

DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Magnetic Survey,  
Christchurch,  
NEW ZEALAND.

International  
Seismological  
Centre

17th January, 1951.

CHRISTCHURCH PROVISIONAL READINGS

1951

1d	e	(S)NE	3 39 32
1d	iP	ZNWA	20 21 48
	ipP	Z	22 08
	iPP	Z	22 26
	S	ENZ	26 07
csS	iSS and	EN	26 44
	SS		
	e	Z	24 10
	Lr	Z	28 50
		100 km. ca. 25° ca.	
3d	eP	WAZ	2 16 15
	eS	NEZWA	17 30
3d	e		6 34 ca
3d	e		8 45 ca
3d	e		12 24 ca
3d	e		13 05 ca
3d	e		13 48 ca
3d	eP	WA	15 57 20
	eS	NEZ	58 35
3d	e		18 00 ca
3d	e		18 42 ca
4d	e		22 30 ca
5d	e		01 42 ca
5d	e		<del>01 42 ca</del> 13 40

6d	e	Z	5 38 02
	e	Z	38 28
	e	Z	41 04
	e	EN	47 00
	e	Z (EN)	48 14
	e	EN	54 00

Disturbed horizontal records. No surface waves.

6d	eSKS	E	8 16 34
	e(PS)	E	19 10
	ePPS	EZN	20 35
	SS	EN	25 10
	SSS	EN	30 00
	eLq	N	36 00
	eLr	ZE	41 05

104° ca.

6d	iP	ZN	18 13 31
	e	Z	14 46
	Lq	EN	17 40
	Lr	Z	18 50
	(S <sub>c</sub> S)	Z	24 12

7d	e		18 17 ca
8d	eP	WA	12 00 52
	eS	EN	02 06
8d	eP	WA	15 01 46
	eS	E	02 50
8d	e		18 20 ca
8d	e		21 46 ca

H. F. Baird,  
DIRECTOR.



DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

25th January, 1951.

Magnetic Survey, Botanic Gardens,  
Christchurch, NEW ZEALAND.

International  
Seismological  
Centre

Continuation: January 1951

1951  
Jan.

CHRISTCHURCH PROVISIONAL READINGS

1951 Jan.			Jan.		
10d	e	8 35 ca	15d	i!P	ZNE 4 18 03 28°
				Compression from NNW.	
10d	e	10 22 ca		i!PP	ZN 19 00
10d	P	WAZ 14 20 11		i!S	N(Z) 22 48
	i	WA 20 17		eS	E 23 10
	S	WA 20 22		Lq	E 24 20
				(S <sub>C</sub> S)	E 28 30
The first of the series of shocks at Cheviot, Canterbury			15d	e(P)	EN 10 48 30
				e(S)	EN 53 00
10d	P	WAZ 19 13 28		eLq	EN 55 00
		Cheviot		eLr	Z 56 55
10d	P	WAZ 19 15 34	15d	e	15 00 ca
		Cheviot, main shock			
10d	P	WAZ 19 23 31			
		Cheviot	16d	e	11 17 ca
11d	P	WA 12 46 19	16d	P	ZN 13 19 26
	S	WA 46 30		e(S)	NEZ 23 40
		Cheviot		eLr	Z 26 00
12d	eP	WA 10 42 55	16d	S	ENZ 22 46 42
	iP	Z 42 56		e	ENZ 47 20
		Cheviot		eLr	Z 48 55
13d	iP	ZWA 6 42 05	17d	e	1 06 ca
		Cheviot	17d	eP	WA 16 04 32
13d	iP	ZWA 19 36 49		eS	EN 05 54
		Cheviot	17d	eP	WA 16 57 28
14d	e	6 50 ca		iP	Z 57 29
14d	P	ZN 10 24 18			Cheviot
	S	EN 28 16	22d	eP	WA 10 36 04
	eLq	NE 29 10		e(S)	EN 36 50
	Lr	Z 30 45	22d	e	13 07 ca
14d	(e)	13 32 ca			
14d	e	19 30 ca			

H.F. Baird  
Director



DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

2nd February, 1951.

Magnetic Survey, Botanic Gardens,  
Christchurch, NEW ZEALAND.

International  
Seismological  
Centre

Continuation: January 1951.

CHRISTCHURCH PROVISIONAL READINGS

1951  
Jan.

#12	23d	P	ZN	6 59 57	32°	In large microseisms
		ePP	Z	7 00 55		
		S	NE	05 10		
		eLq	EN	06 55		
		e	Z	07 35		
		Lr	EZ	08 55		
	24d	e		5 33 ca		In large microseisms
	25d	e		17 25 ca		In large microseisms
	26d	iP	ZWA	11 22 58		Dilatation. Cheviot, Canterbury
	28d	e		14 06 ca		
	29d	e		6 30 ca		
	31d	e		4 24 ca		

H.F. Baird  
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DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Magnetic Survey, Botanic Gardens,  
Christchurch, NEW ZEALAND.

16th February, 1951.

International  
Seismological  
Centre

Continuation: Jan-Feb 1951

1951 CHRISTCHURCH PROVISIONAL READINGS

1951					Feb.				
Jan.					<u>13d</u>	iP	ZNE	12 01 36	30° ca
	30d (e)		9 03 ca			Dilatation from N ca.			250km. ca.
	30d e		11 30 ca			pP	Z	02 26	
						isP	ZNE	02 57	
						e	NZ	03 45	
	31d e		4 24 ca			e	NE	05 58	
						iS	NE	06 12	
						esS	N	07 52	
Feb.						i(ss or			
	2d e		19 50 ca			PcS)	Z	07 57	
						i	Z	09 27	
						i	Z	09 53	
	7d e		0 42 ca		13d	P	Z	22 27 05	98° ca.
						ePP	NZ	31 16	
	8d e(S)	NEZ	10 47 00			ePPP	Z	33 55	
	eLr	Z	49 05			SKS	NEZ	37 26	
						S	ENZ	38 36	
					PS	<del>SKKS</del>	NZE	40 09	
	10d iP	ZEN	3 29 04			eSS	EN	45 40	
	Compression. Local earthquake, felt at Hastings and Napier, North Island.					eSSS	N	49 30	
						eLq	E	55 10	
						Lr	Z	23 00 00	
	10d eP	Z	22 01 25	50° ca					
	ePP	Z	03 30						
	eS	EN	08 50						
	eLq	EN	12 30						
	eLr	Z	18 00						
	Interpretation doubtful. All phases very weak.								
	12d e		18 10 ca						
	13d e		01 45 ca						

H.F. Baird  
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DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

23rd February, 1951.

Magnetic Survey, Botanic Gardens,  
Christchurch, NEW ZEALAND.

International  
Seismological  
Centre

Continuation: February, 1951.

CHRISTCHURCH PROVISIONAL READINGS

1951  
Feb.

						Feb					
						20d					
16d	(e)	EN	19	17	50	e	EN	15	29	00	
	i(S)	N		18	33	e	N		42	30	
	eLr	Z		23	05	e	E		43	45	
17d	e		19	38	ca	e	E		47	35	
						eL	N		50	50	
						eLr	ZE		53	45	
17d	iP	ZNE	21	14	54						
	Dilatation from NW.					21d	eP	WA	7	21	52
	ipP	ZNE		15	33		S	WANEZ		23	32
	PP	Z		16	34						
	iS	Z		21	06						
	iS!	NE		21	07	22d	e(S)	N	2	06	00
	sS	NE		22	10		eLq	N		07	25
	iS <sub>c</sub> S!	NE		24	36		eLr	ZE		10	30
	eLq	NE		25	10						
	eLr	Z		28	00						
19d	e		10	16	ca						
19d	e	NE	22	30	19						
	e	N		31	55						
	e	E		34	38						
	Lq	N		36	45						
	Lr	ZE		39	30						
20d	(eP)	Z	00	08	13						
	P	ZNE		08	16						
	e	Z		09	34						
	eS	EN		12	12						
	iS	EN		12	17						
	Lr	Z		13	30						
20d	e		10	40	ca						

H.F. Baird  
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DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Magnetic Survey, Botanic Gardens,  
Christchurch, NEW ZEALAND.

5th April, 1951.

International  
Seismological  
Centre

Continuation: March 1951

CHRISTCHURCH PROVISIONAL READINGS

1951  
Mar.

1d	iP iS	WAZ WAZ	7 43 22 43 33	Local earthquake. In large microseisms.
2d	e		1 10 ca	In large microseisms.
2d	iP ipP e PP iS SS eL <sub>q</sub> eL <sub>r</sub>	Z Z Z Z ENZ ENZ EN Z	22 17 30 17 53 18 39 19 13 23 50 27 10 27 30 30 15	Compression. 43°

H.F. Baird  
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DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Magnetic Survey, Botanic Gardens,  
Christchurch, NEW ZEALAND.

14th March, 1951.

Continuation: February-March 1951



1951  
Feb. CHRISTCHURCH PROVISIONAL READINGS

25d e 7 20 ca  
27d e 13 09 ca

Mar.

3d S NEZ 18 13 59  
Lq NE 17 10  
Lr Z 19 00

5d e 18 22 ca

5d e 20 46 ca

6d e(P) NEWA 1 28 50 Local earthquake

8d iP ZWA 15 19 47 43°ca  
eS ENZ 26 20  
eLq NE 28 55  
eSS Z 29 15  
eLr ZN 32 25

9d iP ZWAN 7 06 23 Local Earthquake

9d P Z 19 53 46 54°  
i Z 54 01  
i(pP) Z 54 14  
PcP Z 54 57  
S ENZ 20 01 22  
eScS EN 03 35  
SS ENZ 05 40  
eSSS ENZ 07 20  
eLq NE 07 00  
Lr Z 10 10

#33

10d iP Z 22 03 16 Local earthquake

H.F. Baird  
Director



22nd March 1951.

1951  
Mar.

CHRISTCHURCH PROVISIONAL READINGS

Additional:

9a	i(P)	Z	16 14 22
	e(S)	NZ	17 30

In large microseisms.

Re-interpretation:

10d	iP!	ZNE	22 03 15
	PP	ZN	04 02
	S	NE	08 00

29<sup>0</sup>. In very large microseisms

Continuation:

17a	eL	EZ	5 28 ca
17a	S	NE	5 35 02
	eL <sub>q</sub>	NE	36 50
	eL <sub>r</sub>	Z	39 20
17a <sup>3/4</sup>	S	EN	10 04 50
	eL <sub>q</sub>	NE	07 30
	eL <sub>r</sub>	Z	08 50
17a	eS	ENZ	16 05 45
	e(SSS)	EN	13 55
	eL <sub>q</sub>	EN	15 15
	eL <sub>r</sub>	ZE	19 45

H.F. Baird  
Director



DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Magnetic Survey, Botanic Gardens,  
Christchurch, NEW ZEALAND.

30th March 1951.

Continuation: March 1951.

International  
Seismological  
Centre

1951  
Mar. CHRISTCHURCH PROVISIONAL READINGS

23d	iP	Z	21 41 49	12°
	P	WA	41 50	
	iS	Z	44 07	
	S	WAEN	44 08	

24d	iP!	ZNWA	0 24 05	33°
	i(pP)	Z	24 36	
	iS	NE	29 13	
	e(SS)	E	31 20	
	SS	ZN	31 45	
	eL <sub>g</sub>	EN	32 10	
	i(S <sub>c</sub> S)	N	34 18	

In large microseisms.

Deeper than normal?

#37

25d	e		18 58 ca	
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27d	e		14 00 ca	
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28d	iP	Z	1 57 01	
	P	WA	57 02	
	iS	WAZ	58 24	
	i	ZN	58 10	

Local earthquake. Origin near  
Hawkes Bay, North Island.

28d	e		10 15 ca	
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28d	eL		10 38 ca	
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H.F. Baird  
Director



DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

19th April, 1951.

Magnetic Survey, Botanic Gardens,  
Christchurch, NEW ZEALAND.

International  
Seismological  
Centre

Continuation: April 1951.

1951  
Apr.

CHRISTCHURCH PROVISIONAL READINGS

7d (P) Z 09 33 48  
e(S) N 39 40  
eLq NE 42 20  
eLr ZN 44 30

7d P Z 15 54 58  
Local earthquake

8d e 4 51 ca

#45  
10d eP ZN 11 01 58  
eS NE 06 55  
eSS EN 08 40  
eLr Z 10 40

31°ca

11d e 15 00 ca

13d P Z 10 24 27  
e(sP) Z 25 50  
e(P<sub>c</sub>S) Z 29 20  
S NEZ 32 19  
eSS EZN 36 00  
eSSS Z 39 50  
eLr Z 42 00

#48  
14d iP Z 00 58 21  
e Z 59 33  
iPP Z 01 02 08  
e Z 06 50  
SKS EN 08 38  
ePS ENZ 10 02  
e NE 11 34  
eSS NE 15 30  
e(SS) Z 14 50  
e Z 16 40  
e(SSS) Z 18 55  
eLr Z 28 00

Dilatation

Disturbed record. Surface waves comparatively small. Depth greater than normal?

14d eP Z 5 46 54  
S ENZ 49 50  
eLr ENZ 51 10

14d e(L) 13 46 ca

14d e EN 14 11 00  
e N 17 10  
eLr Z 25 00

14d e 15 54 ca

H.F. Baird  
Director



DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Magnetic Survey, Botanic Gardens,  
Christchurch, NEW ZEALAND.

3rd May, 1951.

International  
Seismological  
Centre

Continuation: April-May 1951

1951 CHRISTCHURCH PROVISIONAL READINGS  
Apr.

16d e(S) EN 5 27 44  
eL<sub>r</sub> Z 30 15

16d e 22 50 ca

18d i Z 01 12 23  
e Z 13 25  
eL<sub>r</sub> ZN 17 10  
i Z 20 03

23d P ZWA<sup>3</sup>/<sub>4</sub> (6) 52 03  
i WA 52 18  
i WA 52 34  
i WA 52 52  
i(S) WA 53 20

28d eL<sub>q</sub> NE 22 31 15  
eL<sub>r</sub> Z 33 00

30d P ZNE 15 35 28  
pP ZN 36 11  
esP Z 36 34  
ePP ZNE 37 03  
e N 39 17  
e(S<sub>c</sub>P) Z 40 45  
eS ENZ 41 18  
SS ENZ 44 15  
eL<sub>r</sub> Z 46 30

Δ = 40° h = 200 km. ca.

May  
1d imp! ZEN 05 06 46  
S NEZ 10 22  
eL<sub>r</sub> Z 11 40

Compression from WSW.

H.F. Baird  
Director



DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

10th May, 1951.

Magnetic Survey, Botanic Gardens,  
Christchurch, NEW ZEALAND.

International  
Seismological  
Centre

Continuation: May 1951

1951  
May

CHRISTCHURCH PROVISIONAL READINGS

1d	iP	ZN	21 58 52	In large microseisms
	eS	NE	22 02 08	
	eLr	Z	03 50	
2d	(iP)	Z	16 28 06	In large microseisms
	S	EN	36 28	
	SS	EN	40 35	
	eLq	EN	44 00	
	eLr	ZEN	48 30	
4d	e		10 39 ca	
6d	eLr	ZNE	23 44 20	

H.F. Baird  
Director



DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

17th May, 1951.

Magnetic Survey, Botanic Gardens,  
Christchurch, NEW ZEALAND.

International  
Seismological  
Centre

Continuation: May 1951.

1951		<u>CHRISTCHURCH PROVISIONAL READINGS</u>		
<u>May</u>				
10d	e		10 10	ca
12d	e		9 44	ca
13d	e		9 40	ca
13d	e		12 26	ca
13d	e		14 34	ca
13d	S	NE	17 12	11
	eL <sub>r</sub>	Z	14 50	
14d	e(S)	N	4 08	10
	eL <sub>r</sub>	Z	11 00	
15d	e		01 27	ca
15d	eP	Z	4 36	48
	eS	N	41 20	
	eL <sub>q</sub>	E	42 30	
	eL <sub>r</sub>	E	44 35	

H.F. Baird  
Director



DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

8th June 1951

Magnetic Survey, Botanic Gardens,  
Christchurch, NEW ZEALAND.



Continuation: May-June 1951

1951 CHRISTCHURCH PROVISIONAL READINGS  
May

				<u>May</u>				
15d	e(S)	E	11 42 25	<u>29d</u>	iP	ZNE	06 12 04	
	eL <sub>r</sub>	ENZ	47 15		PP	ZNE	13 57	
					PPP	ZNE	15 12	
18d	e		06 55 ca	#79	iS	N	19 14	
					eS	EZ	19 26	
					SS	NEZ	22 50	
21d	iP	ZWA	8 34 52		eL <sub>q</sub>	EN	24 20	
	(pP)	N	35 30		e(L <sub>r</sub> )	Z	26 40	
	pP	Z	35 40		eL <sub>r</sub>	Z	27 20	
	ePP	ZN	36 32			$\Delta = 50^\circ$		
	e	ZN	37 15	29d	e		16 03 ca	
	S	NEZ	40 47					
	e	NE	41 25	30d	e	Z	20 07 30	
	SS	NEZ	43 45		eL	ENZ	14 55	
	(S <sub>c</sub> S)	Z	44 15					
	eL <sub>r</sub>	Z	47 25	31d	iP!	ZNWA	21 07 51	
	$\Delta = 41^\circ$ ca, h = 200 km. ca.				Compression (from NNW?)			
	In large microseisms				pP	Z	08 20	
24d	e		16 00 ca	#81	iPP	Z	10 52	
25d	e		06 33 ca		iS	ENZ	17 42	
					e	EN	18 15	
27d	iP	Z	05 32 09 $\frac{1}{2}$		eSS	EN	23 00	
	Local earthquake				eL <sub>q</sub>	NE	29 00	
					eL <sub>r</sub>	Z	33 10	
					$\Delta = 79^\circ$ , h = 100 km. ca.			
27d	e(P)	ZN	15 03 26	<u>June</u>				
	e(L)	E	07 32	2d	e		07 26 ca	
	eL <sub>r</sub>	ZN	08 35	2d	e		14 09 ca	
28d	e(S)	EN	20 07 44					
29d	iP	Z	04 01 36					
	Local earthquake							
	S	ZEN	02 12					

H.F. Baird  
Superintendent



DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Magnetic Survey, Botanic Gardens,  
Christchurch, NEW ZEALAND.

14th June 1951.

Continuation: June 1951



1951  
June

CHRISTCHURCH PROVISIONAL READINGS

5d	e	ZN	17	10	10	Horizontal components disturbed
	e	Z		14	40	
	e(S)	NEZ		20	30	
	e(L)	N		22	15	
	e(L)	N		25	10	
6d	e	ZN	17	22	15	Horizontal components disturbed
	eL <sub>r</sub>	ZNE		31	ca	
7d	(e)	ZN	11	47	15	
	e	ZN		51	00	
	eL <sub>r</sub>	Z		55	00	
7d	(e)	Z	23	03	05	
	eP	Z		03	18	
	e(S)	Z		06	23	
	eS	ZNE		06	34	
	L <sub>r</sub>	ZE		07	56	
8d	e		22	30	ca	

H.F. Baird  
Superintendent



DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

28th June 1951.

Magnetic Survey, Botanic Gardens,  
Christchurch, NEW ZEALAND.

International  
Seismological  
Centre

Continuation: June 1951

1951 CHRISTCHURCH PROVISIONAL READINGS  
June June

5d eP ZNE 17 10 10  
ePP ZN 14 05  
ePPP Z 15 40  
eSKS ENZ 20 28  
ePS N 22 00  
eSS N 25 40  
e(SSS) N 29 00  
eLr Z 38 30  
Horizontal components disturbed

6d e ZN 17 22 15  
eLr ZNE 31 ca  
Horizontal components disturbed

7d (e) ZN 11 47 15  
e ZN 51 00  
eLr Z 55 00

7d (e) Z 23 03 05  
eP Z 03 18  
e(S) Z 06 23  
eS ZNE 06 34  
Lr ZE 07 56

8d e 22 30 ca

15d e 20 54 -  
Beginning lost during changing of records

20d e 23 16 ca

20d eP Z 23 45 34  
Local earthquake

21d e 00 18 ca

21d eL EN 07 39 ca

21d e 17 48 ca

22d eP WA 08 37 40 ca  
Local earthquake

23d e 13 50 ca

24d The record of the local earthquake near Hastings at 04h 40m ca was lost as it occurred during a power cut.

24d e(S) N 11 28 20  
eL NE 32 10  
Horizontal components disturbed

24d P ZWA 16 57 02  
e(S) N 03 10  
eL N 06 35  
eL E 08 30  
Horizontal components disturbed

25d e(S) N 16 02 00  
eL EN 03 50  
eL N 08 30  
In large microseisms  
Horizontal components disturbed

25d eP WAZ 18 35 54  
S EN 37 04  
Local earthquake

26d e 04 40 ca

H.F. Baird  
Director



July 1951 (Ctd)



29d	iP	Z	23	43	06
		Dilatation			
	(e)	Z	44	15	
	(e)	E	49	45	
	eS	EN	50	45	
	eSS	NE	54	55	
	eLq	EN	56	00	
	(eLr)	Z	58	30	
			$\mu$	sec.	
	P	Z	7	7	
	SS	H	6	20	
	Max Z		6	15	
	Max H		15	18	

Surface waves small

H.F. Baird  
Director



DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

17th August 1951

Magnetic Survey, Botanic Gardens,  
Christchurch, NEW ZEALAND.



Continuation: July 1951

1951  
July

CHRISTCHURCH PROVISIONAL READINGS

					15d	iP	Z	07 47 32	
1d	e(S)	N	18 21 20		Local earthquake				
	eL	NE	24 25						
In large microseisms. Horizontal components disturbed					16d	iP	Z	10 48 17	
					Compression				
2d	eL	NE	21 57 30		ipP	ZNE		48 48	
In large microseisms.					isP	Z		49 00	
					ePP	Z		50 25	
7d	P	WAZ	10 16 23		S	ENZ		54 41	
	S	WAZ	17 01		i	ENZ		55 16	
Local earthquake. In large microseisms					(isS)	NE		55 25	
					e(SS or S <sub>c</sub> S)	ENZ		58 00	
					SSS	EN		59 00	
					eL	Z		11 01 30	
					$\Delta = 44\frac{1}{2}^\circ$ ; h = 130km. ca. In large microseisms.				
								$\mu$	sec
					pP	Z		7	5
					sP	Z		8	5
					S	H		15	10
					sS	H		20	14
					SSS	H		20	15
					Max Z			15	18
					Max H			30	22
8d	eP	EN	5 55 35						
	ePP	EN	58 12						
	S	N	6 04 45						
	eSS	EN	10 00						
	eSSS	EN	12 30						
	eL <sub>q</sub>	NE	15 30						
	(L <sub>r</sub> )	E	20 00						
$\Delta = 70^\circ$ . In large microseisms									
10d	e		11 31 ca						
In large microseisms									
10d	P	ZNE	22 23 42		17d	eS	EN	07 37 58	
	e	E	26 00			eL <sub>q</sub>	E	39 30	
	e(L <sub>q</sub> )	NE	27 30			eL <sub>r</sub>	Z	41 40	
	eL <sub>r</sub>	Z	30 20						
In large microseisms					17d	eS	E	14 59 15	
						eL <sub>q</sub>	EN	15 00 25	
11d	i(S)	N	18 42 12		18d	PP	ZNE	9 28 30ca	
	eS	EN	42 26			PP	Z	$\mu$ 5 18	
	sS	EN	45 21			PP	H	3 22	
	eSS	NE	46 40			SS	H	45 30	
	eSSS	EN	50 10			Max Z		50 18	
	eL <sub>q</sub>	E	52 55			Max H		55 18	
Horizontal components disturbed					No time marks during this period				
13d	(P)	Z(N)	20 01 39		19d	e		21 28 ca	
	iP	ZN	01 47		22d	e		16 58 ca	
	i	Z	01 56		26d	e		7 00 ca	
	pP	Z	02 14		26d (e)			10 45 ca	
	i(sP)	Z	02 24		27d	e		00 46 ca	
	PP	ZN	03 32						
	S	NEZ	08 01						
	iS <sub>c</sub> S	EN	11 30						
	eL <sub>r</sub>	Z	14 15						
Compression. $\Delta = 43^\circ$ , h = 120km ca									
P(Z)	$\mu$ 3	Sec 3							
S(H)	17	7	Max H	$\mu$ 30	Sec. 21				
S <sub>c</sub> (H)	(15)	(8)	Max Z	15	22				
14d	eS	NE	06 34 45						
	eL <sub>q</sub>	N	37 00						
	eL <sub>r</sub>	Z	38 55						



25th September 1951

Magnetic Survey, Botanic Gardens,  
Christchurch, NEW ZEALAND.

International  
Seismological  
Centre

Continuation: August 1951

1951 CHRISTCHURCH PROVISIONAL READINGS

Aug.

2d iP Z 03 47 38  
 i(pp) Z 49 22  
 #136 e(sp) Z 50 10  
 e ZN 51 30  
 iS NZE 53 17  
 eSS NE 56 00  
 eS<sub>c</sub>S ZEN 56 38  
 Δ = 42°, h = 500km. ca.

		μ	sec.
P	Z	6	4
S	Z	7	6
S	H	20	6

2d eP ZE 10 24 44  
 ePP Z 26 42  
 S ENZ 31 48  
 e NE 34 30  
 eSS NZ 35 35  
 eL<sub>q</sub> NE 36 00  
 eL<sub>r</sub> Z 38 10  
 Δ = 48°

		μ	sec.
S	Z	5	12
S	H	25	15
Max	Z	30	17
Max	H	45	18

3d e 01 13 ca

5d eS N 15 43 50  
 eL<sub>q</sub> NE 45 15  
 eL<sub>r</sub> Z 47 05

6d (P) Z 15 18 28  
 ePP ZNE 20 10  
 ePPP ZNE 20 52  
 #139 e(S) Z 24 30  
 eS ENZ 24 40  
 eSS NEZ 27 35  
 eL<sub>r</sub> Z 30 20  
 Δ = 41° ca.

		μ	sec.
S	H	12	28
Max Z		12	18
Max H		25	20

7d eL<sub>q</sub> EN 11 05 40  
 eL<sub>r</sub> Z 08 30

12d e(S) EN 21 31 50  
 eL<sub>r</sub> ZE 36 50  
 In large microseisms

		μ	sec.
Max Z		10	22
Max H		15	22

13d e 18 21 ca  
 In large microseisms

13d ePKP Z 18 53 34  
 i Z 54 15  
 ePP Z 57 35  
 ePPP Z 19 00 30  
 and SKS  
 eSKKS EN 03 50  
 eSKSP E 07 10  
 ePPS EZ 10 10  
 e EZ 15 45  
 eSS NE 16 20  
 eSSS EN 22 15  
 eSSSS EN 26 30  
 eL<sub>q</sub> N 36 40  
 Δ = 150° ca. In large microseisms  
 eL<sub>r</sub> Z 48.30

		μ	sec.
PP	Z	4	11
SSS	H	30	35
L <sub>q</sub>	N	50	50
Max	Z	30	19
Max	H	40	19

16d eP WA 16 07 56  
 eS WA 11 07

17d P Z 05 55 35  
 eS EN 59 20  
 eL<sub>r</sub> Z 06 01 00  
 Max Z 10 10  
 Max H 25 10

18d eP Z 03 48 25  
 eS NE 57 25  
 eL<sub>q</sub> N 04 04 30  
 eL<sub>r</sub> ZN 10 00

		μ	sec.
L <sub>q</sub>	H	10	40
Max	Z	5	22
Max	H	6	20

21d iP ZNE 11 08 06  
 Dilatation  
 ePP ZN 11 15  
 ePPP Z 12 40  
 S ENZ 17 10  
 #148 eS<sub>c</sub>S E 18 10  
 eSS EN 21 55  
 eL<sub>q</sub> E 26 15  
 L<sub>r</sub> Z 30 35  
 Δ = 69°

		μ	sec.
P	Z	9	8
P	H	8	9
S	H	25	10
Max	Z	30	20
Max	H	20	18



August 1951 (Ctd)



28d eP WA 16 34 43

# 153

28d iP! ZNEWA 16 34 52

Compression from N.

e	WAZN	35	24
i	ZNE	35	37
esP	Z	37	15
S	ENZ	37	49
i	NZWA	39	51

$\Delta = 18^\circ$ ca, h = 600km. ca

		$\mu$	sec.
P	Z	13	4
P	N	13	5
S	H	24	5

H.F. Baird  
Director



September 1951.



Continuation

1951  
Sept

CHRISTCHURCH PROVISIONAL READINGS

1d	eS	EN	04 58 30	17d	eP	WAZ	12 04 00
	eL <sub>r</sub>	Z	05 07 05		eS	EWAZN	09.00
					eL <sub>q</sub>	N	11 10
					eL <sub>r</sub>	ZE	13 05
	S	H	4		In large microseisms		
	Max	Z	5		Δ =	30°ca.	
	Max	H	5		Max	Z	10
					Max	H	15
							22
							24

M = 5 $\frac{3}{4}$  ca.

1d	S	ENZ	09 07 11	20d	e	NE	01 18 40
	eSS	N	10 38		In very large microseisms		
	eL <sub>q</sub>	N	13 20				
	L <sub>r</sub>	ZE	15 35				
	S	H	16	21d	e(S)	WA	18 51 05
	S	Z	6		e(S)	EN	51 10
	Max	Z	15		eL	EN	52 20
	Max	H	25		eL <sub>r</sub>	Z	54 00

M = 6 $\frac{1}{2}$

3d	e		09 48 ca	28d	eL <sub>q</sub> (S)	ENZ	01 33 05
					eL <sub>r</sub>	Z	34 50
					In large microseisms		

8d	iP	ZNE	16 19 20	28d	eS	WA	14 43 57
	Compression from N.				eL	EN	45 10
	P	WA	19 21		eL <sub>r</sub>	Z	47 10
	S	WAZEN	22 29				
	eS <sub>c</sub> S	EN	29 50				

	P	Z	6	28d	eP	WAZ	23 32 28
					i	WA	32 47
					eS	WAENZ	35 08
					eL <sub>q</sub>	NE	35 15
					eL <sub>r</sub>	Z	36 50
					Δ = 15°ca		

9d	i(P)	Z	04 50 05	Max	H	110	20
	eP	Z	50 07	Max	N	130	16
	eS	ENZ	55 25	Max	Z	60	12
	eL <sub>q</sub>	NE	57 40				
	eL <sub>r</sub>	Z	59 30				
	Δ = 33°ca.						

	i	Z	3	29d	eL <sub>r</sub>	EN	16 44 00
	Max	Z	12	29d	e		18 40 ca
	Max	H	25				

12d	eSKS		
	or S	NE	15 34 15
	eL <sub>r</sub>	NEZ	55 00

13d	eL <sub>q</sub>	N	16 50 50
	eL <sub>r</sub>	NE	54 15
	eL <sub>r</sub>	Z	58 ca

14d	e		12 50 ca
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H.F. Baird  
Director



3rd December 1951.

Magnetic Survey, Botanic Gardens,  
Christchurch, NEW ZEALAND.



Continuation: October 1951

1951 Oct.				CHRISTCHURCH PROVISIONAL READINGS			
<u>1d</u>	eLr	NEZ	11 01 10	<u>9d</u>	eP	ZN	15 45 28
<u>3d</u>	e		03 35 ca		1pP	ZN	45 51
<u>3d</u>	eP	WA	17 39 29		1(PP)	ZN	46 11
	eS	WA	39 57		S	NEZ	49 25
	1	ZN	39 42		eLq	EN	50 15
					eLr	Z	51 40
<u>3d</u>	eL	ENZ	20 44 ca		$\Delta = 23^\circ, h = 100 \text{ km.}$		
<u>3d</u>	e		23 38 ca		$M = 6\frac{1}{2}$		
<u>4d</u>	eL		05 17 ca	<u>10d</u>	e		22 30 ca
<u>4d</u>	eL		08 44 ca	<u>11d</u>	1P	ZN	01 45 44
<u>4d</u>	eLq	EN	14 13 10		Dilatation		
	eLr	Z	14 30		1	Z	46 00
<u>4d</u>	eLq	EN	17 32 15		e	ZN	46 35
	eLr	Z	34 50		(e)	Z	46 50
<u>5d</u>	eS	WARNZ	06 36 09		1PP	ZNK	47 18
	eLq	NE	36 40		S	EN	51 41
	eLr	Z	37 30		eSS	EN	54 35
					e(S <sub>0</sub> S)	NEZ	55 10
					eLr	Z	57 20
					$\Delta = 42^\circ \text{ca}, h > N$		
					In large microseisms		

		$\mu$	sec.
Max	Z	15	18
Max	H	15	17

		$\mu$	sec.
P	Z	5	5
S	N	25	8
Max	Z	40	20
Max	H	55	20

<u>5d</u>	e	Z	11 43 29
	S	ENZ	44 33
	eLq	NE	44 55
	e	Z	45 40
	eLr	Z	46 20
Max	Z	$\mu$ 30	sec. 14
Max	H	45	14

<u>13d</u>	e		01 26 ca
<u>13d</u>	1P	Z	22 39 58
	e	Z	41 22
	ePP	Z	43 20
	eS	ENZ	49 32
	e(PS)	NEZ	51 10
	e	N	52 27
	eSS	ENZ	54 25
	eSSS	NZ	57 50
	eLq	EN	59 40
	eLr	Z	23 04 45
	Surface waves relatively small		
	$\Delta = 76^\circ \text{ca.}$		

<u>6d</u>	e		02 37 ca
<u>6d</u>	eS	EN	03 34 30
	eLr	Z	37 10
	Records disturbed		
Max	Z	$\mu$ 20	sec. 17
Max	H	60	14

		$\mu$	sec.
S	H	12	12
Lq	H	15	25
Max	H	10	16
Max	Z	5	15

<u>8d</u>	(e)		05 00 ca
<u>8d</u>	e		05 15 ca

<u>14d</u>	eP	Z	09 39 33
	eS	EN	49 20
	eSS	EN	53 45
	eLq	N	58 20
	eLr	ZE	10 03 50



Continuation: October 1951

1951  
Oct.

CHRISTCHURCH PROVISIONAL READINGS

(ctd)



International  
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18d eL E 07 46 55  
eL ZN 48 10  
In large microseisms

18d e 09 08 ca  
In large microseisms

21d (eP) Z 21 46 20  
eP Z 46 39  
eP NE 46 43  
Dilatation from N.W.  
1 Z 46 53  
1PP ZNE 49 58  
PPP ZEN 51 42  
e NE 56 26  
eS NZE 56 50  
ePS EN 57 30  
e E 22 01 45  
eSS NEZ 02 25  
eLq NE 08 30  
eLr ZEN 13 20

$\Delta = 82^\circ$   
 $M = 7\frac{1}{2}$

Coda continues for over  
three hours

		$\mu$	sec.
P	Z	30	12
P	H	23	16
PP	Z	23	12
PP	H	24	14
S	Z	12	12
S	H	65	22
SS	Z	35	20
SS	H	150*	27
SSS	Z	45	18
SSS	H	130	24
Max	Z	145	20
Max	H	180	20

22d (eP) NE 03 42 00  
1P ZNE 42 09

Dilatation from N.W.

e ZNE 42 56  
PP ZNE 45 10  
ePPP Z 47 12  
e(S) NE 52 00  
eS EN 52 10  
ePS EN 52 50  
eSS EN 57 30  
eSSS E 04 00 40  
eLq EN 03 50  
eLr Z 08 45

$\Delta = 82^\circ$  ca  
 $M = 7$

P	Z	8	10
P	H	5	10
PP	Z	9	14
S	H	20	15
SS	H	27	15
Max	H	40	20
Max	Z	35	19

22d 1P Z 05 55 36  
ePP Z 58 50  
eS EN 06 05 45  
eLq EN 18 00  
eLr ZEN 22 20

Trace disturbed by previous shock  
 $\Delta = 82^\circ$  ca.  
 $M = 6\frac{1}{2}$  ca.

		$\mu$	sec
P	Z	8	7
Max	Z	20	20
Max	Z	50	35
Max	H	75	35
Max	H	30	22

22d eP Z 07 35 20  
eS NE 45 15  
eL NE 58 30  
eL EN 08 03 00

Trace disturbed by previous shocks

22d eP Z 11 23 00  
eS ENZ 33 50  
eSS EN 39 10  
eSSS E 42 50  
eLq N 45 30  
eLr ZE 50 30

$\Delta = 82^\circ$  ca.

22d e(P) Z 13 01 30  
eS EN 11 40  
eSS EN 17 00  
eL EN 28 40

22d eP Z 15 42 10  
ePP Z 45 25  
eS EN 52 25  
eSS ENZ 58 00  
eLq E 16 01 30  
eLr ZE 09 20

$\Delta = 82^\circ$  ca.  
 $M = 6$  ca

		$\mu$	sec.
P	Z	11	13
Max	H	14	22

23d P Z 01 32 10  
eS N 42 10  
S E 42 18  
eSS EN 47 40  
eSSS EN 51 10  
eLq N 53 15  
eLr Z 82° ca. 59 00

$\Delta =$

23d e 03 52 ca

23d e 05 57 ca



October 1951 Continuation



1951  
Oct.

CHRISTCHURCH PROVISIONAL READINGS

23d	eP	Z	09 07 33	P	Z	40	10
	PP	Z	10 32	P	H	60	12
	eS	NZ	17 45	Max	Z	170	16
	eS	E	17 55	Max	H	200	16
	eSS	EN	23 00	$\Delta = 18^\circ \text{ca.}$ $M = 7$			
	eSSS	E	26 10				
	eLq	EN	30 20				
	eLr	Z	35 00				

$\Delta = 82^\circ \text{ca.}$

29d e 15 40 ca

		$\mu$	sec
P	Z	3	11
S	H	5	13

31d	1P	Z	07 08 25
	eP	EN	08 30
	ePP	ZE	11 30
	1S	NEZ	18 20
	SS	NE	23 20
	eSSS	N	26 40
	eLq	E	28 15
	eLr	Z	36 06

$\Delta = 79^\circ$   
 $M = 7$

24d	P	WA	03 25 43
	S	WANN	26 21 $\frac{1}{2}$

Max WA 30mm.

25d	eP	S	12 32 05
	S	ENEZ	42 15
	eSS	E	47 25
	eLq	NE	53 40
	eLr	Z	59 30

$\Delta = 82^\circ \text{ca.}$

S	H	5	15
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		$\mu$	sec.
P	Z	6	5
S	N	17	8
S	H	20	24
SS	H	15	22
Max	Z	20	22
Max	H	65	23

26d	eS	H	05 47 04
	eL	EN	49 15
	e(Lr)	Z	49 20

31d	eS	NE	10 44 20
	eSS	NE	49 40
	eLr	E	11 02 03

28d	1P	ZWA	06 51 52
	1P	NE	51 54

Small compression on Z, followed by large dilatation from S.S.W. on all components

i	Z	52 18
e	NEZ	52 32
e	EZ	54 10
eS	EN	55 05
eS	Z	55 20
e(L)	ENEZ	56 ca

31d	e(S)	N	12 05 35
	eS	E	05 48
	eSS	EN	10 20
	eLq	EN	16 00
	eLr	Z	21 00

H.F. Baird  
Director



17th January 1952

Magnetic Survey, Botanic Gardens,  
Christchurch, NEW ZEALAND.



Continuation: November 1951

1951  
Nov.

CHRISTCHURCH PROVISIONAL READINGS

<u>1d</u>	e		08 00 ca	<u>8d</u>	eSKS	N	14 09 22
					eS	E	10 35
<u>1d</u>	eP	ZN	11 29 35		ePS	N	11 45
	e	N	32 30		eSS	NE	16 50
	(e)	N	33 00		eSSS	EN	20 50
					eLq	E	26 00
					eLr	EN	31 10

$\Delta = 101^\circ \text{ca}$ ,  $M = 6-6\frac{1}{2}$

<u>4d</u>	(P)	Z	09 02 31				
	iS	ENZ	08 45				
	e(sS)	EN	09 55	S	H	$\mu$ 1-2	sec 20
	eSS	EN	12 10	Max	H	10	18
	eLq	EN	14 40				
	eLr	N	17 40				

In large microseisms

<u>9d</u>	e		08 40 ca
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	S	H	$\mu$ 12	sec 20
<u>4d</u>	S	NE	11 30 04	
	eSS	EN	35 00	
	eLq	NE	39 35	
	eLr	NE	44 30	

In large microseisms

<u>9d</u>	eSKS	EN	22 31 30
	eS	EN	32 18
	ePS	EN	33 00
	eSS	NE	38 25
	eLq	N	44 40
	eLr	EN	50 30

S	H	$\mu$ 15	sec 16
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S	H	$\mu$ 7	sec 20
Max	H	30	28

<u>10d</u>	e(s)	NE	05 42 34
	eL	EN	44 32

<u>6d</u>	e		15 42 ca
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<u>6d</u>	P	ZN	16 53 22
	e	NE	54 32
	(1)	Z	54 37
	ePP	ZNE	57 15
	ePPP	NZ	59 15
	SKS	NEZ	17 03 46
	S	EN	04 20
	PS	NEZ	05 20
	eSS	ENZ	10 35
	eSSS	NE	14 20
	eLq	EN	18 30
	eLr	ZNE	24 15

$\Delta = 93^\circ$ ,  $M = 7\frac{1}{4}$ .

<u>11d</u>	eSKS		
	or S	N	12 39 40
	eLr	EN	13 01 ca

<u>12d</u>	eSKS	N	08 33 00
	eS	N	33 40
	ePS	N	34 45
	e	N	38 50
	eL	N	52 15

<u>12d</u>	1P	ZWA	09 17 59
	S	WAN	21 17
	e	WA	21 30

No E component for this day

P	H	$\mu$ 5	sec 12
PP	H	4	10
PPP	H	4	14
SKS	H	20	16
S	H	40	20
PS	H	25	24
SS	H	20	20
Max	H	100	19

<u>15d</u>	eSKS	N	08 50 25
	ePS	N	51 40
	eSS	EN	57 00
	eLq	E	09 06 30
	eLr	N	11 20

<u>15d</u>	eLr	EN	10 49 ca
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<u>7d</u>	e(s)	EN	02 45 12
	e	NE	46 20
	e(L)	EN	48 15

Disturbed horizontal records



Christchurch Provisional Readings - Continuation November 1951 (Ctd)



15d e(SKS) N 10 55 45  
 e(S) E 56 30  
 e(PS) N 57 40  
 eLr NE 11 17 ca

This shock occurs in coda of preceding shock.

15d eLr NE 20 28 40

16d e 08 40 ca

16d e 15 53 ca

16d eP WA 17 37 00  
 eS WAEN 39 21

18d ePP EN 09 54 32  
 ePPP NE 57 25  
 eSKS NE 10 00 30  
 eS NE 01 40  
 ePS NE 03 40  
 SS NE 09 05  
 eSSS E 13 40  
 eLq NE 19 30  
 eLr E 26 30

$\Delta = 106^\circ, M = 7$

		$\mu$	sec
PP	H	5	18
S	H	20	35
SS	H	90	40
Max	H	100	28
Max	H	45	20

22d e E 12 59 00  
 e(L) EN 13 00 40  
 eLr Z 02 00

24d eP ZEN 18 59 31  
 eS EN 19 09 45  
 ePS E 11 00  
 e(Lq) E 20 30  
 eLr Z 26 20  
 $\Delta = 82^\circ, M = 6\frac{1}{2}$  ca.

		$\mu$	sec
P	Z	4	10
S	E	7	20

24d eP ZEN 19 02 34  
 e Z 05 25  
 PP ZN 06 08  
 eS ENZ 12 50  
 ePS ENZ 14 10  
 eSS NEZ 18 15  
 eSSS E 22 00  
 eLq NE 24 35  
 eLr Z 26 20

$\Delta = 82^\circ, M = 7$

		$\mu$	sec
P	Z	9	10
P	H	6	16
S	H	40	30
SS	H	55	30
Lq	N	70	35
Max	Z	40	20
Max	H	60	20

19d eS NE 10 49 25  
 eLq E 50 20  
 eLr Z 53 40

19d e 14 00 ca

19d eS E 21 14 35  
 e N 16 40  
 eLr Z 17 40

22d e(P) Z 02 13 05  
 e Z 13 26  
 e Z 13 41  
 ePP EZN 14 32  
 S ENZ 19 04  
 I EN 19 26  
 SS ENZ 22 30  
 eLr Z 25 30

		$\mu$	sec
S	H	15	8
S	H	12	30
Max	H	25	19
Max	Z	20	19

26d eP Z 06 50 35  
 ePP Z 54 15  
 eS EN 07 00 50  
 eSS EN 06 20  
 eSSS EN 09 55  
 eLq EN 13 00  
 eLr Z 17 35

$\Delta = 82^\circ, M = 6\frac{1}{4}$  ca.

		$\mu$	sec
P	Z	1-1 $\frac{1}{2}$	7
S	H	4	18

26d eL EN 18 13 ca

27d eP WA 16 19 01  
 eS WA 20 51

Max WA 2 $\frac{1}{2}$ mm.

29d IS ENZ 05 04 45  
 (e) NE 08 00  
 e NEZ 12 25  
 e EN 14 15  
 e(Lq) EN 16 ca  
 eLr Z 20 ca

Records disturbed and in large microseisms

22d e N 10 06 25  
 e N 11 20  
 eLr Z 15 15

H.F. Baird  
 DIRECTOR



DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Magnetic Survey, Botanic Gardens,  
Christchurch, NEW ZEALAND

11th February 1952

Continuation: December 1951



1951 CHRISTCHURCH PROVISIONAL READINGS  
Dec.

<u>5d</u>	e	EN	16 27 ca
<u>5d</u>	e	E	18 21 ca
	eL	EN	25 ca
<u>7d</u>	eL <sub>r</sub>	ZE	21 08 ca
<u>8d</u>	eP	Z	04 26 38
	eP	EN	26 44
	iP!	Z	26 46
	Dilatation		
	ePP	Z	29 40
	ePPP	Z	30 40
	eiS!	NE	37 02
	ePS	NE	38 05
	eSS	NE	42 00
	eSSS	EN	45 45
	eL <sub>q</sub>	NE	48 30
	eL <sub>r</sub>	Z	52 30

$\Delta = 83^\circ \text{ca}$ ,  $M = 7\frac{3}{4} \text{ca}$ .

		$\mu$	secs
P	Z	45	10
P	H	25	10
PP	Z	30	12
PPP	Z	15	11
S	H	125	18
L <sub>q</sub>	H	800	50
Max	Z	190	16
Max	H	200+	16
Max	WA	0.8mm	(V = 1400)

<u>8d</u>	eP	WA	14 05 47
	S	ENZ	11 46
	eSS	EN	15 10
	eL <sub>r</sub>	N	17 30
	$\Delta = 41^\circ$		

S	H	7	6
P	WA	$\frac{1}{2} \text{mm.}$	0.7 (V = 1400)

<u>9d</u>	e		18 35 ca
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<u>10d</u>	e	N	10 43 00
	eL <sub>r</sub>	NE	46 05

<u>12d</u>	eP	WAZ	01 22 09
	e	WA	22 22
	e	WA	22 30

Max WA 40mm. (V = 1400)

<u>12d</u>	eP	Z	01 51 30
	ePP	ZE	56 10
	e(PPP)	E	58 20
	(e)	E	02 01 30
	eSKS	E	02 00
	eSKKS	EN	02 40
	iS	N	03 17
	ePS	E	04 40
	PPS	E	05 28
	SS	NEZ	10 25
	eSSS	N	14 50
	eL <sub>q</sub>	NE	20 00
	eL <sub>r</sub>	ZEN	25 10
	$\Delta = 103^\circ$ , $M = 6\frac{3}{4}-7$		

		$\mu$	secs
PP	Z	4	14
S	H	8	12
PPS	H	11	16
SS	H	10	16
Max	H	20	30
Max	Z	12	26

<u>13d</u>	e		01 45 ca
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<u>16d</u>	e		12 33 ca
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<u>16d</u>	eS	ENZ	19 24 00
	eL <sub>r</sub>	Z	26 40

<u>17d</u>	e(S)	E	12 40 40
	eL <sub>r</sub>	ENZ	44 ca

<u>18d</u>	iP	ZNEWA	14 14 40
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Dilatation			
isP	Z		15 06
S	ENZ		19 09
i	ENZ		19 22
eL <sub>q</sub>	EN		20 10
eL <sub>r</sub>	EN		21 45
(eL <sub>r</sub> )	Z		22 05
S <sub>c</sub> S	ENZ		25 28
$\Delta = 26^\circ$ , $M = 6-6\frac{1}{4}$			

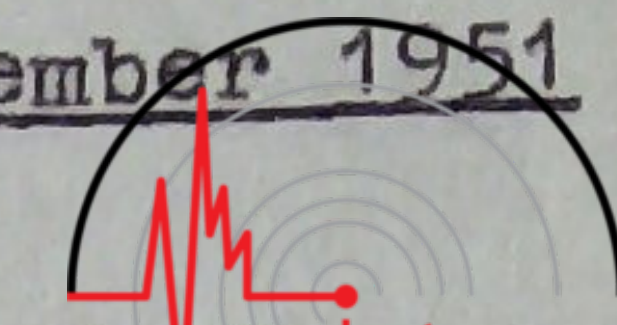
		$\mu$	secs
P	Z	4	7
i	Z	5	5
S	H	15	12
Max	H	50	26

<u>21d</u>	eSKS	EN	09 01 40
	eS	EN	02 30
	ePS	E	03 25
	eSS	EN	08 45
	eL <sub>q</sub>	NE	18 40
	eL <sub>r</sub>	Z	25 20

Interpretation doubtful



CHRISTCHURCH PROVISIONAL READINGS (Ctd) Continuation: December 1951



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22d eS EN 15 02 00  
eSS EN 05 35  
eL<sub>r</sub> Z 10 05

30d eP Z 22 33 37  
S ENZ 41 48  
eSS E 45 55  
eL<sub>r</sub> ZE 51 20

23d e(P) N 00 25 30  
eS NE 29 45  
eL<sub>r</sub> Z 31 00

$\Delta = 60^\circ \text{ca}$ ,  
 $M = 6\frac{1}{2} - 6\frac{3}{4}$

P Z  $2\frac{1}{2}$  secs 6  
S H 30 28  
Max Z 30 17  
Max H 35 18

23d iP ZEN 06 35 32  
i Z 35 58  
e N 38 45  
e ZE 37 22  
i(S) EZ 39 14  
i NEZ 39 53  
eL NE 40 30  
eL<sub>r</sub> Z 41 15

P Z  $\mu$  secs  
i H 7 4  
L H 40 15  
H 150 17

23d e 20 21 ca

25d eS ENZ 22 12 44  
eL ENZ 13 45

26d e 17 30 ca

28d P ZE 09 34 19  
ePP ZE 38 20  
ePPP Z 40 10  
SKS ENZ 44 51  
eS ENZ 45 55  
ePS EZ 47 17  
e E 52 00  
e(SS) NZ 53 15  
eSSS E 56 20  
eL<sub>q</sub> N 10 01 45  
eL<sub>r</sub> ZEN 06 25

$\Delta = 100^\circ \text{ca}$ ,  $M = 7 \text{ca}$ .

P Z  $\mu$  secs  
PP Z 4 18  
SKS H 3 7  
Max H 12 11  
Max H 45 19  
Max Z 30 19

29d e 11 07 ca

30d eP Z 22 28 06  
eS EN 36 25  
eL<sub>r</sub> Z 45 40  
 $\Delta = 60^\circ \text{ca}$

H.F. Baird  
Director