

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

203 Collins Street,
MELBOURNE. VIC.

SEISMOLOGICAL BULLETIN

MACQUARIE ISLAND

DECEMBER 1958 to NOVEMBER 1959



Latitude: 54° 29' 55" S. Longitude: 158° 57' 22" E. Height: 14m.
Foundation: Weathered Basaltic Lava,
Instruments: Wood Anderson, two components.
Period: 1 sec.
Damping: 0.3 between April 14 and July 28;
otherwise 0.85.
Static Magnification: 2300
Grenet Vertical
Period: Seismometer 1.4. sec., galvanometer 0.8 sec.

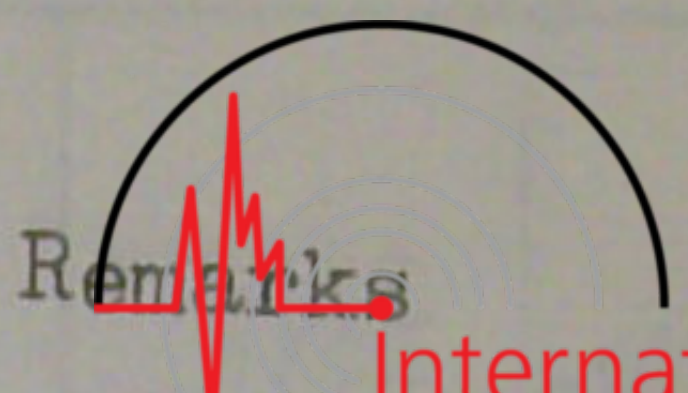
No.	Date	Phase	Time (G.M.T.)	Per.	Amplitude			Remarks
					A _N	A _E	A _Z	
			h. m. s.	s.	mm.	mm.		
1	Dec. 10	eP Z	07 07 31					USCGS: 37S 176½E
		iX NEZ	07 48					
		iX N Z	08 15					
		ipP Z	08 22					
		isP Z	08 48					
		iX Z	09 08					
		eX N	09 16					
		iX EZ	09 39					
		i(L) N	11 36					
2	25	iP Z	08 14 27					Dilatation.
		eX Z	14 46					H = 08 05 36
		eX Z	14 55					Δ = 5520Km.
		eS NE	21 32					USCGS: 5½S 151½E
		eX N	21 51					
3	Jan. 5	iP N Z	09 53 28					H = 09 46 (48)
		ePP NE	54 31					Δ = (3740)Km.
		eS N	58(47)					USCGS: 22S 171½E
4	6	i(P) Z	14 58 51					Dilatation.
								USCGS: 7½S 105½E
5	13	iP Z	21 26 21					USCGS: 25½S 180E
6	18	eiP NEZ	22 30 11					USCGS: 19S 178W
		epP Z	31(28)					
7	Feb. 3	eX Z	19 36 55					
		eX E	36 57					
8	9	iP Z	21 22 10					Dilatation.
		e(sP) Z	22 49					USCGS: 5S 154E
9	25	iP NEZ	23 41 42					H = 23 40 59
		iX N Z	41 47					Δ = 310Km.
		iX N Z	41 51					USCGS: 53S 160E
		iS NEZ	42 15					
10	28	eP Z	11 45 55					Δ = (830)Km.
		e(Lq) N	47 10					USCGS: West of
		e(Lr) NE	47(30)					Macquarie Island.
		M N	48.0	8	10			
		E	48.1	7		5		

No.	Date	Phase	Time (G.M.T.)	Per.	Amplitude			Remarks
					A _N	A _E	A _Z	
			h. m. s.	s	mm.	mm.		
11	Mar. 1	eP Z	16 58 59					USCGS: $1\frac{1}{2}$ S $134\frac{1}{2}$ E
		iX Z	59 12					
		iX Z	59 16					
		iX N	59 17					
		ipP Z	59 22					
		esP Z	59 32					
		eX Z	17 00 10					
		ePP Z	01 09					
		i(sPP) Z	01 46					
		eS N	07(08)					
		e(sSS) NE	11(01)					
		L max. E	20.9	15		1.8		
		L max. N	28.8	14	1.5			
12	April 6	iP Z	14 22 06					USCGS: 10S $120\frac{1}{2}$ E
13	8	eL N	07 45.4					
		L max. N	46.7	8	1.0			
		L max. E	46.9			0.8		
14	8	iP Z	08 09 31					USCGS: 17S $174\frac{1}{2}$ W
15	9	eP Z	06 28 26					USCGS: 36S 76E
16	10	iP NEZ	05 53 19					USCGS: 25S $178\frac{1}{2}$ E
		iX Z	54 09					
17	16	iP Z	16 25 54					Dilatation. USCGS: $12\frac{1}{2}$ N 143E
18	20	eX Z	07 36 50					
19	24	eX Z	18 04 14					USCGS: 31S 178W
20	26	iP NEZ	20 53 05					Dilatation. High Microseismic Background. $\Delta = (9560)$ Km. USCGS: 25N $122\frac{1}{2}$ E
		iPcP EZ	53 34					
		ipP EZ	53 45					
		isP Z	53 57					
		esP E	53 59					
		iX NE	54 10					
		ePP Z	56 27					
		iX Z	56 42					
		iX Z	57 17					
		eX Z	57 34					
		e(PPP) Z	58 27					
		eS NE	21 03.3					
		eX Z	05 28					
21	27	iP Z	09 57 30					USCGS: 7S 129E
22	May 3	eL NE	13 38 53					
23	4	ePP Z	07 34 29					h approx. 60Km. H = 07 15 42 $\Delta = 12,000$ Km. USCGS: $52\frac{1}{2}$ N $159\frac{1}{2}$ E
		e(sPP) Z	34 58					
		eX Z	35 09					
		iX Z	36 17					
		e(PPP) Z	37 07					
		eSKS NE	40 31					
		e(sSKS) N	41 06					
		eS E	41(48)					
		e(PS) N	44(10)					
		e(SS) N	50(12)					
		eL N	08 05.1					
		L max. N	05.9	36	1.3			
24	16	eP Z	06 25 14					h approx. 60Km. USCGS: $4\frac{1}{2}$ S $153\frac{1}{2}$ E
		iX NEZ	25 18					
		ipP NEZ	25 29					
		isP N Z	25 42					
		eS N	32.3					

No.	Date	Phase	Time (G.M.T.)	Per.	Amplitude			Remarks
					A _N	A _E	A _Z	
			h. m. s.	s.	mm.	mm.		
25	May 29	iP epP	NEZ Z	10 49 45 50 11				USCGS: 19S 169 $\frac{1}{2}$ E
26	June 28	iP ipP esP iPcP i(PP)	EZ NEZ N Z Z Z	19 52 49 52 59 53 09 53 42 54 47				Compression. USCGS: 9 $\frac{1}{2}$ S 122 $\frac{1}{2}$ E
27	July 3	eP ipP iPP i(pPP) e(sS) eLq eLr M	Z N Z Z N E E E	18 02 51 03 40 04 30 05 08 09 38 11.8 13.8 19.2				USCGS: 16S 172 $\frac{1}{2}$ E
28	11	e(Lr) M	N N	12 26.1 33 ..				USCGS: 36S 78E
29	12	iP	NEZ	00 31 15				USCGS: 19 $\frac{1}{2}$ S 177 $\frac{1}{2}$ W
30	20	iP eX	N Z Z	02 50 37 50 53				Dilatation. High microseismic back- ground. USCGS: 6S 110E
31	Aug. 4	eiP	Z	08 08 49				USCGS: 20 $\frac{1}{2}$ S 178W
32	10	eP iX eLq e(S) eLr L max. L max.	Z Z N N NE N E	00 38 14 38 18 39 28 39 38 39 50 40.3 41.1	7 6	9.8	3.4	$\Delta = (830)\text{Km.}$ USCGS: 55 $\frac{1}{2}$ S 146E
33	15	eP iX	Z Z	09 09 30 09 50				High microseismic background. USCGS: 23N 121E
34	16	iP iX iX	NEZ Z Z	10 00 44 01 16 02 14				Compression. USCGS: 18S 178W
35	17	eP ipP iX iX oS eScS eSS eX eL L max. L max.	NEZ Z Z Z NE N E E NE E N	21 13 16 13 26 13 40 15 31 20(08) 22(44) 23 17 26(18) 27.5 30.0 33.7	12 15		2.1	H = 20 04 (41) $\Delta = (5300)\text{Km.}$ USCGS: 7 $\frac{1}{2}$ S 156E
36	18	ePP eSKS eSS eSSS eLq eLr M L max.	EZ E E NE E E NE E	06 58 23 07 03 30 15.6 20.1 30.2 37.5 46 .. 56 ..	19 17	0.5	0.6 0.8	H = 06 37 (15) $\Delta = (14,200)\text{Km.}$ USCGS: 44 $\frac{1}{2}$ N 111W

Remarks

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Centre

No.	Date	Phase	Time (G.M.T.)	Per.	Amplitude			Remarks
					A _N	A _E	A _Z	
			h.m.s.	s.	mm.	mm.		
37	Aug. 21	eP eLq L max. L max. eScS	EZ NE N E NEZ	08 06(13) 08 29 09.8 11.3 18 46	8 6	19.6	15.5	 International Seismological Centre $\Delta = (1400)\text{Km.}$ USCGS: $50\frac{1}{2}\text{S } 139\frac{1}{2}\text{E}$
38	21	L max. L max. eX eScS eScS	E N Z E N	08 12.5 12.7 20 54 21 03 21 07	7 6	19.7	16.0	Probably near $50\frac{1}{2}\text{S } 140\text{E}$
39	21	eLq L max. L max. eScS	NE N E NEZ	09 43(04) 44.4 44.8 53 31	8 6	14.0	9.5	USCGS: $50\frac{1}{2}\text{S } 140\text{E}$
40	24	eLq eLr M L max.	E NE E N	21 49 .. 51 .. 55.0 56.5	14	1.2	2.4	USCGS: $10\frac{1}{2}\text{S } 161\text{E}$
41	Sept. 5	iP eLq eLr M	NEZ NE NE E	07 02 19 03.8 04.2 05.5				High microseismic background. USCGS: $62\text{S } 156\text{E}$
42	5	e(L)	NE	15 33.3				Probably Balleny Is. Area.
43	14	iP iX iX ePP eS eL M	Z Z Z Z N NE E N	14 16 02 16 31 16 36 17 10 21(00) 24.4 (28.6 (29.1	18 16	5.5	3.5	USCGS: $28\frac{1}{2}\text{S } 177\text{W}$
44	15	eL M	NE N E	06 16.4 (18.6 (19.0	16 16	(1.5)	(2.0)	High microseismic background. USCGS: $28\frac{1}{2}\text{S } 177\text{W}$
45	15	M	N	06 36.3		(1.6)		USCGS: Kermadec Is. aftershock.
46	15	iP	Z	11 11 55				USCGS: $21\frac{1}{2}\text{S } 179\frac{1}{2}\text{W}$
47	23	iP iS	NEZ NEZ	20 51 45 52 04				H = 20 51 20 $\Delta = 170\text{Km.}$ Macquarie Is. Area. Approximately $53\text{S } 162\text{E}$
48	29	eL	N	15 51 ..				USCGS: $29\text{S } 176\frac{1}{2}\text{W}$
49	Oct. 15	eiP iX eX eS eL	Z Z Z NE NE	06 26 05 26 24 26 57 34 40 57.6				H = 06 15 31 $\Delta = 7170\text{Km.}$ USCGS: $\frac{1}{2}\text{N } 120\frac{1}{2}\text{E}$
50	31	eiP	Z	04 34 25				USCGS: $16\frac{1}{2}\text{S } 178\text{W}$
51	Nov. 2	iP	Z	20 12 34				Compression. USCGS: $5\frac{1}{2}\text{S } 151\frac{1}{2}\text{E}$

No.	Date	Phase	Time (G.M.T.)	Per.	Amplitude			Remarks
					A _N	A _E	A _Z	
			h. m. s.	s.	mm.	mm.		
52	Nov. 3	iP eX	Z Z					USCGS: 10 $\frac{1}{2}$ S 111E
53	5	iP	Z					USCGS: 13S 166 $\frac{1}{2}$ E
54	15	iX iX eX	Z Z Z					
55	19	iP i(pP)	NEZ Z					High microseismic background. USCGS: 5 $\frac{1}{2}$ S 146E USCGS: 5 $\frac{1}{2}$ S 103E
56	26	i(P) eX	Z Z					
57	28	iP	Z					Dilatation. USCGS: 13S 167 $\frac{1}{2}$ E

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MACQUARIE ISLAND

Latitude: $54^{\circ} 29' 55''$ S. Longitude: $158^{\circ} 57' 22''$ E. Height: 14m.
Foundation: Weathered Basaltic Lava.
Instruments: Wood-Anderson, two components
Period : 1 Sec.
Damping : 20:1
Magnification : 2900.
Grenet Vertical.
Period : Seismometer 1.3 Sec., galvanometer 0.8 Sec.



No.	Date 1959	Phase	Time (G.M.T.)	Remarks
16	Jan. 5	iP NEZ e NE	09 53 28.6 55 22.8	USCGS: 22 S $171\frac{1}{2}$ E
17	" 5	iPg NEZ iPn Z iSg NEZ iSn NEZ	17 29 26.0 29 29.0 29 35.0 29 41.2	H = 17 29 12 Δ = 78 Km.
18	" 6	iPg NE iSg NEZ iP ^W NEZ iPn Z iSn NEZ	20 38 23.2 38 24.2 38 26.0 38 30.0 38 34.2	H = 20 38 22 Δ = 9 Km.
19	" 18	iP Z i NEZ	22 30 12.6 30 24.2	USCGS: 19 S 178 W
20	" 23	iPg Z iSg NEZ iS ^W NEZ iSn NEZ	17 02 43.4 02 49.1 02 51.8 02 57.2	H = 17 02 34 Δ = 54 Km.
21	" 25	iPg NEZ iSg NEZ	08 05 47.1 05 48.3	H = 08 05 46 Δ = 9 Km.
22	" 25	iPg NEZ iSg NEZ iP ^W NEZ iS ^W Z iPn NE iSn NEZ	09 07 19.9 07 21.1 07 22.3 07 23.9 07 26.5 07 30.9	H = 09 07 18 Δ = 9 Km.
23	" 25	iPg NEZ iSg NEZ iS ^W NE	11 43 25.5 43 27.9 43 31.5	H = 11 43 21 Δ = 22 Km.

No.	Date 1959	Phase	Time (G.M.T.)	Remarks
24	Jan. 26	iPg Z iPn Z iSg NEZ	22 46 16.9 46 18.5 46 30.7	H = 22 45 56 △ = 118 Km.
25	" 27	iPg Z iSg NEZ	18 15 00.7 15 10.4	H = 18 14 56 △ = 84 Km.
26	" 27	iPg Z iSg NEZ	05 37 00.5 37 02.4	H = 05 36 58 △ = 17 Km.
27	" 28	iP Z iSg NEZ	01 32 28.2 32 32.0	H = 01 32 22 △ = 33 Km.
28	" 30	iPg NEZ iSg NEZ	21 45 11.5 45 14.5	H = 21 45 07 △ = 26 Km.



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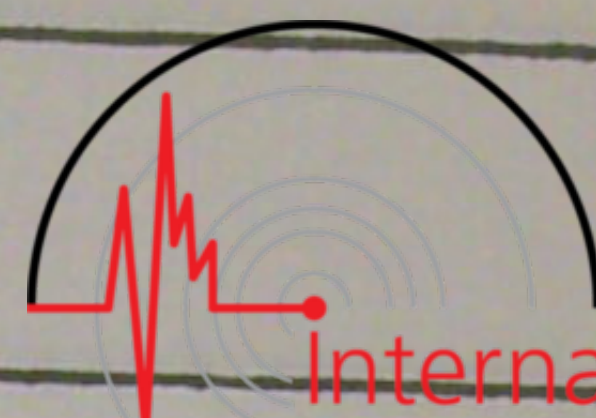
Grenet Vertical.

Period: Seismometer 1.3 Sec., galvanometer 0.8 Sec.

No.	Date 1959	Phase	Time (G.M.T.)	Remarks.
29	Feb. 3	e NEZ	19 36 57	
30	5	iP NEZ iS NEZ	13 11 31.0 11 49.6	H = 13 11 04 Δ = 153 Km.
31	9	iPg NEZ iSg NEZ	19 01 35.5 01 36.9	H = 19 01 34 Δ = 9 Km.
32	9	iPn NEZ iP ⁺ NEZ iS NEZ eL NE	21 22 10.7 22 18.7 23 04.9 23 09	H = 21 20 35 Δ = 511 Km.
33	15	iPg NEZ iSg NEZ	16 46 18.9 46 20.7	H = 16 46 16 Δ = 13 Km.
34	15	iPg NEZ iSg NEZ	21 23 15.5 23 15.9	H = 21 23 15 Δ = 3 Km.
35	17	iPg NEZ iSg NEZ	06 51 52.5 51 55.3	H = 06 51 45 Δ = 26 Km.
36	19	iPg NEZ iP ⁺ NEZ iSg NEZ	21 01 57.7 01 59.5 02 01.6	H = 21 01 52 Δ = 33 Km.
37	19	iPg NEZ iSn NE	21 13 20.9 13 32.9	H = 21 13 17 Δ = 23 Km. Sg inseparable from Pg.
38	19	iPg NEZ iSg NEZ iPn Z	21 14 44.9 14 47.5 14 50.7	H = 21 14 41 Δ = 23 Km.
39	19	iPg NEZ iP ⁺ NEZ iSg NEZ iPn NEZ iS ⁺ NEZ	23 28 33.3 28 35.3 28 36.9 28 38.7 28 40.3	H = 23 28 28 Δ = 31 Km.

No.	Date 1959	Phase	Time (G.M.T.)	Remarks
40	Feb. 25	iPg Z iSg Z	18 30 59.6 31 03.4	H = 18 30 54 Δ = 33 Km.
41	25	iP Z iPg Z iS NEZ iSg NEZ	18 31 08.6 31 10.8 31 31.6 31 37.2	H = 18 30 39 Δ = 175 Km.
42	25	iPn NEZ iP ^{ne} NEZ iPg NEZ iLq NE iS NEZ	23 41 42.0 41 47.4 41 51.2 42 05 42 15.2	H = 23 40 56 Δ = 300 Km.
43	26	iPg NEZ iSg NEZ	06 09 59.3 10 03.5	H = 06 09 53 Δ = 37 Km.
ADDITIONAL FROM JANUARY				
16	Jan. 5	iP NEZ ePP NE ePPP Z eS NE	09 53 29 54 34 54 52 58 44	H = 09 46 43 Δ = 3700 Km.
19	18	iP NEZ epPP Z	22 30 13 31 30	

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Period: 1 Sec.
Damping: 0.85
Magnification: 2200

Grenet Vertical.
Period: Seismometer 1.4 Sec., galvanometer 0.8 Sec.

No.	Date 1959	Phase	Time (G.M.T.)	Remarks
<u>Additional from February.</u>				
44	Feb. 28	eP Z elq NEZ	11 45 54 (?) 47 04	S wave lost in long waves.
45	March 1	eP Z iP NEZ ipP Z isP Z iPcP Z iPP Z ePcS NE eS NEZ eSS NE eL NE	16 58 59 59 12 59 23 59 33 17 00 12 01 10 03 37 06 25 09 59 11 07	H = 16 49 15 Δ = 6400 Km. h = 96 Km.
46	5	iPg Z iSg NEZ iS ^W Z	21 03 42.6 03 51.2 03 52.8	H = 21 03 29 Δ = 75 Km.
47	16	iP Z i NE	20 16 01 16 10	
48	17	iPg Z iSg Z	18 02 38.3 02 40.7	H = 18 02 35 Δ = 21 Km.
49	17	iPg Z iSg NE iPn Z iS ^W NE	18 02 52.1 02 54.5 02 58.3 02 58.7	H = 18 02 48 Δ = 21 Km.
50	24	iPg NEZ iSg NEZ iS ^W NE iPn Z	23 57 12.9 57 14.9 57 16.9 57 18.8	H = 23 57 10 Δ = 17 Km.



No.	Date 1959	Phase	Time (G.M.T.)	Remarks
51	March 25	iPn NZ iP [⊗] Z iPP NZ iLq NZ iSn NZ iS [⊗] N iBg NZ	14 57 49.4 57 56.2 57 56.5 58 04.1 58 12.4 58 17.5 58 32.4	H = 14 57 03 Δ = 304 Km. E-W component not recording.
52	25	iPn NZ iPP NZ iPPP NZ iLq NZ iSn NZ eSS NZ	15 00 10.1 00 15.5 00 23 00 31 00 40 01 03	H = 14 59 44 Δ = 297 Km.
53	30	iPn NEZ iP [⊗] Z iSn NEZ iPn Z	16 20 27.1 20 29.1 20 30.9 20 32.1	H = 16 20 21 Δ = 34 Km.

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No.	Date 1959	Phase	Time (G.M.T.)	Remarks
54	April 1	iPg NEZ iSg NEZ iSn NE	21 51 57.4 52 00.8 52 09.8	H = 21 51 52 Δ = 28Km.
55	7	iPg NEZ iSg NEZ iS [#] Z iSn NEZ	09 55 00.6 09 55 08.0 09 55 10.4 09 55 15.2	H = 09 54 50 Δ = 63Km.
56	7	iPg Z iSg Z iPn Z	19 31 25.5 31 28.4 31 30.6	H = 19 31 20 Δ = 28Km.
57	8	eL NEZ	07 46 -	
58	8	iP Z	08 09 31	
59	10	iP NEZ i Z	05 53 20 05 53 55	
60	10	iPg NE iSg NEZ iPn Z iS NE	04 40 43.6 04 40 46.0 04 40 48.8 40 49.8	H = 04 40 39 Δ = 26Km.
61	20	i Z	03 37 08	
62	26	iP NEZ	20 53 05	
63	26	iPg NEZ iSg NEZ iS NE iSn NEZ	23 19 22.6 19 25.0 19 28.6 19 31.4	H = 23 19 19 Δ = 20Km.
64	26	iSg NE	23 25 56	
65	27	iP NEZ	09 57 30	

No.	Date 1959	Phase	Time (G.M.T.)	Remarks
66	April 29	iPg NEZ iP [±] Z iSg NEZ iS [±] NEZ iSn NEZ	10 44 00.1 44 01.7 44 03.7 44 07.4 44 12.9	H = 10 43 55 Δ = 30 Km. 
Additional to 62	April 26	iP NEZ iPcP NEZ ipP NEZ isP NEZ iPP Z iPPP Z eS NEZ eScS NEZ ePPS Z eSS NE	20 53 05.4 53 32.0 53 44.2 53 57 56 40 59 29 21 03 25 03 39 05 11 08 37	H = 20 40 40 Δ = 9550 Km. h = 0.15

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67	May 1	iPg NEZ iLr Z iSg NEZ	11 21 41.2 21 44.6 21 46.6	H = 11 21 33 Δ = 47Km.
68	1	iPg NEZ iLr Z iSg NEZ	13 22 50.8 22 54.0 22 56.2	H = 13 22 42 Δ = 47Km.
69	3	eL NE	13 39	
70	4	iPP NEZ ipPP Z isPP NEZ iPPP Z eSKS NE eS NE eSS NEZ eL NE	07 34 29.5 34 58 35 07 37 08 40 37 41 09 49 47 08 05 13	H = 07 15 40 h = 65KM. Δ = 12,100Km. USCGS: $52\frac{1}{2}^{\circ}$ N $159\frac{1}{2}^{\circ}$ E.
71	15	iPg NEZ iSg NEZ	21 22 17.8 22 19.8	H = 21 22 15 Δ = 18Km.
72	16	iP NEZ isP NEZ	06 25 05 25 29	USCGS: $4\frac{1}{2}^{\circ}$ S $153\frac{1}{2}^{\circ}$ E.
73	18	iPg Z iSg NEZ	06 09 58.4 10 03.2	H = 06 09 51 Δ = 41Km.
74	20	iPg NEZ iPn NEZ iLr NE iSg NEZ	16 12 52.7 12 55.1 12 59.1 13 02.5	H = 16 12 38 Δ = 85Km.
75	23	iPg NEZ iSg NEZ	03 17 44.2 17 45.4	H = 03 17 42 Δ = 11Km.
76	24	iPg NEZ iSg NEZ	13 59 10.6 59 12.0	H = 13 59 08 Δ = 12Km.
77	29	iP NEZ ipP Z	10 49 46 50 12	USCGS: 19S $169\frac{1}{2}^{\circ}$ E.

(J.M. RAYNER)
DIRECTOR

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

No. 59/6

203 Collins Street,
MELBOURNE. VIC.



PROVISIONAL SEISMOLOGICAL BULLETIN
MACQUARIE ISLAND

Latitude: 54° 29' 55" S. Longitude: 158° 57' 22" E. Height: 14M.
Foundation: Weathered Basaltic Lava.

Instruments: Wood Anderson, two components
Period: 1 Sec.
Damping: 0.85
Magnification: 2200

Grenet Vertical
Period: Seismometer 1.4 Sec., galvanometer 0.8 Sec.

No.	Date 1959	Phase	Time (G.M.T.)	Remarks
78	June 2	iPg NEZ iSg NEZ	22 55 17.7 55 21.7	H = 22 55 11 Δ = 36KM.
79	3	iPg NEZ iLq NEZ iSg NEZ	12 07 22.8 07 23.6 07 25.6	H = 12 07 19 Δ = 24KM.
80	4	iPg NEZ iSg NEZ iS NE iSn NE	17 06 50.3 06 59.3 07 00.9 07 04.7	H = 17 06 36 Δ = 79KM.
81	10	iPg NEZ iSg NEZ iSn NE	13 10 15.9 10 20.5 10 28.3	H = 13 11 08 Δ = 40KM.
82	10	iPg NEZ iSg NE iSn NEZ	13 11 08.7 11 18.9 11 24.3	H = 13 11 03 Δ = 79KM.
83	23	iPg Z iPn NEZ iSg NEZ iS* Z iSn Z	04 52 18.5 52 20.7 52 30.3 52 32.1 52 34.9	H = 04 52 00 Δ = 102KM.
84	28	iP NEZ i Z	19 52 49 52 59	USCGS: 9 $\frac{1}{2}$ S 122 $\frac{1}{2}$ E.

(J.M. RAYNER),
DIRECTOR.

No. 59/71

COMMONWEALTH OF AUSTRALIA
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203 Collins Street,
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PROVISIONAL SEISMOLOGICAL BULLETIN
MACQUARIE ISLAND

Latitude: 54° 29' 55" S. Longitude: 158° 57' 22" E. Height: 14m.

Foundation: Weathered Basaltic Lava

Instruments: Wood-Anderson, two components

Period: 1 Sec.

Damping: 0.85

Magnification: 2200

Grenet Vertical.

Period: Seismometer 1.4 Sec., galvanometer 0.8 Sec.

No.	Date 1959	Phase	Time (G.M.T.)	Remarks
85	July 1	iP NEZ	04 27 32	
86	1	iP Z	09 10 52.3	H = 09 10 29 Δ = 140Km.
		iP Z	10 54.5	
		iS NEZ	11 09.3	
87	1	iP Z	09 15 09.7	H = 09 14 47 Δ = 125Km.
		iP Z	15 10.5	
		iS NE	15 24.3	
88	1	iP Z	09 22 54.9	H = 09 22 48 Δ = 37Km.
		iS NEZ	22 59.1	
89	3	iP Z	11 25 42.6	H = 11 25 40 Δ = 100Km.
		iS NEZ	26 04.0	
90	3	eL NE	18 09 -	USCGS: 16S 172 $\frac{1}{2}$ E.
		eL NE	18 18 -	
91	5	iP Z	09 11 14.4	H = 09 11 12 Δ = 14Km.
		iS NE	11 16.0	
92	6	iP Z	07 05 25.7	H = 07 05 18 Δ = 42Km.
		iS NEZ	05 30.3	
93	11	eL NE	12 34 -	USCGS: 36S 78E.
94	12	iP Z	00 31 06	USCGS: 19 $\frac{1}{2}$ S 177 $\frac{1}{2}$ W.
95	18	iP NEZ	05 54 11.2	H = 05 53 57 Δ = 80Km.
		iS NE	54 40.6	
		iS NEZ	54 22.2	
96	19	iP Z	08 04 26.7	H = 08 04 05 Δ = 120Km.
		iL NE	04 31.2	
		iS NEZ	04 40.9	
97	20	iP NEZ	02 50 37	USCGS: 6S 110E
98	23	iP NEZ	06 09 50.4	H = 06 09 40 Δ = 60Km.
		iS NE	19 57.0	
99	25	iP NE	02 07 51.0	H = 02 07 45 Δ = 36Km.
		iS NEZ	07 55.0	
		iS NEZ	07 58.0	

No.	Date 1959	Phase	Time (G.M.T.)	Remarks
100	July 31	iP NEZ iS NEZ iS Z iS NE	12 54 30.2 54 34.4 54 37.4 54 41.8	H = 12 54 24 Δ = 36Km



(J.M. RAYNER)
DIRECTOR.

No.	Date 1959	Time (G.M.T.)	Phase	Remarks
85	July 1	04 57 32	WHE	
86	1	08 10 52.3	Z	H = 08 10 52
		10 54.5	Z	
		11 09.3	WHE	
87	1	09 15 09.7	Z	H = 09 14 47
		15 10.5	Z	
		15 24.3	NE	
88	1	09 25 55	Z	H = 09 25 48
		25 59.1	WHE	
89	3	11 25 42.6	Z	H = 11 25 40
		26 04.0	WHE	
90	3	18 09	WE	USCGS: 168 175.5
		18 18	WE	
91	5	09 11 14.4	Z	H = 09 11 12
		11 16.0	WHE	
92	6	07 05 57.7	Z	H = 07 05 18
		07 30.3	WHE	
93	17	12 34	WE	USCGS: 368 166
94	18	00 31 06	Z	USCGS: 195 137.4
95	18	05 24 11.5	WHE	H = 05 21 57
		24 40.6	WE	
		24 55.5	WHE	
96	19	08 04 26.7	Z	H = 08 04 02
		04 31.5	WE	
		04 40.9	WHE	
97	20	03 30 37	WHE	USCGS: 68 108
98	23	06 09 50.4	WHE	H = 06 09 40
		19 37.0	WE	
99	28	02 07 37.0	WE	H = 02 07 45
		07 35.0	WHE	
		07 58.0	WHE	

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No. 59/8

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PROVISIONAL SEISMOLOGICAL BULLETIN

MACQUARIE ISLAND

Latitude: 54° 29' 55" S. Longitude: 158° 57' 22" E. Height: 14M.

Foundation: Weathered Basaltic Lava.

Instruments: Wood Anderson, two components

Period: 1 Sec.

Damping: 0.85

Magnification: 2200

Grenet Vertical

Period: Seismometer 1.4 Sec., galvanometer 0.8 Sec.



No.	Date 1959	Phase	Time (G.M.T.)	Remarks
101	August 4	iP Z iS NEZ	01 55 56.6 56 00.2	H = 01 55 52 Δ = 30Km.
102	4	iP NEZ	08 08 50	
103	10	iP NEZ iPP Z eLq NEZ eS NEZ	01 38 14 38 18 39 40 39 52	H = 01 36 08 Δ = 950Km.
104	12	eL NE		Already present when recording resumed after new switchboard connected at 10 23
105	13	iP NEZ iS NEZ	06 19 35.0 19 36.4	H = 06 19 33 Δ = 13Km.
106	15	e Z	09 09 31	USCGS: 23N 121E
107	16	iP NEZ i(pP) Z	10 00 45 01 14	USCGS: 18S 178W
108	17	iP NEZ iS NEZ	00 58 51.1 58 52.7	H = 00 58 49 Δ = 13Km.
109	17	iP NEZ iS NEZ	01 00 02.9 00 03.7	H = 01 00 00 Δ = 15Km.
110	17	iP NEZ ipP Z isP Z eS NE esS NE eLq NE	21 13 18 13 30 13 40 19 28 19 58 22.3	H = 21 05 30 h = 50Km. Δ = 4600Km. USCGS: 7 $\frac{1}{2}$ S 156E
111	18	iPP Z eSKS NE eSS NE eL NE	06 58 28 07 03 30 14.0 27.1	H = 06 37 03 Δ = 1420Km. USCGS: 44 $\frac{1}{2}$ N 111W
112	18	iP NEZ iS NEZ	20 20 22.4 20 27.0	H = 20 20 15 Δ = 40Km.
113	20	iP NEZ iS NEZ	10 06 08.1 06 09.7	H = 10 06 06 Δ = 14Km.
114	21	iP Z eS E eScS NEZ	08 06 15 08 38 18 42	H = 08 03 12 h = 60Km. Δ = 1440Km. USCGS: 50 $\frac{1}{2}$ S 139 $\frac{1}{2}$ E
115	21	iP Z eS NEZ eScS NEZ	08 08 35 10 58 21 02	H = 08 05 32 h = 60Km. Δ = 1440Km.

No.	Date 1959	Phase	Time (G.M.T.)	Remarks
116	August 21	i(PPP) Z eS E eScS	09 41 06 43 16 53 30	H = 09 37 43 Δ = 1440Km. USCGS: 50 $\frac{1}{2}$ S 140E
117	23	iP NEZ iS NEZ	11 04 50.8 05 12.4	H = 11 04 22 Δ = 170Km.
118	24	eL NE eL NE eM NE	21 47 30 49 00 50 00	
119	25	iP NEZ iS NEZ	13 44 01 44 46.1	H = 13 44 31 Δ = 53Km.



(J.M. RAYNER),
DIRECTOR

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No. 59/9

203 Collins Street,
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PROVISIONAL SEISMOLOGICAL BULLETIN

MACQUARIE ISLAND



Latitude: 54° 29' 55" S. Longitude: 158° 57' 22" E. Height: 14M.
Foundation: Weathered Basaltic Lava.

Instruments: Wood-Anderson, two components
Period: 1 Sec.
Damping: 0.85
Magnification: 2200
Grenet Vertical
Period: Seismometer 1.4 Sec., galvanometer 0.8 Sec.

No.	1959	Phase	Time (G.M.T.)	Remarks
120	Sept. 2	iP Z iS NEZ	08 51 57.8 52 12.0	H = 08 51 32 Δ = 135Km.
121	5	iP NEZ iPP Z eLq NE eLr NE	07 02 20 02 29 03 52 04 56	H = 07 00 08 Δ = 1000Km. USCGS: 62S 156E
122	5	eLq NE eLr NE	07 08 42 09 52	H = 07 05 06 Δ = 1000Km.
123	5	eL NE	15 33 40	
124	9	iP NEZ iS NEZ i NEZ	05 03 35.1 03 41.5 03 47.5	H = 05 03 25 Δ = 55Km.
125	14	iP Z i Z iPP Z eS NE eL NE eM NEZ	14 16 00.0 16 35 17 02 21 04 22 30 27 00	H = 14 09 43 Δ = 3440Km. Major P phase. USCGS: 28½S 177W
126	14	iP NEZ iS NEZ	14 22 50.0 22 52.5	H = 14 22 46 Δ = 22Km.
127	15	eL NE eL NE eL NE	06 16 20 22 50 35 40	Probably several shocks. USCGS: 28½S 176½W
128	15	i NEZ i Z	07 34 06 34 21	
129	23	iP NEZ iS NEZ ePcP Z	20 51 46.0 52 04.0 59 25	H = 20 51 00 Δ = 150Km.
130	25	iP NEZ iS NEZ	00 57 28.3 57 32.7	H = 00 57 21 Δ = 40Km.
131	26	iP Z iS NEZ	00 36 00.7 36 03.1	H = 00 35 57 Δ = 20Km.
132	29	e NE	15 51	USCGS: 29S 176½W

(J.M. RAYNER)
DIRECTOR.

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203 Collins Street,
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No. 59/10



PROVISIONAL SEISMOLOGICAL BULLETIN
MACQUARIE ISLAND

Latitude: $54^{\circ} 29' 55''$ S. Longitude: $158^{\circ} 57' 22''$ E. Height: 14M.
Foundation: Weathered Basaltic Lava.

Instruments: Wood Anderson, two components
Period: 1 Sec.
Damping: 0.85
Magnification: 2200

Grenet Vertical
Period: Seismometer 1.4 Sec., galvanometer 0.8 Sec.

No.	Date 1959	Phase	Time (G.M.T.)	Remarks
133	Oct. 13	iP NEZ	05 01 23.8	H = 05 01 09 Δ = 80Km.
		iS NEZ	01 33.2	
134	15	eP Z	06 26 04.4	H = 06 15 29 Δ = 7240Km.
		iP Z	26 07.8	h = 7.5Km.
		ipP NEZ	26 24.0	USCGS: $\frac{1}{2}$ N $120\frac{1}{2}$ E
		iPcP NEZ	26 36.8	
		eS NE	34 41	
		eL NE	41 30	
135	30	iP NEZ	00 28 04.0	H = 00 27 47 Δ = 95Km.
		iS NEZ	28 15.0	
136	31	iP NEZ	04 34 25	(USCGS: $16\frac{1}{2}$ S 178 W)

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DIRECTOR.

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

203 Collins Street,
MELBOURNE. VIC.



PROVISIONAL SEISMOLOGICAL BULLETIN

MACQUARIE ISLAND

Latitude: $54^{\circ} 29' 55''$ S. Longitude: $158^{\circ} 57' 22''$ E. Height: 14M.
Foundation: Weathered Basaltic Lava.

Instruments: Wood-Anderson, two components
Period: 1 Sec.
Damping: 0.85
Magnification: 2200
Grenet Vertical
Period: Seismometer 1.4 Sec., galvanometer 0.8 Sec.

No.	Date 1959	Phase	Time (G.M.T.)	Remarks
137	Nov. 2	iP NEZ	20 12 34	USCGS: $5\frac{1}{2}^{\circ}$ S $151\frac{1}{2}^{\circ}$ E.
138	3	iP NEZ iS NEZ	04 15 22.4 15 24.2	H = 04 15 20 Δ = 16 Km.
139	3	iP NEZ	09 50 00	USCGS: $10\frac{1}{2}^{\circ}$ S 111° E
140	12	iP Z iS NEZ	23 12 04.1 12 05.1	H = 23 12 03 Δ = 9 Km.
141	12	iP NEZ iL NEZ iS NEZ	23 22 53.7 22 57.1 22 58.5	H = 23 22 46 Δ = 43 Km.
142	19	iP NEZ iS NEZ i NEZ	03 02 16.8 02 20.2 02 25.6	H = 03 02 12 Δ = 30 Km.
143	19	iP NEZ i Z	11 18.3 11 18 56	USCGS: $5\frac{1}{2}^{\circ}$ S 146° E
144	26	iP Z	23 20 31	USCGS: $5\frac{1}{2}^{\circ}$ S 103° E
145	28	iP NEZ iS NEZ	16 57 07.0 57 09.0	H = 16 57 04 Δ = 17 Km.
146	30	iP NEZ iS NEZ	13 50 41.4 51 34.4	H = 13 49 30 Δ = 495 Km. Analysis doubtful.

(J.M. RAYNER)
DIRECTOR.

JUN 1 1960

No. 59/12

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

203 Collins Street,
MELBOURNE. VIC.

PRELIMINARY SEISMOLOGICAL BULLETIN

WILKES



Latitude: 66° 15' S.

Longitude: 110° 35' E.

Instruments: Lehner and Griffith long period
(Columbia Type) seismometers, 3 components
Lehner and Griffith recorder:
Galvanometer period: 90 Sec.

Date 1959	Phase	Time (G.M.T.)	Remarks
		h. m. s.	
Dec. 1	iP	15 04 16	USCGS: 63S 154E
	eS	07 34	
2	eP	07 40 02	USCGS: 9S 80W
	eS	48 18	
2	eP	09 44 48	USCGS: 1S 123E
	ipP	44 58	
	eS	53 33	
3	eP	02 00 42.5	
	eS	12 08	
3	eS	13 36 26	USCGS: 16½S 177½W Very small.
3	eL	20 00 00	
8	eLr	05 01 00	
8	eL	08 27 00	
8	eL	14 31 30	
9	eL	08 58 00	
10	eP	03 02 35	
	eS	06 46	
11	eP	00 42 26	USCGS: 5S 130E
	eS	50 37	
11	eP	01 49 10	USCGS: 23S 175W
	eS	57 29	
11	eL	10 00 30	
13	eL	06 08 00	
13	eP	17 47 12	USCGS: 18S 173½W
	eS	56 15	
14	eL	13 27 00	
14	iP	18 09 44	USCGS: 5½N 125½E
	ipP	10 14	
	iS	18 55	
	esS	19 48	
14	i	22 00 10	(USCGS: 1N 125E)
14	eL	22 38 00	

Date 1959	Phase	Time (G.M.T.)	Remarks
		h. m. s.	
Dec. 14	iP ipP eS	23 30 56 31 12 38 10	USCGS: $59\frac{1}{2}$ S 31W (possibly)
15	eLq	05 49 00	
15	iP eS	12 24 48 32 00	
15	eP eS	19 50 15 56 32	
17	eP eS	06 04 21 12 20	USCGS: $5\frac{1}{2}$ S $102\frac{1}{2}$ E
17	eP eS	17 00 38 10 19	
17	eL	18 20 30	
18	eL	09 09 00	
19	eL	16 03 30	
20	eL	17 32 00	
21	eP eS	01 31 20 38 42	
21	eSS eLq	10 30 23 40 15	USCGS: $27\frac{1}{2}$ S 176W
21	eS eLq	11 32 12 38 32	(USCGS: 14N 52E)
21	eL	12 01 00	
22	eL	00 52 00	
23	eL	04 58 00	USCGS: 28S 176W
24	e eL	07 28 30 30 15	
24	eL	09 44 00	(USCGS: $27\frac{1}{2}$ S $176\frac{1}{2}$ W)
24	e	13 30 13	(USCGS: 9N $126\frac{1}{2}$ E)
25	iP eS	03 58 54 06 48	USCGS: $27\frac{1}{2}$ S 176W
25	iP ipP iS	10 31 34 32 16 42 12	USCGS: $25\frac{1}{2}$ S 67W
27	iP epP iS esS	12 50 50 52 55 13 00 33 04 16	USCGS: 28S 63W
27	eP ePKP ePP	16 08 48 12 03 14 06	(USCGS: 56N $162\frac{1}{2}$ E)
28	e	07 41 23	USCGS: $52\frac{1}{2}$ N 160E
28	eL	14 00 00	
29	eL	07 38 00	
29	eP eS	17 25 23 34 02	USCGS: $21\frac{1}{2}$ S 174W
29	eP eS	20 48 48 57 27	USCGS: 18N 145E

Date 1959	Phase	Time (G.M.T.)	Remarks
		h.m.s.	
Dec. 31	eP	10 40 47	USCGS: 3S 139 $\frac{1}{2}$ E
	eS	49 01	
31	eL	17 29 00	
31	e(P)	20 41 35	
	eS	44 56	
31	e(P)	23 38 51	
	e(S)	42 10	
31	e(S)	23 44 05	
	eL	44 21	



(J.M. RAYNER)
DIRECTOR.