0				30		24		6.5	
	F	02.7									
	WIT: iP	01	36	17.2							
	ipP	01	36	53							
Oct. 18	eL	01	52								39.3N 141.4E, H: 01 13 59.7, h 107 km. Mb 5.3. Honshu, Japan.
	F	02.3									
	WIT: iP	01	26	00.5	+						
	epP	01	26	27.5							
Oct. 18	iP	08	55	43	+						52.5N 173.5E, H: 08 44 00.0, h 24 km. Mb 5.6, Ms 5.3. Near Islands, Aleutian Is.
	eL	09	20								
	F	09.9									
	WIT: iP	08	55	39.0	+						
Oct. 19	eL	13	17								39.7N 139.3E, H: 12 29 27.1, h N. Mb 4.8. Near west coast of Honshu, Japan.
	F	13	35								
Oct. 19	eL	20	22								46.2S 33.6E, H: 19 33 36.3, h N. Mb 5.0. Prince Edward Islands region.
	F	20.7									
Oct. 20	WIT: e	02	54	33							
Oct. 20	iP	13	23	10	-						10.8N 72.5W, H: 13 11 37.0, h 40 km. Mb 5.7, Ms 5.5. Venezuela.
	iS	13	32	36							
	eL	13	42								
	F	14.3									
	WIT: iP	13	23	16.4							
Oct. 20	iP	15	33	18							17.3N 95.2W, H: 15 20 36.5, h 87 km. Mb 5.4. Oaxaca, Mexico.
	iS	15	43	06							
	eL	15	59								
	F	16.5									
	WIT; iP	15	32	57							
Oct. 21	eL	11	47								0.8N 27.9W, H: 11 19 05.5, h N. Mb 4.7. Central Mid-Atlantic Ridge.
	F	12.1									
Oct. 21	iP	21	05	37	+						51.3N 179.2W, H: 20 53 47.5, h 48 km. Mb 5.9, Ms 5.4. Andreanof Is., Aleutian Is.
	eS	21	15.7								
	eSS	21	20.7								
	eL	21	40								
	F	22.2									
	WIT: iP	21	05	32.5	+						
Oct. 22	eL	08.3									4.8S 152.5E, H: 07 12 07.7, h 71 km. Mb 5.3. New Britain region.
	F	08.6									
	WIT: ePKP	07	31	01							
Oct. 22	WIT: eP	09	27	10							52.6N 158.9E, H: 09 15 48.3, h 63 km. Mb 4.8. Near east coast of Kamchatka.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Oct. 22	eL	11.1									18.1S 71.5W, H: 10 21 52.1, h 23 km. Mb 5.4. Off coast of northern Chile.
	P	11.8									
	WIT: eP	10	35	25							
Oct. 22	eL	12.7									52.2N 169.5W, H: 12 11 21.3, h N. Mb 5.1, Ms 4.7. Fox Islands, Aleutian Islands.
	F	13.9									
	WIT: eP	12	23	05							
Oct. 22	WIT: iP	13	03	20.4	+						10.9N 62.6W, H: 12 52 22.0, h 79 km. Mb 5.4. Near coast of Venezuela.
	ipP	13	03	40.4							
Oct. 22	iP	23	03	52	+						34.8N 121.3W, H: 22 51 33.5, h 15 km. Mb 5.9, Ms 5.2. Off coast of California.
	ePP	23	07.0								
	eS	23	14	12		20			9	6.2	
	eL	23	33								
	F	24.0									
	WIT: eP	23	03	54							
Oct. 24	WIT: iPKP	00	45	56.3	+						25.2S 178.4E, H: 00 27 08.8, h 620 km. Mb 4.8. South of Fiji Islands.
Oct. 24	WIT: iP	00	57	55.7	-						52.5N 168.6W, H: 00 46 14.6, h N. Mb 5.2. Fox Islands, Aleutian Is.
Oct. 24	eL	09.2									d.b.m. 33.3N 119.2W, H: 08 29 12.1, h 10 km. Mb 5.1, Ms 5.0. Southern California.
	F	09.6									
Oct. 25	WIT: iP	12	15	43.7	(+)						44.1N 147.8E, H: 12 03 47.6, h 38 km. Mb 5.3, Ms 4.6. Kuril Islands.
Oct. 26	eL	08.0									d.b.m. 16.2S 173.9W, H: 06 38 03.4, h 127 km. Mb 5.8. Tonga Islands.
	F	08.4									
	WIT: ePKP	06	57	24							
Oct. 26	eS	15	41	38							d.b.m. 44.9N 17.3E, H: 15 36 51.8, h N. Mb 5.3, Ms 5.6. Yugoslavia, 14 dead.
	eL	15	42.0			12		526		6.5	
	F	16.5									
	WIT: eP	15	39	25							
	HEE: eP	15	39	20							
	i	15	40	51							
Oct. 26	WIT: eP	19	27	52							43.6N 148.2E, H: 19 15 51.2, h 37 km. Mb 5.0, Ms 5.3. Kuril Islands region.
Oct. 26	ePP	22	07	16	-						d.b.m. 53.4S 23.5E, H: 21 39 20.8, h N. Mb 5.9, Ms 6.1. South of Africa.
	eSKS	22	13	00							
	eSS	22	23.4								
	eL	22	30			16			13	6.5	
	F	23.3									
Oct. 27	eL	03	01.3								45.0N 17.0E, H: 02 55 35.4, h N. Mb 4.9. Yugoslavia.
	F	03	10			12		16		5.0	
	WIT: eP	02	58.3								
Oct. 27	eP	08	13	32							44.9N 17.2E, H: 08 10 58.3, h N. Mb 5.3, Ms 6.1. Yugoslavia.
	eS	08	15	38							
	eL	08	16.0								
	F	10.0				8			510	6.5	
	WIT: iP	08	13	30.5							
	HEE: eP	08	13	31							
Oct. 27	WIT: eP	08	56	21.5							44.9N 17.0E, H: 08 53 42.7, h N. Mb 4.8. Yugoslavia.

Seismic Records at De Bilt

Date	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Oct. 29	WIT: iP	22	13	50.7	+						37.1N 116.1W, H: 22 01 51.4, h 0 km. Mb 5.7 Southern Nevada.
Oct. 31	WIT: iP	06	55	13.5							45.8N 150.7E, H: 06 43 17.5, h 9 km. Mb 5.2. Kuril Islands.
Oct. 31	eL	07	47								37.1N 142.0E, H: 07 00 13.4, h 40 km. Mb 5.0, Ms 5.2. Off east coast of Honshu, Japan.
	F	08.1				18			5	5.9	
Oct. 31	iP	11	44	54	+						51.3N 179.0W, H: 11 33 04.8, h 49 km. Mb 6.0, Ms 6.3. Andreanof Is., Aleutian Is.
	iS	11	54	42							
	eSS	12	00.0								
	eL	12.2									
	F	14.5				20			27	6.5	
	WIT: iP	11	44	50.0	+						
Nov. 1	eP	11	21	06	(-)						d.b.m. 23.1N 107.9W, H: 11 08 20.9, h N. Mb 5.6, Ms 6.6. Gulf of California.
	eS	11	31	40							
	eSS	11	37.0								
	eL	11	43								
	F	14.0				17		80		7.1	
	WIT: eP	11	21	08							
Nov. 4	WIT: iPKP	23	59	04.5	(+)						22.2S 179.7W, H: 23 40 22.7, h 610 km. Mb 5.1. South of Fiji Islands.
Nov. 5	iP	18	06	32	+	6	3.4				34.8N 121.2W, H: 17 54 13.6, h N. Mb 5.8, Ms 5.8. Off coast of California.
	ePP	18	09	40							
	eS	18	16	54							
	eSS	18	22.0								
	eSSS	18	26.5								
	eL	18	34			20			23	6.5	
	F	19.5									
	WIT: eP	18	06	33							
Nov. 6	eP	20	32	08							d.b.m. 51.5N 178.9W, H: 20 20 18.5, h 36 km. Mb 5.5, Ms 5.7. Andreanof Is., Aleutian Is.
	eS	20	42.1								
	eL	20	54			20			9.8	6.1	
	F	21.7									
	WIT: eP	20	32	06							
Nov. 7	eL	12	41								3.1S 12.0W, H: 12 11 46.5, h N. Mb 4.9. North of Ascension Island.
	F	12	51								
Nov. 7	eL	13	13								2.9S 12.0W, H: 12 45 35.3, h N. Mb 5.2. North of Ascension Island.
	F	13	24								
Nov. 7	eL	13	32								2.9S 12.0W, H: 13 04 24.9, h N. Mb 5.0. North of Ascension Island.
	F	13	42								
Nov. 7	WIT: iP	13	53	38.3	(-)						26.6N 126.3E, H: 13 41 13.4, h 123 km. Mb 5.3. Ryukyu Islands.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Nov. 7	iP	18	42	31	+						27.9N 60.1E, H: 18 33 59.9, h 35 km. Mb 6.1, Ms 6.7. Southern Iran.
	ePP	18	44	24							
	iS	18	49	19							
	iScS	18	52	17							
	eSS	18	53.0			30			85	6.7	
	eL	18	56								
	F	20.3									
	WIT: eP	18	42	25							
Nov. 8	eL	02	50								16.2S 167.5E, H: 01 41 41.3, h 23 km. Mb 5.7, Ms 5.5. New Hebrides Islands.
	F	03.4									
	WIT: ePKP	02	01	12.5							
Nov. 8	eL	22.8									d.b.m. 1.1S 127.0E, H: 21 55 09.2, h N. Ms 5.9. Halmahera.
	F	23.5									
Nov. 9	WIT: ePP	09	30	(20)							d.b.m. 16.3S 167.9E, H: 09 07 50.9, h 185 km. Mb 5.3. New Hebrides Islands.
Nov. 12	WIT: eP	12	41	42							42.4N 144.9E, H: 12 29 42.5, h N. Mb 5.2. Hokkaido, Japan.
Nov. 12	eL	19	48								53.0N 168.3W, H: 19 09 02.0, h 53 km. Mb 5.4. Fox Islands, Aleutian Is.
	F	20.2									
	WIT: eP	19	20	37.0							
Nov. 13	eL	08	47								27.8S 71.6W, H: 07 51 29.5, h N. Mb 5.8, Ms 6.0. Near coast of northern Chile.
	F	09.2									
Nov. 14	WIT: iPKP	07	57	05.0	-						19.7S 175.9W, H: 07 37 45.7, h 209 km. Mb 5.5. Tonga Islands.
	ipPKP	07	58	01.5							
Nov. 19	WIT: iP	08	56	03.7	+						41.8N 133.7E, H: 08 45 03.3, h 423 km. Mb 5.0. Sea of Japan.
Nov. 19	HEE: e	22	08	04							Local shock.
Nov. 20	eP	23	57	28							
	eS	24	07.0								d.b.m. 56.6N 153.2W, H: 23 46 11.6, h N. Mb 5.1, Ms 5.5. Kodiak Island region.
	eL	24	18								
	F	01.1									
	WIT: eP	23	57.5								
Nov. 21	iP	02	18	29	-						
	eS	02	28	52							d.b.m. 2.1N 94.6E, H: 02 05 35.3, h 20 km. Mb 6.4, Ms 7.7. Off westcoast of northern Sumatra.
	eL	02.9				20		463		7.9	
	F	07.0									
	WIT: eP	02	18	22							
	HEE: eP	02	18.5								
Nov. 21	eL	08	50								43.7N 147.9E, H: 08 12 31.6, h 63 km. Mb 4.7. Kuril Islands.
	F	10.0									
Nov. 22	eL	20.8									
	F	21.6									
	WIT: ePKP	19	47	34.5							22.3S 174.9W, H: 19 27 45.9, h N. Mb 5.3. Tonga Islands region.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Nov. 22	eP	23	20	42							57.8N 163.5E, H: 23 09 37.2, h N. Mb 6.3, Ms 7.3. Near east coast of Kamchatka.
	eS	23	29	52							
	eL	23.7				18		339		7.6	
	F	04.0									
	WIT: iP	23	20	36.4	(+)						
	HEE: e	23	21.1								
Nov. 24	eP	17	31	48							37.2N 71.7E, H: 17 23 20.2, h 123 km. Mb 5.6. Afghanistan-USSR border region.
	epP	17	32	28							
	ePP	17	33	38							
	epPP	17	34	20							
	eS	17	37	36							
	eL	17	46								
	F	18.1									
	WIT: iP	17	31	40.0	-						
Nov. 24	WIT: iP	21	21	08							60.6N 58.8W, H: 21 14 13.7, h N. Mb 5.0. Davis Strait.
Nov. 24	WIT: iPKP	21	49	50							18.0S 178.4W, H: 21 31 17.6, h 593 km. Mb 5.4. Fiji Islands region.
Nov. 24	eP	23	03	08							56.2N 153.6W, H: 22 51 50.1, h N. Mb 5.5, Ms 5.7. Kodiak Island region.
	eS	23	12	22							
	eL	23	22			20			7.1	5.9	
	F	24.5									
	WIT: eP	23	03.1								
Nov. 25	WIT: ePKP	01	51	27.0							18.0S 178.4W, H: 01 32 54.0, h 587 km. Mb 4.6. Fiji Islands region.
Nov. 26	ePKP	13	03.5								16.8S 167.7E, H: 12 44 04.7, h 33 km. Mb 5.4, Ms 6.0. New Hebrides Islands.
	eL	13.9									
	F	15.0									
Nov. 26	ePS	18	55	16							58.8S 24.7W, H: 18 26 08.9, h N. Mb 5.4. South Sandwich Islands region.
	eSS	19	01.4								
	eSSS	19	05.6								
	eL	19	24			20			3.6	6.0	
	F	20.2									
Nov. 30	eL	04	01								49.9N 79.0E, H: 03 32 57.2, h 0 km. Mb 6.0. Eastern Kazakh SSR.
	F	04	03								
	WIT: iP	03	41	04.5							
	ePP	03	42	43							
Dec. 1	WIT: iPKP	02	35	16.5	-						18.4S 178.0W, H: 02 16 42.7, h 600 km. Mb 4.9. Fiji Islands region.
Dec. 1	eL	15	20								35.0N 24.3E, H: 20 18 06.3, h 53 km. Mb 5.0. Crete.
	F	15.8									
Dec. 1	WIT: iP	20	22	55.4	-						
Dec. 1	eS	22	33.0								16.7N 60.8W, H: 22 13 53.4, h 41 km. Mb 5.6, Ms 5.8. Leeward Islands.
	eL	22	43			20			18	6.2	
	F	23.1									
	WIT: eP	22	24	21							
	i	22	24	37.3							
Dec. 2	WIT: eP	04	23	45.0							57.4N 163.4E, H: 04 12 34.6, h N. Mb 5.1, Ms 4.7. Near east coast of Kamchatka.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Dec. 2	eL	18	48								8.2N 126.3E, H: 17 57 04.3, h 102 km. Mb 5.7. Mindanao, Philippine Is.
	F	19.3									
Dec. 4	iP	09	02	40	+						40.7N 144.7E, H: 08 50 21.6, h 20 km. Mb 5.7, Ms 5.5. Off east coast of Honshu, Japan.
	eL	09	30								
	F	09.9									
	WIT: iP	09	02	32.5	+						
	i	09	02	47.5							
Dec. 6	WIT: ePP	07	11	03							Change of papers: 07.08-07.11, 43.8N 54.8E, H: 07 02 57.4, h 0 km. Mb 5.8. Western Kazakh SSR.
Dec. 6	eL	15	49								58.7S 25.1W, H: 14 54 00.8, h N. Mb 5.3, Ms 5.1. South Sandwich Is. region.
	F	16.1									
Dec. 7	eL	05	11								18.1S 168.2E, H: 03 55 31.1, h 49 km. Mb 5.2. New Hebrides Islands.
	F	05	21								
Dec. 7	eL	22	36								9.6N 125.7E, H: 21 46 15.1, h 51 km. Mb 5.2. Mindanao, Philippine Is.
	F	22.9									
Dec. 10	ePKP	20	13.5								d.b.m. 14.8S 167.0E, H: 19 53 58.2, h 21 km. Mb 5.4, Ms 6.3. New Hebrides Islands.
	eSKS	20	30.3								
	eL	21.0									
	F	22.2									
	WIT: ePKP	20	13	28							
Dec. 12	eL	01	50								40.1N 143.8E, H: 01 13 11.4, h 11 km. Mb 5.0, Ms 5.6. Off east coast of Honshu, Japan.
	F	02.5									
	WIT: eP	01	25	25							
Dec. 13	eL	03	34								1.0N 27.9W, H: 03 06 40.0, h N. Mb 4.8. Central Mid-Atlantic Ridge.
	F	in next shock									
Dec. 13	eL	03	47								1.0N 28.0W, H: 03 19 58.3, h N. Mb 5.6. Central Mid-Atlantic Ridge.
	F	04.2									
	WIT: eP	03	29	58							
Dec. 13	WIT: iP	03	52	23.7							34.0N 137.0E, H: 03 40 34.8, h 358 km. Mb 5.1. Near south coast of Honshu, Japan.
Dec. 13	eL	22	24								23.9N 126.5E, H: 21 37 06.0, h 20 km. Mb 5.4. Ryukyu Islands region.
	F	22	45								
	WIT: eP	21	49	56.0							
Dec. 14	ePS	03	10	25							d.b.m. 2.0N 126.9E, H: 02 42 09.4, h 42 km. Mb 6.0, Ms 5.7. Molucca Passage.
	eL	03	34								
	F	04.1				22			7.6	6.3	
	WIT: ePKP	03	00	24							
Dec. 14	WIT: iP	18	47	22.0	-						8.2N 58.5E, H: 18 37 09.5, h N. Mb 6.0, Ms 5.6. Carlsberg Ridge.
	i	18	47	23.0							
Dec. 17	WIT: eP	17	12	00.0	+						37.1N 116.0W, H: 15 00 00.0, h 0 km. Mb 5.5. Southern Nevada.

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Dec. 18	iP	13	43	15	+						d.b.m. 46.3N 142.5E, H: 13 32 05.2, h 344 km. M 5.9. Sakhalin Island.
	iS	13	52	24							
	eL	14	00								
	F	14.6									
	WIT: iP	13	43	07.4	-						
	ipP	13	44	30.0							
Dec. 18	WIT: i	18	16	29.5							
Dec. 20	WIT: eP	17	45	05.0							36.6N 23.5E, H: 17 40 36.3, h 88 km. Mb 4.6. Southern Greece.
Dec. 21	WIT: eP	10	30	41.0	+						28.2N 130.6E, H: 10 18 02.4, h 28 km. Mb 5.6. Ryukyu Islands.
Dec. 23	eL	14	00								57.4N 163.1E, H: 13 22 54.2, h N. Mb 5.4, Ms 5.5. Near east coast of Kamchatka.
	F	14.7									
Dec. 24	eL	05	14.6								36.0N 10.4W, H: 05 04 44.5, h N. Mb 5.1. North Atlantic Ocean.
	F	05	22								
	WIT: eP	05	09	23							
Dec. 25	iP	21	42	52	-						15.8N 59.7W, H: 21 32 27.3, h 7 km. Mb 6.4, Ms 7.2. Leeward Islands.
	eS	21	51	20							
	eL	21	54			20			400	7.6	
	F	02.0									
	WIT: iP	21	42	59.5							
	HEE: iP	21	42	56.5							
Dec. 25	WIT: eP	22	28	11							16.2N 59.8W, H: 22 17 42.9, h 25 km. Mb 5.4. Leeward Islands.
Dec. 25	WIT: eP	22	36	42.5							15.8N 59.7W, H: 22 26 11.8, h 15 km. Mb 5.5, Ms 6.3. Leeward Islands.
Dec. 25	WIT: iP	22	41	33.5	+						16.1N 59.8W, H: 22 31 02.3, h 8 km. Mb 6.0, Ms 6.5. Leeward Islands.
Dec. 26	WIT: eP	00	29	46							55.2N 160.4W, H: 00 18 21.0, h 25 km. Mb 5.3. Alaska Peninsula.
Dec. 26	eL	11	03								16.1N 59.8W, H: 10 33 59.8, h 16 km. Mb 5.4. Leeward Islands.
	F	11	34								
Dec. 26	eL	20	33								15.8N 59.6W, H: 20 03 28.8, h N. Mb 5.4. Leeward Islands.
	F	20	40								
	WIT: iP	20	13	56.4	-						
Dec. 27	eL	10	20								16.2N 59.6W, H: 09 55 35.5, h N. Mb 5.0, Ms 5.1. Leeward Islands.
	F	11.0									
Dec. 27	eL	12	09								15.8N 59.6W, H: 11 39 07.7, h N. Mb 5.0. Leeward Islands.
	F	12.5									
Dec. 27	eL	14	33								16.2N 59.6W, H: 14 03 04.4, h N. Mb 5.5, Ms 4.9. Leeward Islands.
	F	15.2									
	WIT: iP	14	13	31.0							

Seismic Records at De Bilt

Date 1969	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Dec. 27	eL	16	14								16.2N 59.7W, H: 15 43 54.7, h N. Mb 5.4. Leeward Islands.
	F	16.6									
	WIT: eP	15	54	25.0							
Dec. 28	WIT: iP	03	54	59.5	-						50.0N 77.8E, H: 03 46 58.0, h 0 km. Mb 5.7. Eastern Kazakh SSR.
	iPcP	03	56	38							
Dec. 28	eL	05	31								43.5N 147.9E, H: 04 53 09.2, h 26 km. Mb 5.3. Kuril Islands.
	F	06	13								
	WIT: iP	05	05	10.0	-						
Dec. 28	WIT: iPKP	21	44	21							22.3S 179.4W, H: 21 25 28.2, h 485 km. Mb 4.5. South of Fiji Islands.
Dec. 29	eL	01	20								d.b.m. 16.2N 59.7W, H: 00 51 47.2, h 17 km. Mb 5.6, Ms 5.8. Leeward Islands.
	F	02.3									
	WIT: iP	01	02	19							
Dec. 29	WIT: i	05	05	46.5	-						
	i	05	07	05							
Dec. 29	eL	14.4									16.0N 59.7W, H: 13 55 38.0, h N. Mb 5.4. Leeward Islands. 3 shock within 24 seconds.
	F	14.9									
	WIT: iP	14	06	16.5							
Dec. 31	eL	05	50								34.4N 26.1E, H: 05 37 02.5, h 27 km. Mb 5.0. Crete.
	F	05	54								
	WIT: eP	05	42	07							
Dec. 31	eL	13	23.7			13		34		5.3	d.b.m. 44.9N 17.2E, H: 13 18 32.8, h N. Mb 5.1. Yugoslavia. One dead.
	F	13	36								
	WIT: eP	13	21	07							
	HEE: eS	13	22	38							
	e	13	24	08							
Dec. 31	iP	19	14	31							28.5N 129.1E, H: 19 01 56.1, h 44 km. Mb 5.9, Ms 6.3. Ryukyu Islands.
	ePP	19	17	52							
	eS	19	25.0								
	eSS	19	31.2								
	eSSS	19	35.0								
	eL	19	45			13		123		7.3	
	F	21.0									
	WIT: eP	19	14	27							