

13 JUN 1963

Copied by J. B. JAN 63

 UNIVERSITY OF ADELAIDE SEISMOLOGICAL STATION to MAR
 ADELAIDE (MT. BONYTHON)

Latitude: $34^{\circ} 58' 01''$ Longitude: $138^{\circ} 42' 32''$
 Height above mean sea level: 2150'
 Foundation: Sandstone
 Instruments: World-wide standard seismograph system Benioff
 short period seismometers

$T_0 = 1.0$ secs. $T_g = 0.75$ secs.

Sprengnether long period seismometers

$T_0 = 30$ secs. $T_g = 100$ secs.

No.	Date 1963 JAN.	Phase	Time (G.M.T.)	Δ Km.	Remarks
1	1	iP NEZ iPcP Z i(S) NEZ i Z eL NEZ	12 23 51.8 C 26 36.7 28 53 30 09 33.2	3570	USCGS: 6.8S, 155.9E h = 165 km. Solomon Islands
2	1	iP NEZ	14 50 00.1 D	4540	USCGS: 3.4N, 122.9E h = 590 km. Celebes Sea
3	1	iP NEZ	16 35 25.4 C	4760	USCGS: 20.0S, 175.4W h = 100 km. Tonga Islands
4	1	eP NEZ iS NEZ eL NEZ	19 44 11 50 56 57.3	5010	USCGS: 40.2S, 81.3E h = 33 km. Indian Ocean
5	1 ✓	ePP NEZ eSP NZ	23 57 36 06 41	11750	USCGS: 56.6N, 157.7W h = 50 km. Alaska Peninsula Mag $6\frac{1}{2}$ (Pas)
6	2	eP NEZ	03 29 54	3420	USCGS: 5.8S, 150.0E h = 33 km. New Britain Island
7	2	eP NEZ eS NEZ	06 57 19 57 49		Local
8	2 ✓	iP NEZ ipP EZ eS NEZ e NEZ eL EZ e N eL N	15 02 20.5 C 02 30 07 20 08 12 10.5 11 32 12.5	3430	USCGS: 4.1S, 135.2E h = 33 km. Near south coast of western New Guinea
9	2	eP Z eL NEZ	16 06 58 27.3	7830	USCGS: 52.9S, 118.2W h = 33 km. South Pacific Ocean
10	2	eP NEZ isP NEZ i Z eL NEZ	18 05 52 06 10 06 30 14.5	3410	USCGS: 4.3S, 135.2E h = 33 km. Near southern coast of New Guinea
11	2	iP NEZ	18 37 35.0 C	3760	USCGS: 10.7S, 165.0E h = 39 km. Santa Cruz Islands
12	3 ✓	eP NEZ eL NZ	03 15 48 36.0	7200	USCGS: 29.7N, 130.1E h = 33 km. Ryukyu Islands
13	3 ✓	iP NEZ i NZ eS NEZ eL E eL NZ	09 46 02.1 46 13 51 08 53.6 55.2	3520	USCGS: 5.3S, 151.5E h = 74 km. New Britain, Felt: Palmalmal, Pomio, Karlai and Rabaul, Mag $5\frac{1}{4}$ (Pal)

No.	Date 1963 JAN.	Phase	Time (G.M.T.)	Δ Km.	Remarks
14	3	eP eL	NEZ NZ	14 02 53 12. 5	3530 USCGS: 6.9S, 155.2E h = 91 km. Solomon Islands. Felt: Boku
15	3	iP	NEZ	19 19 29.6 D	3620 USCGS: 5.9S, 155.0E h = 99 km. Solomon Islands
16	X 4 ✓	ePKP	NEZ	00 44 07	16000 USCGS: 1.2N, 27.7W h = 33 km. 1500 km south of Cape Verde Islands
17	X 4 ✓	eP	NEZ	05 53 10	7150 USCGS: 29.7N, 142.2E h = 33 km. Bonin Islands region
18	4	eP	NEZ	06 29 59	
19	4	eP eL	EZ Z	06 50 33 07 00. 5	3930 USCGS: 32.6S, 178.6W h = 44 km. Kermadec Islands region
20	X 4 ✓	iP eS esS iScP eL	NEZ NE NE Z NEZ	12 23 09.3 C 28 19 28 48 30 38 02. 9	3690 USCGS: 4.7S, 154.0E h = 69 km. Solomon Islands region, Felt: Rabaul
21	4	iP	NEZ	18 25 19.4 D	
22	5	iP ipP ePP i	NEZ NEZ NEZ NEZ	00 27 41.0 D 27 50 29 18 35 26	4380 USCGS: 3.2N, 127.0E h = 33 km. Halmahera region
23	5	iP	NEZ	03 40 59.0	4460 USCGS: 3.4N, 125.3E h = 126 km. Sangihe Islands
24	5	eP eS e eL	Z NEZ EZ NEZ	13 11 04 16 16 17 24 19. 5	3440 USCGS: 17.8S, 167.9E h = 33 km. New Hebrides Islands. Felt: Port Vila
25	X 5 ✓	iP i iS eL	NEZ NEZ NEZ NEZ	13 22 33.6 D 23 02 27 23 30. 4	3130 USCGS: 10.0S, 124.0E h = 33 km. Timor
26	5	eP	NZ	15 15 29	
27	X 5 ✓	ePKP	NEZ	18 01 40	14330 USCGS: 7.0S, 72.1W h = 544 km. Western Brazil
28	6	iP eS eL	NEZ NEZ Z	03 26 41.3 C 32 57 38. 9	4860 USCGS: 6.0N, 125.3E h = 143 km. Near coast of Mindanao, P.I.
29	6	iP eL	NEZ Z	15 31 12.1 D 38. 5	3660 USCGS: 4.9S, 153.8E h = 131 km. Solomon Islands region
30	X 6 ✓	iP i i i eL	NEZ EZ EZ NEZ NEZ	19 52 59.8 D 53 26 53 50 58 37 20 00. 2	3290 USCGS: 8.9S, 123.8E h = 33 km. Near Flores
31	7	eP	EZ	03 05 40	
32	7	eP eS	NEZ NEZ	06 16 18 16 32	Local?
33	7	eP eS eL	NEZ NEZ NEZ	06 31 09 36 17 40. 9	3540 USCGS: 6.4S, 154.7E h = 80 km. Solomon Is. region, Felt: Boku
34	X 7 ✓	iP eS eL	NEZ NEZ NEZ	11 55 32.0 C 12 01 17 03. 3	4120 USCGS: 0.6N, 126.7E h = 42 km. Halmahera region. Mag 5 $\frac{1}{2}$ -5 $\frac{3}{4}$ (Pal)

No.	Date 1963 JAN.	Phase		Time (G.N.T.)			Δ Km.	Remarks
35	8	eP	NEZ	01	48	36		Local
		eS	NEZ		49	06		
36	X 8 ✓	eP	NEZ	15	57	18	7360	USCGS: 31.2N, 130.2E h = 177 km. Near south coast of Kyushu, Japan
37	9	eP	NEZ	02	09	47	4160	USCGS: 28.9S, 177.4W h = 71 km. Kermadec Islands
		eL	Z		20.	5		
38	X 9 ✓	eP	NEZ	03	22	31	5970	USCGS: 18.6N, 145.4E h = 192 km. Mariana Islands
39	9	eP	NEZ	06	59	21	3100	USCGS: 10.3S, 124.0E h = 33 km. Timor region
		eL	Z	07	11.	0		
40	9	eP	NEZ	07	06	33		
41	9	iP	NEZ	08	00	18 D		
42	9	iP	NEZ	21	22	19.0	3540	USCGS: 4.3S, 128.5E h = 174 km. Banda Sea
43	9	eP	NEZ	21	45	24	5020	USCGS: 16.6S, 174.8W h = 270 km. Tonga Islands region
44	10	eP	NEZ	19	03	23	5380	USCGS: 13.1N, 146.5E h = 61 km. Mariana Islands
45	10	iP	NEZ	20	20	54.1 C	4880	USCGS: 4.2S, 149.3E h = 29 km. New Britain
46	X 11 ✓	eP	NEZ	12	25	36	10490	USCGS: 45.0S, 75.7W h = 33 km. Near coast of southern Chile
		eL	NEZ		55.	1		
47	11	iP	NEZ	17	12	27.9	4130	USCGS: 29.4S, 178.6W h = 225 km. Kermadec Islands
		i	EZ		13	24		
		iPcP	NEZ		14	46		
48	11	eP	Z	21	08	34		
49	12	eL	NEZ	00	30.	6		
50	12	eP	NEZ	04	28	37	5860	USCGS: 15.1N, 120.5E h = 83 km. Luzon, Phillipine Islands
		e	Z		28	43		
51	12	iP	NEZ	09	20	09.8	4010	USCGS: 1.8N, 129.3E h = 112 km. Halmahera region
		i	Z		20	20		
52	12	eP	NEZ	10	55	29		
53	12	eP	NEZ	11	54	32		
54	12	iP	NEZ	23	29	50.4 D	4860	USCGS: 7.1N, 125.2E h = 84 km. Mindanao, P.I.
		i	NZ		29	55		
55	13	eL	Z	04	38.	6		
56	13	iP	NEZ	08	00	17.7 C	4320	USCGS: 2.1N, 125.4E h = 144 km. Northern Celebes region
57	13	eL	NEZ	13	09.	3		
58	13	iP	NEZ	13	49	53.8 C	3980	USCGS: 14.0S, 171.2E h = 634 km. New Hebrides Islands region
59	13	eL	NEZ	16	32.	1		
60	13	eP	NZ	22	21	30		
Z long period heater switched on - trace flat from 03 GMT on 14th - 2347 on 18th								
61	14	eP	NEZ	11	25	56	3340	21.2S, 169.3E h = 33 km. Loyalty Islands
		eL	NEZ		43.	5		
62	15	eP	NEZ	02	41	20	5390	USCGS: 13.4N, 145.3E h = 38 km. Mariana Islands

No.	Date 1963 JAN.	Phase	Time (G.M.T.)	Δ Km.	Remarks
63	15	iP e	NEZ NEZ 09 39 21.9 D 39 38		
64	15	eP e(S) eL	NEZ NE NE 17 47 55 53 44 55. 7	4560	USCGS: 17.1S, 179.6W h = 276 km. Fiji Islands
65	15 ✓	iP i i i iS	NEZ NEZ EZ EZ NE 19 33 32.2 D 33 47 35 22 38 22 39 02	4510	USCGS: 20.5S, 177.9W h = 496 km. Fiji Islands
66	16	eL	NE 03 40. 5		
67	16 ✓	eP e(S) eL	NEZ NE NE 21 15 21 20 48 23. 5	3800	USCGS: 11.1S, 111.6E h = 94 km. South of Java
68	17 ✓	iP e	NEZ NE 20 51 17.8 C 51 45	6840	USCGS: 25.6N, 125.2E h = 140 km. Ryukyu Island
69	18	eP eS eL	NEZ NEZ Z 05 53 31 56 54 58. 6	2030	USCGS: 32.0S, 117.1E h = 35 km. Western Australia. Felt.
70	18	eP	NEZ 07 16 21		
71	18	iP	EZ 21 23 29.8 D	3960	USCGS: 11.0S, 167.0E h = 33 km. Santa Cruz Islands
72	21	eL	Z 07 47. 1		
73	21	eP e e eL eL	NEZ NZ NEZ NEZ NZ 10 42 01 47 50 48 47 50. 7 55. 6	3540	USCGS: 3.0S, 136.2E h = 57 km. Western New Guinea
74	21	iP	NEZ 12 02 54.0 D	3760	USCGS: 2.7S, 150.1E h = 50 km. New Ireland region
75	24 ✓	iP ePP iS	NEZ NEZ NEZ 09 35 44.5 C 37 25 40 48	3870	USCGS: 6.0S, 112.6E h = 493 km. Java Sea
76	24	eP	NEZ 10 21 16	3540	USCGS: 10.1S, 160.8E h = 33 km. Solomon Islands
77	24	eP eL	NEZ EZ 12 17 44 31. 5	5220	USCGS: 15.2S, 173.6W h = 33 km. Tonga Islands region. Felt: Apia
78	24 ✓	iP e e(S) eL	NEZ NEZ E NE 22 35 07.4 D 40 49 42 07 45. 2	4920	USCGS: 8.0N, 126.8E h = 67 km. Off east coast of Mindanao, P.I.
79	24	eP?	NEZ 22 52 23	4920	USCGS: 8.0N, 126.6E h = 44 km. Near east coast of Mindanao, P.I.
80	24	eP?	NEZ 23 30 12	4910	USCGS: 7.7N, 126.0E h = 150 km. Near east coast of Mindanao, P.I.
81	25 ✓	eP?	NEZ 00 22 11	3410	USCGS: 20.3S, 169.6E h = 135 km. Loyalty Islands region
82	25 ✓	eP e(PcP)	NEZ NEZ 12 59 05 59 53	6290	USCGS: 21.8N, 143.8E h = 190 km. Mariana Islands region
83	25	eP	NEZ 14 38 23	2930	USCGS: 04.6S, 147.4E h = 33 km. Off north coast of New Guinea
84	25	eP eL	NEZ NEZ 20 29 09 45. 0	5010	USCGS: 19.0S, 173.3W h = 129 km. Tonga Islands

No.	Date 1963 JAN.	Phase	Time (G.N.T.)	Δ Km.	Remarks
85	26	eP NEZ	00 19 19		
86	26	eP NEZ	08 55 10		
87	27	iP NEZ eL Z	01 02 02.0 D 35. 2		
88	27	iP NEZ	16 59 16.8 D	3790	USCGS: 10.5S, 165.0E h = 107 km. Santa Cruz Islands
89	27	eP NEZ eL NEZ	18 52 36 19 01. 7	3560	USCGS: 5.2S, 152.3E h = 72 km. New Britain, Felt: Savit, Karlai Rabaul
90	28	eL NEZ	00 42. 2		
91	28	iP NEZ	10 45 33.4 C	3500	USCGS: 19.0S, 169.6E h = 220 km. New Hebrides Islands
92	X 28 ✓	iP NEZ iPP Z iS NEZ i NEZ eL NEZ	12 19 0.0 C 20 14 24 24 26 10 27. 5	3760	USCGS: 2.6S, 149.9E h = 33 km. New Britain, Mag 6½ (Pas)
93	28	eP NZ	13 34 27		
94	28	iP NEZ	13 57 21.6 D	4540	USCGS: 19.7S, 178.1W h = 587 km. Fiji Islands
95	28	eP NEZ i NZ	16 14 22 14 34	4050	USCGS: 31.2S, 177.7W h = 33 km. Kermadec Islands
96	28	eP NEZ iS NEZ	20 43 04 43 30.5		Local
97	X 29 ✓	eP NEZ e NEZ	09 33 41 43 56	9490	USCGS: 49.7N, 154.9E h = 126 km. Kurile Islands
98	29	iP NEZ (e) E eL EZ	21 16 22.8 D 23 07 29. 5	5320	USCGS: 12.9N, 143.2E h = 144 km. Mariana Islands
99	30	eP Z eL Z	01 56 36 02 27. 8		
100	30	eL Z	05 30. 7		
101	30	eP NEZ	06 15 41	4200	USCGS: 0.2N, 123.4E h = 33 km. Northern Celebes
102	30	eL NEZ	09 19. 9		
103	X 30 ✓	eP NEZ ePP NEZ iS NE eSP N i N iSS NE i NZ eSSS E i E eL NEZ eL NEZ	10 22 58 26 37 33 43 35 10 39 22 39 42 40 18 42 52 45 48 48. 0 57. 7	9890	USCGS: 55.6S, 28.3W h = 33 km. Sandwich Islands region
104	30	eP NEZ	10 58 10		
105	30	eP Z eL Z	15 50 26 16 21. 4		
106	30	eP NEZ	20 15 45		

6.

No.	Date 1963 JAN.	Phase	Time (G.M.T.)	Δ Km.	Remarks
107	31 ✓	eP NEZ i NZ i Z iS NEZ e NEZ eL E eL NZ	05 17 07 17 09 17 13 25 38 32 28 34. 5 36. 4	7070	USCGS: 27.9N, 126.3E h = 33 km. Ryukyu Islands
108	31	eP NZ eL Z	09 48 44 10 25. 1		

A. SLADE

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g.B.*

FEB 63

UNIVERSITY OF ADELAIDE SEISMOLOGICAL STATION

ADELAIDE (MT. BONYTHON)

Latitude: 34° 58' 01" Longitude: 138° 42' 32"

Height above mean sea level: 2150'

Foundation: Sandstone

Instruments: World-wide standard seismograph system Benioff short period seismometers

To = 1.0 secs. T_g = 0.75 secs.

Sprengn ether long period seismometers

To = 30 secs. T_g = 100 secs.

No.	Date 1963 FEB.	Phase	Time (G.M.T.)	Δ Km.	Remarks
1	1	eP NEZ	09 51 19	3570	USCGS: 8.5S, 159.1E h = 144 km. Solomon Is. Felt at Honiara
2	1	eP NEZ e Z	10 23 07 23 17	3620	USCGS: 3.0S, 131.0E h = 33 km. Ceram region
3	2	eP NEZ eL Z	07 56 59 08 44. 7	3410	USCGS: 9.2S, 120.2E h = 50 km. Sumba Strait
4	3	iP NEZ	01 54 32.8 D	4170	USCGS: 23.9S, 179.7W h = 500 km. Fiji Islands region
5	4 ✓	eP NEZ e NZ eL NEZ	01 23 09 23 24 ✓ 31. 3	3330	USCGS: 6.3S, 149.1E h = 36 km. New Britain region
6	4	eP NEZ	09 24 21	4620	USCGS: 17.4S, 178.8W h = 552 km Fiji Is. region
7	4	eL NZ	15 20. 0		
8	4	eP NEZ iS NEZ	22 44 44.5 44 50		Local?
9	4 ✓	iP NEZ i NZ	23 33 35.1 33 ✓ 53	9360	USCGS: 48.5N, 154.9E h = 85 km. Kurile Islands
10	5	eP NEZ ePcS Z eL Z	19 36 20 42 23 46. 5	3910	USCGS: 31.9S, 179.0W, h = 68 km. Kermadec Islands
11	5 ✓	eP Z eSKS NE eS NE eL NEZ	20 53 12 21 03 46 04 44 ✓ 27. 6	11230	USCGS: 38.4S, 73.2W h = 41 km. Near coast of Central Chile Mag. 6¼-6½ (Pas), 6-6¼ (Brk) 5¼-6 (Pal)
12	6	eP NEZ e NEZ eL NEZ	02 01 57 02 57 08. 2		
13	6	iP NEZ	02 36 40.1 C	3560	USCGS: 6.8S, 23.5E h = 637 km. Flores Sea
14	6	iP NEZ	06 01 00.0 D	4670	USCGS: 18.1S, 177.6W h = 500 km. Fiji Islands region
15	6 ✓	eP NEZ eS NE eL E eL Z eL N	10 26 52 31 56 34. 0 ✓ 36. 1 37. 0	3040	USCGS: 3.5S, 146.0E h = 33 km. Bismarck Sea

No.	Date 1963 FEB.	Phase	Time (G.M.T.)	Δ Km.	Remarks
16	6	iP NEZ	12 52 38.0 D	3460	USCGS: 22.2S, 171.3E h = 101 km. Loyalty Islands region
17	6	eP NEZ	15 50 41		
18	6	eP NEZ	17 42 49	4150	USCGS: 0.0, 124.1E h = 110 km. Molucco Sea. Mag 4.2 (CGS)
19	6	eL Z	19 01. 0		
20	6	iP NEZ eL Z	20 59 37.9 D 21 33. 7		
21	7	iP NEZ	01 30 42.2 D	4600	USCGS: 17.7S, 178.7W h = 559 km. Fiji Islands region, Mag 4.3 (CGS)
22	7	eP NEZ i NZ	03 35 08 35 20	2820	USCGS: 59.6S, 147.9E h = 33 km. 1000 km southwest of Macquarie Is. Mag 5.0 (CGS)
23	7	iP NEZ	15 05 26.3 D		
24	7	eL NEZ	17 27. 1		
25	8	eL NEZ	02 49. 3		
26	8	iP NEZ	18 24 19.0 C	4000	USCGS: 12.9S, 170.2E h = 628 km. New Hebrides Is. region
27	9	eP NEZ	05 55 42	3150	USCGS: 7.3S, 130.3E h = 200 km. Tanimbar Is. region, Mag. 4.3 (CGS)
28	9	iP NEZ	08 42 46.9 C	3600	USCGS: 15.0S, 167.4E h = 127 km. New Hebrides Is: Felt Santo Mag 4.5 (CGS)
29	X 9 ✓	iP EZ	16 ✓ 17 07.5 D	8770	USCGS: 43.7N, 150.6E h = 33 km. Kurile Is. region, Mag 4.8 (CGS)
30	9	eP NEZ eS N eL NEZ	17 01 10 06 26 08. 2	3530	USCGS: 35.9S, 177.9E h = 172 km. Off north coast of North Is. New Zealand, Mag 4.8 (CGS)
31	9	iP NEZ	17 14 20.2 D	4010	USCGS: 24.0S, 179.1E h = 550 km. South of Fiji Is. Mag. 4.7 (CGS)
32	X 10 ✓	iP NZ	21 ✓ 47 50.0 C	8780	USCGS: 44.6N, 147.8E h = 67 km. Kurile Is. region. Mag 5.0 (CGS)
33	X 10	iP NEZ i NEZ	23 28 38.5 D 28 50	4510	USCGS: 4.1N, 126.3E h = 40 km. Celebes Sea, Mag 4.3 (CGS)
34	11	iP NEZ	04 42 33.5 C	3810	USCGS: 29.8S, 179.1E h = 528 km. Kermadic Is. region. Mag 4.6 (CGS)
35	11	eL NEZ	12 44. 4		
36	11	eL NEZ	21 31. 6		
37	12	eP NEZ	17 49 52	3140	USCGS: 6.7S, 147.1E h = 120 km. Near north coast of New Guinea Mag 4.8 (CGS)
38	12	eP NEZ	18 50 06		
39	X 12 ✓	iP NEZ iPP EZ iS NE	23 14 28.8 D 16 12 20 02	4580	USCGS: 17.8S, 178.6W h = 583 km. Fiji Islands, Mag 5.5 (CGS)
40	X 13 ✓	iP NEZ iS NEZ i NEZ iL NEZ e NEZ e Z	09 00 15.5 C 08 29 09 30 13. 0 19 48 29 36	6900	USCGS: 24.5N, 121.8E h = 33 km. Northern Formosa: 3 killed - wide spread damage. Mag 7¼ (Pas.)
41	13	eP Z	09 40 49.7 C	6760	USCGS: 24.8N, 121.7E h = 33 km. Northern Formosa. Mag 5.4 (CGS)

No.	Date 1963 FEB.	Phase	Time (G.M.T.)	Δ Km.	Remarks
42	X/13	eP i iS iL	NEZ NEZ NEZ NEZ 18 20 20 20 23 25 16 27. 8	3560	USCGS: 9.9S, 160.8E h = 29 km. Solomon Islands, Felt: Honiara Mag. 6½ (Pas) 6½ (Bks) 6-6¼ (Pal) 5.8 (CGS)
43	13	eP	NZ 21 28 04	3510	USCGS: 10.1S, 160.3E h = 64 km. Solomon Is. Mag 5.1 (CGS)
44	14	iP eL	NEZ 06 54 50.0 D NEZ 07 03. 5		
45	X/14	iP i i iS iL	NEZ 07 10 26.0 D NZ 10 50 NEZ 15 04 NEZ 15 57 NEZ 18. 5	3250	USCGS: 7.2S, 128.2E h = 197 km. Banda Sea: Felt Darwin Australia Mag. 6½ (Pas), 5.8 (CGS)
46	14	eP	NZ 09 44 59	3550	USCGS: 9.8S, 160.6E h = 25 km. Solomon Is. Mag 5.0 (CGS)
47	X/14	eP i	NEZ 12 28 53 EZ 29 01		
48	14	eP	NZ 15 36 27		
49	X/14	iP	NEZ 21 51 32.3 D		
No time pips from 2315 GMT - 0058 GMT on 15th Exact time correction unknown between 15th - 17th Feb.					
50	18	eP e	NEZ 03 37 37 NEZ 38 41	4250	USCGS: 1.5N, 125.8E h = 41 km. Celebes region, Mag 4.3 (CGS)
51	18	iP	NEZ 15 47 26.0 D		
52	18	eL	Z 23 07. 0	3350	USCGS: 6.2S, 128.1E h = 370 km. Banda Sea Mag 5.3 (CGS)
53	19	eP e e	NEZ 01 31 02 NZ 31 14 NZ 31 51		
54	19	eP ePP e	NEZ 15 34 00 NEZ 35 11 Z 36 24		
55	19	iP eL	NEZ 16 52 10.3 D NZ 17 28. 6	4630	USCGS: 17.2S, 178.2W h = 612 km. Fiji Is. region, Mag 4.4 (CGS)
56	20	eP	NEZ 06 53 16		
57	20	eP	NEZ 08 19 38	3390	USCGS: 22.3S, 170.5E h = 33 km. Loyalty Is. region. Mag 5.0 (CGS)
58	20	eP i	NEZ 08 24 41 Z 24 47		
59	20	eP ePP eS eL eL	NEZ 08 50 12 Z 51 09 E 55 12 NE 56. 7 Z 58. 3		
60	20	e e eL	NEZ 17 33 08 NEZ 38 22 NEZ 50. 5	4700	USCGS: 20.6S, 175.1W h = 33 km. Tonga Is. region. Mag 5.2 (CGS)
61	21	iP	NEZ 06 20 05.4 C		
62	21	eP	NEZ 13 24 03		
63	X/21	eP e e	NEZ 14 36 33 N 46 28 NEZ 50. 6		

No.	Time 1963 FEB.	Phase	Time (G.M.T.)	Δ Km.	Remarks
64	21	eP NEZ	15 51 35	4160	USCGS: 0.9N, 126.8E, h = 101 km. Molucca Sea. Mag 4.4 (CGS)
65	21	eL NEZ	18 15. 3		
66	21	eP NEZ	19 51 33	4550	USCGS: 6.3S, 106.7E, h = 39 km. Near northwest coast of Java, Mag. 4.8 (CGS)
67	21	eP NEZ	20 00 08		
68	22	iP NEZ	08 05 57.1 D		
69	22	iP NEZ e NEZ	11 13 35.4 D 14 57		
70	22	iP NEZ	21 33 50.3		
71	23	eP NEZ	17 20 56		
72	24	eP NEZ	06 43 12	4560	USCGS: 19.7S, 179.0W h = 546 km. Fiji Is. region, Mag. 4.8 (CGS)
73	24	eL EZ	14 34. 5		
74	25	iP NEZ	02 59 56.8 C		
75	25	iP NEZ	04 58 57 C	5780	USCGS: 15.0N, 122.7E h = 58 km. Near east coast of Luzon P.Is.
76	25	iP NEZ	09 19 59.5 D		
77	25	eP EZ	14 54 57		
78	25	iP NEZ i NZ eL NEZ	17 21 12.5 C 21 27 40. 5		
79	25	eP NEZ	23 54 33		
80	26	eP NEZ eS NEZ	07 36 09.5 36 39		Local?
81	26	eP Z	10 26 38		
82	26	eP NEZ	12 59 37		
83	26	eP NEZ e NEZ	14 14 55 18 33		
84	26	iP NEZ iPP NEZ iPPP NEZ i Z iS NEZ iSS NE iL NEZ	20 19 47.0 C 20 35 20 54 22 36 24 16 25 12 27. 5	3120	USCGS: 7.5S, 146.2E h = 171 km. Eastern New Guinea. Mag 7 $\frac{1}{4}$ -7 $\frac{1}{2}$ (PAS) 7-7 $\frac{1}{4}$ (Brk). 6 $\frac{3}{4}$ -7 (Pal) 7.1 (CGS)
85	26	eP NEZ	20 53 07		
86	26	eP NEZ	22 37 09		
87	27	eP NEZ i NZ i NEZ iPP NEZ iS NEZ iL NEZ	04 36 11 36 22 36 33 37 30 41 08 45. 1	3370	USCGS: 6.0S, 149.4E, h = 52 km. New Britain Region. Mag 6 $\frac{1}{2}$ -6 $\frac{3}{4}$ (Pal) 5.2 CGS
88	27	eP NEZ	05 30 09	3340	USCGS: 6.2S, 149.2E h = 59 km. New Britain Region. Mag 4.5 (CGS)
89	27	eP NEZ	07 42 50		

5.

No.	Date 1962 FEB.	Phase	Time (G.M.T.)	Δ Km.	Remarks
90	27	eP i eS i eL	NEZ NEZ NZ Z NZ	20 35 01 35 14 40 36 41 29 44. 5	3660 USCGS: 4.6S, 152.9E h = 100 km New Britain: Felt Rabaul, Mag 5.0 (CGS)
91	28	iP	NEZ	01 41 49.0 D	

A. Slade

D.J. Sutton

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MARCH 63

UNIVERSITY OF ADELAIDE SEISMOLOGICAL STATION

ADELAIDE (MT. BONYTHON)

Latitude: 34° 58' 01" Longitude: 138° 42' 32'

Height above mean sea level: 2150'

Foundation: Sandstone

Instruments: World-wide standard seismograph system Benioff short period seismometers

To = 1.0 secs. T_g = 0.75 secs.

Sprengnether long period seismometers

To = 30 secs. T_g = 100 secs.

No.	Date 1963 MARCH	Phase	Time (G.M.T.)	Δ Km.	Remarks
1	1	e NEZ e NEZ	04 41 51 51 24		
2	1	eL Z	11 23. 9		
3	2	eP NEZ eL NEZ	01 40 39 52. 8	3100	6.5S, 131.4E h = 33 km. Banda Sea, Mag. 4.4 (CGS)
4	2	eP NEZ eL NEZ	05 45 16.8 57. 8	3420	1.8S, 143.6E h = 129 km. North of New Guinea, Mag 5.3 (CG)
5	2	eL NEZ	12 07. 4		
6	2	iP NEZ i NEZ	16 15 15.0 15 21		
7	2	eP NEZ i Z	17 50 58 51 09		
8	✓ 4	eP X Z	08 00 58		
9	✓ 4	eP X NEZ i NZ e NEZ eS NEZ eL NEZ	13 48 54 49 09 49 54 57 16 14 05. 9		
10	✓ 4	iP X NEZ e NEZ eL NEZ	15 58 50.5 D 16 02 03 43. 0		
11	4	eP NEZ eS E eL NEZ	19 10 22 15 48 19. 3	3460	19.3S, 169.5E h = 43 km. New Hebrides Is. region. Felt Tanna. Mag. 4.9 (CGS)
12	5	iP NEZ	06 56 46.6 D		
13	✓ 5 X	eP NEZ eL Z	07 24 02 08 04. 8		
14	5	iP NEZ	09 19 20.1 D	4630	17.5S, 178.6W h = 512 km. Fiji Islands region, Mag. 5.0 (CG)
15	5	eL Z	19 23. 8		
16	6	eP NEZ	06 37 27		
17	6	iP EZ	17 59 56.0 D	3820	11.4S, 166.5E h = 195 km. Santa Cruz Is. Mag 4.6 (CGS)

No.	Date 1963 MARCH	Phase	Time (G.M.T.)	Δ Km.	Remarks
18	6	eP EZ eL Z	19 56 05 20 05. 7	3240	9.8S, 155.2E h = 60 km. Solomon Is. region. Mag. 5.1 (CGS)
19	7	iP NEZ	01 56 53.2 D	3000	3.9S, 131.1E, h = 33 km. Ceram
20	7 X	iP Z iSKS NEZ iPS NEZ iSS E eL NEZ	05 34 52 45 40 46 36 51 32 06 03. 0	9770	113.5W, 27.0S h = 33 km. Mag. $6\frac{3}{4}$ (Pas.) Approx. 500 km. west of Easter Is
21	7 X	eP Z eL NEZ	12 29 50 13 00. 7		
22	8 X	eP NEZ eL NEZ	02 50 53 59. 8	3560	19.2S, 169.7E h = 33 km. New Hebrides Is. Felt: Tanna Mag. 5.3 (CGS)
23	8	eP NEZ e NEZ eL NEZ e NEZ	03 31 14 39 26 39. 7 48. 2	3500	19.2S, 169.6E h = 49 km. New Hebrides Is. Felt: Tanna Mag. 4.8 (CGS)
24	8	iP NEZ	14 07 12.8 D		
25	8	eP X NEZ	15 25 39		
26	8	eP NEZ	16 11 02	3420	21.3S, 170.2E h = 108 km. Loyalty Is. region, Mag. 5.0 (CGS)
27	8	eP NEZ	18 33 41		
28	9	eP NEZ	05 35 09	4930	8.9N, 126.3E h = 33 km. Near coast of Mindanao P. Is. Mag. 4.3 (CGS)
29	9	eP NEZ eS N eL NEZ	16 30 14 35 32 39. 2	3610	3.2S, 147.0E h = 33 km. Bismarck Sea. Mag. 4.8 (CGS)
30	9	iP NEZ i NZ	17 04 18 D 04 25		
31	9	eP NEZ iS N eL NEZ	19 02 21 07 39 11. 5	3660	3.2S, 147.1E h = 33 km. New Britain region. Mag. 4.9 (CGS)
32	9 X	iP NEZ	22 50 34.8 D		
33	10	iP NEZ	01 03 03.0 C		
34	10	iP NEZ	01 25 56.0 C	3570	15.2S, 167.2E h = 142 km. New Hebrides Is. Felt: Santo Mag. 4.9 (CGS)
35	10 X	iP NEZ eL NEZ	03 03 47.2 C 22. 9		
36	10	iP NEZ	09 45 16.5 D	3620	16.0S, 168.4E h = 283 km. New Hebrides Is. Mag. 4.5 (CGS)
37	10	eL Z	11 42. 2		
38	10	eP NEZ	12 58 52		Local?
39	10 X	iP NEZ i(P)? NEZ eL Z	13 58 41.9 D 59 55 14 12. 8	5150	2.4N, 126.6E h = 41 km. Celebes Sea.
40	11	iP NEZ	03 34 10 C		
41	11	iP NEZ	09 09 34.0 D	4640	18.7S, 177.6W h = 402 km. Fiji Is. region. Mag. 4.8 (CGS)
42	11	iP NEZ	09 49 47.9 C	3940	0.0S, 130.4E h = 33 km. Halmahera Region

No.	Date 1963 MARCH	Phase		Time (G.M.T.)			Δ Km.	Remarks
43	11	eL	Z	19	20.	7		
44	11	eL	NEZ	21	23.	6		
45	12	iP	Z	20	21	24.6 C	3540	16.2S, 167.7E h = 33 km. New Hebrides Is. Felt: Lamap & Santo. Mag 4.9 (CGS)
46	12	iP	NEZ	20	46	30 D	3540	7.1S, 156.0E h = 97 km. Solomon Is. Mag. 5.2 (CGS)
		eL	NEZ	21	31.	2		
47	12	eL	NEZ	21	57.	2		
48	13	eP	NEZ	07	45	15.5		Seismic?
49	14	iP	NEZ	01	59	44.2	1010	25.6S, 137.6E h = 33 km. Northern Territory, Australia
		i	NEZ	02	02	22		
50	✓ 14 X	iP	NEZ	08	09	53 D	6300	19.0N, 120.4E h = 51 km. Off coast of northern Luzon. P.I. Mag. 5.0 (CGS)
		eS	NEZ		17.	8		
		eL	NEZ		27.	5		
51	✓ 15 X	iP	NEZ	00	24	00 D	5000	8.4N, 126.4E h = 117 km. Mindanao, P.I. Mag. 5.0 (CGS)
		e	NEZ	00	24	12		
		e	Z	01	34	54		
		e	Z		38.	1		
52	15	eP	Z	11	03	29		
53	✓ 16 X	iP	NEZ	08	57	10.5 D	9150	46.5N, 154.7E h = 26 km. Kurile Islands region. Mag 6.2 (CGS)
		iPcP	NEZ		57	32		
		e	Z		58	14.1		
		ePP	NEZ	09	00	32		
		iPPS	NZ		08	48		
		iSS	NEZ		13	16		
		iPKKS	EZ		19	44		
54	16	e	NEZ	09	23.	0		
55	16	e	NEZ	10	07	32		
		e	NEZ		12	50		
56	17	eL	Z	17	55.	1		
57	18	e	Z	04	23.	7		
		e	Z		48.	2		
		e	Z		58.	7		
58	18	iP	NEZ	11	46	15.7 D	3550	7.6S, 120.2E h = 33 km. Flores Sea
59	18	iP	NEZ	13	23	15.0 C	4750	15.7S, 178.4W h = 561 km. Fiji Is. region
60	19	e	NEZ	06	03.	6		
61	19	eL	NEZ	13	28.	3		
62	19	eL	NEZ	14	56.	7		
63	19	eP	Z	18	18	19	3820	2.1S, 127.3E h = 33 km. Banda Sea
64	19	eP	NEZ	19	16	11.5	4950	8.3N, 126.6E h = 109 km. Near east coast of Mindanao, P.I. Mag. 4.2 (CGS)
No short period records for 20th - lights not switched on								
65	✓ X 20	e	NEZ	04	59.	2		
		e	NEZ	05	01.	5		

No.	Date 1963 MARCH	Phase	Time (G.M.T.)	Δ Km.	Remarks
66	✓ 20 X	e NEZ e E i NEZ i NZ	16 50. 7 52. 1 57 06 17 02 30		
67	✓ 21 X	eP NEZ e NEZ	04 11 25 38. 4		
68	21	e NEZ	14 23. 5		
69	22	e NEZ eL NEZ	12 49. 6 59. 7		
70	23	eP NZ	08 57 54	3130	4.9S, 145.7E h = 51 km. Near north coast of New Guinea Mag. 4.6 (CGS)
71	23	e NEZ	09 10. 7		
72	23	eP NEZ e Z	23 40 32 44. 8		
		No records for	24th - time pips missing - (Globe in programmer blown)		
	"	"	25th - " " " " " "		
73	✓ 26 X	iP NEZ i NEZ eS NEZ iScS NE	09 55 26.2 D 57 04 10 01 28 05 37	4110	29.7S, 177.8W h = 45 km. Kermadec Is. Felt: Raoul Island Mag. 6 $\frac{3}{4}$ - 7 (PAS)
74	✓ 26 X	iP NEZ iPP E iS E iSS NZ	13 32 10.0 D 33 46 37 50 40 40	4100	29.8S, 177.9W h = 42 km. Kermadec Is. Mag. 7 $\frac{1}{4}$ Pas.
75	✓ 26 X	iP NEZ iPcP Z iS NEZ	21 45 54 C 45 57.5 55 08	7850	36.0N, 135.7E h = 33 km. Near east coast of Honshu, Japan Minor damage in central Honshu Mag. 5.9 (CGS)
76	26	e NEZ	22 08. 1		
77	26	eP NEZ	23 57 55	3240	7.0S, 129.0E h = 235 km. Banda Sea
78	27	e NEZ	20 39. 8		
79	27	eP NEZ	21 46 54		
80	✓ 28 X	iPKP NEZ i Z iPcSPKP NEZ iSS NEZ iSSS NE eL Z	00 35 30 D 46 04 46 47 58 04 01 03 12 16. 2	16306	66.3N, 19.6W h = 15 km. Iceland, Slight damage and several people injured in northern Iceland. Mag. 6 $\frac{1}{2}$ (BKS)
81	✓ 28 X	iP NEZ	01 35 49 D	2120	16.0S, 131.9E h = 33 km. Northern Territory, Australia
82	28	eL Z	07 10. 5		
83	✓ 28 X	iP NEZ i EZ ePP NEZ iPcP Z eS NEZ e NEZ	11 19 36.0 C 19 55 21. 4 21 57 25. 7 30. 1	4070	30.2S, 177.8W h = 38 km. Kermadec Is.
84	28	e NEZ	14 48. 5		
85	28	eP NEZ	15 20 24.8	5150	10.2N, 126.2E h = 60 km. Near north coast of Mindanao P.I. Mag. 4.4 (CGS)
86	28	eP NEZ	17 20 13		

No.	Date 1963 MARCH	Phase	Time (G.M.T.)	Δ Km.	Remarks
87	28	iP NEZ ePcP Z iS E i N e NEZ	23 36 21.8 D 38 45 42 39 45. 2 46. 2	4140	29.6S, 177.5W h = 54 km. Kermadec Is. Mag 5.1 (CGS)
88	29	e Z	06 01. 2		
89	29	eP Z e NEZ	06 11 42 21. 4	3510	10.3S, 160.7E h = 32 km. Solomon Is. Mag 5.0 (CGS)
90	29	iP NEZ e(s) NEZ	21 57 20.0 58 11.2		Local
91	30	iP NEZ iPP NEZ iS NEZ eSS NEZ e NEZ	01 59 33.5 D 02 00 40 04 24 06. 4 08. 4	3460	19.1S, 169.1E h = 160 km. New Hebrides Is. Felt: Port Vila, Tanna and Anatom. Mag 6.1 (CGS)
92	30	e NEZ	11 57. 4		
93	30	eP Z eS NEZ	12 42 22 43 46		Regional?
94	30	eP NEZ e NEZ	17 04 03.5 27. 7		
95	31	eP NEZ e NEZ i(s) NEZ	00 27 40 28 18 29 06		Regional?
96	31	iP NEZ iPP EZ iS EZ eSS NEZ iL Z	05 37 54.8 C 39 36 44 04 46. 2 48 20	4100	29.9S, 177.7W h = 48 km. Kermadec Is. Mag 6 $\frac{1}{2}$ (BKS)
97	31	iP NEZ e Z iS NEZ iSS NEZ eL NEZ	07 13 44.1 C 13 52 18 49 20 38 22. 0	3350	6.1S, 149.0E h = 60 km, New Britain. Felt: Popondetto, Walindi & Kandrian, Mag 6 $\frac{1}{4}$ (Pas)
98	31	iP NEZ	09 14 25	4100	30.1S, 177.7W h = 48 km. Kermadec Is. Mag 5.2 (CGS)
99	31	iP NEZ	17 38 8.2	D	
100	31	iP NEZ iPcP NEZ iS EZ eSS NEZ eL NEZ	19 29 58.5 D 32 18 36 04 38. 4 40. 4	4070	30.0S, 178.0W h = 60 km. Kermedac Is. Mag. 5.8 (CGS)

 Seismograms read by
A. Slade

 D.J. Sutton
Director.

*Amie
Carnegi
gls*

APRIL 63
- JUN

UNIVERSITY OF ADELAIDE SEISMOLOGICAL STATION

ADELAIDE (MT. BONYTHON)

Latitude: $34^{\circ} 58' 01''$ Longitude: $138^{\circ} 42' 32''$

Height above mean sea level: 2150'

Foundation: Sandstone

Instruments: World-wide standard Seismograph system Benioff short period seismometers

To = 1.0 secs. $T_g = 0.75$ secs.

Sprengnether long period seismometers

To = 30 secs. $T_g = 100$ secs.

No.	Date 1963 APRIL	Phase	Time (G.M.T.)	Δ Km.	Remarks
3	2	eP NEZ eSS NEZ eL NEZ	04 50 40 59. 4 05 01. 5	4160	29.7S, 177.1W, h = 51 km. Kermadec Islands
4	2	iP NZ	11 43 38 D	4720	5.8S, 105.0E h = 91 km. Sumatra
5	2	eP NZ e Z e N e EZ	16 10 25 15. 8 21 33 26. 8		
6	3	iP NEZ i NEZ eS NEZ	01 39 46 C 40 15 45 15	3200	9.2S, 123.9E h = 33 km. Sawu Sea
7	3	eP NEZ eL Z	11 29 00 39. 6	4160	29.6S, 177.2W, h = 48 km. Kermadec Is. region, Mag. 4.4 (CGS)
8	3	iP EZ	11 51 41 D	3960	8.2S, 112.7E h = 163 km. Java
9	✓ 3 X	iP NEZ iS Z eL NEZ	14 58 28 C 15 06 30 17. 5	7060	55.4S, 128.2W, h = 33 km. South Pacific Ocean, Mag 5.8 (CGS)
10	3	iP NEZ	19 00 43 D	5530	14.4N, 146.7E h = 33 km. Mariana Islands
11	4	iP Z	21 03 53 D		
12	4	eP NEZ	22 08 08		
13	5	eP NEZ	02 33 17	4160	30.2S, 177.7W, h = 33 km. Kermadec Is. region, Mag. 4.6 (CGS)
14	5	iP NEZ	06 58 33 D		
15	6	iP NEZ	02 42 41 D	4290	1.7N, 124.9E h = 38 km. Celebes region
16	6	iP NEZ e NEZ	02 57 55 D 03 06. 7	3370	5.1S, 145.5E h = 57 km. New Guinea. Mag. 4.8 (CGS)
17	6	iP NEZ e EZ	05 41 19 D 54. 4	4140	30.3S, 177.0W, h = 33 km. Kermadec Is. region
18	✓ 6 X	iP NEZ	07 10 9 D	4600	17.5S, 178.9W, h = 526 km. Fiji Is. region Mag. 5.1 (CGS)

2.

No.	Date 1963 APRIL	Phase	Time (G.M.T.)	Δ Km.	Remarks
19	6	iP Z	18 01 34 C		
20	6	eP NEZ e EZ	18 09 09 19.5	3640	32.1S, 178.1E h = 197 km. Kermadec Is. region Mag. 4.6 (CGS)
21	6	eP NEZ	21 41 36	3400	6.0S, 149.9E, h = 49 km. New Britain
22	6	iP NEZ e NEZ	23 42 27 C 00 03 7	3140	7.2S, 132.6E, h = 33 km. Tanimbar Is. region
23	7	iP NEZ	04 04 53 C	4400	24.5S, 177.0W h = 114 km. Tonga Is. region, Mag 4.7 (CGS)
24	7	e NZ	08 27. 4		
25	7	iP NEZ	13 15 25 C	6800	25.0N, 125.1E h = 124 km. Ryukyu Is. region
26	7	eP NEZ e NEZ	15 03 23 08 32		
27	7	iP NEZ iPcP Z	15 17 55 D 18 04	6920	27.0N, 129.2E h = 33 km. Ryuku Is. region
28	7	iP NEZ e NEZ iScP NEZ eL N	22 44 09 C 44 19 49 41 52 46	4930	4.9S, 103.2E h = 72 km. Near southwest coast of Sumatra Mag 6.1 (CGS)
29	8	iP NEZ iPP NEZ e NEZ	06 31 01 D 31 39 36 52	3360	5.5S, 130.1E h = 33 km. Banda Sea. Mag 4.9 (CGS)
30	8	iP NEZ	07 02 25 D		Seismic?
31	8	e EZ	08 12. 4		
32	8	eP NEZ i(s) NEZ	09 04 35 05 16		Local
33	8	e EZ e Z	16 04. 5 23. 2		
34	8	iP Z e Z	20 57 23 D 21 08. 5	3540	10.4S, 161.4E, h = 33 km. Solomon Is. Mag 4.9 (CGS)
35	9	iP NEZ i EZ	02 09 26 D 09 44	4610	17.7S, 178.7W h = 538 km. Fiji Is. region. Mag 4.9 (CGS)
36	9	iP Z e EZ	04 38 53 D 46. 6	3560	17.8S, 168.0E h = 35 km. New Hebrides Is. region. Felt Port Vila. Mag. 4.6 (CGS)
37	9	eP NEZ	10 18 11		
38	9	iP NZ	12 36 32 D		
39	9	eP NZ	16 12 27		
40	9	iP NEZ	18 50 28 D	5100	10.5N, 122.6E h = 55 km. Panay Philippine Is. Mag 4.3 (CGS)
41	9	iP NEZ i Z e Z	23 04 29 D 04 30 14. 5	3770	11.6S, 166.1E h = 64 km. Santa Cruz. Is. region
42	9	eP NEZ	23 36 18		
43	10	e NEZ	03 43. 1		

3.

No.	Date 1963 APRIL	Phase	Time (G.M.T.)	Δ Km.	Remarks
44	✓ 10 ✗	iP NEZ i NEZ eS NEZ e NEZ e NEZ	07 56 25 C 56 42 08 01 20 03. 3 06. 2	3160	9.2S, 125.0E h = 33 km. Timor, Mag. 5.2 (CGS)
45	10	iP NEZ	11 46 27 C	4320	3.6N, 148.1E h = 108 km. Caroline Is. region. Mag 4.0 (CGS)
46	11	iP NEZ	03 05 56 D	4140	1.8N, 128.0E h = 33 km. Halmahera region.
47	11	eP NEZ	09 39 36	3590	9.9S, 116.2E h = 33 km. South of Sumbawa
48	11	iP Z e NZ	16 57 50 D 17 25. 5	9260	60.2S, 18.7W h = 33 km. Sandwich Islands region
49	11 ✗	iP NZ	00 54 13 C		
50	12 ✗	eP NEZ i EZ eL N e EZ	08 47 58 48 03 54. 1 56. 5	3390	39.0S, 176.7E h = 106 km. North Is. New Zealand. Minor damage in central North Island
51	12	iP NEZ i NEZ	08 52 46 53 39		
52	12	iP NEZ	20 56 37 D		
53	✓ 13 ✗	eP NEZ i NEZ i Z e EZ	02 33 56 34 09 39 49 03 20. 6	9670	6.2S, 76.5W h = 125 km. Central Peru. Mag 6.3 (CGS)
54	✓ 13 ✗	iP NEZ iPP NEZ eS NE e NEZ eL NEZ	14 37 43 C 37 55 42. 6 43. 3 45. 6	3500	3.4S, 135.4E h = 31 km. Near north coast of New Guinea. Mag. 5.6 (CGS)
55	13	iP NEZ i Z	15 46 47 D 46 53	3540	3.4S, 135.7E h = 40 km. West Irian
56	13	iP NEZ	16 22 16 D		
57	14	eP NEZ e NEZ i NEZ e NEZ	05 39 41 39 49 42 00 50. 5	4040	31.4S, 177.8W h = 33 km. Kermadec Is. Mag. 5.0 (CGS)
58	14	eP NEZ	16 49 56		
59	15	iP NEZ i NEZ	15 07 41 C 08 13	3550	4.0S, 129.0E h = 148 km. Ceram region. Mag 4.4 (CGS)
60	15	iP NEZ	20 26 17 C	3910	0.9S, 128.0E h = 33 km. Halmahera region. Mag 4.5 (CGS)
61	✓ 16 ✗	iP NEZ eS NEZ	01 36 13 D 41. 5	3900	0.8S, 128.0E h = 33 km Halmahera region. Mag 7 (Pas) 6.1 (CGS)
62	✓ 16 ✗	eP NEZ	01 43 48	3890	1.2S, 128.4E h = 33 km. Halmahera region. Mag 6.3 (CGS)
63	16	eP NEZ	02 02 06	3900	0.7S, 128.0E h = 32 km. Halmahera region. Mag 6.0 (CGS)
64	16	eP NEZ	02 44 35		
65	16	iP NEZ i NZ	02 57 51 D 57 57	3900	0.8S, 127.8E h = 33 km. Halmahera region

4.

No.	Date 1963 APRIL	Phase		Time (G.M.T.)			Δ Km.	Remarks
66	16	eP	NEZ	03	22	30		
67	16	iP i e	NEZ NEZ NEZ	03	39 39 42	19 23 48	D 3850	1.1S, 127.9E h = 33 km. Halmahera region. Mag 4.4(CGS)
68	16	eP	NEZ	03	51	42		
69	16	iP i	NEZ NEZ	03	53 53	26 45	C 3920	0.9S, 127.8E h = 33 km. Halmahera region. Mag 4.4 (CGS)
70	16	eP i	NEZ NEZ	04	04 04	11 35		0.3S, 127.6E, h = 33 km. Halmahera region
71	16	iP	NEZ	04	17	09	C 3890	0.8S, 128.9E h = 33 km. Halmahera region
72	16	iP i e	NEZ NEZ NEZ	05	25 25 27	29 36 11	D	
73	16	iP i	NEZ NEZ	06	34 34	43 48	D 3860	1.6S, 127.8E h = 53 km. Halmahera region
74	16	eP i	NEZ NEZ	07	52 52	24 28	4030	0.0, 127.6E h = 33 km. Halmahera region. Mag 4.5(CGS)
75	16	iP	NEZ	08	17	43	D	
76	16	iP iPP e	NEZ NEZ NEZ	09	17 18 28.	37 25 5	D 3900	0.9S, 128.5E h = 33km. Halmahera region. Mag 4.4(CGS)
77	✓ 16 ✗	iP i iPP e eS	NEZ NEZ NEZ NEZ EZ	12	10 10 11 15. 16.	36 40 39 2 1	D 3920	1.0S, 127.6E h = 33 km. Halmahera region. Mag. 4.7 (CGS)
78	16	eP i	NEZ NEZ	20	07 07	34 41	3850	1.3S, 128.9E h = 33 km. Halmahera region. Mag. 4.6(CGS)
79	✓ 17 ✗	iP i i eS e	NEZ NEZ NEZ NEZ NEZ	01	17 17 18 22. 27.	06 09 52 6 1	D 3890	0.6S, 128.1E h = 89 km. Halmahera region
80	✓ 17 ✗	iP i ePP iS eL	NEZ Z NEZ NEZ NEZ	02	18 19 20. 24 27.	45 30 3 30 2	D 4240	19.6S, 178.6E h = 33 km. Fiji Is. Mag 6 (Brk)5.9(CGS)
81	17	eP	NEZ	03	16	10		
82	17	eP i	NEZ NEZ	04	09 10	59 04	3900	1.0S, 128.3E h = 33km. Halmahera region. Mag 4.6(CGS)
83	17	eP	NEZ	06	29	07		
84	17	iP	NEZ	08	31	48	D	
85	17	iP e	NEZ NEZ	10	27 27	02 08	C 3900	1.1S, 128.0E h = 33 km. Halmahera region
86	17	iP e	NEZ NZ	17	09 09	23 35	D 3530	3.5S, 135.4E h = 39 km. Western New Guinea Mag 5.5 (CGS)
87	17	eP e	NEZ NEZ	18 19	37 11.	25 3		54.9S, 28.2W h = 26 km. Sandwich Is. Mag 5.3 (CGS)
88	✓ 18 ✗	iP	NEZ	01	58	52	D 4540	20.3S, 177.7W h = 530 km. Fiji Is. region Mag 4.5 (CGS)

No.	Date 1963 APRIL	Phase	Time (G.M.T.-)	Δ Km.	Remarks	
89	18	iP i	NEZ NEZ	02 44 06 44 08	D 3890	0.7S, 128.4E h = 116 km. Halmahera region. Mag 4.6 (CGS)
90	18	iP	NEZ	02 55 59	C	
91	18	eP i	NEZ Z	11 28 54 28 57		
92	18	iP i e	NEZ Z Z	22 07 58 08 12 10 17	C 3900	1.3S, 128.8E h = 33 km. Halmahera region Mag 4.7 (CGS)
93	18	eP i e	NEZ NEZ NEZ	22 16 41 16 47 24. 5		
94	19	eP i e	NEZ NEZ NZ	03 53 32 54 32 04 02. 4	3330	9.8S, 120.5E h = 33 km. Sumba, Mag 4.9 (CGS)
95	✓19 X	eP i iS iSS eL e	NEZ NEZ NEZ NEZ NEZ NZ	07 47 33 47 37 57 42 08 03. 1 11. 7 15. 1	8940	35.8N, 96.9E h = 33 km. Tsinghai Province, China Mag 7 (Pas.)
96	✓19 X	iP i	NEZ NEZ	16 30 24 30 38	C 9520	58.8S, 26.0W h = 99 km. Sandwich Islands region
97	19	eP i e	NEZ NEZ NEZ	16 35 42 35 53 46. 5	3890	1.3S, 128.8E h = 33 km. Halmahera region. Mag 4.7 (CGS)
98	20	eP i e	NEZ Z NEZ	01 14 47 14 55 23. 3	3860	1.2S, 128.9E h = 28 km. Halmahera region. Mag 5.1 (CGS)
99	✓21 X	iP i e	NEZ NEZ NEZ	04 48 33 48 39 05 07. 5	C 6740	24.1N, 122.1E h = 33 km. Near east coast of Formosa Mag 5.2 (CGS)
100	✓21 X	eP eS e e	NEZ NEZ NEZ NEZ	10 45 03 50. 2 53. 5 55. 6	3620	3.2S, 146.9E h = 33 km. Bismarck Sea, Mag 6.0 (CGS)
101	21	eP	NEZ	21 24 53	3910	0.9S, 128.1E h = 33 km. Halmahera region Mag 4.6 (CGS)
102	21	iP	Z	23 23 39	D 3830	1.5S, 128.7E h = 33 km. Halmahera region
103	22	eP	NEZ	00 58 25		
104	22	eP ePP e	NEZ NEZ NEZ	01 54 00 54 40 02 00 05	3240	7.0S, 129.2E h = 135 km. Banda Sea. Mag 5.3 (CGS)
105	✓22 X	iP i e e	NEZ NEZ Z Z	07 32 38 32 54 33 17 42. 8	D 4100	29.9S, 177.6W h = 33 km. Kermadec Is. region Mag 5.3 (CGS)
106	22	iP	NEZ	08 36 53	D 3650	5.1S, 154.1E h = 132 km. Solomon Is. region Mag 5.2 (CGS)
107	22	eP	NEZ	10 28 49		
108	23	iP e	EZ Z	02 51 44 03 03. 5	C 3780	11.4S, 165.9E h = 97 km. Santa Cruz Is. region Mag 4.1 (CGS)

No.	Date 1963 APRIL	Phase	Time (G.M.T.)	Δ Km.	Remarks
109	23	iP Z	07 32 14 D	9290	60.7S, 24.7W h = 33 km. Sandwich Is. region Mag. 5.2 (CGS)
110	23	iP NZ e NEZ	10 06 23 D 32. 5	7830	25.7N, 99.5E h = 33 km. Yunnan Province, China Mag 5.1 (CGS)
111	23	eP Z	11 45 44	5370	12.2N, 125.7E h = 30 km. Samar, Philippine Is.
112	23	iP NEZ i NZ	15 39 52 D 39 55	4600	17.8S, 178.7W h = 533 km. Fiji Islands region Mag. 4.4 (CGS)
113	24	iP NEZ	04 03 04 D	5010	17.2S, 174.5W h = 190 km. Tonga Is. region Mag 4.7 (CGS)
114	24	eP NEZ i NZ	05 53 37 58 45	3930	1.1S, 127.2E h = 33 km. Halmahera region. Mag 4.8 (CGS)
115	24	iP NZ i Z	13 42 28 42 39	6920	27.0N, 128.8E h = 33 km. Ryukyu Islands region Mag 5.1 (CGS)
116	24	iP NEZ	21 49 32 C	4400	20.8S, 179.1W h = 603 km. Fiji Is. region Mag 5.1 (CGS)
117	25	iP NEZ i NEZ e(S) NEZ	08 19 59 C 20 22 25 40	4700	4.7N, 122.4E h = 610 km. Celebes Sea Mag 5.5 (CGS)
118	25	eP NEZ e NEZ	09 56 14 56 47		Regional?
119	25	iP NEZ i Z ePP Z e NEZ e NEZ	16 42 45 C 42 49 43 52 50. 7 55. 3	3850	1.3S, 128.7E h = 33 km. Halmahera region Mag 5.3 (CGS)
120	25	eP Z i Z	17 56 24 57 27		
121	26	iP NEZ ipP NZ	23 55 12 C 55 25	6730	24.1N, 122.5E h = 33 km. Off east coast of Formosa Mag 4.9 (CGS)
122	27	iP NEZ ipP Z i Z eS NEZ eSS NEZ eL NZ	08 49 53 C 50 02 51 17 55. 5 57 41 59. 6	3900	0.6S, 128.4E h = 33 km. Halmahera region Mag 4.9 (CGS)
123	27	iP NEZ	11 17 27 C		
124	28	eP Z epP Z eSSS NEZ e NEZ	01 57 53 58 00 02 06. 3 08. 5	3890	1.1S, 128.5E h = 33 km. Halmahera region
125	28	iP NEZ	14 23 11 D	4620	17.6S, 178.5W h = 505 km. Fiji Islands Mag 4.5 (CGS)
126	28	iP Z	18 19 54 C	3540	9.8S, 160.3E h = 30 km. Solomon Is: Felt Honiara Mag 5.4 (CGS)

7.

No.	Date 1963 APRIL	Phase	Time (G.M.T.)	Δ Km.	Remarks
127	28	eP NEZ ePP Z	22 59 15 23 00 37	2790	11.0S, 130.1E h = 4.79 km Banda Sea
128	29	iP Z i Z	05 13 40 C 13 53	6750	23.9N, 121.6E h = 118 km. Northern Luzon, Phillipine Is. Mag 4.3 (CGS)
129	29	iP NE eS NEZ i NEZ	14 58 10 15 03. 5 06. 3	3500	63.9S, 159.5E h = 33 km. Balleny Is. region Mag 5.9 (CGS)
130	29	eP NEZ eS NEZ iSS NE iSSS E e NEZ eL NEZ	21 57 17 22 08. 6 14 40 18 12 21. 5 28. 1	10310	51.4N, 178.6E h = 60 km Andreanof Islands, Aleutian Is. Mag 5.6 (CGS)
131	30	iP NEZ i NEZ iS NEZ eL NEZ	01 05 09 C 10 12 10 50 12. 1	3890	0.7S, 129.0E h = 33 km. Halmahera region, Mag 5.6 (CGS)
132	30	eP NEZ	01 49 37		
133	30	eP NEZ	02 42 56	4770	7.3N, 126.5E h = 34 km. Near coast of Mindanao, P.I. Mag 4.5 (CGS)
134	30	eP Z e Z	10 31 11 37. 7	6760	10.6N, 94.4E h = 33 km. Andaman Islands region

Seismograms read by A. Slade

 D.J. Sutton,
DIRECTOR.

1	1	iP NEZ e NEZ	02 26 40 C 34. 2	3340	6.0S, 149.0E h = 64 km. New Britain Mag 4.8 (CGS)
2	1	e NEZ	08 51. 5		

checked to 25

MAY 63

checked (all) gpb

UNIVERSITY OF ADELAIDE SEISMOLOGICAL STATION

ADELAIDE (Mt. BONYTHON)

Latitude: 34° 58' 01" Longitude: 138° 42' 32"

Height above mean sea level: 2150'

Foundation: Sandstone

Instruments: World-wide standard Seismograph system Benioff short period seismometers

To = 1.0 secs. T_g = 0.75 secs.

Sprengnether long period seismometers

To = 30 secs. T_g = 100 secs.

No.	Date 1963 MAY	Phase		Time (G.M.T.)	Δ Km	Remarks
1	1	iP NEZ ePP NEZ eS eL NEZ		10 09 06 10 40 14 20 16. 0	C 3450	19.0S, 169.0E h=140km New Hebrides Islands Mag6.2(CGS)
NO RECORDS FOR 2nd - RECORDER LIGHTS NOT SWITCHED ON						
2	3	eP NEZ		02 41 14		
3	3	eP NEZ e NEZ e Z		11 03 08 13. 7 17. 8	5250	15.0S, 173.3W, h=33km Tonga Islands Mag5.0(CGS)
4	4	eP NEZ e NEZ e NEZ		09 01 53 02 47 02 55		Regional
5	4	eP NEZ		13 36 50		local
6	4	eP NEZ		18 28 42	2220	54.4S, 144.0E, h=33km South of Australia
7	4	iP NEZ		19 14 31	D 9840	56.1S, 27.1W, h=33km Sandwich Islands
8	5	eP		08 05 53		
9	5	eP NEZ e EZ		17 20 04 33. 5	5050	17.5S, 173.7W, h=33km Tonga Islands region Mag 5.0(CGS)

2.

No.	Date 1963 MAY	Phase	Time (G.M.T.)	Δ Km	Remarks
10	6	iP NEZ	05 59 47 C	3590	2.5S, 138.2E, h=34km West Irian Mag 5.0(CGS)
11	6	iP NEZ ePP NEZ e NEZ	08 45 20 D 46 24 55. 7	3900	9.1S, 112.5E, h=84km Near south coast of Java Mag 5.7(CGS)
12	6	iP NEZ	09 21 45 D	3540	9.9S, 160.6E, h=76km Solomon Islands: Felt Honiara Mag 4.9(CGS)
13	8	eP NEZ i NEZ	02 46 46 46 50		
14	8	iP NEZ	10 31 22 C		
15	8	iP NEZ ipP NEZ iS NEZ iSS EZ iSSS NEZ e NE eL NZ	10 33 24 C 33 33 42 36 47 16 50 48 53. 2 56. 3	7830	36.6N 141.0E, h=53km Honshu, Japan Mag 6.1(CGS)
16	8	eP NEZ i Z i NEZ eS NE	15 31 45 31 54 31 57 38. 2	4620	5.3N 125.7E, h=70km off coast of Mindanao P.I Mag 5.6(CGS)
17	8	iP EZ	19 23 40 D	5000	17.2S, 175.0W, h=199km Tonga Islands region Mag 4.6(CGS)
18	8	iP NEZ	19 58 14		
19	10	iP NEZ ipP EZ i NEZ	04 34 49 C 34 57 42 48	3310	20.0S, 168.1E, h=33km Loyalty Islands Mag 4.9(CGS)
20	10	iPKP NEZ ePP Z ePKS NEZ iSS NEZ i NEZ e NE eL NEZ	22 41 51 D 44. 1 45. 2 23 01 40 17 20 24. 5 26. 2	14420	2.2S, 77.6W, h=33km Ecuador Mag 5.7 (CGS)

No.	Date 1963 MAY	Phase	Time (G.M.T.)	Δ Km	Remarks
21	✓ 11 X	eP i e	NEZ Z NEZ	17 59 53 18 01 36 20. 5	6760 24.2N, 122.5E, h=33km Off east coast of Formosa Mag 4.5 (CGS)
22	✓ 12 X	iP i i iS	NEZ NEZ NEZ NEZ	09 48 33 D 48 36 51 50 53 32	2940 57.5S, 159.4E, h=44km Macquarie Islands region Mag 6.2 (CGS)
23	12	eP iS	NEZ NEZ	18 36 40 36 51	local
24	12	eP eSS e	NEZ E NEZ	19 29 00 36. 5 39. 4	3590 3.4S, 146.9E, h=33km Bismarck Sea Mag 4.9 (CGS)
25	✓ 12 X	e e eL eL	NZ E Z NE	20 36. 7 42. 8 58. 5 21 00. 5	
26	13	e	NEZ	13 46. 9	
27	✓ 13 X	iP i ePPP e	NEZ NEZ NZ NEZ	14 13 51 D 13 54 15. 2 22. 1	3440 19.5S, 169.3E, h=163km New Hebrides Islands Mag 5.6 (CGS)
28	13	eP ePP e e	NEZ NEZ Z NE	22 54 20 55 09 23 02. 3 04. 5	3410 6.0S, 150.1E, h=94km New Britain region
29	14	iP e	NEZ Z	15 14 28 16 41	
30	✓ 15 X	eP ipP eS eSS eSSS eL eL	NEZ NEZ NEZ NEZ E EZ N	02 59 08 59 21 03 04. 4 06. 2 06. 8 08. 6 09. 6	3650 3.4S, 146.8E, h=33km Bismarck Sea Mag 5.7 (CGS)
31	15	iP	NEZ	15 42 21 D	6730 24.1N, 122.8E, h=33km off east coast of Formosa Mag 5.6 (CGS)

4.

No.	Date 1963 MAY	Phase	Time (G.M.T.)	Δ Km	Remarks
32	15	eP NEZ	18 25 18		
33	✓ 16 X	eP NEZ i NEZ ipP Z e NEZ e NEZ e NEZ	15 58 58 59 09 16 59 13 06. 2 07 53 09. 3	3890	0.8S, 128.5E, h=50km Halmahera region Mag 4.4 (CGS)
34	✓ 16 X	iP NEZ i NZ	16 24 52 D 24 59	3890	1.0S, 128.8E, h=33km Halmahera region Mag 4.3 (CGS)
35	16	iP NEZ	19 27 09 D	4610	17.6S, 178.7W, h=510km Fiji Islands region Mag 4.8 (CGS)
36	✓ 17 X	eP NEZ	04 18 44	8910	45.3N, 150.8E, h=33km Kurile Islands region Mag 5.9 (CGS)
37	✓ 17 X	iP NEZ iPP NZ iPPS NEZ i NEZ	06 18 31 C 18 52 26. 5 35 28	5900	15.7N, 120.1E, h=80km Near west coast of Luzon P.I. Mag 5.5 (CGS)
38	17	e Z	12 45. 5		
39	17	eP NEZ	17 22 47		
40	17	iP NEZ	21 37 45 C	3890	0.8S, 128.8E, h=231km Halmahera region Mag 4.7 (CGS)
41	✓ 17 X	eP NEZ i EZ	22 47 23 47 51		
42	18	e Z	06 26. 7		
43	✓ 18 X	iP NEZ iS NEZ i EZ iSSS E i NZ i N	12 27 07 C 32 44 33 28 35 20 36 16 38 44	3760	8.2S, 115.6E, h=39km Bali Mag 5.9 (CGS)
44	✓ 18 X	iP NEZ i NEZ iSS NEZ	13 10 07 C 10 14 17 05	3760	8.2S, 115.7E, h=68km Bali

No.	Date 1963 MAY	Phase	Time (G.M.T.†)	Δ Km	Remarks
45	✓ 19 ✗	eP NEZ i Z i(SKS) N iS EZ i E iPS N iPPS EZ i E iL NZ	01 16 10 16 15 26 52 27 40 28 12 28 44 29 36 42 20 43 12	10370	46.5S, 75.1W, h=33km Coast of southern Chile Mag 6.5(CGS)
46	19	iP NEZ	09 49 32 D		
47	19	iP NEZ	09 56 26 D	5000	4.1S, 130.1E, h=96km off coast of Sumatra.
48	19	iP NEZ	11 09 42 C	4160	1.5N, 126.0E, h=106km Molucca Sea.
49	19	iP NEZ	18 39 47 C		
50	✓ 19 ✗	iP NEZ i Z	19 28 22 C 28 26	4240	2.3N, 128.6E, h=166km Halmahera region Mag 4.3(CGS)
51	✓ 19 ✗	iPKP EZ i Z ePP Z iSS NE e Z iSSS E iL NEZ	21 55 52 D 56 00 22 00 15 21 45 23. 5 28 08 32. 3	18704	23.8N, 45.9W, h=33km North Atlantic Ocean Mag 6.0(CGS)
Exact time correction unknown for 20th and part of 21st.					
52	✓ 21 ✗	iP NEZ iPP Z e NEZ eL N eL EZ	17 36 46 C 37 03 42. 3 44. 5 45. 6		11.1S, 163.3E, h=33km Solomon Islands region Mag 5.4 (CGS)
53	22	iP EZ i NEZ	02 34 23 C 43 20	3600	11.3S, 163.2E, h=60km Solomon Islands region Mag 5.1(CGS)
54	✓ 22 ✗	iP NEZ iPeP NEZ iSKS NEZ iSS NEZ i Z eL NEZ	14 09 16 C 09 30 19 30 25 20 31 30 36. 5	9400	48.6N, 154.7E, h=22km Kurile Islands region Mag 6.3 (CGS)

No.	Date 1963 MAY	Phase		Time (G.M.T.)			Δ Km	Remarks
55	22	eP eS	NEZ NEZ	15 04 46 05 08				local
56	✓ 22 ✗	iP i i	NEZ NZ NEZ	15 50 23 50 39 ✓ 56 30				
57	✓ 22 ✗	iP iS e eL	NEZ NEZ NEZ NEZ	21 59 45 22 05 08 06 39 ✓ 08 32	C	3790	8.2S, 115.7E, h=33km Java Sea Mag 5.6(CGS)	
58	✓ 23 ✗	iP	NEZ	00 59 00	D	4160	1.6N, 126.4E, h=33km Molucca Passage Mag 4.8(CGS)	
59	✓ 23 ✗	iP i i iS i i i	NEZ NEZ EZ NEZ EZ N E	03 41 14 41 24 42 15 47 20 49 24 51 08 ✓ 51 30	C	4940	15.0S, 176.7W, h=279km Fiji Islands region Mag 5.4(CGS)	
60	23	eP eSS	NEZ NEZ	05 37 05 44 07		3820	7.9S, 115.3E, h=33km Java SEA	
61	✓ 23 ✗	iP ipP	NEZ Z	07 54 31 ✓ 54 42	C	3610	11.2S, 163.2E, h=17km Solomon Islands region Mag 4.8(CGS)	
62	23	iP e	NEZ NEZ	08 00 59 03. 5				
63	23	iPKP	NEZ	08 04 09		17100	19.2N, 64.6W, h=55km Leeward Islands region Mag 5.4 (CGS)	
64	23	eP	NEZ	14 24 38				
65	✓ 23 ✗	iP i e	NEZ NEZ NEZ	15 19 54 20 12 ✓ 29. 3	C	4720	6.0N, 126.1E, h=88km Near east coast of Mindanao P.I. Mag 5.5(CGS)	
66	25	eP	NZ	10 18 11		3500	4.5S, 129.2E, h=95km Banda Sea Mag 4.5(CGS)	
67	✓ 25 ✗	iP i iSKS i eL eL	NZ Z E NZ NZ E	16 20 46 20 50 31 24 51 40 53. 0 ✓ 56. 5	D	9710	56.8S, 25.0W, h=29km Sandwich Islands region	

No.	1963 MAY	Phase	.me (G. M. T.)			Δ Km	Remarks
68	26	iP NZ	09 43 42 C	4610	17.9S, 178.5W, h=560km Fiji Islands Mag 5.4(CGS)		
69	26	eP Z	17 44 10				
<u>70</u>	✓ 26 ✗	iP NEZ iPP NEZ	23 40 25 C 41 29	3250	7.2S, 128.8E, h=293km Banda Sea		
71	27	eL NEZ	04 41. 5				
72	27	iP NEZ i EZ e NEZ	16 27 04 C 27 08 38. 6	3850	0.6S, 130.1E, h=33km Halmahera Region Mag 5.0(CGS)		
73	27	iP NEZ	18 52 09 C	3640	1.8S, 139.0E, h=33km Near north coast of West Irian		
74	✓ 28 ✗	eP Z	22 ✓ 02 29				
75	29	iP NEZ	01 09 14 D	4620	18.1S, 178.0W, h=472km Fiji Islands region Mag 4.4(CGS)		
76	29	iP NEZ	08 34 47				
77	✓ 29 ✗	iP NEZ iS NEZ	11 ✓ 06 14 D 11 50	4640	18.0S, 178.0W, h=550km Fiji Islands Mag 4.8(CGS)		
78	29	eP NEZ i NEZ i NEZ	22 43 36 43 50 48 36				
79	✓ 30 ✗	iP NEZ i NEZ iS NEZ eL NEZ (T Phase)	07 ✓ 00 38 D 00 41 04 12 05 00	2160	54.2S, 143.7E, h=33km South of Australia. Mag. 5 ¹ / ₄ -5 ¹ / ₂ (Pal)		
80	30	eP Z e NEZ	19 10 28 38. 5	9670	59.4S, 26.9W, h=33km Sandwich Islands		
81	31	iP NEZ	01 16 02D				
82	✓ 31 ✗	iP NEZ e Z i N i EZ	06 ✓ 12 06 D 21. 5 24 20 27 32	5250	15.1S, 173.3W, h=33km Tonga Islands region Mag 4.8(CGS)		

No.	Date 1963 MAY	Phase	Time (G.M.T.)	Δ Km	Remarks
83	31	iP i	NEZ Z	14 14 19 14 58	
84	31	eP iS	NEZ NEZ	16 52 30 53 08	local

Seismograms read by A. Slade

D.J. Sutton,
DIRECTOR.

JUNE '63

Conrad JB.

UNIVERSITY OF ADELAIDE SEISMOLOGICAL STATION

ADELAIDE (MOUNT BONYTHON)

Latitude: 34° 58' 01" Longitude: 138° 42' 32"
 Height above mean sea level: 2150'
 Foundation: Sandstone
 Instruments: World-wide standard seismograph system Benioff short period seismometers

To = 1.0 secs. T_g = 0.75 secs.

Sprengnether long period seismometers

To = 30 secs. T_g = 100 secs.

No.	Date 1963 JUNE	Phase	Time (G.M.T.)	Δ Km.	Remarks
1	1	iP NEZ e Z i Z	00 07 20 C 18. 2 21 08	5250	15.1S, 173.4W, h = 33 km Samoa Islands region Mag 5.4 (CGS)
2	1	eL Z	13 54. 3		
3	1	iP NEZ	21 22 24 C	5230	15.2S, 173.5W h = 33 km. Samoa Is. region. Felt - Apia Mag 5.5 (CGS)
4	2	eP NEZ ipP NEZ iS NEZ eSS NEZ	10 06 26 06 39 11 52 13. 5	3570	6.1S, 154.4E, h = 49 km. Solomon Is. region. Felt -Rabaul Mag 5.8 (CGS)
5	2	iP NEZ	21 14 03		
6	2	iP NEZ e Z iS NE iSS NE i Z iPKKS NEZ	21 16 54 C 23. 9 27 20 32 20 33 40 39 04	9380	58.5S, 15.6W h = 50 km. Sandwich Is. region Mag 5.9 (CGS)
7	3	iP NEZ ipP Z eS NEZ e E e NZ	07 46 54 D 47 05 56. 3 08 06. 6 08. 4	7160	34.2N, 138.7E h = 43 km. Honshu, Japan Mag 5.3 (CGS)
8	3	eP NEZ	11 51 04	45370	5.3N, 72.9W, h = 21 km Colombia. Slight damage in central Colombia. Mag 5.0 (CGS)
9	3	e NEZ	12 40. 4		
10	3	eP NEZ	14 23 35		
11	3	eP NEZ	14 29 08		
12	3	eP NEZ	14 51 04	5020	4.4S, 102.5E h = 48 km. Near south coast of Sumatra
13	4	iP NEZ	00 07 38 D	3540	3.4S, 135.6E h = 44 km. Western New Guinea
14	4	iP NEZ	03 20 58 D	3400	6.9S, 124.8E, h = 408 km. Banda Sea Mag 4.3 (CGS)
15	4	iP Z	11 52 09 C	4920	8.1N, 126.8E h = 161 km. Off east coast of Mindanao.P.I. Mag 5.0 (CGS)

No.	Date 1963 JUNE	Phase	Time (G.M.T.)	Δ Km.	Remarks
16	4	iP NEZ i Z e NEZ	12 01 14 D 03 36 07. 7	4070	30.5S, 177.8W h = 33 km. Kermadec Islands Mag 5.1 (CGS)
17	4	iP Z ipP Z i Z e Z	13 13 03 D 13 17 15 24 23. 5	4100	30.4S, 177.6W h = 33 km. Kermadec Is. Mag 5.2 (CGS)
18	4	eP NEZ	14 50 07	3430	4.8S, 129.9E h = 188 km. Banda Sea. Mag 4.9 (CGS)
19	4	iP NEZ ipP NEZ	19 31 10 C 31 36	6040	18.9N, 146.2E h = 110 km. Mariana Islands Mag 5.5 (CGS)
20	4	iP NEZ i NZ i NEZ iS NEZ iSS NEZ i Z eL NEZ	21 11 35 D 11 50 12 03 17 08 19 20 22 00 25 00	3910	1.2S, 127.3E h = 31 km. Halmahera region. Mag 5.2 (CGS)
21	5	e NEZ	05 26. 8		
22	5	e Z	05 54. 5		
23	5	eP NZ e NEZ e EZ	10 18 45 24. 3 28. 4	3570	14.9S, 166.8E h = 37 km. New Hebrides Islands. Felt -Santo Mag 5.0 (CGS)
24	5	eL NEZ	11 36. 5		
25	5	iP NZ	13 11 11 D		
26	5	eL N eL EZ	14 25. 7 28. 5		
27	5	iP NEZ i NEZ	23 01 30 D 07 16		
28	6	iP NEZ ipP NZ iS NEZ i Z i Z	05 28 40 D 28 51 36 36 47 04 52 36	6300	19.9N, 120.2E h = 33 km. Off North coast of Luzon.P.I. Mag 5.8 (CGS)
29	6	iP NEZ i NEZ	08 31 09 C 31 28	6500	6.7N, 94.7E h = 33 km. Nicobar Is. region Mag 5.5 (CGS)
30	6	e NEZ i NEZ	12 20. 1 27 04		
31	6	iP NEZ	17 49 08 C	3740	14.3S, 167.3E h = 160 km. New Hebrides Is. Felt-Santo Mag 4.7 (CGS)
32	7	eP NEZ	15 42 45	4730	15.3S, 178.9W h = 33 km. Fiji Islands region Mag 4.9 (CGS)
33	7	iP NEZ ipP NEZ	15 59 34 D 59 43	6240	19.0N, 121.8E h = 33 km. Off north coast of Luzon, P.I. Mag 4.7 (CGS)
34	7	eP NEZ	16 22 15		
35	7	eL NEZ	20 25. 6		
36	7	eP NEZ	22 40 29	5260	15.2S, 173.1W h = 33 km. Samoa Is. region Mag 4.6 (CGS)

No.	Date 1963 JUNE	Phase	Time (G.M.T.)	Δ Km.	Remarks
37	7	iP NEZ i EZ i Z iS NEZ iSS NEZ iSSS N eL EZ	22 45 02 D 46 07 51 04 53 04 56 36 57 30 58. 3	5230	15.3S, 173.2W h = 33 km Samoa Is. region Mag 5.0 (CGS)
38	8	iP NEZ i NZ e Z e N	01 10 24 D 21 08 24. 1 24. 6	5260	15.1S, 173.0W h = 33 km Samoa Is. region Mag 4.6 (CGS)
39	8	iP NEZ i NEZ iSS Z	05 40 05 D 40 14 46 29	3350	5.5S, 147.0E h = 170 km Near north coast of New Guinea Mag 5.1 (CGS)
40	8	eP Z	07 52 51		
41	8	iP NEZ	20 00 06 C	4850	16.1S, 176.9W h = 542 km Fiji Islands region
42	10	iP NEZ iS NEZ eL NEZ eT	04 21 21 C 25 16 27. 2 40 07	2340	55.4S, 146.4E h = 33 km 800 km west of Macquarie Islands Mag 6.1 (CGS)
43	10	iP NEZ e E e NZ eT	05 18 57 C 23. 5 24. 3 37 42	2310	55.2S, 146.3E h = 33 km 800 km west of Macquarie Islands
44	10	iP NEZ i NEZ i NZ iS NEZ eL NEZ eT	06 43 47 C 43 50 44 58 47 40 49. 5 07 02 26	2330	55.3S, 146.1E h = 18 km 800 km west of Macquarie Islands Mag 6.0 (CGS)
45	10	iP Z	10 59 44 C	9750	50.9N, 160.2E h = 33 km Off coast of Kamchatka Mag 5.3 (CGS)
46	10	iP NEZ i NZ	12 26 12 C 26 48	3670	4.6S, 152.0E h = 174 km New Britain - Felt Rabaul Mag 5.2 (CGS)
47	10	iP NEZ	18 48 23 D	3560	5.1S, 151.7E h = 112 km New Britain - Felt Rabaul, Kambubu, Gavit and SumSum Mag 4.9 (CGS)
48	10	eP NEZ	21 16 23		Local
49	11	eP NEZ	02 15 44		
50	11	iP NEZ	09 35 56 C		
51	11	iP NEZ i NEZ	17 19 43 C 20 08	4220	23.1S, 179.8W h = 550 km Fiji Islands Mag 4.1 (CGS)
52	11	iP NEZ i Z	18 19 39 C 19 43	9050	30.7N, 86.9E h = 33 km Tibet Mag 4.5 (CGS)
53	12	eP Z	03 36 35	5020	8.9N, 126.5E h = 33 km Near east coast of Mindanao, P.I.
54	12	iP EZ	04 16 23 D	5090	15.8S, 174.2W h = 150 km Samoa Islands region Mag 4.4 (CGS)
55	12	eP EZ	07 07 42		

4.

No.	Date 1963 JUNE	Phase	Time (G.M.T.)	Δ Km.	Remarks
56	12	eP EZ eS EZ	07 12 05 13 23		regional?
57	12	eP EZ	14 09 27		
58	12	iP EZ	15 24 51	D 9880	55.8S, 27.8W h = 33 km Sandwich Islands region
59	12	eP EZ i(s) EZ	23 23 34 23 50		Local
60	13	iP NEZ	00 25 19	D	
61	13	iP NEZ	00 53 16	D	
62	13	iP NEZ i NEZ iPP NEZ	10 40 47 40 50 41 18	D 3320	6.1S, 130.1E h = 150 km Banda Sea Mag 4.9 (CGS)
63	13	eP NE	15 23 58		
64	13	eP NE eL NEZ	17 33 12 43. 5	3670	4.6S, 153.2E h = 54 km New Britain. Felt - Rabaul Mag 5.0 (CGS)
No vertical short period records from 1321 GMT on 13th until 16th June - Globe blown					
65	14	eP NE e(s) NE	01 03 04 03 59		Regional
66	14	eP NE i NE i(s) N	19 25 34 26 56 27 21		38.7S, 146.0E h = 33 km Near coast of Victoria, Aust.
67	15	e NEZ	12 15. 4		
68	15	eL NEZ	16 12. 7		
69	16	iP NEZ	02 43 30	D	
70	16	eP NEZ i NZ	13 58 45 59 17		
71	16	iP NEZ i(s) NEZ	21 20 02 20 33		Regional?
72	17	iP NEZ	02 12 00	C 4620	17.7S, 178.5W h = 515 km Fiji Islands region Mag 3.2 (CGS)
73	17	iP NEZ iPP NZ iS NEZ iSS NEZ iL NZ	18 38 24 39 56 44 36 47 40 49 20	C 4400	65.8S, 179.5W h = 33 km Scott Is. region Mag 5.6 (CGS)
74	17	iP NEZ	20 16 42	C 4840	20.4S, 174.4W h = 33 km Tonga Islands Mag 4.9 (CGS)
75	17	iP NEZ i Z e NEZ i NEZ	23 10 17 12 35 20. 6 23. 8		
76	18	eP NEZ iS NEZ	02 41 36 42 08		Local
77	18	iP NEZ ipP Z eL NEZ	04 13 01 13 09 36. 7	C 7130	29.0N, 129.9E h = 33 km Ryukyu Islands Mag 5.5 (CGS)
78	18	iP NEZ	12 55 06	C	

No.	Date 1963 JUNE	Phase	Time (G.M.T.)	Δ Km	Remarks
79	18	iP NEZ	23 23 13 C	5430	12.6N, 124.2E h = 16 km Southern Luzon, P.I. Mag 4.6 (CGS)
80	19	e NEZ	02 35. 7		
81	19	iP NEZ iS NEZ eL NEZ	09 16 41 D 22 40 25. 8	4560	4.7N, 126.5E h = 83 km Talaut Islands region Mag 6.2 (CGS)
82	19	iP NEZ ipP Z	10 58 59 D 59 14	8170	25.0N, 92.1E h = 51 km Assam, India Mag 5.7 (CGS)
83	19	iP NEZ eL NEZ	12 05 16 C 14. 4	3530	9.3S, 158.8E h = 33 km Solomon Islands, Felt-Honiara Mag 5.5 (CGS)
84	19	eP NEZ i Z	17 23 21 23 37		
85	19	iP NEZ i Z iSS NEZ	18 28 30 D 34 20 36 28	3820	3.5S, 153.4E h = 279 km New Ireland region Felt - Rabaul Mag 5.1 (CGS)
86	19	eL NEZ	23 33. 6		
87	20	iP NEZ iS E eL NZ eL E	22 53 38 D 23 00 00 02. 7 04. 4	4310	27.9S, 176.6W h = 41 km Kermadec Islands Mag 5.2 (CGS)
88	21	iP NEZ	14 37 19 C	4300	2.7N, 128.6E h = 219 km Halmahera region
89	21	iP NEZ ipP Z	15 38 03 C 38 18	8250	25.2N, 92.2E h = 56 km Eastern India Mag 5.6 (CGS)
90	21	eP NEZ e NEZ	17 49 56 18 02. 6	4310	27.9S, 176.2W h = 33 km Kermadec Is. region Mag 4.7 (CGS)
91	21	iP NEZ ipP EZ	21 49 09 D 49 22	4200	29.7S, 177.4W h = 43 km Kermadec Is. region Mag 4.8 (CGS)
92	22	eP NEZ eL NEZ	04 13 44 24. 9		
93	22	eL NEZ	08 47. 8		
94	22	iP NEZ iS NEZ	15 48 38 D 53 44		
95	22	eP Z	18 19 36		
96	23	iP NEZ e NEZ eSSS NEZ eL EZ	03 56 39 D 58 58 04 05. 3 07. 2	4100	29.6S, 177.9W h = 55 km Kermadec Islands region Mag 5.0 (CGS)
97	23	iP NEZ ipP Z e NEZ	08 59 12 C 59 30 07. 8	3300	6.0S, 146.6E h = 61 km New Guinea. Felt-Saidor Mag 5.3 (CGS)
98	23	eP NZ	18 35 42	5200	12.3N, 140.7E h = 42 km Mariana Is. region Mag 4.9 (CGS)
99	24	iP NEZ i Z	03 05 50 D 05 53	3660	10.6S, 163.3E h = 58 km Solomon Islands region Mag 4.7 (CGS)

No.	Date 1963 JUNE	Phase	Time (G.M.T.)	Δ Km	Remarks
100	✓ 24 ✗	iPKP NEZ iSKS NE iPKKP NEZ iPS Z i E i NZ i NZ iL NE iL Z	04 45 40 51 48 55 08 56 16 05 01 00 01 16 05 04 13 00 18 40	13350	59.5N, 151.7W h = 52 km Cook Inlet Mag 5.7 (CGS)
101	✓ 24 ✗	eP NEZ e NEZ e EZ	13 25 20 34. 9 37. 4	4470	25.5S, 175.6W h = 238 km Tonga Islands region Mag 4.6 (CGS)
102	24	e NEZ	17 02. 1		
103	24	eP NEZ	22 31 42		
104	25	iP NEZ	02 36 38 r		
105	✓ 25 ✗	iP NEZ i Z e Z e NE i Z	14 39 38 D 39 45 49. 5 51. 5 54 20		
106	26	eP NEZ	08 04 04	5150	11.5N, 143.0E h = 48 km Mariana Islands Mag 4.8 (CGS)
107	✓ 26 ✗	eP NEZ i NEZ ipP NEZ e NEZ	09 49 13 49 15 49 22 57. 8	4510	4.6N, 126.3E h = 33 km Off coast of Mindanao, P.I. Mag 4.9 (CGS)
108	✓ 26 ✗	iP NEZ i Z	14 22 18 C 22 46	10130	36.4N, 76.9E h = 33 km Sinkiang Province, China Mag 5.3 (CGS)
109	26	e NEZ i EZ	18 45. 5 46 52		
110	27	iP NEZ	11 53 47 C	4060	8.3S, 111.2E h = 180 km Near Coast of Java
111	27	eP NEZ	12 28 30	4080	30.1S, 177.7W h = 44 km Kermadec Islands region Mag 4.8 (CGS)
112	✓ 27 ✗	iP NEZ	15 43 28 D	7230	14.4N, 93.7E h = 33 km Andaman Islands region Mag 5.2 (CGS)
113	✓ 28 ✗	eP EZ i Z	02 39 02 39 07	6800	27.5S, 66.1E h = 33 km Indian Ocean Mag 6.0 (CGS)
114	28	eP NEZ	07 34 32		Local
115	✓ 28 ✗	iP NEZ i NEZ eL NEZ	13 57 33 C 57 10 14 14. 6	6640	1.3N, 97.4E h = 50 km Near coast of Sumatra Mag 5.0 (CGS)
116	✓ 28 ✗	iP NEZ iS NEZ iSS NEZ iSSS NE eL NEZ	22 08 03 C 18 20 23 40 26 44 30. 5	9110	46.5N, 153.2E h = 33 km Kurile Islands region Mag 6.1 (CGS)
117	✓ 29 ✗	iP NEZ i Z e Z	12 52 14 C 52 30 13 09. 6	5160	11.6N, 142.7E h = 30 km Mariana Islands region Mag 5.2 (CGS)

No.	Date 1963 JUNE	Phase	Time (G.M.T.)	Δ Km.	Remarks
118	29	iP NZ ipP Z	13 12 49 C 12 56	5170	11.7N, 142.8E h = 33 km Mariana Islands Mag 4.9 (CGS)
119	30	iP NZ i Z	04 27 43 C 27 46	5160	11.7N, 142.6E h = 33 km Mariana Islands region Mag 4.7 (CGS)
120	30	iP NEZ i NEZ eS NEZ	06 53 50 C 53 54 07 00 17	5180	2.5S, 102.4E h = 160 km Sumatra Mag 5.5 (CGS)

Seismograms read by A. Slade

D.J. Sutton
Director



JULY '63
Comedi
2/13

UNIVERSITY OF ADELAIDE SEISMOLOGICAL STATION

ADELAIDE (MT. BONYTHON)

Latitude: 34° 58' 01" Longitude: 138° 42' 32"

Height above mean sea level: 2150'

Foundation: Sandstone

Instruments: World-wide standard seismograph system Benioff short period seismometers

To = 1.0 secs. T_g = 0.75 secs.

Sprengnether long period seismometers

To = 30 secs. T_g = 100 secs.

No.	Date 1963 JULY	Phase	Time (G.M.T.)	Δ Km.	Remarks
1	1	e NEZ	04 18. 8		
2	1	iP NEZ	11 35 18	D	
3	1	iP NEZ	20 27 42	C 4830	4.7S, 103.7E h = 91 km Off South coast of Sumatra
4	1	iP NEZ	21 22 47	D 9100	30.7N, 96.1E h = 33 km Tsinghai Province, China Mag 5.3
5	2	iP NEZ i NEZ	09 53 46 54 04	D 4250	7.8S, 109.0E h = 117 km Java Mag 5.1
6	2	eP NEZ eS NEZ	14 13 41 13 58		Local
7	14	iP NEZ i NEZ iPPP EZ iPcP EZ iS NEZ iPcS N i EZ iSS NEZ eL NEZ	11 05 19 06 04 07 02 07 50 10 42 12 08 12 56 14 02 16 30	C 4250	26.3S, 177.7W h = 158 km Tonga Is. region Mag 6.5
8	5	e Z	06 46. 8		
9	6	iP Z e NZ	17 58 22 18 18 00	C 5160	11.6N, 142.7E h = 26 km Mariana Is. region Mag 4.7
10	7	e Z	00 21. 5		
11	7	iP NZ i Z	11 00 01 00 17	D 4760	6.2N, 124.5E h = 33km Mindanao, Philippine Is. Mag 4.6
12	7	iP NEZ	22 08 52	C	
13	9	iP NEZ i NEZ	06 24 07 24 32	D 4330	0.8N, 121.5E h = 142 km. Celebes Mag 4.9
14	9	eL NEZ	10 28. 2		
15	9	eP NEZ	17 44 39	6760	24.2N, 122.4E h = 33 km Near east coast of Formosa Mag 4.8

No.	Date 1963 JULY	Phase	Time (G.M.T.)	Δ Km.	Remarks
16	10	eP NEZ i Z	04 36 37 36 42	4140	29.7S, 177.2W, h = 33 km Kermadec Islands region Mag 4.4
17	10	iP NEZ ipP Z iS NE iSS N eL NEZ	05 35 18 35 30 45 30 51 08 57. 7	9090	46.3N, 152.9E h = 33 km Kurile Is. region Mag 5.6
18	10	eP NEZ i Z i Z iPP Z	20 01 29 01 34 02 35 03 35	6000	19.2N, 145.2E h = 171 km Mariana Is. region Mag 5.4
19	11	eP NEZ i(s) NEZ	21 01 15 01 53		Regional
20	11	iP NEZ i NEZ	21 51 19 C 51 35		Regional?
21	12	e Z	16 11. 8		
22	13	e NEZ	00 07. 5		
23	13	iP NZ ipP NZ e NZ	14 16 34 D 16 46 41. 2	6740	24.3N, 122.3E h = 33 km Ryukyu Is. Mag 4.9
24	13	iP NEZ	20 23 15 C		
25	14	iP NEZ ipP Z iS NEZ eL N eL EZ	00 09 30 C 09 43 15 20 18 00 19. 8	4100	30.5S, 177.2W h = 33 km Kermadec Is. region Mag 5.3
26	14	iP NEZ eL NEZ	04 06 20 C 16. 5	4100	30.5S, 177.3W h = 50 km Kermadec Is. region Mag 4.7
27	14	iPKP NEZ e NEZ eL NE eL Z	06 01 31 C 24. 3 46. 5 50. 5	16520	10.4N, 62.6W, h = 24 km. Off coast of northern Venezuela, Felt - Trinidad, West Indies Mag 5.5
28	14	eP NEZ e NEZ eL Z eL NE	14 35 30 44. 6 46. 5 47. 5	4130	30.2S, 177.4W h = 92 km Kermadec Islands Mag 5.1
29	14	iP NEZ i EZ	17 12 22 C 12 55	3230	39.4S, 174.9E h = 189 km North Island, New Zealand Mag 6.0
30	14	iP NEZ	19 24 58 C	3550	15.8S, 168.0E h = 186 km New Hebrides Islands Felt - Santo Mag 4.8
31	15	iP Z	05 26 49 C	4220	1.6N, 127.1E h = 33 km Halmahera Region
32	15	eP NEZ	19 42 46		
33	16	iP NEZ	01 45 28 D		
34	16	eP NEZ i NZ	13 05 48 06 20		
35	16	iP NEZ ipP NEZ eL N eL EZ	19 15 37 D 15 54 21. 8 24. 6	4100	30.6S, 177.2W, h = 41 km Kermadec Is. Mag 5.0

No.	Date 1963 JULY	Phase	Time (G.M.T.)	Δ Km.	Remarks
36	17	eP NEZ	07 09 27	4410	7.5S, 107.2E h = 41 km Java Mag 5.1
37	17	iP NZ	19 11 39	C 3600	14.9S, 167.3E h = 138 km New Hebrides Islands Felt - Santo Mag 4.4
38	18	iP NEZ i NZ	05 10 32 10 37	D 9250	61.0S, 22.3W h = 33 km Sandwich Is. region Mag 6.0
39	18	iP NEZ e NEZ eL NZ	05 15 34 38 00 41 00	D	
No vertical short period record after 0057 G.M.T. on 19th - Globe blown					1754 GMT on 18th until
40	19	iP Z	06 05 28	C 15600	43.3N, 8.2E h = 33 km*
41	20	iP Z	05 35 07	C 5440	14.4N, 142.9E h = 33 km Mariana Is. Mag 5.1
42	20	iP NEZ ipP NEZ i NEZ iS NEZ iSS NEZ eL NEZ eT	06 41 20 41 31 41 36 45 38 46 28 47. 7 07 03 10	D 2620	57.6S, 148.5E, h = 33 km Macquarie Is. region Mag 5.6
43	21	iP NEZ	14 53 34	D 5230	9.7N, 122.3E h = 54 km**
44	22	iP NEZ i Z i NE iS NEZ eL NEZ	00 35 23 35 45 36 28 40 20 44. 5	C 3360	6.1S, 148.9E h = 59 km New Britain Mag 5.1
45	24	eP NEZ i NEZ ipP NEZ i NEZ e E eL NZ	11 42 32 42 35 42 46 43 01 57. 7 12 03. 4	6810	24.6N, 122.0E, h = 33 km Near east coast of Formosa Mag 5.3
46	24	iP NEZ iPP NEZ eL NEZ	16 52 40 52 42 17 03. 2	C 2830	6.4S, 147.8E h = 55 km Near coast of eastern New Guinea Mag 4.5
47	24	iP NEZ ipP EZ eL NEZ	19 10 53 11 03 19. 5	C 3480	9.0S, 158.2E h = 33 km Solomon Is. region Mag 5.8
48	24	eP NEZ eL NEZ	21 53 55 22 01. 8	3210	9.7S, 154.4E h = 16 km Solomon Sea. Mag 5.2
49	25	iP NZ	21 42 30	D	
50	26	eL Z	05 29. 5		
51	26	iP NEZ eS Z	05 33 07 38 00	D 3600	15.0S, 167.3E h = 124 km New Hebrides Islands Mag 4.6

No records for 28th - Paper placed on inside out

*43.3N, 8.2E h = 33 km, Ligurian Sea. Mag 5.5

** 9.7N, 122.3E h = 54 km, Negros P.Is.

4.

No.	Date 1963 JULY	Phase	Time (G.M.T.)	Δ Km.	Remarks
52	29	iP NEZ i NEZ	05 38 57 39 00	C 4480	6.7S, 107.1E, h = 85 km Java Mag 4.6
53	29	eP NEZ i(s) NEZ	07 44 53 44 56		Local?
54	29	eP NEZ	16 55 27	4360	5.7S, 110.2E h = 530 km Java Sea
55	29	eP NEZ iS NEZ	20 17 32 18 00		Local - felt at Cockaleechie
56	29	iP NEZ iPP EZ iPcP NEZ i EZ iS NE iScP Z iSS NEZ eL NEZ	20 21 17 22 48 23 48 25 20 27 10 27 52 29 40 32. 2	C 4140	30.2S, 177.3W h = 39 km Kermadec Is. Mag 5.7
57	29	iP NEZ	23 25 53	D 4150	30.1S, 177.1W h = 48 km Kermadec Is. Mag 4.5
58	29	eP NEZ	23 46 12	3340	5.4S, 131.6E h = 33 km Banda Sea Mag 4.8
59	30	eP NEZ e NEZ	02 49 36 03 17. 7		
60	30	eP NEZ eL NEZ	04 34 35 43. 8	4140	30.2S, 177.3W h = 17 km Kermadec Is. Mag 4.6
61	30	iP NEZ iPP EZ i NEZ i Z iS NE iScP E eL NEZ	05 53 04 54 36 55 38 57 40 58 52 59 10 06 01. 8	D 4130	29.6S, 177.3W h = 33 km Kermadec Is. Mag 5.3
62	30	eP NEZ	08 01 45		
63	30	eL NZ	13 38. 8		
64	30	iP NEZ ipP NEZ i NE iPP NEZ i NZ	14 04 49 05 04 05 20 08 16 08 30	C 9830	55.9S, 27.5W h = 33 km Sandwich Islands Mag 6.2
65	30	eP NEZ iPPP Z eL NEZ	14 30 25 32 42 34. 2	4170	29.5S, 177.1W, h = 33 km Kermadec Is. region Mag 5.2
66	30	iP NEZ e NEZ eL NEZ	15 11 46 20. 8 24. 0	D 4130	29.9S, 177.4W h = 76 km Kermadec Is. Mag 5.2
67	30	eP NZ ipP NZ i NZ	23 36 49 37 22 43 25	3220	7.3S, 128.9E h = 143 km Banda Sea. Mag 5.0
68	31	eP NEZ eSSS NEZ	01 51 25 02 00. 3	4130	29.8S, 177.2W h = 65 km Kermadec Is. Mag 4.8
69	31	eP NEZ	06 00 52		

Seismograms read by A. Slade

 D.J. Sutton
Director.



Adelaide

Aug. 1963

*Comedi
883.*

UNIVERSITY OF ADELAIDE SEISMOLOGICAL STATION

ADELAIDE (MT. BONYTHON)

Latitude: 34° 58' 01" Longitude: 138° 42' 32"

Height above mean sea level: 2150'

Foundation: Sandstone

Instruments: World-wide standard seismograph system Benioff short period seismometers

To = 1.0 secs. T_g = 0.75 secs.

Sprengnether long period seismometers

To = 30 secs. T_g = 100 secs.

No.	Date 1963 AUG.	Phase	Time (G.M.T.)	Δ Km.	Remarks
1	1	iP NEZ	12 49 38 C		
2	1	eP NEZ eL NEZ	15 28 05 40. 5	4140	29.8S, 177.2W h = 59 km Kermadec Islands. Mag 4.8
3	1	eP NEZ	22 28 56		
No NS short period records after 0623 G.M.T. on 2nd until 5th Aug. globe blown					
4	2	eP EZ	07 20 23		
5	2	eP EZ iS EZ	09 00 20 00 50		Regional
6	2	iP Z	10 30 42 D	6740	26.8N, 141.3E h = 109 km Mariana Is. region, Mag. 4.3
7	2	iP EZ i EZ	19 34 14 C 35 30	4740	6.0N, 125.1E h = 118 km Mindanao, P.I. Mag 5.0
8	3	iP EZ	03 53 58 D	3540	7.6S, 156.8E h = 402 km Solomon Is. Mag. 5.1
9	3	iPKP EZ i EZ iSS NZ i NZ i Z eL NZ	10 41 29 D 41 38 11 05 28 24 20 30 52 32. 4	17100	7.7N, 35.8W, h = 33 km Mid-Atlantic Ocean, Mag. 6.1
10	3	iP EZ	20 33 07 D	4010	30.7S, 178.3W h = 37 km. Kermadec Is. Mag. 5.2
11	4	eP EZ	07 15 20	3750	9.4S, 114.2E h = 117 km South of Java, Mag. 5.5
12	4	eP Z e NEZ	07 23 18 25 00		
13	4	eP Z e N e EZ	09 19 45 29 00 31 00	3640	22.6S, 173.4E h = 72 km Loyalty Is. region. Mag 4.9
14	4	iP EZ i Z	09 59 50 C 10 06 02	3250	7.7S, 129.5E h = 195 km Tanimbar Islands region. Mag. 4.9.

No.	Date 1963 AUG.	Phase	Time (G.M.T.)	Δ Km.	Remarks
15	4	eP EZ	21 47 00	3380	5.2S, 145.9E h = 59 km Near north coast of eastern New Guinea
No N S short period records from 5th August - fault in optical system of recorder.					
16	5	iP EZ iS EZ	00 01 16 06 50	C 4580	17.5S, 179.1W h = 515 km Fiji Islands region, Mag. 5.2
17	5	eP EZ iS EZ	13 09 00 09 08		Local
18	5	eP EZ iS NEZ iSS E i NZ eT	15 44 51 49 40 50 44 52 12 16 11 36	3070	60.7S, 154.3E h = 33km Macquarie Is. region, Mag. 5.2
19	6	eP Z	01 02 40		
20	6	eP EZ	07 58 40		Seismic event?
21	7	iP EZ eL N eL EZ	04 32 52 40. 5 42. 5	C 3670	21.8S, 173.5E h = 106 km Loyalty Islands region Mag. 4.5
22	7	iP EZ	11 21 57	D 4510	20.0S, 178.3W h = 600 km Fiji Islands Mag. 4.5
23	7	iP EZ	11 23 38	D 4510	20.1S, 178.4W h = 600 km Fiji Islands Mag. 4.3
24	7	iP EZ	15 46 05	C 4550	21.2S, 177.8W h = 352 km Fiji Islands Mag. 4.4
25	7	iP EZ i Z	17 26 08 26 10	D 9850	56.1S, 27.0W h = 33 km Sandwich Islands. Mag 5.4
26	8	e NEZ	02 56. 9		
27	8	iP EZ iS NEZ iScP Z i NE i NZ eL NEZ	11 22 26 27 40 29 06 30 00 31 40 33 00	3440	5.8S, 151.0E h = 33 km New Britain - Felt Palmamal, Ponio. Mag. 5.6
28	8	eP EZ i EZ	14 02 21 03 55	5900	18.3N, 145.3E h = 423 km Mariana Islands region Mag. 4.9
29	9	eP EZ	10 16 23	3490	21.6S, 171.1E h = 153 km Loyalty Islands region Mag 5.4
30	9	iP EZ	14 21 16	D 4200	1.2N, 125.6E h = 33 km Molucca Passage
31	9	eP EZ iS NEZ i EZ eL N eL EZ	14 45 03 51 40 55 36 57. 4 58. 8	5030	15.3S, 175.7 W h = 33 km Fiji Islands region Mag 5.5
32	9	iP EZ	15 19 30	C 3800	3.0S, 152.3E h = 143 km New Ireland. Mag 5.3

3.

No.	Date 1963 AUG.	Phase	Time (G.M.T.)	Δ Km.	Remarks
33	9	eP EZ	16 58 40		
34	10	iP EZ	08 15 59	C	
35	10	eP EZ	15 27 46		
36	10	iP EZ	17 57 57	D 3550	3.2S, 141.9E h = 88 km Near north coast of New Guinea
37	11	eP EZ iS NEZ iSS NE i Z eT	01 40 05 44 54 46 00 47 00 02 06 15	3060	60.5S, 154.9E h = 33 km Balleny Islands region Mag 5.4
38	11	iP EZ	05 31 03	D 4600	17.4S, 179.0W h = 509 km Fiji Islands Mag 4.1
39	11	eP EZ e EZ	08 11 12 16 55		
40	11	iP EZ	10 16 32	D	
41	11	eP EZ	16 40 10		
42	12	iP NEZ	09 04 45	D 3800	11.6S, 166.3E h = 53 km Santa Cruz Islands Mag 4.2
43	12	iP NEZ i NEZ iSS NEZ	10 16 09 16 45 22 40	C 3270	5.7S, 131.1E h = 90 km Banda Sea. Mag 5.2
44	12	eP NEZ	17 48 45	3300	5.9S, 146.5E h = 100 km Near east coast of New Guinea Mag 4.4
45	13	iP NEZ iPP Z	04 59 30 05 00 56	C 3380	7.2S, 124.5E h = 542 km Banda Sea. Mag 5.3
46	13	iP NEZ eL Z	06 36 07 07 14. 1	D 4450	20.6S, 178.5W h = 562 km Fiji Islands. Mag 4.6
47	13	iP NEZ e NZ eL NEZ	22 00 50 11. 1 14. 4	C 4950	19.3S, 173.7W h = 33 km Tonga Islands. Mag 5.1
48	13	iP NEZ i Z	23 30 02 31 35	D	
49	14	eL NEZ	03 07. 0		
50	14	iP NEZ e NEZ	03 38 59 48 00	D 3590	4.9S, 152.3E h = 62 km New Britain. Felt Pomio Mag 5.8
51	14	iP NEZ	08 49 45	D	
52	14	eP NEZ	16 28 30	6640	24.1N, 122.4E h = 28 km Off coast of Formosa Mag 5.3
53	14	iP NEZ e NEZ e NEZ i NZ	18 50 17 56 00 19 00 48 03 40	C 3550	3.4S, 135.4E h = 33 km West Irian. Mag 6.4
54	15	eP NZ	01 23 42		

No.	Date 1963 AUG.	Phase	Time (G.M.T.)	Δ Km.	Remarks
55	15	iP NZ	02 26 55	D 6950	27.9N, 139.6E h = 476 km Bonin Islands. Mag 4.7
56	15	eP NZ iS NEZ i(SSS)NEZ eL NEZ	06 22 51 32 20 40 40 42 00	8070	37.9N, 141.6E h = 59 km Near east coast of Honshu, Japan
57	15	iP NZ	08 08 53	C	
58	15	iPKP NEZ i NEZ iPP NEZ i NEZ iPKS NEZ iSKS NEZ iSKKS NEZ i NZ iPcSPKP NEZ iPPS Z iSS NE	17 43 05 43 15 45 35 47 04 48 58 51 04 53 05 54 00 56 02 56 56 18 01 58	D 13840	13.8S, 69.3W h = 543 km Peru - Bolivia Border. Mag 8 (BKS)
59	15	iP NEZ	22 36 28	C 4360	21.0S, 179.2W h = 597 km Fiji Islands. Mag 4.9
60	16	eP NZ	02 44 35	3660	3.1S, 129.3E h = 94 km Ceram Sea. Mag. 4.6
61	16	eP NZ	03 06 41		Regional?
62	16	iP NEZ iSS NE i Z eL NEZ eT NEZ	23 23 40 27 00 27 40 28 00 40 20	C 1930	48.9S, 122.8E h = 33 km South of Australia
63	17	eP NEZ i(s) NEZ	04 11 33 14 18		Regional (exact beginning unknown)
64	17	iP NEZ ipP NEZ i Z iS NEZ iSS NEZ iSSS NEZ eL NEZ	11 23 24 23 33 24 00 32 04 36 36 39 20 44 20	C 7330	30.6N, 130.9E h = 33 km Ryukyu Islands region. Mag 5.6
65	18	eL NEZ	19 27. 5		
66	18	iP NEZ	19 59 41	C 4620	18.0S, 178.3W h = 544 km Fiji Islands. Mag 4.3
67	18	iP NEZ	20 26 16	D 4710	22.5S, 175.2W h = 33 km Tonga Islands. Mag 4.7
68	18	eP NEZ e NEZ eL NEZ	20 34 39 42. 2 45. 5	4030	32.1S, 178.1W h = 33km Kermadec Islands region Mag 5.0
69	19	eP NEZ eL NEZ	04 31 00 40. 5	4050	32.0S, 177.9W h = 33 km Kermadec Islands region Mag 4.8
70	19	eP NEZ	06 54 07		Local?
71	19	iP NEZ ePP Z	10 03 57 06 55	D 9400	59.8S, 29.5W h = 33 km Sandwich Islands region
72	19	iP NEZ	17 00 10	D 3560	17.0S, 168.8E h = 231 km New Hebrides Islands Mag 3.8

5.

No.	Date 1963 AUG.	Phase		Time (G.M.T.)			Δ Km	Remarks
73	19	eP	NEZ	19	15	57	3300	6.1S, 130.7E h = 33 km Banda Sea. Mag 4.3
		e	NEZ		21	35		
74	20	iP	NEZ	15	59	55	8400	41.2N, 142.7E h = 50 km Off east coast of Honshu, Japan Mag 4.5
		ipP	Z	16	00	10		
75	20	eP	NEZ	19	51	02	4000	30.2S, 177.8W h = 43 km Kermadec Islands Mag 4.2
76	21	iP	Z	03	59	00	16120	14.3N, 72.5W h = 33 km Caribbean Sea. Felt Caracas, Venezuela. Mag 5.4
77	22	eP	Z	05	08	31	3890	1.2S, 128.5E h = 33 km Halmahera region. Mag 3.7
78	22	eP	Z	14	46	02	3670	1.9S, 133.9E h = 33 km Irian. Mag 4.3
79	22	eP	Z	17	11	26	3590	7.2S, 120.4E h = 398 km Flores Sea
80	22	iP	NEZ	19	58	42	3440	9.4S, 158.0E h = 33 km Solomon Islands Mag 6.1
		iS	NEZ	20	03	46		
		i	NEZ		05	00		
		iSSS	NEZ		06	00		
		i	NEZ		07	04		
		eL	NEZ		07	28		
81	24	eP	NEZ	03	25	11	4020	30.7S, 178.2W h = 42 km Kermadec Islands. Mag 4.6
82	24	eP	Z	12	57	00	3840	37.3S, 178.2W h = 36 km Off east coast of North Island New Zealand
83	25	iP	NEZ	12	25	13	4580	17.5S, 178.8W h = 565 km Fiji Islands region Mag 6.1
		iPP	NEZ		27	00		
		iPPP	NEZ		27	56		
		i	Z		29	56		
		iS	NE		30	48		
		iSS	NEZ		33	52		
		i	NEZ		36	20		
		i	NEZ		37	20		
		eL	NEZ		38	00		
84	25	iP	NZ	13	41	48	4580	17.4S, 178.7W h = 540 km Fiji Islands region. Mag 3.6
85	26	iP	NEZ	01	01	29		
86	26	iP	NEZ	02	34	23	3910	26.3S, 178.8E h = 546 km Fiji Islands region. Mag 4.4
		eL	Z		42.	6		
87	26	iP	NEZ	04	56	42	4600	17.7S, 178.8W h = 575 km Fiji Islands. Mag 4.6
88	26	iP	NEZ	05	50	25	4580	6.8S, 105.6E h = 33 km Java. Mag 5.1
		eL	Z	06	04	00		
89	26	eP	NEZ	06	58	25		Local? Quarry Blast?
		iS	NEZ		58	29		
90	26	iP	Z	11	56	50		
91	26	iP	NEZ	23	38	43	3240	7.7S, 127.3E h = 151 km Banda Sea, Mag 4.4
		iPP	NEZ		39	16		
		eS	NEZ		43	00		

6.

No.	Date 1963 AUG.	Phase	Time (G.M.T.)	ΔKm.	Remarks
92	27	iP NEZ i Z	01 25 57 26 09		D
93	27	e NEZ eL NEZ	03 52 00 04 06. 6		
94	27	eP NEZ i NEZ	19 20 33 23 58		
95	28	eL NEZ	13 01. 2		
96	28	eP NEZ	16 01 24	6950	28.3N, 141.0E h = 96 km Bonin Islands region Mag 5.1
97	28	eL NEZ	17 41. 0		
No short period NS record for 29th after					0058 GMT
98	29	iP EZ	01 29 36	4380	D 2.0N, 123.4E h = 43 km Northern Celebes. Mag 4.6
99	29	eP EZ e NEZ eL NEZ	04 39 47 48 00 50. 2		
100	29	iP EZ iP _o P Z eSKS NE ePS NEZ i(P _o PKP)NEZ iPKPKP)NEZ eL NE eL Z	09 07 11 07 16 17. 5 19. 6 29 00 32 20 37 00 39 00	10540	C 39.6N, 74.2E h = 31 km Sinkiang Province, China Mag 5.5
101	29	eP Z	15 59 20		
102	29	iPKP EZ i Z iPP NEZ iSKKS NE iPS NEZ iPPS Z iPKKSEZ iSS N i EZ i NE iSSS EZ i Z i NE i NE eL NEZ	15 49 31 49 35 51 12 58 12 16 01 00 02 30 03 00 08 00 08 30 11 30 12 40 16 38 22 00 23 30 27 30	13720	C 7.1S, 81.6W h = 23 km Off coast of Peru Mag 6.1
103	29	iP EZ ipP EZ iS NE i NEZ eL NEZ	21 06 03 06 15 13 00 16 40 18 00	5250	D 15.5S, 172.9W h = 33 km Tonga Islands region Mag 4.9
104	30	iP NEZ i Z i NEZ	10 34 22 35 13 35 54		D
105	30	eP NEZ ipP Z eL NEZ	13 59 35 59 47 14 12. 5	4610	23.4S, 175.4W h = 33 km Tonga Islands Mag 4.9

7.

No.	Date 1963 AUG.	Phase	Time (G.M.T.)	▲ Km	Remarks
106	31	iP NEZ	02 39 46 D		
107	31	eP NZ	17 01 00	4240	2.0N, 127.5E h = 70 km Halmahera region
108	31	iP NEZ	21 32 46 D	4340	21.5S, 179.2W h = 543 km Fiji Islands Mag 4.8
No short period NS record on 1st Sept. after 0947 GMT Globe blown					

Seismograms read by A. Slade

 D.J. Sutton
Director.

Adelaide
OCT. 1963
Comes JB.

UNIVERSITY OF ADELAIDE SEISMOLOGICAL STATION

ADELAIDE (MT. BONYTHON)

Latitude: 34° 58' 01" Longitude: 138° 42' 32"

Height above mean sea level: 2150'

Foundation: Sandstone

Instruments: World-wide standard seismograph system Benioff short period seismometers

To = 1.0 secs. Tg = 0.75 secs.

Sprengnether long period seismometers

To = 30 secs. Tg = 100 secs.

No.	Date 1963 OCT.	Phase	Time (G.M.T.)	Δ Km.	Remarks.
1	1	IP NEZ IS NEZ	07 43 39 C 43 55		Local
2	X 2 ✓	IP NEZ eL NEZ	03 37 46 D 46.8	3,530	5.4S, 152.0E, h=65 km New Britain: Felt Pomio & Rabaul Mag 5.6
3	X 2 ✓	IP NEZ eScS NEZ eL NZ eL E	05 55 08 D 06 05.2 09.0 10.0	4,840	20.8S, 174.1W, h=33km Tonga Islands Mag 5.3
4	3	eP Z	03 44 59		
5	3	eP NEZ	05 42 17	6,640	22.3N, 121.1E, h=55km Near east coast of Taiwan Mag 4.4
6	3	eP NEZ	06 44 49	3,500	3.4S, 135.7E, h=78km West New Guinea Mag 5.4
7	X 3 ✓	eP NEZ e NEZ	16 00 54 D 30 00	9,500	58.5S, 25.1W, h=54km Sandwich Islands
8	3	eL NEZ	17 41.5		
9	3	IP NEZ eL NEZ	18 08 46 D 42.0	9,560	58.6S, 25.5W, h=33km Sandwich Islands Mag 5.5
10	3	eL NE eL Z	19 35.5 38.0		
11	X 3 ✓	IP NEZ IP NEZ IS NEZ ISS N ISSSE I Z	23 35 25 D 35 37 44 20 48 52 51 44 52 00	7,450	32.2N, 131.6E, h=33km Kyushu, Japan Mag 5.7
12	X 4 ✓	eP NEZ	00 38 54	7,510	32.8N, 131.4E, h=21km Kyushu, Japan Mag 4.9
13	X 4 ✓	IP NEZ eScS NEZ eL EZ eL N	02 55 35 C 03 05.8 09.0 10.0	4,840	20.7S, 174.0W, h=33km Tonga Islands Mag 5.3

	OC			time M.T.)	(2) Δ Km	Remarks
14	4	eP	NEZ	03 52 35		
15	4	iP e	NEZ NEZ	03 57 07 D 04 04 00	9,550	58.4S, 25.0W, h= 33km Sandwich Islands Mag 5.2
16	4	eP	NEZ	10 18 11		
17	4	eP	NEZ	15 48 38		
18	5	eP	NEZ	00 23 20	5,200	15.7S, 173.3W, h=33km Tonga Islands Mag 4.6
19	5	iP eL	NEZ NEZ	02 03 58 D 19.8	5,180	16.0S, 173.2W, h=79km Tonga Islands Mag 5.5
20	5	iP	NEZ	06 48 17 C	4,330	2.7N, 127.4E, h=175km Molucca Sea Mag 4.7
21	5	eL	NEZ	15 40.0		
22	5	eL	NEZ	18 06.0		
23	6	eP i	NEZ NEZ	13 33 40 33 46		
24	6	iP	NEZ	21 36 08 C		
25	7	iP iS i	NEZ NEZ NEZ	13 20 52 D 26 01 29 28	4,200	23.6S, 179.9E, h=550km Fiji Islands region Mag 5.7
26	7	iP	NEZ	21 45 40 C	3,850	1.0S, 147.5E, h=68km Admiralty Islands region Mag 5.0
27	8	iP iScS i eL eL	NEZ N EZ N EZ	00 25 32 D 35 36 36 00 37.1 40.0	5,250	15.1S, 173.2W, h=33km Samoa Islands region: Felt throughout Samoa Islands and Nandi, Lautoka, Fiji Islands Mag 6.0
28	8	iP iPcP	NEZ Z	03 02 50 C 03 20	8,380	28.6N, 95.1E, h=24km Assam India Mag 5.4
29	8	iP ipP	NEZ NZ	06 34 52 D 35 03	5,290	11.3N, 125.9E, h=39km Samar region P.I. Mag 5.4
30	8	iP	NEZ	20 36 49 C	4,280	2.6N, 128.4E, h=166km Halmahera
31	9	eP eL	NEZ NZ	05 21 39 35.0	5,000	18.6S, 173.7W, h=33km Tonga Islands Mag 4.6
32	9	eP eL	NZ NEZ	10 22 52 34.0		
33	9	iP	NEZ	13 02 51.5 D		
34	9	eP e	NEZ NEZ	23 46 36 56 00	3,200	8.4S, 126.1E, h=229km Timor

Time
 (G.M.T.) (3)

Δ Km

Remarks

	UTC			Time (G.M.T.) (3)	Δ Km	Remarks
35	10	eP	NEZ	00 56 34	3,420	5.6S, 145.6E, h=102km New Britain region Mag 4.7
36	10	eP i(S)	NEZ NEZ	07 46 20 46 22		Local?
37	10	iP	NEZ	10 57 29D		
38	11	iP	NEZ	00 07 49D	4,180	24.1S, 179.6W, h=437km Fiji Islands region Mag 4.9
39	11	eL	NEZ	11 13.0		
40	11	iP	NEZ	16 41 01D	4,640	18.5S, 177.7W, h=583km Fiji Islands Mag 4.4
41	12	eP	NEZ	05 34 02		Seismic event?
42	12	iP ipP iS iSS iSSS eL eL	NEZ NEZ NEZ NEZ NEZ E NZ	11 39 04D 39 17 49 00 54 00 57 40 12 00.0 01.0	8,870	44.8N, 149.0E, h=40km Kurile Islands Mag 7.0 (BKS)
43	13	iP i iPcP i iS	NEZ NEZ NEZ NEZ NEZ	05 30 02D 30 08 30 26 31 30 40 00	8,880	44.8N, 149.5E, h=60km Kurile Islands Felt: Hokkaido and Honshu Japan Mag 8 $\frac{1}{4}$ (PAS)
44	13	iP	NEZ	07 15 35D	8,970	45.5N, 150.0E, h=50km Kurile Islands Mag 5.6
45	13	iP	NEZ	07 15 48D		
46	13	eP	Z	09 28 31	8,860	44.6N, 149.6E, h=50km Kurile Islands Mag 4.9
47	13	iP i	NEZ NEZ	13 10 30 10 43	8,900	45.0N, 150.1E, h=50km Kurile Islands Mag 5.4
48	13	iP	Z	14 38 18C	8,850	44.5N, 149.5E, h=50km Kurile Islands Mag 5.1
49	13	iP iS	NEZ NEZ	16 12 05C 22 12	8,970	45.6N, 150.5E, h=35km Kurile Islands Mag 6.1
50	13	iP	NEZ	18 27 07D	8,900	45.2N, 150.8E, h=45km Kurile Islands Mag 5.2
51	13	iP	Z	19 39 51 D	9,000	45.7N, 151.7E, h=45km Kurile Islands Mag 5.5
52	13	iP	NEZ	22 07 08 C	8,890	44.7N, 152.1E, h=50km Kurile Islands Mag 5.5

				Time (G.M.T.)	(4) Δ Km	Remarks
53*	OCT 14	eP	Z	00 04 09 C	8,850	44.5N, 150.1E, h=50km Kurile Islands Mag 5.5
54	14	eP ipP i eL	NEZ Z Z NEZ	04 18 09 C 18 23 23 47 41.0	8,900	44.9N, 150.2E, h=50km Kurile Islands Mag 5.3
55	14	iP	NEZ	13 04 34 D		
56	14	iP ipP i eL	NEZ NEZ NEZ NEZ	13 33 51 D 34 07 44 00 56.0	8,890	44.8N, 151.0E, h=60km Kurile Islands Mag 5.9
57	14	iP	NEZ	15 38 33 D	4,200	1.6N, 127.6E, h=231km Timor region
58	14	eP	NEZ	18 40 17	4,960	4.2S, 103.4E, h=33km Sumatra
59	14	eL	NEZ	23 16.5		
60	15	eL	NEZ	07 26.1		
61	15	eP	Z	10 19 02		
62	15	eP eL	NEZ NZ	10 59 18 11 14.0	8,850	44.6N, 149.0E, h=50km Kurile Islands Mag 5.4
63	15	eL	NEZ	12 40.0		
64	15	iP iS	NEZ NEZ	14 30 34 C 30 42		Local
65	15	eL eL	E NZ	18 57.4 19 04.0		
66	15	eL	NZ	21 24.0		
67	15	iP ipP iS i eL	NEZ NEZ NEZ NEZ NEZ	21 51 32 C 51 39 56 48 59 40 22 02.7	3,650	3.0S, 129.9E, h=27km Ceram Mag 5.2
68	16	iP iPcP	NEZ Z	07 27 47 C 28 02	8,900	44.8N, 150.4E, h=33km Kurile Islands Mag 5.2
69	16	iP	NEZ	07 19 36 C	4,280	22.2S, 179.5W, h=539km Fiji Islands region Mag 4.3
70	16	iP	NEZ	07 56 54 C	3,650	10.8S, 163.7E, h=68km Solomon Islands region Mag 5.4
71	16	iP	NZ	10 43 05 C	8,940	45.2N, 150.4E, h=45km Kurile Islands Mag 5.0
72	16	iP eL	NEZ NEZ	12 54 29 D 13 06.0	3,830	1.8S, 127.9E, h=33km Halmahera region Mag 5.2
73	16	iP iSKS iPS	NEZ NE Z	15 56 23 C 16 07 00 09 00	10,530	38.6N, 73.4E, h=33km Tadzik S.S.R. Mag 5.0



				(5) Time (G.M.T.)	Δ Km	Remarks
74	16	iP eL	Z NEZ	20 47 41 D 21 02.0	4,840	8.8N, 137.9E, h=28km Palau Islands Region Mag 5.0
75	17	eP eL	NEZ NEZ	03 14 14 30.0	5,250	11.6N, 140.6E, h=70km Mariana Islands region Mag 5.1
76	17	eP	NEZ	07 11 13		
77	17	iP i eL	NEZ NEZ Z	14 22 21 D 22 27 32.5	5,100	9.8N, 126.5E, h=33km Near east coast of Mindanao P.I. Mag 5.4
78	17	iP	NZ	18 50 53 D		
79	17	iP	NEZ	19 11 29 C	4,760	6.6N, 126.3E, h=33km Off east coast of Mindanao P.I. Mag 5.4
80	17	eP ipP iS eL	NZ Z Z NEZ	23 36 39 36 56 46 13 00 03.0	8,850	44.6N, 149.0E, h=45km Kurile Islands Mag 5.4
81	18	iP eL	Z Z	08 48 02 D 09 36.0	3,560	10.5S, 161.6E, h=33km Solomon Islands Mag 4.9
82	18	iP	NEZ	13 03 42 C		
83	18	iP	Z	18 07 12 D	8,980	45.6N, 150.6E, h=40km Kurile Islands Mag 5.2
84	18	iP	NEZ	21 44 59 C	4,870	5.3S, 103.5E, h=33km Sumatra Mag 5.1
85	18	iP i	NEZ NEZ	22 16 30 D 16 38		
86	19	eP eL	Z NEZ	02 31 10 53.0	9,370	46.8N, 153.7E, h=45km Kurile Islands Mag 5.2
87	19	eP	Z	03 46 45	9,140	46.6N, 153.8E, h=33km Kurile Islands Mag 5.4
88	19	eP ipP	NEZ Z	09 10 37 10 55	5,140	9.9N, 126.1E, h=86km Near east coast of Leyte P.I.
89	19	eP	NEZ	11 52 35		
90	19	eP	NEZ	18 09 12	5,200	35.9S, 80.5E, h=33km Indian Ocean
91	20	eP iPcP i iS iSS iSES i	NEZ NEZ NEZ NEZ NEZ NEZ E	01 05 20 05 35 05 57 15 20 20 16 23 52 26 20	8,880	44.7N, 150.7E, h=25km Kurile Islands Seismic sea waves Mag 6 ² / ₄ -7 (PAS)

Cont. → i N 01 27 00
i NZ 31 00

	OCT	e	Time (G.M.T.) (6)	Δ Km	Remarks
92	20	iP NEZ	03 06 56 C	4,440	20.8S, 178.6W, h=600km Fiji Islands region Mag 4.8
93	20	iP NEZ	06 22 28 C	8,800	43.9N, 150.7E, h=50km Kurile Islands Mag 5.2
94	20	eP NEZ i NEZ is NEZ	08 28 43 30 06 31 01		Regional
95	20	iP NEZ ipP Z eL PEZ	09 22 50 C 23 02 45.0	8,900	44.4N, 150.0E, h=40km Kurile Islands Mag 5.5
96	20	eP NEZ eL Z	11 11 04 30.5	7,400	16.1S, 66.3E, h=33km Indian Ocean
97	20	eP Z eL NEZ	12 04 27 26.0	8,900	44.7N, 150.2E, h=45km Kurile Islands Mag 5.1
98	20	eL Z	18 27.0		
99	21	eL NEZ	09 40 .0		
100	21	iP NEZ	11 01 44 C		
101	21	eL NEZ	13 26.0		
102	21	iP NEZ	13 33 40 D	4,040	26.0S, 179.9E, h=397km Fiji Islands region Mag 4.5
103	21	eP NEZ	15 50 33	8,960	45.5N, 149.7E, h=55km Kurile Islands Mag 5.4
104	21	eL NEZ	18 04 .0		
105	22	iP NEZ	01 10 18 D	5,670	13.7N, 121.6E, h=15km Luzon P.I. Mag 5.0
106	22	eP NEZ is NEZ	02 40 48 41 18		Regional
107	22	eP NEZ	03 54 09		
108	22	eP NEZ	07 09 24	3,850	3.0S, 130.0E, h=54km Ceram Mag 4.5
109	22	iP NEZ e(FAS) NE e Z	15 42 06 D 50 00 52 00	3,790	11.6S, 166.3E, h=80km Santa Cruz Islands Mag 4.5
110	23	iP NEZ ipP EZ eL NEZ	08 02 49 D 03 15 12.0	3,770	12.0S, 166.5E, h=107km Santa Cruz Islands Mag 5.0
111	23	eP NEZ e NEZ	10 22 40 31.5	3,240	6.9S, 148.4E, h=29km Near northeast coast of New Guinea



	Oct			Time (G.M.T.) (7)	Δ Km	Remarks
112	23	iP	NEZ	14 54 07 D	5,370	12.2N,125.7E, h=99km Off east coast of Samar P.I. Mag 5.5
113	23	iP	NEZ	20 21 12 C	4,160	25.9S,178.8W, h=343km Kermadec Islands region Mag 4.4
114	24	eP eL	NEZ NEZ	01 18 33 46.0	8,860	44.5N,150.3E, h=45km Kurile Islands Mag 5.0
115	24	eP	NEZ	07 07 00	6,270	19.2N,121.3E, h=72km Babuyan Islands P.I. Mag 4.8
116	24	iP ipP iS i i eL eL	NEZ NEZ NE NEZ E NE Z	07 34 33 34 44 41 04 44 32 45 40 47.0 48.0	4,940	4.9S,102.9E, h=50km Off south coast of Sumatra Mag 6.1
117	24	eP i	Z Z	19 29 40 29 46	7,060	28.3N,128.5E, h=33km Ryukyu Islands Mag 5.1
118	24	eP	Z	20 30 20	8,850	44.4N,149.7E, h=40km Kurile Islands Mag 5.0
119	25	eP eL	NEZ NEZ	20 07 32 19.0	5,340	12.3N,144.5E, h=29km Mariana Islands Mag 5.4
120	25	iP i	NEZ Z	23 02 01 D 02 07	9,120	36.9N,95.2E, h=33km Tsinghai Province, China Mag 5.1
121	26	eP	NEZ	03 42 11		
122	26	eP eL	Z NEZ	04 07 46 34.0	8,850	44.5N,150.1E, h=55km Kurile Islands Mag 5.1
123	26	iP	Z	06 11 47 C	8,850	44.5N,149.8E, h=60km Kurile Islands Mag 5.1
124	26	iP eL	Z NEZ	11 33 55 D 12 02.0	8,850	44.7N,149.7E, h=55km Kurile Islands Mag 5.4
125	26	iP	NEZ	12 42 05 C	5,130	15.8S,174.0W, h=115km Tonga Islands Mag 5.5
126	26	eP ipP i	NEZ NEZ NEZ	19 01 30 02 03 07 15	3,220	7.0S,129.7E, h=125km Banda Sea Mag 5.0
127	26	iP i i eL	NEZ NEZ NEZ NEZ	22 47 52 D 48 02 53 00 57.0	3,550	5.2S,152.0E, h=73km New Britain Mag 5.9



NO	1903 OCT	Phase	Time (G.M.T.) (8)	Δ Km	Remarks
128	27	iP NEZ	08 52.42.5 D	4,600	17.9S, 178.5W, h=586km Fiji Islands region Mag 5.0
129	27	eL NEZ	10 59.0		
130	27	eP Z eL NEZ	18 32 19 44.0	4,480	24.3S, 176.1W, h=33km Tonga Islands Mag 5.3
131	27	iP NEZ	18 46 01 C		
132	27	eP NEZ	19 44 49	5,120	16.8S, 173.5W, h=33km Tonga Islands Mag 4.5
133	27	iP Z	20 17 45 C	8,900	44.5N, 150.1E h=50km Kurile Islands Mag 5.2
134	28	eP NEZ i(S) NEZ	06 52 02 52 07		Local? Quarry blast?
135	28	eP EZ i E i N i E eL N eL EZ	08 02 48 09 20 12 00 12 40 13.0 14.6	4,480	24.3S, 176.0W, h=33km Tonga Islands region Mag 5.4
136	28	iP Z ipP Z eL NEZ	12 16 14.5 D 16 24 46.0	9,910	52.8N, 159.8E, h=33km Off east coast of Kamchatka Mag 5.7
137	28	iP NEZ i(PP) Z	20 05 40 D 07 48	4,130	24.5S, 179.9E, h=532km Fiji Islands region Mag 5.0
138	29	eP NEZ i N eL NEZ	20 29 35 38 20 40.0	4,240	26.2S, 177.8W, h=49km Kermadec Islands region Mag 4.8
139	29	eP Z eL NEZ	22 36 55 42.0		
140	30	iP NEZ	06 55 44		
NO VERTICAL SHORT PERIOD RECORD AFTER				1443 G.M.T. ON 31 st	GLOBE BLOWN
141	31	iP NEZ i NEZ i NZ eL NEZ	03 25 36 D 32 00 35 20 37.6	4,710	21.8S, 177.0W, h=33km Tonga Islands Mag 5.2
142	31	iP Z	04 32 12 C	4,170	23.9S, 179.8W, h=464km Fiji Islands region Mag 4.5
143	31	iP NEZ	08 58 36 D	4,570	17.9S, 178.8W, h=637km Fiji Islands region Mag 4.3
144	31	iP Z eL NEZ	10 01 27 23.5	4,630	19.3S, 177.4W, h=555km Fiji Islands region Mag 3.9

Seismograms read by A. Slade

D.J. Sutton
Director.

Adelaide
Nov. 1963

*boxed
J.B.*

UNIVERSITY OF ADELAIDE SEISMOLOGICAL STATION

ADELAIDE (MOUNT. BONYTHON)

Latitude: 34° 58' 01" Longitude 138° 42' 32"

Height above mean sea level: 2150'

Foundation: Sandstone

Instruments: World-wide Standard seismograph system Benioff short period seismometers

To = 1.0secs. Tg = 0.75secs.

Sprengnether long period seismometers

To = 30secs. Tg = 100secs.

No	Date 1963 NOV.	Phase	Time (G.M.T.)	ΔKm	Remarks
NO RECORDS FOR 1st NOV - RECORDS EXPOSED					
1	2	iP NZ	20 18 34 D	3,310	5.3S, 133.9E, h=33km Tanimbar Islands region Mag 4.9
2	2	eP NEZ i NEZ	22 38 59 41 44		
3	2	eP Z i NZ i NE eL NEZ	23 05 00 11 52 18 00 20.5		
4	3	iP NEZ	02 09 02 D		
5	3	iP NEZ	02 28 06 D		
6	3	iP NEZ iPP NZ iPKS NEZ i E i NZ i NE eL NEZ	03 29 19 D 31 22 32 40 49 28 50 00 04 04 30 11.0	14,290	3.5S, 77.8W, h=33km Peru-Ecuador border Mag 6.0
7	3	eP NEZ iS NEZ	12 03 05 04 40	1,110	43.4S, 145.8E, h=33km Tasmania region. Felt: Hobart
8	3	eP NZ eL EZ eL Z	14 38 22 48.0 50.8	3,570	14.0S, 165.9E, h=50km New Hebrides Islands Mag 4.9
9	3	iP NZ	15 21 10 C		
10	4	iP NEZ i NEZ	01 20 51 C 21 36	3,600	15.1S, 167.3E, h=154km New Hebrides Islands Mag 5.8

No	Date 1963 NOV.	Phase	Time (G.M.T.)	Δ Km	Remarks
11	4	iP NEZ iS NEZ	01 23 05 C 27 45	3,240	6.8S, 129.6E, h=180km Banda Sea Slight damage in Darwin, felt throughout South Australia, northern Tasmania and Papua
12	4	iP NEZ i NEZ	02 20 01 D 20 29	3,220	6.9S, 129.5E, h=76km Banda Sea. Mag 5.3
13	4	eP NEZ	02 25 35		
14	4	iP NEZ	02 42 32 C	3,220	7.0S, 129.5E, h=129km Banda Sea. Mag 5.5
15	4	e(P) NEZ	02 48 08		
16	4	eP NEZ	03 36 28		
17	4	eP NEZ i NEZ i NEZ	03 49 10 49 43 54 45	3,220	6.9S, 129.8E, h=100km Banda Sea. Mag 5.1
18	4	eP NEZ	04 36 32.5		
19	4	eP NEZ	05 06 44	3,220	7.0S, 129.5E, h=115km Banda Sea
20	4	iP NEZ i NEZ	05 28 56 C 34 33	3,240	6.8S, 129.8E, h=80km Banda Sea. Mag 5.4
21	4	eP NEZ	05 59 15		
22	4	iP NEZ	07 26 27 D		
23	4	eP NEZ	08 28 13		
24	4	eP NEZ	08 47 19		
25	4	eP NEZ	08 53 16		
26	4	eP NEZ	09 56 37		
27	4	eP NEZ i Z	14 03 34 09 00		
28	4	iP NEZ i NEZ	15 19 25 D 25 26	3,220	7.0S, 129.4E, h=132km Banda Sea. Mag 5.0
29	4	eP NEZ eL E eL Z eL N	15 32 43 16 11.3 14.5 15.0		
30	4	eP NEZ i NEZ	16 19 04 24 32		
31	4	eP NEZ	17 41 13		
32	4	eL EZ	18 46.0		
33	4	eP NEZ i NEZ	19 57 58 58 24	3,230	6.9S, 129.5E, h=104km Banda Sea

No	Date 1963 NOV.	Phase		Time (G.M.T.)	Δ Km	Remarks
34	4	iP	NEZ	22 20 17 C		
35	4	iP	NEZ	22 23 00 C	3,230	6.8S, 129.9E, h=136km Banda Sea. Mag 5.6
		i	NEZ	23 28		
		i	NEZ	28 35		
		iPcS	NEZ	30 16		
		i	NEZ	33 00		
		eL	NEZ	34.5		
36	5	iP	NEZ	05 22 19 D	3,210	7.3S, 129.2E, h=141km Banda Sea. Mag 5.1
		i	NEZ	22 50		
		i	NEZ	27 50		
37	5	eP	NEZ	06 06 40		
38	5	eP	NEZ	06 12 14	3,230	6.9S, 129.4E, h=94km Banda Sea. Mag 4.7
		i	NEZ	12 40		
		i	NEZ	17 52		
39	5	iP	NEZ	08 24 22.5C	4,080	24.8S, 179.7E, h=606km Fiji Islands. Mag 4.4
40	5	iP	NEZ	08 49 25 C	3,220	7.2S, 129.0E, h=112km Banda Sea. Mag 4.9
		i	NEZ	49 55		
		i	NE	55 02		
		i	Z	55 29		
41	5	eP	NZ	13 58 22		
42	5	eP	NEZ	14 14 50		
43	6	iP	NEZ	00 00 16 C	4,250	1.7N, 126.4E, h=28km Molucca Passage. Mag 5.8
		iPP	NEZ	01 40		
44	6	iP	NEZ	01 25 18	3,130	7.8S, 129.8E, h=158km Banda Sea. Mag 4.9
		i	NEZ	31 05		
45	6	eP	NEZ	02 19 43	3,570	2.6S, 138.4E, h=33km Western New Guinea. Mag 5.7
		iS	NEZ	25 00		
		i	E	26 00		
		i	NEZ	27 40		
		eL	NEZ	28.6		
46	6	eP	NEZ	03 02 21	3,590	2.5S, 138.6E, h=32km Western New Guinea. Mag 4.8
47	6	iP	NEZ	03 06 38 D	3,620	2.2S, 138.7E, h=43km Western New Guinea. Mag 5.1
		iScP	NEZ	13 33		
48	6	eP	NZ	04 13 17	3,590	2.4S, 138.6E, h=22km Western New Guinea. Mag 5.3
49	6	eP	Z	04 41 35	3,570	2.5S, 138.4E, h=33km Western New Guinea.
50	6	eP	Z	04 48 04		
51	6	iP	NEZ	06 35 11 C	3,860	30.8S, 179.9E, h=411km Kermadec Islands region Mag 4.7
52	6	eP	NZ	07 41 52	3,590	2.5S, 138.6E, h=38km Western New Guinea. Mag 5.5
		eScS	NEZ	52 30		
		eL	NEZ	55.0		

No	1963 NOV.	Phase	Time (G.M.T.)	Δ Km	Remarks
53	6	iP NEZ i NEZ i NEZ eL Z	09 07 06 D 07 41 12 40 19.4	3,240	7.1S, 129.2E, h=90km Banda Sea. Mag 5.5
54	6	iP Z i(PP) Z eL Z	10 59 26 D 11 00 19 13.3	3,530	3.0S, 138.7E, h=16km Western New Guinea. Mag 5.8
55	6	iP NZ eL NEZ	11 39 26 D 53.0	3,530	2.8S, 139.1E, h=95km Western New Guinea. Mag 5.2
56	6	eL NEZ	13 47.5		
57	6	e Z	23 09.0		
58	7	eP NEZ i NEZ i NEZ	00 00 50 01 20 06 35	3,220	7.0S, 129.7E, h=229km Banda Sea. Mag 5.3
59	7	eL NEZ	02 07.3		
60	7	eP NEZ i NEZ eL NEZ	02 49 20 59 00 03 03.0	3,590	2.5S, 138.7E, h=69km Western New Guinea. Mag 4.9
61	7	eP Z eL EZ eL N	13 04 11 20.0 22.0		
62	7	iP NZ	16 01 15 D	4,470	24.2S, 176.4W, h=33km Tonga Islands region. Mag 5.1
63	7	iP NEZ	16 33 17 D	3,810	11.3S, 166.1E, h=89km Santa Cruz Islands. Mag 4.9
64	7	iP NEZ eL NEZ	16 35 05 17 20.5		
65	8	iP NEZ	05 11 35.50	4,280	21.5S, 179.7W, h=659km Fiji Islands. Mag 4.6
66	8	iP NEZ i NEZ	06 48 44D 48 47		
67	8	eP NEZ	06 52 36		
68	8	iP NEZ i(PP) NEZ iS NEZ	16 20 41 D 22 04 26 27	4,280	2.7N, 128.4E, h=216km Molucca Passage. Mag 5.7
69	8	eP NEZ e NEZ	23 13 39 19 42		
70	9	iP NEZ eL N eL EZ	01 19 48 C 47.0 48.0	3,790	11.9S, 166.6E, h=112km Santa Cruz Islands. Mag 4.3
71	9	iP NEZ	05 45 07 D	4,700	5.6S, 105.5E, h=33km Sumatra. Mag 4.8
72	9	eP NEZ i NEZ i NEZ	18 56 41 57 09 19 02 21	3,230	7.1S, 129.4E, h=80km Banda Sea. Mag 5.2

No	Date 1963 NOV.	Phase	Time (G.M.T.)	Δ Km	Remarks
73	9	iP eL	Z NEZ 20 28 14 50.0	3,810	11.2S, 165.6E, h=47km Santa Cruz Islands. Mag 4.8
74	9	ePKP i i i i iPPP i iPcSPKP iPPS i i iScSPKP eL	NEZ NEZ NEZ Z NEZ NEZ NEZ NEZ E NEZ Z NEZ 21 33 17 33 30 34 20 36 00 36 52 38 40 44 48 46 28 47 40 48 44 49 20 50 08 52.1	14,190	9.0S, 71.5W, h=600km Western Brazil Mag 5.9
75	10	ePKP i	NEZ NEZ 01 18 29 18 39	14,190	9.2S, 71.5W, h=600km Western Brazil. Mag 5.6
76	10	eP i	NEZ NEZ 04 37 37 38 07½	3,230	6.9S, 129.3E, h=181km Banda Sea. Mag 4.4
77	10	iP	NEZ 05 10 29 D		
78	10	eP i	NEZ NEZ 08 05 16 10 39		
79	10	iP ipP	NEZ Z 09 02 13 D 02 26	8,850	44.5N, 149.4E, h=45km Kurile Islands. Mag 4.9
80	10	iP i eL	NEZ NEZ NEZ 17 29 47 D 39 48 51.0	8,820	44.4N, 149.0E, h=40km Kurile Islands. Mag 5.5
81	10	eP i	NEZ NEZ 18 31 45 36 50		
82	10	iP iS	NEZ NEZ 19 26 43 D 31 31	3,890	26.2S, 178.3E, h=607km South of Fiji Islands Mag 4.3
83	11	iP i i	Z Z Z 00 20 53 D 21 26 26 48	3,220	7.0S, 129.5E, h=132 km Banda Sea, Mag 5.6
NO LONG PERIOD VERTICAL RECORD FOR 11th-GLOBE BLOWN					
84	11	iP i i	NEZ NEZ NEZ 11 37 08 C 39 06 43 29	5,040	16.9S, 174.4W, h=185km Tonga Islands. Mag 5.2
85	11	iPKP	NZ 20 12 11 C	14,190	9.1S, 71.4W, h=585km Western Brazil. Mag 4.9
86	12	eP i(S)	NEZ NEZ 06 29 40 29 43		Local? Qua rry Blast?
87	12	eL	NEZ 07 53.5		
88	12	eL	Z 13 06.0		
89	13	iP	NEZ 05 24 26 C	4,920	7.8N, 125.9E, h=33km Mindanao P.I. Mag 5.6

No	1963 NOV	Phase		Time (G.M.T.)	Δ Km	Remarks
90	13	eP	NEZ	08 45 10	3,370	4.9S, 132.3E, h=33km Banda Sea
91	13	iP	NEZ	11 24 59 D	4,160	23.8S, 179.9W, h=520km Fiji Islands region. Mag 4.9
92	13	eP eL	Z NEZ	17 26 33 38.5		
93	13	iP	NEZ	19 47 00D		
94	14	eP eL	NEZ Z	00 27 11 38.0	4,130	30.1S, 177.4W, h=42km Kermadec Islands. Mag 4.7
95	14	iP	Z	04 08 20D	6,370	22.6N, 142.9E, h=177km Mariana Islands region Mag 4.9
96	14	eP ipP iS eL eL	NEZ NEZ NEZ NZ E	04 42 02 42 17 47 12 49.0 49.9	3,370	17.5S, 167.7E, h=33km New Hebrides Islands Mag 4.8
97	14	eL	NEZ	14 16.5		
98	15	eP	NEZ	01 18 27	3,630	3.3S, 129.1E, h=54km Ceram
99	15	iP i	NEZ NEZ	21 18 38D 28 40	8,810	44.3N, 149.0E, h=50km Kurile Islands. Mag 6.0
100	16	eP	NEZ	06 34 42		
101	16	eP	NEZ	06 40 38		
102	16	eP i	NEZ Z	06 46 30 46 58	3,230	7.0S, 129.4E, h=125km Banda Sea. Mag 4.7
103	16	eP eL	NEZ NEZ	06 59 31 07 29.5	10,330	41.3S, 87.5W, h=11km Off coast of Chile. Mag 5.3
104	16	eP	NEZ	11 19 23		
105	16	i i eL	NEZ N NEZ	22 58 40 23 00 52 04.0		
NO SHORT PERIOD RECORDS FOR 17th- FAULT IN RECORDER						
106	17	e i i i i i eL eL	NEZ EZ E E E NE Z NE	01 08.0 31 08 36 40 40 00 44 20 48 20 49.0 50.5		
107	18	eP e iScS	NEZ NEZ NEZ	01 08 14 18 24 19 07	3,500	3.6S, 143.4E, h=33km Near coast of northeast New Guinea. Mag 5.2

No	Date 1963 NOV.	Phase	Time (G.M.T.)	Δ Km	Remarks
108	18	eP NEZ	05 23 27	3,900	8.4S, 113.5E, h=104Km South of Java
109	18	eP NEZ iPcP Z eL NEZ	13 20 20 22 57 32.0	3,730	35.5S, 179.9W, h=50Km Kermadec Islands region
110	18	eP NEZ eL EZ	14 00 03 15.0	5,180	15.9S, 173.3W, h=33Km Tonga Islands. Mag 5.1
111	18	ePKP EZ iPS NEZ iSS NZ i(PcSPKP)E i NEZ i Z i NE eL N eL EZ	14 57 23 15 08 40 15 12 15 32 18 36 20 04 28 26 32.6 34.7	13,320	29.9N, 113.6W, h=14Km Gulf of Mexico. Mag 5.7
112	18	eP EZ	19 53 28		
113	18	eP NEZ ipP NEZ iS NEZ eL N eL EZ	21 17 43 17 52 23 00 26.0 28.0	3,570	13.4S, 166.6E, h=51Km Santa Cruz Islands. Mag 4.7
114	19	iP Z	04 48 39 D	8,300	39.7N, 129.5E, h=537Km Off east coast of Korea. Mag 4.4
115	19	iP NEZ	06 59 16 C		
116	19	eP NEZ eL N eL EZ	10 52 04 11 00.0 01.0	3,450	22.5S, 171.3E, h=36Km Loyalty Islands region Mag 5.0
117	19	eP EZ eL EZ	11 13 00 39.0	8,820	44.4N, 149.2E, h=33Km Kurile Islands. Mag 5.8
118	19	eP EZ	12 00 00		
119	19	eP NEZ	12 24 19		
120	19	iP NZ	12 36 14 D	7,140	30.2S, 60.8E, h=33Km Indian Ocean. Mag 5.7
121	19	iP EZ	17 56 27 C		
122	19	eP EZ	18 01 18		
123	19	iP NEZ i NZ eL NE eL Z	18 25 16.5D 35 08 38.0 40.0	4,980	5.0S, 102.2E, h=37Km Off south coast of Sumatra Mag 5.4
NO SHORT PERIOD E.W. RECORD FOR 20th - SEISMOMETER DISCONNECTED					
124	20	iP NZ ipP Z	04 13 19 D 14 01	3,390	5.5S, 148.2E, h=201Km New Britain. Mag 5.2

No	Date 1963 Nov.	Phase	Time (G.M.T.)	Δ Km	Remarks
125	20	eP NZ	09 30 51		
126	20	eP NZ eL NEZ	12 07 49 18.0	4,660	22.2S, 175.2W, h=33Km Tonga Islands. Mag 5.6
127	20	iP NZ	18 57 17C	4,780	6.4N, 126.2E, h=33Km Mindanao P.I. Mag 5.4
128	21	iP Z	06 01 53D	4,600	17.9S, 178.6W, h=595Km Fiji Islands. Mag 4.3
129	121	eP NZ	19 36 44	3,520	8.7S, 119.2E, h=157Km Flores Sea.
130	21	iP Z	20 29 48C	3,840	11.1S, 166.3E, h=149Km Santa Cruz Islands. Mag 4.7
131	21	iP NEZ i NEZ	21 14 11D 14 28	9,590	50.3N, 156.4E, h=80Km Southern Kamchatka. Mag 5.3
132	22	iP NEZ	00 25 46D	4,500	5.9S, 107.9E, h=323Km Near north coast of Java. Mag 5.1
NO SHORT PERIOD E.W. RECORDS FOR 22,23,24th NOV- SEISMOMETER DISCONNECTED.					
133	22	eP NZ	03 30 58	3,570	6.1S, 154.3E, h=78Km Solomon Islands. Mag 4.7
134	22	iP Z i Z	04 26 25 C 26 31		
135	22	iP Z	05 51 41C		
136	22	eP NZ e NEZ eL NEZ	14 57 59 15 08 00 20.0	8,820	44.4N, 149.0E, h=33Km Kurile Islands. Mag 5.6
137	22	iP Z i Z	16 22 41D 23 24		
138	22	eP NZ	15 50 55		
139	22	iP NZ eL Z	16 26 12C 46.0		
140	22	eL NEZ	17 29.0		
141	23	eP NZ i Z	05 02 54 05 14		
142	23	eP Z	07 20 21		
143	23	eL NEZ	08 47.0		
144	24	eP NZ i Z	02 01 19 01 27		
145	24	iP NZ	04 05 08D	3,670	2.9S, 128.8E, h=42Km Ceram Sea. Mag 5.5
146	24	eP NZ	05 16 30	4,650	22.1S, 175.6W, h=33Km Tonga Islands. Mag 5.1

No	1963 NOV.	Phase	Time (G.M.T.)	Δ Km	Remarks
147	24	eP Z	05 21 11	4,650	21.9S, 175.8W, h=33Km Tonga Islands. Mag 5.0
148	24	eP NZ i Z	11 15 56 17 04	6,970	28.2N, 140.1E, h=260Km South of Honshu Japan Mag 5.2
149	24	iP Z	23 11 07 D		
150	25	eL Z	10 46.0		
151	26	eL NEZ	03 18.0		
152	26	iP NEZ i NEZ eL NEZ	06 43 01D 43 30 07 03.6		
153	26	eP NEZ	08 53 08	3,230	7.1S, 129.2E, h=117Km Banda Sea. Mag 4.7
154	26	eP NEZ	11 07 15		
155	26	iP NEZ iS NE i NE eL NE	22 57 2 0.5D 23 03 08 05 56 07.6	4,140	16.6S, 175.2E, h=33Km Fiji Islands region. Mag 5.3
NO LONG PERIOD VERTICAL RECORDS FOR 27th & 28th NOV.					
156	27	eP NEZ	14 06 27	4,370	3.1N, 126.6E, h=33Km Molucca Passage. Mag 4.8
157	28	eP NZ	20 03 15	3,230	7.0S, 129.3E, h=101Km Banda Sea.
NO LONG PERIOD VERTICAL RECORD FROM 29 th NOV -1st DEC.					
158	30	iP NEZ	00 05 52C		
159	30	iP NEZ ipP Z iS NE iSS NE i NE	09 55 10 D 55 30 10 00 52 03 30 06 12	4,180	1.6N, 128.4E, h=61Km Halmahera region Mag 5.5
160	30	iP NEZ	21 50 18C	6,540	6.6N, 94.2E, h=33Km Nicobar Islands. Mag 5.3

Seismograms read by A. Slade

 Dr D.J. Sutton
Director.

Adelaide
DEC. 1963
Cotrucci
J.B.

UNIVERSITY OF ADELAIDE SEISMOLOGICAL STATION

ADELAIDE (MT. BONYTHON)

Latitude: 34° 58' 01" Longitude: 138° 42' 32"
 Height above mean sea level: 2150'
 Foundation: Sandstone
 Instruments: World-wide standard seismograph system Benioff
 short period seismometers
 To = 1.0 secs T_g = 0.75 secs.
 Sprengnether long period seismometers
 To = 30 secs. T_g = 100 secs.

Date 1963 DEC.	Phase	Time (G.M.T.)	Δ Km	Remarks
NO VERTICAL SHORT PERIOD RECORD AFTER 0801 GMT on 1st-3rd Dec. GLOBE BLOWN				
1	iP NEZ	07 53 12 C	3500	3.9S, 146.3E h = 33 km Bismarck Sea. Mag 5.6
2	eP NE	07 01 44		
3	eP N	04 26 12	5010	4.2S, 102.9E h = 50 km Near south coast of Sumatra. Mag 5.2
3	eP N	05 00 33		Local, felt at Hawker
	iS N	01 21		
3	iP NEZ	07 19 37 D	3310	6.2S, 147.6E h = 97 km North east New Guinea, Mag 5.2
3	eP NEZ	11 20 52		
3	eP Z	14 40 36.5	4630	18.5S, 177.8W h = 615 km Fiji Islands region. Mag 3.9
3	eP NEZ	19 50 21		
3	eP NEZ	21 21 52	3720	12.2S, 166.0E h = 32 km
	ipP EZ	22 00		Santa Cruz Islands.
	i(S) NE	27 18		Mag 5.1
	i NE	30 20		
3	eP NEZ	21 36 48	3720	12.0S, 166.0E h = 40 km
	i NE	42 28		Santa Cruz Islands. Mag 4.8
3	eL NE	23 58. 0		
4	eP NEZ	00 20 04	3720	12.1S, 166.1E h = 39 km Santa Cruz Islands Mag 4.1
4	iP NEZ	00 51 24 D	3830	34.0S, 179.3W h = 33 km Kermadec Islands Mag 4.8
4	eP NEZ	03 00 00	3440	4.8S, 130.1E h = 33 km Ceram region
4	eP NEZ	03 43 32		Seismic event?

Date 1963 DEC.	Phase	Time (G.M.T.)	Δ Km	Remarks
4	i NEZ	16 23 36		
	i NE	24 32		
	i Z	25 04		
	i NEZ	29 28		
	eL Z	41. 0		
	eL NE	41. 5		
5	eP EZ	05 59 50		
5	eP NEZ	14 21 31		
5	iP NZ	23 37 26	D 5310	12.8N, 143.5E h = 94 km Mariana Islands Mag 4.8
6	iP NEZ	02 03 04	D 3430	5.8S, 150.3E h = 61 km New Britain Mag 5.3
RECORDS FOR 5th DEC. NOT CHANGED UNTIL 7th DEC.				
7	iP NEZ	04 14 31	C 4320	22.1S, 179.4W h = 546 km Fiji Islands region Mag 5.5
7	eP NEZ	04 52 54	3490	18.8S, 169.2E h = 227 km New Hebrides Islands Mag 4.7
7	eL NEZ	10 48. 5		
7	eP Z	15 26 31	5250	12.3N, 143.9E h = 33 km Mariana Islands region Mag 5.1
	eL NEZ	41. 0		
8	iP NZ	09 44 04	D	
8	eP NEZ	10 24 10		Local felt at Eudunda
	iS NEZ	24 21		
9	iP NEZ	11 00 38	D 4470	21.1S, 178.0W h = 435 km Fiji Islands region Mag 5.0
	i EZ	02 58		
	iS E	06 08		
	iSS EZ	09 48		
NO SHORT PERIOD E.W. RECORD FOR 10th DEC.				
10	iP NZ	03 37 02	C 3350	6.2S, 128.1E h = 366 km Banda Sea, Felt Darwin Mag 5.6
	iPP NEZ	38 10		
	iS NEZ	41 32		
	iSS NEZ	43 40		
10	iP NZ	06 43 26	D 9600	58.1S, 26.4W h = 110 km Sandwich Islands
	i NZ	44 02		
10	eP NZ	08 21 00		
10	eP NZ	13 16 14	4870	7.2N, 125.1E h = 33 km Near east coast of Mindanao P.I. Mag 4.7
11	eP NEZ	00 56 16	5230	15.1S, 173.6W h = 33 km Tonga Islands region Mag 5.6
	e NEZ	01 07 00		
	eL N	08. 0		
	eL EZ	10. 5		
11	iP NEZ	02 38 21	D 4610	17.8S, 178.6W h = 537 km Fiji Islands. Mag. 4.9

Date 1963 DEC.	Phase	Time (G.M.T.)	Δ Km.	Remarks
11	eP NEZ	03 04 33		
11	iP NEZ iPP NEZ	04 00 39 C 01 57	3470	7.2S, 125.5E h = 145 km Banda Sea, Mag 5.3
11	eP NEZ	10 10 09	4930	8.0N, 126.1E h = 33 km Near east coast of Mindanao, P.I.
11	eL NEZ	17 55. J		
12	eP NEZ i NEZ	04 18 33 24 04	3120	8.3S, 128.5E h = 179 km Timor region Mag 4.7
12	eP NEZ	15 12 21	6150	4.5N, 97.2E, h = 33 km Northern Sumatra
12	eP NEZ iS NEZ	19 53 22.5 53 57		Local
14	iP NEZ	01 52 16 D	4620	17.9S, 178.3W h = 550 km Fiji Islands region Mag 4.3
14	eP NEZ	02 50 34		Seismic event?
14	eP NEZ	04 40 54		
14	iP NEZ	05 13 46.5 C	3890	13.8S, 169.9E h = 614 km New Hebrides Islands region Mag 4.4
14	iP NEZ	07 41 47 D	3530	140.8E, 2.8S, h = 33 km Near north coast of New Guinea
15	eP NEZ	15 13 25	4960	4.7S, 102.9E h = 72 km Near coast of Sumatra, Mag 5.0
15	eP NEZ i NEZ i NEZ	17 38 28 43 52 47 32	3200	9.4S, 124.1E h = 33 km Timor Region Mag 4.5
15	eP NEZ iPP NEZ i NEZ iS NEZ iSS N eL EZ eL N	19 41 39 43 24 46 00 47 02 50. 21 50. 6 51. 0	4580	4.8S, 108.0E h = 650 km Java Sea, Felt - Djarkarta Mag 6.4
16	iP NEZ i NEZ iS NEZ eL E eL NZ	01 59 15 C 02 01 52 05 28 08. 0 08. 3	4700	6.1S, 104.9E h = 36 km Near west coast of Sumatra Mag 5.0
16	eP NEZ	02 14 25	4640	6.2S, 105.5E h = 33 km Near west coast of Sumatra
16	iP NEZ	04 24 28 D	4640	6.3S, 105.5E h = 63 km Near west coast of Sumatra Mag 5.8
16	eP NEZ	05 14 24	3340	5.0S, 133.8E h = 39 km Off coast of Western New Guinea Mag 5.0

Date 1963 DEC.	Phase		Time (G.M.T.)				Δ Km.	Remarks
16	iP	NEZ	14	21	57	D	1830	49.1S, 127.1E h = 33 km 2000 km South of Australia Mag 5.3
	eS	NEZ		24	54			
	eL	NE		25	00			
	eL	Z		25.	4			
	eT			30	00			
16	eP	NEZ	16	14	22		4640	6.5S, 105.3E h = 46 km Sunda Strait Mag 6.0
17	eP	NEZ	08	39	41		3910	33.4S, 178.6W, h = 383 km Kermadec Islands Mag 4.0
	eL	NEZ		52.	0			
17	iP	Z	09	56	09			
17	eP	NEZ	10	25	09		3210	6.5S, 146.8E h = 33 km Eastern New Guinea Mag 4.8
	eL	NEZ		33.	5			
18	iP	NEZ	00	37	31.5		4360	24.8S, 176.6W h = 46 km Tonga Islands, Felt Tonga, Fiji and Kermadec Islands Mag 6.5
	iS	NEZ		43	16			
18	e(P)	NEZ	01	21	07			
18	e(P)	NEZ	01	26	46			
18	eP	NEZ	06	53	14		10230	41.7N, 82.5E h = 33 km Sinkiang Province, China Mag 5.2
18	eL	NEZ	12	42.	0			
19	iP	NEZ	08	31	32	C	4160	24.9S, 179.3W, h = 33 km South of Fiji Islands Mag 4.4
19	eP	Z	12	52	54			Seismic event?
19	iP	NEZ	15	41	50			
19	eP	NEZ	17	06	55			
19	ePKP	NEZ	17	23	00		13650	9.7S, 79.1W, h = 56 km Near coast of central Peru Mag 5.1
	eL	EZ	18	01.	5			
	eL	N		02.	0			
19	eP	NEZ	18	31	14			
20	iP	NEZ	00	30	19	C	3650	8.6S, 160.4E h = 69 km Solomon Islands mag 5.5
	i	Z		30	28			
	e	NEZ		36	00			
	eL	NEZ		40.	0			
20	eP	NEZ	04	26	11		3230	6.9S, 129.5E h = 58 km Banda Sea Mag 4.4
	i	NEZ		26	41			
20	iP	NEZ	09	03	10	D	3230	7.0S, 129.3E h = 103 km Banda Sea. Mag 5.5
	i	NEZ		08	32			
	i	NEZ		15	28			
20	eP	NEZ	16	00	46		7600	12.8S, 66.0E h = 33 km Indian Ocean Mag 5.6
20	eP	EZ	16	35	05		7600	12.7S, 66.3E h = 33 km Indian Ocean

Date 1963 DEC.	Phase		Time (G.M.T.)			Δ	km.	Remarks
21	eP	NEZ	06	57	58			
	i	NEZ		59	25			
	eL	E		11.	0			
	eL	NZ		12.	3			
21	eP	NEZ	08	40	26	3240		7.1S, 129.2E, h = 143 km Banda Sea, Mag 4.4
21	iP	NEZ	12	42	07	D 4660		21.2S, 175.8W, h = 90 km Tonga Islands Mag 5.1
	i	EZ		54	30			
21	iP	NEZ	13	18	30	C 5980		16.1N, 119.7E h = 49 km Near west coast of Luzon, P.I. Felt Manila Mag 5.6
	e	NEZ		26	00			
	eL	NEZ		33.	0			
22	eP	NZ	10	43	02			
	e(s)	NEZ		48	13			
22	iP	NEZ	12	03	25	C 3310		6.1S, 146.9E h = 102 km North East New Guinea Felt Lae Mag 5.4
NO SHORT PERIOD E.W. RECORD FOR 23rd DEC. - PAPER PLACED ON INSIDE OUT								
24	iP	NEZ	09	14	20	D 3710		5.0S, 155.1E h = 197 km Solomon Islands Mag 4.5
24	iP	NEZ	11	24	49.5	C 3710		13.1S, 166.7E h = 61 km Santa Cruz Islands region Mag 5.5
	ipP	NEZ		25	01			
	iS	NEZ		30	12			
	eL	NEZ		32.	7			
24	eP	Z	13	06	58	7850		36.2N, 139.7E h = 70 km Honshu, Japan - Felt Tokyo Mag 4.8
24	eP	NEZ	14	33	25	5140		10.0N, 126.1E h = 33 km Siargan, P.I. Mag 5.7
24	iP	NEZ	21	11	00	C		
	i	NEZ		15	20			
	eL	NEZ		17.	0			
24	eP	NEZ	21	34	02			
	e	NEZ		34	21			
26	eP	NEZ	01	39	04	4980		5.1S, 102.3E h = 40 km Near south coast of Sumatra Mag 5.6
	eL	N		54.	0			
	eL	EZ		55.	5			
26	eP	NEZ	05	41	18	3440		5.1S, 129.3E h = 175 km Banda Sea Mag 4.6
26	eP	NEZ	16	31	08	4210		1.4N, 126.7E h = 65 km Molucca Sea Mag 4.8
27	eP	EZ	05	40	57	4650		6.4S, 105.2E, h = 33 km Sunda Strait Mag 4.9
27	eP	NEZ	07	45	59			

Date 1963 DEC.	Phase		Time (G.M.T.)			Δ Km.	Remarks	
27	eP	Z	09	08	32			
28	iP	NEZ	05	51	49	C	3640	5.1S, 153.5E h = 70 km New Ireland region Mag 5.5
	ipP	NEZ		52	09			
	iS	NE		57	00			
	eL	NE		59.	5			
	eL	Z	06	00.	5			
28	eP	NEZ	06	25	28			
	i	NEZ		26	02			
28	eP	NEZ	07	25	31			
28	iP	NEZ	09	10	45	C	3890	32.7S, 178.9W h = 33 km Kermadec Islands Mag 5.8
	i	EZ		12	00			
	iS	NEZ		16	04			
	eL	N		19.	0			
	i	Z		19	16			
	eL	EZ		20.	5			
28	iP	NEZ	09	16	48	C		
28	iP	NEZ	18	11	01	C	9390	60.4S, 51.8W h = 49 km South Shetland Is. region Mag 5.4
	eL	E		33.	1			
	eL	NZ		40.	5			
29	eP	NEZ	03	07	14		4050	30.9S, 177.8W h = 33 km Kermadec Islands Mag 4.4
	eL	NEZ		29.	0			
29	eP	Z	12	11	00		4530	6.5S, 106.7E h = 33 km Western Java Mag 4.9
30	iP	NEZ	01	04	39.5	D	3630	3.4S, 128.8E h = 82 km Banda Sea Mag 5.0
	eL	NEZ		16.	0			
30	iP	NEZ	01	24	57	C	6280	21.6N, 144.5E h = 120 km Mariana Islands region Mag 5.2
30	iP	NEZ	13	41	37	C	8970	45.5N, 150.6E h = 40 km Kurile Islands Mag 5.7
	eL	NEZ	14	03.	0			
30	iP	NEZ	15	12	27	D	5080	9.4N, 126.0E h = 102 km Near east coast of Mindanao, P.I. Mag 5.6
	i	Z		17	43			
	iS	NEZ		18	59			
	eL	EZ		22.	5			
30	iP	EZ	22	16	01	C	6500	6.9N, 94.7E h = 64 km Nicobar Islands Mag 5.6
31	iP	NEZ	10	28	47	D	4580	19.1S, 178.1W h = 609 km Fiji Islands Mag 4.5
31	eP	NEZ	17	50	20		9770	56.5S, 26.0W h = 30 km Sandwich Islands Mag 5.3
	i	Z		56	34			
	eS	N	18	00	52			
	i	EZ	18	01	00			
	iSS	NEZ		06	52			
	i	E		13	24			
	eL	Z		19.	6			
	eL	NE		19.	8			
31	eP	NEZ	19	04	37		3230	7.1S, 129.3E h = 100 km Banda Sea Mag 4.6
31	iP	NEZ	19	25	06	C	5000	17.4S, 174.2W h = 80 km Tonga Islands, Felt Apia Mag 5.4