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Department of Geophysics
Australian National University
CANBERRA A.C.T. AUSTRALIA
MONTHLY SEISMOLOGICAL BULLETIN

APRIL, 1964

Latitude : 35° 19' 15"S. Longitude: 148° 59' 55"E. Height: 700 M.

Instruments: Three-component Benioff variable reluctance seismographs.

T_s = 1 sec.

T_G = 0.25 Secs, (Short periods VNE)

T_G = 16 sec. (Long period vertical V₁)

T_G = 70 sec. (Long period horizontals N₁E₁)

Three-component Press Ewing long period seismographs.

T_s = 30 secs.)

T_G = 100 secs.) V'N'E'

Mount Stromlo quartz clocks provide accurate time marks and 50 c/s for drum drive.

Abbreviations: R; rarefaction, C ; compression

Epicentre locations are those given by USCGS. * Indicates epicentres believed accurate to 1/2° in latitude and longitude and ± 50 km. in depth.

No.	Date	Phase	Component	Time	Remarks
1	1	eSKS	N'	03 48 25	57.2 N 151.3 W 25 km Alaska
		ePS	N'E'	51 05	
		eSPSP	N'E'	57 23	
		eLq	E'	04 07.1	
		eLr	N'	11.9	
L1	1	eP	VE	06 32 26	Local
		eS	V	43	
		eS	E	44	
2	1	i	VNE	07 10 24.2	
3	1	eP	V	17 43 06 1/2	17.4 S 168.9 E h: 227 km* New Hebrides Is.
		i	VNE	09.3	
L2	1	eP	VNE	19 23 45 1/2	Local
		eS	NE	58 1/2	
		iS	V	29 00.1	
	1	i	VN	19 57 32.6	
4	1	e	V	22 44 25	
5	2	iP	VE	01 20 33.8	
6	2	iP	VNE	01 22 20.0	5.9 N 95.7E h: 132 km Near coast of northern Sumatra
		i	VNEV ₁ N ₁ E ₁	24.3	
		ePcP	V ₁	57 1/2	
		eisP	V ₁	23 05	
		i	NE	14.5	
		e	V'E'	24 05	
		e	V	30 1/2	
		e	V	28 11 1/2	
		eS	N ₁ E'	30 53	
		e	EE ₁ E'	31 03	
		iSP	VV ⁺	05.6	
		e	NN ₁	07 1/2	
		eSPP	E ₁	20 1/2	
		ePS	E ⁺	29	
		e	V	34 36	
		eSS	N ₁ E ₁ E'	35 03	
		e	V ⁺	38	
eSSS	N ₁	37 46			

No.	Date	Phase	Component	Time	Remarks.
6	2	eLq	E'	01 33.0 (Quake Continued).	
		e	N ₁	39.6	
		e	V ₁	39.46	
		Lr	V'	41.1	
		eQ ₂	E'	03 15.0	
7	2	iP	VN	01 43 26.1	
		e	V	01 53 00.2	
8	2	iP	VNE	03 20 12.6	C 5.5 N 95.7 E h: 103 km*
		i	V	16.1	Near coast of northern Sumatra
		iPcP	V	42.9	
9	2	(e)	V	06 59 22.2	
		i	V	33.6	
10	2	iP	VNEV ₁ N ₁ E ₁	06 59 48.8	C 6.9 S 125.5 E h: 485 km
		e(PP)	V	07 01 19.2	Banda Sea
		esP	VN	02 13	
		iScP	V	05 03.3	
11	2	iP	VNEV ₁ N ₁ E ₁	07 46 25.1	C 2.0 N 125.6 E h: 32 km
		ipP	VNEV ₁	50.2	Northern Celebes
		iPcP	V	48 13.4	
		e	V	56 36.2	
		e	E	57 33	
12	2	iP	VNEV ₁ E ₁	16 05 03.7	C 5.8 N 125.3 E h: 179 km
		i	VNEV ₁ N ₁ E ₁	07.6	Mindanao, P.I.
		i	VNE	13.7	
		i	VNE	30.0	
		ePcP	VV ₁	06 35	
		iPP	V	56.2	
		e	V ₁ E ₁	07 13.2	
		epPP	V ₁	29	
		eScP	E	10 08	
		iPcS	EE ₁	20.9	
		i(PcS)	V ₁	23.4	
		eS	V	11 33	
		eS	N ₁ E ₁ V'E'	42	
		i	NE ₁	45.8	
		e	V'E'	12 28	
		e(S)	V	53	
		e	V	14 14.2	
		eScS	V'E'	32	
		e(ScS)	NN ₁ E ₁ V'E'	47.2	
		eSS	EN ₁ E ₁ E'	15 06	
e	N ₁ V'E'	16			
eSSS	V ₁	16 17			
eL	E'	17.7			
eLr	V'	13.5			
13	2	eP	V	20 00 17	
		i(P)	NE	17.9	
		i	V	13.4	
		eT	VNE	15 26	
		Tmax	V	16 28	
		Tmax	N	59	
14	2	eP	V	23 40 43	56.4 S 25.1 W h: 33 km Sandwich Is. region
15	3	iP	V	04 23 01.2	R 4.0 N 96.6 E h: 70 km
		i	VNEV ₁	02.1	Near west coast of Sumatra
		i	V	16.5	
		ipP	VE	19.2	

No.	Date	Phase	Component	Time		Remarks
15	3	esP ePP i iScP e eLr	E V V V V' V'	04 23	29.8	(Quake Continued)
				25	21	
					35.5	
				27	37.9	
					35.2	
					41.8	
16	3	eP	V	08 53	39 $\frac{1}{2}$	27.9 S 173.1 W h: 33 km Kermadec Is.
17	3	iP	V	09 10	40.1	R 4.9 S 152.1 E h: 32 km New Britain
18	3	iP i	V VN	15 51	30.0 31.4	7.5 S 128.7 E h: 33 km Banda Sea
19	3	iP	VNE	19 14	22.2	14.9 S 167.1 E h: 95 km New Hebrides Is.
20	3	iP	VE	21 13	01.6	
21	3	e e e ePS e eSS ePSPS eSSS e eLq	VV V' V ₁ E' V' E' E' V' E' V' E'	22 52	49	61.6 N 147.6 W h: 40 km Prince William Sound, Alaska
				23 00	5	
					02.2	
					02.6	
					07.8	
					08.6	
				12	23	
					40	
					20.0	
	4	e e	E' E'	05 22	4 28.1	
22	4	iP	V	07 07	37.1	R
23	4	eS ePS ePPS eSS ePSPS eSSS L eLr	E' V E' E' V E' E' V'	09 06	29 08 10 09 10 13 43 14 20 17 42 23.9 23.0	56.5 N 152.6 W h: 15 km Alaska
24	4	iP	V	15 14	38.6	R
25	4	iP i	V VE	16 00	15.0 16.3	19.1 S 169.4 E h: 153 km** New Hebrides Is.
26	4	e e eSKS eS i(ScS) eSS eL	V' V' E' E' E' N ₁ E'	18 05	23 06.6 10 40 11 50 12 00 18 28.9	56.3 N 154.4 W h: 25 km Alaska
27	4	iP	V	18 24	50.6	C 19.7 S 175.3 W h: 57 km* Tonga Is.
28	4	eP eL eL	V E' V'	21 47	24 $\frac{1}{2}$ 55.6 59.1	10.5 N 122.1 E h: 33 km Off west coast of Negros P.I.
L3	5	eP iS	VE VNE	01 39	50 $\frac{1}{2}$ 53.0	Local

No	Date	Phase	Component	Time	Remarks
29	5	ePP	N ₁	01 40.4	56.2 N 153.5 W h: 25 km Alaska
		eS	E [†]	48 10	
		eSS	E'	55 15	
		eSSS	E'	59 05	
		lq	E'	02 05.4	
		M	V ₁ N ₁ E ₁ E'	17	
	5	eL	V'E'	12 29.6	
30	5	eP	V	20 37 56	
		i	V	33 21.6	
		e	V'	44	
		e	V'	51	
		eL	E'	59.4	
31	5	eP	V	22 28 (44)	23.1 S 178.2 W h: 31 km Kermadec Is.
32	5	iP	V	22 30 28.5	
		eL	V'E'	23 03.9	
L4	6	(eP)	V	00 43 01½	Regional
		e	V	04½	
		eS	VE	25½	
33	6	i(P)	V	01 28 04.0	23.4 S 180.0 h: 568 km* Fiji Is. region
34	6	eP	V	02 41 17	19.0 S 175.5 W h: 177 km* Tonga Is.
35	6	iP	VNE	05 42 51.2	
36	6	e(P)	V	07 17 23	
37	6	iP	VNE	07 13 10.3	
		e	V	48	
38	6	e(P)	V	08 04 06½	
		i	VN	11.1	
		e	V	05 03	
L5	6	iP	VNE	03 40 57.2	Local
		iS	VE	41 12.0	
39	6	eiP	VNEV ₁ N ₁ E ₁	23 49 04.3	C 5.1 S 154.0 E h: 116 km New Ireland region
		i	E ₁	50 25.5	
		i	N	52 26.5	
40	6	e(P)	VNE	04 02 16½	
41	7	i(P)	VNE	11 30 43.0	
42	7	iP	VNE	13 26 03.1	R 0.1 N 123.2 E h: 150 km Northern Celebes
		ipP	VNE	35.6	
		iPP	E	27 47.1	
		iPcP	V	52.6	
		iScP	V	31 23.5	
		eS	EE'	32 12	
		esS	E'	33 12	
		eSS	E'	35 25	
		eScS	E, V'E'	39	
		eSSS	V [†]	36 (20)	
		eLr	V'E'	33.9	
		43	7	e(P)	
e	VN			43	
e(L)	E'			21.8	

No.	Date	Phase	Component	Time			Remarks			
44	8	eiP	VNEV ₁	05	05	36.9	R 9.7 N 125.6 E h: 126 km Mindanao. P.I.			
		i	E			43.1				
		esP	VEV ₁	06		16 $\frac{1}{2}$				
		iPcP	V			55.4				
45	8	eP	V	03	20	10	6.3 S 68.9 E h: 38 km Chagoes Archipelago region			
		i	VNE			10.6				
		eS	E'		30	06				
		ePS	E'			54				
		ePPS	V'		31	24				
		eSS	E'		35	20				
		eLq	E'			41.0				
		eLr	V'E'			44.1				
46	8	e	V	11	10	(26)	45.8 N 150.8 E h: 40 km Kurile Is.			
		eS	N V'E'		20	22				
		ePS	V'		21	10				
		e	E'		25	20				
		eSS	E'			39				
		eSSS	E'		28	53				
		eLq	V'E'			31.6				
		eLr	V'E'			36.4				
		M	V ₁ N ₁ E ₁ V'E'			40.6				
		47	8	eiP	VNE	19		48	44.3	R
48	8	ePPS	V'E'	22		26.0	18.5 S 71.5 W h: 39 km Southern Peru			
49	8	iP	V	23	56	32.3	R 21.9 S 178.2 W h: 323 km* Fiji Is. region			
50	9	iP	VE	01	04	27.1	R 6.3 N 125.1 E h: 33 km Mindanao. P.I.			
		e	V		05	21				
	9	eL	E'	05		13.8				
51	9	e	V	07	47	54				
		eL	V'E'			53.3				
52	9	iP	VNE	08	04	11.3				
53	9	iP	VNE	15	34	25.0				
54	10	e(P)	V	11	50	03 $\frac{1}{2}$				
		e	V			33				
55	10	i(P)	V	13	13	41.0	13.5 N 144.9 E h: 101 km Mariana Is.			
56	10	eSS	E'	22	18		60.1 N 153.7 W h: 10 km Alaska			
		eSSS	E'		22	15				
		eLq	E'			27.3				
		eLr	V'			33.6				
57	11	iP	VE	01	09	55.3	29.0 S 178.9 W h: 302 km Kernadec Is.			
		i	VE		10	37.9				
		i(PP)	V		11	01.2				
		i	VN			07.1				
		ePPP	V			18				
		i(sP)	V			31.9				
		i	V		13	10.9				
		eS	NE'		14	19				
		eSS	E'		16	10				
			12	eL	V'	02			12.3	Alaska
				M	V ₁ N ₁ E ₁ V'E'				19	
L6	12	eP	V	02	56	29 $\frac{1}{2}$	Local			
		iS	VNE			35.3				

No.	Date	Phase	Component	Time	Remarks
58	12	eP	VE	05 33 36	
		e	VE	37 30 $\frac{1}{2}$	
		ePP	V	38 00 $\frac{1}{2}$	
		eS	E'	42 08	
		eL	V'E'	46.8	
59	12	iP	VE	05 58 16.1	
60	12	iP	VNE	06 06 22.2	13.6 S 166.0 E h: 33 km New Hebrides Is.
		i	VN	56.7	
		ePP	V	07 03 $\frac{1}{2}$	
		e(PcP)	V'	09 41	
		eS	E'	10.9	
		Lr	V'	13.1	
61	12	eP	EV ₁ E ₁ V'E'	11 16 18	33.9 S 179.3 W h: 39 km Kermadec Is.
		i	V	19.0	
		i	VNE	21.5	
		epP	NV ₁ E ₁ V'E'	41	
		ipP	VNE ₁	45.1	
		esP	V'E'	55	
		ePP	NEN ₁ E ₁	17 05	
		eS	EE ₁ V' ₁	20 35	
		eS	N ₁	40	
		e	V'E'	44	
		esS	V'E'	21 15	
		i	E ₁	22	
		eSS	V ₁ N ₁ V'	43	
		eG	V'E'	28.1	
		eScP	V	28 07 $\frac{1}{2}$	
		i	V	11.9	
62	12	e(PKP)	V'	13 06 15	56.6 N 151.3 W h: 33 km Alaska
		ePP	V'	34	
		eS	E'	14.1	
		eSP	V'	15 35	
		e	E'	20.4	
		eSS	E'	21 09	
eL	E'	31.2			
63	12	e(P)	V	16 33 31	
		i	V	33.4	
		e	V	57.8	
64	12	e	V	18 03 25	
		e	V	31 $\frac{1}{2}$	
		e(L)	V'	11.3	
65	12	eP	VNE	20 45 04 $\frac{1}{2}$	16.4 S 179.3 W h: 509 km* West of Tonga Is.
		i	V	13.6	
66	12	iP	VE	22 37 07.4	
67	13	e	V	00 31 43	
		e	V	32 27	
68	13	eP	VNE	01 05 33	0.1 N 123.0 E h: 97 km Northern Celebes
		epP	V	56	
		esP	N	06 04 $\frac{1}{2}$	
		iPcP	V	07 22.3	
69	13	iP	V	03 03 24.0	23.7 S 179.0 W g: 360 km South of Fiji Is.
70	13	eiP	VNEV ₁	06 29 27.1	19.5 S 177.7 W h: 574 km Tonga Is. region
		ePP	V	31 07	
		eS	E'	34 07	
		e(G)	V'E'	37.4	

No.	Date	Phase	Component	Time		Remarks
L7	13	eP	VN	06	29 19	Local
		i	N		19.5	
		eS	V		36 $\frac{1}{2}$	
71	13	ePKP	V	08	49 31 $\frac{1}{2}$	45.3 N 10.1 E h: 33 km
		eSKSP	E'	09	02 40	Northern Yugoslavia
		e	E'		04.3	
		eSS	E'		11.1	
		e	E'		27.3	
72	13	iP	VNEV ₁	08	54 45.1	R 22.3 N 142.1 E h: 309 km
		ePcP	V		55 27	Bonin Is. region
		ipP	VE		50.7	
		ePP	V		56 50 $\frac{1}{2}$	
73	13	eP	V	11	30 34	7.1 S 129.2 E h: 126 km*
		i	VE		31 30.3	Banda Sea
		e	VN		33 55 $\frac{1}{2}$	
74	13	i(P)	VNE	11	35 13.4	6.9 N 126.6 E h: 110 km
		i	VNEV ₁		27.2	Near east coast of Mindanao P.I.
		eS	E'		42 08	
		eSS	E'		45.5	
		Lq	E'		47	
75	13	eSKKS	E'	12	51.1	59.4 N 143.9 W h: 40 km*
		eS	E'		52 37	Alaska aftershock
		ePS	V'		54 15	
		ePPS	V'		55 16	
		eSS	V'E'	13	00 08	
		eSSS	V'E'		04 12	
		eLq	E'		10.5	
		eLr	V'		16.1	
	13	e(L)	V'E'	17	01.5	
76	14	iP	V	00	13 38.6	C
77	14	eP	VE	01	16 57 $\frac{1}{2}$	49.4 N 155.5 E h: 60 km
		eLq	E'		38.9	Kurile Is.
		e	V'		39 02	
		eLr	V'		45.4	
		e	E'		48.7	
78	14	iP	VNE	05	11 13.0	C 41.0 S 30.8 E h: 33 km
		eS	E'		18 41	Kerguelen Is. region
		eSPP	V'		55	
		eSS	V'E'		22 16	
		eLq	E'		24	
		eLr	V'E'		26.8	
		eLr	V ₁ E ₁		28.6	
79	14	ePKP	V	06	54 26 $\frac{1}{2}$	39.0 N 14.5 E h: 303 km
						Tyrrhenian Sea
80	14	iP	V	09	03 59.3	R 17.5 S 167.9 E h: 33 km
		i	VNE		04 01.0	New Hebrides Is.
		opP	V		08	
		isP	VN		11.6	
		ePP	V		04 35	
		e	V		05 38 $\frac{1}{2}$	
		eS	V'E'		08 13	
		esS	E ₁		25	
		e	V ₁		33	
		e	V ₁		45	
		eLr	E ₁		10.1	
		eLr	V ₁ N ₁ E ₁ V'		10.3	

No.	Date	Phase	Component	Time	Remarks.
81	14	eP	V	09 23 00	
82	14	eP	VNE	09 25 33	
		i	VE	42.0	
83	14	eP	V	11 57 10 $\frac{1}{2}$	
84	14	eP	V	15 40 13	
85	14	iP	VNE	16 26 19.7	8.6 S 117.3 E h: 50 km*
		epP	N	34 $\frac{1}{2}$	Sumbawa Is. region
		isP	V	41.1	
		e	N	27 10 $\frac{1}{2}$	
		iPeP	VNE	28 27.1	
		e	E'	29 20	
		eS	E'	32.2	
		eSS	V'	35 08	
		eL	E'	39.7	
		eL	V'	41.1	
		M	V'E'	50	
86	14	eP	VE	17 23 48	
87	14	eP	VE	22 52 47	19.8 S 176.7 W h: 235 km* Tonga Is.
88	14	e(P)	VNE	23 04 57 $\frac{1}{2}$	
		e	V	05 15	
89	14	e	E'	23 12 30	50.0 N 152.6 E h: 30 km
		eSKS	E'	20.9	Alaska
		eS	E'	21 16	
		eSS	E'	28 20	
		eL	E'	38.5	
90	15	iP	VNE	01 04 20.2	R 17.8 S 170.3 W h: 450 km* Fiji Is.
91	15	iP	VNE	01 46 07.0	
93	15	eP	VNE	04 51 15	Local
		iS	VNE	29.5	
92	15	eP	V	15 06 22 $\frac{1}{2}$	45.2 S 167.0 E h: 33 km*
		eP	VNEV ₁ E ₁	25	Near west coast of
		ePP	E ₁ N ₁ ' ₁	40	South Is., N.Z.
		ePPP	E ₁	46 $\frac{1}{2}$	
		e	V	07 53	
		e(S)	VN	09 12	
		e	E	15	
		eS	VNEE ₁	19	
		eSS	V'N ₁ ' ₁	43	
		eLr	V'N'E'	10.2	
		eT	VNE	21 21	
		Tmax	VE	22 23	
		Tmax	N	44	
		Tmax	V	49	
93	15	eSKS	N'E'	15 55.4	56.5 N 154.4 W h: 35 km
		eS	N'E'	56 39	Alaska
		eSS	E'	16 03 47	
		eSS	N'	04 00	
		e	N'	07.2	
		eSSS	E'	07.7	
		eLq	N'	12.8	
		(G)	N'	13 57	
		eLr	V'	18.6	
94	15	eP	VNE	16 48 10	21.7 N 80.0 E h: 36 km
		ePP	V	51 22	India-East Pakistan border Region

No.	Date	Phase	Component	Time			Remarks
95	15	eP	V	16	57	35	37.7 S 177.5 E h: 51 km Off east coast of North Is. N.Z.
		eS	N'	17	01	59	
96	15	eP	V	21	41	53	19.7 S 175.6 W h: 172 km Tonga Is.
97	15	iP	VN	21	53	35.5	
98	16	eP	VNE	01	15	57	37.0 N 142.7 E h: 38 km Off east coast of Honshu
		eS	N'E'		25	13	
		e	V'		26	06	
		eScS	E'			12	
		e(SS)	E'		29	40	
		e(SS)	N'			52	
		eLr	N'E'		37.4		
99	16	eP	VNE	02	40	49	21.5 S 170.5 E h: 110 km Loyalty Is. region
		epP	V		41	03	
		i	V			14.9	
		esP	NE			17.5	
		i(PP)	VNE			41.3	
		e	VV		43	13.5	
		eS	E,N'E'		44	53	
		eS	NEV'		45	02	
		eL	V'N'W'		46		
100	16	iP	VNE	11	50	57.2	23.3 S 130.0 h: 530 km South of Fiji Is.
101	16	eSKS	N'	14	07	03	52.1 N 169.4 W h: 38 km Fox Is., Aleutian Is.
		ePS	V'N'		09	06	
102	16	eP	VNV ₁	14	11	00.5	7.0 S 155.7 E h: 78 km Solomon Is.
		e	VN			19.5	
		esP	NE			37	
		e	V		13	53	
		3(PcP)	N'		14	12	
		eS	N'		16	00	
		eLq	E'		17.4		
		e	E ₁		18	26	
		eLr	V ₁		18.9		
103	16	ePP	V'	19	45	29	50.4 N 152.9 W h: 30 km Alaska
		ePP	N'			36	
		eSKS	V'N'		51	25	
		e	E'			33	
		eS	V'		52	42	
		eS	N'E'			55	
		ePS	V'		54	00	
		ePS	N'			25	
		e	E'		58	40	
		eSS	V'E'		59	53	
		eSSS	N'E'	20	04	00	
		eScSScS	E'			52	
		eLq	N'E'		10.3		
eLr	V'N'		15.2				
104	17	iP	VN	01	28	04.3	3.7 N 127.7 E h: 34 km* Talaud Is.
105	17	e(P)	V	02	03	30	
		i	VNE	04	09	19.5	
106	17	e	V'	05	04	22	56.4 N 152.9 N h: 25 km Alaska
		eSKS	N'		14	10	
		eS	N'E'		15	22	
		ePS	V'N'E'		17	00	

No.	Date	Phase	Component	Time			Remarks.
106	17	eSS e eSSS eL	N'E' V' N'E' V'	05	22	30 50 26.6 36.9	(Quake Continued).
107	17	eP ePP i i e eS eLq eLr	VNE VN V V N N ₁ N ₁ V ₁ V ₁	06	05	55 58 20.8 13.8 13 39 13 14	6.6 S 154.9 E h: 85 km Solomon Is.
L9	17	eP e(S) eS	VNE VE NE	06	28	50 07 07½	Local
108	17	eP	VN	14	49	44½	16.2 S 167.7 E h: 65 km New Hebrides Is.
109	17	iP	V	17	06	37.4	
L10	18	iP eS	VNE VNE	00	45	59.0 06	R Local
L11	18	eP eS	VN NE	05	31	01½ 13	
110	18	eP i opP	V V V	05	39	54 57.4 03	45.5 N 151.1 E h: 33 km Kurile Is.
111	18	e(P) e	V V ₁	06	08	06½ 12	
112	18	eP	VNE	08	09	20½	29.0 N 129.3 E h: 33 km Ryukyu Is.
113	18	iP	VNE	18	03	32.0	15.0 S 174.3 W h: 90 km Samoa Is. region
114	19	iP i	VE V	04	03	34.2 00.0	R 15.4 S 173.7 W h: 51 km Tonga Is.
	19	eL	V ₁	06	00		41.7 S 83.9 W h: 33 km Off coast of southern Chile
115	19	e(P)	V	06	41	08	
116	19	e(P) i	VE VN	08	49	47½ 51.2	17.7 S 167.3 E h: 15 km New Hebrides Is.
117	19	eP iPcP e eLq eLr	V VV ₁ NE ₁ N ₁ E ₁ V ₁ V ₁	14	24	39 43.4 47½ 47.4 51.6	60.5 S 53.3 W h: 33 km Near South Shetland Is.
118	19	iP	VNE	21	40	47.6	R 7.3 S 128.3 E h: 130 km Banda Sea
119	20	iP esP eS eScP e	VNE VN N V E	13	50	12.5 54.2 20 16 20	7.3 S 128.1 E h: 128 km Banda Sea
120	20	eP	V	15	35	42½	R

No.	Date	Phase	Component	Time			Remarks.
121	20	e(P) e	VNE VN	16	02	06½ 22½	
122	20	eP	V	20	37	31½	4.7 S 143.1 E h: 93 km* North-east New Guinea
123	20	iP esP e ePP e iPcP	VN V V N E V	21	21	52.8 22 45 10½ 41½ 31.6	C 6.9 S 129.3 E h: 91 km Banda Sea
124	20	e(pP)	VNE	22	40	03½	4.2 S 102.1 E h: 33 km Southern Sumatra
L12	21	eP eS	VN VE	06	31	08 25½	Local
125	21	eP	V	07	03	05½	4.8 S 142.8 E h: 62 km* Eastern New Guinea
L13	21	eP eS	VNE VNE	10	27	34 41½	Local
126	21	(eP) iP i i	V VNEV ₁ V V	20	40	52 52.7 57.9 41 10.0	
127	22	iP	VNE	00	45	44.3	C
128	22	eP eL	V V'N'E'	19	45	16 56.5	16.1 S 173.4 W h: 33 km Tonga Is.
129	22	eP i i(pP) e ePP eS e eLq eLr	VNEV' V V VV' V' N ₁ V'N'E' N ₁ E' V'	20	05	44 43.1 06 09.7 13½ 28 10 04 56½ 11 06 12.2	15.5 S 167.5 E h: 123 km New Hebrides Is.
130	22	eP i e i	VNE V N V	23	09	40½ 43.0 10 12½ 26.3	13.2 S 167.1 E h: 213 km New Hebrides Is.
131	23	iP e eS eLq eLr	V N N' N'E' V'	01	37	33.9 45½ 42 20 44.3 45.4	6.7 S 155.0 E h: 72 km Solomon Is.
132	23	eP e e eSSS eLq eLr	V N' N' N' E' V'N'	02	02	16 11 47 15 22 19 03 20 24	32.1 N 130.7 E h: 33 km South of Honshu
133	23	iP i ePP ePPP e iPcP eS	VEV ₁ N ₁ E ₁ V'E' VNE N ₁ N ₁ V ₁ VV ₁ V ₁ N ₁ E ₁	03	39	23.5 25.1 40 33 51 41 19 42 09.6 44 35	R 5.3 S 134.0 E h: 33 km Aru Is. region

No.	Date	Phase	Component	Time	Remarks.
133	23	iS	N'	03 44 38	
		esS	V'N'E'	52	
		e	E'	46 22	
		eSS	V ₁ '	32	
		eLq	N ₁ 'E ₁ '	46.9	
		eLr	V ₁ '	47.5	
		eLr	N ₁ '	48.5	
L14	23	eP	VN	06 35 11½	Local
		eS	N	28½	
134	23	iP	V	07 15 48.4	60.3 S 19.8 W h: 33 km
		ipP	V	16 01.2	Sandwich Is. region
135	23	iP	V	10 38 45.8	C 6.6 S 155.1 E h: 60 km
		eS	N'	43 30	Solomon Is. region
		e(S)	V'E'	40	
		eLq	E'	45.3	
		eLr	V'	46.9	
136	23	e(P)	V	13 25 30	
		e	V	32 08	
		eL	V'N'E'	38.6	
137	23	eSS	V'E'	15 29.4	57.3 N 151.9 W h: 25 km
		eL	V'	42	Alaska
138	23	eP	VN	20 54 45½	14.0 N 124.4 E h: 45 km
		e	VE	51	Near east coast of Luzon, P.I.
138	23	e	E'	21 44 51	
		e	E'	46.1	
		eL	V'E'	50.2	
		eL	N'	51.5	
140	23	e(P)	V	23 30 00½	
	24	eL	V'E'	00 35.1	
141	24	iP	VNE	03 24 16.9	20.1 S 177.3 W h: 393 km
					Fiji Is.
	24	eL	V'N'E'	04 (52)	
142	24	eP	VNE	05 32 52.0	3.9 S 130.3 E h: 113 km
					Western New Guinea.
143	24	iP	VNEV'N'E'	06 02 14.2	R 5.1 S 144.2 E h: 106 km
		ipP	VNEV'N'E'	38.2	North-east New Guinea
		isP	VV'	49.7	
		ePP	N ₁ '	03 19½	
		ePPP	E ₁ '	34	
		i	VNV'N'	04 18.5	
		iPcP	VV'E ₁ '	05 08.4	
		e	E ₁ 'N'E'	38	
		e	V'E'	06 10	
		e(S)	V'	06.9	
		eS	N ₁ 'E ₁ 'N'E'	07 05	
		e	V ₁ 'N ₁ 'N'E'	38	
		esS	N ₁ 'E ₁ '	48	
		e(Lq)	E ₁ '	08.3	
		eLq	V'N'E'	09.5	
		eLr	V'	11.2	
144	24	e	V	12 10 06	
		e	V	11 29	

No.	Date	Phase	Component	Time	Remarks.	
145	24	ePKP	V	14 59 13	13.3 N 88.0 W h: 153 km Near coast of El Salvador	
		ePP	V'E'	15 01.0		
		eSKS	V'E'	05 54		
		e	E'	07 49		
		ePS	V'	10 54		
		ePSS	N'	18		
		e	N'	29.9		
146	25	eLr	V'	37.3	6.7 S 155.0 E h: 72 km Solomon Is.	
		eP	VNE	05 42 37		
		e	N'	43 40		
		ePPP	VNE	43		
		eS	N'	47 25		
		eLq	E'	49.1		
L15	25	eLr	V'N'	50.7	Regional	
		e(P)	V	05 45 32		
147	25	eS	VNE	46 02 $\frac{1}{2}$		
		e	E'	06 42 21		
148	25	e	V'N'E'	44 32	C	
		iP	VNE	18 43 26.7		
		e	V	49 45		
		i	V	52 15.1		
		eS	N'E'	57 22		
		e	E'	19 00 16		
		e	N'	00.3		
		e	V'N'	03 52		
		e	N'	06.3		
		e	V'	08		
		eLr	V'	13.2		
149	25	iP	VNEV ₁ E ₁	14 03 14.2	C	5.8 S 105.0 E h: 90 km Southern Sumatra
		ipP	V	36.4		
		isP	V	43.1		
		iPcP	V	09 34.2		
		eS	N'E'	15 18		
		esSS	V'N'E'	19 34		
		eLq	N'	21.0		
		eLr	V'E'	22.3		
150	26	iP	VNEV ₁ N ₁ E ₁	14 57 53.1	R	20.6 S 173.0 W h: 490 km Fiji Is. region
		ipP	V ₁	59 25.3		
		ePcP	N	15 00 25		
		eS	V'E'	02 36		
		eS	E	40		
		eSS	N'E'	05 20		
		e	V'	34		
		eScS	E'	07 29		
151	26	iP	VNE	20 40 34.5	C	
152	26	eP	V	22 47 19	60.4 S 24.6 W h: 33 km South of Sandwich Is.	
		e(P)	VNE	00 40 44		Regional or T wave
		e	E	41 36		
		e	VN	51 $\frac{1}{2}$		
		i	E	42 06.6		
		i	N	10.5		
153	27	i	V	13.5	0.3 N 90.1 E h: 33 km Off west coast of Sumatra	
		eP	VNE	01 47 14		
		isP	V	30.0		
		iPcP	V	43 04.4		
eS	E'	55 20				

No.	Date	Phase	Component	Time	Remarks.
153	27	eSS	N'	01 59 15	(Quake Continued)
		eSSS	V'N'	02 01 36	
		eLq	N'	04.7	
		eLr	V'E'	06.8	
154	27	iP	VNE	04 26 46.1	C 8.6 S 143.1 E h: 110 km Eastern Papua
155	27	(eP)	VN	06 49 42 $\frac{1}{2}$	60.1 S 151.0 E h: 33 km
		eP	V	44 $\frac{1}{2}$	Balleny Is. region
		i	VNE	47.2	
		i	VN	51.4	
		i	E ₁	50 08	
		iPP	V ₁	20.0	
		e	N ₁	33	
		i	V ₁	52 04	
		e	N ₁	53 15	
		e	N ₁	53 34 $\frac{1}{2}$	
		eS	N ₁ E ₁	54 12	
		e	V ₁	21	
		eLq	N ₁	51	
		eLq	N ₁ E ₁	55.5	
		eLr	V ₁	56.4	
156	27	ePKP	V	12 27 39 $\frac{1}{2}$	4.0 N 31.1 W h: 33 km* Mid-Atlantic Ocean
157	27	iP	VE	14 41 11.8	19.3 S 170.1 E h: 274 km* New Hebrides Is.
158	27	iP	VN	19 30 14.4	
		ipP	V	39 05.3	
		e	V ₁	40 36	
159	27	i(P)	VNE	22 59 24.0	
160	27	e(P)	V	23 48 28 $\frac{1}{2}$	
		e	V	51 21	
161	28	e	V	01 36 34	
162	28	e(P)	VE	05 09 18 $\frac{1}{2}$	
163	28	eP	VN	15 01 20	11.9 S 166.2 E h: 42 km
		esP	V	34	Santa Cruz Is
		eS	N'E'	06 05	
		eLq	N'	07.2	
		eLr	V'E'	09.0	
164	28	(e)	V	22 39 07	
		e	V	11	
165	29	e	E'	02 34 34	32.4 N 129.0 E h: 33 km
		e(SSS)	N'E'	40 14	Near west coast of Kyushu
		eL	E'	43.2	
		eL	N'	47.7	
		eL	V'	43.7	
	29	eL	V'N'	05 34.9	39.3 N 23.7 E h: 33 km Aegean Sea
166	29	eP	V	06 04 42 $\frac{1}{2}$	
		eL	N'	16.3	
		eL	V'	13.1	
167	29	eP	V	07 27 21	7.2 S 155.7 E h: 78 km
		eS	N'	32 12	Solomon Is.
		eLq	N'E'	34.5	
		eLr	V'N'	36.5	

No.	Date	Phase	Component	Time		Remarks.			
168	29	iP	V	17	50	20.7	58.2 S 15.7 W h: 38 km East of Sandwich Is.		
		ipP	V			30.1			
		eS	N'	18	00	(43)			
		eSS	N'		06	46			
		e(Lq)	N'E'			12.4			
		eL	N'E'			19.5			
		eLr	V'			22.1			
					19	07.9			
						09.3			
					19	18.9			
				21.0					
169	30	iP	VN	03	40	40.3	C	15.5 S 174.7 W h: 224 km Tonga Is.	
170	30	iP	VNE	04	55	55.0		19.7 S 177.8 W h: 339 km Fiji Is.	
		ePP	V		57	20½			
171	30	eP	VNE	08	19	09½		56.2 S 27.6 W h: 88 km* Sandwich Is.	
172	30	eP	VNE	15	04	16		20.3 N 121.1 E h: 50 km Off north coast of Luzon, P.I.	
		i	V		05	11.9			
		e	V		06	19			
173	30	eP	VNE	16	09	42		4.6 S 153.2 E h: 73 km New Ireland region	
		e	V			45			
		ipP	VNE			57.7			
		isP	VNE	10	05.2				
		e	N			25½			
		e	V ₁ V'			39			
		ePP	N ₁ N'			47			
		e	V ₁		13	34			
		eS	N ₁ E ₁ V ₁ N ₁ E ₁		14	38			
		iPeS	V ₁ ₁		16	18.0			
		eLq	E'			16.6			
		eLr	V ₁ N'			18.4			
					18	25.1			
						29.5			
174	30	eS	N'E'	19	13	42		11.8 S 166.0 E h: 40 km* Santa Cruz Is.	
		eL	V'			17.2			
175	30	eP	V	19	15	54½		12.8 N 124.4 E h: 121 km Samar P.I.	
176	30	eS	N'E'	21	07.4			12.5 S 165.1 E h: 33 km* Santa Cruz Is.	

Seismograms read by
Jennifer Wanless.

J.C. Jaeger.
Professor of Geophysics.

Department of Geophysics
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CANBERRA A.C.T., AUSTRALIA
MONTHLY SEISMOLOGICAL BULLETIN OF EARTHQUAKES OF KNOWN MAGNITUDE
OF 5½ AND ABOVE.
MAY, 1964

Latitude : 35° 19' 15"S. Longitude : 143° 59' 55"E. Height : 700 M.

Instrument: Three-component Benioff variable reluctance seismographs

$T_s = 1$ sec.

$T_g = 0.25$ secs. (Short periods VNE)

$T_g = 16$ sec. (Long period vertical V_1)

$T_g = 70$ sec. (Long period horizontals N_1E_1)

Three-component Press Ewing long period seismographs.

$T_s = 30$ secs

$T_g = 100$ secs.

} V'N'E'

Mount Stromlo quartz clocks /provide accurate time marks and 50 c/s for drum drive.

Directions of first motion taken from the three short period components.

Epicentre locations are those given by USCGS. *Indicates epicentres believed accurate to 1/8 in latitude and longitude and ± 50 km. in depth.

Date	Phase	Component	Time	Direction of Motion	Remarks.
2	eP	VN	13 23 10.0		45.5 N 150.3 E 35 km Kurile Is.
	i	VNEN'	12.3		
	e	VNEV ₁	24 06		
	ePP	VN	26 07		
	iS	NEV ₁ N ₁ E ₁ N'E'	33 15		
	eSS	E ₁ †	33 21		
	(SS)	N ₁ N'	30		
	Lq	E ₁ †	44.6		
	eL	N'	45.5		
7	ePP	V ₁ N ₁ E ₁ V'E'	06 04 08.5		4.0 S 34.9 E 38 km Tanganyika
	ePPP	V'	06 30		
	e(SKP)	V	07 23.3		
	SKS	E ₁ V'N'E'	10 20		
	S	N ₁ †	11 45		
	PS	V ₁ E ₁ V'N'E'	13 24		
	PPS	V ₁ V ₁ †	14 26		
	eSS	V'N'E'	19 12		
	eSSS	V'N'E'	23 22		
	Lq	N ₁ N'	30.4		
	Lr	V'E'	35.6		
	7	eiP	VNEV ₁ N ₁ E ₁ V'N'E'	08 09 50.5	
(PcP)		E ₁ †	10 19.3		
i		NE	11 26.1		
e		V	33.7		
iPP		VV ₁ V'	12 46.4		
i		NV ₁ N'	51.7		
e(PPP)		V ₁ †	14 44		
e		EE ₁	17 35		
e		N ₁ †	47		
iS		NEV ₁ E ₁ V'N'E'	19 36		
ePS		V ₁ N'	20 22		
ePPS		N ₁ N'E'	44		
e(SS)		N'E'	24 22		
eSS		V'N'E'	50		
e		V'	25 06		
e		E'	26 53		
e(SSS)		V'	27 50		
e		N'E'	28.9		

Date	Phase	Component	Time	Direction of Motion	Remarks
7	Lq	E'	30.0	(Quake Continued)	
	ePKKS	VN	32	35.1	
	e	V	33	03.0	
	Lr	V'N'	03 34.5		
	eP'P'	V	37	36.2	
7	eP	VNEV ₁ N ₁ E ₁ V'N'	20 24	35	40.5 N 139.0 E
	i	VV ₁		43.8	33 km Off west coast of Honshu Japan
	eS	N ₁ E ₁ N'E'	34	13	
	e(PS)	N ₁		53	
	e(PPS)	N'	35	22	
	e	N'		51	
	SS	N'E'	39	12	
	Lq	E'		44.8	
	eL	N'		45.2	
	Lr	N'		49.6	
	12	iP	VNE	18 24	06.8
eLq		N'		32.5	33 km Tonga Is.
eLr		V'E'		34.8	
12	eS	N'E'	18 42	43	56.6 N 152.4 W
	ePS	N'E'		44 22	10 km Alaska after-shock
	eSS	E'		50 00	
	e(SS)	N'		37	
	eSSS	N'E'		53 52	
	e	E'		55 06	
	Lq	E'	19 00.0		
	Lr	V'N'		05.2	
16	eP	VEV ₁ E ₁ V'E'	16 13	30.8	32.8 S 173.3 W
	e	N ₁		36.2	33 km Kernadec Is. Region
	ePP	VNV ₁ E'	14	14	
	e	V ₁		42	
	i	V	15	44.0	
	iS	N ₁ E ₁ V'N'E'	18	10	
	Lq	N ₁		19.5	
	iScP	V	20	32.2	
Lr	V'E'		20.6		
17	ePKP ₁	VV ₁	19 46	41.2	35.2 N 35.9 W
	e	VV ₁		48 53	33 km North Atlantic Ocean
	SKSP	N ₁	20 02	43	
	e	E'		03 30	
	e	N'		08 37	
	e	N'		12 53	
	eSS	N'		13 44	
	eSPS	E'		14 40	
	PSPS	E'		15 46	
	e	N'E'		19.4	
	e	N'E'	20 21	43	
	e	N'E'		25 13	
	Lq	N'E'		39.1	
	L	N'E'		41.3	
18	eP	VNEV ₁ E ₁	14 13	59.3	21.2 S 174.5 W
	eS	E ₁ N'E'		24 32	33 km Tonga Is. region
	eLq	N ₁		27.3	
	eL	E'		29.4	
19	iPKP	V	23 22	31.7	0.7S 30.2 W 54 km
	ePP	N'		24 30	Near coast of Ecuador
	eSKS	N'E'		29 26	
	eSKKS	N'E'		31 03	
	e	N'		32 10	

Date	Phase	Component	Time	Direction of Motion	Remarks
19	ePKKP	V	23 32	30.3	(Quake Continued)
	ePKKP	V		40.3	
	e(PS)	N'E'	33	30	
	e(PFS)	N'	35.2		
	eSS	N'E'	40	40	
	e	N'	47	40	
	eLq	N'E'	54.3		
	eLr	N'E'	00 00.5		
20	eiP	VNEV ₁ N ₁ E ₁ V ₁ N ₁ '	06 07	51.4	d,e 2.7 S 139.3 E 61 km Near north coast of western New Guinea
	e	V ₁ V ₁ '	08	15	
	e	V ₁ V ₁ E ₁ '	11	41	
	iS	NEV ₁ N ₁ E ₁ V ₁ N ₁ E ₁ '	13	10.4	
	e(SS)	V ₁ N ₁ E ₁ '	15	32	
	(L)	V ₁ '	16.5		
	L	E ₁ '	16.7		
	L	V ₁ N ₁ '	17.5		
21	eSKS	N'	16 00.3		59.0 N 153.5 W 15 km Alaska After-shock
	eSS	N'E'	09.5		
	e	N'	10.1		
	eLq	N'E'	19.3		
	eLr	V'	25.4		
24	eP	VEV ₁ E ₁ '	04 19	51.4	22.6 S 174.1 W 33 km Tonga Is.
	i	VNE ₁ '		53.5	
	i	N	20	21.3	
	S	N'	25	20	
	eSS	N'	27	42	
	eL	N'	28.1		
25	eP	VE	19 54	14.3	9.1 S 83.9 E 33km Indian Ocean
	i	VEV ₁ E ₁ V ₁ E ₁ '		19.7	
	e	E ₁ '	56	20	
	ePP	V ₁ E ₁ '		36	
	e	EE ₁ V ₁ E ₁ '	58	13.5	
	S	E ₁ V ₁ E ₁ '	20 02	20	
	eSS	V ₁ E ₁ '	06	36	
	eSSS	V ₁ E ₁ '	09	12	
	eLq	E ₁ '	11.4		
	eLr	V ₁ E ₁ '	12.4		
26	iP	V	09 49	55.7	16.5 N 145.9 E 94 km Mariana Is. region
	i	VNE		56.1	
26	eP	VNEV ₁ V ₁ N ₁ '	11 11	52.2	56.2 S 27.3 W 120 km Sandwich Is.
	i	VNEV ₁ N ₁ E ₁ '		54.0	
	i(PcP)	VNEV ₁ '		55.3	
	i(PcP)	V		56.5	
	i(PcP)	VNEV ₁ N ₁ E ₁ V ₁ N ₁ E ₁ '	12 00.5		
	ipP	VV ₁ '		30.0	
	i	V	13 16.4		
	e	V ₁ N ₁ E ₁ '		25	
	iPP	VNV ₁ N ₁ V ₁ '	15	31.7	
	e(pPP)	VV ₁ '	16	03	
	e	VV ₁ '	18	22.1	
	eSKS	NN ₁ E ₁ '	22	15.0	
	eS	NEV ₁ N ₁ E ₁ '		32.6	
	e	NEN ₁ '		39	
	e	N		45	
	e	NN ₁ '	11 23 09		
	e(sS)	NV ₁ N ₁ '		20	
	sS	EE ₁ '		31	
(SPP)	NN ₁ '	24 23			
(PSP)	VV ₁ N ₁ '		33		

Date	Phase	Component	Time	Direction of Motion	Remarks.
26	eSS	N'E'	11 28 33	(Quake Continued)	
	iPKKP	VV ₁	29 36.0		
	Lq	E' ₁	34.0		
	Lr	V'N'	39.5		
27	eP	VNV ₁ N ₁ N'	01 09 25		56.1 S 27.6 W 105 km Sandwich Is.
	i	EE ₁	27.9		
	i	VN ₁	10 18.6		
	ePP	VN	12 57.7		
	eSKS	N'	19 42		
	S	VNEN ₁ E N'E'	20 00		
	e(sS)	N'E'	54		
	e(PPS)	N'	21 56		
	e	N'E'	22 20		
	eSS	N'E'	25 52		
	e(sSS)	N'	26 58		
	Lq	E'	32.6		
	eL	N'	38.7		
	Lr	V'N'	39.3		
27	eP	VNEV ₁	06 43 39.8		53.2 S 27.4 W 116 km Sandwich Is.
	i	V	44 22.5		
	ePP	VN	47 12		
	eS	E'	54 13		
	e	N'	27		
	eSS	N'E'	07 00 43		
	eL	E'	07.1		
	eL	E'	10.9		
	eL	N'	13.6		
	eLr	V'	13.8		
27	eP	V	10 02 53½		55.9 S 27.4 W
27	eP	VNE	19 14 50.1		52 km Sandwich Is. 56.4 S 23.4 W 61 km Sandwich Is.
28	eP	VNE	02 07 35½		24.5 N 122.0 E 41 km Near east coast of Taiwan
	eS	N'E'	16 22		
	e	N'	19.5		
	eSS	N'E'	20 27		
	eSSS	E'	23.4		
	e	N'	23.6		
	e	E'	25.8		
	eL	N'E'	27.3		
28	iP	VNEV ₁ N ₁ E ₁	23 36 11.0	d,s,w	1.6 N 127.2 E 103 km Molucca Passage
	pP	V ₁	39.0		
	sP	VV ₁	54.2		
	iPP	VNEV ₁ N ₁ E ₁ N'E'	37 50.5		
	iPcP	V ₁	33 03.4		
	iScP	VV ₁	41 43.7		
	eS	N'E'	42 20		
	esS	N'E'	43 13		
	SS	N'E'	45 32		
	eL	N'E'	48.5		
29	eP	V	09 17 13.4		56.2 S 27.7 W 33 km Sandwich Is.
	eL	N'	47.9 47.9		
	L	N'	53.8 53.8		
29	eSS	V'N'E'	10 52 25		60.2 N 146.3 W 5 km Alaska After- shock
	e	V'N'	11 03 40		
	eL	V'N'	03.3		
	eL	E'	11.2		

Date	Phase	Component	Time	Direction of Motion	Remarks.
29	P	VNE	15 45	46.1	56.8 S 20.0 W 120 km * Sandwich Is
	e	N'	58	24	
	e	N'	59	28	
	eL	E'	16 09.2		
	eL	N'	11.5		
	eL	E'	14.4		
30	P	VNEV ₁ E ₁	14 42	03.0	36.2 N 141.1 E 49 km Near east coast of Honshu, Japan
	e	VV ₁		16	
	e(PcP)	V ₁		22	
	e	V'	43	54	
	eS	NEN ₁ E ₁ V'	51	18	
	(PS)	V' ₁	52	10	
	(ScS)	NEN ₁ E ₁		13	
	e	N' ₁		40	
	SS	V'N'E'	55	43	
	e	V'	58	22	
	e	N'E'		32	
	(SSS)	V'E'	59	10	
	eLq	E'	15 01.4		
	eLr	V'	05.4		
LMa _x	V'N'	09.0			
31	eiP	VNEV ₁ N ₁ E ₁ V'	00 52	34.5	48.5 N 146.0 E 49 km Kurile Islands
	ePcP	VNV ₁ N ₁ V'		45.1	
	e	VN ₁	53	11.2	
	i	VN	54	40.2	
	ePP	V ₁ N ₁ V'	55	31	
	iS	V ₁ N ₁ E ₁ V'E'	01 02	18	
	e(PS)	V ₁ N ₁ E ₁		41	
	e(PPS)	E ₁	03	39	
	SS	V ₁ N ₁ E ₁ V'E'	07	22	
	e	V'E ₁	10	08	
	e(SSS)	E'		40	
	Lq	V'E'	13.4		
	Lr	V'	16.9		

Seismograms read by
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CANBERRA A.C.T., AUSTRALIA
MONTHLY SEISMOLOGICAL BULLETIN OF EARTHQUAKES OF KNOWN MAGNITUDE
OF 5½ AND ABOVE.

JUNE, 1964

Latitude : 35° 19' 15"S. Longitude : 146° 59' 55"E. Height : 700 M.

Instrument: Three-component Benioff variable reluctance seismographs.

$T_g = 1$ sec.

$T_g = 0.25$ Secs. (Short periods VNE)

$T_g = 16$ sec. (Long period vertical V_1)

$T_g = 70$ sec. (long period horizontals N_1, E_1)

Three-component Press Ewing long period seismographs.

$T_s = 30$ secs.

$T_g = 100$ secs.

} V'N'E'

Directions of first motion taken from the three short period components.

Mount Stromlo quartz clocks provide accurate time marks and 50 c/s for drum drive.

Epicentre locations are those given by USCGS. * Indicates epicentres believed accurate to ½° in latitude and longitude and ± 50 km. in depth.

Date	Phase	Component	Time	Direction of Motion	Remarks.
3	eP	V	00 57 00.5		55.4 S 24.8 W 38 km* Sandwich Is.
3	eiP	VNEV ₁ E ₁	03 01 09.3		25.9 N 95.3 E
	eS	N'E' ₁	11 03		100 km Northern Burma
	eSS	N'E'	16.6		
	eL	E'	22.2		
	eL	N'	25.4		
	eL	V'	28.2		
6	eP	VV ₁ V'	19 20 00.2		26.6 S 114.4 W
	e(PcP)	VE'	03		38 km Easter Is. region
	ePP	V'	23 04		
	eS	V'N'E'	30 05		
	ePS	V'N'E'	50		
	eSS	N'E'	35 18		
	(SS)	V'N'	32		
	eL	N'	44.2		
	L	V'E'	44.6		
	eL	N'	45.4		
10	iP	VNEV ₁	22 24 47.5		5.0 N 127.4 E
	i	VNEV ₁ N ₁ E ₁ N'E'	49.2		146 km Talaud Is. region
	i	VNEV ₁ N ₁ N'E'	25 07.3		
	pP	VNEV ₁ N ₁	25		
	esP	VNV ₁ N ₁	54½		
	ePcP	V	26 19		
	ePP	N'E'	41		
	e(pPP)	V ₁ N'E'	56		
	e(PPP)	V ₁	27 22		
	iS	V ₁ N ₁ E ₁ N'E'	31 13		
	ScS	NN ₁ N ₁	34 36		
	(SS), (ScS)	EE ₁ E'	34 36		
	e	V ₁ E ₁	35 14		
	e	N ₁	49		
	eL	E'	36.5		
	e	N'	40.3		
	e	E'	52 34		

Date	Phase	Component	Time	Direction of Motion	Remarks.
11	e(S)	V'N'	15 33.4		2.0 S 141.2 E 33 km* Near north coast of western New Guinea.
	e	N'	34 32		
	eL	V'E'	39.7		
	eL	N'	40.3		
11	eS	N'E'	21 51 23		55.9 S 27.7 W 135 km Sandwich Is.
	ePPS	N'E'	53 18		
	eSS	N'	57.6		
	eL	N'E'	22 03 34		
	L	E'	09.9		
12	eP	VNE	10 56 50.0		2.1 S 141.1 E 33 km Near north coast of Western New Guinea
	i	VNV ₁ N ₁ E ₁ V'N'	50.8		
	ePP	V'N'E'	53 14		
	e	VNE	11 00 02		
	S	N ₁ E ₁ V'N'E'	02 13		
	SS	E ₁	04 42		
	eL	V'N'E'	06.6		
12	iP	VNE	16 05 12.2	u	11.4 N 124.9 E 103 km Cebu, Philippine Is.
	i	V	24.4		
	e	N	30		
	ipP	VV ₁	52.9		
	isP	VN ₁	06 16.1		
	e	VN	50		
	S	EV'N'E'	12 16		
	e	N	21		
	e(sS)	N'E'	13 15		
	eSS	N'E'	16 11		
	esSS	V'N'E'	17 03		
	e	E'	20.7		
	Lq	E'	21.3		
	eL	N'	23.3		
	eL	V'N'	25.2		
13	iP	VNEV ₁ N ₁ E ₁	05 11 03.1		1.9 S 141.2 E 33 km Off north coast of western New Guinea
	i	V	16.0		
	PcP	VV ₁	12 20.1		
	eS	V'N'E'	16 36		
	L	V'N'E'	21.1		
13	iP	VNEV ₁ E ₁	08 34 52.7	u,s	10.0 93.0 E 33 km Andaman Is.
	e	E	33 23		
13	iP	VNEV ₁ N ₁ E ₁	14 07 24.3	d,n,e	3.9 S 154.3 E 474 km Solomon Is. region
	i	VNE	29.4		
	e	E'	11 30		
	eS	E'	12 06		
	e(ScP)	VV ₁	13 03		
	(sS)	N'E'	14 36		
	e	N'	19 04		
e	N'	50			
13	iP	VNEV ₁ E ₁	17 47 50.9	u	23.0 N 94.0 E 61 km Burma
14	ePKP	V	12 34 29.9		33.0 N 33.5 E 3 km Southeastern Turkey
	e	V	46.1		
	ePS	E'	46 32		
	e	N'E'	40 44		
	eSS	E'	53 50		
	eSSS	E'	53 32		
	eLq	N'	13 05.2		
	eLr	E'	11.5		
	LMax	E'	20.9		
	LMax	N'	22.5		

Date	Phase	Component	Time	Direction of Motion	Remarks.
15	eP	VNEV ₁	00 15	59.0	5.4 N 97.0 E 33 km Northern Sumatra
	i	VNEV ₁ E ₁ N ₁ E ₁	16	00.7	
	i	VN ₁		09.1	
	e	VV ₁	17	29.2	
	ePP	VNE ₁	18	29	
	ePPP	E ₁	00 19	57	
	e	N ₁ E ₁	24	12	
	S	N ₁ E ₁ N ₁ E ₁		32	
	e (ScS)	N ₁ E ₁	26	08	
	eSS	N ₁ E ₁	26	23	
	Lq	N ₁		31.3	
	Lr	E ₁		33.4	
	16	eP	VNEV ₁	04 13	
i		VNEV ₁ N ₁ E ₁ V ₁ N ₁ E ₁		20.0	
iPcP		VN ₁ N ₁ E ₁ V ₁ N ₁ E ₁		34.0	
ePP		VV ₁ N ₁ V ₁ N ₁	16	10	
ePPP		V ₁ N ₁ E ₁	17	46	
e		E ₁	18	11	
e		E ₁	20	33	
e		V ₁ E ₁ N ₁		51	
S		N ₁ E ₁ V ₁ N ₁ E ₁	22	52	
SP		V ₁ N ₁ E ₁	23	15	
(PSP)		V ₁ N ₁ E ₁		43	
(SS)		E ₁	27	20	
SS		N ₁ E ₁ N ₁		30	
e		N ₁ E ₁	29	50	
eSSS		V ₁ N ₁ E ₁	30	32	
Lq		E ₁ N ₁ E ₁		31.4	
Lr		V ₁ N ₁		34.2	
eP'Pt		V	40	57.2	
eP'PKS		V	44	25.3	
e	V		37.4		
16	eP	VNE	04 29	16.9	30.9 N 139.1 E 13 km Near west coast of Honshu, Japan
16	iP	VNE	04 47	07.0	30.3 N 139.7 E 33 km Near west coast of Honshu, Japan
16	eP	VNEV ₁	07 04	43.0	30.7 N 139.0 E 15 km Near west coast of Honshu, Japan
i (PcP)	VNEV ₁ E ₁		47		
e (PP)	VV ₁		07 32		
16	eP	VNE	07 26	32.9	33.5 N 139.2 E 16 km Near west coast of Honshu, Japan
i	V		30.0		
i	VN ₁		41.3		
e	V	27	28.9		
e (PP)	V	29	31		
e	E	33	43		
16	eiP	VNEV ₁ N ₁ E ₁ V ₁ N ₁	11 22	40.3	2.0 S 141.1 E 13 km Near north coast of of New Guinea
S	V ₁ E ₁ N ₁	23	13		
e	V ₁ E ₁		26		
eL	V ₁ N ₁ E ₁		32.4		
16	eP	VN	17 29	34.1	5.3 S 154 E 60 km Solomon Is. region
e	N ₁ E ₁		32 12		
e	E		34 03		
eS	N ₁		23		
eL	N ₁		36.1		
eL	E ₁		36.3		
19	eP	VNEV ₁ E ₁	10 17	12.5	33.3 N 139.3 E 30 km Near west coast of Honshu Japan.

Date	Phase	Component	Time	Direction of Motion	Remarks.
19	e(SS)	N'	10 31 45	(Quake Continued)	
	e(SSS)	V'	35 20		
	eL	E'	30.5		
	eL	N'	39.9		
	eL	V'	43.5		
20	eL	N'	11 31.2		3.4 S 139.7 E
	eL	E'	31.5		33 km Western New Guinea
20	iP	VN	16 13 14.5	u,s	3.3 S 142.4 E
	e(S)	E'	13 21.5		33 km Near coast of northeast New Guinea
	e(S)	N'	37		
	e	N'	20.9		
	eL	N'E'	22.4		
	L	V'	25.7		
21	eP	VN	01 45 49		51.0 N 157.0 E
	i	V	46 12.4		51 km Kamchatka
	e(SKS)	E V'E'	56 11		
	e(S)	N'	23		
	e(SS)	N'E'	02 01.6		
	eL	N'	15.7		
eL	V'E'	17.6			
22	eP	VE	07 43 21.3		24.3 S 176.3 W 75 km Fiji Is. region
22	eP	VNE	21 33 06.3		13.6 N 120.3 E
	e(PP)	V	23		56 km Luzon, Philippine Is.
	e	V	34 24		
23	eiP	VNEV ₁ N ₁ E ₁ V ₁ N ₁ E ₁ '	01 30 30.0	u	43.3 N 146.1 E
	ePcP	V ₁ N ₁ E ₁ V ₁ N ₁ '	47.5		77 km Kurile Is.
	e	VE ₁	56.2		
	e	E ₁	39 16		
	e	E ₁	52		
	e(PP)	VV ₁ V ₁ '	41 14		
	e(PP)	V ₁ V ₁ '	22		
	e	N ₁	29		
	e	V ₁ N ₁ '	46		
	e(PPP)	V ₁ N ₁ '	43 22		
	e	V	35		
	iS	NV ₁ N ₁ E ₁ V ₁ N ₁ E ₁ '	43 12		
	(SS)	V ₁ N ₁ ' ₁	53 07		
	SS	V ₁ N ₁ E ₁ '	22		
	e	E'	55 40		
	SSS	N'	56 42		
	PKKP	VN	57 26.5		
	eL	N'E'	59.1		
	L	V'	59.5		
	(Lq)	E'	59.9		
L	V'	02 02.4			
(Lr)	V ₁ N ₁ '	03.1			
P'P'	VN	05 33.2			
26	iP	VV ₁	01 45 42.0		55.9 S 27.6 W 55 km Sandwich Is.
26	eP	V	13 33 42		9.2 S 153.9 E
	e	V	47.6		17 km Solomon Is.
	i	VNE	49.3		
	i	VNV ₁	39 00.3		
	S	N ₁	43 23		
	(S)	V'E'	39		
	Lq	N'E'	45.1		
	eL	V'	45.7		

Date	Phase	Component	Time	Direction of Motion	Remarks	
28	iP	VNEV ₁ N ₁	12 53	16.0	1.7 S 149.6 E 7 km New Ireland region	
	i	V				21.5
	e	VNV ₁ N ₁ E ₁		24		
	ePP	V ₁ N ₁ N ₁ E ₁	59 35	45.9		
	i	VN ₁				
	e	N'	13 01	16		
	S	V ₁ N ₁ E ₁ N ₁ E ₁				
	SS	E ₁ ⁺ ₁ ⁺ ₁ ⁺	03	23		
	(SS)	N ₁ E ₁ N ₁	05	29		
	Lq	N ₁ E ₁		58		
Lr	N ₁ E ₁	06.8				
			08.0			
28	ePKP	V	17 47	48.0	4.0 N 32.4 W 33 km North Atlantic Ocean	
	iPKP	VV ₁				50.7
	e	N ₁	48 04	10		
	e	E				
	eSKKS	E ₁	58 35	20.5		
	e	E ₁				
	eL	N ₁ E ₁	29			
L	N ₁ E ₁	43				
28	eL	N'	20 02	3	58.3 N 150.2 W 23 km Alaska	
	eL	E'				05.9
29	eL	N'E'	03 03	5	62.7 N 152.0 W 33 km Southern Alaska	
	eL	N'E'				18.8
	eL	N'				27.2
30	eP	VNEV ₁ N ₁ E ₁ V'	13 54	18.0	0.8 S 122.5 E 36 km Northern Celebes	
	i	VNEV ₁ N ₁ E ₁				18.8
	i	VNEV ₁ N ₁ E ₁		20.7		
	i	ME	55	22.5		
	ePP	V ₁ E ₁ V ₁ N ₁		50		
	e(PP)	NEN ₁ E ₁ E ₁	56	05		
	ePPP	V ₁ N ₁ E ₁ V ₁ N ₁ E ₁		36		
	e	V ₁ ⁺ ₁ ⁺ ₁ ⁺	57	13		
	eScP	VV ₁	14 00	06		
	iS	V ₁ N ₁ E ₁ V ₁ N ₁ E ₁				
	e	EE ₁	01	34		
	SS	V ₁ N ₁ E ₁ V'	03	26		
	Lq	N ₁ E ₁		08.5		
	eSSS	V ₁ N ₁ E ₁	04	22		
	eLr	V ₁ ⁺ ₁ ⁺ ₁ ⁺		06.0		
	L	V ₁ N ₁ E ₁		08.9		
30	eP	VNEV ₁ E ₁	16 00	55.0	45.9N 150.4 E 33 km* Kurile Is.	
	e(PP)	V				04 37
30	iP	VNEV ₁ E ₁	20 20	06.3	46.6 N 144.6 E 383 km Sea of Okhotsk	
	iPcP	VNEV ₁				08.2
	epP	VNV ₁	21	28.0		
	(PPP)	V ₁	25	27		

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- T_g = 16 sec. (Long period vertical V₁)
- T_g = 70 sec. (Long period horizontals N₁E₁)

Three-component Press Ewing long period seismographs.

- T_s = 30 secs
 - T_g = 100 secs.
- } V'N'E'

Mount Stromlo quartz clocks provide accurate time marks and 50 c/s for drum drive.
 Directions of first motion taken from the three short period components.

Epicentre locations are those given by USCGS. *Indicates epicentres believed accurate to ¼ in latitude and longitude and ± 50 km. in depth.

Date	Phase	Component	Time	Direction of Motion	Remarks.
2	ePS	E'	17 32 15		47.7 N 128.3 W 33 km Off coast of Washington
	eSS	N'E'	38 30		
	e(SSS)	N'E'	42 40		
	eLq	E'	48.7		
	eLr	V'N'	54.3		
4	eP	VNE	10 57 58.2		11.7 N 144.5 E 33 km Mariana Is.
	i	VNV, V'N'	58 03.1		
	ePP	V'N'	59 52		
	e	VN	11 00 11½		
	eS	V'N'E'	04 40		
	eSS	V'N'E'	08 22		
	eLq	V'E'	09.8		
	Lr	V'N'	12.2		
5	ePP	V'E'	19 27 26		26.2 N 110.2 W 29 km Gulf of California
	eSKKS	E'	33 47		
	e	N'	35 28		
	PS	V'N'E'	37 05		
	SPP	N'	38 13		
	SS	N'E'	43 12		
	e	N'	32		
	eSSS	N'E'	47 12		
	eLq	V'N'E'	54.7		
	eLr	V'E'	59.4		
5	eP	VEV ₁ E ₁	28 48 07		44.8 N 149.6 E 54 km Kurile Is.
	e	N	11		
	ePcP	VNV	10½		
	e(PF)	V ₁	51 10		
	ePP	V ₁	17½		
	iS	E ₁ V'N'E'	53 06		
	e(SS)	E ₁	00 02 40		
	SS	N'	03 21		
	L	E'	09.1		
5	eP	VNEE ₁	28 51 20		44.7 N 149.6 E 40 km Kurile Is.

Date	Phase	Component	Time	Direction of Motion	Remarks.
6	e	N'	02 41 57		26.2 N 110.4 W 33 km Gulf of California
	PS	V'E'	43 43		
	SS	V'N'E'	49 50		
	eSSS	E'	53 30		
	e(SSS)	N'	52		
	eLq	E'	03 00.1		
	eL	V'N'	00.7		
	eLr	V'N'E'	06.5		
6	eP	VNE'	10 12 03.0		6.3 S 154.7 E 49 km Solomon Is.
	e	V	31.4		
	eL	V'N'	21.3		
6	P diff.	V'E'	07 37 04		18.3 N 100.4 W 100 km Guerrero, Mexico
	ePKP	VV ₁	40 47		
	ePKP	V ₁	52 $\frac{1}{2}$		
	iPKP	V	41 07.3		
	iPP	VV'E'	52		
	e(pPP)	V ₁ E ₁	42 11		
	e	V ₁ ¹	46 15		
	SKS	E ⁺	47 35		
	eS	E ₁ N'	49 32		
	i	N ⁺	50		
	e	V'	50 20		
	ePKP	V	51 14		
	ePS	V ₁ E'	27		
	iPKP	VNEV ₁ E ₁ V'	35.3		
	e	V ₁ E ₁ N ⁺ ₁	51		
	i	V ⁺ ₁	53 18		
	e	VNEV ₁	55 15		
	SS	N ₁ E ₁ V ₁ N'E'	57 30		
	SSS	N ₁ E ₁ V ₁ N'E'	08 02 12		
	Lq	N ⁺ ₁	10.3		
L	V'E'	12.4			
Lr	V'E'	15.7			
6	eiP	VNEV ₁ N ₁ E ₁	14 26 17.1		6.9 S 129.6 E 100 km Banda Sea
	i	V	31.7		
	(pP)	V	37.3		
	e	V	40		
	(sP)	V	51.4		
	e	E	27 24		
	e(pP)	E ₁	30		
	e(S)	V ₁	31 21		
	e(S)	E ₁	25		
	eS	N'E'	30		
	ScP	V	32 27		
	e	E ₁	33 17		
	e	V ₁	25		
	e(SS)	NEV ₁ N ₁ E'	30		
	e	N'E ⁺ ₁	34.5		
	ScS	VV ₁	36 47.6		
	eL	E ₁ ⁺	37.4		
	eL	V'	39.6		
7	P	VNEE ₁	07 44 30		22.3 S 179.9 W 462 km Fiji Is. region
	(pP)	V	45 53.3		
	e(pP)	VNE ₁	46 04		
	PcP	V ₁	47 20.3		
	S	EE ₁	48 40		
	ScP	V ₁	50 13 $\frac{1}{2}$		
	L	N'	51 35		
	L	E'	43		

Date	Phase	Component	Time	Direction of Motion	Remarks.		
8	eP	VNEV ₁ E ₁	07 53	44.4	3.2 N 123.4 E 50 km Molucca Passage		
	i	VNEV ₁		49.2			
	isP	VNE ₁	54	05.0			
	ePP	VNEV ₁ N ₁ E ₁ V ₁ N ₁ E ₁	55	32			
	e(PcP)	V ₁		35.2			
	eScP	VV ₁	59	23			
	S	NEN ₁ E ₁ N ₁ E ₁	03	00 06			
	(SS)	V ₁ N ₁ E ₁	03	14			
	eScS	NE ₁		40			
	eL	E ₁		05.5			
	eL	N ₁		07.3			
	eL	V ₁		10.2			
	8	iP	VNEV ₁ N ₁ E ₁ V ₁ N ₁ E ₁	12 02		13.3	d,w 5.5 S 129.3 E 165 km* Banda Sea
		e(pP)	VV ₁ N ₁			54.2	
e(sP)		VV ₁	03	08			
PP		EV ₁ N ₁ E ₁ V ₁ N ₁		23			
ePcP		VEV ₁	04	45.2			
eS		VNEV ₁ N ₁ E ₁ V ₁ N ₁ E ₁	07	26			
ScP		VV ₁	08	13			
eL		V ₁ N ₁ E ₁		09.0			
9		P	VNEV ₁ N ₁ E ₁	05 56	55.0	15.4 N 119.3 E 53 km Near west coast of Luzon, Philippine Is.	
		eS	E ₁	06 04	50		
	eSS	E ₁	08	45			
	eL	N ₁		10.2			
	L	N ₁ E ₁		15.4			
9	P	VE	11 23	37.3	23.3 S 175.7 W 43 km Tonga Is.		
	i	VNEV ₁ E ₁ V ₁ E ₁		39.3			
	i	VNE ₁		41.2			
	e(PF)	V ₁ E ₁ V ₁ N ₁ E ₁	29	53			
	e	VV ₁ V ₁ N ₁ E ₁	30	15			
	e	NEE ₁		20			
	S	VNEV ₁ N ₁ E ₁ V ₁ N ₁ E ₁	33	53			
	e	V ₁ E ₁	34	20			
	Lq	N ₁ E ₁		36.1			
	Lr	V ₁ E ₁		37.6			
	e	VNE	39	16			
9	eP	VNEV ₁ N ₁	16 45	10.7	15.5 S 167.6 E 121 km New Hebrides Is.		
	i	VNEV ₁ N ₁ E ₁ E ₁		13.1			
	i	VNE ₁		13.3			
	ePP	VEV ₁ N ₁ E ₁		41			
	e(sP)	NN ₁		53			
	ePP	V ₁ E ₁ N ₁ E ₁		56			
	e	NEN ₁ E ₁	46	12			
	PcP	VV ₁ E ₁	48	39			
	(Lq)	E ₁		49.4			
	(L)	V ₁ N ₁		49.5			
	eS	VNEV ₁ N ₁ E ₁	49	31.2			
	e	E ₁		43			
	(sS)	E ₁	50	00			
	SS	V ₁ N ₁	50	22			
	eScS	EE ₁		36			
11	e(SS)	NEE ₁	55	56	59.7 N 146.2 W 40 km Alaskan aftershock		
	e	N ₁	21	01.2			
	eL	E ₁		06.3			
	eL	N ₁		16.2			
12	P	VIV ₁	01 57	03.6	33.3 N 139.2 E 13 km Near west coast of Honshu, Japan		
	i	VNEV ₁ E ₁		08.4			
	ePcP	VNE ₁		13			



Date	Phase	Component	Time	Direction of Motion	Remarks.
12	S	N'E'	02 06 40		
	eSS	N'E'	11 20		
	eSSS	E'	14 34		
	Lq	E'	17.6		
	eL	N'	18.2		
12	P	VNEV ₁	20 27 45		24.9 N 95.3 E 155 km
	epP	VN	23 25		Northwestern Burma
	ePP	V	30 43		
13	eP	VNEE ₁	11 10 34		23.7 N 94.7 E 117 km
	pP	V	11 08.6		Northwestern Burma
14	eP	VV ₁	14 11 20		53.3 N 159.7 E 40 km Near east coast of Kamohatka
17	ePKP	VE ₁	02 53 10.8		30.2 N 23.7 E 150 km Southern Greece
	iPKP	VV ₁ V'	31.1		
	i	VNE	33.1		
	e	V	54 22		
	iSKP	VE ₁ V'	56 21.7		
	e	E ₁	50 07		
	(PS)	E'	03 05 42		
18	iP	VNEV ₁ N'E ₁	12 53 36.2	d	0.2 N 123.5 E 97 km Northern Celebes
	epP	V ₁	54 01		
	isP	VNEV ₁ N'E ₁	07.9		
	e(PP)	NE ₁	55 15		
	e	V	17		
	iPcP	V	26.3		
	e	V	55 $\frac{1}{2}$		
	eS	NN ₁ N'E'	59 39		
	e(SS)	N ₁ V ₁ N'E'	13 03 08		
	21	P	VNEV ₁ E ₁	03 54 40.1	
i		VN ₁	55 13.4		
e		M ₁ E'	30		
ipP		VNE ₁	32.4		
e(sP)		N ₁	50 $\frac{1}{2}$		
e		NEV'	56 23		
e		V	32 $\frac{1}{2}$		
e		V ₁	30		
PcP		V ₁ V'	57 47		
S		V ₁ N'E'	59 29		
L		E'	04 00.7		
L		N ₁ V ₁ N'	00.8		
ScP		VNEV ₁	01 00.6		
ScS		NE ₁	05 05		
24		eP	VNV ₁ E ₁ V'	07 03 19.7	
	e(PPP)	V ₁	00 50		
	eS	N ₁ E ₁ V ₁ N'E'	13 20		
	(ScS)	N ₁	46		
	(PS)	V ₁ N'	14 12		
	SS	V ₁ N'E'	13 47		
	eSSS	V ₁ N'E'	21 50		
	eLq	E'	24.6		
	eL	N'	26.1		
	eLr	V ₁ N'	30.3		
24	eP	VNEV ₁ E ₁ N'	03 25 00.5		47.2 N 153.0 E 33 km Kurile Is.
	ePP	V ₁ V ₁ N ₁	23 15		
	S	N ₁ E ₁ N'E'	35 03		
	(ScS)	N ₁	34		
	PS	V ₁ N'	36 05		
	e	N ₁	37 02		

Date	Phase	Component	Time	Direction of Motion	Remarks.
24	e	N ₁ N'	08 40 03	(Quake Continued)	
	SS	N ₁ N'E'	30		
	eSSS	N'E'	43 36		
	eLq	E'	46.2		
	L	N'	47.3		
	L	V'	52.4		
24	P	VNEV ₁ E ₁	11 03 31.3		13.1 N 145.0 E 43 km Mariana Is.
	e	V	04 24.7		
	ePP	VV ₁	05 23		
24	e(PP)	E'	13 41 16		47.0 N 153.7 E 33 km Kurile Is.
	S	E'	47 53		
	ePS	N'	40.7		
	SS	N'	53 26		
24	eP	V	13 53 45		6.6 S 154.3 E 62 km Solomon Is.
	i	VNEV ₁	49.4		
	ePP	VV ₁	54 40		
	e	VNV ₁	55 29 $\frac{1}{2}$		
	Lq	N'E'	50.6		
	S	N ₁ E ₁ E'	14 00 34		
	L	V ₁ N'E'	00.6		
24	eP	VNV ₁ E ₁ V ₁ N'	17 15 12 $\frac{1}{2}$		47.1 N 153.6 E 33 km Kurile Is.
	e	N'E ₁ '	17 25		
	e(PP)	N'	18 30		
	eS	V ₁ N'E'	25 20		
	e(ScS)	V ₁ N'	41		
	PS	N'	26 03		
	(PPS)	V ₁ N'	27 03		
	e	E'	29 12		
	e	N'	30 03		
	SS	N'E'	46		
	SSS	N'E'	33 52		
	Lq	E'	36.5		
	Lr	N'	42.7		
	25	ePP	V ₁ N'		
SKS		N'E'	55 53		
PS		N'E'	59 03		
ePKKP		V	20 00 51 $\frac{1}{2}$		
e		N'E'	04 17		
e		E'	50		
SS		N'	05 09		
e		E'	03 13		
SSS		N'E'	09 03		
e		N'E'	12.4		
eLq		N'E'	15.3		
EI	N'	19.5			
25	P	VNE	22 53 20.3		9.7 S 159.3 E 21 km Solomon Is.
23	eP	VNEV ₁ E ₁ V ₁ N'E'	21 49 55 $\frac{1}{2}$		14.3 N 96.2 E 33 km Andaman Is. region
	ePP	V ₁ N'E'	52 34		
	eScP	VV ₁	54 12		
	e	E ₁ '	55 00		
	e	E'	55 16		
	e	V'	40		
	e	V ₁ N'	57 43		
	eS	V ₁ N'E'	59 09		
	e(SS)	V ₁ N'E'	22 03 20		
	SS	N'E'	49		
	(SS)	V'	04 11		
	eSSS	V ₁ N'	06.3		

Date	Phase	Component	Time	Direction of Motion	Remarks.
28	e	N'E'	22 07 54		
	eL	N'	09.3		
	L	V'N'E'	12.6		
28	eP	V	22 57 40 $\frac{1}{2}$		14.1 N 96.1 E 14 km Andaman Is. region
30	ePKP	VV ₁	05 35 02.6		11.1 N 96.2 W
	iPKP	V ₁	04.2		42 km Near west coast
	e(SPP)	V'	40 22		Costa Rica
	e	V'E'	49 34		
	SS	V'N'E'	54 03		
	e	N'	53 10		
	eSSS	E'	42		
	Lq	N'	06 00.7		
	eLr	V'N'E'	14.7		
	31	P	VHEV ₁	04 17 13	
e		V	29.6		Kurile Is.
eL		V'N'	46.8		
31	eP	VIV ₁	05 58 14 $\frac{1}{2}$		6.1 S 149.4E 63 km
	i	VV ₁	17.7		New Britain
	i	VHEV ₁ N ₁ E ₁ V'N'	21.0		
	i(pP)	VHEV ₁ N ₁ E ₁ V'N'	33.0		
	iPP	VHEV ₁ N ₁ E ₁ V'	59 13.2		
	(PPP)	V'N'E' ₁ ₁	32		
	e	V'N'	06 00 16		
	e	E ₁ V'	01 15 $\frac{1}{2}$		
	e	N'	02 20		
	iS	N ₁ E ₁ V'N'E'	52		
	eSS	V'N'	04 30		
	Lq	E'	04.9		
	e(ScP)	VV ₁	05 07		
Lr	V'N'E'	06.3			

Seismograms read by
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 CANBERRA A.C.T., AUSTRALIA
 MONTHLY SEISMOLOGICAL BULLETIN
 AUGUST, 1964

Latitude: 35° 19' 15"S. Longitude: 143° 59' 55"E. Height: 700 M.

Instruments : Three-component Benioff variable reluctance seismograph.

$T_g = 1$ sec.

$T_g = 0.25$ secs. (Short periods VNE)

$T_g = 16$ sec. (Long period vertical V_1)

$T_g = 70$ sec. (Long period horizontals $N_1 E_1$)

Three-component Press Ewing long period seismograph.

$T_s = 30$ secs

$T_g = 100$ secs.

V'N'E'

Mount Stromlo quartz clocks provide accurate time marks and 50 c/s for drum drive.

Directions of first motion taken from the three short period components.

Epicentre locations are those given by USCGS. *Indicates epicentres believed accurate to $\frac{1}{2}^\circ$ in latitude and longitude and - 50 km. in depth.

This bulletin contains only earthquakes of magnitude $5\frac{1}{2}$ and over as quoted on the USCGS. Cards.

Date	Phase	Component	Time	Direction of Motion	Remarks.
2	ePS	V'N'	09 03 58		56.2 N 149.9 W
	eSS	V'N'	09 46		31 km Alaska aftershock
	e	N'	17 06		
	eLq	N'E'	19.8		
	eLr	V'N'	24.5		
	eL	E'	30.2		
4	iP	VNEV ₁ N ₁ E ₁	03 43 28.4		2.5 S 139.8 E
	ePP	V ₁	44 22		33 km Near north coast of western New Guinea
	eL	V'N'	57.1		
4	iP	VNEV ₁ N ₁ E ₁ V'N'	17 36 30.7	u	46.5 N 151.1 E
	epP	VN ₁	37 04		101 km Kurile Is.
	e	VV ₁	46 03		
	S	NV ₁ N'	32		
	e	E'	44		
	eSS	N'	52 10		
	e(sSS)	N'	53 35		
	e	N'	58 26		
	eL	N'E'	59.7		
	L	V'N'	18 02.7		
	5	iP	VNEV ₁ N ₁ E ₁ V'N'	11 11 19.1	u,s,e
ipP		V ₁ V'E'	12 03		235 km South of Kermadec Is.
iPP		VNN ₁ E ₁	06.4		
i		VE ₁	12.5		
e		NN ₁	24.4		
esP		VV ₁ N'E'	30		
i		VNN ₁	13 26.4		
i		VV ₁	14 26.8		
iPcP		VV ₁	36.4		
(L)		N' ₁	50		
eS		NEN ₁ V'E'	15 35		
e		NN ₁	16 19		
L		V'N'E'	17.0		
ScP		V	17 51		
5	iP	VNEV ₁ E ₁ V'N'	22 36 29.4		41.1 S 74.9 W 38 km
	iPP	VNV ₁ E ₁ V'N'	11.8		Off coast of Southern Chile
	e	V' ₁	48 00		

Date	Phase	Component	Time	Direction of Motion	Remarks
5	e	V'	22 46 07	(Quake Continued)	
	eSKS	N'E'	47 09		
	S	N'E'	46		
	e	V'N'	48 41		
	(PS)	V'N'E'	49 10		
	PFS	V'	40		
	e	N'	53 30		
	SS	V'	58		
	eSS	N'E'	54 08		
	eSSS	V'	57 32		
	Lq	N'E'	23 02.5		
	L	V'	08.2		
	Lr	V'N'	08.4		
6	iP	VNEV ₁	02 44 19.3	u	31.5 N 129.9 E
	ipP	VV ₁	45 05.3		197 km Southwest of Kyushu
6	iP	VNEV ₁ E ₁	07 19 04.4	u	9.1 S 120.3 E 58 km Sumba Is. Region
	e	VNEE ₁	20 10		
	iPP	VNV ₁	30.2		
	eScP	V	24 31		
	e(SS)	VN	27 20		
	e	V	39		
	eL	V'N'	30.1		
6	eS	N'	13 50 44		58.9 N 152.1 W
	ePS	N'	52 22		
	eSS	N'	53 24		
	eSSS	N'	19 02 09		39 km Alaska Aftershock
	eLq	N'	08.5		
	eL	V'N'	12.7		
	eL	E'	10		
8	iP	VNEV ₁ E ₁	15 10 24.9	u	31.7 N 140.2 E
	e(PcP)	V	52		110 km South of Honshu Japan
	sP	VNE	11 04.1		
	e	N'	17 30		
	eS	E ₁ N'	19 35		
	eL	N'	32.6		
9	iP	VNEV ₁ E ₁	01 54 10.5	d	17.3 S 178.6 W
					537 km Fiji Is. region
10	PKP	VNE	01 29 44.7		19.1 N 67.3 W 38 km
	PKS	VN	33 29.5		Mona Passage
10	PKP	VN	17 18 05.0		9.2 N 62.0 W 51 km
					Near coast of Venezuela
10	iP	VNEN'	21 46 05.9		6.2 S 154.5 E 105 km
	e(pP)	V	22.9		Solomon Is.
	ePP	VNN'	47 09		
	e	V	43 44.2		
	eS	VNE	50 21		
	e(S)	N'	50		
	Lq	N'E'	53.1		
	Lr	V'	54.5		
12	P	VN	07 04 05.0		43.9 N 153.7 E
					127 km Kurile Is.
13	iP	VNEV ₁ N ₁ E ₁ V'N'E'	00 36 51.3	d,n,e	5.4 S 154.3 E 333 km
	pP	V ₁ N ₁ V'N'	37 53		Solomon Is.
	e(pP)	VNE ₁	38 10		
	iPP	V	13.1		
	i	VN	23.5		
	sP	V'N'	40		
	i	VV ₁	53.0		

Date	Phase	Component	Time	Direction of Motion	Remarks.
13	e	N ₁	00 39 31	(Quake Continued)	
	i(S)	N ₁	41 12		
	iS	VNEV ₁ N ₁ E ₁ V ₁ E ₁	21.0		
	L	N ₁ N ₁	43.4		
	L	V ₁ E ₁ V ₁ E ₁	43.6		
18	e(P) diff.	V ₁	04 59 23		26.4 S 71.5 W 8 km Off coast of northern Chile
	ePKP	VNV ₁ V ₁ N ₁ E ₁	05 03 44		
	e(PP)	V ₁ N ₁ E ₁	53		
	e	N ₁	09 12		
	eSKS	E ₁	10 16		
	PS	V ₁ N ₁ E ₁	13 00		
	PPS	V ₁ N ₁ E ₁	14 10		
	ePKP	VV ₁	42.4		
	iPKP	V ₁	51.3		
	e	N ₁	13 30		
	SS	V ₁ N ₁ E ₁	51		
	eSSS	V ₁ N ₁ E ₁	23 13		
	Lq	V ₁ N ₁ E ₁	29.3		
	Lr	V ₁ N ₁ E ₁	34.5		
	19	e	E ₁		
e		N ₁	15.3		
eL		N ₁ E ₁	22		
L		V ₁ E ₁	26.6		
20	iPKP	VNEV ₁ E ₁	03 57 23.6	u	14.9 N 60.4 W 65 km Windward Is.
25	PP	V ₁ N ₁ E ₁	14 06 44		73.2 N 126.6 E 50 km East of Severnaya Zemlya
	e(S)	E ₁	14 45		
	PS	V ₁ N ₁	16 27		
	PS	E ₁	32		
	PPS	V ₁ N ₁ E ₁	17 43		
	e	V ₁ E ₁	20 45		
	eSS	E ₁	22 27		
	SS	N ₁	50		
	SSS	V ₁ N ₁	27 13		
	e	V ₁	29 25		
	e	E ₁	50		
	eLq	E ₁	35.7		
	eL	V ₁	39.9		
	eL	V ₁	43.2		
30	iP	VNEV ₁ E ₁	03 53 41.0	u,s	5.0 S 144.5 E 93 km New Guinea
	isP	VNV ₁	54 10.7		
	e	V ₁	13		
	e	N ₁	34		
	iPcP	VN	53 25.6		
	eS	E ₁	53 36		
	eScP	V ₁	09 00 17		
	eL	N ₁ E ₁	00.7		
	e	V ₁	04 25		
	i	VV ₁	05 34.2		
30	iP	VNEV ₁	21 51 21.3	d,e	19.9 S 176.0 W 253 Km Fiji Is. region
	e	VV ₁	52 09		
	pP	VV ₁ E ₁	14.9		
	i	VV ₁	16.7		
	e	V ₁	53 10.5		
	ePcP	V ₁	53		
eL	V ₁ N ₁ E ₁	59.5			

 Seismograms read by
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 CANBERRA A.C.T., AUSTRALIA
 MONTHLY SEISMOLOGICAL BULLETIN
 SEPTEMBER, 1964

Latitude: 35° 19' 15"S Longitude: 148° 59' 55"E Height: 700 M

Instruments: Three-component Benioff variable reluctance seismograph .

$T_s = 1$ sec

$T_g = 0.25$ sec (Short periods VNE)

$T_g = 16$ sec (Long period vertical V_1)

$T_g = 70$ sec (Long period horizontals $N_1 E_1$)

Three-component Press Ewing long period seismograph

$T_s = 30$ sec

$T_g = 100$ sec

} V'N'E'

Mount Stromlo quartz clocks provide accurate time marks and 40 c/s for drum drive.

Directions of first motion taken from the three short period components.

Epicentre locations are those given by USCGS. * Indicated epicentres believed accurate to $\frac{1}{2}^\circ$ in latitude and longitude and ± 50 km in depth

This bulletin contains only earthquakes of magnitude $5\frac{1}{2}$ and over as quoted on the USCGS cards

Date	Phase	Component	Time	Direction of Motion	Remarks.
1	eP	V	13 34 56		27.2 N 92.3 E 33 km India-China border region
	i	VNEV ₁	56.3		
	S	E ₁ V'N'E'	45 06		
	eSS	V'N'E'	50 24		
	e(SSS)	N'	53 28		
	eL	N'E'	59.3		
1	eP	VNE	14 01.3		51.2 N 170.6 W 25 km Fox Island Aleutian Is.
4	eP	VNE	10 41 06		4.0 S 131.4 E 33 km West New Guinea region
	i	VNEV ₁ N ₁ E ₁ N'E'	07.1	u,s,e	
	i	V ₁ N ₁	14		
	i	V ₁	20		
	ePP	VNE	42 26		
	e	N'E'	43 22		
	iPcP	VV ₁ N'	33.5		
	iS	VNEV ₁ N ₁ E ₁ N'E'	46 33	e	
	e	VN ₁	43 56		
	SS	V ₁ E ₁ N'E'	49 07		
	Lq	E ₁	51.1		
	L	N'	51.5		
5	iP	VNEV ₁ N ₁ E ₁ V'N'E'	02 59 53.7	d,n	5.8 S 154.0 E 69 km Solomon Island
	iP	VNEV ₁ N ₁ E ₁ N'E'	03 00 08.1	u	
	e(P)	VN ₁ N ₁ E ₁	49		
	e(P)	N'E ₁	01 00		
	e	VV ₁	04 33		
	iS	NEN ₁ E ₁ N'E'	46	s,e	
	L	E ₁	06.6		
6	L	N'	07.3		
	iP	VNEV ₁	20 40 32.0	d,n	4.7 S 144.0 E 73 km Near north coast of New Guinea
	i	VNE	37.3		
	eL	E'	52.7		
eL	N'	53.7			

Date	Phase	Component	Time	Direction of Motion	Remarks
8	iP	VH	13 50	30.4	d 29.6 N 142.0 E 77 km South of Honshu, Japan
	i	VEV ₁		32.5	
	ePP	V ₁	53	36	
12	iP	VNEV ₁ N ₁ E ₁ V ₁ N ₁ '	12 49	27.9	d,n,w 4.4 S 144.0 E 120 km Near north coast of New Guinea
	e	V ₁ N ₁ '	50	26	
	ePP	N ₁ V ₁ N ₁ 'E ₁ '		35	
	PcP	VN	52	16	
	e	E ₁ N ₁ 'E ₁ '	53	18	
	e(S)	N ₁ '	54	21	
	iS	N ₁ E ₁ V ₁ N ₁ 'E ₁ '		25	
	e	E ₁ ' ₁	55	00	
	e	N ₁ '		44	
	ScP	VV ₁		58.6	
	e(SS)	E ₁ ' ₁	56	18	
	Lq	V'E ₁ '		56.9	
	Lr	V ₁ '		58.0	
	L	N ₁ '		58.6	
12	iP	VNEV ₁	15 25	10.8	d 17.4 S 179.9 W 561 km Fiji Is. region
	i	VNEV ₁ N ₁ E ₁ V ₁ '		12.2	
	i	NEE ₁ ' ₁ ' ₁		30.9	
	i	V ₁		42.1	
	i	V	26	11.7	
	ePP	VEV ₁ V ₁ 'E ₁ '		49	
	ePcP	VN	27	38	
	iS	NEV ₁ N ₁ E ₁ V ₁ N ₁ 'E ₁ '	29	48	
	i(S)	V ₁		51.8	
	iScP	VV ₁ V ₁ '	30	30.2	
	e	N ₁ '		39	
	L	V ₁ N ₁ 'E ₁ '		32.9	
	ScS	E ₁ '		34 33	
	eL	N ₁ '		34.8	
12	iP	VNEV ₁ N ₁ E ₁ V ₁ N ₁ 'E ₁ '	22 11	07.7	d,s,e 49.13 164.2 E 33 km Auckland Is. region
	L	E ₁ ' ₁		14.1	
	eS	VNE ₁ N ₁ E ₁ '	14	21	
	TMax	VNE		28	
15	eP	VNE	09 10	40.5	56.4 S 27.2 W 33 km South Sandwich Is. region
	eL	N ₁ '		40.3	
15	iP	VNEV ₁ N ₁ E ₁ V ₁ N ₁ 'E ₁ '	15 40	33.1	d 3.9 N 93.1 E 37 km Nicobar Is. region
	e	V ₁ N ₁ 'E ₁ '		49	
	i	VV ₁ ' ₁	41	23.5	
	e	V ₁	42	18	
	e	N ₁ 'E ₁ '	44	51	
	e	V	45	42	
	S	E ₁ E ₁ '	49	24	
	iS	VNEV ₁ N ₁ E ₁ V ₁ N ₁ 'E ₁ '		29	
	ScS	NEV ₁ N ₁ E ₁ V ₁ N ₁ 'E ₁ '	50	24	
	e	E ₁ ' ₁		48	
	e(SS)	N ₁ '	53	36	
	SS	E ₁ '		56	
	SSS	N ₁ '	57	06	
	(SSS)	E ₁ '		20	
	Lq	N ₁ 'E ₁ '		58.4	
	eL	V ₁ '	16	00.4	
L	V ₁ '		01.7		
16	eP	VNEV ₁ E ₁ '	01 37	34 $\frac{1}{2}$	10.9 N 93.1 E 47 km Andaman Is. region
	e	V		39 24 $\frac{1}{2}$	
	e	V ₁ E ₁ '		41 17	
	eS	N ₁ 'E ₁ V ₁ N ₁ 'E ₁ '	46	36	

Date	Phase	Component	Time	Direction of Motion	Remarks.
16	eScS	E'	01 47 31	(Quake Continued)	
	eSS	N'E'	51 23		
	L	N'E'	59.1		
	eL	V'	01 01.3		
16	eP	VNEV ₁	05 26 49		5.9 S 152.0 E 29 km New Britain region
	e	VN	27 15 ¹ / ₂		
	e	N	23 22		
	e	V	43		
	S	NE, N'E'	31 42		
	L	E', I'	33.5		
	eL	N'	33.6		
	eL	NN, N'	34 11		
17	eL	V'	16 22.5		44.5 N 31.3 W 24 km North Atlantic Ridge
	eL	V'N'E'	23.4		
18	e	VV ₁	13 37 43		39.3 N 29.7 W 20 km Azores Is.
	eSS	N'E'	14 00 55		
	eSSS	N'E'	07 56		
	L	E'	33.9		
19	eL	V'N'	40.4		15.3 N 94.0 W 42 km Near coast of Oaxaca, Mexico
	PS	V'E'	05 33 24		
	PPS	V'E'	39 50		
	SS	V'N'E'	45 26		
	e	V'N'E'	48.5		
20	L	V'E'	06 04.0		6.3 S 100.9 E 240 km Java
	iP	VNE	03 33 40.3		
21	epP	V	34 41		2.1 S 123.3 E 36 km Ceram Sea
	eP	VV ₁	03 33 13		
21	i	VNEV'N'	14.3		
	ipP	V	23.6		
	isP	VN	26.9		
	e(PcP)	V	40 17.5		
	eS	N'	44 20		
	eL	N'E'	51.6		
	eL	V'	53.4		
22	iP	VNE	20 45 33.3	u	2.3 S 141.0 E 34 km Near north coast of New Guinea
	e(L)	N ₁	55 13		
23	eSKS	N'	05 24 07		53.6 N 163.9 W 29 km Unimak Is. region
	S	N'E'	50		
	ePPS	N'	27 03		
	e?	V	30 24		
	e(SS)	E'	31 15		
	SS	N'	50		
	e(SSS)	E'	35 14		
	e	N'	55		
	e?	VV ₁	38 15		
	eL	N'E'	40.6		
	eL	V'E'	47.2		
	25	eP	VNEV ₁		
eS		N'	16 05 56		
PS		N'	07 02		
SS		N'	12 09		
eL		V'	23.2		
eL		N'	23.4		
25	eP	VNEV ₁ E ₁	20 34 51.5		3.3 S 139.0 E 171 km Western New Guinea
	e	V	36 24		

Date	Phase	Component	Time	Direction of Motion	Remarks.	
26	iP	VNEV ₁ V'	00 59	06.3	d	30.1 N 80.7 E 50 km Tibet-India border region
	S	N'E'	10	02		
	eSS	N'	16	12		
	e(SSS)	N'	19	30		
	eL	N'	22.6			
	eL	V'	32.3			
26	iP	VNEV ₁ E ₁ N'	23 01	26.9	d	4.9 S 153.5 E 34 km New Ireland region
	pP	VV ₁		36.7		
	i	V ₁		48.1		
	ePcP	V	04	30		
	S	N ₁ N'E'	06	18		
	eSS	E ₁	07	50		
	eL	E ₁ N'E'	08.6			
	L	N ₁	09.4			
	28	ePKP	V	05 24		
iPKP		VEV ₁ V'		27.3		
28	iP	VNE	20 12	35.9	u	5.2 S 150.5 E 224 km New Britain region
	e	V	13	36		
29	iP	VNEV ₁ N ₁ E ₁ V ₁ N'E'	14 07	09.8	u	20.4 S 174.4 W 29 km Tonga Is.
	ePP	V'E'	08	35		
	e	N'	10	06		
	S	N'E'	12	42		
	e	V'	13.4			
	PcS	N'E'	13	36		
	Lq	N'	15.2			
	eL	V'E'	15.4			
	Lr	V'E'	17.1			

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CANBERRA A.C.T., AUSTRALIA
MONTHLY SEISMOLOGICAL BULLETIN
OCTOBER, 1964.

Latitude: 35° 19' 15"S Longitude: 148° 59' 55" E Height: 700 M

Instruments: Three-component Benioff variable reluctance seismograph.

$T_s = 1$ sec

$T_g = 0.25$ sec (Short periods VNE)

$T_g = 16$ sec (Long period vertical V_1)

$T_g = 70$ sec (Long period horizontals $N_1 E_1$)

Three-component Press Ewing long period seismograph

$T_s = 30$ sec

$T_g = 100$ sec

} V'N'E'

Mount Stromlo quartz clocks provide accurate time marks and 50 c/s for drum drive.

Directions of first motion taken from the three ^{short} period components.

Epicentre locations are those given by USCGS.

This bulletin contains only earthquakes of magnitude $5\frac{1}{2}$ and over as quoted on the USCGS cards.

Date	Phase	Component	Time	Direction of Motion	Remarks.
2	iP	VNEV V'	01 11 24.2	d	51.9 N 142.9 E 33 km Sakhalin Is.
	eS	N' 1	22 07		
	e	E'	25.7		
	eL	E'	32.2		
	eL	V'N'	32 44		
2	eP	VNEV N ₁ E ₁ V'E'	13 06 22.3		10.5 S 162.4 E 68 km Solomon Is.
	pP	VNEV N ₁ E ₁ V'N'E'	35		
	PP	VN 1	07 11.2		
	i	VNE	08 07.4		
	e	V'N'E'	09 14		
	ePcP	V V'	36		
	S	VNEN E ₁ V'N'E'	11 04		
	Lq	N'E'	11.7		
	Lr	VNEV N ₁ E ₁ V'N'	12.6		
6	eP	VNEV E ₁	06 21 42		18.6 N 119.6 E 33 km Philippine Is. region
	ePPP	V' 1 1	25.4		
	eS	V'N'E'	30 00		
	eL	E'	37.8		
	eL	V'N'	41.4		
6	eP	VV'	07 30 22		36.2 S 100.9 W 33 km Southern Pacific Ocean
	a(PP)	V'	33 24		
	PP	V'	36		
	S	V'N'E'	40 48		
	e	V'	41 37		
	PS	V'N'E'	40		
	e	N'E'	45 55		
	SS	N'E'	46 28		
	eLq	N'	53 42		
	Lr	V'N'E'	56.5		
6	ePKP	VNEV V'	14 50 34		40.3 N 28.2 E 10 km Turkey
	iPKP	VE 1	44.4		
	PP	VV ₁ N ₁ E ₁ V'N'E'	53 04		
	e	N ₁ E ₁	36		
	e	VNEV	42		
	PKS	E V'N'E'	54 08		
	e	NN ₁	15		

Date	Phase	Component	Time	Direction of Motion	Remarks.
6	e	V	14 55 27	(Quake Continued)	
	(PPP)	E ₁ V ₁ E ₁ '	56 05		
	SKS	V ₁ '	57 30		
	(SKKS)	V ₁ E ₁ '	59 26		
	PS	V ₁ E ₁ '	15 03 19		
	e	E ₁ '	04 44		
	PPS	V ₁ N ₁ E ₁ '	05 04		
	PPPS	V ₁ E ₁ '	06 26		
	SS	V ₁ '	10 30		
	e(PPPS)	V ₁ N ₁ E ₁ '	11 06		
	eSSS	N ₁ E ₁ '	15 13		
	L	V ₁ '	24.9		
	L	N ₁ '	25.4		
	L	E ₁ '	25.8		
7	eP	VNE	03 53 06		6.3 S 155.2 E 70 km
	eLq	E ₁ '	04 04.7		Solomon Is.
	L	V ₁ '	06.2		
9	eP	V	21 41 33.9		13.2 S 171.9 W 33 km
	i	VV ₁ E ₁ '	40.6	d	Samoa Is. region
	i	V ₁ '	41.7	u	
	i	NE	41.8	s,w	
	iPP	VN	42 13.1		
	e(S)	E ₁ '	47 33		
	S	E ₁ '	45		
	eL	E ₁ '	50.0		
11	L	E ₁ '	50.7		
	iP	VV ₁ N ₁ E ₁ 'N ₁ '	21 23 02.1	u,s	0.6 S 121.7 E 33 km
	i	VV ₁ '	05.9		Northern Celebes
	e(PaP)	VNEV ₁ E ₁ '	24 44		
	ePP	V ₁ N ₁ E ₁ 'N ₁ E ₁ '	50		
	iS	N ₁ N ₁ '	29 26		
	S	E ₁ '	23		
	Lq	N ₁ E ₁ 'N ₁ E ₁ '	32 20		
12	Lr	N ₁ E ₁ '	34.2		
	iP	VV ₁ '	15 50 53.9	d	3.0 N 126.7 E 59 km
	eP	NE ₁ '	54.2		Talau Is.
	e	N ₁ '	51 13		
	eP	NV ₁ N ₁ E ₁ '	20		
	PP	V ₁ N ₁ '	52 42		
	i	VV ₁ '	55.5		
	PPP	NN ₁ '	53 11		
	eScP	V ₁ '	56 30		
	e(S)	N ₁ E ₁ '	57 04		
	S	N ₁ E ₁ V ₁ N ₁ E ₁ '	15		
	SS	V ₁ N ₁ E ₁ 'V ₁ N ₁ E ₁ '	13 00 30		
	L	N ₁ E ₁ '	02.3		
	L	V ₁ '	03.9		
12	iP	VN	20 19 44.0		5.6 S 147.1 E 195 km
					East New Guinea region
12	eP	VV ₁ E ₁ '	22 07 41.5		31.3 S 110.3 W 25 km
	eS	N ₁ E ₁ '	17 50		Easter Is. region
	ePS	E ₁ '	10 20		
	e	N ₁ '	22.1		
	eSS	N ₁ E ₁ '	22 55		
	eSSS	N ₁ E ₁ '	23 12		
	Lq	N ₁ E ₁ '	29.2		
	eL	N ₁ '	31.4		
14	eP	V	03 13 04		33.4 N 141.3 E 33 km
	S	E ₁ '	25 04		Off east coast of
	e	N ₁ '	40		Honshu Japan

Date	Phase	Component	Time	Direction of Motion	Remarks.
14	ScS	E'	03 26 04	(Quake Continued)	
	eSS	N'E'	29 24		
	(SSS)	E'	32 34		
	L	E'	34.6		
	L	V'N'	37.3		
16	eP	VE	06 21 36.6	d,e u,w	28.6 S 177.6 W 176 km South of Fiji Is.
	i	VE	30.0		
	esP	VNEV ₁	22 35		
	ePP	V'	54		
	eS	EE V'E'	26 24		
	Lq	N'E'	23 02		
	Lr	V'N'	29.0		
16	eP	VV'N'	07 11 45.2	d	44.3 N 149.5 E 33 km Kurile Is.
	e(PcP)	VV ₁	50.4		
	ePP	V ₁	14 46		
	e	N'E'	18 40		
	S	V.E V'N'E'	21 44		
	PS	V'N'	22 36		
	eSS	V'N'E'	26 30		
	Lq	V'N'E'	32 43		
	L	E'	34.0		
	Lr	V'N'	34.6		
	16	eP	VNEV ₁ E ₁		
i		V ₁	54.6		
e(PcP)		VV ₁	31 46		
S		N'E'	40 34		
e(PS)		N'	41 30		
SS		N'E'	45 36		
L		E'	51 30		
L		E'	52.8		
iP		VNEV ₁ E ₁	15 07 44.3		
pP		VNEV ₁ E ₁	08 16		
17	esP	E	29	u	7.1 S 129.4 E 117 km Banda Sea
	eS	N'	12 54		
	e	E'	18.9		
	eL	N'E'	16.5		
18	iP	VNEV ₁	12 38 41.9	u,s,e,	7.0 S 124.0 E 574 km Banda Sea
	i	V ₁ N ₁ E ₁ V'N'E'	43.5		
	i	N ₁	39 00.3		
	e	V	12		
	e	VN	40 05		
	ePP	V'N'E'	12		
	iPP	V ₁ N ₁ E ₁ V'N'E'	20		
	ipP	VNE	20.9		
	iPcP	VN ₁	52		
	esP	V ₁ V'	41 20		
	eS	N'E'	43 33		
	iS	NV'N'E'	33		
	iS	VV ₁	43.4		
	iS	NEN ₁ E ₁	45		
	i(PcS)	NEN ₁	44 06.5		
	e	N ₁	40		
	esS	N ₁ N'E'	46 33		
	isS	V ₁ E ₁ V'	33		
	SS	NEE ₁	47 00		
	iScS	NN ₁	50.5		
21	eL	N'	08 35	u,s,e,	44.8 N 111.6 W 33 km Hebgen Lake region
	eL	V'E'	38.2		
	eL	N'	39.5		

Date	Phase	Component	Time	Direction of Motion	Remarks.	
21	eP	V'	23 21 35		23.1 N 93.3 E 37 km India-China border region	
	ePcP	VNEV'N'E'				40
	i	V				23 12.0
	ePP	V,V'N'E'				24 44
	e	N'E'				26 13
	ePPP	V'N'				42
	e	N'				26 03
	e	N'				31 00
	iS	E,V'N'E'				43
eLr	V'E'	43.3				
23	iPKP ₁	VV,V'	02 15 52.2	u	19.3 N 53.0 W 31 km North Atlantic Ocean	
	i	VVE				16 02.1
	ePKP ₂	N'E'				14
	e	N'E'				19 06
	ePP	V'N'E'				42
	e(SKKS)	N'				22 44
	e	E'				23 03
	eSKSP	N'E'				30 06
	ePPS	V'				32 50
	e(SS)	V'N'				33 36
	SS	V'N'E'				39 24
	SSS	V'N'E'				45 07
	eLq	N'E'				57.0
	L	N'E'				59.7
	L	V'				03 03.3
23	eP	VV'	21 13 23.9		44.0 N 147.5 E 45 km Kurile Is.	
	ePcP	VN				33
	ipP	VNV				43.7
	esP	VNEE'				50.4
	S	V'N'E'				28 25
	eSS	N'				33 00
	SS	V'N'				42
	e	V'				36 20
	eSSS	N'E'				53
	eLq	V'E'				33.3
	Lr	V'N'				43.3
24	iP	V	22 11 19.3	d	4.5 S 152.9 E 49 km New Britain region or possibly Santa Cruz Islands	
	e	V'N'E'				19.3
	eL	N'E'				22.4
25	eP	VNE	12 14 22		21.7 S 179.2 W 534 km Fiji Is. region	
	ipP	V				16 02.7
	eS	N'E'				13 43
	iScP	VNE				19 47.0
	L	N'E'				21 50
	eScS	N'				23 44
26	iP	VNEV N E'	14 30 52.7	u,s	2.2 N 126.3 E 43 km Molucca Passage	
	e	V ₁ E'				31 13
	i	VE				35.0
	e	N				32 19 $\frac{1}{2}$
	iPP	VNV				23.6
	e	N' E'				41
	e	N ₁				43
	eScP	VV ₁				36 32 $\frac{1}{2}$
	eS	N'E'				37 10
	e	V				37.5
	eSS	V'N'E'				40 24
	eL	N'E'				41.3
	L	V'				44.2
L	N'E'	44.6				

Department of Geophysics
 Australian National University
 CANBERRA A.C.T., AUSTRALIA
 MONTHLY SEISMOLOGICAL BULLETIN
 NOVEMBER, 1964

Latitude: 35° 19' 15"S Longitude: 148° 59' 55"E Height: 700 M

Instruments: Three-component Benioff variable reluctance seismograph.

- T_s = 1 sec
 - T_g = 0.25 sec (Short periods VNE)
 - T_g = 16 sec (Long period vertical V₁)
 - T_g = 70 sec (Long period horizontals N₁E₁)
 - Three-component Press Ewing long period seismograph
 - T_s = 30 sec
 - T_g = 100 sec
- } V'N'E'

Mount Stronlo quartz clocks provide accurate time marks and 50 c/s for drum drive.
 Directions of first motion taken from the three short period components.
 Epicentre locations are those given by USCGS.
 This bulletin contains only earthquakes of magnitude 5½ and over as quoted on the USCGS cards.

Date	Phase	Component	Time	Direction of Motion	Remarks.	
1	iP	VNEV E V'	12 34 00.9	u,s,e	65 km 3.1 N 128.1 E North of Halmahera	
	e	VN N ₁ V'				
	e	V ₁	07			
	e	V'N'	22			
	ePP	VNEV V'E'	35 22			
	PPP	V'N'E'	48			
	iScP	VNV	36 22			
	iS	NEV ₁ V'N'E'	39 34.7			
	esS	N' V'N'E'	40 20			
	Lq	N'E'	57			
	(SS)	V'E'	43 24			
	(SSS)	E'	33			
L	V'E'	44 20				
		47				
2	iPKP	V	07 09 43.8	u	91 km 4.1 S 76.9 W Northern Peru	
	i	V				44.4
	e	V				10 15
	ePS	V'				21 10
	eSS	N'E'				27 33
3	eP	VNE	13 35 35.8		35 km 1.7 S 149.8 E New Ireland Region	
	eS	V'N'E'				41 05
	eLr	N'E'				43 33
	LMax	V'N'E'				49
6	eP	VNV V'N'	10 05 25.1		60 km 44.4 N 149.0 E Kurile Is.	
	epP	VNV ₁ V'				39½
	eS	N'E'	15 26			
	ScS	N'E'	50			
	e	N'E'	20 06			
	SS	N'E'	23			
	eLq	E'	26 05			
	eL	V'	27.1			

Date	Phase	Component	Time	Direction of Motion	Remarks
7	eP?	V	15 01 21		33 km 45.5 N 150.3 E Kurile Is.
	e	V	47		
	S	N'	11 30		
	SS	N'	16 48		
	eL	E'	22 40		
	eL	V'N'	27 32		
8	iP	VN ₁ V'N'E'	02 48 01.3	u,n,w	49.0 S 163.7 E Auckland Is. Region
	i	VNEV ₁ N ₁ E'	07.1		
	S	EN ₁ E ₁ E ₁ ⁺	51 11		
	(Lq)	N ₁ N ₁ ' ₁	16		
	L	E ₁ ⁺	22		
	iLr	V ₁ N ₁ E ₁ V'N'E'	40		
	eT	E ₁ ⁺ ₁ ₁	03 00 31		
	eT	V	01 20		
	eT	N	33		
	TMax	E	04 54		
	TMax	V	05 17		
	TMax	N	41		
	11	eS	N'		
S		N'E'	12		
ePC		N'	32 36		
eSS		N'	37 55		
e		N'	39 09		
eL		N'	48.2		
15	eP	VNE	04 43 19		62 km 9.4 N 126.3 E Mindanao, Philippine Islands
	i	VN	20.7		
16	iP	VV'	22 49 05.1	d u,s,e	33 km 1.0 N 118.8 E Borneo
	i	VNEV ₁ N ₁ E'	06.6		
	ipP	VNEV ₁ N ₁ E ₁ ⁺	14.1		
	i	VN ₁ ₁ ₁	52.5		
	i	V	50 12.3		
	ePP	VV ₁	50		
	i	V ₁	51 18.2		
	S	EV'N'E'	55 50		
	e(SS)	N ₁ E ₁ N'	59 06		
	e(Lq)	E ₁ ⁺ ₁	16		
	eL	V'	34		
	Lr	V'	43		
	17	iP	VN ₁ V ₁ N ₁ V'N'		
i		VN ₁ ₁	43.0		
i		VNEV ₁	47.0		
i		VNEV ₁ N ₁ E ₁ V'	50.9		
ipP		VNEV ₁ N ₁ E ₁ ⁺	53.9		
PP		V ₁ N ₁ ₁ ₁	22 41		
iS		VN ₁ N ₁ E ₁ V'	26 29		
e		V'E ₁ ⁺ ₁	28 20		
Lq		E'	45		
Lr		V'	29.7		
17		e(P)	V	11 08 27.6	d,n,e
	iP	VNEV ₁ E ₁	28.0		
	pP	VE ₁ ₁	09 58		
	S	NN ₁	12 44		

Date	Phase	Component	Time	Direction of Motion	Remarks.
18	iP	V	22 27	58.2	d 38 km 20.2 S 174.1 W Tonga Is.
	i	V _{EE} ₁ E'		59.1	
	e	E' ₁	29	52	
	e(S)	E'	33	26	
	S	N'E'		31	
	e	N'	35	10	
	e(Lq)	E'		32	
L	N'	36	25		
18	iP	V _{IN} '	14 40	58.3	u,s 49 km 6.0 S 148.2 E New Britain region
	i	N	41	04.0	
	ipP	V _{INEN} ₁ E' ₁ N'		07.6	
	e	V		28	
	ePP	N'		50	
	iPcP	V	43	59.3	
	iS	N ₁ N'E'	45	37	
	iS	EE ₁		42.1	
	sS	NN ₁	46	02.8	
	Lq	E' ₁	47	28	
	e(SS)	N'		37	
	iScP	V		38.4	
	L	E'	48.9		
	L	N'	49	30	
19	iP	V _N	15 51	54.8	38 km 3.4 S 150.1 E New Ireland region
	i	V _{NV} ₁ E' ₁		58.4	
	e	V ₁	52	20	
	ePP	V ₁	53	07	
	iPcP	V	54	48.3	
	e(S)	N'E'	56	43	
	S	N'E'	57	04	
	e	V'		34	
	SS	V'N'E'	58	56	
	eL	V'E'	16 00.4		
	eL	V'N'	01	22	
19	iP	V _{NV} ₁ N ₁ V'N'	23 41	10.3	d 3 km 6.0 S 150.8 E New Britain region
	i	V _{NV} ₁ N ₁ E' ₁		16.2	
	i	V _N ₁ ₁ ₁		19.1	
	i	V _{NEV} ₁ N ₁ E' ₁ E'		22.1	
	e	N ₁ V'N'E' ₁	45	22	
	iS	N ₁ E' ₁ V'N'E'	46	06.2	
	e	N ₁		26	
	Lq	E'	47.0		
Lr	V'	48.0			
20	eP	V	01 01	37.7	38 km 6.9 S 149.9 E New Britain region
20	iP	V _{NEV} ₁ N ₁ E' ₁	19 27	11.2	d 152 km 4.9 S 145.4 E Near north coast of New Guinea
	eS	N' ₁	31	58	
	e(sS)	N'	32	48	
	eL	N'E'	33		
20	eP	V _V ₁	23 45	23	38 km 44.6 N 149.7 E Kurile Is.
	eS	N'E'	55	19	
	PS	N'	56	06	
	eSS	E'	00 00	16	
	SS	N'		26	
	Lq	E'	06	15	
	eL	N'	06.5		
	eL	E'	07.6		

Date	Phase	Component	Time	Direction of Motion	Remarks.	
21	iP	VNEV ₁ N ₁ E ₁	02 24 23.0	d,n,w	243 km 1.0 N 124.0 E Northern Celebes	
	ipP	VNE ₁	25 10.8			
	e	V'N'	14			
	iPcP	VNEV ₁	26 08.1			
	ePPP	V'N'E'	50			
	iScP	V	29 08.9			
	ePcS	VN	30.3			
	iS	VNEV ₁ N ₁ V'N'E'	30 31.9			u,n,e
	iScS	VNEV ₁ N ₁ E ₁ V'N'E'	33 46			
	e	V' 1 1 1	34 04			
	L	E'	37.2			
	L	V'N'E'	39.6			
23	eP	V	19 53 00.4		33 km 56.0 S 27.6 W South Sandwich Is. region	
	eL	E'	20 20.2			
	eL	N'	29.7			
23	eP	VNN'	22 23 38.2		66 km 0.1 S 124.5 E Molucca Sea	
	i	VNV ₁ E ₁ E'	41.0			
	ipP	VNEV ₁ E ₁ V'	46.2			
	i	V	24 00.6			
	ePP	VV ₁ N'E'	25 10			
	ePPP	VV ₁	39			
	eS	EE ₁ N'E'	29 46			
	eSS	N'E'	32 48			
	SS	V'E'	33 04			
	eL	V'E'	37.5			
eL	N'	38.3				
24	eP	VNV ₁	01 44 47.5		33 km 6.3 S 150.7 E New Britain region	
	ePP	V'N'	45 33			
	eS	N'	49 37			
	e	V'	52			
	eLq	E'	51 38			
	eL	V'	52.4			
	eLr	V'N'	53.2			
24	iP	VNEV ₁ N ₁ E ₁ V'	10 49 53.9	u,s,e	125 km 6.8 S 107.4 E Java	
	ipP	VEV ₁ V' 1 1	50 26.4			
	i	VV' 1	33.6			
	e(sP)	E'	40			
	ePcP	V	51 26.1			
	e	V'	52 20			
	iScP	VN'E'	35.3			
	eS	N'E'	56 45			
	esS	N'	57 27			
	eSS	V'N'E'	11 00 08			
	(SS)	V'N'E'	37			
eLr	V'E'	08.9				
24	eP	V	12 50 15	u,s,e	5 km 13.1 N 124.7 E Luzon, Philippine Is.	
	i	V	16.2			
	i	VN ₁ E ₁ V'N'E'	17.5			
	i	VNE ₁ 1	20.9			
	e	NE	23			
	i	EV ₁	35.5			
	ePcP	V ₁	51 18			
	ePP	VV ₁ V'N'E'	14			
	eScP	VV ₁ V'	16			
	e	E ₁	35			
	eS	NN ₁ V'N'E'	44			
	iS	VNEV ₁ N ₁ E ₁ V'N'E'	47			d,w
	SS	V'N'E' 1 1	13 01 28			

Date	Phase	Component	Time	Direction of Motion	Remarks.
24	(SS) eSSS L eL	V'N' V' N'E' V'	18 01 49 03 22 04 15 05.7	(Quake Continued)	
25	iP e e ipP iPcP e i iaP iScP S iS iPcS sS eSS iScS	VNEV ₁ N ₁ E ₁ EE ₁ V ₁ VEV ₁ E ₁ V' V ₁ EE ₁ V ₁ VV ₁ VNEV ₁ N ₁ E ₁ E ₁ VNV ₁ N ₁ E ₁ V' ₁ N'E' VV ₁ N ₁ E ₁ N ₁ N'E' ₁ NNE ₁ V' ₁ N'E' VNV ₁ N ₁ E' V' ₁	09 30 51.3 31 56.4 32 37.3 39.0 43.1 50 33 07.7 46.5 35 33.0 36 11 11.4 13.1 39 25 39 46.9	d,n	610 km 4.3 S 122.2 E Celebes
26	eP i ePP e eS (SP) PPS eSS e Lq Lr L	VNV ₁ V' ₁ N' V' ₁ V' ₁ N' N' V' ₁ N'E' E' V' ₁ N'E' N'E' V'E' V'E' V' V' ₁ N'	10 31 47 47.4 34 16 35 05 40 29 39 53 43 43 46.5 47 36 49 54 52 36		33 km 24.9 N 122.0 E Taiwan region
27	iP i e i	VNV ₁ E ₁ V V V	13 59 14.3 38.5 45 14 00 06.4	d	36 km 37.9 N 133.3 E Near west coast of Honshu, Japan
28	ePP e e e e e e e	VE V E' V'E' N'E' N' V'E' N' E'	17 07 15.9 09 17.5 11 40 12 54 19 36 21 19 26 29 05 24	u	655 km 8.0 S 71.4 W Western Brazil
29	eP i eS eL	V V N'E' V' ₁ N'E'	17 07 22.2 30.3 18 14 45.5		33 km 55.5 S 26.0 W South Sandwich Is. region
30	iP i i i e ePcP ePP e(S) iS	VNE VNE VNEV ₁ E ₁ V' VNEV ₁ N'E' N N' V' ₁ N'E' N ₁ E ₁ V' ₁ N'E'	12 38 23.0 25.1 29.0 32.5 42 56 40 56 46 56 47 00	u	33 km 6.3 N 94.3 E Nicobar Is. region

Date	Phase	Component	Time	Direction of Motion	Remarks.
30	ePFS	V'N'	12 47 42	(Quake Continued)	
	ScS	V'E'	48 12		
	eSS	V'N'E'	51 10		
	Lq	N'E'	54 29		
	Lr	V'N'E'	56 23		
30	iP	V1E1	13 53 29.2	d,e	550 km 24.0 S 179.9 E South of Fiji Is.
	ipP	VV1	59 50.0		
	eS	E'1	19 02 46		
	ePcS	V1V1N1E1N1	04 33		
	esS	E'1111	05 46		

Seismograms read by
Angela Day

J.C. Jaeger.
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Canberra Dec. 1964

Department of Geophysics
Australian National University
CANBERRA A.C.T., AUSTRALIA
MONTHLY SEISMOLOGICAL BULLETIN
DECEMBER, 1964.

Latitude: 35° 19' 15"S Longitude: 148° 59' 55"E Height: 700 M

Instruments : Three-component Benioff variable reluctance seismograph.

$T_s = 1$ sec

$T_g = 0.25$ sec (Short periods VNE)

$T_g = 16$ sec (Long period vertical V_1)

$T_g \neq 70$ sec (Long period horizontals N_1E_1)

Three-component Press Ewing long period seismograph

$T_s = 30$ sec

} V'N'E'

$T_g = 100$ sec

Mount Stromlo quartz clocks provide accurate time marks and 50 c/s for drum drive.

Directions of first motion taken from the three ^{short} period components.

Epicentre locations are those given by USCGS.

This bulletin contains only earthquakes of magnitude $5\frac{1}{2}$ and over as quoted on the USCGS cards.

Date	Phase	Component	Time	Direction of Motion	Remarks.
1	iP	VNV ₁ E ₁ E ₁ '	04 59 57.1	d,n	232 km Tonga Is.
	i	V	05 00 41.8		
	epP	VNEV ₁	47.6		
	i	VV ₁	50.3		
	esP	N ₁	01 10		
	ePP	V'E'	16		
	esPP	E'	02 40		
	eS	E'	05 12		
	esS	E'	06 41		
	e	E'	07.0		
	e(SS)	E'	07 45		
	L	V'E'	08 10		
	e(ScS)	E'	09 56		
2	iP	VNEV ₁ E ₁ '	10 14 27.3	d,n	42 km 9.1 S 158.0 E Solomon Is.
	eS	N'E' ₁	19 09		
	eLr	N'E'	20.8		
	L	N'	21.8		
2	eP	VNEV ₁	14 32 36.4		16 km 49.1 S 121.4 E South of Australia
	i(PP)	VE	33 04.1		
	eS	N'E'	37 07		
	L	E'	39 30		
	L	N'	56		
3	eP	VV ₁	04 01 42.6		46 km 15.0 S 66.8 E Mid-Indian Rise.
	ePcP	VEV ₁ E ₁	48.5		
	eS	E' ₁	11 27		
	eSS	E'	16 34		
	eL	N'E'	21.8		
	L	N'E'	24.6		
6	iP	VNEV ₁ E ₁	05 47 03.9	d,n,e	551 km 18.0 S 178.5 W Fiji Is. region
7	iP	VV ₁ V'N'	09 04 47.5	u	54 km 5.4 S 151.3 E New Britain region
	e	V ₁ E ₁	05 18		
	ePP	N ₁ N ₁ '	42		
	i	E ₁ E ₁ '	06 11.9		
	PcP	V	07 50.7		
	eS	V'N'E'	09 40		

Date	Phase	Component	Time	Direction of Motion	Remarks.
7	iS	V'N'	09 10 02	(quake Continued)	
	eL	E'	11 32		
	Lr	V'	42		
	L	N'	13 26		
9	eSKS	N'	13 58 58		586 km 27.5 S 63.2 W Santiago del Estero Province, Argentina
	eSP	N'	14 02 30		
	ePS	N'	03 44		
	eSS	N'	09 06		
	esSS	N'	12 22		
10	iP	VNEV ₁ E ₁	15 22 51.0	u	38 km 40.4 N 138.9 E Eastern Sea of Japan
	ePcP	V ₁	23 07		
	i	V ₁	24 20.1		
11	iP	VNV ₁ E ₁	16 15 50.1	u,s	550 km 33.9 N 130.0 E Sea of Japan
	iPcP	V	16 04.1		
	e	V	21½		
11	iP	VNEV ₁ N ₁ E ₁	22 49 34.4	d,n	47 km 6.3 S 131.2 E Tanimbar is. region
	e(PP)	NEE ₁	50 40		
	e(Lq)	N' ₁	56 42		
	eL	N'	59.5		
12	iP	VNV ₁ E ₁	07 25 52.9	u,s	38 km 6.9 S 150.6 E New Britain region
	i	VNV ₁ N ₁	26 23.3		
	eS	N'	30 44		
	iS	V'N'	52		
	eL	V'N'E'	33 10		
16	iP	VNEV ₁ N ₁ E ₁	04 03 33.3	d	121 km 6.0 N 125.3 E Mindanao, Philippine Is.
	i	VN	52.1		
	pP	VNV ₁	04 07		
	iPcP	VV ₁	05 09.4		
	S	V'N'E'	10 20		
	e(sS)	N'E'	55		
	(SS)	V'N'E'	13 43		
	e	E'	18 16		
	L	V'N'	18.7		
17	eP	V	23 57 48.4		57 km 51.4 N 177.9 W Aleutian Is.
	eSKS	E,N'	00 08 15		
	eS	E'	44		
	eSP	E'	09 44		
	ePS	N'	54		
	ePPS	N'	10 33		
	e	N'	54		
	eSS	N'	14 42		
	eL	N'	18.9		
22	iPKP	V	08 20 23.8	d	115 km 18.4 N 63.3 W Mona Passage
	e	NE	30		
	i	V	34.5		
	i	V	21 33.2		
22	i	V	24 02.1		14 km 31.9 N 117.1 W Off west coast of Baja, California.
	e	N'	21 21 43		
	ePS	V'N'	23 25		
	eSS	V'N'	29 19		
23	eLq	N'	40 11		38 km 59.4 S 26.9 W South Sandwich Is. region
	eLr	V'	45 25		
	eS	N'E'	06 09 45		
	ePS	N'	10 52		
	eSS	V'N'	15 42		
23	eL	N'	27.4		
	eL	V'	07 04.4		

Date	Phase	Component	Time	Direction of Motion	Remarks.	
24	iP	VNEV ₁ N ₁ E ₁	18 51	56.1	u	93 km 4.4 S 153.1 E New Ireland region
	epP	VNV ₁ N ₁ ¹ ₁	52	19 $\frac{1}{2}$		
	(sP)	E ₁		34		
	ePP	V	53	08		
	ePPP	VN'		20		
	iPcP	V	54	52.9		
	iS	V ₁ N ₁ 'E'	56	56		
	e	V ₁ N ₁	57	36		
	e	V ₁	59	28		
	eL	E ₁		35		
	eL	E ₁ ⁺		56		
	eL	N'	19	00.3		
	25	eP	VNE	01 17		
e		E		19		
26	iP	VNV ₁ E ₁ V'	14 43	02.2	d	136 km 51.8 N 156.8 E Kamchatka
	e	N' ₁	53	05		
	eS	E'		30		
	e(SP)	E'	54	26		
	e(PS)	N'		36		
	e	N'	55	32		
	e	N'	15	00 20		
	e	N'		04.8		
	eL	V'N'		07		
	27	iP	VNV'	17 52		
i		VNV ₁		39.3		
i		VNV ₁ ⁺		47.0		
ePP		V'	55	16		
eS		VN ₁ ⁺ V ₁ N ₁ E ₁ V'N'	18 00	07		
i		E'		11		
e		V'	02	24		
eSS		V'N'	03	44		
eL		V'		04.7		
L		V'		08.1		
28	iP	VE	16 21	36.4	d,e d,n,e	
	i	VNEV ₁ N ₁ E ₁		38.5		
	ePP	VEV ₁	23	16.2		
	iPcP	V	24	19.4		
	iS	VNEV ₁ N ₁ E ₁ N'E'	25	57		
	e	N ₁	26	24 $\frac{1}{2}$		
	iScP	V ₁	27	06.1		
	e	N ₁ N'		38		
	SS	N ₁ N'	29	02		
	e	E ₁ E'		16		
	iScS	NEN ₁ N'	31	03		
	e	N' ₁	32	02		
	sScS	N ₁ N'E'	35	02		
	PKKP	N ₁ ⁺	46	13		
	PKKS	N'	50	12		

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