Jan - ~~June~~ DEC 1959.

All year copied. Jan copied MM

COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

No 716

203 Collins Street,
MELBOURNE. VIC.

S E I S M O L O G I C A L B U L L E T I N

P O R T M O R E S B Y

Latitude: 09° 24!5 S. Longitude: 147° 09!1 E

Height: 70 metres Foundation: Eocene Cherts

Instruments:

1) 2 Sprengnether Horizontal Seismometers
N-S component: period 15.8 sec., damping critical
E-W " " 14.8 " , " "

1 Wilson-Lamison Vertical Seismometer
period 1.1 sec., damping critical

1 Sprengnether 3-component Recorder
N-S component: Galvo. period 15.8 sec., damping critical
E-S " : " " 14.8 " , " "

2) 2 Wood-Anderson Seismometers
N-S comp.: period 0.8 sec., damping 0.65, magnification 2500
E-W " : " 0.8 " , " 0.72, " 2650

1 Kew Vertical Seismometer
period 1.0 sec., damping 0.52, magnification 3960

1 Sprengnether 3-component Recorder

Further information or copies of seismograms may be obtained by writing to:-

Observer in Charge,
Geophysical Observatory,
P.O. BOX 323,
PORT MORESBY. PAPUA.

JANUARY 1959

PORT MORESBY

No.	Date	Phase		Time (G.M.T.)	Per.	Amplitude A_N	A_E	A_Z	Δ	Remarks
	Jan.			h m s	s				km.	
1	1	eP	EZ	07 33 19	2			+	4200	Compression
		e	Z	33 23	2					H=07 26 04
		e	Z	33 46	2					USCGS:19S 176W
		eS	E	39 07	12					
		eS	N	39 09	12					
		e	E	39 24						
2		eP	Z	07 56 46.	2			+	4200	Compression
		e	Z	56 50	2					H=07 49 31
		e	Z	57 04	2					Epicentre approx. 19S 176W
		eS	E	08 02 34.	12					Probable after-shock
		e	E	02 49						USCGS:8½S 177W
3		iP	Z	20 06 33					622	Mag. 4
		eS	Z	07(37)						H=20 05 (10)
4	2	e	NE	03 09 01						H=20 05 (10)
5		eL	NE	06 20 ..						
6		iP	Z	12 17 09					1911	H=12 13 10
		eS	E	20 18	8					
		e	N	22 09	6					
		e	N	22 53						
7		eP	Z	17 07 18					389	Mag. 4
		eS	NE	07 58						H=17 06 25
		i	N	08 04						
		i	E	08 05						
8	3	ePKS	E	11 40(31)	10					Record confused by microseisms
		eLq	N	12 27 ..	18					USCGS:14½S 75½W
		M	NE	32 ..	15(E) 16(N)					
9		eP	Z	15 14 02					800	Mag. 5;
		eS	NE	15 23						H=15 12 17
		e	Z	15(29)						Approx. 6 S 153 E
10		eP	Z	22 03.2						Local Activity
		e	Z	04 20						
11	4	eP	Z	00 39 40						
		eL	NE	45.3	16					
12		eP	Z	03 23 31					3877	H=03 16 41
		ePP	Z	24 52.	2					USCGS:10S 11½E
		ePPP	Z	25 13	3					
		eS	N	28 59.						
		eLq	NE	31.5						
		M	N	36.9	17					
13		e	Z	03 39 47						USCGS:21S 174½W
14		iP	Z	16 06 50	1			+	700	Compression
		iS	NE	08 01						Mag. 5¼, 5½S 152E
		L max	E	10.5	15					H=16 05 17
15		eP	Z	20 54 08						
		i	Z	54 47						

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No.	Date	Phase		Time (G.M.T.) h m s	Per. s	Amplitude A_N	A_E	A_Z	Δ	Remarks
16	Jan.	iP	Z	21 13 30	2			+	2133	Compression
		i(PP)	Z	13 51	1½					H=21 09 30
		i(PP)	Z	14 01	1½					6½S 128E
		eS	NE	16 44	(8)					Depth 300 Km.
										USCGS: 8S 126½E
17		eP	NE	22 39 29					678	Mag. 4¾
		e	Z	39 37						H=22 38 06
		iS	NEZ	40 39						
18	5	iP	Z	02 42 07	1			-	2466	Dilatation
		ipP	Z	42 58	1½					H=02 37 33
		eS	E	45 48						Depth 250 Km.
		i	N	46 06						USCGS 11½N 141E
		esS	N	47 17						
19		iP	Z	09 37 29	1		+		1011	Compression
		i	Z	37 39	1½					H=09 35 20
		eL	N	38.2	20					Mag 5½
		eS	N	39 10						USCGS: 7 S 156½E
		iS	Z	39 11	1					
		i	Z	39 21	1					
		M	N	41.4	15					
20		iP	EZ	09 52 28	2(Z)		+			Compression
		i	Z	53 01	1½					USCGS: 22S 171½E
		e	EZ	53 06	2					confused by coda
		e	EZ	53 15						of preceding.
		iPcP	Z	55 50.	2					Phases identified
		e	N	58 44						as PcP, ScS on Z
		e	E	58 54						component,
		iScP	Z	59 20	2					unusually promin-
		e	N	59 02						ent.
		eScS	NEZ	10 03 13	2(Z)					
21		e(S)	E	13 57 24						
		Lmax	NE	14 15½	18					
22	6	e(S)	E	04 54 53	8					
23		eP	Z	11 55 31					978	H=11 53 26
		eLq	NE	57.0	24					USCGS: 6½S 155E
		iS	EZ	57 09	2					
24		eP	Z	14 06 39						
25		iP	Z	14 55 48.	1		+		4500	Compression
		ipP	Z	56 02	2					H=14 48 11
		iPP	Z	57 34	2					USCGS: 7½S 105½
		eS	N	15 01 54	7					
		eS	E	01 57	7					
26		eP	Z	15 05 27					444	Mag. 4¼
		iS	E	06 13						H=15 04 27
		i	Z	06 16						
27	7	iP	Z	07 23 12					800	Mag. 5¼
		iS	N	24 34						H=07 21 26
		iS	E	24 35						

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No.	Date	Phase	Time (G.M.T.) h m s	Per. s	Amplitude A_N	A_E	A_Z	Δ Km.	Remarks
28	Jan. 8	ePKIKP Z	01 53 31	2			+	16776	Compression
		iPKP Z	53 37	1					H=01 33 55
		iPKP Z	53 47	1½					Depth 60 Km.
		ipPKIKPZ	53 58	2					USCGS:15½N 61W
		ipPKP Z	54 04	1½					
		ipPKP Z	54 14	1½					
		e Z	54 59	3					
		i Z	55 52	1½					
		e E	58 44						
		e E	02 05 10	10					
		e E	08 26	(18)					
		e E	10 23	14					
		eSS N	16 28						
		e E	17 21	20					
		e N	17 31						
		e E	18 48						
		e E	29 51						
29		iP Z	04 08 20	1			+	644	Compression
		i Z	08 23	1					H=04 06 55
		i Z	08 39	1					Mag 5¾
		i Z	09 02						USCGS:5S 151E
		iS NE	09 26						
		iS EZ	09 27						
30		iP Z	10 31 00					222	Mag. 2¾
		iS NEZ	31 24						H=10 30 28
31		eP Z	18 03 47					1100	Mag. 4¼
		eS NE	05 (38)						H=18 01 (24)
		eL NE	05.9						Normal depth
		M NE	08..	12					8S 157E
									USCGS:7S 155½E
32	8	eP Z	22 38 41					1022	Mag.6
		i Z	38 44	1½					H=22 36 (29)
		i(PP) Z	38 49	1½					USCGS:4½S 138½E
		i(PPP) Z	38 54	1½					
		i(S) NE	40 24						
		eL N	40 42	9					
		M NE	43½	16(N) 18(E)					
33	9	e(P) Z	00 28 13						Probable after-shock
34		eL N	06 15 ..						
		eL E	16 ..						
35		e NEZ	12 07 28						Minor local activity
36	10	iP Z	02 30 14					478	Mag. 4¾
		iS N	31 03						H=02 29 09
		iS EZ	31 04						
37		iP Z	05 54 49					855	Mag 5¾
		i NEZ	54 52	1(Z)					H=05 52 56
		iS N	56 16	1					5S 153½ E
		iS EZ	56 17						
38		iP Z	13 09 25				-	433	Dilation
		iS NEZ	10 10						Mag. 3½
		i Z	10 24						H=13 08 26

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No.	Date	Phase	Time (G.M.T.) h m s	Per. s	Amplitude A_N	A_E	A_Z	Δ Km.	Remarks
39	Jan.	e NEZ	13 59 34						Minor local activity
40		eL NE	23 30 ..						
41	11	iP Z	01 06 44						
42		e(SKKS)E	07 49 43						USCGS:15N 90W
43		eP Z	13 33 28						USCGS:21S 174½W
		M N	49 ..	18					
44	11	iP Z	16 26 27					922	Mag. 5½
		i Z	26 54						H=16 24 26
		iS NEZ	28 01						Bouganville - New Ireland region
45	12	e Z	00 34 21						Minor local activity
46		e Z	01 36 33						Minor local activity.
47		e Z	02 06 08						Minor local activity
48		iP NEZ	03 01 28					411	Mag. 5
		i NZ	01 33						H=03 00 32
		iS NE	02 11						6 S 146 E USCGS NE New Guinea
49		e E	14 33 54						USCGS:44N 146E
50		e(P) Z	14 45 53	1					
		e(S) Z	46 34						
51		eP Z	15 29 37	2					
		Lmax E	36.3	14					
		Lmax N	36.6	17					
52	12	eP Z	17 46 31	1				2644	Dilatation
		eS NE	50 32						Depth 100 - 150 Km
		e E	51 23						H=17 41 32
		e N	51 25						USCGS:14½N 145E
53	13	iP NZ	01 20 31	2(Z)				2600	Dilatation
		iPP NZ	21 02						Mag 6¼
		iS E	24 36	11					H=01 15 27
		iS NZ	24 39	9(N)					Depth 50 KM
		iSS NZ	25 04	7(N)					USCGS:13½N 146E
54		eP Z	07 41 53	2					USCGS:3S 102E
		e Z	42 10						
		e Z	07 42 31						
		ePP Z	43 42						
		e E	48 46						
55		eP Z	09 11 12						USCGS:19S 176½E
		e Z	12 39						
56		iP Z	11 51 05	1			-	755	Dilatation
		iS NEZ	52 22						Mag 5
									H=11 49 25
									USCGS:5S 153½E

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No.	Date	Phase	Time (G.M.T.)	Per.	Amplitude A_N	Amplitude A_E	Amplitude A_Z	Δ	Remarks
	Jan.		h m s	s				Km.	
57		eP NEZ	21 00 35					333	Mag. $3\frac{3}{4}$
		e(S) NEZ	01 10						
58	14	M NE	03 14.0	(18)					USCGS:10S 161E
59		iP Z	13 23 40	1			-	3800	Dilatation
		eS NE	28 (24)						H=13 17 (45)
									USCGS: 21S 179W
									Depth 650 Km
60	15	e Z	07 38 44						Minor local
		e NE	38 53						activity
61		iP Z	09 59 43					889	Mag $4\frac{1}{2}$
		i Z	10 00 08						H=09 57 46
		e(S) NE	01 13						
		i Z	01 15						
		i Z	01 21						
62		eP Z	20 12 50						
		i Z	12 53	1					
63		iP Z	20 34 55	1					
64		iP Z	21 26 40	$1\frac{1}{2}$			-	3966	Dilatation
		i Z	27 02	2					H=21 20 30
		e Z	27 (32)	$1\frac{1}{2}$					Depth 550-600 Km
		ipP Z	28 21	$1\frac{1}{2}$					USCGS:$25\frac{1}{2}$S 180
		iS NE	31 37	7					
		i Z	32 03	$2\frac{1}{2}$					Phase very prom-
		esS NE	21 34 46	(14)					inent
		e(ScS) NE	35(56)	(12)					
		i NE	36 08	6					
		i E	39 04	13					
65	16	iP Z	01 42 41					7888	H=01 31 25
		ipP Z	42 53	2					Record confused
		eS E	51 53						by microseisms
		M N	12.0	22					USCGS: $52\frac{1}{2}$N 171W
66		iP Z	20 05 36						Minor local
		i Z	06 32						activity
67	17	iP Z	09 30 35	2					Record confused
									by microseisms
									USCGS:$10\frac{1}{2}$N 126E
68		eP Z	11 34 21					1678	H=11 30 49
		i(PP) Z	34 38						Record confused
		eS NE	37 08						by microseisms
									USCGS:10S $162\frac{1}{2}$E
69	18	iP Z	02 57 05					700	Mag $5\frac{1}{4}$
		iS NE	58 17						$5\frac{1}{2}$S 152E
		i Z	58 18	$1\frac{1}{2}$					H=02 55 32
70		i(P) Z	04 51 55						Record confused
									by microseisms
71		eP Z	06 25 03						Small local shock
									- record confused
									by microseisms

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No.	Date	Phase	Time (G.M.T.)	Per.	Amplitude A_N	A_E	A_Z	Δ	Remarks
	Jan.		h m s	s				Km.	
72	18	iP Z	14 42 55	(4)			+	767	Compression
		i NEZ	42 57	1(Z)					Mag. 6
		iS NE	44 13						H=14 41 13
		i NE	44 18						USCGS: 5S 152½E
73		iP Z	17 00 26	1			-	578	Dilatation
		eS N	01 26						Mag 4¼
									H=16 59 08
74		iP Z	19 13 26	2			-		Dilatation
		i(PP) Z	19 13 42	1½					Ceram Sea Region
		i(PPP) Z	13 54	1½					Confused by
		e(S) NE	17 02						microseisms
75		eP NEZ	19 27 35					767	Mag. 5½
		i Z	28 05						H=19 25 54
		iS E	28 53						USCGS: 5S 152½E
		iS NE	28 54						
		i E	28 57						
		M NE	31.5	16					
76		iP Z	20 54 59					478	Mag. 4
		iS NZ	55 54						H=20 53 54
		eS E	55 55						
77	18	iP EZ	22 29 35	1½(Z)			-	3877	Dilatation
		i Z	29 59	2					Depth 450 Km
		i Z	31 11	2					H=22 23 23
		iPcPisPZ	31 51	2					USCGS: 19S 178W
		iS NN	34 33	6(N)					
		eScP NZ	34 54	1½(Z)					
		eScP E	34 55						
		eG E	37 53	14					
78	19	e(S) E	00 02 49						Small local
		e(S) NZ	02 52						shock
79		eP NE	10 06 35					456	Mag 4½
		eP Z	06 39						H=10 05 34
		i Z	06 41						
		eS N	07 22						
		eS E	07 24						
80		e(S) E	10 52 40	10					Record confused by heavy micro-seisms
									USCGS: 16S 168½E
81	19	eP NEZ	23 31 05					767	Mag. 5
		iS NEZ	32 23						H= 23 29 24
82	20	iP Z	16 50 49	1			+?		Compression?
		eP E	50 50						Confused by heav,
		i Z	51 04	2					microseisms
		i(PP) Z	51 13	2					USCGS: 9S 126E
		i Z	51 39	1½					
		i Z	51 48	2					
		e E	55 02						
83	21	iP NZ	16 36 54	1½(Z)			+	267	Compression
									Mag 4½
									H=16 36 16
									Epicentre approx.
									7S 146½E
		eP E	36 55						
		i(PP) Z	37 00						

No.	Date	Phase	Time (G.M.T.)	Per.	Amplitude A_N	Amplitude A_E	Amplitude A_Z	Δ	Remarks
	Jan.		h m s	s				Km.	
103	25	eP NZ	11 47 48					456	H=11 46 46
		eP E	47 49						Epicentre 6S
		i Z	47 49	1					149E
		i Z	48 12	1½					Mag. 5-5½
		i Z	48 19						Depth possibly
		e E	48 32						about 60 kms.
		e N	48 33						
		iS NEZ	48 35	1(Z)					
104		e E	21 23.2	(16)					
		e N	25.9	(14)					
105		eP Z	22 32 50	1½				2566	H=22 27 46
		eS NE	36 55						Epicentre about
		eLr N	38 21						18S 169E.
		eLr E	38.6						
		Lmax N	40.0	16					
		M E	41.9	16					
106	26	e(P) Z	02 33 13						
107		iP Z	05 55 22						Depth about 250Km
		i Z	55 26						USCGS:16½S 174½W
		epP Z	56 18						
108		iS NEZ	11 22 52						Local shock
109		iP Z	16 18 27					389	Mag. 4
		iS N	19 07						H=16 17 34
		iS EZ	19 08						
110		eP Z	17 48 02						Epicentre about
		e Z	48 47						6S 118E
111		iP Z	22 43 51					744	Mag. 4½
		eS NE	45 05						H=22 42 13
		iS Z	45 07						
		Lmax NE	47.7	15					
112	27	ePKP Z	00 39 47	2					USCGS:18N 68½W
113		iP Z	02 25 05	1					Epicentre 17½S
		epP Z	25 20	1½					162E
		M N	31.9	14					
		M E	33.1	14					
114		iP Z	09 35 05	1			+	2344	Compression
		ipP Z	35 37	1½					H=09 30 32
		epPP Z	35 46	1¾					Epicentre 15S
		eS E	38 45						167E
									Depth about 100
									Kms.
115	27	eP NZ	12 20 15					722	Mag. 4¼
		eS NEZ	21 29						H=12 18 39
116		iP Z	14 17 59	1			-		Dilatation
									Tonga Islands
									approx. 24S 176W
									Possibly deep.
117		e(S) NEZ	16 05 13						Small local shoc

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No.	Date	Phase	Time (G.M.T.) h m s	Per. s	Amplitude A_N	A_E	A_Z	Δ Km.	Remarks
118	Jan. 27	iP Z	17 30 05	1			-		Dilatation Eastern Fiji Islands.
119		iP NEZ	20 11 39	2(Z)			+	1911	Compression H=20 07 40 Epicentre 7S 130
		i Z	11 48	1½					
		iPP Z	11 59	1½					
		eS NE	14 48						
120		iP Z	21 10 41	1			-	2911	Dilatation H=21 05 25 Depth about 200 Kms USCGS:4N 126E
		epP Z	11 25	1½					
		eS NE	14 55						
		esS N	16 15						
		e(SS) E	16 36						
121		eP Z	21 18 28					44	Mag. 1 H=21 18 19
		eS NEZ	18 35						
122	28	iP Z	08 10 57	1			-	422	Dilatation Mag. 4¾ H=08 09 59
		iS NE	11 41						
123		iPKIKP Z	10 23 04	1½			+		Compression USCGS:30½S 79W
		eSKS NE	30.7						
		eSS NE	41 19.	22					
124		e(P) Z	14 16 22						
		e NE	17 27						
		e Z	17 32	2					
125		eP Z	17 12 43						H=17 07 (30) Epicentre approx. ½S 125E
126	29	iP Z	05 32 03					433	Mag. 3¾ H=05 31 04
		iS NEZ	32 48						
127		eP Z	11 07 46	1					H=11 04 .. Near NW tip of New Guinea
		e E	11 33	6					
		Lmax N	13.6	16					
		Lmax E	14.0	13					
128		eP Z	20 32 40					7766	H=20 21 30 USCGS:52N 174W
		ePcP Z	32 57	1½					
		eS E	41 46.	8					
		eS N	41 48	10					
		e(SSS) N	49.6						
		e(SSS) E	49.8						
		eLq N	51 ..						
		eLr NE	54.5						
		M N	21 00.5	20					
		Lmax E	05 ..	20					
129		ePS N	23 53 36	14					USCGS:71N 8E
		eSS N	00 00.0	(20)					
		eSSS N	04.2						
130	30	iP EZ	00 22 46	2(Z)			-	1600	Dilatation Mag 5¾ H=00 19 22 USCGS:10S 161E
		i Z	23 08						
		iS N	25 24	11					
		iS E	25 25	9					
		M NE	27.5	20(E) 19(N)					

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No.	Date	Phase	Time (G.M.T.) h m s	Per. s	Amplitude A_N	A_E	A_Z	Δ Km.	Remarks
131	Jan. 30	eP Z	04 24 01					611	Mag. 4½
		iS NEZ	25 04						H=04 22 39
132		iP NEZ	18 16 24	1½(Z)			-	4066	Dilatation
		i Z	16 52	1½					H=18 09 58
		ipP Z	17 46	1½					Depth about
		i Z	18 17						450 Kms.
		iS NE	21 33	9					Epicentre 32S
		iScP Z	21 35	2					178E
		e E	22 14						USCGS:31S 179W
		ePcS N	22 22						
		ePcS E	22 25						
		e NE	24 55	9(E)					
		iScS NE	25 43	7					
133		iP Z	20 48 18	2			+	5988	Compression
		e Z	48 26	2					H=20 39 02
		eS E	55 44	13					Depth possibly
		eS N	55 49						50-100 Kms
		e(sS) E	56 35	12					USCGS:44N 144E
		e N	56 49	12					
		eG E	21 01 32	(30)					
134		eP Z	22 26 06	2			+	6022	Compression
		e Z	26 15	2					H=22 16 48
		eS E	33 34	13					Depth possibly
		eS N	33 35	12					50-100 Kms
		e N	34 05						USCGS:44N 144E
		e(sS) E	34 22	13					
		eG E	39 24	26					
135	31	iP Z	05 52 37	1½			-		Dilatation
									Tonga Islands
136		eP Z	07 36 50	2					Probably Solomon
		e Z	37 23	2					Islands
		Lmax NE	41½	20					
137		i(P) Z	12 42 33						

(J.M. RAYNER),
D I R E C T O R.

Feb copied MM.

COMMONWEALTH OF AUSTRALIA
DEPARTMENT OF NATIONAL DEVELOPMENT
BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

203 Collins Street,
MELBOURNE. VIC.

S E I S M O L O G I C A L B U L L E T I N

P O R T M O R E S B Y

FEBRUARY 1959

Latitude : 09° 24!5 S. Longitude : 147° 09!1E

Height : 70 metres Foundation: Eocene Cherts

Instruments :

1) 2 Sprengnether Horizontal Seismometers
N-S component: period 15.8 sec., damping critical
E-W " " 14.8 " , " "

1 Wilson-Lamison Vertical Seismometer
period 1.1 sec., damping critical

1 Sprengnether 3-component Recorder
N-S component: Galvo. period 15.8 sec., damping critical
E-W " : " " 14.8 " , " "

2) 2 Wood-Anderson Seismometers
N-S comp.: period 0.8 sec., damping 0.65, magnification 2500
E-W " : " 0.8 " , " 0.72, " 2650

1 Kew Vertical Seismometer
period 1.0 sec., damping 0.52.

1 Sprengnether 3-component Recorder

Further information or copies of seismograms may be obtained by writing to :-

Observer-in-Charge
Geophysical Observatory,
P.O. BOX 323,
PORT MORESBY.....PAPUA.

No.	Date. 1959.	Phase			Time (G.M.T) H m s	per s	△ degrees.	Remarks.
	FEB							
1	1	eL	E		03 05.3			
2		eP		Z	03 12 (23)	1½		
		e(S)	E		14.4			
		eX	N		14 52			
		eX	N		16 41			
		eX	E		16 55			
3		iP		Z	03 25 42			USCGS: 36½N 71E.
4		eP	EN	Z	05 32 18			Solomon Islands.
		eL	N		34.8			
		eX	E		35 11			
		Lmax	EN		36.0	(18)		
		eX	N		37 27	(12)		
		eX	E		38 13	(12)		
5	2	iP		Z	04 00 54	2		Compression. USCGS: 6½S 126E.
		iPP		Z	03 21			
		iX	E	Z	04 15	6(E)		
		iX		Z	04 43	2		
		eX	E		06 27	(10)		
6		eX	E		19 44.2			USCGS: 35N 24E.
7	4	iP		Z	05 02 53			Masked by microseisms.
8		eL	EN		13 53 ..			USCGS: N. Coast of Mindanao.
9		eP		Z	22 05 09		-23.6	H=22 05 00
		eX		Z	06 07		2620 Km.	
		eS	E		09 18			
10		iP		Z	22 56 31	1½		Compression.
11	5	eS	E		01 27 00			USCGS: 57½N 157½W.
12		iP		Z	02 32 59		(3.4)	Mag 4½; Probably New
		iX		Z	33 10		380 Km.	Guinea Highlands.
		iX	S	Z	33 33			H=02 32 (07).
		i(S)	SW		33 38			
13		iP		Z	09 11 18	1	3.6	Dilatation. Approx 6S
		iX		Z	11 23		400 Km	146E, Mag 4¾.
		iS	ENSW		12 00			H=09 10 23.
14		L	EN		19 08 ..			
15	6	eP		Z	05 21 12	2	24.6	Molucca Passage Region
		i(pP)		Z	21 34	2	2730 Km	Depth 50-100 Km.
		iPP		Z	21 55	2		H=05 15 (53)
		e(S)	E		25 28			
		M	E		32.5	20		
16		iP		Z	14 44 04	1	68.5	Dilatation. USCGS: 51½N
		iPcP		Z	44 23	2	7610 Km.	175½W. H=14 33 03 (calc
		iX		Z	46 16	2		
		eS	EN		53 02	13(E)		
		eScS	N		53 59			
		eScS	E		54 02	14		
		eSSS	E		15 00 35	24		
		eLq	N		02 04	20		
		eLr	EN		05.5	30		
		M	EN		10.5	20		

No.	Date. 1959	Phase.		Time. (G.M.T). h	m	s	per s	△ degrees.	Remarks.
17	FEB. 7	iP	Z	03	56	31	1½		Compression. Molucca Passage Region. H=03 51.2(calc)
18		ePKIKP	Z	09	56	03		131	Magnitude 7¼.
		iPKIKP	Z		56	05	2	14560 Km.	Dilatation H=09 36 49
		iX	Z		56	33	1½		USCGS. 1S 81½W.
		ePP	E Z		58	(13)	3(Z) (18(E)		
		eSKP	Z		59	24			
		iPKS	N		59	29	13		
		iPKS	E		59	31	13		
		e(SKKKS)	EN	10	05	23	13		
		ePS	E		08	24	12		
		eScSP	Z		08	36	4		
		e(PKKS)	N		09	08	13		Major arc.
		i(PcPPKP)	Z		09	11	2		Major arc.
		ePPS	E N		10	01	15(N) 16(E)		
		eX	E		10	40	15		
		eX	Z		12	32	3		
		eX	Z		12	44	3		
		eX	N		13	56	18		
		eSS	E		15	38	13		
		eSS	N		15	41	17		
		ePSS	E		16	22	30		
		eX	E		18	21	19		
		eX	N		18	23	19		
		eSSS	E		20	39	25		
		eSSS	N		20	43	18		
		eLr	E		37.8		33		
		eLr	N		37.8		28		
		eLr	Z		38.0		30		
19		iP	Z	10	17	06	1		Compression; local shock?
		iX	Z		17	34	2		
20	8	M	N	02	20	..			USCGS: 49N 28½W.
21		iP	Z	05	52	20	1	35.0	Depth approx 600 Km.
		iS	EN		57	10		3890 Km	USCGS: 23S 180.
		esS		06	00	13			H= 05 46 18. (calc).
22		eP	Z	13	08	17			
23		eLq	EN	16	11	..			USCGS: 32S 176½W.
		M	EN		19.5		16		
24	9	iP	Z	04	53	25	1½	67.1	USCGS: 50½N 177½W.
		ipP	Z		53	32	1½	7450 Km	H=04 42 33(Calc).
		iPcP	Z		53	52	2		
		eS	EN	05	02	15	(12)		
		ePS	EN		02	41	17(N) 14(E)		
		eScS	N		03	19	(11)		
		eLq	EN		10	..	(28)		
		eLr	EN		14.4				
		M	N		20.0		20		
25		eP	Z	05	59	30			Local shock.
		iX	Z	06	00	46			
26		iP	ENSWZ	21	15	19	2(SWZ) 4(EN)	7.8 870 Km.	Dilatation h=(100) Km.
		iS	SW		16	46			USCGS: 5S 154E. H= 21 13 26.(calc).

No.	Date	Phase.	Time. (G.M.T.) h m s	per s	△ degrees	Remarks.
27	FEB. 10	iX Z	13 57 20			Record confused by microseisms.
28	11	eP Z	03 49 26	2	27.1	H=03 43 44.
		ePP Z	50 09	1½	3010 Km.	USCGS: 9N 127E.
		ePPP Z	50 24	1½		
		eX Z	50 30	2		
		eX Z	53 30	1½		
		eS E	54 00			
		eS N	54 01			
29		e(P) Z	06 46 18			
		eX EN	48.1			
30		iP Z	06 50 04	1		
		iX Z	50 25	2		
		eX N	52 16			
31		iP Z	07 09 35	½	3.2	Mag. 4.
		iS SW	10 12		355 Km.	H=07 08 46.
		iX Z	10 16			
32		iP Z	12 53 35			USCGS: 12S 166½E.
		iX Z	53 57			
		eX N	57 11			
		eX E	57 22			
		Lmax EN	13 00.5			
33		eX Z	21 44 31			USCGS: 15½S 173W.
		eL EN	54 ..			
34	12	iP Z	17 08 58	1	27.3	Compression.
		eX Z	09 36	1½	3030 Km.	H=17 03 21.
		iX Z	10 27	2		h about 50 Km.
		eS EN	13 29			Record confused by
		eX E	15 06	9		microseisms.
		Lmax N	17.0	16		USCGS: 22S 173E.
35	13	iP Z	01 51 47	1		Dilatation.
		iX Z	57 08			Epicentre approx 600 miles SW of Tonga. H=01 45.8 . Depth probably 3-400 Km.
36		iP Z	03 52 10		3.5	Mag. 4¼.
		iS SWZ	52 50		390 Km	H= 03 51 17 .
37		iP Z	15 15 33	1		Dilatation.
						USCGS: 20S 177W.
38	14	eP Z	04 41 40		25.0	Mag. 5½.
		iX Z	42 03		2780 Km.	H= 04 36 18.
		iPP Z	42 17	1½		USCGS: 7½S 122E.
		iX Z	42 44			
		eS N	45 (59)			
		eX E	46 09			
		eLq N	47½			
		M N	51.6	21		
		Lmax E	53.8	15		
39		eP Z	06 34 35		1.6	Mag. 3¼.
		iS SW	34 55		180 Km.	H= 06 34 09.
40		eP Z	07 33 (41)			Solomons - Santa Cruz Is. Region.
		eLq N	36½			

No.	Date.	Phase.	(G.M.T.) Time	per	△	Remarks.
	FEB.		h m s	s	degrees.	
41	14	eP Z	22 36 06			USCGS: 28N 97E.
		ePcP Z	36 (47)			
42	15	e(SS) N	04 34 04			USCGS: 59½S 25W.
		e(SS) E	34 07	21		
43		iP Z	04 14 28			Records of shocks Nos. 42 and 43 superimposed. Interpretation of record very difficult. USCGS: 44½N 83½E.
		e(pP) Z	14 37			
		eX Z	19 14			
		eX E	26 (17)			
		eX N	26 (27)			
		eX E	27 (30)			
		eX N	28 (09)			
		eX E	29 (33)			
		eX N	30 (43)			
		eX E	32 (14)			
		eX N	37 (03)			
		eX E	38 (15)			
		eX N	39 (05)			
		eX E	41 (49)			
		eX E	44 (58)			
		eX N	05 00 05			
44		eX Z	05 01 31			Record confused with coda of shocks Nos. 42 and 43. USCGS: 59½S 26W.
45	16	iP Z	00 35 00		1.6	Mag. 3¼.
		iS SW	35 20		180Km.	H= 00 34 34.
		iS Z	35 21			
46		eX E	01 08 02			USCGS: 1S 81½W.
		eX E	11 02			
		eX N	44 36			
		M EN	47 ..	20		
47		iP Z	05 22 16		2.7	Mag. 4.
		iS SWZ	22 48		300 Km.	H= 05 21 34.
48		eX Z	06 44 16			
49		eP Z	06 52 31		2.8	Mag. 3¾.
		iX Z	52 57		310 Km.	H= 06 51 47.
		eS SW	53 (04)			
		iX Z	53 15			
50		iP Z	08 00 40	1		Dilatation. h about 500 Km. USCGS: 25S 180.
		iX Z	01 00			
		eX Z	02 31			
		e(S) E	05 (24)			
51	17	eP Z	00 03 42			Small local shock.
52		e(S) SWZ	08 08 (35)			Small local shock.
53		eP Z	11 26 09			USCGS: 15S 168½E.
		M E	34.0	14		
		M N	34.5	14		
54		iP Z	11 55 21	1		USCGS: 15N 142½E.
55		eP Z	12 01 44			

No	Date.	Phase.	Time (G.M.T.) h m s	per s	△ degrees	Remarks.
	FEB.					
56	17	iP Z	12 14 20	1½	71.0	Dilatation.
		iS N	23 32	10	7890 Km	H= 12 03 04.
		iS E	23 33	10		USCGS: 51½N. 171W.
		ePS N	23 (58)	(20)		
		ePS E	24 (01)	(20)		
		iScS N	24 21	10		
		eX N	29 14			
		eX E	29 (41)			
		e(SSS) E	31 (27)			
		e(SSS) N	31 (33)			
		M N	43.0	19		
		M E	43 ..	19		
57		eX Z	12 43 23			
58		eP Z	12 56 59			Epicentre probably
		eX Z	57 30			30½N 140½E.
						In coda of preceding.
						USCGS: 32½N 140½E.
59		e(P) Z	20 01 34			
60	18	iP Z	02 03 35			USCGS: 24S 179½W.
		e(S) E	08 23			
61		eP Z	11 57 03		(2.5)	Mag. 3.
		e(S) SWZ	57 33		(280)Km.	H= 11 56 (24).
62		Z	16 44 ..			Minor activity.
63		iP Z	17 34 15	1½	26.1	Dilatation.
		ipP Z	34 34	1½	3000 Km.	Epicentre possibly
		isP Z	34 48	1½		16½N 148E.
		eS E	38 37	10		H= 17 28 49.
		eX N	38 41			h about 50 Km.
		e(sS) E	39 05			
		eX E	40 36			
64		e(S) SW	18 43 (48)			Small local shock.
65	19	eP Z	07 40 04			Probably Sulu Sea Area
66		eP Z	11 42 55		4.5	
		eS SW	43 47		500 Km.	Mag. 4½.
						H= 11 41 48.
						Probably Astrolabe
						Bay area. North Coast
						New Guinea.
67		eP Z	16 06 03		6.0	Mag 4¾.
		eS EN Z	07 11		670 Km.	H= 16 04 34.
68		eP Z	18 18 00		1.4	Mag 3¼.
		eS SWZ	18 18		160 Km.	H= 18 17 37.
69		eP Z	21 04 30			
		eX E	05 56	12		
		eX E	06 20	18		
		M E	07.4			
70		eP SWZ	21 19 23		8.3	H =21 17 20.
		eS SWZ	20 57		920 Km.	Possibly deeper than
						normal.

No.	Date.	Phase.	Time. (G.M.T) h m s	per s	△ degrees.	Remarks.
	FEB.					
71	20	eL N	01 12 ..			
		eL E	12.2	18		
72		eP Z	01 34 23		23.6	H= 01 29 14.
		eS EN	38 32		2620 Km.	About 2N 127E.
73		eP Z	02 55 28		6.9	H= 02 53 47.
		eS Z	56 46		770 Km.	
		Lmax N	59.5	13		
		Lmax E	59.8	13		
74		ePKP Z	04 31 51	1		USCGS: 30½S 71W.
75		iP Z	12 08 00	1½		Dilatation.
		eP E W	08 01			USCGS: 18S 178½W.
76		eP Z	12 22 21			
77		eP Z	20 26 41		7.0	H= 20 25 00.
		eS NS	27 59		780 Km.	
		eS E WZ	28 00			
78	21	eP Z	05 21 (03)			
		eX E	26 17			
		Lmax E	28.8	15		
		Lmax N	28.9	15		
79		L E	08 42 ..			USCGS: 14N 120½E.
		L N	43 ..			
80		eX Z	13 00 41			Epicentre Sumbawa?
81	22	eP Z	03 41 27			USCGS: 28½N 91½E.
82		iP EN Z	10 30 08	(2)(Z)	16.5	Dilatation.
		iX Z	30 20	1½	1830 Km.	H= 10 26 48.
		iX Z	31 26	1		h about 100-200 Km.
		iS S	33 01			USCGS: 5½S 131E.
		iS Z	33 02			
		eS W	33 03			
		iS N	33 07			
		iS E	33 09			
		i(ScP) Z	38 15	1½		
		e(ScS) E	42 08			
		e(ScS) N	42 10			
83		eP Z	12 28 54		4.0	H= 12 27 54.
		eS SWZ	29 40		440 Km.	
84		iP Z	22 53 36	1½		
		eS E	57 (21)	8		
		L N	59 22			
		Lmax N	23 00.4	14		
		Lmax E	00.5	15		
85	23	iP ENSWZ	01 59 51		4.0	Dilatation. Mag. 6.
		iS ENSW	02 00 37		440 Km.	Epicentre about 7S 150E.
		eX Z	05 43			H= 01 58 51.
						USCGS: 5½S 150E.
86		iP Z	10 04 21		3.9	Mag 4¼.
		eS SW	05 06		430 Km.	H= 10 03 22.
87		eP Z	10 41 35			USCGS: 53½N 158½E.

No.	Date.	Phase.	Time (G.M.T.) h	m	s	per s	△ degrees.	Remarks.
88	FEB. 23	eP Z	16	14	56		60.6	H=16 04 46.
		eS EN		23	08	6(E) 7(N)	6740 Km.	USCGS: 50N 157E.
		e(Lq) E		30.2				
		e(Lq) N		30.3				
		Lr N		33	40			
89		iP NS Z	17	31	05		3.5	Mag. 4.
		iS NS		31	46		390 Km.	Epicentre about 6S 147E. H= 17 30 12.
90		eP Z	17	59	48	1½	18.9	Epicentre about 8S
		eS N	18	03	14		2100 Km.	128E. H= 17 55 28
		eS E		03	16	5		
91		iP Z	18	40	48	1	(32)	Dilatation. Fiji Is.
							(3550 Km)	H=18 34 (40).
								h about 200 Km.
92		eP Z	20	54	(34)			
		eS Z		55	(22)			
93		eL N	21	10	50			
		eL E		11	..			
94		eP Z	22	28	24			
		eX Z		28	42			USCGS: 28½S 177W.
		eX EN		30	13	5		
		eSS E		37	18	12		
		eSS N		37	19			
		Lmax N		42.6		16		
		Lmax E		42.8		16		
95	24	eX N	02	08	..	(16)		
96		iP NSWZ	06	55	35			
		eS E W		56	14		3.3	Mag. 4½.
		eS NS Z		56	15		365 Km.	H= 06 54 44.
97		eX N	12	32	..			
98		eP Z	12	51	(59)	1½		
		eX N Z		53	23	2		H= 12 45 (30).
		eS E		57	11			USCGS: 11N 122½E.
		eSS N		59	12	(10)		
99		iP Z	16	19	22	1		Compression.
								Near Bali.
100		e(P) Z	19	16	(18)			
		eX SW		17	17			Confused by local
		eX Z		17	18			activity.
		e(S) Z		18	24			
101	25	eX Z	09	51	23			
		eX Z		53	10			
102		iP Z	10	09	05	1	34.8	Dilatation.
		ePcP Z		11	21		3870 Km.	H= 10 02 54.
		eS EN Z		14	02			h about 500 Km.
		eSS E		17	02			USCGS: 19S 177W.

No.	Date	Phase.	Time (G.M.T.) h	m	s	per s	△ degrees.	Remarks.
	FEB.							
103	25	N Z	10	36	..			Minor local activity.
104		eP Z	11	25	45		38.9	H= 11 19 12.
		eS N W		31	00		4320 Km.	h about 650 Km.
		eS Z		31	01			USCGS: 28½N 139E
		eX EN		34	(18)	10		
105		Z	15	33	..			Minor local activity.
106		eP E WZ	20	12	27		(20.4)	H= 20 07 56.
		iX Z		12	29		(2270)Kms.	Analysis confused by uncertain depth.
		eX NS		12	29			USCGS: 2S 129E.
		iS EN		16	07			
		Lmax E		23.3		17		
107	25	eX E	23	59	(46)			USCGS: Macquarie Is. region.
	26	eX N	00	00	(11)			
		Lmax E		07.8		12		
		Lmax N		09.3		15		
108		eP SWZ	00	12	25			
109		iP ENSWZ	04	42	03		3.5	Compression. Mag. 5½.
		iS SW		42	44		390 Km.	H= 04 41 10.
								USCGS: 5½S 147E.
110	27	iP Z	13	51	15			Compression.
		e(pP) Z		51	37			Epicentre about 7½S 128E.
								h possibly about 100 Km.
111		iP S Z	15	05	58		2.7	H= 15 05 16.
		eX Z		06	06		300 Km.	Confused, possibly multiple shock.
		eX Z		06	17			
		iS NS Z		06	30			
		eX S		07	06			
		eX W		07	07			
		eX Z		07	08			
		eX Z		07	20			
112		iP Z	15	27	55			Dilatation.
		eX E		34	10			USCGS: 22½S 175W.
		eX N		38	20			
		M E		44.0		15		
		M N		44.1		15		
113		iP Z	18	51	17	2		Compression.
		iS E		54	42			H= 18 47 05.
		iX Z		57	46			USCGS: 7S 126E.
114		eP Z	21	04	16		41.2	H= 20 56 30.
		isP Z		04	29		4580 Km.	USCGS: 27½N 129E.
		ePP Z		05	(55)			
		eS E Z		10	24			
		iS N		10	25	(10)		
		M N		19.1		21		
		M E		19.6		20		
115	28	eP Z	03	58	16			USCGS: 3S 129½E.
		iX Z		59	05			
		e(S) E	04	02	02			
		e(S) N		02	04			

No.	Date.	Phase.		Time (G.M.T.)			per	△	Remarks.
	FEB.						s	degrees.	
116	28	eL	EN	05	35	..			
117		eS	E	06	12	07			USCGS: 24½S 179½E.
		M	N		19.8		18		
118		eP	Z	11	52	31		46.3	H= 11 44 07.
		eS	EN		59	15	11(E)	5140 Km.	USCGS: 500 miles W.
		iX	N		59	19			of Macquarie Is.
		ePS	N		59	31			
		ePPS	N		59	36			
		eSS	E	12	02.5				
		eLq	E		03.5				
		M	E		09.1		14		
119		iX	Z	13	32	15			USCGS: about 350 miles south of Fiji Is.

J. M. Rayner.
(Director)

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COMMONWEALTH OF AUSTRALIA
DEPARTMENT OF NATIONAL DEVELOPMENT
BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

203 Collins Street,
MELBOURNE. VIC.

S E I S M O L O G I C A L B U L L E T I N

P O R T M O R E S B Y

MARCH 1959

Latitude : 09° 24!5 S. Longitude : 147° 09!1E

Height : 70 metres Foundation: Eocene Cherts

Instruments :

1) 2 Sprengnether Horizontal Seismometers
N-S component: period 15.8 sec., damping critical
E-W " " 14.8 " , " "

1 Wilson-Lamison Vertical Seismometer
period 1.1 sec., damping critical

1 Sprengnether 3-component Recorder
N-S component: Galvo. period 15.8 sec., damping critical
E-W " : " " 14.8 " , " "

2) 2 Wood-Anderson Seismometers
N-S comp.: period 0.8 sec., damping 0.65, magnification 2500
E-W " : " 0.8 " , " 0.72, " 2650

1 Kew Vertical Seismometer
period 1.0 sec., damping 0.52.

1 Sprengnether 3-component Recorder

Further information or copies of seismograms may be obtained by writing to :-

Observer-in-Charge
Geophysical Observatory,
P.O. BOX 323,
PORT MORESBY.....PAPUA.

No.	Date 1959	Phase.		Time (G.M.T.) h m s	per s	Δ degrees.	Remarks.
1	March 1st	iP	ENSW Z	13 13 14		5.0	Compression. Mag 3½.
		eS	E SW	14 12		560 Km.	H= 13 11 59.
2		iP	EN Z	16 52 44			USCGS: ½S 134½E
		iX	N	54 13			Near north coast of
		iS	N	55 33			New Guinea.
		iX	N	55 45			H=16 49 10.(calc).
3	2	i(S)	Z	01 45 51			USCGS: 7S 104E
4		iP	SWZ	08 42 18		4.2	Dilatation.
		eX	Z	42 27		470 Km.	H= 08 42 15.
		iS	EN	43 06			
5		iP	Z	09 18 14	2½	19.5	Compression.
		iPP	Z	18 26	1½	2170 Km.	Mag 6¼; USCGS: 8S
		iS	N	21 46			128E; H=09 13 47(ca.)
		iS	E	21 50			
6		iP	Z	16 03 53		85.2	Compression h=200Km
		eS	N	14 02		9470 Km.	USCGS: 37N 70½E.
		i(sS PS	N	15 32			H=15 51 41.(calc)
7		i(S)	N	21 17 30			
8	3	eP	Z	06 47 29			USCGS: 11S 165½E.
		eS	E	50 55			H=06 43 11.
		M	N	55.0			(calc)
		Lmax	E	57.0			
9		iP	Z	19 02 16			USCGS: 20½S 175½W.
		eX	Z	02 53			
		Lmax	EN	15.0			
10	5	eP	Z	03 02 39		24.6	USCGS: 20½S 169E
		eS	N	06 55		2730 KM.	H=02 57 21.(calc).
		Lmax	EN	10.0			
11		M	N	06 03.0			USCGS: 29½S 178W.
12		iP	Z	12 56 05		4.7	Off SE tipof Papua.
		iX	Z	56 25		520 Km.	Mag 5½.
		eS	N	56 59			H= 12 54 55.
		eS	E W	57 07			
13		M	N	16 50.5			USCGS: 29½S 179W.
		Lmax	E	54.0			
14		eP	Z	17 00 (09)			
		iS	SW	00 42			
15		eP	Z	20 36 00			
16		eP	Z	23 04 (29)			USCGS: 2N 98E.
17	6	Lmax	EN	01 21.5			
18		eP	Z	07 12 23		21.1	2S 128E (approx)
		eS	N	16 11		2230 Km.	H= 07 07 39.
19		iP	EN Z	20 32 22		16.0	Compression Mag 5½.
		iS	N	35 10		1780 Km.	USCGS: 11S 162E.
		iX	E	35 18			H=20 28 40 (calc).
		iX	N	35 24			
		M	EN	39.0			

No.	Date. 1959	Phase.		Time (G.M.T.) h m s	per s		Remarks.
	March					degrees	
20	6	iP	Z	20 45 33			Compression. Mag 5½. Confused by preceding
21		Lmax	EN	23 48.0			USCGS: 10½S 162E.
22	7	iP	S Z	01 32 36			Compression.
23		iP	Z	09 04 36			Dilatation. Mag 5.
		eS	ENSWZ	05 56	2(Z)	7.1	H= 09 02 52.
		iX	Z	06 17	1½	790 Km.	USCGS: 5½S 153E.
		Lmax	E	09.5			
		Lmax	N	11.0			
24		eP	Z	09 20 50			Confused by preceding
25		eP	Z	10 26 51			USCGS: 3S 102E.
		eS	E	28 58			
26		iX	E	12 19 04			
		Lmax	N	25.0			
27		eP	Z	13 57 50			
28		Lmax	E	15 10.0			
29		iP	Z	15 54 08	1½		Compression.
30	8	eP	Z	06 00 44			USCGS: 53½N 161½W.
31		eP	Z	17 13 19			USCGS: 21S 170E.
		eX	EN	18 04			
		M	N	22.0			
		Lmax	E	25.0			
32		iP	S Z	19 05 15		2.0	Dilatation. Mag 3½.
		iS	WZ	05 39		220 Km.	H= 19 04 43.
33		iP	Z	23 25 04		2.0	Dilatation. Mag 3¼.
		i(S)	Z	25 28		220 Km.	H= 23 24 (32).
34	9	iP	Z	01 39 10	1		Dilatation. Banda
		eS	E	43 04	6		Sea?
		eS	N	43 07	6		
		iX	N	43 42	6		
35		Lmax	N	10 34.2			USCGS: 13½N 125½E
36			Z	10 38-40			Minor activity.
37		iP	Z	11 37 13	1½		Compression. Mag 3¼.
		iS	SWZ	37 36		1.9 210 Km.	H= 11 36 42.
38		Lmax	E	21 03.5			
39	10	iP	SWZ	07 02 27	1	1.7	Compression. Mag 3¼.
		iS	ENS Z	02 48		190 Km.	H= 07 01 59.
40		eP	Z	21 48 52			
		iX	Z	48 59		(3.9)	Mag 4½.
		eL	N	49 21	18	(430 Km)	H= 21 47 (53).
		eS	SW	49 (37)			
41	11	Lmax	N	00 52.0			

No.	Date. 1959	Phase.		Time (G.M.T.) h m s	per s	degrees	Remarks.
	Mar.						
42	11	eP	Z	06 43 25			
		L	EN	07 05.2			
43		iP	Z	07 11 35	1½		Compression. Mag 5½.
		iPP	Z	11 56			Confused by preceding.
		Lmax	E	30.5			USCGS: 6S 127½E.
		Lmax	N	32.5			
44		iP	Z	20 37 45		4.0	Dilatation. Mag 4¾.
		iS	ENSWZ	38 31		440 Km.	H=20 36 45.
45	12	eP	N Z	01 33 01		17.5	Approx 8N 147½E. Mag 6.
		iS	EN	36 10		1940 Km	USCGS: 17N 145E.
		iX	N	36 48			H=01 29 57 (calc).
		iSS	N	37 24			
		iX	N	40 18			
		M	N	42.0			
46		e	Z	03 44 ..			
		Lmax	EN	52.0			
47		iP	- Z	02 28	1½	7.9	Dilatation.
		iX	Z	31		880 Km.	Deep? H=09 00 33
		eL	E	03.4			USCGS: 5S 155E.
		iX	N	03 [illegible]			
		iS	SW	03 57			
48	13	iP	Z	16 47 09	1½		Dilatation. USCGS: 21S 176½W
49	14	eP	Z	07 01 17			USCGS: 18S 166E.
		iX	EN	05 18	10		
		Lmax	N	08.5			
		M	E	10.4			
50	15	iP	Z	22 47 13		3.5	H= 22 46 20.
		iS	Z	47 54		390 Km.	
51	16	iP	NSWZ	12 35 38		4.9	Dilatation. Mag. 4¾.
		eS	SW	36 33		540Km.	H= 12 34 35.
52		eP	Z	15 03 02			
		eX	Z	03 47			
		iX	Z	03 56			
53	17	iP	SWZ	05 43 39		3.9	Dilatation. Mag 4½.
		iS	ENSWZ	44 24		430 Km.	H= 05 42 40.
54		iP	S Z	08 32 58	2	39.5	Dilatation. Mag 5¾.
		eX	E	39 18	11	4390 Km.	USCGS: 27½N 130E.
		iS	N	39 58	11		H=08 25 29 (calc).
		eX	EN	42 04	16		
		M	E	47.3	19		
		Lmax	N	48.8	16		
55		e(P)	Z	10 23 (09)			
56		eP	Z	10 38 45			
57		iP	Z	13 33 25		4.5	Dilatation. Mag 5.
		eS	SW	34 17		500 Km.	H= 13 32 17.
58		iP	Z	17 07 07			Compression.
		iX	Z	08 44	1½		

No.	Date	Phase.		Time. (G.M.T) h m s	per		Remarks.
59	March 17	eP	Z	19 03 (36)	s	degrees	
60	18	iP	Z	00 48 58		41.1	USCGS: 27N 129E.
		eS	E	55 09		4570 Km	H=00 41 16 (calc).
		eSS	E	58 01			
61		eP	Z	07 12 25		(4.2)	Mag 4¼.
		e(S)	SW	13 14		(470 Km)	H= 07 11 (22).
62		eP	Z	07 35 04			Approx. 36½N 142½E.
63		iP	Z	19 17 15	1		USCGS: 32N 141E. Dilatation.
64	19	eP	Z	01 32 26			
65		iP	Z	02 03 45	1		Compression. Approx. 6½S
		iX	Z	04 00			127½E. H=01 59 23(calc
		i(PPP)	Z	04 20			h=0.02? Other phases confused by microseisms. USCGS: 6½S 125½E.
66		ePKP	Z	08 45 32			USCGS: 35N 36W.
		eSS	E	09 09 08	12		
67		eP	Z	09 40 46			
		Lmax	N	10 04.0			
68		eP	Z	17 46 31			
69		eP	Z	18 55 38			
		Lmax	N	19 03.0			
70		eP	Z	21 17 01			
		iX	Z	17 13			
71		eP	Z	22 24 05			
72	20	iP	Z	02 17 56			Dilatation. USCGS: 20½S 174½W.
73		eP	Z	04 31 18			
74		eP	Z	06 59 29			
75	20		Z	07 04			Minor local activity
76		eP	Z	09 21 07		3.0	Mag 3¾.
		iX	SWZ	21 13		330 Km.	H= 09 20 21.
		iS	SW	21 42			
77		eP	Z	15 01 24			
78			Z	15 53			Minor activity
79		iP	Z	23 21 46			
80		eP	Z	23 59 33			USCGS: 10S 117E.
		eS	N	00 04 31		30.5	H= 23 53 21.
		Lmax	EN	12.5	13	3390Km.	
81	21	iP	ENSWZ	04 33 34	1	35.0	USCGS: 19S 178W.
		eX	Z	34 19		3890 Km.	H=04 27 30 (calc)
		ePcP	Z	35 47	1½		h about 600 Km.
		iS	E Z	38 26	2		
		esS	E	41 30			
		eX	E	43 36			

No.	Date. 1959	Phase.		Time. (G.M.T.)			per		Remarks.
	March			h	m	s	s	degrees.	
82	21	eP	Z	08	33	46		(19.4)	Mag 5¼.
		e(S)	N		37	17		(2160 Km)	H= 08 29 20.
83		eP	Z	10	07	16			
		eX	E		12	12			
84		iP	Z	19	53	01			Dilatation. Approx. 21S 179E.h about 300 Km.
		eX	Z		54	41			
		eX	EN	20	01	00			
85	23	eP	S Z	02	05	18			Days record confused by microseisms.
		iX	SWZ		06	02			
		eX	SW		07	41			
86		Lmax	E	08	02.5		16		USCGS: 40N 118W
87		eP	Z	08	09	55		3.7	Mag 4.
		iS	S		10	39		410 Km.	H= 08 08 57.
88		eP	Z	08	19	32		10.2	Mag 4½
		iS	N		21	26	8	1130 Km.	H= 08 17 05.
		Lmax	N		24.0		16		
89		Lmax	E	19	54.0				
90	24	eP	Z	05	23	16		1.8	Mag 3¼.
		eS	SW		23	38		200 Km.	H= 05 22 48.
91		eP	Z	09	52	05			
92		eP	Z	16	55	48			
93		iS	E	17	21	59	10		USCGS: New Hebrides Islands.
94	25	iP	Z	00	06	06	1½	27.9	Dilatation.
		iS	N		10	45	3	3100 Km.	H= 00 00 16.
		eX	N		14	05	14		h about 550 Km.
									USCGS: 19S 179½E.
95		Lmax	N	00	48.5				
96		e(S)	EN	07	11	13			
		Lmax	N		16.0				
		Lmax	E		20.0				
97		eL	N	08	25.0				
98		Lmax	EN	15	20.0				
99	26	iP	Z	02	26	25	2		Dilatation.
		iX	Z		26	28	1½		USCGS: 7S 155½E.
		eX	Z		26	46			
		iS	E Z		28	05			
100		iP	Z	05	30	00	2	23.6	Compression.
		iX	Z		30	09	1½	2620 Km.	USCGS: 0 125E.
		eS	N		34	09			H=05 24 52 (calc).
		eS	E		34	13			
		iScP	Z		37	19	2		
101		iP	Z	07	50	47	1		Dilatation. Off Southern tip of Bougainville.
		eS	E		52	24			
			N Z		52	25			H=07 48 42 (calc)
102		iP	Z	08	58	20	1½		Dilatation.
		eL	E	09	08.0				

No.	Date 1959	Phase.	Time. (G.M.T)	per		Remarks.
	Mar.		h m s	s	degrees	
103	26	iP Z	11 51 08	1½		Dilatation.
104		L E	14 28.0			
105		eP Z	22 39 (08)			
		eL E	40 46			
		eL N	41 27			
106	27	iP Z	01 41 47	1		Compression.
107		iPKP Z	07 21 42	1½		Dilatation. USCGS: 17N 61W.
108		eP S Z	09 21 57		3.6	Mag 3¾.
		iS ENSWZ	22 39		400 Km.	H= 09 21 02.
109		eP Z	20 35 03			
110	28	iP Z	07 52 26		3.7	Dilatation. Mag 4.
		eS SWZ	53 10		410 Km.	H= 07 51 29
111		eP S Z	11 37 38		5.4	New Britain area.
		eS NSWZ	38 40		600 Km.	Mag 4¾. H= 11 36 18.
112		eP Z	12 03 (30)		(4.6)	Mag 4¼.
		eS SW	04 (23)		(510 Km)	
113		eP Z	14 51 26			5S 152E H=14 49 52(calc)
		iX Z	51 29	1		h=0.01.Minor activity
		iX Z	51 40	1½		at about 14 50 40.
		iS EN	52 38			Probably another shock from the same area. USCGS: 4½S 152E.
114		iP ENSWZ	19 53 17	1½	35.1	Dilatation.
		epP Z	54 54		3900 Km	USCGS: 20S 178½W.
		iS EN	58 10	8		H=19 47 12.(calc).
		esS N	20 01 18			h about 600 Km.
115	29	eP Z	04 29 (31)			
116		iP NS Z	09 32 50		3.2	7½S 149½E Mag. 4¾.
		eS EN	33 27		360Km.	H=09 32 01.
117		eP N Z	09 44 17		3.7	Mag 4½
		iS S Z	45 00		410 Km.	H= 09 43 21.
118	30	Lmax N	18 38.5			USCGS: 17½S 172W.
119	31	iP Z	07 28 17		40.0	USCGS: 15S 173W.
		eS EN	34 20		4440 Km.	H= 07 20 40. (calc).
		eSS N	37 10			
		eLr N	38 10	20		
120	31	eP Z	19 24 (09)			

April copied WK

COMMONWEALTH OF AUSTRALIA
DEPARTMENT OF NATIONAL DEVELOPMENT
BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

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MELBOURNE. VIC.

S E I S M O L O G I C A L B U L L E T I N

P O R T M O R E S B Y

APRIL 1959

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period 1.0 sec., damping 0.52.

1 Sprengnether 3-component Recorder

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No.	Date.	Phase.	Time. (G.M.T.) h m s	per. s	Δ degrees.	Remarks.
	April.					
1	1	iPKIKP Z	00 54 22	2		Compression.
		iPKP Z	54 59	1		USCGS: 27½N 21W.
		iPP Z	58 37	2		
		Lmax E	01 09.0	20		
		M N	21.0	18		
2		Z	12 42 ..			Minor activity.
3		iP Z	14 21 11	2	56.0	Dilatation.
		eS E	28 55		6220 Km.	H= 14 11 33.
						USCGS: 48S 98½E.
4		iP Z	14 53 26	1½		Dilatation.
		iS E	57 37	10		H= 14 48 18.
		iX N	57 53	10		USCGS: 18S 169E.
5		eP Z	19 23 13			USCGS: 17S 173W.
		Lmax EN	36.5	18		
6		iP Z	22 52 47	2	23.6	Dilatation.
		ipP Z	53 15		2620 Km	H= 22 47 47.
		iS EN	56 53	10		h approx 140Km.
		M N	23 00.0	18		USCGS: 17S 168½E.
7		iP Z	23 35 44	1	8.2	Dilatation. Mag 6.
		iX Z	35 48		910 Km.	H= 23 33 44.
		iS E SW	37 16			USCGS: 6S 154½E.
8	2	eP Z	02 31 11		1.5	H= 02 30 46.
		eS EN Z	31 31		280 Km.	
9		eP Z	12 05 (09)		18.4	Mag. 5¼.
		eS N	08 30		2040 Km.	H= 12 00 (55).
		eX E	08 38			Banda Sea?
		Lmax N	13.5			
		Lmax E	14.0			
10		iP Z	19 29 06		39.8	Dilatation. Mag 5¾.
		eS N	35 08		4420 Km.	H= 19 21 31.
		M EN	45.0			USCGS: 20½N 121E.
11		Lmax EN	22 09.0			
12	3	eP Z	00 25 (49)		15.8	H= 00 22 (08).
		eS E	28 43		1760 Km.	Solomon Is. Region.
		Lmax N	33.5			
		Lmax E	37.0			
13		iP Z	04 56 34	1	4.3	Dilatation. Mag 4½.
		eS ENSW	57 24		480 Km.	H= 04 55 29.
14		eP Z	14 27 15		19.7	H= 14 22 46.
		iS E	30 50		2190 Km.	
15	4	iP ENSWZ	12 17 40		(1.5)	Compression. Deep?
		iS SW	18 00		170 Km.	H= 12 17 (14).
						Huon Gulf district of New Guinea.
16		iP ENSWZ	12 52 28			Compression.
17		eP Z	18 56 (14)			
18	5	eP Z	08 09 21		5.2	Mag 4½.
		iS SWZ	10 20		580 Km.	H= 08 08 03.

No.	Date.	Phase.	Time. (G.M.T.) h m s	per. s		Remarks.
	APRIL.				degrees.	
19	5	eP Z	20 56 48		0.7	Mag 2½.
		iS SWZ	56 59		80 Km.	H= 20 56 35.
20		iP Z	21 10 33		(22)	Dilatation.
		iS EN Z	14 23	10	(2450)Km.	H= 21 05 50. Deep? USCGS: 15½S 167½E.
21		eP Z	21 42 42		0.9	Mag 3¼-3½.
		iS ENSW	42 54		100 Km.	H= 21 42 26.
22		iP ENSWZ	23 30 32		4.8	Dilatation. Mag 6½.
		iX W	30 47		530 Km.	H= 23 29 21.
		iS EN	31 27			USCGS: 5½S 146E.
23	6	eP S Z	08 43 18		4.0	Mag 3¾.
		eS SW	44 04		440 Km.	H= 08 42 18 New Britain Area.
24		eP S Z	13 11 06		3.2	Mag 4.
		eS SW	11 43		360 Km.	H= 13 10 17.
25		eP Z	14 18 18		26.0	Mag 6½.
		isP Z	18 31	2	2890 Km.	H= 14 12 46.
		iPP Z	19 57	2		USCGS: 10S 120½E.
		iS N	22 44			
		Lmax E	31.0			
26	7	iP Z	00 03 51			Compression. Day confused by microseisms. USCGS: 13N 146½E.
27		Lmax EN	01 04.5			
28		eP WZ	01 51 40		1.1	Mag 3¾.
		iS SW	51 54		120 Km.	H= 01 51 21.
29		eP Z	01 54 59		0.9	Mag 2½.
		eS S Z	55 11		100 Km.	H= 01 54 43.
30		eP Z	19 50 43			
31	8	iP Z	01 30 11	2	37.5	Compression.
		iX Z	30 45		4160 Km.	H= 01 23 33.
		isP Z	32 18			h approx 400 Km.
		iS EN	35 30	9		USCGS: 32½S 179½E.
		e(SS) E	38 41			
32		Lmax EN	08 03.5			
33		iP Z	08 08 56			Dilatation. USCGS: 17S 174½W.
34		e(PS) N	12 13 15	14		
		eX N	28 50	18		USCGS: 50½S 73W.
		eX E	31 55	24		
35		eP SWZ	14 04 44		3.4	Mag 4¼.
		iS SWZ	05 24		380 Km.	H= 14 03 52.
36	9	iP Z	04 48 33	1½	20.8	Compression.
		ipP Z	49 02		2310 Km.	H= 04 43 58.
		eS EN	52 15			h approx 100 Km. Day confused by microseisms. USCGS: 14½S 167½E.

No.	Date.	Phase.		Time. (G.M.T.) h	m	s	per. s	degrees	Remarks.
	APRIL.								6h NOT 5
37	9	iP	Z	05	29	42		69.4	Compression.
		eS	EN		38	45		7710 Km.	H= 06 18 36.
									USCGS: 36S 76E.
38		Lmax	N	18	50.5				
		Lmax	E		53.5				
39		Lmax	EN	22	57.0				
40	10	iP	ENSWZ	05	53	33	2	33.4	Dilatation.
		iX	Z		54	03	1½	3710 Km.	H= 05 47 42.
		ipP	Z		55	11	1		h approx 600 Km.
		iPcP	Z		55	57			USCGS: 25S 178½E.
		iS	ENS		58	14	8		
		iG	EN	06	01	29	15		
		eScS	E		02	41			
41	11	Lmax	N	00	13.0				
42		eP	Z	11	33	35		20.9	Mag 5½.
		iPP	Z		33	59		2320 Km.	H= 11 28 53.
		iX	Z		35	19	2		USCGS: 1S 128E.
		eS	EN		37	21			
43		eL	EN	18	13.0				USCGS: 15S 173½W.
44	12	M	E	10	25.1				USCGS: 24½N 122E.
45		eL	E	11	20.1				
46		eP	S Z	15	25	45		14.1	H= 15 22 26.
		iX	EN Z		25	50		1570 Km.	USCGS: 4½S 134E.
		iPP	Z		25	56			
		iX	Z		26	27			
		eS	N		28	21			
		eSS	EN		28	35			
47		eP	Z	20	01	30		38.7	H= 19 54 08.
		isP	Z		01	45		4300 Km.	No E-W Sprengnether
		iS	N		07	25			record.
		eLq	N		10	26			USCGS: 15½S 173W.
		eX	N		11	09			
48	13	eP	Z	02	09	21		0.7	Mag 2.
		e(S)	SW		09	31		80 Km	H= 02 09 09.
49			Z	05	30	..			Minor local activity.
50	14	e(PS)	EN	03	20	17			USCGS: 24N 109½W.
		eL	EN		45.5				
51		iP	Z	07	32	44	1½		Compression.
									USCGS: 57½N 155W.
52		eP	Z	13	15	19		1.6	Mag 3.
		iS	SWZ		15	39		180 Km.	H= 13 14 53.
53		eP	Z	13	17	38		1.5	Mag 3.
		eS	SWZ		17	57		170 Km.	H= 13 17 13.
54		eP	Z	14	25	52		1.5	Mag 2½.
		eS	SW		26	11		170 Km.	H= 14 25 27.
55		eP	Z	14	27	20		1.9	Mag 2½.
		eS	SW		27	43		210 Km.	H= 14 26 49.

No.	Date.	Phase.	Time. (G.M.T.) h	m	s	per s	degrees.	Remarks.
	APRIL.							
56	14	eP Z	15	07	45			
		e E		11	03			
57	15	eP Z	00	24	23		51.3	H= 00 15 21.
		iS EN	31	33	10		5700Km.	USCGS: 41½N 143E.
58		eP Z	00	56	31			Approx 5S 127E. H= 00 51 (48).
59		eP Z	05	56	(55)		(4.0)	Mag 3½.
		eS Z		57	41		440 Km.	H= 05 55 (55)
60		Z	09	47	..			Minor local activity.
61		eP Z	23	27	55		3.9	Mag 3½.
		eS Z		28	40		430 Km.	H= 23 26 56.
62		iP Z	23	58	43			Dilatation. USCGS: 23S 180
63	16	eP E Z	00	36	51		9.8	Approx 3S 139½E.
		iX Z		36	52		1090Km.	H= 00 34 33.
		eS S		38	39			h about 150 Km.
64		iP Z	07	33	27	1½	(33.3)	Dilatation.
		iX Z		33	42		(3700)	H= 07 27 34.
		i(PcP) Z		35	42		Km.	USCGS: 23½S 179E.
		eS EN		38	10			h about 550 Km.
		eX N		41	29			
		eX N		42	36			
65		Z	12	46	..			Minor local activity
66		iP Z	16	18	52	2	22.9	Compression.
		ipP Z		19	13		2540Km.	H= 16 13 56.
		eX Z		19	54			h about 100 Km.
		iX Z		20	45	2		USCGS: 12½N 143E.
		iS EN		22	49	7		
		iX N		23	11	12		
67		iP Z	16	57	13			
68		eP Z	17	19	36			
69		iP Z	19	50	45			
70	18	eP Z	02	20	..			
		eS N		21	23			
71		iP Z	06	19	48		7.5	Dilatation. Mag 5¾.
		iPPP Z		20	02		830 Km.	H= 06 17 58.
		iX Z		20	18			USCGS: 4½S 154E.
		iX Z		20	54			
		iS E S Z		21	14			
		i(SS) W		21	45			
72	19	ePS EN	07	54	56			USCGS: 45S 82W.
		ePPS N		56	14			
		Lmax N		24.0				
		M E		25.5				
73		iP Z	07	55	14			Compression. Mag5½. Approx 5S 157½E. H= 07 52 40.
74		iP Z	07	56	47			Compression.

No.	Date.	Phase.		Time. (G.M.T.) h	m	s	per s	degrees	Remarks.
	APRIL.								
75	19	iP	Z	14	56	18		7.2	Mag 5¼.
		iS	ENSWZ		57	40		800 Km.	Approx 4S 142½E.
									H= 14 54 28.
76		iP	Z	16	14	22		8.0	Compression.
		eS	Z		15	52		890 Km	H= 16 12 25.
77		Lmax	N	20	04.0				
78	20	iP	ENSWZ	03	28	51		3.8	Dilatation.
		iS	SW		29	35		420 Km.	H= 03 27 54.
									USCGS: 6S 149½E.
79	21	eL	E	15	50.0				
80	22	iP	Z	16	44	03		3.9	Compression.
		iS	SWZ		44	48		430 Km.	Approx 6½S 150E.
									H= 16 43 02.
									h about 100 Km.
81		iP	Z	16	50	04		3.9	Compression.
		iS	SWZ		50	49		430 Km.	Approx 6½S 150E.
									H= 16 59 03.
									h about 100 Km.
82		Lmax	EN	21	00.5				
83	23	eP	Z	02	14	39		5.2	Mag 4½.
		iS	S		15	40		580 Km	H= 02 13 23
		iS	W		15	42			
84		iP	Z	03	16	42			Dilatation.
		iS	SWZ		16	55			H= 03 16 24.
									Deep?
85		iP	S Z	10	34	44		2.7	Mag 3½.
		iS	SW		35	16		300 Km	H= 10 34 02.
86	24	Lmax	N	10	37.0				USCGS: 11½N 86½W.
87		iP	ENSWZ	18	05	29	2	39.4	Compression. Mag 6½.
		iX	Z		06	07		4380 Km	H= 17 58 01.
		i(PPP)	EN		07	16	12		USCGS: 31S 178W.
		eX	EN		11	07			
		eX	N		11	29			
		iX	E		12	59	10		
		iSS	E		14	11	11		
		iSSS	EN		14	47	12		
		M	EN		22.0				
88	25	eX	E	00	43	45			
		Lmax	E		47.5				
89		iP	Z	05	24	29			Mag 5.
		iX	Z		24	56			Approx 3S 140E.
		iSS	E		26	41			H= 05 22 05.
		Lmax	E		31.0				
		Lmax	N		33.0				
90		eL	EN	15	22.0				
91		e(P)	Z	18	12	12			
		eX	EN		15	15			
		Lmax	E		18.5				

No.	Date.	Phase.	Time. (G.M.T.) h m s	per s	degrees.	Remarks.
	APRIL.					
92	26	iP Z	05 52 46			Dilatation.
		iX Z	52 53			Approx 20½S 164½E.
		eL EN	56 51			H= 05 48 29.
						h about 200 Km.
93		eP Z	08 49 50			Mag 5.
		eL EN	52.5			USCGS: 7½S 157E.
94		eP Z	16 27 13		2.1	Mag 3½.
		iS ENSW	27 38		230 Km.	H= 16 26 40.
95		iP NSWZ	17 30 15			Compression. Deep?
		iX Z	30 25			Approx 6S 147E.
		iS E W	30 54			H= 17 29 23.
96		iP ENS Z	20 48 15	2	41.6	Dilatation.
		iX Z	48 30	1½	4620 Km.	H= 20 40 35.
		ipP EN Z	48 41			h about 100 Km.
		i(PcP) Z	50 05	2		USCGS: 25N 122½E.
		iX E	52 09	8		
		iScP Z	53 51			
		iX E	54 15			
		iS E WZ	54 24	13(E) 4(W) 2(Z)		
		iSP W	54 39			
		i(PS) Z	54 53	2		
		isSS SW	58 12	6		
		M E	21 05.0			
97	27	iP Z	09 52 14		18.4	Dilatation.
		iX ENSWZ	52 18	2	2040 Km.	Approx 4½S 129½E.
		eX Z	53 25	2		H= 09 48 05.
		iX Z	54 46	2		h about 100 Km?
		iS NS	55 32	8		USCGS: 7S 129E.
		iLq E	55 48			
		iX Z	56 18	2		
98		iP SWZ	12 52 38	2		Compression.
		eL E	13 05.0			USCGS: ½S 124E.
99	28	eP Z	01 47 38		13.8	Mag 4¾.
		iX Z	49 18		1530 Km.	H= 01 44 23.
		iS E	50 11	6		USCGS: 4S 135E.
						USCGS: 15N 93W.
100		ePP E	11 29 56			
		iX Z	30 21			
		ePKS EN	31 49			
		iX E	32 04	8		
		iSKS E	35 28	12		
		eSKKS E	36 56	12		
		iPS E	39 48	13		
		eX EN	40 44	16		Major arc.
		eSKKS E	45 46	14		
		i(SS) EN	46 35	19		
		iPSS E	46 56	12		
		iX N	47 05	20		
		iSSS E	50 54	14		
		eX E	51 26			
		eX E	54 52			
		eX N	55 34	18		
		Lmax E	12 09.0	21		
		M N	14.0	19		

No.	Date.	Phase		Time. (G.M.T.) h	m	s	per s		Remarks.
	APRIL							degrees	
101	28	eP	Z	13	02	37		6.9	H= 13 00 55.
		iPP	Z		02	48		770 Km.	USCGS: 5S 152½E.
		iS	ENSW		03	55			
102		iP	Z	15	59	08		3.9	Dilatation.
		iS	SW		59	55		430 Km	H= 15 58 09.
103		iP	ENSWZ	15	59	18		3.8	H= 15 58 20
		eS	EN W	16	00	02		420 Km.	Shocks 102, 103 probably duplicate.
104		eP	Z	16	31	32		4.2	Mag 4¼.
		eS	SW		32	21		470 Km	H= 16 30 29.
105		e(S)	SWZ	17	32	20			
106		eP	Z	21	02	46		1.6	Mag 2½.
		iS	SWZ		03	06		180 Km.	H= 21 02 20.
107	29	iP	ENSWZ	03	29	01		3.6	Dilatation. Mag 5.
		iL	N		29	37		400 Km.	Approx 6½S 149E.
		iS	E SW		29	43			H= 03 28 06.
108		iP	Z	12	16	03		7.3	Mag 4¼.
		eS	EN		17	26		810 Km.	Approx 3½S 151½E.
									H= 12 14 16.
109		eP	Z	15	41	05			USCGS: 16½N 145E.
110	30	eX	Z	04	12	(28			
111		eL	N	14	28.0				

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Director.

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No.	Date.	Phase.	Time. (G.M.T.) h m s	per. s	△ degrees.	Remarks.
	MAY.					
1	1	eP Z	07 22 28		12.6	Mag 5¾.
		ePPP Z	22 48		1400 Kms.	H= 07 19 15.
		eS EN	24 48			USCGS: 3½S 135½E.
		M N	29.0	7½		
		M E	29.5	8		
2		eP Z	08 48 28		13.0	Mag 5½.
		eX Z	48 43		1440 Km.	H= 08 45 23.
		eS EN	50 52			Probably W.New Guinea
		M EN	55.0	7		
3		iP ENSWZ	14 58 53		8.0	Compression.
		iX Z	59 19		890 Km.	H= 14 56 57.
		iS ENSWZ	15 00 20			h about 60-100 Kms.
						USCGS: 5S 154E.
4	2	eP S Z	01 47 01		3.8	Mag. 3¾.
		eS SWZ	47 45		420 Km.	H= 01 46 03.
5		eP S	10 05(55)			
		eX S Z	06 08			
		eX Z	06(40)			
		eX SW	06 43			
6		iP Z	10 11 21		3.8	Compression.
		iS E WZ	12 08		420 Km.	H= 10 10 20.
		iS NS	12 09			h possibly 200 Km.
		iX Z	12 22			Bismarck Sea area.
7		eP Z	21 32 10		7.4	Mag 5.
		eS E SWZ	33 34		820 Km.	H= 21 30 23.
8	3	eP Z	03 05 07		14.6	H= 03 01 43.
		i(PP) Z	05 18		1620 Km.	USCGS: 10½S 161½E.
		eS EN	07 49			
		M E	10.0	(20)		
9		M N	05 48.6	18		USCGS: 12½N 87½W.
		M E	51.2			
10		eL EN	10 40 ..			
11		eL EN	13 59 ..			
12	4	eL EN	01 22 ..			
13		eP Z	05 55(49)		3.(0)	Mag 3½.
		iS S	56(24)		330 Km.	H= 05 55 (03).
14	4	iP ENS Z	07 26 10	2(Z)	63.9	Dilatation. Mag 7¾.
		iX Z	26 14	1½	7100 Km.	H= 07 15 45.
		iX Z	26 22	1½		h approx 100 Km.
		ipP Z	26 33	1½		USCGS: 52½N 159½E.
		isP, PcP Z	26 45	2		
		iX Z	30 17	(4)		
		iS EN	34 36	19		
		iX Z	35 18			
		esS W	35 23	8		
		esS S	35 24	8		
		iX Z	35 43			
		eX E	48(02)			
		eX N	48(09)			
		eX E	50 08	20		
		eX Z	53 58			

No.	Date.	Phase.		Time. (G.M.T.) h	m	s	per s	△ degrees	Remarks.
	MAY.								
14	4	eX	Z		54	41			
(Continued)		eX	Z		55	04	2		
		eX	Z		55	20	2		
		eX	Z		55	36	5		
		eX	Z		55	49	2½		
		eX	Z	08	06	27			Very small.
15		eL	EN	15	23	..			
16	5	eP	Z	19	14	48		64.3	H= 09 04 14.
		eS	EN		23	22		7140 Km.	USCGS: 53N 159E.
		ePS	N		23	43			
		eSS	N		27	(32)			
		eLq	E		31.0		(30)		
		eLr	N		34	..			
		M	N		41.3		20		
17	6	eL	N	12	04	..			
18		eL	EN	14	36	..			
19		eP	Z	17	35	20		33.(6)	H= 17 29 27.
		eS	E		40	(03)		3740 Km.	h approx 600 Km.
		esS	E		43	(06)			USCGS: 18S 179W.
20		eX	E	18	17.0				
21		eP	Z	18	40	02			Local.
		eX	EN		41	05			
		eX	Z		41	26			
22		eP	Z	18	57	02			Confused by preceding
		iX	Z		57	13			USCGS: 3S 128E.
		iPP	Z		57	23			
		iPPP	Z		57	31			
23	7	eP	EN Z	00	05	01		6.2	Mag 5¾.
		iX	Z		05	04		690 Km.	H= 00 03 29.
		iX	Z		05	11			USCGS: 3S 148½E.
		eS	SW		06	12			
24		e(P)	Z	04	42	(49)			Probable after shock.
		eX	E		44	21			
		eX	N		44	26			
		eX	E		45	17			
25		e(P)	Z	04	50	35			Mag 4½.
		eX	Z		50	(41)			Probable aftershock.
		eX	EN		51	43			
26		eX	Z	05	25	48			Mag 4.
		eX	E		26	44			Probable aftershock.
		eX	E		27	32			
27		eP	Z	09	05	27		6.8	Mag 5.
		eX	N		06	30		760 Km.	
		eX	E		06	34			USCGS: 3½S 149½E.
		Lmax	E		07.7				
		Lmax	EN		09.2				
28		eP	Z	11	18	54		6.8	Mag 5.
		iX	E		20	03		760 Km.	
		Lmax	E		21.5				USCGS: 3½S 150E.
		Lmax	EN		23.0				

No.	Date.	Phase.	Time. (G.M.T.) h m s	per s	△ degrees	Remarks.
	MAY.					
29	7	eP Z	13 20 05			Mag 4¼.
		eX E	21 13			Aftershock.
30		iP E Z	20 27 51	1(Z)	23.3	Dilatation.
		iPP Z	28 21		2590Km.	H= 20 22 45.
		iPPP Z	28 32			USCGS: 8½S 123½E.
		iX Z	28 38			
		iX Z	28 44			
		eS EN	31 57			
		iSS E	32 41			
		eSSS E	33 00			
		M N	37.0			
31		eP Z	20 49 17			Local.
		iX Z	50 31			
32	8	eL EN	09 22 ..			
33		eP Z	11 45 20	2	64.9	H= 11 34 49.
		iX Z	45 28		7210Km.	h approx 100 Km.
		iX Z	45 35			USCGS: 53½N 160½E.
		eS EN	53 52			
		eSS N	57 53			
		e(SSS) EN	12 01 (07)			
34		eX E	21 34 45			
		eX E	36 14			
35		iP Z	22 37 50		1.6	Mag 3¾.
		iS S	38 08		180Km.	H= 22 37 24.
		iS EN W	38 10			
36	9	eP Z	00 49 36		3.5	Mag 4¾.
		iS SW	50 17		390Km.	H= 00 48 43.
37		iP Z	08 43 14	½	3.5	Compression. Mag 6.
		iX N Z	43 27		390Km.	6S 148E.
		iX Z	43 48			H= 08 42 21.
		iS SW	43 55			
38		e(P) S Z	10 35 45			Minor local activity.
39		e(P) S Z	13 06 52			Minor local activity.
40		iP S Z	22 12 32		1.9	Mag 3¼.
		iS S Z	12 55		210Km.	H= 22 12 01.
41	10	iP Z	05 02 03		3.7	Dilatation.
		eS SW	02 47		410Km.	5½S 147E.
						H= 05 01 05.
						h approx. 150 Kms.
42		eP SWZ	10 51 33		3.7	H= 10 50 37.
		eX Z	52 04		410Km.	Possibly same area
		eS NSW	52 16			as preceding shock.
43	11	iP Z	05 36 42			Local shock.
		iX Z	37 25			
44		eL EN	09 13 ..			

No.	Date.	Phase.		Time (G.M.T.) h	m	s	per s	△ degrees	Remarks.
	MAY.								
45	12	iP	Z	05	08	31	2	66.3	Compression.
		ipP	Z		08	39	2½	7370Km	H= 04 57 44.
		iS	E		17	17	10		USCGS: 54½N 168E.
		iS	N		17	19	10		
		iPS	E		17	37	12		
		iScS	N		18	20	12		
		iScS	E		18	24	15		
		eSS	E		21	39	13		
		eSSS	E		24	40			
		iG	E		25	32	19		
46		iP	E Z	08	08	40		11.6	H= 08 05 57.
		iX	Z		08	45		1290Km	h approx 100 Kms.
		iPPP	Z		09	02			USCGS: 9½S 159E.
		eS	N		10	47			
		iSSS	N		11	20			
		M	E		12.5		17		
		M	N		12.9		14		
		Lmax	E		15.5		12		
		Lmax	N		15.9		10		
47		iPKIKP	Z	10	06	20	2		Compression. Mag 6½.
		ePP	Z		08	48			USCGS: 23½S 64½W.
		iPKS	EN		09	50	10		
		eSKS	N		13	27			
		ePS	EN		19	00	11		
		eX	EN		21	16	(14)		
		e(SS)	N		26	(09)			
		e(SS)	E		26	(34)			
		eSPS	EN		26	54			
		Lmax	N		56.5		17		
		M	E		59.5		19		
48		eP	Z	11	52	50		7.4	Mag 5;
		eS	S		54	15		830Km	H= 11 51 02.
		eS	WZ		54	16			New Ireland -Bougainville area.
49		eP	Z	21	51	(24)		69.(0)	H= 21 40 (22.)
		eS	E	22	00	19		7670Km	USCGS: 51½N 177W.
		eX	N		00	31			
		eX	E		01	33			
		eSSS	E		07	58			
		M	EN		20	..			
50		eS	E	22	19	55		69	H= 21 59 (56).
		eX	E		25	47		7670Km	Confused by preceding.
		eSSS	E		27	31			USCGS: 51½N 177W.
		M	N		38.4				
51		e(S)	N	23	53	29			Probably Fiji Islands Region.
		eL	EN		57	..			
52	13	eL	EN	01	14	..			USCGS: 17S 175E.
53		eX	Z	01	31	..			Minor local activity.
54	14	ePKIKP	Z	06	55	57			Confused by microseisms.
		eSKS	EN	07	03.0				USCGS: 35½N 24½E.
55		eP	Z	08	20	07		7.7	H= 08 18 16.
		iS	WZ		21	33		860 Km	USCGS: 7S 154½E.

No.	Date.	Phase.		Time. (G.M.T). h m s	per s	△ degrees.	Remarks.
	MAY.						
56	14	iP	Z	09 38 40			Dilatation; Mag 5½.
		iX	Z	39 03			Confused by Micro -
		iX	Z	39 33			seisms.
		eX	EN	43 09			USCGS: 19S 170E.
		M	EN	46½	15		
57		iP	Z	10 47 07			Dilatation;
		ipP	Z	47 25			Confused by micro -
		eX	EN	51 42			seisms.
							19S 170E, USCGS.
58		eP	Z	11 54 28			USCGS: 19S 170E.
		ipP	Z	54 51			
		eX	EN	59 00			
		M	E	12 02.5			
		M	N	02.7			
59		iP	Z	13 24 37			Dilatation.
		iX	Z	24 42			USCGS: 19S 170E.
		eX	EN	29 06			
		M	E	32.5			
		M	N	32.8			
60	16	iP	ENSWZ	06 18 18	3(Z)	7.6	Dilatation; Mag 7.
		iX	W	18 32		840 Km.	H= 06 16 27.
		iS	W	19 44			h approx. 50 Km.
		iS	Z	19 45			USCGS: 4½S 153½E.
		iS	S	19 46			
		iX	Z	21 46			
		M(W2)	EN	09 28.0	20		
61		eP	Z	07 33 11		7.6	Mag. 4¾.
		eS	S	34 (37)		840 Km.	H= 07 31 20.
		eS	WZ	34 39			USCGS: 4½S 153½E.
62		eP	Z	14 26 15			
		iX	Z	26 31			
		iX	Z	27 04			
		Lmax	E	31.5			
		Lmax	N	32.0			
63		eP	Z	19 27 04		4.0	Mag. 4¼.
		eS	S Z	27 50		440 Km.	H= 19 26 04.
		eS	W	27 51			
64	17	i(P)	Z	06 17 13			
65	18	iP	Z	02 24 00		(4.0)	Mag. 4.
		e(S)	SW	24 47		440 Km	H= 02 28 (59).
66		iP	Z	05 42 02		7.6	H= 05 40 11.
		iS	Z	43 28		840 Km.	h approx 60 Km.
		eS	ENSW	43 28			USCGS: 4½S 153½E.
67		M	E	06 28.3			USCGS: 36S 148E.
		M	N	31.0			
68		iP	Z	17 06 39			
69	19	eP	Z	02 53 56		6.9	H= 02 52 15.
		iS	ENSWZ	55 14		770 Km.	h approx 100 Km.
							USCGS: 5½S 153E.

No.	Date.	Phase.		Time (G.M.T.) h	m	s	per. s	△ degrees / Km	Remarks.
	MAY.								
70	19	iP	Z	05	55	11		1.2	Dilatation. Mag 3¾.
		iS	Z		55	26		130 Km	H= 05 54 51.
		eS	SW		55	27			
71		eX	EN	09	37	..			
72		eP	Z	15	30	23		86.8	H= 15 17 41.
		ePcP	Z		30	30		9650 Km	USCGS: 33N 68½E.
		e(SKS)	E		40	33			
		eS	E		40	57			
		eX	E		41	49			
73		eX	Z	01	03	37			USCGS: 23S 114W.
74	20	eX	EN	01	07	..			
75		M	EN	01	58	..			USCGS: 250 m. off S. coast of Java.
76		eX	S Z	18	12	56			
77		iP	Z	19	44	30		54.(8)	H= 19 35 01.
		epP	Z		44	45		6090 Km	USCGS: 44½N 149E.
		eS	EN		52	(07)			
		eLr	N	20	00.8				
		Lmax	EN		08	..			
78		iP	Z	20	51	22		3.5	Mag 4¾.
		iS	SW		52	02		390 Km	H= 20 50 29.
									6S 146½E.
79	21	eX	Z	02	30	31			USCGS: 18½N 121E.
80		iP	Z	08	49	12			
		iX	Z		49	15			
81		ePKIKP	Z	11	53	32			Chile - Argentina border. (USCGS)
		iX	Z		53	46			
		iX	Z		54	25			
		iPP	Z		55	48			
		e(SKKS)	N	12	02	22			
		e(SKKS)	E		02	28			
		e(SS)	E		12	45			
		e(SS)	N		12	51			
		eX	EN		15	29			
		M	N		37	..			
82		e(P)	Z	12	14	21			Possibly local.
		eX	Z		16	15			
		eX	Z		17	01			
83		iP	Z	20	19	16		3.8	Mag 4¼.
		iS	SW		20	00		420 Km	H= 20 18 18.
84	22	iP	ENSWZ	07	04	39	1½	40.4	Compression.
		ipP	Z		05	05	1	4490 Km	H= 06 57 09.
		e(PP)	Z		06	23	2		h about 100 Km.
		e(ScP)	Z		10	26			USCGS: 40S 176E.
		eS	EN		10	40			
85	23	eP	Z	12	23	41		(3.4)	Mag 3½.
		iX	Z		25	08		380 Km	Approx. 7½S 150E.
		Lmax	E		26.5				H= 12 22 (50).
86		e(P)	Z	18	31	57			

No.	Date.	Phase.	Time. (G.M.T.) h m s	per s	△ degrees	Remarks.
	MAY					
87	23	eP Z	20 51 (34)			
88	24	ePKP Z	00 29 14			USCGS: 19½N 64½W.
		ePKP Z	29 17			
		eX Z	29 24			
89		eP Z	01 15 54		(1.9)	Mag 3¼.
		eS SW	16 (17)		210 Km	H= 01 15 (23)
		eX Z	16 (20)			
90		iP SWZ	03 28 06		3.4	Mag 4½.
		iS ENSWZ	28 46		380 Km	H= 03 27 14
91		iP S Z	03 46 57		1.9	Mag 3¼.
		eS SWZ	47 20		210 Km	H= 03 46 26
92		eP Z	04 45 25	1½		Dilatation.
		epP Z	47 03			h about 600 Km.
						USCGS: 20½S 179W.
93		eP S Z	05 38 42		1.7	Mag 3.
		eS SWZ	39 (03)		190 Km	H= 05 38 (14).
94		eX Z	05 59 ..			Minor local activity.
95		eP S Z	07 48 52		(2.0)	Mag 3.
		eS SW	49 (16)		220 Km	H= 07 48 (20).
96		eP Z	08 12 14		(9.0)	
		eX Z	13 30		1000Km	
		e(S) Z	13 45			
		eX E	14 30			
		eX E	14 59			
97		eP Z	10 42 25		9.0	Mag 5.
		eS Z	44 06		1000Km	H = 10 40 14.
98		iP S Z	11 39 05	1½(Z)		Compression.
		ePPP Z	42 06			USCGS: 26½N 90½E.
99		eP Z	18 14 43		4.8	Mag 4¾.
		eX S Z	14 50		530Km	H= 18 13 30
		eS E	15 37			
		eS NS Z				
100		ePKIKP Z	19 36 21		117.4	H= 19 17 47.
		epPKIKP Z	36 42		13050Km	Depth about 100 Km.
		ePP E Z	37 28			USCGS: 17½N 97W.
		epPP Z	37 49			
		eSKS E	42 52	11		
		iSKS EN	43 12	11(E) 10(N)		
		eX E	44 28	(12)		
		ePKKP Z	46 46			
		eX Z	47 18			
		eX EN	47 20	19(E)		
		e(SPP) EN Z	48 03	(13)(E) (13)(N)		
		ePPS E	48 24			
		ePPS N	48 26			
		eX E	50 02	16		
		ePcPPKP Z	50 42	2		
		eX E	51 08			
		eX N	51 12	16		
		eX N	53 42	16		
		eX E	53 48	17		
		eX N	54 14	(16)		

Cont^d over.

No.	Date.	Phase.		Time.(GMT) h	m	s	per s	△ degrees	Remarks.
	MAY								
100	24	eX	Z		54	21			
Continued.		eX	E		54	23	14		
		eX	Z		54	49			
		eSSS	E		58	00	23		
		eSSS	N		58	04	18		
		iPKPPKS	N		58	37	17		
		eG	N	20	05	04	17		
		eG	E		05	05	14		
		eLr	EN		12	24			
		Lmax	N		16.9		(21)		
101		eX	S Z	20	05	31			Minor local activity.
102		iP	S Z	20	06	08	1(Z)	5.8	Compression.
		eS	S		07	14		640 Km	H= 20 04 43.
		iS	Z		07	15	2		h possibly about 100 Km.
									USCGS: 5½S 152E.
103		i(P)	Z	22	42	45			Dilatation.
104	25	iP	Z	05	10	08			USCGS: Fiji Is.region
105		eP	Z	05	31	(31)			
106		eP	Z	12	10	47		6.0	Mag 5.
		iS	SWZ		11	56		670 Km	Approx 5½S 152E.
									H= 12 09 18.
107		eP	SWZ	14	02	09			Small local shock.
108		iP	Z	14	17	04		3.8	Dilatation. Mag 5¼.
		iS	SWZ		17	48		420 Km	Approx 6S 149E.
									H= 14 16 06.
109	26	iP	Z	14	20	38	2	41.4	Compression.
		ipP	Z		21	01		4500 Km	H= 04 13 00.
		isP	Z		21	08			h approx 100 Km.
		iX	Z		21	19			Masked by microseisms
		i(pPP)	Z		22	43			USCGS: 27½N 126½E.
		iS	N		26	45			
110		eX	Z	09	51	41			
111	27	iP	Z	11	30	10			Probably local.
		iX	Z		32	16			
112		iX	Z	14	13	15			Small local shock.
113		eP	Z	20	45	00			
114	28	iP	Z	04	15	14			
115		iP	Z	04	36	04			
116		eP	Z	06	09	27		5.2	Mag 4¼.
		iX	Z		09	37		580 Km	H= 06 08 09.
		iS	ENS Z		10	27			
117		iP	Z	22	29	09	1		Dilatation. Mag 5.
									USCGS: 4S 141½E.
118		iP	Z	22	41	59			Probably near Timor.
119	29	iX	Z	02	08	29			Small local shock.
120		eP	Z	03	17	36		2.2	Mag 4.
		eS	SW		18	02		240 Km	H= 03 17 01.

No.	Date.	Phase.	Time (GMT) h m s	per s	△ degrees	Remarks.
121	MAY 29	iP EN Z	10 47 52		23.9	Dilatation.
		ipP EN Z	48 14		2660 Km.	H= 10 42 46.
		isP EN Z	48 24			h about 100 Km.
		iX Z	48 32			USCGS: 19S 169½E.
		iS N	51 58			
		iS E	52 03			
		esS Z	52 33			
		esS EN	52 (36)			
		eX Z	53 37			
		eX Z	54 23			
122		eP Z	12 34 18			USCGS: 21N 146½E.
		eX Z	34 28			
123		iP Z	14 05 55		3.6	Mag 4½.
		iS SWZ	06 37		400 Km	Approx 5½S 147E.
						H= 14 05 00.
124		eP Z	17 58 (58)			Mariana Is. (USCGS).
125	30	e(P) Z	07 22 51			
126		iP Z	18 20 49			
		eS SW	22 28		8.8	Approx 7S 156E.
		iS Z	22 30		980 Km	H= 18 18 41.
						h about 100 Km.
127	31	iP Z	05 56 15			Local shock.
		M E	58.7			
128		iP Z	09 30 34	2	9.8	Dilatation; Mag 5¾.
		iX Z	30 48	1½	1090 Km	H= 09 28 12.
		iX Z	31 04	2		USCGS: 6½S 155E.
		iS W	32 24			
		iS S	32 26			
129		iP Z	15 29 03			Probably Fiji Area.
130		eP Z	17 47 26		9.5	Mag 5.
		eS WZ	49 13		1060 Km.	Approx 6S 156E.
						H= 17 45 08.

J.M. RAYNER.
Director.

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COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

203 Collins Street,
MELBOURNE. VIC.

S E I S M O L O G I C A L B U L L E T I N

P O R T M O R E S B Y

for the month of ..JUN 1959..

Latitude : 09° 24!5 S. Longitude : 147° 09!1 E

Height : 70 metres Foundation: Eocene Cherts

Instruments :

1) 2 Sprengnether Horizontal Seismometers
N-S component: period 15.8 sec., damping critical (N)
E-W " " 14.8 " , " " (E)

1 Wilson-Lamison Vertical Seismometer
period 1.1 sec., damping critical (Z)

1 Sprengnether 3-component Recorder
N-S component: Galvo. period 15.8 sec., damping critical
E-W " : " " 14.8 " , " "

2) 2 Wood-Anderson Seismometers
N-S comp.: period 0.8 sec., damping 0.65, magnification 2500(S)
E-W " : " 0.8 " , " 0.72, " 2650(W)

1 Kew Vertical Seismometer
period 1.0 sec., damping 0.52. (V)

1 Sprengnether 3-component Recorder

Further information or copies of seismograms may be obtained by writing to :-

Observer-in-Charge
Geophysical Observatory,
P.O. BOX 323,
PORT MORESBY. PAPUA.

No.	Date.	Phase.	Time (GMT) h	m	s	per s	△	Remarks.
	JUNE							
1	1	iP S Z	02	54	39		2.8	Mag 4.
		eS ENSW		55	12		310 Km	H= 02 53 55.
2		iP ENSWZ	05	33	41	2	8.8	Compression.
		i(PP) Z		33	52		980 Km	H= 05 31 37.
		i(PPP) Z		33	59			h about 400 Km.
		iX Z		34	24			USCGS: 4S 153E.
		iX N		35	08			
		eLr EN		35	17			
		iS S		35	20			
		i(SS) N		35	30			
		i(SSS) E W		35	42			
3		iP E SWZ	12	34	30	1½	8.5	H= 12 32 28.
		i(PPP) Z		34	47		940 Km	h about 400 Km
		iX WZ		34	53	2		USCGS: 6S 154E.
		eL E		35	46	(12)		
		iS ENS		36	06	8		
4		eP Z	15	39	37		4.0	Mag 5.
		iX Z		40	06		440 Km	H= 15 38 39.
		iS NS		40	24			Off south coast of
		iX E SW		40	26			New Britain.
5		eP ENSWZ	17	09	40		9.7	H= 17 07 22.
		eX N W		10	30		1080 Km	h about 100 Km
		eS ENSWZ		11	28			USCGS: 6½S 155½E.
		iSS N		11	46	12		
		iSSS N		11	58	16		
		iX Z		12	16			
6	2	eX N	01	00	16			USCGS: 32N 131E.
		Lmax EN		12.5				
7		eP Z	02	02	..			USCGS: Off south
		iS E		06	14	6		coast of Minahasa
		eSS E		08	02			North Celebes.
8		iP Z	02	45	20		39.1	H= 02 37 54.
		eS EN		51	18		4350 Km	USCGS: 21N 121E.
		i(ScS) EN		55	38	11		
		Lmax E	03	04.0		18		
9		iP Z	03	30	38		40.1	H= 03 23 04.
		eX E		35	20		4455 Km	USCGS: 25S 176W.
		eS EN		36	40			
		iX E		36	58	18		
10		iP WZ	03	39	20	1½		Dilatation.
								Confused by preceding.
								USCGS: 25½S 176W.
11		iP Z	03	59	31	1½		Dilatation.
		ipP Z		59	40	2		USCGS: 25½S 176W.
		iX Z		59	56	1½		
		iX E	04	05	04	13		
		iX N		06	18	15		
		iSS N		08	18	15		
12		iP Z	05	04	51	1½	41.2	H= 04 57 08.
		eX N		10	50		4577 Km	USCGS: 21N 121½E.
		iS E		11	04			
		iPS N		11	13			

No.	Date.	Phase.	Time. (G.M.T.) h m s	per. s	△ degree	Remarks.
13	JUNE 2	ePKS N	05 04 28			USCGS: 43S 72W.
		eSPP E	12 48			
		iX N	13 54			
		iX N	15 22			
		iX E	15 50	15		
14		Lmax EN	13 07.0			
15		eX N	17 45 28			
		Lmax E	49.2			
		Lmax N	49.5			
16	4	iP SWZ	01 58 04	1		Dilatation. Approx 19½S 176½E. Depth indeterminate.
17		eP S Z	11 58 12			
18		iP Z	16 03 58		1.6	Compression; Mag 4½.
		iL E	04 19		180Km	H= 16 03 32.
		iS SW	04 22			Off north coast of Papua.
19		eL N	20 34 ..			
20		iP Z	21 41 19	1		Dilatation. USCGS: Tonga Is. region.
21		eX E	22 06 (00)			
		Lmax N	18.2	14		
		Lmax E	18.8	14		
22	5	eP WZ	06 00 43			H= 05 58 40.
		eS SW	02 19			USCGS: 7S 155½E.
		eL EN	02 23			
		M EN	02.7			
23		iP Z	22 59 07		1.5	Mag 3½.
		iS ENSWZ	59 26		170Km	H= 22 58 42.
24	6	eP Z	00 20 (17)		(4.4)	Mag 4¼.
		iS ENSWZ	21 08		490Km	H= 00 19 (18).
25		Z	00 50 ..			Minor activity.
26		eL EN	10 31 ..			
27		eP S Z	20 53 29		8.8	Mag 5¼.
		iS WZ	55 08		980KM	H= 20 51 20.
		eL EN	55.5			USCGS: 6½S 155½E.
28		iP Z	22 57 19		4.2	Dilatation; Mag 3¾.
		iS Z	58 07		470Km	H= 22 56 16.
29	7	iP SWZ	08 01 15	1		Dilatation.
30		eL EN	02 47 ..			USCGS: Loyalty Is. region.
31		eL E	03 58 ..			USCGS: 10½N 126E.
32		iP Z	08 40 34			USCGS: Samar Is.
		eL EN	46 ..			

No.	Date.	Phase.	Time. (G.M.T.) h m s	per s	△ degree	Remarks.
	JUNE.					
33	7	eL EN	15 01 ..			USCGS: ½N 18W.
34	8	L N	10 04 ..			USCGS: About 150 miles south of East Java.
35		eP Z	16 57 15		4.6	Mag 4½.
		iS SWZ	58 07		510Km	H= 16 56 06.
36	9	eP Z	06 20 53		.6	Mag 5½.
		iX NS Z	21 03		510Km	5S 146E.
		iS E W	21 46			H= 06 19 45.
						USCGS: 6S 146½E.
37	9					No record between 2335 & 2358 due to power failure. Long waves fro quake USCGS: 59S 7½W appear from 2358 on E & N.
38	10	eP Z	03 21 48		4.4	Mag 4¼.
		iX Z	21 55		490Km	H= 03 20 42.
		iS NS	22 38			Record confused by
		iX E W	22 47			microseisms.
39		L E	13 30 ..			
40	11	eP Z	05 59 43		5.4	Mag 4½.
		eS E S	06 00 45		600Km	H= 05 58 23.
		eX EN	01 04			Record confused by microseisms.
41	13	eP Z	23 50 12		3.4	Mag 4½.
		iX NS Z	50 16		380Km	H= 23 49 20.
		iX SWZ	50 25			Off north coast of
		eS E	50 52			New Guinea.
		iX E	51 01			
42	14	iPKIKP Z	00 31 01			USCGS: 20½S 68W.
		iX Z	31 13			
		isPKIKP Z	31 43			
		i(PP) Z	33 35			
		iX EN	33 41			
		iX Z	34 08			Additional phase:
		iPKIKS E	34 45			iSKP Z 00 34 19
		eSKS N	38 00			
		eX N	39 11			
		iX N	40 57			
		eX N	44 32			
		iX E	47 43			
		iX N	52 15			
43		eP SWZ	02 48 18			
44		eP S Z	03 15 15		5.5	Mag 4¾.
		eS SW	16 18		610KM	H= 03 13 53.
45		eX EN	08 19 14			USCGS: Ceram Sea.
		Lmax E	25.8			
		Lmax N	27.0			
46		eP Z	10 03 47		5.0	Mag 4½.
		e(S) W	04 45		550Km	H= 10 02 32.
47		iP SWZ	21 09 04	1		Dilatation.
						USCGS: 23½S 179½W.

No.	Date.	Phase.	Time. (G.M.T.) h m s	per	△	Remarks.
	JUNE				degrees	
48	15	eP Z	02 46 41		40.8	H= 02 39 01.
		iPP Z	48 15		4530 Km	Confused by microseisms. 24N 124E (calc)
		eS E	52 49			USCGS: 25N 122½E.
49		eP Z	08 56 55		4.2	Mag 4½.
		iS NSWZ	57 44		470 Km	H= 08 55 52.
50		eP S Z	13 54 20		3.2	Mag 4.
		eS SW	54 58		360 Km	H= 13 53 31.
51	16	iP SWZ	02 42 04		4.9	Compression.
		iX Z	42 17		540 Km	Approx 5S 146½E.
		iS SW	43 00			H= 02 40 51.
		eX N Z	43 27			h about 100 Km.
		iX Z	43 52			USCGS: 4½S 143E.
52		eP Z	07 34.7			Local activity.
53	17	eP Z	04 47 57		4.4	Mag 4½.
		eS SW	48 47		490 Km	H= 04 46 51.
		iX Z	49 06			
54		eP Z	10 46 52			Mag 5½.
		iX N	51 27			USCGS: 3S 135½E.
		Lmax EN	52.9			
55		iP Z	20 50 25		20.6	H= 20 46 02.
		iPP E	50 58		2290 Km	USCGS: 12½S 167½E.
		eS EN	53 57			
		eSS EN	54 51			
		Lmax EN	57.3			
56	18	Lmax N	07 35.1			USCGS: 55S 129W.
57		eP Z	08 54.8			USCGS: 16S 168E.
		eL EN	09 01.5			
58		iP Z	15 42 02		64.0	Dilatation.
		eP N	42 02		7110 Km	H= 15 31 30.
		iX Z	43 04			USCGS: 54N 160E.
		eX N	43 34			
		eX N	44 11			
		eX N	46 12			
		eX N	48 52			
		eS E	50 34			
		iX E	50 55			
		iPPS EN	51 16			
		iScS N	51 40			
		eX N	54 36			
		iSS E	54 50			
		iX E	55 16	14		
		iX N	57 58			
		iLq E	58 20			
		iG N	58 37	28		
		iG E	58 39	28		
59		iP Z	16 09 08			Confused by preceding.
						USCGS: 54N 161E.
60		eP Z	16 31 52		3.9	Mag 3¾.
		eS SW	32 37		430 Km	H= 16 30 53.
		iX Z	33 05			

No.	Date.	Phase.	Time. (G.M.T.) h m s	per. s	Δ degrees.	Remarks.
	JUNE.					
61	18	eP S Z	17 05 33		4.0	Mag $3\frac{3}{4}$.
		iS SW	06 09		440 Km	H= 17 04 33.
		iS Z	06 10			
62		eP Z	22 58 22			Local shock.
63	19	eP Z	01 12 (43)		4.(5)	Mag $4\frac{1}{2}$.
		eS SWZ	13 (35)		500 Km	H= 01 11 (35).
64		Lmax N	06 12.0			
65	20	eP S Z	00 03 28		4.0	Mag $4\frac{3}{4}$.
		iS ENS Z	04 14		440 Km	H= 00 02 28.
66		iP Z	03 29 (39)		6.1	Mag 5.
		iPP Z	29 (49)		680 Km	H= 03 28 (09).
		iPPP Z	29 (56)			USCGS: 3S 146E.
		eL EN	30.5			
		eS E S	30 (49)			
		iX Z	31 (35)			
67		iP SWZ	05 49 (05)	2	6.5	Dilatation. Mag $5\frac{3}{4}$.
		eS E SW	50 (19)		720 Km	H= 05 47 (29).
						USCGS: $4\frac{1}{2}$S $151\frac{1}{2}$E.
68		eP Z	14 05 50		4.0	Mag $4\frac{1}{4}$.
		eS SW	06 36		440 Km	H= 14 04 50.
69		iP Z	14 18 57		27.3	Compression.
		eX N	23 07		3030 Km	H= 14 13 13.
		eS E	23 33			USCGS: 0 124E.
70		iP Z	22 16 25		(19.1)	Compression.
		iX EN WZ	16 35	2(Z)	2120 Km	H= 22 12 (03).
		iX Z	17 11			USCGS: $11\frac{1}{2}$S 167E.
		iS E	19 53	10		
		eS N	19 53			
71	22	eP Z	05 35 39		5.2	Mag $4\frac{1}{2}$.
		eS EN	36 38		580 Km	H= 05 34 21.
72		eP WZ	09 18 03		6.4	H= 09 16 30.
		iPPP Z	18 24		710 Km	USCGS: 6S $152\frac{1}{2}$E.
		eS ENSW	19 15			
		iSS SW	19 33			
73		iP Z	14 13 50	1		Dilatation.
						USCGS: 17S 177W.
74		iP Z	16 14 34		3.3	Compression; Mag $3\frac{1}{2}$.
		eS S	15 13		370 Km	H= 16 13 54.
75	23	Lmax EN	12 05.0			USCGS: $10\frac{1}{2}$S $162\frac{1}{2}$E.
76	25	eP S Z	08 35 17		3.2	Mag $4\frac{1}{4}$.
		iS N	35 54		360 Km	Approx. $6\frac{1}{2}$S 148E.
		iS S	35 57			H= 08 34 21.
		iS E	35 59			
77		iP SWZ	12 18 32		1.5	Mag $3\frac{1}{4}$.
		iS SWZ	18 51		170 Km	H= 12 18 07.
78		iP ENSWZ	14 36 28		5.9	Dilatation.
		eS EN	37 33		660 Km	H= 14 35 01.
		iS SW	37 35			h about 150 Km.
						USCGS: 5S 152E.

No.	Date.	Phase.	Time (G.M.T.	per	△	Remarks.
	JUNE		h m s	s	degrees	
79	26	eP Z	00 56 (03)		(20.8)	H= 00 51 (22).
		eS EN	59 48		2310 Km	Confused by micro -
		eX E	01 03 17	10		seisms.
80		eLr N	05 44.1			USCGS: 30½S 177½W.
81		eP Z	14 35 13		6.0	Small amplitude.
		iX Z	35 17		670 Km	H= 14 33 45. Mag. 5.
		iX Z	35 42			
		iX Z	36 12	2		Possibly two shocks
		iS ENS Z	36 21	1½(Z)		confused.
		M N	39.1	12		
		M E	39.3	12		
82	27	eX SW	04 06 55			Minor local activity.
		X Z	07 ..			
83		iP ENSWZ	06 12 26	½(Z)	3.7	Dilatation.
		iPP Z	12 32		410 Km	6S 147½E.
		i(PP) S	12 34			H= 06 11 30.
		iS ENSW	13 09			h about 100 Km.
		iSS S	13 20			
		iSSS S	13 30			
84		iP ENSWZ	19 11 47	2(Z)	38.5	Compression.
				8(E&N)	4280 Km	H= 19 04 39.
		i(pP) WZ	12 06	2(Z)		h doubtful but
		i(sP) NS	12 21			probably 100-200 Km.
		e(sP) Z	12 23			USCGS: 33S 179W.
		iX ENS Z	12 39	2½(Z)		
				11(E)		
		iX Z	13 04			
		i(PP) E	13 22	11		
		i(PP) Z	13 24			
		iX N	13 28			
		iPcP N Z	13 56	2(Z)		
		eX Z	14 (08)	(8)		
		eX N	14 12	11		
		iX E	14 13	12		
		eX EN	14 47	8(E)		
				9(N)		
		eX E	15 32	10		
		eS EN	17 30	12(N)		
				(10)(E)		
		e(sS) N	18 15	10		
		eX N	18 55	14		
		eX E	18 58	16		
		eX E	19 48	13		
		eX EN	20 37	13(E)		
		eX EN	21 12	17(E)		
				16(N)		
85		eP Z	19 23 36			In coda of preceding.
						USCGS: 42N 80E.
86	28	iP Z	06 30 46			Compression.
						Long period records
						masked by microseisms
						for first half of day
87		eP Z	11 18 54		5.1	Approx 6S 152E.
		eS SWZ	19 52		570Km	H= 11 17 39.
						h about 100 Km.

No.	Date.	Phase.	Time.(G.M.T) h	m	s	per s	Δ degrees	Remarks.
	JUNE.							
88	28	eP E WZ	19	48	44		24.3	H= 19 43 35.
		iX Z		48	58		2700 Km	h about 100 Km.
		iPPP Z		49	36			USCGS: 9½S 122½E.
		iX Z		52	02			
		iS N		52	53			
		iX NS		53	07			
		iSS E		53	54			
89	29	eP EN Z	07	18	07		8.4	Mag 6.
		iS WZ		19	43		930 Km	H= 07 16 05.
		iS S		19	45			USCGS: 7S 155½E.
		iX Z		21	13			
90		eP Z	09	53	50		5.2	Mag 4¾.
		eS S Z		54	51		580 Km	H= 09 52 34.
91		eP Z	13	25	06			USCGS: 6N 126½E.
		iPP Z		25	46			
		eS N		29	35			
92		eP SWZ	21	19	28		6.5	Mag 5.
		eS S		20	42		720 Km	H= 21 17 52
		eS W		20	44			
93	30	eP Z	10	31.0				USCGS: 34S 179W.
		eX E		41	17			
		eX N		41	23			
		Lmax EN		49.0				

J.M. RAYNER.
DIRECTOR.

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COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

203 Collins Street,
MELBOURNE. VIC.

S E I S M O L O G I C A L B U L L E T I N

P O R T M O R E S B Y

for the month of ...JUL 1959...

Latitude : 09° 24'.5 S. **Longitude** : 147° 09'.1 E

Height : 70 metres **Foundation: Eocene Cherts**

Instruments :

1) 2 Sprengnether Horizontal Seismometers
N-S component: period 15.8 sec., damping critical (N)
E-W " " 14.8 " , " " (E)

1 Wilson-Lamison Vertical Seismometer
period 1.1 sec., damping critical (Z)

1 Sprengnether 3-component Recorder
N-S component: Galvo. period 15.8 sec., damping critical
E-W " : " " 14.8 " , " "

2) 2 Wood-Anderson Seismometers
N-S comp.: period 0.8 sec., damping 0.65, magnification 2500(S)
E-W " : " 0.8 " , " 0.72, " 2650(W)

1 Kew Vertical Seismometer
period 1.0 sec., damping 0.52. (V)

1 Sprengnether 3-component Recorder

Further information or copies of seismograms may be obtained by writing to :-

Observer-in-Charge
Geophysical Observatory,
P.O. BOX 323,
PORT MORESBY. PAPUA.

No.	Date JULY.	Phase.	Time (G.M.T) h	m	s	per s.	degrees	Remarks.
1	1	iP Z	02	34	21	1	37.5	Compression.
		ipP Z		35	59	3	4170Km	H= 02 27 52.
		ePP Z		36	04	2		h approx 550 Km.
		iPcP Z		36	24	2		USCGS: 28N 139½E.
		iX Z		36	40	1½		
		iX Z		36	51	2		
		iX Z		36	54	1½		
		i(sP) Z		37	01	2		
		i(pPcP) Z		38	32	1½		
		iScP Z		39	12			
		iS EN		39	33	8		
		iPcS EN Z		39	59	3		
		iX N		40	05	6		
		iX EN		41	03	7		
		i(sS) N		42	26			
		eX E		42	49	12		
		eX N		42	53	12		
		e(ScS) E		43	35	12		
2		eP Z	19	07	(31)		(7.5)	Mag 4½.
		eX Z		08	51		830Km	H= 19 05 (41.)
		e(S) SW		08	56			
3	2	iP Z	01	29	29		3.1	Mag 3¾.
		iS S Z		30	05		340Km	H= 01 28 21.
4		iP Z	11	33	49			Dilatation.
		eX E		41	58			Confused by mic'seisms and succeeding shock.
								USCGS: 20S 178½W.
5		iP Z	11	40	24		(34.9)	Dilatation.
		e(S) E		45	11		3880Km	H= 11 34 (26).
		e(sS) E		48	35			h approx. 700 Km.
								Confused by mic'seisms and preceding shock.
								USCGS: 20S 178½W.
6		iP Z	17	17	21		4.2	Compression. Mag 4¼.
		iS SWZ		18	09		470Km	H= 17 16 18.
7	3	iP EN Z	18	00	47	2(Z)		Dilatation.
		i(pP) E Z		01	30	2(Z)		Confused by micro - seisms.
		iX Z		02	22	1½		
		eX N		02	50			USCGS: 16S 172½E.
		eX E		05	(43)			
		eX E		06	(11)			
8	4	iP Z	05	01	22			USCGS: 24½S 177W.
		iX Z		01	56			
9		eP Z	08	04	24		3.3	Mag. 4.
		eS W		05	08		370Km	H= 08 03 33.
		eS S		05	09			
10		i(P) Z	13	34	01			Local shock?
11	5	e(S) Z	05	04	57			Small local shock.
12		eP S V	14	06	40		3.5	H= 14 05 47.
		eP Z		06	42		390Km	USCGS: 6S 147E.
		iS W		07	21			

No.	Date.	Phase.		Time.(G.M.T) h	m	s	per s	degrees.	Remarks.
	JULY								
13	5	iP	EN Z	I4	06	51		3.7	Mag approx. $5\frac{3}{4}$.
								410 Km	H= 14 05 55.
		iS	W)		07	34			Shocks 12 and 13
		iS	S)		07	36			probably from same locality.
14		e(P)	Z	14	22	(35)			Local Shock ?
		iX	Z		22	45			
15		eP	Z	14	38	50		3.7	Mag $4\frac{1}{4}$.
		eS	SW		39	33		410 Km	H= 14 37 54.
		iX	Z		39	38			
16		iP	Z	20	46	34		3.4	Mag $4\frac{1}{2}$.
		iX	Z		46	42		380 Km	H= 20 45 43.
		iS	SW		47	13			
17		eP	Z	06	29	54			USCGS: $14\frac{1}{2}$S $168\frac{1}{2}$E.
		e(Lr)	EN		34.0				
		M	E		37.1		16		
		M	N		37.4		15		
18	6	ePKIKP	Z	09	28	21			USCGS; h about 600Km.
		ePKIKP	Z		28	31	4		USCGS: $26\frac{1}{2}$S $61\frac{1}{2}$W.
		iX	Z		28	37	$1\frac{1}{2}$		
		iX	Z		28	51			
		iX	Z		30	58	$1\frac{1}{2}$		
		iPP	EN Z		31	04			
		iSKIKP	Z		31	15	$1\frac{1}{2}$		
		eX	Z		31	42			
		ePKIKS	EN		32	05			
		eX	Z		32	12	2		
		iSKP	Z		33	04			
		eX	E		33	43			
		epSKP	N Z		35	25	3(z)		
		eScSP	Z		40	19			
		iX	N		49	38			
19		ePKIKP	Z	09	41	31			USCGS: H about 600Km
		iPKIKP	Z		41	44	2		USCGS: $26\frac{1}{2}$S $61\frac{1}{2}$W
		iSKIKP	N Z		44	17			
		ePKS	EN		45	14			
		iX	N		48	29			
		isPKS	E		48	36			
		isSKP	Z		48	37	4		
		iX	N		49	16			
		iX	E		49	19			
		eX	N		52	46			
		eScSP	Z		53	28			
		iX	N		56	55			
		eX	Z		57	05			
		esSP	Z		57	24			
		eX	N	10	01	24			
		iSPS	E		01	57			
		esPSS	N		05	20			
20	7	eX	EN	02	21.1				
21		iP	Z	05	50	36		3.3	Approx. $6\frac{1}{2}$S 148E.
		iS	SW		51	20		370Km	H= 05 49 45.
		iS	Z		51	21			h possibly 100 Km.
									USCGS: $4\frac{1}{2}$S 145E.
22		eL	EN	11	02$\frac{1}{2}$				

No.	Date.	Phase.	Time (G.M.T) h	m	s	per s	degrees	Remarks.
	JULY							
23	7	iP Z	16	42	17			Local shock.
		iX Z		42	58			
		iX Z		43	14			
24	8	eP Z	13	07	21			USCGS: 5S 134E.
		iX Z		07	27			
		M E		13.9				
25		eP Z	17	57	00		3.3	Mag 4¼.
		eS SW		57	38		370Km	Approx 6S 147E.
								H= 17 56 09.
26		eP Z	21	59	(58)		(1.9)	Mag 3¼.
		iS SW	22	00	20		(210Km)	H= 21 59 (27).
		iS Z		00	21			
27	9	eX Z	00	00				Minor local activity.
28		eLq EN	09	24	..			USCGS: 15S 173W.
29		iP Z	10	19	17		6.5	Mag 5¼.
		i(PP) Z		19	28		720 Km	H= 10 17 41.
		iX Z		19	57			USCGS: 9S 153E.
		iS NS		20	31			
		M E		22.3				
30		iPKIKP Z	16	24	20	1½		
		ePKIKP Z		24	32	2		
		esPKIKP Z		25	02			
		esPKIKP Z		25	16	2		
		i(PP) Z		26	59	2		
		iSKIKP Z		27	50	2		
		iPKIKS EN		28	03			
		eX EN		28	36			
		iX N		29	26			
		i(PPP) E		29	30			
		eX N		32	24			
		eX N		34	14			
		iX EN		37	48			
		eX EN		39	28			
		iX EN		39	50			
		iX N		45	12			USCGS: h about 100Km
		iX N		45	56			USCGS: 20½S 68W
31		eX Z	18	26	..			Minor local activity.
32		eP Z	20	15	03		5.2	Mag 5.
		iX Z		15	14		580 Km	H= 20 13 45.
		iS W		16	03			
		iS S Z		16	04			
33	10	eP Z	02	20	45			USCGS: 27½S 177½W.
34		iP Z	14	08	16		4.5	Mag 5.
		iX Z		08	23		500Km	H= 14 07 08.
		iS WZ		09	08			
35		i(S) W	14	11	12			Shocks 34 & 35 superimposed and probably duplicate.
36		iP Z	14	43	32		4.0	Mag 4¼.
		iX Z		43	42		440Km	H= 14 42 31.
		eS W		44	19			

No.	Date.	Phase.		Time(G.M.T) h	m	s	per s	degree	Remarks.
	JULY								
37 ×	10	iP	Z	16	52	31			
		iX	Z		52	41			
		eX	W		53	15			
38 ×		iP	Z	17	52	47		4.0	H= 17 51 47.
		iX	S Z		52	57		440Km	Possible double shock.
		iS	W		53	33			USCGS: 5½S 145½E.
		iX	W		53	43			
39 ×		iP	Z	18	51	17		2.4	Mag 4½.
		iX	Z		51	24		270Km	Approx 8S 149E.
		iS	SW		51	45			H= 18 50 40.
40 ✓	11	eP	Z	04	56	36		23.3	H= 04 51 28.
		ipP	Z		56	51		2590 Km	h approx 60 Km.
		eS	EN	05	00	44			USCGS: I8½S I69E
		Lmax	N	.	04.4				
41 ×		iP	Z	08	28	10		4.8	Mag 4¾.
		iS	SW		29	05		530Km	H= 08 26 58.
									Probably Sepik district of New Guinea.
42 ✓		iP	Z	12	12	41		68.0	Compression; Mag 7.
		ipP	Z		12	53		7550 Km	H= 12 01 43.
		eS	E		21	36			USCGS: 36S 78E.
		eS	N		21	39			
		eLq	N		29.5				
		eLr	E		33.0				
		eLr	N		33.4				
		M	EN		40.0				
43 ×		eP	Z	22	40	00			Local shock.
		iX	Z		40	08			
44 ×	12	e(P)	Z	00	16	(14)			Confused by microseisms.
		M	EN		19.8				USCGS: 8½S 157½E.
45 ✓		iP	Z	00	30	47			Confused by microseisms and previous shock.
									USCGS: 19½S 177½W.
46 ×		iP	Z	03	41	27		(3.6)	Mag 4¼.
		e(S)	W		42	09		(400Km)	H= 03 40 (32).
		e(S)	S		42	17			
47 ×		iP	Z	03	47	57		4.0	Mag 4½.
		iS	SW		48	43		440Km	H= 03 46 57.
48 ×		eX	Z	09	23	..			Minor local activity.
49 ×		eP	Z	12	52	19		4.2	Mag 4½.
		iS	W		53	08		470Km	H= 12 51 16.
		iX	S		53	13			
		iX	Z		53	19			
50 ×	13	iX	Z	09	20	49			Small local shock.
51 ✓		iP	Z	12	40	01	1½	71.0	Dilatation.
		ipP	Z		40	11	2	7890Km	H= 12 28 45.
		iPcP	Z		40	25	2		USCGS: 52N 172½W.
		eX	Z		41	16	2		
		eX	Z		42	48	2		
		eS	EN		49	13	10		
		i(sS)	N		49	26	(10)		

No.	Date.	Phase.	Time (G.M.T.) h	m	s	per s	degrees	Remarks.
51	JULY Continued							
	13	i(sS) E	12	49	27			
		e(ScS) E		50	(01)			
		eX N		50	52			
		M N		08.7		19		
52		iP Z	15	31	01			Compression. USCGS: 25½S 180.
53	14	eP Z	02	56	13		7.8	Mag 4¾.
		eS SWZ		57	41		870Km	Approx 6½S 155E. H= 02 54 19.
54		eP Z	13	05	55			Confused by micro - seisms.
		eX Z		06	33			USCGS: 16½S 173E.
		M E		14.8				
55		eP Z	17	22	37		(7.5)	Mag (4¾).
		e(S) W		24	01		830Km	H= 17 20 (47).
56		eP Z	22	37	21			Confused by micro - seisms.
57	15	eX Z	12	20	..			Minor local activity.
58		eP Z	21	37	32		3.8	Mag 4½.
		eX Z		38	04		420Km	H= 21 36 34.
		eS SW		38	16			
59		eP Z	23	18	50		(1.9)	Mag 3½.
		e(S) SW		19	13		210Km	H= 23 18 (19).
		iX Z		19	15			
60	16	iP Z	19	19	07	2	24.6	Dilatation.
		ipP Z		19	16	1½	2730Km	H= 19 13 49.
		iPP Z		19	48	1½		USCGS: 21½S 169E.
		eS E		23	23			
		iX N		23	31			
		eLq EN		23	42			
		M N		27.7		15		
		M E		28.0		15		
61	17	iP SWZ	00	06	19		1.5	Mag 3¾.
		iS E SW		06	38		170Km	H= 00 05 54.
		iS N		06	39			
		iS Z		06	40			
62		eX Z	02	17	..			Minor local activity.
63	18	eP Z	03	32	32			
64		eX Z	04	05	00			Local?
65		iP Z	07	06	41	1		Dilatation.
		epP Z		08	20			h about 600 Km.
		iScP Z		11	51			USCGS: 21½S 179W.
		eX EN		14.6				
66		iP Z	18	30	14			Compression.
67		iP Z	19	36	24	1		Dilatation. h about 2-300Km. Probably near Vavau Is. (Tonga).

No.	Date.	Phase.		Time (G.M.T) h	m	s	per s		Remarks
	JULY Continued							degrees	
68	18	iP	Z	20	01	52	1½	35.7	Compression:
		ipP	Z		02	28	1	3970Km	H= 19 55 07
		isP	Z		02	46	1½		h about 150 Km
		iX	Z		03	01	1½		Approx 14½N 121E
		ipPP	Z		03	43	3		USCGS: 15½N 120½E
		iS N	Z		07	16	13		
		iS E	Z		07	19	13E 3Z		
		iScP	Z		07	51	1½		
		eX	Z		10	21			
		eX	Z		12	20	(10)		
		eX	Z		13	19	(12)		
69	19	e(P)	Z	02	27	(41)			Minor local activity
70		iP E	Z	03	49	53	I	41.4	Compression:
		ipP	Z		50	10		4600Km	h about 60 Km
		isP	Z		50	17			H= 03 42 12
		iPP	Z		51	10			USCGS: 6½S 105E
		eS E N			56	03			
		eX N			56	37			
		eX E			56	40			
		M E			07.0				
71		eP	Z	07	08	15			
72		ePKIKP	Z	15	25	02			USCGS: 15S 70½W
		iPKIKP	Z		25	09	3		
		eX E N			25	13			
		iX	Z		25	40	1½		
		ipPKIKP	Z		26	08	2½		
		iX	Z		26	17	1½		
		i(PP)	Z		27	49	3		
		ipPP	Z		28	22	(4)		
		ipPP N			28	27	6		
		i(PKS) E			28	31			
		isPP N			28	45	I0		
		isPP E			28	48	10		
		ipPKS E			29	39	11		
		isPKS E	Z		29	53			
		iX N	Z		30	02	14(N)		
		eX N			34	39	12		
		iSKKP	Z		37	30	(2)		
		ePS E			37	53	10		
		ePS N			37	54	10		
		eX N			39	02	10		
		ePPS E			39	42	12		
		ePPS N			39	43	12		
		eX E			40	08	16		
		eX	Z		40	28			
		eX N			40	41	14		
		eX	Z		41	46	5		
		eX E			43	57	12		
		eX E			45	49			
		eX N			46	51			
		eSSS N			49	(54)			
		eSSS E		(50.2)					
73	20	iP E N	Z	02	47	25	2	35.3	Dilatation:
		iPcP	Z		49	40	1½	3920Km	H: 02 4I I4
		iS N	Z		52	22	10(N)		h about 550Km
		iS E			52	24	10		approx 6S II2E
		iScP	Z		52	37	1½		USCGS: 6S 110E
		iScS N			56	44	8		

No.	Date	Phase		Time(G.M.T) h m s	per		Remarks
	JULY Continued					degrees	
74	20	eP	Z	09 52 55		(5.7)	Mag ($4\frac{1}{2}$)
		eL	N	53.8		630Km	H= 09 5I (30)
		e(S) E		54 00			
75		eP	Z	II 12 39			Local Shock
76		eP	Z	12 42 13		(6.0)	Mag ($4\frac{3}{4}$)
		eL N		43.I		670Km	H: 12 40 (44)
		e(S) E		43 22			
77		iP	Z	16 59 34		33.3	Compression:
		iP EN	Z	59 35		3700	H= 16 53 40
		iX	Z	17 00 38			h about 550 Km
		eX	Z	01 20			USCGS $23\frac{1}{2}$S I79E
		eS EN		04 18			
		iX	Z	04 56			
		eX EN		07 36			
78	20	e(P)	Z	22 43 53		(6.0)	Mag ($4\frac{1}{4}$)
		eS EN		45 0I		670Km	H= 22 42 (24)
79	21	eP	Z	00 37 32			Mag ($3\frac{1}{2}$)
							Probably D'entrecastaux Is. region
80		eP	Z	00 44 34		3.4	Mag 5
		iX	Z	44 45		380Km	USCGS: 9S 151E
		iX	Z	44 54			
8I		eP	Z	01 33 57			Mag ($4\frac{1}{2}$)
		iX	Z	34 10			USCGS: D'entrecastaux Is.
82		e(P)	Z	02 30 24			Local
83		e(P)	Z	03 06 (I0)			Local
		iX		06 4I			
84		e(P)	Z	03 24 40			Local
85		e(P)	Z	03 39 5I			Local
86		iP	Z	07 47 59	2	22.0	Compression:
		ipP	Z	48 16	2	2450 Km	Mag $6\frac{1}{2}$
		iPP	Z	48 27	2		h about 50 Km
		eS EN		51 54			H= 07 43 I0
		M EN SW		$55\frac{1}{2}$	15		approx I3S I69E
87	2I	iPKP	Z	09 37 28			USCGS: $14\frac{1}{2}$N $167\frac{1}{2}$E
		eX	Z	37 35			
		eX	Z	37 39			USCGS: 19N $68\frac{1}{2}$W
88		e(P)	Z	13 10 14			
89		eL EN		13 23 ..			USCGS: 16N 98W
90		eX	Z	17 01 40			
91	22	eX	Z	05 20 ..			Minor local activity
92		eP	Z	07 18 (34)			Near shock
		eX	Z	19 22			
93		eP	Z	08 09 42		5.2	Mag: $4\frac{1}{4}$
							H= 08 08 24

No.	Date	Phase			Time (G.M.T) h	m	s	per		Remarks
	JULY								degrees	
93	Continued 22	eS	SW	Z		10	42		580Km	
94		iP		Z	11	20	52	2	24.4	Compression:
		ipP		Z		21	11		2710Km	H= 11 15 42
		iX		Z		21	29			h about 100 Km
		iPP		Z		21	35			USCGS 2N 126½E
		iX		Z		21	58			
		eS	EN	Z		25	02			
95	22	eX		Z	12	22	..			Minor local activity
96		eP		Z	13	54	07		3.5	Mag 4¼
		iS	EN			54	47		390Km	H= 13 53 14
		iS		Z		54	48			
97		eX		Z	17	37	37			Possibly local
98		e(P)		Z	18	44	42			Local
99		iP		Z	19	33	42	2	62.8	Dilatation:
		iPcP		Z		34	12		6880Km	H= 19 24 17
		ipP		Z		35	46			h 600 - 650Km
		iS	EN	Z		41	22			USCGS: 53N 153E
		iX	N			41	47			
		eScSEN				42	33			
		e(ScS)		Z		42	38			
		ePKPPKP		Z	20	02	38			
100		iP	EN SW	Z	23	04	07	3	6.9	Dilatation:
		iS	SW			05	25		770Km	Mag 6½
										H= 23 02 26
										h about 60 Km
										USCGS: 5S 152½E
101	23	eP		Z	00	06	32		6.9	Mag 5¼
		iX		Z		06	34		770Km	H= 00 04 5I
		iS	SW			07	50			Aftershock
										USCGS: 5S 152½E
102		eP		Z	00	19	28		6.7	Mag 5
		eS	SW			20	44		740Km	H= 00 I7 49
										Aftershock
103		eP		Z	00	40	(48)			Probable aftershock
		e(S)				42	0I			
104		eP		Z	02	10	20			Probable aftershock
		iX		Z		11	49			USCGS: New Brit.
										Sol. Is. Region
105		iP		Z	03	18	46		3.5	Compression:
		iS	SW			19	26		390KM	Mag 4¼
										H= 03 I7 53
106		eP		Z	04	41	(I0)		(6.2)	Mag (4½)
		eS	SW	Z		42	20			H= 04 39 (38)
107		eX		Z	04	46	..			Minor local activity
108		eP		Z	07	41	37			
109		e(P)		Z	13	54	10			USCGS: 38N 140E
		eX		Z		54	16			

No.	Date	Phase			Time (G.M.T) h	m	s	per		Remarks
	JULY Continued.								degrees	
110	23	iP		Z	15	03	58		38.3	H= 14 56 46
		ipP		Z		04	18		4260Km	h 50 - 100 Km
		iPP		Z		05	34			USCGS: 24½S 176W
		eS	E			09	45			
111		eP		Z	21	33	18			USCGS: 25N 125½E
112	24	ePP		Z	0I	40	19			USCGS: 41N 125½W
		eSKS	EN			47	17			
		ePS	EN			49	04	18		
		ePPS	EN			49	38	16		
		eSS	EN			54	19	19		
		eLQ	EN		02	02	..			
		eLR	EN			07½				
		Lmax	E			10½				
		M	E			17½				
113		eP		Z	02	05	56		(7.7)	Mag (5)
		iX		Z		05	59		(860Km)	H= 02 04 (03)
		eS	SW			07	(23)			Approx 4½S 153½E
114		eP		Z	10	18	22			Local
		iX		Z		19	15			
115		iP		Z	11	05	36		6.6	Mag 5
		eS	S			06	51		730Km	H= 11 03 59
		eS	W Z			06	52			
116		eX		Z	11	14	..			Minor local activity
117		iP		Z	16	27	44	1½		Compression
		ePcP		Z		28	25			USCGS: 24½N 94½E
118		iP		Z	19	21	47		6.5	Mag 5½
		iS	S	Z		23	0I		720Km	H= 19 20 11
		iS	W			23	02			5½S 153½E.
119		iP		Z	22	10	51			Banda Sea, NE of Timor
120		eP		Z	23	15	41			Small local shock
121	25	eX		Z	01	17	..			Minor local activity
122		eL	EN		01	57½				
123		eX		Z	02	50	..			Minor local activity
124	25	iP		Z	16	26	34		6.7	Mag 5
		iS	S W			27	50		740Km	H= 16 24 55
125	26	eP		Z	13	37	57			
I26		eX		Z	22	48				Minor Local activity
127	27	eX		Z	01	05	..			Minor local activity
128		eP	S W	Z	05	28	33		6.5	Mag 5
		iX		Z		28	40		720 Km	H= 05 26 57
		eS	S			29	47			
		eS	W			29	48			
129		eP		Z	10	19	24		7.6	Mag 4½
		eS	S			20	50		840Km	H= 10 17 33
130		eP		Z	13	00	44			Small local shock

No.	Date	Phase	Time (GMT) h m s	per		Remarks
	JULY Continued				degrees	
131	28	iP Z	10 14 03			Small local shock
132		eP S W	12 53 56		4.3	Mag 4½
		eS S W	54 46		480Km	H= 12 52 51
133		eP Z	19 18 46			
		e(S) Z	19 09			
134	29	iP Z	00 37 06			H= 00 31 01
		iS N	41 58			USCGS: 18½S 178W
						h about 550 Km
						USCGS: 18½S 178W
135		eX Z	01 29 22			Local
136		i(P) Z	04 03 53			
137		eP S W Z	18 55 59		7.6	Mag 5
		eS	57 25		840Km	H= 18 54 08
						USCGS: 5½S 154E
138		eX Z	19 [illegible] ..			
139	30	eP Z	13 01 29			USCGS: 31½S 177½W
		eL E N	12 .			
140		iP Z	17 03 17		4.0	Compression
		iS S W	04 04		440Km	Mag 4½
						H= 17 02 17
141		iP S Z	18 07 59		3.7	Mag 5¼
		iX Z	08 06		410Km	Approx 6 S 146 E
		eS S W	08 42			H= 18 07 03
142	31	eP Z	05 01 04		6.6	Mag 4¾
		iX S W Z	01 07		730Km	H= 04 59 27
		iL_Q E N	02 14			USCGS: 5S 152½E
		iS N S W	02 19			
		eL_R N	02.8			
		Lmax N	05.0	13		
		LmaxE	05.2	13		
143	31	eP S W Z	05 22 08			
144		eP Z	06 02 36			
145		eP S Z	10 14 31		(2.7)	Mag 3½
		e(S) S	15 03		(300Km)	H= 10 13 (49)
146		eP Z	14 22 11		3.3	Mag 4
		eS E S W	22 50		370Km	H= 14 21 20
147		eL E N	15 45.3			
148		eP Z	16 23 51		8.0	Mag 5
		eS S W Z	25 21		890Km	Approx 51½S 154E
						H= 16 21 54
149		eP W Z	17 41 13		8.0	Mag 5
		eS S W	42 43		890Km	H= 17 39 16
150		eP W Z	18 37 11		7.7	Mag 5
		eS S W Z	38 38		860Km	H= 18 35 19
		eL_Q E N	38.8			USCGS: 6½S I54½E
151		iP Z	20 05 45			Compression
						USCGS: 38½N 70E

No.	Date	Phase	Time (GMT) h m s	per		Remarks
-	JULY continued				degrees	
152	31	iP S W Z	20 47 44			Compression USCGS: 40S I74E
153	31	eP Z	21 03 (06)			
		Lmax N	05.5			
		Lmax E	05.8	11		
154		eP W Z	22 14 12		5.5	Mag 5¼
		iX Z	14 52		610 Km	H= 22 12 20
		iS S W Z	15 15			

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COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

203 Collins Street,
MELBOURNE. VIC.

S E I S M O L O G I C A L B U L L E T I N

P O R T M O R E S B Y

for the month of ..... AUG 1959 .....

Latitude : 09° 24:5 S. Longitude : 147° 09:1 E

Height : 70 metres Foundation: Eocene Cherts

Instruments :

1) 2 Sprengnether Horizontal Seismometers
N-S component: period 15.8 sec., damping critical (N)
E-W " " 14.8 " , " " (E)

1 Wilson-Lamison Vertical Seismometer
period 1.1 sec., damping critical (Z)

1 Sprengnether 3-component Recorder
N-S component: Galvo. period 15.8 sec., damping critical
E-W " : " " 14.8 " , " "

2) 2 Wood-Anderson Seismometers
N-S comp.: period 0.8 sec., damping 0.65, magnification 2500(S)
E-W " : " 0.8 " , " 0.72, " 2650(W)

1 Kew Vertical Seismometer
period 1.0 sec., damping 0.52. (V)

1 Sprengnether 3-component Recorder

Further information or copies of seismograms may be obtained by writing to :-

Observer-in-Charge
Geophysical Observatory,
P.O. BOX 323,
PORT MORESBY. PAPUA.

No.	Date.	Phase.	Time.(G.M.T) h m s	per s	degrees	Remarks.
1	AUG. 1	eP Z	11 19 38		5.6	Mag 4¾.
		eS SW	20 42		620Km	H= 11 18 15.
2		eP SWZ	11 56 37			
3		eP Z	16 16 30			Approx 2S 131½E.
		Lmax E	27.3			H= 16 12 28.
4		eP Z	16 29 32		6.8	H= 16 27 52.
		i(S) Z	30 49		760Km	
5	2	eP Z	11 59 54		8.0	Mag 5½.
		iPP Z	12 00 01		890Km	H= 11 57 57.
		eL N	01 02			USCGS: 6½S 154½E.
		iS E WZ	01 24			
		iX Z	01 34			
		iX N	02 27			
6		eX WZ	14 14 53			
7		iP NSWZ	15 03 41		3.8	Dilatation. Mag 4½.
		iS WZ	04 25		420Km	H= 15 02 43.
8		eP Z	18 57 (56)			Local.
9		L N	21 02 ..			
10	3	eP Z	05 43 39			Possible multiple
		iX SWZ	44 22			shock.
		eS Z	44 32			
11		eP Z	11 53 40		7.8	Mag 5½.
		iX Z	54 50		870Km	H= 11 51 46.
		iS ENSW	55 08			
12		L EN	14 51 ..			
13		L EN	16 37 ..			USCGS: 46½S 98E.
14		eP WZ	17 19 04		3.1	H= 17 18 16.
		eS W	19 40		340Km	No W-A N-S record.
15		eP Z	18 55 22		3.6	H= 18 54 27.
		eS Z	56 04		400Km	No W-A N-S record.
16	4	eP Z	02 31 ..			
17		eP SW	02 44 (02)			
		i(S) Z	44 15			
18		eP SW	03 06 (58)			
		e(S) Z	07 12			
19		iP Z	08 08 26		35.0	H= 08 02 21.
		iX Z	08 50		3890Km	h about 600 Km.
		ipP Z	10 04			Dilatation
		iS EN	13 18			USCGS: 20½S 178W
		iX E	16 38			
20		eP E Z	14 54 21			
		e(S) E	55 29			
21		iP Z	21 19 19		33.7	Compression.
		eS E	24 39		3750Km	H= 21 12 39

No.	Date.	Phase.	Time (G.M.T) h	m	s	per s	degrees	Remarks.
22	AUG. 5	iP Z	05	22	58			Dilatation.
		eX N		28	18			USCGS: 12½N 125E.
23		iP Z	11	54	10			
		iX N		59	04			
24		eP Z	13	54	15		31.7	H= 13 48 52.
		eS E		59	21		3520Km	USCGS: 5½N 125½E
		eX E	14	00	09			
25		iP Z	19	58	14			Compression. USCGS: 14N 142E
26	6	eX Z	02	55	33			Small local shock.
27		eP SWZ	03	50	31		6.2	Mag 5½.
		eS ENSW		51	41		690Km	H= 03 49 00. Off east coast of New Britain.
28		eP S Z	08	14	20		5.5	Mag 4½.
		eS S		15	23		610Km	H= 08 12 52.
29		iP Z	13	43	28		3.9	Dilatation. Mag 4½.
		eS SW		44	13		430Km	H= 13 42 29.
		iX Z		44	25			
30		eP Z	14	55	17		3.0	Mag 4.
		iX Z		55	36		330Km	H= 14 54 31.
		iX Z		55	43			
		eS S		55	52			
31		iP S Z	16	14	16		1.6	Dilatation Mag 3¾.
		iS SWZ		14	36		180Km	H= 16 13 50.
32		eP SWZ	18	37	28		8.0	Mag 5.
		eS W		38	58		890Km	H= 18 35 31.
33	7	eP S Z	01	13	57			Local.
34		eP Z	10	55	54		81.6	H= 10 43 38.
		eX Z		56	35		9070Km	USCGS: 56N 154W.
		eX Z		56	51			
		ePP Z		58	52			
		eS EN	11	06	02			
35		eP S Z	12	44	49		5.4	Mag 4½.
		eS SW		45	51		600Km	H= 12 43 29.
36		eP S Z	13	11	22		1.3	Mag 2¾.
		iS NS Z		11	39		140Km	H= 13 11 00.
		eX S		12	01			
37		eX SWZ	13	59	28			Local.
38		iP Z	19	04	35		1.9	Mag 3¼.
		eS W		04	58		210Km	H= 19 04 04.
		iS S		04	59			
		iS Z		05	00			
39		iP E Z	19	14	33		15.4	Mag 5.
		iS E		17	23	9	1710Km	H= 19 10 57.
		eLq E		18	11			USCGS: 10½S 162½E
		iLr E		19	01			
40		eP SWZ	20	02	51			Local.

No.	Date.	Phase.		Time (G M.T) h	m	s	per s		Remarks.
	AUG.							degrees	
41	7	iP	NSWZ	20	50	13		1.8	Dilatation. Mag 3¾.
		iS	E SWZ		50	35		200Km	H= 20 49 44.
42		eP	Z	21	57	45		82.0	H= 21 45 27.
		eS	EN	22	07	55		9115Km	USCGS: 56½N 154W.
43	8	eP	Z	00	58	21		66.2	H= 00 47 34.
		epP	Z		58	34		7360Km	USCGS: 55N 162½E.
		iS	E	01	07	06			
		eSP	N		07	26			
		eSKS	E		08	18			
44		iP	S Z	02	10	40		1.9	Mag 3.
		eS	SWZ		11	03		210Km	H= 02 10 09.
45		eP	Z	04	13	28		7.6	Mag 5.
		eS	SW		14	54		850Km.	H= 04 11 38.
46		eP	Z	09	01	58		(4.0)	H= 09 00 (58).
		eS	SWZ		02	(44)		440Km	
47		L	EN	21	14	..			
48		iP	ENSWZ	23	58	11		8.3	H= 23 56 09. Calc.
		iPP	SWZ		58	23		920Km	on USCGS depth.
		iL	N		59	38			USCGS: 6S 155E.
		iS	E SW		59	45			
		iSS	SW		59	55			
		iSSS	W	00	00	01			
49	9	eP	Z	02	39	51		23.4	Mag 5½.
		eS	EN		43	58		2600Km	H= 02 34 45.
		eX	N		44	21			USCGS: 2N 128E.
		eSS	N		44	51			
		eSSS	E		45	09			
50		e(P)	Z	05	00	(33)			Doubtful - obscur
		eX	Z		00	(43)			by microseisms.
		eX	E		10	02			
51		iP	EN Z	20	32	40		15.0	Dilatation.
		iX	N		33	20		1670Km	Approx 9½S 162½E.
		iS	EN		35	24			H= 20 29 12.
		iLr	E		36	37			h about 100 Km.
									USCGS: 10S 161E
52		iP	S Z	20	43	50		2.9	Compression
		iS	SW		44	24		320KM	Mag 4.
									H= 20 43 05.
53		eP	Z	22	24	15		14.8	H= 22 20 46.
		eS	E		26	59		1530Km	Solomon Is. region.
		eL	EN		28.2				
54		eP	SWZ	22	39	41		8.3	Mag 5¼.
		eS	S Z		41	15		920Km	H= 22 37 40.
55		eP	Z	23	42	47			USCGS: 8½S 159E.
56	10	iP	Z	00	44	59			Dilitation:
		iS	EN		51	49		47.2	H=00 36 28
		eSS	E		55	20	10	5250 Km	USCGS: 55½S 146E.
		eSSS	E		56	31			
		eX	E		58	00			
		eX	N		59	33			
		M	E	01	02.7				

No.	Date.	Phase.		Time(G.M.T) h	m	s	per s		degree	Remarks.
57	AUG. 10	eP	Z	04	24	(43)				Minor disturbance.
58		eP	S Z	21	20	19				" "
59		eX	S	21	46	01				" "
		eX	Z		46	49				
60	11	iP	E SWZ	00	05	25		2.0		Mag 4¼.
		iS	ENSW		05	49		220Km		H= 00 04 53.
		iX	S		07	32				
61		eP	Z	03	20	41		2.4		Mag 3½.
		eS	S		21	10		270Km		H= 03 20 38.
62		eP	Z	04	53	04		3.9		Mag 4.
		eS	S		53	49		430Km		H= 04 52 05.
63		eP	Z	06	27	02		1.8		Mag 3½.
		eS	SW		27	24		200Km		H= 06 26 33.
		iX	N		27	27				
64		eP	Z	08	24	06		1.8		Mag 3¼.
		iS	SWZ		24	30		200Km		H= 08 23 37.
65		eP	Z	13	22	13		4.6		Mag 4¾.
		eS	SW		23	06		510Km		H= 13 21 04.
66		eP	Z	21	38	38				Local.
		iX	EN Z		38	51				Very prominent phase.
		eX	SW		39	34				
67		iP	EN Z	21	53	33	3	16.6		Compression. Mag 6.
		iX	Z		53	36	1½	1850Km		H= 21 49 49.
		iX	E		53	42				USCGS: 11S 163E.
		eS	EN		56	35				
		iLr	E		57	50	22			
		M	N		59.8		14			
		M	E	22	00.4		12			
68		iP	S Z	21	59	22				Compression.
69		eP	S Z	23	36	11		3.6		W-A record change at
		e(S)	Z		36	53		400Km		23 36 51.
										H= 23 35 16.
70	12	eP	Z	02	27	41		3.1		Mag 3½.
		eS	SW		28	17		340Km		H= 02 26 53.
71		eP	Z	09	09	37		3.2		Mag 3¼.
		eS	S		10	15		360Km		H= 09 08 48.
72		iP	E WZ	10	05	21	2	36.9		Compression. Mag 6½.
		e(PP)	EN		06	48		4100Km		H= ~~10~~ 58 14.
		eX	N		07	32				USCGS: 16½S 177½W.
		eX	E		09	49				9h.
		eS	EN		11	03				
		eX	N		14	48				
		Lmax	E		18.6					
		M	N		19.5					
73		iP	S Z	12	43	29		3.5		Dilatation. Mag 3¾.
		eS	S Z		44	10		390KM		H= 12 42 37.
74	13	e(P)	Z	12	19	20				
		L	E		20	..				
		L	N		21	..				

No.	Date.	Phase.	Time (G.M.T			per		Remarks.
	AUG.		h	m	s	s	degree	
75	13	eP SWZ	13	43	34		3.7	Mag 4½.
		eS E W		44	17		410Km	H= 13 42 38.
76		eX Z	14	43	21			Minor local activity.
77		eP Z	18	00	42		1.6	Mag 3.
		iS NSW		01	02		180Km	H= 18 00 16.
78		eP Z	21	11	19			Minor disturbance.
79		eP SWZ	21	24	02		7.0	Approx 3½S 151E.
		eL EN		24.9			780Km	H= 21 22 20.
		eS SW		25	20			h about 100 Km.
80	14	eP Z	04	00	26			Minor local disturbance.
81		iP Z	04	44	25		23.9	Compression. Mag 5¾.
		iPP Z		44	57		2660Km	H= 04 39 14.
		iX Z		45	23			USCGS: 0 12½S 125½E
		eS EN		48	36			
		Lmax EN		55.7				
82		eP Z	09	45	..			USCGS: Santa Cruz Is.
		L EN		48	..			
83		Z	17	57	..			Minor local disturbance.
84		eP Z	21	16	36		6.4	Mag 4½.
		eS W		17	49		710Km	H= 21 15 02.
		Lmax EN		18.8				
85		Z	22	16	..			Minor local activity.
86	15	iP SWZ	07	12	04		3.1	Dilatation.
		iX Z		12	09		340Km	Approx 6½S 147½E.
		iS SW		12	40			H= 07 11 16.
								h about 100 Km.
87		iP EN Z	09	04	41		39.8	Mag 6¾.
		iX Z		04	58		4420Km	H= 08 57 10.
		iX Z		05	25			E-W prengnether
		iPPP S Z		06	35	4		jammed at 0921.
		iX Z		07	20			USCGS: 23N 121E.
		eScP Z		10	29			
		eX EN		10	43	14		
		eSP Z		10	53			
		iX E		11	47	20		
		eX N		13	53			
88		eP Z	11	56	59		7.0	Approx 5S 152½E.
		eS S		58	18		780Km	H= 11 55 16.
89		eP Z	13	21	52			USCGS: 21S 174W.
		M N		36.7				
90		iP Z	13	27	57		32.2	Compression.
		eX N		32	45		3580Km	Approx 15N 127E.
								H= 13 21 30.
91		eP S Z	17	03	21			
		eX N		05	59			
92		iP Z	21	36	33			USCGS: 17½S 177W.

No.	Date	Phase		Time (GMT) h m s	per	degrees	Remarks
	AUG CONTINUED						
93	16th	eP	Z	00 07 (43)			
		e(S) E		10 02			
		eX E N		10 07			
94		iP	Z	00 57 02		24.6	Mag 6¼
		iX	Z	57 28		2730Km	H= 00 51 44
		eX N		58 59			USCGS: 21S 169E
		iX E		59 31	8		
		eX N		01 00 11			
		eS N		01 18			
		iX E		01 26			
		eX E		01 51			
		Lmax E N		07.4	16		
95		iP	Z	10 00 03	1½		Compression
		iS E		05 12			h about 350 Km
		eSS E		08 10			USCGS: 18S 178W
96		eP	S W Z	11 04 27		6.7	Mag: 5
		eS	S W	05 43		740 Km	H= 11 02 [illegible]
							Approx 4S 151½E
97		eP	S W Z	11 09 17		6.2	
		eS	W	10 27		690 Km	Mag: 5
		eS	S	10 30			H= 11 07 49
							USCGS: 5S 152E
98		eP	Z	13 20 48		6.2	Mag: 4¾
		eS	S	21 58		690Km	H= 13 19 16
		eS	W	21 59			Probably from same area as No.97
99		eL E N		16 40.1			
100		eP	Z	17 51 56		8.3	H= 17 49 55
		eS N		53 30		920Km	
		eX W		54 16			
101	17th	iP	Z	01 08 44			Compression
		Lmax E		27.4			USCGS: 22½N 121E
102		L E N		08 17 ..			
103		eP	Z	17 12 07		3.6	Mag 4¼
		eS	W	12 46		400Km	H= 17 11 12
		eS	S [illegible] Z	12 49			New Britain area
104		eP	Z	17 21 12		3.4	
		eS		21 52		380Km	Mag 4
							H= 17 20 20
105		iP	Z	21 07 01		10.2	Mag 6¾ - 7
		iPPP	V	07 22		1130Km	H= 21 04 34
		eL R	S	08.7	20		USCGS: 7½S 156E
		eS E	W	08 56			
		eSSS	W	09 20			
106	18th	iP	Z	00 35 16			Compression
		ipP	Z	35 54			h about 200 Km
		i(S) E		39 46			Confused by preceding USCGS 0 125E
107		eP	Z	00 41 23	1 [illegible]	107	USCGS: 22N 121½E
		eX	Z	42 06		II900Km	
		i(S) E N		47 17			
108		L E N		02 59 ..			
109		L E N		03 27 ..			

No	Date	Phase	Time (GMT) h m s	per	degrees	Remarks
	AUG 18 CONTINUED.					
110		eP S W Z	04 59 32	7	7.9	H= 04 57 37
		e(S) Z	01 01		880Km	
111		eX N	95 52 29			Confused by succeeding
		eX E	52 53			USCGS: 22½S 172E
112		eP Z	06 51 29			Mag 7¼
		eX E	51 48			Records very confused
		eX Z	55 17			Z record confused due
		eX Z	55 45			to instrumental fault
		iPP Z	55 57			USCGS: 44½N 111W
		eX Z	56 41			
		eX E	57 38			
		eX E	58 09			
		iX E N	07 02 22			
		iPS E	04 51			
113		iPS E	15 53 55			USCGS: 44½N 111W
		M E	16 22.2			
114		eP Z	20 11 16		23.3	H= 20 06 10
		eS E	15 23		2590Km	
115		eP Z	21 16 36			USCGS: 11S 162E
		eX E	19 35			
116	19th	e(P) Z	03 32 09			Z record confused by instrumental fault
117		eP Z	04 01 50			
118		eP S W Z	04 26 00		2.0	Mag 3¼
		eS W	26 24		220 Km	H= 04 25 28
		eS S	26 25			
119		eP S Z	11 36 48		5.6	Mag 5¼
		eS E N S W	37 52		620Km	H=11 35 25 New Britain
120	20th	eP E Z	02 02 31		15.1	Mag 5¼
		eS E N	05 18		1680Km	H= 01 [illegible] 59
		iX N	05 54			USCGS: 10½S 161E
		eLQ N	06 22			
		Lmax E	08.4	14		
		M N	09.6	12		
121		iP S W Z	08 56 39		7.0	Dilatation
		eL N	57.3		780Km	Mag 5
		eS W	57 58			H= 08 54 56
						Approx 4S 151E
						New Britain
122		eP Z	12 31 12		70.4	H=12 19 59
		eS E N	40 22		7820Km	USCGS: 29S 78E
		M E N	59.0			
123		eP Z	17 36 08		7.3	Mag 5
		eS S W	37 31		810Km	H= 17 34 21
						Off South.New Ireland
124		iP E N S W Z	17 55 54			Dilatation
		iS E N S W Z	56 37			H= 17 54 58
						Deep
125		L E N	19 58 ..			

No	Date	Phase		Time (GMT) h	m	s	per	degrees	Remarks
	AUG. CONTINUED								
126		eP	Z	21	48	28		IO.7	Mag $4\frac{3}{4}$
		eS E N			50	28		1190Km	H= 21 45 54
		iSSS N			50	54			
127	21st	iP	Z	08	11	05	2	42.1	Dilatation
		eS E N			17	22		4670Km	H= 08 03 14
		e(SS)E N			20	28			USCGS: $50\frac{1}{2}$S $139\frac{1}{2}$E
		[illegible]			17	22			
		eSS [illegible]			20	28			
128		iP	Z	08	13	25	2	42.1	Compression:
		eS E N			19	(46)		4670Km	H= 08 05 (34)
		e(SS)E N			22	(48)			USCGS: Epicentre same as before.
		iLQ E			25	20	15		
		iLQ N			25	26	16		
		eX E N			25.9				
129		iP	Z	09	45	38	$1\frac{1}{2}$	42.3	H=09 37 46
		iPP	Z		47	18		4700Km	USCGS: $50\frac{1}{2}$S 140E
		eS E			51	56			
130		eP	Z	09	59	54		3.0	Mag: 4
		eS S W		10	00	29		330Km	H= 09 59 08
131		L E N			17	00	..		
132		eP	S Z	17	52	16		4.3	Mag: $4\frac{1}{4}$
		eS	S W		53	05		480Km	H= 17 51 11
133		L E N			21	57	..		
134	22nd		Z		11	24	..		Minor activity
135		L E N			20	30	..		
136		eP	Z		21	23	(07)		
137	23rd	L E N			11	29	..		
138		iP	SW Z	21	49	37		8.0	Dilatation
		iS E	SW		51	07		890Km	Mag: $5\frac{1}{4}$
									H= 21 47 40
									Near Bougainville.
139	24th	eP							
139	24th	eP	Z	03	03	31		14.0	H= 03 00 13
		eS E			06	06		1560Km	
140		L E N			03	57	..		
141		eL E N			10	01	..		
142		iP E	Z	15	45	05		14.9	Dilatation
		iPP	Z		45	15		1660Km	Mag: $5\frac{1}{4}$
		iX	Z		45	56			H= 15 41 35
		iS E N			47	50			USCGS: $10\frac{1}{2}$S $161\frac{1}{2}$E
		iSSS E			48	21			
		eLR E			48.8				
		M E			50.I				
		M N			51.9				

No	Date	Phase	TIME (GMT) h m s	per	degrees	Remarks
	AUG. Cont.					
143	24th cont.	eP Z	16 43 28			USCGS: 10½S 161½E
		iPP Z	43 38			
		eX E	45 24			
		eX N	45 56			
		eSSS N	46 29			
		eL$_R$ E	47 32			
144		eP S Z	17 56 49			Dilatation
145		iP E N Z	21 34 10		14.8	Dilatation
		iPP W	34 26		1650Km	Mag: 7
		iX W	34 41			H= 21 30 4I
		eS S	36 54			USCGS: 10½S 161E
		iSS W	37 09			
		iL$_R$ S	37 28			
146		eP Z	23 28 18			Confused by preceding
147		eP Z	23 35 51			USCGS: 10½S 161½E
148		iP Z	23 45 05			USCGS: 10½S 161½E
149	25th	eP S W Z	13 42 13		8.3	Mag 5¾
		iX Z	42 15		920Km	H= 13 40 12
		eS E N S W Z	43 46			Day confused by microseisms
						USCGS: 6½S 155E
150		eP Z	19 31 (39)		2.3	H= 19 31 (03)
		eS S	32 06		260Km	
		eS W	32 07			
151		L E N	19 45 ..			
152	26th	L E N	0I 54 ..			
153		eP S W Z	02 31 07			H= 02 29 34
		iX Z	31 49			USCGS: 5S 152E
		iS E N S W Z	32 12			
154		Z	02 59 ..			Minor Local Activity
155		eP Z	04 54 48		6.4	Mag 5¼
		eS E S W	56 0I		710Km	H= 04 53 14
						USCGS: 5½S 153½E
156		eP Z	05 25 (44)		3.(5)	Mag 3¾
		eS S W	26 25		(390Km)	H= 05 24 (51)
157		ePKIKP Z	08 44 25		120	Mag: 6½
		iPP Z	45 47		13300 Km	USCGS: 18N 94½W
		eSKS E	51 29			
		iPS E N	55 48			
		iSS N	09 02 18			
		ePSS E	02 25			
		eX E	07 05			
		Lmax N	28.I			
158		Lmax N	11 14 ..			Confused.Incoda of preceding.
		Lmax E	16 ..			
159		iP S Z	12 27 22		1.9	Mag 3¼
		iS S W	27 44		210Km	H= 12 26 51
160		Lmax N	12 55.5			Confused

No	Date	Phase	TIME (GMT) h m s	per		Remarks
	AUG. Cont.				degrees	
161	26th cont.	Z	15 29 ..			Minor local activity
162	27th	iP E N S W Z	05 07 08		(5)	Compression
		eX W V	07 12		(550Km)	H= 05 05 52
		iX N	07 55			h about 300 Km
		eS E W	08 08			USCGS: 5S 150½E
163		eP Z	05 21 (21)		I.(4)	Mag: 2¾
		eS S W	21 39		160Km	H= 05 20 (58)
164		eP Z	07 56 (32)			USCGS:0 122E
165		L E N	12 31 ..			
166		L N	14 30 ..			
167		L E N	20 46 ..			
168	28th	eP W Z	02 39 38			H= 02 37 05
		iX Z	40 00			USCGS: 9S 158E
		eS N	41 39			
		eL_R E N	42.0			
169		eP Z	12 22 44		3.4	Mag: 4
		eS S W	23 24		380Km	
I70		iP E Z	15 57 0I		22.2	Dilatation
		iPP Z	57 24		2470Km	Mag 5¾
		ePPP N	57 37			H= 15 52 06
		iS E N	16 00 58			USCGS: 17S I67E
		iSSS E	02 00			
		M E	05.I			
171		iP Z	23 12 26			
172	29th	eP Z	02 16 50			
173		eP Z	03 23 35			USCGS: Guadalcanal
		eL N	27.0			
		eX E	27 17	8		
174		eP Z	10 52 23			
		eL E N	59.0			
175		L E N	12 07 ..			
176		L N	13 19.5			
177		iP N Z	17 14 30		70.8	Dilatation
		ePPP E	18 51		7870KM	H=17 03 15
		eS N	23 41			Confused by microseisms
		eSS N	28 05			USCGS: 52N 106½E
178		eP Z	21 25 18		23.1	H=21 20 15
		eS E N	29 23		2570Km	USCGS: 17S 168E
179		L E N	00 12 ..			P possibly lost in record change
180	30th	eP Z	02 55 (25)		9.2	Mag 5
		eS W	57 09		I020Km	H= 02 53 12
		eS S	57 10			Day confused by miscrseisms
						USCGS: 8S 156½E

No	Date	Phase	TIME (GMT)	per		Remarks
	AUG Cont.				degrees	
181	30th Cont.	eP S Z eS S W	08 55 44 56 27		3.7 410Km	Mag: 4 H= 08 54 48
182		L E N	16 29.0			
183		L E N	19 00 ..			USCGS: 23S 171½E
184		eP Z iX Z iX Z eS E N LmaxE N	21 56 10 57 38 57 57 22 05 13 23.5		69.4 7710Km	H= 21 45 04 USCGS: 36½S 78½E
185	31st	L E N	13 05 ..			
186		L E N	20 42 ..			USCGS: 17S 167½E
187		S Z	21 27 ..			Minor activity
188		iP Z	23 27 12			Dilatation.

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COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF NATIONAL DEVELOPMENT.

BUREAU OF MINERAL RESOURCES GEOLOGY AND GEOPHYSICS.

203 Collins Street.
MELBOURNE VIC.

S E I S M O L O G I C A L B U L L E T I N

P O R T M O R E S B Y.

For the month of SEPTEMBER 1959

Latitude : 09° 24.5' S

Longitude : 147° 09.1' E

Height : 70 metres

Foundation: Eocene Cherts

Instruments :

1) 2 Sprengnether Horizontal Seismometers
N-S component: period 15.8 sec., damping critical (N)
E-W " " 14.8 " , " " (E)

1 Wilson-Lamison Vertical Seismometer
period 1.1 sec., damping critical (Z)

1 Sprengnether 3-component Recorder
N-S component: Galvo. period 15.8 sec., damping critical
E-W " : " " 14.8 " " "

2) 2 Wood-Anderson Seismometers
N-S comp.: period 0.8 sec., damping 0.7, magnification 2500(S)
E-W " : " 0.8 " , " 0.7, " 2700(W)

1.Kew Vertical Seismometer
period 1.0 sec., damping 0.5 (V)

1 Sprengnether 3-component Recorder

Further information or copies of seismograms may be obtained by writing to : -

Observer-in-Charge
Geophysical Observatory,
P.O. BOX 323.,
PORT MORESBY. PAPUA.

ASSIGNMENT OF EARTHQUAKE MAGNITUDES.

Earthquake magnitudes quoted in Port Moresby bulletins are tentatively assigned on the following basis, commencing with the September 1959 bulletin.

(1) Magnitudes "M_L" are determined from Wood Anderson torsion seismometer maximum amplitudes, following the procedure of Gutenburg and Richter (1942), and are assigned to earthquakes within 10^{o}.

(2) Magnitudes "m" (unified magnitude) of teleseisms, are determined from ground amplitudes (principally of surface waves), and assigned according to the procedure of Gutenberg and Richter (1955).

Magnitudes are tentatively assigned to the nearest $\frac{1}{4}$ unit.

References

Gutenberg B., and Richter C.F.

1942 "Earthquake Magnitude, Intensity, Energy and Acceleration", Bull.Seis.Soc.Amer. Vol.32 pp 163-191.

1955 "Magnitude and Energy of Earthquakes" Contribution N.750 - Division of the Geological Sciences - California Institute of Technology, Pasadena, California.

No.	Date	Phases	Time (GMT) h m s	per	degrees	Remarks
	1959					
1	SEPT 1	eX E	02 09.8			Record confused by microseisms
		eX N	10.1			
2		eX N	07 07.7			
		eX E	09.4			
3		iP Z	09 46 35		6.0	Mag M_L= 4½
		eS E W Z	47 44		670Km	H= 09 45 06
4		ePKIKP Z	11 09 38			USCGS: 20N 64½W
		ePKP Z	09 45			
5		eX E	12 53 58			
6		iP Z	18 32 11		7.7	Mag M_L= 4¾
		eS S W	33 38		860Km	H= 18 30 18
		iS Z	33 40			
7	2	eP Z	16 25(24)		(4.0)	Mag M_L=(3¾)
		eS S W	26 11		440Km	H= 16 24 (24)
						Confused by microseisms
8	3	iP Z	02 45 18			Depth approx 550Km
		isP Z	47 34			Confused by microseisms
						USCGS: 20½S 178½W
9		iP E N Z	06 32 56	2	25.6	Dilatation
		iX Z	33 16		2840Km	Mag m = 6
		iX Z	35 16	2		H= 06 27 28
		iS N	37 19	12		
		eX Z	39 49			
10		eP Z	08 44 10		4.1	Mag M_L= 4½
		eS S W	44 58		460Km	H= 08 43 08
						Approx 6½S 150½E
						Confused by microseisms
11	4	eP Z	08 54 36		6.8	H= 08 52 57
		iS S W Z	55 52		760Km	Record disturbed by microseisms
						USCGS 4½S 152E
12		eX Z	11 48 31			
13		eX E N	12 54			micro- Confused by seisms
						USCGS 31½S 179W
14	5	iP Z	05 03 30		4.0	Mag M_L= 4½
		iS W	04 16		440 Km	H= 05 02 30
		iS S Z	04 17			Record disturbed by microseisms
15		eP Z	06 12 26		20.7	Mag m = 6
		iPP Z	12 45		2300 Km	H= 06 07 46
		iPPP Z	12 55			USCGS IN 129E
		iS N	16 10			
		iX Z	16 17			
		iX E	16 22			
		eX Z	16 49			
16		eP Z	07 09 43			Confused by preceding
		iX Z	10 22			USCGS 62S I56E
		iX Z	18 49			

		1959 SEPT Cont.			Time (GMT) h	m	s	per		Remarks
17	5 cont.	iP		Z	15	39	33	2	20.9	Compression:
		iS	N			43	19		2320Km	Mag m = 5¾
		eX	E			43	27			H = I5 34 5I
		iX	N			43	29			USCGS IN I29E
18		iP		Z	23	11	07	3	33.8	Dilatation
		iX		Z		11	16		3750Km	H= 23 05 09
		iS	E N			15	54			h about 550 Km
										USCGS 18S 178½W
19	6	eP		Z	00	33	37			h about 50 Km
		i(pP)		Z		33	51			Confused by microseisms
		i(sP)		Z		34	01			USCGS 5½N 126½E
		iPP		Z		34	17			
20		eP		Z	04	14(10)				Mag M_L=5½
		iX		Z		14	25			Confused by miscroseisms
										USCGS 10S 160½E
21	7	iP		Z	04	06	55		3.2	Dilatation
		iX		Z		06	57		360Km	Mag M_L=4¾
		iS	W			07	32			H = 04 06 06
		iS	S			07	33			Approx 6S 148E
										USCGS 5½S 147E
22		eP		Z	04	18(49)				Small local shock
		iX		Z		18	54			
		eX	S W			19(40)				
		iX		Z		19	49			
23	8	iP		Z	03	23	07		3.6	Confused by microseisms
		eS	S W	Z		23	49		400 Km	Mag M_L= 4½
										H= 03 22 12
24		iP		Z	03	26	11		3.6	Mag M_L = 4¼
		eS	S W	Z		26	53		400Km	H= 03 25 16
25		eP		Z	03	50(10)				Banda Sea near Timor
26		eP		Z	15	12	01		2.2	Mag M_L= 3½
		eS	S W			12	27		24[illegible]Km	H = I5 II 26
27	9	eP		Z	05	10	04		5.0	Mag M_L= 4¾
		iS	S W			11	02		560Km	H = 05 08 49
										5S 144½E
28		iP		Z	11	03	29		4.0	H= 11 02 29
		iS	W			04	16		440Km	h about 150 Km
		iS	S			04	17			5½S 147E
29		eP		Z	16	29	16		6.9	Mag M_L = 5¼
		eS	S W			30	34		770Km	Approx 4½S 152E
										H = I6 27 35
30	10	iP	E N	S W Z	05	37	10	2	8.3	Dilatation
		iS	S W	V		38	44		920Km	Mag M_L= 6¼
										H= 05 35 09
										USCGS 6½S 154½E
31		eX	N		08	52.0				
32		eX	E		10	58.0				
33		eX	N		13	12.0				
		eX	E			13.0				

	Date	Phases		Time (GMT) h m s	per		Remarks
	1959					degrees	
34	SEPT.	eP	Z	16 19 05		4.3	H= 16 18 01
	Cont.	iX	Z	19 36		480Km	h about 100 Km
	10	i(S) S W		19 54			USCGS 9½S 151½E
	Cont	eX S		20 00			
		eX S		20 04			
		eX S W		20 08			
35		iX	Z	19 19 33			
		e(S) S W		20 15			Small local shock
		iX	Z	20 16			
36	11	iP	Z	02 39 14			Fiji Islands
37		eP	Z	14 37 54			
38		iP	Z	19 45 04		(8.0)	Mag M_L=(4½)
		iX	Z	45 20		890Km	H= 19 43.1
		e(S) S W		46 34			Approx 6S 155E
39	12	iP	Z	00 29 39			USCGS 6S 106E
		ipP	Z	29 53			
40		eP	Z	01 55 20			Mag M_L= 6
		iX E N S W	Z	55 25			USCGS 3S 146½E
		iX	Z	55 27			
		eL E N		55.5			
41		e(P)	Z	02 43(31)			Mag M_L= 4
							Probable aftershock
							Confused by preceding
42		e(P)	Z	03 07 10			Mag M_L= 4¼
							Probable aftershock
43		e(P)	Z	06 25 04			
		iX	Z	25 58			
44		iP	Z	06 49 00			Mag M_L= 4½
							Probable aftershock
45		eP	Z	06 57 18			Mag M_L= 4¾
		iX	Z	57 24			Probable aftershock
46		iP	Z	07 03 18			Mag M_L=5½
							Confused by preceding
							USCGS 3S 147E
47		e(P)	Z	07 32(54)			Mag M_L=(4)
							Probable aftershock
							Confused by preceding
48		eP	Z	07 41 25			Mag M_L=4½
							Probable aftershock
							Confused by preceding
49		eP	Z	08 00 53			Mag M_L= 4¾
							Probable aftershock
50	12	iP	Z	08 49 07		6.0	Compression
		eS E S W		08 50 15		670Km	Mag M_L= 5
							H= 08 47 38
							Bismark Sea
51		iP	Z	10 29 18			
52		iP	Z	10 39 24		3.5	Mag M_L= 4¼
		iS S W	Z	40 04		390Km	H = 10 38 31
							h possibly 50Km

No.	Date	Phases	Time (GMT) h m s	per sec	degrees	Remarks
	SEPT. Cont.					
53	12 Cont.	iP Z	11 26 42	1½	9.0	Dilatation
		iX E N Z	26 44		1000Km	Mag M_L= 6¼
		eL_Q E	28.3			H= 11 24 31
		iS N	28 24			USCGS 9½S 156E
		e(L_R) S Z	28.6			
		e(L_R) W	28.7			
54		eP Z	12 52 40			Mag M_L=(4)
		iX Z	52 43			Probably West end of New Britain
55		iP Z	14 42 00		6.9	Mag M_L= 5½
		iS E N S Z	43 18		770Km	H= 14 40 19
						USCGS 5S 152½E
56		eP Z	15 40 26		6.0	Mag M_L= 4¾
		eS S Z	41 34		670Km	H= 15 38 57
						Approx 5S 151E
57		eX Z	16 20 ..			Minor local activity
58		eP Z	19 55 36			Local shock
						Probably Bismark Sea
59		iP Z	23 46 07			Probably Bismark Sea
60	13	eP Z	01 03 06			Small local shock
		iX Z	03 33			Probably Bismark Sea
61		eP Z	01 43 31			Probably Bismark Sea
62		iP Z	04 00 18			USCGS 6½S 130E
		e(pP) Z	00 29			
63		eP Z	04 39 37		5.9	Mag M_L= 4¾
		eS S	40 44		650Km	H= 04 38 10
						USCGS 3½S 146½E
64		iP Z	21 58 37			Dilatation
						Local Shock
65		eP Z	22 45 22		21.0	Mag m = 5½
		iPP Z	45 40		2330Km	H= 22 40 39
		iX Z	46 01			USCGS 1N 129E
		eS E N	49 09			
		iX N	49 57			
		Lmax E N	56 ..			
66	14	eP V	13 23 (05)		(38.7)	Mag m = 6¼
		eS E N	28 59		4300Km	H= 13 15 (43)
		iX N	31 51			Overlapped by following shoc'-
						USCGS 24S 176½W
67		eP V	14 17 05			Mag m= 7
		ePcP V	19 17			Record confused
		eL_R S W V	29 ..			USCGS 28½S 177W
		M S	32.2			
68		eP V	17 13 41			Mag m= 6½
		iPcP V	15 55			Confused by preceding
						USCGS 29S 176½W
69		M N	20 50 ..			USCGS 28½S 176½W

	1959				TIME (GMT)			per		Remarks
	Sept. Cont				h	m	s	sec	degrees	
70	14 Cont	eP		V	22	31	20		(37.9)	Mag m= 5¾
		ePcP		V		33	33		4210Km	H= 22 24 (05)
		eS	E N			37	(04)			USCGS 29S 177W
		M	E N			46	..			
71	15	eL	N		01	30	..			
72		e(P)		Z	01	48	(40)			
		iX		Z		49	08			
73		eL	N		04	35	..			
		eL	E			37	..			
74		iP		Z	06	05	41			
75		iP		Z	06	07	08		(38.3)	Compression
		iX		Z		09	07		4260Km	Mag m= 6½
		ePcP		Z		09	15			H= 05 59 (49)
		iS	E			13	(00)			USCGS 28½S 177W
		iX	E			13	40			
		eL_Q	E N			16	..			
		eX		Z		19	..			
76		i(P)		Z	06	16	17			Aftershock
										USCGS 28½S 176½W
77		eX		Z	08	10	..			Aftershock
										USCGS 28½S 177W
78		eL	N		11	07	..			USCGS 29S 177W
79		iP	N	Z	11	11	37	1	34.2	Dilatation
		ipP		Z		13	19		3800Km	H= 11 05 39
		iS	N S			16	24			h about 69[illegible] Km.
		iScP		Z		16	47			E/W component not
		i(G)	N			19	40			recording 0627-2348
		iX		Z		21	00			USCGS 21½S 179½W
80		iP		Z	13	01	29			Dilatation
										USCGS 21½S 177½W
81		eP		Z	13	53	(46)			USCGS 29S 177W
		ePcP		Z		55	57			
		M	N		14	08.8				
82		$e(L_R)$	N		19	55.2				No record E Component
83		eX	N		22	48.9				No record E component
		$e(L_R)$	N			53.8				USCGS 29S 176½W
84	16	M	N		02	26	..			USCGS 29S 176½W
85		M	N		02	59	..			USCGS 29S 176½W
86		eX		Z	10	16	59			USCGS 29S 176½W
		eX		Z		17	29			
		eS	E			21	10			
		eX	N			21	21			
		M	E			30.1		16		
		M	N			30.5		18		

No.	Date	Phases	TIME (GMT) h m s	per sec.	degrees	Remarks
	1959 Sept Cont					
87	16	eP Z	16 04 32		38.3	Mag m = 6
		eX Z	04 51		4250Km	H= 15 57 08
		ePPP Z	06 32			USCGS 28½S 176W
		eX E	10 05			
		eS N	10 27			
		e(L_R) E	14.8			
		M E	19.0	17		
		M N	19.9	17		
88	17	eL E N	00 48 ..			
89		eL E N	03 42 ..			
90		eX Z	03 49 28			
91		eP Z	06 53 47			Local
		iX Z	53 53			
		eX S	54 51			
		eX W	54 54			
92		M E	07 33 ..			
		M N	33½			
93		eP Z	07 39 28			
94		eL E N	08 58½			
95		eP Z	14 15 24			USCGS 28½S 176W
		eX Z	15 28			
		eX Z	16 01			
		eX Z	17 56			
		eX Z	18 26			
		eL_Q E	24.7			
		eX E	28.9			
		eX N	30 23			
96		eP Z	14 43 42			Mag m= 5½
		eX E	49 17			Confused by preceding
		eX N	49 36			USCGS 28½S 176W
		eL_Q E	52.8			
		eL_Q N	53.8			
		Lmax E N	15 04 ..			
		Lmax N	06½			
		Lmax E	07			
		(W2) E N	17 31 ..			
						Confused by preceding
97		eX Z	14 59 14			USCGS 28½S 176½W
98		M E N	23 09			USCGS 30½N 114W
99	18	eL N	03 26 ..			
		eL E	27 ..			
100		eL E	09 42 ..			USCGS 28½S 176½W
		eL N	42½			
101		eL E N	11 04 ..			
102		eX Z	12 20 50			USCGS 57½S 24W
		ePPS N	31.3			
		e(SS)EN	36.2			
		LMax E	13 04½			
		Lmax N	07			
		Lmax E	07½			

No.	Date	Phases	Time (GMT) h m s	per sec	degrees	Remarks
	1959 Sept. Cont					
103	18 cont	iP N S Z iX S W iS EN S W	16 53 54 54 14 54 40		3.7 410Km	Compression H= 16 52 54 h about 200 Km 5½S 147E
104		eP Z eS S W	18 06 39 07 21		(3.2) 360Km	H = 18 05 (45) Possibly deep
105		iP Z eS W	21 04 53 05 20		2.3 260Km	Compression Mag M_L= 4 H= 21 04 17
106		eP Z	22 42 24			
107		eX Z	23 00 ..			Minor Local Activity
108		eP Z eS S eS W	23 14 08 14 46 14 48		3.5 390Km	Mag M_L = 4 H= 23 13 15
109	19	eP Z	02 04 08			Local
110		eX Z	05 01 ..			Minor local activity
111		eP Z eX E N	08 45 23 08 47.1			Local shock
112		e(L) E	09 25 ..			
113		e(L) E N	12 03 ..			
114		eX E N	23 23 ..			
115	20	eP Z eS SW	03 34 51 35 17		2.2 240 Km	Mag M_L= 2¾ H= 03 34 18
116		eX SW Z	06 25 ..			Minor local activity
117	20	eX N eSS N eLQ N Lmax N	06 33 31 39.9 48.5 56½			USCGS 13½S 111½W
118		eX E	14 50 ..			
119		eX N	21 17 ..			
120		eX Z	23 57 ..			Minor local activity
121	21	e(P) Z	01 20 11			Local shock?
122		iP W Z iX E N S iS S	02 08 59 09 00 09 23		2.0 220Km	Dilatation Mag M_L= (5½) H= 02 08 27 USCGS 9½S 149E
123		eP W	02 14 21			Aftershock
124		iP Z eS S W	02 47 23 47 46		2.0 220Km	Mag M_L= 3½ H= 02 46 51 Aftershock
125		e(S) S W Z	06 40 (06)			Probable aftershock

No.	Date	Phases	Time(GMT) h m s	per sec	degrees	Remarks
	1959 Sept Cont.					
126	21	eP Z	07 20 49			Mag $M_L = 2\frac{3}{4}$ Aftershock
127		eP Z	07 22 25			Mag $M_L = 2\frac{3}{4}$ Aftershock
128		eP Z ePP Z eLQ N	13 15 24 16 08 20.2			USCGS 10S 120E
129		eX S W Z	14 24 ...			Minor near activity
130		iP Z iS S W Z	22 30 10 30 33		2.0 220 Km	Mag $M_L = 3\frac{1}{2}$ H= 22 29 38
131	22	eP Z eS W eS S	08 35 24 37 03 37 04		8.8 980Km	Mag $M_L = 4\frac{1}{2}$ H= 08 33 16
I32		eP Z eS S W	15 34 36 35 08		2.7 300Km	Mag $M_L = 3\frac{1}{4}$ H= 15 33 54
133		eP Z eS S W	20 09 09 09 34			
134		eP Z	22 31 28			Small near shock
135		eX N S Z	22 36 ..			Small near shock
136	23	eP Z iS S W Z	02 06 48 07 II		2.0 220Km	Mag $M_L = 2\frac{3}{4}$ H= 02. 06 I6
I37		eP Z eS S W	II 07 (34) 07 57		2.0 220Km	Mag $M_L = 2\frac{3}{4}$ H= II 07 02
I38		e(P) Z	I6 45 (27)			
I39		e(S) S W	22 I0 43			Minor near activity
I40		eP Z iS S W iX S W	23 24 I4 24 38 24 40		2.0 220Km	Mag $M_L = 4$ H= 23 23 42
I4I	24	eP Z iX Z iS Z eS S W	0I 44 25 44 29 45 0I 45 02		3.I 340 Km	Mag= $M_L = 3\frac{1}{2}$ H = 0I 43 37
I42		eP Z e(S) S	03 46 I7 46 (49)		(2.7) 300 Km	Mag $M_L = 3$ H = 03 45 (35)
I43		eP Z eS S W	I0 50 (24) 50 54		(2.5) 280Km	Mag $M_L = 3$ H = I0 49 (45)
I44		e(P) Z	I2 I0 25			Minor near activity
I45		eL E N	20 06 ..			USCGS $29\frac{1}{2}$S $176\frac{1}{2}$W
I46		eP Z eS S W iS Z	22 48 3I 49 52 49 54		I.7 I90 Km	Mag $M_L = 2\frac{3}{4}$ H = 22 48 03

No.	Date	Phases		Time (GMT) h	m	s	per sec	degrees	Remarks
	Sept. Cont.								
I47	25th	iP	Z	00	2I	08		32.6	H= 00 I4 37
		eX	Z		21	53		3620Km	USCGS 9S II3½E
		ePP	Z		22	I8			
		eS N			26	20			
I48		eP	Z	02	44	26	2	40.0	Mag m= 6½
		iX E N	Z		46	33	I	4445Km	H = 02 36 53
		eScP N			50	I3	II		USCGS 22N I22E
		iScP	Z		50	I5			
		iS E			50	29	II		
		isS N			50	43	9		
		isS E			50	46			
		eLQ E N			53.5		I6		
		M	S W Z	03	0I.0		I8		
I49		eP	Z	05	53	5I		3.7	Mag M_L= 3¾
		iS	S W Z		54	34		4I0Km	H= 05 52 55
I50		eS	S W Z	I2	24	07			Minor near shock
I5I		iP	Z	22	5I	54		4.4	Mag M_L= 4
		eS	S W		52	45		490 Km	
		iS	Z		52	47			
I52		eS	S W	22	58	42			Minor near shock
I53	26	eP	Z	02	I4	I7			
		eLmax E N		02	21.5				
I54		eP	Z	03	II	08			
		eX	Z		I3	06			
I55		eP	Z	08	34	I0			--
		ePP	Z		37	55		---	USCGS 43½N 128½W
		e(PPS) N			46	28			
		e(PPS) E			46	29			
		eSS E			5I.5				
		Lmax E		09	I0.0				
I56		iPKIKP	Z	I0	37	27			
		epPKIKP			37	59		---	h about 150Km
									USCGS 22S 68½W
I57		eP	Z	II	42	43			Minor near shock
I58		eP	Z	I4	33	41			Minor near shock
I59		eP	Z	I5	34	30		(2.2)	Mag M_L= 2¾
		e(S) S W			34	(56)		240Km	H= 15 33 (55)
I60		eP	Z	I7	03	08		(2.0)	Mag M_L= 2½
		e(S) W Z			03	32		220Km	H = I7 02 (36)
I6I		eP	Z	23	52	55			Minor near shock?
I62		eP	Z	23	59	(48)			Minor near shock
I63	27	eX	Z	0I	38	..			Minor activity
I64		eP	Z	0I	20	I2			Minor near shock
I65		eP	Z	03	I0	24		3.2	Mag M_L= 3¼
		eS	S W		II	02		360Km	H = 03 09 34
I66		e(P)	Z	04	I3	09			

			Time (GMT)			per		Remarks
			h	m	s	sec	degrees	
I67	Sept.							
	Cont.	eP Z	07	07	50		(6.2)	H = 07 06 (20)
	27	eX Z		08	0I		690Km	
	Cont.	e(S) E N		09	0I			
I68		eP Z	07	I8	29		7.6	Mag M_L= 5¼
		eX S Z		I8	53		840Km	H= 07 I6 38
		eS W		I9	55			USCGS Solomon Is.
		eX W		20	0I			
		eX Z		20	I0			
I69		iP S Z	I0	24	28		I7.0	Dilatation
		iP E W		24	29		I889Km	6S I30E
		eX W		27	28			H = I0 20 33
		e(S) N		27	33			h about 65 Kms
		e(S) E		27	35			USCGS 5½S I29½E
		iX Z		29	06			
I70		eX Z	I0	5I	..			Minor activity
I7I		eP S Z	I2	03	07		2.6	Mag M_L= 3
		eS S Z		03	38		288Km	H = 12 02 14
I72		e(P) Z	I7	00	09			Minor Activity
		e(S) Z		00	33			
I73	28	eP S Z	0I	0I	07			
		eX S		0I	I4			
I74		eP Z	04	28	05			
		eL E N		4I.I				USCGS 26½N I28E
I75		eP Z	05	26	II		2.8	Mag M_L= 2¾
		eS SW		26	45		310 Km	H= 05 25 28
I76		eX Z	I5	27	55			Minor activity
I77	29	eP Z	I0	00	54		3.8	Mag M_L= 3¾
		eS E		0I	38		421Km	H= 09 59 56
		eS N		0I	40			
I78		eX Z	I2	09	29			Minor near activity
I79		eP Z	I4	41	21			
I80		eP Z	I5	I3	47		2.0	Mag M_L= 3
		eS SW		I4	II		222Km	H = I5 I3 I5
I8I		eP N Z	I5	39	28		39.4	Mag m= 6½
		e(PP)E N		40	59		4379Km	H = I5 32 00
		ePPP Z		4I	20			USCGS 29S 176½W
		iX E N		4I	43			
		iS E Z		45	02			
		iPcS E		45	27			
		iPcS N		45	29			
I82	29	eP Z	I5	48	(52)			Confused by preceding
								USCGS 29S 176W
I83	30	eP Z	04	55	55			
I84		eS E	05	09	47			
		eLmax E		22.0				USCGS 28½S I76½W
		eLmax N		23.5				
I85		eX Z	II	00	4I			

				Time (GMT)			per		Remarks
	Sept I959 Cont.			h	m	s	sec	degrees	
I86	30th cont.	eL	N	I3	50.5				
I87		eP	Z	I3	38	5I		39.0	H= I3 31 26
		ePPP	Z		40	45		4335Km	USCGS 29S I76½W
		eS	E N		44	(47)			
		eLMax	E N		54.0				
I88		eX	Z	I5	0I	I0			Minor activity.
		eX	Z		0I	49			
I89		eLmax	E	16	58.5				
I90		e(P)	Z	I7	36	39			
I9I		iP	Z	20	3I	0I	I.2	22.6	Compression
		iX	Z		3I	46		25IIKm	H= 20 26 02
		e(S)	E		35	02			USCGS I8S I68E
		i(L_Q)	E N		35	08	8		
		M	E		39.5		8		

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COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF NATIONAL DEVELOPMENT.

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS.

203 Collins Street.
MELBOURNE VIC.

S E I S M O L O G I C A L B U L L E T I N

P O R T M O R E S B Y.

For the month of OCT 1959

Latitude : 09° 24.5' S Longitude : 147° 09.1' E

Height : 70 metres Foundation: Eocene Cherts

Instruments :

1) 2 Sprengnether Horizontal Seismometers
N-S component: period 15.8 sec., damping critical (N)
E-W " " 14.8 " , " " (E)

1 Wilson-Lamison Vertical Seismometer
period 1.1 sec., damping critical (Z)

1 Sprengnether 3-component Recorder
N-S component: Galvo. period 15.8 sec., damping critical
E-W " : " " 14.8 " " "

2) 2 Wood-Anderson Seismometers
N-S comp.: period 0.8 sec., damping 0.7, magnification 2500(S)
E-W " : " 0.8 " , " 0.7, " 2700(W)

1.Kew Vertical Seismometer
period 1.0 sec., damping 0.5 (V)

1 Sprengnether 3-component Recorder

Further information or copies of seismograms may be obtained by writing to : -

Observer-in-Charge
Geophysical Observatory,
P.O. BOX 323.,
PORT MORESBY. PAPUA.

No.		Date	Phases	Time (GMT) h m s	per sec	degrees	Remarks
		OCT. I959					
1	×	1	iP Z I(S) W i(S) S	0I 59 50 02 00 32 00 33		(3.5) 389Km	H = 0I 58 (53)
2	×		eX E N eX E N	03 26½ 29 ..			
3	×		i(P) Z eX E eX N eX N	08 34 52 08 47 00 46 02 48 40			
4	×		iX S WZ	I6 27 I3			Local
5	×		iP E N S WZ iS E N S WZ	I8 34 30 35 I4		3.6 400Km	Dilatation Mag M_L = 4¾ Approx 6½S I50E H = I8 33 34
6	×	2	eL E N	04 28 ..			
7	×		eX Z	II 39 ..			Minor local activity
8	×		e(P) Z	I7 46 59			
9	×		eX Z	2I 27 47			
I0	×	3	eP Z eX Z	00 44 52 44 24			Probably Celebes area
II	×		eX Z	03 30 ..			Minor local activity
I2	×		eL E eL N	03 38.5 39.0			
I3	×		eP Z	09 I3 56			USCGS I4½N I42E
I4	×		eX E N	I2 28.5			
I5	✓	?	eX Z	20 27 ..			Local activity
I6	×		iP Z eX E eX N LMax E	23 24 47 38(23) 38(27) 44.0			
I7	×	4	iX Z	09 I6 25			
I8	×		iP Z iS S W iX W Z	20 36 22 37 07 37 23		3.9 430Km	Mag M_L = 4¼ H = 20 35 23
I9	×	4	eX S W Z	20 50			Local activity
20	×		iP Z	21 45 46			Dilatation
21	×		iP Z	23 I6 56			
22	×	5	iX	02 25 26			
23	×		iP Z iS S W Z	04 I9 42 20 07		2.1 (230 Km)	H = 04 18 59
24	×		iP Z iS S W Z	04 22 55 24 23		7.8 870Km	Mag M_L = 4½ H = 04 2I 02

No.	Date	Phases	Time (GMT) h m s	per sec	degrees	Remarks
	OCT. I959					
25	5 (cont)	i(P) Z	04 40 24			Compression Probably Celebes Area
26		eX Z	07 53 (I5)			
27		eP Z	09 I6 41			
		eX E N	20 (20)			
		Imax E N	23.2			
28		iP Z	I0 02 I6		I.9	Local activity
		iS S W Z	02 39		2I0Km	H = I0 0I 45
		iX Z	02 43			
29		iX Z	I0 04 36			
30		eX Z	II 45 21			
31		eX Z	I4 29 (29)			
		eX Z	31 (28)			
32		iP Z	I5 I0 21		2.6	Local Activity
		iS S W Z	I0 52		290 Km	H = I5 09 40
33	6	iP S W Z	0I 25 35		3.6	Mag M_L= $4\frac{1}{2}$
		iX Z	25 54		400 Km	H = 0I 24 40
		iS S W Z	26 I7			
		iX Z	27 02			
34		iP Z	05 50 04			Compression
		ipP Z	50 4I			h approx 200 Km
		isP Z	5I 02		(27)	H = 05 44 37
		eX Z	5I 46		3000Km	USCGS $\frac{1}{2}$°N I22$\frac{1}{2}$°E.
		e.(S) E	54 25			
		eX N	54 35			
		iX E	54 45			
		eL EN	55 (2I)			
35		iP Z	I5 I2 35		3.8	Mag M_L = $4\frac{1}{2}$
		iS ENS W Z	I3 I9		430 Km	H = I5 II 37
36	7	iPKP Z	08 49 41			USCGS 4IN 20E
37		iX Z	II 55 21			
38	8	iP Z	00 08 41		(24.0)	Compression
		i(pP) Z	09 00		(2670Km)	h approx 80 Km
		i(sP) Z	09 11			H = (00 03 33)
		iS EN	12 49			USCGS I9S I69E
		eX N	00 13			
		eX EN	15 (32)			
		Lmax N	16 12			
39		iP SW Z	00 35 34		6.3	Mag M_L= $4\frac{3}{4}$
		iX SW Z	00 35 47		700Km	H = 00 34 02
		iS SW Z	36 45			
40		eL EN	I6 26.5			
41	9	iP SW Z	I7 05 23		8.I	Mag M_L= $4\frac{3}{4}$
		iS SW	06 54		900Km	H = I7 [illegible] 25
						Bougainville area
42	I0	eP Z	0I I7 23			
43		eX Z	02 08 (I0)			

No.	Date	Phases	Time (GMT) h m s	per sec	degrees	Remarks
	OCT 1959 Cont					
44	10 cont.	e(P) Z e(S) Z	17 14 56 15 40			Minor local activity
45		iP S W Z iS S W Z	22 17 02 17 26		2.0 220Km	Mag M_L = 3½ H = 22 16 30
46		iP S W Z iS S W Z	22 18 30 18 54		2.0 220Km	H = 22 17 58 Probable aftershock
47	11	eP Z eX S W Z eX E N	02 55 37 56 38 56 (54)			
48		iP Z e(L)E N Z	06 40 49 42 06		(7.0) (780Km)	H = 06 39 (06) Felt Rabaul
49		eP Z iX Z eS E N	09 55 12 55 25 09 56 43 56 45		8.2 910Km	Mag M_L = 5 H = 09 53 16 USCGS 3½ S 152 E
50		iP E N S W Z iX E N iS S W Z	20 04 14 04 58 05 02		4.2 470Km	Mag M_L = 5¾ H = 20 03 11 USCGS = 5½°S 147°E
51		eP Z eS S	20 24 54 25 42		4.2 470Km	H = 20 23 51 Probable aftershock
52		iP Z eS S Z	22 02 32 03 (34)		5.4 600Km	H = 22 01 12
53		eX S Z	22 24 ..			Minor local activity
54	12	iP Z epP Z ePP Z eS E N eScS N eSS E N eL E N	03 30 52 31 05 32 40 38 03 40 40 41 39 44.4		50.8 5640Km	H = 03 21 54 h approx 50Kms USCGS 2N 98½E
55	12	eP Z iS S WZ	08 06 57 07 38		3.5 390Kms	Mag M_L = 4½ H= 08 06 04
56		eLr N eX E eX N	19 33.6 35.5 36.4			USCGS 29S 176½W
57		eX Z	11 16.7			Nth Coast NewGuinea Felt Wewak
58		iP S W Z iS E N S W Z	11 39 22 39 45		1.9 210Kms	Mag M_L = 4¼ H = 11 38 51
59		iP S W Z iS S W Z	13 57 08 57 29		1.6 178Kms	Mag M_L = 3¼ H = 13 56 56
60		eP Z iX Z iS E S W Z Lmax N LmaxE	19 23 53 24 22 19 25 28 28.4 28.6		8.4 930Km	M_L = 5¼ H = 19 21 51 USCGS 7S 155½E
61		eP Z iX Z eX E N eX E Z	02 33 57 34 11 38 (08) 38 (19)			

	Date	Phases	Time (GMT) h	m	s	per sec	degrees	Remarks
62	1959 OCT. Cont.							
	13 Cont.	iP Z	03	38	05		1.3	Mag $M_L = 2\frac{1}{2}$
		iS S W Z		38	21		140 Km	H = 03 37 43
63		iX Z	05	33	11			
64		iX Z	09	17	39			
65		eX Z	10	20	..			Minor local activity
66		eX Z	14	35	..			Minor local activity
67		i)P) Z	17	07	43			Compression
67a		~~iX~~ Z		08	03			
		~~eP~~	20	05	56			
		iS S W Z		06	19		1.9	$M_L = 2\frac{1}{2}$
68	14	eP Z	01	13	18		210 Km	H = 20 05 25
		e(S) E Z		16	22			
		eL E		16.4				
69		eP Z	07	25	00			USCGS $12\frac{1}{2}^oS$ 167^oE
70		iP Z	09	19	57			
		iS E N S WZ		20	42		4.1	Dilatation
		iX S WZ		20	45		460 Km	Mag $M_L = 4\frac{1}{2}$
								H = 09 18 58
								h about . Normal
								Sth Coast New Brit.
71		iP Z	14	58	43			Mag $M_L = 3\frac{3}{4}$
		iS S W		59	29			H = 14 57 42
		iX Z		59	32			
72		eP Z	20	40	55			
		eS E		46	28		35.5	H = 20 34 00
		e(L_Q) N		49	03		3940 Km	USCGS 15S 177W
		eL_R E N		50	07			
		eX E N	20	52	(57)			
73	15	eP Z	00	27	34			
		eS S W		28	26		3.6	Mag $M_L = 3\frac{1}{2}$
							400 Km	H = 00 26 40
74		iP Z	02	18	32			
		iS S W		19	33		5.3	Mag $M_L = 4$
							590 Km	H = 02 17 13
75		iP E N S W Z	04	23	49			
		iX EN S W Z		24	01		4.1	Dilatation
		iS EN S W		24	36		460 Km	Mag $M_L = 5\frac{1}{4}$
		eX S W		24	53			H = 04 22 47
		iX W Z		24	57			USCGS $5\frac{1}{2}^oS$ 146^oE
76		eX Z	04	52	..			Local Activity
77		eP Z	06	21	31			
		ePP Z		22	34		29.0	Mag m = $6\frac{1}{2}$
		ePPP Z		22	42		3220 Km	H = 06 15 32
		eP_cP Z		24	41			USCGS $\frac{1}{2}^oN$ $120\frac{1}{2}^oE$
		eS N		26	18			
		eS E		26	22			
78		iP S W Z	23	45	11			
		eX S W		45	45		7.4	Mag $M_L = 4\frac{1}{2}$
		iS S W Z		46	34		820 Km	H = 23 43 24
79	16	eP Z	02	09	43			
		eL E		13	(28)			
		N		13	(31)			

No.	Date	Phases		Time (GMT) h	m	s	per sec	degrees	Remarks
	Cont. OCT.								
80	16 cont.	eP	Z	02	52	08		2.1	Mag = M_L = $2\frac{3}{4}$
		eS	S WZ		52	33		230 Km	H = 02 52 00
		eX	Z		52	46			
81		eP	Z	02	53	13		2.1	Mag M_L = $2\frac{3}{4}$
		eS	S WZ		53	38		230 Km	H = 02 53 05
		eX	Z		53	50			
82		eP	Z	11	45	41		3.0	Mag M_L= $3\frac{3}{4}$
		iX	Z		45	46		330 Km	H = 11 44 55
		iS	S Z		46	16			
83		eP	Z	16	20	48		26.7	H = 16 15 10
		ePP	Z		20	33		2970 Km	USCGS 6N 125E
		eS	E		25	19			
		eS	N		25	23			
84		iP	Z	23	01	50		1.3	Mag M_L = 2
		iS	S WZ		02	07		140 Km	H = 23 01 28
85	17	eP	Z	00	25	57		2.0	Mag M_L= $2\frac{1}{2}$
		iS	WZ		26	21		220 Km	H = 00 25 25
86		iP	Z	01	33	47			
		e(L) E N			53.4				
87		iP	Z	08	45	25			Dilatation
									USCGS $57\frac{1}{2}$°S 161°W
88		eX	Z	13	37	..			Minor local Activity
89		eX	Z	22	38	..			Minor Local Activity
90	18	e(S)	Z	00	46	(22)			Minor Local Activity
91		eP	Z	09	01	25		4.9	Mag M_L= $4\frac{3}{4}$
		iX	Z		01	38		540 Km	H = 09 00 12
		iS	S WZ		02	21			Bismark Sea
		iX	S Z		02	43			
92		i(P)	Z	21	01	40			
93		iP	Z	23	32	58			USCGS 6°S 105°E
		eX	Z		33	09			
94	19	iP	Z	08	34	49	3	38.2	Dilatation
		i(PPP)	Z		36	32	3	4250 Km	H = 08 27 31
		eX	Z		40	24			m = $6\frac{1}{4}$
		eS	E		40	40	12		No record prior to
		e(sS)	N		40	55	10		0630 hours as time
		eX	E		41	15			marking unservice-
		eX	N		41	24			able.
		e(L_Q)	N		43	24	18		USCGS $27\frac{1}{2}$S 177W
		e(L_Q)	E		43	28	15		
		eX	E		44	18	12		
		e(ScS)	E		44	47	20		
		e(L_R)	E		46.0				
		e(L_R)	N		46	18			
		eX	E		46	52	18		
		M	E		50.2		15		
		Lmax	N		54.1				
95		i(P)	Z	13	40	22			Near Shock
96		iP	Z	13	58	43	I		Dilatation
		iX	Z		58	52			h about 600 Km
		eScP	Z	14	03	53			USCGS 22S $179\frac{1}{2}$W

	Date	Phases			Time (GMT) h	m	s	per sec	degrees	Remarks
	OCT.									
97 ✓	Cont. 19 cont	iPKIKP		Z	16	14	19	1	116.2	Compression
		ePP		Z		15	26		12910 Km	m = 6 - 6½
		ePP	N			15	27			H = 15 55 34
		eX		Z		15	35			USCGS 54½S 29W
		eX	N			16	47.6	25		
		eX		Z		18	48			
		eSKS	N			21	10	16		
		eSKKS	N			22	20	20		
		iPS	N			25	07	18		
		iPS	E			25	16	18		
		eX	N		16	27	(28)	50		
		eSS	N			31	22	19		
		eSSP	E			31	(35)	(20)		
		eX	N			32	11			
		eSSS	E			35	50	15		
		eX	E			40	08	14		
		eX	E			46	(32)	24		
		eX	N			47	6	25		
		iX	E			48	07	23		
		eX	E		16	58.5		23		
		M	E		17	00.2		22		
		Lmax	N			04.1		18		
98 ✓		eP		Z	16	54	(28)		3.5	M_L = 3
		eS	S W			55	08		390 Km	H = 16 53 35
99 ✓		eP		Z	18	12	36		3.7	M_L = 4
		eS	S W			13	19		410 Km	H = 18 11 46
		iX		Z		13	22			
100 ✓	20	iP		Z	03	03	23			
101 ✓		eP		Z	09	19	10		(4.7)	M_L = 3¾
		eS	S			20	(03)		520 Km	H = 09 18 (00)
		eS	W			20	(04)			
102 ✓		eP		Z	12	49	12			
103 ✓		iP		Z	21	28	25			
104 ✓		eP		Z	21	39	22		8.5	H = 21 37 18
		iX		Z		39	30		940 Km	Possibly deeper than
		iX		Z		39	46			normal
		eS	S W			40	58			
		eX	W			41	00			
105 ✓	21	eP		Z	02	54	12		(4.5)	M_L = 4½
		iX		Z		54	19		(500 Km)	H = 02 53 (04)
		iS	W			55	(04)			
		iS	S			55	(06)			
106 ✓		eP		Z	04	59	(21)		(2.8)	M_L = 3¾
		iS	S W			59	54		(310 Km)	H = 04 58 (38)
107 ✓		iP		Z	06	04	23		(I4.5)	H = 06 00 (58)
		eX		Z		04	45		(I6IOKm)	USCGS 10S 162E
		e(S)	E			07	04			
108 ✓		e(P)		Z	07	03	(42)			Minor near activity
109 ✓		e(P)		Z	16	19	38			
110 ✓		eP		Z	16	53	07		1.9	M_L = 2½
		eS	S W			53	30		210 Km	H = 16 52 36
		eS		Z		53	31			

	Date OCT	Phases		Time (GMT) h	m	s	per sec	degrees	Remarks
111	21 Cont	eP	Z	20	02	24		(8.3)	$M_L = 4\frac{1}{4}$
		e(S) W			03	58		(920Km)	H = 20 00 (22)
112		eP	Z	20	53	18		7.9	$M_L = 4\frac{3}{4}$
		eS S W			54	47		880 Km	Approx 4S 153E
									H = 20 51 23
									USCGS 4S 154E
113	22	eP	Z	01	37.7				
		e(L) N			47.0				
114		eX	Z	07	22	..			Minor activity
115		eP	Z	09	31	23			Fiji -Tonga Region
		e(L) N			41	..			
116		iP	Z	10	08	17			Dilatation
									Approx 21S 179E
117		e(P) or PKP	Z	10	22	48			Possibly deep
		eX	Z		22	51			
		eX	Z		23	04			
118		iP	Z	12	29	42		3.9	Dilatation
		iS E N S W			30	27		430 Km	$5\frac{1}{2}$S $147\frac{1}{2}$E
									H = 12 28 43
									h about 100 km
119		eP	Z	19	13	57		3.7	$M_L = 3\frac{1}{2}$
		iS S			14	40		410 Km	H = 19 13 01
120		eP	Z	20	43	12		8.0	$M_L = 4\frac{3}{4}$
		eS S W			44	41		890 Km	H=20 41 15
		eS	Z		44	42			New Brit-Bougainville area.
121		iP	Z	22	38	52		3.8	Compression
		iS S W			39	36		420 Km	Approx 5S 147E
									H = 22 37 54
									h about 100 Km
122	23	e(P)	Z	03	32	28			
123		iP E N	Z	03	45	34		8.0	Dilatation
		iX	Z		45	52		890 Km	Approx 4S 153E
		iX	Z		46	02			H = 03 43 38
		iS E N S W			47	03			h about 150 Km
									USCGS 4 S 154E
124		e(P)	Z	03	50	21			
125		eP	Z	05	43	32		3.9	$M_L = 3\frac{1}{2}$
		eS S W			44	17		430 Km	H = 05 42 33
		eX	Z		44	31			
126		eP	Z	13	39	(24)		(3.5)	M_L = (4)
		iS S W Z			40	06		390 Km	H = 13 38 (31)
127		iP S W Z		16	32	27		3.9	Approx $5\frac{1}{2}$S $147\frac{1}{2}$E
		iS W			33	12		430 Km	H = 16 31 28
									h about 100 Km
128	24	eP	Z	02	22	54		3.6	$M_L = 4\frac{3}{4}$
		iX	Z		22	57		400 Km	H = 02 21 59
		eS S			23	36			
		iS W Z			23	37			

	Date	Phases			Time(GMT) h	m	s	per sec	degrees	Remarks
	OCT Cont									
129	24	eP		Z	06	00	16		4.2	M_L = 4¼
		iX		Z		00	20		470 Km	H = 05 59 12
		eS	S W			01	05			
130		eP		Z	17	22	07			Flores Sea -Celebes Area
		eX		Z		22	33			
131		iP		Z	23	53	20		(88.8)	Compression
		iPcP		Z		53	26		(9870 Km)	H = 23 40 (32)
		e(pP)		Z		53	40			h about 50 Km
		eS	E		00	04	(00)			USCGS 41½N 70E
132	25	e(S)	S W	Z	00	36	(50)			Small near shock
133		ePKP		Z	07	11	01			USCGS Atlantic Ocean
134		eP		Z	07	56	32		3.4	M_L= 3½
		eS	S W			57	11		380 Km	H = 07 55 40
		iX		Z		57	28			
135		eP		Z	09	34	(34)		(4.0)	M_L= 4
		eS	S W			35	20		440 Km	H = 09 33 (34)
136		iP		Z	16	12	31		5.9	M_L= 4½
		eS	S	Z		13	38		660 Km	Approx 5½S 152E
		eS	W			13	39			H= 16 11 04
		iX		Z		13	52			
		eX		Z		14	09			
137		iP		Z	16	14	56		5.9	M_L= 4¾
		iS	W			16	02		660 Km	Approx 5½S 152E
		iS	S	Z		16	03			H= 16 13 29
		iX		Z		16	17			Double shock 136-137
138		iP		Z	17	34	10		3.9	M_L = 4
		eS	S W			34	55		430 Km	H = 17 33 11
139	26	eP		Z	10	38	13			Power off between 0653 & 0914 GMT
		eX		Z		39	(44)			USCGS 51½N 157½E
		eS	E			47.2				
140		iP		Z	11	38	03			
141		eL	E N		12	27½				
142		eP		Z	18	51	48			
143		eP		Z	19	39	46		29.2	Approx 22S 175E
		iX		Z		39	49		3240 Km	H = 19 33 46
		eX		Z		39	59			
		eX		Z		40	06			
		eS	E			44	35			
144	27	eX	S W	Z	02	30	..			Minor Activity
145		eX	S W	Z	03	16	..			Minor Activity
146		eX	S	Z	03	52	..			Minor Activity

	Date	Phases	Time (GMT) h	m	s	per sec	degrees	Remarks
	OCT Cont.							
147 ✓	27	iP N Z	07	02	19	2	56.2	Compression:
		iX Z		02	30		6250 Km	H = 06 52 47
		isP Z		02	57	1½		h about 100 Km
		iPcP Z		03	11	1½		USCGS 45½N 151E
		eX N		07	28			
		iS E		09	59	15		
		eS N		10	01			
		iPS E		10	22	16		
		isS N		10	43			
		iX E		10	57	13		
		iX E		11	16	12		
		iX N		11	24	12		
		eScS E		11	56			
		iX EN		12	31	19(N)		
		i(SS) N		13	37	21		
		iSS E		13	42			
		eX E		15	27			
		iX N		15	29	17		
		iSSS E		15	51	20		
		iX N		16	40			
		iX E		16	51	16		
		iL_R N		19	16	27		
		M N		20.3		26		
		LMax E		26.8		18		
148 ✓	28	iP Z	02	05	13		2.0	M_L= 3
		eS S W		05	37		220 Km	H = 02 04 41
		eS Z		05	38			
149 ✓		eP Z	04	21	23		(8.1)	M_L= 4½
		eS S W		22	(55)		900Km	approx 6½S 155E
150 ✓		eP Z	05	13	26		8.1	M_L= 4½
		iX Z		13	34		900 Km	H = 05 11 27
		eS S		14	58			
		eS W		14	59			
		eS Z		15	00			
151 ✓		e(P) Z	05	47	(04)			Small near shock?
		eX Z		48	01			
152 ✓		iP Z	09	28	51			USCGS 22S 178½W
		eX Z		29	11			
153 ✓		e(P) Z	10	01	(29)			Small near shock
154 ✓		eX Z	13	28	..			Minor activity
155 ✓		eP Z	16	13	01		8.0	M_L= 4¾
		eS Z		14	29		890 Km	Approx 5S 153½E
		eS W		14	31			H = 16 11 04
156 ✓		iP Z	23	15	47		8.1	Compression
		iX Z		15	54		900 Km	M_L = 4¾
		eS S W		17	18			Approx 5S 154E
		iS Z		17	20			H = 23 13 48
157 ✓	29	eP Z	14	27	17		(39.0)	H = 14 19 (55)
		ipP Z		27	34		(4340 Km)	h about 50 - 100Km
		esP N		27	40			USCGS 29½S 176½W
		iX Z		28	03			
		ipPP E N Z		29	12			
		ipPPP Z		29	32			
		e(sPPP)E		29	47			
		e(S) N		33	11			
		iX E Z		33	23			

	Date	Phases		Time (GMT) h	m	s	per sec	degrees	Remarks
	OCT Cont.								
157	29 Cont.	eX N		33	27				
		esS E			33	41			
		eL_Q E N			36.2				
		M N	Z		41	..			
158		iP	Z	14	39	00			Compression, h about 600 Km Confused by preceding shock USCGS 43N 131E
		iPcP	Z		39	55			
		epP	Z		40	56			
159		eX E N		22	26	..			
160	30	iP E N	Z	00	37	06	2	21.1	Dilatation:
		iS N			40	54	8	2340 Km	m = 5½
		M E N			44.7				H = 00 32 22
									USCGS 8½ N 138E
161		eP	Z	04	12	..			USCGS 66N 136½E
162		eP	Z	06	29	54		(24.0)	H = 06 32 (42)
		eX	Z		30	(16)		(2670 Km)	USCGS 7S 123½E
		eX N			30	54			
		eS E			34	(06)			
		Lmax N			10.6				
163		eP	Z	07	11	10			USCGS 19S 177½W
164		iP	Z	11	12	25		8.4	Dilatation:
		iX	Z		12	28		930Km	6½S 155E
		eS S W			13	59			H = 11 10 23
									h about60 Km
165		iP	Z	14	05	49			Compression
		e(pP)	Z		05	59			USCGS 23½S 175½W
		eX E N			07	31			
		M E			21	..			
166	30	eP	Z	17	11	33		7.6	M_L = 4¾
		eS S W	Z		12	59		840 Km	H = 17 09 42
167		e(S) S W	Z	18	07	53			Small near shock?
168		iP	Z	21	43	49		35.6	H = 21 37 39
		eS E			48	45		3960Km	h about 600 Km
									USCGS 19S I77½W
169	31	iP E N	Z	04	33	28	2	34.7	
		iX	Z		33	40		3860 Km	Compression
		iX	Z		33	45			H = 04 27 14
		iS E N			38	29			h about 400 Km
		iS	Z		38	30			USCGS 16½S 178W
		iX	Z		38	37			
		iX	Z		38	47			
		iScP	Z		38	59			
		eX N		04	41	[illegible]			
170		eP	Z	23	52	59		1.2	M_L = 2½
		eS S W	Z		53	14		130 Km	H = 23 52 39

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COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF NATIONAL DEVELOPMENT.

BUREAU OF MINERAL RESOURCES GEOLOGY AND GEOPHYSICS.

203 Collins Street.
MELBOURNE VIC.

S E I S M O L O G I C A L B U L L E T I N

P O R T M O R E S B Y.

For the month of..... NOV 1959

Latitude : 09° 24.5' S

Longitude : 147° 09.1' E

Height : 70 metres

Foundation: Eocene Cherts

Instruments :

1) 2 Sprengnether Horizontal Seismometers
N-S component: period 15.8 sec., damping critical (N)
E-W " " 14.8 " , " " (E)

1 Wilson-Lamison Vertical Seismometer
period 1.1 sec., damping critical (Z)

1 Sprengnether 3-component Recorder
N-S component: Galvo. period 15.8 sec., damping critical
E-W " : " " 14.8 " " "

2) 2 Wood-Anderson Seismometers
N-S comp.: period 0.8 sec., damping 0.7, magnification 2500(S)
E-W " : " 0.8 " , " 0.7, " 2700(W)

1.Kew Vertical Seismometer
period 1.0 sec., damping 0.5 (V)

1 Sprengnether 3-component Recorder

Further information or copies of seismograms may be obtained by writing to : -

Observer-in-Charge
Geophysical Observatory,
P.O. BOX 323.,
PORT MORESBY. PAPUA.

	Date	Phases	Time (GMT) h m s	per sec.	degrees	Remarks
	1959					
1	Nov 1	eX Z	04 22 31			Minor activity
2		eP W Z	13 24 20		2.1	Mag $M_L = 3\frac{3}{4}$
		eP S	24 21		230 Km	H = 13 23 47
		eS W	24 43			Near shock
		eS S	24 44			
		eS Z	24 45			
3		eP Z	22 52 30		3.6	Mag $M_L = 3\frac{3}{4}$
		eS S	53 12		400 Km	H = 21 51 35
						Near shock
4	Nov 2	eP Z	05 31 29		3.2	Mag $M_L = 3\frac{1}{2}$
		eS W	32 05		360 Km	H = 05 30 40
		eS S Z	32 06			Near Shock
5		iP Z	08 50 20		(30.8)	Compression
		eS E	55 (20)		3420 Km	H = 08 44 (05)
		eL_Q E	57.5			USCGS $22\frac{1}{2}$N $144\frac{1}{2}$E
		eX S	57 54			
		eX E	57 56			
6		eP Z	09 22 12		3.1	Mag $M_L = 4\frac{1}{4}$
		eS N S	22 48		340 Km	H = 09 21 35
		eS E	22 49			
		eS W	22 51			
		eX W	22 59			
		eX S	23 02			
7		eP Z	11 24 (50)		3.8	Mag $M_L = 4$
		eS S	25 34		420 Km	H = 11 23 (52)
						Near shock
8		eP S	13 25 57			Compression
		iP W Z	25 58			USCGS $21\frac{1}{2}$N $92\frac{1}{2}$E
		iX Z	26 03			
9		e(P) Z	17 15 (59)		3.9	Mag $M_L = (3\frac{3}{4})$
		e(S) Z	16 44		430 Km	H = 17 15 (00)
10		eP Z	17 33 28		6.5	Mag $M_L = 4\frac{1}{2}$
		eS S W Z	34 42		720 Km	H = 17 31 52
11		iP E N S W Z	20 04 54		5.4	Dilatation
		eS S	05 53		600 Km	Mag $M_L = 6\frac{1}{4}$
		iS W	05 55			H = 20 03 34
		eS V	05 56			h about 60 Kms
						Near shock
						$5\frac{1}{2}$S 151E
12		eP Z	23 39 48			Near shock
		eX S	41 (50)			
		eX E N	44.5			
13		eP Z	22 00 27			Confused by preceding ?
14	3	eX Z	00 37 56			USCGS $3\frac{1}{2}$N $126\frac{1}{2}$E
		eX Z	38 05			
		eL N	42.3			
		eL E	46.3			
15		e(P) Z	02 03 (34)			
		eX Z	04 31			

d	Date	Phases		Time (GMT) h	m	s	per sec	degrees	Remarks
	1959								
16	Nov 3 cont.	eX	Z	04	37	55			Minor Activity
		eL E				39.4			
		eL N				39.5			
17		eP	Z	09	12	22			No records 0930-1348 (Power failure) USCGS 23½S 175½W
		eX E			18	(17)			
		eL E N			25	13			
		eLmaxE				27.6			
18		eP	Z	15	21	(54)			Near minor activity
19		eP	Z	16	26	18		(8.6)	H = 16 24 (13)
		eX S			27	(34)		960 Km	
		eS S W	Z		27	55			
20	Nov 4	eP	Z	04	04	15			
		eX	Z		06	21			
		e(S) N			06	25			
		eL E				07.5			
		eL N				07.8			
21		eX	Z	15	47	16	1.2		Minor activity
22		eP	Z	16	39	04			
		eX	Z		39	17			
		eX	Z		39	30			
23		eP	Z	17	21	18			USCGS Tonga Is. Region
		eL N				35.3			
		eL E				36.2			
24		eP	Z	18	29	43			Dilatation USCGS Tonga Is. Region
25		eP	Z	19	12	50	2		USCGS 20S 169½E
		e(pP)	Z		12	58			
		eX E N			17	14			
		eL_{max} E				21.5			
26		eP	Z	20	06	59			Tonga-Kermadec Region. Possibly deep.
27		eP	Z	22	01	00	1¼		
		iX	Z		01	13			
28	Nov 5	eP	Z	01	56	14		2.1	Mag M_L = 4
		eS N S			56	39		230 Km	H = 01 55 41
		eS	WZ		56	40	1½		
29		eP	Z	05	47	10	1½	7.4	H = 05 45 23
		eS S	WZ		48	34	1½	820 Km	h about 100 Km
									USCGS 4½S 153E
30		eP	Z	06	59	06		3.6	Mag M_L = 4¼
		eS W			59	48		400 Km	H = 06 58 11
		eS S	Z		59	49			
31		eP	Z	11	11	42	2	79.0	Approx: 5S 68E
								8780 Km	

No.	Date	Phases		Time (GMT) h	m	s	per sec.	degrees	Remarks
	1959								
32	Nov 5	iP E	Z	11	54	42	2	19.8	Compression
		e(pP)	Z		54	58		2200 Km	H= 11 50 17
		eS N			58	21	12		h about 100 kms
		eS E			58	23	12		USCGS 13S 166½E
		Lmax E N		12	01.7		14		
33		eP	Z	13	53	58		3.4	Mag: M_L = 3½
		eS W			54	38		380 Km	H =13 53 06
			Z		54	41			Minor near shock
34		iP	Z	15	07	17	2	43.3	Dilatation
		e(PcP)	Z		09	17		4810 Km	Approx 30N, 129E
		eS E N			13	23			H= 14 59 37
									h about 250 Kms
35		eP	Z	17	39	(44)			
36		eP E	Z	17	40	(47)			Double shock
		eX	Z		40	54			P arrival times
		eX	Z		41	14			doubtful
		eX N			42	31			
		eX E			42	57			
		iX N			42	58			
		eX E			43	20			
		eX N			43	21			
		eX	Z	17	44	(16)			
37		eP	Z	19	47	11		3.7	Mag: M_L= 4¼
		eX	Z		47	34		410 Km	H= 19 46 15
		eS S			47	54			Near shock
		eS E			47	58			
38		eX	Z	20	26	14			Minor activity
		eX S			26	18			
		eX W			26	20			
39	Nov 6	eP E	Z	01	10	08		..	Mag.M_L= 5½
		iX E			12	19			Probably double
		iX E N			12	44			shock
		e(P)	Z		14	12			USCGS 9S 157½E
40		eP S W	Z	02	11	18		8.4	Mag.M_L= 5½
		eS S W	Z		12	53		930 Km	Approx 6S 155E
									H = 02 09 16
									Near Shock
41		eX	Z	10	59	..			Minor local activity
		eL N		11	13.7				
		eL W			13.9				
42		eP S	Z	11	34	24		(8.2)	H = 11 32 24
		eS			35	(56)		(910 Km)	Near shock,
		eS S			35	(58)			Bismarck Sea.
43		eP	Z	11	50	36	1½	38.3	Dilatation:
		eX	Z		50	52		4260 Km	H = 11 43 17
		eS N S W			56	28			USCGS 24S 174½W
									confused by
									preceding coda.
44		eP	Z	12	28	34			H = 10S 161½E
		e(S) E			31	15			In coda of
									preceding
45		eX	Z	18	52	34			Minor local
									activity.
46	Nov 7	eP	Z	08	22	(17)			
		e(L)E			26	00			USCGS 11½S 166½E
		M N			28.8				

No.	Date	Phases		Time (GMT) h	m	s	per sec	degrees	Remarks
1959 Cont.	Nov 7 Cont.								
47		eX	Z	11	36	21			Minor local activity
48		eX	Z	14	38	19			Minor local activity
49		eP	Z	22	23	39		(37.9)	H = 22 16 (23)
		epP	Z		23	51		(4210 km)	USCGS 23½S 175½W
		eX	Z		24	09			
		e(PPP)	E N		25	24			
		eX	E		29	15			
		e(S)	N		29	26			
		e(sS)	E		29	43			
		eX	E		33	28			
		eX	N		34	29			
		eL	N		36.2				
		eL	E		37.2				
50		eP	Z	23	32	48			Minor activity; confused by coda of preceding
		iX	Z		32	57			
51	Nov 8	eP	Z	02	24	59			
		eLmax	N		37.7				
		eLmax	E		40.4				
52		eP	Z	03	12	(55)		(4.0)	H = 13 11 (55)
		eS	S W		13	41		(440Km)	Minor near shock
53		eP	Z	08	26	33			Minor near activity
54		iP	Z	14	04	18	2	54.2	H = 13 54 53
		e(pP)	Z		04	28	2	6020 Km	USCGS 44N 140½E
		iX	Z		04	42			
		eX	Z		05	15			
		ePcP	Z		05	33	2		
		eS	E N		11	51			
		e(PPS)	E N		12	14			
		eX	N		12	57			
		eScS	E		14	(10)			
		eSS	N		15	31			
		eL_Q	E		(17.0)				
		eLmax	E		23.9				
		eLmax	N		24.2				
55		eP	Z	14	32	02			h approx 100Km
		epP	Z		32	21			USCGS 13S 167E
		esP	Z		32	42			Confused by preceding
56		eX	Z	16	23	34			
57		eP	Z	16	38	18		(7.4)	Mag. M_L = (4¾)
		iX	Z		38	41		(820 Km)	H = 16 36 (38)
		i(S)	S W Z		39	41			USCGS 4½S 154E
58		eP	Z	18	22	29		4.0	Mag. M_L = 4½
		e(S)	N		23	15		440 Km	H = 18 21 29
59		e(S)	Z	17	29	43			Sth of Bougainville
60		eL	E N	20	06	..			
		eL	E		08	..			
		eL	N		09	..			
61		eP	Z	21	18	27		2.9	Mag. M_L = 3½
		eS	S W		19	01		320 Km	H = 21 17 42

No	Date 1959	Phases		Time (GMT) h m s	per sec.		Remarks
62	Nov.9	eP	Z	04 30 36		76.0	H = 04 18 50
		eS E N		40 16		8445 Km	Sth Pacific Ocean
		e(SS) N		44 44			
		eX N		46 06			
		eL_Q E N		50.4			
		eL_R E N		54.2			
		M E		05 01.5			
		M N		01.7			
63		eP	Z	13 39 22			USCGS 6½S 132E
		iX	Z	39 25			
		eX E		47.6			
64		iP	Z	15 56 27		4.9	Mag M_L= 5
		iX	Z	56 30		540 Km	H = 15 55 15
		i(P*)	Z	56 43			
		iS	S W Z	57 23			
65		iP	Z	17 18 38		3.9	Mag. M_L= 4¼
		iS	Z	19 23		430 Km	H = 17 17 39
66	Nov. 10	eP	Z	00 26 57		7.1	M_L= 5
		eS E N S W	Z	28 17		790 Km	Approx 6S 153E
		iX	Z	28 25			H = 00 25 15
67		iP	Z	08 10 18		8.4	Compression
		iX	Z	10 21		930 Km	3S 152E
		eS	S W	11 51			H = 08 08 19
		iS	Z	11 54			h about 200 km
							USCGS 3½S 153½E
68		eP	Z	10 02 41		(6.8)	M_L= 4¾
		eX	Z	04 00		(760 Km)	Approx 6S 153E
		eS S W		04 (02)			H = 10 00 (58)
69		eP	Z	12 06 37		2.1	M_L= 4¼
		eS S W		07 02		230 Km	H = 12 06 04
		iS	Z	07 04			
70		eP	Z	16 42 52		8.2	M_L= 5¼
		iX	Z	43 00		910 Km	7S 155E
		iX	Z	43 20			H = 16 40 48
		eL E N		44.3			USCGS 7S 156E
		eS E N S W		44 27			
		iX	Z	44 31			
		LmaxE N		45.6			
71		eP	Z	17 07 (54)			M_L= 4½
		iX	Z	09 29			Aftershock
72		eX	Z	19 26 ..			Minor near activity
73		eX	Z	20 29 ..			Minor near activity
74		eP	Z	21 07 34		(72.5)	H = 20 56 (09)
		e(PcP)	Z	07 57		(8060)Km	USCGS 36N 89E
		eS E		16 (55)			
		eL_Q E N		25.5			
75	Nov 11	eP	Z	07 22 15		3.9	M_L= 4¾
		iS	S W Z	23 00		430 Km	H = 07 21 16
76		eP	Z	15 06 35			
77		eX	Z	18 11 ..			Minor activity
78		iP	Z	19 30 41			Compression; Possibly Fiji or Tonga region

No.	Date	Phases	Time (GMT) h m s	per sec	degrees	Remarks
	1959					
79	Nov.12	eP Z	00 41 41			Small near shock
80		eP Z	03 32 50		2.2	M_L = 3¾
		eS S W	33 17		240 Km	H = 03 32 14
81		eP Z	09 59 14		1.9	M_L = 3¼
		eS S W	59 36		210 Km	H = 09 58 43
82		eP Z	16 55 50		4.3	M_L = 4½
		iX Z	55 52		480 Km	5½S 149½E
		iX Z	56 02			H = 16 54 45
		iX Z	56 12			
		iS S W Z	56 40			
83		eP Z	20 34 35		19.4	H = 20 30 09
		eS E N	38 06		2160Km	USCGS 11S 166½E
84	Nov.13	iP Z	10 12 11			Compression
						USCGS 23S 179E
85		iP Z	13 24 18			Small near shock
86		eP Z	16 41 (15)		(5½)	
		eS W	42 12		(600 Km)	
		eS S	42 16			
87		eX Z	17 57 ..			
88		eP Z	21 45 40			Banda Sea
89	Nov.14	eP Z	00 30 20			
		eX N	33.0			
90		eP Z	08 41 11			Small near shock
		iX Z	41 44			
91		eP Z	10 35 35		6.4	M_L = 5
		eS S W	36 49		710Km	H = 10 33 59
		iX Z	36 58			USCGS 3S 148½E
		eL E	36.6			
		eL N	36.8			
92		eP Z	10 41 ..			Probable aftershook
93		iP Z	12 47 36		3.6	M_L = 3¾
		iS S	48 17		400 Km	H 12 46 42
		eS E Z	48 18			
94		eP Z	17 07 59		1.9	M_L = 2¾
		eS S W	08 22		210 Km	H = 17 07 28
95		eP Z	20 28 49		(35).	H = 20 (22.0)
		L max N	42.4		(3900Km)	300-400 Miles S.W.of
		Lmax E	43.5			Tonga
96		eP Z	23 16 47		(35)	H = 23 (10.0)
		L max N	30 ..		(3900 Km)	300-400 Miles S.W.of
		L maxE	31.3			Tonga
97	Nov.15	eP Z	01 57 47		2.5	M_L = 3¼
		eS W	58 15		280 Km	H = 01 57 08
		eS S	58 16			
98		iP Z	08 10 48	1		Dilatation
						USCGS Fiji Region

	Date	Phases		Time (GMT) h	m	s	per sec	degrees	Remarks
99	1959 Nov.15 Cont.	iP	Z	10	37	34	2		Compression
		ipP	Z		37	47			h about 50 km
		isP	Z		37	54			USCGS 38N 74½E
		eSKS or S	N		47	46			
		L max	N		15	..	20		
		L max	E		17.5		20		
100		ePKIKP	Z	17	27	47	1	(124.5)	USCGS 37½N 20½E
		iX	Z		27	51	1	(13830Km)	
		iX	Z		27	55			
		iX	Z		28	16	1½		
		eX	Z		29	21	2		
		ePP	E		29	(29)	18		
		ePP	N		29	33	22		
		e(PP)	Z		29	39	3		
		eSKS	E		34	49	14		
		eSKS	N		34	53	18		
		iSKKS	E		36	29	15		
		eSKKS	N		36	29	18		
		ePKKP	N		37	30	14		
		ePKKP	Z		37.7				
		iPS	E		39	34	17		
		iPS	N		39	34	18		
		eX	E		40	25			
		i(PPS)	E		41	06	18		
		eSKKP	N		41	12	15		
		eSKKP	Z		41.4				
		iX	E		41	29	18		
		iX	N		42	01	12		
		iX	E		42	02	13		
		iX	E		42	28	14		
		eX	E		43	01	14		
		iX	N	17	45	01	16		
		iSS	E		46	27	16		
		iSS	N		46	33	16		
		iX	E		47	14			
		iX	E		47	39			
		eX	E		49	33			
		eX	E		50	18	17		
		iSSS	E		50	51	17		
101		eP	Z	20	22	10			Small near shock
102		eP ,,	Z	23	52	49			
103	Nov.16	eX	Z	00	49	..			Minor near activity
104		eP	Z	09	55	02			Small near shock
105		ePKIKP	Z	10	41	29	2½	(I70)	USCGS 1N 26½W
		ipPKIKP	Z		41	37	2	(18890Km)	
		esPKIKP	Z		41	48	3		
		ePKP	Z		42	41	2		
		eX	Z		43	36			
		ePP	Z		46	30			
		esPP	Z		46	50	3		
		eX	Z		47	46			
		ePP(I90°)	E Z		48	13			
		e(PcPPKP)	Z	10	50	06			
		e(PPS)	E		59.4				
		e(PPS)	N		59.6				
106		eP	Z	12	54	03		7.4	$M_L = 4\frac{1}{2}$
		eS	S		55	26		820 Km	H = 12 52 15
		eS	W		55	27			New Brit.-New Ire. region
107		eX	Z	23	49	14			USCGS 4N 126½E

No.	Date	Phases		Time (GMT)			per		Remarks
	1959						sec	degrees	
108	Nov.16 Cont.	eP	Z	23	56	21			USCGS 18N 147E
		e(pP)	Z		56	28			
109	Nov 17	eP	Z	02	44	45	2		USCGS 11S 66½E
		eX	Z		45	20			
		eX E			55	34			
110		eP	Z	06	49	(48)		(5.4)	M_L= 4¼
		eS S W			50	50		600 Km	H = 06 48 (28)
111		e(P)	Z	07	05.3				
112		eP	Z	13	46	37			Minor near activity
113		eX	Z	13	58	40			
114		eP	Z	14	18	22		6.1	M_L= 4¾
		eS S W			19	36		680 Km	H = 14 16 51
		iS	Z		19	37			
115		e(S)	Z	14	42	13			Small near shock?
116		iP	Z	17	25	27		7.4	M_L = 5
		iX	Z		25	35		820 Km	H = 17 23 39
		eS S W			26	50			USCGS 5S 141E
117	Nov 18	iP	Z	02	59	18			Minor near shock
118		e(P)	Z	05	34	26			
119		eP	Z	06	26	44		(2.5)	M_L= 3
		eS S W			27	(13)		(280 Km)	H = 06 26 05
120		eP	Z	06	33	13			
121	Nov 19	eP	Z	02	28	(20)			Near
		iX	Z		29	46			
122		eP	Z	03	17	18			Near
123		iP	Z	05	33	11			Dilatation
		e(L) E N			44	..			USCGS 24½S 177W
124		iP	Z	06	02	18		2.9	M_L= 4½
		iS S			02	52		320 Km	H = 06 01 33
		iS W			02	53			
125		eX	Z	06	23	05			
		eP	Z	10	05	27			
126		e(S) S W			05	(33)			
127		eX	Z	10	32	..			Minor activity
128		iP E N S W	Z	11	09	40		(3.3)	Compression
								(370 Km)	6S 146E
									H = 11 08 46
									h about 100 Km
									Widely felt through out East.New Guinea and Papua.
									USCGS 5½S 146E
129		iP	Z	11	39	50		3.3	Dilatation
		iX	Z		40	01		(370 Km)	H = 11 38 58
		iX SV			40	24			Aftershock
		iS S W			40	28			
130		iP	Z	14	17	09			Small near shock ?
131		eX	Z	17	56	..			Minor near activity

No.	Date 1959	Phases	Time (GMT) h	m	s	per sec	degrees	Remarks
132	Nov.20	e(L) E	00	40	..			
133		eX N	01	06.5				
134		eX E N Z	01	24.5				
135		eP Z	10	58	50		6.9	H = 10 57 09
		iX Z		59	03		770 Km	h doubtful
		iX Z		59	19			USCGS 4½S 153E
		eX W	11	00	04			
		eX S		00	05			
		eS W		00	08			
		eS S		00	09			
136		iP Z	15	24	13			USCGS 15½S 174W
137		iP Z	16	35	07		(17.0)	H = 16 31 (10)
		iX Z		35	41		(1890 Km)	USCGS 7S 129E
		iX Z		36	32			
		e(S) S W		38	13			
		eX S W		38	18			
		iX Z		38	20			
		eX N		38	24			
		iX E		38	36			
138		eP Z	17	56	48			
139		ePKIKP Z	19	49	51			USCGS 1N 26½W
		eX Z		50	09			
140		iP Z	21	53	09		3.1	M_L= 3½
		eS W		53	48		340 Km	H = 21 52 21
		iS Z		53	49			
141	Nov.21	eX S WZ	03	35	..			Local Activity
142		eX S WZ	04	44	..			Local activity
143		e(L) N	08	15.0				
		e(L) E		17.8				
144		eP Z	11	53	24		2.8	M_L = 4
		iP SW Z		53	57		310 Km	H= 11 53 14
		iS SW Z		54	30			Probably two shocks
145		iP SW Z	14	13	29		3.4	Compression
		iS E N S W		14	09		380 Km	Mag M_L= 4½
								H = 14 12 37
								Approx -
								6°S 146° E
								3°S 140°E
146	Nov.22	eiP Z	12	50	22			
		iX S W		51	18			
		iX S		53	35			
		iX W		53	39			
		Lmax E		55.0				
147		eX E N	15	47.2				
		eX E N	16	08.0				
148		eP Z	16	38	22		76.2	H = 16 26 34
		eS E N		48	03		8470 Km	54S 136W
		eSS E N		52.7				
		LQ E			58.2			
		N			58.4			
		L_R E	17	00.8				
		N		01.0				
		Lmax N		05.4		20		
		E		08.5		17		
		N		09.0		18		

			Time (GMT) h	m	s	per sec		Remarks
	1959							
149	Nov.22 Cont.	iP Z	19	05	50		3.3	Mag. M_L = 4
		iS S W		06	29		370 Km	H = 19 05 00
150		iP Z	19	40	45		34.9	Dilatation
		iPcP Z		42	57		3870 Km	H = 19 34 35
		iS E N		45	39			h approx 550 kms
		eScS E		48	57			USCGS: 21½S 178½W
		nScS N		48	59			
151		eX Z	21	14	..			Local activity
152		iP Z	22	04	23		4.8	Mag. M_L = 4
		iS S W Z		05	18		530 Km	H = 22 03 11
153		eP Z	22	48	56		29.0	USCGS 19½S 175E
		eS E N		53	44		3220 Km	
		eX E		54	41			H = 22 42 56
		e(L_Q) E N		54	56			
		Lmax E		56.6		18		
		N		56.6		21		
154		eP Z	14	46	(28)		(19.9)	H = 14 41 (57)
		eS E N		50	04			USCGS ½S 128½E
		e(L) N		52.8			(2210 Km)	
		e(L) E		53.0				
		Lmax N		55.4		19		
		Lmax E		56.5		18		
		Lmax E		58.3		16		
155	Nov.23	eP Z	16	20	48		(28.1)	USCGS 20S 174E
		e(S) E		25	(29)		(3120Km)	
		eX E		26	38			
		eL_Q N		26	50			
		Lmax E		28.6		18		
		Lmax N		28.6		21		USCGS 20S 174E
156		eP Z	19	49	03		1.6	Mag. M_L = 3
		iS S W Z		49	25		180 Km	H = 19 48 37
157		eX E	20	49.0				
158		eP Z	21	13	11			USCGS. 24½N 122E
		e(S) E N		19.0				
		(M) E		30.3				
159	Nov.24	iP Z	04	07	54			Probably local shock
		eX Z		08	45			
		eX S W Z		09	50			
160		iP Z	12	48	18			USCGS 25S 176W
161		eL E	16	41.0				
		eL N		47.0				
162		iP Z	21	46	48	1		Dilatation West of New Hebrides
		(M) E		55.0				
163	Nov.25	iP S W Z	12	31	56		4.0	Mag. M_L = 4½
		iS S W Z		32	40		440 Km	H = 12 30 56
								Off N.E.Coast of New Guinea
164		eL N	22	40	..			
		eL E		41	..			
165		eP Z	23	01	25		2.1	Mag M_L = 3
		iS S W		01	48		230 Km	H = 23 00 52
		iX Z		01	50			

	Date	Number		Time (GMT) h	m	s	per sec	degrees	Remarks
1959									
166	Nov.26	eP	Z	00	46	39		23.5	H = 00 41 33
		e(pP)	Z		46	52		2610 Km	h about 50 kms
		ePP	Z		47	07			USCGS 1½N 127½E
		eS	E N		50	46			
		M	N		56.1				
		Lmax	E		59.0				
167		iP	Z	07	14	30		43.8	Compression
		iPP	Z		16	17			Mag. m = 6½
		iPPP	Z		16	59		4870 Km	H = 07 06 25
		eScP	Z		20	(04)			USCGS 5½S 102½E
		eS	E N		20	58			
		e(SS)	E N		24	(02)			
		eL_Q	E		24.8				
		eL_R	N		26.8				
		M	N		33.7		37		
		Lmax	E		37.3		17		
168		iP	Z	07	41	51		3.9	Mag M_L = 4¼
		eS	S W Z		42	36		430 Km	H = 07 40 52
		iX	Z		42	47			
169		iP	Z	07	47	02			In coda of preceding
		eX	Z		47	08			USCGS 15½S 175W
170		eP	Z	16	13	36			USCGS: Tonga Is.area
171		iP	S W Z	23	17	35			Compression
		i(pP)	Z		17	45		44.1	Mag: m = 6½
		i(sP)	Z		17	53		4900Km	H = 23 09 28
		iX	Z		19	33			USCGS 5½S 102½E
		eP_cS	N		23	12			
		iS	E N Z		24	05			
		e(SS)	N		27	(29)			
		eL_Q	N		28.5				
		eL_R	E		31.0				
		Lmax	N		36.6		37		
		Lmax	E		37.0		33		
172		e(P)	Z	23	20	48			Probably a separate shock
173	Nov.27	eP	Z	00	00	22			Near coast of Sumatra
		i(pP)	Z		00	32			Probable aftershock
174		iP	Z	05	54	28			Dilatation. Banda Sea Area.
175		eL	E	08	18.7				
176		iP	Z	10	48	54			USCGS 22S 177½W
177		eP	Z	13	01	(12)		(7.5)	Mag M_L= 4½
		iS	S W		02	32		(830 km)	H = 12 59 (22)
		iX	Z		02	37			
178		iP	SWZV	13	37	08		7.7	Mag M_L = 5½
		iS	ENSWZV		38	35		860 Km	H = 13 35 16
									West of Bougainville
									6½S 154½E
179		eP	Z	18	59	39		44.1	H = 18 51 32
		ipP	Z		59	49		4900 Km	USCGS 5½S 103E
		iPP	Z	19	01	18			
		eS	E N		06	09			
		L_Q	N		09.7				
		M	E N		16.9				
180		iP	Z	20	15	36		3.4	Mag: M_L = 3½
		iS	S W Z		16	16		380Km	H = 20 14 44

				Time (GMT) h	m	s	per sec	degrees	Remarks
181	Nov 28	iP	Z	02	51	44	1½		Mag m = 6
		ePP	Z		52	21		29.5	USCGS 19½S 174½E
		eS	N		56	35		3280 Km	H = 02 45 41
			E		56	39			
		eL_Q	E		57	(28)			
			N		57	(30)			
		eL_R	E		58	46			
		L max	N		59.4		20		
182		eP	Z	03	28	00			In Coda of Preceding
									USCGS 26N 128½E
183		iP	Z	04	42	10		3.7	Mag M_L = 4
		iS	SW Z		42	53		410Km	
		iX	Z		43	02			H = 04 41 57
184		iP	Z	07	06	39		4.4	Mag M_L = 5½
		iX	Z		07	04		490 Km	
		iS	ENSWZ		07	30			H = 07 05 30
									Approx 5S 149E
									New Brit.Area
185		iPKIKP	Z	12	54	02		128	
		iX	Z		54	11		14220 Km	H = 12 34 54
		ePP	Z		56	05			USCGS 28½ 71W
		ePKS	N		57	11			
		ePKS	Z		57	14			
		ePKS	E		57	17			
		eSKKS	E N	13	02	52			
		ePS	E N		05	36			
		eSS	E N		13	(12)			
		eL	E		32.0				
		eL	N		34.0				
186		eX	Z	14	20	..			Local Activity
187		eP	Z	15	42	27			
		eS	N S Z	15	42	27		3.0	Mag M_L = 3¾
		eS	N S Z		43	02		330 Km	H = 15 41 41
		eX	E W		43	05			
188		eP	Z	21	23	17			USCGS 14½S 168E
		ePP	Z		23	41			
		$e(L_Q)$			27	(25)			
		$e(L_R)$			28	(45)			
189		iP	Z	22	43	52		19.9	Dilatation
		e(pP)	Z		44	05		2210 Km	H = 22 39 22
		ePP	Z		44	18			h probably about
		eS	E N		47	28			50 Kms
		eSS	E		48	00			USCGS 13S 167½E
		$e(L_R)$	E N		48	(25)			
		M	E N		50.5		15		
190		iP	Z	23	34	19		2.1	Mag M_L = 3½
		iS	N S		34	43		230Km	
		iS	E W Z		34	44			H = 23 33 46
191	Nov.29	iP	Z	01	38	01			Dilatation
									USCGS 21S 177W
192		eP	Z	03	54	28			San Cristobal area
		e(L)	E N		57.3				Brit.Solomon Is.
193		iP	Z	05	53	45			USCGS 28½S 178W
		i(PcP)	Z		56	00			
194		eP	Z	09	00	45		(22)	Halmahera area
		e(S)	E N		04	42		(2440) Km	H = 08 55 (51)
		Lmax	E		12.1				

	1959			Time (GMT) h	m	s	per sec	degrees	Remarks
195	Nov.29 Cont	eP	Z	19	28	(50)			H = 19 17 (39)
		eS	E N		37	58		(70)	USCGS 57S 147½W
		eSS	N		42	(18)		(7780km)	
		eL_Q	E		45.5				
		eL_R	N		49.9				
		Lmax	E		52.8		19		
		Lmax	N		54.0		19		
196	Nov.30	eP	Z	09	55	(34)		(4.3)	Mag. M_L= (3½)
		eS	S W Z		56	23		(480 Km)	H = 09 54 (30)
197	Nov.30	eP	Z	11	25	04			USCGS 44½N 80½E
		e(S)	E N		35.1				
198		eP	Z	15	31	09		85.4	H = 15 18 34
		iX	Z		31	14	1¾	94940Km	USCGS 59½N 152W
		eS	N		41	36			
199		iP	S Z	15	50	45		4.4	Mag M_L= 3½
		iS	S W Z		51	32		490Km	H = 15 49 39

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COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF NATIONAL DEVELOPMENT.

BUREAU OF MINERAL RESOURCES GEOLOGY AND GEOPHYSICS.

203 Collins Street.
MELBOURNE VIC.

S E I S M O L O G I C A L B U L L E T I N

P O R T M O R E S B Y.

For the month of DEC 1959

Latitude : 09° 24.5' S Longitude : 147° 09.1' E

Height : 70 metres Foundation: Eocene Cherts

Instruments :

1) 2 Sprengnether Horizontal Seismometers
N-S component: period 15.8 sec., damping critical (N)
E-W " " 14.8 " , " " (E)

1 Wilson-Lamison Vertical Seismometer
period 1.1 sec., damping critical (Z)

1 Sprengnether 3-component Recorder
N-S component: Galvo. period 15.8 sec., damping critical
E-W " : " " 14.8 " " "

2) 2 Wood-Anderson Seismometers
N-S comp.: period 0.8 sec., damping 0.7, magnification 2500(S)
E-W " : " 0.8 " , " 0.7, " 2700(W)

1.Kew Vertical Seismometer
period 1.0 sec., damping 0.5 (V)

1 Sprengnether 3-component Recorder

Further information or copies of seismograms may be obtained by writing to : -

Observer-in-Charge
Geophysical Observatory,
P.O. BOX 323.,
PORT MORESBY. PAPUA.

Dec. 1959			Time (GMT) h	m	s	per sec	degrees	Remarks
1	1	eP Z	02	02	17			Small near shock
2		iP Z	02	43	27		3.7	Mag. $M_L = 3\frac{3}{4}$
		iS SW V		44	09		410 Km	H = 02 42 31
		iX Z		44	24			
3		iP EN W Z	03	11	27		3.5	Dilatation
		i EN Z		11	37		390 Km	Mag. = $4\frac{3}{4}$
		e Z		12	02			6S 146E
		iS ENSW Z		12	07			H = 03 10 (34)
		i S	12	12				Slightly deeper than normal
4		iP SW Z	05	15	02			Comp'sn
5		e(P) Z	09	22	15			Minor near activity
6		eP Z	09	52	22			Fiji Is.
7		e(P) Z	12	57	(49)			Probably near 3
		eX Z		59	(28)			
8		iP Z	15	09	08		55.3	Mag. m = $6\frac{1}{2}$
		e) E		09	11		6140 Km	H = 14 59 35
		e)X N		09	12			USCGS: 63S 154E
		i) Z		09	13			
		e(pP) Z		09	27			
		eS EN		16	48			
		i EN		16	58			
		e E	15	17	49			
		e)SS N		20	42			
		e) E		20	52			
		iL_Q E		22	42			
		eL_R N		25	..			
		L_{max} E		28	..			
9		iP SWZ	18	16	58		29	Compression
		iX Z		17	14		3220 Km	H = 18 11 49
		e sS EN		23	09			h about 400 Km
								USCGS 5N 125E
10		e(P) Z	18	39	08			
		eX N		42	04			
		eX E		42	38			
11		eP Z	18	59	(46)		$22\frac{1}{2}$	H = 18 54 48
		iX Z		59	52		2500 Km	h about 150 Km
		eX W	19	00	04			USCGS 9S $124\frac{1}{2}$E
		eX Z		00	11			
12		e(P) Z	20	03	57		(5.2)	M_L = (4)
		iS) W		04	55		(580) Km	H = 20 02 (39)
		) S Z		04	57			
13		eX Z	21	39	..			Minor near activity
14		iP S Z	23	02	13		(2.6)	Compression
		e(S)) Z		02	43		(290)Km	M_L = (3)
		) W		02	45			H = 23 01 (32)
		eX Z		03	09			
15	Dec 2	e(P) Z	03	35	03			
16		iP Z	04	24	48			Compression Tonga Is. region?

			Time (GMT)			per		Remarks
			h	m	s	sec	degrees	
17	Dec 2 (Cont)	eP Z	07	37	59		44.1	Compression
		epP Z		38	11		4900 Km	H = 07 29 52
		iS N		44	29			h about 50 Km
		isS E		44	49			USCGS 5S 104E
		e(ScS) N		47	58			
		e(L_Q) N		49.5				
18		iP Z	09	39	32	1	(25.7)	Dilatation
		iX Z		39	34		(2860 Km)	H = 09 34 (03)
		iPPP Z		40	27			USCGS: 1[illegible] 123E
		iS E		43	(56)			
		i(S) N		44	(07)			
19		eP Z	20	00	05		9	H = 19 57 55
		iX Z		03	19		1000 Km	USCGS 4½S 140 E
		L_{max} E		04.8				
20		e(S) SW	21	11	45			Minor near activity
21		eP Z	22	11	40		(4.2)	H = 22 10 (37)
		e(S) W		12	(29)		(470)Km	
		e(S) Z		12	34			
22	Dec 3	L EN	02	58	..			
23		e(S) Z	04	08.3				Minor near activity
24		e(P) Z	06	08	56			Small near shock
25		iP SWZ	07	10	00		(3.0)	Compression
		iS SW		10	37		(333)Km	H = 07 09 12
								Possibly deeper than normal
26		eP Z	10	18	(49)			
		eL EN		20	(25)			
27		eP Z	13	23	21		(36.3)	H = 13 16 (19)
		iX Z		23	27		(4030)Km	USCGS 16½S 177½W
		e(S) EN		28	(58)			
		eL EN		31.4				
28		e(P) Z	17	57	10			Minor local activity
		e(L) E		58.9				
29		eP Z	23	14	20		(4.4)	H = 23 13 (14)
		eS Z		15	(11)		(490) Km	
30	Dec 4	iP WZ	01	13	23		38	Dilatation
		eL_Q N	01	(22.5)			4220 Km	USCGS 15S 174W
		eL_R E	01	(23.8)				
31		e(P) Z	04	18	(19)			Minor near activity?
		eX) Z		18	35			
		) W		18	38			
		) S		18	39			
32		eP Z	05	41	32			Minor near activity?
		) S Z		41	48			
		e(S)) W		41	49			
		) Z		41	53			
33		eP Z	07	05	50			H = 07 01 ..
		e(S) EN		09	50			New Hebrides area
		L_{max} E		15.7				
34		iP Z	09	30	11		34.8	H = 09 24 08
		epP Z		31	47		3870 Km	h about 600 Km
		eS EN		35	02			
35		i(P) Z	19	53	49			USCGS 21S 178½W

	1959 Dec.			Time (GMT) h	m	s	per sec	degrees	Remarks
36	4 (cont)	i(P)	Z	20	17	19			
37		eX	WZ	20	23	11			Minor near activity?
38	5th	eX	Z	11	23	..			Minor activity
39		eP	Z	16	38	48			Local activity
		eX	Z		39	03			
40		eP	Z	19	02	09			
41		eP	Z	19	37	50			
42		eP	Z	22	06	48			USCGS - Off coast of Mindana o Philipine Is.
		eL_Q	N		12.0				
43	6th	e(P)	Z	00	01	54			
44		e(P)	Z	08	35	(36)			Small near shock
45		eX	Z	09	16	..			Minor activity
46		eP	Z	10	04	48		5.1	Mag. $M_L = 4\frac{3}{4}$
		eS	SWZ		05	46		570 Km	H = 10 03 32
47		e(P)	Z	11	14	48			
48		eP	Z	15	51	57			
49		iP	Z	17	15	32		3.9	Compression
		iX	Z		15	36		430 Km	$5\frac{1}{2}$S $148\frac{1}{2}$E
		eS	SW		16	17			H = 17 14 33
									h about 100 Km
									USCGS New Brit.Region
50		eP	Z	17	35	28		3.5	Mag. $M_L = 4$
		eS	SWZ		36	09		390 Km	H = 17 34 35
51		eX	Z	19	28	48			Minor Activity
52	7th	eP	Z	00	43	57			Record confused Possibly 2 or more shocks
		i(P)	S Z		44	07			
		i(P)	W		44	09			
		eX	SW		44	37			
		e(S)	SW		44	(55)			
53		iP	SWZ	01	12	57		3.4	Compression
		iX	Z		13	06		380 Km	H = 01 12 05
		iS	SW		13	33			h about 100 Km
									USCGS 6S $146\frac{1}{2}$E
54		iP	ENSWZ	03	07	53		35.9	Dilatation
		eS	EN Z		12	45		3990 Km	H = 03 07 44
		e(sS)	E		15.8				h about 600 Km
		e(G)	N		16.5				USCGS 18S 178W
55		eP	SWZ	04	36	30			Dilatation
56		eP	Z	05	23	(19)			USCGS $32\frac{1}{2}$N $139\frac{1}{2}$E
57		eL	E	08	10.4				
58		eL	E	08	32.5				
59		eP	Z	12	12	50		2.3	Mag. $M_L = 3\frac{1}{2}$
		eS	SWZ		13	18		260 Km	H = 12 12 14
60		eP	Z	14	00	36		3.3	
		e(S)	S		01	(14)		370 Km	H = 13 59 (45)

	1959		Time (GMT) h	m	s	per sec	degrees	Remarks
61		eP Z	16	37	18		3.5	Mag. M_L = 4
		eS S Z		37	59		390 Km	H = 16 36 25
		eS W		38	00			
62	8th	eP Z	02	26	13		(2.5)	H = 02 25 (34)
		e(S) W		26	43		(280) Km	
		eX S Z		26	53			
63		eP Z	03	08	(37)			USCGS 36½N 141½E
64		eX S Z	03	29	(23)			Minor activity
65		iP Z	04	35	36		25.8	
		ipP E		35	45		2870 Km	
		iX Z		35	58			
		iPP Z		36	18			
		eS EN		40	02			
		iX EN		40	09			
		e(S) N		40	17			
		eX E		40	(22)			
		eX N		40	55			
		e(L) E		41	(46)			
66		eP Z	04	58	18		5.8	Mag. M_L = 4½
		eS S Z		59	24		640 Km	H = 04 56 52
		eS W		59	28			
67		eP Z	08	00	27		7.0	Mag. M_L= 5
		eS ENSWZ		01	46		780 Km	H = 07 58 44
68		eP Z	08	50	04			Minor activity
69		eP Z	12	30	17		5.4	Mag. M_L= 4½
		eS SWZ		31	19		600 Km	
70		eX S Z	12	40	57			Minor local activity
71		e(P) Z	13	04	13			
72		e(S) SWZ	18	15	35			Minor near shock
73		e(S) SWZ	20	18	55			Minor near shock
74	9th	eL EN	02	44.0				
75		eP Z	04	31	32		(7.9)	Mag.M_L = 5
		e(S) S Z		32	47		(880 Km)	H = 04 29 (37)
		eX Z		33	01			
76		eP Z	08	02	33		(4.0)	Mag. M_L = 4
		e(S) S Z		03	(19)		(445 Km)	H = 08 01 (33)
77		eP Z	10	46	(03)			
		eS SW		46	31			Minor near shock
78		eX Z	10	56	34			Minor activity
79		eP S Z	13	07	31		3.8	Mag. M_L = 4½
		eS SW		08	15		420 Km	H = 13 06 33

				Time (GMT)			per		Remarks
Dec.	1959			h	m	s	sec	degrees	
80	9th cont.	iP	E WZ	14	10	49		36.5	Dilatation
		iS	EN		15	54		4055 Km	H = 14 04 28
									USCGS 17S 177½W
81		iP	SWZ	14	44	15		4.0	Dilatation
		eS	ENSW		44	59		445 Km	Mag. M_L= 4½
									Stn. New Britain
									H = 14 43 13
82		eP	Z	15	22	57		3.8	
		eS	SWZ		23	41		420 Km	Mag. M_L= 4
									H = 15 21 59
83		eP	Z	21	30	15		(6.6)	Compression
		iP	Z		30	47		(730 Km)	Mag. M_L= 6¼
		iX	EN		31	55			H = 21 29 (08)
		iS	SW		32	(00)			USCGS 5S 153E
84	10th	eP	Z	03	06	52		(56.4)	H = 02 57 (12)
		eS	EN		14	(39)		(6270 Km)	
		eX	E		20.7				
		L_{max}	E		24.4				
85		eP	Z	07	04	26			
86		eX	Z	08	07	..			
87		eX	Z	09	23	..			Minor near activity
88		eP	Z	12	50	44			Near
		eX	Z		52	17			
89		e(P)	Z	14	10	44			Near ?
90		eP	Z	14	40	26			
91		e(P)	Z	22	05	(49)			Near
92		eP	Z	22	27	11		6.4	M_L = 4¾
		iX	Z		27	39		710 Km	Mag. 22 25 37
		eS	S		28	23			
		eS	W		28	24			
		eS	Z		28	26			
93	11th	iP	E Z	00	35	49		18.1	Compression
		iX	Z		36	23		2010 Km	H = 00 31 39
		eS	N		39	07			USCGS 5S 130E
		eS	E		39	09			
		eX	E		39	39			
94		eP	Z	01	45	58			Compression
		eX	Z		46	11			USCGS 23S 175W
		e(PPP)	EN		47	45			
		e(PPP)	Z		47	49			
		e(L_R)	N		56	5			
		M	E	02	00	..	17		
		M	N		01.0		18		
95		e(P)	Z	03	31	37			Tonga region?
96		eP	Z	03	46	06			Tonga Region
		M	N		59.9				
		M	E	04	01.2				
97		eX	Z	05	12	..			Minor near activity
98		eP	Z	10	14	38			USCGS 23S 175W
		eX	E		19	55			
		L_{max}	E		29.8				
99		eP	Z	11	38	11			Small near shock
100		eP	Z	11	45	23			Tonga region?

	1959			Time (GMT)			per		Remarks
				h	m	s	sec	degrees	
101	Dec. 11th cont.	eP	Z	14	11	12			Small near shock
102		e(L) EN		20	42	..			
103		eP	Z	20	53	(28)			
104		eX	Z	21	54	..			Minor activity
105		eP	Z	23	14	55			Near shock
		iX	Z		14	59			
106	12th	eP	Z	06	56	45			Small near shock
107	13th	iP	Z	05	47	09	2		USCGS 9½S 106½E
		e(PP)	Z		48	45			
		M	EN	06	03.5				
108		eP	Z	15	39	(07)			
		eX	EN		41	04			
		eX	Z		41	47			
109		eP	Z	17	43	42			
		epP	Z		43	51			USCGS 18S 173½W
		eX	E		49	13			
		eX	E		49	56			
		eX	N		50	05			
		eL_R	EN		53.3				
		M	E		57.0				
		M	N		58.2				
110		eP	Z	19	11	26			
111		e(L)	EN	22	56	..			
112	14th	eP	Z	00	23	40			
113		e(L)	EN	00	31	..			
114		iP	Z	01	22	43			
		iX	Z		22	55			Compression
		eX	E		25	45			Banda Sea
115		e(L)	N	11	31	..			
		e(L)	E		33	..			
116		e(L)	E	13	15	..			
		e(L)	N		16	..			
117		iP	EN Z	18	03	53	1½Z		Compression
							6E	27.I	Mag. m = 5¾
							5N	3010 Km	H = 17 58 29
		eX	Z		04	23	2		h about 200 Km
		ipP	Z		04	33	1½		USCGS 5½N 125½E
		iX	Z		05	16	2		
		iX	Z		06	37	2		
		iX	Z		07	53	2		
		iS	EN		08	13	9N		
		iX	N		09	(04)			
		isS	EN Z		09	13			
		iPcS	Z		10	47	2		
		iX	E		11	(11)	16		
		eX	Z		11	49			
		iX	E		14	37	10		
		iX	N		14	43	14		
		eX	Z		15	07			
		iX	EN		15	39	14		
118		eP	Z	21	54	32	1½	24.7	Compression
		iX	Z		55	06	1½	2740 Km	H = 21 49 13
		i(PP)	Z		55	11	2		USCGS 1N 125E
		iX	Z		55	26	1½		

	1959 Dec.		Time (GMT) h	m	s	per sec	degrees	Remarks
118 cont	Dec. cont 14th	iS EN		58	49			
		iX EN Z		58	56			
119	cont	eP Z	22	12	21		(72.4)	H = 22 00 56
		iX Z		12	25	1	(8040Km)	USCGS 52½N 168W
		iPcP Z		12	32	1½		
		iX Z		12	40	1		
		eS N		21	(41)			
		iS E		21	45	10		
		i(sS) N		21	58			
		iPS EN		22	15			
		eX E		23	57	18		
120		eP Z	23	36	36		(111)	Compression?
		eX Z		39	44		(12335Km)	Mag. m = 7
		iPKIKP Z		40	(36)			USCGS 59½S 31W
		iPKIKP Z		40	41	2		
		iPP N Z		41	10	2(3)		
		iPP Z		41	17	2		
		iPP N		41	19			
		iX Z		41	44	2		
		eSKS N		47	(21)	22		
		eS E		48	59	12		
		ePS N		50	(35)	12		
		iPS N	23	50	49	(22)		
		eX E		51	33	12		
		iPKKP Z		51	34	1		
		iPPS E		51	53	14		
		eX N		52	11	18		
		eSS E		56	43	(20)		
		i(PSPS) N		57	17	17		
		eX E		58	33	18		
	15th	e(SSS) N	00	00	35	16		
		iX N		01	41	(16)		
		eX E		02	38	18		
		eX E		04	46	18		
		eX E		06	07	18		
		eL_Q E		07.1		(30)		
		eL_R N		12.9				
		M E		25	..	20		
121		eP Z	01	41	06			Horizontal records (E,N) confused by preceding
		iX Z		41	16			
		eX Z		41	33			USCGS 17½N 145E
122		eP Z	05	09	50		(27.6)	H = 05 04 (04)
		eS N		14	28		(3070Km)	USCGS 17N 145E
123		iP Z	09	02	00		(27.I)	H = 08 56 (18)
		eX Z		02	02		(3010Km)	USCGS 17½N 145E
		eX Z		02	09			
		iX Z		02	28			
		eS N		06	(34)			
124		eP Z	09	36	03			
		eX Z		36	(11)			
125		iP Z	09	41	41		5.6	M_L= 4¾
		iS S		42	45		620 Km	H = 09 40 18
		iS WZ		42	47			Probably New Britain region near Rabaul
126		eP Z	11	30	48			USCGS: 5½N 125½E
		eX Z		30	57			USCGS 17N 145E
		iX Z		31	15			

				Time (GMT)			per		Remarks
	1959 Dec.15			h	m	s	sec	degrees	
127	Cont	e(P)	Z	11	23.0				
		e(S)	E		24.2				
128		e(PKIKP)	Z	12	34	(07)			59S 24W USCGS
		eLQ	E	13	00	..			
		M	E		18	..			
		L_{max}	N		22	..			
129		iP	Z	20	12	26			Celebes Sea Area
		iX	Z		12	33			
		eX	E		16.6				
		L_{max}	N		24	..			
		L_{max}	E		25	..			
130		iP	Z	23	34	31			
131		eP	Z	00	45	30		(7.9)	H = 00 43 (35)
		eS	SWZ		46	(59)		(880 Km)	Possibly deeper than normal
132	16th	eP	Z	02	36	22			
133		eP	Z	02	47	55		(3½)	M_L= 4
		e(S)	SW		48	(35)		(390 Km)	H = 02 47 (02)
134		e(S)	Z	07	13	32			Small near shock
135		eP	Z	11	31	34			USCGS 47½N 152E
136		eP	Z	16	51	51			Fiji-Tonga region Probably deep
137	17th	iP	Z	02	36	21		(3.4)	Mag. M_L= 3¼
		eS	S		37	(01)		(380 Km)	H = 02 36 (29)
138		eP	Z	02	38	39			USCGS 21½N 121E
		eLQ	EN		48	..			
		L_{max}	E		55	..			
139		iP	Z	03	03	05			USCGS 24S 177W
140		eP	Z	06	02	00	1	44.5	H = 05 53 52
		ipP	Z		02	13	1⅓	4940 Km	h about 50 Km
		isP	Z		02	22	1		USCGS 5½S 102½E
		iS	N		08	31	6		
		eS	E		08	32			
		iX	N		08	41	6		
		i(PS)	E		08	49	8		
		e(PS)	N		08	50			
		i(ScS)	N		12	00	10		
		eLQ	N		13.7		45		
141		L_{max}	EN	10	04½				
142		ePS	E	17	16.0				USCGS 36½S 101½W
		eX	EN		21.2				
		M	N		44	..			
143	18th	iP	Z	10	03	11	1		Dilatation 18S 178½W
									USCGS 18S 178½E
144		iP	Z	16	36	18	2	72.7	Compression
		iPcP	Z		36	33	1½	8080 Km	H = 16 24 52
		eX	Z		36	55	3		USCGS 53N 168½W
		eX	Z		38	52			
		iS	EN		45	40	8		
		iPS	N		46	17			
		eX	Z		47	21			
		eX	E		47	54	17		
		eLQ	EN		55	..			

1959

				Time (GMT) h	m	s	per sec	degrees	Remarks
	Dec 18th								
145	Cont.	eL	N	18	57	..			
		eL	E		59	..			
146		eX	N	19	57	(55)			
147		eL	N	20	32	..			
		eL	E		34	..			
148		e(L)	E	23	05	..			
149		eP	Z	23	35	(07)			Near shock
150	19th	e(P)	Z	01	25.9				
151		eP	Z	03	28.8				
		eX	N		33.1				
152		iP	ENSWZ	06	42	56	1(3)	3.7	5½S 147E (approx)
		iX	Z		43	03	1	410 Km	H = 06 41 56
		iS	ENSW		43	42			h about 200-250 km
153		eP	Z	07	36	(15)		(4.4)	M_L = 4
		eS	SW		37	(06)		(490 Km)	H = 07 36 (09)
154		eP	Z	08	30	33			
155		iP	Z	09	15	56	1		Dilatation
									Fiji Is, Lau Group
156		i(P)	Z	10	39	00			h about 550-600 Km
157		e(P)	Z	14	33	31			Near shock
									Small near shock
158		iP	Z	15	19	48		3.4	Compression M = (4½)
		iX	Z		20	12		380 Km	Probably Morobe Dist.
		iS	E SW		20	28			New Guinea
									H = 15 18 56
159		iP	Z	17	34	58			Small near shock
160		iP	Z	22	15	03			Dilatation
		iX	Z		15	04			
161	20th	e(P)	Z	00	07	24			
162		e(P)	Z	00	28	25			
163		iP	Z	06	30	36			Approx 3-400 miles
									S.W. Tonga
									h about deep
164		iP	Z	07	55	50			M_L = 4
		iX	Z		55	54		3.5	
		eS	SW		56	31		390 Km	H = 07 54 57
165		iP	Z	08	13	22			USCGS -
		L_{max}	E		29.9				S of Kermadec Is.
		L_{max}	N		30.2				
166		e(P)	Z	12	59	(44)			USCGS 10½N 126½E
		e(PPP)	Z	13	00	42			
		e(L)	EN	14	37	..			USCGS: 17½S 174½W
		e(P)	Z	18	54	(44)			Minor near shock
			Z	20	30	17			Possibly small near shock

	1959	Phases	Time (GMT) h	m	s	per sec	degrees	Remarks
170	Dec 21	eX E	01	56	38			
		eX N	02	00	32			
		L_{max} (E		04	.3			
		(N		04	.7			
171		eL N	07	32	,7			
		eL E		33	.4			
172		eP Z	10	28	04			
		e(PP) Z		28	13			
		e(sP) Z		28	26			
		iX Z		29	12		39.5	Mag m = 6
		eP N		29	40		4390 Km	H = 10 20 35
		ePP E Z		29	42			USCGS 27½S 176W
		eX E		29	56			
		ePPP Z		30	06			
		eS E		34	03			
		eX Z		34	16			
		eX N		34	23			
		eL_Q N		37	05			
		eX EN		38	(26)			
		eL_R EN		(39	.1)			
173		eP Z	11	21	44		(39.7)	Mag m = 6½
		e(sP) Z		21	59		(4410) Km	H = 11 14 (13)
		ePP Z		23	20			Confused by preceding
		ePP E		23	22			
		ePPP Z		23	47			USCGS: 27½S 176W
		eP_cP Z		23	55			
		iX Z		24	12			
		eX E		27	34			
		eS N		27	(46)			
174		eP Z	11	32	49			Confused by preceding
		eX Z		36	51			USCGS 14N 52E
175		eX Z	15	20	..			Minor near activity
176		iP Z	16	58	49		7.2	Mag M_L = 4⅓
		eS SWZ	17	00	10		800 Km	H = 16 57 03
177		iP Z	23	12	41		1.7	Mag M_L = 2¾
		iS SWZ		13	03		190 Km	H = 23 12 13
178	22nd	iP ENSWZ	05	41	45		1.4	Compression
		iX E W		41	59		155 Km	Mag M_L = 4
		iS SW V		42	02			H = 05 41 22
179		eX Z	05	53	25			
180		eP S Z	08	26	20		(1.6)	Mag M_L = 2¾
		eX SWZ		26	37		(180 Km)	H = 08 25 (54)
		i(S) S Z		26	40			
181		iP Z	13	46	59		3.6	Mag M_L= 3⅓
		eS W		47	40		400 Km	H = 13 46 04
		eS Z		47	41			
182		e(P) Z	17	29	02		(46)	USCGS 37⅓N 141⅓E
		e(S) E		35	44		5110 Km	
183		eP Z	20	24	42		8.3	Mag. M_L = 5
		iP SWZ		24	43		920 Km	H = 20 22 41
		eX Z		24	46			Approx. 7°S 155°E
		iS EN WZ		26	15			Solomon Islands
184	23rd.	eP Z	04	01	11			USCGS 56½N 158W

	1959		Time (GMT) h m s	per sec		Remarks
185	23rd. cont	eX N	04 41 05		degrees	USCGS 28S 176W
		eX E	44 09			
		eS N	44 25			
		e(L_Q) N	48 14			
		eX N	50 18			
		eX E	50 22			
		eX N	51 22			
		e(M) N	53 (11)	17		
		L_{max} N	57.2	14		
		L_{max} E	05 01.6	13		
186		eP Z	09 36 25		3.2	Mag. $M_L = 3\frac{3}{4}$
		eX Z	37 00		355 Km	H = 09 35 01
		eS SW	37 02			
187		eP Z	14 06 (29)		(38.5)	H = 13 59 (07)
		ePP EN	08 02			USCGS $27\frac{1}{2}$S 176W
		e(PPP) Z	08 22		(4280 Km)	
		eX E	11 34			
		eS E	12 22			
		eS N	12 25			
		eX EN	14 02			
		eL_Q E	15.3			
		iX EN	16 47			
		L_{max} N	25.2	14		
		L_{max} E	25.4	14		
		L_{max} N	28.8	13		
188		iP SWZ	15 46 47		(2.6)	Dilatation
		iX EN W	47 07		(290 Km)	Mag $M_L = 4$
		iX Z	47 10			H = 15 46 07
		i(S) NS	47 18			
		i(S) E WZ	47 20			
189		iP Z	20 57 39		4.0	Mag $M_L = 4\frac{1}{2}$
		eX ENS	58 23		445 Km	H = 20 56 39
		iS SWZ	58 26			
190	Dec 24th	eP Z	01 11 20			
		eX E	23 (03)			
		eX N	24 (01)			
		L_{max} EN	27.0	18		
191	[illegible]	eP Z	07 27 33		(69.7)	Approx. 43S 77E
		eS N	36 38			H = 07 16 (25)
		eS E	36 (40)		(7750 Km)	Sth Indian Ocean
		eL EN	50.0			
		M N	55.2	12		
		M E	55.4	13		
192		eP Z	09 21 51		(38.9)	H = 09 14 (27)
		eS E	27 (47)		(4320 Km)	USCGS $27\frac{1}{2}$S $176\frac{1}{2}$W
		eX N	27 (57)			
		eX E	29 (43)			
		eSS N	30 46			
		eL_Q E	31 15			
		eL_Q N	31 17			
		eX E	33 05			
		eX N	34.2			
		eX E	35 25			
		M N	37.4	16		
		M E	37.9	17		
		L_{max} N	41.2	14		

No.	Date 1959	Phases		Time (GMT) h	m	s	per sec	degrees	Remarks
193	Dec 24	eP	Z	13	14	27		(27.7)	
		iX	Z		14	41		(3080) Km	H = 13 08 (40)
		eX	Z		14	52	1½		USCGS 9N 126½E
		e(PPP)	Z		15	23			
		eX	E		18	(52)			
		eS	N		19	(04)			
		eL_Q	E		20	31			
		eLQ	N		20	42			
		e(ScS)	E		25.2				
		eX	E		27	06	17		
		L_{max}	E		30.4		16		
		L_{max}	N		31.5		15		
194		eL	N	19	(07)	..			
195		eX	Z	22	23	..			Minor Near Activity Record confused by microseisms.
196	Dec 25	eP	Z	03	56	28		37.9	H = 03 48 02
		eS	E	04	02	16		4210 Km	Record Obscured by heavy microseisms
		eL_Q	N		05	31			USCGS: 27½S 176W
		e(ScS)	E		06.3				
		$e(L_R)$	N		07.8				
		M	N		11.4		17		
		M	E		11.6		16		
197		iP	ENSWZ	07	08	35		3.8	Dilatation
		iS	ENSWZ		09	19		420 Km	Approx 5½S 148½E
									H = 07 07 38
									h about 100 Km
									Sth West New Britain
198		iP	Z	10	08	50			Fiji-Tonga Region Deep.
199		e(PKIKP)	Z	10	37	41			
		iPKP	Z		37	54			USCGS 25½S 67W
		eX	Z		38	33			
		ePP	Z		40	04			
		ePKS	EN		41	20			
		e(PKS	EN		41	58			
		eX	N Z		43	52			
		eX	E		45	37			
200		eX	Z	16	01	(28)			Approx. 3N 118 E
		e(L)	N		10	34			Sumbawa Area
		e(L)	E		14.1				
201		e(P)	Z	19	04	14			
202		eX	Z	21	39	..			Minor near activity
203	Dec 26	eX	E	03	19.1				
204		eiP	Z	08	46	47			Near Activity
		iX	Z		47	02			
		iX	SW		47	58			
		eX	SWZ		48	23			
205		e(L)	N	11	21.6		(80)		Due possibly to instrumental malfunction.
		e(L)	E		23.3		(80)		

	Date 1959	Phases		Time (GMT) h	m	s	per sec	degrees	Remarks
206	Dec.26 cont.	iP	Z	12	20	52	1½		Dilatation
		iX	Z		21	50			Approx 52S 97E
		eL	EN		39	..			Sth Indian Ocean
									Record confused by microseisms
207		eX	Z	14	22	..			Near Activity
208		eX	Z	14	56	50			
209		eS	EN	16	29	30			Possibly Kermadec Is.
		eL_Q	EN		31	(50)			
		i(SS)	N		32	05			
		eL_R	E		35	(02)			
		L_{max}	N		41.6		14		
210	Dec.27	eX	Z	01	26	..			Minor near activity Record confused by heavy microseismic background
211		iP	SW	09	56	30		I.0	Mag $M_L = 2\frac{3}{4}$
		iS	SWZ		56	43		110 Km	H = 09 56 12
212		e) PP	Z	13	59	37			USCGS 28S 63W
		i)or SKP	Z		59	53			
213		iX	Z	15	51	24			Probably Near Activity.
214		iP	Z	16	03	46		66.9	Compression
		ipP	Z		03	56			
		isP	Z		04	02		7430 Km	H = 15 52 55
		iP_cP	Z		04	18			USCGS 56N 162½E
		iX	Z		04	36			
		iS	EN		12	35			
		e(SSS)	E		20	(00)			
		e(G)	N		20	08			
215		iP	Z	20	38	29			Mag. M_L = 3
		iX	S		38	42		1.1	H = 20 38 10
		iS	SWZ		38	43		120 Km	
		iX	Z		38	44			
216	Dec.28	eP	Z	02	07	39		I.8	H = 02 07 15
		eS	SWZ		08	01		200 Km	
217		eP	Z	07	31	00		63.1	Mag $M_L = 6\frac{1}{4}$
		ePP	Z		33	16		7010 Km	H = 07 20 33
		iS	E		39	27	17		USCGS 52⅔N 160E
		iS	N		39	30			
		eS_cS	EN		41	05			
		eX	N		42	(16)			
		eSS	EN		43	(42)			
		eX	N		44	32			
		eX	E		45	04			
		eG or SSS	EN		46	24	20		
		M	N		57.4		18		
218		eP	Z	07	53	31		1.9	Mag M_L = 3
		eS	SW		53	54		210 Km	H = 07 53 00
		iS	Z		53	55			
219		eP	Z	13	14	58		63.9	H = 13 04 33
		eS	EN		23	24		7100 Km	USCGS 52½N 160E
		eGor SSS	EN		30	30			
220		iP	Z	13	34	32			In Coda of Preceding
									USCGS 18S 170E

	Date 1959	Phases	Time (GMT) h	m	s	per sec	degrees	Remarks
221	Dec.28 cont.	iP SWZ	20	09	34		3.7	Dilatation Mag M_L = 5
		iS SWZ		10	17		410 Km	H = 20 08 38 Sth Coast New Brit.
222		iP Z	23	53	01			
223	Dec 29	eiP Z	07	09	18			USCGS 2 S 126 E
		ipP Z		09	26			
		ePPP Z		09	55			
		iX E		13	30			
		eL_R EN		14	58			
		eX E		22	46			
224		iP Z	08	17	19			Mag M_L = $4\frac{3}{4}$
		iX SWZ		17	23			Approx. 6S 147E
		iS ENSWZ		17	57		3.3	H = 08 16 28
		iX E SW		18	04		370 Km	h about 50 Km
225		iP SWZ	14	34	51			Nth E. New Guinea
		iX SWZ		34	57		3.5	Dilatation
		iX S		35	27		390 Km	Mag M_L = $4\frac{3}{4}$
		iS ENSWZ		35	32			Approx 6S 147E
								H = 14 33 58
226		eP Z	17	22	08			
		e(pP) Z		22	17		39.8	H = 17 14 38
		eX Z		23	23		4420 Km	USCGS $21\frac{1}{2}$S 174W
		eS E		28	10			
		eL_Q EN		31	(25)			
		$e(L_R)$EN		33	18			
		eX EN		34	11			
		M E		37.4		17		
		M N		38.0		15		
227		iP Z	19	49	38			
228		eiP Z	20	40	22	1.4	26.6	H = 20 35 11
		iX Z		40	45		2955 Km	h about 350 Km
		iX Z		41	00			
		ipP Z		41	30	1.6		USCGS 18N 145E
		iPPP Z		41	38			
		iX N		42	13			
		iS EN Z		44	29			
		i(sS)EN		46	36			
		eSS EN		46	45			
		e(ScS)N		50	(00)			
229		eP Z	21	32	41			
		e(S) EN		36	50			Possibly two shocks
		iX N Z		37	24			USCGS $8\frac{1}{2}$S 122E
		eX NS		39	15			
230	Dec.30	i(P) Z	00	05	45			
		(M) EN		20	..			
231		eL E	02	53	..			
		eL N		54	..			
		Lmax N		58.0				
232		eL EN	07	55.7				
233		eX Z	10	56	..			Minor near activity
234		iP Z	14	03	21	$1\frac{1}{2}$		Compression
		ipP Z		03	48			h about 150 Km
								USCGS 6S $105\frac{1}{2}$E
235		eP Z	23	58	52		8.2	Mag. M_L = 5
		iX Z		59	01		910 Km	
		iS SWZ	24	00	24			H = 23 56 52
236	Dec.31	eL EN	02	07.1				

No.	Date 1959	Phases		Time (GMT) h	m	s	per sec	degrees	Remarks
237	Dec 31 cont.	eX	SWZ	08	29	..			Minor near activity
238		iP	Z	10	31	51			Dilatation
		iX	SWZ		31	54			Mag $M_L = 5\frac{1}{2}$
		eX	Z		32	06			USCGS 3S $139\frac{1}{2}$E
		eX	N		33	33			
		eX	EN		34	15			
		iX	Z		35	17			
		eX	W		35	21			
		iX	Z		35	34			
		L_{max}	E		36.7		19		
		L_{max}	N		39.7		16		
239		eX	Z	20	46.	40			
240		eL	EN	21	01.6				
241		ePKP	Z	21	12	52			
		ePKP	Z		13	01			USCGS $37\frac{1}{2}$N 25W
242		eX	Z	23	43	53			
243		eL	EN	23	59	..			

J.A.BROOKS
(Observer-in-Charge)