

13 MAY 1968

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: $171^{\circ} 46' 35.1''W$

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 = 100 sec.


Nominal Magnifications: S.P. 12500

L.P. 750

January 1967 *

No.	Date	Phase	Time (G.M.T.)							Δ (Degs)	Remarks
				Az	Tz	An	Tn	Ae	Te		
1	1	eP ZNE	00 25 54	2.3	2.5	1.6	2.7	3.0	2.6	21.6	USCGS: 12.1S, 166.2E Santa Cruz Islands h about 33 km H = 00 21 06.6 Mag. 4.9 (CGS)
2	1	eP ZNE eS ZNE eT ZNE	02 21 04 52 25 13	1.5	1.1					5.4	USCGS: 18.8S, 173.6W Tonga Islands h about 12 km H = 02 19 44.3 Mag. 4.4 (CGS)
3	1	eP ZE e(PPP)Z eS Z eL ZE	03 18 09 19.1 22.0 23.6	0.5	2.0			1.0	2.2	21.6	USCGS: 11.9S, 166.2E Santa Cruz Islands h about 33 km H = 03 13 18.0 Mag. 4.6 (CGS)
4	1	eP ZE eS ZNE eL ZNE	04 08 56 13 03 15.2					2.7	15.0 8.0 16.0	21.7	USCGS: 12.0S, 166.0E Santa Cruz Islands h about 33 km H = 04 04 06.5 Mag. 4.5 (CGS)
5	1	iP ZNE Motion too rapid for S registration.	07 06 20							2.2	USCGS: 15.3S, 173.6W Tonga Islands h about 33 km H = 07 05 48.6 Mag. $6\frac{1}{2}$ - $6\frac{3}{4}$ (PAS) 6.4(BRK), 6.0(CGS)
6	1	eP ZNE eS ZNE	07 40 51 41 18							3.2	USCGS: 16.6S, 173.1W Tonga Islands h about 33 km H = 07 40 11.8 Mag. 4.1 (CGS)

2.

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						 (Deg.)	Remarks			
							Az	Tz	An	Tn	Ae	Te					
7	1	iP eS	ZNE ZNE	08 47 41 49 18			7.9	1.8	6.5	1.8			9.1	USCGS: 20.5S, 178.4W Fiji Islands region h about 627 km H = 08 45 42.2 Mag. 5.6 (CGS)			
8	1	eP eS eSS eL	ZE ZE ZE ZE	09 00 06 04 18 05.6 06.3								6.0	16.0	21.7	USCGS: 12.3S, 166.0E Santa Cruz Islands h about 33 km H = 08 55 16.8 Mag. 4.7 (CGS)		
9	1	eL	ZE	13 03.1											21.9	USCGS: 11.7S, 165.9E Santa Cruz Islands h about 33 km H = 12 53 29.9 Mag. 4.7 (CGS)	
10	1	eL	ZE	13 27.6											22.6	USCGS: 11.6S, 165.3E Santa Cruz Islands h about 33 km H = 13 18 27.3 Mag. 4.9 (CGS)	
11	1	eP eS eL	ZE ZE ZE	14 23 34 27 44 30.0									5.5	16.0	21.8	USCGS: 12.4S, 165.8E Santa Cruz Islands h about 33 km H = 14 18 51.4 Mag. 5.0 (CGS)	
12	1	iP eS	ZN ZNE	17 22 41 23 00													Samoa Islands region
13	1	eS eL	ZE ZE	20 54.2 56.0											21.9	USCGS: 11.9S, 165.9E Santa Cruz Islands h about 33 km H = 21 45 26.7 Mag. 4.4 (CGS)	
14	1	eP eS eL M	ZE ZNE ZE E	22 03 53 08 02 09 30 12			2.0	2.9							22.4	USCGS: 11.1S, 165.5E Santa Cruz Islands h about 33 km H = 21 58 57.8 Mag. 6(PAS), 5.4(CGS)	
15	2	eL	ZE	03 52.1													
16	2	eL	ZE	06 29.4													
17	2	eL	ZE	07 36.3									1.3	22.0	93.0	USCGS: 25.2S, 71.0W Near coast of Northern Chile h about 38 km H = 06 53 17.5 Mag. 5.0 (CGS)	
18	2	eL	ZE	10 11.8													
19	2	eL	ZE	13 58.8											22.0	USCGS: 11.3S, 165.8E Santa Cruz Islands h about 36 km H = 13 49 19.1 Mag. 4.3 (CGS)	
20	2	eL	ZN	15 20.4											21.8	USCGS: 12.2S, 165.9E Santa Cruz Islands h about 45 km H = 15 11 16.1 Mag. 4.5 (CGS)	

No	Date	Phase	Time (G.M.T.)			Az	Tz	An	Tn	Ae	Te	△ (Deg.)	Remarks
33	3	eS ZN	10	52.6								22.5	USCGS: 11.0S, 165.4E Santa Cruz Islands h about 33 km H = 10 43 25.1 Mag. 4.8(CGS)
34	3	eP ZE eS ZN	11	10 13 14 28								22.5	USCGS: 11.2S, 165.4E Santa Cruz Islands h about 33 km H = 11 05 15.4 Mag. 5.1-5.5(CGS)
35	3	eP ZE	11	36 40								22.5	USCGS: 11.2S, 165.4E Santa Cruz Islands h about 33 km H = 11 31 34.4 Mag. 5.1 (CGS)
36	3	eP ZE ePP Z eS ZN eL Z	12	36 40 37 13 41 14 42.8								22.4	USCGS: 10.9S, 165.4E Santa Cruz Islands h about 33 km H = 12 32 09.2 Mag. 5.2 (CGS)
37	3	eS ZN	17	55.6								22.0	USCGS: 11.3S, 165.4E Santa Cruz Islands h about 33 km H = 17 46 44.9 Mag. 4.8(CGS)
38	3	eP ZNE eS ZNE	20	29 25 56									
39	3	eS ZN	20	38.5								22.4	USCGS: 11.1S, 165.5E Santa Cruz Islands h about 33 km H = 20 30 18.0 Mag. 4.5(CGS)
40	3	eP ZNE eS ZN eL Z eL N	21	28 08 32 16 34 38 54								21.3	USCGS: 12.4S, 166.4E Santa Cruz Islands h about 33 km H = 21 23 21.8 Mag. 5.4-5.8(BRI), 5.0(CGS)
41	3	eP ZE	21	38 36									
42	3	iP ZNE eS ZNE	22	28 20 29 10	4.0	2.0	3.0	1.6					d
43	4	eS ZN eL Z	00	23.4 25.4								22.4	USCGS: 11.1S, 165.5E Santa Cruz Islands h about 33 km H = 00 14 38.2 Mag. 4.5(CGS)
44	4	eL Z	02	05.4								22.3	USCGS: 11.6S, 165.5E Santa Cruz Islands h about 33 km H = 01 55 06.6 Mag. 4.5(CGS)
45	4	eSS ZN eL Z	03	10.2 12.1								40.2	USCGS: 3.6S, 148.9E Bismarck Sea h about 9 km H = 02 53 28.1 Mag. 4.9(CGS)

No	Date	Phase	Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
46	4	eP Z	03	53	24	0.7	2.2					75.0	USCGS: 20.3N, 120.0E Philippine Islands region h about 33 km H = 03 41 36.4 Mag. 5.6(CGS)
47	5	eP ZNE e Z ePP Z eS N eS Z e Z eSS N	00	28	12 42 31 38 41 00 45.6 46.2	1.1	2.9					98.0	USCGS: 48.1N, 102.8E Mongolia Felt at Ulan Bator Mongolia and Irkutsk, U.S.S.R. h about 33 km H = 00 14 40.4 Mag. 7 $\frac{1}{4}$ (PAS), 7.4-7.6(BRK), 7 $\frac{1}{4}$ (PAL), 7 $\frac{1}{4}$ -7 $\frac{1}{2}$ (CGS SURFACE WAVES)
48	5	eP ZNE eS ZE e(ScS)N eSS ZE	06	24	42 35.5 44.0 47.1	1.5	2.5					72.0	USCGS: 13.8N, 120.7E Mindoro, Philippine Islands. Felt at Manila and IBA. h about 166 km H = 06 13 31.6 Mag. 5.4(CGS)
49	5	eP ZE ePP ZE eS ZN e(SSS)E	10	40	38 51 44.7 45.3							21.6	USCGS: 11.3S, 166.2E Santa Cruz Islands h about 62 km H = 10 35 50.3 Mag. 5.1(CGS)
50	5	eP Z	21	42	44							19.2	USCGS: 21.8S, 169.9E Loyalty Islands region h about 62 km H = 21 38 28.6
51	6	eP Z eS ZNE e(SSS)ZN e(L) ZN eK E	00	15	15 24.2 31.6 34.5 35.9							69.0	USCGS: 41.8N, 143.3E Hokkaido, Japan region h about 35 km H = 00 04 02.7 Mag. 5.5(CGS)
52	6	iP Z	00	50	02.1	1.4	1.5						u
53	6	e ZNE eL ZE	05	32.4									
54	6	eP Z eS ZNE	12	42	21 19								
55	6	eP ZNE S ZNE	19	12	48 08								Samoa Islands region
56	7	e ZNE eS ZN e Z eSS N eSSS ZNE	00	47.8								92.0	USCGS: 48.8S, 112.7E Southeast Indian Rise h about 33 km H = 00 27 25.2 Mag. 5.8(CGS)
57	7	e(S) ZE	09	35.3									
58	7	eP Z eS ZNE eL ZE	11	37	55 50 44.2							21.6	USCGS: 12.3S, 166.1E Santa Cruz Islands h about 33 km H = 11 33 00.5 Mag. 4.7(CGS)

No	Date	Phase		Time (G.M.T.)		Az Tz An Tn Ae Te						Δ (Deg.)	Remarks
						Az	Tz	An	Tn	Ae	Te		
59	7	e	ZNE	15	58.2							20.1	USCGS: 12.6S, 167.5E Santa Cruz Islands h about 33 km H = 15 53 50.9 Mag. 4.8 (CGS)
		eS	ZNE	16	02.4								
		eL	Z		03.5								
60	7	eP	Z	16	45 53	0.9	2.5					21.6	USCGS: 11.9S, 166.1E Santa Cruz Islands h about 33 km H = 16 41 03.0 Mag. 5.1 (CGS)
		eS	ZNE		50 00								
		eL	ZE		52.7								
		Coda lasting 30 minutes											
61	8	eS	ZN	05	23.8							73.0	USCGS: 56.ON, 162.9E Near east coast of Kamchatka h about 33 km H = 05 02 52.1 Mag. 5.1 (CGS)
		eL	E		33.3								
		eL	ZN		35.8								
62	8	iP	Z	12	29 11	1.5	1.0						u
		S	ZNE		29								Samoa Islands region
63	8	eP	Z	15	32 01							21.3	USCGS: 12.2S, 166.5E Santa Cruz Islands h about 40 km H = 15 27 16.9 Mag. 5.1 (CGS)
		eS	ZNE		36 00								
		eL	ZE		37 36								
64	9	iP	Z	07	02 24.5								u
		S	ZNE		43								Samoa Islands region
65	9	eS	ZNE	17	56.3							21.0	USCGS: 12.3S, 166.6E Santa Cruz Islands h about 33 km H = 17 47 41.6 Mag. 4.8 (CGS)
66	9	eP	Z	18	50 28								
		eS	ZNE		51 06								
67	9	eL	ZE	18	53.2							95.0	USCGS: 5.1N, 77.6W Near west coast of Colombia. Felt at Cali and Manizales h about 40 km H = 18 08 23.9 Mag. 5.2 (CGS)
68	9	iP	ZNE	19	04 59							4.5	d
		eS	NE		05 15								USCGS: 15.5S, 176.1W Fiji Islands region h about 339 km H = 10 03 44.3 Mag. 5.0 (CGS)
69	9	eS	ZNE	19	55.5							22.4	USCGS: 11.5S, 165.4E Santa Cruz Islands h about 78 km H = 19 47 06.0 Mag. 5.5 (CGS)
70	9	iP	Z	20	07 16								u
		eS	NE		38								Samoa Islands region
71	10	iP	Z	10	49 44	1.5	1.8						d
		S	ZNE		50 04								Samoa Islands region

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						Δ (Deg.)	Remarks
72	10	eP eS eT	Z ZNE ZNE	13 36 42	35 50 32	40							7.0	USCGS: 19.6S, 175.8E Tonga Islands h about 33 km H = 13 34 05.8 Mag. 5.0(CGS)
No readings between 102010 and 170238 due to time marks failure.														
73	17	eP eS	Z ZNE	03 24	23 50	20	6.0	1.5					8.6	USCGS: 20.2S, 177.8W Fiji Islands region h about 500 km H = 03 21 18.3 Mag. 4.6(CGS)
74	17	eP eS	Z NE	10 57	54 49	51							17.7	USCGS: 30.6S, 177.8W Kermadec Islands region h about 33 km H = 10 50 46.5 Mag. 4.6(CGS)
75	17	eP eS eSS eSSS eL	Z ZNE ZE ZNE ZNE	12 19 23 26 30	10 25 25 51 11	30							68.0	USCGS: 38.3N, 142.1E Near east coast of Honshu, Japan h about 44 km H = 11 59 31.5 Mag. 6 $\frac{1}{2}$ (PAS), 6.5(BRK), 5.9(CGS SURFACE WAVE)
76	17	eP eS	Z NE	18 28	27 13	04								
77	18	eP eS	Z ZNE	03 16	15 50	57								
78	18	eP eS eSS e e eL eL	Z NE E ZE N ZE ZNE	05 06 06 10 12 13.4 16.7	47 55 23 20 22	32							90.0	USCGS: 56.6N, 120.8E Eastern Russia Felt at Chita h about 11 km H = 05 34 32.6 Mag. 6 $\frac{1}{2}$ -6 $\frac{3}{4}$ (PAS), 6.5(BRK), 6.1(CGS)
79	18	eP eS	Z ZNE	07	27 42	13								
80	18	eSSS eL	NE Z	08	45.7 49.4								65.0	USCGS: 52.5N, 168.3W Fox Islands, Aleutian Islands h about 37 km H = 08 18 22.0 Mag. 6(PAS), 5.5-5.7(BRK), 5.7(CGS)
81	18	iP S	Z ZNE	14	31 08	10.9							5.4	d USCGS: 17.9S, 175.4W Tonga Islands h about 226 km H = 14 29 51.5 Mag. 4.6(CGS)
82	18	e(3)	ZNE	16	17.0								18.5	USCGS: 19.5S, 169.8E New Hebrides Islands h about 33 km H = 16 08 05.2 Mag. 4.5(CGS)

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						Δ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
83	18	iP S	Z ZNE	23	01	24.2 41								u Samoa Islands region
84	19	eP eS	Z NE	09	46	08 50								
85	19	eP eS	ZNE ZNE	11	37	43 19								
86	19	eP eS	ZNE ZNE	12	41	48 09						6.8		USCGS: 14.8S, 178.8W Fiji Islands region h about 18 km H = 12 40 12.6 Mag. $6\frac{3}{4}$ (PAS), 6.8(CGS) SURFACE WAVE)
87	19	eP eS	Z ZNE	17	22	23 23.6								
88	19	iP eS	Z NE	22	45	40 13								d
89	20	e(SS) eL	NE ZE	00	38.0	40.1						37.0		USCGS: 3.9S, 152.0E New Ireland region Felt at Rabaul h about 23 km H = 00 22 53.2 Mag. 5.0(CGS)
90	20	eS eS eSS eSSS e eL eL	NE ZNE ZNE ZN E NE Z	02	23.2	24.5 29.6 33.5 37.2 39.0 43.8						99.0		USCGS: 48.0N, 102.9E Mongolia h about 33 km H = 01 57 23.1 Mag. $6\frac{3}{4}$ (PAS), 6.8-7.2 (BRK), 6.1(CGS)
91	20	e(P) eS	Z ZNE	04	52	47 47							8.0 11.0 5.5 11.0	
92	20	eS	NE	06	20.1									
93	21	eP eS e eSS eSSS eL	Z ZNE NE NE ZNE ZNE	03	03	31 52 13.7 15.9 17.9 19.7						59.0		USCGS: 49.8S, 114.8W Easter Island, Cordillera h about 33 km H = 02 54 00.8 Mag. 5.3(CGS)
94	21	eP eS	Z NE	04	46	14 04								
95	21	eP eS	Z NE	04	51	38 10								
96	21	eP eS eL eT	Z NE ZNE ZNE	13	52	05 15 43 35						17.9		USCGS: 30.7S, 178.2W Kermadec Islands region h about 65 km H = 13 48 14.1 Mag. 4.9(CGS)
97	21	iP eS	Z NE	15	18	15 34	7.5	1.5				7.0		u USCGS: 16.4S, 178.7W Fiji Islands region h about 496 km H = 15 16 37.3 Mag. 3.6(CGS)

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
98	22	eP eS	Z NE	17 33	32 41	09						8.6	USCGS: 20.1S, 177.9W Fiji Islands region h about 569 km H = 17 29 18.5 Mag. 3.5(CGS)	
99	22	iP eS	ZNE ZNE	21	36 53	23.5						3.4	d USCGS: 16.5S, 173.8W Tonga Islands h about 33 km H = 21 34 35.0 Mag. 4.2(CGS)	
100	22	eP eS	Z NE	22	38 40	34 04						7.6	USCGS: 18.0S, 178.5W Fiji Islands region h about 600 km H = 22 35 50.6 Mag. 4.5(CGS)	
101	23	eP eS eL eT	Z NE ZNE ZNE	11	14 16 17 27	04 32 37 00						14.8	USCGS: 27.7S, 176.9W Kermadec Islands h about 60 km H = 11 09 51.8 Mag. 5.1 (CGS)	
102	23	eP eS	Z NE	11	44	(05) (57)								
103	23	eP eS	Z NE	15	26 27	(04) (43)								
104	23	eS e(L) eL	ZNE NE ZNE	20	47.4 55.9 58.3							70.0	USCGS: 19.9N, 109.3W Revilla Gegado Islands region h about 56 km H = 20 25 38.8 Mag. 5.7-5.9(BRK), 5.3(CGS)	
105	24	eS eL	NE ZNE	03	26 37.3	06						70.0	USCGS: 41.4N, 141.9E Hokkaido Japan region h about 69 km H = 03 05 39.0 Mag. 5.4(PAL), 5.7(CGS)	
106	24	ePKP eSSP eSSS eL	Z ZNE Z ZN	09 10	49 11.7 18.5 25.3	04	1.1	2.0				148.0	USCGS: 0.6S, 21.0W Central Mid-Atlantic Ridge h about 33 km H = 09 29 12.3 Mag. 4.9(CGS)	
107	25	iP eS	Z NE	04	15 16	08 48	1.0	1.5				9.0	u USCGS: 20.2S, 178.5W Fiji Islands region h about 576 km H = 04 12 58.8 Mag. 4.0(CGS)	
108	25	iP eS	Z ZNE	07	33 35	48.9 31	2.3	1.5				9.4	u USCGS: 20.6S, 178.4W Fiji Islands region h about 517 km H = 07 31 35.3 Mag. 4.8 (CGS)	

11.

No	Date	Phase	Time (G.M.T.)	Az Tz An Tn Ae Te						△ (Deg.)	Remarks
122	28	eS NE	17 46.5							64.0	USCGS: 52.3N, 169.4W Fox Islands, Aleutian Islands h about 33 km H = 17 26 32.8 Mag. 4.3(CGS)
123	28	eS N	18 01.4							65.0	USCGS: 52.4N, 169.4W Fox Islands, Aleutian Islands h about 50 km H = 17 42 01.5 Mag. 6(PAS), 5.6(CGS)
		eSSS NE	08.7								
		eL ZN	11.5								
124	29	eP Z	02 25 45								
		eS ZNE	26 20								
		eT ZNE	28 26								
125	29	eP Z	10 33 24								
		eS ZNE	34 21								
126	29	iP ZNE	17 47 16							3.0	une USCGS: 16.2S, 173.0W Tonga Islands h about 134 km H = 17 46 33.3 Mag. 4.5(CGS)
		eS ZNE	46								
127	30	eS ZNE	01 29 17								
128	31	eP ZNE	16 18 46								Samoa Islands region
		eS ZNE	19 02								

NOTE:

- (i) Trace amplitude(A) are expressed in millimetres and periods (T) in seconds.
- (ii) The small letters in the Remarks column indicate the direction of initial movement. u indicates an upwards ground movement, d a downwards one, n,s,e, and w towards north, south, east, and west respectively.
- (iii) *Readings to be incorporated in the New Zealand Seismological Report for 1967.

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P.D. Muller

OBSERVER-IN-CHARGE

2.

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
10	3	eP S	ZNE ZNE	06	23	35 52	4.0	1.8	2.0	1.9	2.0	1.9		Samoa Islands region
11	3	eP e e(L)	ZNE N NE	12 13	59	07 01.2 08.3							77.0	USCGS: 5.6S, 110.5E. Java Sea h about 560 km. H = 12 48 09.2 Mag. 5.4 (CGS)
12	3	eP eS	Z ZNE	13	56	59 40								
13	3	eP eS	ZNE ZNE	21	50	28 57								
14	4	eP eS	ZNE ZNE	09	32	21 03								
15	4	e	NE	09	50.9									
16	4	iP S	ZNE ZNE	18	34	26.9 47								une Samoa Islands region
17	5	eP eS eT	Z ZNE ZNE	06	29	01 51 34								
18	5	iP iS	Z NE	07	24	43.7 03								d Samoa Islands region
19	5	eP eiS	ZNE ZNE	09	31	13 33								Samoa Islands region
20	5	eP eS	Z ZNE	10	33	04 46								
21	5	eP eS	Z ZNE	18	07	15 47								
22	5	eP eS	Z ZNE	18	31	06 02								
23	5	e(P) eS	Z NE	19	04	40 59								
24	6	eP eS	ZNE ZNE	00	14	40 25								
25	6	eP iS	ZNE ZNE	01	16	48 17								
26	6	eP eS	ZE NE	01	20	55 05						12.6	USCGS: 23.9S, 179.7W. South of Fiji Islands h about 435 km. H = 01 18 05.6 Mag. 4.6 (CGS)	
27	6	eP eS	ZNE ZNE	01	36	55 10						7.6	USCGS: 20.2S, 176.2W. Fiji Islands region h about 280 km. H = 01 35 17.9 Mag. 4.1 (CGS)	

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
28	6	eP S eT	Z ZNE ZNE	03 12 14 19	41 17 55							9.9	USCGS: 22.8S, 176.1W. South of Fiji Islands h about 90 km. H = 03 10 33.4 Mag. 5.1 (CGS)	
29	6	eP eS	Z ZNE	13 32 53	12 53									
30	6	iP S	Z ZNE	21 09 10	46 07								u Samoa Islands region	
31	6	eP S	Z ZNE	22 53 54	42 54									
32	7	eP e eL	ZNE NE NE	08 37 44.7 50.7	46							51.0	USCGS: 13.9N, 144.8E. Mariana Islands Felt on Guam h about 138 km. H = 08 28 57.9 Mag. 5.7(BRK), 5.4(CGS)	
33	7	eP eS eS	Z Z NE	10 41 43	27 21 27							11.4	USCGS: 22.5S, 179.5W. South of Fiji Islands h about 532 km. H = 10 39 02.8 Mag. 4.1 (CGS)	
34	7	eP eS eT	Z ZNE ZNE	16 39 42	04 41 34									
35	7	eP iS	ZNE ZNE	18 47 48	29 03									
36	8	eP S	ZNE ZNE	07 43	07 28								Samoa Islands region	
37	8	e(L)	ZNE	15	08.9									
38	8	e e eL	ZNE ZNE ZN	16 09.7 20.0 24.2										
39	9	e	Z	08	45	07								
40	9	eP e ePPP eSKS e(S) e e eSS eSSS eLq eLr	ZNE ZE N NE N Z ZE NE ZN NE ZNE	15 38 42 44 48 50 51 55 56 16 00.2 06.3 10.2	16 16 43 56 20 04 36 36							97.0	USCGS: 2.9N, 74.9W. Colombia 100 killed, many injured. Major damage at Campoale, Guatamaya and Neiva. Felt at Iquito, Peru and Guito, Ecuador. h about 58 km. H = 15 24 47.2 Mag. 6 $\frac{3}{4}$ (PAS), 7.3-7.5(BRK), 7-7 $\frac{1}{4}$ (PAL), 6.3(CGS) Surface waves lasting 3 hours	

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						Δ (Deg.)	Remarks
86	25	eP	NE	15	48	12							7.0	USCGS: 19.6S, 176.0W. Tonga Islands h about 358 km. H = 15 46 51.8 Mag. 4.5 (CGS)
		eS	NE		49	19								
		eT	NE		53	51								
87	26	iP	N	03	07	12								u
		eS	ZNE			39								
88	26	eP	Z	20	45	31								
		eS	ZNE		46	15								
89	27	eP	ZNE	01	52	37								
		eS	ZNE		53	14								
		eT	ZNE		55	48								
90	27	eP	Z	02	21	37								
		eS	ZNE		22	16								
		eT	ZNE		24	46								
91	27	eP	ZNE	04	13	16								
		eS	ZNE			46								
92	27	eP	Z	11	15	23							10.6	USCGS: 23.9S, 175.3W. Tonga Islands region h about 33 km. H = 11 13 02.1 Mag. 4.6 (CGS)
		eS	ZNE		17	13								
		eT	ZNE		25	06								
93	27	eP	Z	12	00	54								
		eS	ZNE		01	48								
94	27	eP	Z	13	46	51								
		eS	NE		48	24								
95	28	iP	Z	05	50	54								
		eS	ZNE		51	12								
96	28	eP	Z	09	47	54							65.0	USCGS: 32.7N, 141.7E. South of Honshu, Japan h about 23 km. H = 09 37 18.0 Mag. 5.4-6 (PAS), 5.5 (CGS)
		eS	NE		56	36								
		eSSS	NE	10	03.5									
		eL	NE		06.5									
97	28	eP	ZNE	12	29	52	0.7	2.0					10.1	USCGS: 21.2S, 179.1W. Fiji Islands region h about 591 km. H = 12 27 34.1 Mag. 4.8 (CGS)
		eS	ZNE		31	42								

NOTE:

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- (iii) * Readings to be incorporated in the New Zealand Seismological Report for 1967

NEW ZEALAND

Department of Scientific and Industrial Research

Geophysics Division

APIA OBSERVATORY

FINAL SEISMOLOGICAL BULLETIN

STANDARD SEISMIC STATION (AFI)

AFIAMALU, WESTERN SAMOA

 Latitude: $13^{\circ} 54' 33.6''$ 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. $T_g = 100$ sec.

Nominal Magnifications: S.P. 12500

L.P. 750

MARCH 1967 *

No	Date	Phase	Time (G.M.T.)							Δ (Deg.)	Remarks	
				Az	Tz	An	Tn	Ae	Te			
1	1	eP eS	ZE NE	02	27	20						
2	1	iP S	ZE ZNE	06	43	59						uw Samoa Islands region
3	1	eP eS	Z NE	09	35	52						
4	1	iP eiS	Z ZNE	10	35	04						u
5	2	e(PcP)Z		03	00	35				92.0		USCGS: 0.3S, 78.7W. Ecuador h about 121 km. H = 02 47 31.7 Mag. 4.8-5.2(BRK), 5.8(CGS)
6	2	eP eS e(T)	ZNE ZNE ZNE	06	01	10	1.5	1.2			13.1	USCGS: 24.6S, 179.6W. South of Fiji Islands h about 480 km. H = 05 58 28.2 Mag. 4.5 (CGS)
7	3	iP S	ZNE ZNE	06	24	14						u Samoa Islands region
8	3	eP eS eT	ZNE NE ZNE	07	27	24						
9	3	eS eL eL	NE NE ZE	09	11.2						59.0	USCGS: 0.2S, 129.8E. Halmahera h about 47 km. H = 08 52 48.8 Mag. 5.0 (CGS)
10	3	eP	ZNE	10	14	04	1.0	1.1				

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
26	8	eP S	ZNE ZNE	03 04 12 46										
27	8	eP	Z	22 59 07	1.0	2.1						11.4	USCGS: 12.3S, 166.4E. Santa Cruz Islands h about 61 km. H = 22 52 13.6 Mag. 4.8 (CGS)	
28	8	eP	ZNE	23 09 17	1.2	2.0	2.1	2.8	1.6	2.1		6.3	USCGS: 17.6S, 177.0W. Fiji Islands region h about 182 km. H = 23 07 15.7 Mag. 4.2 (CGS)	
29	9	eS	ZNE	03 33.1								21.6	USCGS: 10.7S, 166.3E. Santa Cruz Islands h about 30 km. H = 03 24 18.9 Mag. 5.6 (CGS)	
30	9	eP S	ZNE ZNE	05 12 01 29										
31	9	e eL	ZE ZNE	05 06	48.3 01.2							21.7	USCGS: 10.7S, 166.1E. Santa Cruz Islands h about 33 km. H = 05 38 14.9 Mag. 5.2 (CGS)	
32	9	eP eS eL	ZNE ZNE ZE	07 03 07 08.9	29 28							21.7	USCGS: 10.6S, 166.3E. Santa Cruz Islands h about 30 km. H = 06 58 35.7 Mag. 6 $\frac{1}{2}$ (PAS), 5.6-5.8(BRK), 6.0(CGS)	
33	9	eP	ZNE	17 59 21								4.0	USCGS: 15.5S, 175.5W. Tonga Islands h about 95 km. H = 17 58 33.2 Mag. 4.3 (CGS)	
34	9	eP (T)	ZNE ZNE	18 28 02 31 24								3.8	USCGS: 15.6S, 175.3W. Tonga Islands h about 28 km. H = 18 27 08.1 Mag. 4.6 (CGS)	
35	9	eP eS	ZNE ZNE	21 27 17 28 43								8.8	USCGS: 21.5S, 176.3W. Fiji Islands region h about 283 km. H = 21 25 34.6 Mag. 4.8 (CGS)	
36	10	eP	Z	00 19 54										
37	10	iP eS	ZNE ZNE	05 46 23 47 08	3.0	1.3							d	
38	10	eP eS	ZNE ZNE	06 36 25 38 36								11.8	USCGS: 23.0S, 179.7W. South of Fiji Islands h about 551 km. H = 06 33 53.3 Mag. 4.2 (CGS)	
39	10	eP eS	ZNE NE	10 15 22 16 50								7.6	USCGS: 17.8S, 178.6W. Fiji Islands region h about 517 km. H = 10 13 21.8 Mag. 4.2 (CGS)	

8.

No	Date	Phase		Time (G.M.T.)									Δ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
102	29	P S	ZNE ZNE	19	54	25 42							1.7	USCGS: 15.2S, 172.9W. Samoa Islands region h about 33 km. H = 19 53 57.8 Mag. 4.7 (CGS)
103	30	eP eS eL eL	ZNE ZNE N ZE	02	19	25 28 41 36.2 37.5	1.5	2.4					71.0	USCGS: 11.0S, 115.5E. South of Bali Island h about 33 km. H = 02 08 02.4 Mag. 6.0 (CGS)
104	30	eP eS	ZNE ZNE	23	07	51 08 58							5.6	USCGS: 16.9S, 176.9W. Fiji Islands region h about 33 km. H = 23 04 45.8 Mag. 5.1 (CGS)
105	31	e(SSS) eL	NE ZE	10	56.8	59.7							66.0	USCGS: 35.7S, 102.7W. Southern Pacific Ocean h about 33 km. H = 10 29 43.5 Mag. 4.9 (CGS)
106	31	eP eS	Z NE	16	59	14 17 00 10								
107	31	eP eS	ZNE ZNE	20	10	24 14 12	3.0	2.0	2.0	2.0	2.0	2.0	20.1	USCGS: 15.4S, 167.5E. New Hebrides Islands Felt h about 132 km. H = 20 15 18.9 Mag. 5.3 (CGS)

NOTE:

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- (iii) * Readings to be incorporated in the New Zealand Seismological Report for 1967.

"

P.D. Muller

OBSERVER-IN-CHARGE

NEW ZEALAND

Department of Scientific and Industrial Research

Geophysics Division

APIA OBSERVATORY

FINAL SEISMOLOGICAL BULLETIN

STANDARD SEISMIC STATION (API)

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

April 1967 *

No	Date	Phase	Time (G.M.T.)							Δ (Deg.)	Remarks
				Az	Tz	An	Tn	Ae	Te		
1	1	eP Z	06 09 05							68.0	USCGS: 45.8N, 151.8E. Kurile Islands h about 40 km H = 05 54 19.1 Mag. $5\frac{3}{4}$ (PAS), 5.9-6.1(BRK), $5\frac{3}{4}$ (PAL), 5.7(CGS)
		eS ZN	14 11								
		eS E	27								
		eSS N	17.8								
		e(SSS)E	22.3								
eL ZNE	25.8										
2	1	eP Z	10 52 56						65.0	USCGS: 4.6S, 105.8W. Northern Easter Island, Cordillera. h about 33 km. H = 12 23 35.5 Mag. 5.9-6.1(BRK), 6.0(PAL)	
		eS N	11 01 39								
		eS E	54								
		e Z	02 13								
		eL ZE	11.8								
3	1	eS ZNE	12 45 11						68.0	USCGS: 45.7N, 151.8E. Kurile Islands h about 40 km. H = 12 23 35.5 Mag. $5\frac{3}{4}$ (PAS), 5.4-5.8(BRK), 5.9(CGS)	
		eL E	54.9								
		eL ZN	55.8								
4	1	eL ZNE	14 33.5						68.0	USCGS: 45.8N, 151.7E. Kurile Islands h about 23 km. H = 14 00 33.8 Mag. 5.4 (CGS)	
5	1	eP ZE	15 33 12								
		eS NE	34 43								

4.

No	Date	Phase		Time (G.M.T.)		Az Tz An Tn Ae Te				△ (Deg.)	Remarks		
						Az	Tz	An	Tn			Ae	Te
27	12	eL	ZNE	13	59.8						33.0	USCGS: 7.5S, 155.8E. Solomon Islands h about 49 km. H = 13 46 05.0 Mag. 5.1 (CGS)	
28	12	iP	Z	14	01	25	4.3	1.0				33.0	u USCGS: 7.3S, 155.6E. Solomon Islands h about 52 km. H = 13 54 57.2 Mag. 4.9-5.3(BRK), 5.2(CGS)
		e	Z		05.8								
		eL	ZNE		08.5								
		eL	Z		10.5		4.0	20.0					
29	12	eP	ZNE	14	58	21							
30	12	eP	ZNE	18	19	58						8.0	12.0
		S	ZNE		20	36							
		eT	ZNE		23	06							
31	13	eP	ZNE	00	13	09							
		iS	ZNE		14	50							
32	13	eP	Z	03	10	20							
		S	ZNE			54							
		eT	ZNE		13	32							
33	13	eP	Z	04	18	49					19.0	USCGS: 18.7S, 168.8E. New Hebrides Islands h about 123 km. H = 04 14 33.6 Mag. 5.2 (CGS)	
34	13	iP	Z	17	15	36						7.6	d USCGS: 18.0S, 178.6W. Fiji Islands region h about 610 km. H = 17 13 43.5 Mag. 5.0 (CGS)
		S	ZNE		17	06							
35	13	eP	ZNE	20	28	30							
		S	ZNE		29	20							
		eT	ZNE		32	50							
36	13	eP	ZNE	21	38	27							
		eiS	ZNE			46							
37	14	eP	ZE	09	43	48					20.0	USCGS: 17.1S, 167.7E. New Hebrides Islands Felt at Port Vila h about 28 km. H = 09 39 14.3 Mag. 4.7 (CGS)	
38	14	eP	Z	14	47	43					32.7	USCGS: 7.4S, 155.5E. Solomon Islands h about 77 km. H = 14 41 17.6 Mag. 5.1 (CGS)	

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks	
39	14	iP	ZNE	23	00	51.3							2.0	u USCGS: 15.3S, 173.3W. Tonga Islands h about 27 km. H = 23 00 19.2 Mag. 4.7 (CGS)	
40	14	eP eS	Z ZNE	23	33 34	28 32									
41	15	iP	ZNE	09	04	21							17.0	u USCGS: 29.1S, 179.7W. Kermadec Islands h about 349 km. H = 09 00 40.3 Mag. 4.4 (CGS)	
42	16	eP eS eT	ZNE ZNE ZNE	07	21 23 32	17 41 00							13.0	USCGS: 19.4S, 175.9E. South of Fiji Islands h about 38 km. H = 07 18 11.8 Mag. 5.3 (CGS)	
43	16	eP	ZNE	18	18	37							3.0	USCGS: 15.8S, 174.2W. Tonga Islands h about 33 km. H = 18 17 52.2 Mag. 4.3 (CGS)	
44	19	eP eS	ZNE ZNE	13	25 26	52 35							4.3	USCGS: 17.3S, 174.5W. Tonga Islands h about 85 km. H = 13 24 48.3 Mag. 4.3 (CGS)	
45	19	eP eS	ZNE ZNE	17	16 18	31 07							9.1	USCGS: 20.6S, 178.0W. Fiji Islands h about 449 km. H = 17 14 24.1 Mag. 4.9 (CGS)	
46	20	eP	ZNE	00	11	04							58.0	USCGS: 5.5S, 129.7E. Banda Sea h about 163 km. H = 00 01 24.9 Mag. 5.7 (CGS)	
47	20	eP eS	ZNE ZNE	05	24 25	13 42									
48	21	eP eS eSS eSSS e eL	Z ZNE NE ZE N ZE	08	24 33 35.9 39.0 40.0 43.8	45 00							62.0	USCGS: 5.4S, 126.9E. Banda Sea h about 33 km. H = 08 14 25.0 Mag. 6.4(PAS), 6.4-6.6(BRK)	
49	21	eP eS	ZNE ZNE	14	40 41	06 40							8.7	USCGS: 20.6S, 177.5W. Fiji Islands region h about 453 km. H = 14 38 02.8 Mag. 4.9 (CGS)	

6.

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						Δ (Deg.)	Remarks	
50	22	eP e eL	Z N ZE	08 09	47 03.3 10.4	42							61.0	USCGS: 5.6S, 126.8E. Banda Sea h about 33 km. H = 08 37 25.5 Mag. 5.2 (CGS)	
51	22	eP	ZE	19	51	44							58.0	USCGS: 7.0S, 129.5E. Banda Sea h about 82 km. H = 19 41 57.8 Mag. 5.5 (CGS)	
52	22	eP eS	ZNE ZNE	22	03 05	53 19							7.5	USCGS: 18.6S, 177.8W. Fiji Islands region h about 460 km. H = 22 02 02.4 Mag. 4.2 (CGS)	
53	23	eP S	ZNE ZNE	11	50	30 49									Samoa Islands region
54	24	eP	Z	18	59	54							39.9	USCGS: 6.1S, 148.5E. New Britain region h about 63 km. H = 18 52 21.3 Mag. 5.1 (CGS)	
55	25	eL	ZE	11	20.1								92.0	USCGS: 32.9S, 69.0W. Mendoza Province, Argentina Minor damage at Mendoza. Felt at San Juan h about 39 km. H = 10 36 14.3 Mag. 5.7 (CGS)	
56	25	eP	Z	12	33	01							20.0	USCGS: 15.9S, 167.6E. New Hebrides Islands Felt at Norsup and Luganville. h about 46 km. H = 12 28 26.3 Mag. 4.6 (CGS)	
57	26	iP S	ZNE ZNE	06	36	04 34							2.6	dsw Felt at Apia MMII USCGS: 15.6S, 173.8W. Tonga Islands h about 140 km. H = 06 35 24.7 Mag. 4.4 (CGS)	
58	27	eL	ZN	01	18.3										
59	27	eS e(SSS) eL	NE N ZE	08	25.4 30.8 32.6								50.3	USCGS: 1.8S, 138.7E. Near north coast of west New Guinea h about 33 km. H = 08 09 47.9 Mag. 5.3 (CGS)	

7.

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
60	28	eP eS eL	Z ZN ZE	07 23 27 29.4	54 45							22.0	USCGS: 11.3S, 165.8E Santa Cruz Islands h about 37 km. H = 07 18 57.1 Mag. 4.7 (CGS)	
61	28	eP eS eL	Z ZNE ZE	07 49 54 55.0	47 02							21.9	USCGS: 11.5S, 165.8E. Santa Cruz Islands h about 30 km. H = 07 44 37.3 Mag. 4.7 (CGS)	
62	28	e(S)	ZNE	10	15.7									
63	29	eS e(SSS) eL	ZN E ZN	04 14 22.5 24.6	46							65.0	USCGS: 51.4N, 178.3W. Andreanof Islands, Aleutian Islands Felt on Adak h about 50 km. H = 03 55 20.8 Mag. 5 $\frac{1}{4}$ -5 $\frac{1}{2}$ (GOL), 6.0(CGS)	
64	29	iP S	ZNE ZNE	12 31 32	50 12							2.6	u USCGS: 15.6S, 173.8W. Tonga Islands Felt at Apia, Samoa. h about 59 km. H = 12 31 09.4 Mag. 4.6 (CGS)	
65	30	e(P)	ZNE	05	29	49								
66	30	eL	ZNE	08	08.1									
67	30	eS e eSS eL	ZNE N Z ZNE	17 15 18.0 19.1 23.0	14							50.3	USCGS: 1.8S, 138.7E. Near north coast of New Guinea h about 33 km. H = 16 59 00.6 Mag. 5.5 (CGS)	
68	30	eL	ZNE	23	23.8							34.4	USCGS: 6.2S, 154.2E. Solomon Islands h about 72 km. H = 23 06 16.1 Mag. 4.7 (CGS)	

P.D. Muller
OBSERVER-IN-CHARGE

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- (ii) The small letters in the Remarks column indicate the direction of initial movement. u indicates an upwards ground movement, d a downwards one, n,s,e, and w towards north, south, east and west respectively.
- (iii) *Readings to be incorporated in the New Zealand Seismological Report for 1967.

No records on 6,7,10,17 and 18 as maintenance of the Seismographs was carried out by the USCGS team.

Correction to January, February and March 1967 Final Seismological Bulletin:

Benioff short period seismometers

To = 1.0 sec. Tg = 0.75 sec.

Sprengnether long period seismometers

To = 15 sec. Tg = 100 sec.

* * * * *

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
3	4	eP eS	ZNE ZNE	10 21	20 34	27							7.2	USCGS: 19.7S, 176.2W. Fiji Islands region h about 33 km. H = 10 18 58.0 Mag. 4.9 (CGS)
9	4	eP	Z	16	29	36							43.0	USCGS: 6.0S, 146.7E. East New Guinea region h about 49 km. H = 16 22 00.9 Mag. 5.2 (CGS)
10	4	iP eS	Z ZNE	22 09	08 30	58								u
11	5	eP eS e eL	Z ZNE ZNE ZE	15 10 11 12.5	05 14 26	46							26.5	USCGS: 10.5S, 161.3E. Solomon Islands Felt at Honiara h about 41 km. H = 15 00 07.7 Mag. 5.1-5.5(BRK), 5.4(CGS)
12	6	e eL	N Z	09	20.5 23.4									
13	6	e(P)	ZNE	10	16	29								
14	7	iP S	ZNE ZNE	02	33 02	43								u Samoa Islands region
15	7	eL	ZE	10	32.6								36.1	USCGS: 4.1S, 152.8E. New Britain region h about 47 km. H = 10 16 56.2 Mag. 5.0 (CGS)
16	7	eP S	ZNE ZNE	13	41 42	23								Samoa Islands region
17	8	eP eS	ZNE NE	18	49 46	25							20.3	USCGS: 33.2S, 178.4W. South of Kermadec h about 50 km. H = 18 44 56.8 Mag. 5.3 (CGS)
18	9	eL	ZNE	06	45.0								67.0	USCGS: 44.2N, 149.0E. Kurile Islands h about 40 km. H = 06 14 57.1 Mag. 5.3 (CGS)
19	9	eS e eL	NE E ZN	12 13	56 06.2 09.5	33							72.0	USCGS: 56.6N, 152.6W. Kodiak Island region h about 33 km. H = 12 36 36.8 Mag. 5.0 (CGS)
20	9	iP S	ZNE ZNE	20	14 30	09							2.2	u Felt at Apia MGA USCGS: 15.5S, 173.4W. Tonga Islands h about 89 km. H = 20 13 32.4 Mag. 4.8 (CGS)

4.

No	Date	Phase		Time			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
				(G.M.T.)										
32	14	eP S T	Z ZNE ZNE	19 27 29	28 49 48									Samoa Islands region
33	15	eP eS	ZNE ZNE	02 30 31	17 52							8.4		USCGS: 20.1S, 177.6W. Fiji Islands region h about 564 km. H = 02 28 16.8 Mag. 4.9 (CGS)
34	15	eL	ZNE	02	56.8							64.0		USCGS: 32.5N, 141.4E. South of Honshu, Japan. h about 40 km. H = 02 27 36.0 Mag. 5.4 (CGS)
35	16	eP	ZN	06	26 13							42.0		USCGS: 5.7S, 146.4E. East New Guinea region h about 53 km. H = 06 18 24.4 Mag. 5.4 (CGS)
36	16	eL eL	NE ZE	08	40.2 42.6							61.0		USCGS: 33.2S, 108.4W. Easter Island Cordillera h about 33 km. H = 08 14 33.9 Mag. 5.1 (CGS)
37	16	iP S	ZNE ZNE	16 14 15	55 14							2.1		u USCGS: 15.2S, 173.5W. Tonga Islands Felt at Apia h about 33 km. H = 16 14 22.9 Mag. 5.2 (CGS)
38	16	iP S	ZNE ZNE	19 28 12	33									d Samoa Islands region
39	16	eP	ZNE	23	10 32							9.8		USCGS: 21.0S, 178.8W. Fiji Islands region h about 551 km. H = 23 08 16.3 Mag. 3.9 (CGS)
40	16	eP eS eT	ZNE ZNE ZNE	23 13 15 25	51 57 20							13.3		USCGS: 25.9S, 177.6W. South of Fiji Islands h about 154 km. H = 23 11 07.6
41	17	e(S)	NE	06	51 41									
42	17	eL	ZNE	13	09.0							28.0		USCGS: 9.7S, 159.8E. Solomon Islands Felt at Honiara h about 32 km. H = 12 56 55.4 Mag. 5.1 (CGS)
43	17	e eL	N ZE	16	20.5 21.4							12.5		USCGS: 16.6S, 175.5E. Fiji Islands region h about 80 km. H = 16 13 37.6 Mag. 4.8 (CGS)

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks	
							Az	Tz	An	Tn	Ae	Te			
44	17	eL	ZNE	22	02.1								60.0	USCGS: 34.7S, 109.4W. Easter Island Cordillera h about 33 km. H = 21 33 32.0 Mag. 4.8 (CGS)	
45	18	eL	ZN	04	38.2								68.0	USCGS: 41.9N, 144.6E. Hokkaido, Japan region h about 44 km. H = 04 06 54.7 Mag. 4.7 (CGS)	
46	19	eP eS eT	Z ZNE ZNE	05	14	03	0.9	1.0					22.0	USCGS: 34.9S, 179.0W. South of Kermadec Is. h about 35 km. H = 05 09 10.9 Mag. 5.2 (CGS)	
47	19	eP eS eT	Z NE ZNE	12	06	13							17.4	USCGS: 30.3S, 177.9W. Kermadec Islands region h about 25 km. H = 12 02 19.9 Mag. 4.7 (CGS)	
48	19	eP S L T	ZNE ZNE NE ZNE	12	52	16									
49	20	eL	ZNE	03	15.1								52.0	USCGS: 19.8N, 146.0E. Mariana Islands region h about 42 km. H = 02 51 09.4 Mag. 5.5 (CGS)	
50	20	e(L)	ZNE	10	51	32									
51	21	eL	ZNE	07	50	32							72.0	USCGS: 27.9N, 111.3W. Gulf of California h about 33 km. H = 07 18 12.8 Mag. 4.4-4.8(BRK), 5 ¹ / ₂ (GOL), 4.7(CGS)	
52	21	eP e ePP eS eS e e(L) eL	Z ZE ZE ZE N ZN ZE ZE	18	57	37							87.0	USCGS: 1.0S, 101.5E. Southern Sumatra h about 51 km. H = 18 45 11.7 Mag. 6 ³ / ₄ (PAS), 6.1-6.3(BRK), 6.3(CGS)	
53	22	eP eS	Z ZNE	12	11	03							9.7	USCGS: 20.7S, 178.9W. Fiji Islands region h about 607 km. H = 12 08 48.1 Mag. 4.3 (CGS)	
54	22	eP S	Z ZNE	23	44	42									Samoa Islands region

No	Date	Phase	Time (G.M.T.)			Az	Tz	An	Tn	Ae	Te	△ (Deg.)	Remarks
55	23	e(SSS)E eL ZN	02	18	20							66.0	USCGS: 44.6N, 150.5E. Kurile Islands region h about 22 km. H = 01 52 39.1 Mag. 4.9 (CGS)
56	23	eP Z eS NE eT ZNE	15	28	41							14.9	USCGS: 28.0S, 176.7W. Kermadec Islands h about 91 km. H = 15 25 26.3 Mag. 4.5 (CGS)
57	23	e(S) Z eL Z eL Z	19	45.0								105.0	USCGS: 56.2S, 27.3W. South Sandwich Islands region h about 130 km. H = 19 17 47.5 Mag. 5.9 (CGS)
58	24	e Z eL NE eL Z	04	30	16								
59	24	e Z e NE eL Z	05	14.0									
60	24	iP ZNE S ZNE	06	50	12.4								d Samoa Islands region
61	24	eP Z (P) ZNE S ZNE T ZNE	09	37	57								
62	24	eP Z S ZNE T ZNE	11	56	12							2.4	USCGS: 16.0S, 172.6W. Samoa Islands region h about 33 km. H = 11 55 38.9 Mag. 4.2 (CGS)
63	25	eP Z e(S) NE	16	30	07								
64	25	eP Z S ZNE	16	44	31								
65	25	eP Z S ZNE	17	15	09								Samoa Islands region
66	26	eP Z	10	57	25								
67	26	iP ZNE S ZNE	16	19	38.7								u Samoa Islands region
68	27	e(S) ZNE	11	59	00								
69	27	eP Z eS ZN eS E e(SSS)ZNE eL ZN	17	33	44							65.0	USCGS: 51.9N, 176.1E. Rat Islands, Aleutian Island h about 34 km. H = 17 22 58.7 Mag. 6(PAS), 5.8(BRK), 6-6 $\frac{1}{4}$ (PAL), 5.8(CGS)

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
70	28	eL	ZN	02	01.5								65.0	USCGS: 52.1N, 175.0E. Rat Islands, Aleutian Islands. h about 45 km. H = 01 31 56.7 Mag. 5.2 (CGS)
71	28	eP eS	ZNE ZNE	06	32 34	31 38							12.6	USCGS: 23.8S, 179.7W. South of Fiji Islands h about 441 km. H = 06 29 45.6 Mag. 4.4 (CGS)
72	28	eP eS	Z ZNE	12	10 11	59 33								
73	28	eP	ZE	13	37	35								
74	29	eP eS	ZNE ZNE	11	11 12	32 45							6.8	USCGS: 19.2S, 176.3W. Fiji Islands region h about 236 km. H = 11 09 53.9 Mag. 5.1 (CGS)
75	29	eP S eT	ZNE ZNE ZNE	19	21 22 28	29 38 08							6.6	USCGS: 20.2S, 173.9W. Tonga Islands h about 33 km. H = 19 19 54.5 Mag. 4.2 (CGS)
76	29	eP S T	ZNE ZNE ZNE	21	55 56 58	44 11 07							2.1	USCGS: 15.8S, 172.5W. Samoa Islands region h about 33 km. H = 21 55 14.0 Mag. 4.6 (CGS)
77	30	eP S	ZNE ZNE	07	07 09	56 03							6.8	USCGS: 19.4S, 175.8W. Tonga Islands h about 185 km. H = 07 06 20.0 Mag. 4.2 (CGS)
78	30	e(P) eS e(T)	Z NE ZNE	18	20 21 27	28 42 10								
79	31	eP S	Z ZNE	04	27	38 58								Samoa Islands region
80	31	eP eS	Z ZE	10	51 57.7	58							21.6	USCGS: 12.0S, 166.2E. Santa Cruz Islands h about 50 km. H = 10 46 54.6 Mag. 4.7 (CGS)
81	31	eP eS eT	Z NE ZNE	16	26 29	13 55 30								

8.

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
82	31	eP	ZNE	17	50	00							8.0	USCGS: 15.8S, 179.7W Fiji Islands region h about 465 km. H = 17 49 07.5 Mag. 4.1 (CGS)
		eS	ZNE		51	31								
83	31	eP	ZNE	23	57	50								
		eS	ZNE		58	24								
		eT	ZNE	00	00	26								

NOTE:

- (i) Trace amplitude(A) are expressed in millimetres and periods (T) in seconds.
- (ii) The small letters in the Remarks column indicate the direction of initial movement. u indicates an upwards ground movement, d a downwards one, n,s,e, and w towards north, south, east, and west respectively.
- (iii) *Readings to be incorporated in the New Zealand Seismological Report for 1967.

"

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.

Nominal Magnifications: S.P. 12500

L.P. 750

June 1967 *

No	Date	Phase	Time (G.M.T.)	Az Tz An Tn Ae Te						△ (Deg.)	Remarks
				Az	Tz	An	Tn	Ae	Te		
1	1	eP Z	03 47 09	0.9	1.0				67.0	USCGS: 53.7N, 165.6W. Fox Islands, Aleutian Islands Felt at Dutch Harbor and on Unimak Island h about 60 km. H = 03 36 19.0 Mag. 5-5.4(BRK), 5-5.4(PAL), 5.7(CGS)	
		eS ZN	03 55 42								
		e(L) ZNE	04 04 08								
		eL ZN	04 06 28								
2	1	ePKP Z	10 59 14	0.9	1.5				151.0	USCGS: 36.9N, 29.2E. Turkey Felt at Denizli, Bodru, and Isparta h about 36 km. H = 10 39 22.8 Mag. 5.0 (CGS)	
3	1	eP ZE	20 54 23						33.4	USCGS: 6.8S, 155.0E. Solomon Islands Felt at Buin h about 31 km. H = 20 47 45.6 Mag. 5.6 (CGS)	
		eS ZNE	20 59 48								
		eLq NE	21 02 28								
		eLr Z	21 03 40								
4	2	iP Z	10 02 01.5						u	Samoa Islands region	
		S ZNE	10 02 23								
5	2	iP Z	11 35 49						d	Samoa Islands region	
		S ZNE	11 36 08								
6	2	eP ZNE	12 05 06								
		S ZNE	12 05 34								

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						Δ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
7	3	eS eL	Z ZE	06 34 52	40 28							90.0	USCGS: 10.8S, 79.0W Near coast of Peru h about 33 km. H = 06 11 07.8 Mag. 4.6 (CGS)	
8	3	eP eS e eL	Z N E ZN	09 20 30 37 42	30 28 40 00							78.0	USCGS: 58.4N, 151.2W. Kodiak Island region h about 32 km. H = 09 08 56.4 Mag. 4.8-5.2(BRK), 5-5 $\frac{1}{4}$ (PAL), 5.5(CGS)	
9	3	iP S	Z ZNE	11 47	18 39								u	Samoa Islands region
10	4	iP iS	ZNE ZNE	02 32 33	48.5 09								u	Samoa Islands region
11	4	eL	ZN	05 58	00							68.0	USCGS: 51.4N, 159.3E. Off east coast of Kamchatka h about 9 km. H = 05 26 44.6 Mag. 4.8 (CGS)	
12	4	eS eL	E ZE	19 09 12	44 28							92.0	USCGS: 15.5S, 75.7W. Near coast of Peru h about 38 km. H = 18 28 39.6 Mag. 4.7 (CGS)	
13	5	eP i S iL eT	Z ZNE ZNE ZN ZNE	01 23 24 25 29	05 11 26 00 48							7.8	USCGS: 21.3S, 174.5W. Tonga Islands h about 33 km. H = 01 21 20.2 Mag. 5.0-5.2(BRK), 5.2(CGS)	
14	5	eP S	ZNE ZNE	05 26	01 18									Samoa Islands region
15	5	iP iS	ZNE ZNE	06 06	18.9 36								d	Samoa Islands region
16	5	eP eS eT	Z ZNE ZNE	17 51 52 58	06 16 13									
17	5	iP iS	ZNE ZNE	21 58	19.5 51								u	
18	6	eP	Z	06 42	17	0.9	1.0					36.5	USCGS: 6.2S, 152.0E. New Britain region h about 58 km. H = 06 35 16.1 Mag. 5.4 (CGS)	
19	6	eP eS eL	Z ZNE ZE	09 35 39 41	24 24 16							34.0	USCGS: 10.8S, 165.3E. Santa Cruz Islands h about 33 km. H = 09 30 26.7 Mag. 5.1 (CGS)	

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
34	9	eP S	Z NE	17 08 09	11 54	1.6	0.9					9.5	USCGS: 20.6S, 178.6W. Fiji Islands region h about 546 km. H = 17 05 58.9 Mag. 4.5 (CGS)	
35	9	eP S T	Z ZNE ZNE	20 11 13	32 50 22								Samoa Islands region	
36	10	eL	ZNE	06 06	30							87.0	USCGS: 41.3S, 73.6W. Near coast of Southern Chile h about 37 km. H = 05 26 44.4 Mag. 5.7 (CGS)	
37	10	iP eS	ZNE ZNE	14 00 02	54.6 29	10.0	1.3					8.2	u USCGS: 19.3S, 178.2W. Fiji Islands region h about 596 km. H = 13 58 53.3 Mag. 5.1 (CGS)	
38	10	eP S	Z NE	14 09 10	22 57									
39	11	eP S	Z ZNE	05 23 24	34 06									
40	11	iP iS	Z NE	05 34 35	59 29									
41	11	eP S	Z NE	09 33 34	29 23									
42	12	eP S eT	ZNE ZNE ZNE	00 05 06 12	16 31 37							7.6	USCGS: 21.0S, 174.6W. Tonga Islands h about 33 km. H = 00 03 32.4 Mag. 5.0 (CGS)	
43	12	eP S	ZNE ZNE	00 50 52	45 03							7.6	USCGS: 21.1S, 174.4W. Tonga Islands h about 13 km. H = 00 48 59.2 Mag. 5.1 (CGS)	
44	12	iP S	Z ZNE	07 41 42	59 30								d	
45	12	eP S T	ZNE ZNE ZNE	10 36 39	01 39 25									
46	12	eS eSSS eL	ZNE E ZN	23 42 50 53	52 24 00							67.0	USCGS: 47.4N, 154.3E. Kurile Islands h about 56 km. H = 23 22 45.3 Mag. 5.5-5.7(BRK), 5.4(CGS)	

5.

No	Date	Phase	Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
47	13	eP ZNE	15	46	48							40.4	USCGS: 5.6S, 148.1E. Near Britain region Felt at Wau h about 213 km. H = 15 39 29.7 Mag. 5.4 (CGS)
48	14	iP iS ZNE ZNE	05	06	51 12							2.2	une USCGS: 15.2S, 173.6W. Tonga Islands Felt on PagoPago and at Apia h about 11 km. H = 05 06 16.3 Mag. 5.6-5.8(BRK), 5.9(CGS)
49	14	eS eSSS eL ZN N ZN	08	26	00 08 24							67.0	USCGS: 47.5N, 154.4E. Kurile Islands h about 55 km. H = 08 05 58.6 Mag. 4.4-4.8(BRK), 5.3(CGS)
50	14	iP S ZNE ZNE	12	30	00.2 23							1.8	u USCGS: 15.3S, 173.0W. Tonga Islands h about 33 km. H = 12 29 30.6 Mag. 4.3 (CGS)
51	14	eP S Z ZNE	15	03	34 28							5.6	USCGS: 18.6S, 174.8W. Tonga Islands h about 68 km. H = 15 02 12.1 Mag. 4.9 (CGS)
52	15	eP S T Z ZNE ZNE	04	51	39 04 15							8.3	USCGS: 21.6S, 174.7W. Tonga Islands h about 33 km. H = 04 49 41.4 Mag. 4.9 (CGS)
53	15	iP S ZNE ZNE	09	24	11 30							1.9	d USCGS: 15.2S, 173.2W. Tonga Islands h about 33 km. H = 09 23 43.4 Mag. 4.4 (CGS)
54	15	eL ZNE	21	02	30							35.7	USCGS: 5.4S, 153.0E. New Ireland region h about 65 km. H = 20 44 47.9 Mag. 5.0 (CGS)
55	16	eLr ZN	06	09	18							53.0	USCGS: 55.7S, 146.8E. West of Macquarie Island h about 27 km. H = 05 44 02.2 Mag. 5.4 (CGS)

No.	Date	Phase	Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
65	21	eS NE e NE e N eLq NE eLr Z	16	05 52 08 24 10 16 14 30 16 30								65.0	USCGS: 12.7N, 123.1E. Luzon, Philippine Islands h about 56 km. H = 15 45 28.3 Mag. 5.2 (CGS)
67	21	eP Z eS E e E eL N eL ZE	18	25 14 35 20 39 00 41 36 42 48								80.0	USCGS: 64.8N, 147.4W. Central Alaska Felt over 90,000 Sq. miles area h about 17 km. H = 18 13 02.9 Mag. 6.0(PAS), 5.2-5.6 (BRK), 6 $\frac{1}{4}$ -6 $\frac{1}{2}$ (GOL), (6.1CGS Surface wave)
68	21	eP Z eS ZNE	18	55 00 56 22								8.2	USCGS: 19.8S, 177.6W. Fiji Islands region h about 401 km. H = 18 53 08.2 Mag. 4.4 (CGS)
69	21	eP ZNE eS ZNE	19	13 06 15 11								12.5	USCGS: 23.5S, 180.0E. South of Fiji Islands h about 546 km. H = 19 10 31.1 Mag. 5.0 (CGS)
70	21	eS E e Z eSS ZE e ZE eL ZE eL N	20	33 20 35 00 40 00 47 24 53 00 54 00								94.0	USCGS: 25.2S, 70.5W. Near coast of northern Chile Felt at Taltal h about 23 km. H = 20 09 28.4 Mag. 5.7 (CGS)
71	21	eP ZNE eS ZNE	22	07 44 09 12								7.8	USCGS: 17.8S, 178.7W. Fiji Islands region h about 574 km. H = 22 05 54.0 Mag. 4.6 (CGS)
72	22	e NE e(L) NE	02	33 52 35 24									
73	22	eP ZNE S ZNE	10	50 36 51 00								2.3	USCGS: 15.8S, 172.7W. Samoa Islands region h about 33 km. H = 10 50 05.3 Mag. 4.5 (CGS)
74	22	eP Z eS ZNE	11	43 50 46 04								13.2	USCGS: 24.5S, 179.9W. South of Fiji Islands h about 429 km. H = 11 40 57.8 Mag. 4.3 (CGS)
75	22	eS N eSS N eL ZE	19	22 00 25 00 28 42								40.0	USCGS: 1.3S, 149.8E. New Ireland region h about 34 km. H = 19 08 33.5 Mag. 5.0 (CGS)

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
75	22	iP S	Z ZNE	22	23	27 48								u Samoa Islands region
77	23	iP S	ZNE ZNE	00	25 26	47.4 04							1.3	u USCGS: 15.0S, 172.3W. Samoa Islands region Felt at Apia h about 33 km. H = 00 25 29.8 Mag. 5.1 (CGS)
78	23	iP S	ZNE ZNE	00	42	30.4 44							1.2	u USCGS: 14.9S, 172.4W Samoa Islands Felt at Apia h about 33 km. H = 00 42 13.4 Mag. 5.1 (CGS)
79	23	eP e(L)	ZE ZE	05	14 32	46 30							57.0	USCGS: 5.8S, 130.5E. Banda Sea h about 85 km. H = 05 05 04.8 Mag. 5.9 (CGS)
80	23	e e e(L)	ZNE E ZN	12	04 09 11	28 54 18								
81	23	eP S	ZNE ZNE	14	40 42	57 48							10.3	USCGS: 21.3S, 179.3W. Fiji Islands region h about 605 km. H = 14 38 35.7 Mag. 5.1 (CGS)
82	23	eP eS eS e eL	Z E Z N ZE	21	34 38 39 40	46 24 52 20 06							20.3	USCGS: 19.2S, 167.7E. New Hebrides Islands region Felt at Port Vila h about 37 km. H = 21 30 11.5 Mag. 4.7-5.1 (BRK), 5.3 (CGS)
83	24	eP eS	ZNE ZNE	13	30 32	57 49							10.4	USCGS: 21.4S, 179.3W. Fiji Islands region h about 592 km. H = 13 28 35.9 Mag. 4.7 (CGS)
84	24	eP eS eSSS eL eL	Z ZNE NE E ZNE	21	09 17 22 23 24	42 20 40 52 30							54.0	USCGS: 12.5N, 141.6E. South of Mariana Islands h about 18 km. H = 21 00 23.9 Mag. 5.5-6.0 (BRK), 5.5 (CGS)
85	25	eP eS eSSS eL	Z ZNE NE ZNE	23	27 34 40 42	27 56 00 00							54.0	USCGS: 12.4N, 141.8E. South of Mariana Islands h about 42 km. H = 23 18 04.3 Mag. 6.3 (BRK), 5.6 (CGS)

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						Δ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
85	26	eL	ZNE	02	55	24							73.0	USCGS: 18.4N, 105.2W. Off coast of Jalisco, Mexico h about 45 km. H = 02 22 34.8 Mag. 5.7(BRK), 4 $\frac{3}{4}$ -5 (PAL), 5 $\frac{1}{2}$ (GOL), 5.0(CGS)
87	26	eP S	ZNE ZNE	09 12	11 59	34							7.5	USCGS: 18.0S, 178.3W. Fiji Islands region h about 477 km. H = 09 09 42.4 Mag. 4.3 (CGS)
88	27	eP S	ZNE ZNE	04 06	05 12	59								Samoa Islands region
89	27	iP S	Z ZNE	13	10	31.8 49								u Samoa Islands region
90	27	eP S	ZNE ZNE	17	49	41								Samoa Islands region
91	27	eP S T	ZNE ZNE ZNE	19	42	31 55 56							1.5	USCGS: 15.3S, 171.8W. Samoa Islands region h about 33 km. H = 19 42 09.5 Mag. 4.2 (CGS)
92	27	eP S T	ZNE ZNE ZNE	19	54	21 41 14								Samoa Islands region
93	27	eL	ZN	21	02	36							65.0	USCGS: 51.3N, 180.0 Andreanof Islands, Aleutian Islands. h about 26 km. H = 20 32 59.3 Mag. 5.1 (CGS)
94	27	eP S T	ZNE ZNE ZNE	21	47	13 36 14								
95	27	eL eL	N ZE	22	15 16	42 24							82.0	USCGS: 46.4S, 96.0E. Southeast Indian Rise h about 33 km. H = 21 37 48.1 Mag. 5.4 (CGS)
96	27	eP S T	ZNE ZNE ZNE	23	38	16 37 15								Samoa Islands region
97	28	eSS eL	NE ZE	00	27 29	36 00							31.0	USCGS: 9.5S, 157.4E. Solomon Islands h about 16 km. H = 00 14 34.5 Mag. 5.4 (CGS)
98	28	eP S S	ZNE E ZNE	05	32 33	17 44 50							9.5	USCGS: 22.2S, 176.5W. South of Fiji Islands h about 131 km. H = 05 30 03.6 Mag. 4.0 (CGS)

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						Δ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
99	28	iP S	ZNE ZNE	05 34 21.5 41								1.0	u USCGS: 14.4S, 172.6W. Samoa Islands Felt at Apia h about 40 km. H = 05 34 06.4 Mag. 4.8 (CGS)	
100	28	iP S	ZNE ZNE	09 03 08 23										Samoa Islands
101	28	eP eS eLq eLr	ZNE ZE NE ZN	14 41 21 47 28 50 54 53 00								37.0	USCGS: 47.0S, 165.8E. Off west coast of South Island, N.Z. h about 37 km. H = 14 34 04.5 Mag. 5.6 (CGS)	
102	28	eP eS	ZNE NE	19 13 01 15 26										
103	29	eP S	ZNE ZNE	09 26 14 33								2.1	USCGS: 15.8S, 172.4W. Samoa Islands region Felt at Apia h about 14 km. H = 09 25 47.4 Mag. 4.8 (CGS)	
104	29	eP S	ZNE ZNE	10 38 13 39 27								7.7	USCGS: 21.2S, 174.4W. Tonga Islands h about 33 km. H = 10 36 28.7 Mag. 4.8(BRK), 4.4(CGS)	
105	29	eP e	Z ZNE	16 45 46 54 00								63.0	USCGS: 7.2S, 128.6E. Banda Sea h about 121 km. H = 16 36 15.7 Mag. 5.4 (CGS)	
106	29	iP e e	Z ZNE ZNE	21 27 15 28 04 29 56										d
107	30	iP S	Z ZNE	06 37 08 28										u Samoa Islands region
108	30	e(P)	Z	15 14 05.3										
109	30	iP S	ZNE ZNE	23 36 24 44										Samoa Islands region

NOTE:

- (i) Trace amplitude(A) are expressed in millimetres and periods (T) in seconds
- (ii) The small letters in the Remarks column indicate the direction of initial movement. u indicates an upwards ground movement, d a downwards one, n,s,e, and w towards north, south, east, and west respectively.
- (iii) *Readings to be incorporated in the New Zealand Seismological Report for 1967

P.D. Muller
OBSERVER-IN-CHARGE

NEW ZEALAND

Department of Scientific and Industrial Research

Geophysics Division

APIA OBSERVATORY

FINAL SEISMOLOGICAL BULLETIN

STANDARD SEISMIC STATION (API)

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

July 1967 *

No	Date	Phase	Time (G.M.T.)	Az Tz An Tn Ae Te				Δ (Deg.)	Remarks
1	1	eP S	ZNE ZNE	00 32 43 33 00					Samoa Islands region
2	1	iP S	ZNE ZNE	04 59 03 16					une Samoa Islands region
3	1	eP eS eSS eL eL	Z ZNE N NE ZN	07 41 55 53 00 58 24 08 05 30 08 08 30	0.5	2.1		90.0	USCGS: 0.8S, 98.7E. Southern Sumatra h about 26 km. H = 07 28 57.6 Mag. 5.5 (CGS)
4	1	eP eS eSS eSSS eLr	ZNE ZNE ZE ZNE ZN	23 21 13 30 23 34 31 38 00 41 17				68.0	USCGS: 54.4N, 158.0W. South of Alaska Felt at Cold Bay and Sant Point h about 33 km. H = 23 10 07.2 Mag. $6\frac{3}{4}$ (PAS), 6.3-6.5 (BRK), $6\frac{1}{2}$ - $6\frac{3}{4}$ (GOL), 6.2(CGS)
5	2	eS eS eSS e(SSS) eL eL	ZE ZE ZNE Z N Z	07 28 00 30 00 35 06 39 12 44 42 48 24				93.0	USCGS: 8.7N, 93.8E. Nicobar Islands region h about 33 km. H = 07 03 52.9 Mag. 5.7 (CGS)
6	3	eP S T	Z ZNE ZNE	02 12 58 13 31 16 00					

No	Date	Phase	Time (G.M.T.)			Az Tz An Tn Ae Te						Remarks
						△ (Deg.)						
7	3	eP Z eS ZNE	11 06 05 08 01							12.0	USCGS: 21.9S, 179.8E South of Fiji Islands h about 690 km. H = 11 03 45.3	
8	3	eP ZNE S ZNE	16 13 13 38									
No readings on 4th and 5th July 1967 due to time mark failure.												
9	6	eP ZN eS ZNE eL ZNE eL ZN	13 53 10 14 01 55 09 32 12 12							65.0	USCGS: 52.6N, 168.2W. Fox Islands, Aleutian Islands h about 14 km. H = 13 42 22.5 Mag. 6 $\frac{1}{4}$ -6 $\frac{1}{2}$ (PAS), 5.6- 6.0(BRK), 5 $\frac{3}{4}$ (GOL), 6-6 $\frac{1}{4}$ (PAL), 5.9(CGS)	
10	7	iP ZNE eS ZNE	09 44 05 45 38	0.8	1.1					8.6	u USCGS: 20.3S, 177.7W. Fiji Islands region h about 540 km. H = 09 42 08.0 Mag. 4.6 (CGS)	
11	7	e(P) ZNE e(S) ZNE	10 40 37 41 40									
12	7	iP Z S NE	11 46 10 30								u Samoa Islands region	
13	8	eP ZNE ePP ZE eS NE e(sS) ZE	01 03 20 56 07 00 39							20.1	USCGS: 15.4S, 167.5E. New Hebrides Islands h about 137 km. H = 00 58 54.7 Mag. 5.0-5.4(BRK), 5.2(CGS)	
14	8	eP Z eS ZNE eL ZE	06 27 42 31 36 33 04							20.8	USCGS: 16.3S, 166.8E. New Hebrides Islands h about 9 km. H = 06 22 52.8 Mag. 5.0-5.4(BRK), 5.0(CGS)	
15	8	eP ZNE eS NE	07 41 56 43 41							9.5	USCGS: 20.3S, 179.1W. Fiji Islands region h about 589 km. H = 07 39 43 Mag. 3.8 (CGS)	
16	8	eP ZNE S ZNE eT ZNE	09 54 23 55 07 58 13									
17	8	eP Z eS NE	10 05 22 07 40							14.4	USCGS: 25.8S, 179.8E. South of Fiji Islands h about 459 km. H = 10 02 19.5 Mag. 4.1 (CGS)	

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
70	23	eP S T	ZNE ZNE ZNE	18 45 55 47 02 51 06								7.2	USCGS: 20.0S, 175.5W. Tonga Islands. h about 77 km. H = 18 44 13.6 Mag. 4.9 (CGS)	
71	24	eP	Z	07 49 57	1.6	2.1						66.0	USCGS: 8.3S, 121.3E. Flores Island region h about 197 km. H = 07 39 31.7 Mag. 5.7 (CGS)	
72	24	e(S)	ZN	09 43 09										
73	24	e(S)	ZN	13 42 44										
74	25	e(P) e(S)	Z NE	07 15 44 17 30										
75	26	eP eS e(L) eL	Z ZN N Z	08 19 11 22 48 23 16 24 12								19.1	USCGS: 22.0S, 170.1E. Loyalty Islands region h about 30 km. H = 08 14 56.3 Mag. 5.0 (CGS)	
76	26	eP S	ZNE ZNE	18 53 24 54 06								4.2	USCGS: 17.4S, 174.0W. Tonga Islands h about 15 km. H = 18 52 21.2 Mag. 5.0 (CGS)	
77	26	e eL eL	E Z N	19 57 30 20 00 00 01 00										
78	27	iP S	ZNE ZNE	22 34 32.5 51									u Samoa Islands region	
79	28	iP S	Z ZNE	08 07 33.2 55									u Samoa Islands region	
80	28	eP eS	ZNE ZNE	14 28 02 29 42	2.3	1.0						9.5	USCGS: 20.7S, 178.5W. Fiji Islands region h about 555 km. H = 14 25 50.1 Mag. 4.7 (CGS)	
81	28	eP eS	ZNE ZNE	14 40 47 41 37										
82	28	eP S	ZNE ZNE	18 34 19 35 37	5.2	0.8						6.6	USCGS: 15.2S, 178.5W. Fiji Islands region h about 375 km. H = 18 32 39.9 Mag. 4.3 (CGS)	
83	29	eP ePP eScS eS eSS e eL eL	Z ZE ZNE ZNE ZE N ZNE ZNE	10 37 56 41 44 48 24 50 13 56 24 11 04 56 06 30 11 30								100.0	USCGS: 6.8N, 73.0W. Northern Colombia. 10 killed and moderate property damage. Felt in Colombia and Western Venezuela, h about 161 km. H = 10 24 24.6 Mag. 6.2-6.4 (PAS), 6.1-6.3 (BI 6.2 (PAL), 6.0 (CGS)	

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
84	29	iP	ZNE	20	57	53								u Samoa Islands region
		S	ZNE		58	14								
85	29	e(S)	ZNE	21	45	36								
86	29	eP	Z	22	06	00						6.1	USCGS: 17.1S, 177.1W. Fiji Islands region h about 187 km. H = 22 04 27.2 Mag. 4.2 (CGS)	
		eS	NE		07	32								
87	30	eP	Z	05	11	10						13.9	USCGS: 26.7S, 177.4W. South of Fiji Islands h about 117 km. H = 05 08 07.7 Mag. 4.1 (CGS)	
		eS	ZNE		13	26								
88	30	e	Z	09	06	00								
		e(L)	NE		07	30								
89	30	eP	ZNE	11	06	16								
		eS	E		11	30								
		eS	ZN		12	12								
		eL	ZN		14	30								
90	30	eP	Z	13	42	07						35.1	USCGS: 5.3S, 153.6E. New Ireland region h about 50 km. H = 13 35 14.4 Mag. 5.2 (CGS)	
		eS	ZE		47	44								
		e(Lq)	ZNE		50	16								
		eLr	ZE		52	00								
91	30	iP	ZNE	17	26	35						7.8	d USCGS: 17.8S, 178.8W. Fiji Islands region h about 564 km. H = 17 24 43.1 Mag. 5.1 (CGS)	
92	31	iP	ZNE	10	05	52						3.3	u USCGS: 16.0S, 174.3W. Tonga Islands. h about 151 km. H = 10 05 01.3 Mag. 3.8 (CGS)	
		S	ZNE		06	26								
93	31	eS	ZNE	23	04	56						51.0	USCGS: 60.0S, 159.1E. Macquarie Island region h about 33 km. H = 22 48 35.6 Mag. 5.2 (CGS)	
		eLq	NE		10	30								
		eLr	Z		12	00								

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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 Magnification: S.P. 12500

L.P. 750

August 1967 *

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						Δ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
1	1	eP eL	ZN ZNE	09 29	22 00	00 00						51.0	USCGS: 60.0S, 159.2E. South of New Zealand h about 33 km. H = 09 05 49.3 Mag. 5.5 (CGS)	
2	2	eP eS	Z ZNE	09 41	39 32	46 32	1.0	1.0				9.9	USCGS: 20.8S, 179.1W. Fiji Islands region h about 592 km. H = 09 37 29.5 Mag. 4.7 (CGS)	
3	2	eL	ZN	12	03	30								
4	3	eP S eT	Z NE ZNE	00 11 17	09 09 02	52 09 02						7.5	USCGS: 20.9S, 174.3W. Tonga Islands h about 43 km. H = 00 08 12.9 Mag. 4.4 (CGS)	
5	3	eP S	Z NE	02 31	29 17	46 17						8.9	USCGS: 19.9S, 178.6W. Fiji Islands region h about 426 km. H = 02 27 40.1 Mag. 3.9 (CGS)	
6	3	e(S)	ZNE	03	07	56								
7	3	e(L)	ZNE	08	57	00								
8	4	iP S	Z ZNE	11 15	14 10	43 10							d	

No	Date	Phase		Time									△ (Deg.)	Remarks
				(G.M.T.)			Az	Tz	An	Tn	Ae	Te		
36	21	eP S T	ZNE ZNE ZNE	02 03 07	01 41 02							4.1	USCGS: 17.8S, 172.8W. Tonga Islands region h about 33 km. H = 02 02 01.7 Mag. 4.3 (CGS)	
37	21	eP e S T	ZNE Z NE ZNE	06 30 32	36 46 58 33									
38	21	eP e eS eSS e eSSS eLq eLr	Z E NE NE Z NE NE ZE	07 08	46 50 57 03 04 07 12 21	19 48 31 12 20 00 18 00	1.0	2.5				93.0	USCGS: 3.6N, 95.8E. Off west coast of northern Sumatra h about 33 km. H = 07 33 00.6 Mag. $6\frac{1}{2}$ - $6\frac{3}{4}$ (PAS), 6.3-6.7(BRK), 5.9(CGS)	
39	21	eP S	Z ZNE	16	05 06	48 09							Samoa Islands region	
40	22	eP ePP eSKS eS e eSS eSSS eLq eLr	Z ZN ZNE ZN Z E ZE ZNE ZN	13	15 20 26 29 34 38 42 49	52 00 36 00 32 56 00 00 12						102.0	USCGS: 60.8S, 24.6W. South of Sandwich Islands region h about 33 km. H = 13 02 06.8 Mag. $6\frac{3}{4}$ (PAS), 5.7-6.1 (BRK), 6.1(CGS)	
41	22	eP S T	ZNE ZNE ZNE	13	41 43	18 39 06								
42	22	eP	Z	22	45	47						7.5	USCGS: 17.0S, 178.7W. Fiji Islands region h about 546 km. H = 22 43 55	
43	22	eP	Z	22	57	24	1.2	1.3				9.2	USCGS: 20.5S, 178.4W. Fiji Islands region h about 533 km. H = 22 55 14.5 Mag. 4.0 (CGS)	
44	23	eP S	ZNE ZN	19	08	23 42							Samoa Islands region	
45	24	iP S	ZNE ZNE	05	11 12	45.1 04							d Samoa Islands region	
46	24	eP eS	Z ZNE	05	32 34	19 07						10.2	USCGS: 21.0S, 179.4W. Fiji Islands region h about 672 km. H = 05 30 05.8 Mag. 4.7 (CGS)	
47	24	eP eS eL	ZNE ZNE ZE	10	37 41 42	36 36 44	2.1	2.6				20.6	USCGS: 14.9S, 166.9E. New Hebrides Islands Felt at Luganville h about 23 km. H = 10 32 52.6 Mag. 4.6 (CGS)	

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						Δ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
48	25	eP S T	ZE NE ZNE	18 22 23	21 11 50	45								
49	25	eP e(S)	Z NE	18 32	30 38	50								
50	25	eP S	Z NE	21 45	44 14	51								
51	25	eP S	ZNE ZNE	21	48	32 53							Samoa Islands region	
52	26	eP eS eSS eSSS eL	Z ZN ZN N ZN	00 53 57 59 01	46 48 20 00 00	04					54.0		USCGS: 12.2N, 140.7E. West Caroline Islands h about 33 km. H = 00 36 42.1 Mag. $6\frac{1}{2}$ - $6\frac{3}{4}$ (PAS), 6.0-6.4(BRK), 6.1(CGS)	
53	26	eP eS	Z ZNE	04 27	26 48	35								
54	26	eP	Z	17	19	29								
55	26	iP S	ZNE ZNE	18	20	17 40					1.9		u USCGS: 15.4S, 172.7W. Samoa Islands region Felt at Apia h about 37 km. H = 18 19 58.2 Mag. 5.0 (CGS)	
56	26	eP S	ZNE ZNE	23	18	06 24							Samoa Islands region	
57	27	eP S eT	Z NE ZNE	04 31	28 49 40	07								
58	27	eP eS	Z ZNE	05	06 07	45 20								
59	27	eP eS eSS eL	Z ZN Z Z	13 31 38 47	22 48 18 24	17					90.0		USCGS: 12.3N, 86.2W. Nicaragua Felt in Managua area h about 183 km. H = 13 08 55.9 Mag. 5.2 (CGS)	
60	27	eP eS	ZNE ZNE	22	12 13	17 55	2.2	1.0				9.0	USCGS: 20.4S, 178.1W. Fiji Islands region h about 545 km. H = 22 10 11.6 Mag. 4.3 (CGS)	
61	28	eL	ZN	16	53	24						74.0	USCGS: 50.4N, 129.8W. Vancouver Island region h about 33 km. H = 16 20 06.6 Mag. 4.2-4.4(BRK), 5.1(CGS)	

6.

No	Date	Phase	Time (G.M.T.)			Az	Tz	An	Tn	Ae	Te	△ (Deg.)	Remarks
62	29	eP S	Z ZNE	01 31 48 32 13									
63	29	eP S	Z NE	02 51 06 38									
64	29	eS e eL eL	N Z ZN Z	07 46 42 47 18 54 42 59 00									
65	29	eSS eL	N ZN	11 09 00 12 36							47.0	USCGS: 3.3S, 141.5E. New Guinea h about 41 km. H = 10 50 09.4 Mag. 5.1 (CGS)	
66	29	eP S	Z ZNE	16 24 47 25 12									
67	30	eP eS	Z NE	04 25 54 27 26									
68	30	eP ePP eS eS? eSS eSSS e eLq eLr	Z ZE NE ZNE ZNE ZNE NE N Z	04 35 32 39 16 46 08 48 12 52 54 57 06 05 00 06 01 48 06 06							96.0	USCGS: 31.7N, 100.3E. Szechwan Province, China. h about 3 km. H = 04 22 01.5 Mag. 6.1 (CGS)	
69	30	eP S	Z NE	11 45 56 47 25							7.5	USCGS: 18.0S, 178.4W. Fiji Islands region h about 570 km. H = 11 44 02.8 Mag. 4.2 (CGS)	
70	30	eP S	ZNE ZNE	12 30 12 47									
71	30	eP S eT	ZNE ZNE ZNE	12 53 14 55 56 45									
72	30	eS eSSS eL	ZNE ZNE ZNE	13 53 24 14 01 24 04 00							67.0	USCGS: 45.4N, 151.5E. Kurile Islands h about 33 km. H = 13 33 26.4 Mag. 5.5 (CGS)	
73	30	eP	Z	15 25 51							7.5	USCGS: 18.1S, 178.4W. Fiji Islands region h about 599 km. H = 15 23 55.5 Mag. 3.8 (CGS)	

No	Date	Phase	Time (G.M.T.)			Az	Tz	An	Tn	Ae	Te	△ (Deg.)	Remarks
74	31	iP S	ZNE ZNE	18 54 35 55 28								5.0	d USCGS: 17.5S, 175.2W Tonga Islands h about 277 km. H = 18 53 25.2 Mag. 5.4 (CGS)
75	31	P S	Z ZNE	19 01 25 02 18									

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STANDARD SEISMIC STATION (AFI)

AFIAMALU, WESTERN SAMOA

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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 1967 *

No	Date	Phase		Time									Δ (Deg.)	Remarks	
				(G.M.T.)			Az	Tz	An	Tn	Ae	Te			
1	1	iP	ZNE	03	38	40.2	7.6	1.0						41.2	u USCGS: 5.6S, 147.2E East New Guinea region Felt in eastern New Guinea h about 182 km H = 03 31 10.5 Mag. 5.6 (CGS)
2	1	iP	ZNE	05	12	51.2									u Samoa Islands region
		iS	ZNE		13	10									
3	1	eL	ZNE	15	30	36								80.0	USCGS: 44.1S, 82.1W West Chile Rise h about 33 km H = 14 53 54.9 Mag. 5.2 (CGS)
4	1	eP	Z	17	23	35									
		S	NE			59									
5	1	eP	ZN	23	43	28								20.9	USCGS: 33.8S, 178.6W South of Kermadec Islands h about 26 km H = 23 38 51.7 Mag. 4.6 (CGS)
		eS	NE		47	20									

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						Δ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
6	2	eP	Z	01	28	42							21.0	USCGS: 33.7S, 178.8W South of Kermadec Islands h about 129 km H = 01 24 22.4 Mag. 4.7 (CGS)
7	2	eP eS	Z NE	03 15	13 08	29							10.9	USCGS: 24.0S, 175.9W South of Tonga Islands h about 65 km H = 03 10 56.0 Mag. 4.3 (CGS)
8	2	eP eS	Z NE	05 19	17 42	55								
9	2	iP S	ZNE ZNE	05 32	31 13	47								u
10	2	iP eS	Z NE	05 44	41 11	22.5	1.6	1.0					16.7	u USCGS: 29.1S, 179.0W Kermadec Islands h about 307 km H = 05 37 50.0 Mag. 4.6 (CGS)
11	2	eP eS eT	Z NE ZNE	16 06 08	05 12 47	38								
12	2	iP iS	ZNE ZNE	21	48	10.3								u Samoa Islands region
13	3	iP e(SS)	ZE NE	01 40	30 08	49							40.7	d USCGS: 7.8S, 147.1E East New Guinea region Felt in eastern New Guinea h about 139 km H = 01 23 19.6 Mag. 5.4 (CGS)
14	3	iP eS	ZNE ZNE	06 25	24 55	29							7.9	u USCGS: 19.0S, 178.0W Fiji Islands region h about 547 km H = 06 22 45.8 Mag. 4.1 (CGS)
15	3	iP iS	Z NE	12 06	05 10	50								u Samoa Islands region
16	3	e(P)	ZE	19	31	58								
17	3	eP iPcP iPP i(ScS) iS iS i iSS iSSS i iL iL	ZNE ZE ZNE E ZN E ZN ZN ZNE E ZNE	21 24 30 31 36 37 40 44 48	20 08 36 00 24 08 44 08 00 20	27.3	8.7	1.5					90.0	USCGS: 10.6S, 79.8W Off coast of Peru Felt at Lima h about 38 km H = 21 07 30.8 Mag. $6\frac{3}{4}$ -7(PAS), 6.5(CGS)

 Surface waves lasting $1\frac{1}{2}$ hours.

No	Date	Phase	Time (G.M.T.)	Az Tz An Tn Ae Te				Δ (Deg.)	Remarks
				Az	Tz	An	Tn		
13	4	iP ZNE iS ZNE e Z	03 55 59.8 59 09 04 03 33					17.5	d USCGS: 31.4S, 179.4W Kermadec Islands h about 231 km H = 03 51 58.9 Mag. 6.0-6.2(BRK), 5.5 (CGS)
19	5	iP Z eS NE	05 20 24.9 22 32	1.0	1.5			12.5	d USCGS: 23.8S, 179.7W South of Fiji Islands h about 445 km H = 05 17 39.1 Mag. 4.6 (CGS)
20	5	e(P) Z	06 13 05						
21	5	e(P) Z e(S) NE	18 15 18 16 40						
22	5	eP Z S ZNE eT ZNE	19 38 22 39 03 42 08						
23	6	iP Z S ZNE	04 19 45 20 04						u Samoa Islands region
24	6	eP NE S NE	14 28 37 29 03						
25	7	eiP ZE eS ZNE eL ZNE	07 22 53 31 16 39 30	1.5	1.2			65.0	USCGS: 2.7N, 124.3E Celebes Sea h about 274 km H = 07 12 36.6 Mag. 5.8(CGS)
26	7	eP Z eS NE eT ZNE	09 38 10 41 05 52 07					17.5	USCGS: 30.5S, 177.6W Kermadec Islands region h about 27 km H = 09 34 12.1 Mag. 4.7 (CGS)
27	7	iP ZNE S ZNE eT ZNE	11 12 08 15 21 24 25	11.7	1.0			19.2	u? USCGS: 31.3S, 1799.6E Kermadec Islands h about 430 km H = 11 08 13.2 Mag. 5.1 (CGS)
28	8	e(P) Z eS ZNE	16 03 49 05 25						
29	8	eP Z eS ZNE eL NE eL ZE	22 47 00 54 44 23 00 00 02 28					54.0	USCGS: 12.2N, 140.8E West Caroline Islands h about 27 km H = 22 37 39.5 Mag. 5.4-5.6(BRK), 5 $\frac{1}{2}$ -5 $\frac{3}{4}$ (GOL), 5.3(CGS)
30	9	iP Z S ZNE	02 59 46.6 03 00 06						d Samoa Islands region

No	Date	Phase	Time (G.M.T.)	Az Tz An Tn Ae Te						(Deg.)	Remarks
				Az	Tz	An	Tn	Ae	Te		
31	9	eP Z eS NE	10 00 45 02 10							8.6	USCGS: 21.1S, 176.7W Fiji Islands region h about 118 km H = 09 58 34.0 Mag. 4.1 (CGS)
32	9	epPcP Z ePP Z iSKS ZNE iSP ZNE ePS N e(sSP)ZNE esSS ZNE e ZNE e ZNE	10 21 36 23 43 29 13 31 48 33 00 36 00 40 48 47 24 52 24							101.0	USCGS: 27.7S, 63.1W Santiago Del Estero Prov., Arg. h about 578 km H = 10 06 44.1 Mag. 5.0-5.2 (BRK), 5.8 (CGS)
33	9	eS ZNE eLq NE eLr ZE	15 01 00 06 30 08 06							54.0	USCGS: 12.3N, 140.7E West Caroline Islands h about 33 km H = 14 43 57.7 Mag. 5.4 (CGS)
34	9	eP' Z eS ZNE eSS ZE iSSS NE iL ZN	17 00 36 08 00 11 24 12 18 14 00							49.0	USCGS: 54.8S, 136.0W South Pacific Cordillera h about 33 km H = 16 52 01.3 Mag. 6.4 (PAS), 5.4 (CGS)
35	9	eP Z S ZNE	21 48 43 49 02								
36	9	e(S) ZN eL E eL ZN	22 03 52 08 54 11 30								
37	10	e(S) NE	21 06 48								
38	11	e(P) Z (S) NE	00 52 56 54 10								
39	11	e(S) ZNE eL NE eL Z	01 26 12 29 18 30 06								
40	11	e(L) NE eL Z	04 34 30 35 12								
41	11	eP Z e(S) ZNE eL ZE	04 41 42 45 18 47 00	1.1	1.1					19.1	USCGS: 21.4S, 169.7E Loyalty Islands region h about 11 km H = 04 37 16.4 Mag. 5.0-5.3 (BRK), 5.0 (CGS)
42	11	eP Z eS NE eL Z	06 55 50 58 44 59 42							15.5	USCGS: 21.4S, 174.0E New Hebrides Islands region h about 15 km H = 06 52 11.5 Mag. 4.8 (CGS)

No	Date	Phase		Time			Az Tz An Tn Ae Te						Δ (Deg.)	Remarks
				(G.M.T.)										
53	16	eP eS	ZNE NE	23 38	35 37	24 37	4.0 1.0						19.3	USCGS: 31.5S, 179.8E Kermadec Islands h about 377 km H = 23 31 27.3 Mag. 4.0 (CGS)
54	17	eP S	Z ZNE	01 24	23 05	08 05							5.7	USCGS: 18.6S, 175.0W Tonga Islands h about 200 km H = 01 21 52.4 Mag. 4.1 (CGS)
55	18	eP eS eSS eL	Z ZNE ZNE ZE	15 47 50 53	40 08 18 18	55 08 18 18							41.6	USCGS: 5.9S, 146.6E East New Guinea region Felt at Lae and Bundi h about 39 km H = 15 33 06.5 Mag. 5.5 (CGS)
56	18	eP S	ZNE ZNE	19 17	16 45	03 45							9.4	USCGS: 20.7S, 178.4W Fiji Islands region h about 562 km H = 19 13 52.5 Mag. 4.0 (CGS)
57	19	eP eS	ZNE ZNE	00 50	48 09	09 09							12.1	USCGS: 24.7S, 177.3W South of Fiji Islands h about 139 km H = 00 45 31.1 Mag. 4.7 (CGS)
58	19	iP eS e(SSS) eL eT	Z ZNE ZNE ZNE ZNE	11 16 24 27 12	07 40 00 12 22	07 40 00 12 03							68.0	d USCGS: 43.ON, 145.2E Hokkaido, Japan region h about 84 km H = 10 56 08.6 Mag. 6 $\frac{1}{2}$ (PAS), 6.2- 6.6(BRK), 6 $\frac{1}{4}$ -6 $\frac{1}{2}$ (PAL), 5.9 (CGS)
59	20	eP ePP eS eS eL eL	Z ZN N ZN ZN ZN	09 48 52 53 56 59	46 24 44 16 00 00	56 24 44 16 00 00							41.0	USCGS: 49.8S, 163.4E Auckland Islands region Felt on Campbell Island h about 30 km H = 09 39 15.2 Mag. 6 $\frac{1}{4}$ (PAS), 6.3- 6.7(BRK), 6.1 (CGS)
60	20	eP	ZNE	10	41	30	4.0 1.0						18.9	USCGS: 20.8S, 169.8E New Hebrides Islands Felt on Li'u h about 129 km H = 10 37 20.3 Mag. 5.3(BRK), 5.9 (CGS)
61	20	eP eS eT	Z ZNE ZNE	18 44 54	41 19 46	50 19 46							15.4	USCGS: 28.6S, 175.9W Kermadec Islands h about 39 km H = 18 38 25.2 Mag. 5.0 (CGS)

No	Date	Phase	Time (G.M.T.)	Az Tz An Tn Ae Te				△ (Deg.)	Remarks
62	21	eP S T	ZNE ZNE ZNE	19 33 46 34 06 35 35					Samoan Islands region
63	22	eP S S	Z N E	07 57 11 58 09 14					
64	22	eP eS e(L) eL	Z ZNE NE ZNE	10 29 00 38 00 46 00 48 18			67.0		USCGS: 44.5N, 149.4E Kurile Islands h about 60 km H = 10 17 59.9 Mag. 5.3-5.7(BRK), 5.9(PAL), 5.6 (CGS)
65	22	eP eS	ZNE ZNE	11 41 21 43 22					
66	23	eP S	ZNE ZNE	03 24 52 26 21	3.5	1.0		7.8	USCGS: 17.7S, 178.7W Fiji Islands region h about 567 km H = 03 22 59.7 Mag. 5.0 (CGS)
67	23	eP eS	ZNE ZNE	06 59 08 07 01 02	4.0	1.0		11.1	USCGS: 21.8S, 179.7W Fiji Islands region h about 595 km H = 06 56 43.6 Mag. 6-6.4(BRK), 5.4 (CGS)
68	23	eP	Z	07 06 51				41.0	USCGS: 49.7S, 164.0E Auckland Islands region h about 15 km H = 07 02 03.3 Mag. 5.7 (CGS)
69	23	eP eS	Z ZNE	07 42 13 44 08				11.1	USCGS: 22.1S, 179.6W South of Fiji Islands h about 600 km H = 07 39 47.8 Mag. 4.6 (CGS)
70	23	eP S	Z NE	09 50 50 51 46					
71	23	eP eS eT	ZNE ZNE ZNE	22 46 54 49 49 23 00 58				17.4	USCGS: 29.6S, 179.3W Kermadec Islands h about 347 km H = 22 43 16.6 Mag. 4.5 (CGS)
72	24	eP eS eT	Z NE ZNE	01 13 55 16 49 28 55				16.0	USCGS: 29.6S, 177.3W Kermadec Islands region h about 85 km H = 01 10 15.3 Mag. 4.6 (CGS)
73	24	eP	ZNE	06 20 13				61.0	USCGS: 2.8N, 128.5E Halmahera h about 226 km H = 06 10 16.2 Mag. 5.4 (CGS)

No	Date	Phase		Time (G.M.T.)			A _z T _z A _n T _n A _e T _e						△ (Deg.)	Remarks	
							A _z	T _z	A _n	T _n	A _e	T _e			
86	28	iP S	Z ZNE	00 28	27 43	56							3.9	d USCGS: 16.0S, 175.2W. Tonga Islands h about 283 km. H = 00 26 51.5 Mag. 4.5 (CGS)	
87	28	eP e eS eSS eL	ZNE Z ZNE ZNE Z	05 06 09 11 13	03 19 16 36 20	44	3.1	1.0					35.0	USCGS: 6.6S, 153.4E. New Britain region Felt at Rabaul, Sohano and Piva. h about 44 km. H = 04 56 56.3 Mag. 6.1-6.3(BRK), 6.5(PAS), 6.9(GOL), 5.9(CGS)	
88	28	iP S	Z ZNE	14	58 46	27									Samoa Islands region
89	28	eP S	Z ZNE	15	39 20	01									Samoa Islands region
90	28	eS e(SSS) eL	NE NE Z	16	06 12 18	28							75.0	USCGS: 59.5N, 147.1W. Gulf of Alaska. Felt on Middleton Island. h about 28 km. H = 15 44 55.7 Mag. 5.4-5.8(BRK), 5.6(CGS)	
91	28	eP S	ZNE ZNE	21	40 40	16									
92	29	e(P) S	Z ZNE	05	25 38	20									
93	29	eP S T	Z ZNE ZNE	07	21 10 12	04							6.4	USCGS: 19.8S, 174.0W. Tonga Islands h about 33 km. H = 07 19 34.8 Mag. 4.6 (CGS)	
94	30	eS e(L) eL	NE N ZE	08	18 18 00	00							71.0	USCGS: 28.9N, 129.9E. Ryukyu Islands h about 32 km. H = 07 57 19.9 Mag. 4.9-5.2(BRK), 5.5(CGS)	

NOTE:

- (i) Trace amplitude (A) are expressed in millimetres and periods (T) in seconds
- (ii) The small letters in the Remarks column indicate the direction of initial movement. u indicates an upwards ground movement, d a downwards one, n, s, e, and w towards north, south, east, and west respectively.
- (iii)* Readings to be incorporated in the New Zealand Seismological Report for 1967

We regret the delay in sending Final Bulletin from June 1967 due to some month being held up in data centre and in mail. The bulletins have been withheld to keep them in chronological order. All further bulletins will be forwarded monthly.

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

October 1967 *

No	Date	Phase		Time (G.M.T.)									Δ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
1	1	eS eL	N ZNE	02 43 44	24 30							16.7	USCGS: 22.7S, 173.2E. Loyalty Islands region h about 33 km. H = 02 36 23.7 Mag. 4.4 (CGS)	
2	1	iP S	ZNE ZNE	11 56 57	39.1 00							2.6	dsw USCGS: 15.1S, 174.1W. Tonga Islands h about 90 km. H = 11 56 02.8 Mag. 4.6 (CGS)	
3	2	iP S	ZNE ZNE	00 15 16	05.2 50							9.8	une USCGS: 21.0S, 178.8W. Fiji Islands region h about 60 km. H = 00 12 52.8 Mag. 5.8-6.1(BRK), 5.2(CGS)	
4	2	P S	ZNE ZNE	03 24	18 39								Samoa Islands region	
5	3	P S T	ZNE ZNE ZNE	00 00 02	25 39 11								Samoa Islands region	
6	3	eP eS	Z NE	14 49 51	14 10							11.0	USCGS: 21.9S, 179.5W. Fiji Islands region h about 553 km. H = 14 46 46.7 Mag. 4.7 (CGS)	

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
32	10	eSS eL	N ZE	03 15 17	24 12							32.7	USCGS: 9.5S, 155.1E. Dentrecasteaux Islands region h about 33 km. H = 03 01 47.7 Mag. 5.3 (CGS)	
33	10	eS eL eL	Z ZNE ZE	05 27 30 31	18 00 48							34.8	USCGS: 5.6S, 153.9E. New Ireland region h about 67 km. H = 05 15 13.3 Mag. 4.7 (CGS)	
34	10	eP eS eL	Z NE Z	06 30 33 34	33 32 40	1.0	2.3					16.3	USCGS: 18.1S, 171.8E. New Hebrides Islands region h about 63 km. H = 06 26 46.3 Mag. 5.2 (CGS)	
35	10	eP S T	ZNE ZNE ZNE	08 26 28	12 36 06									
36	10	eP eS eT	ZNE ZNE ZNE	16 23 24 27	50 27 02									
37	11	iP S	Z ZNE	00 15 16	44 03								d	Samoa Islands region
38	11	eL	ZE	04	18	30								
39	11	eP S	ZNE ZNE	05	10	06 41								
40	11	eP eS	Z NE	13 15 16	10 35									
41	12	iP S	Z ZNE	06 37 39	25 14							10.2	d	USCGS: 21.1S, 179.2W. Fiji Islands region h about 636 km. H = 06 35 06.7 Mag. 6(PAS), 5.6(CGS)
42	12	iP S	Z ZNE	11 45 46	40 15								u	
43	12	eP	Z	13	04	16						72.0	USCGS: 52.2N, 152.5E. Northwest of Kurile Islands h about 476 km. H = 12 53 46.9 Mag. 6(PAS), 5.5-5.9(BRK), 5.5(CGS)	
44	12	iP eS eS eScS e eSS eSSS eL eL	Z ZE N ZN E N N ZE ZE	18 41 49 51 52 53 55 56 59	25 20 48 20 52 40 42 18 36	3.0	3.1					58.0	u	USCGS: 7.1S, 129.8E. Banda Sea h about 45 km. H = 18 31 37.1 Mag. 6.2 (CGS)

No	Date	Phase	Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
45	12	iP S	Z ZNE	20 09	08 22	56							
46	12	eP eS	Z NE	20 43	40 12	45							
47	13	iP S	Z ZNE	00	13 45	26							d Samoa Islands region
48	13	P S	Z ZNE	01	05 40	21							Samoa Islands region
49	13	e(P) e(S)	Z ZNE	06	36 38	34 18							
50	13	e(P) e(S)	Z ZNE	08	12 14	13 23							
51	13	eP eiS	Z ZNE	12	33 34	11 04							
52	13	iP iS	ZNE ZNE	16	04 43	15							u
53	14	eP eS eL	ZE NE ZE	16	12 16 18	52 48 12					20.4		USCGS: 15.9S, 167.2E. New Hebrides Islands Felt at Luganville h about 15 km. H = 16 08 11.9 Mag. 5.1 (CGS)
54	15	eP ePcP eS eSS eSSS eL eL	ZNE ZE ZNE ZNE ZN ZN ZNE	08	13 14 23 30 33 37 41	30 07 52 12 36 00 36					90.0		USCGS: 11.9N, 86.0W. Near coast of Nicaragua Felt along west coasts of Nicaragua and Costa Rica. h about 162 km. H = 08 00 50.3 Mag. 6 $\frac{3}{4}$ (PAS), 6.6-6.9(BRK), 6 $\frac{1}{4}$ (PAL), 6 $\frac{1}{4}$ -6 $\frac{1}{2}$ (GOL), 6.2(CGS).
55	15	eP S T	ZNE ZNE ZNE	23	04 07	04 43 57					4.0		USCGS: 17.6S, 173.2W. Tonga Islands h about 40 km. H = 23 03 15.0 Mag. 4.6 (CGS)
56	15	eP e(S)	ZNE ZNE	23	37 38	24 37							
57	16	eP	ZNE	17	08	13					63.0		USCGS: 1.7N, 127.5E. Halmhera h about 120 km. H = 16 58 02.0 Mag. 5.6 (CGS)
58	16	eP	Z	22	18	44					7.5		USCGS: 18.0S, 178.4W. Fiji Islands region h about 593 km. H = 22 16 48.8 Mag. 4.2 (CGS)

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						Δ (Deg.)	Remarks	
							Az	Tz	An	Tn	Ae	Te			
70	19	eP eS	Z ZNE	13 12	10 02	33 02							7.4	USCGS: 17.6S, 178.5W. Fiji Islands region h about 530 km. H = 13 08 40.6 Mag. 3.2 (CGS)	
71	19	eiP iS	ZNE ZNE	16 26	24 14	29 14							9.4	USCGS: 20.2S, 179.0W. Fiji Islands region h about 567 km. H = 16 22 16.8 Mag. 4.2 (CGS)	
72	20	eL	Z	01	50	30							104.0	USCGS: 58.6S, 25.0W. South Sandwich Islands region h about 12 km. H = 01 02 43.8 Mag. 5.6 (CGS)	
73	20	iP iS	ZNE ZNE	15 16	58 00	38 16							9.0	u USCGS: 20.6S, 178.1W. Fiji Islands region h about 556 km. H = 15 56 33.4 Mag. 5.0 (CGS)	
74	21	eSS eL eL	N N ZNE	03	05 14 17	36 00 30					0.524.0		0.524.0	92.0	USCGS: 27.7S, 71.8W. Near coast of Northern Chile h about 13 km. H = 02 35 12.3 Mag. 5-5.2(BRK), 5.4(CGS)
75	21	eP eS	Z NE	11	05 06	58 55									
76	21	eP S	ZNE ZNE	18	42 44	23 26							12.1	USCGS: 24.8S, 177.3W. South of Fiji Islands h about 107 km. H = 18 39 40.3 Mag. 4.8 (CGS)	
77	22	eP S	ZNE ZNE	15	36 37	21 02									
78	22	eP iS	ZNE NE	22	19 20	28 20							5.1	USCGS: 18.0S, 174.8W. Tonga Islands h about 145 km. H = 22 18 14.4 Mag. 4.5 (CGS)	
79	23	eP S	ZNE ZNE	06	33 34	52 27									
80	23	eP	Z	08	36	53							64.0	USCGS: 28.9N, 139.1E. Bonin Islands region h about 463 km. H = 08 27 06.2 Mag. 5.5-5.7(BRK), 5.3(CGS)	

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
31	24	eP	ZE	01	42	40	0.7	2.0					20.4	USCGS: 14.7S, 167.2E. New Hebrides Islands Felt at Luganville h about 169 km. H = 01 38 12.7 Mag. 4.3 (CGS)
32	24	eP eS	ZNE NE	03	17 20	27 42							18.9	USCGS: 31.3S, 179.7W. Kermadec Islands h about 250 km. H = 03 13 26.5 Mag. 5.4 (CGS)
33	24	eP S	ZNE ZNE	07	05 06	50 23								
34	24	eP	Z	11	03	52	0.7	2.0					87.0	USCGS: 3.1S, 101.5E. Southern Sumatra. h about 63 km. H = 10 51 15.1 Mag. 5.5 (CGS)
35	24	iP S	ZNE ZNE	21	20 21	46 11								une
36	25	eSS eL eL	ZN ZN ZN	01	25 31 33	04 00 18							76.0	USCGS: 24.5N, 122.2E. Taiwan region 2 killed, 3 injured and major property damage h about 65 km. H = 00 59 22.6 Mag. 6.2-6.5(BRK), 7.0(GOL), 6.0(CGS)
37	25	eP eS	ZN ZN	08	26 27	06 36								
38	26	eP eS eSS eL eL	Z ZN ZN ZN ZN	00	33 43 48 54 56	57 36 00 00 12	1.4	3.0					76.0	USCGS: 24.5N, 122.2E. Taiwan region Felt at Taipei h about 63 km. H = 00 22 21.6 Mag. 5.6 (CGS)
39	26	e(P) eS	Z NE	02	26 27	37 12								
40	26	iP	Z	05	15	29	0.6	1.0					68.0	u USCGS: 2.3N, 121.7E. Celebes Sea h about 62 km. H = 05 10 02.0 Mag. 5.0 (CGS)
41	26	eP eS	Z ZN	11	55 56	01 48							10.1	USCGS: 21.1S, 179.1W. Fiji Islands region h about 603 km. H = 11 52 41.9 Mag. 3.9 (CGS)
42	26	iP S	ZN ZN	12	08 49	29 49								u Samoa Islands region

No	Date	Phase	Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
93	26	eP eS eSS eSSS eL	Z ZNE Z N ZNE	17 41 45 48 53	32 06 54 30 24							64.0	USCGS: 0.2S, 125.2E. Molucca Sea h about 42 km. H = 17 22 05.3 Mag. 5.6 (CGS)
No SP ZE records of 27													
94	27	eP	N	18	44	36							
95	27	ei(P) iS	N N	18	44 45	53 47							
96	27	eP iS	N N	22	10	36 55							Samoa Islands region
97	27	eP iS	N N	22	29	21 40							Samoa Islands region
98	27	eP S T	N N N	22	49	24 53 18							
99	28	e(L)	ZNE	00	57	06						93.0	USCGS: 25.8S, 70.3W. Near coast of north- ern Chile. h about 33 km. H = 00 24 27.3 Mag. 4.6 (CGS)
100	28	eP S T	ZNE ZNE ZNE	11	38	20 48 48							
101	28	eP eS	Z NE	20	41 43	36 11							
102	28	eP eS	Z NE	22	04 05	16 02							
103	29	eP S eT	ZNE NE ZNE	01	25	08 33 10							
104	29	eP eS	ZN ZNE	03	01 04	58 09						12.8	USCGS: 24.0S, 179.9E. South of Fiji Islands region h about 548 km. H = 02 59 19.5 Mag. 4.4 (CGS)
105	29	iP eS	ZNE ZNE	07	18 19	04 46						10.0	d USCGS: 22.5S, 176.9W. South of Fiji Islands h about 249 km. H = 07 15 47.0
106	29	eS	NE	07	50	30						13.1	USCGS: 19.3S, 175.7E. South of Fiji Islands h about 42 km. H = 07 45 04.5 Mag. 5.0 (CGS)

No	Date	Phase	Time (G.M.T.)			Az	Tz	An	Tn	Ae	Te	△ (Deg.)	Remarks
107	29	eL NE eL ZN	13	20 24	00 30							103.0	USCGS: 60.8S, 23.1W South Sandwich Islands region h about 33 km H = 12 37 22.2 Mag. 5.3 (CGS)
108	29	eP Z eS ZNE eT ZNE	16	01 02 08	31 45 16							7.0	USCGS: 20.5S, 173.9E Tonga Islands h about 33 km H = 16 00 00.4 Mag. 4.4 (CGS)
109	29	eP ZNE S ZNE	22	00 01	30 06								
110	30	iP Z eS NE	02	41 44	08.5 54							19.0	d USCGS: 22.0S, 170.1E. Loyalty Islands region h about 32 km H = 02 36 45.1 Mag. 4.4 (CGS)
111	30	iP ZNE eS ZNE	14	31 33	26.6 00	1.3	1.8					7.5	u USCGS: 17.9S, 178.5W Fiji Islands region h about 538 km H = 14 29 31.6 Mag. 4.0 (CGS)
112	30	e(P) Z eS NE	16	54 56	26 33								
113	31	eP ZE	01	20	38							21.7	USCGS: 11.6S, 166.0E Santa Cruz Islands h about 63 km H = 01 15 40.8 Mag. 4.4 (CGS)
114	31	iP ZNE iS ZNE	09	00	29.0 52								u
115	31	eP ZE eS ZNE	10	17 19	33 44							12.1	USCGS: 19.7S, 177.3E South of Fiji Islands h about 40 km H = 10 14 43.8 Mag. 5.4 (CGS)
116	31	iP ZNE iS ZNE	12	28 29	43 06								u

NOTE:

- (i) Trace amplitude (A) are expressed in millimetres and periods (T) in seconds.
- (ii) The small letters in the Remarks column indicate the direction of initial movement. u indicates an upwards ground movement, d a downwards one, n,s,e, and w towards north, south, east, and west respectively.
- (iii) *Readings to be incorporated in the New Zealand Seismological Report for 1967.

" P.D. Muller
OBSERVER-IN-CHARGE

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks	
34	9	iP S	ZNE ZNE	20 12	11 12	54.6 12							1.8	d USCGS: 15.1S, 173.2W Tonga Islands h about 65 km H = 20 11 32.1 Mag. 4.9 (CGS)	
35	10	eP eS	ZNE ZNE	03 30	29 30	26 50								8.6	USCGS: 21.5S, 175.7W Tonga Islands h about 100 km H = 03 27 33.6 Mag. 4.8 (CGS)
36	10	eP eS	Z NE	12	29	04 56									
37	10	iP S	ZNE ZNE	13 14	13 14	13 42	18.6	2.0						7.5	den USCGS: 18.0S, 178.5W Fiji Islands region h about 592 km H = 13 11 18.1 Mag. 5.0 (CGS)
38	10	iP eS	Z NE	19	05 06	15 45									u
39	11	eP eS	Z ZNE	06	42 44	22 26								12.8	USCGS: 24.2S, 179.7W South of Fiji Islands h about 465 km H = 06 39 35.1 Mag. 4.1 (CGS)
40	11	eL eL	NE ZN	12	11 14	18 24								66.0	USCGS: 10.4N, 126.5E Philippine Islands region. h about 48 km H = 11 41 45.4 Mag. 5.3 (CGS)
41	11	e(SS) eL	ZNE ZNE	12 13	50 02	30 24								116.0	USCGS: 6.0S, 71.3E Chagos Archipelago region. h about 34 km H = 12 14 57.3 Mag. 5.7-5.9 (BRK), 5.7 (CGS)
42	12	eP eS	ZNE NE	04	23	20 53									
43	12	eL	NE	05	58	18								20.5	USCGS: 16.0S, 167.2E New Hebrides Islands Felt at Luganville h about 15 km H = 05 47 07.4

5.

No.	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						Δ (Deg.)	Remarks
44	12	iP S	ZNE ZNE	10 37 41 38 16							3.4	dse USCGS: 17.2S, 172.0W Tonga Islands region Felt in Samoa Islands h about 34 km H = 10 36 52.0 Mag. 6-6 $\frac{1}{4}$ (PAS), 5.6- 5.8(BRK), 5 $\frac{3}{4}$ -6 (GOL), 5.6 (CGS)		
45	12	eP eS	ZNE ZNE	13 29 49 30 40										
46	12	eP S eT	ZNE ZNE ZNE	15 02 33 03 06 05 45										
47	12	eP eS eT	ZNE ZE ZNE	15 29 32 30 14 33 02										
48	12	eP eS	ZNE ZNE	17 28 53 32 12							18.8	USCGS: 22.8S, 170.7E Loyalty Islands region h about 26 km H = 17 24 31.9 Mag. 5.1 (CGS)		
49	12	eiP S	ZNE ZNE	22 02 19 04 23							12.5	USCGS: 25.2S, 177.2W South of Fiji Islands h about 225 km H = 21 59 50.7 Mag. 4.9 (CGS)		
50	12	eP S	ZNE ZNE	22 35 50 36 10									Samoa Islands region	
51	13	eP S T	ZNE ZNE ZNE	04 41 53 42 27 45 00										
52	13	iP eS	ZNE ZNE	15 36 07 13									d Samoa Islands	
53	14	eP	ZNE	00 49 26										
54	14	iP eS e(L)	ZNE NE ZN	05 36 04.1 42 00 45 18							41.4	u USCGS: 5.4S, 147.1E East New Guinea region h about 204 km H = 05 28 36.9 Mag. 4.9-5.3 (BRK), 5.8 (CGS)		
55	14	eP eiS	ZNE ZNE	19 46 01 57							5.4	USCGS: 18.0S, 175.2W Tonga Islands h about 255 km H = 19 44 45.6 Mag. 4.4 (CGS)		
56	14	eP S	ZNE ZNE	20 04 51 05 24										

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
69	18	eP eS	ZNE ZNE	21 46	44 23	27						11.2	USCGS: 22.1S, 179.6W South of Fiji Islands h about 553 km H = 21 41 58.3 Mag. 4.3 (CGS)	
70	18	eP eiS	ZNE ZNE	23 05	04 21	40								
71	19	iP S	ZNE ZNE	00	46 42	26							u Samoa Islands region	
72	19	iP S	ZNE ZNE	05	36 23	08.9							u Samoa Islands region	
73	19	eP eS eL	ZNE NE ZNE	12 26 27	17 40 18	49						66.0	USCGS: 36.4N, 141.1E Near east coast of Honshu, Japan. Felt at Tokyo h about 41 km H = 12 06 59.5 Mag. 5.5 (CGS)	
74	19	iP eS	ZNE ZNE	15 45	43 23	32	1.8	0.9				10.4	u USCGS: 21.5S, 179.3W Fiji Islands region h about 586 km H = 15 41 09.6 Mag. 4.4 (CGS)	
75	19	eP iS iL	ZNE ZNE Z	17 37	33 02 48	35	11.0	12.0				18.6	USCGS: 22.6S, 170.9E Loyalty Islands region h about 33 km H = 17 29 20.9 Mag. 5.2 (CGS)	
76	19	eP	ZNE	19	10	12						18.6	USCGS: 22.7S, 171.0E Loyalty Islands region h about 33 km H = 19 05 57.1 Mag. 4.4 (CGS)	
77	19	eP	ZNE	20	23	53						18.7	USCGS: 22.6S, 170.7E Loyalty Islands region h about 33 km H = 20 19 35.0 Mag. 4.3 (CGS)	
78	20	eP eS eT	ZNE ZNE ZNE	02	03 20 10	53								
79	20	iP S T	ZNE ZNE ZNE	02	12 28 32	01						2.6	d USCGS: 15.3S, 174.3W Tonga Islands h about 33 km H = 02 11 25.3 Mag. 4.8 (CGS)	
80	20	eP eS eT	ZNE NE ZNE	02	28 24 20	54								

No	Date	Phase		Time			Az Tz An Tn Ae Te						(Deg.)	Remarks
				(G.M.T.)										
93	24	iP eiS	ZNE ZNE	05 45	43 11	50							6.1	u USCGS: 16.4S, 177.9W Fiji Islands region h about 428 km H = 05 42 14.0 Mag. 5.4 (CGS)
94	24	iP eS eT	ZE NE ZNE	10 33 35	32 13 10	43.5								u
95	24	eP S	ZNE ZNE	10	52	32 58								
96	25	iP	ZNE	10	35	18.5							13.8	d USCGS: 24.8S, 179.4E South of Fiji Islands h about 567 km H = 10 32 32.7 Mag. 4.7 (CGS)
97	26	eS eL eL	ZNE Z NE	00 40 41	28 54 18	40							71.0	USCGS: 28.6N, 130.0E Ryukyu Islands Felt on Amami Oshima h about 33 km H = 00 08 09.8 Mag. 5.7 (CGS)
98	26	e(SSS) eL	E ZE	08 44	39 00	00							72.0	USCGS: 56.6N, 152.2W Kodiak Island region h about 28 km H = 08 11 06.3 Mag. 5-5 $\frac{1}{4}$ (GOL), 4.9 (CGS)
99	26	e(L)	ZE	12	04	00							18.4	USCGS: 22.9S, 171.4E Loyalty Islands region h about 58 km H = 11 55 53.3 Mag. 4.7 (CGS)
100	26	iP iS	ZNE ZNE	15 31	30 00	29								u
101	27	iP eS	ZNE ZN	00 07	06 20	54.6							2.2	dsw USCGS: 15.3S, 173.6W Tonga Islands h about 173 km H = 00 06 44.5 Mag. 4.3 (CGS)
102	27	eP eiS T	ZNE ZNE ZNE	05 15	13 04	15 34								Samoa Islands region
103	27	eL	ZN	05	54	24							92.0	USCGS: 30.8S, 71.0W Near coast of Central Chile h about 62 km H = 05 13 12.6 Mag. 5.4 (CGS)

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
104	27	iP S	ZNE ZNE	06	51	28 46							d Samoa Islands region	
105	27	iP S	ZNE ZNE	07	51	48 52 08							u Samoa Islands region	
106	27	eP eS eL T	ZNE NE ZN ZNE	08	20	27 21 40 22 24 28 02						7.8	USCGS: 21.3S, 174.3W Tonga Islands h about 33 km H = 08 18 42.4 Mag. 5.3-5.5 (BRK), 5.4 (CGS)	
107	27	eP eS eT	ZNE ZNE ZNE	15	44	10 45 30 51 45						7.8	USCGS: 21.2S, 174.4W Tonga Islands h about 33 km H = 15 42 25.2 Mag. 4.6 (CGS)	
108	28	eS eL	NE ZN	02	57	16 03 09 30						71.0	USCGS: 32.1N, 130.8E Kyushu, Japan h about 125 km H = 02 36 54.1 Mag. 5-5.2 (BRK), 5.6 (CGS)	
109	29	iP S	Z ZNE	00	23	56.5 24 15							u Samoa Islands region	
110	29	eP eS	ZNE ZNE	13	27	27 29 32	2.0	1.0				12.4	USCGS: 23.5S, 179.8W South of Fiji Islands h about 528 km H = 13 24 47.0 Mag. 5.1-5.3 (BRK), 4.8 (CGS)	
111	30	ePKP e(PKP) e e eL eL	ZNE Z N ZE N E ZN	07	43	42 44 15 08 13 12 15 00 26 00 28 30 32 48						151.0	USCGS: 41.5N, 20.5E Albania 11 killed and 134 injured at Peshkopi, Albania. 7 killed and 40 injured at Debar, Yugoslavia. Considerable damage in Peshkopi-Debar area. h about 29 km H = 07 23 51.5 Mag. $6\frac{1}{2}$ (PAS), 6.6-6.8 (BRK), $6\frac{3}{4}$ (PAL), $6\frac{1}{2}$ - $6\frac{3}{4}$ (GOL), 6.0 (CGS)	
112	30	e(P)	ZNE	07	56	49								
113	30	eP eS eT	ZNE ZNE ZNE	11	42	32 45 00 55 28						13.0	USCGS: 27.4S, 176.9W Kermadec Islands h about 40 km H = 11 39 13.1 Mag. 4.4 (CGS)	

11.

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
114	30	eL eL	ZE N	12	24 27	00 30							115.0	USCGS: 42.9N, 77.4E Alma-Ata region Felt at Alma-Ata h about 21 km H = 11 44 39.0 Mag. 5.1 (CGS)
115	30	eP	ZNE	12	49	41								
116	30	iP S	ZNE ZNE	15	49 51	39.6 13							7.4	d USCGS: 17.9S, 178.3W Fiji Islands region h about 629 km H = 15 47 44.2 Mag. 4.7 (CGS)
117	30	eP	ZNE	18	18	16							89.0	USCGS: 8.1S, 80.2W Off coast of Northern Peru h about 45 km H = 18 05 19.2 Mag. 5.1 (CGS)
118	30	eP eS	ZNE ZNE	20	24 25	00 00								
119	30	eP eS	ZNE ZNE	20	47 48	27 20								

NOTE:

- (i) Trace amplitude (A) are expressed in millimetres and periods (T) in seconds.
- (ii) The small letters in the Remarks column indicate the direction of initial movement. u indicates an upwards ground movement, d a downwards one, n,s,e, and w towards north, south, east, and west respectively.
- (iii) *Readings to be incorporated in the New Zealand Seismological Report for 1967.

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)

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

December 1967 *

No	Date	Phase	Time (G.M.T.)	Az Tz An Tn Ae Te						Δ (Deg.)	Remarks	
				Az	Tz	An	Tn	Ae	Te			
1	1	eP eS	ZNE NE	07 50 09 52 25							12.5	USCGS: 23.5S, 179.9E. South of Fiji Islands h about 45 km. H = 07 47 42.1 Mag. 4.3 (CGS)
2	1	iP e eS e eL eT	ZN Z ZNE ZNE ZN ZNE	14 07 58 08 34 17 00 24.5 28.0 15 23 05							69.0	d USCGS: 49.5N, 154.4E. Kurile Islands h about 136 km. H = 13 57 02.4 Mag. 5.4-5.6(BRK), 6 $\frac{1}{4}$ (GOL), 5.9(CGS)
3	1	iP S	ZNE ZNE	15 40 08.5 25								d Samoa Islands region
4	1	eP eS	ZNE ZNE	16 55 01 56 30	1.6	1.8					7.4	USCGS: 17.6S, 178.5W. Fiji Islands region h about 504 km. H = 16 53 08.8 Mag. 4.2 (CGS)
5	2	eP eS eL	Z N ZNE	00 42 46 52.8 01 03.9							72.0	USCGS: 24.1N, 108.6W. Gulf of California h about 33 km. H = 00 31 18.9 Mag. 5.8-6.0(BRK), 6(PAL), 4 $\frac{3}{4}$ -5(GOL), 5.1(CGS)

2.

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
6	2	eP S	ZNE ZNE	02 10 11	55 16								Samoa Islands region	
7	2	eP S eT	ZNE ZNE ZNE	06 20 21 23	55 30 29									
8	2	e(P)	Z	13	04	38	1.0	1.0						
9	2	eP eS	Z ZNE	16 24 25	22 59									
10	2	eP eP	Z ZNE	17	28	04 09					27.0		USCGS: 38.5S, 175.9E. North Island, New Zealand h about 166 km. H = 17 22 39.1 Mag. 5.4 (CGS)	
11	3	iP iS	ZNE ZNE	02	42 43	45 22							usw	
12	3	e(L)	ZNE	11	02.0									
13	3	eL	ZNE	11	25.5									
14	3	eP eS	Z ZNE	11	50 52	04 05								
15	4	eP S	ZNE ZNE	01	13	09 55								
16	4	eP S	ZNE ZNE	08	29	11 30							Samoa Islands region	
17	4	eP S	Z ZNE	09	04	12 32							Samoa Islands region	
18	4	e eL	E ZN	09	17.5 20.0									
19	4	eP eS	Z ZNE	14	36 38	41 13								
20	4	eP eS	ZN ZNE	22	08 10	10 29					13.7		USCGS: 25.1S, 179.8E. South of Fiji Islands h about 522 km. H = 22 05 21.8 Mag. 4.5 (CGS)	
21	5	e	ZNE	11	42.1									
22	5	eP eS	Z ZNE	17	30 32	38 21					9.7		USCGS: 20.8S, 178.8E. Fiji Islands region h about 656 km. H = 17 28 31.5 Mag. 4.5 (CGS)	
23	5	eL eL	NE Z	19	06.5 08.0						71.0		USCGS: 30.8N, 114.0W. Gulf of California h about 33 km. H = 18 35 37.6 Mag. 5½(PAS), 4.8(CGS)	

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
24	6	eP eS	ZNE ZNE	05 05 07	05 05 07	56 36							10.0	USCGS: 21.3S, 178.8W Fiji Islands region h about 559 km. H = 05 03 40.8 Mag. 5.1 (CGS)
25	6	eP	Z	09	45	37							20.4	USCGS: 14.9S, 167.3E. New Hebrides Islands Felt at Luganville h about 124 km. H = 09 41 06.4 Mag. 5.3 (CGS)
26	7	iP S	Z ZNE	00	11	31 51								u Samoa Islands region
27	7	eP S	Z ZNE	07	42 43	17 45							9.5	USCGS: 22.7S, 175.2W. Tonga Islands region h about 33 km. H = 07 40 09.0 Mag. 4.6 (CGS)
28	7	iP S	ZNE ZNE	09	42	05 38							3.6	u USCGS: 16.7S, 174.1W. Tonga Islands h about 120 km. H = 09 41 14.1 Mag. 5.0 (CGS)
29	7	eP eS	ZNE ZNE	09	54 57	07 56	2.6	1.1					20.3	USCGS: 14.6S, 167.3E. New Hebrides Islands Felt at Luganville h about 151 km. H = 09 49 37.0 Mag. 5.3 (CGS)
30	7	eP eS	Z ZNE	14	35 36	22 13								
31	7	eP eS eT	Z ZNE ZNE	20 21	52 54 00	49 04 18							7.9	USCGS: 21.3S, 174.5W. Tonga Islands h about 33 km. H = 20 51 01.5 Mag. 4.3 (CGS)
32	8	e	NE	03	19	24								
33	8	eP eS	Z NE	03	43 46	34 28	0.5	1.0						
34	8	eP eS	Z NE	11	55 57	56 44	0.9	1.0						
35	8	eP S	ZNE ZNE	15	33	28 49								Samoa Islands region
36	8	eP S	ZNE ZNE	21	03 04	48 10								Samoa Islands region
37	9	eP eS	ZNE ZNE	05	31 33	03 00							13.8	USCGS: 22.2S, 179.4W. South of Fiji Islands h about 588 km. H = 05 28 38.9 Mag. 4.9 (CGS)

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						Δ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
47	11	eP S eT	ZNE ZNE ZNE	19 42 43 49	30 37 17							7.4	USCGS: 20.6S, 174.3W. Tonga Islands h about 33 km. H = 19 40 53.3 Mag. 5.3 (CGS)	
48	12	eL	ZNE	04	42.5							36.0	USCGS: 5.2S, 152.8E. New Britain region h about 54 km. H = 04 24 42.3 Mag. 4.9 (CGS)	
49	12	eP eS eS e(L) eL	ZNE ZNE NE ZN E	08 10 13.9 14.4 15.7 16.6	32	1.2	1.0					18.5	USCGS: 22.7S, 171.1E. Loyalty Islands region h about 39 km. H = 08 06 16.7 Mag. 5.5-5.9(BRK), 4.9(CGS)	
50	13	eP eS eS eL	ZNE E ZN ZNE	19 11 15 15.3 16.7	40 00	4.6	1.0					19.4	USCGS: 19.1S, 168.7E New Hebrides Islands Felt at Port Vila h about 51 km. H = 19 07 14.4 Mag. 5.4-5.8(BRK), 5.7(CGS)	
51	13	eP S	ZNE ZNE	19 36	10 30									Samoa Islands region
52	13	eP S eT	Z ZNE ZNE	19 42 46	19 56 00									
53	13	eP eS	ZNE ZNE	21 37 38	02 29							7.0	USCGS: 17.7S, 178.1W. Fiji Islands region h about 562 km. H = 21 35 11.4 Mag. 4.6 (CGS)	
54	14	eP eS	Z ZNE	20 30 32	37 32							13.0	USCGS: 26.1S, 176.2W. South of Fiji Islands h about 112 km. H = 20 27 48.6 Mag. 4.9 (CGS)	
55	15	eP eS eT	ZNE ZNE ZNE	19 50 53 20 05	55 34 37							16.2	USCGS: 29.1S, 177.6W. Kermadec Islands region h about 61 km. H = 19 47 13.5 Mag. 5.3 (CGS)	
56	16	iP S	Z ZNE	15 43	31 51									Samoa Islands region
57	16	eL	ZNE	21	25.6							70.0	USCGS: 51.2N, 157.7E. Near east coast of Kamchatka Felt h about 24 km. H = 20 53 58.3 Mag. 5.5 (CGS)	

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
58	17	eP S	Z NE	06 43 30	44 04									
59	18	eP	ZNE	06 28 36								18.6	USCGS: 22.4S, 170.8E Loyalty Islands region h about 34 km. H = 06 24 19.7 Mag. 4.8 (CGS)	
60	18	eP S	Z ZNE	07 16 04	25								Samoa Islands region	
61	18	eP e(S)	ZNE ZNE	08 34 00	35 02									
62	18	eP S	ZNE ZNE	14 20 23	45								Samoa Islands region	
63	18	eP S	ZNE ZNE	18 16 32	17 13									
64	19	eP S	ZNE ZNE	00 20 12	33								Samoa Islands region	
65	19	eP S T	Z ZNE ZNE	21 38 21	44 30									
66	20	eP S eT	Z ZNE ZNE	03 13 14	48 58									
67	20	eP iS	ZNE ZNE	09 55 10	45									
68	20	eP	Z	17 12 16		1.1	1.0					20.1	USCGS: 15.1S, 167.4E. New Hebrides Islands Felt at Luganville and Norsup h about 135 km. H = 17 07 49.1 Mag. 5.1 (CGS)	
69	20	eP iS	ZNE ZNE	17 57 13	32									
70	21	eP e eS eL eL	ZNE Z ZNE ZNE ZNE	02 39 02	44.8 49.4 56.5 09.3	1.2	1.6					95.0	USCGS: 21.8S, 70.0W. Near coast of Northern Chile 1 killed, 30 injured, and major property damage at Quillagua and Tocopilla Felt in southern Bolivia and northern Chile. h about 33 km, H = 02 25 21.6 Mag. 7.0(PAS), 7.0-7.3(ERK), 7 $\frac{1}{2}$ (PAL) 7.0(GOL), 6.3(CGS) Coda lasting 3 hrs.	

No	Date	Phase		Time (G.M.T.)			Az Tz An Tn Ae Te						△ (Deg.)	Remarks
							Az	Tz	An	Tn	Ae	Te		
71	21	eP eS	ZNE ZNE	11 44 45 46 31								11.4	USCGS: 21.1S, 179.2W Fiji Islands region h about 606 km. H = 11 42 25.3 Mag. 4.5 (CGS)	
72	21	eP eS	ZNE ZE	17 50 08 54 00								19.2	USCGS: 31.7S, 179.1W Kermadec Islands h about 23 km. H = 17 45 54.4 Mag. 5.1 (CGS)	
73	22	eP S	ZNE ZNE	18 36 09 30									Samoa Islands region	
74	22	eP S	ZNE ZNE	23 12 43 15 35								16.8	USCGS: 29.9S, 177.4W Kermadec Islands region h about 22 km. H = 23 08 58.0 Mag. 5.5-5.8(BRK), 5.4(CGS)	
75	23	iP S eT	ZNE ZNE ZNE	00 57 42.5 58 18 01 00 45								3.4	USCGS: 16.8S, 173.3W Tonga Islands h about 38 km. H = 00 56 53.4 Mag. 4.3 (CGS)	
76	23	eP eS	Z NE	10 42 01 54										
77	23	eP S	Z ZNE	13 20 18 48										
78	23	eP eL	ZNE ZN	13 30 19 39.7	0.7	1.0						37.0	USCGS: 5.2S, 151.8E New Britain region Felt at Rabaul, Pomio & Ulamona h about 61 km. H = 13 23 15.0 Mag. 5.7-6.1(BRK), 5.5(CGS)	
79	23	eP S	ZNE ZNE	17 39 42 40 03									Samoa Islands region	
80	23	e(P)	ZE	19 24 55										
81	24	eP eS	ZNE ZNE	02 27 04 28 40								9.4	USCGS: 21.0S, 178.0W Fiji Islands region h about 428 km. H = 02 24 58.4 Mag. 5.0-5.4(BRK) 5.0(CGS)	
82	24	eP S	Z ZNE	17 50 33 51 22										
83	24	iP S	Z ZNE	20 29 13 34									Samoa Islands region	

No	Date	Phase	Time (G.M.T.)	Az	Tz	An	Tn	Ae	Te	(Δ) (Deg.)	Remarks
04	24	e(S) Z eSS N eL N eL Z	20 32 04 39.0 49.1 55.4							114.0	USCGS: 17.4N, 61.1W. Leeward Islands h about 24 km. H = 20 03 10.9 Mag. $6\frac{3}{4}$ -7(PAS), 6.3-6.5(BRK), $6\frac{1}{2}$ (GOL), 6.4(CGS)
05	25	eP ZNE eS ZNE eL ZNE	01 30 23 35 46 38 20							35.0	USCGS: 5.3S, 153.7E. New Ireland region Felt on eastern New Britain h about 64 km. H = 01 23 33.6 Mag. $6\frac{3}{4}$ -7(PAS), 6.8-7.2(BRK), $7\frac{1}{4}$ (GOL)
06	25	iP ZNE S ZNE	09 57 40 58 00								u Samoa Islands region
07	25	eS E eS ZNE eSS ZNE eL N eL ZNE	11 05.8 07.8 12.3 20.1 25.3							95.0	USCGS: 21.5S, 70.4W. Near coast of Northern Chile Felt at Tokopilla and Arequeipa h about 53 km. H = 10 41 31.6 Mag. $6\frac{3}{4}$ (PAS), 5.8-6.2(BRK), $5\frac{1}{2}$ - $5\frac{3}{4}$ (GOL), 5.8(CGS)
08	25	e(P) Z	12 36 43								
09	25	eP Z eS NE	22 35 09 57								
90	26	eP ZE eS ZE e ZN eL ZE	08 59 34 09 04.9 07.4 09.3							35.0	USCGS: 5.1S, 153.7E. New Ireland region h about 59 km. H = 08 52 42.3 Mag. 5.2 (CGS)
91	26	eP ZNE eS NE	14 38 45 42 30	1.2	1.0					19.0	USCGS: 32.0S, 178.0W. South of Kermadec Islands h about 33 km. H = 14 34 27.8 Mag. 4.7 (CGS)
92	26	eP Z eS ZNE	18 51 45 52 22								
93	27	eL ZNE	02 04.5							41.2	USCGS: 5.8S, 147.1E. East New Guinea region h about 85 km. H = 01 43 25.0 Mag. 5.0 (CGS)
94	27	eL ZNE	04 43.0							35.0	USCGS: 5.0S, 153.7E. New Ireland region h about 130 km. H = 04 28 21.3 Mag. 4.9 (CGS)

No	Date	Phase	Time (G.M.T.)			Az Tz An Tn Ae Te						Δ (Deg.)	Remarks
106	28	eS N eSSS NE eL Z	22	32.0 40.2 42.9								69.0	USCGS: 44.2N, 128.9W. Off coast of Oregon h about 33 km. H = 22 11 33.9 Mag. 5.2(BRK), 5-5 $\frac{1}{4}$ (GOL), 5.0(CGS)
107	29	eP ZNE eS NE	09	40 59 42 17								7.4	USCGS: 17.5S, 178.4W. Fiji Islands region h about 512 km. H = 09 39 08.6 Mag. 3.7 (CGS)
108	29	iP ZNE S ZNE T ZNE	10	18 44.9 19 06 20 45									u Samoa Islands region
109	29	eP ZNE S ZNE	18	19 25 46									Samoa Islands region
110	29	eP ZNE S ZNE L ZNE Coda lasting 2 hrs.	20	31 39 33 21 34.3								9.6	USCGS: 22.8S, 175.3W. Tonga Islands region h about 30 km. H = 20 29 32.2 Mag. 5.4-5.8(BRK), 5 $\frac{1}{2}$ (GOL), 5.3(CGS)
111	29	iP ZNE S ZNE	22	25 12.5 26 50								9.6	u USCGS: 22.7S, 175.2W. Tonga Islands region h about 33 km. H = 22 23 06.0 Mag. 5.1 (CGS)
112	30	eP Z S ZNE	02	19 05 26									Samoa Islands region
113	31	iP ZNE (S) NE	07	42 09.8 43 40									d
114	31	eP ZNE e NE eL ZE	15	12 12 21.0 22.6								33.5	USCGS: 7.1S, 154.8E. Solomon Islands h about 19 km. H = 15 05 32.3 Mag. 5.4 (CGS)
115	31	eP ZNE S ZNE	15	16 45 17 04									Samoa Islands region

NOTE:

- (i) Trace amplitude(A) are expressed in millimetres and periods (T) in seconds
- (ii) The small letters in the Remarks column indicate the direction of initial movement. u indicates an upwards ground movement, d a downwards one, n,s,e, and w towards north, south, east, and west respectively.
- (iii) *Readings to be incorporated in the New Zealand Seismological Report for 1967.