

NEW ZEALAND

Department of Scientific and Industrial Research

Geophysics Division

APIA OBSERVATORY

FINAL SEISMOLOGICAL BULLETIN

STANDARD SEISMIC STATION (AFI)

AFIAMALU, WESTERN SAMOA.

 Latitude: $13^{\circ} 54' 33.6''S$ Longitude: $171^{\circ} 46' 38.1''W$

Height above mean sea level: 705.6 metres, 2315 ft.

Geocentric direction cosines: a. - 0.961 070

b. - 0.138 883

c. - 0.238 862

Lithological Foundation: Basaltic Lava Flows

Instruments: World-wide standard seismograph system

Benioff short period seismometers

To = 1.0 sec. Tg = 0.75 sec.

Sprengnether long period seismometers

To = 30 sec. Tg = 100 sec.

Nominal Magnifications: S.P. 12500

L.P. 750

JANUARY 1965 *

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						Δ (Deg.)	Remarks
1	1	eP	Z	09	06	16								
		eS	NE		08	02								
2	1	eP	Z	12	41	22								
		eS	NE		42	53								
3	1	eS	NE	17	07	42								
4	1	eS	NE	17	53	36								
5	1	c(S)	NE	18	14	18								
6	2	eP	Z	09	39	21	1.0	1.5					11.0	USCGS: 22.1S, 179.4W. h about 555 km. South of Fiji Islands H = 09 36 53.9 Mag. 4.6 (CGS)
		eS	NE		41	23								
7	2	eP	Z	13	53	27							54.0	USCGS: 19.1N, 145.4E. h about 142 km. Mariana Islands H = 13 44 18.9 Mag. $5\frac{3}{4}$ -6(PAL), 6.1(CGS)
		iPcP	Z			56.4								
		eS	NE	14	00	50								
		eSS	N		05.4									
		eL	ZE		08.4									
8	2	eP	Z	14	29	44								Samoa Islands region
		eS	NE		30	05								
9	3	eP	Z	11	44	39								
		eS	NE		46	00								
10	3	eP	Z	13	50	03								
		eS	NE		51	04								

* See note at end.

No	Date	Phase		Time									△ (Deg.)	Remarks
				(G.M.T.)			Az	Tz	An	Tn	Ae	Te		
26	7	iP iS	ZNE NE	03 04	04 54	29.6 54								Dilatation Samoa Islands region
27	7	iP eS	ZNE NE	04	19 20	54 14								Compression Samoa Islands region
28	7	eP eS	Z NE	16	01 03	12 02	0.6	1.9						
29	7	eP eS	Z NE	18	30 42	17 42								Samoa Islands region
30	8	eP eS	Z NE	12	10 11	43 37								
31	8	eP eS	Z NE	12	27 28	53 24								
32	8	iP eS	Z ZNE	14	25	38.3 58								Samoa Islands region
33	8	eP eS	Z NE	16	23 25	58 40								
34	8	eP eS eT	Z ZNE ZNE	17	43 44 47	48 29 50					4.5			USCGS: 18.2S, 172.6W. h about 392 km. Tonga Islands region H = 17 43 32.6 Mag. 4.2 (CGS)
35	8	eSSS eL	N ZE	21	32.4 34.6						59.0			USCGS: 13.2S, 112.0W. h about 33 km. Northern Easter Island Cordillera H = 21 08 06.0 Mag. 5 $\frac{1}{4}$ -5 $\frac{1}{2}$ (PAS), 5(BRK), 4.9(CGS)
36	9	eS	NE	04	38	40					21.7			USCGS: 34.2S, 179.9E. h about 74 km. South of Kermadec Island H = 04 28 56 Mag. 4.9 (CGS)
37	9	iP eS	Z ZNE	06	48 49	42 39	2.8	0.7			5.5			Dilatation USCGS: 18.0S, 175.4W. h about 229 km. Tonga Islands H = 06 47 21.9 Mag. 5.0 (CGS)
38	9	eP	Z	09	39	56								
39	9	eP eS	Z NE	11	13 49	30 49								Samoa Islands region
40	9	eP eS eSSS eL eL	Z ZNE NE Z ZN	13 14	43 52 00 03.2 09.8	42 36 16	1.0	2.2			66.0			USCGS: 11.9N, 126.2E. h about 5 km. Philippine Islands region H = 13 32 46.4 Mag. 6.1 (CGS)

No	Date	Phase		Time									Δ (Deg.)	Remarks
				(G.M.T.)			Az	Tz	An	Tn	Ae	Te		
84	15	eP eS eT	Z ZNE ZNE	20 45 08	48 00							2.8	USCGS: 16.5S, 172.6W. h about 33 km. Samoa Islands region H = 20 44 27 Mag. 4.8 (CGS)	
85	15	eP	Z	21	12	23						21.3	USCGS: 13.3S, 166.4E. h about 85 km. New Hebrides Islands H = 21 07 35.1 Mag. 5.2 (CGS)	
86	15	eP eS eL	Z NE NE	23	22 26.3 27.5	25	1.0	2.3				21.3	USCGS: 13.3S, 166.3E. h about 8 km. New Hebrides Islands H = 23 17 36.0 Mag. 5.5 (CGS)	
87	16	eP eS	Z NE	01	12 14	55 41	1.7	1.5				9.6	USCGS: 20.7S, 178.7W. h about 520 km. Fiji Islands region H = 01 10 42.3 Mag. 4.7 (CGS)	
88	16	eL eL	Z E	05	39.0 40.0							21.0	USCGS: 13.5S, 166.1E. h about 53 km. New Hebrides Islands H = 05 30 12.1 Mag. 4.8 (CGS)	
89	16	eP eS	Z NE	07	51 52	52 15							Samoa Islands region	
90	16	iP eS	Z NE	08	52	16.6 38							Samoa Islands region	
91	16	eP eS	Z NE	11	57 58	17 22								
92	16	e e eL	N Z ZN	12	16.5 17.2 21.2									
93	16	eP eS eT	Z NE ZNE	12 54 56 13	30 53 09 05							14.2	USCGS: 25.6S, 180.0 h about 445 km. South of Fiji Islands H = 12 51 29 Mag. 4.9 (CGS)	
94	17	eP eS	Z NE	00	40 43	44 35								
95	17	iP iS	ZNE ZNE	08	20	16.3 36						2.3	Compression from south-west USCGS: 15.1S, 173.7W. h about 33 km. Tonga Islands Felt: Samoa Islands H = 08 19 44.5 Mag. 5.4 (CGS)	

No	Date	Phase		(G.M.T.)			Az Tz An Tn Ae Te						Δ (Deg.)	Remarks
96	17	iP iS	ZE NE	09	02	00.8 31							3.5	Compression USCGS: 16.4S, 174.3W. h about 123 km. Tonga Islands H = 09 01 07.2 Mag. 5.3 (CGS)
97	17	iP eS eT	Z NE ZNE	10	46	12.6 34 04	2.8	1.5					14.3	Compression USCGS: 24.5S, 178.4E. h about 568 km. South of Fiji Islands H = 10 43 17.5 Mag. 5.5 (CGS)
98	17	eP eS	Z NE	14	33	00 19								Samoa Islands region
99	17	iP ePcP	Z Z	21	09	16 10	2.8	2.0					78.0	Dilatation USCGS: 6.8S, 109.1E. h about 242 km. Java H = 20 57 41.3 Mag. 6.5 (CGS)
100	18	eL	Z	00	43.7								90.0	USCGS: 37.7S, 72.9W. h about 52 km. Central Chile Felt at Concepcion H = 00 03 11.9 Mag. 5.3 (CGS)
101	18	eP eS eT	Z E ZE	06	57	45 08 58								Samoa Islands region
102	18	iP eS	Z E	14	15	01 18								Samoa Islands region
103	18	eP	Z	22	40	16							7.4	USCGS: 18.2S, 178.0W. h about 569 km. Fiji Islands region H = 22 38 23 Mag. 3.5 (CGS)
104	19	eP	Z	00	22	09	1.0	1.9						
105	19	iP eS	Z NE	08	38	49 08								Dilatation Samoa Islands region
106	19	eP eS	Z NE	08	51	38 57								Samoa Islands region
107	19	eP eS eT	Z NE ZNE	21	09	02 12 21 38							19.4	USCGS: 32.2S, 178.2W. h about 33 km. South of Kermadec Islands H = 21 04 44.4 Mag. 4.8 (CGS)
108	20	eP eS	Z NE	01	37	30 27							19.5	USCGS: 32.5S, 178.0W. h about 33 km. South of Kermadec Islands H = 01 33 12.8 Mag. 4.9 (CGS)

No	Date	Phase		Time			Az Tz An Tn Ae Te				Δ (Deg.)	Remarks	
				(G.M.T.)									
136	28	eP eS	Z NE	21 36	35 50	30 50							
137	29	iP iS	Z NE	03 32	30 16	28 16					9.9	Dilatation USCGS: 21.2S, 178.9W. h about 550 km. Fiji Islands region H = 03 28 18.0 Mag. 4.8 (CGS)	
138	29	eS eL	N ZN	09 10	56.3 07.5						71.0	USCGS: 54.8N, 161.7E. h about 33 km. Near east coast of Kamchatka H = 09 35 25.7 Mag. 5.8 (CGS)	
139	29	eP eS	Z NE	10 55	54 36	02 36					8.5	USCGS: 20.3S, 177.6W. h about 447 km. Fiji Islands region H = 10 52 00.0 Mag. 4.1 (CGS)	
140	29	eP eS	Z NE	22 52	49 22	44 22							
141	30	eP eS	Z NE	08 56	54 08	53 08							
142	30	iP eS	ZE NE	17 48	45 18	48.6 18	4.1	1.7		1.0	2.0	18.4	Dilatation USCGS: 13.0S, 169.4E. h about 647 km. Santa Cruz Islands region H = 17 42 12.3 Mag. 5.2 (CGS)
143	30	eP eS	Z ZNE	18 12.7	09 57	57 12.7	1.5	1.9				18.3	USCGS: 12.9S, 169.5E. h about 649 km. Santa Cruz Islands region H = 18 06 21.2 Mag. 5.4 (CGS)
144	31	eP eS	Z ZNE	08	30 42	23 42							Samoa Islands region
145	31	iP iS	Z NE	16	05 25	04 25							Samoa Islands region

NOTE:

- (i) Trace amplitudes (A) are expressed in millimetres and periods (T) in seconds.
- (ii) *Readings to be incorporated in the New Zealand Seismological Report for 1965.

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b. - 0.138 883

c. - 0.238 862

Lithological Foundation: Basaltic Lava Flows

Instruments: World-wide standard seismograph system

Benioff short period seismometers

To = 1.0 sec. T_g = 0.75 sec.

Sprengnether long period seismometers

To = 15 sec. T_g = 100 sec.

Nominal Magnifications: S.P. 12500

L.P. 750

FEBRUARY 1965

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						Remarks	
							△ (Deg.)							
1	1	eL	Z	00	05.5								65.0	USCGS: 51.2N, 178.6E. h about 33 km. Rat Islands, Aleutian Islands H = 23 36 13.4 Mag. 5.2 (CGS)
2	1	eP	Z	05	28	54	3.4 1.4						7.6	USCGS: 18.6S, 178.1W. h about 472 km. Fiji Islands region H = 05 27 04.5 Mag. 5.6 (CGS)
		i	Z		29	58								
		eS	ZNE		30	21								
3	1	iP	ZN	08	33	33.3	8.5 1.5 2.6 1.5						10.0	Compression USCGS: 21.4S, 178.6W. h about 510 km. Fiji Islands region H = 08 31 20.7 Mag. 5.3 (CGS)
		iS	NE		35	18								
4	1	eP	Z	11	55	07								
5	1	iS	NE			40								
		eP	Z	13	44	18								
6	1	eS	NE			42								Samoa Islands region
		iP	Z	23	57	16								
7	2	eS	NE			18								
		eP	Z	03	55	05							7.5	USCGS: 17.3S, 178.8W. h about 504 km. Fiji Islands region H = 03 53 11.8 Mag. 4.0 (CGS)
		eS	NE		56	40								

No	Date	Phase	Time (G.M.T.)			Az	Tz	An	Tn	Ae	Te	△ (Deg.)	Remarks
8	2	eL ZNE	08	23.5							50.1	USCGS: 2.1S, 138.9E. h about 12 km. West New Guinea H = 07 58 15.6 Mag. 6.1 (CGS)	
9	2	eP Z eS ZNE eT ZNE	10	00 09 01 33 06 30							8.6	USCGS: 21.4S, 176.2W. h about 171 km. Fiji Islands region H = 09 58 17.7 Mag. 4-4 $\frac{1}{4}$ (BRK), 5.1(CGS)	
10	2	eL Z eL Z	16	53.6 59.3							76.0	USCGS: 60.7N, 154.3W. h about 10 km. Southern Alaska H = 16 36 30 Mag. 4.5 (CGS)	
11	3	iP Z	18	29 13.3	7.2	2.0					15.0	Compression USCGS: 14.2S, 172.7E. h about 634 km. New Hebrides Islands region H = 18 26 05.3	
12	3	eP Z eS NE	20	25 08 28								Samoa Islands region	
13	4	eS ZNE eSS ZNE eL ZNE	03	42 08 45 38 50.4							55.0	USCGS: 51.8S, 139.7E. h about 33 km. South of Australia H = 03 25 00.8 Mag. 5.9 (CGS)	
14	4	iP ZNE eT ZNE S unreadable owing to large trace amplitude and high microseismic activity Surface waves about 6 hours.	05 12 27 06 23 32		6.0	2.4					65.0	Dilatation Tsunami of maximum amplitude 6" recorded Apia USCGS: 51.3N, 178.6E. h about 40 km. Rat Islands, Aleutian Islands Slight damage to runways and masonry buildings at U.S. Air Force station on Shemya Islands. Felt aboard the "S.S. Ohio" located at 50.48°N, 179.15°E. Seismic Sea Wave generated with heights as follows Attu, 8'; Kodiak, 0.4'; Midway, 0.7'; Wake, 0.8'; Marcus, 0.6'; Nawiliwili, 1.0'; Honolulu, 0.4'; Hilo, 1.1', Adak, negative; Unalaska, 0.5' H = 05 01 21.8 Mag. 7 $\frac{3}{4}$ (PAS), 7 $\frac{3}{4}$ (BRK), 7.5(CGS-M _L)	

No	Date	Phase		Time									Δ (Deg.)	Remarks
				(G.M.T.)			Az	Tz	An	Tn	Ae	Te		
15	4	iP	Z	08	51	27	2.3	2.2					65.0	USCGS: 51.3N, 179.5E. h about 40 km. Aleutian Islands aftershock H = 08 40 40.9 Mag. $6\frac{3}{4}$ -7(PAS), 6.4(CGS)
16	4	eS eL	ZNE ZNE	12	25.4 34.0								66.0	USCGS: 52.6N, 172.1E. h about 25 km. Aleutian Islands aftershock H = 12 06 04.3 Mag. $6\frac{1}{2}$ (PAS), 5.8(CGS)
17	4	eS eL	ZNE ZNE	14	38 30 49 18								67.0	USCGS: 53.0N, 171.0E. h about 30 km. Aleutian Islands aftershock H = 14 18 27.9 Mag. $6\frac{1}{4}$ (PAS), 5.7(CGS)
18	4	eL	NE	16	23.0								67.0	USCGS: 53.1N, 170.8E. h about 40 km. Aleutian Islands aftershock H = 15 51 25.5 Mag. $6\frac{1}{4}$ (PAS), 5.7(CGS)
19	4	eL	ZNE	20	44.6								65.0	USCGS: 51.5N, 177.0E. h about 33 km. Aleutian Islands aftershock H = 20 15 40.5 Mag. 4.7 (CGS)
20	5	eL	ZN	07	09.5								65.0	USCGS: 51.8N, 175.1E. h about 25 km. Aleutian Islands aftershock H = 06 39 49.6 Mag. $6\frac{3}{4}$ - $6\frac{1}{2}$ (PAS), $5\frac{3}{4}$ (PAL), 5.7(CGS)
21	5	eP eS	Z NE	07	43 32 45 04		2.6	1.8					7.6	USCGS: 17.3S, 179.0W. h about 477 km. Fiji Islands region H = 07 41 37.3
22	5	eS eL eL	ZNE E ZN	09 10	52.0 59.8 02.0								66.0	USCGS: 52.3N, 174.3E. h about 41 km. Aleutian Islands aftershock H = 09 32 09.3 Mag. $5\frac{1}{2}$ (BRK), $6\frac{1}{2}$ (PAS), 5.9(CGS)
23	5	eL	ZNE	19	28.3								65.0	USCGS: 52.0N, 173.2E. h about 27 km. Aleutian Islands aftershock H = 19 00 41.9 Mag. 5.5 (CGS)
24	5	eP eS	Z NE	19	58 50 59 09									Samoa Islands region

No	Date	Phase		Time									△ (Deg.)	Remarks
				(G.M.T.)			Az	Tz	An	Tn	Ae	Te		
25	5	eS	ZNE	21	07.2								65.0	USCGS: 51.9N, 174.6E. h about 35 km. Aleutian Islands aftershock H = 20 47 13.3 Mag. 5.7 (CGS)
		eL	E		14.4									
		eL	ZN		16.4									
26	7	eP	Z	03	33	42	2.1	1.0						
		eS	NE		34	17								
27	8	eP	Z	12	39	36	2.0	1.3					7.7	USCGS: 17.3S , 179.0W. h about 495 km. Fiji Islands region H = 12 37 42 Mag. 4.7 (CGS)
		eS	NE		41	06								
28	8	iP	Z	14	19	32.5							7.8	USCGS: 17.5S, 179.0W. h about 482 km. Fiji Islands region H = 14 17 37 Mag. 4.9 (CGS)
		eS	ZNE		21	18								
29	8	eSSS	E	16	15	10							71.0	USCGS: 55.1N, 165.7E. h about 40 km. Komandorsky Islands region H = 15 46 49.9 Mag. 5.6 (CGS)
		eL	ZN		19.3									
30	9	eP	ZNE	05	46	10							18.8	USCGS: 18.8S, 169.2E. h about 223 km. New Hebrides Islands H = 05 42 06.8 Mag. 5.5 (CGS)
		epP	Z		47	07								
31	9	eP	Z	06	18	06								
		eS	NE			47								
32	9	iP	Z	15	28	39	1.0	1.3						
		eS	NE		30	19								
33	9	eP	ZNE	16	57	47	1.2	2.0					18.6	USCGS: 22.2S, 170.6E. h about 29 km. Loyalty Islands region H = 16 53 28.8 Mag. 4.9 (CGS)
34	9	iP	Z	17	02	41								Samoa Islands region
		eS	NE			59								
		eT	ZNE		06	01								
35	9	eP	Z	17	53	13								
		eS	NE		55	07								
36	9	eS	ZNE	17	57	25							66.0	USCGS: 52.8N, 171.9E. h about 41 km. Aleutian Islands aftershock H = 17 37 15.9 Mag. 5.7 (CGS)
		eL	ZN	18	07.6									
37	10	eP	Z	04	25	47	1.0	2.0					82.0	USCGS: 6.0S, 106.1E. h about 152 km. Java H = 04 13 46.4 Mag. 4.9 (CGS)

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
38	10	eP	ZNE	06	42	26							20.4	USCGS: 14.7S, 167.2E. h about 156 km. Felt at Luganville New Hebrides Islands H = 06 37 58.0 Mag. 4.6 (CGS)
39	11	eP	NE	04	15	59								Samoa Islands region
		eS	NE		16	21								
40	11	eP	NE	12	12	20								
		eS	NE		13	49								
41	11	e(P)	NE	16	28	10								
		eS	NE		29	40								
42	12	eP	NE	03	22	11								
		eS	NE		23	18								
43	13	eP	NE	09	49	13								Samoa Islands region
		eS	NE			37								
		eT	NE		51	21								
44	13	eP	NE	14	56	20								Samoa Islands region
		eS	NE			45								
45	14	eP	NE	02	01	32								
		eS	NE			51								
46	14	eP	NE	12	55	34								
		eS	NE			53								
47	14	eP	NE	22	54	33								
		eS	NE		55	24								
48	15	eL	ZE	01	54.2								65.0	USCGS: 51.4N, 179.4E. h about 42 km. Aleutian Islands aftershock H = 01 25 08.8 Mag. 5.8 (CGS)
49	15	eP	NE	10	53	55	1.0	2.0					64.0	USCGS: 3.0N, 125.9E. h about 33 km. Talaud Islands H = 10 43 19.8 Mag. 6.0 (CGS)
		ePPP	ZE		58	15								
50	15	eP	NE	11	11	12	3.0	2.0	2.5	1.9				
		eS	ZNE			54								
		eT	NE		13	47								
51	15	eP	NE	11	48	00								
		eS	NE		50	47								
52	15	eP	NE	15	07	06				1.0	2.0			
		eS	NE		09	55								
53	15	eP	NE	22	18	51								Samoa Islands region
		eS	NE		19	11								
54	16	iP	Z	09	06	38.5								
		eS	NE		07	16								
55	16	iP	Z	11	42	13								
		eS	NE			57								
56	16	eL	ZN	12	54.7								69.0	

No	Date	Phase		Time			Az Tz An Tn Ae Te						Δ (Deg.)	Remarks
				(G.M.T.)										
89	22	eP	Z	13	45	37							13.5	USCGS: 26.3S, 177.5W. h about 33 km. South of Fiji Islands H = 13 42 28
		eS	NE		47	59								
90	22	iP	Z	14	40	06.6								Samoa Islands region
		eS	NE			21								
91	22	eP	ZE	21	41	09					1.5	3.0	12.4	USCGS: 16.8S, 175.7E. h about 73 km. Fiji Islands region H = 21 38 15.5 Mag. 4.9 (CGS)
		eS	NE		43	30								
92	23	eP	Z	04	10	05								
		iS	ZNE			47								
93	23	eL	ZE	07	47	06							19.0	USCGS: 18.3S, 168.2E. h about 33 km. New Hebrides Islands H = 07 37 11 Mag. 4.6 (CGS)
94	23	eP	ZE	11	29	42	1.5	2.0			1.1	2.0		
		eS	NE		31	15								
95	23	eP	Z	22	25	04							93.0	USCGS: 25.7S, 70.5W. h about 80 km. Near coast of Northern Chile One killed, 5 injured and heavy damage H = 22 11 50.2 Mag. $7\frac{1}{2}$ (PAS), $6\frac{3}{4}$ (BRK), $6\frac{3}{4}$ -7(PAL), 6.2(CGS)
		ePcP	Z			08								
		e	N		28	30								
		ePP	ZE			50								
		eS	ZNE		35	36								
		eS	ZNE		37	32								
		e	NE		41	56								
		eSS	ZNE		42	46								
		eSSS	ZNE		46	14								
		eLq	ZNE		49	47								
		eLr	ZNE		54	54								
		Surface waves about 3 hrs.												
96	24	iP	Z	02	06	29.9								Compression
		eS	NE		07	08								
97	24	eL	ZE	08	47.4								84.0	USCGS: 14.ON, 92.2W. h about 56 km. Near coast of Chiapas, Mexico H = 08 09 17.2 Mag. $5\frac{1}{2}$ - $5\frac{3}{4}$ (PAL), $5\frac{1}{2}$ (BRK), 5.0(CGS)
98	24	iP	Z	15	04	58								Compression
		eS	NE		05	58								
99	24	eP	Z	15	30	51	0.8	0.8					9.6	USCGS: 20.4S, 179.1W. h about 487 km. Fiji Islands region H = 15 28 37 Mag. 4.4 (CGS)
		eS	NE		32	39								
100	24	eSS	NE	23	04.6								22.0	USCGS: 10.8S, 165.8E. h about 91 km. Santa Cruz Islands H = 22 54 59.5 Mag. 4.7 (CGS)
		eL	Z		05.5									
101	24	iP	Z	23	54	14.3	2.6	0.7						Compression
		eS	NE			34								Samoa Islands region

No	Date	Phase	Time (G.M.T.)			Az Tz An Tn Ae Te						(Δ) (Deg.)	Remarks
						Az	Tz	An	Tn	Ae	Te		
102	25	eP eS eL M M	ZE ZNE ZNE ZNE ZE	04 05 07 10 17	58 04 00	34 14 00						36.7	USCGS: 5.5S, 152.0E. h about 35 km. New Britain region H = 04 51 27.8 Mag. 6 $\frac{1}{2}$ (PAS), 6 $\frac{1}{4}$ -6 $\frac{1}{2}$ (BRK), 5.9(CGS)
103	25	eS eLq eLr M M	ZNE ZN ZNE ZN N	05 06	42 49 52 01 08	00 18 40						65.0	USCGS: 52.1N, 173.2E. h about 35 km. Rat Islands, Aleutian Islands aftershock H = 05 22 14.5 Mag. 5.6 (CGS)
104	25	eL eL	NE ZE	10	34 36	40 10						36.0	USCGS: 5.5S, 152.3E. h about 31 km. New Britain region H = 10 19 11.0 Mag. 5.7 (CGS)
105	25	eP eS eSSS eL	ZE ZNE E ZE	19	28 32 33	19 16 06 56						21.0	USCGS: 11.4S, 166.1E. h about 86 km. Santa Cruz Islands H = 19 23 33.0 Mag. 5.7 (CGS)
106	26	eP eS	Z ZNE	04	43 45	58 10						6.5	USCGS: 18.8S, 176.1W. h about 33 km. Fiji Islands region H = 04 42 28.3 Mag. 5.3 (CGS)
107	26	iP eS eT	Z ZNE ZNE	05	37 38 43	24.1 34 39						6.6	Compression USCGS: 18.9S, 176.3W. h about 61 km. Fiji Islands region H = 05 36 01.1 Mag. 5.4 (CGS)
108	26	iP eS	Z NE	08	24	38 55						1.6 1.0	Samoa Islands region
109	26	eP	Z	09	08	19						0.8 2.0	USCGS: 6.7S, 102.7E. h about 33 km. Southwest of Sumatra H = 08 55 42.2 Mag. 6.1 (CGS)
110	27	eP eS	Z NE	00	37 39	12 45						1.0 1.2	
111	27	eS eSSS eL	NE NE ZNE	08	07 15 18	06 20 36						72.0	USCGS: 28.5N, 112.1W. h about 33 km. Gulf of California H = 07 46 29.1 Mag. 5.3 (CGS)
112	27	eP eS	Z NE	15	35 36	15 49							
113	28	eP eS	Z NE	04	42 43	45 20						1.5 1.0	
114	28	iP eS	Z NE	07	32	40 59							Compression Samoa Islands region

10.

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						(Deg.)	Remarks
				12	22	47								
115	28	eP eS	Z NE	12 25	22 00	47 00							12.6	USCGS: 24.0S, 179.9W. h about 529 km. South of Fiji Islands H = 12 20 09 Mag. 4.8 (CGS)
116	28	eP	Z	23	45	16	0.5	1.9					14.0	USCGS: 25.3S, 179.6E. h about 485 km. South of Fiji Islands H = 23 42 21.9 Mag. 4.8 (CGS)

- NOTE: (i) During February the maintenance of the equipment was performed by the USCGS team.
- (ii) Trace amplitude (A) are expressed in millimetres and periods (T) in seconds.
- (iii) Readings to be incorporated in the New Zealand Seismological Report for 1965

P.D. Muller
Observer-in-Charge.

NEW ZEALAND
 Department of Scientific and Industrial Research
 Geophysics Division
 APIA OBSERVATORY
FINAL SEISMOLOGICAL BULLETIN
 STANDARD SEISMIC STATION (AFI)
AFIAMALU, WESTERN SAMOA.

Latitude: $13^{\circ} 54' 33.6''S$ Longitude: $171^{\circ} 46' 38.1''W$

Height above mean sea level: 705.6 metres, 2315 ft.

Geocentric direction cosines: a. - 0.961 070

b. - 0.138 883

c. - 0.238 862

Lithological Foundation: Basaltic Lava Flows

Instruments: World-wide standard seismograph system

Benioff short period seismometers

To = 1.0 sec. Tg = 0.75 sec.

Sprengnether long period seismometers

To = 15 sec. Tg = 100 sec.

Nominal Magnifications: S.P. 12500

L.P. 750

MARCH 1965 *

No	Date	Phase	Time (G.M.T.)							Δ (Deg.)	Remarks	
				Az	Tz	An	Tn	Ae	Te			
1	1	eP ZE	07 27 57	1.5	2.1				2.0	2.3	36.6	USCGS: 5.5S, 152.1E. h about 35 km. New Britain region Felt at Rabaul, Doilene and Kalai. H = 07 20 55.3 Mag. $5\frac{1}{4}$ - $5\frac{1}{2}$ (BRK), $5\frac{3}{4}$ -6(PAL), 5.7(CGS)
		eS ZNE	33 38									
		eLq ZNE	36 30									
		eLr ZE	38 13									
2	1	eP Z	07 54 05	36.6	USCGS: 5.2S, 152.1E. h about 33 km. New Britain region H = 07 46 57.5 Mag. 5.7 (CGS)							
		eS ZN	59 32									
3	1	eP Z	08 30 36	75.0	USCGS: 21.1N, 121.2E. h about 42 km. Taiwan region H = 08 18 56.4 Mag. 5.2 (CGS)							
		eL ZNE	53 34									
4	1	eP Z	09 15 50	36.6	USCGS: 5.4S, 152.0E. h about 29 km. New Britain region Felt at Rabaul, Doilene and Kalai. H = 09 08 45.0 Mag. 5.6 (CGS)							
		eL N	24 24									
		eL ZE	25 45									
5	1	eP Z	11 05 39									
		e Z	48									
		eS ZNE	06 06									
		eT ZNE	08 06									

No	Date	Phase	Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
6	1	e(S) NE	13	18	27								
7	1	eP Z	13	32	36							75.0	USCGS: 21.2N, 121.2E. h about 42 km. Taiwan region H = 13 20 56.7 Mag. 5.5 (CGS)
8	1	eP Z	18	30	33							14.7	USCGS: 27.6S, 177.2W. h about 15 km. Kermadec Islands H = 18 27 07.0 Mag. 4.4 (CGS)
9	1	eL NE	18	53.4									
10	1	eP ZE epP Z e Z eL NE	20	07 08 09 12	37 26 25 56							21.0	USCGS: 12.3S, 166.7E. h about 190 km. Santa Cruz Islands H = 20 03 09.8 Mag. 4.8 (CGS)
11	1	eP Z eS ZE e ZE	20	52 53 54	55 17 44								Samoa Islands region
12	1	eLr E	21	34	52							14.6	USCGS: 27.3S, 177.7W. h about 33 km. Kermadec Islands H = 21 27 50.4
13	1	eP Z ePcP Z eS NE eL NE eL ZE	21	44 54 07 09	30 53 57 20 57	0.8	3.0					85.0	USCGS: 15.4N, 92.5W. h about 93 km. Mexico Guatemala Border Region Felt at San Salvador H = 21 32 11.8 Mag. 6(PAS), 5 $\frac{1}{2}$ (BRK), 5 $\frac{3}{4}$ -6(PAL), 5.9(CGS)
14	1	iP Z eS ZE	21	54 57	48.9 02	16.4	2.0					13.0	Dilatation. USCGS: 23.5S, 179.0E. South of Fiji Islands h about 541 km. H = 21 52 04.4 Mag. 5.2 (CGS)
15	1	eP Z eS E eT ZE	22	00 01 05	45 42 38								
16	1	eP Z eS E eL E eL ZN eT ZE	23	55 58 59 00	50 31 28 46 06							14.6	USCGS: 27.3S, 177.9W. h about 33 km. Kermadec Islands H = 23 52 32.1 Mag. 5.0 (CGS)
17	2	eP Z eS E eL ZNE eT ZE	02	53 56 57 03	58 23 34 30							14.7	USCGS: 27.4S, 177.7W. h about 33 km. Kermadec Islands H = 02 50 35.5 Mag. 5.2 (CGS)

No	Date	Phase		Time										△ (Deg.)	Remarks
				(G.M.T.)			Az	Tz	An	Tn	Ae	Te			
29	2	eP e(S) eT	Z NE ZE	14	35 39 50	30 12 08								14.7	USCGS: 27.4S, 177.6W. h about 9 km. Kermadec Islands H = 14 32 08.9 Mag. 4.9 (CGS)
30	2	eP eS eL eT	Z ZE NE ZE	15	23 26 27 41	40 24 18 19								14.1	USCGS: 27.1S, 176.7W. h about 33 km. Kermadec Islands H = 15 20 22.3 Mag. 4.7 (CGS)
31	2	eP eS eLr	Z ZNE ZNE	15	26 29 30	49 28 28								14.7	USCGS: 27.3S, 178.2W. h about 89 km. Kermadec Islands H = 15 23 27.7 Mag. 4.9 (CGS)
32	2	eLr	E	15	55	32								14.4	USCGS: 27.1S, 177.5W. h about 33 km. Kermadec Islands H = 15 48 31.6 Mag. 4.8 (CGS)
33	2	eP eLr	Z E	16	28 32	29 04								14.4	USCGS: 27.0S, 177.7W. h about 33 km. Kermadec Islands H = 16 25 04.0 Mag. 4.8 (CGS)
34	2	eP eS eT	Z NE ZE	16	37 41 52	40 04 18								14.4	USCGS: 27.0S, 177.7W. h about 70 km. South of Fiji Islands H = 16 34 26.9 Mag. 4.9 (CGS)
35	2	eL	E	17	52	00									
36	2	iP iS	Z E	18	18	24.5 45									
37	2	eL	E	18	25	40									
38	2	eL	E	18	41	04									
39	2	e(S)	E	19	09	46									
40	2	eP eS eT	Z NE ZE	19	32 36 47	30 00 48								14.7	USCGS: 27.5S, 177.7W. h about 33 km. Kermadec Islands H = 19 29 17 Mag. 4.6 (CGS)
41	2	eP eS eT	Z E ZE	19	54 57 20	19 48 13								14.6	USCGS: 27.2S, 177.2W. h about 33 km. Kermadec Islands H = 19 51 01.0 Mag. 5.1 (CGS)
42	2	eP eS	Z NE	20	27 30	10 08								14.5	USCGS: 27.3S, 177.5W. h about 33 km. Kermadec Islands H = 20 24 19.2 Mag. 4.6 (CGS)


No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
43	2	eP eS	Z E	21 14	10 10	36 10							14.6	USCGS: 27.4S, 177.5W. h about 33 km. Kermadec Islands H = 21 07 20.7 Mag. 4.5 (CGS)
44	2	eP eS eT	Z NE ZE	21 29 39	25 18 08	47 18 08							14.1	USCGS: 26.7S, 177.9W. h about 33 km. South of Fiji Islands H = 21 22 29.9 Mag. 4.6 (CGS)
45	2	e(S)	NE	21	49	36								
46	2	eL	NE	22	30	43								
47	2	eP eLr	Z NE	22 49	45 00	32 00							15.1	USCGS: 27.9S, 177.5W. h about 33 km. Kermadec Islands H = 22 42 00.1 Mag. 4.6 (CGS)
48	2	eP eS eL eT	Z ZE E ZE	23 36 37 47	33 17 56 03	49 17 56 03							14.2	USCGS: 26.7S, 178.0W. h about 109 km. South of Fiji Islands H = 23 30 42.8 Mag. 4.9 (CGS)
49	2	eP eS eT	Z E ZE	23 39 51	37 31 03	03 31 03							14.4	USCGS: 27.0S, 177.7W. h about 33 km. Kermadec Islands H = 23 33 39.3 Mag. 5.2 (CGS)
50	3	eP eS eT	Z E ZE	01 08 20	05 40 07	38 40 07							14.5	USCGS: 27.2S, 177.7W. h about 33 km. Kermadec Islands H = 01 02 24.4 Mag. 4.9 (CGS)
51	3	eL	NE	01	50	14								
52	3	eP eS eT	ZE ZE ZE	03 22 33	20 45 28	16 45 28							14.5	USCGS: 27.2S, 177.6W. h about 33 km. Kermadec Islands H = 03 17 04.1 Mag. 5 $\frac{1}{2}$ (BRK), 5.4(CGS)
53	3	iP eS	Z E	03	31	27.4 50								Samoa Islands region
54	3	eP eS eL eT	Z E E ZE	05 16 17.2 28	14 45 17.2 47	22 45 17.2 47							15.3	USCGS: 28.1S, 177.5W. h about 33 km. Kermadec Islands H = 05 11 01.1 Mag. 4.8 (CGS)
55	3	eP eS eT	Z NE ZE	05 06	56 11	12 04							14.5	USCGS: 27.2S, 177.6W. h about 33 km. Kermadec Islands H = 05 52 57.4 Mag. 4.7 (CGS)

7.

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks	
							Az	Tz	An	Tn	Ae	Te			
71	3	eL	ZN	20	00	30							67.0	USCGS: 45.7N, 150.9E. h about 33 km. Kurile Islands H = 19 29 16.1 Mag. 5.1 (CGS)	
72	3	eP eS eT	Z ZN ZE	19 20	58 01 13	30 44 16							14.5	USCGS: 27.1S, 177.7W. h about 33 km. Kermadec Islands H = 19 55 16.7 Mag. 5.1 (CGS)	
73	3	eP eS eT	Z E ZE	21	15 18 28	33 00 52							14.5	USCGS: 27.2S, 177.7W. h about 33 km. Kermadec Islands H = 21 12 16.5 Mag. 5.0 (CGS)	
74	4	iP eSS	Z N	01 02	56 05	23.9 50	3.8	2.0					41.5	Compression USCGS: 5.4S, 147.0E. h about 191 km. East New Guinea region Felt at Lae and Aiome H = 01 48 54.1 Mag. 6.4 (CGS)	
75	4	eP eS	Z E	03	35 39	18									Samoa Islands region
76	4	eP eS eT	Z ZE ZE	03 04	55 56 01	00 13 09							7.6	USCGS: 20.9S, 174.8W. h about 52 km. Tonga Islands H = 03 53 15 Mag. 5.1 (CGS)	
77	4	iP eS	Z NE	05	59	09.4 31							1.9	Dilatation USCGS: 14.7S, 173.5W. h about 33 km. Samoa Islands region H = 05 58 43.2 Mag. 4.8 (CGS)	
78	4	iP eS	Z ZE	07	43 44	41 02									Compression Samoa Islands region
79	4	eP eS	Z ZE	07	54 55	33 05									
80	4	eP eL eT	Z NE ZE	08	27 31 43	39 00 05							14.5	USCGS: 27.3S, 177.6W. h about 33 km. Kermadec Islands H = 08 24 19 Mag. 4.8 (CGS)	
81	4	eP eS eT	Z ZE ZE	14	24 26	27 45 16									Samoa Islands region
82	4	eP eLr eT	Z E ZE	23	11 15 26	24 00 04							14.5	USCGS: 27.3S, 177.4W. h about 33 km. Kermadec Islands H = 23 08 03.3 Mag. 4.5 (CGS)	

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
94	5	eL	ZNE	23	59.7							66.0	USCGS: 53.ON, 171.1E. h about 45 km. Aleutian Islands aftershock H = 23 29 23.2 Mag. 5.4 (CGS)	
95	6	eP	Z	03	58	48								
		eS	NE	04	00	00								
96	6	eP	Z	04	10	01						14.0	USCGS: 26.7S, 177.3W. h about 24 km. South of Fiji Islands H = 04 06 48.5 Mag. 5.3 (CGS)	
		eS	NE		12	27								
		eL	ZNE		13.0									
		eL	E			44								
		eT	ZNE		22	53								
97	6	eL	ZNE	08	49.6							65.0	USCGS: 52.4N, 174.2E. h about 25 km. Aleutian Islands aftershock H = 08 19 30.7 Mag. 5.1 (CGS)	
98	6	iP	Z	10	02	38								Compression
		eS	NE		03	11								
99	6	eP	Z	10	23	07						7.6	USCGS: 17.5S, 178.7W. h about 573 km. Fiji Islands region H = 10 21 17.9 Mag. 4.2 (CGS)	
		eS	NE		24	38								
100	6	eP	Z	11	18	14						40.0	USCGS: 18.4S, 132.9W. h about 35 km. South Pacific Ocean H = 11 10 53.1 Mag. 5.5 (CGS)	
		eL	ZNE		28	00								
101	6	eL	ZN	14	11	30						65.0	USCGS: 52.1N, 175.4E. h about 35 km. Aleutian Islands aftershock H = 13 41 17.0 Mag. 5.2 (CGS)	
102	6	eP	Z	23	18	07								Samoa Islands region
		eS	NE			27								
103	7	eP	Z	01	14	01	2.0	1.8				17.4	USCGS: 30.3S, 177.9W. h about 60 km. Kermadec Islands region H = 01 43 11.4 Mag. 5.3(BRK), 5.6(CGS)	
		eS	NE		50	00								
		eL	ZNE		50.3									
		eT	ZNE	02	00	15								
104	7	eP	Z	04	46	01						6.4	USCGS: 19.5S, 174.6W. h about 187 km. Tonga Islands H = 04 44 30.4 Mag. 4.2 (CGS)	
		eS	NE		47	02								
105	7	eS	E	16	15	54						14.7	USCGS: 27.5S, 177.6W. h about 33 km. Kermadec Islands H = 16 08 55.5 Mag. 5.0 (CGS)	

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
106	8	eS	E	02	48	48								
107	9	eP eS	ZE ZNE	01	38 39	21 32						6.4	USCGS: 17.0S, 177.4W. h about 386 km. Fiji Islands region H = 01 36 45.4 Mag. $5\frac{3}{4}$ -6(BKS), 5.5(CGS)	
108	9	eP eS	Z E	10	33 36	22 48						14.4	USCGS: 27.0S, 177.7W. h about 103 km. South of Fiji Islands H = 10 30 15.6 Mag. 4.7 (CGS)	
109	9	ePKP eSSS e eL eL	Z E E N ZN	18 19	17 46 00.1 11.7 16	48 46						152.0	USCGS: 39.4N, 24.0E. h about 18 km. Aegean Sea Two killed and heavy damage on Alonissos Island. Felt widely throughout Greece and in Canakkale and Edremit, Turkey. Seismic sea wave reported on Pelagos and Skiathos Islands. H = 17 57 53.7 Mag. $6\frac{1}{4}$ - $6\frac{1}{2}$ (BRK), $6\frac{1}{4}$ - $6\frac{1}{2}$ (PAL), 5.7(CGS)	
110	10	eP eS	Z NE	00	29 30	13 40						7.5	USCGS: 18.0S, 178.4W. h about 589 km. Fiji Islands region H = 00 27 17.9 Mag. 4.2 (CGS)	
111	10	eP eS	Z NE	05	19 20	34 48								
112	10	eP eS	Z ZNE	11	17 18	50 32						4.0	USCGS: 17.1S, 174.2W. h about 125 km. Tonga Islands H = 11 16 50.1 Mag. 4.3 (CGS)	
113	10	iP eS	Z ZNE	15	56 58	11 12	4.9	2.0				11.5	Compression USCGS: 21.9S, 179.6E. h about 547 km. South of Fiji Islands H = 15 53 37.8 Mag. 5.7 (CGS)	
114	11	eS	ZNE	08	09	56						19.0	USCGS: 18.4S, 169.7E. h about 25 km. New Hebrides Islands H = 08 01 45.1 Mag. 5.0 (CGS)	
115	11	eP eS	Z NE	10	40 42	58 29								

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						 (Deg.)	Remarks	
							Az	Tz	An	Tn	Ae	Te			
116	12	eP eS	Z E	06 05	04 05	12 28							5.6	USCGS: 15.7S, 177.3W. h about 406 km. Fiji Islands region H = 06 02 42.5 Mag. 4.2 (CGS)	
117	12	eP eS eT	Z E ZE	17 46	34 36 46	04 23 48							13.7	USCGS: 26.8S, 176.5W. h about 48 km. South of Fiji Islands H = 17 31 02.2 Mag. 4.7 (CGS)	
118	13	eP eS eT	Z E ZE	08 09	58 00 11	38 54 10							13.6	USCGS: 26.8S, 176.3W. h about 31 km. South of Fiji Islands H = 08 55 34.7 Mag. 5.3 (CGS)	
119	13	iP eS	ZE ZE	13	56 58	36 10	6.5	2.0			2.3	2.0	8.6	Dilatation USCGS: 20.4S, 177.6W. h about 470 km. H = 13 54 33.0 Mag. 5.7 (CGS)	
120	14	eP eS	Z ZE	04 05	59 00	13 06									
121	14	eP eS	Z E	08	40 42	58 13							13.1	USCGS: 24.6S, 179.7W. h about 462 km. South of Fiji Islands H = 08 37 12.8 Mag. 4.3 (CGS)	
122	14	ePKP ePP ePPP ePKKP e eL	Z ZN ZE Z ZN ZN	16	11 13 14 21 29 42	34 00 49 45 03 11	6.2	1.9					120.0	USCGS: 36.3N, 70.7E. h about 219 km. Hindu Kush region. Light damage in Afghanistan and West Pakistan. Felt in India. H = 15 53 06.6 Mag. $7\frac{3}{4}$ (BRK), $7\frac{1}{2}$ - $7\frac{3}{4}$ (PAS), 6.6 (CGS)	
123	14	eP eS	Z N	22	13 14	18 30							6.6	USCGS: 19.0S, 176.1W. h about 39 km. Fiji Islands region H = 22 11 42.3 Mag. 5.2 (CGS)	
124	14	iP eS	Z ZE	22	58	22.4 45									Samoa Islands region
125	14	iP eS	Z ZE	23	50 51	32.4 45	2.9	1.5					5.7	Compression USCGS: 16.2S, 177.3W. h about 427 km. Fiji Islands region H = 23 49 00.4 Mag. 4.4 (CGS)	
126	15	eP eS	Z ZE	03	01 02	47.4 15	11.72	0			5.5	2.0	2.5	USCGS: 15.0S, 173.9W. h about 33 km. Tonga Islands H = 03 01 13.3 Mag. 5.0 (CGS)	

No	Date	Phase		Time (G.M.T.)								Δ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae		
139	18	eL	ZN	13	33	30						105.0	USCGS: 55.8S, 26.7W. h about 92 km. South Sandwich Islands region H = 12 40 49.3 Mag. 5.7 (CGS)
140	18	iP	Z	16	17	52	6.0	1.3				7.8	Compression USCGS: 17.7S, 178.9W. h about 507 km. Fiji Islands region H = 16 15 56.1 Mag. 5.1 (CGS)
		eS	ZNE		19	20							
		eT	ZNE		30	05							
141	18	eP	Z	16	47	10							Samoa Islands region
		eS	NE			35							
142	19	iP	Z	12	57	40.5	4.0	1.0				1.7	Compression USCGS: 14.9S, 173.3W. h about 33 km. Samoa Islands region H = 12 57 11.6 Mag. 4.5 (CGS)
		eS	ZNE		58	00							
143	19	eP	Z	15	37	55							
		eS	NE		40	10							
		eT	ZNE		50	07							
144	19	eP	Z	16	31	54	2.0	2.4				69.0	USCGS: 2.0S, 119.8E. h about 46 km. Celebes H = 16 20 51.4 Mag. 5.0 (CGS)
		eS	NE		41	08							
		eSS	N		45	06							
		eLq	N		50	00							
		eLr	ZE		54	20							
145	19	eP	Z	17	39	24						8.9	USCGS: 19.7S, 178.7W. h about 617 km. Fiji Islands region H = 17 37 18.6 Mag. 5.5 (CGS)
		eS	NE		41	03							
146	19	iP	Z	22	29	30							Samoa Islands region
		eS	NE			47							
147	19	eP	Z	23	12	24							Samoa Islands region
		eS	NE			53							
148	19	eP	Z	23	34	47	1.5	0.9				7.6	USCGS: 20.1S, 176.4W. h about 219 km. Fiji Islands region H = 23 32 58.0 Mag. 4.6 (CGS)
		eS	ZNE		36	03							
149	20	eP	Z	08	11	22							
		eS	NE			51							
150	20	eP	Z	17	18	53							
		eS	NE		19	53							
151	21	eL	ZNE	10	23	16						89.0	USCGS: 11.7N, 86.4W. h about 36 km. Near coast of Nicaragua H = 09 42 41.3 Mag. 4 $\frac{3}{4}$ (BRK), 5 $\frac{3}{4}$ (PAL), 5.2(CGS)

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						Δ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
165	23	iP iS	Z ZNE	18 16	30.4 48	9.0	0.7					2.2	Compression USCGS: 15.2S, 173.5W. h about 75 km. Tonga Islands Felt at Apia H = 18 16 08.4 Mag. 5.4 (CGS)	
166	23	iP eS	ZNE ZNE	19 27	43 02	20.5	1.4					2.0	Dilatation USCGS: 15.4S, 173.2W. h about 50 km. Tonga Islands Felt at Apia H = 19 27 17.4 Mag. 4.9 (CGS)	
167	23	iP S	ZNE ZN	23 54	29.7 46							2.2	Dilatation USCGS: 15.2S, 173.5W. h about 130 km. Tonga Islands Felt at Apia H = 23 54 14.7 Mag. 6 $\frac{1}{2}$ (PAS), 5.9(BRK), 6 $\frac{1}{4}$ -6 $\frac{1}{2}$ (PAL), 5.7(CGS)	
168	24	eP epP ePP eS ePcS	Z ZE ZNE ZNE ZE	08 03	55 28 52 20 25							19.7	USCGS: 16.3S, 167.9E. h about 189 km. New Hebrides Islands H = 07 59 39.0 Mag. 5.6 (CGS)	
169	24	eS eLq eLr	ZNE E ZNE	08 28	58 46 54							72.0	USCGS: 56.6N, 152.4W. h about 30 km. Kodiak Island region H = 08 08 05.2 Mag. 5(BRK), 6(PAL), 5.2(CGS)	
170	24	eP	Z	09 45	54							20.5	USCGS: 13.4S, 167.1E. h about 210 km. New Hebrides region H = 09 41 30.4 Mag. 4.7 (CGS)	
171	24	eP eS eL eT	Z ZNE ZNE ZNE	10 09	15 25 06 38							6.6	USCGS: 20.1S, 174.1W. h about 33 km. Tonga Islands H = 10 07 43.4 Mag. 5.1 (CGS)	
172	24	eP eS eT	Z NE ZNE	10 24	14 24 52							6.4	USCGS: 19.7S, 174.4W. h about 33 km. Tonga Islands H = 10 22 41.6 Mag. 4.0 (CGS)	
173	24	eP eS	Z ZNE	14 48	32.7 53								Samoa Islands region	
174	24	eP eS	Z NE	15 41	43 03								Samoa Islands region	

No	Date	Phase		Time (G.M.T.)									Δ (Deg.)	Remarks	
							Az	Tz	An	Tn	Ae	Te			
175	24	eL	ZNE	17	40	46							19.3	USCGS: 21.9S, 169.9E. h about 41 km. Loyalty Islands region H = 17 31 10.4 Mag. 6.6 (CGS)	
176	24	eP eS eT	Z NE ZNE	18	26 28 37	44 52 10							12.7	USCGS: 25.4S, 177.3W. h about 143 km. South of Fiji Islands H = 18 23 59.9 Mag. 5.0 (CGS)	
177	24	eL	ZNE	18	59	12							54.0	USCGS: 23.6S, 115.3W. h about 33 km. Easter Island, Cordillera H = 18 35 20.7 Mag. 4.5 (CGS)	
178	24	eP eL	Z ZNE	22 23	52 12	49 14							61.0	USCGS: 8.4N, 126.6E. h about 51 km. Mindanao, Philippine Island Felt H = 22 42 09.6 Mag. 5.8 (CGS)	
179	24	iP eS	Z ZNE	23	26	12 31									Dilatation Samoa Islands region
180	24	iP eS	Z ZNE	23	59	37.5 58									Compression Samoa Islands region
181	25	eP epP	ZNE Z	07	21 22	45 40	3.5	2.0	1.4	2.0	1.5	2.1	20.2	USCGS: 14.3S , 167.4E. h about 205 km. New Hebrides Islands H = 07 17 21.4 Mag. 5.8 (CGS)	
182	25	eP eS	Z NE	09	51 52	01 07							7.4	USCGS: 19.9S, 176.0W. h about 206 km. Fiji Islands region H = 09 49 16.9	
183	25	iP eS	Z ZNE	12	21 22	44 00									Compression Samoa Islands region
184	25	eP eS	Z ZNE	15	58	17 35									Samoa Islands region
185	25	eP	Z	18	39	28	0.5	2.0					34.4	USCGS: 7.4S, 153.9E. h about 96 km. New Britain region H = 18 32 50.5 Mag. 5.6 (CGS)	
186	25	eP eS eT	Z ZNE ZNE	21	07 08 13	12 22 49							7.0	USCGS: 20.4S, 174.1W. h about 33 km. Tonga Islands H = 21 05 40.7 Mag. 4.7 (CGS)	

No	Date	Phase		Time									Δ (Deg.)	Remarks
				(G.M.T.)			Az	Tz	An	Tn	Ae	Te		
187	25	iP S	ZNE ZNE	23	37	00.4 21							2.0	Compression USCGS: 15.1S, 173.4W. h about 33 km. Tonga Islands Felt at Apia H = 23 36 29.4 Mag. 4.7 (CGS)
188	26	iP iS	Z ZNE	00	23 24	00.3 37							8.0	Dilatation USCGS: 20.0S, 178.1W. h about 567 km. Fiji Islands region H = 00 20 56.3 Mag. 5.8 (CGS)
189	26	eP eS	Z NE	07	53 55	33 18								
190	26	eP eS	Z NE	08	22	11 31								Samoa Islands region
191	26	iP eS	Z NE	13	44 45	56.5 17								Dilatation Samoa Islands region
192	26	iP eS	Z NE	13	49	17.9 38								Dilatation Samoa Islands region
193	26	eP eS eT	Z NE ZNE	16	14 16 23	41 12 09	1.7	2.0					8.9	USCGS: 22.2S, 175.0W. h about 33 km. Tonga Islands region H = 16 12 36.9 Mag. 5.2 (CGS)
194	27	eP eS eT	ZE ZE ZNE	16	33 34 36	42 32 37	1.6	2.0			1.0	1.9		
195	27	eP eS	ZE NE	20	07 09	33 27	1.4	0.8			1.0	1.0		
196	28	eP eS eT	Z NE ZNE	01	18 19 22	27 20 33								
197	28	eP eS	Z NE	04	19 21	25 00								
198	28	iP ePP eS eSS eLq eLr	Z ZNE ZNE ZNE ZNE ZNE	16	46 49 56 03 10 14	16.3 50 17 38 27 48	4.4	4.0					91.0	Dilatation USCGS: 32.4S, 71.2W. h about 61 km. Near coast of Central Chile. About 400 dead or missing and extensive property damage in Central Chile. H = 16 33 14.6 Mag. 7-7 $\frac{1}{4}$ (PAS), 6.4(CGS)
														Surface waves lasting 2 hrs.
199	29	eP eS	Z NE	00	37 38	33 42							7.3	USCGS: 20.8S, 173.6W. h about 33 km. Tonga Islands H = 00 35 59.8 Mag. 4.6 (CGS)

19.

No	Date	Phase	Time (G.M.T.)			Az Tz An Tn Ae Te						Δ (Deg.)	Remarks
						Az	Tz	An	Tn	Ae	Te		
215	31	ePKP Z	10	07	15	1.7	2.3					153.0	USCGS: 38.6N, 22.4E. h about 78 km. Greece Felt in Southern Italy, 3 killed 16 injured, major property damage at Patras and Agrinion. H = 09 47 30.7 Mag. $6\frac{3}{4}$ (PAS); $6\frac{3}{4}$ -7(BRK), $6\frac{1}{2}$ - $6\frac{3}{4}$ (PAL), 6.3 (CGS)
		ePKP Z											
		e ZNE	10	40									
		eSKS ZNE	14	21									
		eS NE	17	52									
		eSKSP ZNE	21	10									
		ePPS ZNE	24	27									
		eSS ZNE	31	14									
		cL ZNE	40.0										
		eL ZE	42.0										
		eL ZNE	49.4										
		Surface waves lasting 2 hrs.											
216	31	eP Z	15	30	13								
		eS ZNE				32	21						
		eT ZNE				37	07						
217	31	eP Z	19	25	12								
		eS NE					59						

NOTE:

- (i) Trace amplitudes (A) are expressed in millimetres and periods (T) in seconds.
- (ii) *Readings to be incorporated in the New Zealand Seismological Report for 1965.

P.D. Muller
OBSERVER-IN-CHARGE

CORRECTIONS TO THE AFIAMALU FINAL SEISMOLOGICAL BULLETIN FOR 1963

<u>DATE</u>	<u>NUMBER</u>	<u>COLUMN</u>	
Jan.	2	Deg.	Add "7.5" 835 km.
Jan.	25	Remarks	Delete "h = 33 km. H=16 54 40" Add "h = 603 km. H = 16 14 07.5"
Feb.	25	Deg.	Add "74.0"
Feb.	27	Phase	Add "eT ZNE 07 38 00"
Mar.	16	Phase	Add "eT ZNE 10 07 31"
Mar.	30	Phase	Add eT ZNE 18 17 14
Mar.	30	-	Delete
Apr.	10	Remarks	Add "h = 558 km."
Apr.	16	Deg. & Remarks	Add 62.0 deg. 6890 km. Add 1.0S, 127.6E. h = 33 km. Halmahora region H = 12 03 42.5 Mag. 4.7 (CGS)
Jun.	5	Phase	Add "eT ZNE 14 14 29"
Jul.	29	Phase	Add "eT ZNE 20 36 52"
Aug.	14	Phase	Add "eT ZNE 20 47 36"
Oct.	8	Remarks	Add "H = 00 17 01.1"
Oct.	10	Phase	Add eT ZNE 12 11 53
Dec.	4	Phase	Add "eS NE 00 53 07" "eT ZNE 01 10 29"
Dec.	27	Phase	Add eT ZNE 05 25 24

NEW ZEALAND

Department of Scientific and Industrial Research

Geophysics Division

APIA OBSERVATORY

FINAL SEISMOLOGICAL BULLETIN

STANDARD SEISMIC STATION (AFI)

AFIAMALU, WESTERN SAMOA.

Latitude: $13^{\circ} 54' 33.6''S$ Longitude: $171^{\circ} 46' 38.1''W$

Height above mean sea level: 705.6 metres, 2315 ft.

Geocentric direction cosines: a. - 0.961 070

b. - 0.138 883

c. - 0.238 862

Lithological Foundation: Basaltic Lava Flows

Instruments: World-wide standard seismograph system

Benioff short period seismometers

$T_0 = 1.0$ sec. $T_g = 0.75$ sec.

Sprengnether long period seismometers

$T_0 = 15$ sec. $T_g = 100$ sec.

Nominal Magnifications: S.P. 12500

L.P. 750

APRIL 1965 *

No	Date	Phase	Time (G.M.T.)							Δ (Deg.)	Remarks	
				Tz	Az	Tn	An	Te	Ae			
1	1	eP	Z	04	17	57						
		eS	NE		19	37						
2	1	eP	Z	08	36	24				6.5	USCGS: 20.2S, 173.4W. h about 33 km. Tonga Islands H = 08 34 52.6 Mag. 4.8 (CGS)	
		eS	NE		37	36						
		eT	ZNE		43	09						
3	1	iP	Z	11	58	22.7					Compression Samoa Islands region	
		iS	NE			38.7						
4	1	eP	Z	12	14	42					Samoa Islands region	
		eS	NE			59						
5	1	eP	Z	13	45	04				7.0	USCGS: 20.6S, 173.6W. h about 46 km. Tonga Islands H = 13 43 32.6 Mag. 5.1 (CGS)	
		eS	NE		46	13						
		eT	ZNE		51	18						
6	1	eP	Z	17	01	02				7.7	USCGS: 17.8S, 178.6W. h about 554 km. Fiji Islands region H = 16 59 07.0 Mag. 4.5 (CGS)	
		eS	NE		02	34						
7	1	iP	Z	17	03	16.5					Compression Samoa Islands region	
		iS	NE			36						
8	1	eP	Z	21	23	33						
		e	Z		24	25						
		eS	NE			56						

No	Date	Phase	(G.M.T.)									△ (Deg.)	Remarks
						Tz	Az	Tn	An	Te	Ae		
9	1	eP eS eScS eSS eLq eLr eT	Z ZNE E NE NE ZNE ZNE	21 30 39	38 40 42 45 47 22	56 48 50 16 00 28						59.0	USCGS: 50.0S, 114.1W. h about 33 km. Easter Island Cordillera H = 21 20 43.8 Mag. 5.3 (CGS)
10	2	eP eS	Z NE	05 05	02 16	49 16						10.0	USCGS: 26.0S, 179.9E. h about 445 km. South of Fiji Islands H = 04 59 45.7 Mag. 4.0 (CGS)
11	2	eP	Z	13	15	09						64.0	USCGS: 12.5N, 123.5E. h about 33 km. Luzon, Philippine Islands H = 13 04 01.8 Mag. 5.6 (CGS)
12	2	iP eS	Z ZNE	15	47 49	14.2 46						15.0	Dilatation USCGS: 27.1S, 179.2W. h about 382 km. Kermadec Islands H = 15 44 01.0 Mag. 4.7 (CGS)
13	2	eP	Z	16	47	35						20.4	USCGS: 14.8S, 167.3E. h about 123 km. New Hebrides Islands H = 16 43 05.8 Mag. 4.1 (CGS)
14	2	eP eS eS	Z E N	18	45 46	16 20 33						6.5	USCGS: 18.3S, 176.8W. h about 33 km. Fiji Islands region H = 18 43 50.1 Mag. 4.5 (CGS)
15	3	eP eS eT	Z NE ZNE	03	32 34 45	32 53 16						13.3	USCGS: 26.4S, 176.4W. h about 33 km. South of Fiji Islands H = 03 29 28.6 Mag. 4.6 (CGS)
16	3	eP eS eT	Z ZNE ZNE	08	42 44 55	35 53 06						13.6	USCGS: 26.8S, 176.4W. h about 109 km. South of Fiji Islands H = 08 39 40.8 Mag. 4.9 (CGS)
17	3	eP eS eT	Z NE ZNE	09	36 38 49	09 27 08						4.0	USCGS: 17.1S, 174.3W. h about 33 km. Tonga Islands region H = 09 33 50.3 Mag. 4.3 (CGS)
18	3	eP	Z	10	58	07							

No	Date	Phase	Time (G.M.T.)			Tz	Az	Tn	An	Te	Ae	△ (Deg.)	Remarks
19	3	eS E eSS E e(SSS)N eL N eL ZE	11	42	32							79.0	USCGS: 16.0N, 97.9W. h about 16 km. Near coast of Oaxaca, Mexico Felt at Mexico City H = 11 20 43.5 Mag. 6(PAS), 5(BRK), 5 $\frac{1}{2}$ -5 $\frac{3}{4}$ (PAL), 5.5(CGS)
20	3	eS E eL ZE	11	51	10							79.0	USCGS: 16.1N, 97.8W. h about 45 km. Oaxaca, Mexico Felt at Mexico City H = 11 29 13.0 Mag. 6-6 $\frac{1}{4}$ (PAS), 5.5(CGS)
21	3	eP Z eS NE eT ZNE	18	34	45							13.4	USCGS: 26.5S, 176.3W. h about 33 km. South of Fiji Islands H = 18 31 40.0 Mag. 4.7 (CGS)
22	3	iP Z eS ZNE	23	57	27.2								Dilatation
23	4	eP Z eS NE eL ZNE eT ZNE	11	14	10							3.4	USCGS: 16.9S, 173.4W. h about 61 km. Tonga Islands H = 11 13 18.9 Mag. 4.6 (CGS)
24	4	eP Z eS ZNE eL E eL ZNE	13	41	35							65.0	USCGS: 51.9N, 175.2E. h about 40 km. Rat Islands, Aleutian Islands H = 13 30 37.8 Mag. 6(PAS), 5.4(BRK), 6-6 $\frac{1}{4}$ (PAL), 5.7(CGS)
25	4	e(S) E	15	04	38								
26	4	e(S) E eL E	15	14	50								
27	4	eP Z eS NE eL NE eL Z eT ZNE	15	39	16							13.7	USCGS: 26.9S, 176.1W. h about 33 km. South of Fiji Islands H = 15 36 11.9 Mag. 6(PAS), 5 $\frac{1}{2}$ -5 $\frac{3}{4}$ (BRK), 5.6(CGS)
28	4	eP Z eS ZNE eT ZNE	15	55	52	2.0	1.6					13.7	USCGS: 26.9S, 176.1W. h about 29 km. South of Fiji Islands H = 15 52 47.7 Mag. 5.0 (CGS)
29	4	eP Z eS ZNE eT ZNE	16	13	12							13.9	USCGS: 27.1S, 176.0W. h about 28 km. Kermadec Islands H = 16 10 08.3 Mag. 4.9 (CGS)

4.

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						Δ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
30	4	eP eS eT	Z NE ZNE	16 35 48	38 10 07	2.0	2.5					13.5	USCGS: 26.9S, 176.0W. h about 12 km. South of Tonga Islands H = 16 32 41.9 Mag. 5.2 (CGS)	
31	4	iP iS	Z NE	18 33 08.9	29								Samoa Islands region	
32	4	eP eS	Z NE	23 41 28	43 02							7.2	USCGS: 16.6S, 178.6W. h about 54.0 km. Fiji Islands region H = 23 39 38.3 Mag. 3.8 (CGS)	
33	5	eP eS eT	Z NE ZNE	01 59 43	02 03 19							12.7	USCGS: 25.8S, 176.3W. h about 33 km. South of Fiji Islands H = 01 56 44.1 Mag. 4.1 (CGS)	
34	5	ePKP eL eL	Z ZN ZN	03 32 55	04 24 50							154.0	USCGS: 37.7N, 21.8E. h about 34 km. Southern Greece 20 dead, 200 injured and 2000 homes destroyed in Central Peloponnesus H = 03 12 54.2 Mag. $5\frac{1}{2}$ - $5\frac{3}{4}$ (PAL), 5.7(CGS)	
35	5	eS eSS eSSS eL	NE NE NE Z	06 35 36	37 36 40 36							40.0	USCGS: 3.2S, 148.4E. h about 10 km. Bismarck Sea H = 06 21 34.2 Mag. 5.0 (CGS)	
36	5	eP eS eL eL	Z N NE ZN	14 03 02	12 28 19 58 22 30							66.0	USCGS: 44.6N, 151.1E. h about 81 km. Kurile Islands region H = 13 52 13.4 Mag. 5(BRK), $5\frac{1}{2}$ - $5\frac{3}{4}$ (PAL), 5.7(CGS)	
37	5	eP eS eT	Z NE ZNE	14 36 38	39 00 02							13.5	USCGS: 26.7S, 176.3W. h about 45 km. South of Fiji Islands H = 14 33 39.0 Mag. 4.6 (CGS)	
38	5	eP eS eT	Z NE ZNE	18 12 04	14 25 24 40									
39	5	iP eS	Z ZNE	19 35 25.7	50								Compression Samoa Islands region	
40	5	eP eS eT	Z ZNE ZNE	22 44 10	45 20 50 35							6.7	USCGS: 20.2S, 173.9W. h about 102 km. Tonga Islands H = 22 42 47.2 Mag. 4.6 (CGS)	
41	6	eP eS	Z ZNE	00 54 20	42								Samoa Islands region	

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						△ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
55	8	iP eS	Z NE	12 53 54	20.2 50	2.0	6.0					7.7	Dilatation USCGS: 17.6S, 178.7W. h about 575 km. Fiji Islands region H = 12 51 27.8 Mag. $5\frac{1}{4}$ - $5\frac{1}{2}$ (BRK), 5.2(CGS)	
56	8	eP	Z	13	01	38	2.1	1.5						
57	8	eP eS	Z NE	13 56 59	06 04									
58	8	eS eL	ZN ZN	14 03 14	50 08							65.0	USCGS: 52.2N, 173.5E. h about 46 km. Near Islands, Aleutian Islands Felt on Shemya H = 13 43 52.8 Mag. $5\frac{3}{4}$ (PAS), 6(PAL), 5.4(CGS)	
59	8	iP iS	Z N	18 52 59	40 59								Compression Samoa Islands region	
60	9	eP eS eT	Z NE ZNE	05 39 40 42	36 09 05									
61	9	eP eS e eL eL eT	Z ZNE N ZE N ZNE	10 49 53 11 55 11	48 11 35 38 18 07 51							19.7	USCGS: 32.6S, 178.3W. h about 52 km. South of Kermadec Islands H = 10 45 29.4 Mag. 5.1 (CGS) Coda lasting 1 hr.	
62	9	eP eS eSS eSSS eLq eLr	Z N E N E ZE	23 01 09 12 15 16 19	50 40 16 16 46 05							54.0	USCGS: 4.2S, 134.1E. h about 33 km. West New Guinea region H = 22 52 24.3 Mag. 5.6 (CGS)	
63	10	eLq eLr	N ZE	00 11.2 14	20							55.0	USCGS: 4.0S, 134.2E. h about 33 km. West New Guinea region H = 23 47 12.5 Mag. 5.2 (CGS)	
64	10	eP e	Z N	00 16 17	53 10									
65	10	eL eL	N Z	01 16 18	20 30									
66	10	eP eS eT	Z N ZN	04 41 42 48	33 47 35							7.0	USCGS: 20.3S, 174.3W. h about 33 km. Tonga Islands H = 04 39 55.3 Mag. 4.4 (CGS)	

No	Date	Phase	Time (G.M.T.)			Tz	Az	Tn	An	Te	Ae	△ (Deg.)	Remarks
67	10	eP eS eLr eT	Z ZN ZNE ZN	14 49 50 53	48 50 10 20							6.6	USCGS: 20.2S, 173.7W. h about 33 km. Tonga Islands H = 14 46 50.7 Mag. 5.7 (CGS)
68	10	iP eS	Z N	15	41 57								Dilatation
69	10	eL	ZN	17	25 52							66.0	USCGS: 53.1N, 170.9E. h about 8 km. Near Islands, Aleutian Islands H = 16 54 55.8 Mag. 5.8 (CGS)
70	10	iP eS	Z ZNE	19	43 44	54.4 17						2.0	Dilatation USCGS: 15.8S, 172.0W. h about 43 km. Samoa Islands region H = 19 43 23.2 Mag. 5.3 (CGS)
71	10	eP eS	Z ZNE	22	34 36	38 06	2.0	11.5				7.8	USCGS: 17.8S, 178.8W. h about 54.3 km. Fiji Islands region H = 22 32 46.6 Mag. 6 SMALL M (PAS), 5 ¹ / ₂ -5 ³ / ₄ (BRK), 5.9(CGS)
72	10	iP eS	Z ZNE	22	56 59	34.2 23						17.5	Dilatation USCGS: 13.4S, 170.3E. h about 644 km. New Hebrides Islands H = 22 53 04.8 Mag. 6.2 (CGS)
73	11	eP eS e eL eT	Z ZN E ZNE ZN	00	17 22 23 25.0 49	28 34 26 50	2.0	2.5				31.5	USCGS: 42.7S, 173.9E. h about 7 km. South Island, New Zealand H = 00 11 08.8 Mag. 6.2 (CGS)
74	11	eP eS eT	Z ZN ZN	02	14 17 32	43 44 07						17.8	USCGS: 30.6S, 178.1W. h about 68 km. Kermadec Islands region H = 02 10 42.0 Mag. 4.6 (CGS)
75	11	eL	ZE	05	31	18						70.0	USCGS: 19.8N, 109.2W. h about 33 km. Revilla Ggedo Islands H = 04 59 39.3 Mag. 4 ³ / ₄ -5(BRK), (PAL), 5.0(CGS)
76	11	eP eS eT	Z ZN ZN	07	00 01 07	29 35 11							
77	11	eP eS	Z ZN	08	46 47	21 44							

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						△ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
78	11	eP	Z	10	45	24								
		iS	N		46	09								
		eT	ZN		49	02								
79	11	eP	Z	13	01	12								
		eS	N		02	31								
80	11	eP	Z	13	27	50						8.8	USCGS: 22.0S, 175.3W. h about 33 km. Tonga Islands region H = 13 25 46.0 Mag. 4.7 (CGS)	
		eS	ZN		29	20								
		eT	ZN		36	07								
81	11	eP	Z	14	31	58								
82	11	eP	Z	16	58	39						21.6	USCGS: 11.5S, 166.1E. h about 75 km. Santa Cruz Islands H = 16 53 53.9 Mag. 5.4 (CGS)	
83	11	eP	Z	17	07	43	2.0	1.1					18.0	USCGS: 30.7S, 178.1W. h about 67 km. Kermadec Islands region H = 17 03 45.8 Mag. 5.3 (CGS)
		eS	ZN		10	44								
		eT	ZN		21	37								
84	11	eP	Z	18	54	42	1.9	1.6					15.4	USCGS: 26.2S, 178.5E. h about 581 km. South of Fiji Islands H = 18 51 38.1 Mag. 5.6 (CGS)
		eS	ZN		57	14								
		eT	ZN	19	07	34								
85	12	eP	Z	08	55	37							19.5	USCGS: 32.5S, 178.1W. h about 22 km. South of Kermadec Islands H = 08 51 16.7 Mag. 4.9 (CGS)
		eS	ZN		59	03								
		eT	ZN	09	15	14								
86	12	eP	Z	11	27	10								
		eS	N		30	31								
87	12	eP	Z	15	17	45						19.9	USCGS: 32.7S, 178.3W. h about 11 km. South of Kermadec Islands H = 15 13 14.0	
88	12	eP	Z	17	27	37							4.1	USCGS: 15.2S, 175.7W. h about 118 km. Tonga Islands H = 17 26 57.8 Mag. 4.3 (CGS)
		eS	ZN		28	21								
		eT	ZN		30	36								
89	12	eP	Z	19	10	36								
		eS	ZN		11	17								
		eT	ZN		14	04								

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						Δ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
90	12	eP eS eT	Z ZN ZN	20 30 45	20 37 23							19.5	USCGS: 32.3S, 178.5W. h about 167 km. South of Kermadec Islands H = 20 26 15.3 Mag. 5.9 (CGS)	
91	12	eP eS eT	Z N ZN	21 35 46	21 40 46							19.7	USCGS: 32.6S, 178.0W. h about 33 km. South of Kermadec Islands H = 21 27 58.8 Mag. 4.7 (CGS)	
92	13	eP eS eT	Z ZN ZN	13 34	18 44 40								Samoa Islands region	
93	13	eP eS eT	Z ZN ZN	15 16	30 12 41									
94	13	e(P)	Z	16	43									
95	13	eP eS eT	ZN ZN ZN	17 28 37	41 01 20							13.5	USCGS: 26.8S, 175.9W. h about 33 km. South of Tonga Islands H = 17 22 38.6 Mag. 5.0 (CGS)	
96	14	eP eS eT	ZN ZN ZN	00 10	57 07 37									
97	14	eP eS	Z ZN	00	31 08									
98	14	eP	Z	11	45							19.5	USCGS: 32.5S, 178.0W. h about 33 km. South of Kermadec Islands H = 11 49 21.9 Mag. 4.4 (CGS)	
99	14	iP iS	Z N	16	58 17								Compression Samoa Islands region	
100	14	eP eS	Z ZN	17	48 22							8.7	USCGS: 20.4S, 177.8W. h about 458 km. Fiji Islands region H = 17 41 43.6 Mag. 4.3 (CGS)	
101	15	eP eS	Z N	04	16 20							12.4	USCGS: 23.7S, 179.6W. h about 460 km. South of Fiji Islands H = 04 33 32.4 Mag. 4.6 (CGS)	
102	15	eP eS	Z ZN	05	28 50								Samoa Islands region	

No	Date	Phase		Time			Tz	Az	Tn	An	Te	Ae	△ (Deg.)	Remarks	
				(G.M.T.)											
103	15	iP eS e	Z E E	07 48 52 54	52.3 24 22								19.4	Dilatation USCGS: 32.2S, 178.5W. h about 153 km. South of Kermadec Islands H = 07 44 38.1 Mag. 4.3 (CGS)	
104	15	iP S	Z N	08 54	06.9 25										Dilatation
105	15	eP eS	Z N	18 09 12	53 04										
106	16	eP eS	Z ZN	00 26	16 34										Samoa Islands region
107	16	iP eS	Z NE	00 58	23.3 43										Compression Samoa Islands region
108	16	eP	ZE	10 03	33								19.2	USCGS: 20.1S, 169.2E. h about 62 km. New Hebrides Islands H = 09 59 06.2 Mag. 5.0 (CGS)	
109	16	iP eS	Z NE	19 18	11 30										Compression Samoa Islands region
110	16	eP eS eSS eSSS eL	Z E E Z ZE	23 34 44 48 53 55	24 36 20 10 10								78.0	USCGS: 64.7N, 160.1W. h about 5 km. Central Alaska Felt at Norton Sound Vicinity H = 23 22 18.6 Mag. $5\frac{3}{4}$ -6(PAS), (BRK) 5.8(CGS)	
111	17	eP	Z	01 30	01										
112	17	eP eS	Z NE	09 57	29 48										Samoa Islands region
113	17	iP S	Z ZNE	15 52	19.1 40								1.5	Dilatation USCGS: 14.5S, 173.1W. h about 33 km. Samoa Islands region H = 15 51 55.7 Mag. 4.6 (CGS)	
114	17	iP	Z	17 25	58.2										Compression
115	17	eP eS eT	Z NE ZNE	19 30 32 37	50 00 30										
116	18	eP eS eT	Z NE ZNE	01 10 12 18	49 06 20										
117	18	eP eS	Z NE	02 37 39	19 39								13.0	USCGS: 24.1S, 179.7E. h about 466 km. South of Fiji Islands H = 02 34 28.7 Mag. 4.5 (CGS)	

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						Δ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
118	18	eP eS eT	Z NE ZNE	03 19 22	05 36 06									
119	18	eP eS	Z NE	03 04	59 00	15 54								
120	18	eP eS eT	Z ZNE ZNE	14 13 23	11 20 04	06					13.6	USCGS: 26.9S, 176.1W. h about 33 km. South of Fiji Islands H = 14 08 01.4 Mag. 5.2 (CGS)		
121	18	eP eS	Z ZNE	16 55	54 04	38								
122	19	eP eS	Z ZNE	02 33	32 00	23					8.7	USCGS: 22.0S, 175.0W. h about 33 km. Tonga Islands region H = 02 30 18.6 Mag. 4.9 (CGS)		
123	19	eP eS	Z ZNE	03 24	23 06	50								
124	19	eP	Z	17	04	42	2.0	1.0			17.5	USCGS: 13.5S, 170.3E. h about 647 km. New Hebrides Islands region H = 17 01 10.5 Mag. 4.9 (CGS)		
125	19	eP eS	Z NE	18 22	20 26	55					7.9	USCGS: 17.5S, 179.0W. h about 502 km. Fiji Islands region H = 18 18 59.9 Mag. 4.1 (CGS)		
126	20	iP eS	Z NE	15 38	36 05	28.8	1.5	1.9					Dilatation	
127	21	eP eS eT	Z NE ZNE	06 01 07	00 15 06	01					7.2	USCGS: 20.4S, 174.7W. h about 33 km. Tonga Islands H = 05 58 19.3 Mag. 4.5 (CGS)		
128	21	eP eS eT	ZNE ZNE ZNE	08 27 33	26 17 05	03					7.5	USCGS: 20.9S, 174.6W. h about 33 km. Tonga Islands H = 08 24 13.1 Mag. 4.8 (CGS)		
129	21	eP eS eT	Z NE ZNE	10 33 39	32 32 04	19					7.2	USCGS: 20.4S, 174.6W. h about 33 km. Tonga Islands H = 10 30 39.5 Mag. 4.6 (CGS)		
130	21	eP eS	Z NE	17	09	17 46								

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						△ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
131	22	eP	Z	01	10	14	2.2	2.1					20.4	USCGS: 14.3S, 167.3E h about 204 km. New Hebrides Islands Felt at Vanikoro H = 01 05 50.2 Mag. 5.3 (CGS)
132	22	eP	Z	03	42	44								
		eS	ZNE		43	16								
		eT	ZNE		45	02								
133	22	eP	Z	18	20	07								
		eS	E		21	11								
134	22	eL	Z	19	06	00							65.0	USCGS: 51.8N, 176.1E. h about 37 km. Rat Islands, Aleutian Islands H = 18 36 01.2 Mag. 4½(BRK), 5.1(CGS)
135	22	eP	Z	20	57	11								
		eS	E		58	21								
		eT	ZE	21	03	49								
136	23	eP	Z	15	12	25	1.8	0.8						
137	23	eP	Z	22	27	08								
		eS	ZE			43								
138	23	iP	Z	22	44	24.6								Compression
		eS	ZE			45								Samoa Islands region
139	23	iP	ZE	23	17	48								Dilatation
		eS	ZE		18	31								
140	24	eP	Z	00	08	53							19.9	USCGS: 32.8S, 178.4W, h about 33 km.
		eS	ZE		12	09								South of Kermadec
		eL	ZNE			42								Islands
		eT	ZE		27	54								H = 00 04 32.6 Mag. 4.7 (CGS)
141	24	eP	Z	02	41	38								
		eS	E		44	48								
		eL	E		45	08								
142	24	eP	Z	13	45	18							7.3	USCGS: 20.4S, 173.8W. h about 33 km.
		eS	ZE		46	28								Tonga Islands
		eT	ZE		51	57								H = 13 43 44.5 Mag. 4.7 (CGS)
143	24	eS	ZE	22	12	30							54.0	USCGS: 11.4N, 140.1E. h about 59 km.
		eSS	ZE		16	28								West Caroline Islands
		eSSS	E		17	54								H = 21 55 26.5
		eL	ZE		20	00								Mag. 5.7 (CGS)
144	25	eP	Z	00	29	38							19.6	USCGS: 32.5S, 177.9W. h about 33 km.
		eS	ZE		32	55								South of Kermadec
		eL	E		33.0									Islands H = 00 25 14.8 Mag. 4.8 (CGS)

No	Date	Phase	Time (G.M.T.)			Tz	Az	Tn	An	Te	Ae	△ (Deg.)	Remarks
159	26	eP Z eS ZE eT ZE	22	31 16 34 19 48 51							17.8	USCGS: 30.9S, 177.4W h about 33 km Kermadec Islands region H = 22 27 10.6 Mag. 5.9 (CGS)	
160	27	eP Z eS ZE	01	17 42 19 12									
161	27	iP Z eS ZE	06	54 38.4 55 00								Compression Samoa Islands region	
162	27	iP Z eS ZE	10	26 45.1 27 25	1.7	1.5						Dilatation	
163	27	eP Z eS E eLq ZE eLr ZE	11	04 16 12 00 19.5 22.4	2.0	1.5					58.0	USCGS: 1.0S, 129.5E h about 67 km Banda Sea H = 10 54 28.0 Mag. 5.9 (CGS)	
164	27	ePKP Z	14	29 12							154.0	USCGS: 35.7N, 23.5E h about 50 km Crete H = 14 09 07.1 Mag. 5.5 (CGS)	
165	27	eP Z eS ZE	14	50 23 52 30							12.6	USCGS: 24.1S, 179.5W h about 405 km South of Fiji Islands H = 14 47 34.9 Mag. 4.3 (CGS)	
166	27	eS E eL ZE	20	32 57 49 00							87.0	USCGS: 1.5N, 85.2W h about 33 km Off coast of Ecuador H = 20 09 18.4 Mag. $5\frac{1}{2}$ - $5\frac{3}{4}$ (PAL), 5.5 (CGS)	
167	28	iP Z iS ZE	04	55 39.6 59								Compression Samoa Islands region	
168	28	eP Z eLr ZE	07	46 02 55.6							34.0	USCGS: 7.2S, 155.0E h about 143 km Solomon Islands H = 07 39 34.0 Mag. 4.7 (CGS)	
169	28	eP Z eS ZE eL ZE eT ZE	10	29 51 32 15 42 42 21	2.0	1.1					14.0	USCGS: 27.1S, 176.5W h about 33 km Kermadec Islands H = 10 26 43.6 Mag. 5.4 (CGS)	
170	28	iP Z eS ZE	11	15 08.7 54	1.0	2.5					4.0	Compression USCGS: 17.0S, 174.3W h about 280 km Tonga Islands H = 11 14 03.6 Mag. 3.8 (CGS)	
171	28	eP Z eS ZE eT ZE	16	45 22 47 39 55 06							13.6	USCGS: 26.4S, 177.3W h about 33 km South of Fiji Islands H = 16 42 12.0 Mag. 4.7 (CGS)	

No	Date	Phase	Time (C.M.T.)	Tz Az Tn An Te Ae						M (Deg.)	Remarks		
				Tz	Az	Tn	An	Te	Ae				
172	28	iP iS	Z ZE	22 55 41.8 56 16							3.6	Dilatation USCGS: 17.1S, 173.6W h about 35 km Tonga Islands H = 22 54 46.4 Mag. 4.7 (CGS)	
173	29	eP eS	Z ZE	07 54 11 49							4.7	USCGS: 17.3S, 175.1W h about 33 km Tonga Islands H = 07 53 01.4 Mag. 4.5 (CGS)	
174	29	iP eS	ZE ZE	09 47 07 49 08	2.0	3.2			2.0	2.2	11.6	Compression USCGS: 22.1S, 179.8E h about 540 km South of Fiji Islands H = 09 44 34.2 Mag. 5.2 (CGS)	
175	29	eP ePP eS eT	Z Z ZE ZE	11 32 42 33 31 36 11 49 09	2.0	1.6					19.9	USCGS: 32.5S, 179.1W h about 64 km South of Kermadec Islands H = 11 28 19.1 Mag. 5.0 (CGS)	
176	29	eP eS	Z ZE	13 46 39 48 12							8.3	USCGS: 20.1S, 177.4W h about 530 km Fiji Islands region H = 13 44 40.2 Mag. 4.8 (CGS)	
177	29	eP eS	Z E	14 42 34 44 23									
178	29	iP ePCP ePP eS eS eSS eSSS eLq eLr	Z Z Z ZE ZE ZE ZE ZE ZE	15 40 21.5 38 43 10 49 55 50 50 54 44 58 24 16 00 00 02 46							75.0	Dilatation USCGS: 47.4N, 122.4W h about 57 km Washington Two Killed, some injured, moderate property damage in Seattle area. Felt in Oregon, Idaho, Montana , British Columbia and on Vancouver. H = 15 28 43.3 Mag. 6.6 (PAS), 6 $\frac{3}{4}$ -7 (BRK), 7 $\frac{1}{4}$ (PAL), 6.5 (CGS)	
179	29	eP eS	Z ZE	19 46 55 47 29									
180	29	eP	Z	22 36 27							19.5	USCGS: 32.6S, 177.4W h about 33 km South of Kermadec Islands H = 22 32 04.9 Mag. 4.7 (CGS)	
181	30	eP eS	Z E	19 42 04 43 32									

NOTE: (i) Trace amplitude (A) are expressed in millimetres and periods (T) in seconds
(ii) *Readings to be incorporated in the New Zealand Seismological Report for 1965

P.D. Muller
Observer-in-Charge

NEW ZEALAND

Department of Scientific and Industrial Research

Geophysics Division

APIA OBSERVATORY

FINAL SEISMOLOGICAL BULLETIN

STANDARD SEISMIC STATION (AFI)

AFIAMALU, WESTERN SAMOA.

Latitude: $13^{\circ} 54' 33.6''S$ Longitude: $171^{\circ} 46' 38.1''W$

Height above mean sea level: 705.6 metres, 2315 ft.

Geocentric direction cosines: a. - 0.961 070

b. - 0.138 883

c. - 0.238 862

Lithological Foundation: Basaltic Lava Flows

Instruments: World-wide standard seismograph system

Benioff short period seismometers

$T_0 = 1.0$ sec. $T_g = 0.75$ sec.

Sprengnether long period seismometers

$T_0 = 15$ sec. $T_g = 100$ sec.

Nominal Magnifications: S.P. 12500

L.P. 750

MAY 1965 *

No	Date	Phase		Time (G.M.T.)							Δ (Deg.)	Remarks
					Tz	Az	Tn	An	Te	Ae		
1	1	eP	Z	13 11 52	2.3	1.0					52.0	USCGS: 12.3N, 143.7E. h about 5 km. South of Mariana Islands H = 13 02 44.5 Mag. 5.1 (CGS)
		eS	E	19 20								
		eL	NE	24.5								
2	1	eP	Z	13 42 40	1.9	1.6						
		eS	ZE	44 06								
3	1	eS	NE	21 49 00							77.0	USCGS: 60.4N, 146.0W. h about 33 km. Southern Alaska H = 21 27 54.4 Mag. 5.3 (CGS)
		eL	ZE	22 01.2								
		eL	NE	03.8								
4	2	eS	E	07 35 00							72.0	USCGS: 28.9N, 128.9E. h about 30 km. Ryukyu Islands H = 07 13 42.0 Mag. 5.0 (CGS)
		eL	E	42 44								
5	2	eP	Z	10 54 25							9.4	USCGS: 20.3S, 178.9W. h about 581 km. Fiji Islands region H = 10 52 13.5 Mag. 4.9 (CGS)
		eS	ZNE	56 08								

* See note at end.

No	Date	Phase		Time (G.M.T.)									Δ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
6	3	eS	E	10	25	00							86.0	USCGS: 13.5N, 89.3W. h about 23 km. El Salvador 125 killed, 400 injured, 4000 homes wrecked in San Salvador Cisneros District, San Marcos and Santo Tomas. H = 10 01 35.2 Mag. 6 $\frac{1}{4}$ (PAS), 6-6 $\frac{1}{4}$ (PAL), 5.1(CGS)
		eS	E		26	38								
		eSS	ZE		30.4									
		eL	E		37.6									
		eL	ZE		41.0									
7	3	eP	Z	15	17	28							8.5	USCGS: 20.3S, 177.6W. h about 483 km. Fiji Islands region H = 15 15 25.6 Mag. 4.9 (CGS)
		eS	ZNE		19	02								
8	3	eP	Z	21	31	50								
		eS	NE		32	17								
9	4	eP	Z	18	05	28							6.6	USCGS: 20.1S, 173.9W. h about 33 km. Tonga Islands H = 18 03 57.7 Mag. 5.2 (CGS)
		eS	ZNE		06	38								
		eL	ZNE		07	20								
		eT	ZNE		12	04								
10	5	eP	N	07	10	53							5.9	USCGS: 17.0S, 176.9W. h about 33 km. Fiji Islands region H = 07 09 29.3 Mag. 4.8 (CGS)
		eS	ZNE		11	54								
		eL	NE		12	00								
		eT	N		16	24								
11	5	eP	N	09	32	32							6.5	USCGS: 19.9S, 174.1W. h about 33 km. Tonga Islands H = 09 30 59.9 Mag. 4.7 (CGS)
		eS	N		33	35								
		eT	N		38	42								
12	5	eP	NE	18	04	55								
		eS	NE		05	36								
13	6	eP	Z	14	31	25	2.0	1.9					39.0	USCGS: 6.1S, 149.1E. h about 74 km. New Britain region H = 14 24 04.3 Mag. 6.0 (CGS)
		eS	NE		40	30								
		eL	Z		43.0									
14	7	eS	E	07	07	58								
15	7	eC	ZNE	15	51	24							19.6	USCGS: 32.5S, 178.2W. h about 33 km. South of Kermadec Islands H = 15 43 23.0 Mag. 4.7(CGS)
		eL	E		52	20								
16	7	eP	Z	16	36	55							19.5	USCGS: 32.4S, 178.3W. h about 33 km. South of Kermadec Islands H = 16 32 30.6 Mag. 5.1 (CGS)
		ePP	Z		37	07								
		eS	NE		40	30								
		eL	E		41	36								

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						△ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
17	7	eS eL eL	NE N ZE	17 00 01	14 00 32							19.6	USCGS: 32.5S, 178.2W. h about 33 km. South of Kermadec Islands H = 16 52 11.9 Mag. 4.6 (CGS)	
18	9	iP eS	Z Z	11 49 50	41 00								Samoa Islands region	
19	9	eP	Z	13 41	21	2.7	0.6					49.0	USCGS: 3.0S, 139.6E. h about 37 km. Near north coast of West New Guinea H = 13 32 34.1	
20	9	eP eS	Z Z	17 35 37	46 00									
21	9	eP eS eT	Z Z Z	21 11 12 15	59 33 15									
22	9	eP eS	Z Z	23 53 56	58 07							12.2	USCGS: 23.4S, 179.8W. h about 555 km. South of Fiji Islands H = 23 51 22.6 Mag. 5.0 (CGS)	
23	10	eP eS	Z Z	22 05 07	57 22									
24	11	eP eS	Z Z	04 11 13	27 01	3.9	0.5							
25	11	iP S	Z Z	10 10	32.5 4.2								Dilatation Samoa Islands	
26	11	eP	Z	13 25	51									
27	11	eP eS	Z Z	15 26 27	48 03								Samoa Islands region	
28	11	eP eL	Z ZN	17 49 18 12	26 54							76.0	USCGS: 61.4N, 149.6W. h about 58 km. Southern Alaska Felt widely in the Anchorage area H = 17 37 38.3 Mag. 5.5 (CGS)	
29	12	eP eS	Z Z	06 47 48	05 35								USCGS: 18.4S, 178.0W. h about 534 km. Fiji Islands region H = 06 45 12.2 Mag. 4.0 (CGS)	
30	12	iP ePcP ePP eS eSoS eSS eSSS eL	Z Z Z N N N N ZN	10 43 44 45 51 53 54 57 11 00	21.6 11 27 04 06 52 30 30	2.2	7.0					57.0	Compression USCGS: 6.2S, 130.3E. h about 125 km. Banda Sea Felt at Darwin H = 10 33 43.5 Mag. 5.4-5.1 (PAL), 5.7 (CGS)	

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						△ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
43	18	eL	N	08	32	20							60.0	USCGS: 25.2N, 142.8E. h about 10 km. Volcano Islands region H = 08 04 23.3 Mag. 4.8 (CGS)
44	18	eP	Z	08	56	18	2.1	1.3					19.0	USCGS: 18.0S, 168.5E. h about 143 km. New Hebrides Islands H = 08 52 01.5 Mag. 5.0 (CGS)
45	18	eL	ZNE	09	29	08								
46	18	iP eS	Z ZN	16	32 33	32 01	1.0	3.6						Compression
47	18	eP eS	Z ZN	16	39 41	40 11							8.1	USCGS: 20.0S, 177.3W. h about 516 km. Fiji Islands region H = 16 37 41.7 Mag. 4.7 (CGS)
48	18	iP eS	Z ZN	16	51 52	25.1 02	1.9	3.0						Dilatation
49	18	eP	Z	17	50	01								
50	18	eL eL	NE Z	21	08	08 40								
51	19	eP eS	Z ZN	01	30 32	13 28							14.4	USCGS: 26.4S, 179.1W. h about 377 km. South of Fiji Islands H = 01 27 06.2 Mag. 4.0 (CGS)
52	19	eP eS	Z ZN	02	03 04	01 46							10.5	USCGS: 23.5S, 176.0W. h about 113 km. Tonga Islands region H = 02 00 47.4 Mag. 4.1 (CGS)
53	19	eP ePP eSS eL	Z Z NE Z	03	06 07 13 15	55 24 04 14	2.0	1.0					29.0	USCGS: 9.2S, 159.0E. h about 50 km. Solomon Islands H = 03 00 59.0 Mag. 5.6 (CGS)
54	19	eL	ZN	03	42	14							66.0	USCGS: 52.4N, 173.4E. h about 49 km. Near Islands, Aleutian Islands. H = 03 11 12.5 Mag. 5.1 (CGS)
55	19	eP eS eT	Z N ZN	04	23 25 30	42 17 56							9.7	USCGS: 22.5S, 176.3W. h about 33 km. South of Fiji Islands Felt on Tonga H = 04 21 26.7 Mag. 5.5 (CGS)

No	Date	Phase		Time (G.M.T.)									Δ (Deg.)	Remarks
							Tz	Az	Tn	Am	Te	Ae		
56	19	eP eS	Z ZN	04 40 45 42 16								9.5	USCGS: 22.3S, 176.4W. h about 98 km. South of Fiji Islands H = 04 38 29.9 Mag. 5.0 (CGS)	
57	19	eSSS eL	N ZNE	06 46 00 49 56								82.0	USCGS: 27.6N, 110.9W. h about 33 km. Gulf of California H = 06 17 12.0 Mag. 5.0 (CGS)	
58	19	eP eS	Z ZN	07 30 56 31 15									Samoa Islands region	
59	19	eP e eSS eL	Z N N ZNE	14 06 53 07 12 13 30 15 20								36.6	USCGS: 4.8S, 152.3E. h about 70 km. New Britain region Felt at Rabaul H = 13 59 55.2 Mag. 5.6 (CGS)	
60	19	iP iS	ZN ZN	16 00 17.7 51								3.2	Compression USCGS: 16.1S, 174.0W. h about 140 km. Tonga Islands H = 15 59 29.0 Mag. 4.5 (CGS)	
61	19	iP iS	ZN N	23 34 18.8 36 01								9.5	Compression USCGS: 20.8S, 178.5W. h about 552 km. Fiji Islands region H = 23 32 14.0 Mag. 4-4 $\frac{1}{4}$ (BRK), 5.4(CGS)	
62	20	eP iS	ZN ZNE	00 44 48 48 44	2.0	3.6						20.3	USCGS: 14.7S, 167.4E. h about 16 km. New Hebrides Islands Felt H = 00 40 10.9 Mag. 6 $\frac{3}{4}$ -7(PAS), 7(BRK) 5.6(CGS)	
63	20	eP	Z	01 09 29	2.0	1.0								
64	20	eP eS	Z ZN	05 30 42 31 12										
65	20	eP eS eT	Z ZN ZN	20 40 35 41 10 44 34										
66	20	eSSS eL	N ZN	20 53 26 55 06								36.0	USCGS: 45.1S, 167.6E. h about 105 km. South Island, New Zealand Felt in southern area of South Island H = 20 37 41.4 Mag. 5.5 (CGS)	

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						△ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
67	21	iP	Z	19	10	48	1.2	3.0						Compression
68	22	eP eL	Z ZE	03	16 35	11 40						64.0		USCGS: 1.3N, 126.3E. h about 25 km. Molucca Passage H = 03 05 43.6 Mag. 5.5 (CGS)
69	22	eP eS	Z ZNE	10	33 35	49 26						9.8		USCGS: 21.1S, 178.7W. h about 578 km. Fiji Islands region H = 10 31 39.5 Mag. 6 $\frac{3}{4}$ -7(BRK), 5.8(CGS)
70	22	eP eS eL	Z NE ZE	13	23 27 29	46 45 06						20.5		USCGS: 14.5S, 167.1E. h about 27 km. New Hebrides Islands Felt at Sola H = 13 19 04.5 Mag. 5.1 (CGS)
71	22	eP eS eL	Z ZNE NE	14	15 19 21.2	27 10						20.4		USCGS: 14.7S, 167.4E. h about 17 km. New Hebrides Islands Felt at Sola and Luganville H = 14 10 45.0 Mag. 4.7 (CGS)
72	22	eP eS	Z ZN	14	30 31	15 57								
73	22	eP e e	Z Z ZN	16	13 15	05 35 46								
74	22	eS	NE	20	01	54						20.0		USCGS: 14.7S, 167.5E. h about 24 km. New Hebrides Islands Felt on Santo H = 19 53 23.8 Mag. 4.6 (CGS)
75	23	eP eS eS eSS eSSS eL eL	Z ZN E ZN ZN E ZN	23 00	56 05 06 09 13 14 16	50 52 12 23 32 10 33						65.0		USCGS: 52.2N, 175.0E. h about 22 km. Near Islands, Aleutian Islands H = 23 46 12.0 Mag. 6.1 (CGS)
76	24	eS	NE	15	11	48						20.0		USCGS: 14.7S, 167.4E. h about 23 km. New Hebrides Islands Felt at Santo H = 15 03 15.4 Mag. 4.4 (CGS)
77	24	iP eS eT	Z ZN ZN	20	31 33	29.8 49 14								Samoa Islands region
78	24	iP eS eT	Z ZN ZN	20	53 54 55	46 06 25								Samoa Islands region

No	Date	Phase		Time (G.M.T.)									Δ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
104	31	eP eS	Z N	03 25	23 44	56							10.6	USCGS: 23.2S, 177.0W. h about 94 km. South of Fiji Islands H = 03 21 27.3 Mag. 4.6 (CGS)
105	31	eP	Z	08	48	51	1.9	0.8					67.0	USCGS: 35.7N, 139.6E. h about 124 km. Near south coast of Honshu, Japan. Felt H = 08 38 07.5 Mag. 5.5 (CGS)
106	31	eP eS	Z N	09	37 38	44 55							7.5	USCGS: 20.2S, 175.9W. h about 259 km. Tonga Islands H = 09 36 06.9 Mag. 4.4 (CGS)
107	31	iP e eS eSS eL eL	Z Z ZNE ZN ZNE N	11 12	48 56 00.3 03 05.1	26.1 47 26	2.1	2.2					58.0	Dilatation USCGS: 7.5S, 128.7E. h about 37 km. Banda Sea H = 11 38 28.0 Mag. 6.0 (CGS)
108	31	e e eL	N N ZNE	16 17	51.4 58.0 13.6									
109	31	iP iS	Z N	18	35	21.1 38.4								Samoa Islands region

NOTE:

- (i) Trace amplitude (A) are expressed in millimetres and periods (T) in seconds
- (ii) *Readings to be incorporated in the New Zealand Seismological Report for 1965

P.D. Muller
OBSERVER -IN-CHARGE

Correction to June 1965 Final Bulletin Afiamalu

Page 3 No. 26 eP 17 26 1.5 Tz2.9 Az1.5 Tn1.8 should read
eP 17 26 56 Tz1.5 Az2.9 Tn1.5 An1.8

NEW ZEALAND

Department of Scientific and Industrial Research

Geophysics Division

APIA OBSERVATORY

FINAL SEISMOLOGICAL BULLETIN

STANDARD SEISMIC STATION (AFI)

AFI AMALU, WESTERN SAMOA.

 Latitude: $13^{\circ} 54' 33.6''S$ Longitude: $171^{\circ} 46' 38.1''W$

Height above mean sea level: 705.6 metres, 2315 ft.

Geocentric direction cosines: a. - 0.961 070

b. - 0.138 883

c. - 0.238 862

Lithological Foundation: Basaltic Lava Flows

Instruments: World-wide standard seismograph system

Benioff short period seismometers

To = 1.0 sec. Tg = 0.75 sec.

Sprengnether long period seismometers

To = 15 sec. Tg = 100 sec.

Nominal Magnifications: S.P. 12500

L.P. 750

JUNE 1965 *

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						Δ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
1	1	eP	N	06	05	33								Samoa Islands region
		eS	N			47								
2	1	eP	N	12	05	10						7.5	USCGS: 18.0S, 178.5W. Fiji Islands region h about 607 km. H = 12 03 15.0 Mag. 4.0 (CGS)	
		eS	N		06	40								
3	1	eP	N	16	30	29						6.2	USCGS: 19.6S, 174.0W. Tonga Islands h about 56 km. H = 16 29 00.5 Mag. 4.6 (CGS)	
		eS	N		31	29								
		eT	N		36	20								
4	1	eP	N	18	25	40	2.0	3.2				2.5	USCGS: 15.6S, 173.5W. Tonga Islands Felt at Apia h about 33 km. H = 18 25 06.1 Mag. 4.9 (CGS)	
		eS	N		26	12								
		eL	ZNE			33								
		eT	N		27	59								
5	2	iP	ZN	03	18	25.1	1.3	9.5				1.5	Compression USCGS: 14.9S, 172.8W. Samoa Islands region h about 33 km. H = 03 18 04.4 Mag. 4.9 (CGS)	
		eS	N			41								
6	2	iP	Z	05	15	37	1.4	1.5				12.5	Compression USCGS: 23.5S, 180.0E. South of Fiji Islands h about 539 km. H = 05 12 59.1 Mag. 5.2 (BRK), 5.6 (CGS)	
		eS	ZN		17	45								

* See note at end.

No	Date	Phase		Time									Δ (Deg.)	Remarks
				(G.M.T.)			Tz	Az	Tn	An	Te	Ae		
7	2	eP eS	Z ZN	07 26	25 04	47 04								Samoa Islands region
8	2	eP	Z	09	21	16	2.2	1.1					8.4	USCGS: 18.0S, 179.4W. Fiji Islands region h about 630 km. H = 09 19 13.7 Mag. 4.7 (CGS)
9	2	eP	Z	09	21	34	1.7	3.1					8.4	USCGS: 18.2S 179.3W. Fiji Islands region h about 631 km. H = 09 19 32.6 Mag. 5.4 (CGS)
10	2	eP eS	Z ZN	12 41	40 09	39 09							2.6	USCGS: 16.2S, 172.9W. Samoa Islands region h about 33 km. H = 12 40 00.8 Mag. 4.7 (CGS)
11	2	eP eS	Z ZN	14 49	47 36	57 36	2.0	6.0					8.5	USCGS: 17.9S, 179.5W. Fiji Islands region h about 637 km. H = 14 45 55.8 Mag. 5.1 (CGS)
12	2	eP eS	Z ZN	15 02	00 17	33 17	2.1	4.2					8.4	USCGS: 18.0S, 179.4W. Fiji Islands region h about 621 km. H = 14 58 31.9 Mag. 4 $\frac{1}{2}$ (BRK) 5.1(CGS)
13	2	eP eS	Z N	17 09	07 32	52 32							8.3	USCGS: 17.9S, 179.3W. Fiji Islands region h about 636 km. H = 17 05 51.2 Mag. 4.4 (CGS)
14	2	eP eS	Z ZN	17	11	01 16								Samoa Islands region
15	2	eP eS	Z N	18	54 55	04 24	1.1	1.2						
16	3	eSS eL eL	E N ZE	00	18 37.8 39.3	48							127.0	USCGS: 16.ON, 46.8W. North Atlantic Ridge. h about 33 km. H = 23 40 24.4 Mag. 5.6 (CGS)
17	3	eL eL	N ZE	04 05	58.8 00.1								31.0	USCGS: 8.8S, 157.1E. Solomon Islands h about 50 km. H = 04 45 13.4 Mag. 5.3 (CGS)
18	3	eL	ZN	08	13.8								65.0	USCGS: 51.9N, 175.8E. Rat Islands, Aleutian Islands h about 58 km. H = 07 43 39.1 Mag. 5(BRK), 5.5(CGS)

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						Δ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
34	6	eP eS	Z ZN	18 26 47 27 17										
35	6	eP eS	Z ZN	21 32 34 34 56								13.8	USCGS: 25.2S, 179.9E. South of Fiji Islands h about 423 km. H = 21 29 34.2 Mag. 4.0 (CGS)	
36	7	eP eS	Z N	06 21 20 24 29								18.6	USCGS: 31.1S, 179.2W. Kermadec Islands h about 280 km. H = 06 17 23.0 Mag. 4.4 (CGS)	
37	7	eP eS eLr	Z N ZE	13 17 12 18 42 19 02								7.3	USCGS: 16.4S, 178.8W. Fiji Islands region h about 33 km. H = 13 15 27.0 Mag. 4.4 (CGS)	
38	7	iP eS	Z N	15 14 45.3 16 16	2.0	1.9						7.7	Dilatation USCGS: 17.7S, 178.7W. Fiji Islands region h about 546 km. H = 15 12 52.6 Mag. 5.2 (CGS)	
39	7	eP eS	Z N	16 11 17 12 06										
40	8	eP eS	Z N	14 04 52 06 26										
41	8	eL	ZNE	14 12 10								72.0	USCGS: 23.3N, 108.5W. Gulf of California h about 33 km. H = 13 39 58.2 Mag. $4\frac{1}{2}$ - $4\frac{1}{2}$ (BRK), 5.1(CGS)	
42	9	eP eS	Z N	00 24 06 25 22										
43	9	eL	N	13 57.5								66.0	USCGS: 52.6N, 173.2E. Near Islands, Aleutian Islands h about 25 km. H = 13 26 52.2 Mag. 5.6 (CGS)	
44	9	eP eS	Z N	15 59 03 16 02 26								19.4	USCGS: 31.8S, 179.6W. Kermadec Islands h about 200 km. H = 15 54 56.0 Mag. 4.8 (CGS)	
45	9	eP eS	Z ZN	17 00 12 01 16								6.5	USCGS: 19.0S, 175.7W. Tonga Islands h about 195 km. H = 16 58 40.3 Mag. 5.4 (CGS)	


No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						Δ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
46	9	eS eSSS eL	N N ZNE	19 23 34	23 06 12							60.0	USCGS: 8.6S, 127.3E. Timor h about 33 km. H = 19 04 55.2 Mag. 5.1 (CGS)	
47	9	eP eS	Z NE	22 48	46 05 23							11.0	USCGS: 24.0S, 176.3W. South of Fiji Islands h about 33 km. H = 22 44 15.3 Mag. 4.8 (CGS)	
48	10	eP eS	Z ZNE	04 37	36 41 50							5.2	USCGS: 18.3S, 174.6W. Tonga Islands h about 131 km. H = 04 35 40.3 Mag. 4.6 (CGS)	
49	10	eP	Z	15	23	13	2.0	1.0				64.0	USCGS: 1.9N, 126.6E. Molucca Passage h about 106 km. H = 15 16 50.5 Mag. 5.0 (CGS)	
50	10	eP eS	Z Z	23	14	20 39								Samoa Islands region
51	11	eS eL	ZNE NE	02 03	57 08 40	40						65.0	USCGS: 51.8N, 174.1E. Near Islands, Aleutian Islands h about 35 km. H = 02 37 34.7 Mag. 5-5 $\frac{1}{4}$ (BRK) 5.5(CGS)	
52	11	eP eS eT	Z ZN ZN	03	21 22 25	31 15 05						4.0	USCGS: 17.1S, 174.3W. Tonga Islands h about 139 km. H = 03 20 52.8 Mag. 4.4 (CGS)	
53	11	eP ePcP eS eS eSS eLq eLr eT	Z ZNE NE Z Z ZNE ZNE ZN	03 04	44 45 53 54 57 01 04 58	47 00 45 00 46 30 18 52						67.0	USCGS: 44.7N, 148.7E. Kurile Islands h about 47 km. H = 03 33 44.9 Mag. 6 $\frac{3}{4}$ (PAS), 6 $\frac{1}{2}$ (BRK) 6.0(CGS)	
		Surface waves lasting 2 hours												
54	11	iP eS	Z N	04	33 34	57.6 15								Compression
55	11	eL eL	NE ZN	07	56.8 58.8							67.0	USCGS: 44.1N, 149.4E. Kurile Islands h about 61 km. H = 07 27 45.5 Mag. 5.2 (CGS)	
56	11	eL eL	NE ZN	09	09.2 12.3							67.0	USCGS: 44.3N, 149.0E. Kurile Islands h about 54 km. H = 08 41 01.1 Mag. 5.1 (CGS)	

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						△ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
57	11	eL	N	10	47.7							67.0	USCGS: 44.4N, 149.3E. Kurile Islands h about 29 km. H = 10 16 37.3 Mag. 5.0 (CGS)	
58	11	eL	ZNE	12	31.2							67.0	USCGS: 44.2N, 149.1E. Kurile Islands h about 33 km. H = 12 00 00.8 Mag. 5.2 (CGS)	
59	11	eP eS	Z ZN	15	36 37	39 07								
60	12	eP	Z	02	49	22	2.0	1.5				21.0	USCGS: 10.7S, 166.2E. Santa Cruz Islands h about 125 km. H = 02 44 39.1 Mag. 5.3 (CGS)	
61	12	eS eSS eL eL	N N N ZN	06	02.1 05.1 10.5 12.5							67.0	USCGS: 44.0N, 149.1E. Kurile Islands h about 64 km. H = 05 41 00.3 Mag. 5.6 (CGS)	
62	12	eP eS eT	Z ZN ZN	06 07	53 54 00	11 24 05						7.4	USCGS: 20.9S, 173.8W. Tonga Islands h about 33 km. H = 06 51 33.2 Mag. 5.1 (CGS)	
63	12	eL eL	ZE N	19	34.5 35.5							96.0	USCGS: 20.3S, 68.9W. Chile-Bolivia Border region h about 103 km. H = 18 50 11.3 Mag. 6 $\frac{1}{2}$ (PAS), 5.8(CGS)	
64	13	iP eS	Z ZN	00	45 46	48.3 04	1.4	0.6					Compression	
65	13	eP eS	Z ZN	01	42 43	54 26								
66	13	eP eS	Z ZN	02	07 08	17 17	1.7	1.4						
67	13	eS eL	ZNE ZNE	07	26 37.3	28						69.0	USCGS: 41.9N, 143.4E. Hokkaido, Japan region h about 32 km. H = 07 06 13.6 Mag. 6-6 $\frac{1}{4}$ (BRK), 6(PAL), 5.7(CGS)	
68	13	iP iS	Z N	16	32 33	57.4 19							Samoa Islands region	

No	Date	Phase	Time (G.M.T.)			Tz	Az	Tn	An	Te	Ae	△ (Deg.)	Remarks
82	15	e(P) N	20	15	51	2.0	1.1						
83	15	eP ZNE ePP N eS ZNE eL ZNE Coda about 1½ hours	23	14	02 28 17 00 52							15.5	USCGS: 20.9S, 173.7E. New Hebrides Islands region h about 22 km. H = 23 10 25.2 Mag. 6(BRK), 6½(PAS), 6½(PAL), 5.7(CGS)
84	16	eL ZNE	03	09.0								58.0	USCGS: 34.6S, 112.0W. Easter Island Cordillera h about 33 km. H = 02 43 08.1 Mag. 5.0 (CGS)
85	16	eS ZNE eSSS E eL ZNE Surface waves about 20 minutes	04	13	05 18 50 20.8							58.0	USCGS: 34.3S, 112.2W. Easter Island Cordillera h about 33 km. H = 03 55 17.6 Mag. 5.7 (CGS)
86	16	eP Z eS ZN eT ZN	06	11	08 13 47 25 03							15.7	USCGS: 28.8S, 176.7W. Kermadec Islands h about 10 km. H = 06 07 31.0 Mag. 4.5 (CGS)
87	16	eP Z eS ZN	17	50	37 58								
88	16	eP Z eS ZN	21	57	39 58 28								
89	17	eP Z eS ZN	03	03	05 24								Samoa Islands region
90	17	eP Z eS NE eL ZNE	04	22	11 25 02 25.9							15.4	USCGS: 20.9S, 174.0E. New Hebrides Islands region h about 33 km. H = 04 18 34.3 Mag. 4.3 (CGS)
91	17	eP ZN eS ZN	04	45	36 47 43							12.4	USCGS: 23.6S, 179.7W. South of Fiji Islands h about 474 km. H = 04 42 53.7 Mag. 4.7 (CGS)
92	17	eP Z	08	23	45								
93	17	eP Z eS ZN eL ZNE eT ZN	10	56	06 59 40 11 00.0 16 50							21.3	USCGS: 33.9S, 179.5W. South of Kermadec Islands h about 33 km. H = 10 51 36.5 Mag. 5.3 (CGS)
94	18	eP Z eS ZN	02	17	01 18								Samoa Islands region
95	18	iP Z eS ZN	06	32	58 33 15								Compression Samoa Islands region

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						△ (Deg.)	Remarks
96	18	eP eS	Z ZN	12 23 07 29									Samoa Islands region	
97	18	eP eS	Z ZN	23 13 50 14 54								6.3	USCGS: 18.9S, 175.5W. Tonga Islands h about 106 km. H = 23 12 20.2 Mag. 4.5 (CGS)	
98	19	eP eS	Z N	06 44 16 45 07										
99	19	eS eL	ZN ZN	06 57 48 07 08.0								66.0	USCGS: 52.3N, 172.0E. Near Islands, Aleutian Islands h about 54 km. H = 06 38 12.6 Mag. 5 $\frac{1}{4}$ -5 $\frac{1}{2}$ (PAL), 5.5(CGS)	
100	19	eP eS	Z ZN	13 20 07 21 42										
101	19	eP eS	Z ZN	15 33 25 35 17								10.4	USCGS: 21.4S, 179.3W. Fiji Islands region h about 624 km. H = 15 31 05.1 Mag. 5.1 (CGS)	
102	19	eP eS	Z ZN	22 08 22 10 02										
103	20	eP	Z	00 51 10								3.4	USCGS: 14.9S, 175.1W. Samoa Islands region h about 297 km. H = 00 50 10.2 Mag. 4.9 (CGS)	
104	20	eL	ZN	02 27.4								67.0	USCGS: 44.6N, 149.2E. Kauai Islands h about 40 km. H = 01 57 24.8 Mag. 5.4 (CGS)	
105	20	eP eS	Z ZN	06 42 52 44 36								11.0	USCGS: 24.0S, 176.3W. South of Fiji Islands h about 67 km. H = 06 40 22.5 Mag. 4.4 (CGS)	
106	20	eP eS eT	Z ZN ZN	18 34 57 35 26 37 00										
107	21	eP eS eT	Z N ZN	03 19 02 21 57 20									Samoa Islands region	
108	21	eP eS eT	Z N ZN	09 47 40 58 14 49									Samoa Islands region	
109	22	eP eS	Z ZN	01 31 22 40									Samoa Islands region	

12.

No	Date	Phase		Time (G.M.T.)									 (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
136	28	eP	Z	17	59	56							9.8	USCGS: 21.0S, 178.9W. Fiji Islands region h about 562 km. H = 17 57 39.7 Mag. 5.3 (CGS)
		eS	ZN	18	01	43								
137	29	eP	Z	04	28	23								Samoa Islands region
		eS	ZN			47								
138	29	iP	Z	06	46	07.1								Samoa Islands region
		eS	ZN			27								
139	29	iP	Z	16	37	23							5.0	USCGS: 17.7S, 174.8W. Tonga Islands h about 231 km. H = 16 36 10.0 Mag. 4.0 (CGS)
		eS	ZN		38	17								
140	30	eP	Z	00	09	05								
		eS	ZN			49								
141	30	eP	Z	03	03	35	2.0	0.7					63.0	USCGS: 1.6S, 126.7E. Molucca Sea h about 33 km. H = 02 53 14.0 Mag. 5.2 (CGS)
		eS	ZNE		12	00								
		eSS	Z		15	40								
		eL	NE		19,5									
		eL	ZE		23.4									
142	30	eS	ZNE	08	53	08							65.0	USCGS: 51.7N, 176.5E. Rat Islands, Aleutian Islands h about 60 km. H = 08 33 31.8 Mag. $5\frac{1}{2}$ - $5\frac{3}{4}$ (PAS), 6.0(CGS)
		eL	ZN	09	03.4									

NOTE:

- (i) Trace amplitude(A) are expressed in millimetres and periods (T) in seconds
- (ii)*Readings to be incorporated in the New Zealand Seismological Report for 1965

P.D. Muller
OBSERVER-IN-CHARGE

NEW ZEALAND

Department of Scientific and Industrial Research

Geophysics Division

APIA OBSERVATORY

FINAL SEISMOLOGICAL BULLETIN

STANDARD SEISMIC STATION (AFI)

AFIAMALU, WESTERN SAMOA.

Latitude: $13^{\circ} 54' 33.6''S$ Longitude: $171^{\circ} 46' 38.1''W$

Height above mean sea level: 705.6 metres, 2315 ft.

Geocentric direction cosines: a. - 0.961 070

b. - 0.138 883

c. - 0.238 862

Lithological Foundation: Basaltic Lava Flows

Instruments: World-wide standard seismograph system

Benioff short period seismometers

To = 1.0 sec. Tg = 0.75 sec.

Sprengnether long period seismometers

To = 15 sec. Tg = 100 sec.

Norminal Magnifications: S.P. 12500

L.P. 750

JULY 1965*

No	Date	Phase	Time (G.M.T.)							Δ (Deg.)	Remarks
				Tz	Az	Tn	An	Te	Ae		
1	1	e(P) ZN	03 29 52								
2	1	eP Z	09 39 55								
		eS ZN	40 16								
3	1	eP Z	11 40 20								
		eS NE	41 19								
4	1	eP Z	16 49 15								
		eS N	46								
5	1	eP Z	23 21 34							48.0	USCGS: 63.0S, 163.7W. South Pacific Cordillera h about 33 km. H = 23 12 45.4 Mag. $6\frac{3}{4}$ (BRK), 5.5(CGS)
		eS E	28 40								
		eSS ZNE	32 40								
		eL ZE	35.2								
		eT ZN	00 13 41								
6	2	eP Z	02 22 22								Samoa Islands region
		eS ZN	40								
7	2	iP Z	13 29 08								Samoa Islands region
		eS ZNE	24								
8	2	iP Z	21 09 25.6	2.6	3.0					65.0	Dilatation USCGS: 53.1N, 167.7W. Fox Islands, Aleutian Islands Slight damage on Umnak Island h about 59 km. H = 20 58 40.0 Mag. $6\frac{3}{4}$ -7(BRK), $6\frac{3}{4}$ (PAL), 6.6(CGS)
		ePP ZN	11 52								
		eS ZNE	18 12								
		eSS ZE	22 28								
		eSSS E	25 16								
		eL ZN	26 05								
		eL ZN	28 18								
		eT ZN	22 22 04								
		Surface waves about $2\frac{1}{2}$ hours									

No	Date	Phase	Time (G.M.T.)	Tz Az Tn An Te Ae						△ (Deg.)	Remarks
				Tz	Az	Tn	An	Te	Ae		
9	2	e(P) Z	21 38 56	2.3	1.4						
10	3	iP Z eS ZN	02 30 37.6 55								Samoa Islands region
11	3	iP Z iS ZN	10 55 21 41								Compression Samoa Islands region
12	3	eLq NE eLr ZE	12 05.3 09.2						93.0		USCGS: 22.6N, 101.4E. Burma-China Border region h about 33 km. H = 11 26 11.6 Mag. 5.2 (CGS)
13	3	eLr ZNE	12 47 44						55.0		USCGS: 4.7S, 133.8E. West New Guinea region h about 14 km. H = 12 22 28.6 Mag. 5.5 (CGS)
14	3	eP Z eS ZNE	16 42 52 43 50	1.8	0.8						
15	3	eP Z eS ZNE eT ZN	20 49 31 50 20 53 35						4.6		USCGS: 15.3S, 176.3W. Fiji Islands region h about 33 km. H = 20 48 24.2 Mag. 4.9 (CGS)
16	4	eP Z	02 39 46	1.5	1.5						
17	4	iP Z eS ZN	08 52 40 53 06								Dilatation Samoa Islands region
18	4	eP Z	09 02 30	1.9	1.0				4.7		USCGS: 15.7S, 176.4W. Fiji Islands region h about 369 km. H = 09 01 10.3 Mag. 4.5 (CGS)
19	4	eP ZN iS ZN	17 08 44 09 32						4.6		USCGS: 17.4S, 174.6W. Tonga Islands h about 216 km. H = 17 07 37.9 Mag. 4.4 (CGS)
20	5	eP Z eS ZN eT ZN	01 06 18 48 09 16								
21	5	eSSP ZN e ZNE eL ZN eL Z	09 11 15 33 30 35.3 39.5						129.0		USCGS: 52.9N, 34.2W. North Atlantic Ocean h about 33 km. H = 08 31 58.9 Mag. $5\frac{1}{2}$ - $5\frac{3}{4}$ (PAL), 5.7(CGS)
22	5	eP Z eS ZN eT ZN	17 05 36 06 07 08 35								
23	5	iP Z eS ZN	21 22 21.7 42								Compression Samoa Islands region

No	Date	Phase	Time (G.M.T.)			Tz Az Tn An Te Ae						△ (Deg.)	Remarks
						Tz	Az	Tn	An	Te	Ae		
24	5	eP Z eS ZN	22	00	18								
25	6	eP Z eS ZN eT ZN	02	09	29							4.8	USCGS: 17.8S, 174.6W. Tonga Islands h about 26 km. H = 02 08 17.3 Mag. 4.7 (CGS)
26	6	eP ZN eS ZNE eL ZNE	03	08	15	2.0	1.0	2.0	1.0			17.0	USCGS: 22.6S, 172.9E. Loyalty Islands region h about 41 km. H = 03 04 19.8 Mag. 6(BRK), 5.9(CGS)
27	6	ePKP Z e N e N eL ZNE eL ZNE	03	38	40	2.0	3.5					153.0	USCGS: 38.7N, 22.6E. Greece One killed, six injured, Considerable damage in Northern Peloponnesus, Seismic sea wave reported at Eratini h about 28 km. H = 03 18 44.6 Mag. 6(BRK), 6-6¼(PAL), 5.9(CGS)
28	6	eS ZNE eSS ZNE eSSS ZNE eL Z	04	53	54							64.0	USCGS: 7.4N, 127.0E. Philippine Islands region h about 50 km. H = 04 34 22.1
29	6	iP ZN epP Z ePcP ZE eS ZNE ePcS Z esS ZNE eScS N e ZE e N	18	42	49	2.1	10.6	2.0	5.0			33.9	USCGS: 4.5S, 155.1E. Solomon Islands h about 510 km. H = 18 36 47.3 Mag. 6-6¼(PAS), 6¼(BRK) 6.5(CGS)
30	6	eP Z eS ZN eT ZN	21	22	10								
31	7	iP Z S ZNE Coda about 40 minutes	15	37	43	1.2	3.8					1.6	Dilatation USCGS: 15.0S, 173.0W. Samoa Islands region h about 33 km. H = 15 37 21.5 Mag. 4.9 (CGS)
32	7	eP Z eS NE	16	02	43								Samoa Islands region
33	7	eP Z eS NE	16	18	54								Samoa Islands region

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						Δ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
48	9	eP eS	Z ZNE	15 42	40 13	35							9.4	USCGS: 20.9S, 178.2W. Fiji Islands region h about 567 km. H = 15 38 24.2 Mag. 3.5 (CGS)
49	9	eP eS eT	Z NE ZNE	17 07 11	06 28 12	33	2.0	1.0					4.0	USCGS: 15.4S, 175.6W. Tonga Islands h about 33 km. H = 17 05 33.7 Mag. 4.2 (CGS)
50	10	eP eS eT	Z NE ZNE	00 15 18	14 08 37	04								
51	10	eLr	ZNE	00	41	26							17.3	USCGS: 30.0S, 178.4W. Kermadec Islands region h about 39 km. H = 00 32 26.6
52	10	eS	ZNE	01	24.6								17.6	USCGS: 30.2S, 178.9W. Kermadec Islands region h about 33 km. H = 01 16 53.7 Mag. 4.8 (CGS)
53	10	eL	ZNE	02	16.0								17.6	USCGS: 30.2S, 178.8W. Kermadec Islands region h about 33 km. H = 02 07 45.8 Mag. 5.0 (CGS)
54	10	eS eL	E ZNE	03	33.5 34.2								17.6	USCGS: 30.2S, 178.6W. Kermadec Islands region h about 33 km. H = 03 25 43.5 Mag. 4.8 (CGS)
55	10	eL	ZN	04	59.3								73.0	USCGS: 55.3N, 162.6E. Near east coast of Kamchatka h about 33 km H = 04 26 41.9 Mag. 5.0 (CGS)
56	10	eS	ZNE	05	18.5								17.4	USCGS: 30.0S, 178.5W. Kermadec Islands region h about 15 km. H = 05 10 41.4 Mag. 4.7 (CGS)
57	10	eL	ZNE	08	03.5								17.6	USCGS: 30.2S, 178.7W. Kermadec Islands region h about 14 km. H = 07 55 13.9 Mag. 4.6 (CGS)
58	10	eL	ZNE	08	59.8								21.9	USCGS: 11.5S, 165.9E. Santa Cruz Islands h about 102 km. H = 08 50 07.1 Mag. 4.2 (CGS)

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						△ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
59	10	iP eS	Z NE	09 35 37	26 36							7.6	Dilatation USCGS: 17.8S, 178.6W. Fiji Islands region h about 602 km. H = 09 33 30.6 Mag. 3.8 (CGS)	
60	10	eP eS	Z NE	09 46 48	13 22							12.8	USCGS: 24.2S, 179.8W. South of Fiji Islands h about 499 km. H = 09 43 29.4 Mag. 4.9 (CGS)	
61	10	eL	ZNE	11	27.3									
62	10	eP eS eT	Z NE ZNE	11 57 59	09 40 53									
63	10	eL	ZNE	12	21.2									
64	10	eL	ZNE	14	16.4							17.7	USCGS: 30.4S, 178.6W. Kermadec Islands region h about 33 km. H = 14 07 48.9 Mag. 4.3 (CGS)	
65	10	eL	ZNE	16	57.2							17.6	USCGS: 30.3S, 178.8W. Kermadec Islands region h about 69 km. H = 16 48 43.7 Mag. 4.7 (CGS)	
66	10	eL	ZNE	18	40.5									
67	10	eL	ZNE	21	20.0							17.2	USCGS: 30.2S, 178.1W. Kermadec Islands region h about 18 km. H = 21 11 24.2 Mag. 4.0 (CGS)	
68	11	iP eS	Z NE	02 20 21	59 45									
69	11	eP eS	Z NE	02 43 44	10 49									
70	11	eP eS	Z NE	04 21 23	27 04									
71	11	iP eS	ZNE ZNE	05 22	10.5 30							1.7	Dilatation USCGS: 15.3S, 172.9W. Samoa Islands region h about 33 km. H = 05 21 44.3 Mag. 4.9 (CGS)	
72	11	iP e e eS	Z ZNE N ZNE	20 14 15	07 17 29 09							6.3	Dilatation USCGS: 18.9S, 175.5W. Tonga Islands h about 229 km. H = 20 12 40.1 Mag. 4.7 (CGS)	

No	Date	Phase	Time (G.M.T.)							△ (Deg.)	Remarks	
				Tz	Az	Tn	An	Te	Ae			
88	14	eLq eLr	E Z	17	41.7 44.1						82.0	USCGS: 1.4N, 90.7W. Galapagos Islands region h about 33 km. H = 17 06 48.1 Mag. 4.7 (CGS)
89	15	iP iS	Z ZNE	00	30 31	58.3 18						Compression Samoa Islands region
90	15	eL	ZNE	06	59.7							
91	15	eP iS	Z NE	19	20 31 51							Samoa Islands region
92	15	eP	Z	21	08	50	2.0	1.3			17.2	USCGS: 29.8S, 178.7E. Kermadec Islands h about 308 km. H = 21 04 59.0
93	16	eP eS	Z ZNE	04	00 01	46 05						Samoa Islands region
94	16	iP eS	Z ZNE	12	19 20	46.3 04					1.5	Compression USCGS: 14.6S, 173.1W. Samoa Islands region h about 50 km. H = 12 19 21.4 Mag. 4.8 (CGS)
95	16	eLq eLr	ZNE Z	13	22.1 25.0						82.0	USCGS: 1.2N, 90.5W. Galapagos Islands region h about 33 km. H = 12 47 13.2 Mag. 5.1 (CGS)
96	16	eP eS eS eL	Z ZE N ZE	22	38 42 43	06 08 38 40					21.6	USCGS: 11.8S, 166.1E. Santa Cruz Islands h about 30 km. H = 22 33 16.3 Mag. 4.6 (CGS)
97	17	eP eS eT	Z ZNE ZNE	02	51 52 55	54 14 12						Samoa Islands region
98	17	iP eS eSS eSSS eL Coda	Z NE NE Z Z about	07	26 31 32 33 34	25 06 30 15 14	2.0	1.5			28.0	Dilatation USCGS: 9.7S, 159.8E. Solomon Islands Felt at Honiara h about 23 km. H = 07 20 30.5 Mag. 5½(BRK), 6.4(CGS)
99	17	eP	Z	12	54	35	2.1	2.1			34.6	USCGS: 7.2S, 153.6E. New Britain region h about 28 km. H = 12 47 49.4 Mag. 5.7 (CGS)
100	17	eP eS eL eT Coda	Z ZNE ZNE ZNE about	13	02 04 05 15	25 53 18 06					14.5	USCGS: 27.2S, 177.6W. Kermadec Islands h about 27 km. H = 12 59 10.7 Mag. 5.4 (CGS)

No	Date	Phase		Time (G.M.T.)									△ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
101	17	eP eS	Z ZNE	16 13	12 48	56 48								
102	18	eL	NE	05	58	30						50.0	USCGS: 7.8N, 142.2E. Caroline Islands region h about 33 km. H = 05 32 47.8 Mag. 4.7 (CGS)	
103	18	iP eS	Z NE	07	30 31	46.3 22	1.0	2.1					Compression	
104	18	eP eS	Z NE	14	46 47	21 36								
105	18	eL	ZN	22	47.2							68.0	USCGS: 45.4N, 151.3E. Kurile Islands h about 16 km. H = 22 14 59.5 Mag. 5.1 (CGS)	
106	19	eP eS	Z ZNE	15	42 43	14 01								
107	19	eP eS eL	Z ZNE ZN	16	51 54 56.5	10 56						21.8	USCGS: 12.0S, 165.9E. Santa Cruz Islands h about 55 km. H = 16 46 05.3 Mag. 4.6 (CGS)	
108	19	eP eS	Z ZNE	23	56 59	50 11	1.9	5.7				14.2	USCGS: 25.5S, 179.8E. South of Fiji Islands h about 482 km. H = 23 53 55.1 Mag. 6.0 (CGS)	
109	20	eP e eL	Z NE Z	13	29 46.2 50.1	24						67.0	USCGS: 7.5N, 124.3E. Mindanao, Philippine Islands Felt at Cotabats, Malaybalay and General Santos h about 45 km. H = 13 18 27.4 Mag. 5.8 (CGS)	
110	20	eP eS eT	Z ZNE ZNE	13 14	55 58 08	45 04 12	2.0	2.1				13.2	USCGS: 26.3S, 176.4W. South of Fiji Islands h about 33 km. H = 13 52 46.1 Mag. 5.0 (CGS)	
111	20	eP eS	Z NE	14	42 44	52 25								
112	21	eP eS eT	Z NE ZNE	00	33 35 47	31 45 44						14.0	USCGS: 27.3S, 176.1W. Kermadec Islands h about 33 km. H = 00 30 14.4 Mag. 4.8 (CGS)	

No	Date	Phase	Time (G.M.T.)			Tz Az Tn An Te Ae						△ (Deg.)	Remarks
113	21	eP ZNE eS ZN Coda about	02 53 24 54 45 1 hour	2.0	5.6	2.0	3.0	1.8	2.5		8.0	USCGS: 20.8S, 175.8W. Tonga Islands h about 57 km. H = 02 51 39.0 Mag. 5.7 (CGS)	
114	21	eP Z eS NE	16 16 11 17 03										
115	21	eL ZNE	18 24.2								67.0	USCGS: 53.3N, 170.4E. Near Islands, Aleutian Islands h about 26 km. H = 17 52 30.5 Mag. 5.7 (CGS)	
116	21	eP Z eS ZNE	18 53 20 47										
117	21	eP Z eS ZNE	23 51 07 36										
118	22	eP Z eS ZNE	16 29 08 44								3.4	USCGS: 16.9S, 173.2W. Tonga Islands h about 63 km. H = 16 28 19.4 Mag. 4.9 (CGS)	
119	22	eP Z eS ZNE eT ZNE	19 47 31 46 49 31								2.0	USCGS: 15.3S, 173.4W. Tonga Islands h about 33 km. H = 19 46 58.1 Mag. 4.2 (CGS)	
120	22	eP Z eS ZNE	21 31 58 24										
121	22	iP Z eS ZNE	22 33 19.1 35									Samoa Islands region	
122	23	iP Z eS ZNE	03 40 39 58									Compression Samoa Islands region	
123	24	eP Z eS ZNE	20 35 40 20										
124	24	eP Z eS NE	21 22 57 16									Samoa Islands region	
125	25	eP Z eS NE	04 16 57 16									Samoa Islands region	
126	25	eL ZNE	04 24.8								90.0	USCGS: 2.0N, 99.3E. Northern Sumatra h about 98 km. H = 03 40 40.4 Mag. 5.3 (CGS)	
127	25	eP Z eS NE	08 31 47 33 49	2.0	1.5						12.4	USCGS: 23.4S, 179.9W. South of Fiji Islands h about 547 km. H = 08 29 12.2 Mag. 5.1 (CGS)	

No	Date	Phase		Time (G.M.T.)		Tz Az Tn An Te Ae						△ (Deg.)	Remarks
						Tz	Az	Tn	An	Te	Ae		
128	25	eL	NE	13	19.4								
129	25	eP eS	Z NE	13	48	07							Samoa Islands region
130	25	eS	NE	13	53	20						67.0	USCGS: 41.3N, 146.6E. Off coast of Hokkaido, Japan h about 33 km. H = 13 33 05.2 Mag. 5.9 (CGS)
		eSSS	NE	14	00.8								
		eL	ZNE		03.3								
131	25	eP	Z	14	35	08						12.1	USCGS: 23.3S, 179.7W. South of Fiji Islands h about 560 km. H = 14 32 31.5 Mag. 4.0 (CGS)
		eS	NE		37	12							
132	25	eL	NE	15	26.7								
133	25	eS	ZNE	22	06	18						65.0	USCGS: 51.4N, 176.0E. Rat Islands, Aleutian Islands. h about 37 km. H = 21 46 45.3 Mag. 5 $\frac{3}{4}$ (PAS), 5.3(CGS)
		eL	ZNE		16.4								
134	26	eP	Z	03	35	14						12.0	USCGS: 23.2S, 179.7W. South of Fiji Islands h about 526 km. H = 03 32 37.4 Mag. 3.7 (CGS)
		eS	NE		37	15							
135	26	eL	NE	04	35.3								
136	26	eL	NE	07	32.8								
137	26	eP	ZNE	10	42	16						2.4	USCGS: 16.0S, 172.7W. Samoa Islands region h about 33 km. H = 10 41 44.1 Mag. 4.2 (CGS)
		eS	ZNE			40							
		Coda about 20 minutes											
138	26	iP	Z	15	24	19.5						2.2	Dilatation USCGS: 15.8S, 172.9W. Samoa Islands region h about 25 km. H = 15 23 46.1 Mag. 5 $\frac{1}{4}$ (BRK), 4.9(CGS)
		eS	NE			42							
		Coda about 40 minutes											
139	27	iP	Z	01	46	35							Compression Samoa Islands region
		eS	ZNE			55							
140	27	eP	Z	03	17	08							
		eS	ZN			30							
		eS	E			35							
141	27	eP	Z	08	31	16						21.5	USCGS: 34.2S, 179.1W. South of Kermadec Islands h about 14 km. H = 08 26 26.1 Mag. 4.4 (CGS)
		eL	E		37.1								

No	Date	Phase		Time			Tz	Az	Tn	An	Te	Ae	△ (Deg.)	Remarks
				(G.M.T.)										
142	27	eP eL	Z ZE	16	00 10.3	14	2.0	0.7					34.0	USCGS: 6.8S, 155.1E. Solomon Islands h about 86 km. H = 15 53 44.1 Mag. 5.5 (CGS)
143	27	eP eS	Z ZNE	18	15	07 34								
144	28	eP eS	Z ZNE	05	43 45	43 02	2.0	1.0						
145	28	eP eS	Z NE	08	35 36	06 02							6.0	USCGS: 18.8S, 175.1W. Tonga Islands h about 117 km. H = 08 33 40.6
146	28	eP eS	Z NE	12	03 05	56 23	2.0	2.0					7.4	USCGS: 17.8S, 178.3W. Fiji Islands region h about 601 km. H = 12 02 04.3 Mag. 4.0 (CGS)
147	28	eP eS eT	Z ZNE ZNE	14	19 20 21	41 07 56								
148	28	eP eS	Z NE	19	09 10	47 03								Samoa Islands region
149	28	eP	Z	22	41	38							87.0	USCGS: 2.2S, 101.8E. Southern Sumatra h about 110 km. H = 22 29 04.9 Mag. 5.8 (CGS)
150	29	eP eS	Z ZNE	05	27	18 40							1.7	USCGS: 15.2S, 172.8W. Samoa Islands region h about 33 km. H = 05 26 55.0 Mag. 4.8 (CGS)
151	29	eP ePP eS eSS eSSS eL	Z ZN ZNE ZNE ZNE ZN	08	40 42 48 52 55 57	03 26 30 17 50 50	2.9	2.1					64.0	USCGS: 51.2N, 171.3W. Fox Islands, Aleutian Islands h about 23 km. H = 08 29 22.1 Mag. $6\frac{1}{2}$ - $6\frac{3}{4}$ (PAS), $6\frac{1}{4}$ - $6\frac{1}{2}$ (BRK), $6\frac{3}{4}$ -7(PAL), 6.4(CGS)
Surface waves about 2 hours														
152	29	eP eS	Z ZNE	12	53	05 50								
153	29	eP eS	Z NE	13	35	23 44	1.0	2.5						
154	29	e eL	Z Z	16	01.2 03.1									
155	30	eP eS eT	Z NE ZNE	03	13 15 19	54 05 25							7.7	USCGS: 20.6S, 175.7W. Tonga Islands h about 120 km. H = 03 12 03.4 Mag. 4.3 (CGS)

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						△ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
156	30	eP	Z	05	47	50							12.9	USCGS: 24.3S, 179.7W. South of Fiji Islands h about 549 km. H = 05 45 03.5 Mag. 5.4 (CGS)
157	31	eP	Z	00	17	32								
		eS	ZNE		18	05								
158	31	eP	Z	06	06	56							7.6	USCGS: 17.9S, 178.5W. Fiji Islands region h about 542 km. H = 06 05 01.2 Mag. 3.9 (CGS)
		eS	NE		08	28								
159	31	eS	NE	07	56	08							66.0	USCGS: 35.9N, 142.2E. Off east coast of Honshu, Japan h about 52 km. H = 07 36 31.5 Mag. 4.8 (CGS)
		eL	NE	08	05.4									
		eL	Z		06.1									
160	31	eP	ZNE	11	48	22	1.4	0.7					6.4	USCGS: 20.1S, 173.0W. Tonga Islands h about 33 km. H = 11 46 59.3 Mag. 4.3 (CGS)
		eS	NE		49	28								
		eL	ZNE		50.4									
161	31	eP	ZNE	14	29	29	1.1	1.6					14.5	USCGS: 26.0S, 179.7E. South of Fiji Islands h about 464 km. H = 14 26 26.6 Mag. 4.4 (CGS)
		eS	ZNE		31	56								
162	31	eP	ZNE	15	02	34								
		eS	ZNE		03	00								
163	31	eP	Z	15	22	27							7.4	USCGS: 20.6S, 174.4W. Tonga Islands h about 33 km. H = 15 20 40.3 Mag. 4.5 (CGS)
		eS	ZNE		23	27								
		eT	ZNE		29	05								
164	31	iP	Z	15	46	40	1.0	4.8					7.6	Dilatation USCGS: 19.2S, 177.6W. Fiji Islands region h about 551 km. H = 15 44 44.9 Mag. 4.1 (CGS)
		eS	NE		48	10								
165	31	eSS	NE	20	42.2								21.0	USCGS: 12.3S, 166.1E. Santa Cruz Islands h about 33 km. H = 20 33 04.5
		eL	Z		43.4									

NOTE:

- (i) Trace amplitude(A) are expressed in millimetres and periods (T) In seconds
- (ii) *Readings to be incorporated in the New Zealand Seismological Report for 1965

P.D. Muller
OBSERVER-IN-CHARGE

NEW ZEALAND

Department of Scientific and Industrial Research
 Geophysics Division
 APIA OBSERVATORY

FINAL SEISMOLOGICAL BULLETIN
 STANDARD SEISMIC STATION (AFI)

AFIAMALU, WESTERN SAMOA.

Latitude: 13° 54' 33.6"S Longitude: 171° 46' 38.1"W

Height above mean sea level: 705.6 metres, 2315 ft.

Geocentric direction cosines: a. - 0.961 070

b. - 0.138 883

c. - 0.238 862

Lithological Foundation: Basaltic Lava Flows

Instruments: World-wide standard seismograph system

Benioff short period seismometers

To = 1.0 sec. Tg = 0.75 sec.

Sprengnether long period seismometers

To = 15 sec. Tg = 100 sec.

Norminal Magnifications: S.P. 12500

L.P. 750

AUGUST 1965 *

No	Date	Phase		Time (G.M.T.)									△ (Deg.)	Remarks	
							Tz	Az	Tn	An	Te	Ae			
1	1	eP	Z	05	39	01								Samoa Islands region	
		eS	NE			20									
		eT	ZNE		40	55									
2	1	eP	Z	07	29	50							7.8	USCGS: 19.9S, 177.0W. Fiji Islands region h about 256 km. H = 07 27 59 Mag. 4.0 (CGS)	
		eS	NE		31	13									
3	1	eP	ZNE	10	25	19	2.0	4.0	1.9	1.2	2.0	1.5			
		eS	ZNE			50									
		eT	NE		28	03									
4	1	eP	Z	15	13	40	1.9	0.6					72.0	USCGS: 46.9N, 143.8E. Sakhalin Island h about 400 km. H = 15 02 56.1 Mag. 5.7 (CGS)	
5	1	eP	Z	19	30	42								11.8	USCGS: 24.6S, 176.8W. South of Fiji Islands h about 33 km. H = 19 27 57.6
		eS	NE		32	36									
		eT	ZNE		41	05									

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						Δ (Deg.)	Remarks	
							Tz	Az	Tn	An	Te	Ae			
7	1	eP eS eL eT	Z NE ZNE ZNE	23 52 53.3 00	48 11 3 07	52 11 01							19.7	USCGS: 32.5S, 178.9W. South of Kermadec Islands h about 44 km. H = 23 44 28.3 Mag. 5.8 (CGS)	
8	2	eP eS eT	Z NE ZNE	06 45	42 13	33 49									Samoa Islands region
9	2	eP ePP eS eSS eLq eLr	Z ZNE ZNE ZNE ZNE ZN	13 30 35 39 40 42	28 36 36 04 45 05	35 36 36 04 45 05	2.0	1.5					47.0	USCGS: 56.2S, 158.2E. Macquarie Island region h about 33 km. H = 13 19 54.7 Mag. 7-7 $\frac{1}{4}$ (PAS), 7 $\frac{3}{4}$ (BRK), 7(PAL), 6.7(CGS)	
10	2	eSS eL	ZE ZE	17 27.5	14 34	34								94.0	USCGS: 7.4N, 78.7W. Panama Felt at Balboa heights, Canal zone h about 2 km. H = 16 43 09.4 Mag. 5 $\frac{1}{4}$ (BRK), 4 $\frac{3}{4}$ -5(PAL), 5.4(CGS)
11	3	eP eS e eL	Z ZE N ZE	02 38 42	14 24 10 34	46 24 10 34	3.0	2.5						90.0	USCGS: 7.7S, 81.3W. Off coast of Northern Peru h about 49 km. H = 02 01 52.2 Mag. 5 $\frac{1}{4}$ -5 $\frac{1}{2}$ (BRK), 5(PAL), 5.8(CGS)
12	3	eP eS	Z ZNE	04	13	03 48									
13	3	eP eS	Z ZNE	05	06 07	54 13									
14	3	eP eS	Z NE	09	38 40	56 42								10.3	USCGS: 21.4S, 179.0W. Fiji Islands region h about 571 km. H = 09 36 36.6 Mag. 4.8 (CGS)
15	3	iP eS	Z ZNE	14	35	23.3 41									Samoa Islands region
16	3	iP eS	Z ZNE	14	42	26 50								2.3	Compression USCGS: 15.9S, 172.8W. Samoa Islands region

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						Δ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
18	4	eP	Z	08	51	34	2.0	2.8					20.6	USCGS: 13.2S, 167.0E. New Hebrides Islands h about 237 km. H = 08 47 12.4 Mag. 5.7 (CGS)
		epP	Z			58								
		eS	NE		55	12								
		esS	ZNE		56	06								
19	5	eP	Z	00	14	57	2.0	1.5					37.0	USCGS: 5.3S, 151.7E. New Britain region Felt on eastern New Britain h about 47 km. H = 00 07 50.5 Mag. $6\frac{1}{2}$ (PAS), $5\frac{3}{4}$ -6(BRK), $6\frac{1}{2}$ - $6\frac{3}{4}$ (PAL), 6.3(CGS)
		ePPP	Z		16	49								
		eS	ZNE		20	36								
		eSSS	ZNE		23	34								
		eL	ZE		25	18								
		Surface waves lasting 1 hr.												
20	5	iP	Z	00	41	46								
		iS	NE		42	05								
		Dilatation Samoa Islands region												
21	5	iP	Z	11	03	43							5.1	Dilatation USCGS: 15.1S, 176.9W. Fiji Islands region h about 378 km. H = 11 02 20.1 Mag. 4.5 (CGS)
		eS	NE		04	49								
22	5	eP	Z	14	36	29								
		eS	NE			48								
		Samoa Islands region												
23	5	eL	ZNE	20	10.5								52.0	USCGS: 65.5S, 179.0E. Balleny Islands region h about 33 km. H = 19 47 44
24	5	iP	Z	22	34	30.1								
		eS	NE			43								
25	6	eP	Z	02	59	52	1.7	1.1					11.0	USCGS: 21.7S, 179.6W. Fiji Islands region h about 568 km. H = 02 57 25.6
		eS	NE	03	01	55								
26	7	eP	Z	08	19	39								
27	7	iP	Z	15	32	27								
		eS	ZNE			42								
		Samoa Islands region												
28	7	eP	Z	23	59	35							7.5	USCGS: 20.1S, 176.0W. Fiji Islands region h about 222 km. H = 23 57 49.7 Mag. 4.7 (CGS)
		eS	ZNE	00	00	54								
29	8	eL	Z	05	03.5									
30	8	eL	Z	05	50.0								66.0	USCGS: 52.6N, 173.4E. Near Islands, Aleutian Islands h about 35 km. H = 05 19 26.2 Mag. 5.4 (CGS)

No	Date	Phase	Time (G.M.T.)			Tz	Az	Tn	An	Te	Ae	Δ (Deg.)	Remarks
44	11	eP eS eS eL	Z ZN E ZE	03 14 18 19 20	49 46 07 12	2.0	1.4					20.7	USCGS: 15.5S, 166.9E. New Hebrides Islands Felt at Norsup h about 37 km. H = 03 10 07.1 Mag. 4.8 (CGS)
45	11	eP eS Coda lasting 2 hrs.	ZNE ZNE	03 45 49	37 33							20.7	USCGS: 15.4S, 166.9E. New Hebrides Islands h about 26 km. H = 03 40 56.2 Mag. 7(PAS), 6.3(CGS)
46	11	eP	Z	03	53								
47	11	eP	ZNE	04	01								
48	11	eP eS eL	Z NE ZE	07 23 27 28	25 17 31	2.0	1.9					20.5	USCGS: 15.6S, 167.2E. New Hebrides Islands Felt at Norsup h about 12 km. H = 07 18 41.8 Mag. 5.0 (CGS)
49	11	eL	ZE	08	57.7							20.5	USCGS: 15.7S, 167.0E. New Hebrides Islands h about 33 km. H = 08 47 45.7 Mag. 4.4 (CGS)
50	11	eL	Z	12	32.5							20.9	USCGS: 33.6S, 179.2W. South of Kermadec Islands h about 33 km. H = 12 22 48 Mag. 4.8 (CGS)
51	11	eP eS	Z ZNE	19 52 56	22 20	2.0	2.0					20.5	USCGS: 15.8S, 167.1E, New Hebrides Islands Felt at Norsup h about 36 km. H = 19 47 44.0 Mag. 5.2 (CGS)
52	11	eP	Z	19	57	2.2	4.3					20.5	USCGS: 15.7S, 167.1E. New Hebrides Islands h about 33 km. H = 19 52 29.8 Mag. 6 $\frac{1}{2}$ (PAS), 5.6(CGS)
53	11	iP	Z	20	18	2.2	9.0						Compression
54	11	eP	Z	20	22								
55	11	eP	Z	20	59	2.3	2.7					20.7	USCGS: 15.8S, 166.9E. New Hebrides Islands h about 25 km. H = 20 55 12.3 Mag. 4.7 (CGS)
56	11	eP	Z	22	36	4.0	5.6					20.5	USCGS: 15.8S, 167.2E. New Hebrides Islands Damage on Espiritu Santo h about 33 km. H = 22 31 48.9 Mag. 7 $\frac{1}{4}$ -7 $\frac{1}{2}$ (PAS), 6.4(CGS)

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						△ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
57	11	eP	Z	23	03	27								
58	12	eP	Z	01	27	19							9.8	USCGS: 22.9S, 175.8W. Tonga Islands region h about 33 km. H = 01 25 00.8 Mag. 5.3 (CGS)
		eS	ZNE		29	05								
		eT	ZNE		35	28								
59	12	eP	Z	02	32	05								
		eS	NE			50								
60	12	eP	Z	04	41	42	2.0	6.5						
		eS	ZNE		43	14								
61	12	eP	ZNE	08	06	18	2.5	11.2					20.1	USCGS: 15.9S, 167.5E. New Hebrides Islands Felt at Port Vila h about 25 km. H = 08 01 43.3 Mag. $6\frac{3}{4}$ (PAS), $6\frac{1}{2}$ (PAL), 6.3(CGS)
		eS	ZNE		10	02								
		iL	ZNE		11	25								
		Coda lasting 2 hrs.												
62	12	eP	Z	11	36	42								Samoa Islands region
		eS	ZNE			57								
63	12	eP	ZNE	13	04	20							36.6	USCGS: 5.3S, 152.2E. New Britain region Felt widely h about 41 km. H = 12 57 09.7 Mag. $6\frac{1}{2}$ - $6\frac{3}{4}$ (PAS), $7\frac{1}{4}$ (PAL), 5.9(CGS)
		eS	ZNE		09	58								
		eL	ZNE		12	56								
		Coda lasting 2 hrs.												
64	12	eP	ZNE	18	09	32	2.0	2.5					20.1	USCGS: 16.0S, 167.4E. New Hebrides Islands Felt at Port Vila h about 45 km. H = 18 04 56.1 Mag. 5.3 (CGS)
		eS	ZNE		12	56								
		eL	ZE		14	20								
		Coda lasting 30 min.												
65	12	eP	ZNE	19	33	20							20.6	USCGS: 16.1S, 167.0E. New Hebrides Islands h about 33 km. H = 19 28 44.0 Mag. 4.9 (CGS)
		eS	ZNE		37	44								
		eL	ZE		39.0									
66	13	eP	ZNE	01	08	23	2.0	2.9	2.0	1.4	2.0	2.4	7.4	USCGS: 17.6S, 178.4W. Fiji Islands region h about 514 km. H = 01 06 32 Mag. 5.7 (CGS)
		eS	NE		09	52								
67	13	eP	Z	04	45	30	2.7	4.1					20.1	USCGS: 15.9S, 167.5E. New Hebrides Islands h about 34 km. H = 04 40 55.3 Mag. 5.7 (CGS)
		eS	ZNE		49	18								
		eL	ZE		50	38								
68	13	eP	Z	11	29	30							20.6	USCGS: 16.0S, 167.0E. New Hebrides Islands h about 33 km. H = 11 24 51.8 Mag. 5.5 (CGS)
		eS	ZNE		33	37								
		eL	ZE		34	50								

No	Date	Phase	Time (G.M.T.)			Tz	Az	Tn	An	Te	Ae	Δ (Deg.)	Remarks
69	13	eP iS	ZNE ZNE	11 41	40 16	47						2.4	USCGS: 16.3S, 171.6W. Samoa Islands region h about 33 km. H = 11 40 10 Mag. 4.6 (CGS)
70	13	eP	ZE	12	44	52						20.7	USCGS: 15.9S, 166.8E. New Hebrides Islands h about 33 km. H = 12 40 08.3 Mag. 7(PAS), 7-7 $\frac{1}{4}$ (BRK), 5.6(CGS)
		Phases confused by large coda lasting 3 hrs.											
71	13	eP	Z	13	18	10	2.0	2.4					
72	13	eP eS eL eL	Z NE Z NE	18	01 04 05 06	01 52 18 26	2.0	6.0				20.1	USCGS: 16.6S, 167.6E. New Hebrides Islands h about 39 km. H = 17 56 27.6 Mag. 5.4 (CGS)
		Coda lasting 2 hrs.											
73	13	eP	Z	18	05	36	2.0	1.7				20.0	USCGS: 16.4S, 167.6E. New Hebrides Islands h about 72 km. H = 18 01 09 Mag. 5.0 (CGS)
74	13	eP eS eL eL	Z ZNE ZNE ZE	22	05 11 14 16	06 05 22 42	2.0	2.0				39.8	USCGS: 6.4S, 148.5E. New Britain region h about 51 km. H = 21 57 38.7 Mag. 5 $\frac{1}{2}$ (BRK), 5.2(CGS)
75	14	eP eS	Z NE	00	36 39	03 04						17.8	USCGS: 30.7S, 177.9W. Kermadec Islands region h about 33 km. H = 00 32 03.1 Mag. 4.7 (CGS)
76	14	eP eS	Z NE	06	37 38	09 36	0.9	0.6				7.6	USCGS: 19.3S, 177.4W. Fiji Islands region h about 570 km. H = 06 35 15.4 Mag. 3.9 (CGS)
77	14	eP eS eL	Z ZNE ZNE	11	12 16 17	27 30 42	2.1	1.5				20.7	USCGS: 15.8S, 166.8E. New Hebrides Islands h about 33 km. H = 11 07 47.1 Mag. 6(PAL), 5.5(CGS)
78	14	eP e eS eL	Z ZNE ZNE ZNE	13	22 23 26 28	55 07 34 18	2.0	2.1				21.6	USCGS: 11.5S, 166.3E. Santa Cruz Islands h about 49 km. H = 13 18 06.0 Mag. 5.6 (CGS)
79	14	eP eS eL	Z ZNE ZNE	14	16 17 18	06 44 34						10.0	USCGS: 23.2S, 175.3W. Tonga Islands region h about 27 km. H = 14 13 50.1 Mag. 4.7 (CGS)

No	Date	Phase	Time (G.M.T.)			Tz Az Tn An Te Ae	△ (Deg.)	Remarks
115	20	eP Z ePcP ZNE eS ZNE eScS ZNE eSS ZNE eSSS ZNE Coda lasting 30 minutes	06 05 12 13 16 19	04 36 06 46 07 04	20	2.911.9	59.0	USCGS: 5.7S, 128.6E. Banda Sea h about 326 km. H = 05 54 50.0 Mag. $6\frac{3}{4}$ (PAS), 6.2(CGS)
116	20	eP Z ePPP Z eSKS E eScS N e(PFS) ZN eSS ZE e Z e ZNE eL ZNE	09 10 06 07 09 13	56 00 40 39 30 12	16		96.0	USCGS: 19.0S, 69.1W. Northern Chile Felt at Arequipa, Peru and Arica, Iquique, Chile h about 129 km. H = 09 42 48.5 Mag. $6\frac{1}{2}$ (PAS), $5\frac{3}{4}$ (BRK) 6.0(CGS)
117	20	iP Z eS ZNE	12	03 04	55 15			Compression Samoa Islands region
118	20	eP Z eS ZNE eT ZNE Coda lasting 30 minutes	21	24 25 33	03 41 09		9.2	USCGS: 22.9S, 176.3W. South of Fiji Islands h about 77 km. H = 21 21 50.9 Mag. $5\frac{3}{4}$ (BRK), $6-6\frac{1}{4}$ (PAL), 6.2(CGS)
119	21	eP ZNE	01	12	36		19.5	USCGS: 32.4S, 178.1W. South of Kermadec Islands h about 33 km. H = 01 08 10 Mag. 4.9 (CGS)
120	21	eP Z eS ZNE	03	44 45	57 20			Samoa Islands region
121	21	eP Z eS NE	13	01 02	00 28		7.1	USCGS: 17.5S, 178.2W. Fiji Islands region h about 543 km. H = 12 59 10 Mag. 4.9 (CGS)
122	21	eP Z eS NE	18	52 53	09 37		7.5	USCGS: 18.0S, 178.5W. Fiji Islands region h about 580 km. H = 18 50 16.1 Mag. 5.9 (CGS)
123	21	iP Z eS ZNE	20	19	00.5 31			Compression
124	21	e(L) ZE	21	26	48			
125	22	eP N eS ZNE eL NE eT ZNE	03 04	52 55 57 08	26 08 00 08		14.7	USCGS: 28.0S, 176.2W. Kermadec Islands h about 33 km. H = 03 48 49 Mag. 5.1 (CGS)

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						△ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
138	25	eP eS	Z ZNE	03 03	02 03	21 18							7.4	USCGS: 19.9S, 176.1W. Fiji Islands region h about 261 km. H = 03 00 30.2 Mag. 4.5 (CGS)
139	25	iP eS	Z ZNE	09 04	03 04	55.5 36	1.1	5.1						Compression
140	25	eL	ZE	14	53	06								
141	26	eP	Z	09	58	38							9.4	USCGS: 18.4S, 179.6E. Fiji Islands h about 527 km. H = 09 56 56
142	26	iP iS	Z NE	12	18	07.6 25								Dilatation Samoa Islands region
143	27	iP eS	Z ZNE	06	34	25.4 58	1.8	7.0					3.0	Compression USCGS: 15.9S, 174.2W. Tonga Islands h about 128 km. H = 06 33 37 Mag. 3.8 (CGS)
144	28	eP eS eT	Z NE ZNE	15	01 02 06	48 30 06								
145	28	eP eS	Z NE	18	34 36	21 52							15.1	USCGS: 27.7S, 177.8W. Kermadec Islands h about 180 km. H = 18 31 08.9 Mag. 4.6 (CGS)
146	28	iP eS	Z NE	18	38 39	57 49	1.0	1.8						Compression
147	28	eP eS	Z ZNE	23 00	59 00	36 06							2.4	USCGS: 15.9S, 173.1W. Tonga Islands h about 43 km. H = 23 58 59 Mag. 4.3 (CGS)
148	29	eL	ZNE	02	24.5									
149	29	eP eS	Z NE	04	18	08 50								
150	30	eP	Z	17	19	49							7.5	USCGS: 18.5S, 177.7W. Fiji Islands region h about 504 km. H = 17 17 59
151	30	iP iS	Z NE	22	35	23.4 43								Compression Samoa Islands region
152	31	eSSS eLq eLr	E N ZN	08	32 34.5 37.2	38							70.0	USCGS: 43.4N, 144.4E. Hokkaido, Japan region h about 33 km. H = 08 04 34 Mag. 4.7 (CGS)

14.

No	Date	Phase	Time (G.M.T.)									△ (Deg.)	Remarks
						Tz	Az	Tn	An	Te	Ae		
153	31	e	E	16	37.5								
		e	E		42.6								
		eL	ZNE		45.3								
154	31	iP	Z	20	44	39							Compression
		e(S)	NE		47	19							
155	31	eP	Z	22	45	15					5.1	USCGS: 18.9S, 172.0W. Tonga Islands region h about 16 km. H = 22 44 11 Mag. 4.8 (CGS)	
		eS	NE		46	04							
156	31	eP	Z	22	49	52						Samoa Islands	
		eS	ZNE			58							

NOTE:

- (i) Trace amplitude(A) are expressed in millimetres and periods (T) in seconds
- (ii) *Readings to be incorporated in the New Zealand Seismological Report for 1965

P.D. Muller
OBSERVER-IN-CHARGE

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Department of Scientific and Industrial Research

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APIA OBSERVATORY

FINAL SEISMOLOGICAL BULLETIN

STANDARD SEISMIC STATION (AFI)

AFIAMALU, WESTERN SAMOA.

 Latitude: $13^{\circ} 54' 33.6''$ S Longitude: $171^{\circ} 46' 38.1''$ W

Height above mean sea level: 705.6 metres, 2315 ft.

Geocentric direction cosines: a. - 0.961 070

b. - 0.138 883

c. - 0.238 862

Lithological Foundation: Basaltic Lava Flows

Instruments: World-wide standard seismograph system

Benioff short period seismometers

To = 1.0 sec. Tg = 0.75 sec.

Sprengnether long period seismometers

To = 15 sec. Tg = 100 sec.

Norminal Magnifications: S.P. 12500

L.P. 750

AUGUST 1965 *

No	Date	Phase	Time (G.M.T.)	Time						Δ (Deg.)	Remarks	
				Tz	Az	Tn	An	Te	Ae			
1	1	eP eS eT	Z NE ZNE	05 39 01 20 40 55							Samoa Islands region	
2	1	eP eS	Z NE	07 29 50 31 13						7.8	USCGS: 19.9S, 177.0W. Fiji Islands region h about 256 km. H = 07 27 59 Mag. 4.0 (CGS)	
3	1	eP eS eT	ZNE ZNE NE	10 25 19 50 28 03	2.0	4.0	1.9	1.2	2.0	1.5		
4	1	eP	Z	15 13 40	1.9	0.6					72.0	USCGS: 46.9N, 143.8E. Sakhalin Island h about 400 km. H = 15 02 56.1 Mag. 5.7 (CGS)
5	1	eP eS eT	Z NE ZNE	19 30 42 32 36 41 05							11.8	USCGS: 24.6S, 176.8W. South of Fiji Islands h about 33 km. H = 19 27 57.6 Mag. 5.6 (CGS)
6	1	eP eS	Z ZNE	20 39 11 43.1	2.0	1.6					21.7	USCGS: 13.3S, 165.8E. New Hebrides Islands h about 28 km. H = 20 34 19.6 Mag. 5.9 (CGS)

No	Date	Phase	Time (G.M.T.)							Δ (Deg.)	Remarks
				Tz	Az	Tn	An	Te	Ae		
7	1	eP Z eS NE eL ZNE eT ZNE	23 48 52 52 11 53.3 00 07 01							19.7	USCGS: 32.5S, 178.9W. South of Kermadec Islands h about 44 km. H = 23 44 28.3 Mag. 5.8 (CGS)
8	2	eP Z eS NE eT ZNE	06 42 33 49 45 13								Samoa Islands region
9	2	eP Z ePP ZNE eS ZNE eSS ZNE eLq ZNE eLr ZN	13 28 35 30 36 35 36 39 04 40 45 42 05	2.0	1.5					47.0	USCGS: 56.2S, 158.2E. Macquarie Island region h about 33 km. H = 13 19 54.7 Mag. 7-7 $\frac{1}{4}$ (PAS), 7 $\frac{3}{4}$ (BRK), 7(PAL), 6.7(CGS)
Surface waves lasting 3 hrs.											
10	2	eSS ZE eL ZE	17 14 34 27.5							94.0	USCGS: 7.4N, 78.7W. Panama Felt at Balboa heights, Canal zone h about 2 km. H = 16 43 09.4 Mag. 5 $\frac{1}{4}$ (BRK), 4 $\frac{3}{4}$ -5(PAL), 5.4(CGS)
11	3	eP Z eS ZE e N eL ZE	02 14 46 26 24 38 10 42 34	3.0	2.5					90.0	USCGS: 7.7S, 81.3W. Off coast of Northern Peru h about 49 km. H = 02 01 52.2 Mag. 5 $\frac{1}{4}$ -5 $\frac{1}{2}$ (BRK), 5(PAL), 5.8(CGS)
12	3	eP Z eS ZNE	04 13 03 48								
13	3	eP Z eS ZNE	05 06 54 07 13								
14	3	eP Z eS NE	09 38 56 40 42							10.3	USCGS: 21.4S, 179.0W. Fiji Islands region h about 571 km. H = 09 36 36.6 Mag. 4.8 (CGS)
15	3	iP Z eS ZNE	14 35 23.3 41								Samoa Islands region
16	3	iP Z eS ZNE	14 42 26 50							2.3	Compression USCGS: 15.9S, 172.8W. Samoa Islands region h about 33 km. H = 14 41 55 Mag. 4.6 (CGS)
17	3	ePP ZE eS ZNE	18 05 38 08.7							20.1	USCGS: 15.5S, 167.5E. New Hebrides Islands h about 126 km. H = 18 00 32.4 Mag. 4.9 (CGS)

NEW ZEALAND

Department of Scientific and Industrial Research

Geophysics Division

APIA OBSERVATORY

FINAL SEISMOLOGICAL BULLETIN

STANDARD SEISMIC STATION (AFI)

AFIAMALU, WESTERN SAMOA.

Latitude: $13^{\circ} 54' 33.6''S$ Longitude: $171^{\circ} 46' 38.1''W$

Height above mean sea level: 705.6 metres, 2315 ft.

Geocentric direction cosines: a. - 0.961 070

b. - 0.138 883

c. - 0.238 862

Lithological Foundation: Basaltic Lava Flows

Instruments: World-wide standard seismograph system

Benioff short period seismometers

To = 1.0 sec. Tg = 0.75 sec.

Sprengnether long period seismometers

To = 15 sec. Tg = 100 sec.

Nominal Magnifications: S.P. 12500

L.P. 750

SEPTEMBER 1965*

No	Date	Phase		Time (G.M.T.)									Δ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
1	1	eP	ZNE	04	52	16	2.1	1.5	2.8	1.5	2.0	1.0	22.2	USCGS: 34.6S, 179.6E. South of Kermadec Islands h about 107 km. H = 04 47 34.9 Mag. $6\frac{1}{4}$ (BRK), 6.2 (CGS)
		eS	NE		56	08								
		eL	ZNE		57.2									
		eT	ZNE	05	08	00								
2	1	eP	Z	06	43	00	12.5	2.1					20.3	Dilatation USCGS: 14.5S, 167.4E. New Hebrides Islands Felt at Santo h about 189 km. H = 06 38 36.2 Mag. $4\frac{3}{4}$ -5(BRK), 5.6(CGS)
		eS	ZNE		46	32								
3	1	eP	Z	07	34	28							4.8	USCGS: 18.5S, 172.9W. Tonga Islands region h about 119 km. H = 07.33 36.8 Mag. 4.6 (CGS)
		e	ZN		35	06								
		eS	E		35	20								
		eT	ZNE		39	04								
4	1	iP	Z	16	32	48	2.0	1.2					6.4	Dilatation USCGS: 17.0S, 177.4W. Fiji Islands region h about 394 km. H = 16 31 14.8 Mag. 4.8 (CGS)
		eS	NE		34	03								
5	1	eP	Z	20	08	50							6.6	USCGS: 20.2S, 173.8W. Tonga Islands h about 106 km. H = 20 07 51.0 Mag. 5.0 (CGS)
		eS	ZE		09	57								
		eS	N		10	05								
		eT	ZNE		15	08								

No	Date	Phase		Time (G.M.T.)		Tz Az Tn An Te Ae						Δ (Deg.)	Remarks
						Tz	Az	Tn	An	Te	Ae		
6	2	eL	ZN	04	56.7							65.0	USCGS: 51.9N, 175.5E. Rat Islands, Aleutian Islands h about 33 km. H = 04 26 37.3 Mag. 4 $\frac{1}{2}$ -5(BRK), 5.6(CGS)
7	2	iP	Z	08	29	30.4							Compression Samoa Islands region
8	2	eP	Z	16	44	37							
		eS	NE		45	07							
9	4	eS	NE	10	39.0							67.0	USCGS: 46.6N, 153.5E. Kurile Islands h about 27 km. H = 10 19 51.3 Mag. 5.5 (CGS)
		eSSS	NE		46.9								
		eL	ZNE		49.2								
10	4	eP	Z	14	44	28	2.0	1.0				75.0	USCGS: 58.2N, 152.6W. Kodiak Island region Felt aboard USC and GSS Surveyor Located at 58° 57'N, 151° 23'W and in a wide area of South central Alaska. h about 19 km. H = 14 32 47.9 Mag. 6 $\frac{3}{4}$ -7(PAS), 7(BRK), 6 $\frac{3}{4}$ -7(PAL), 6.1(CGS)
		ePP	N		47	23							
		ePPP	Z		49	08							
		e	N		51.1								
		eS	ZNE		54	02							
		eSSS	ZNE	15	02	15							
		eL	ZNE		06.4								
		Coda about		2 hours									
11	4	eP	Z	21	27	29						2.9	USCGS: 16.6S, 172.3W. Samoa Islands region h about 27 km. H = 21 26 43.4 Mag. 4.5 (CGS)
		eS	ZNE		28	04							
12	4	eSSS	NE	22	05.6							68.0	USCGS: 36.1S, 98.8W. South Pacific Ocean h about 33 km. H = 21 37 26.6 Mag. 5.1 (CGS)
		eL	NE		08.5								
13	5	eP	Z	01	13	52							
		iS	ZNE		14	14							
14	5	eP	Z	11	33	(16)						7.6	USCGS: 17.6S, 178.7W. Fiji Islands region h about 583 km. H = 11 31 17.5 Mag. 5.4 (CGS)
		eS	NE		34	(51)							
15	5	eP	Z	21	24	(49)						9.0	USCGS: 20.4S, 178.3W. Fiji Islands region h about 562 km. H = 21 22 37.0 Mag. 4.9 (CGS)
		eS	ZNE		26	(26)							
16	5	eP	Z	23	21	(29)						3.1	USCGS: 16.9S, 172.2W. Samoa Islands region h about 33 km. H = 23 20 41.1 Mag. 4.6 (CGS)
		eS	ZNE		22	(04)							
		eT	ZNE		25	(25)							

No	Date	Phase		Time (G.M.T.)			Tz Az Ym An Te Ae					△ (Deg.)	Remarks
							Tz	Az	Ym	An	Te		
39	13	eS	NE	16	35	44						69.0	USCGS: 36.5S, 97.5W. Southeast Central Pacific Ocean h about 33 km. H = 16 15 44.5 Mag. 5.3-6(PAL), 5.4(CGS)
		eSS	N		40	18							
		eSSS	NE		43	42							
		eL	ZE		47	14							
40	14	iP	ZN	07	27	57						3.1	Compression USCGS: 16.6S, 173.3W- Tonga Islands h about 95 km. H = 07 27 16.1 Mag. 4.8 (CGS)
		eS	ZNE		28	28							
41	14	eS	ZE	08	46	20						65.0	USCGS: 8.4N, 126.8E. Mindanao, Philippine Islands h about 33 km. H = 08 27 15.9 Mag. 5.7 (CGS)
		eSS	N		54	22							
		eL	ZNE		57.5								
42	14	eL	ZNE	14	32.6								
43	15	eP	Z	04	56	37							Samoa Islands region
		eS	NE			55							
44	15	eP	Z	05	49	21							
		eS	NE			47							
45	15	eP	Z	13	05	06							
		eS	NE			32							
		eT	ZNE		07	23							
46	15	eP	Z	18	19	26							
		eS	NE			56							
47	15	e(L)	NE	20	59.8								
48	15	eP	Z	22	20	50	1.9	1.7				13.7	USCGS: 25.1S, 179.9E. South of Fiji Islands h about 473 km. H = 22 17 55.8 Mag. 5.4 (CGS)
		eS	NE		23	10							
49	15	e(L)	ZNE	22	46	53							
50	16	eP	ZNE	14	00	33						65.0	USCGS: 7.1N, 126.5E. Mindanao, Philippine Islands h about 179 km. H = 13 50 11.8 Mag. 5.0 (CGS)
		eS	NE		09	00							
		eSoC	NE		10	14							
		eSSS	ZNE		17.2								
		eL	ZNE		19.2								
51	16	eP	Z	16	22	34						9.7	USCGS: 20.9S, 170.7W. Fiji Islands region h about 525 km. H = 16 20 19.8 Mag. 5.3 (CGS)
		eS	NE		24	15							

No	Date	Phase	Time (G.M.T.)			Tz	Az	Tn	An	Te	Ae	△ (Deg.)	Remarks
52	17	iP eS	Z NE	08 22 37.6 24 45	1.9	1.5					12.7	Dilatation USCGS: 23.3S, 179.3E. South of Fiji Islands h about 544 km. H = 08 19 53.8 Mag. 5.2 (CGS)	
53	17	eP eS	Z NE	08 47 04 48 47							9.8	USCGS: 20.9S, 179.0W. Fiji Islands region h about 616 km. H = 08 44 47.9 Mag. 4.9 (CGS)	
54	17	eP e(S)	Z NE	09 28 16 29 43									
55	17	eP ePcP ePP e e e eS e e eSS e eL	Z Z ZE E N NE ZE N ZNE N NE ZE	11 26 54 27 40 30 38 31 40 36 26 37 16 38 51 39 23 44 00 45 52 51.4 58.0	2.2	2.0					94.0	USCGS: 1.4S, 77.6W. Ecuador Felt at Guayaquil and Quito h about 190 km. H = 11 13 56.4 Mag. 6 $\frac{1}{2}$ (PAS), 5 $\frac{1}{2}$ -6(BRK) 6.0(CGS)	
56	17	eP eS	Z NE	13 29 23 31 06	1.0	1.9					9.5	USCGS: 21.3S, 178.0W. Fiji Islands region h about 409 km. H = 13 27 14.0 Mag. 4.9 (CGS)	
57	17	eL	ZNE	13 29.8							66.0	USCGS: 36.7N, 141.2E. Near east coast of Honshu, Japan h about 57 km. H = 12 59 19.3 Mag. 4.5 (CGS)	
58	17	eL	ZNE	13 51.4							66.0	USCGS: 36.5N, 141.4E. Near east coast of Honshu, Japan h about 45 km. H = 13 20 58.3 Mag. 4.8 (CGS)	
59	17	eS eL	NE ZNE	14 42 26 53.0							66.0	USCGS: 36.5N, 141.4E. Near east coast of Honshu, Japan h about 23 km. H = 14 22 36.5 Mag. 5.1 (CGS)	
60	17	eS eL	NE ZNE	15 38 38 48.8							66.0	USCGS: 36.3N, 141.2E. Near east coast of Honshu, Japan h about 66 km. H = 15 18 38.4 Mag. 5.2 (CGS)	

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						△ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
61	17	eP	Z	15	53	18	2.1	1.5					20.5	USCGS: 13.7S, 167.2E. New Hebrides Islands Felt on Espiritu Santo h about 200 km. H = 15 48 54.2 Mag. 4.8 (CGS)
62	17	eP	Z	16	32	09							66.0	USCGS: 36.3N, 141.1E. Near east coast of Honshu, Japan h about 72 km. H = 16 21 21.9 Mag. 5.8 (CGS)
		eS	ZNE		41	00								
		eSSS	ZNE		48	36								
		eL	ZNE		51.5									
		Surface waves lasting 2 hours												
63	17	eP	Z	19	56	20								
		eS	NE			51								
64	17	eP	Z	21	15	10								
		eS	NE			45								
65	17	eP	Z	22	59	13	2.0	0.9					21.4	USCGS: 12.7S, 166.3E. Santa Cruz Islands h about 65 km. H = 22 54 30.0 Mag. 5.1 (CGS)
		eS	ZNE	23	03	15								
		eL	ZE		05.7									
66	18	eL	ZN	21	21.3								76.0	USCGS: 59.5N, 145.1W. Gulf of Alaska h about 22 km. H = 20 46 39.2 Mag. 6(PAL), 5.3(CGS)
67	18	eP	Z	22	13	36							65.0	USCGS: 8.2N, 126.8E. Mindanao, Philippine Islands h about 85 km. H = 22 03 18.8 Mag. 5.6 (CGS)
		ePP	NE		16	24								
		eS	ZNE		22	00								
		eL	NE		30	08								
		eL	ZNE		33.0									
68	19	iP	Z	01	08	53.5							2.0	Dilatation USCGS: 15.4S, 173.1W. Tonga Islands h about 33 km. H = 01 08 26.1 Mag. 4.7 (CGS)
		iS	NE		09	05								
69	19	eP	Z	01	18	43							8.0	USCGS: 21.6S, 173.3W. Tonga Islands h about 39 km. H = 01 16 49 Mag. 4.3 (CGS)
		eS	NE		20	11								
		eL	ZN		21	16								
70	19	eP	Z	01	28	51							8.9	USCGS: 22.1S, 174.9W. Tonga Islands region h about 33 km. H = 01 26 52.5 Mag. 5.4 (CGS)
		eS	NE		30	22								
		eL	ZNE		31	23								
		eT	ZNE		36	48								
		Coda lasting 1 hr.												
71	19	eP	Z	09	48	58							18.8	USCGS: 20.6S, 169.8E. New Hebrides Islands h about 126 km. H = 09 44 46.6 Mag. 5.0 (CGS)

No	Date	Phase	Time (G.M.T.)			Tz Az Tn An Te Ae						Δ (Deg.)	Remarks
72	19	eS eSS eSSS eL	ZNE E N ZN	14 15 16 17.4	11 30 00	26						49.0	USCGS: 54.4S, 135.7W. South Pacific Cordillera h about 33 km. H = 13 55 39.9 Mag. 4.8 (CGS)
73	19	iP iS	ZNE ZNE	17 17	37 27	09							Dilatation Samoa Islands region
74	19	iP iS	Z NE	18 18	58 59	56.9 11	1.0	6.5					Dilatation Samoa Islands region
75	19	iP eS	Z NE	20 20	26 50	35.5	1.0	3.3					Compression Samoa Islands region
76	20	eP eS eT	Z NE ZNE	03 03 03	45 47 55	44 14 18						9.0	USCGS: 22.2S, 175.4W. Tonga Islands region h about 33 km. H = 03 43 36.7 Mag. 4.9 (CGS)
77	20	eP eS eT	Z NE ZNE	08 08 08	20 21 22	42 08 50							
78	20	eP iS eT	Z NE ZNE	20 20 21	58 59 00	36	1.0	0.9					
79	21	iP eS	ZNE ZNE	08 08	02 03	55.5 16	0.9	6.5					Compression Samoa Islands region
80	21	eP eS eT	Z NE ZNE	17 17 17	04 06 13	31 02 06						8.6	USCGS: 22.0S, 174.5W. Tonga Islands h about 33 km. H = 17 02 31.3 Mag. 4.6 (CGS)
81	21	eP eS eT	Z NE ZNE	17 17 17	47 44 49	18 44 33							
82	21	iP eS	ZNE ZNE	18 18	15 47	26.4 47							Compression Samoa Islands region
83	22	iP eS	Z NE	04 04	03 56	37.3							Dilatation Samoa Islands region
84	22	eL	ZE	05	08.5							95.0	USCGS: 20.8N, 99.3E. Burma h about 35 km. H = 04 24 17.8 Mag. 5.5 (CGS)
85	22	iP eS	Z NE	05 05	47 48	47 08							Compression Samoa Islands region
86	22	eP ePP eS eSSS e eL	Z NE E N E ZE	09 09 09 09 09 10	45 47 53 58 59 01.3	00 00 22 28 08	2.1	1.7				57.0	USCGS: 1.3S, 134.0E. West New Guinea region h about 14 km. H = 09 35 25.3 Mag. 5.8 (CGS)

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						Δ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
99	24	iP eS	ZNE NE	06 46 39 59									Compression Samoa Islands region	
100	24	iP iS	ZNE NE	23 55 18.3 23									Dilatation Samoa Islands region	
101	25	eS eL	ZNE ZNE	00 16 28 19.0								50.0	USCGS: 13.1N, 145.3E. Mariana Islands h about 58 km. H = 23 53 42.1 Mag. 5.3 (CGS)	
102	25	eP eS eL eT	Z NE E ZNE	02 03 49 05 49 06.3 14 46								11.4	USCGS: 24.5S, 175.9W. South of Tonga Islands h about 22 km. H = 02 01 17.2 Mag. 6 $\frac{1}{2}$ (BRK), 5.2(CGS)	
103	25	eP eS	Z NE	03 37 45 38 43										
104	25	iP eS	Z ZNE	06 10 38.5 55									Compression	
105	25	eP eS eT	Z NE ZNE	07 52 02 26 54 20										
106	25	eP eS eL	Z NE E	10 33 24 36 12 37.3								15.4	USCGS: 28.0S, 177.9W. Kermadec Islands h about 33 km. H = 10 29 58.6 Mag. 4.4 (CGS)	
107	25	eP eS eT	Z NE ZNE	12 31 38 33 34 46 00								2.0 1.0	11.5	USCGS: 23.9S, 177.6W. South of Fiji Islands h about 24.2 km. H = 12 29 08.6 Mag. 4.8 (CGS)
108	25	eP eS	Z NE	13 23 47 25 41									11.7	USCGS: 25.1S, 174.9W. South of Tonga Islands h about 33 km. H = 13 21 14.5 Mag. 4.6 (CGS)
109	25	eL	ZN	15 08.9									67.0	USCGS: 39.6N, 143.2E. Off east coast of Honshu, Japan h about 43 km. H = 14 53 34.9 Mag. 5.5 (CGS)
110	25	eP eS eL	Z NE ZE	15 57 11 16 06 40 08.8										
111	25	eS eL	ZNE ZNE	17 08.3 14.7									49.0	USCGS: 12.9N, 145.3E. South of Mariana Islands h about 42 km. H = 16 52 09.6 Mag. 5.1 (CGS)

No	Date	Phase		Time (G.M.T.)									△ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
127	30	eP	Z	07	08	53	1.1	1.2					10.2	USCGS: 21.1S, 179.3W. Fiji Islands region h about 625 km. H = 07 06 35.3 Mag. 5.2 (CGS)
		eS	NE		10	43								
128	30	eP	Z	07	10	04	1.5	1.9					10.2	USCGS: 21.1S, 179.2W. Fiji Islands region h about 604 km. H = 07 07 44.3 Mag. 5.4 (CGS)
		eS	NE		11	53								

NOTE:

- (i) Trace amplitude(A) are expressed in millimetres and periods (T) in seconds
- (ii)*Readings to be incorporated in the New Zealand Seismological Report for 1965

P.D. Müller
OBSERVER-IN-CHARGE

No	Date	Phase		Time									△ (Deg.)	Remarks
				(G.M.T.)			Tz	Az	Tn	An	Te	Ae		
19	6	eP eS	Z ZNE	17 51 52	15 10							5.4	USCGS: 17.8S, 175.3W. Tonga Islands h about 243 km. H = 17 45 09.5 Mag. 4.5 (CGS)	
20	7	eP eS eT Coda	Z ZNE ZNE about 1 hour	01 10 11 18	43 50 45							8.2	USCGS: 21.7S, 174.3W. Tonga Islands h about 43 km. H = 01 09 07.2 Mag. 5.1 (CGS)	
21	7	eP eS e eSS eSSS eL eL	Z NE E ZE Z N ZNE	03 48 58 04 00 02 06 08 12	10 10 00 56 42 40 44 30	2.0	1.0					78.0	USCGS: 12.6N, 114.5E. South China Sea h about 17 km. H = 03 35 59.6 Mag. 5.9 (CGS)	
22	7	eP eS	Z ZNE	07 00 03	55 02							12.7	USCGS: 24.5S, 179.1W. South of Fiji Islands h about 378 km. H = 06 58 11.3 Mag. 4.8 (CGS)	
23	7	eP eS	ZNE ZNE	08 45 50	10 10							20.0	USCGS: 17.5S, 167.6E. New Hebrides Islands h about 25 km. H = 08 40 32.6 Mag. 4.8 (CGS)	
24	7	eP eP eS	Z Z ZNE	09 23 24 29	55 00 06	2.5	0.5	3.0	1.5			20.0	USCGS: 17.5S, 167.9E. New Hebrides Islands Felt at Port Vila h about 24 km. H = 09 19 21.5 Mag. 4.8 (CGS)	
25	7	eP e eS eL eT	Z ZN ZNE ZNE ZNE	11 17 18 19.0 25	22 41 48 10							8.0	USCGS: 21.5S, 174.2W. Tonga Islands h about 33 km. H = 11 15 28.9 Mag. 4.6 (CGS)	
26	7	eP eS	Z ZNE	17 08 12	46 34							18.4	USCGS: 31.4S, 177.5W. Kermadec Islands h about 33 km. H = 17 04 34.4 Mag. 4.8 (CGS)	
27	8	eP eS	Z ZNE	02 31	33 48									Samoa Islands region
28	8	eSS eL	NE Z	03 47 48.8	36							34.0	USCGS: 7.1S, 154.9E. Solomon Islands h about 85 km. H = 03 32 52.8 Mag. 5.1 (CGS)	
29	8	eP eS eL eT	Z ZNE ZNE ZNE	12 18 20 21.3 27	42 15 36							9.0	USCGS: 22.4S, 174.5W. Tonga Islands region h about 33 km. H = 12 16 38.9 Mag. 4.8 (CGS)	

No	Date	Phase		Time (G.M.T.)									△ (Deg.)	Remarks
							Tz	Az	Tn	In	Te	Ae		
44	13	eP	Z	14	50	40	2.1	1.0					18.6	USCGS: 22.6S, 171.0E. Loyalty Islands region h about 24 km. H = 14 46 25.0 Mag. 5 $\frac{1}{2}$ -5 $\frac{3}{4}$ (BRK), 5.6(CGS)
		eS	E		54	05								
		eS	ZNE			30								
45	13	eP	Z	15	18	18	2.1	1.2					20.5	USCGS: 16.4S, 167.1E. New Hebrides Islands h about 10 km. H = 15 13 36.9 Mag. 5.0 (CGS)
		eS	N		22	44								
		eL	ZE		23	38								
46	14	eP	Z	05	55	28								Samoa Islands region
		eS	NE			45								
47	14	eP	Z	15	17	35								
		eS	NE		18	03								
48	15	eP	ZE	12	06	46							21.0	USCGS: 12.5S, 165.8E. Santa Cruz Islands h about 33 km. H = 12 01 58.8 Mag. 5.9 (CGS)
49	15	eS	NE	18	17	34								
50	15	eP	Z	23	23	41							6.8	USCGS: 19.4S, 175.8W. Tonga Islands h about 194 km. H = 23 22 04.2 Mag. 4.1 (CGS)
		eS	ZNE		24	47								
		eT	ZNE		29	24								
51	16	iP	Z	01	43	31.4								Compression Felt at Apia
		iS	NE			44								
		Coda lasting 3 minutes												
52	16	iP	ZNE	08	32	54.2	2.0	3.0	2.0	1.0	2.0	2.5	61.0	Compression USCGS: 3.1N, 128.5E. North of Halmahera h about 213 km. H = 08 22 56.1 Mag. 5.7 (CGS)
53	16	eP	Z	10	51	34								
54	16	eP	Z	13	36	06							8.2	USCGS: 19.5S, 178.0W. Fiji Islands region h about 535 km. H = 13 34 06 Mag. 4.0 (CGS)
		eS	NE		37	40								
55	16	eS	N	20	22	48							73.0	USCGS: 56.2N, 164.7E. Komandorsky Islands region h about 33 km. H = 20 01 52.5 Mag. 5.3 (CGS)
		eSSS	E		31.5									
		eL	ZN		34.4									
56	16	iP	ZNE	22	14	46							2.0	Compression USCGS: 15.1S, 173.5W. Tonga Islands Felt at Apia h about 45 km. H = 22 14 15.3 Mag. 5.3 (CGS)
		iS	ZNE		15	04								
		Coda lasting 12 minutes												

No	Date	Phase		Time			Tz	Az	Tn	An	Te	Ae	△ (Deg.)	Remarks
				(G.M.T.)										
79	22	eP eS	Z NE	21	42	15 55								
80	23	eL	ZNE	07	36.0								92.0	USCGS: 29.4S, 71.6W. Near coast of Central Chile h about 33 km. H = 06 53 32.8 Mag. 5.5 (CGS)
81	23	eS eL	ZN Z	08	31.6 39.5								52.0	USCGS: 54.9S, 146.1E. West of Macquarie Is. h about 33 km. H = 08 15 02.3 Mag. 5.4 (CGS)
82	23	eS eSSS eL	ZNE NE ZNE	08	50.3 56.3 58.7								53.0	USCGS: 55.1S, 146.0E. West of Macquarie Is. h about 43 km. H = 08 33 48.6 Mag. 5.3 (CGS)
83	23	eP eS eT	Z NE ZNE	23	18	34 58 42								
84	24	eS eSS	NE N	14	50.9 55.2								65.0	USCGS: 4.1N, 125.9E. Taland Islands h about 175 km. H = 14 32 13.7 Mag. 5.8 (CGS)
85	24	iP eS	Z ZNE	21	11	33.4 00	2.2	9.0					7.5	Dilatation USCGS: 17.7S, 178.5W. Fiji Islands region h about 515 km. H = 21 09 44.3 Mag. 4.7 (CGS)
86	25	eP	ZNE	00	19	24	2.0	2.0	2.0	1.9	2.0	2.0		
87	25	eP eS eL	Z NE ZNE	08	42	48 45 46.2							19.0	USCGS: 22.2S, 170.3E. Loyalty Islands region h about 33 km. H = 08 38 30.6 Mag. 5.0 (CGS)
88	25	eS eL eL	ZNE E ZN	18	10	30 36 19.7							54.0	USCGS: 60.5S, 154.0E. West of Macquarie Is. h about 33 km. H = 17 53 44.7 Mag. 5.1 (CGS)
89	25	iP eS e eSS e eL eL	Z ZNE Z NE Z N ZE	22	45	18.4 15 00	2.0	4.8					69.0	Dilatation USCGS: 44.2N, 145.3E. Hokkaido, Japan region Felt in eastern and southern Hokkaido h about 180 km. H = 22 34 24.3 Mag. 6½(PAS), 6-6½(BRK), 7-7¼(PAL), 6.2(CGS)

No	Date	Phase		Time								Δ (Deg.)	Remarks
				(G.M.T.)			Tz	Az	Tn	An	Te		
90	26	eP eS	Z NE	06	51	21 40							Samoa Islands region
91	26	iP eS eT	Z ZNE ZNE	08	17 19 26	35 04 34	2.2	1.0				8.8	Compression USCGS: 22.0S, 175.1W. Tonga Islands region h about 33 km. H = 08 15 36.5 Mag. 5.1 (CGS)
92	26	eP eS eSS eL	Z NE ZE N	10	26 29 31 32.3	20 50 30						19.6	USCGS: 20.1S, 168.8E. Loyalty Islands h about 37 km. H = 10 21 46.1 Mag. 5.2 (CGS)
93	26	eP eS eT	Z NE ZNE	21	12 13 15	51 20 15							
94	26	eP eS eT	Z NE ZNE	22	29 30 31	40 05 50							
95	27	iP iS	Z NE	00	44	33.8 55	1.5	1.8					Compression Samoa Islands region
96	27	eP eS eL	Z NE NE	09	29 30	01 44 46						5.3	USCGS: 18.9S, 173.2W. Tonga Islands h about 33 km. H = 09 27 48.1 Mag. 4.8 (CGS)
97	27	eP eS e(L)	Z NE ZNE	09	33 34	48 12 48							
98	27	eP eS	Z NE	10	05	15 36							Samoa Islands region
99	27	iP eS	Z NE	10	24	31.8 56	1.1	4.0					Dilatation
100	27	iP eS	Z NE	17	55	53.4 25						7.5	USCGS: 17.8S, 178.7W. Fiji Islands region h about 556 km. H = 17 53 59.8 Mag. 4.3 (CGS)
101	27	eP eS	Z NE	23	48 49	56 19							Samoa Islands region
102	28	eL	ZNE	09	29.3							62.0	USCGS: 1.3S, 127.7E. Halmahera h about 33 km. H = 08 58 25.9 Mag. 5.8 (CGS)
103	28	eP eS	Z NE	14	53 54	35 45						6.4	USCGS: 19.3S, 175.4W. Tonga Islands h about 215 km. H = 14 52 02 Mag. 4.0 (CGS)

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						Δ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
104	29	eP eS	Z NE	02 03 04	03 04	35 05								
105	29	eP eS eL	Z NE ZNE	04 12 13 14.7	12 13	06 29						20.4	USCGS: 33.3S, 178.7W. South of Kermadec Islands h about 33 km. H = 04 08 49 Mag. 4.8 (CGS)	
106	29	eP	Z	21 10 46			2.0	0.7				65.0	USCGS: Rat Islands, Aleutian Islands h about 0 km. H = 21 00 00.1 51° 26' 17"N, 179° 10' 57"E Amchitka Island "Longshot" Elevation-660M. (DASA). Mag. 5 $\frac{1}{2}$ (BRK), 5 $\frac{1}{2}$ -5 $\frac{3}{4}$ (PAL), 6.1(CGS)	
107	30	eP eS e	Z ZNE ZNE	06 58 19	58	19 24 48						3.0	USCGS: 16.5S, 173.3W. Tonga Islands h about 33 km. H = 06 57 39.7 Mag. 5 $\frac{3}{4}$ -6(BRK), 5.3(CGS)	
		Coda about 30 minutes												
108	30	eP eS	Z ZNE	07 28 28	28	57								
109	30	eP eS	Z ZNE	15 52 51	52	51 22								
110	31	eSS	ZNE	06 51.3								22.0	USCGS: 11.6S, 165.8E. Santa Cruz Islands h about 68 km. H = 06 42 07.4 Mag. 4.8 (CGS)	
111	31	eP eS	Z ZNE	15 04 35	04 05	35 46						7.1	USCGS: 19.5S, 176.3W. Fiji Islands region h about 34 km. H = 15 02 51.9 Mag. 5.5 (CGS)	
112	31	eP eS	Z NE	15 51 14	51 52	14 25						6.6	USCGS: 19.6S, 175.1W. Tonga Islands h about 152 km. H = 15 49 40 Mag. 4.1 (CGS)	
113	31	eL	ZNE	18 15.9										

NOTE:

- (i) Trace amplitude(A) are expressed in millimetres and periods (T) in seconds
- (ii) *Readings to be incorporated in the New Zealand Seismological Report for 1965

30 MAY 1967

NEW ZEALAND

Department of Scientific and Industrial Research

Geophysics Division

APIA OBSERVATORY

FINAL SEISMOLOGICAL BULLETIN

STANDARD SEISMIC STATION (AFI)

AFIAMALU, WESTERN SAMOA.

Latitude: 13° 54' 33.6"S Longitude: 171° 46' 38.1"W

Height above mean sea level: 705.6 metres, 2315 ft.

Geocentric direction cosines: a. - 0.961 070

b. - 0.138 883

c. - 0.238 862

Lithological Foundation: Basaltic Lava Flows

Instruments: World-wide standard seismograph system

Benioff short period seismometers

To = 1.0 sec. Tg = 0.75 sec.

Sprengnether long period seismometers

To = 15 sec. Tg = 100 sec.

Nominal Magnifications: S.P. 12500

L.P. 750

NOVEMBER 1965 *

No	Date	Phase	Time (G.M.T.)							△ (Deg.)	Remarks
				Tz	Az	Tn	An	Te	Ae		
1	1	eP Z eS NE	07 57 33 59 12							7.5	USCGS: 18.1S, 178.3W. Fiji Islands region h about 551 km. H = 07 55 39 Mag. 3.7 (CGS)
2	1	e(L) NE	10 37.9								
3	1	eP ZNE eS ZNE	14 54 54 55 13								Samoa Islands region
4	1	eP Z eS ZNE eS NE eT ZNE	18 06 00 07 54 08 15 12 45	2.0	6.5					12.3	USCGS: 24.1S, 178.9E. South of Fiji Islands h about 546 km. H = 18 03 09.6 Mag. 5.6 (CGS)
5	2	iP ZNE e ZNE eS ZNE e ZNE	00 51 52.8 56 53 57 54 08	1.0	3.0					12.5	Dilatation USCGS: 23.7S, 179.8W. South of Fiji Islands h about 522 km. H = 00 49 13.4 Mag. 5.4 (CGS)
6	2	iP ZNE eS ZNE	06 07 15.5 36								Compression Felt at Apia Samoa Islands region
7	2	eP Z	13 48 06							7.6	USCGS: 18.0S, 178.5W. Fiji Islands region h about 612 km. H = 13 46 12.6

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						△ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
20	6	eL	N	07	15.4							76.0	USCGS: 60.6N, 147.3W. Southern Alaska Felt at Anchorage h about 37 km. H = 06 38 41.5 Mag. 5.2 (CGS)	
21	6	e(L)	ZNE	07	47.6									
22	6	eP eS	Z ZNE	07	52 54	24 54						15.2	USCGS: 27.6S, 178.5W. Kermadec Islands h about 298 km. H = 07 49 12.6 Mag. 3.7 (CGS)	
23	6	eL eL	NE ZN	09	24.6 27.6							66.0	USCGS: 34.0N, 138.9E. Near South Coast of Honshu, Japan. h about 15 km. H = 08 57 12.3 Mag. 5.0 (CGS)	
24	6	iP eS eSSS eL eL	Z ZNE N E ZNE	09	31 39 44 46 46.8	23.1 23 50 00	3.0	1.0				55.0	Compression USCGS: 22.1S, 113.8W. Easter Island region h about 33 km. H = 09 21 48.6 Mag. 6(PAS), 6(BRK), 5 $\frac{1}{2}$ -5 $\frac{3}{4}$ (PAL) 6.2(CGS)	
25	6	iP eS	ZNE ZNE	19	49	21 40	1.5	6.0	2.0	5.0	2.0	7.0	Compression Samoa Islands region	
26	6	eP eS	ZNE ZNE	20	26	22 41							Samoa Islands region	
27	7	eP eS	ZNE NE	21	31 35	45 32						18.1	USCGS: 22.4S, 171.5E. Loyalty Islands region h about 117 km. H = 21 27 45.1 Mag. 5.0 (CGS)	
28	7	eP eS	ZNE NE	23	01 04	36 21						12.8	USCGS: 24.0S, 180.0 South of Fiji Islands h about 514 km. H = 22 59 28.7 Mag. 4.7 (CGS)	
29	8	eP	Z	10	56	18								
30	9	eP eS	ZNE ZNE	09	01 02	52 17								
31	9	iP eS	Z NE	10	07	18.5 39							Compression Samoa Islands region	
32	9	eP eS eT	Z NE ZNE	10	20 23 40	02 34 20	2.0	1.0				21.0	USCGS: 34.0S, 178.1W. South of Kermadec Islands h about 50 km. H = 10 15 21.3 Mag. 5.1 (CGS)	

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						△ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
33	9	iP eS	ZNE ZNE	19	07	09.2 30	1.0	9.5					1.8	Compression USCGS: 15.2S, 173.1W. Tonga Islands h about 44 km. H = 19 06 39.6 Mag. 4.4 (CGS)
34	9	eP	ZNE	21	48	58								
35	10	eP eS eT	ZNE ZNE ZNE	08	13	23 42 31								Samoa Islands region
36	10	eP eS	Z NE	10	01	28 57								
37	10	eP eS	Z ZNE	13	03	36 56							12.8	USCGS: 24.6S, 179.3E. South of Fiji Islands h about 560 km. H = 13 00 48.0 Mag. 4.4 (CGS)
38	10	eP eS	ZNE ZNE	14	48	32 54								Samoa Islands region
39	11	eP eS e eSS eSSS eL	Z ZNE E ZE N Z	03	00	53 16 48 12.0 13.4 14.3							54.0	USCGS: 60.7S, 154.0E. West of Macquarie Island. h about 33 km. H = 02 51 25.4 Mag. 5.1 (CGS)
40	11	iP eS	Z ZNE	04	28	52 12								Compression Samoa Islands region
41	11	eP eS	Z NE	07	46	07 19								
42	11	iP iS eT	ZNE ZNE ZNE	08	48	21 40 43							7.4	Compression USCGS: 18.4S, 177.7W. Fiji Islands region h about 350 km. H = 08 46 35.1 Mag. 4.9 (CGS)
43	11	eS e eSSS eL eL	ZN E E ZN ZN	17	09	18 30 13 16.5 18.5							54.0	USCGS: 61.3S, 154.5E. Balleny Islands region h about 33 km. H = 16 52 23.4
44	11	eP eS eL eT	Z ZNE ZNE ZNE	22	53	20 51 56.7							15.2	USCGS: 28.4S, 176.5W. Kermadec Islands h about 47 km. H = 22 49 57.8 Mag. 4.9 (CGS)
45	12	eP eS	Z NE	01	21	18 37								Samoa Islands region

No	Date	Phase	Time (G.M.T.)			Tz	Az	Tn	An	Te	Ae	△ (Deg.)	Remarks
56	14	eP Z eS ZN	14	41 38 42 31									
57	14	eP Z	16	25 39	2.0	0.6					24.4	USCGS: 10.6S, 163.5E. Solomon Islands h about 23 km. H = 16 20 21.1 Mag. 5.4 (CGS)	
58	15	ePKP Z e Z eSS NE e E e NE eL Z	11 38 49 12 00.3 01.5 02.3 05.4 07.1								150.0	USCGS: 0.3S, 18.7W. Central Mid-Atlantic Ridge h about 24 km. H = 11 18 49.9 Mag. 6 ¹ / ₂ (PAS), 6 ¹ / ₄ (PAL), 5.6(CGS) Surface waves lasting 1 hr.	
59	16	iP ZE eS ZE	04	51 58.9 52 21	1.0	7.0						Dilatation Samoa Islands region	
60	16	eP ZE eS ZE eT ZE	10	12 06 26 14 09								Samoa Islands region	
61	16	eP Z eS ZE	14	03 37 05 03									
62	16	eSSP NE	16	04.4							131.0	USCGS: 31.ON, 41.5W. North Atlantic ridge h about 17 km. H = 15 24 42.9 Mag. 6 ¹ / ₂ (PAS), 6.4(BRK), 6(PAL)	
63	16	eSSP ZNE eL ZNE	16	25.0 30.0							132.0	USCGS: 30.8N, 41.2W. North Atlantic ridge h about 33 km. H = 15 40 56.3 Mag. 5.2 (CGS)	
64	17	eP Z eS ZE	20	48 47 49 05								Samoa Islands region	
65	18	eP Z eS ZNE	10	47 03 48 16							8.0	USCGS: 20.2S, 176.7W. Fiji Islands region h about 285 km. H = 10 45 11.7 Mag. 4.4 (CGS)	
66	18	eP Z	17	27 00	2.0	0.9					58.0	USCGS: 7.1S, 129.5E. Banda Sea h about 208 km. H = 17 17 23.1 Mag. 5.4 (CGS)	
67	18	eP ZNE eS ZNE	20	02 07 03 31							7.6	USCGS: 18.8S, 177.9W. Fiji Islands region h about 421 km. H = 20 00 19.0 Mag. 5.6 (CGS) Movement follows for several minutes	

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						Δ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
79	21	eP eS	Z ZNE	14	02	24 49								
80	21	eP eS	Z NE	18	54 55	09 02								
81	22	eP	ZNE	19	13	22						20.0	USCGS: 12.0S, 167.4E. Santa Cruz Islands h about 326 km. H = 19 09 09.4 Mag. 5.2 (CGS)	
82	22	eS eL	ZN ZN	20	45 55.0	00						65.0	USCGS: 51.3N, 179.8W. Andreanof Islands Aleutian Islands h about 40 km. H = 20 25 30.4 Mag. 5.9 (CGS)	
83	23	eL	ZNE	01	48.2							66.0	USCGS: 3.ON, 124.8E. Celebes Sea h about 45 km. H = 01 17 31.2 Mag. 5.6 (CGS)	
84	23	eS eL	ZNE ZN	02	37.0 47.2							65.0	USCGS: 51.4N, 179.7W. Andreanof Islands, Aleutian Islands h about 48 km. H = 02 17 49.4 Mag. 5.4(PAL), 5.6(CGS)	
85	23	iP eS	Z NE	12	56 57	43 22						3.8	Compression USCGS: 17.3S, 173.5W. Tonga Islands h about 77 km. H = 12 55 48.0 Mag. 4.4 (CGS)	
86	23	eP eS	Z NE	13	54 56	38 20						10.5	USCGS: 23.7S, 175.2W. Tonga Islands region h about 33 km. H = 13 52 21.9 Mag. 4.1 (CGS)	
87	24	eP eS	Z NE	06	54 56	37 46	2.0	1.5				12.7	USCGS: 23.8S, 179.9E. South of Fiji Islands h about 542 km. H = 06 51 57.2 Mag. 5.0 (CGS)	
88	24	eP eS	Z NE	10	55 57	19 05						10.0	USCGS: 20.9S, 179.3W. Fiji Islands region h about 625 km. H = 10 52 59.2 Mag. 4.1 (CGS)	
89	24	eP iS	Z NE	16	43 44	58 33								
90	25	eP eS eT	Z NE ZNE	16	39 42 53	38 07 23						15.1	USCGS: 28.1S, 176.9W. Kermadec Islands h about 32 km. H = 16 36 13.3 Mag. 5.1 (CGS)	

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						Δ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
91	25	eP eS	Z NE	22 33 07 34 48								9.8	USCGS: 22.9S, 175.9W. Tonga Islands region h about 33 km. H = 22 30 45.4 Mag. 4.4 (CGS)	
92	26	eP eS eT	Z NE ZNE	03 53 07 34 55 35										
93	26	eP	ZNE	16 03 11										
94	26	eP eS	Z NE	18 19 45 20 07									Samoa Islands region	
95	27	iP eSS eL	Z ZNE ZE	01 37 19.5 45.8 48.6	2.3	3.4						39.9	Dilatation USCGS: 6.1S, 148.5E. New Britain region h about 56 km. H = 01 29 49.5 Mag. 5.8 (CGS)	
96	27	eS eL	N ZN	03 22.4 33.2								64.0	USCGS: 30.6N, 140.2E. South of Honshu, Japan. h about 60 km. H = 03 04 20.6 Mag. 5.2 (CGS)	
97	27	eP eS	ZNE ZNE	08 29 49 31 26	1.9	1.5			2.0	1.5		8.9	USCGS: 20.3S, 178.3W. Fiji Islands region h about 432 km. H = 08 27 51.0 Mag. 4.4 (CGS)	
98	27	eP eS eSS eL	Z ZNE NE Z	12 07 42 12 41 14.3 15.5	2.0	1.1						28.0	USCGS: 9.7S, 159.7E. Solomon Islands Felt at Honiara h about 51 km. H = 12 01 51.9 Mag. $6\frac{3}{4}$ (PAS), $5\frac{3}{4}$ (BRK), $6\frac{3}{4}$ (PAL), 6.3(CGS)	
99	27	eS eSS eL	ZNE N ZNE	14 53.8 54.7 56.4								25.0	USCGS: 10.7S, 163.4E. Solomon Islands Felt at Honiara h about 33 km. H = 14 44 24.0 Mag. 5.4 (CGS)	
100	28	eP eS	Z ZNE	02 32 11 54										
101	28	eP eS	Z ZNE	03 30 43 31 12										
102	28	eP eL eL	Z NE ZNE	04 09 25 32.8 36.3								86.0	USCGS: 45.6S, 72.4W. Near coast of Southern Chile. Felt at Aysen h about 33 km. H = 03 56 45.9 Mag. $6-6\frac{1}{4}$ (PAL), 5.8(CGS)	

11.

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						Δ (Deg.)	Remarks
							Tz	Az	Tn	An	Te	Ae		
115	29	e(S)	ZNE	15	00	00								
116	29	eP	Z	15	06	37						3.7	USCGS: 16.3S, 174.8W. Tonga Islands h about 68 km. H = 15 05 51.8 Mag. 4.4 (CGS)	
		eS	ZNE		07	19								
		eT	ZNE		09	05								
117	30	eP	Z	16	05	25								
		eS	NE		06	13								
118	30	eP	ZE	19	50	29	2.8	1.5				12.6	USCGS: 17.0S, 175.5E. Fiji Islands region h about 33 km. H = 19 47 26.3 Mag. 5.0 (CGS)	
		eS	NE		52	56								
		eL	Z		53.5									
119	30	eP	Z	22	27	09								
		eS	ZNE			53								
120	30	eP	ZNE	22	32	04						9.8	USCGS: 22.7S, 176.2W. South of Fiji Islands h about 77 km. H = 22 29 52.5 Mag. 5.4 (CGS)	
		eS	ZNE		33	40								
		eT	ZNE		40	39								

NOTE:

- (i) Trace amplitude(A) are expressed in millimetres and periods (T) in seconds
- (ii)*Readings to be incorporated in the New Zealand Seismological Report for 1965

P.D. Müller
OBSERVER-IN-CHARGE

NEW ZEALAND

Department of Scientific and Industrial Research

Geophysics Division

APIA OBSERVATORY

FINAL SEISMOLOGICAL BULLETIN

STANDARD SEISMIC STATION (AFI)

APIAMALU, WESTERN SAMOA.

Latitude: $13^{\circ} 54' 33.6''S$ Longitude: $171^{\circ} 46' 38.1''W$

Height above mean sea level: 705.6 metres, 2315 ft.

Geocentric direction cosines: a. - 0.961 070
 b. - 0.138 883
 c. - 0.238 862

Lithological Foundation: Basaltic Lava Flows

Instruments: World-wide standard seismograph system

Benioff short period seismometers

To = 1.0 sec. Tg = 0.75 sec.

Sprengnether long period seismometers

To = 15 sec. Tg = 100 sec.

Nominal Magnifications: S.P. 12500

L.P. 750

DECEMBER 1965*

No	Date	Phase	(G.M.T.)	Tz	Az	Tn	An	Te	Ae	(Deg)	Remarks
1	1	eP eS	Z NE	08 57 37 55							
2	1	eP eS	Z NE	14 48 02 49 11							
3	2	eL	ZN	06 36.3							
4	2	iP eS	ZNE ZNE	23 38 45 54						1.9	Compression USCGS: 15.3S, 173.1W Tonga Islands Felt at Apia h about 20 km H = 23 38 13.3 Mag. 5.5 (CGS)
5	2	eP eS	Z ZNE	23 48 43 49 01							
6	3	eP eS	Z NE	02 22 17 36							
7	3	eP eS	Z NE	03 39 55 41 44						9.7	USCGS: 20.9S, 178.8W Fiji Islands region h about 588 km H = 03 37 29.1 Mag. 4.6 (CGS)

(3)

No	Date	Phase	Time (G.M.T.)	Tz Az Tn An Te Ae						Δ (Deg)	Remarks	
				Tz	Az	Tn	An	Te	Ae			
23	6	eP eS eT	ZNE ZNE ZNE	08 50 37 51 00 52 43								
24	6	eP eS eSS eSSS eL eL	Z ZNE ZE ZN ZN ZNE	11 46 10 53 32 59 44 12 03 46 05 38 07.0						72.0	USCGS: 18.9N, 107.1W Off coast of Jalisco, Mexico h about 33 km H = 11 34 53.7 Mag. $6\frac{3}{4}$ (PAS), 7-7.5 (BRK), $6\frac{1}{2}$ - $6\frac{3}{4}$ (PAL), 5.9 (CGS)	
25	6	eL	ZNE	19 14.5							71.0	USCGS: 18.8N, 107.0W Off coast of Jalisco, Mexico h about 40 km H = 18 42 33.2 Mag. $5\frac{3}{4}$ (PAS), $5\frac{3}{4}$ (PAL) 5.1 (CGS)
26	6	eP eS	ZNE ZNE	20 27 30 59							3.0	USCGS: 16.2S, 173.7W Tonga Islands h about 67 km H = 20 26 44.7 Mag. 4.7 (CGS)
27	6	eP eS	Z ZNE	21 20 36 21 28								
28	7	eP	Z	08 32 33							26.7	USCGS: 38.4S, 176.1E North Islands, New Zealand Felt widely in North Island and extreme north of South Islands h about 141 km H = 08 27 09.9 Mag. 4.6 (CGS)
29	7	eP eS	Z ZNE	12 29 03 30 57							11.4	USCGS: 24.0S, 176.9W South of Fiji Islands h about 56 km H = 12 26 25 Mag. 4.4. (CGS)
30	7	eP e(S)	Z NE	17 00 47 01 52	1.9	2.0						
31	7	eP eS eT	Z NE ZNE	19 58 43 59 16 20 01 54								
32	7	iP eS	Z ZNE	21 06 28 51							2.3	Dilatation USCGS: 15.5S, 173.4W Tonga Islands h about 66 km H = 21 05 51.6 Mag. 4.8 (CGS)

(4)

No	Date	Phase	Time (G.M.T.)	Tz Az Tn An Te Ae						△ (Deg.)	Remarks	
				Tz	Az	Tn	An	Te	Ae			
33	7	iP eS eScS eL	Z NE NE Z	22 26 57.5 32 56 36 50 40.0	2.0	8.1					43.0	Dilatation USCGS: 6.4S, 146.3E East New Guinea region Felt widely h about 109 km H = 22 19 14.8 Mag. 6.4 (CGS)
34	8	iP eS	Z NE	01 32 36.4 33 18								Compression
35	8	iP eS	Z NE	13 09 23.4 43	1.0	3.3						Compression Samoa Islands region
36	8	eP eS eT	ZNE ZNE ZNE	18 10 32 14 34 31 00	2.0	1.5	2.0	2.1			25.3	USCGS: 37.1S, 177.5E Off east coast of North Island, New Zealand Felt widely in North Island and extreme north of South Island h about 165 km H = 18 05 26.1 Mag. 5 $\frac{1}{2}$ -5 $\frac{3}{4}$ (PAL), 5.8 (CGS)
37	8	eP eS	Z NE	19 08 18 10 06							9.4	USCGS: 20.5S, 178.6W Fiji Islands region h about 551 km H = 19 06 06.4 Mag. 4.6 (CGS)
38	9	eP eS eT	Z ZNE ZNE	02 11 06 37 14 10								
39	9	eP eS eSS eSSS eLq eLr	Z ZNE ZNE ZN NE ZNE	06 19 40 29 34 34 32 38 00 39 24 42 28							77.0	USCGS: 17.3N, 100.0W Guerrero, Mexico Felt in South Mexico h about 57 km H = 06 07 48.6 Mag. 6 $\frac{1}{4}$ (PAS), 6(BRK) 6 $\frac{1}{4}$ -6 $\frac{1}{2}$ (PAL), 6.0 (CGS)
40	9	eP eS	ZN NE	06 43 19 44 31	2.0	0.5	2.0	0.5			6.1	USCGS: 17.0S, 177.3W Fiji Islands region h about 338 km H = 06 41 46.5 Mag. 4.1 (CGS)
41	9	iP eS	Z NE	07 59 35.4 08 00 42	1.0	6.5					5.5	Compression USCGS: 15.1S, 177.4W Fiji Islands region h about 365 km H = 07 58 07.3 Mag. 4.2 (CGS)

No	Date	Phase	Time (G.M.T.)	Tz Az Tn An Te Ae						△ (Deg)	Remarks	
				Tz	Az	Tn	An	Te	Ae			
42	9	iP eS	ZNE ZNE	13 14 51.2 16 23	2.0	8.5					7.5	Compression USCGS: 18.0 S, 178.2W Fiji Islands region h about 650 km H = 13 12 55.5 Mag. 6 (BRK), 5.6(CGS)
43	9	iP eS	ZNE NE	13 27 36 29 07	2.0	5.5	2.0	1.7	2.0	1.8	7.3	Compression USCGS: 17.7S, 178.3W Fiji Islands region h about 650 km H=13 25 40.7 Mag. 5.1 (BRK), 5.1 (CGS)
44	9	eP eS	Z NE	15 48 27 49 37	1.5	1.0					5.9	USCGS: 15.5S, 177.7W Fiji Islands region h about 403 km H = 15 46 54.0 Mag. 4.4 (CGS)
45	10	eP eS	Z ZNE	18 22 32 24 18								
46	10	eP eFP eS eL	ZNE ZE ZNE ZE	21 58 08 19 22 02 00 3.6							21.6	USCGS: 11.4S, 166.2E Santa Cruz Islands h about 55 km H = 21 53 17.4 Mag. 5.8 (CGS)
47	11	iP	ZNE	00 07 31.8	2.0	2.5	2.0	1.2	2.0	3.0	34.0	Dilatation USCGS: 4.4S, 155.0E Solomon Islands h about 510 km H = 00 01 28.4 Mag. 5.1 (CGS)
48	11	eP eS eL eT	Z ZNE ZNE ZNE	22 44 18 47 40 49.0 23 03 31							20.4	USCGS: 33.1S, 178.8W South of Kermadec Islands h about 33 km H = 22 39 50 Mag. 5.1 (CGS)
49	12	eP eS eL eL eT	ZNE NE ZNE E ZNE	07 24 22 26 57 27 16 28 20 35 04							15.2	USCGS: 27.9S, 177.9W Kermadec Islands h about 10 km H = 07 20 53.7 Mag. 4.9 (CGS)
50	12	eP eS eL eT	Z NE NE ZNE	16 42 30 44 16 45.0 52 11							10.0	USCGS: 23.3S, 175.5W Tonga Islands region h about 32 km H = 16 40 14.3 Mag. 5.0 (CGS)
51	13	eP eS	ZNE NE	03 16 46 18 48	1.9	0.5	1.9	1.0	1.9	0.6	12.0	USCGS: 23.0S, 179.9W South of Fiji Islands h about 509 km H = 03 14 07.6 Mag. 4.4 (CGS)

No	Date	Phase	Time (G.M.T.)	Tz Az Tn An Te Ae						(Δ) (Deg)	Remarks	
				Tz	Az	Tn	An	Te	Ae			
52	13	eP eS eT	Z NE ZNE	07 59 22 08 00 21 05 31								
53	13	eP eS eL	Z N ZNE	11 03 10 11 52 22.4						66.0	USCGS: 44.7 150.1E Kurile Islands region h about 35 km H = 10 52 08.5 Mag. 6 (PAL), 5.7(CGS)	
54	13	eP eS	ZNE NE	12 58 06 59 40								
55	13	eS eL eL	N ZN N	15 06 12 16.5 17.8						66.0	USCGS: 44.7N, 150.2E Kurile Islands region h about 33 km H = 14 46 10.2 Mag. 5.4 (CGS)	
56	13	iP eS	Z ZNE	23 12 27 45	1.0	3.9					Compression	
57	13	eL	ZN	23 09.3						66.0	USCGS: 44.7N, 150.0E Kurile Islands region h about 33 km H = 22 37 37.2 Mag. 5.0 (CGS)	
58	13	eL	ZN	23 23.5						66.0	USCGS: 44.7N, 149.9E Kurile Islands h about 33 km H = 22 53 17.1 Mag. 5.0 (CGS)	
59	14	eL	ZE	06 33.1						58.0	USCGS: 35.0S, 111.4W Easter Island Cordillera h about 33 km H = 06 06 47.4 Mag. 5.1 (CGS)	
60	15	eP eS	ZNE ZNE	06 59 21 07 00 20						5.4	USCGS: 14.7S, 177.3W Fiji Islands region h about 33 km H = 06 58 01.4 Mag. 4.0 (CGS)	
61	15	eP eS	Z ZNE	07 53 17 50								
62	15	eP eS eSS e eSSS eL	Z ZNE ZN E N ZN	12 18 25 25 30 29 12 30 44 31 28						49.0	USCGS: 57.0S, 141.5W South Pacific Cordillera h about 33 km H = 12 09 36.4	
63	15	eP eL	Z NE	19 28 33 39 38	2.1	1.7				49.0	USCGS: 56.8S, 142.0W South Pacific Cordillera h about 33 km H = 19 19 51.0 Mag. 5.7 (CGS)	

No	Date	Phase		Time (G.M.T.)			Tz Az Tn An Te Ae						△ (Deg)	Remarks
							Tz	Az	Tn	An	Te	Ae		
64	15	eP	Z	23	18	27	2.5	1.5					91.0	USCGS: 7.5N, 82.2W South of Panama h about 15 km H = 23 05 20.7 Mag. $6\frac{3}{4}$ (PAS), $6\frac{1}{4}$ - $6\frac{1}{2}$ (PAL) 6.0 (CGS)
		eS	E		29	00								
		eS	N		29	38								
		e	N		31	35								
		eSS	ZNE		35	53								
		eL	ZNE		47.4									
65	16	eL	ZNE	10	46.5								80.0	USCGS: 47.4S, 99.7E Southeast Indian Rise h about 33 km H = 10 09 23.3 Mag. 5.6 (CGS)
66	16	eP	Z	11	52	40								Samoa Islands region
		eS	ZNE		53	00								
67	16	eP	Z	13	14	40								
		eS	ZNE		15	25								
68	16	eP	Z	20	39	06								
		eS	NE		40	46								
69	16	eP	Z	21	19	13							11.7	USCGS: 24.7S, 176.4W South of Fiji Islands h about 44 km H = 21 16 36.0 Mag. 4.5 (CGS)
70	16	eP	Z	22	21	29							18.0	USCGS: 23.0S, 171.8E Loyalty Islands region h about 24 km H = 22 17 19.8 Mag. 4.6 (CGS)
		eS	NE		24	50								
		eL	Z		25	30								
71	16	iP	Z	23	08	34.4	1.9	4.4					8.0	Dilatation USCGS: 17.5S, 179.1W Fiji Islands region h about 573 km H = 23 06 42.4 Mag. 5.5 (CGS)
		iS	NE		10	07								
72	17	eP	Z	16	20	04	2.1	0.8					57.0	USCGS: 21.8N, 142.6E Mariana Islands region h about 298 km H = 16 10 46.3 Mag. 5.0 (CGS)
73	17	eP	Z	21	22	22							15.0	USCGS: 27.6S, 178.0W Kermadec Islands h about 159 km H = 21 19 05.3 Mag. 4.7 (CGS)
		eS	NE		24	50								
		eT	ZNE		35	32								
74	17	eP	Z	22	44	00								
		eS	NE		45	33								
75	18	eL	ZN	09	01.5								67.0	USCGS: 44.7 N, 149.9E Kurile Islands h about 33 km H = 08 30 45.8 Mag. 5.5 (CGS)

No	Date	Phase		Time (G.M.T.)						Tz	Az	Tn	An	Te	Ae	△ (Deg)	Remarks		
76	18	eSS eL	N ZN	13	44.3 52.4											66.0	USCGS: 44.3N, 150.2E Kurile Islands region h about 36 km H = 13 20 23.4 Mag. 5.1 (CGS)		
77	19	eP	Z	01	59	15											8.4	USCGS: 18.1S, 179.3W Fiji Islands region h about 620 km H = 01 57 13.1 Mag. 3.8 (CGS)	
78	19	eP eS	Z NE	02	23 25	28 12			1.7	2.5							8.4	USCGS: 18.0S, 179.3W Fiji Islands region h about 620 km H = 02 21 27.0 Mag. 5.5 (CGS)	
79	19	eP	Z	02	59	52			1.5	1.0							8.4	USCGS: 18.1S, 179.3W Fiji Islands region h about 620 km H = 02 57 50.3 Mag. 4.9 (CGS)	
80	19	eP eS	Z NE	10	11	05 23													Samoa Islands region
81	19	eP eS	Z NE	10	56 57	52 11													Samoa Islands region
82	19	eL	ZN	22	51.2													99.0	USEGS: 32.2S, 78.8E Mid-Indian Rise h about 33 km H = 22 06 32.7 Mag. 5.8 (CGS)
83	20	ePKP	Z	00	28	09			2.0	0.9								150.0	USCGS: 40.2N, 24.9E Aegean Sea Felt in Northern Greece h about 33 km H = 00 08 15.2 Mag. 5.3 (CGS)
84	20	eL	ZN	01	21.8														
85	20	eP eS eT	Z NE ZNE	02	32 34	26 51 47													
86	20	eP eS	Z NE	04	13	19 40													
87	20	eP	ZNE	22	44	07													
88	21	eP eS	Z NE	10	42 45	07 07			2.2	1.4								17.6	USCGS: 30.0S, 179.3W Kermadec Islands h about 288 km H = 10 38 23.7 Mag. 5.4 (CGS)

No	Date	Phase		Time (G.M.T.)							△ (Deg)	Remarks
					Tz	Az	Tn	An	Te	Ae		
89	21	iP eS	ZNE NE	17 51 57.5 53 19	2.0	4.5	2.0	2.0	2.0	3.0	7.6	Compression USCGS: 19.1S, 177.6W Fiji Islands region h about 366 km H = 17 50 10.2 Mag. 5.1 (CGS)
90	21	eP eS	Z ZNE	22 08 01 59							6.0	USCGS: 19.4S, 174.2W Tonga Islands h about 224 km H = 22 06 34.2 Mag. 4.3 (CGS)
91	21	eL eL	NE Z	23 46.4 48.0								
92	22	eS eL	NE ZNE	00 49 24 01 00.5							69.0	USCGS: 52.4N, 160.5E Off east coast of Kamchatka h about 5 km H = 00 28 46.2 Mag. 5 (BRK), 5.1 (CGS)
93	22	eP	Z	01 02 58							67.0	USCGS: 6.6N, 124.1E Mindanao, Philippine Islands h about 54.2 km H = 00 52 56.0 Mag. 5.6 (CGS)
94	22	eP eS eSSS eL	ZNE ZNE E ZN	19 52 51 20 02 20 10 20 14.4							74.0	USCGS: 58.4N, 153.0W Kodiak Islands region Minor damage at Kodiak and felt widely h about 50 km H = 19 41 23.0 Mag. $6\frac{3}{4}$ -7 (PAS), (BRK), 6.5 (CGS)
95	23	eP eS	Z NE	08 16 33 18 21							11.2	USCGS: 22.3S, 179.5W South of Fiji Islands h about 575 km H = 08 13 57.3 Mag. 3.9 (CGS)
96	23	eS eL	N ZNE	21 09.5 23.3							78.0	USCGS: 60.5N, 141.0W Southeastern Alaska h about 33 km H = 20 47 37.5 Mag. 5.4 (CGS)
97	24	iP eS	ZNE NE	02 20 05 21 10	1.6	9.0	1.9	1.9	1.9	2.5	5.4	Dilatation USCGS: 15.0S, 177.3W Fiji Islands region h about 366 km H = 02 18 39.4
98	24	iP eS	Z ZNE	03 04 42 05 07	1.3	4.0						Compression

No	Date	Phase	Time (G.M.T.)			Tz	Az	Tn	An	Te	Ae	△ (Deg)	Remarks
125	28	eP Z eS NE eL N eL ZE	12	20	58							64.0	USCGS: 3.2N, 127.0E Talaud Islands h about 53 km H = 12 10 31.4 Mag. 5.3 (CGS)
126	28	iP Z eS NE	16	14	23.1	2.0	1.5					7.7	Compression USCGS 17.6S, 178.8W Fiji Islands region h about 540 km H = 16 12 29.0 Mag. 4.1 (CGS)
127	28	eP Z eS ZNE eSSS NE eL ZNE	20	42	38							62.0	USCGS: 27.8N, 141.8E Bonin Islands region h about 36 km H = 20 32 24.7 Mag. 6 (PAS), 5.9 (CGS)
128	29	iP Z eS NE	01	07	19.5								Compression Samoa Islands region
129	29	eS E eSS NE eSSS Z eL Z	04	31.4								46.0	USCGS: 3.3S, 143.1E Near north coast of New Guinea h about 23 km H = 04 16 28.9 Mag. 5.4 (CGS)
130	29	eP Z eS NE	09	09	40								
131	29	eP Z eS NE	11	45	32							9.6	USCGS: 22.8S, 175.3W Tonga Islands region h about 82 km H = 11 43 32.4 Mag. 4.3 (CGS)
132	29	eP ZNE	23	45	38	2.1	2.0	2.0	1.5	3.1	2.0	22.0	USCGS: 10.6S, 166.0E Santa Cruz Islands h about 198 km H = 23 41 00.5 Mag. 5.2 (CGS)
133	30	eS ZN eSSS E eL ZN	02	27	06							67.0	USCGS: 54.1N, 164.3W Unimak Island region h about 28 km H = 02 06 31.1 Mag. 5 ³ / ₄ (BRK), 5 ³ / ₄ (PAL)
134	30	eP ZNE eS ZNE eT ZNE	04	33	32								
135	30	eP Z eS NE	06	33	47	2.0	3.5					7.5	USCGS: 17.9S, 178.4W Fiji Islands region h about 598 km H = 06 31 52.8 Mag. 4.8 (CGS)

(13)

No	Date	Phase		Time			Tz Az Tn An Te Ae						(Deg)	Remarks	
				(G.M.T.)											
136	30	iP eS	Z ZNE	11 44 01 45 30									7.6	Dilatation USCGS: 19.3S, 177.5W Fiji Islands region h about 582 km H = 11 42 08.5 Mag. 5.3 (CGS)	
137	30	eS eL eL	ZE E Z	13 31 28 37 25 38 24									54.0	USCGS: 24.5S, 116.1W Easter Island Cordillera h about 33 km H = 13 14 15.0 Mag. 5.0 (CGS)	
138	30	eP eS eT	ZNE NE ZNE	17 00 04 40 03 02									2.8	USCGS: 16.6S, 172.4W Samoa Islands region h about 33 km H = 16 59 22.8 Mag. 4.8 (CGS)	
139	30	eP eS eT	Z NE ZNE	20 31 05 33 23 44 22											
140	31	eL eL	N NE	01 24.2 26 40									54.0	USCGS: 24.6S, 116.4W Easter Island Cordillera h about 33 km H = 01 02 23.5 Mag. 4.8 (CGS)	
141	31	eP eS eT	Z NE ZNE	01 41 44 42 13 44 39											
142	31	eP eS eT	Z NE ZNE	04 01 46 02 17 04 48											
143	31	eP eS eT	Z NE ZNE	08 10 02 12 29 56											
144	31	eP eS eT	Z ZNE ZNE	10 44 37 46 44 52 47									12.5	USCGS: 25.2S, 177.2W South of Fiji Islands h about 160 km H = 10 41 57.7 Mag. 5.5 (CGS)	
145	31	iP eS eT	ZNE NE ZNE	15 25 46.5 26 15 28 18										2.0 1.6	Compression
146	31	eP	Z	19 54 16									64.0	USCGS: 9.6S, 123.5E Banda Sea h about 33 km H = 19 43 45.8 Mag. 5.2 (CGS)	

NOTE:

- (1) Trace amplitude (A) are expressed in millimetres and periods (T) in seconds.
- (11) *Readings to be incorporated in the New Zealand Seismological Report for 1965.

P.D. Müller
Observer-In-Charge