International Seismological Centre From the ISC collection scanned by SISMOS

27 FEB 1970

KONINKLIJK NEDERLANDS METEOROLOGISCH INSTITUUT

SEISMIC RECORDS
AT DE BILT

VOLUME 52
1964

DE BILT - 1969

PRIJS F 3,—

International Seismological Centre From the ISC collection scanned by SISMOS

K O N I N K L I J K N E D E R L A N D S

M E T E O R O L O G I S C H I N S T I T U U T

Seismic Records

at De Bilt

Volume 52

1964

De Bilt, 1969

International Seismological Centre From the ISC collection scanned by SISMOS

Publicatienummer K.N.M.I. 108 - 52

P R E F A C E

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

The Director in Chief of
the Royal Netherlands Meteorological Institute,

Dr. M.W.F. Schregardus.

De Bilt, August 1969

International Seismological Centre From the ISC collection scanned by SISMOS

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°6!1 N and 5°10!6 E. The instruments are placed at a height of 3 m above mean sea-level on a subsoil consisting of sand (pleistocene).

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

THE GALITZIN SEISMOGRAPHS AT DE BILT. Below are given: the period of the galvanometer T1, the reduced pendulum length l, the distance A1 between the mirror of the galvanometer and the recording paper, and the rough values for the natural period of the undamped pendulum T, of the damping constant and of the multiplying factor k for the year 1964.

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

SEISMOLOGICAL STATION HEERLEN (HEE)

The geographic coordinates of the seismological station are: 50°53!0 N and 5°59!0 E.

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

The mean values of the constants for the year 1964 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!8 N and 6°40!1 E.

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

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

International Seismological Centre From the ISC collection scanned by SISMOS

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

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

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

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

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

In this formula A1 is the distance between galvanometer mirror and recording paper, k is the multiplying factor, T_b the period of the wave, l the reduced length of the pendulum, T the free period of the undamped seismograph, and V the magnification. The period of the galvanometer is assumed to be equal to the free period of the undamped seismograph.

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

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

THE MICROSEISMIC ACTIVITY

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

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

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

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

International Seismological Centre From the ISC collection scanned by SISMOS

Seismic Records at De Bilt

Character of the microseismic movement

Date 1964	Jan.	Febr.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	3	3	2	1	1	1	1	1	1	1 2	0 1	2 1
2	3	3 2	2 1	1	1	1	1	1	1 0	2	1 2	1 2
3	3	2 3	1	1	1 2	1	1	1 0	0	2 1	2 1	2 3
4	3 2	3	1	1	2	1	1 0	0 1	0	1	1	3 2
5	2 1	3 2	1	1 0	2	1 0	0 1	1	0	1	1 2	2 1
6	1	2 1	1	0 1	2 1	0 1	1 0	1	0 1	1	2	1 2
7	1	1	1	1	1	1	0 3	1 0	1	1 2	2	2
8	1 2	1	1	1 2 1	1	1	3	0 1 0	1	2 3	2	2 3
9	2 1	1	1	1 2 1	1 2	1	3 2	0 1	1	3	2 1	3 2
10	1	1	1	1	2	1	2 1	1 0	1	3	1 2	2 1
11	1 2	1 2	1 2	1	2 1	1	1	0	1	3 2	2 3	1 2
12	2	2	2	1	1	1	1 0	0	1	2 1	3	2 3
13	2 3	2 3	2	1 3	1	1 0	0	0 1	1	1	3	3 2
14	3	3 2	2 3	3	1 2 1	0 1	0	1 0	1	1	3	2
15	3 2	2 1	3	3 2	1	1	0 1	0	1 2	1	3	2
16	2	1	3	2 1	1 0	1 0	1	0 1	2	1	3	2 1
17	2 1	1 2	3	1	0	0	1 0	1 2	2 1	1	3 1	1
18	1 2	2 3	3	1	0 1	0	0	2	1	1	1	1
19	2 3	3	3	1	1	0 1	0	2 1	1	1	1 2	1 2
20	3	3 2	3	1	1 0	1	0	1	1	1	2	2
21	3	2	3 1	1	0 1	1 0	0	1	1	1 2	2 1	2
22	3 2	2	1	1	1 2 1	0	0	1	1 2	2	1	2 1
23	2 3	2 3	1	1	1	0	0	1	2 1	2	1	1
24	3 2	3	1 2	1	1	0	0	1	1	2 1	1 2	1
25	2 1	3	2 3	1 2	1	0	0	1	1	1	2 1	1
26	1	3	3 1	2 1	1 0	0 1	0 1	1 0	1 0	1	1 2	1 2
27	1 2	3	1	1 0	0	1	1 2	0	0	1	2	2
28	2 1	3	1	0 1	0	1	2	0	0 1	1	2 3	2 1
29	1 2	3 2	1	1	0	1	2 1	0 1	1	1	3 2	1 3
30	2 3		1	1	0	1	1	1	1	1	2	3
31	3		1		0 1		1	1		1 0		3

International Seismological Centre From the ISC collection scanned by SISMOS

Seismic Records at De Bilt

Date 1964	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. 1	eL	18	08								d.b.m. 45.4 N 151.9 E, H: 17 26 43.5, h 45 km. Kurile Islands.
	F	18	45								
	WIT iP	17	38	04							
Jan. 2	WIT iP	5	13	18							53.0 N 159.6 E, H: 05 01 53.5, h 40 km. Kamchatka.
Jan. 2	WIT iP	5	32	17							54.6 N 161.5 E, H: 05 21 00.5, h 31 km. Kamchatka.
Jan. 3	WIT ePKP	21	43	41	-						20.4 S 178.2 W, H: 21 24 56.3, h 520 km. Fiji Islands.
Jan. 5	WIT ePKP	3	24	19							20.6 S 179.0 W, H: 03 05 44.1, h 650 km. Fiji Islands.
Jan. 5	eL	17	42								d.b.m. 61.4 S 154.9 E, H: 16 25 52.6, h 33 km. Balleny Islands.
	F	18	25								
Jan. 5	WIT iP	18	46	44							8.0 S 74.5 W, H: 18 33 54.7, h 150 km. Central Peru.
Jan. 6	eP	0	00	26							d.b.m. 52.3 S 28.6 E, H: 23 46 10.7, h 33 km. Prince Edward Islands region.
	iPP	0	04	43	-						
	(ePS)	0	14.0								
	eSS	0	19	51							
	eL	0	35							6½	
	F	2.5									
Jan. 6	WIT iP	6	07	08	+						27.2 N 127.3 E, H: 05 54 42.7, h 110 km. Ryukyu Islands.
Jan. 6	eP	23	57	03							d.b.m. 50.9 N 157.3 E, H: 23 45 23.4, h 33 km. Southern Kamchatka.
	eS	24	06	38							
	eL	24	22								
	F	11									
	WIT eP	23	57.0								
Jan. 7	WIT iPKP	23	32	22							18.3 S 173.4 N, H: 23 12 33.4, h 33 km. Tonga Islands.
Jan. 9	WIT eP	3	11	19							41.7 N 141.9 E, H: 02 59 21.6, h 50 km. Near south coast of Hokkaido, Japan.
Jan. 9	eP	18	43	45	(+)						d.b.m. 45.5 N 150.9 E, H: 18 31 52.4, h 40 km. Kurile Islands.
	eS	18	53	42							
	eSS	18	59.5								
	eL	19	07							6½	
	F	20.5									
	WIT iP	18	43	46	+						
Jan. 10	eP	5	03.0								d.b.m. 42.0 N 142.6 E, H: 04 50 53.4, h 33 km. Near south coast of Hokkaido, Japan.
	eS	5	13	20							
	eL	5	29							6¼	
	F	6.3									
	WIT iP	5	02	52.5	+						
Jan. 10	eL	17	40								d.b.m. 45.4 N 150.0 E, H: 16 57 26.5, h 50 km. Kurile Islands.
	F	17	53								
	WIT eP	17	09	18							
Jan. 12	eL	6	35								d.b.m. 53.2 N 166.3 W, H: 06 00 13.2, h 33 km. Fox Islands, Aleutian Islands.
	F	7	05								
	WIT iP	6	11	50							
Jan. 14	WIT eP	1	22	36							52.9 N 159.6 E, H: 01 11 12.6, h 50 km. Near east coast of Kamchatka.
Jan. 15	WIT iP	2	35	40							45.3 N 150.6 E, H: 02 23 47.4. h 45 km. Kurile Islands.
Jan. 15	eSKS	21	59	27							d.b.m. 29.1 N 140.8 E, H: 21 36 05.0, h 70 km. South of Honshu, Japan.
	eS	21	59	46							
	ePS	22	00	52							
	eL	22	24							6½	
	F	23.0									
	WIT eP	21	49	54							
	i	21	49	55	-						
Jan. 17	WIT iP	3	06	16	-						45.4 N 151.3 E, H: 02 54 22.6, h 55 km. Kurile Islands.
Jan. 17	WIT iPKP	3	14	06	(+)						21.6 S 169.9 E, H: 02 54 26.8, h 33 km. Loyalty Islands.
Jan. 18	iP	12	17	21	(+)						d.b.m. 23.1 N 120.5 E, H: 12 04 40.0, h 33 km. Taiwan, Formosa.
	eS	12	27	52							
	eSS	12	33.5								
	eL	12	45							7½	
	F	14.0									
	WIT eP	12	17	15							
Jan. 18	WIT eP	22	47	25							18.8 N 69.4 W, H: 22 36 17.6, h 95 km. Dominican Republic.
Jan. 19	WIT iP	9	21	56.5							26.9 N 54.0 E, H: 09 13 53.5, h 33 km. Near coast of Southern Iran.
Jan. 19	WIT iPKP	23	41	46							18.6 S 177.8 W, H: 23 23 05.4, h 521 km. Fiji Islands.
Jan. 20	iPKP	17	28	04	-	5	10				d.b.m. 20.7 S 169.9 E, H: 17 08 37.4, h 141 km. Loyalty Islands region.
	ipPKP	17	28	38							
	eSS	17	50.3								
	eSSS	17	55.5								
	eL	18	10								
	F	19.0									
	WIT iPKP	17	28	00.5	-						
	iPP	17	31	26							
Jan. 22	WIT iP	16	09	55							22.4 N 93.6 E, H: 15 58 46.5, h 88 km. Burma-India border.
Jan. 23	iPKP	0	19	10							d.b.m. 13.7 S 165.9 E, H: 23 59 43.6, h 33 km. New Hebrides Islands.
	iPP	0	21	54							
	iPKS	0	22	40							
	iPPP	0	25	00							
	eSS	0	40	20							
	eL	1	08								
	F	2.2									
	WIT ePKP	0	19.1								

International Seismological Centre From the ISC collection scanned by SISMOS

Seismic Records at De Bilt

Data 1964	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. 24	WIT iP	17	28	39							38.7 N 129.4 E, H: 17 17 45.5, h 542 km. Japan Sea.
Jan. 26	iP	9	22	45							d.b.m. 16.3 S 71.7 W, H: 09 09 33.9, h 116 km. Southern Peru. Change of papers: 09h 32 m - 09h 37 m.
	ePP	9	26	50							
	eL	9	50								
	F	10.5									
	WIT eP	9	22	50							
Jan. 27	eP	1	22	46							d.b.m. 0.0 N 17.9 W, H: 01 12 23.5, h 33 km. Mid Atlantic Ocean.
	eS	1	29	46							
	eL	1	41								
	F	2.0									
Jan. 28	iP	14	17	37	+	5	13				d.b.m. 36.5 N 70.9 E, H: 14 09 17.1, h 207 km. Hindu Kush.
	ipP	14	18	20							
	i	14	20	29							
	esS	14	25	20							
	e	14	28.0							6½	
	F	15.4									
	WIT iP	14	17	28	+						
	(i	14	29	29)							
	HEE eP	14	17	33							
Jan. 30	eL	17	58								d.b.m. 37.3 N 29.9 E, H: 17 45 54.6, h 41 km. Near southeast coast of Turkey.
	F	18	10								
Feb. 2	e	9	42								d.b.m. 24.2 N 122.6 E, H: 08 54 48.3, h 28 km. Near east coast of Taiwan. Change of papers: 9h 37m - 9h 42m.
	F	10	10								
Feb. 5	eL	12	10							7¼	d.b.m. 36.5 N 140.0 E, H: 11 30 16.2, h 52 km. Central Honshu, Japan.
	F	12	40								
Feb. 6	iP	13	18	45	+	5	15				d.b.m. 55.7 N 155.8 W, H: 13 07 25.2, h 33 km. Kodiak Island region.
	iS	13	28	08							
	eL	13.4								6	
	F	17.5									
	WIT iP	13	18	42							
Feb. 6	eL	19	58								d.b.m. 24.0 N 126.4 E, H: 19 08 57.8, h 33 km. Ryukyu Islands.
	F	20	15								
Feb. 7	e(P)	13	11.5								39.8 N 142.8 E, H: 12 58 53.6, h45 km. Off east coast of Honshu, Japan.
	eL	13	42								
	F	14	00								
	WIT iP	13	11	02							
	e	13	11	13							
	HEE eL	13	54								
Feb. 8	WIT iP	11	29	14							52.3 N 175.6 E, H: 11 17 46.5, h 60 km. Rat Islands, Aleutian Islands.
Feb. 9	WIT iPKP	2	18	46	+						16.5 S 179.2 W, H: 02 00 07.3, h 480 km. Fiji Islands region.
Feb. 12	eSS	21	10								d.b.m. 3.5 S 146.6 E, H: 20 31 53.2, h 33 km. Admiralty Islands.
	eL	21	30								
	F	22.0									
Feb. 13	eL	10	44								d.b.m. 26.1 N 100.9 E, H: 10 03 50.6, h 33 km. Yuannan Province, China.
	F	10	50								
Feb. 13	eL	14	20								d.b.m. 39.4 N 72.7 E, H: 13 53 31.1, h 144 km. Tadzhik SSR.
	F	14	23								
Feb. 14	eL	17	08							6½	d.b.m. 5.1 S 151.7 E, H: 16 29 45.0, h 55 km. New Britain.
	F	18	00								
	WIT iP	16	48	41							
Feb. 17	eP	12	20	34							d.b.m. BCIS: 46°57' N, 8° 13' E, H: 12 19 01. South of Luzern, Switzerland.
	eS	12	21	30							
	eL	12	22								
	F	12	28								
	WIT eP	12	20.5								
	HEE eP	12	20	08							
	i	12	21	16							
Feb. 20	eL	10	43								d.b.m. 44.6 N 150.0 E, H: 09 53 51.1, h 50 km. Kurile Islands.
	F	11	00								
	(WIT eP	10	05	45)							
Feb. 21	eL	17	27								d.b.m. 38.3 N 28.7 W, H: 17 14 45, h 33 km. Azores.
	F	17	35								
Feb. 23	eS	22	48.9								d.b.m. 39.2 N 23.7 E, H: 22 41 06.3, h 33 km. Aegean Sea.
	eL	22	50								
	F	23	10								
	WIT e	22	45.4								
Feb. 24	e	23	40								39.2 N 23.8 E, H: 23 30 24.6, h 16 km. Aegean Sea.
	F	23	45								
Feb. 26	WIT ePKP	21	36	53							20.7 S 174.4 W, H: 21 17 08.1, h 33 km. Tonga Islands.
Feb. 27	eL	15	33								d.b.m. 21.7 N 94.4 E, H: 15 10 48.8, h 102 km. Central Burma.
	F	16	05								
	WIT iP	15	22	03							
	i	15	22	29							
Feb. 28	WIT e	17	58.9								18.2 N 94.3 E, H: 17 47 05.9, h 43 km. Burma.
Feb. 29	eL	16	05								d.b.m. 34.8 N 141.7 E, H: 15 20 12.8, h 34 km. Off east coast of Honshu, Japan.
	F	16	30								
Feb. 29	WIT iPKP	20	33	20							18.2 S 172.8 W, H: 20 13 41.6, h 33 km. Tonga Islands.
Mar. 2	ePKP	19	52	12							18.9 S 174.8 W, H: 19 32 41.7, h 105 km. Tonga Islands.
	WIT ePKP	19	52	10							
	i	19	52	11	-						
Mar. 8	eL	3	07								44.0 S 168.4 E, H: 01 35 48.1, h 33 km. South Islands, New Zealand.
	F	3	50								
Mar. 11	WIT e	19	21								46.9 N 8.5 E, H: 19 19 06.2, h 33 km. South of Luzern, Switzerland.
Mar. 12	eL	23	20								13.5 N 122.9 E, H: 22 32 56.7, h 33 km. Near south coast of Luzon, Philippine Islands.
	F	23	50								

International Seismological Centre From the ISC collection scanned by SISMOS

Seismic Records at De Bilt

Data 1964	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude μ Z	NS	EW		Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Mar. 14	eS_n	2	40								d.b.m. 47.1 N 8.3 E, H: 02 37 24.6, h 33 km. Central Switzerland.
	F	2	50								
	WIT eP_n	2	38	51							
	eS_n	2	39	58							
	HEE iP_n	2	38	28							
Mar. 14	WIT iPKP	12	03	36.0	-						20.6 S 178.5 W, H: 11 44 53.8, h 561 km. Fiji Islands region.
Mar. 14	eL	15	42								d.b.m. 15.9 N 60.5 W, H: 15 12 22.4, h 31 km. Leeward Islands region.
	F	15	50								
Mar. 15	iP	22	34	42		5	7				d.b.m. 36.2 N 7.6 W, H: 22 30 26.0, h 27 km. West of Strait of Gibraltar.
	iS	22	38	12							
	eL	22	39	00						6¾	
	F	23.4									
	WIT iP	22	34	55	+						
	eS	22	38	20							
	HEE eP	22	34	35							
	iS	22	37	44							
Mar. 16	WIT iP	1	15	31	-						36.9 N 95.5 E, H: 01 05 17.6, h 33 km. Tsinghai Province, China.
Mar. 16	WIT iP	8	56	13.4	+						44.8 N 146.8 E, H: 08 44 32.8, h 140 km. Kurile Islands.
Mar. 16	WIT iPKP	21	58	24	-						20.6 S 178.7 W, H: 21 39 42.5, h 578 km. Fiji Islands region.
Mar. 18	iP	4	48	09							d.b.m. 52.5 N 153.6 E, H: 04 37 26.9, h 440 km. Sea of Okhotsk.
	ipP	4	49	44							
	eS	4	57	00							
	esS	4	59	46							
	F	5	30								
	WIT iP	4	48	05							
	ipP	4	49	37							
Mar. 18	WIT e	16	48								d.b.m. 45.7 N 14.1 E, H: 16 43 23.7, h 33 km. Yugoslavia.
Mar. 19	WIT iPKP	5	04	31	-						21.9 S 179.5 E, H: 04 45 50.9, h 613 km. South of Fiji Islands.
Mar. 19	eL	23	05								d.b.m. 15.1 S 172.6 W, H: 21 44 03.6, h 33 km. Samoa Islands region.
	F	23	20								
Mar. 21	e	4	02	40							d.b.m. 6.4 S 127.9 E, H: 03 42 19.6, h 367 km. Banda Sea.
	e	4	05.5								
	e	4	10	24							
	e	4	12	55							
	F	5.2									
	WIT ePKP	4	00	18							
Mar. 21	eL	15	50								18.7 N 103.1 W, H: 15 08 14.3, h 83 km. Near coast of Michoacan, Mexico.
	F	16	12								

Seismic Records at De Bilt

Data 1964	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. 22	e	9	35								35.7 S 72.9 W, H: 08 35 06.4, h 33 km. Near coast of Central Chile.
	F	9	35								
Mar. 26	eL	2	58								11.3 N 142.0 E, H: 02 04 20.2, h 33 km. South of Marianen Islands.
	F	3	35								
Mar. 27	WIT iPKP	20	41	05.0	-						23.7 S 179.9 E, H: 20 22 10.6, h 520 km. South of Fiji Islands.
Mar. 28	iP	3	46	53	+	12	55				61.1 N 147.6 W, H: 03 36 12.7, h 20 km. Kenai Peninsula, Alaska.
	iS	3	55	42							
	F	9								8½	
	WIT eP	3	46	52	(+)						
	HEE e	3	47	16							
Mar. 28	WIT iP	5	44	36	+						60.2 N 146.2 W, H: 05 33 52.6, h 20 km. Kenai Peninsula, Alaska.
Mar. 28	WIT iP	5	46	47	+						57.2 N 153.0 W, H: 05 35 38.4, h 33 km. Kodiak Island, Alaska.
Mar. 28	WIT iP	6	19	30	(+)						60.1 N 148.6 W, H: 06 08 44.2, h 20 km. Kenai Peninsula, Alaska.
Mar. 28	WIT iP	6	43	21	+						60.1 N 147.6 W, H: 06 32 38.6, h 33 km. Kenai Peninsula, Alaska.
Mar. 28	WIT iP	6	52	15	(-)						59.9 N 147.8 W, H: 06 41 28.0, h 15 km. Kenai Peninsula, Alaska.
Mar. 28	WIT iP	6	54	58	-						58.3 N 151.3 W, H: 06 43 57.4, h 25 km. Kodiak Island, Alaska.
Mar. 28	WIT iP	7	02	08	(+)						57.1 N 152.3 W, H: 06 50 48.9, h 33 km. Kodiak Island, Alaska.
Mar. 28	WIT iP	7	04	30	+						58.8 N 149.5 W, H: 06 53 35.6, h 20 km. Kenai Peninsula, Alaska.
Mar. 28	WIT iP	7	21	16							58.8 N 149.5 W, H: 07 10 21.4, h 20 km. Kenai Peninsula, Alaska.
Mar. 28	WIT eP	7	41	36	+						57.4 N 151.7 W, H: 07 30 29.6, h 15 km. Kodiak Island, Alaska.
Mar. 28	iP	9	12	15	+						56.5 N 152.0 W, H: 09 01 00.5, h 20 km. Kodiak Island, Alaska.
	WIT iP	9	12	12							
Mar. 28	eP	10	03	43							
	WIT eP	10	03	40						6¼	59.7 N 146.6 W, H: 09 52 55.7, h 30 km. Kenai Peninsula, Alaska.

International Seismological Centre From the ISC collection scanned by SISMOS

Seismic Records at De Bilt

Data 1964	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. 28	iP	10	46	48						6¼	57.2 N 152.4 W, H: 10 35 38.9, h 33 km. Kodiak Island, Alaska.
	WIT iP	10	46	45							
Mar. 28	WIT iP	11	19	13							60.1 N 148.4 W, H: 11 08 26.0, h 15 km. Kenai Peninsula, Alaska.
Mar. 28	eP	12	32	07						6¾	56.5 N 154.0 W, H: 12 20 49.8, h 25 km. Kodiak Island, Alaska.
	iS	12	41	20							
	e	12	49	45							
	WIT iP	12	32	03	-						
Mar. 28	WIT iP	13	12	05							60.1 N 147.0 W, H: 13 01 14.2, h 20 km. Kenai Peninsula, Alaska.
Mar. 28	eP	14	58	27							60.4 N 146.5 W, H: 14 46 37.1, h 10 km. Kenai Peninsula, Alaska.
	eS	15	07	20							
	eL	15	18								
	F	16.5									
	WIT iP	14	58	21							
Mar. 28	eP	14	59	57						6½	60.4 N 147.1 W, H: 14 49 13.7, h 10 km. Kenai Peninsula, Alaska.
	WIT eP	15	00	00							
Mar. 28	eP	20	40	00	-						59.8 N 148.7 W, H: 20 29 08.6, h 40 km. Kenai Peninsula, Alaska.
	ePP	20	42	24							
	ePPP	20	44	06							
	eS	20	48.7								
	eL	21.0									
	F	22.5									
	WIT eP	20	39	55							
Mar. 29	WIT iP	1	20	25	-					6¾	59.8 N 149.2 W, H: 01 09 36.4, h 20 km. Kenai Peninsula, Alaska.
Mar. 29	eP	6	16	00							56.1 N 154.3 W, H: 06 04 44.5, h 30 km. Kodiak Island, Alaska.
	eS	6	25.3								
	eL	6	40								
	F	8.0									
	WIT eP	6	15	59						6¼	
Mar. 29	WIT eP	8	04	06							56.1 N 154.2 W, H: 07 52 46.4, h 25 km. Kodiak Island, Alaska.
Mar. 29	WIT iP	10	18	51							60.0 N 148.6 W, H: 10 08 02.4, h 20 km. Kenai Peninsula, Alaska.
Mar. 29	eP	16	51	51						6	59.7 N 147.0 W, H: 16 40 57.9, h 15 km. Kenai Peninsula, Alaska.
	eS	17	00	42							
	WIT eP	16	51	45							
Mar. 30	eP	2	29	24						7	56.6 N 152.9 W, H: 02 18 06.3, h 25 km. Kodiak Island, Alaska.
	eS	2	38	40							
	WIT eP	2	29	17							
Mar. 30	WIT eP	3	32	02							BCIS: 35.1 N 24.0 E, H: 03 27 15, h 70 km. South of Crete.
Mar. 30	eP	7	20	10	+					6¼	59.9 N 145.7 W, H: 07 09 34.0, h 15 km. Kenai Peninsula, Alaska.
	eS	7	29	10							
	WIT eP	7	20	21							

Seismic Records at De Bilt

Data 1964	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. 30	eS	12	09								56.4 N 152.5 W, H: 11 48 40.4, h 20 km. Kodiak Island, Alaska
	eL	12	28								
	F	12.7									
Mar. 30	eS	13	24								56.5 N 152.7 W, H: 13 03 34.9, h 20 km. Kodiak Island, Alaska.
	eL	13	40								
	F	14.5									
Mar. 30	eP	16	20	42							56.6 N 152.1 W, H: 16 09 28.4, h 25 km. Kodiak Island, Alaska.
	eS	16	29	26							
	eL	16	42								
	F	18.0									
	WIT eP	16	20	37							
Mar. 30	WIT iP	17	04	20	-						56.6 N 152.2 W, H: 16 53 07.7, h 15 km. Kodiak Island, Alaska.
Mar. 31	eP	0	26	17							45.3 N 151.0 E, H: 00 14 11.7, h 60 km. Kurile Islands.
	eS	0	36								
	eL	0	50								
	F	1.6									
	WIT iP	0	26	04							
Mar. 31	eP	9	12.8								50.8 N 130.2 W, H: 09 01 30.2, h 15 km. Vancouver Island region.
	eS	9	22	10							
	eL	9	34							6½	
	F	10.5									
	WIT eP	9	12	49							
Mar. 31	e	12	30								56.5 N 152.3 W, H: 11 53 14.4, h 25 km. Kodiak Island region, Alaska.
	F	13.0									
Mar. 31	WIT iPKP	17	23	16							17.7 S 178.8 W, H: 17 04 39.0, h 540 km. Fiji Islands.
Apr. 1	eL	4	04								57.2 N 151.3 W, H: 03 23 17.2, h 25 km. Kodiak Islands, Alaska.
	F	4	20								
Apr. 2	iP	1	24	27							5.8 N 95.6 E, H: 01 11 43.5, h 33 km. Near coast of northern Sumatra.
	eS	1	34	53							
	i	1	34	55							
	eL	1	52							7	
	F	4.5									
	WIT eP	1	24	20							
Apr. 2	iS	22	54	13							59.8 N 144.3 W, H: 22 34 31.7, h 20 km. Gulf of Alaska.
	eL	23	10								
	F	23	30								
Apr. 3	WIT iP	4	25	22	+						3.9 N 96.6 E, H: 04 12 39.7, h 52 km. Near west coast of Sumatra.
	ipP	4	25	39							
Apr. 3	eL	9	15								59.6 N 144.7 W, H: 08 38 42.8, h 10 km. Gulf of Alaska.
	F	9	40								
	WIT iP	8	49	31							
Apr. 3	eP	22	44	16							61.6 N 147.6 W, H: 22 33 42.2, h 40 km. South of Alaska.
	eS	22	53	00							
	e	22	57	40							
	eL	23	06								
	F	24.0									
	WIT iP	22	44	16.5	-						

International Seismological Centre From the ISC collection scanned by SISMOS

Data 1964	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	iP	5	04	49	-						60.1 N 146.7 W, H: 04 54 01.7, h 40 km. South of Alaska.
	eS	5	13	40							
	e	5	17	20							
	eL	5	25								
	F	6	30								
	WIT iP	5	04	43							
Apr. 4	eP	8	51	46							56.5 N 152.6 W, H: 08 40 29.8, h 15 km. Kodiak Island region.
	eS	9	01	00							
	eL	9	10							6	
	F	10	35								
Apr. 4	WIT eP	9	22	09							56.9 N 152.7 W, H: 09 10 55.1, h 15 km. Kodiak Island region.
Apr. 4	iP	17	57	24	+						56.3 N 154.4 W, H: 17 46 08.6, h 25 km. Kodiak Island region.
	iS	18	06	42							
	eL	18	16							6	
	F	21.0									
	WIT iP	17	57	22	+						
Apr. 4	WIT eP	18	10	56							56.4 N 154.5 W, H: 17 59 43.3, h 25 km. Kodiak Island region.
Apr. 4	eP	22	27.9								59.4 N 154.2 W, H: 22 16 54.5, h 10 km. Gulf of Alaska.
	eL	22	54								
	F	24.0									
Apr. 5	eP	1	33.4								56.2 N 153.5 W, H: 01 22 13.3, h 25 km. Kodiak Island region.
	eS	1	42	51							
	e	1	47.5								
	eL	1	57							6	
	F	3.5									
	WIT eP	1	33	27							
	e	1	33	32							
Apr. 5	WIT eP	1	53.1								56.2 N 153.2 W, H: 01 41 45.0, h 35 km. Kodiak Island region.
	e	1	53.3								
Apr. 5	eP	19	39.0								60.2 N 146.7 W, H: 19 28 18.1, h 15 km. South of Alaska.
	eL	20	05								
	F	20.6									
	WIT iP	19	39	02	(+)						
Apr. 8	WIT eP	8	20	20							6.8 S 68.9 E, H: 08 08 11.8, h 33 km. Chagos Archipel.
Apr. 8	eP	11	10.1								45.8 N 150.8 E, H: 10 58 09.1, h 40 km. Kurile Islands. No Z-record.
	eS	11	20	00							
	eL	11	33							6	
	F	12.5									
	WIT eP	11	10.0								
Apr. 8	eS	14	21	14							35.1 N 24.3 E, H: 14 12 29.5, h 71 km. Near Crete. No Z-record.
	e	14	25.0								
	F	14	32								
	WIT eP	14	17	17							
Apr. 8	e	20	20								59.6 N 157.0 W, H: 19 33 19.0, h 15 km. South of Alaska.
	F	20	50								
	WIT eP	20	01	05							

Data 1964	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. 9	e	13	43								59.6 N 146.1 W, H: 13 06 15.2, h 15 km. Gulf of Alaska.
	F	14	00								
	WIT eP	13	17	04							
Apr. 10	e	1	50								58.4 N 150.6 W, H: 01 08 00.2, h 15 km. Gulf of Alaska.
	F	2	05								
	WIT eP	1	19	00							
Apr. 10	e	19	43								59.7 N 148.2 W, H: 19 05 52.6, h 15 km. Kenai Peninsula.
	F	20	05								
	WIT eP	19	16	42							
Apr. 10	eP	21	55	00							60.1 N 153.7 W, H: 21 44 06.7, h 10 km. South of Alaska.
	eL	22	20								
	F	23.1									
	WIT iP	21	55	02							
Apr. 11	WIT ePKP$_1$	1	23	50							29.0 S 178.9 W, H: 01 04 30.2, h 302 km. Kermadec Islands.
	iPKP$_2$	1	24	18	+						
Apr. 11	eP	16	04	54							40.5 N 25.0 E, H: 16 00 42.8, h 33 km. Aegean Sea.
	eS	16	08	25							
	eL	16	09.5								
	F	16	40								
	WIT eP	16	04	49							
Apr. 12	iP	1	35	44	+	6	4				56.6 N 152.2 W, H: 01 24 31.2, h 22 km. Kodiak Island region.
	eS	1	45	00							
	e	1	49.5								
	e	1	53.4								
	eL	1	57							6½	
	F	4	20								
	WIT eP	1	35	42							
	i	1	35	43	-						
Apr. 12	eP	12	59.5								56.6 N 151.3 W, H: 12 48 02.2, h 33 km. Kodiak Island region.
	eL	13	31								
	F	14	20								
Apr. 13	eP	8	32	(50)							d.b.m. 45.3 N 18.1 E, H: 08 30 03.6, h 33 km. Northern Yugoslavia.
	eS	8	35.0								
	eL	8	35	42							
	F	9	10								
	WIT eP	8	32	(38)							
	HEE i	8	34	14							
Apr. 13	eS	12	45.5								d.b.m. 59.4 N 143.9 W, H: 12 25 36, h 40 km. Gulf of Alaska.
	eL	12	58								
	F	13	45								
Apr. 13	WIT iP	21	36	37	+						57.5 N 153.9 W, H: 21 25 33.0, h 30 km. Kodiak Island, Alaska.
Apr. 14	eL	23	30								d.b.m. 58.0 N 152.6 W, H: 22 55 31.3, h 30 km. Kodiak Island, Alaska.
	F	24.0									
	WIT eP	23	06.5								
Apr. 15	eL	16	05								56.2 N 154.4 W, H: 15 30 47.1, h 35 km. Kodiak Island, Alaska.
	F	16	55								
	WIT eP	15	41	57							

International Seismological Centre From the ISC collection scanned by SISMOS

Data 1964	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. 16	eL	1	50.5								37.0 N 142.7 E, H: 01 04 34.5, h 38 km. Off east coast of Honshu, Japan.
	F	2	15								
	WIT eP	1	16	57							
Apr. 16	WIT ePKP	2	55	17							21.5 S 170.5 E, H: 02 35 48.9, h 110 km. Loyalty Islands.
	i	2	55	19.5							
Apr. 16	WIT eP	13	54	52							52.1 N 169.4 W, H: 13 43 08.9, h 33 km. Fox Islands, Aleutian Islands.
Apr. 16	iP	19	38	11							56.4 N 152.9 W, H: 19 26 57.4, h 30 km. Kodiak Island, Alaska.
	eS	19	47	35							
	eSS	19	52								
	eL	19	58							6¼	
	F	21.5									
	WIT eP	19	38	08							
Apr. 17	eP	5	00	46							56.4 N 152.9 W, H: 04 49 30.5, h 25 km. Kodiak Island, Alaska.
	eS	5	10	04							
	eL	5	25								
	F	7	20								
	WIT eP	5	00	42							
	i	5	00	45	-						
Apr. 17	e	9	50								57.7 N 151.4 W, H: 09 09 07.8, h 20 km. Kodiak Island, Alaska.
	F	10.1									
	WIT iP	9	20	12	+						
Apr. 18	WIT iP	5	39	43.5	-						45.5 N 151.1 E, H: 05 27 44.6, h 33 km. Kurile Islands.
Apr. 18	ePP	20	29.0								d.b.m. 56.1 N 153.7 W, H: 20 16 16.3, h 30 km. Kodiak Island, Alaska.
	eS	20	37.0								
	e	20	37.7								
	eL	20	47								
	F	21	50								
Apr. 19	eL	6	17								41.7 S 83.9 W, H: 05 13 01.6, h 33 km. Off coast of Chile.
	F	6	45								
Apr. 19	ePP	14	33.0								60.5 S 58,3 W, H: 14 12 21.9, h 33 km. Near South Shetland Islands.
	eL	15	03								
	F	16	30								
Apr. 20	WIT iP	12	07	16.5	-						61.4 N 147.3 W, H: 11 56 41.6, h 30 km. South of Alaska.
Apr. 21	WIT iP	5	12	09.5							61.5 N 147.4 W, H: 05 01 35.7, h 40 km. South of Alaska.
Apr. 22	e	9	56								56.1 N 34.9 W, H: 09 46 54.2, h 33 km. North Atlantic Ocean.
	eL	9	59								
	F	10	15								
Apr. 22	WIT ePKP	20	19.5								15.5 S 167.5 E, H: 20 00 22.8, h 123 km. New Hebrides.

Data 1964	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. 23	eP	3	48	11							5.3 S 134.0 E, H: 03 32 50.3, h 33 km. Aru Islands region.
	ePP	3	53	03							
	eL	4	28							6¾	
	F	6	30								
	WIT ePKP	3	51	34							
	ePP	3	53	01							
Apr. 24	WIT eP	0	54	01							52.7 N 160.9 E, H: 00 42 33.9, h 33 km. Near east coast of Kamchatka.
Apr. 24	e	4	25								59.5 N 144.5 W, H: 03 51 05, h 33 km. Gulf of Alaska.
	F	4	40								
Apr. 24	iPKP	6	15	23							5.1 S 144.2 E, H: 05 56 10.1, h 106 km. Northeastern New Guinea.
	iPP	6	16	57							
	ePPP	6	19	25							
	iS	6	24	18							
	iPS	6	26	49							
	eSS	6	33	14							
	eSSS	6	39	03							
	eL	6.	49							6¾	
	F	8.5									
	WIT ePKP	6	14	54							
Apr. 25	eL	19	25								24.4 N 125.3 E, H: 18 37 58.1, h 33 km. Ryukyu Islands.
	F	19	40								
	WIT eP	18	50.7								
	i	18	50	55							
Apr. 26	WIT iPKP	15	10	58	(-)						20.6 S 178.0 W, H: 14 52 07.6, h 490 km. Fiji Islands.
Apr. 27	e	7	06								60.1 S 151.0 E, H: 06 44 25.1, h 33 km. Macquarie Islands.
	e	7	29								
	eL	8.0									
	F	9.0									
	WIT ePKP	7	04.3								
Apr. 29	iP	4	25	22	-						39.3 N 23.7 E, H: 04 21 06.7, h 33 km. Aegean Sea.
	iS	4	28	56							
	eL	4	29.7							5¾	
	F	5.0									
	WIT eP	4	25	18							
	e	4	25	23	-						
Apr. 30	WIT ePKP	16	22	25							4.6 S 153.2 E, H: 16 03 31.4, h 78 km. New Ireland region.
May 1	WIT eP	6	12	36							60.5 N 145.6 W, H: 06 01 55.4, h 20 km. South of Alaska.
May 2	(e	16	22	58)							45.5 N 150.3 E, H: 16 11 00.2, h 35 km. Kurile Islands.
	iP	16	23	04	-	8	6				
	eS	16	32	52							
	eL	16	46							6½	
	F	18.7									
	WIT eP	16	22	54							

International Seismological Centre From the ISC collection scanned by SISMOS

Data 1964	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 6	iP	15	38	04							56.7 N 152.1 W, H: 15 26 35.5, h 15 km. Kodiak Island, Alaska.
	eS	15	47.1								
	eSS	15	52.2								
	eL	16	02								
	F	16	45								
	WIT eP	15	37	50							
May 7	WIT iPKP	0	54	03							18.2 S 176.6 W, H: 00 34 57.2, h 300 km. Fiji Islands region.
May 7	iP	5	55	45	-						4.0 S 34.9 E, H: 05 45 29.5, h 33 km. Tanzania.
	eS	6	04	06							
	eSS	6	08							6½	
	eL	6	12								
	F	in next shock									
	WIT iP	5	55	46.5							
May 7	iP	8	10	20	+	6	11				40.4 N 139.0 E, H: 07 58 14.3, h 33 km. Off coast of northern Honshu, Japan.
	eS	8	20	22							
	eL	8	35							7	
	F	11.0									
	WIT iP	8	10	14.5	+						
	HEE eL	8	41								
May 7	WIT iP	11	22	59							30.6 N 137.7 E, H: 11 11 04.9, h 469 km. South of Honshu, Japan.
May 7	eP	20	24	54							40.5 N 139.0 E, H: 20 12 49.3, h 33 km. Off west coast of Honshu, Japan.
	ePP	20	28.1								
	eS	20	34.9								
	eL	20	51							6¾	
	F	23.0									
	WIT eP	20	24	50	+						
May 8	eL	17	00								56.7 N 154.0 W, H: 16 21 49.8, h 25 km. Kodiak Island region
	F	17	15								
	WIT eP	16	33.1								
May 8	e	21	49								60.8 N 143.6 W, H: 21 34 40.6, h 35 km. South of Alaska.
	F	22	00								
	WIT eP	21	45	20							
May 9	e	0	20								52.2 N 169.5 W, H: 23 40 44.1, h 20 km. Andreanof Islands.
	F	1	00								
	WIT eP	23	52	31							
May 9	eL	2	45								52.2 N 169.6 W, H: 02 02 28.8, h 25 km. Andreanof Islands.
	F	3	05								
	WIT iP	2	14	14							
May 11	WIT ePKP	14	58	51							22.5 S 175.8 W, H: 14 39 04, h 50 km. Tonga Islands region.
May 12	eP	18	28	00							56.6 N 152.4 W, H: 18 16 41.9, h 10 km. Kodiak Island region.
	e	18	37.0								
	iS	18	37	13							
	eSS	18	41	40							
	eSSS	18	45.5								
	eL	18	53								
	F	20	00								
	WIT eP	18	27	55							

Data 1964	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 12	WIT ePKP	18	36	51							19.9 S 173.9 W, H: 18 17 07.7, h 33 km. Tonga Islands.
May 13	ePKP	5	45.5								32.8 S 178.3 W, H: 05 25 26.1, h 33 km. Kermadec Islands.
	ePP	5	50								
	eSS	6	10								
	eL	6	52								
	F	8	10								
	WIT ePKP	5	46	00							
May 15	eL	11	55								3.5 S 149.1 E, H: 10 50 21, h 44 km. Bismarck Sea.
	F	12	08								
May 16	WIT iP	6	09	01							49.9 N 78.3 E, H: 06 00 58.1, Kazakhstan, USSR.
May 16	WIT eP	8	47	18	(-)						36.3 N 71.5 E, H: 08 38 54.0, h 122 km. Hindu Kush.
May 16	eP	16	28.2								32.8 S 178.3 W, H: 16 07 46.2, h 33 km. Kermadec Islands.
	ePP	16	32	14							
	eSS	16	52	22							
	eL	17.6									
	F	18.4									
May 17	iP	1	01	02	+						59.4 N 142.7 W, H: 00 50 17.9, h 35 km. Gulf of Alaska.
	eS	1	09	50							
	eSS	1	11.0								
	eL	1	24		-						
	F	2	30								
	WIT eP	1	01.0								
May 17	WIT iP	4	53	16							53.9 N 159.7 W, H: 04 41 44, h 33 km. South of Alaska.
May 17	iP	19	33	03							35.2 N 35.9 W, H: 19 26 20.6, h 33 km. Mid Atlantic Ridge.
	ePP	19	34	14							
	iS	19	38	26							
	eL	19	41	10							
	F	21.0									
	WIT iP	19	33	12							
May 18	ePKP	14	31	54							21.2 S 174.5 W, H: 14 12 10.1, h 33 km. Tonga Islands.
	eL	15	42								
	F	15	50								
	WIT iPKP	14	31	56							
May 19	eL	6	22								77.7 N 18.3 E, H: 06 09 04.1, h 33 km. Near Spitzbergen.
	F	6	32								
May 19	WIT iP	10	51	17.5	-						45.5 N 150.3 E, H: 10 39 24.8, h 33 km. Kurile Islands.

International Seismological Centre From the ISC collection scanned by SISMOS

Seismic Records at De Bilt

Data 1964	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 19	eP	23	16	24	+						0.7 S 80.2 W, H: 23 03 41.8, h 54 km. Near coast of Ecuador.
	iS	23	27	10							
	eL	23	45								
	F	1.5									
	WIT iP	23	16	32	-						
May 20	ePP	6	21	14							2.7 S 139.3 E, H: 06 01 14.6, h 61 km. Near north coast of Western New Guinea.
	eL	7	02								
May 21	eS	15	56	02							59.0 N 153.5 W, H: 15 36 01.5, h 15 km. South of Alaska.
	eL	16	10								
	F	17.0									
	WIT eP	15	47.0								
May 21	WIT iP	23	22	46	-						44.5 N 149.6 E, H: 23 10 49, h 45 km. Kurile Islands.
May 23	WIT iP	11	34	45							28.6 N 139.4 E, H: 11 22 33.3, h 409 km. Bonin Islands region.
May 24	ePKP	4	32	52							22.6 S 174.1 W, H: 04 13 05.3, h 33 km. Tonga Islands region.
	F	4	40								
	WIT ePKP	4	32	50							
	i	4	32	55							
May 24	eP	10	44.0								34.3 N 141.1 E, H: 10 31 24.1, h 33 km. Near east coast of Honshu, Japan.
	eS	10	54	36							
	eL	11	17								
	F	11	55								
	WIT eP	10	43	57							
May 25	eL	20	30								9.1 S 88.9 E, H: 19 44 07.0, h 33 km. Indian Ocean.
	F	21	05								
May 26	iP	11	13	44	+	7	4			7¾	56.2 S 27.8 W, H: 10 59 12.3, h 120 km. Sandwich Islands.
	iPP	11	18	44							
	iSKS	11	24	11							
	iPS	11	27	37							
	F	15									
	WIT eP	11	14	01							
	ePP	11	18	13							
May 27	ePKP	1	15.1								56.1 S 27.6 W, H: 00 56 42.5, h 105 km. Sandwich Islands.
	ePP	1	15	45							
	ePS	1	25.1								
	e	1	31.6								
	eL	1	43								
	F	2	30								
May 28	eL	2	42								24.5 N 122.0 E, H: 01 56 58.9, h 41 km. Near east coast of Taiwan.
	F	3	10								
May 28	eP	12	43.0								0.8 S 24.7 W, H: 12 33 10.2, h 33 km. Mid Atlantic Ridge.
	eS	12	51.5								
	eL	12	58								
	F	13.5									
May 29	WIT iP	5	19	58							44.7 N 149.4 E, H: 05 08 02.2, h 50 km. Kurile Islands.
May 29	eP	10	28	23							60.2 N 146.3 W, H: 10 17 34.5, h 5 km. South of Alaska.
	eL	10	50								
	F	11	30								
	WIT eP	10	28	20							
May 30	iP	14	43	12	+	6	3				36.2 N 141.1 E, H: 14 30 45.3, h 49 km. Near east coast of Honshu, Japan.
	i	14	43	26							
	ePP	14	46	24							
	eS	14	53	32							
	e	14	53	57							
	eL	15	13								
	F	16.5									
	WIT iP	14	43	08							
May 31	iP	0	52	38	+	5	20			7	43.5 N 146.8 E, H: 00 40 36.4, h 48 km. Kurile Islands.
	iS	1	02	36							
	eL	1	15								
	F	4.0									
	WIT iP	0	52	33	+						
	HEE eP	0	52	47							
May 31	ePKP	17	35.0								13.6 S 172.1 E, H: 17 15 26.8, h 73 km. New Hebrides Islands region.
	ePP	17	38.0								
	eL	18	23								
	F	19									
June 2	eL	16	46								59.7 N 144.4 W, H: 16 09 23.5, h 15 km. Gulf of Alaska.
	F	17	15								
June 4	eL	5	14								17.5 N 100.8 W, H: 04 28 54.7, h 22 km. Near coast of Guerrero, Mexico.
	F	5	32								
June 5	e	4	55								47.8 N 27.3 W, H: 04 44 48.6, h 33 km. North Atlantic Ocean.
	F	5	05								
	WIT iP	4	49	47							
June 5	e	22	47								58.1 N 152.1 W, H: 22 06 53.0, h 15 km. Kodiak Island region.
	F	23	00								
	WIT eP	22	17	55							
June 6	eL	20	08								26.6 S 114.4 W, H: 19 07 51.4, h 33 km. Easter Islands region.
	F	20	30								
June 7	WIT iPKP	13	27	48	+						18.4 S 173.7 W, H: 13 07 53.2, h 33 km. Tonga Islands.

International Seismological Centre From the ISC collection scanned by SISMOS

Data 1964	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 7	WIT iP	20	42	51	(-)						45.3 N 150.9 E, H: 20 30 55.5, h 33 km. Kurile Islands.
June 9	eL	2	41.7								38.2 N 2.5 W, H: 02 33 39.4, h 33 km. SE-Spain.
	F	2	50								
June 10	ePP	22	35								5.0 N 127.4 E, H: 22 16 44.8, h 146 km. Philippine Islands region.
	eSKS	22	41	09							
	eSP	22	43	57							
	eL	23	07								
	F	24.0									
	WIT eP	22	31.0								
June 11	ePP	17	21.6								2.0 S 140.8 E, H: 17 01 48.5, h 18 km. Near north coast of W-New Guinea.
	ePS	17	31.7								
	eL	17	59								
	F	18.0									
June 12	e	7	57								37.5 N 30.4 E, H: 07 46 23.6, h 33 km. W-Turkey.
	F	8	05								
June 12	eL	11	40								2.1 S 141.1 E, H: 10 50 09.1, h 33 km. Near north coast of New Guinea.
	F	12	15								
June 12	WIT iPKP	18	31	07.8	+						26.5 S 178.3 E, H: 18 12 20.5, h 648 km. South of Fiji Islands.
June 13	eL	4	57								53.6 N 172.1 E, H: 04 20 53.5, h 33 km. Near Islands, Aleutian Islands.
	F	5.5									
June 14	iP	12	21	16							38.0 N 38.5 E, H: 12 15 31.3, h 8 km. SE-Turkey.
	eS	12	25	17							
	eL	12	26.1							5¾	
	F	13	20								
	WIT iP	12	21	12	-						
June 15	eP	0	18	18							5.4 N 97.0 E, H: 00 05 31.1, h 33 km. N-Sumatra.
	eS	0	28	52							
	eL	0	47							6¼	
	F	2.0									
	WIT eP	0	18	13							
June 16	iP	4	14	01	+	8	11				38.3 N 139.1 E, H: 04 01 44.3, h 51 km. Near west coast of Honshu, Japan.
	iS	4	24	12							
	eL	4	42							8	
	F	9.0									
	WIT iP	4	13	54							
	HEE eL	4	43								
June 16	WIT iP	7	27	10.0	-						38.5 N 139.2 E, H: 07 14 57.1, h 16 km. Aftershock Japan.

Seismic Records at De Bilt

Data 1964	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 18	eP	18	13	42							47.5 N 154.9 E, H: 18 01 47.6, h 33 km. East of Kurile Islands.
	eS	18	23	34							
	eL	18	43								
	F	19	30								
June 18	eL	21	30								39.3 S 74.7 W, H: 20 33 53.3, h 26 km. Off coast of Central Chile.
	F	22	00								
June 19	eL	1	03								40.7 N 32.9 E, H: 00 50 24.4, h 33 km. N-Turkey.
	F	1	15								
June 19	e	10	55								22.6 N 121.0 E, H: 10 34 33.6, h 33 km. Taiwan.
	F	11	45								
June 22	e(PKP)	0	36								15.7 S 172.8 W, H: 00 16 27.4, h 33 km. Samoa Islands region.
	F	2	30								
June 22	e	4	05								10.4 S 161.1 E, H: 03 03 37.9, h 70 km. Solomon Islands.
	F	4	30								
June 23	iP	1	38	35	+	6	17				43.3 N 146.1 E, H: 01 26 37.0, h 77 km. Kurile Islands.
	i	1	38	57							
	iS	1	48	29							
	iSS	1	49	12							
	eL	2	02							7¼	
	F	4.5									
	WIT iP	1	38	30	+						
	HEE eP	1	38	43							
June 24	e	13	41								32.2 N 129.4 E, H: 12 56 26, h 48 km. Kyushyu, Japan.
	F	14	00								
June 27	e	2	55								40.4 N 77.5 E, H: 02 28 57.1, h 33 km. Sinkiang Province, China.
	F	3	05								
	WIT eP	2	37.5								
June 27	e	17	14								11.5 S 13.8 W, H: 16 43 47.0, h 33 km. Ascension Island region.
	F	17	35								
June 28	ePP	13	12	02							d.b.m. 1.7 S 149.6 E, H: 12 51 34.6, h 7 km. New Ireland region.
	eSP	13	22.0								
	ePPS	13	23.5								
	e	13	29.0								
	eL	13	47								
	F	15.0									
	WIT iPKP	13	10	31.5							
	ePP	13	12	10							
June 28	WIT iPKP	15	11	09							13.2 S 167.1 E, H: 14 52 08.4, h 215 km. New Hebrides.

International Seismological Centre From the ISC collection scanned by SISMOS

Data 1964	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	eP	17	37.9								d.b.m. 4.0 N 32.4 W, H: 17 27 59.8, h 33 km. North Atlantic Ocean.
	eS	17	46.0								
	eL	17	55								
	F	18	30								
	WIT eP	17	37	54							
June 30	e	12	34	28							47.8 N 16.0 E, H: 12 30 03.3, h 33 km. E-Austria.
	F	12	40								
	WIT e	12	32.7								
	e	12	33	25							
	i	12	34	08							
	i	12	34	28							
	HEE e	12	33	12							
June 30	eP	14	00	37							0.8 S 122.5 E, H: 13 46 21.6, h 36 km. N-Celebes.
	iPP	14	05	09							
	eSKS	14	11.1								
	iS	14	12	43							
	ePS	14	14.5								
	eSS	14	20	24							
	eSSS	14	24	20							
	eL	14	34							6¾	
June 30	WIT iP	16	00	35							45.9 N 150.4 E, H: 15 48 43, h 33 km. Kurile Islands.
June 30	WIT iP	20	19	27							46.6 N 144.6 E, H: 20 08 28.5, h 383 km. Sea of Okhotsk
July 1	e	3	27								46.3 N 146.9 E, H: 02 47 33.9, h 33 km. Kurile Islands.
	F	4	00								
	WIT iP	2	59	17.0							
July 2	WIT eP	1	29	53							60.1 N 146.0 W, H: 01 19 02.7, h 14 km. Alaska.
July 2	e	17	33								47.7 N 128.8 W, H: 17 17 34.4, h 14 km. Off coast of Washington, USA.
	F	18	15								
July 4	ePKP	11	08	16							11.7 N 144.5 E, H: 10 49 28.8, h 33 km. Mariana Islands.
	F	12	20								
July 4	e	11	17	32							42.2 N 23.6 E, H: 11 11 20, h 10 km. Bulgaria.
	eL	11	19								
	F	11	38								
July 5	iP	19	20	39.4	-	5	2				26.2 N 110.2 W, H: 19 07 58.2, h 33 km. California.
	eS	19	30	54							
	eL	19	43								
	F	21	00								
	WIT eP	19	20	30						6½	

Date 1964	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
July 5	iP	23	48	01.8	-	8	6				44.8 N 149.6 E, H: 23 36 01.5, h 54 km. Kurile Islands.
	eS	23	57	56							
	eL	0	12							6¼	
	F	1.5									
	WIT iP	23	47	56							
July 6	eP	2	27	12							26.2 N 110.4 W, H: 02 14 36.0, h 33 km. California.
	eS	2	37	34							
	eL	2	49							7	
	F	5.0									
	WIT eP	2	27	14	+						
July 6	iP	7	34	42.0	-	5	28				18.2 N 100.4 W, H: 07 22 10.3, h 82 km. Guerrero, Mexico.
	eS	7	45	02							
	iScS	7	45	10							
	iPS	7	45	50							
	iSS	7	51	48							
	eL	7	49							7	
	F	10.5									
	WIT iP	7	34	44	-						
	HEE eP	7	34	47							
July 6	WIT eP	10	22.5								37.1 N 71.4 E, H: 10 13 45.2, h 100 km. Hindu Kush.
July 7	WIT iPKP	7	58	03	-						23.6 S 179.9 W, H: 07 39 04.2, h 462 km. Fiji Islands.
July 8	ePP	12	15	10							d.b.m. 5.5 S 129.8 E, H: 11 55 39, h 165 km. Banda Sea.
	eSS	12	32.0								
	eL	12	53							6¾	
	F	13.5									
	WIT e(P)	12	10								
July 9	ePKP	11	41	55	-						d.b.m. 23.3 S, 175.7 W, H: 11 22 05.4, h 43 km. Tonga Islands.
	ePP	11	45	30							
	eSS	12	05.0								
	eL	12	36								
	F	13.5									
	WIT iPKP	11	41	56	-						
July 9	iPKP	16	59	00.8	-	7	20				15.5 S 167.6 E, H: 16 39 49.3, h 121 km. New Hebrides Islands.
	ipPKP	16	59	39							
	ePP	17	02	10							
	ipPP	17	02	50							
	iPPS	17	14	07							
	iSS	17	20	36							
	eL	17	50							7¼	
	F	19.5									
	WIT iPKP	16	59	03.5	-						
	iPP	17	02	30							
July 11	eL	12	22								1.0 N 29.3 W, H: 11 52 25.0, h 33 km. Mid Atlantic Ridge.
	F	12	30								

International Seismological Centre From the ISC collection scanned by SISMOS

Seismic Records at De Bilt

Date 1964	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
July 11	eL	17	55								66.4 N 19.7 W, H: 17
	F	18	08								44 29.8, h 19 km.
	WIT iP	17	48	51.5	+						N-Iceland.
July 11	eL	21	00								59.7 N 146.2 W, H: 20
	F	21	40								25 40.3, h 40 km.
											Alaska.
July 12	eP	1	57	45							38.6 N 139.2 E, H: 01
	eS	2	07	55							45 25.6, h 13 km.
	eL	2	23								Near west coast of
	F	3	05								Honshu, Japan.
	WIT iP	1	57	38.5	-						
July 12	eL	20	29								24.9 N 95.3 E, H: 20
	F	20	31								15 59.0, h 155 km.
											Birma.
July 13	WIT iPKP	1	33	14.6							20.7 S 178.7 W, H: 01
											14 33.5, h 575 km.
											Fiji Islands.
July 13	WIT eP	11	09	54							23.7 N 94.7 E, H: 10
											58 47.7, h 117 km.
											India-Birma border.
July 13	eL	16	35								53.7 N 35.2 W, H: 16
	F	16	45								22 26, h 33 km.
											North Atlantic Ocean.
July 13	eP	21	12	02							7.7 N 34.7 W, H: 21
	eS	21	19	57							02 33.3, h 33 km.
	eL	21	27								Mid Atlantic Ridge.
	F	21	50								
	WIT iP	21	12	13.0							
July 14	WIT iP	5	35	20.0							57.0 N 7.3 E, H: 05
											33 55.1, h 36 km.
											Near south coast of
											Norway.
July 14	WIT iP	14	09	55.5							53.3 N 159.7 E, H: 13
											58 28.5, h 40 km.
											Kamchatka.
July 15	eL	9	56								35.2 N 4.5 E, H: 09
	F	10	10								49 05.8, h 39 km.
											Algeria.
July 17	eP	2	38	45.8		8	6				38.2 N 23.7 E, H: 02
	ipP	2	39	24							34 26.7, h 150 km.
	eS	2	42	11							Greece.
	esS	2	42	52							
	eL	2	43.5							5½	
	F	3	35								
	WIT iP	2	38	37.8	+						
	iScP	2	46	16							
July 17	WIT iP	4	52	45.8							49.3 N 158.6 E, H: 04
											41 05.1, h 50 km.
											Kurile Islands.

Data 1964	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
July 17	eP	23	06	42							44.6 N 149,2 E, H: 22
	eL	23	38								54 42.2, h 33 km.
	F	24	00								Kurile Islands.
	WIT iP	23	06	38.8	-						
July 18	iP	3	45	04.5	(-)						36.3 N 26.1 E, H: 03
	iS	3	49	00							40 21.5, h 115 km.
	F	4	10								Dodecanese Islands.
	WIT iP	3	45	02.7	(+)						
July 19	eL	6	27.5								49.9 N 78.1 E, H: 05
	F	6	29								59 58.9, h 0 km.
	WIT iP	6	08	02							Kazakh SSR.
July 21	eL	1	45								19.8 N 108.8 W, H: 01
	F	1	50								09 25.8, h 31 km. Off
											coast of Jalisco.
											Mexico.
July 21	iPKP2	4	08	46.8	+						26.0 S 178.0 W, H: 03
	F	4	40								48 59.1, h 222 km.
	WIT iPKP1	4	08	31.2							Fiji Islands region.
	ipPKP1	4	09	23.0							
July 21	e	10	23								72.1 N 130.2 E, H: 09
	F	10	40								56 16.6, h 33 km.
	WIT iP	10	05	05.5	+						Laptev Sea.
July 21	eL	14	00								11.5 N 121.9 E, H: 13
	F	14	30								13 00.2, h 34 km.
											Panay, Philippine
											Islands.
July 21	WIT iPKP	21	20	45.7	+						4.6 S 153.3 E, H: 21
											01 49.5, h 60 km. New
											Ireland region.
July 23	e	9	50.1								0.7 S 16.3 W, H: 09
	F	10	30								40 29.2, h 33 km.
											North of Ascension
											Island.
July 23	WIT iP	19	18	50.6	+						59.9 N 149.2 W, H: 19
											08 06.6, h 55 km.
											Alaska.
July 24	iP	7	02	49.1	+	4	4				46.9 N 153.9 E, H: 06
	eS	7	12	43							50 52.8, h 33 km.
	eSS	7	18.0								Kurile Islands.
	eL	7	26							6½	
	F	in next shock									
	WIT eP	7	02	43							
July 24	iP	8	24	34.7	+	9	12				47.2 N 153.8 E. H: 08
	iS	8	34	27							12 40.0, h 33 km.
	eL	8	52							7	Kurile Islands.
	F	12									
	WIT iP	8	24	29.5							
	i	8	24	32							

International Seismological Centre From the ISC collection scanned by SISMOS

Data 1964	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
July 24	iP	13	37	13.1	+	4	2.5				47.0 N 153.7 E, H: 13 25 18.3, h 33 km. Kurile Islands.
	eS	13	47.0								
	eL	14	05								
	F	15.5									
	WIT iP	13	37	09							
July 24	iP	17	14	44.5	+	5	4				47.1 N 153.6 E, H: 17 02 49.2, h 33 km. Kurile Islands.
	eS	17	24	36							
	eSS	17	30.0							6¾	
	eL	17	43								
	F	19.7									
	WIT iP	17	14	39.5	+						
July 25	WIT iPKP	12	39	43.5	-						19.9 S 176.2 W, H: 12 20 22.2, h 205 km. Fiji Islands.
July 25	eP	19	45	07							27.9 S 70.9 W, H: 19 31 07.0, h 26 km. Chile.
	ePP	19	49	24							
	eSKS	19	55	50							
	ePS	19	58	30							
	eL	20	18							6¼	
	F	in next shock									
July 25	ePP	21	48	27							2.9 N 128.2 E, H: 21 29 33.2, h 22 km. North of Halmahera.
	eL	22	27								
	F	23.0									
July 26	WIT iP	14	08	11							2.6 N 78.5 W, H: 13 55 37.4, h 38 km. Columbia.
July 26	WIT iP	18	46	27							46.8 N 153.8 E, H: 18 34 34.6, h 33 km. Kurile Islands.
July 27	eP	23	12	32							d.b.m. 46.8 N 153.8 E, H: 23 00 36.3, h 33 km. Kurile Islands.
	eS	23	22.5								
	eL	23	40								
	F	24	15								
	WIT iP	23	12	28.5	-						
July 28	ePKP	18	59.7								d.b.m. 51.2 S 139.0 E, H: 18 40 04.3, h 33 km. South of Australia.
	eSS	19	23.0								
	eL	19	46								
	F	20.8									
	WIT iPKP	19	00	01.5	-						
July 28	iP	21	50	49.6	-	6	3.5				14.3 N 96.2 E, H: 21 38 43.5, h 33 km. Andaman Islands.
	iPP	21	53	53							
	eS	22	01.0								
	eSS	22	06.5							6¾	
	F	23.5									
	WIT iP	21	50	46.8	-						
July 30	WIT iPKP	1	40	37.8	+						17.7 S 178.2 W, H: 01 22 10.1, h 643 km. Fiji Islands region.

Data 1964	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 30	eS	5	39.6								11.1 N 86.2 W, H: 05 16 03.3, h 42 km. Costa Rica. No vertical record.
	eSS	5	44.3								
	eL	5	53								
	F	6	50								
July 31	WIT iP	4	17	05.4	+						44.6 N 151.6 E, H: 04 05 06.2, h 53 km. Kurile Islands.
July 31	eP	6	07	44							6.1 S 149.4 E, H: 05 52 18.8, h 63 km. New Britain.
	ePKP	6	11	15							
	ePP	6	13	16							
	eSS	6	30.0								
	eL	6	42							6¾	
	F	8.5									
	WIT e(PP)	6	13.2								
July 31	eP	23	53.0								d.b.m. 86.3 N 40.5 E, H: 23 45 55.2, h 10 km. Arctic Ocean.
	eS	23	58.5								
	eL	24	03								
	F	24	30								
Aug. 2	eL	9	18								56.2 N 149.9 W, H: 08 36 16.9, h 31 km. Alaska.
	F	9	50								
Aug. 3	eL	2	15								19.8 N 70.7 W, H: 01 48 23.3, h 7 km. Dominican Republic region.
	F	3	10								
Aug. 3	eP	7	57	25							22.6 N 121.3 E, H: 07 44 44.3, h 33 km. Near south coast of Taiwan.
	ePP	8	00	55							
	eL	8	28							6¼	
	F	9.0									
Aug. 4	iP	17	36	17.0	-						46.5 N 151.1 E, H: 17 24 29.2, h 101 km. Kurile Islands.
	eS	17	46	00							
	eL	17	59								
	F	18	45								
	WIT eP	17	36	12							
Aug. 5	WIT eP	4	37	16							27.1 N 128.1 E, H: 04 24 51.3, h 144 km. Ryukyu Islands.
Aug. 5	iPKP1	11	25	33.8	+						32.1 S 179.8 E, H: 11 06 02.6, h 235 km. South of Kermadec Islands.
	iPKP2	11	26	15.2	-						
	epPKP1	11	26	33							
	epPKP2	11	27	12							
	F	in next shock									
	WIT ePKP1	11	25	32							
	ePKP2	11	26	12							
	epPKP2	11	27	11							
Aug. 5	ePS	11	30	30							39.0 S 74.5 W, H: 11 01 16.5, h 26 km. Off coast of Central Chile.
	ePPS	11	31	32							
	eSS	11	36	22							
	eL	11	51								
	F	13.0									

International Seismological Centre From the ISC collection scanned by SISMOS

Seismic Records at De Bilt

Data 1964	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. 5	ePP	22	43	00							41.1 S 74.9 W, H: 22
	ePPP	22	45	30							23 13.0, h 33 km. Off
	eSP	22	52	54							coast of Southern Chile.
	eL	23	15							6¾	
	F	24	50								
	WIT ePKP	22	41	57							
Aug. 6	WIT iP	2	45	43.1	-						31.5 N 129.9 E, H: 02
											33 39.5, h 197 km.
											Southwest of Kyushu,
											Japan.
Aug. 6	WIT iPKP	17	22	20.7	-						22.5 S 179.5 W, H: 17
											03 28.9, h 504 km.
											South of Fiji Islands.
Aug. 6	eP	18	35	56							56.9 N 152.1 W, H: 18
	eS	18	45	16							24 47, h 39 km. Kodiak
	eL	18	59								Island, Alaska.
	F	20.0									
	WIT eP	18	36.0								
Aug. 8	WIT iP	15	12	14.8	+						31.7 N 140.2 E, H: 14
											59 41.2, h 110 km.
											South of Honshu, Japan.
Aug. 8	eL	16	25								12.5 N 87.8 W, H: 15
	F	16	45								45 10.9, h 63 km. Off
											west coast of Nicaragua.
Aug. 10	eS	1	29	33							19.1 N 67.3 W, H: 01
	eL	1	40								10 12.4, h 33 km. Mona
	F	2	50								Passage.
Aug. 10	WIT iP	18	03	57	-						45.1 N 149.9 E, H: 17
											52 02.5, h 40 km.
											Kurile Islands.
Aug. 12	WIT iP	7	03	19	-						48.9 N 153.7 E, H: 06
											51 49.9, h 127 km.
											Kurile Islands.
Aug. 12	e(S)	19	40								31.0 N 49.8 E, H: 19
	F	20	05								26 26.1, h 33 km.
	WIT iP	19	33	45	-						Western Iran.
Aug. 13	iPKP	0	49	36.3	-						5.4 S 154.3 E, H: 00
	iPP	0	51	38.2							31 14.1, h 383 km.
	ePKS	0	52	55							Solomon Islands.
	ePPS	1	02	40							
	eL	1	30							6½	
	F	3.5									
	WIT iPKP	0	49	36.0	-						
Aug. 13	e	10	53								34.2 N 25.7 E, H: 10
	F	10	59								38 05, h 33 km. Crete.
Aug. 14	eS	21	45	20							7.4 N 36.8 W, H: 21
	F	22.5									27 41.6, h 33 km.
											Central Mid-Atlantic
											Ridge.

Seismic Records at De Bilt

Data 1964	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. 17	e	0	27.0								35.0 N 26.0 E, H: 00
	F	0	39								17 40.9, h 18 km.
	WIT eP	0	22	42							Crete.
Aug. 17	eP	15	19	52							72.2 N 1.7 E, H: 15
	eS	15	23	37							15 18.9, h 33 km.
	eL	15	25								Norwegian Sea.
	F	15	40								
	WIT eP	15	19	51							
Aug. 17	e	22	58								52.1 N 30.1 W, H: 22
	F	23.2									47 32.4, h 36 km.
											North Atlantic Ridge.
Aug. 18	eL	5	30								26.4 S 71.5 W, H: 04
	F	6.2									44 58, h 8 km. Off
											coast of Northern
											Chile.
Aug. 19	eL	9	53								28.2 N 52.6 E, H: 09
	F	10	15								33 10.0, h 50 km.
	WIT eP	9	41	00							Southern Iran. No
											vertical record.
Aug. 20	eS	4	04	04							63.9 N 20.5 W, H: 03
	eL	4	05	15							56 29.2, h 33 km.
	F	4	30								Southwest of Iceland.
	WIT iP	4	00	42.5	+						No vertical record.
Aug. 20	WIT iP	5	47	36	-						28.2 N 52.6 E, H: 05
											39 47.7, h 52 km.
											Southern Iran.
Aug. 22	eP	17	09	25							51.9 N 30.0 W, H: 17
	eS	17	13.5								04 31.2, h 33 km.
	eL	17	14.5								North Atlantic Ridge.
	F	17	50								
	WIT iP	17	09	29.6	+						
Aug. 22	WIT iP	17	29	13							BCIS: 59.6 N 30.3 W,
											H: 17 24 28. North
											Atlantic Ocean.
Aug. 23	eL	3	07								59.4 N 30.3 W, H: 02
	F	3	15								56 13.3, h 33 km.
	WIT eP	3	00	59							North Atlantic Ocean.
Aug. 23	eP	4	52	30							59.4 N 30.2 W, H: 04
	eS	4	56	20							47 46.4, h 33 km.
	eL	4	58								North Atlantic Ocean.
	F	5	15								
	WIT eP	4	52	32							
Aug. 23	e	15	44	02							6.1 S 149.4 E, H: 15
	ePS	15	54	40							24 05.3, h 63 km.
	eSS	16	02	00							New Britain region.
	eSSS	16	06	55							
	eL	16	20							6½	
	F	17	05								

International Seismological Centre From the ISC collection scanned by SISMOS

Data 1964	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. 24	eL	22	38								58.4 N 150.3 W, H: 21
	F	22	50	-							56 54.2, h 22 km. Alaska.
Aug. 25	eP	11	17.0								36.1 N 28.7 E, H: 11
	eS	11	21	10							11 53.6, h 50 km.
	eL	11	23								Dodecanese Islands.
	F	12	15								
Aug. 25	iP	13	55	34.7	-	4	3				78.2 N 126.6 E, H: 13
	eS	14	02	26							47 20.6, h 50 km.
	eSS	14	05	50							East of Severnaya
	eL	14	07.0							6½	Zemlya.
	F	16.0									
	WIT eP	13	55	29							
Aug. 26	eP	3	23	33							52.1 N 30.1 W, H: 03
	eS	3	27	20							18 44.1, h 33 km.
	eL	3	29								North Atlantic Ridge.
	F	3	55								
	WIT eP	3	23	40							
Aug. 27	iPKP	8	13	32.8	-						17.5 S 173.0 W, H: 07
	F	8	15								53 54.8, h 33 km.
	WIT iPKP	8	13	31.0	-						Tonga Islands.
Aug. 27	eL	13	18								27.5 N 55.9 E, H: 12
	F	13	40								56 46.1, h 33 km. Southern Iran.
Aug. 27	eP	19	37	03							35.5 N 28.7 E, H: 19
	eS	19	41	22							31 56.9, h 33 km.
	eL	19	44.0								Eastern Mediterranean
	F	20	10								Sea.
	WIT e	19	37.4								
Aug. 28	WIT iPKP	4	54	08.2	-						19.8 S 178.2 W, H: 04
											35 29.3, h 580 km.
											Fiji Islands region.
Aug. 28	e	12	13	48							37.9 N 19.8 E, H: 12
	eL	12	16								06 18.3, h 61 km.
	F	12	30								Ionean Sea.
Aug. 28	eL	19	03								23.5 N 120.6 E, H: 18
	F	19	20								17 03.2, h 10 km. Taiwan.
Aug. 29	eL	2	52								43.0 N 0.1 E, H: 02
	F	2	55								45 29. Central
	WIT e	2	50.1								Pyrenees, France.
Aug. 30	WIT iPKP	22	04	12.0	(+)						19.9 S 176.0 W, H: 21
											44 56.9, h 253 km.
											Fiji Islands region.
Sep. 1	eP	13	33	32							27.2 N 92.3 E, H: 13
	eS	13	42	30							22 36.6, h 33 km.
	eL	13	57								India-China border
	F	14	30								region.
	WIT eP	13	33	24							

Data 1964	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. 1	WIT iP	17	28	36.6	-						51.2 N 170.6 W, H: 17
											16 40.4, h 25 km. Fox
											Islands. Aleutian
											Islands.
Sep. 4	eP	3	38	15							7.6 N 36.9 W, H: 03
	eS	3	46	05							28 33.1, h 22 km.
	eL	3	53								Central Mid-Atlantic
	F	4	50								Ridge. No vertical
	WIT eP	3	38	22	-						record.
Sep. 4	WIT eP	3	45	12							39.8 N 40.3 E, H: 03
											39 36.7, h 33 km.
											Turkey.
Sep. 4	ePP	10	53	50							4.0 S 131.4 E, H: 10
	eSS	11	09	54							34 13.1, h 33 km.
	eL	11	28								Banda Sea.
	F	13	10								
	WIT ePP	10	53	44							
Sep. 5	ePKP	3	12	50							5.8 S 154.0 E, H: 02
	ePP	3	14	50							53 50.6, h 69 km.
	eS	3	25	05							Solomon Islands.
	eL	3	50							6¼	
	F	5	15								
	WIT ePKP	3	12	47							
Sep. 5	eP	12	37	12							0.6 N 25.9 W, H: 12
	eS	12	45	07							27 22.2, h 33 km.
	eL	12	51								Central Mid-Atlantic
	F	13	45								Ridge.
Sep. 5	eL	21	13.5								44.1 N 11.1 E, H: 21
	F	21	30								08 49.4, h 40 km.
	WIT eP	21	11	14							N-Italy.
Sep. 6	eL	19	08								38.3 N 26.6 W, H: 18
	F	20	15								55 47.4, h 33 km.
											Azores Islands.
Sep. 7	eS	11	44.2								15.7 N 53.3 E, H: 11
	e	11	48.0								27 15, h 33 km.
	eL	11	52								Arabian Sea.
	F	12	20								
Sep. 8	WIT iPKP	17	24	07.7	+						20.4 S 178.3 W, H: 17
											05 23.4, h 539 km.
											South of Fiji Islands.
Sep. 12	iPKP1	22	27	10.7	+	9	15				49.1 S 164.2 E, H: 22
	eSS	22	53	00							07 03.2, h 33 km.
	eL	23	23							7¼	Auckland Islands.
	F	1.5									
	WIT ePKP	222	28	12							
Sep. 14	eL	14	30								BCIS: 59.1 N 31.1 W,
	F	14	45								H: 14 21 14. Atlantic
											Ocean.

International Seismological Centre From the ISC collection scanned by SISMOS

Seismic Records at De Bilt

Data 1964	Phase	G.M. Time h	m	s	First motion	Period s	Amplitude Z	NS	EW	Magnitude De Bilt	Remarks Data without indication are from USCGS; d.b.m. means disturbed by microseisms
Sep. 15	iP	15	41	49.8	-	5	5				8.9 N 93.1 E, H: 15 29 32.2, h 37 km. Nicobar Islands region.
	iPP	15	45	45							
	iS	15	51	55							
	iPS	15	52	28							
	eL	16	03.5							6¼	
	F	17	15								
	WIT iP	15	41	45.8	-						
Sep. 16	WIT eP	1	38	30							10.9 N 93.1 E, H: 01 26 26.9, h 47 km. Andaman Islands region.
Sep. 16	eP	2	01	20							60.0 N 147.1 W, H: 01 50 33.9, h 29 km. Gulf of Alaska.
	eS	2	10	15							
	eL	2	20								
	F	3.0									
	WIT iP	2	01	18.0							
Sep. 16	WIT iP	22	32	24.1	+						22.9 N 45.1 W, H: 22 23 36.3, h 33 km. North Atlantic Ridge.
Sep. 17	eP	15	07	30							44.5 N 31.3 W, H: 15 02 00.9, h 24 km. North Atlantic Ridge.
	eS	15	12	06							
	eL	15	14.5								
	F	15	45								
	WIT iP	15	07	35.5							
Sep. 18	e	0	18								35.4 N 28.8 E, H: 00 08 42.6, h 18 km. Eastern Mediterranean Sea.
	F	0	45								
Sep. 18	eP	13	18.5								39.8 N 29.7 W, H: 13 12 42.3, h 20 km. Azores Islands.
	eS	13	23	04							
	eL	13	25.5								
	F	13	50								
	WIT eP	13	18	36							
Sep. 19	eP	5	20	41							15.3 N 94.0 W, H: 05 08 15.1, h 42 km. Near coast of Oaxaca, Mexico.
	eS	5	31	13							
	eL	5	46								
	F	6.0									
Sep. 21	WIT iPKP	4	42	00.3	-						21.8 S 179.6 W, H: 04 23 19.7, h 609 km. Fiji Islands region.
	ipPKP	4	44	23.9	+						
Sep. 22	HEE i	13	08	35							Local shock
Sep. 23	e	5	33.0								53.6 N 163.9 W, H: 04 59 47.4, h 29 km. Unimak Island region.
	eL	5	45								
	F	6	20								
	WIT iP	5	11	21							
Sep. 26	eP	0	55	50							30.1 N 80.7 E, H: 00 46 02.8, h 50 km. Tibet-India border region.
	eS	1	03	54							
	eL	1	14								
	F	1	50								
	WIT iP	0	55	47.8	-						
Sep. 26	WIT iPKP	3	58	08							17.7 S 173.3 W, H: 03 38 32.7, h 33 km. Tonga Islands.
Sep. 27	eP	16	02	08							56.6 N 152.0 W, H: 15 50 54.7, h 27 km. Kodiak Island region.
	i	16	02	12							
	eS	16	11	20							
	eL	16	25								
	F	17	20								
	WIT eP	16	02	04							
Sep. 28	eP	5	14	51							1.2 S 24.1 W, H: 05 04 55.5, h 37 km. Central Mid-Atlantic Ridge.
	eS	5	22	55							
	eL	5	31								
	F	6	05								
Sep. 29	iPKP	14	20	00.0		4	2				20.4 S 174.4 W, H: 14 00 14.9, h 29 km. Tonga Islands.
	ePP	14	23	28							
	ePS	14	34	00							
	ePPS	14	36	00							
	eSS	14	42	45							
	eL	15	15								
	F	16	20								
	WIT ePKP	14	20	00							
Sep. 30	eP	4	44	40							34.5 N 23.4 E, H: 04 39 44.0, h 43 km. Crete.
	eS	4	48	40							
	eL	4	51.5								
	F	5	06								
	WIT eP	4	44	39							
Oct. 1	eL	19	05								49.3 N 128.8 W, H: 18 30 01.9, h 9 km. Vancouver Island region.
	F	19	15								
Oct. 2	eL	1	34								51.9 N 142.9 E, H: 00 58 39.2, h 33 km. Sakhalin Island.
	F	2	10								
Oct. 2	ePKP	13	20	05							10.5 S 162.4 E, H: 13 00 39.7, h 68 km. Solomon Islands.
	eL	14.0									
	F	15.7									
	WIT ePP	13	22	14							
Oct. 3	WIT iPKP	23	00	28	+						20.2 S 176.3 W, H: 22 41 09.0, h 219 km. Fiji Islands region.
Oct. 4	eL	9	45								8.9 S 129.2 E, H: 09 11 23.0, h 78 km. Timor Sea.
	F	9	55								
Oct. 6	eL	6	58								18.6 N 119.6 E, H: 06 11 32.6, h 33 km. Philippine Islands region.
	F	7.5									
Oct. 6	eL	8	15								36.2 S 100.9 W, H: 07 17 57.1, h 33 km. Southeastern Pacific.
	F	9.0									

International Seismological Centre From the ISC collection scanned by SISMOS

Seismic Records at De Bilt

Data 1964	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. 6	eP	14	34	30							40.2 N 28.2 E, H: 14
	WIT iP	14	34	24.5							29 55.6, h 10 km. Turkey, foreshock.
Oct. 6	iP	14	35	53.1	-	5	8				40.3 N 28.2 E, H: 14
	iS	14	39	42							31 19.2, h 10 km.
	eL	14	40.5							7	Turkey.
	F	18.5									
	WIT iP	14	35	48.5	-						
	HEE eP	14	35	43							
Oct. 11	iPP	21	33	44.0	-	4	6				0.6 S 121.7 E, H: 21
	e	21	34	19							15 03.9, h 33 km.
	eS	21	41	26							Northern Celebes.
	eSS	21	48	55							
	eL	22	06							6½	
	F	23	10								
	WIT iPP	21	33	36.0	-						
Oct. 12	eL	16	35								3.0 N 126.7 E, H: 15
	F	17	05								42 54.7, h 59 km. Talaud Islands.
Oct. 12	ePKP	22	14.5								31.3 S 110.8 W, H: 21
	ePP	22	16.7								55 33.2, h 25 km.
	ePKS	22	18.2								Easter Islands region.
	ePPP	22	19.8								
	ePS	22	27	15							
	eSS	22	34.6								
	eL	22	58								
	F	23.5									
Oct. 14	eP	3	18	11							33.4 N 141.8 E, H: 03
	eS	3	28	18							04 59.6, h 33 km.
	eL	3	48								Off eastcoast of
	F	4	30								Honshu, Japan.
Oct. 15	iP	20	38	55.0	+						44.7 N 149.8 E, H: 20
	eS	20	48	54							26 53.5, h 49 km.
	eL	21	02							6¼	Kurile Islands.
	F	22.0									
	WIT iP	20	38	49.0	+						
Oct. 16	eP	7	11	44							44.3 N 149.5 E, H: 06
	eS	7	21	44							59 38.6, h 33 km.
	iPS	7	22	43							Kurile Islands.
	eL	7	36							6½	
	F	in next shock									
	WIT iP	7	11	38.2	-						
Oct. 16	eP	8	30	30							44.6 N 149.4 E, H: 08
	eS	8	40	45							18 28.3, h 33 km.
	F	in next shock								6¼	Kurile Islands.
	WIT eP	8	30	25							
Oct. 16	eP	9	30	23							44.5 N 149.1 E, H: 09
	eS	9	40	26							18 16.6, h 33 km.
	F	11.0								6¼	Kurile Islands.
	WIT eP	9	30	17							
Oct. 17	eS	9	59	39							35.0 N 25.4 E, H: 09
	eL	10	02.0								50 29.5, h 33 km.
	F	10	25								Crete.
Oct. 18	iP	12	46	10.2	-						7.0 S 124.0 E, H: 12
	epP	12	48	09							32 24.1, h 574 km.
	esP	12	49	08							Banda Sea.
	ePP	12	51	02							
	epPP	12	52	49							
	e	12	55	11							
	e	12	56	17							
	iSKS	12	57	00							
	i	12	57	46							
	iSP	12	59	34							
	i	13	04	28							
	eSS	13	06.0								
	eSSS	13	10.5								
	F	15									
	WIT iPKP	12	49	57.3							
	ePP	12	50	57							
	epPP	12	52	54							
	i	13	01	04							
Oct. 21	eL	8	14								44.8 N 111.6 W, H: 07
	F	8	40								38 31.0, h 33 km. Hebgen Lake region.
Oct. 21	iP	23	20	10.8	+	4	3				28.1 N 93.8 E, H: 23
	ePP	23	22	45							09 18.8, h 37 km.
	eS	23	29	06							India-China border.
	eScS	23	30	12							
	eL	23	45							7½	
	F	24.4									
	WIT iP	23	20	07.7							
Oct. 23	iP	2	05	56.5	+						19.8 N 56.0 W, H: 01
	eS	2	13	55							56 03.2, h 31 km.
	eL	2	20.0							6¾	North Atlantic Ocean.
	F	3.0									
	WIT iP	2	06	03.7	+						
Oct. 27	eS	19	49	50							47.8 N 16.1 E, H: 19
	e	19	50	04							46 12.0, h 39 km.
	eL	19	50.5								Near Vienna, Austria.
	F	20	10								
	WIT iP	19	48	07.5							
	HEE eP	19	48	00							
Oct. 27	eSS	22	02.1								45.6 S 96.1 E, H: 21
	eL	22.5									24 31.2, h 33 km. Mid
	F	24.0									Indian Ocean Ridge.
Nov. 1	eL	5	30								51.8 N 130.8 W, H: 04
	F	5	50								55 47.5, h 33 km. Queen Charlotte Islands region.

International Seismological Centre From the ISC collection scanned by SISMOS

Data 1964	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. 1	ePP	12	45	03							3.1 N 128.1 E, H: 12 26 06.2, h 65 km. North of Halmahera.
	e	12	45	37							
	ePPP	12	47	22							
	eS	12	52	16							
	ePS	12	54	15							
	eSS	13	00	02							
	eL	13	22								
	F	14.0									
Nov. 2	iP	7	03	41	-						4.1 S 76.9 W, H: 06 50 58.2, h 91 km. N-Peru.
	eS	7	14.0								
	F	7.6									
	WIT iP	7	03	46.5	-						
Nov. 6	eP	10	05	18		4	2				44.4 N 149.0 E, H: 09 53 22.4, h 60 km. Kurile Islands.
	eS	10	15.2								
	eL	10	34								
	F	11	15								
	WIT iP	10	05	15.6	+						
Nov. 7	eL	19	20								0.4 N 100.1 E, H: 18 37 43.7, h 107 km. N-Sumatra.
	F	20	05								
Nov. 8	ePKP	3	04.0								49.0 S 163.7 E, H: 02 43 57.2, h 33 km. Auckland Islands region.
	eSS	3	29.5								
	eSSS	3	35.0								
	eL	4	15								
	F	5.0									
Nov. 8	WIT iP	10	40	58.5	-						29.7 N 51.0 E, H: 10 33 27.5, h 40 km. Southern Iran.
Nov. 9	eL	19	40								19.3 N 121.0 E, H: 18 43 38.6, h 33 km. Philippine Islands region.
	F	19	45								
Nov. 10	WIT iP	15	54	55.3	-						32.6 N 49.1 E, H: 15 47 49.3, h 28 km. Western Iran.
Nov. 11	eL	8	40								59.4 N 144.6 W, H: 08 01 26.1, h 10 km. Gulf of Alaska.
	F	9	00								
Nov. 11	WIT iP	13	28	42.0	-						56.6 N 161.4 E, H: 13 17 37.5, h 33 km. Near east coast of Kamchatka.
Nov. 14	WIT iP	4	08	19.0	-						33.6 N 131.6 E, H: 03 56 06.0, h 60 km. Shikoku, Japan.
Nov. 15	eL	16	38								24.0 N 122.2 E, H: 15 52 21.5, h 42 km. Taiwan region.
	F	17.0									

Seismic Records at De Bilt

Data 1964	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. 16	WIT iP	6	08	02							49.7 N 78.0 E, H: 05 59 57.4, h 0 km. Eastern Kazakh SSR.
Nov. 17	ePP	8	36	24							d.b.m. 5.7 S 150.7 E, H: 08 15 39.3, h 45 km. New Britain region.
	eSS	8	53	40							
	eSSS	8	58	38							
	eL	9	14							7¼	
	F	10.0									
	WIT e	8	35								
Nov. 17	eL	19	58								12.7 N 144.9 E, H: 19 00 10.4, h 43 km. South of Mariana Islands.
	F	20	10								
Nov. 18	ePP	14	55.5								6.0 S 148.2 E, H: 14 34 54.5, h 49 km. New Britain region.
	eL	15	30								
	F	16.3									
Nov. 18	ePKP	22	40.9								20.2 S 174.1 W, H: 22 21 01.9, h 33 km. Tonga Islands.
	eL	23	45								
	F	24.0									
	WIT ePKP	22	40	50							
Nov. 19	ePP	23	55.9								d.b.m. 6.0 S 150.8 E, H: 23 35 06.0, h 33 km. New Britain region.
	ePPS	0	07	48							
	eSS	0	13	40							
	eL	0	30							7¼	
	F	2.5									
	WIT ePKP	23	54	11							
Nov. 20	eL	24	15								d.b.m. 44.6 N 149.7 E, H: 23 33 08.9, h 33 km. Kurile Islands.
	F	24	40								
	WIT eP	23	45	07							
Nov. 21	WIT iP	0	03	34.3	(-)						44.6 N 149.5 E, H: 23 51 35.4, h 33 km. Kurile Islands.
Nov. 24	eP	12	54	28							13.1 N 124.7 E, H: 12 40 51.4, h 5 km. Luzon, Philippine Islands.
	ePP	12	58	14							
	eS	13	05	50							
	eSS	13	12	20							
	eL	13	25							6½	
	F	14.5									
	WIT eP	12	54	19							
Nov. 26	eL	11	00								d.b.m. 24.9 N 122.0 E, H: 10 21 07.2, h 33 km. Taiwan region.
	F	11	40							6¼	
	WIT eP	10	33	42	-						
Nov. 27	eL	14	30								d.b.m. 37.9 N 138.3 E, H: 13 47 42.7, h 36 km. Near west coast of Honshu, Japan.
	F	15.0									
	WIT eP	13	59	52							

International Seismological Centre From the ISC collection scanned by SISMOS

Seismic Records at De Bilt

Data 1964	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. 30	eS	12	50	30						6¼	d.b.m. 6.8 N 94.8 E, H: 12 27 38.6, h 33 km. Nicobar Islands region.
	eL	13	03								
	F	14.5									
	WIT iP	12	40	07.0							
Dec. 1	WIT iPKP	5	12	39.5	-						18.9 S 175.8 W, H: 04 53 23.9, h 232 km. Tonga Islands.
Dec. 2	eL	8	40								30.6 N 42.0 W, H: 08 20 45.6, h 33 km. North Atlantic Ridge.
	F	9.0									
	WIT iP	8	28	32.5	(+)						
Dec. 2	WIT iP	13	30	02.5							53.8 N 165.4 W, H: 13 18 29.0, h 35 km. Fox Islands, Aleutian Islands.
Dec. 7	eL	10	10								5.4 S 151.3 E, H: 08 58 43.8, h 54 km. New Britain region.
	F	10	25								
Dec. 8	eL	18	33								34.7 N 139.2 E, H: 17 49 46.3, h 31 km. Near south coast of Honshu, Japan.
	F	19.0									
Dec. 9	WIT eP	13	48	29							27.5 S 63,2 W, H: 13 35 42.4, h 586 km. Argentinia.
Dec. 10	eP	15	23	10							40.4 N 138.9 E, H: 15 11 05.5, h 33 km. Near west coast of Honshu, Japan.
	ePP	15	26.4								
	eS	15	33	15							
	eL	15	50								
	F	16	45							6¾	
	WIT eP	15	23	05	-						
Dec. 11	e	0	14								40.2 N 139.0 E, H: 23 30 51.4, h 39 km. Near west coast of Honshu, Japan.
	F	0	30								
Dec. 11	WIT iP	16	15	52.8	-						38.9 N 130.0 E, H: 16 04 58.2, h 550 km. Sea of Japan.
Dec. 13	WIT iP	0	43	50							64.9 N 165.7 W, H: 00 33 24.7, h 15 km. Alaska.
Dec. 14	eL	2	48								d.b.m. 54.S 2.4 W, H: 01 59 05.6, h 33 km. Bouvet Island region, South Atlantic Ocean.
	F	3	25								
Dec. 15	eP	12	25	44							14.7 N 91.7 W, H: 12 13 25.8, h 118 km. Guatemala.
	ePS	12	37.1								
	eL	12	54								
	F	13	15								
	WIT e	12	26.1								
Dec. 17	eL	6	00								45.4 N 150.1 E, H: 05 18 34.8, h 17 km. Kurile Islands.
	F	6	20								
	WIT eP	5	30	29							
Dec. 18	eL	0	20								51.4 N 177.9 W, H: 23 44 46.2, h 57 km. Andreanof Islands, Aleutian Islands.
	F	0	50								
Dec. 20	WIT iPKP	11	45	23.5	(-)						20.1 S 177.7 W, H: 11 26 32.6, h 463 km. West of Tonga Islands.
Dec. 20	WIT iP	13	44	11							37.5 N 141.6 E. H: 13 31 54.7, h 40 km. Near east coast of Honshu, Japan.
Dec. 22	eS	4	51.5								28.2 N 57.0 E, H: 04 36 34.7, h 42 km. Southern Iran.
	eSS	4	54.8								
	eL	4	57								
	F	5	30								
	WIT iP	4	44	42.7	—						
Dec. 22	e	8	35								18.4 N 68.8 W, H: 08 01 12.6, h 115 km. Mona Passage. Caribbean Loop.
	F	8	49								
	WIT eP	8	12	19							
Dec. 22	eL	21	30								31.9 N 117.1 W, H: 20 54 35.3, h 14 km. California-Mexico border region.
	F	22	10								
	WIT iP	21	07	05							
Dec. 23	eL	20	35								30.3 N 131.1 E, H: 19 47 59.3, h 33 km. Kyushu, Japan.
	F	21.0									
	WIT eP	20	00	25							
Dec. 24	WIT iPKP	19	04	36.3	(+)						4.4 S 153.1 E, H: 18 45 45.5, h 93 km. New Ireland region.
Dec. 25	eL	17	40								34.8 N 139.3 E, H: 17 01 32.2, h 33 km. Near south coast of Honshu, Japan.
	F	18	10								
Dec. 26	iS	14	51	09							51.8 N 156.8 E, H: 14 30 29.1, h 136 km. Kamchatka.
	eL	15	05								
	F	15.5									
	WIT eP	14	41	44							
Dec. 27	eL	18	30								12.9 N 125.4 E, H: 17 43 21.4, h 33 km. Samar, Philippine Islands.
	F	19	15								

International Seismological Centre From the ISC collection scanned by SISMOS

Seismic Records at De Bilt

Data 1964	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. 28	ePKP	16	34	50							22.1 S 179.6 W, H: 16
	epPKP	16	37	07							16 11.0, h 611 km.
	ePS	16	48	44							South of Fiji Islands.
	F	17	40								
	WIT ePKP	16	34	49.0							
	epPKP	16	37	07.5							
Dec. 31	WIT iP	16	22	47							35.8 N 25.6 E, H: 16
											18 01.7, h 86 km.
											Crete.