

New Zealand Department of Scientific and Industrial Research
GEOPHYSICS DIVISION

NEW ZEALAND
SEISMOLOGICAL
REPORT
1961

SEISMOLOGICAL OBSERVATORY BULLETIN
E - 142



International
Seismological
Centre

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SEISMOLOGICAL OBSERVATORY, WELLINGTON
NEW ZEALAND.

ALL measurement and interpretation of records is carried out at the central station in Wellington. Communications should therefore be addressed to

The Superintendent,
Seismological Observatory,
P.O. Box 8005,
Wellington, New Zealand.

NEW ZEALAND SEISMOLOGICAL REPORT 1961

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INTRODUCTION

The form of the annual New Zealand Seismological Report is now well established. It is intended to summarise the standard measurements carried out at the Seismological Observatory, Wellington, and to provide in addition an account of New Zealand earthquakes during the period in a form that will be of use and interest to people other than professional seismologists. The Report includes a descriptive account of the most important seismic events of the year, and maps showing their size, distribution and felt effects.

New Zealand data for 1961 are now available at the Observatory, and advance copies of standard readings have been forwarded to international data centres. Reprints of research papers by members of the staff, and material that is not regularly included in this report are issued as a series of S-Bulletins. Those issued in 1961 are listed at the back of this Report. The Observatory is prepared to consider additional agreements to exchange material of this kind with other organisations.

SCIENTIFIC STAFF 1961WELLINGTON

Superintendent: F.F. Evison, M.A., B.Sc. (N.Z);
Ph.D. (Lond.); D.I.C.

Geophysicists: R.D. Adams, M.A., M.Sc. (N.Z); Ph.D. (Cantab);
J.H. Christie (nee Le Fort) B.Sc;
G.A. Eiby M.Sc; M.G. Muir, M.Sc;
A.A. Thomson, M.Sc.

Technicians: R.H.G. Barton (from February); M.A. Lowry;
A.M. Maher; R.C. Martindale; R.H. Orr.

APIA

Officer-in charge: J.G. Keys

SCOTT BASE

Observer: R. Shanahan

HALLETT

Observer: N.E. Stent

PRINCIPAL NEW ZEALAND EARTHQUAKES IN 1961

The year 1961 was unmarked by any abnormal seismic event within New Zealand. About one hundred and fifty of the epicentres listed result from an outbreak of swarm activity in the seismic region associated with the Kermadec Trench.

The largest earthquake was the deep-focus shock of July 26 (Epicentre 61/276) which was centred in the Bay of Plenty and had a magnitude of $6\frac{3}{4}$. Its focal depth was 230 km, and the felt area included most of the North Island (with the exception of the Northland peninsula) and several places in northern Marlborough. The usual questionnaire was issued. Most of the reports received indicate an intensity of MM 3 or MM 4 (See map, in the pocket inside the back cover). Although the higher values predominated in reports from the Gisborne - East Cape region, and the felt area is elongated in a south westerly direction, it is difficult to suggest isoseismals, and it seems likely the local ground conditions are largely responsible for the irregular distribution apparent.

A deep earthquake on February 3, with a focal depth of 320 km (Epicentre 61/12) showed a similarly irregular pattern of felt intensities, but the felt area was more restricted, as might be expected from the greater depth and smaller magnitude (6.0). This was the deepest shock of the year. Its epicentre is near Te Aroha.

The largest shallow shock, on December 27 (Epicentre 61/394) had a magnitude of 5.3, and originated at sea about 100 km south west of Masterton, near the southern end of the Hikurangi Trench. It was followed by series of aftershocks extending for some 200 km in a belt 20-30km wide, at right angles to the coast, and some 40 km to the south of the main shock. A paper dealing with this sequence is being prepared. The principal shock was responsible for some minor damage in the Wairarapa, 77 insurance claims being lodged with the Earthquake and War Damage Commission; but replies to the Observatory questionnaire provide little evidence of intensities greater than MM 5 (See isoseismal map). The felt area extended from a little south of the Firth of Thames to southern Nelson and Kaikoura.

The shallow earthquake near Dannevirke of May 14 (Epicentre 61/233) had a magnitude of 5.4 and a felt area that includes most of the central and southern parts of the North Island, the maximum reported intensity (in Dannevirke itself) being MM 5 (See isoseismal map).

Another widely-felt shallow shock on July 4 (Epicentre 61/257) had an epicentre near the northern end of Lake Wakatipu and a felt area extending from Bruce Bay to Stewart Island. The epicentral region is sparsely populated, the maximum intensity reported being MM 4, at Milford Sound.

Throughout the year, activity in the central part of the South Island has been abnormally low, the whole region between latitudes 42° and 44° S being free of shocks. However, there were two shocks on the northern flank of the Chatham Rise, both on April 15 (Epicentres 61/65 and 61/66). The larger of these had a magnitude of 5.4, and the second, smaller one a magnitude of 4.8.

The usual vigorous activity associated with the Kermadec trench continued. A particularly notable sequence of shocks began with an earthquake of magnitude 4.7 centred near $34\frac{1}{2}^{\circ}\text{S } 179^{\circ}\text{E}$ (Epicentre 61/69) on April 18. By the end of the month, there were approximately 150 shocks with magnitudes between 4 and 5 recorded from this region. A second centre of activity near $33^{\circ}\text{S } 178^{\circ}\text{W}$ developed on April 20, with 12 shocks reaching about magnitude 5.

STATIONS OF THE NEW ZEALAND NETWORK

The network of stations under the control of the Seismological Observatory, Wellington, may be considered to consist of two parts: first, a set of short-period instruments distributed widely over the country, and intended to yield records of earthquakes originating within New Zealand; and secondly, teleseismic instruments to provide information about distant earthquakes, and the physical condition of the Earth. These functions interlock, and every Seismograph gives some useful information in both fields.

The only changes in the network during 1961 were the restoration of the Onerahi Wood-Anderson seismograph to standard constants in May, and the replacement of the Tuai Wood-Anderson by a vertical Willmore of higher magnification in July. With the present network, most New Zealand earthquakes strong enough to be reported felt can be at least approximately located; but in certain districts, particularly the far south of the country the origins cannot be placed with the highest accuracy. In the case of the larger shocks, some assistance can be obtained from Australian stations.

Instrumental constants, standard abbreviations of the station names (used in tabular sections of this Report), geographical positions, and similar information are listed below, in order of increasing southern latitude.

APIA (AA)

Latitude:					13° 48'.48
Longitude:					171° 46'.5W
Height above mean sea level:					2 metres, 6 ft
Geocentric direction cosines:				a	- 0.961 484
				b	- 0.138 980
				c	- 0.237 132
Lithological Foundation:					Coral sand on volcanic rock.
Instrument	Component	Period	Damping	Magnification	
Wood-Anderson	N	0.80 sec.	15 1	2050	Nominal
Wood-Anderson	E	0.80 sec.	15 1	2050	

APIAMALU (AF)

Latitude: 13° 54'.6 S
 Longitude: 171° 46'.6 W
 Height above mean sea level: 706 metres, 2315 ft.
 Geocentric direction cosines: a - 0.961 070
 b - 0.138 883
 c - 0.238 862

Lithological Foundation: Basaltic lava flows.

Instrument	Component	To	Tg	V
Benioff	Z	1 Sec.	0.2 Sec.	72,000
			70 Sec.	765
	N	1 Sec.	70 Sec.	

SUVA (SU)

Latitude: 18° 09' S
 Longitude: 178° 27' E
 Height above mean sea level: 6 metres, 20 ft.
 Geocentric direction cosines: a - 0.950 515
 b + 0.025 720
 c - 0.309 613

Lithological Foundation: Hard, fine-grained calcareous marl.

Instrument	Component	Period	Damping	Magnification	Date
Milne-Shaw	N	12 sec.	20:1	250	12/57

RAOUL (RL)

Latitude: 29° 15'.1 S
 Longitude: 177° 55'.1 W
 Height above mean sea level: 110 metres, 350 ft.
 Geocentric direction cosines: a - 0.873 304
 b - 0.031 743
 c - 0.486 140

Lithological Foundations: Volcanic rock.

Instrument	Component	Period
Willmore	Z	To = 0.8 sec. Tg = 0.25 sec.

ONERAHI (ON)

Latitude: 35° 46'.5 S
 Longitude: 174° 21'.7 E
 Height above mean sea level: 33 metres, 110 ft.
 Geocentric direction cosines: a - 0.809 249
 b + 0.079 894
 c - 0.582 008

Lithological foundation: Basalt

Instrument	Component	Period	Damping	Magnification	Date
Wood-Anderson	E	1.2 sec.	23:1	2,800	to 22/5/61
		0.8 sec.	Critical	2,800	22/5/61

AUCKLAND (AK)

Latitude: 36° 51'.7 S
 Longitude: 174° 46'.7 E
 Height above mean sea level: 76 metres, 250 ft.
 Geocentric direction cosines: a - 0.798 694
 b + 0.072 992
 c - 0.597 293

Lithological foundation: Volcanic beds on Tertiary sandstone and mudstone

Instrument	Component	Period	Damping	Magnification
Milne-Shaw	N	10 sec.	20:1	150

KARAPIRO (KP)

Latitude: 37° 55'.6 S
 Longitude: 175° 32'.3 E
 Height above mean sea level: 61 metres, 200 ft.
 Geocentric direction cosines: a - 0.788 405
 b + 0.061 519
 c - 0.612 072

Lithological foundation: Greywacke

Instrument	Component	Period	Damping	Magnification	Date
Willmore	Z	0.8 sec.	Critical		8/59

TUAI (TU)

Latitude: 38° 48'.4 S
 Longitude: 177° 09'.1 E
 Height above mean sea level: 292 metres, 960 ft
 Geocentric direction cosines: a - 0.780 359
 b + 0.038 825
 c - 0.624 126
 Lithological foundation: Thick Tertiary sandstone and mudstone

Instrument	Component	Period	Damping	Magnification
Wood-Anderson	N	0.8 sec.	Critical	1,400
Willmore	Z	To = 1 sec	Tg = 1/4 sec	3,500
				Nominal 7/61

CHATEAU (CT)

This instrument is under the control of the Geophysical Survey, Geophysics Division, DSIR, and is operated primarily for volcanological research. Seismograms are read by the Seismological Observatory, Wellington, and the readings of earthquakes used to supplement those of the Tongariro station.

Latitude: 39° 12'.1 S
 Longitude: 175° 32'.6 E
 Height above mean sea level: 1,135 metres
 Lithological foundation: Volcanic ash and lava
 Instrument Component To Tg Magnification
 Willmore Z 1 sec. 0.25 sec. 25,000

TONGARIRO (TO)

Latitude: 39° 12'.2 S
 Longitude: 175° 32'.3 E
 Height above mean sea level: 1,131 metres, 3,710 ft
 Geocentric direction cosines: a - 0.774 637
 b + 0.060 444
 c - 0.629 512
 Lithological foundation: Volcanic ash and lava on Tertiary sandstone and mudstone

Instrument	Component	Period	Damping	Magnification
Jones	Z	0.5 sec.	10:1	11,000
				Nominal

BUNNYTHORPE (BT)

Latitude: 40° 17'.0 S
 Longitude: 175° 38'.1 E
 Height above mean sea level: 60 metres, 197 ft.
 Geocentric direction cosines: a - 0.762 783
 b + 0.058 224
 c - 0.644 028
 Lithological Foundation: Gravels, silts and sands.

Instrument	Component	Period	Damping	Magnification
Imamura	NE (X)	8 sec.	5:1	2
	NW (Y)	8 sec.	5:1	2
	Z	2 sec.	5:1	2
				Nominal

COBB RIVER (CB)

Latitude: 41° 05'.2 S
 Longitude: 172° 44'.0 E
 Height above mean sea level: 213 metres, 700 ft.
 Geocentric direction cosines: a - 0.749 836
 b + 0.095 613
 c - 0.654 679
 Lithological Foundation: Schist
 Instrument Component Period Damping Magnification Date
 Wood-Anderson E 0.8 sec. Critical 2,800 2/60

WELLINGTON (WN)

Latitude: 41° 17'.2 S
 Longitude: 174° 46'.0 E
 Height above mean sea level: 122 metres, 400 ft.
 Geocentric direction cosines: a - 0.750 478
 b + 0.068 739
 c - 0.657 311
 Lithological Foundation: Greywacke.

Instrument	Component	Period	Damping	Magnification
Milne-Shaw	N	12 sec.	30:1	250
Galitzin-Wilip	Z	To = 10.6	Critical	600
		Tg = 10		
Wood-Anderson	n	0.8	Critical	2,800

The station has also an Imamura strong-motion instrument.

KAIMATA (KM)

Latitude: 42° 31'.4 S
 Longitude: 171° 24'.6 E
 Height above mean sea level: 70 metres, 230 ft.
 Geocentric direction cosines: a - 0.730 977
 b + 0.110 420
 c - 0.673 410
 Lithological Foundation: Meraine and alluvium over Tertiary sandstone and mudstone.
 Instrument Component Period Damping Magnification Date
 Wood-Anderson NE (X) 0.8 sec. Critical 2,800 2/60

GEBBIES PASS (GP)

Latitude: 43° 41'.7 S
 Longitude: 172° 38'.8 E
 Height above mean sea level: 225 metres, 740 ft.
 Geocentric direction cosines: a - 0.719 385
 b + 0.092 835
 c - 0.688 380
 Lithological Foundation: Rhyolite
 Instrument Component Period Damping Magnification Date
 Wood-Anderson N 0.8 Critical 2,800 9/57

ROXBURGH (RX)

Latitude: 45° 28'.5 S
 Longitude: 169° 18'.9 E
 Height above mean sea level: 106 metres, 345 ft.
 Geocentric direction cosines: a - 0.691 422
 b + 0.130 458
 c - 0.710 576
 Lithological Foundation: Chlorite schist.
 Instrument Component Period Damping Magnification Date
 Galitzin Z To=Tg=14 sec. Crit. 217 5/57
 N 24 Critical 323
 E 24 Critical 305

HALLETT (HT)

Latitude: 72° 18'.8 S
 Longitude: 170° 12'.5 E
 Height above mean sea level: 3 metres, 10 ft.
 Geocentric direction cosines: a - 0.301 224
 b + 0.051 985
 c - 0.952 135
 Lithological Foundation: Frozen gravel spit.
 Instrument Component To Tg Magnification
 Willmore Z 1 2 Nominal
 Press-Ewing Z 15 50 1,200
 N 15 75 1,200
 E 15 75 1,200

SCOTT BASE (SB)

Latitude: 77° 51'.0 S
 Longitude: 166° 48' E
 Height above mean sea level: 33 metres, 100 ft.
 Geocentric direction cosines: a - 0.206 204
 b + 0.048 510
 c - 0.977 306
 Lithological Foundation: Frozen basaltic debris resting on lava flows.
 Instrument Component To Tg Magnification
 Benioff Z 1.0 Sec. 25 sec. 1,000 Nominal
 N 1.0 10
 E 1.0 25
 z 1.0 0.2 100,000 Nominal
 n 1.0 0.2
 e 1.0 0.2

TIMING ARRANGEMENTS

Radio time-signals originating in the New Zealand Time Service of the D.S.I.R. are broadcast 15 times daily by station 2YA of the New Zealand Broadcasting Service. These signals are automatically impressed on the records at all stations within New Zealand, except Auckland, Bunnythorpe, Monowai, and Wellington, by an arrangement that has been described by B.H. Glisson (N.Z. Journal of Science and Technology, Vol 37B pp 115-8, 1955 Sept.). At Wellington, the timing is derived directly from the Time Service, which is situated in the same building as the seismographs. At the other stations the operator records several signals a day by depressing a hand-key when the signal is heard. At Suva, Raoul Island, Apia, Afiamalu and the Antarctic stations similar methods are in use. The minute marks at the out-stations are provided either by an electric pendulum clock of the Synchronome type, a quartz crystal clock, or a marine chronometer fitted with electric contacts.

STATION READINGS

The station readings are so arranged that data for the stations within New Zealand and for Suva are given in a single chronological list, and other stations are listed independently. This is partly a result of geographical affinity and partly one of administrative convenience. It is not possible to delay epicentre determination until records from the remoter stations reach Wellington.

All times are given in U.T.; that is, the civil time of the Greenwich meridian, beginning at midnight. New Zealand Standard Time is 12 hours ahead of U.T.

When the horizontal components at a recording station are not oriented north-and south or east-and-west, the directions are designated X and Y, and the corresponding bearings listed with the station constants in the section 'Stations of the N.Z. Network.'

The small letters following the time of an 'impetus' phase indicate the direction of initial movement. u indicates an upwards ground movement, d a downwards one, n, s, e and w towards north, south, east, and west respectively; x and y are horizontal movements as explained above; f is a movement opposite to x, and j a movement opposite to y.

Amplitudes are given in microns (1 micron = 10^{-6} metre) and periods in seconds, except for the Antarctic Stations, Samoa, and Raoul Island, where the amplitudes are given in millimetres, read in the manner explained at the beginning of each section.

Magnitudes for local earthquakes are a mean of the indications of the Wood-Anderson stations of the network. For distant earthquakes, the values given are the unified magnitude m , determined at the station, and from the wave opposite which the value appears, but the methods of Gutenberg and Richter, 1956 (Annali di Geofisica Vol. 9, p.1). Both surface waves and body waves are used.

The accuracy of local earthquake epicentres is indicated by a letter in brackets following the attribution 'NZ'.

- | | |
|-----|---|
| (A) | epicentres are not in error by more than 5 miles, or 8 km |
| (B) | " " " " " " " " 10 " " 16 " |
| (C) | " " " " " " " " 15 " " 24 " |
| (D) | " " more uncertain. |

The low accuracy of (D) epicentres generally results from the small magnitude of the shock, or from lack of recording stations in certain azimuths.

In indicating focal depth, a distinction is made between shallow earthquakes (S), whose records show clear crustal phases, and normal earthquakes (N), which probably originate near the base of the crust.

NEW ZEALAND STATIONS AND SUVA

This section does not include readings of New Zealand earthquakes whose magnitudes are less than 5.0; but epicentres have been determined for all such shocks above magnitude 4.0, and for any smaller shocks that have been reported felt. These epicentres, focal depths, and origin times are listed in a separate section of the Report.

Throughout this section, the amplitudes given are those of the actual ground motion, not the deflection of the trace. They are expressed in microns.

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
JAN 1	KP	eP	Z	13	14	38				
	CT	eP	Z	13	14	50				
	Epicentre:			13	09	06.4	12.9S	167.2E	87 km	USCGS
1	ON	ePn	E	13	16	30				
		e	E			42				
		e	E			17				
TU	ePn	N		13	16	30				
	eSn	N				49				
KP	ePn	Z		13	16	32				
	e	Z				40				
	eP*	Z			50					
CT	eP	Z		13	16	41				
	e	Z				56				
	eP*	Z			17					
	(S)	Z			18					
TO	eP	Z		13	16	45				
	e	Z				17				
WN	eP ?	N		13	17	23				
	e	N				50				
	Sn	N			18					
CB	eSn	E		13	19	20				
	GP	eSn	E	13	20	02				
	Epicentre:			13	14	47	33.2S	177.8W	S	NZ(D) 5.4 NZ
Additional readings from Charters Towers and Brisbane used for determination of epicentre.										
1	ON	eP	E	16	42	12				
	KP	P	Z	16	42	24				
	e	Z			48					
CT	eP	Z		16	42	30				
	Epicentre:			16	38	27	18.3S	178.2W	663 km	USCGS
1	KP	P	Z	20	29	25				
	Epicentre:			20	22	14.6	49.5S	125.5E	59 km	USCGS
1	KP	eP	Z	22	13	37				
	Epicentre:			22	11	15.5	29.0S	177.1W	115 km	USCGS

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
JAN 2	SU	IP	N	10	15	00				
		S	N	17	43	n	60 7			
	ON	eP	E	10	17	04	150 12			
		eS	E	21	18					
	KP	ip	Z	10	17	23				
		e	Z		38					
		epP	Z		57					
		iScP	Z	24	18	u				
		pScP	Z		54					
	TO	P	Z	10	17	34				
		eScP	Z		24	21				
	CT	P	Z	10	17	34				
		e	Z		58					
		ScP	Z		24	21				
	CB	eP	E	10	17	45				
		eS	E	22	32					
		eScP	E	24	26					
	WN	ip	ZN	10	17	49	5 5		6.6	
		e	Z		18	11	3 8			
		e	N		19	00		18 6		
		ePP	ZN		07		17 6		6.5	
		eS	N		22	36		7 5	6.4	
		eL	ZN		28.0		31 20	33 22		
	KM	P	X	10	17	55				
		epP	X		18	30				
	GP	IP	N	10	18	07				
	RX	IP	Z	10	18	20	12 6		6.8	
		ip	NE	10	18	20			7.1	
		ePP	NE		19	54		9 4	6.3	
		S	NE		23	23		4 10	6.2	
		e	N		24	38		13 23		
		eL	ZNE		27.3		59 28	36 22		
		Epicentre:		10	11	56.9	12.4S	166.4E	161 km	USCGS 6½ PAS
2	KP	eP	Z	12	59	30				
		e	Z		13	00	04			
		Epicentre:		12	49	12.1	5.3N	127.4E	66 km	USCGS
2	KP	eP	Z	20	59	16				
	CT	eP	Z	20	59	25				
		Epicentre:		20	51	59.3	6.8S	150.3E	62 km	USCGS
2	KP	P	Z	23	13	26				
	TO	eP	Z	23	13	37				
	CT	P	Z	23	13	37				
	GP	eP	Z	23	14	03				
		Epicentre:		23	07	21.5	10.2S	160.7E	117 km	USCGS
3	KP	eP	Z	11	49	48				
		e	Z		50	18				
		ScP	Z		54	46				
	CT	eP	Z	11	49	53				
		e	Z		50	20				
		Epicentre:		11	40	42.5	6.8S	129.3E	72 km	USCGS
3	KP	eP	Z	19	36	00				
		e	Z		47					
	CT	eP	Z	19	36	04				
		e	Z		17					
		e	Z		39					
		Epicentre:		19	27	00.4	6.4S	130.4E	100 km	USCGS
3	KP	P	Z	20	15	09				
	CT	P	Z	20	15	10				
		L	Z		35					
	KP	eP	Z	20	18	53				
		Epicentre:		20	05	33.8	17.6N	101.2W	40 km	USCGS

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
JAN 4	KP	P	Z	02	00	04				
	CT	P	Z	02	00	09				
		Epicentre:		01	50	18.0	5.5N	122.5E	633 km	USCGS
4	CT	eP	Z	11	39	44				
	KP	eP	Z	11	39	45				
		Epicentre:		11	29	53.1	6.9S	121.7E	25 km	USCGS
4	ON	eP	E	13	29	28				
	KP	P	Z	13	29	40				
	CT	eP	Z	13	29	48				
	GP	eP	N	13	30	33				
		Epicentre:		13	25	35.6	17.4S	178.9W	591 km	USCGS
4	KP	eP	Z	19	25	26				
		e	Z		26	32				
	CT	eP	Z	19	25	30				
		Epicentre:		19	16	19.5	5.5S	128.7E	173 km	USCGS
5	KP	eP	Z	05	44	35				
		Epicentre:		05	40	00.6	20.1S	174.0W	25 km	USCGS
5	KP	P	Z	14	19	23				
		epP	Z		38					
	CT	eP	Z	14	19	28				
		epP	Z		42					
		ep'p'	Z		45	04				
	TO	eP	Z	14	19	30				
		ep'p'	Z		45	03				
	WN	eP	Z	14	19	30	2 5		6.7	
		epP	Z		50		2 8			
		iSKS	N		30	08		7 8		
		eS?	Z		43					
		eL	ZN		51		18 20	15 22	6.5	
	CB	eP	E	14	19	41				
		epP	E		57					
	RX	ePPP	ZE	14	26.0		6 5		5 6	
		eSKS	N		30	38		7 12		
		eS	E		31	26		5 12	6.8	
		eSS	N		38	08		6 26		
		eSSS	N		41	48		4 24		
		e(SKKS)	E		43	55		4 12		
		e(Lq)	N		51					
		eLr	Z		52.5		18 20			
		eLr	E		54.5			7 21		
		Epicentre:		14	06	25.9	51.6N	176.3W	37 km	USCGS
5	KP	P	Z	15	22	21				
		e	Z		46					
		Epicentre:		15	09	37.9	45.7N	149.3E	19 km	USCGS
5	KP	eP	Z	16	02	05½				
		epP	Z		35					
		e	Z		40					
		e	Z		49½					
		e(PcP)	Z		03	45 ±				
		e	Z		07	32 ±				
		e(PcS)	Z		40½					
	CB	eP	E	16	02	10				
		e	E		42					
		e	E		04	22				
		eS	E		08	45				
	CT	eP	Z	16	02	12½				
		i	Z		19					
		i(SP)	Z		45½					
		e(PcP)	Z		03	49				
		e(PcS)	Z		07	31				
		eS	Z		08	50				

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
JAN 5	TO	eP	Z	16 02 13			
		e	Z	16 02 45			
	e(PcS)	Z	07 31				
		Z	08 50				
	KM	eP	X	16 02 19			
		eP	N	16 02 19			
	TU	e	N	08 55			
		e(S)	N	08 53			
	WN	eP	ZN	16 02 19			
		e(P)	N	03 50			
	e(SP)	Z	03 00				
		N	08 56				
	e ?	N	10 00			5 8	
		N	12 53			5 8	6.3
	eSS	N	12 53				
		ZN	15.8		7 14	6 12	
	ON	eP	E	16 02 54			
		S	E	08 06			
	RX	eP	ZNE	16 02 55			
		e(S)	ZNE	09.1			
e(SSS)	NE	16 14.1					
	eLq	N	16.5				
Epicentre:				15 53 56.0	4.1S	143.0E	108 km USCGS
5	ON	eP	E	18 01 31			
		eL	E	04 20			
	KP	eP	Z	18 01 54			
		e	Z	02 02			
	CT	eP	Z	18 02 10			
		e	Z	19			
	TO	eP	Z	18 02 10			
		e	N	18 02 12			
	CB	eS	N	05 48			
		eP	E	18 02 27			
	eS	E	06 16				
		ip	ZN	18 02 30	10 8		
	is	ZN	06 22	19 8	66 11		
		eL	ZN	07.9	94 16	79 17	
	KM	eP	X	18 02 40			
		eS	X	06 39			
	GP	eP	N	18 02 54			
		eS	N	07 05			
	RX	eP	Z	18 03 08	9 6		
		eP	N	18 03 08		7 16	
S	ZNE	07 22	22 15	81 16	12 14		
	eLq	E	09		28 24		
eLr	ZN	09.7	43 23	57 26			
	M ₁	NE	11		105 20	60 18	
M ₂	Z		100 18				
	Epicentre:				17 57 56.6	21.2S	169.3E
5	ON	eP	E	18 18 11			
		eL	E	20.4			
	KP	eP	Z	18 18 40			
		eP	Z	18 18 55			
	CT	e	Z	19 03			
		eP	Z	18 18 55			
	eS	Z	22 26				
		e	N	18 19.0			
	TU	eS	N	22 30			
		eP	E	18 19 14			
	eS	E	23 00				
		eP	ZN	18 19 18			
	eS	ZN	23 14	35 10	140 11		
		eLr	ZN	25.0	170 22	130 17	
	KM	eP	X	18 19 30			
		eS	X	23 31			

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
JAN 5	GP	eP	N	18 19 38			
		eS	N	23 49			
RX	S	NE	18 24 20		74 18	58 18	7.5
	eL	ZNE	26.4	41 20	97 20	102 20	
M ₁	NE	28			190 20	135 18	
	M ₂	Z	29	200 18			
Epicentre:				18 14 43.0	21.0S	169.1E	124 km USCGS
5	KP	eP	Z	18 50 48			
		e	Z	51 06			
Epicentre:				18 37 48.3	51.3N	176.6W	30 km USCGS
5	KP	P	Z	20 15 06			
		Epicentre:				20 05 12.2	11.5N
6	KP	P	Z	01 33 08			
		Epicentre:				01 20 30.8	42.5N
6	KP	P	Z	06 34 32			
		pP	Z	48			
6	ON	eP	E	23 58 59			
		eL	E	00 01.5			
TU	eP	N	23 58 59				
	eS	N	00 00 15				
KP	eP	Z	23 59 00				
	e	Z	10				
CT	eP	Z	23 59 21				
	e	Z	26				
TO	eP	Z	23 59 22				
	S	N	00 01 25				
WN	eL	N	02.7			2 15	
	eS	E	00 01 45				
CB	eS	N	00 02 30				
	GP	eS	N	00 02 30			
RX	eL	NE	00 05.2			3 20	3 20
	eL	Z	07	8 16			
M	N	10				5 15	
	Epicentre:				23 57 29.6	32.4S	178.6W
7	KP	eP	Z	11 33 07			
		e	Z	14			
TO	eP	Z	11 33 22				
	CT	eP	Z	11 33 23			
WN	eS	N	11 36 37				
	Epicentre:				11 30 14.7	24.3S	179.4E
7	CT	P	Z	18 29 15			
		KP	iP	Z	18 29 18 u		
RX	eL	N	19 00				
	Epicentre:				18 16 51.2	57.2S	25.3W
8	KP	P	Z	01 25 26			
		Epicentre:				01 15 25.6	4.1N
8	KP	P	Z	03 06 33			
		CT	eP	Z	03 06 39		
Epicentre:				02 56 34.1	3.5N	129.6E	117 km USCGS
8	KP	e(P)	Z	07 33 24			
		(S)	Z	35 37			
CT	e	Z	07 33 32				
	GP	eS	N	07 36 32			
WN	eL	Z	07 43				
	RX	eL	NE	07 41.3			
eL	Z	45					
	M	NE	46	3 14			
Epicentre:						4 15	7 15

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
JAN 8	KP	P	Z 10 03 49				
		e	Z 10 06 01				
	CT	eP	Z 10 04 01				
		S	Z 10 06 29				
	KM	eP	X 10 04 47				
		eS	X 10 07 39				
	GP	eP	N 10 05 52				
		eS	N 10 08 53				
	TU	eS	N 10 06 12				
	WN	eS	N 10 07 01				
CB	eS	E 10 07 12					
	Epicentre:		10 01 06.6	25.9S	179.6E	538 km	USCGS
9	KP	eP	Z 07 57 01				
		e	Z 07 58 15				
		e	Z 07 58 20				
	CT	eP	Z 07 57 14				
		e	Z 07 59 28				
	ON	e	E 07 57 21				
		e	E 07 58 14				
	AK	eL	N 07 59.5				
	SU	eL	N 08 01		14 12		
	GP	eS	N 08 01 13				
WN	eL	N 08 02					
RX	eL	NE 08 05					
	eL	Z 08 08					
	Epicentre:		07 54 25.0	28.2S	176.8W	25 km	USCGS
9	KP	eP	Z 10 17 20				
	CT	eP	Z 10 17 37				
	SU	eL	N 10 18		34 12		
	AK	eL	N 10 20				
	WN	eS	N 10 21 50			2 5	
		eL	N 10 25				
	RX	eS	NE 10 23 00			3 16	5.5
		eL	NE 10 25			2 23	
		eL	Z 10 27		5 16		
		M	NE 10 28			5 14	7 14
	Epicentre:		10 13 34.1	21.3S	169.1E	82 km	USCGS
10	KP	P	Z 14 35 13				
		SKKP	Z 14 55 26				
	CT	P	Z 14 35 17				
	WN	eP	Z 14 35.5				
		eSKS	N 14 45 53			3 9	
		eS	ZN 14 46 30			7 8	
		eSS	N 14 52.5				
		eSSS	N 14 56.0				
		eLr	ZN 15 05		17 24	14 24	
	SU	S	N 14 42 49			20 8	
	eL	N 14 54			76 30		
AK	S	N 14 45 25					
	eSS	N 14 51 35					
	eL	N 15 03					
RX	SKS	NE 14 46 16			5 13	3 14	
	S	NE 14 47 05			8 14	7 10	
	eL	ZNE 15 08.4		12 24	9 23	4 23	
	Epicentre:		14 22 18.2	49.9N	156.2E	29 km	USCGS
11	KP	eP	Z 12 12 54				
	RX	eL	N 12 50				
	WN	eL	ZN 12 52				
		Epicentre:		11 59 55.0	51.8N	171.0W	47 km
11	KP	eP	Z 19 42 43				
		Epicentre:		19 29 05.9	24.7S	69.8W	98 km

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.	
JAN 11	RX	L	NE 21 40.7		12 18	15 13		
		eL	Z 21 41.4	20 15				
	WN	L	N 21 45.0		7 13			
		eL	Z 21 45.6	9 14				
		Epicentre:		21 37 05.1	52.3S	160.3E	25 km	USCGS
12	ON	eP	E 05 20 01					
	KP	eP	Z 05 20 24					
	SU	eL	N 05 21 16					
	AK	eL	N 05 26					
		Epicentre:		05 16 12.2	20.3S	169.0E	100 km	USCGS
14	RX	eL	NE 00 38.6		5 18	9 16		
		eL	Z 00 39	8 15				
	WN	eL	N 00 43.0		5 15			
		eL	Z 00 43.5	5 13				
		Epicentre:		00 35 03.0	52.9S	160.8E	25 km	USCGS
14	KP	P	Z 05 40 00					
	CT	P	Z 05 40 08					
	RX	eL	NE 05 55					
		Epicentre:		05 32 42.5	5.4S	152.9E	81 km	USCGS
	15	RX	eL	NE 01 11.3		7 15	3 14	
		eL	Z 01 12.3	5 15				
		Epicentre:		01 02 50.2	53.6S	139.6E	25 km	USCGS
RX		eL	NE 10 17.5		4 18	5 16		
		eL	Z 10 17.9	6 15				
15	KP	P	Z 11 59 06					
	TO	e	Z 11 59 24					
		Epicentre:		11 53 10.9	39.5N	143.3E	75 km	USCGS
15	KP	eP	Z 14 30 51					
	TO	eP	Z 14 31 09					
15	KP	P	Z 16 48 47.5					
	WN	P	ZN 16 49	7 5			6.3	
		P	N 16 49		6 6		6.3	
		S	ZN 16 53	6 6	9 6		6.5	
		P	ZN 16 49 01 d					
		eS	Z 16 52 48					
	CB	eP	E 16 49 16					
	KM	P	X 16 49 29					
	GP	P	N 16 49 39					
	RX	eP	Z 16 49 54	3 5			6.1	
	eP	N 16 49 54		2 10		5.8		
	S	NE 16 54 05		5 15	2 12	5.8		
	Epicentre:		16 44 44.8	20.4S	169.5E	182 km	USCGS	
15	KP	P	Z 20 44 20					
		Epicentre:		20 34 14.3	5.2S	110.0E	565 km	USCGS
16	WN	eL	ZN 04 28	6 14	5 14			
16	KP	eP	Z 07 32 20					
		ePP	Z 07 35 27					
	TO	eP	Z 07 32.4					
		ePP	Z 07 35 33					
	CB	eP	E 07 32.5					
	WN	eP	Z 07 32 35	3 5			6.3	
		ePP	Z 07 35 45	3 9			6.4	
		eis	ZN 07 42 52	3 10	12 6		7.2	

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
JAN 11	eSS	ZN	48 08		7 10		
	eSSS	N	50 40		4 6		
	eLr	ZN	57.0	32 20	17 20		
	AK	IS	N 07 42 15				
	eSS	N	47 20				
	eL	N	59				
	RX	S	N 07 43 04		13 16		6.8
	eSS	N	49 00		12 22		
	eL	N	08 00		11 20		
	M	N	06		17 19		
Epicentre:			07 20 18.6	36.0N	141.1E	131 km	USCGS
16	KP	eP	Z 12 24 37				
	e	Z	43				
	TO	eP	Z 12 24 52				
	ePP	Z	28 00				
	AK	S	N 12 34 39				
	eSS	N	39 40				
	eL	N	51				
	RX	S	N 12 35 28		7 18		6.5
	eSS	N	41		6 20		
	eL	N	52		4 20		
M	N	58		9 20			
WN	e	ZN 12 40					
eL	N	52.8	15 22	9 20			
Epicentre:			12 12 34.4	36.0N	141.1E	131 km	USCGS
16	KP	eP	Z 12 24 37				
	e	Z	43				
	TO	eP	Z 12 24 52				
	ePP	Z	28 00				
	AK	S	N 12 34 39				
	eSS	N	39 40				
	eL	N	51				
	RX	S	N 12 35 28		7 18		6.5
	eSS	N	41		6 20		
	eL	N	52		4 20		
M	N	58		9 20			
WN	e	ZN 12 40					
eL	N	52.8	15 22	9 20			
Epicentre:			12 12 34.4	36.2N	141.7E	105 km	USCGS
16	RX	eS	N 16 04 08		3 16		6.0
	eSS	N	10.5				
	eL	N	22				
	M	N	27		5 20		
	WN	eL	ZN 16 22	9 20			
Epicentre:			15 41 23.3	36.4N	140.6E	147 km	USCGS
17	RX	eL	NE 01 41.3		9 16	12 16	
	eL	Z	42.0	11 12			
	WN	eL	ZN 01 45	6 12			
AK	eL	N 01 48					
17	KP	eP	Z 13 33 48				
	CT	eP	Z 13 34 02				
17	RX	eL	NE 17 58.4		9 18	10 12	
	eL	Z	59.0	14 16			
	AK	eL	N 18 03				
WN	eL	ZN 18 03	6 12	6 12			
17	KP	P	Z 21 16 27				
	CT	P	Z 21 16 39				
	S	Z	17 45				
	TO	eP	Z 21 16 39				
	WN	eP	N 21 17 02				
	eS	N	18 21				

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.	
JAN 17	TU	eS	N 21 17 16					
	CB	eS	E 21 18 44					
	GP	eS	N 21 19 27					
	Epicentre:			21 15 18	34.7S	179.5E	N	NZ(D) 5.0 NZ
17	KP	eP	Z 23 09 32					
	e	Z	51					
	CT	eP	Z 23 09 48					
	TO	eP	Z 23 09 49					
	WN	eP	Z 23 10 19					
	ePP	Z	11 00	3 9			5.7	
	eS	ZN	14 03	3 7				
	eLr	ZN	16.3	4 8	7 7		6.2	
	AK	eL	N 23 13	14 12	17 10			
	RX	eS	N 23 15 10		8 14		5.9	
e	E	30			6 11			
eL	E	17.3			11 20			
eL	N	19						
Epicentre:			23 05 32.5	21.4S	169.3E	84 km	USCGS	
17	CT	eP	Z 23 24 30					
KP	eP	Z 23 24 31						
18	TU	eP	N 04 56 43					
	S	N	57 23					
	KP	P	Z 04 56 44					
	CT	P	Z 04 56 54					
	eS	Z	57 45					
	TO	eP	Z 04 56 54					
	WN	eP	N 04 57 19					
	S	N	58 26					
	AK	S	N 04 57 21					
	GP	eP	N 04 57 53					
S	N	59 29						
CB	eS	E 04 58 42						
KM	eS	X 04 59 21						
Epicentre:			04 55 50	35.9S	179.1E	S	NZ(C) 5.2 NZ	
Additional readings from Brisbane included in epicentre determination.								
18	KP	e ?	Z 09 11 04					
	e(P)	Z	18					
Epicentre:			09 05 43.8	12.2S	166.2E	95 km	USCGS	
18	KP	eP	Z 13 59 48					
	S	Z	14 00 41					
	CT	e	Z 13 59 54					
	e	Z	14 00 26					
	WN	eS	N 14 01 38					
	CB	eS	E 14 02 03					
	KM	eS	X 14 02 40					
	GP	eS	N 14 02 43					
	Epicentre:			13 58 39	34.2S	178.4E	N	NZ(D) 4.8
	18	AK	eL	N 15 17				
WN		eL	ZN 15 20					
RX		eL	NE 15 22					
Epicentre:			15 09 44.9	24.4S	176.3W	10 km	USCGS	
18	AK	eL	N 20 57.4					
	M	N	21 01					
	WN	eL	N 21 02					
	RX	eL	NE 21 02					
	M	NE	06			6 16	3 20	
						4 15		
19	KP	eP	Z 01 58 54					

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
JAN 19	KP	eP	Z	04	26	38						
		i	Z			42						
		eScP	Z		33	57						
		e	Z		34	07						
	TO	eP	Z	04	26	50						
	AK	S	N	04	30	42						
		eL	N		34	0						
	WN	e	ZN	04	32	44	3	10				
		eL	ZN		38							
	RX	eS	E	04	32	45					2 18	5.4
	eL	NE		36				3 20		3 20		
	M	NE		39				4 16		11 16		
	Epicentre:		Z	04	21	16.0	14.48	166.7E		26 km		USCGS
19	AK	eP	N	05	58	03						
		S	N	06	01	15						
		L	N		02	47						
	KP	eP	Z	05	58	23						
		e	Z		59	31						
	WN	eP	ZN	05	59	04	3	7				5.8
		eP	N	05	59	04			5 7			6.1
		eS	ZN	06	02	54	4	9	5 5			6.4
		eL	ZN		04	9	13	15	11 14			
	KM	eP	X	05	59	12						
GP	eP	N	05	59	22							
RX	eS	N	06	03	59			8 16			6.0	
	eL	E		05	1					7 20		
	M	NE		08				6 18		10 14		
	Epicentre:		Z	05	54	25.5	21.58	170.3E		100 km		USCGS
19	KP	P	Z	17	35	13						
	Epicentre:		Z	17	22	16.9	49.7N	155.8E		31 km		USCGS
20	KP	P	Z	02	30	49						
20	KP	P	Z	03	26	02						
20	KP	P	Z	12	35	18						
20	ON	eP	E	18	46	11						
		P	Z	18	46	37						
	CT	eP	Z	18	46	51						
	TO	eP	Z	18	46	52						
	AK	eL	N	18	48	1						
		M	N		50							
	RX	eL	NE	18	52				8 15		13 14	
	M	NE		54								
20	KP	eP	Z	22	47	01						
	Epicentre:		Z	22	34	51.1	38.1N	141.2E		52 km		USCGS
20	KP	eP	Z	22	47	01						
	Epicentre:		Z	22	34	51.1	38.1N	141.2E		52 km		USCGS
20	RX	eL	NE	22	05	1			3 15		6 15	
21	RX	eL	NE	00	28	1			3 16		5 16	
22	AK	eP	N	03	29	35						
		ePP	N		30	25						
	eS	N		34	25							
	eSS	N		35	18							
		eL	N		35	1						
	ON	e(P)	E	03	29	45						
		eS	E		34	00						
		eL	E		36	1						
	KP	eP	Z	03	29	51						
		eL	Z		40							
TO	eP	Z	03	30	0							

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
JAN	WN	eP	ZN	03	30	18	4	6				6.4
		eP	N	03	30	18			3 6			6.5
		e	ZN		31	36	7	12	6			
		e	ZN		32	43	7	6	10 6			
		eS	ZN		35	24	7	10				
		eLq	N		37	4						
		eLr	ZN		39	0	190	17	270 16			
	GP	eP	N	03	30	31						
	KM	eP	X	03	30	6						
	RX	eP	Z	03	30	44	4	5				6.6
	eP	N	03	30	44			4 3			7.0	
	e	N		31	34			5 16				
	S	NE		36	22			33 23		32 10		
	Lq	NE		38	9			75 32		85 35		
	eLr	Z		44								
	M	ZNE		46		125	20	170 16	108 17	105 17		
	Epicentre:		Z	03	24	04.5	11.98	166.2E		25 km		USCGS
22	KP	eP	Z	06	22	15						
WN	eL	ZN	06	33				2 16				
RX	eL	N	06	38								
	Epicentre:		Z	06	16	27.9	11.88	166.3E		16 km		USCGS
22	KP	P	Z	12	48	57						
		eP	E	12	48	59						
		e	E		49	21						
		e	E		55							
	WN	eP	N	12	49	30						
		S	N		51	08						
	CT	e(S)	Z	12	50	28						
	AK	eL	N	12	50	1						
	CB	eS	E	12	51	31						
	KM	eS	X	12	52	09						
GP	eS	N	12	52	15							
RX	eL	NE	12	57								
	Epicentre:		Z	12	47	24	35S	177.4W	N		NZ(D)	5.2
22	KP	eP	Z	16	12	27						
		eP	N	16	13	05						
	WN	eS	N	15	40			2 5				6.2
	GP	eP	N	16	13	43						
		eS	N	16	16	46						
	KM	eP	X	16	13	45						
		eS	X	16	16	46						
	AK	eL	N	16	14	55						
	CB	eS	E	16	16	03						
	RX	eS	NE	16	18	3			1 10		2 12	5.3
	eL	NE		21				2 16		3 16		
	Epicentre:		Z	16	09	37.3	28.58	174.8W		68 km		USCGS
22	KP	eP	Z	19	10	44						
		eL	NE	19	21	1						
		M	NE		27				6 15		5 15	
	WN	eL	ZN	19	22				6 15			
	Epicentre:		Z	19	04	54.1	12.38	166.1E		35 km		USCGS
23	KP	eP	Z	10	50	10						
		eP	Z	10	50	25						
24	ON	eP	E	07	29	38						
		PP	E		30	14						
		eS	E		33	30						
	KP	P	Z	07	29	57						
		PP	Z		30	39						
	CT	P	Z	07	30	09						
TU	e	N	07	30	10							
		N		31								

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
JAN	KM	eP	X 07 30 37				
	AK	e	N 07 30 42				
	GP	P	N 07 30 42				
		pP	N 31 14				
	WN	P	Z 07 31 09	4 6			6.3
		P	N 07 31 09		4 5		6.5
	RX	eP	Z 07 32 00	2 6			5.7
		eP	N 07 32 00		3 10		6.1
		S	NE 35 46		2 8	2 10	5.5
		Epicentre: 07 25 03.5			15.6S	167.6E	198 km
24	RX	P	Z 08 06 40	5 8			5.8
		P	NE 08 06 40		5 8		5.9
		eS	E 10 01			4 8	5.5
		eL	N 10 9		15 22		5.7
		eL	Z 11.1	17 18			
	CT	P	Z 08 07 59				
	TO	eP	Z 08 00 00				
	WN	e ?	N 08 08 15		5 5		
		eL	N 15 1/2		12 8		
		AK	eL	N 08 14			
	M	N 20					
	Epicentre: 08 02 28.7			61.1S	152.1E	25 km	USCGS
25	ON	e(P)	E 05 26 41				
	KP	eP	Z 05 26 53				
		i	Z 55				
	CT	eP	Z 05 27 04				
	TO	eP	Z 05 27 04				
	WN	eP	Z 05 28 26	3 5			6.3
		eL	Z 37	7 12	8 12		
	AK	S	N 05 29 00				
		eL	N 32.9				
	RX	eP	N 05 29.1		3 20		
	eL	N 38		9 15			
	eL	Z 40 1/2	8 16				
	M	N 41					
	Epicentre: 05 21 42.2			14.1S	165.4E	195 km	USCGS
25	KP	eP	Z 06 12 14				
	Epicentre: 06 06 45.8			13.8S	166.1E	36 km	USCGS
25	KP	eP	Z 12 10 54				
	Epicentre: 12 05 35.6			13.8S	165.9E	134 km	USCGS
25	AK	eL	N 16 56 1/2				
25	KP	iP	Z 17 31 01 u				
	TO	P	Z 17 31 05				
	Epicentre: 17 20 34.7			1.2N	121.3E	56 km	USCGS
25	KP	eP	Z 19 17 12				
	Epicentre: 19 04 22.8			49.8N	156.0E	98 km	USCGS
26	KP	eP	Z 06 07 45				
	RX	eL	NE 06 21				
	Epicentre: 06 02 20.1			13.9S	165.7E	50 km	USCGS
26	KP	eP	Z 10 32 39				
	RX	eL	NE 10 49				
	Epicentre: 10 26 59.7			11.7S	165.7E	113 km	USCGS
26	KP	P	Z 13 16 21				
	CT	eP	Z 13 16 35				
	TO	eP	Z 13 16 35				
	SU	eS	N 13 17 00		13 7		

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.	
JAN	WN	eP	N 13 17 12					
		eS	N 20 51		3 6		5.9	
		eL	ZN 23	2 13				
	AK	eL	N 13 20			2 18		
	RX	eL	NE 13 24			2 18		
	Epicentre: 13 12 22.6			21.3S	169.5E	77 km	USCGS	
	26	SU	P	N 16 15 35		108 15		
			eS	N 17.5				
		AK	eP	N 16 16 55				
			S	N 20 03				
		eL	N 21.0					
		M	N 23					
ON		e(P)	E 16 17 03					
		eL	E 19 38					
KP		eP	Z 16 17 16					
		e	Z 26					
TO	eP	Z 16 17 32						
	eL	Z 23						
CT	eP	Z 16 17 33						
TU	eP	N 16 17 38						
	eS	N 21 05						
WN	eP	ZN 16 17 54	27 12			6.5		
	eP	N 16 17 54		26 9		6.7		
	iS	N 21 49 n		40 12				
	iPcP	Z 58	29 12					
	e	N 22 42		43 12				
	e	ZN 23 20	16 8	23 9				
	eLr	ZN 24.1	120 13	96 13				
CB	eP	E 16 18 00						
	eS	E 22 33						
	eL	E 25						
KM	eP	X 16 18 05						
	eS	X 21 59						
	eL	X 25						
GP	eP	N 16 18 13						
	eS	N 22 19						
	eL	N 25						
RX	P	Z 16 18 28	7 8			6.1		
	P	N 16 18 28		10 12		6.2		
	e	E 19 16			8 10			
	S	NE 22 44		34 18	63 16	7.0		
	e	E 24 18			13 10			
	eL	NE 25 1/2		32 22	50 20			
	eL	Z 26 1/2	50 18					
	M	ZNE 28	135 16	88 15	89 15			
	Epicentre: 16 13 25.1			21.4S	169.5E	119 km	USCGS	
26	SU	eP	N 18 51 06					
		e(S)	N 53 30					
	ON	eP	E 18 52 41					
	KP	P	Z 18 53 05					
	CT	P	Z 18 53 19					
	TO	eP	Z 18 53 20					
	TU	eP	N 18 53 20					
	CB	eP	E 18 53 34					
	WN	eP	N 18 53 40					
		eS	N 57 35		3 5		6.2	
	e	Z 53	3 8					
	eLr	ZN 59	5 18					
KM	eP	X 18 53 48						
GP	P	N 18 53 59						
RX	eP	N 18 54 13						
	eS	N 58 48		3 12		5.8		
	eL	NE 19 00 1/2		5 24				
	eLr	Z 02 1/2	10 18					
	M	NE 03		8 18	5 20			

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
JAN	AK	eL	N 18 57				
	Epicentre: 18 48 56.9 20.7S 169.5E 106 km USCGS						
26	SU	ep	N 19 54 41				
		e(s)	N 19 55 02				
	KP	eP	Z 19 58 25				
		e	Z 19 58 32				
	TO	P	Z 19 58 38				
	CT	P	Z 19 58 39				
26	SU	eP	N 21 21 18				
	KP	P	Z 21 25 13				
	CT	P	Z 21 25 19				
	TO	eP	Z 21 25 19				
	Epicentre: 21 20 33.7 18.1S 176.5E 25 km USCGS						
27	KP	P	Z 00 59 21½				
	CT	P	Z 00 59 30 u				
	TO	P	Z 00 59 30				
	CB	eP	E 00 59 33				
	RX	eL	N 01 12		2 22		
	Epicentre: 00 52 14.6 6.4S 154.7E 23 km USCGS						
27	SU	eP	N 14 49 05				
		L	N 14 51 37		50 12		
	KP	eP	Z 14 50 58				
	CT	eP	Z 14 51 13				
	RX	eS	N 14 56 38		2 16		
		eL	N 14 59.0		3 19		
		eL	Z 15 00½	3 14			
		M	N 01.7		9 15		
	AK	eL	N 14 56.7				
	WN	eL	ZN 14 57	10 14	9 13		
	Epicentre: 14 46 51.2 21.4S 169.5E 64 km USCGS						
27	SU	eP	N 15 08 10		10 3		
		L	N 15 10 40		67 15		
	KP	eP	Z 15 09 58				
	TO	e(P)	Z 15 10 09				
	WN	eP	Z 15 10 10	10 4			
		eP	N 15 10 10		5 8		
		eS	N 14 23		4 6		
		eLr	ZN 17	14 14	11 13		
	CT	e(P)	Z 15 10 17				
	RX	eS	N 15 15 30		5 16		
		eL	N 17.8		3 20		
		eL	Z 19				
		M	ZN 21	15 15	13 15		
	AK	eL	N 15 15.6				
	Epicentre: 15 05 53.5 21.2S 169.4E 68 km USCGS						
27	KP	eP	Z 15 15 06½				
		i	Z 15 15 10				
		eS	Z 17 53				
	CT	eP	Z 15 15 18				
		eS	Z 18 13				
	TO	eP	Z 15 15 19				
	TU	eS	N 15 17 42				
	WN	eS	N 15 18 35				
28	KP	eP	Z 03 38 22				
	WN	eLr	Z 04 10				
	RX	eL	ZNE 04 10				
	Epicentre: 03 24 39.2 13.6S 76.6W 35 km USCGS						
28	ON	eP	E 05 16 08				
	SU	L	N 05 16.2				

5.7
6.1

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
JAN	KP	P	Z 05 16 32				
	CT	P	Z 05 16 46				
	TO	eP	Z 05 16 46				
	CB	eP	E 05 17 02				
	WN	eP	N 05 17 05				
	KM	P	X 05 17 17				
	GP	eP	N 05 17 26				
	RX	eL	N 05 22				
28	CT	P	Z 14 15(52)				
	KP	eP	Z 14 15 56				
	SU	e(SS)	N 14 27 38				
		eL	N 29				
	RX	eL	NE 14 30				
		M	NE 41				
	Epicentre: 14 06 21.0 45.0S 105.8W 144 km USCGS						
28	KP	P	Z 14 27 29				
	CT	eP	Z 14 27(38)				
	AK	S	N 14 31 40				
28	KP	P	Z 14 40 16				
	CT	P	Z 14 40(27)				
	Epicentre: 14 34 56.1 13.8S 165.8E 128 km USCGS						
28	KP	eP	Z 17 38 29				
	CT	eP	Z 17 38(44)				
	AK	eL	N 17 44				
	RX	eS	N 17 44 14				
		eLq	E 146½				
		eLr	Z 48			3 20	
		M	NE 48½				
	WN	eLr	Z 17 46			3 15	
28	SU	L	N 18 39 03			16 12	
28	SU	iP	N 19 45 20 s			25 5	
		eS	N 48.0			58 10	
		eL	N 49			180 11	
	ON	e(P)	E 19 46 48				
		eL	E 19 50				
	AK	P	N 19 46 50				
		L	N 51 21				
		M	N 54				
	KP	eP	Z 19 47 07				
	TU	eP	N 19 47.3				
		eS	N 51 11				
	CT	P	Z 19 47(22)				
	WN	eiP	ZN 19 47 46	9 10			6.1
		is	N 19 47 46			10 10	6.2
		iS	N 51 40			10 7	
		e(PcP)	Z 52	8 9			
		eLr	ZN 53	35 18		44 18	6.1
	GP	eP	N 19 48 02				
		eS	N 52 23				
	RX	P	Z 19 48 20	4 9			6.0
		P	N 19 48 20			4 12	5.9
		eS	NE 52 38			20 18	6.1
		i	E 53 14			4 12	
		Lq	NE 55.0			15 14	
		eLr	Z 57	37 15		10 22	30 22
		M	NE 57½			56 15	
	Epicentre: 19 43 01.4 21.3S 169.5E 50 km USCGS						
29	KP	P	Z 00 55 52				
	CT	P	Z 00 56(03)				
	SU	eL	N 00 57			6 8	

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
JAN	RX	eL M	NE NE	01 06 11		1 13 2 13	
		Epicentre:	00 50 35.0	14.0S	165.9E	123 km	USCGS
29	KP	P	Z	03 22 30			
	CT	eP	Z	03 22 (33)			
	SU	eL	N	03 23			
	RX	eL	NE	03 35			
29	KP	P	Z	13 36 52			
		pP	Z	37 07			
		Epicentre:	13 23 54.7	51.8N	165.9W	41 km	USCGS
31	RX	eSKS	N	01 13 24		1 8	
		eLq	E	33			
		eLr	ZN	43		3 20	
		M	ZNE	48		2 20 2 17	6.0
	SU	eL	N	01 30			
		Epicentre:	00 48 36.5	55.8N	153.9W	26 km	USCGS
31	SU	eP	N	06 15 40			
		e(L)	N	18.0		35 14	
	AK	eP	N	06 17 15			
		eL	N	22			
	KP	eP	Z	06 17 23			
	WN	eP	Z	06 18 10		1 6	5.6
		eP	N	06 18 10		2 6	5.9
		eS	N	22 26		2 5	5.8
		eL	ZN	25.0		4 15 3 11	
	GP	eP	N	06 18 29			
	RX	eS	N	06 23 02		1 15	5.2
		eL	N	26 22		1 17	
		eL	Z	27			
		M	NE	28		2 14 4 13	
		M	Z	29			
		Epicentre:	06 13 15.2	17.1S	166.8E	60 km	USCGS
31	ON	eP	E	13 27 16			
	KP	P	Z	13 27 31			
31	SU	e	N	18 28 55			
		e	N	29 50		4 6	
		eL	N	30 35		22 8	
31	KP	e(P)	Z	18 45 14			
		Epicentre:	18 32 19.5	51.4N	178.4W	53 km	USCGS
FEB	1	KP	eP	Z	05 03 34		
		Epicentre:	04 53 44.4	11.9N	143.7E	95 km	USCGS
1	SU	e(P)	N	06 28 59			
		e	N	29 47			
		eL	N	30 30		25 9	
	KP	eP ?	Z	06 32 41			
		e	Z	43			
	RX	e(L)	NE	06 43 44		1 15	
		Epicentre:	06 27 18.9	13.5S	173.4E	25 km	USCGS
1	KP	eP	Z	18 51 27			
		Epicentre:	18 39 03.6	37.4N	138.4E	38 km	USCGS
1	SU	e	N	20 10 45			
		e	N	12 05			
	KP	eP	Z	20 13 18			
	CT	e ?	Z	20 13 41			
	WN	e ?	N	20 14 34			
	GP	e(pp)	N	20 15 38			
		Epicentre:	20 09 13.8	18.0S	178.4W	599 km	USCGS

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
FEB	2	KP	P	Z	00 52 29		
			e	Z	40		
			i	Z	53 32 u		
		Epicentre:	00 42 07.2	7.3N	127.3E	157 km	USCGS
2	KP	e(P)	Z	08 06 34			
		Epicentre:	08 00 45.3	12.0S	166.0E	25 km	USCGS
2	KP	iP	Z	11 23 22 d			
		e	Z	28			
		e(pp)	Z	51			
		e	Z	24 10			
	CT	P	Z	11 23 29			
		e	Z	37			
		e(pp)	Z	24 04			
	TO	eP	Z	11 23 29 d			
	CB	eP	E	11 23 31			
	GP	e(P)	N	11 23 45			
		Epicentre:	11 13 31.8	13.6N	145.3E	131 km	USCGS
3	KP	iP	Z	12 34 09.5 u			
		e	Z	32			
		e(S)	Z	42			
	TU	iP	N	12 34 13.5 s			
		S	N	46			
	CT	iP	Z	12 34 14.7 u			
		e(S)	Z	49			
	ON	iP	E	12 34 19.1 e			
		e	E	39			
		iS	E	58½			
		e	E	35 06			
	WN	iP	ZN	12 34 33.3 us			
		S	ZN	35 24½			
	CB	eP?	E	12 34 38.2			
		e	E	39.3			
		e	E	40			
		e ?	E	35 34			
		e(S)	E	36			
	AK	iS	N	12 34 46 n			
		e	N	35 50			
	KM	eP?	X	12 34 59.6			
		e	X	35 00.3 sw			
		iS	X	06.4 sw			
		e	X	36 10.6 ne			
		e	X	13			
		e	X	49			
	GP	iP	N	12 35 05.2 s			
		i	N	07			
		e(S)	N	13½			
		i	N	36 21			
		e	N	22			
		e	N	37 26			
		e	N	38 19			
		Epicentre:	12 33 28	37.6S	175.8E	320 km±	NZ(C) 6 NZ
4	SU	M	N	03 00			
	KP	P	Z	03 00 22		7 10	
		e	Z	33			
	CT	e ?	Z	03 00 42			
4	SU	e ?	N	05 53 40			
		eL	N	55			
		M	N	56		13 7	
	KP	eP	Z	05 57 51			
4	SU	M	N	06 04			
	KP	e ?	Z	06 05 31		22 9	
		e	Z	41			

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
FEB 4	KP	eP Z	09 05 09				
		epP Z	47				
	Epicentre:		08 51 48.9	24.7N	95.3E	162 km	USCGS
4	KP	P Z	13 02 14				
	Epicentre:		12 49 37.7	50.3N	156.4E	161 km	USCGS
4	SU	eP? N	15 30 09				
	eL N		31				
	M N		33		110 8		
ON	e	E	15 33 48				
	e(L) E		40.0				
KP	eP Z		15 34 05				
	e Z		10				
	e Z		22				
	e Z		37 15				
	e Z		21				
	e Z		38 47				
WN	eL ZN		15 43	3 16			
RX	eL N		15 44				
	eL ZE		46				
	M N		47		4 17		
	Epicentre:		15 29 11.7	17.0S	176.8W	57 km	USCGS
4	KP	eP? Z	19 21 20				
	e Z		22				
	e Z		31				
GP	eP N		19 21 38				
RX	eS NE		19 31 48				
	eSS NE		37 16				
	eL N		50				
	M N		54		1 21		
	Epicentre:		19 09 12.9	24.ON	122.7E	14 km	USCGS
5	KP	eP Z	00 11 07				
	Epicentre:		23 58 52.4	45.3N	148.2E	25 km	USCGS
5	SU	e? N	07 41 20				
ON	P E		07 43 44				
	e E		44 11				
KP	P Z		07 43 55				
	e Z		45 19				
TU	e(P) N		07 43 59				
WN	eP ZN		07 44 23				
CB	eP E		07 44 27				
KM	eP X		07 44 42				
GP	eP N		07 44 49				
	Epicentre:		07 39 57.9	17.7S	178.4W	590 km	USCGS
5	RX	eL E	16 34				
	M E		36				
	Epicentre:		15 38 34.0	8.ON	82.8W	49 km	USCGS
5	KP	e(P) Z	18 02 21				
RX	eS N		18 10 00				
	eSS N		14 50				
	eLq N		18				
	eLr ZNE		22				
WN	eL Z		18 25				
	M Z		28		3 18		
6	KP	P Z	00 03 54				
	Epicentre:		04 16 06				
	Epicentre:		04 06 08.9	14.1N	145.5E	22 km	USCGS
6	KP	eP Z	06 32 14				
	Epicentre:		06 27 49.6	21.0S	174.6W	25 km	USCGS

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
FEB 6	KP	eP Z	10 43 24				
	Epicentre:		10 30 07.2	19.2S	68.6W	181 km	USCGS
6	RX	e NE	11 39 14			1 15	
	eL N		42				
	eL ZNE		44				
6	KP	eP Z	12 25 18				
	e Z		27				
	pp Z		35				
RX	eL N		13 00				
	M N		02			1 22	
	M N		06			1 20	
	Epicentre:		12 12 26.0	51.6N	174.8W	77 km	USCGS
6	KP	eP Z	18 28 03				
	e Z		12				
RX	eSKS N		18 39 38			1 8	
	eL N		19 00				
	M N		03			1 24	
	Epicentre:		18 15 21.6	44.8N	149.1E	25 km	USCGS
6	ON	eP E	19 36 01				
KP	eP Z		19 36 17				
	e Z		25				
	e Z		38 20				
CT	P Z		19 36 25				
	e Z		44				
	e Z		38 23				
TU	eP N		19 36 29				
	e N		42 02				
CB	eP E		19 36 29				
WN	P ZN		19 36 36				
	e Z		37 30				
	e N		42 16				
KM	eP X		19 36 38				
GP	eP N		19 36 46				
RX	e N		19 46 38				
6	KP	P? Z	20 02 47				
6	SU	eP N	21 50 47				
	i N		53 05			n	
	i(s) N		55 29			15 5	
ON	eP E		21 51 56			30 13	
	e E		52 10				
AK	eP N		21 51 57				
	e(P) N		53 30				
	e N		56 32				
	eS N		57 28				
KP	ip Z		21 52 12			u	
	epP Z		27				
	ePcP Z		54 37				
	epPcP Z		51				
	e Z		55 12				
	e(s) Z		58 19				
	e Z		23				
	e(s) Z		44				
CT	ip Z		21 52 22			u	
	e Z		38				
	e(PcP) Z		54 41				
TU	e(P) N		21 52 23				
	e N		54 45				
	eS N		58 06				
	e N		39				
CB	P E		21 52 25				
	e E		54 41				

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.					
FEB	KM	eS	E	58	12												
		e(sS)	E		33												
		eScS	E	22	02	28											
		eSsCS	E			56											
		eP	X	21	52	31											
		e	X			48											
		e	X			54											
		eS	X			58											
		eScS	X	22	02	35											
		eSsCS	X			58											
WN	P	ZN	Z	21	52	32						u					
		e	ZN			54											
		eS	ZN	21	58	23											
		e	Z			29											
		e(SS)	ZN	22	01	.5											
		eL	ZN			04											
		M	Z			06	22	20									
		GP	iP	N	Z	21	52	43						s			
				e	N			53									
				e	N			54									
eS	N					58.8											
RX	iP			ZN	Z	21	52	48				3	8	us			
				e	ZN			54						us			
				e	ZNE			55					8	14			
				e	E			58									
				eS	NE			49									
				eP	E	22	02	02									
		e	E			09											
		e	NE			24											
		M	ZN			08	90	19	90	19							
		Epicentre:			21	45	13.5	6.8S		155.3E		59 km	USCGS				
6	KP	P	Z	22	04	36											
			epP	Z			49										
			PcP	Z			07										
			CT	eP	Z	22	04	45									
			WN	eP	Z	22	04	56									
			GP	eP	N	22	05	07									
			Epicentre:			21	57	33.4	6.4S		155.0E		25 km	USCGS			
			7	RX	eL	N	00	30									
						M	N			38				1	20		
						7	SU	e(P)	N	01	47	12					
e(S)	N									49							
KP	eP	Z							01	49	30						
CT	e(P)	Z							01	49	38						
ON	e	E							01	50	03						
KM	e(P)	X							01	50	06						
GP	eP	N							01	50	09						
AK	eL	N							02	00							
WN	eL	ZN	02	01													
RX	eL	NE	02	01													
Epicentre:			01	43	42.6	11.6S		166.1E		59 km	USCGS						
7	KP	P	Z	02	18	07											
			7	KP	eP	Z	03	03	34								
						e	Z			38							
						CT	eP	Z	03	03	47						
						e	Z			04							
						GP	eP	N	03	04	19						
						WN	eL	Z	03	16							
						RX	eL	NE	03	19							
						Epicentre:			02	57	51.5	11.7S		166.2E		55 km	USCGS

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
FEB	7	KP	iP	Z	03	50	06					
				e	Z			54				
Epicentre:			03	47	40.9	23.6S		179.7W		521 km	USCGS	
7	KP	eP	e	Z	04	05	32					
				Z			51					
CT	eP	e	Z	Z	04	05	44					
				N	04	06	16					
GP	eP	eL	NE	Z	04	22						
				Z	03	59	49.4	11.8S		166.2E	55 km	USCGS
Epicentre:												
7	KP	eP	e	Z	05	20	46					
				Z	05	23	10					
CT	eP	e	Z	Z	05	23	11					
				Z			28					
Epicentre:					05	11	45.0	4.1S		103.3E	82 km	USCGS
7	KP	e(P)	e	Z	06	08	07					
				Z	06	08	08					
Epicentre:					06	02	12.6	11.6S		166.2E	77 km	USCGS
7	KP	eP	e	Z	06	23	59					
				Z			24					
CT	e	Z	Z	Z	06	24	07					
				Z			11					
Epicentre:												
7	KP	(P)	e	Z	14	30	25					
				Z	14	37	17					
Epicentre:					14	24	35.7	33.1S		72.5W	56 km	USCGS
7	WN	e(P)	e	N	14	41	41					
				Z	14	42	35					
7	KP	e(P)	e	Z	14	49	16					
				Z	14	36	53.5	33.1N		137.6E	25 km	USCGS
Epicentre:												
7	KP	eP	e	Z	21	14	16					
				Z			50					
Epicentre:					21	01	37.3	43.9N		147.1E	36 km	USCGS
7	KP	e(P)	e	Z	22	22	52					
				Z	22	09	41.5	49.3N		156.3E	60 km	USCGS
Epicentre:												
7	KP	P	e	Z	23	40	10					
				Z			23					
Epicentre:					23	27	10.8	51.4N		177.2W	15 km	USCGS
8	SU	eP	e	N	02	39	14					
				N			28					
ON	P	e	E	N	02	41	21					
				E			42					
KP	iP	e	Z	Z	02	41	41				u	
				Z			45					
TU	P	e	Z	Z	02	48	51					
				N	02	41	53					
CB	eP	e	E	N	02	46	04					
				E	02	42	05					
WN	P	e	N	Z	02	42	07					
				N			10					
KM	eP	e	X	X	02	42	14					
				N	02	42	25					
Epicentre:					02	36	40.5	15.3S		167.5E	162 km	USCGS

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
FEB 8	ON	e	E	04	37	08			
		eS	E	04	39	16			
	KP	P	Z	04	37	21			
		e	Z	04	38	09			
		e	Z	04	32				
	e	Z	04	39	10				
		e(s)	Z	04	40	47			
		e	Z	04	40	58			
	TU	e	N	04	37	24			
		eS	N	04	39	42			
	CB	e(P)	E	04	38	05			
		e(S)	E	04	40	48			
	GP	eP	N	04	38	26			
		eS	N	04	41	34			
	WN	eS	N	04	40	40			
eS		X	04	41	28				
Epicentre:			04	34	35.4	26.1S	178.8W	431 km	USCGS
8 CT	eP	Z	08	17	02				
	eP	Z	08	17	04				
Epicentre:			08	04	13.8	10.6S	71.0W	669 km	USCGS
8 KP	eP	Z	09	54	46				
	eP	Z	09	54	55				
	e(P)	N	09	55	01				
8 KP	P	Z	12	04	34				
	e	Z	12	05	07				
	e(P)	Z	12	04	45				
Epicentre:			11	59	52.3	18.8S	174.9W	76 km	USCGS
8 KP	P	Z	15	57	40				
	e(P)	Z	15	57	59				
	e(L)	Z	16	07					
	eL	ZNE	16	08					
8 KP	P	Z	17	01	08				
	eP	Z	17	01	18				
	e	Z	17	01	28				
Epicentre:			16	57	23.3	20.4S	178.1W	543 km	USCGS
8 SU	ip	N	17	52	10 n				
	iS	N	17	53	16 n				
ON	eP	E	17	54	16				
	e	E	17	57	28				
KP	eS	E	17	57	09				
	P	Z	17	54	30				
	e	Z	17	55	50				
TU	eS	Z	17	57	37				
	e	N	17	54	32				
CT	e(S)	N	17	57	42				
	P	Z	17	54	38				
e	Z	17	57	51					
	(S)	Z	17	57	05				
	(S)	Z	17	57	59				
WN	eP	N	17	54	59				
	eS	N	17	58	20				
e	N	17	57	33					
	eScS	N	18	05	10				
CB	eP	E	17	55	01				
	eS	E	17	58	25				
KM	eP	X	17	55	17				
	e(S)	X	18	05	52				
	eScS	X	18	05	13				
GP	eP	N	17	55	23				
	eS	N	17	59	05				
e	N	17	57	22					

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Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.		
FEB	RX	e	N	18	05	38					
		Epicentre:		17	50	45.2	20.4S	178.1W	543 km	USCGS	
8 KP	P	Z	18	01	18						
	eP	Z	18	01	20						
	eP?	N	18	01	38						
8 KP	eP	Z	19	33	15						
	e(P)	Z	19	33	24						
	eL	N	19	52							
	Epicentre:		19	25	54.9	5.9S	151.8E	51 km	USCGS		
9 KP	eP	Z	00	06	11						
	e	Z	00	06	17						
	e	Z	00	08	37						
	e	Z	00	06	47						
Epicentre:			23	59	22.4	7.2S	154.7E	140 km	USCGS		
9 ON	i	eP	E	02	10	40					
		e	E	02	10	48					
		e	E	02	11	02					
		e	E	02	12	57					
		e	E	02	13	01					
		eP	Z	02	10	52					
		e	Z	02	11	56					
		e	Z	02	11	05					
		e	Z	02	11	29					
		e	Z	02	14	52					
TU	e	N	02	11	00						
	eS	N	02	11	19						
SU	P	N	02	11	00						
	e	N	02	11	20						
CT	eS	N	02	11	05						
	eP	Z	02	11	11						
e	Z	02	11	23							
	e	Z	02	13	25						
	e	Z	02	15	53						
WN	eP?	Z	02	11	34						
	e	Z	02	11	42						
e	N	02	11	45							
	S	ZN	02	14	01 s						
CB	e	Z	02	11	40						
	e	E	02	11	45						
e	E	02	12	11							
	eS	E	02	14	18						
	e	E	02	15	25						
KM	e	X	02	12	10						
	e	X	02	12	42						
eS	X	02	14	56							
	e	X	02	15	09						
GP	eP?	N	02	12	10						
	e	N	02	12	12						
eS	N	02	15	04							
	e	N	02	15	09						
RX	eP	NE	02	12	47						
	e?	N	02	14	48						
	eL	NE	02	17							
	M	E	02	19							
eL	Z	02	19								
	M	ZN	02	20							
Epicentre:			02	08	15.4	14 21	20 21	28.2S	177.4W	37 km	USCGS
9 ON	eP?	E	08	48	13						
		E	08	48	19						

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20 20

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
FEB	CB	e	E	21	04	53			
		e	E		05	09			
		eS	E		07	09			
	KM	e	E	21	05	02			
		e(P)	X		07	47			
		e(S)	X			52			
	GP	eP	N	21	05	03			
		e	N		07	54			
		e(s)	N		08	03			
	RX	e(ScP)	N	21	05	34		3 22	
e(P)		N		09	46				
eL		ZNE		11					
Epicentre:			21	01	06.4	28.2S	177.5W	41 km	USCGS
12 RX	eS	E	01	38	22				
	eL	ZNE		48					
	M	ZNE		50					
Epicentre:			01	19	21.8	34.8S	106.9W	100 km	USCGS
12 SU	P	N	12	11	06				
		N		12	31				
		N		12	31				
	ON	e(P)	E	12	14	05			
		eP?	Z	12	14	15			
		i	Z		17	d			
	TU	e(P)	N	12	14	19			
		eP	N	12	14	47			
		e(P)	E	12	14	50			
	KM	eP	X	12	15	05			
e(P)		N	12	15	12				
e(P)		N	12	09	22.0	15.0S	175.2W	281 km	USCGS
Epicentre:			12	09	22.0	15.0S	175.2W	281 km	USCGS
12 KP	e?	Z	12	51	23				
	e?	Z		53	31				
	e	Z			46				
12 SU	e?	N	12	59	25				
		N		13	01	07			
		N		13	01	41			
	ON	eP	E	13	01	09			
		eS	E		12	50			
		e	E	13	01	59			
	KP	iP	Z	13	01	59			
		i	Z		02	09			
		e(ScP)	Z		07	54			
	TU	e	Z		08	04			
eP		N	13	02	06				
eS		N		05	49				
CB	eP	E	13	02	24				
	eS	E		06	23				
	eP	ZN	13	02	25				
WN	e	N		37					
	e	N		49					
	eS	N		06	20				
KM	eP	X	13	02	35				
	eS	X		06	47				
	eP	N	13	02	44				
GP	eS	N		07	03				
	eS	E	13	07	24				
	e	ZN		30					
Epicentre:			12	57	15.3	13.1S	171.8E	598 km	USCGS

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
FEB	12 KP	eP	Z	15	30	38			
		Epicentre:		15	21	17.9	4.1S	127.3E	111 km
12 SU	eP	N	22	05	01				
		N		06	01				
		N		13	40				
	eS	N		14	05			90 25	
		N		18.2					
		N		25					
	eL	N		29				90 20	
		N		39				40 19	
		N		39					
	KP	P	Z	22	06	21			
WN		eP	Z	22	06	37			
		e	Z		40			2 6	
eSKS	N		16	55					
	N		17	15			8 6		
	Z		18	22					
eSS	ZN		23						
	ZN		27						
	N		30						
eL	ZN		35						
	ZN		39				40 23		
	ZN		51				18 18		
RX	eP	ZN	22	06	55			25 23	
	e?	N		16	54			14 17	
	eSKS?	N		17	12				
e	NE		16						
	NE		22	17	49			30 18	
	ZNE		24					30 24	
eSSS	ZN		28					15 22	
	E		32						
	ZN		36						
M	NE		40					25 24	
	Z		42						
	E		22	34				30 21	
Epicentre:			21	53	43.5	43.7N	147.6E	45 km	USCGS
12 KP	P	"	23	39	11				
		eL	ZN	24	11				
		M	Z		14				
	SU	eL	N	23	59				
		M	N	24	02			8 20	
		M	N	11				10 17	
	RX	eL	ZNE	24	12				
		M	ZNE	16					
		M	ZNE	23	26	34.5	44.0N	147.7E	23 km
	Epicentre:			23	26	34.5	44.0N	147.7E	23 km
13 KP	eP?	Z	02	43	49				
	Epicentre:		02	31	19.4	43.5N	148.1E	60 km	USCGS
13 SU	e(L)	N	06	47	09				
		N		48	39				
		N		06	50	31			
ON	e(P)	E	06	50	31				
	eS	E		53	14				
	eL	E		55					
KP	eP	Z	06	50	40				
	e	Z		44					
	e	Z		53	02				
WN	eL	ZN	06	57					
	RX	NE	06	57					
	CB	E	06	58					
KM	eL	X	07	02					
	Epicentre:		06	45	25.0	17.0S	173.7W	43 km	USCGS
	Epicentre:		06	45	25.0	17.0S	173.7W	43 km	USCGS
13 KP	eP?	Z	13	52	59				
		e	Z		53	02			

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
FEB	CT	eP	Z	13	53	07			
	RX	eL	N	14	07				
	M	N		08			1 20		
Epicentre:			13	45	57.7	6.9S	155.7E	25 km	USCGS
13	CB	e(P)	E	16	26	34			
	KM	eP	X	16	26	36			
	KP	ip	Z	16	26	37	u		
	e	Z		27	41				
	e	Z			46				
	CT	P	Z	16	26	41			
	e	Z			27	01			
	WN	P	Z	16	26	43			
	GP	eP	N	16	26	43			
	Epicentre:			16	17	20.1	5.1S	128.7E	66 km
13	KP	eP	Z	16	39	59			
	e	Z			40	11			
	e	Z			21				
	WN	eP	Z	16	40	25			
	RX	eL	Z	17	11				
	eSKS	N		16	51	02			
	eS	NE			31				
	eSS	NE			57	40			
	eSSS	N		17	01				
	eL	ZNE			13				
M	ZN			18		3 20	2 20		
SU	eL	N	17	02					
Epicentre:			16	27	20.9	43.7N	149.6E	25 km	USCGS
13	KP	eP	Z	22	49	51			
	Epicentre:			22	37	12.9	43.6N	148.1E	40 km
14	KP	eP	Z	03	34	41			
	e	Z			57				
	RX	e(SKS)	N	03	46	04			
	eSS	N			52				
	eL	ZNE			08				
	M	NE			09		1 22		
	M	N			12		2 20		
	WN	eL	Z	04	06				
	M	Z			07		2 20		
	Epicentre:			03	22	00.7	43.8N	147.9E	20 km
14	CT	P	Z	05	56	17			
	KP	P	Z	05	56	22			
	Epicentre:			05	44	24.3	42.3S	73.1W	58 km
14	KP	P	Z	10	07	50			
	Epicentre:			10	02	48.9	14.8S	167.5E	190 km
14	SU	eL	N	15	54				
	M	N			56		25 7		
	KP	eP?	Z	15	56	08			
	e	Z			13				
	RX	eL	NE	16	08				
Epicentre:			15	50	52.2	15.4S	175.1W	25 km	USCGS
15	SU	e(L)	N	02	12				
	KP	P	Z	02	13	06			
	e	Z			10				
	CT	P	Z	02	13	24			
	WN	eP?	Z	02	13	30			
	e?	Z			45				
	CB	e	E	02	13	49			
	KM	e(P)	X	02	14	01			
	GP	e(P)	N	02	14	06			
	Epicentre:			02	09	20.4	22.3S	171.6E	64 km

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
FEB 15	KP	eP?	Z	06	30	14			
	e	Z			23				
	e	Z			31	12			
	CT	eP	Z	06	30	32			
	e	Z			33	00			
	e	Z			14				
	WN	P?	Z	06	31	09			
	eS	ZN			33	37			
	e	ZN			49				
	GP	e(P)	N	06	31	28			
	eS	N			34	39			
	TU	eS	N	06	32	33			
	CB	eS	E	06	33	52			
	KM	eS	X	06	34	31			
	Epicentre:			06	27	13.8	26.1S	177.5W	148 km
15	KP	eP	Z	10	57	52			
	e	Z			58	04			
	KM	e	X	10	58	01			
	e	X			04				
	GP	e	N	10	58	27			
	SU	eS	N	11	05			11 25	
	eL	N			18			15 20	
	M	N			20				
	RX	e(SKS)	N	11	08.8				
	eS	NE			09	23			
	eSS	NE			15				
	eSSS	N			19				
	eL	ZNE			30				
	M	E			32				4 22
	M	N			35				6 20
WN	eL	ZN	11	29					
M	ZN			31					
Epicentre:			10	45	15.9	43.7N	147.4E	69 km	USCGS
16	KP	eP	Z	09	06	42			
	Epicentre:			08	54	59.9	32.7N	137.7E	303 km
16	SU	eL	N	13	29				
	CT	eP?	Z	13	29	49			
	WN	e	ZN	13	30	16			
	RX	eL	ZNE	13	38				2 18
16	KP	e(P)	Z	14	07	37			
	RX	eL	N	14	43				
	M	N			46				1 20
	Epicentre:			13	54	53.7	43.2N	148.0E	71 km
16	RX	eL	N	23	53				
	eL	ZNE			58				2 23
17	KP	P	Z	00	27	18			
	CT	eP?	Z	00	27	35			
	e	Z			41				
	WN	eP	ZN	00	27	45			
Epicentre:			00	22	51.7	18.9S	173.7W	254 km	USCGS
17	KP	eP	Z	19	02	25			
	Epicentre:			18	55	04.3	4.4S	153.0E	108 km
18	ON	eP	E	12	08	44			
	e	E			09	05			
	e(S)	E			12	01			
	KP	eP	Z	12	09	13			
	e	Z			19				
	TU	e?	N	12	09	18			
	e	N			32				

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.	
FEB	CB	eP	E 12 09 52					
		e	E 12 10 05					
	WN	eP	ZN 12 09 53					
		e?	N 13 46					
		e	N 14 08					
		eL	ZN 15		15 18	8 17		
		M	ZN 17					
			X 12 10 10					
	GP	e	N 12 10 23					
	RX	eP	N 12 10 36			2 14		
		e	N 11 47					
		e(S)	N 14 55					
	e	E 15 02						
	eL	ZNE 18						
	Epicentre:		12 05 36.3	22.6S	171.3E	38 km	USCGS	
18	KP	eP	Z 20 10 46					
		e	Z 11 00					
	Epicentre:		20 00 28.7	4.3N	126.6E	74 km	USCGS	
19	SU	e(L)	N 07 14+					
		e(P)	Z 07 15 05					
	KP	e	Z 07 11 21.5	23.1S	171.9E	25 km	USCGS	
	Epicentre:							
20	KP	eP	Z 00 27 53					
20	SU	eL	N 09 13+					
		eP	Z 09 15 48					
	e	Z 55						
20	KP	P	Z 09 54 07					
		e	Z 09					
20	KP	P	Z 14 24 43 u					
		e	Z 53					
		e	Z 27 57					
	CT	P	Z 14 24 52					
	TO	P	Z 14 24 53					
	CB	eP	E 14 24 55					
	WN	eP	ZN 14 25 03					
	GP	eP	N 14 25 13					
	RX	e(L)	N 14 39					
		Epicentre:		14 17 27.3	5.0S	153.4E	107 km	USCGS
	20	CT	P	Z 18 38 23				
			e	Z 54				
TO		P	Z 18 38 24 d					
e		Z (55)						
CB		eP	E 18 38 26					
e		E 58						
KP		P	Z 18 38 26 d					
e		Z 53						
e		Z 58						
KM		e	X 18 38 31					
e		X 59						
GP		e	N 18 38 48					
TU	e?	N 18 39 32						
20	KP	eP	Z 18 59 20					
		e	Z 19 02 39					
	e	Z 43						
WN	P	N 18 59 40						
	Epicentre:		18 46 56.5	5.0N	96.0E	139 km	USCGS	
21	KP	eP	Z 23 38 35					
		eP	Z 39 12					
	Epicentre:		23 28 34.9	0.1S	123.2E	183 km	USCGS	

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
FEB	22	KP	eP	Z 03 02 03			
			Epicentre:		02 49 18.2	51.5N	179.8E
22	KP	eP	Z 09 29 2				
		SU	e(L)	N 09 29±			
22	KP	eP	Z 15 54 59				
		e	Z 55 51				
		Epicentre:		15 42 51.9	0°	99.1E	36 km
22	SU	eL	N 18 09±				
		KP	e(P)	Z 18 11 23			
22	SU	eP	N 21 56±				
		ON	P E 21 56 03				
22	KP	eP	Z 21 56 08				
		e	Z 14				
		e	Z 18				
		e	Z 23				
		e	Z 38				
		e(P)	N 21 56 24				
		e	N 57 21				
		eP?	Z 21 56 31				
		e	Z 35				
		e	Z 42				
		e	Z 58				
		e	Z 58 38				
WN	P	Z 21 56 49					
		e	Z 56				
e	N 57 00						
eS	ZN 59 14						
e	Z 18						
i	ZN 22 00 04 n			7 4			
CB	e	E 21 57 05					
eS	E 59 30						
e	E 39						
GP	eP	N 21 57 24					
eS	N 22 00 17						
e	N 22						
e	N 45						
KM	eP	X 21 57 26					
e	X 58 02						
e	X 09						
e(S)	X 59 14						
e	X 19						
RX	eL	NE 22 03					
		M NE 04			6 22	8 19	
eL	Z 05						
M	E 06						
	Epicentre:		21 53 34.5	28.4S	177.2W	78 km	USCGS
23	KP	P	Z 03 09 10				
		Epicentre:		03 00 05.1	4.4S	134.1E	60 km
23	KP	eP	Z 04 28 34				
		e	Z 29 06				
		e	Z 33 51				
		e(SKS)	N 04 39 32				
		eS	N 40 47				
	eL	NE 59					
	Epicentre:		04 16 25.0	38.2N	142.7E	119 km	USCGS
23	KP	P	Z 04 59 58				
		Epicentre:		04 49 35.0	2.4S	119.9E	25 km
23	KP	eP	Z 05 38 18				
		e	Z 25				

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
FEB 23	KP	P	Z	06	49	51				
23	KP	eP	Z	13	42	19				
		e	Z			22				
		e	Z		43	59				
		e	Z		44	55				
	WN	eP	ZN	13	42	53				
		eS	ZN		45	37				
	GP	e(S)	N	13	46	30				
24	KP	eP	Z	01	33	48				
	Epicentre:			01	27	56.6	2.6S	163.9E	33 km	USCGS
24	KP	eP	Z	03	16	15				
	Epicentre:			03	04	11.7		125.4E	25 km	USCGS
24	ON	eP	E	10	59	29				
	KP	P	Z	10	59	43				
		i	Z			46				
		e	Z		11	00				
	WN	eP	ZN	11	00	17				
		e	N		03	06				
		e	N			10				
	CB	e	E	11	00	20				
		e	E		03	17				
	GP	eP	N	11	00	37				
		e	N			40				
		i	N			42				
		e	N			57				
		e	N			04				
	Epicentre:			10	56.2			Tonga-Kermadec region		N.Z.
24	KP	eP	Z	18	00	54				
		e	Z			56				
	WN	P	Z	18	01	27				
25	KP	P	Z	00	54	08				
		e	Z			12				
	Epicentre:			00	50	12.4	19.2S	177.4W	611 km	USCGS
25	KP	eP	Z	01	24	19				
	RX	eL	NE	01	39					
	Epicentre:			01	18	58.3	14.1S	165.8E	105 km	USCGS
25	KP	P	Z	04	58	51				
		e	Z		59	38				
		e	Z		05	00				
		e	Z			38				
		e(pp)	Z		01	00				
		e	Z			50				
	WN	eP	ZN	04	59	18				
		e	Z			31				
		eS	N	05	02	32				
	CB	eP	E	04	59	24				
		eS	E	05	02	30				
	KM	e(P)	X	04	59	49				
		e(S)	X	05	02	56				
	GP	e(P)	N	04	59	55				
		eS?	N	05	03	09				
		e	N			26				
	Epicentre:			04	55	25.1	21.7S	179.6W	608 km	USCGS
25	ON	eP	E	08	27	26				
		e	E		29	52				

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
FEB 25	KP	P	Z	08	27	40				
		e	Z			43				
		e	Z			47				
		e	Z		28	04				
		e	Z			31				
		eS	Z		30	21				
	WN	eP	ZN	08	28	12				
		eS	ZN		31	10				
	CB	eP	E	08	28	15				
		eS	E		31	14				
	KM	eP	X	08	28	32				
		e(S)	X		31	44				
	GP	eP	N	08	28	38				
		eS	N		31	52				
		e	N		32	07				
	Epicentre:			08	24	33.2	23.4S	179.9W	576 km	USCGS
25	ON	eP	E	13	55	37				
		eS	E		56	55				
	KP	P	Z	13	55	46				
		e	Z		57	27				
	WN	P	ZN	13	56	19				
		eS	ZN		58	13				
	GP	eP?	N	13	56	52				
		eS	N		59	09				
	CB	eS	E	13	58	23				
		e	E			31				
	Epicentre:			13	55	37	33.8S	177.1W	N?	NZ
25	ON	eP	E	15	07	03				
		e	E			11				
	KP	eP	Z	15	07	10				
		e	Z			15				
	WN	eL	N	15	14					
		eL	Z			16				
	RX	eL	NE	15	16					
		eL	Z			18				
		M	N			19				
	Epicentre:			15	02	04.8	15.4S	175.8W	62 km	USCGS
25	KP	P	Z	23	54	09				
26	KP	eP	Z	03	00	10				
		e	Z			12				
	Epicentre:			02	56	10.3	22.4S	165.7W	91 km	USCGS
26	KP	eP	Z	05	14	05				
		e	Z			11				
	ON	e(S)	E	05	19	45				
	Epicentre:			05	08	41.4	13.8S	175.6W	623 km	USCGS
26	KP	P	Z	05	58	44				
		e	Z			53				
		e	Z			59				
	WN	eP	Z	05	58	47				
		eS	N	06	06	40				
		eL	N			13				
		eL	Z			15				
		M	N			16				
	ON	e	E	05	58	57				
	CT	e	Z	05	59	02				
	RX	S	N	06	07	22				
		eScS	N		08	54				
		eL	N			14				
		eL	ZE			16				
	Epicentre:			05	48	46.3	32.7S	111.2W	29 km	USCGS

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
FEB 26	ON	eP?	E	18	22				
		e	E		44				
		e	E		55				
		eS	E		32				
	KP	P	Z	18	23				
		e(P)	Z		15				
		ePP	Z		26				
	TU	e(P)	N	18	23				
		e	N		20				
		eS	N		33				
	RX	eP?	Z	18	23				
		e	Z		15				
		e	NE		20				
		e	ZNE		30	15	8		
		ePP	Z		26				
		s	NE		33			30	11
		eSS	NE		38.7				
		M	N		40			60	25
		eSSS	N		42				
		eL	N		51				
		eL	Z		53				
		M	N	19	00			23	19
	WN	eP	ZN	18	23				
		e	ZN		14				
		e	ZN		22				
		e	Z		59				
		ePP	Z		26				
		s	N		33			25	9
		eSS	N		38.7				
		eSSS	N		42				
		eL	ZN		51				
		M	Z		55			24	23
	KM	e(P)	X	18	23				
		eS	X		33				
	GP	eP	N	18	23				
		eS	N		33				
		Epicentre:		18	10	48.7	31.4N	131.2E	54 km USCGR
26	KP	e	Z	19	09				
26	KP	eP	Z	21	12				
	CT	eP	Z	21	12				
		Epicentre:		21	01	04.8	16.0N	121.6E	32 km USCGR
26	SU	eL	N	21	08+				
	KP	P	Z	21	10				
		e	Z		11				
	CT	P	Z	21	10				
27	KP	e(P)	Z	03	05				
27	SU	eL	N	05	26+				
	KP	eP	Z	05	27				
	CT	eP	Z	05	27				
27	SU	eL	N	05	44+				
	KP	P	Z	05	46				
	CT	P	Z	05	46				
	RX	eL	E	05	55				
27	KP	eP	Z	10	42				
		e	Z		06				
		e	Z		17				
	CT	e(P)	Z	10	42				
	RX	eL	ZNE	11	08				
		M	N		10			1	18
		Epicentre:		10	29	48.3	38.7S	72.4W	57 km USCGR

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
FEB 27	KP	P	Z	12	01				
		e	Z		51				
	CT	e(P)	Z	12	01				
27	KP	e(P)	Z	13	19				
		e	Z		51				
		Epicentre:		13	06	35.8	52.5N	168.8W	56 km USCGR
27	KP	P	Z	16	57				
	CT	eP	Z	16	57				
		Epicentre:		16	48	24.9	4.2S	135.3E	100 km USCGR
27	RX	eL	NE	16	55				
		M	NE		56			2	18
		eL	Z		56.5			2	15
	WN	e(L)	Z	17	00			1	13
27	GP	e(P)	N	17	44				
		e	N		19				
		eS	N		46				
	RX	eL	NE	17	45				
		M	NE		45.2			3	18
		M	Z		46			4	15
	CT	eP	Z	17	45			4	15
		e	Z		13				
	KP	eP	Z	17	45				
	KM	eS	X	17	46				
	WN	eL	N	17	49				
		eL	Z		50				
27	KP	P	Z	22	00				
27	KP	P	Z	22	14				
28	KP	eP	Z	01	40				
		e	Z		43				
	CT	P	Z	01	40				
28	SU	eL	N	07	12+				
	KP	eP	Z	07	14				
	CT	e(P)	Z	07	15				
28	RX	e	N	07	34			1	20
		eL	NE		36				
		M	NE		37			9	18
		M	Z		37.2			13	15
	KM	e(P)	X	07	35				
		S	X		37				
		eL	X		39				
	WN	eP	ZN	07	36			2	4
		e(L)	N		40			6	12
	CT	e(P)	Z	07	36				
		e	Z		32				
	KP	e(P)	Z	07	36				
		e	Z		53				
	CB	e(S)	E	07	38				
28	KP	eP?	Z	12	46				
		e	Z		32				
		Epicentre:		12	33	32.1	46.5N	152.2E	29 km USCGR
28	KP	P	Z	21	31				
		e	Z		32				
		Epicentre:		21	18	11.3	24.1S	66.6W	30 km USCGR

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
MAR 1	KP	P	Z	00	33	25						
	CT	eP	Z	00	33	32						
	Epicentre: 00 23 42.5 13.2N 143.2E 221 km USCGS											
	1 KP	eP	Z	03	36	48						
	Epicentre: 03 24 10.4 30.7N 66.0W 259 km USCGS											
	1 KP	P	Z	06	45	39						
	CT	eP	Z	06	45	48						
	Epicentre: 06 41 43.5 18.7S 177.9W 513 km USCGS											
	1 GP	eP	N	09	31	42						
	eS	N			33	37						
	RX	eL	NE	09	32.5					4 17	9 14	
	eL	Z			33.2			8 15				
	CT	eP	Z	09	32	50						
	KM	eS	X	09	33	56				6 14		
	WN	eL	N	09	36.8							
	eL	Z			37.5			4 14				
	AK	eL	N	09	38							
	Epicentre: 09 29 14 51S 169E N NZ(D) 5.3 NZ Additional readings from Canberra and Brisbane used to determine epicentre.											
	1 KP	eP	Z	13	56	38						
	CT	eP	Z	13	56	42						
	Epicentre: 13 47 37.2 7.5S 130.0E 25 km USCGS											
	1 KP	eP	Z	14	15	19						
	Epicentre: 14 05 08.3 2.8N 126.5E 61 km USCGS											
	3 KP	P	Z	03	23	53						
	Epicentre: 03 19 00.1 17.4S 168.0E 42 km USCGS											
	3 ON	eP	E	06	28	48						
	e	E			29	00						
	AK	P	N	06	29	02						
	L	N			32	00						
	M	N			36.2							
	KP	eP	Z	06	29	18						
	TU	e	N	06	29.5							6.1
	WN	iP	ZN	06	29	56		9 8		6 7		
	e	N			31	28				5 5		
	e(s)	N			33	52				6 7		6.0
	eL	ZN			35.2			40 17		24 17		5.9
	CB	eP	E	06	30.0							
	KM	eP	X	06	30	14						
	eS	X			34	00						
	GP	eP	N	06	30	26						
	RX	P	ZN	06	30	42		4 10				5.9
	eS	NE			34	52				5 10		6.0
	eL	ZNE			38			6 16		6 20		
	M	ZNE			39.5			11 15		13 15		8 15
	Epicentre: 06 25 37.9 22.9S 171.4E 27 km USCGS											
	3 TU	eP	N	08	19	14						
	eS	N			20	37						
	KP	eP	Z	08	19	17						
	ON	eP	E	08	19	18						
	e	E			33							
	CT	eP	Z	08	19	29						
	eS	Z			21	09						
	AK	e(s)	N	08	20	52						
	eL	N			21	20						

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
MAR 3	WN	eS	ZN	08	21	47						
	eL	ZN			23.6							
	CB	eS	E	08	22	07		11 15		7 17		
	KM	eS	X	08	22	47						
	GP	eS	N	08	22	52						
	RX	eL	ZNE	08	26					2 15	3 14	
	Epicentre: 08 17 30.6 31.8S 178.0W 63 km USCGS											
	3 CT	P	Z	09	53	06						
	KP	P	Z	09	53	57						
	e	Z			54	18						
	Epicentre: 09 46 16.7 5.7S 147.4E 25 km USCGS											
	3 KP	eP	Z	20	18	01						
	CT	eP	Z	20	18	09						
	Epicentre: 20 14 19.7 22.3S 171.6E 61 km USCGS											
	3 CT	eP	Z	23	02	53						
	KP	eP	Z	23	02	57						
	Epicentre: 22 51 15.6 44.1S 74.8W 95 km USCGS											
	4 ON	eP	E	20	06	32						
	KP	P	Z	20	06	45						
	4 KP	P	Z	22	38	18						
	Epicentre: 22 26 01.2 37.8N 141.6E 61 km USCGS											
	5 ON	P	E	01	32	11						
	KP	iP	Z	01	32	29						
	Pcp	Z			35	30						
	e	Z			40							
	CT	P	Z	01	32	39						
	TU	eP	N	01	32	41						
	CB	eP	E	01	32	47						
	WN	eP	ZN	01	32	52						
	e(L)	ZN			37			8 23				
	GP	P	N	01	33	06						
	KM	e(P)	X	01	33	09						
	AK	eL	N	01	39					1 16		5.5
	RX	eS	N	01	39.3							
	eL	NE			42							
	M	NE			44.2					7 21	4 20	
	Epicentre: 01 26 26.1 10.7S 161.6E 99 km USCGS											
	5 KP	iP	Z	21	30	13						
	pp	Z			30							
	eS	Z			33	39						
	CT	eP	Z	21	30	25						
	eS	Z			33	54						
	WN	eP	N	21	30	51						
	eS	N			34	32						
	TU	eS	N	21	33	31						
	GP	eS	N	21	35	26						
	Epicentre: 21 25 55.6 20.6S 176.1W 58 km USCGS											
	7 CT	eP	Z	06	54	25						
	KP	eP	Z	06	54	33						
	RX	eS	NE	07	03.8							
	eL	ZNE			16					7 20	3 22	6.0
	WN	eL	ZN	07	16					4 20	6 22	
	AK	eL	N	07	17					9 19		
	Epicentre: 06 43 10.6 43.3S 80.4W 60 km USCGS											
	7 ON	eP	E	10	13	16						
	eL	E			15.4							
	M	E			18.6							
	AK	iP	N	10	13	20						
	S	N			15	33						

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.	
MAR	TU	ep	N	10	13	23							
		S	N		15	29							
		eL	N		17	0							
	KP	P	Z	10	13	24							
		eL	Z		17	5							
	CT	ip	Z	10	13	36							
		e(s)	Z		15	47							
	WN	ep	ZN	10	14	00							
		S	ZN		16	37	35	7					
		eL	ZN		17	6	47	6					
	CB	ep	E	10	14	17	850	18	650	14			
		eS	E		16	58							
		eL	E		17	8							
	KM	ep	X	10	14	38							
		eS	X		17	35							
eL		X		19	1								
GP	ep	N	10	14	40								
	S	N		17	42								
	eL	N		19	0								
RX	ip	NE	10	15	13								
	i	ZNE		20	dse			38	16	22	7		
	S	N		18	54			158	14				
	eL	NE		20	5			320	26	500	26		
	eL	Z		21	5	150	20						
Epicentre:			10	10	38.9	28.2S		175.7W		43	km	USCGS	
7	CT	ep	Z	19	19	59							
		i	Z		20	01							
	KP	ep	Z	19	20	05							
		eLq	N		19	35			5	24			
	RX	eL	ZE		40					3	23		
Epicentre:			19	08	36.1	38.2S		78.1E		30	km	USCGS	
7	KP	e	Z	19	51	13							
		ep	Z		19	51	45						
	CT	eS	Z		54	00							
		S	ZN	19	54	38							
	CB	eS	E	19	54	55							
		eS	N	19	55	42							
	Epicentre:			19	48	41.5	28.0S		176.0W		50	km	USCGS
	7	KP	ep	Z	23	19	22						
			epP	Z		38							
		CT	P	Z	23	19	30						
epP			Z		46								
GP		ep	N	23	19	48							
Epicentre:			23	11	59.6	4.7S		153.2E		90	km	USCGS	
8	KP	P	Z	03	35	23							
		ep	E	03	35	26							
	CT	ip	Z	03	35	29							
		ep	N	03	35	33							
	TU	ep	N	03	35	35							
		ep	N	03	35	40							
	Epicentre:			03	27	16.2	4.0S		141.8E		217	km	USCGS
8	KP	e(P)	Z	05	31	17							
		eS	Z		05	33	13						
	WN	S	ZN	05	33	40							
		eS	N	05	34	45							
	Epicentre:			05	28	34.4	29.8S		177.7W		55	km	USCGS
8	KP	ep	Z	08	32	37							
		Epicentre:			08	28	34.6	17.7S		178.7W		620	km

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.	
MAR	8	CT	P	Z	13	04	25						
		KP	ep	Z	13	04	30						
Epicentre:			12	52	28.8	40.0S		74.3W		96	km	USCGS	
10	GP	ep	N	03	03	23							
		eS	N		05	23							
	WN	ep	Z	03	04	06			2	3			
		eL	ZN		08	3			20	15		12	15
	RX	eL	NE	03	04	3						16	16
		eL	Z		05	0					24	16	
	KP	ep	Z	03	04	47							
		KM	eS	X	03	05	35						
		AK	eL	N	03	10	5						
	Epicentre:			03	00	43.3	51.9S		161.6E		25	km	USCGS
11	KP	ep	Z	01	44	26							
		eL	N	02	20					4	20		
Epicentre:			01	31	34.4	48.7N		154.6E		26	km	USCGS	
11	KP	P	Z	02	30	43							
		Epicentre:			02	25	17.0	16.3S		173.0W		25	km
12	KP	ep	Z	23	24	21							
		WN	ep	ZN	23	25	09						
	eS	ZN		27	29								
		eL	ZN		31				8	14			
	GP	ep	N	23	25	36							
		eS	N		28	35							
	KM	eS	X	23	28	31							
		RX	eL	NE	23	32					3	20	
	eL	Z		36									
		Epicentre:			23	21	42.5	28.4S		176.0W		113	km
13	KP	e(P)	Z	01	18	04							
		Epicentre:			01	05	06.2	42.9N		140.2E		147	km
13	KP	P	Z	07	46	18							
		TU	eS	N	07	48	(42)						
	GP	eS	N	07	50	31							
		Epicentre:			07	43	25.9	25.4S		179.5W		449	km
13	RX	eL	N	08	50								
		Epicentre:			08	03	43.9	19.2N		107.3W		49	km
13	KP	P	Z	09	18	41							
		Epicentre:			09	16	25.3	28.9S		178.9W		25	km
13	KP	PKP2	Z	19	37	32							
		Epicentre:			19	17	16.1	34.4N		26.5E		25	km
13	KP	P	Z	20	47	42							
		Epicentre:			20	35	15.4	56.2S		27.2W		56	km
13	KP	ep	Z	21	20	15							
		RX	eL	NE	21	32							
	eL	Z		34									
		Epicentre:			21	16	13.1	16.9S		178.1W		600	km
13	TU	ep	N	22	05	18							
		S	N		06	10							
	KP	P	Z	22	05	19							
		eS	Z		10	15							
	ON	P	E	22	05	21							
		CT	ep	Z	22	05	38						
	WN	e(P)	Z	22	06	12							
		S	ZN		07	18							
	CB	eS	E	22	07	40							

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.	
MAR	GP	S	N	22	08	24							
	KM	eS	X	22	08	25							
	Epicentre:			22	04	08	35S	179.2W	N	NZ(D)	5.2	NZ	
14	KP	P	Z	01	16	48							
	AK	eL	N	01	24								
	WN	eL	Z	01	26.3		11	18					
	RX	eL	ZNE	01	29.5				3	18	3	15	
	Epicentre:			01	11	55.4	16.9S	176.5W	60	km	USCGS		
14	KP	eP	Z	13	53	23							
		e	Z		55	01							
	Epicentre:			13	49	31.7	22.0S	172.1E	25	km	USCGS		
15	KP	eP	Z	10	22	41							
		S	Z		24	23							
	CT	eP	Z	10	22	52						6.3	
	WN	eP	ZN	10	22	59						6.3	
		ePP	Z		25	09							
		eL	ZN		34					12	15		
	GP	eP	N	10	23	10							
	AK	ePP	N	10	24	08							
		eS	N		28	44						6.1	
	RX	eS	NE	10	29	50				3	18	4	12
		eLq	NE		36.5					10	23	10	22
		eLr	Z		38.5								6.2
		M	NE		40					18	20	12	20
	Epicentre:			10	14	15.5	3.3S	150.7E	21	km	USCGS		
15	ON	eP	E	13	08	07							
	KP	ip	Z	13	08	26						d	
		i	Z		34	d							
		PcP	Z		10	34							
		ScP	Z		14	19							
	CT	ip	Z	13	08	34						u	
	CB	eP	E	13	08	37							
	TU	eP	N	13	08	38							
	WN	P	ZN	13	08	44							
	Epicentre:			13	01	02.2	4.4S	152.5E	99	km	USCGS		
15	KP	P	Z	16	19	29							
	Epicentre:			16	11	56.8	4.6S	153.4E	18	km	USCGS		
15	TU	P*	N	23	12	54							
	CT	ipn	Z	23	13	12						d	
	KP	Pn	Z	23	13	14							
	WN	ePn	N	23	13	29							
		iSn	N		14	10							
	CB	ePn	E	23	13	45							
		Sn	E		14	40							
	ON	e(P)	E	23	13	46							
		eSn	E		14	34							
		e	E		45								
	KM	e	X	23	14	16							
		Sn	X		15	16							
	RX	eL	NE	23	19								
		eL	Z		20								
	Epicentre:			23	12	34	39.1S	178.5E	S	NZ(B)	5.0	NE	
				Felt: Gisborne MM3									
16	KP	eP	Z	04	03	31							
		e	Z		40								
	Epicentre:			03	58	00.9	13.4S	165.9E	53	km	USCGS		
16	ON	P	E	04	33	18							
	KP	P	Z	04	33	34							

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.	
MAR	CT	eP	Z	04	33	46							
		eS	Z		36	22							
	WN	P	ZN	04	34	07							
		eS	ZN		36	56							
	CB	P	E	04	34	11							
		eS	E		37	03							
	KM	eP	X	04	34	29							
		eS	X		37	31							
	GP	eP	N	04	34	32							
		eS	N		37	40							
	Epicentre:			04	30	39.9	24.9S	179.9E	536	km	USCGS		
16	KP	eP	Z	07	26	20							
	Epicentre:			07	15	41.7	6.6S	106.5E	135	km	USCGS		
16	KP	eP	Z	07	57	31.5							
		e	Z		42								
	Epicentre:			07	52	39.6	19.0S	172.7W	25	km	USCGS		
16	ON	eP	E	11	28	04							
	KP	P	Z	11	28	19							
		e	Z		45								
		e	Z		29	04							
	CT	eP	Z	11	28	33							
		e	Z		29	08							
		e	Z		31	19							
	WN	e	Z	11	28.9								
		e	ZN		31	53							
	RX	eL	N	11	41								
	Epicentre:			11	19	43.5	6.4S	130.7E	77	km	USCGS		
16	RX	eP	Z	13	55	00							
		e	N		18							6.4	
		eS	NE	14	02	30						3	5
		eL	NE		10							14	25
		eLr	Z		14							34	42
		M	NE		15							20	30
		M	NE		15							37	21
		M	NE		15							21	25
	ON	eP	E	13	55	04							
	CB	eP	E	13	55	07							
	AK	eP	N	13	55	08							
		S	N	14	03	09							
		ScS	N		04	59							
		eLq	N		10								
		M	N		16								
	KM	eP	X	13	55	12							
	GP	eP	N	13	55	13							
	KP	P	Z	13	55	15						u	
	CT	P	Z	13	55	16						u	
	WN	ip	ZN	13	55	17						u	
		e	N		14	02						5	6
		eS	N		03	20						3	7
		e	N		09	17						4	8
		eLq	N		10	50						3	25
		eLr	ZN		15							62	35
	Epicentre:			13	45	36.6	8.2S	122.0E	74	km	USCGS		
16	KP	P	Z	18	30	55							
	CT	eP	Z	18	30	57							
	AK	eL	N	18	50								
	WN	eL	ZN	18	50								
	RX	eL	NE	18	50								
		eL	Z		54								
	Epicentre:			18	21	12.2	8.1S	122.0E	43	km	USCGS		
16	RX	eL	NE	23	39								
		eL	Z		40								
	Epicentre:			23	12	43.5	23.6S	175.5W	20	km	USCGS		

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
MAR 17	KP	eP	Z	06	19	25						
	Epicentre: 06 09 46.7 8.4S 121.3E 60 km USCGS											
17	KP	eP	Z	14	10	29						
	ON	e	E	14	10	.6						
	SU	eL	N	14	11							
	AK	eL	N	14	12	.8						
	WN	eS	NE	14	14	18						
		eL	ZN	16			15	18	13	18		
	GP	eS	N	14	15	21						
	RX	eL	NE	14	20	.5						
		M	ZNE	22			12	15	10	16	6	16
	Epicentre: 14 06 51.6 23.8S 175.9W 120 km USCGS											
17	ON	eP	E	20	14	17						
		eL	E	18	.0							
	KP	eP	Z	20	14	21						
	WN	eP	ZN	20	15	05						
		eS	NE	18	09							
		eL	ZN	19			21	20	18	17		
	GP	eS	N	20	19	13						
	RX	eL	NE	20	22				6	22	9	23
		M	NE	24	.5				20	20	10	18
		eL	Z	25			21	16				
	Epicentre: 20 10 36.4 24.3S 175.6W 79 km USCGS											
18	KP	P	Z	02	18	22						
	WN	eP	Z	02	18	24						
	RX	eL	N	02	37				2	16		
	AK	eL	N	02	39							
	Epicentre: 02 08 38.5 8.2S 122.0E 35 km USCGS											
18	SU	eL	N	08	32							
	AK	eL	N	08	34							
	WN	eL	N	08	37							
	RX	eL	ZNE	08	40				5	16	6	16
	Epicentre: 08 26 49.0 24.3S 174.2W 25 km USCGS											
18	KP	P	Z	09	33	23						
	Epicentre: 09 29 23.5 20.6S 175.5W 667 km USCGS											
18	KP	P	Z	09	42	55						
	CT	eP	Z	09	43	05						
		eS	Z	44	59							
	WN	eP	Z	09	43	30						
		S	ZNE	45	45							
	TU	eS	N	09	44	44						
	CB	eS	E	09	46	01						
	KM	eS	X	09	46	39						
	GP	eS	N	09	46	49						
	Epicentre: 09 40 40.7 28.9S 178.0W 385 km USCGS											
18	KP	ip	Z	11	42	55 d						
	CT	eP	Z	11	43	08						
	Epicentre: 11 37 53.1 17.1S 170.5W 78 km USCGS											
18	KP	eP	Z	13	21	24						
	Epicentre: 13 16 09.2 16.8S 174.2W 25 km USCGS											
18	RX	ip	NE	14	56	26 ne			50	10	37	10
		i	Z	28	u				20	10		
		is	NE	57	30				480	24	470	26
		L	Z	58.1					>850	16		
	GP	eP	N	14	57	07						
		S	N	58	43							
		eL	N	59.0								

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
MAR	KM	eP	X	14	57	15						
		S	X	58	55							
		eL	X	59	.5							
	CB	eP	E	14	57	35						
		eL	E	59	.8							
	WN	eP	ZNE	14	57	48			28	12	15	9
		eL	N	15	00	.1						
		eL	E	15	00	.4						
		eL	N	01	.6							
		eL	Z	01	.9							
	TO	eP	Z	14	58	12						
		e	Z	16								
		eS	Z	15	00	41						
	CT	eP	Z	14	58	14						
		eS	Z	15	00	40						
		eL	Z	03	.2							
	KP	eP	Z	14	58	26						
		i	Z	46								
		eL	Z	15	03	.5						
	ON	eP	E	14	58	42						
		e	E	51								
		eL	E	15	02	16						
	Epicentre: 14 54 59.3 49.9S 163.3E 38 km USCGS											
18	KP	eP	Z	17	50	09						
	Epicentre: 17 39 34.3 7.6N 126.9E 63 km USCGS											
18	WN	1(P*)	ZN	18	30	43.5 d						
		is	Z	48	.5							
	CB	ip*	E	18	30	56.5						
		(S*)	E	31	13							
	CT	Pn	Z	18	31	07.5						
		e(Sn)	Z	28								
	KM	eP	X	18	31	13						
		S	X	43								
	GP	P	N	18	31	14						
		S	N	44	30							
	KP	ipn	Z	18	31	24						
		Sn	N	55								
	ON	ePn	E	18	31	52						
		Sn	E	32	52							
		e	E	33	09							
	Epicentre: 18 30 34 41.1S 174.3E S NZ(B) 5.3 NZ Additional readings from Canberra and Charters Towers used to determine epicentre. Felt: Cook Strait to Banks Peninsula MM3-4.											
19	KP	eP	Z	05	10	25						
	CT	P	Z	05	10	27						
	Epicentre: 04 59 19.3 6.4S 105.5E 120 km USCGS											
19	ON	eP	E	07	19	41						
	AK	eP	N	07	19	50						
		S	N	23	49							
		eL	N	26	50							
	KP	P	Z	07	19	59						
		eScP	Z	27	07							
	CT	ip	Z	07	20	15 u						
		eScP	Z	27	17							
	WN	eP	ZNE	07	20	28						
		eL	ZN	30								
	GP	eP	N	07	20	48						
	RX	eS	N	07	25	54						
		eL	NE	29	.5							
		eL	Z	32								
		M	N	35					19	14		
	Epicentre: 07 14 57.4 16.0S 168.2E 90 km USCGS											

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
MAR 19	KP	eP	Z	08	01	36			
		e	Z			50			
	CT	eP	Z	08	01	38			
	Epicentre:			07	51	35.0	2.3N	127.4E	83 km USCGR
19	ON	eP	E	12	10	25			
	KP	P	Z	12	10	52			
	CT	P	Z	12	11	05			
	WN	P	Z	12	11	20			
	RX	eS	N	12	17	0			5.7
		eL	NE			21	4 18	6 18	
		M	NE			24	7 15	7 15	
	AK	e	N	12	17	30			
		eL	N			19			
	Epicentre:			12	05	47.7	16.4S	167.3E	16 km USCGR
19	KP	P	Z	12	57	02			
	CT	eP	Z	12	57	04			
	Epicentre:			12	47	17.5	8.1S	121.9E	25 km USCGR
19	ON	eP	E	20	37	41			
	GP	eS	N	20	42	29			
	RX	eLq	E	20	46	2			5.7
		eL	ZN			48	11 16	7 17	
20	KP	eP	Z	02	28	12			
	CT	eP	Z	02	28	18			
	Epicentre:			02	17	34.5	21.6N	145.8E	101 km USCGR
20	WN	P*	ZNE	06	08	01			
		eS*	NE			15			
	CB	P*	E	06	08	09			
		S*	E			28			
	CT	P*	Z	06	08	09			
		e	Z			10			
	KP	Pn	Z	06	08	25			
		eP*	X			33			
	KM	e(P)	X	06	08	34			
		eSn	X	09	09				
		eS*	X			22			
	GP	ePn	N	06	08	38			
		eP*	N			48			
		e	N			09			
		e(Sn)	N			12			
	ON	e	E	06	08	55			
		e	E			09			
		e	E			11			
		e	E			43			
		e	E			59			
	AK	e	N	06	09	08			
		e	N			53			
	Epicentre:			06	07	42	40.3S	174.3E	S NZ(B) 5.1 M
	Felt: S.Taranaki, Nelson and about Cook Strait. Max. MM4.								
20	RX	eL	NE	07	10				
		eL	Z			14			
	Epicentre:			06	16	23.9	11.5N	86.3W	122 km USCGR
20	KP	P	Z	11	50	59			
		eP	Z			52			
	Epicentre:			11	38	39.3	46.3N	142.7E	354 km USCGR
20	ON	P	E	15	57	33			
		S	E	16	01	03			
	AK	iP	N	15	57	40			
		e	N			58			
		iS	N	16	01	12			

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
MAR	KP	P	Z	15	57	48			
		S	Z	16	01	35			
	WN	iP	ZNE	15	58	18	8 6	9 6	6.7
		ePP	ZN	59	16		7 10	6 9	
		PcP	Z	16	01	50			
		S	ZNE	02	18		14 7		
	iScS	NE		09	00			65 7	
CB	eP	E	15	58	25				
	eS	E	16	02	29				
GP	eP	N	15	58	44				
	eS	N	16	03	02				
	ScS	N	09	14					
RX	P	N	15	59	10		4 14		6.1
	ePP	N	16	00	12		7 13		5.9
	S	NE	03	46			12 15	8 18	6.0
	eL	NE	06	06			10 12	17 14	
	eL	Z	09						
	ScS	NE	09	30				15 8	49 10
	Epicentre:			15	53	09.9	18.4S	175.2W	175 km USCGR
	Felt: Haapai, Tonga, MM1.								
20	ON	eP	E	23	46	12			
		e	E			29			
	eL	E		50					
KP	P	Z	23	46	23				
	eL	Z		51					
AK	e	N	23	46	40				
	eS	N		49	30				
	eL	N		51					
WN	eP	ZN	23	46	57				
	eS	ZN		50	07				
	eL	ZN		51					
	M	ZN		55					
KM	eP?	X	23	47	19		135 17	118 15	6.3
	eS	X		51	06				
	eL	X		55					
GP	eP	N	23	47	25				
	eS	N		51	12				
	eL	N		54					
RX	eP	N	23	47	56			2 12	5.8
	eS	NE		52	06			2 8	5.7
	eL	NE		54	10			21 26	
	eL	Z		56			33 20		
	M1	E		56				88 20	6.5
	M2	ZNE		58			140 16	130 17	105 16
CB	eS	E	23	50	30				
	eL	E		52					
	Epicentre:			23	42	33.9	24.2S	175.9W	25 km USCGR
21	ON	eP	E	05	54	50			
	KP	P	Z	05	54	53			
	WN	eS	ZN	05	57	16			
	GP	eS	N	05	58	20			
21	KP	eP	Z	06	09	02			
	AK	eL	N	06	13	5			
21	KP	eP	Z	06	28	38			
	AK	eL	N	06	33				
	RX	eL	ZN	06	40				
21	ON	eP	E	09	25	45			
	KP	P	Z	09	25	58			
	Epicentre:			09	22	31.7	21.8S	179.9W	595 km USCGR
21	AK	e	N	09	57	0			
	KP	eP	Z	09	57	19			

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
MAR 21	ON	eP	E	19	58	00			
	AK	eP	N	19	58	20			
		eL	N	20	02				
	KP	eP	Z	19	58	27			
		e	Z			32			
	WN	eP	ZN	19	59	09	11 5	4 5	5.8
		e	ZN			39		4 6	
		eS	N	20	02	55			
		eL	ZN			04.8	11 15	9 13	
		M	ZN			06			
	GP	eP	N	19	59	28		3 6	5.9
	RX	eS	N	20	03	59		5 14	
		eL	N			08			
		eL	ZE			09	2 14	6 12	
Epicentre:			19	54	44.4	22.8S	171.4E	19 km	USCGS
22	KP	eP	Z	04	20	37			
	AK	eL	N	04	31				
	RX	eL	NE	04	34				
22	KP	eP	Z	04	40	49			
		e	Z			41 03			
Epicentre:			04	34	03.4	9.0S	157.9E	41 km	USCGS
22	ON	P	E	21	31	25			
		S	E			33 36			
	KP	P	Z	21	31	41 u			
		eS	Z			34 07			
	TU	e(P)	N	21	31	45			
		S	N			34 09			
	WN	eP	ZNE	21	32	13			
		eS	ZNE			35 02			
	GP	eP	N	21	32	45			
		eS	N			35 46			
CB	eS	E	21	35	07				
Epicentre:			21	28	41.6	24.6S	179.3E	517 km	USCGS
23	KP	eP	Z	01	57	57			
	Epicentre:			01	47	27.6	1.0S	120.2E	10 km
24	KP	eP	Z	23	09	25			
	CT	eP	Z	23	09	26			
	Epicentre:			22	57	14.2	35.3N	140.9E	102 km
24	KP	P	Z	23	45	40			
	CT	P	Z	23	45	47			
	Epicentre:			23	37	17.1	2.6S	141.9E	118 km
25	KP	eP	Z	14	19	35			
Epicentre:			14	15	38.1	17.5S	179.0W	688 km	USCGS
26	KP	eP	Z	14	39	42			
	CT	eP	Z	14	39	47			
	TO	eP	Z	14	39	48			
	Epicentre:			14	29	23.8	5.7N	126.4E	147 km
26	KP	eP	Z	20	37	18			
	TO	eP	Z	20	37	25			
		e	Z			54			
	CT	P	Z	20	37	26			
		e	Z			55			
Epicentre:			20	29	05.7	3.1S	146.2E	25 km	USCGS
27	ON	P	E	16	31	35			
		S	E			32 59			
	KP	ip	Z	16	31	49			
	eS	Z			33 24				

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
MAR	TU	eP	N	16	31	53			
		eS	N			33 21			
	CT	P	Z	16	31	58			
		S	Z			33 42			
	TO	eP	Z	16	31	58			
		eS	Z			33 45			
	WN	eP	ZNE	16	32	20			
		eS	ZNE			34 16			
	GP	eP	N	16	32	51			
		S	N			35 11			
	KM	eP	X	16	32	53			
		eS	X			35 03			
	AK	S	N	16	33	11			
	CB	eS	E	16	34	28			
Epicentre:			16	29	52.9	30.7S	179.3E	514 km	USCGS
28	ON	eP	E	09	45	49			
		i	E			52			
		eS	E			53 50			
	AK	eP	N	09	46	0			
		S	N			54 15			
		PS	N			55			
		eL	N	10	01				
	CB	eP	E	09	46	00			
		eS	E			54 19			
	RX	P	ZE	09	46	02	11 6	6 6	7.2
		e	Z			32	17 17		
		eS	NE			54 02		43 28	47 22
		eLq	N	10	00	.5		110 30	
		eLr	ZE	10	05		190 34	52 30	
KP	ip	Z	09	46	04 u				
	e	Z			55 53				
	iScS	Z			56 25 u				
	e	Z	10	15	26				
	P'p'	Z			36				
KM	eP	X	09	46	05				
	e	X			47 02				
CT	P	Z	09	46	07 d				
	eP'p'	Z	10	15	21				
	e	Z			40				
TO	P	Z	09	46	07				
GP	eP	N	09	46	08				
	e	N			46				
	eS	N			54 33				
WN	ip	ZE	09	46	09	6 7		6.9	
	ip	N			09	6 5		7.3	
	e	Z			20	10 6			
	e	Z			50				
	e	Z			58	13 12			
	eS	ZNE			54 22	8 10	13 8	6.9	
	eScS	NE			55 53		20 8		
	eLq	N	10	01	.5		67 25		
	eLr	ZN			06				
	M	ZN			10				
TU	eP	N	09	46	15		95 22	47 22	
Epicentre:			09	35	55.4	0.2N	123.6E	83 km	USCGS
28	KP	ip	Z	12	42	07 d			
	CT	eP	Z	12	42	11			
	TO	eP	Z	12	42	.2			
	Epicentre:			12	29	12.7	51.7N	176.2W	60 km
28	KP	eP	Z	13	23	06			
	Epicentre:			13	12	59.9	0.6S	122.9E	60 km
28	KP	eP	Z	14	11	55			
		pp	Z			12 11			
	Epicentre:			13	59	03.7	52.0N	176.3W	89 km

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
MAR 28	TO	eP	Z 21 15 10				
		epP	Z 41				
	KP	P	Z 21 15 13				
		pp	Z 43				
		sp	Z 55				
	Epicentre:		21 01 56.3	22.0S	68.0W	125 km	USCGS
29	KP	P	Z 06 05 54				
	WN	eS	ZNE 06 07 45				
29	KP	ip	Z 06 55 36 d				
	CT	P	Z 06 55 41				
	Epicentre:		06 43 43.3	33.5N	140.9E	116 km	USCGS
29	KP	eP	Z 09 45 07				
		e	Z 35				
	Epicentre:		09 35 02.1	0.2N	123.9E	84 km	USCGS
30	KP	P	Z 01 32 19				
	CT	ep	Z 01 32 24				
	Epicentre:		01 22 19.1	0.3N	123.9E	159 km	USCGS
30	ON	eP	E 08 55 00				
	AK	eP	N 08 55 04				
		S	N 59 22				
		eL	N 09 01				
		M	N 04				
	KP	P	Z 08 55 08				
	CT	P	Z 08 55 18				
	TO	eP	Z 08 55 19				
	WN	eP	Z 08 55 37				
		eL	ZNE 09 04	9 16			
		KM	eP	X 08 55 57			
	GP	eP	N 08 56 09				
30	RX	eL	E 09 05			6 30	
		eL	ZN 09				
	Epicentre:		08 49 45.6	15.2S	172.8W	25 km	USCGS 5.9
31	KP	P	Z 05 31 59				
	CT	P	Z 05 32 05				
	Epicentre:		05 20 36.8	32.6N	135.7E	300 km	USCGS
APR 2	KP	ep	Z 17 28 52.4 u				
	Epicentre:		17 18 52.5	0.5S	123.2E	139 km	USCGS
4	KP	P	Z 05 08 08				
	TO	P	Z 05 08 14				
	CT	ip	Z 05 08 14 u				
		e	Z 29				
	Epicentre:		04 59 24.8	2.4S	138.2E	99 km	USCGS
4	KP	ep?	Z 07 50 35				
	Epicentre:		07 38 50.2	26.9N	125.8E	48 km	USCGS
4	ON	eP	E 07 51 43				
		e	E 46				
		eS	E 54 57				
	KP	P	Z 07 51 57				
		e	Z 59				
		e	Z 52 04				
		e(pP)	Z 46				
		eS	Z 55 32				
	TO	ep	Z 07 52 08				
		e	Z 55 51				
		e	Z 25				

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
APR	CT	eP	Z 07 52 08				
		e	Z 14				
		e	Z 54 52				
		e(S)	Z 55 45				
		e	Z 51				
		e	Z 56 11				
	WN	e(P)	N 07 52 28				
		e?	Z 37				
		e	E 56 17				
		e(S)	NE 24				
	CB	e(P)	E 07 52 35				
		eS	E 56 27				
	KM	e(P)	X 07 52 51				
		eS	X 56 56				
	GP	ep	N 07 52 58				
		eS?	N 57 13				
		e	N 22				
	e	N 34					
TU	eS	N 07 55 27					
Epicentre:			07 47 48.1	19.6S	177.1W	276 km	USCGS
4	KP	P	Z 10 42 35				
		e	Z 48				
		ePcP	Z 44 41				
	CT	ep	Z 10 42 44				
		e	Z 57				
		e(PcP)	Z 44 43				
		e(PP)	Z 58				
	TO	e	Z 10 42 56				
	GP	ep?	N 10 43 02				
		e	N 11				
		e	X 10 43 06				
KM	e	X 10 43 06					
RX	e(SS)	N 10 52.5					
	eL	NE 58					
	M	Z 11 01					
Epicentre:			10 35 11.1	3 20 5.9S	149.4E	124 km	USCGS
5	ON	eP	E 00 33 14				
	KP	ip	Z 00 33 31 d				
		e	Z 35				
	CT	e(P)	Z 00 33 42				
		e	Z 44				
	TO	ep	Z 00 33 44				
	WN	P	ZNE 00 34 02				
		e	NE 07				
		eS	ZNE 36 43				
	CB	ep	E 00 34 05				
		e	E 35 00				
	eS	E 36 45					
KM	P	X 00 34 22					
	eS	X 37 13					
	e	X 21					
GP	ep	N 00 34 28					
	eS	N 37 33					
TU	ep?	N 00 35 56					
Epicentre:			00 30 38				
26S 175E N? NZ(D) Additional readings from Charters Towers, Brisbane, and Raoul Is. used to deter- mine epicentre.							
5	ON	eP	E 04 58 05				
	KP	P	Z 04 58 16				
	TO	ep	Z 04 58 26				
	CT	ep	Z 04 58 26				
		e(S)	Z 05 00 14				
	e	Z 19					

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.	
APR	WN	eP	ZE	04	58	51							
		e	E	05	00	47							
	GP	eP	N	04	59	19							
		e	N	05	01	48							
	TU	eS	N	04	59	51	32S		177W		N?	NZ(D)	
Epicentre: 04 56 07													
5	RX	e(P)	N	21	32	12							
		eL	NE		33	52							
		e	Z		34	5							
	GP	eP	N	21	32	44							
		e(s)	N		34	55							
	KM	e?	X	21	33	14							
		e	ZN	21	33	24							
	WN	e	E		29								
		eS	N		37	55							
	TO	eP	Z	21	33	50							
	CT	eP	Z	21	33	51							
	KP	eP?	Z	21	34	12							
		e	Z		31	15							
	Epicentre: 21 30 00.4 52.2S 160.0E 47 km USCGS												
	6	WN	iP	ZNE	07	12	32.8						usw
e			Z		39								
CT		e	NE		44								
		iP	Z	07	12	39.4							
TO		iP	Z	07	12	39.2						u	
		e	Z		57								
TU		eP	N	07	12	52							
		e	N		58								
e		N		13	19								
		N		24									
KP		iP	N	07	12	55						u	
		e	Z		13	16							
KM		P	X	07	13	01.2						sw	
		e	X		34								
eS		X			37								
GP	iP	N	07	13	05.2								
	eS	N		44									
AK	e	N	07	13	06								
	eS	N		48									
e	N		14	08									
	N		45										
ON	e(P)	E	07	13	(25)								
	e	E		33									
e	E			46									
	E			52									
eS	E		14	14									
	E			29									
e	E			40									
	E												
RX	e(s)	ZE	07	14	50								
Epicentre: 07 12 15 40.4S 174.3E N? NZ(D) 5.3 N													
Additional readings from Charters Towers used to determine epicentre.													
Felt: S. Taranaki, W. Wellington, and Nelson. Max MM4 in coastal localities.													
6	KP	eP	Z	14	17	23							
		e	Z		34								
	TO	P	Z	14	17	23						u	
		e	Z	14	17	24						u	
	CT	P	Z		32								
Epicentre: 14 05 00.3 2.2N 97.2E 25 km USCGS													

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.	
APR	6	KP	P	Z	15	37	52						
			e	Z		38	03						
	TO	eP	Z	15	38	07							
		eP	Z	15	38	07							
	CB	e(P)	E	15	38	22							
		e	X	15	38	38							
	GP	eP	N	15	38	43							
		e(L)	N	15	48								
	Epicentre: 15 33 38.6 20.3S 169.4E 121 km USCGS												
	6	KP	P	Z	18	31	43						
Epicentre: 18 12 40.7 27.8N 56.7E 109 km USCGS													
6	RX	eL	ZNE	20	40								
		WN	eL	Z	20	44							
6	KP	eP	Z	22	38	55							
		e	Z		39	12							
TO	ep	Z	22	38	55								
	e	Z		39	09								
CT	P	Z	22	38	55								
	e	Z		39	11								
Epicentre: 22 26 29.6 1.9N 96.5E 25 km USCGS													
7	KP	eP	Z	08	48	53							
		Epicentre: 08 35 54.9 51.1N 156.7E 32 km USCGS											
7	TO	eP	Z	10	19	04							
		eP	Z	10	19	04							
e	Z		14										
	Z		10	19	05								
Epicentre: 10 06 49.5 0.3S 97.0E 25 km USCGS													
7	KP	eP	Z	17	41	15							
		eP	Z	17	41	24							
CT	e	Z		43	23.2								
	e	Z		27									
TO	e	Z	17	43	24								
	e	Z		29									
Epicentre: 17 37 09.6 19.5S 177.1W 355 km USCGS													
7	KP	eP?	Z	20	08	01							
		Epicentre: 19 54 51.9 57.2N 163.3E 90 km USCGS											
8	KP	eP?	Z	11	59	38							
		Epicentre: 11 48 35.9 10.0N 122.1E 62 km USCGS											
8	KP	eP	Z	16	04	23							
		eS	Z		09	03							
TO	eP	Z	16	04	38								
	P	Z	16	04	38								
WN	eP	ZNE	16	04	57								
	eL	ZN		12									
SU	eL	N	16	05						3	20		
	e(P)	X	16	05	07								
KM	e(P)	N	16	05	14								
	e	N		09	48								
GP	e	N	16	10	18								
	eL	E		12									
RX	eL	ZN		13.2									
	M	ZN		15									
Epicentre: 15 59 49.2 18.2S 168.6E 120 km USCGS													
8	GP	eP	N	18	11	56							
		TO	eP	Z	18	11	57						

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
APR	RX	e(PcS)ZE e(ScS) E	09 31 43 35 34	26.0S	178.4E	655 km	USCGS
		Epicentre:	09 21 29.0				
9	KP	P	Z 13 32 01	29.7N	138.2E	352 km	USCGS
		Epicentre:	13 20 49.0				
9	KP	eP	Z 15 47 16				
		e	Z 15 47 19				
		e	Z 15 47 28				
		e	Z 15 50 24				
	TO	eP	Z 15 47 19				
		e	Z 15 47 23				
		e	Z 15 47 31				
	CT	P	Z 15 47 19 u				
		e	Z 15 47 23				
		e	Z 15 47 32				
	CB	e	E 15 47 23				
	GP	eP	N 15 47 33				
	RX	eP	Z 15 47 38				
		eS	NE 15 57 36		2 12	6 9	
		eSS	NE 16 03 05		4 20	5 18	
		eSSS	N 16 07 00		2 18		
		e(Lq)	NE 09				
		eL	ZNE 16				
	M	ZNE	20	4 18	3 18	2 18	
	ON	e	E 15 47 14				
		e	E 15 48 12				
	SU	eS	N 15 56 25				
		eL	N 16 08		5 10	9 20	
	WN	eL	ZN 16 18				
		M	Z 16 24	5 18			
		Epicentre:	15 35 05.4	24.1N	122.2E	13 km	USCGS
9	KP	eP	Z 17 18 59				
		e	Z 17 19 03				
		e	Z 17 19 39				
	TO	eP	Z 17 19 13				
	CT	P	Z 17 19 13				
		e	Z 17 19 15				
	CB	eP	E 17 19 28				
	WN	eP	Z 17 19 32				
	GP	eP	N 17 19 49				
	RX	eL	E 18 06				
		eL	ZN 11		1 20		
		M	N 14				
9	KP	eP	Z 20 06 45	18.6N	147.7E	65 km	USCGS
		Epicentre:	19 56 19.0				
10	SU	e(L)	N 01 13				
10	SU	e(S)	N 14 17 32				
	KP	e	Z 14 19 49				
		e	Z 14 20 10				
10	KP	eP?	Z 17 27 22	36.2N	141.7E	60 km	USCGS
		Epicentre:	17 15 47.7				
10	KP	eP	Z 19 49 45				
		e	Z 19 49 51				
	CT	eP	Z 19 49 49				
	CB	e	E 19 49 55				
		Epicentre:	19 40 15.9	0.2S	132.9E	36 km	USCGS
10	TO	eP	Z 20 52 31				
	CT	P	Z 20 52 31 u				

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
APR 11	KP	eP?	Z 16 15 18				
		e	Z 16 15 22				
		e(PP)	Z 16 15 31				
	CT	e(P)	Z 16 15 37				
		e	Z 16 15 46				
	TO	e	Z 16 15 39				
	WN	e?	Z 16 15 50				
		e	Z 16 15 57				
	SU	e	N 16 16				
		Epicentre:	16 11 33	22.4S	169.9E	58 km	USCGS
11	KP	eP	Z 18 30 33				
	CT	e(P)	Z 18 31 04				
11	CB	e(P)	E 18 42 26				
	KM	e	X 18 42 31				
	KP	eP	Z 18 42 35				
	CT	eP	Z 18 42 37				
		e(PP)	Z 18 43 05				
		Epicentre:	18 32 45.0	8.8S	117.4E	182 km	USCGS
12	ON	eP	E 03 08 38				
	KP	P	Z 03 08 42				
		e	Z 03 08 49				
		e	Z 03 08 59				
		e	Z 03 10 14				
	CT	eP?	Z 03 08 57				
		e?	Z 03 09 10				
		e	Z 03 09 15				
		e(S)	Z 03 09 45				
	CB	e	S 03 09 45				
		eS	E 11 41				
	KM	e?	X 03 10 15				
		e	X 03 10 39				
		e	X 12 03				
		e(S)	X 03 10 34				
	TU	eS	N 03 10 16				
	WN	S	ZNE 03 11 24				
		Epicentre:	03 06 53.9	30.8S	178.6W	190 km	USCGS
12	KP	P	Z 07 57 19 u				
	CT	eP	Z 07 57 22				
12	KP	eP	Z 09 03 24				
		e	Z 09 04 04				
		e	Z 09 05 54				
	CT	eP?	Z 09 03 27				
		Epicentre:	08 53 05.1	8.2S	119.7E	242 km	USCGS
12	KP	eP?	Z 10 00 05				
		e	Z 10 00 09				
		e	Z 10 00 24				
	CT	e?	Z 10 00 23				
		e	Z 10 00 32				
		e(S)	Z 10 02 31				
		e	Z 10 01 38				
	WN	e?	Z 10 01 06				
		eS	ZNE 03 14				
	GP	e	N 10 01 27				
		eS	N 10 04 19				
	TU	e(S)	N 10 02 07				
	TO	e(S)	Z 10 02 31				
		e	Z 10 02 41				
	CB	eS	E 10 03 33				
	KM	e	X 10 04 32				
		Epicentre:	09 57 11.4	28.2S	175.9W	31 km	USCGS

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Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
APR 12	RX	eL	E 12 07	6.9N	122.3E	22 km	USCGS
		Epicentre:	11 36 44.1			1 11	
12	RX	eL	E 11 38				
12	SU	eL	N 11 56		14 11		
		M	N 11 57				
	KP	eP?	Z 11 56 10				
		e?	Z 11 57 44				
12	KP	eP	Z 17 40 34				
		e	Z 17 40 48				
	CT	P	Z 17 40 (42)				
		e	Z 17 40 (57)	48.1N	154.7E	42 km	USCGS
		Epicentre:	17 27 46.5				
12	KP	eP	Z 18 03 01				
		e	Z 18 03 06				
		e	Z 18 03 11				
	CT	eP	Z 18 03 (07)				
		e	Z 18 03 (17)				
	TO	eP	Z 18 03 07				
		Epicentre:	17 52 02.2	23.2N	142.4E	64 km	USCGS
12	KP	P	Z 17 28 01				
		e	Z 17 28 38				
		e	Z 17 28 46				
		e	Z 17 29 04				
	CT	eP	Z 17 28 (05)				
	WN	eP	Z 17 28 06				
	GP	e?	N 17 28 10				
		e	N 17 28 42				
		Epicentre:	17 17 55.3	0.3N	123.8E	122 km	USCGS
12	KP	P	Z 22 34 18				
		e	Z 22 34 23				
		e(PP)	Z 22 38 35				
	WN	e(PP)	Z 22 38 42				
		eL	Z 23 08				
		M	Z 23 11	5 21			
	RX	eSKS	E 22 44 58				
		eSS	NE 22 54 26				
		e	E 22 54 38				
		eLr	ZNE 23 10				
		M	ZNE 23 12	5 22	1 23	3 23	
		M	ZE 23 15	3 18	2 18		
		Epicentre:	22 20 33.6	13.1N	88.9W	122 km	USCGS
13	KP	eP	Z 15 37 54				
		Epicentre:	15 26 11.0	27.0N	128.3E	197 km	USCGS
13	KP	eP'	Z 16 53 26				
	CT	e	Z 16 55 (08)				
		e	Z 16 55 (11)				
	RX	eSS	NE 17 11				
		eSSS	E 17 15				
		eLr	ZNE 17 34				
		e	N 17 47				
		e	ZE 17 49			3 19	
	WN	eL	Z 17 40				
		M	Z 17 45	6 22			
		M	Z 17 52	4 19			
		Epicentre:	16 34 39.1	40.1N	77.8E	19 km	USCGS
13	SU	eL	N 17 17				
	ON	e?	E 17 17 40				
		e	E 17 17 48				

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Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
APR	KP	eP	Z 17 17 59				
		e	Z 17 20 49				
		e	Z 17 21 09				
		e	Z 17 25 13				
		e	Z 17 25 40				
	CT	eP	Z 17 18 (12)				
	AK	eL	N 17 27				
		Epicentre:	17 12 36.4	15.5S	173.1W	25 km	USCGS
13	KP	eP	Z 21 57 19				
		e?	Z 21 59 44				
	CT	eP	Z 21 57 (28)				
		Epicentre:	21 50 33.3	6.7S	154.7E	192 km	USCGS
13	CT	eP	Z 23 55 (45)				
	KP	P	Z 23 55 49				
		Epicentre:	23 43 04.7	27.9S	67.3W	219 km	USCGS
14	ON	eP	E 04 04 24				
		e	E 04 04 43				
	KP	eP	Z 04 04 28				
		e	Z 04 04 30				
		e	Z 04 05 51				
		e	Z 04 05 31				
		e	Z 04 06 15				
	TU	e?	N 04 04 33				
		eS	N 04 05 57				
	CT	eP	Z 04 04 (44)				
		e	Z 04 05 (00)				
		e	Z 04 06 (20)				
		e	Z 04 06 (25)				
		e	Z 04 06 (30)				
	TO	eP	Z 04 04 45				
		e	Z 04 05 30				
		e	Z 04 06 14				
		e	Z 04 07 21				
	WN	e	ZE 04 05 32				
		e	ZNE 04 07 04				
		eS	ZNE 04 06 06				
	GP	e(P)	N 04 05 42				
		e	N 04 05 52				
		e	N 04 06 59				
		eS	N 04 08 10				
	CB	eS	E 04 07 23				
	KM	eS	X 04 08 01				
		Epicentre:	04 02 31.2	31.1S	178.5W	60 km	USCGS
14	KP	P	Z 12 09 15				
	CT	eP	Z 12 09 (29)				
		Epicentre:	12 04 00.6	14.7S	168.1E	37 km	USCGS
14	KP	P	Z 12 50 46				
	CT	P	Z 12 50 (55)				
		Epicentre:	12 41 02.5	10.2N	143.6E	25 km	USCGS
15	KP	P	Z 00 26 48				
		Epicentre:	00 14 49.2	34.3N	141.6E	100 km	USCGS
15	KP	eP	Z 01 23 27				
	CT	eP	Z 01 23 (40)				
		Epicentre:	01 18 12.8	13.2S	166.9E	229 km	USCGS
15	TO	P	Z 04 10 32				
	KP	ip	Z 04 10 33 1/2 u				
		e	Z 04 10 42				
		eS	Z 04 10 54				

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Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
APR	TU	e	04	10	40				
		e			45				
		e			58				
		S	11	03	1/2				
WN	P	ZNE	04	10	47				d
	S	ZNE	11	21					
CB	P	E	04	10	51				
	e	E	11	12					
	S	E			28 1/2				
GP	P	N	04	11	18				
	S	N	12	16					
	i	N			17				
	i	N			20				
KM	e	X	04	11	33				
	eS	X	12	04					
	Epicentre:		04	10	03	38.7S	175.4E	210 km	NZ(D) 5.2 NZ
15	WN	P1	ZNE	09	27	49 1/2			d
	1p2	ZNE			59				
	S1	ZNE			28 21				
	e	ZNE			23				
	eS2	E			31				
TU	P1	N	09	28	05				
	eP2	N			14				
	e	N			47				
	e(S)	N			49				
	e	N			52				
CT	P1	Z	09	28	07				
	eP2	Z			17				
	e	Z			52				
CB	P1	E	09	28	09 1/2				
	eP2	E			18				
	e	E			20				
	e	E			52				
	e	E			57				
	eS1	E			58				
	eS2	E	29	08					
KM	e(P)	X	09	28	19				
	eS	X	29	10					
KP	eP1	Z	09	28	21				
	eP2	Z			31				
	e	Z			42				
	e	Z			29 10				
RX	eL	ZE	09	32					
	Epicentre 1:		09	27	07	42.7S	177.9E	N	NZ(D) 5.4 NZ
	Epicentre 2:		09	27	16	42.7S	177.9E	N	NZ(D) 4.8 NZ
15	ON	eP	E	09	37	55			
	e	E			38 25				
	e	E			39 06				
TU	eP	N	09	37	59 1/2				
	e(S)	N			39 15				
	e	N			18				
	e	N			25				
KP	eP	Z	09	38	01				
	e	Z			08				
	e	Z			18				
	e	Z			30				
	e	Z			36				
TO	eP	Z	09	38	12				
	e	Z			15				
	e(S)	Z			39 34				
	e	Z			43				
	e	Z			51				
WN	eP	Z	09	38	34				
	e	NE			50				
	e	ZNE			40 23				

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Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
APR		e(S)	N		26				
		e	NE		41 12				
		e	Z		17				
CB	e	E	09	38	59				
	e	E			40 41				
	e(S)	E			46				
KM	e(S)	X	09	41	21				
	e	X			24				
RX	e(L)	NE	09	45 1/2					
	Epicentre:		09	36.3		32 1/2 S	178 1/2 W	N	NZ(D) 5.5 NZ
15	CT	e	Z	16	51(03)				
	e	Z			(09)				
	e	Z			52 09				
	e	Z			43				
	e	Z			57				
CB	e?	E	16	51	43				
	e	E			52 14				
	eS	E			53 46				
WN	e?	N	16	51	55				
	eS	ZNE			53 29				
	e?	ZNE			35				
GP	e?	N	16	51	58				
	e	N			52 02				
	e	N			21				
	eS	N			54 32				
	e	N			54				
TO	e	Z	16	52	53				
KM	eS	X	16	54	32				
RX	eL	N	16	59					
	Epicentre:		16	48 1/2					
									Kermadec region. Felt: Raoul Island MM4.
16	SU	eL	N	21	52				
	M	N			53				12 10
16	KP	P	Z	23	21 45				
	Epicentre:		23	12	52.2	3.4S	135.6E	64 km	USCGS
17	KP	P	Z	04	41 08				
	Epicentre:		04	37	28.6	20.1S	178.1W	644 km	USCGS
17	KP	P	Z	07	50 13				
	Epicentre:		07	45	24.4	16.0S	175.3W	289 km	USCGS
17	SU	eS	N	13	43 28				
	KP	e(P)	Z	13	47 20				
17	SU	eS	N	15	43 25				
17	SU	S	N	19	29 58				
CT	e(P)	Z	19	33(54)					
17	KP	ip	Z	20	51 16				
ON	eP	E	20	51	32				
	e	E			53 49				
	e	E			54 03				
	Epicentre:		20	48	12.5	21.3S	178.6W	60 km	USCGS
17	KP	eP	Z	23	40 24				
18	SU	e(L)	N	02	44				
	Epicentre:		02	39	40.8	13.7S	172.2W	60 km	USCGS
18	ON	P	E	04	12 10				
	e	E			11				
	e	E			48				
	e	E			13 03				
	e(S)	E			11				

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
APR	KP	ip	Z 04 12 15 d				
		e	Z 18				
		e	Z 13 32				
	TO	P	Z 04 12 26				
		e(S)	Z 13 48				
	CT	ep	Z 04 12 1/2				
	WN	e(P)	ZNE 04 12 50				
		e	NE 13 18				
		s	ZNE 14 27				
	CB	ep	E 04 13 02				
		e	E 04				
		es	E 14 46				
	AK	e(S)	N 04 13 25				
	GP	ep	N 04 13 28				
		s	N 15 32				
	KM	es	X 04 15 26				
	Epicentre:	X	04 10 46	33.3S	179.4W	N?	NZ(D) 5.6 M
18	KP	e(P)	Z 04 24 04				
		e	Z 16				
	Epicentre:		04 14 13.0	13.1N	146.8E	38 km	USCGS
18	KP	P	Z 08 39 36				
	Epicentre:		08 26 54.8	44.6N	150.1E	25 km	USCGS
18	KP	P?	Z 13 53 06				
	Epicentre:		13 44 08.7	6.3S	131.5E	67 km	USCGS
18	KP	ep?	Z 19 01 33				
	Epicentre:		18 49 25.1	38.5S	73.3W	30 km	USCGS
18	CT	P	Z 22 16(26)				
	Epicentre:		22 04 21.5	1.5S	99.5E	39 km	USCGS
18	ON	ep	E 22 27 34				
		e	E 28 49				
		e	E 14				
		e(S)	E 21				
	KP	P	Z 22 27 41				
	TU	e	N 22(27 42)				
		e	N (28 36)				
	TO	P	Z 22 27 55				
		e	Z 28 15				
		e	Z 22				
	CT	P	Z 22 27(55)				
		e	Z 28(10)				
		e	Z 29(06)				
		e	Z (22)				
	CB	e(P)	E 22 28 36				
		e?	E 30 04				
		e	E 15				
	WN	e	E 22 28 37				
		es	ZNE 29 44				
		e	E 30 16				
	AK	eL	N 22 29				
	GP	es	N 22 30 50				
	Epicentre:		22 26 30	34.3S	179.2E	N	NZ(D) 5.0 M
19	ON	ep	E 00 42 12				
		e	E 43				
	KP	ep	Z 00 42 16				
		e	Z 43 25				
	TU	e	N 00(42 16)				
		e	N (43 12)				
	TO	ep	Z 00 42 31				
		e(S)	Z 43 40				
		e	Z 43				
		e	Z 58				

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
APR	CT	P	Z 00 42(31)				
		e	Z (41)				
		e	Z 43(58)				
	AK	eL	N 00 43				
	GB	e	E 00 43 11				
		e	E 44 41				
		e	E 44				
	GP	e?	N 00 44 00				
		es	N 45 27				
		e	N 35				
	WN	es	E 00 44 20				
		e	ZNE 22				
	KM	e(S)	X 00(45)24				
		e	X 33				
	Epicentre:		00 41.1	34.3S	179.2E	N	NZ(D) 5.1 NZ
19	KP	ep?	Z 06 04 27				
	Epicentre:		05 57 12.6	5.0S	152.9E	111 km	USCGS
19	KP	P	Z 07 43 48				
	TO	ep	Z 07 44 04				
	CT	P	Z 07 44(06)				
		e	Z (18)				
	WN	ep	ZN 07 44 19				
		e	Z 35				
	Epicentre:		07 39 12.8	18.2S	168.2E	98 km	USCGS
19	KP	P	Z 16 25 06				
		e(P)	Z 32				
	Epicentre:		16 12 28.7	44.2N	148.0E	51 km	USCGS
19	KP	ep?	Z 18 27 01				
		e	Z 18				
	Epicentre:		18 13 51.8	55.1N	163.6E	21 km	USCGS
20	KP	ep	Z 00 24 06				
	Epicentre:		00 15 12.5	5.6S	128.7E	285 km	USCGS
20	TU	ep	N 03 48(31)				
		es	N 49(08)				
	KP	ip	Z 03 48 37 d				
		e	Z 49 08				
		e(S)	Z 19				
	ON	ep	E 03 48 44				
		e(S)	E 49 32				
		e	E 39				
	CT	P	Z 03 48(46)				
		ep*	Z 49(00)				
		e	Z (03)				
	TO	P	N 03 48 47				
		ep*	N 49 02				
		es	N 35				
		e	N 39				
	WN	e?	E 03 49 09				
		e	Z 12				
		e	N 28				
		e	N 31				
		ep*	ZE 33				
		s	ZNE 50 17				
	CB	e(P)	E 03 49 22				
		e	E 34				
		e	E 38				
		e(P*)	E 53				
		s	E 50 39				
	KM	es	X 03 51 18				
	GP	es	N 03 51(22)				
	Epicentre:		03 47 42	36.2S	179.4E	S	NZ(C) 5.2 NZ

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
APR 20	KP	P	Z 07 43 39				
	TO	eP	Z 07 43 49				
	CT	eP	Z 07 43(50)				
20	KP	eP	Z 13 32 33	52.5N	171.9E	25 km	USCGS
		Epicentre:	13 19 33.3				
20	TU	eP	N 19 21 04				
		e	N 22 22				
		e(s)	N 22 20				
		e	N 22 22				
		e(s*)	N 23 13				
	ON	eP	E 19 21 05				
		eL	E 24 24				
	KP	eP	Z 19 21 06.2				
		e	Z 11 11				
		e	Z 16 16				
		e	Z 22 55				
	TO	eP	Z 19 21 21				
		e	Z 29 29				
		e	Z 39 39				
		e(s)	Z 22 49				
		e	Z 56 56				
		e	Z 23 16				
	CT	eP	Z 19 21 (21)				
		e	Z (25)				
		e	Z (30)				
		e	Z (38)				
		e	Z 22 55				
		e	Z 23 12				
	WN	e	Z 19 22 14				
		e	ZE 20 20				
		s	ZNE 23 29				
	CB	e	E 19 22 25				
		e	E 46 46				
		e(s)	E 23 50				
		e	E 52 52				
	KM	eS	X 19 24 30				
	GP	eS	N 19 24 36				
	SU	eL	N 19 28 28				
	RX	eL	NE 19 28 29				
		eL	Z 29 29				
		Epicentre:	19 19 25	33.OS	178.0W	N	NZ(D) 5.8 NZ
20	SU	e	N 21 41 21				
		i(s)	N 42 56				
	ON	eP	E 21 44 17				
		e	E 30 30				
	CT	eP?	Z 21 44(32)				
		e	Z (42)				
	WN	e	Z 21 45 12				
		eL	ZN 53 53				
		M	ZN 54 54	9 20	12 20		
	RX	eL	ZNE 21 56	8 20	10 21		
		M	ZN 58 58	15.2S	173.7W	25 km	USCGS
		Epicentre:	21 39 07.0				
21	ON	eP	E 13 50 23				
	TU	eP	N 13 50 23				
		eS	N 51 39				
	AK	e	N 13 50 35				
		e(s)	N 51 42				
		M	N 53 53				
	TO	eP	Z 13 50 36				
		e	Z 51 02				
		eS	Z 52 03				
	CT	eP	Z 13 50(36)				
		e	Z (40)				

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
APR		e	Z 51(04)				
		eS	Z 52(05)				
	WN	e	Z 13 51 23				
		eS	ZNE 52 46				
		e	NE 53 53				
	GP	e	N 13 51 43				
		eS	N 53 51				
		e	N 54 03				
	CB	e	E 13 51 52				
		eS	E 53 07				
		e	E 11 11				
	KM	eS	X 13 53 47				
		e	X 58 58				
	RX	eL	NE 13 57				
		eL	Z 59 59				
		Epicentre:	13 48 43	33S	178W	N	NZ(D) 5.6 NZ
21	KP	P	Z 21 39 38				
		e	Z 50 50				
		Epicentre:	21 26 42.1	51.7N	173.9W	36 km	USCGS
22	KP	e	Z 00 38 19				
	CT	eP	Z 00 38(26)				
	TO	e	Z 00 38 26				
	RX	e(s)	NE 00 45 28				
		e	N 41 41				
		e(SS)	N 49 44				
		eL	N 52 52				
		M	ZNE 54 54				
		M	N 56 56				
	SU	eL	N 00 47				
	WN	eL	ZN 00 53				
		M	Z 55 55				
				4 20			
22	KP	P	Z 06 17 53				
		e	Z 18 03				
22	ON	eP	E 10 38 03				
		e	E 10 10				
	KP	P	Z 10 38 05				
		e	Z 15 15				
		e	Z 39 54				
	CT	eP?	Z 10 38(17)				
		e	Z (30)				
		e	Z 40(00)				
	TO	eP?	Z 10 38 19				
		e	Z 41 41				
		e	Z 39 58				
	TU	eP	N 10 38 20				
		eS	N 39 26				
	AK	e	N 40 15				
	WN	S	ZNE 10 40 36				
	CB	eS	E 10 40 58				
	KM	eS	X 10 41 37				
	GP	eS	N 10 41 42				
		e	N 44 44				
		Epicentre:	10 36.0	32S	177W	N	NZ(D) 5.4 NZ
22	KP	eP	Z 19 07 06				
		e	Z 09 43				
	TO	eP	Z 19 07 15				
		e	Z 19 19				
	CT	P	Z 19 07(16)				
		e	Z (22)				
	RX	eS	NE 19 14 22				
		eL	NE 21 21				
		M	E 23 23				
				4 21			

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
APR	AK	eL	N	19	20				
	WN	eL	ZN	19	22				
		M	Z		23				
	Epicentre:		18	59	23.2	3.5S	150.1E	91 km	USCGS
22	KP	P	Z	19	15	14 d			
		e	Z		19				
	TO	e	Z	19	15	47			
	Epicentre:		19	01	34.4	2.8S	80.8W	30 km	USCGS
23	KP	ip	Z	05	26	14 d			
		(pp)	Z		24				
	CB	eP	E	05	26	18			
	GP	e?	N	05	26	19			
	CT	ip	Z	05	26	(19) d			
		e	Z		(43)				
		e	Z		27	(03)			
	WN	P	Z	05	26	24			
		e	E		43				
	KM	eP?	X	05	26	27			
		e	X		38				
	RX	eL	N	05	53				
	Epicentre:		05	14	31.1	26.2N	129.8E	110 km	USCGS
23	KP	P	Z	09	14	21			
		e(pp)	Z		38				
	CT	e?	Z	09	14	28			
	WN	P	Z	09	14	34			
		e	Z		52				
		e	E		55				
		eS	N		24	58			
		eL	ZN		45				
		M	ZN		57		12 19	8 19	
	CB	e(P)	E	09	14	36			
		e	E		56				
		eS	E		25	14			
	KM	e(P)	X	09	14	40			
		e(S)	X		25	27			
	GP	eP	N	09	14	44			
		e	N		15	03			
	TO	e	Z	09	14	52			
	RX	eP	ZN	09	14	58			
		eSKS	NE		25	20			
		eS	ZNE		52		4 10	18 14	12 10
		eSS	NE		32				
		e(SSS)	N		35				
		eL	NE		39				
	eL	ZN		48					
	M	ZNE		50		11 21	12 22	7 20	
	M	E		57				8 18	
	M	ZN	10	01		18 18	18 18		
SU	eS	N	09	22	43				
	e(SS)	N		27					
	e	N		27	30				
	e(SSS)	N		31					
	eL	N		34					
	M	N		38			35 20		
	M	N		42			35 19		
AK	S	N	09	24	38			7 10	
	e	N		30	20				
	eL	N		42					
	M	N		45			9 19		
	Epicentre:		09	01	41.8	44.6N	150.2E	44 km	USCGS
23	KP	eP	Z	17	03	45			
	RX	eS	N	17	15	10		1 18	
		eL	N		37				
	KP	M	N		39				

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
APR		M	N		51				
	Epicentre:		16	51	03.6	44.5N	150.1E	76 km	USCGS
23	KP	P	Z	22	14	46			
	CT	P	Z	22	14	(52) d			
	Epicentre:		22	04	18.6	28.7N	140.5E	581 km	USCGS
23	ON	P	E	23	40	01			
		eS	E		41	19			
	KP	P	Z	23	40	11			
		e	Z		35				
		e(S)	Z		41	36			
		e	Z		40				
	TU	eP	N	23	40	12			
		e	N		30				
		eS	N		41	37			
		e	N		40				
	CT	P	Z	23	40	(20)			
	e	Z		(47)					
	e(S)	Z		41	(51)				
	e	Z		(59)					
TO	P	Z	23	40	21				
	e	Z		46					
	e(S)	Z		41	52				
	e	Z		42	03				
	WN	P	Z	23	40	42			
		S	ZNE		42	33			
	CB	eP	E	23	40	50			
		eS	E		42	43			
	GP	e(P)	N	23	41	14			
		e	N		17				
		eS	N		43	29			
AK	e?	N	23	41	23				
	e(S)	N		27					
KM	e(S)	X	23	43	24				
	e	X		29					
	Epicentre:		23	38	20	31S	180	350 km	NZ(D) 5.5 NZ
24	KP	P	Z	02	08	51			
		e	Z		09	04			
	ON	eP	E	02	08	55			
		e	E		09	15			
	CT	P	Z	02	09	(00)			
		e	Z		(16)				
		e	Z		10	(14)			
	TO	eP	Z	02	09	01			
		e	Z		16				
		e	Z		10	07			
		e	Z		16				
TU	e(S)	N	02	09	43				
CB	e	E	02	10	10				
	S	E		11	15				
AK	e	N	02	10	40				
WN	S	NE	02	10	52				
	e	E		11	54				
	e	N		59					
KM	eS	X	02	11	57				
GP	e	N	02	11	57				
	e(S)	N		59					
	Epicentre:		02	07.6		35.4S	179W	N	NZ(D) 5.0 NZ
24	KP	e(P)	Z	12	40	24			
	WN	e	Z	12	54				
		e(L)	Z	13	17				
	RX	eSS	N	12	58				
		eL	N	13	21				
	Epicentre:		12	27	39.5	44.5N	150.2E	76 km	USCGS

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
APR 24	TU	e(P)	N 12 49 16	33S	178W	N	NZ(D) 5.2 NZ
		eS	N 12 49 31				
	ON	e(P)	E 12 49 20				
		e	E 12 49 39				
	KP	P	E 50 03				
		e	Z 12 49 20				
	TO	e	Z 12 49 25				
		eP	Z 12 49 30				
	CT	e	Z 12 49 45				
		eP	Z 12 49 (31)				
		e	Z 12 49 (43)				
		e(S)	Z 51 (02)				
	AK	e(S)	N 12 49 40				
		eL	N 51				
	WN	e	ZN 12 50 45				
s		ZNE 51 39					
24 CB	s	E 12 51 59					
	e	E 12 52 25					
KM	eS	X 12 52 41					
	GP	N 12 52 45					
	e(S)	N 47					
	e	N 53 44					
Epicentre:			12 47 37				
24	ON	P	E 13 12 16				
		KP	eP? Z 13 12 23				
	CT	eP?	Z 13 12 31				
		e	Z 13 12 (42)				
		e	Z 13 (52)				
		e	Z 13 (08)				
	TO	e	Z 14 (31)				
		e	Z 15 (38)				
		e	Z 15 (00)				
		e	Z 13 12 48				
	WN	e	Z 14 49				
		eP?	ZE 13 13 01				
	TU	e	Z 15 18				
		s	ZNE 19				
	CB	eS	N 13 14 10				
s		E 13 15 35					
KM	s	X 13 16 18					
	GP	eS N 13 16 22					
Epicentre:			13 09 51.8	29.2S	176.7W	25 km	USCGS
24	ON	eP	E 16 12 51				
		KP	P Z 16 12 53				
		e	Z 13 05				
		e	Z 27				
	CT	e?	Z 16 13 (06)				
		e?	Z 16 (11)				
		e	Z (20)				
		e	Z 14 (35)				
	TO	e	Z (42)				
		eP	Z 16 13 08				
	AK	e	Z 14 32				
		eL	N 16 13 40				
	TU	e(S)	N 16 14 05				
		s	ZNE 16 15 04				
	CB	s	E 16 15 35				
KM		eS? X 16 16 18					

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
APR	GP	e	N 16 16 18	33S	178W	N	NZ(D) 5.1 NZ
		eS	N 16 16 22				
Epicentre:			16 11.2				
25	KP	e?	Z 00 41 24				
		Epicentre:	00 29 15.4	44.6N	150.0E	72 km	USCGS
25	KP	P	Z 01 30 15				
		Epicentre:	01 17 42.7	44.5N	150.0E	78 km	USCGS
25	CB	e(P)	E 02 41 41				
		KP	P Z 02 41 42 u				
TO	e(P)	eP	Z 42 25				
		e	Z 02 41 46				
GP	eP?	N	02 41 47				
		CT	eP Z 02 41 (48)				
Epicentre:			02 34 44.2	0.7S	124.1E	200 km	USCGS
25	ON	eP	E 11 18 19				
		e	E 24				
TU	e(L)	E	21.1				
		eP	N 11 18 19				
	eS	N	19 34				
		e	N 53				
KP	eP	N	20 17				
		Z	11 18 20				
	e	Z	23				
		e	Z 30				
AK	e(T)	Z	40				
		eP	N 11 18 22				
	e	N	43				
		e(S)	N 19 44				
TO	eL	N	58				
		N	21				
	eP	Z	11 18 33				
		e	Z 34				
	e	Z	38				
		e	Z 47				
	e	Z	54				
		e	Z 19 56				
	eS	Z	20 00				
		e	Z 06				
CT	eP	Z	11 18 (33)				
		e	Z (37)				
	e	Z	(43)				
		e	Z (55)				
	e(S)	Z	19 (19)				
		e	Z 20 (05)				
WN	e	Z	(20)				
		e	Z 11 18 58				
	e	ZN	19 19				
		e	NE 26				
	s	ZNE	20 40				
		e	ZN 21 32				
	e	NE	39				
		eL	ZN 23				
CB	e?	E	11 19 22				
		e	E 30				
	e	E	44				
		e	E 20 01				
	eS	E	21 03 1/2				
		e	E 06				
KM	e	E	59				
		X	11 19 41				
	eS	X	51				
		X	21 42				

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
APR	GP	e?	11	19	41	33S	178W	N	NZ(D) 5.9 NZ
		N		49					
		e		20 05					
		e		21 48					
		e(s)		54					
		e		11 24					
		SU eL		26					
		M		11 25					
		RX eL	NE	26					
		eL	Z	27					
M	NE	29							
M	Z	11 16 42							
Epicentre:									
25	ON	eP	E	11	56	33S	178W	N	NZ(D) 5.2 NZ
		e	E	57 03					
		e	E	19					
		e	E	30					
		e	E	11 56 54					
		KP P	Z	57 04					
		e	Z	58 31					
		e	Z	11 57 (06)					
		CT eP?	Z	(15)					
		e	Z	58 (33)					
e	Z	11 57 27							
WN eP?	ZNE	59 13							
eS	ZNE	11 58 03							
TU e(s)	E	11 59 37							
CB e(s)	X	12 00 16							
KM eS?	N	12 00 21							
GP e(s)	N	11 55 14							
Epicentre:									
25	KP	P	Z	12	17	27S	179W	>N?	NZ(D) 5.2 NZ
		e	Z	18 14					
				15 46 30					
		eP	Z	47 32					
		e	Z	15 46 45					
		TO e	Z	49 05					
		e	Z	19					
		e	Z	15 46 (49)					
		CT e	Z	49 (06)					
		e	Z	15 49 10					
TU e?	N	15 49 42							
WN eS	NE	44							
e	ZNE	15 50 00							
CB eS	E	15 50 38							
KM eS	X	15 50 46							
GP eS	N	15 50 50							
e	N	15 43.7							
Epicentre:									
25	ON	e(P)	E	19	38	33S	178W	N	NZ(D) 5.3 NZ
		eP	Z	19 38 20					
		e	Z	43					
		e	Z	39 00					
		e	Z	19 38 40					
		TO e(P)	Z	40 17					
		e(s)	Z	19 38 (40)					
		CT e(P)	Z	(56)					
		e	Z	39 (21)					
		e	Z	40 (01)					
e	Z	19 39 41							
TU eS	N	19 39 42							
GP e	N	41 53							
eS	N	58							
e	N	19 40							
AK e(L)	N	19 40 45							
WN e	NE	48							
eS	ZNE								

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
APR	CB	eS	E	19	41	32S	178½W	N?	NZ(D) 5.4 NZ
		KM e(s)	X	19 41 47					
		Epicentre:		19 36 29					
25	ON	eP	E	20	53	31S	176½W	N	NZ(D) 5½ NZ
		KP eP	Z	20 53 56					
		e	Z	54 05					
		CT e	Z	20 54 (15)					
		e	Z	(49)					
		eS	Z	55 (36)					
		e	Z	(54)					
		TU e(s)	N	20 55 06					
		AK M	N	20 56					
		WN eS	NE	20 56 14					
CB eS	E	20 56 35							
GP eS	N	20 57 20							
SU e(L)	N	21 02							
Epicentre:									
25	KP	P	Z	23	52	27.9N	129.3E	25 km	USCGS
		Epicentre:		23 40 34.3					
26	ON	e	E	01	46	31S	176½W	N	5 NZ
		KP eP	Z	01 46 44					
		e	Z	53					
		CT e	Z	01 47 (08)					
		e	Z	(15)					
		e	Z	48 (32)					
		WN eS	E	01 49 03					
		CB eS	E	01 49 24					
		GP eS?	N	01 50 08					
		e	N	16					
Epicentre:									
26	TU	e(P)	N	05	57	32½S	178W	N	NZ(D) 5.3 NZ
		e	N	57					
		e(s)	N	59 09					
		KP eP	Z	05 57 51					
		e	Z	58 06					
		e	Z	44					
		ON e	E	05 57 53					
		CT e?	Z	05 58 (00)					
		e	Z	(06)					
		e	Z	(19)					
e	Z	(37)							
e	Z	59 (30)							
TO eP?	Z	05 58 03							
e	Z	07							
e	Z	14							
e	Z	36							
eS	Z	59 35							
GP e?	N	05 59 25							
eS	N	06 01 23							
WN e	ZNE	06 00 18							
KM e?	NE	19							
e?	X	06 00 19							
CB eS	E	01 17							
AK M	N	06 00 37							
SU e(L)	N	06 01							
RX eL	N	06 05							
eL	NE	06 05							
M	ZN	09							
Epicentre:									
26	KP	eP?	Z	06	27	32½S	178W	N	NZ(D) 5.3 NZ
		e	Z	49					
		e	Z	28 02					

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
APR	CT	eP?	Z	06	27					
		e	Z		(55)					
		e?	Z		(58)					
		e?	Z		28					
	TO	e	Z	05	28					
	AK	eL	N	06	44					
	RX	eL	ZNE	06	46					
		M	ZN		48					
							3 15			
26	WN	eL	ZN	06	46					
	Epicentre:			06	20	23.5	5.7S	151.1E	34 km	USCGS
26	SU	iS	N	07	25					
	ON	e(P)	E	07	26					
	KP	P	Z	07	26					
		e	Z		18					
		e	Z		17					
	TO	e	Z	07	26					
		e	Z		31					
		e	Z		29					
		e	Z		25					
	CT	eP	Z	07	26					
		e	Z		(27)					
		e	Z		(31)					
		e	Z		29					
	CB	e(P)	E	07	26					
		eS	E		50					
		eS	E		29					
	WN	eS	N	07	29					
		e	E		58					
		e	E		58					
	GP	eS	N	07	30					
		e	N		53					
	Epicentre:			07	22	51.2	21.8S	179.5W	522 km	USCGS
26	KP	P	Z	07	51					
		e	Z		35					
		e	Z		51					
	AK	eS	N	08	01					
		e	N		50					
		e	N		05					
		eL	N		22					
		M	N		29					
	RX	eSKS	NE	08	02					
		eS	NE		03					
		eSS	N		10					
		e(SSS)	N		13					
		eL	N		20					
		eL	ZNE		25					
		M	N		27					
		M	ZN		39					
	WN	eL	ZN	08	23					
		M	ZN		27					
	Epicentre:			07	38	54.1	44.6N	149.9E	20 km	USCGS
26	ON	e?	E	08	30					
	KP	ep	Z	08	30					
	CT	eP?	Z	08	30					
		e	Z		(36)					
		e	Z		(48)					
		e(s)	Z		32					
	TO	e?	Z	08	32					
		e	Z		07					
		e	Z		11					
	WN	eS	NE	08	32					
	CB	eS	E	08	33					
	GP	eS	N	08	33					
	Epicentre:			08	28.6		32.3S	178W	N	NZ(D) 5 NZ
26	KP	P	Z	09	44					
	CT	e	Z	09	44					
	ON	e?	E	09	45					
					06					
26	ON	e?	E	10	58					
	KP	ip	Z	10	59					
	CT	e(P)	Z	10	59					
		e	Z		38					

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
APR 26	TU	eP	N	13	16					
		eS	N		17					
	ON	e(P)	E	13	16					
		e	E		49					
26	KP	eP	Z	13	16					
		e	Z		43					
		e	Z		55					
		e	Z		17					
	TO	eP	Z	13	16					
		e	Z		48					
		e	Z		55					
		e(s)	Z		18					
	CT	eP	Z	13	16					
		e	Z		(19)					
		e	Z		(57)					
		e	Z		17					
		e(s)	Z		18					
	WN	e	NE	13	18					
		e	ZNE		59					
	AK	M	N	13	19					
	CB	eS	E	13	19					
	KM	e	X	13	19					
		e(s)	X		59					
	GP	e	N	13	20					
		eS	N		05					
	RX	eL	N	13	25					
	Epicentre:			13	14	55	33S	178W	N	NZ(D) 5.3 NZ
26	KP	eP	Z	15	23					
		e	Z		10					
		e	Z		15					
		e	Z		20					
		e	Z		31					
		e	Z		24					
	ON	e(P)	E	15	23					
		e	E		11					
		e	E		35					
	CT	e(P)	Z	15	23					
		e	Z		(24)					
		e	Z		(36)					
		e	Z		24					
		e	Z		(07)					
		e	Z		(47)					
		e	Z		25					
	TO	e(P)	Z	15	23					
		e	Z		26					
		e	Z		34					
	WN	eS	NE	15	25					
		e	Z		29					
		e	Z		33					
	CB	eS	E	15	25					
	GP	eS	N	15	26					
	Epicentre:			15	21	29	33S	178W	N	NZ(D) 5.0 NZ
26	CB	e(P)	E	17	03					
	KP	P	Z	17	03					
		e(P)	Z		00					
	TO	eP	Z	17	03					
	CT	ep	Z	17	03					
		e	Z		(34)					
		e	Z		(05)					
	WN	P	ZNE	17	03					
		epP	Z		04					
	Epicentre:			16	53	29.4	0.2N	124.1E	135 km	USCGS
26	ON	e	E	19	24					
	KP	ep	Z	19	24					
26	KP	ep	Z	19	45					
	RX	e(L)	NE	20	31					
	Epicentre:			19	32	34.2	44.6N	150.1E	51 km	USCGS
27	KP	ep	Z	00	28					
		e	Z		41					
		e	Z		43					
		e	Z		29					
		e	Z		31					

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
APR	CT	eP	Z	00	28				
		e	Z	31	22				
	TO	e(P)	Z	00	28				
	CB	eP	E	00	29				
		eS	E	32	10				
	WN	eS	NE	00	31				
		e	E	32	06				
	KM	e(S)	X	00	32				
	GP	eS	N	00	32				
	Epicentre:			00	25	48.7	25.3S	180	504 km USCGR
27	SU	e	N	14	44				
		M	N	46				16	12
	KP	e(P)	Z	14	49				
27	KP	eP	Z	17	57				
	CT	e(P)	Z	17	57				
28	KP	P	Z	09	00				
		e	Z	46					
	ON	e	E	09	00				
		e	E	01	27				
	TO	e?	Z	09	01				
28	KP	P	Z	20	40				
		e	Z	47					
		e	Z	43	38				
	Epicentre:			20	36	25.3	17.7S	178.7W	595 km USCGR
28	KP	P	Z	22	23				
	CT	eP	Z	22	23				
29	TC	e	Z	05	54				
	SU	eL	N	05	55			5	8
		M	N	56					
29	SU	eL	N	09	55			5	25
		M	N	56					
	RX	eL	N	10	08			1	19
		M	N	13					
	Epicentre:			09	19	28.3	40.6N	127.5W	26 km USCGR
29	KP	ePKP	Z	09	48				
	TO	ePKP	Z	09	48				
	CT	ePKP	Z	09	48				
	Epicentre:			09	29	09.5	71.3N	7.4W	14 km USCGR
29	RX	eL	N	11	18				
29	KP	P	Z	19	49				
	CT	P	Z	19	59				
29	KP	P	Z	21	11				
		e	Z	14	39				
	TO	P	Z	21	12				
		e	Z	14	19				
	CT	P	Z	21	12				
		e	Z	14	(15)				
		e	Z	(19)					
30	RX	eL	N	08	59				
30	KP	eP?	Z	11	13				
	Epicentre:			11	00	46.8	45.8N	150.2E	100 km USCGR
30	KP	eP	Z	11	27				

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
APR	WN	eP	Z	11	28				
		eL	N	12	03				
	RX	eSKS	N	11	39				
		eS	N	28				2	16
		e(L)		53					
		eL	ZNE	12	01				
		M	N	04				1	21
		M	ZN	14				1	17
	SU	eL	N	11	48				
		M	N	53				5	20
	AK	eL	N	12	00				
	Epicentre:			11	15	19.8	44.6N	149.7E	70 km USCGR
30	KP	P	Z	11	34				
	CT	eP	Z	11	34				
30	KP	P	Z	11	48				
	TO	eP	Z	11	48				
	CT	P	Z	11	48				
30	KP	e	Z	13	48				
	SU	e	N	13	48				
30	SU	e	N	14	50				
		L	N	51	01				
		M	N	52				280	9
	ON	eP	E	14	53				
		eL	E	59					
	KP	eP	Z	14	53				
		e	Z	36					
		e	Z	56	13				
		e	Z	18					
		e	Z	27					
	CT	e?	Z	14	53				
		e	Z	(45)					
		e	Z	54	(15)				
		e	Z	56	(40)				
	TO	eP	Z	14	53				
	AK	e	N	14	53				
		eS	N	57	40				
		eL	N	15	00				
	WN	eP	Z	14	53				
		e	ZE	54	03				
		eL	N	15	01				
	KM	e	X	14	54				
		eL	X	15	05				
	RX	e(L)	N	15	00				1
		eL	NE	03					
		eL	Z	05					
		M	ZNE	08					
	Epicentre:			14	48	11.5	15.3S	174.4W	25 km USCGR
30	KP	P	Z	17	30				
		e	Z	21					
	CT	e(P)	Z	17	30				
		e	Z	(38)					
MAY	1	KP	P	03	49				
		TO	P	03	50				
	Epicentre:			03	45	04.1	18.7S	174.3W	25 km USCGR
2	ON	eP	E	18	56				
	KP	P	Z	18	56				
	CT	eP	Z	18	56				
	Epicentre:			18	50	57.5	15.2S	173.1W	71 km USCGR

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.	
MAY 2	KP	eP	Z	19	40	55							
	SU	e	N	19	40	55		4	5				
		eL	N			43.8		29	20				
		M	N			46.4		40	12				
	ON	e(P)	E	19	40	58.4							
	WN	e	Z	19	41	47							
		eS	NE			44 15							
		eL	ZN			47	16	20	12	20			5.6
	GP	eP	N	19	42	17							
		eS	N			45 18							
	RX	eL	NE	19	48.4		6	18	2	20	4	20	5.5
		eL	Z			51.4							
	Epicentre:			19	38	13.5	27.8S	176.4W		53	km	USCGS	
2	KP	e(P)	Z	19	42	31							
	WN	eP	Z	19	43	09							
		eS	NE			45 36							
	GP	eP	N	19	43	39							
	eS	N			46 40								
	Epicentre:			19	39	38.2	27.5S	176.7W		77	km	USCGS	
2	KP	eP	Z	20	51	11							
		e	Z			23							
	ON	e(P)	E	20	51	18							
		e	E			38							
	TO	e(P)	Z	20	51	49							
	WN	S	ZNE	20	53	31	2	8	5	7			
		eL	Z			54 22	4	6					
		eL	ZN			55.7	9	14	8	10			
	CB	eS	E	20	53	53							
	GP	eS	N	20	54	38							
	SU	eL	N	20	57				12	12			
	RX	eL	NE	20	58				2	16	8	16	
	eL	Z			59.4	8	18						
2	KP	eP	Z	21	10	51							
	WN	eS	NE	21	13	12							
2	KP	eP	Z	21	26	13							
2	KP	eP	Z	22	37	22							
	WN	e(S)	NE	22	39	42							
2	KP	ep	Z	22	44	48							
	WN	eS	E	22	47	12							
	GP	eS	N	22	48	20							
2	SU	P	N	22	47	24 n							
		eL	N			50							
	ON	P	E	22	47	28							
		eL	E			50.0							
	KP	eP	Z			30							
		eL	Z			51.4							
	WN	ep	ZNE	22	48	15							
		S	ZNE			50 48							
		Lq	N			51.8							
	WN	M1	ZN			53	190	20	150	20			
	M2	ZN			58	135	16	170	15				
CB	eP	E	22	48	26								
	eS	E			51 04								
	eL	E			52.5								
KM	eP	X	22	48	47								
	eS	X			51 47								
GP	eL	X			55								
	eP	N	22	48	4.8								
	eS	N			51 52								

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.		
MAY	RX	eP	NE	22	49	24				4	18			
		eS	N			53 13				11	13	5.3		
		eLq	NE			54.2				30	30	5.8		
		M1	NE			56				47	30			
		eL	Z			58				100	20	6.3		
		M2	N			59								
		Epicentre:			22	44	44.3	27.8S		95	15	47	km	USCGS
	2	KP	eP	Z	23	26	46							
			e	Z			50							
		ON	e	E	23	26	53							
		GP	eP	N	23	28	05							
			eS	N			31 09							
WN		S	ZNE	23	30	01								
	CB	eS	E	23	30	18								
	KM	eS	X	23	31	05								
	Epicentre:			23	24	03.6	27.7S		176.4W		84	km	USCGS	
3	KP	ep	Z	16	56	53								
	SU	eL	N	17	01					10	10			
	GP	eS	N	17	01	16								
	Epicentre:			16	54	11.4	27.8S		176.1W		49	km	USCGS	
3	KP	e(P)	Z	17	06	0								
	GP	eS	N	17	10	10								
	Epicentre:			17	03	06.2	27.9S		176.4W		60	km	USCGS	
3	SU	eL	N	19	07					5	10			
				19	00	40.7	27.7S		176.0W		44	km	USCGS	
5	KP	ep	Z	06	41	50								
	ON	e	E	06	41	9								
	WN	P	ZN	06	42	39								
		eS	NE			45 08								
	SU	eL	N	06	45						9	12		
	AK	eL	N	06	46									
	GP	eS	N	06	46	17								
		Epicentre:			06	39	07.9	27.7S		176.4W		84	km	USCGS
	5	KP	ep	Z	08	47	01							
		ON	e	E	08	48								
		WN	eS	ZNE	08	50	20							
			eL	ZN			54							
SU		eL	N	08	50	7					11	10		
AK		eL	N	08	51									
GP	eS	N	08	51	25									
RX	eL	NE	08	56										
	Epicentre:			08	44	15.7	27.3S		176.4W		42	km	USCGS	
5	SU	P	N	13	45	53								
		eS	N			47 51				12	10			
		eL	N			49.4				15	7			
	KP	eP	Z	13	46	05					200	12		
	TO	ep	Z	13	46	20								
	WN	ep	ZNE	13	46	54								
		eS	ZNE			49 22								
		eL	ZN			51.4								
	GP	eP	N	13	47	25								
		eS	N			50 28								
	ON	eL	E	13	49									
AK	eL	N	13	50	5									
	M				53									
KM	eS	X	13	50	38									
RX	eL	NE	13	54										
	eL	Z			56									
	Epicentre:			13	43	21.1	27.8S		15	19	176.1W	84	km	USCGS

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
MAY 5	KP	eP	Z	15	31	32			
	WN	eS	NE	15	34	55			
	GP	eS	N	15	36	00			
	SU	eL	N	15	36	00	17 12		
	RX	eL	N	15	40				
Epicentre:			15	28	50.7	27.3S	176.1W	60 km	USCGS
5	SU	eL	N	20	44 $\frac{1}{2}$		9 12		
6	KP	P	Z	22	43	14			
	CT	eP	Z	22	43	19			
	TO	eP	Z	22	43	20			
	Epicentre:			22	32	49.7	6.3N	126.3E	110 km
6	SU	e	N	23	16	20			
		S	N	18	10		4 2		
		M	N	22			18 9		
							34 12		
	KP	P	Z	23	18	15			
	CT	P	Z	23	18	28 u			
	CB	e(P)	E	23	18	43			
	WN	eP	Z	23	18	44			
		eL	ZN	28			13 16	11 16	
	GP	P	N	23	19	02			
	RX	eL	NE	23	26			5 26	4 26
		eL	Z	29	29				
Epicentre:			23	13	29.5	17.2S	167.9E	96 km	USCGS
6	GP	eP	N	23	43	39			
		eS	N	45	36				
	RX	Lq	NE	23	44.6		12 13	15 13	
		Lr	Z	45.4			16 14		
	KP	P	Z	23	45	03			
	WN	eL	ZN	23	49		12 14	10 14	
Epicentre:			23	40	54.7	51.5S	161.3E	21 km	USCGS
7	KP	P	Z	00	32	44 d			
		ePcP	Z	35	03				
	TO	eP	Z	00	32	(51)			
	CT	P	Z	00	32	52			
	SU	eL	N	00	36		21 22		
		eS	N	00	38	34	4 18		
		eL	NE	42	52		10 25	11 34	5.9
		eL	Z	46			26 24		
		M	NE	47			18 20	12 22	
	WN	eL	ZN	00	42				
		M	ZN	48			11 22	17 20	
Epicentre:			00	25	40.8	6.1S	154.4E	123 km	USCGS
7	SU	eP	N	04	38	59			
		L	N	41	35		17 10		
		M	N	43			16 11		
							43 10		
	KP	eP	Z	04	40	48			
AK	eL	N	04	46					
RX	eL	NE	04	51					
7	KP	eP	Z	04	42	45			
Epicentre:			04	32	14.5	8.6S	111.4E	113 km	USCGS
7	ON	P	E	07	48	00			
	KP	eP	Z	07	48	08			
		i	Z	10		u			
	WN	e(P)	ZNE	07	48	40			
		eS	ZNE	50	33				
	GP	eP	N	07	49	16			
		e	N	51	31				
		S	N	33					
CB	eS	E	07	50	45				
Epicentre:			07	46	24.7	31.8S	179.9W	374 km	USCGS

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
MAY 7	KP	P	Z	10	33	05			
		e	Z	31					
Epicentre:			10	22	43.7	5.8N	126.8E	89 km	USCGS
8	KP	eP	Z	14	27	42			
	CT	eP	Z	14	27	54			
		eS	Z	30	10				
	WN	eP	Z	14	28	33			
		eS	NE	30	46				
GP	eS	N	14	31	58				
Epicentre:			14	24	48.6	27.9S	176.2W	67 km	USCGS
8	KP	P	N	19	36	46			
		e	N	55					
Epicentre:			19	23	35.4	24.3S	69.7W	48 km	USCGS
8	KP	P	Z	23	02	15			
	CT	eP	Z	23	02	19			
	WN	P	Z	23	02	19			
	Epicentre:			22	52	05.2	0.2N	123.5E	88 km
9	KP	eP	Z	08	18	50			
	CT	eP	Z	08	19	15			
		e	Z	20	54				
	AK	eL	N	08	21				
	WN	eS	NE	08	22	10			
		eL	N	25					
		L	ZN	26			5 18	6 18	
	SU	eL	N	08	22 $\frac{1}{2}$			10 10	
	RX	eL	NE	08	27				
	Epicentre:			08	16	08.2	27.7S	176.4W	84 km
9	KP	P	Z	11	13	29			
		i	Z	39					
	CT	P	Z	11	13	38			
Epicentre:			11	06	26.2	6.2S	154.5E	110 km	USCGS
9	KP	eP	Z	11	59	56			
	CT	eP	Z	11	59	56			
Epicentre:			11	48	54.8	7.0S	106.8E	81 km	USCGS
10	KP	P	Z	02	51	59			
10	KP	eP	Z	03	18	30			
10	KP	P	Z	03	39	03			
10	KP	P	Z	06	19	38			
	CT	eP	Z	06	19	52			
	WN	eP	Z	06	20	11			
10	SU	e	N	10	10				
	KP	eP	Z	10	10	30			
		i	Z	34					
	CT	eP	Z	10	10	40			
		e	Z	47					
		e	Z	16	20				
	WN	eP	ZN	10	11	02			
		eS	NE	16	02				
	CB	eP	E	10	11	12			
	KM	eP	X	10	11.5				
GP	eP	N	10	11	30				
	eS	N	16	52					
RX	eL	ZNE	10	20					
Epicentre:			10	05	13.7	15.8S	172.3W	52 km	USCGS

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Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
MAY 11	KP	P	01 01 56				
	e	Z	02 15				
		Z	00 51 24.2	8.4S	112.5E	39 km	USCGS
	Epicentre:						
11	SU	eP	05 27 50		8 4		
	S	N	28 56				
	KP	P	05 30 35				
	e	Z	55				
	WN	P	05 31 03	19.1S	178.0W	486 km	USCGS
		ZNE	05 26 36.2				
	Epicentre:						
11	CT	P	08 50 49				
	KP	P	08 50 52				
	RX	eL	09 15	5 20	2 22	3 20	6.0
	WN	eL	09 16				
		ZN	09 16				
	Epicentre:						
			08 38 27.1	37.2S	73.6W	47 km	USCGS
12	KP	eP	03 52 15				
	e	Z	26				
	CT	eP	03 52 18				
	e	Z	26				
	Epicentre:						
			03 40 20.1	0.0	97.9E		USCGS
12	SU	eP	04 47 03		3 5		
	eL	N	50.5		32 16		
	ON	eP	04 47.2				
	KP	e	04 47.5				
	WN	eP	04 48.1				
	S	ZNE	50 31	5 10	7 15		
	eL	ZN	53				
	GP	eP	04 48 38				
	eS	N	51 37		2 20	3 20	
	RX	eL	04 55				
	eL	NE	59	3 15			
	Epicentre:						
			04 44 28.6	27.7S	176.2W	60 km	USCGS
12	KP	P	06 31 42				
	e	Z	32 15				
	CT	P	06 31 53				
	SU	eS	06 31 58				
	Epicentre:						
			06 26 00.4	11.7S	167.3E	100 km	USCGS
12	KP	eP	07 27 07				
	SU	eL	07 30.4		5 10		
	Epicentre:						
			07 24 04.6	28.2S	176.2W	21 km	USCGS
12	SU	iS	21 28 42 s		14 4		
	KP	P	21 30 22				
	CT	P	21 30 31				
	Epicentre:						
			21 26 39.3	19.3S	179.1E	600 km	USCGS
13	ON	eP	13 44 33				
	e	E	50				
	KP	eP	13 44 35				
	CT	e	13 44 55				
	GP	eP	13 45 54				
	eS	N	48 57				
	TU	eS	13 46 45				
	WN	S	13 47 53				
	e	N	51		3 6		
	eL	ZN	51.5	8 18	7 15		
	SU	L	13 47 57		22 12		
	CB	eS	13 48 10				
	KM	eS	13 49.0				
	RX	eL	13 52		1 20	2 20	5.2
	eL	NE	54				
	Epicentre:						
			13 41 48.1	27.8S	176.2W	32 km	USCGS

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Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
MAY 13	SU	P	14 21 20				
	L	N	25 00			11 5	
	KP	eP	14 21 30			83 12	
	ON	e(P)	E 14 21 36				
	CT	e(P)	Z 14 21 45				
	eS	Z	24 14				
	WN	iP	ZNE 14 22 22				
	S	NE	24 49				
	eL	ZN	27	20 16	24 15		
	TU	eS	N 14 23 40				
	CB	eS	E 14 25 08				
	GP	eS	N 14 25 53				
	RX	eL	NE 14 29			5 20	14 20
	eL	Z	31.4	8 13			5.7
	Epicentre:						
			14 18 42.4	27.9S	176.0W	25 km	USCGS
13	SU	eP	14 54 09				
	iS	N	55 08 s			68 3	
	ON	P	E 14 56 47				
	S	E	59 57				
	KP	P	Z 14 57 02				
	e	Z	58 20				
	CT	P	Z 14 57 10				
	Epicentre:						
			14 52 55.3	17.5S	178.8W	556 km	USCGS
13	KP	P	Z 19 21 25				
	CT	P	Z 19 31 29				
	Epicentre:						
			19 19 37.3	25.3N	122.6E	261 km	USCGS
14	CT	iP*	Z 00 13 00 u				
	TO	iP	Z 00 13 00				
	WN	P*	ZNE 00 13 01				
	eS*	NE	20				
	TU	ePn	N 00 13 05				
	e	N	15.2				
	Sn	N	27				
	KP	Pn	Z 00 13 15.2				
	CB	eP	E 00 13 19				
	e	E	30.2				
	eS	E	48				
	e	E	52				
	KM	eP	X 00 13 38				
	eS	X	14 24				
	ON	eP	E 00 13 48.2				
	e	E	14 15				
	e	E	55				
	RX	eL	NE 00 15.4				
	eL	Z	17				
	Epicentre:						
			00 12 36	40.35S	176.0E	S	NZ(B) 5.4 NZ
14	KP	eP	Z 02 46 07				
	ON	e	E 02 46.5				
	AK	eL	N 02 49				
	WN	eS	NE 02 49 27				
	L	ZN	53	9 16	11 16		
	SU	eL	N 02 49.2			17 10	
	RX	eL	NE 02 54			1 20	2 20
	eL	Z	58				5.2
	Epicentre:						
			02 43 22.7	27.9S	176.3W	47 km	USCGS
14	KP	P	Z 12 51 54				
	CT	eP	Z 12 52 06				
	Epicentre:						
			12 48 30.9	22.0S	179.5W	620 km	USCGS
14	WN	eL	ZNE 13 44 49				
	eL	ZN	49	3 10			

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
MAY	SU	eL	N	13	45			8	12			
	AK	eL	N	13	45 $\frac{1}{2}$							
	RX	eL	NE	13	49							
		eL	Z		54							
15	ON	P	E	19	17	03						
	AK	eP	N	19	17	13						
		eS	N		21	35						
	KP	P	N	19	17	23	d					
	CT	P	Z	19	17	35	u					
	WN	eP	Z	19	17	48						
		eL	ZN		27			7	20			
	RX	eL	NE	19	25			3	25	2	20	
		eL	Z		27							
	Epicentre:			19	12	10.8	15.3S	166.6E		58	km	USCGS
15	KP	P	Z	19	54	27						
	CT	P	Z	19	54	39						
	Epicentre:			19	49	18.4	15.4S	166.4E		107	km	USCGS
15	ON	eP	E	20	57	22						
		e(sS)	E	21	00	21						
	KP	P	Z	20	57	33						
	CT	P	Z	20	57	44						
		eS	Z		21	01	05					
	WN	P	ZNE	20	58	02						
		eS	ZNE	21	01	27						
	AK	S	N	20	59	30						
		sS	N	21	00	24						
	Epicentre:			20	53	05.3	20.0S	177.2W		89	km	USCGS
16	RX	eL	NE	14	53							
	WN	eL	ZN		14	57						
16	SU	eP	N	17	30	16						
		L	N		33	38						
	ON	e	E	17	30	3						
	KP	eP	Z	17	30	19						
		e	Z			36						
		e	Z			31	01					
	CT	eP	Z	17	30	34						
		e	Z			57						
	WN	eP	NE	17	31	04						
		eS	NE		33	34						
		e	Z			34	00					
		L	ZN			36		2	6			
	RX	eL	NE	17	38			14	18	8	15	
		eL	Z			42		3	22	5	22	
		M	NE			42 $\frac{1}{2}$		5	15	8	15	
	Epicentre:			17	27	34.1	27.9S	176.4W		53	km	USCGS
16	KP	P	Z	21	57	31						
	CT	eP	Z	21	57	36						
	Epicentre:			21	45	24.0	30.0N	132.0E		25	km	USCGS
17	SU	e(L)	N	00	59 $\frac{1}{2}$					4	6	
	KP	P	Z	01	00	40						
	CT	P	Z	01	00	51						
	Epicentre:			00	55	30.6	14.3S	170.4E		137	km	USCGS
17	KP	P	Z	04	34	55						
	Epicentre:			04	24	55.0	12.6N	143.2E		27	km	USCGS
17	KP	P	Z	19	42	21						
	CT	eP	Z	19	42	28						
	SU	S	N	19	48	50						
		eSS	N	19	54					7	9	
		eL	N	20	02					6	20	
										11	25	

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.	
MAY	AK	eS	N	19	52.5								
		eL	N	20	10								
	RX	eSKS	N	19	53	30							
		eS	N		55	44						6.2	
		eSS	N	20	01	16							
		eL	NE		15								
		eL	Z		16								
	WN	eL	ZN	20	15								
	Epicentre:			19	29	19.3	52.0N	173.9E		21	km	USCGS	
18	SU	eL	N	11	10								
19	KP	P	Z	01	47	15							
	Epicentre:			01	44	05.5	22.4S	179.0W		615	km	USCGS	
19	SU	iS	N	02	24	27	n						
	KP	P	Z	02	24	51							
	GP	eS	N	02	28	57							
	Epicentre:			02	21	31.8	22.5S	179.2E		600	km	USCGS	
19	SU	eL	N	02	30 $\frac{1}{2}$								
												8	10
19	SU	eL	N	03	46 $\frac{1}{2}$								
	KP	eP	Z	03	47	52							
	AK	eL	N	03	54								
	Epicentre:			03	42	31.1	15.8S	172.8W		25	km	USCGS	
20	KP	P	Z	00	57	01							
	Epicentre:			00	44	12.2	52.1N	170.4W		71	km	USCGS	
21	KP	eP	Z	08	48	15							
	Epicentre:			08	43	22.5	17.3S	174.7W		60	km	USCGS	
21	KP	P	Z	18	17	49							
	Epicentre:			18	13	02.9	18.8S	173.6W		60	km	USCGS	
21	KP	P	Z	21	44	49							
	TO	eP	Z	21	44	49							
	CT	P	Z	21	44	50							
	RX	eL	N	21	48								
	Epicentre:			21	40	03.2	34.3S	150.4E		27	km	USCGS	
22	ON	eP	E	13	48	37							
	KP	P	Z	13	48	49							
	TO	eP	Z	13	48	58							
		eS	Z		52	48							
	CT	P	Z	13	48	59							
		eS	Z		52	49							
	WN	eP	NE	13	49	26							
		eS	NE		52	48							
		L	ZN		55.7								
	CB	eP	E	13	49	36							
	KM	eP	X	13	49	59							
	GP	eP	N	13	50	1							
	TU	eS	N	13	52	12							
	RX	eL	NE	13	58								
		eL	Z		14	00 $\frac{1}{2}$							
	Epicentre:			13	44	35.8	21.3S	174.4W		97	km	USCGS	
22	SU	P	N	17	34	13	s						
		S	N		35	38							
	ON	eP	E	17	36	05							
		e	E		19								
	KP	eP	Z	17	36	13							
		e	Z			16							
	TU	eP	N	17	36	18							
		eS	N		39	11							
	TO	eP	Z	17	36	24							
		eS	Z			39	37						

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
MAY	CT	eP	Z	17	36	25				
	i	Z			30					
	eS	Z			39	38				
	WN	eP	NE	17	36	50				
	e	N			56		5 8		5.8	
	S	NE			40	14	8 7		6.0	
	L	ZN			42.7		36 20	36 22		
	CB	eP	E	17	37	00				
	eS	E			40	27				
	KM	eP	X	17	37	19				
	eS	X			41	17				
	GP	eP	N	17	37	24				
	S	N			41	13				
	RX	eL	ZNE	17	45		17 24	30 24	17 20	
	Epicentre:			17	32	21.6	22.8S	176.1W	35 km	USCGS
							Felt:	Nukualofa, Tonga. MM3		
22	SU	P	N	23	48	14 s				
	KP	eP	Z	23	50	10				
	WN	eS	NE	23	54	09				
	CB	eS	E	23	54	26				
	KM	eS	X	23	55	03				
	Epicentre:			23	47	03.2	22.6S	177.0W	526 km	USCGS
23	SU	ePKP	N	03	05	0				
	KP	ePKP1	Z	03	05	06				
	i	Z			15					
	iPKP2	Z			29					
	e	Z			09	59				
	ON	e	E	03	05	09				
	PKP2	E			21					
	CB	e	E	03	05	10				
	GP	e	N	03	05	11				
	e(PKP2)	N			25					
	KM	ePKP2	X	03	05	13				
	e	X			36					
	CT	e	Z	03	05	14				
	iPKP2	Z			29					
	i	Z			42					
	WN	e	N	03	05	15				
	RX	eL	N	04	04			2 20		
	M	N			22				6.1	
	Epicentre:			02	45	16.0	36.4N	28.3E	49 km	USCGS
23	CT	P	Z	05	59	31				
	KP	P	Z	05	59	42				
	RX	eL	N	06	02	1/2		7 12		
	eL	Z			06	03	5 12			
	WN	eL	ZN	06	06	1/2		5 10		
	AK	eL	N	06	08					
	SU	eL	N	06	18					
24	KP	P	Z	17	28	01				
	CT	eP	Z	17	28	03				
	AK	eL	N	17	48					
	RX	eL	N	17	48					
	Epicentre:			17	18	17.6	8.2S	121.8E	36 km	USCGS
25	KP	P	Z	09	30	26 1/2				
	DP	Z			55					
	CT	eP	Z	09	30	32				
	eP	Z			31	03				
	Epicentre:			09	18	48.4	31.3N	139.9E	171 km	USCGS
25	KP	eP	Z	17	37	41				
								176.1W	25 km	USCGS

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
MAY 25	SU	S	N	21	09	43		9 5		
	KP	P	Z	21	12	07				
	Epicentre:			21	07	29.7	14.8S	177.4W	417 km	USCGS
26	KP	P	Z	04	46	15				
	Epicentre:			04	36	08.5	32.7S	109.1W	43 km	USCGS
26	KP	P	Z	06	11	19				
	CT	eP	Z	06	11	33				
26	KP	P	Z	12	40	05				
26	KP	eP	Z	23	02	06				
	Epicentre:			22	49	49.4	38.4N	142.9E	60 km	USCGS
27	KP	eP?	Z	07	30	37				
	e	Z			51					
	Epicentre:			07	18	12.2	41.0N	141.1E	156 km	USCGS
27	CT	eP	Z	17	04	30				
	KP	eP	Z	17	04	31				
	Epicentre:			16	52	19.3	0.8N	98.5E	39 km	USCGS
27	KP	eP	Z	17	37	42				
	CT	P	Z	17	38	42				
	Epicentre:			17	26	32.2	1.2N	98.4E	36 km	USCGS
28	KP	P	Z	02	38	19				
	e	Z			36					
	GP	eP	N	02	38	39				
	Epicentre:			02	30	20.8	4.9S	145.0E	59 km	USCGS
28	KP	eP	Z	04	11	36				
	Epicentre:			03	59	53.5	5.4S	102.4E	74 km	USCGS
28	KP	eP	Z	10	55	14				
	e	Z			20					
	Epicentre:			10	47	17.5	5.1S	144.8E	25 km	USCGS
28	SU	eP	N	19	30	40				
	eS	N			32	22			4 2	
	ON	eP	E	19	31	08			4 6	
	TO	eP	Z	19	31	31				
	eS	Z			33	59				
	WN	eP	ZE	19	31	54				
	S	ZE			34	36				
	GP	eP?	N	19	32	32				
	S	N			35	38				
	TU	S	N	19	33	37				
	CB	S	E	19	34	51				
	KM	eS	X	19	35	28				
	Epicentre:			19	28	21.9	26.0S	179.7E	219 km	USCGS
29	KP	eP	Z	07	34	45				
	e	Z			35	01				
	Epicentre:			07	23	51.6	22.8N	143.7E	79 km	USCGS
29	KP	eP	Z	07	40	27				
	Epicentre:			07	28	11.7	39.0S	73.4W	13 km	USCGS
29	KP	P	Z	10	41	02				
	e	Z			14					
	Epicentre:			10	29	27.8	27.7N	141.7E	25 km	USCGS
31	KP	P	Z	05	16	42				
	CB	eP	E	05	17	10				
	WN	P	ZNE	05	17	14				
	GP	eP	N	05	17	31				

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
JUN 8	CB	eP	E	15	53	39			
	KP	eP	Z	15	53	46			
	WN	eP	ZNE	15	53	48			
	GP	e	N	15	53	50			
	RX	eL	N	16	12				
	Epicentre:		15	44	01.0	8.1S	121.7E	25 km	USCGS
9	CB	ep	E	18	58	59			
	WN	e	ZN	18	59				
	GP	eP	N	18	59	14			
	RX	eL	NE	19	10				
		Epicentre:		18	52	41.8	10.7S	165.4E	115 km
9	WN	eP	Z	22	15				
	KP	P	Z	22	15	36			
	Epicentre:		22	05	50	7.6S	122.2E	25 km	USCGS
10	KP	ep	Z	00	44	56			
	GP	eP	N	00	45	35			
	Epicentre:		00	39	05.1	10.7S	162.0E	170 km	USCGS
10	KP	P	Z	02	23	26			
10	KP	ep	Z	08	57	02			
		Epicentre:		08	47	48.0	5.2S	129.1E	78 km
10	KP	P	Z	09	04	53			
	RX	eL	N	09	36				
		eL	ZE	38					
		M	N	38			1 20		
		Epicentre:		08	52	01.1	8.1N	103.4W	25 km
10	KP	eP	Z	09	22	15			
		Epicentre:		09	11	51.8	24.0S	111.4W	25 km
10	SU	eL	N	11	34				
	KP	e(P)	Z	11	37	15			
10	KP	e(P)	Z	20	42	11			
	WN	e(P)	Z	20	42	12			
		eS	N	50	38				
		eSS	N	54	40				
		eSSS	N	57	40				
		e(L)	ZN	21	00				
	RX	eS	N	20	51	20			
		eSS	N	55	28				
		eSSS	N	58	39		11 20		
		e(L)	Z	21	02				
SU	eL	N	20	59					
	Epicentre:		20	31	50.9	24.1S	122.1W	47 km	USCGS
11	RX	eL	NE	00	09				
11	WN	ePKP	Z	05	29	36			
		eL	N	06	04				
		eL	Z	11					
		M	Z	21			4 22		
		Epicentre:		05	29	37			
KP	ePKP	Z	05	29	36				
	e	Z	30	46					
	ePKS	Z	33	02					
		Epicentre:		05	48	33			
RX	SS	NE	05	48	33				
	eSSS	N	54						
	eL	N	06	03		7 32			
		M	ZN	20			3 18		
SU	eL	N	06	10					
	Epicentre:		05	10	26.0	28.9N	54.6E	38 km	USCGS

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
JUN 11	KP	ePKP	Z	05	49	20			
		e	Z	45					
	Epicentre:		05	30	05.9	27.3N	54.5E	25 km	USCGS
11	KP	e(P)	Z	06	06	00			
		Epicentre:		05	52	51.7	51.4N	159.3E	18 km
11	RX	eL	ZNE	10	44				
	WN	eL	ZN	10	48				6 15
	Epicentre:		10	19	23.6	46.6N	27.4W	22 km	USCGS 6.4
11	KP	ePKP	Z	12	50	37			
		PKS	Z	54	00				
	Epicentre:		12	31	26.8	28.0N	54.6E	36 km	USCGS
12	RX	e	N	07	36	45			
		e(S)	NE	37	49				
		M	ZNE	39			13 13	16 17	20 14
	GP	P	N	07	37	27			
		e	N	38	58				
KM	e(S)	N	39	06					
	e	N	41						
	e(P)	X	07	37	35				
	e	X	58						
	eS	X	39	14					
CB	eP	E	07	37	56				
	eS	E	39	51					
WN	eP	Z	07	38	09				
	eS	ZNE	40	10					
	eL	ZN	42						
KP	e(P)	Z	07	38	48				
SU	eL	N	07	55					
	Epicentre:		07	35	24.4	49.6S	163.8E	34 km	USCGS
12	KP	P	Z	10	11	07			
	TO	eP	Z	10	11	09			
	Epicentre:		09	58	17.6	21.5N	106.0E	55 km	USCGS
12	WN	P?	ZNE	10	43	30			
12	RX	eL	NE	11	43				
		Epicentre:		17	13	20			
12	KP	P	Z	17	13	20			
	e	Z	15	04					
12	KP	eP	Z	18	00	23			
	TO	eP	Z	18	00	32			
	GP	e(P)	N	18	00	54			
	RX	eL	N	18	15				
		M	N	16					
	Epicentre:		17	53	27.4	6.9S	155.0E	110 km	USCGS 5.4
13	SU	eL	N	07	59				
	WN	e?	Z	07	59	26			
	e	NE	37						
13	KP	P	Z	12	06	09			
	e	Z	49						
	WN	e(P)	Z	12	06	13			
	Epicentre:		11	55	44.1	0.0	121.5E	20 km	USCGS
13	ON	ep	E	13	18	01			
	TU	eP	N	13	18	07			
		e	N	19	23				
		S	N	24					
		Epicentre:		13	18	08.5			
KP	P	Z	13	18	08.5				
	S	Z	19	33					

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
JUN	TO	eP	Z	13	18				
		S	Z	19	46				
	CT	P	Z	13	18				
		S	Z	19	50				
	WN	eP	ZNE	13	18				
		S	ZNE	20	30				
		e	ZNE						
	CB	e?	E	13	19				
		S	E	20	46				
	GP	eP?	N	13	19				
		S	N	21	32 $\frac{1}{2}$				
	KM	e?	X	13	19				
	S	X	21	23					
Epicentre:			13	16	24	32 $\frac{1}{2}$ S	180	N	NZ(D) 6.1 NZ
13	SU	P	N	21	39				
		e(S)	N	40	43				
	KP	P	Z	21	41				
	TU	eP	N	21	41				
		eS	N	45	05				
		e	N		10				
		eScS	N	53	27				
	TO	eP	Z	21	42				
		e(S)	Z	45	30				
	CT	P	Z	21	42				
		eS	Z	45	30				
	WN	eP	ZNE	21	42				
		e	Z		32				
		eS	NE	46	07				
		e	ScS	53	40				
	CB	eP	E	21	42				
		eS	E	46	19				
		e	E		31				
	KM	eP	X	21	42				
		eS	X	46	50				
		e	X	47	09				
GP	eP	N	21	42					
	e	N		43					
	eS	N	47	01					
	eScS	N	53	50					
RX	e(S)	N	21	47					
	e(ScS)	NE	54	02					
Epicentre:			21	37	55.0	21.4S	176.4W	146 km	USCGS
						Felt: Nukualofa, Tonga MM3.			
14	KP	e(P)	Z	24	03				
	Epicentre:			23	50	44.0	52.0N	172.2W	100 km
15	TU	e?	N	10	58				
		eP	N		32 $\frac{1}{2}$				
		e	N		59	10			
		S	N		12				
	KP	iP	Z	10	58				
		e	Z		59	12			
		S	Z		13 $\frac{1}{2}$				
	ON	P	E	10	58				
		S	E		59	15			
	TO	P	Z	10	58				
		e	Z		59	39 $\frac{1}{2}$			
	CT	P	Z	10	58				
	e	Z		48 $\frac{1}{2}$					
	e	Z		59	23 $\frac{1}{2}$				
WN	eP	ZNE	10	59					
	S	ZNE	11	00					

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
JUN	GP	eS	N	11	01				
	Epicentre:			10	57	40	35.7S	178.6E	160 km
Additional readings from Brisbane used to determine epicentre.									
15	KP	e(P)	Z	23	37				
		e	Z		37				
	RX	eL	N	24	11				
Epicentre:			23	24	40.5	45.4N	151.3E	38 km	USCGS
16	CT	e(P)	Z	03	47				
	KP	e(P)	Z	03	47				
16	TU	eP	N	06	25				
		e	N		45 $\frac{1}{2}$				
		S	N		26	00 $\frac{1}{2}$			
	KP	iP	Z	06	25				
		S	Z		26	20 $\frac{1}{2}$			
		e	Z		26	30			
	CT	iP	Z	06	25				
		e	Z		26	00 $\frac{1}{2}$			
		(S)	Z		33 $\frac{1}{2}$				
	TO	P	Z	06	25				
		e	Z		26	17			
	ON	eP	E	06	26				
	(P*)	E		19					
	e	E		23					
	S	E		59					
WN	eP	Z	06	26					
	e	ZNE		27					
	S	ZNE		27	10				
	(P)	E	06	26					
	e	E		47					
	S	E		27	38				
GP	e(P)	N	06	26					
	S	N		28	16 $\frac{1}{2}$				
KM	e	X	06	27					
	e	X		24					
	S	X		28	14				
Epicentre:			06	25	12	37.6S	178.6E	N	NZ(D) 5.0 NZ
16	CT	eP	Z	07	20				
	TO	eP	Z	07	20				
	KP	P	Z	07	20				
	SU	eL	N	07	55				
Epicentre:			07	08	16.5	41.1S	74.5W	17 km	USCGS
16	KP	e(PKKP)	Z	11	01				
		e	Z		24				
		e	Z		56				
	CT	(PKKP)	Z	11	01				
RX	e(SS)	N	11	08					
Epicentre:			10	31	56.2	8.8N	73.4W	120 km	USCGS
16	KP	eP?	Z	16	08				
	Epicentre:			16	01	05.5	5.7S	150.7E	121 km
16	KP	eP?	Z	16	21				
		e	Z		21				
TO	e(P)	Z	16	21					
Epicentre:			16	10	06.3	11.1N	125.0E	63 km	USCGS
17	KP	eP	Z	05	03				
	CT	e(P)	Z	05	03				
	Epicentre:			04	58	58.5	20S	175.3W	31 km

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
JUN 17	ON	eP	E	09	36	27				
	KP	P	Z	09	36	41				
	CT	P	Z	09	36	53				
	TU	eS	N	09	38	33				
	WN	eS	ZNE	09	39	37				
	CB	eS	E	09	39	50				
	KM	eS	X	09	40	28				
	GP	eS	N	09	40	36				
	Epicentre:			09	34	10.5	29.0S	178.6W	253 km	USCGS
	17	RX	eL	N	11	38				
WN		eL	Z	11	46					
Epicentre:			10	56	30.3	11.9S	75.3W	29 km	USCGS	
17	KP	eP	Z	14	43	24				
	Epicentre:			14	32	30.6	9.9N	126.0E	25 km	USCGS
17	RX	e(SS)	E	15	41					
		eL	NE	57						
		M	ZN	16	00		3 20		6.1	
	SU	eL	N	15	52					
	WN	eL	Z	15	55		5 19			
Epicentre:			15	07	36.1	14.2N	92.2W	147 km	USCGS	
17	KP	P	Z	15	32	51 u				
	TO	eP	Z	15	32	57				
	CT	P	Z	15	32	57				
	TU	e(P)	N	15	33	03				
	WN	eP?	Z	15	33	06				
Epicentre:			15	24	17.8	3.7S	138.2E	139 km	USCGS	
17	KP	P	Z	18	08	54				
17	WN	P	Z	19	11	32 u				
	CT	eP?	Z	19	11	51				
	KP	P	Z	19	12	08				
17	SU	eS	N	21	51	00				
	ON	eP	E	21	52	47				
	KP	P	Z	21	53	01 d				
	TO	eP	Z	21	53	10				
	CT	P	Z	21	53	10				
	CB	eP	E	21	53	33				
		eS	E	21	56	50				
	GP	e(P)	N	21	53	53				
	Epicentre:			21	49	25.8	20.8S	178.9W	627 km	USCGS
	18	CB	eP	E	03	22	10			
KP		P	Z	03	22	18				
		e	Z			21				
		(pp)	Z			47				
WN		e(P)	Z	03	22	18				
TO	P	Z	03	22	20					
CT	P	Z	03	22	20					
Epicentre:			03	12	35.7	5.9S	113.0E	641 km	USCGS	
18	KP	P	Z	12	40	46				
	Epicentre:			12	36	56.0	19.1S	178.0W	561 km	USCGS
18	KP	P	Z	13	32	02				
	Epicentre:			13	21	55.9	0.2N	123.9E	91 km	USCGS

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
JUN	KP	S	N	58	35					
		iP	Z	13	57	07 $\frac{1}{2}$				
		e	Z	58	13					
		e	Z	25	1					
	TO	eP	Z	13	57	16				
		i	Z	58	49	18 $\frac{1}{2}$				
	CT	S	Z	58	49					
		eP	Z	13	57	16				
		e	Z	58	49	18 $\frac{1}{2}$				
		(S)	Z	58	28	1 $\frac{1}{2}$				
	WN	eP	ZNE	13	57	39				
		i	ZNE	40	1					
	CB	S	ZNE	59	34					
		ScS	ZNE	14	09	29				
		e(P)	E	13	57	46				
		e	E	59	45					
	KM	eScS	E	14	09	26				
		eP	X	13	58	07 $\frac{1}{2}$				
	SU	S	X	14	00	19				
		iP	N	13	58	10				
GP	S	N	14	00	6					
	P	N	13	58	12					
	iS	N	14	00	30					
Epicentre:			13	55	13					
31 $\frac{1}{2}$ S 180 450 km NZ(D) 7.4 NZ Additional readings from Canberra, Afiamalu, Port Moresby, Raoul I., Hallett, and Scott used to determine epicentre. Felt: Wairoa and Putaruru, MM3; Waipawa MM2.										
18	SU	eL	N	16	50					
	Epicentre:			16	47	03.9	21.2S	176.1W	360 km	USCGS
18	CT	e(P)	Z	22	20	01				
	KP	e(P)	Z	22	20	06				
	WN	e	Z	22	20	38				
		eL	ZN	28						
		M	ZN	29			7 17	4 19	5.6	
RX	eS	E	22	25	06					
	eL	N	27				2 23	5.4		
	eL	ZE	28							
	SU	e(PPP)	N	22	25	19				
SU	e(S)	N	29	05						
	e(L)	N	36							
	Epicentre:			22	13	30.0	56.7S	141.6W	92 km	USCGS
19	SU	eS	N	00	48	59				
	KP	P	Z	00	50	56				
		e	Z	51	35					
	CT	eP	Z	00	51	07				
		e(S)	Z	54	06					
	TO	e	Z	00	51	08				
	CB	eP	E	00	51	33				
		eS	E	54	48					
	Epicentre:			00	47	32.0	22.5S	178.9W	477 km	USCGS
	19	KP	e(P)	Z	01	56	42			
CT		e(P)	Z	01	56	44				
Epicentre:			01	45	29.9	12.6N	121.9E	120 km	USCGS	
19	KP	eP	Z	02	58	24				
	Epicentre:			02	46	03.6	39.3N	142.9E	85 km	USCGS

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
JUN 19	ON	eP	E 06 31 49				
	KP	ep	Z 06 32 05				
	CT	ep	Z 06 32 18				
		e(S)	Z 06 34 58				
	CB	e(P)	E 06 32 41				
		e(S)	E 06 35 32				
	TU	e(S)	N 06 34 36				
	TO	e(S)	Z 06 34 50				
	Epicentre:		06 29 07.1	24.2S	179.6E	591 km	USCGS
	19	KP	eP	Z 07 50 48			
	e	Z 07 57					
Epicentre:		07 38 29.6	39.2N	142.9E	98 km	USCGS	
19	KP	ep	Z 08 12 05				
Epicentre:		07 59 38.1	39.7N	142.6E	23 km	USCGS	
19	KP	P	Z 10 23 06				
CT	ep	Z 10 23 14					
TO	e	Z 10 23 19					
CB	ep	E 10 23 50					
GP	e	N 10 24 17					
	e(S)	N 10 28 16					
WN	ep	NE 10 29 46					
19	KP	PKP	Z 17 23 07				
Epicentre:		17 04 30.3	36.6N	71.0E	151 km	USCGS	
20	RX	eL?	N 04 22				
20	KP	ep?	Z 06 43 51				
	e	Z 06 53					
	e	Z 06 44 58					
Epicentre:		06 38 47.1	14.7S	167.3E	172 km	USCGS	
20	SU	e	N 14 29 30				
	eL	N 14 32					
ON	e	E 14 30 47					
KP	P	Z 14 30 58					
CT	ep	Z 14 31 13					
	e	Z 14 31 26					
TO	ep	Z 14 31 13					
WN	ep	ZNE 14 31 33					
	e?	Z 14 32 59					
	eS	ZN 14 35 30					
	eL	ZN 14 38					
TU	e	N 14 31 55					
GP	e(P)	N 14 32 04					
CB	e	E 14 32 15					
RX	eS	N 14 36 29					
	eL	NE 14 38					
Epicentre:		14 27 02.6	21.8S	169.3E	64 km	USCGS	
20	KP	P	Z 16 38 13 u				
	e	Z 16 38 18					
ON	e	E 16 38 17					
	e?	E 16 40 33					
CT	ep	Z 16 38 24					
TO	ep	Z 16 38 24					
GP	e?	N 16 38 44					
Epicentre:		16 32 14.3	10.5S	164.9E	50 km	USCGS	
21	KP	ep	Z 07 41 10				
RX	eL	NE 08 04					
Epicentre:		07 33 34.4	7.7S	146.7E	25 km	USCGS	
21	KP	P	Z 09 14 15				
Epicentre:		09 04 19.4	8.4N	124.4E	615 km	USCGS	

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
JUN 21	KM	ep	X 20 35 25				
	GP	P	N 20 35 29				
	WN	P	ZNE 20 35 24				
	KP	P	Z 20 35 35				
		e(pp)	Z 20 36 01				
	CT	P	Z 20 35 37				
		e(pp)	Z 20 35 56				
	TO	P	Z 20 35 37				
	Epicentre:		20 25 00.9	7.6S	110.0E	103 km	USCGS
	22	KP	ePKP	Z 01 16 06			
Epicentre:		00 56 04.7	42.4N	19.6E	53 km	USCGS	
22	SU	e(L)	N 01 45				
22	KP	P	Z 03 27 38				
	e	Z 03 27 41					
TO	ep	Z 03 27 53					
CT	P	Z 03 27 53					
SU	eL	N 03 33					
Epicentre:		03 22 55.8	17.9S	168.9E	67 km	USCGS	
22	CT	e(P)	Z 05 37 57				
SU	eL	N 05 38					
RX	eL	E 05 45					
	eL	N 05 47					
Epicentre:		05 33 35.4	21.2S	170.3E	55 km	USCGS	
23	SU	eL	N 09 32				
	M	N 09 38					
RX	eL	NE 09 44			5 18		6.1
	eL	ZNE 09 48					
	M	N 09 49					
Epicentre:		08 55 55.2	43.9N	128.9W	4 21	56 km	USCGS
23	KP	P	Z 10 15 39				
TO	ep	Z 10 15 47					
CT	P	Z 10 15 47					
WN	P	ZNE 10 15 55					
GP	ep	N 10 16 04					
Epicentre:		10 05 35.4	18.5N	145.2E	256 km	USCGS	
23	KP	e(P)	Z 11 17 04				
Epicentre:		11 04 59.1	35.2N	140.0E	138 km	USCGS	
23	KP	ePKP	Z 16 55 32				
Epicentre:		16 36 28.0	28.5N	55.5E	54 km	USCGS	
24	KP	P	Z 03 04 57				
Epicentre:		03 01 10.5	20.1S	177.4W	542 km	USCGS	
24	CT	ep	Z 09 48 18				
KP	P	Z 09 48 20					
RX	eL	N 09 16					
Epicentre:		09 36 08.8	4.1N	97.5E	188 km	USCGS	
24	KP	ep	Z 16 27 08				
	e	Z 16 27 24					
	e(pp)	Z 16 27 51					
CT	e	Z 16 27 31					
	e	Z 16 27 59					
Epicentre:		16 19 23.7	4.6S	144.9E	212 km	USCGS	
24	KP	e	Z 19 43 53				
24	KP	P	Z 23 15 34				

Date	STN	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
JUN 25	KP	e(P)	Z	02	42	02	40.8N	144.1E	57 km	USCGS
		Epicentre:		02	29	29.9				
25	SU	eS	N	09	12	35				
	KP	P	Z	09	13	58				
	CT	P	Z	09	14	07				
		Epicentre:		09	10	04.2	19.4S	177.9W	489 km	USCGS
25	KP	P	Z	12	54	20 $\frac{1}{2}$				
		S	Z			38 $\frac{1}{2}$				
	CT	ip	Z	12	54	23 u				
		(S)	Z			40				
	TO	ip	Z	12	54	(23) u				
		e	Z			(32)				
	TU	eP	N	12	54	26				
		e	N			31				
		S	N			43				
	WN	P	ZNE	12	54	45				
		S	ZNE			55 20				
	CB	eP	E	12	54	52 $\frac{1}{2}$				
		S	E			55 34 $\frac{1}{2}$				
	GP	eP	N	12	55	18 $\frac{1}{2}$				
		(S)	N			56 21 $\frac{1}{2}$				
		e	N			23				
	KM	e(P)	X	12	55	20 $\frac{1}{2}$				
		S	X			56 15				
		Epicentre:		12	53	58	38.3S	176E	150 km	NZ(D) 5.1 NZ
25	CT	eP?	Z	16	33	38				
		Epicentre:		16	21	53.0	18.9N	121.3E	143 km	USCGS
25	KP	eP	Z	16	57	25				
		e	Z			31				
	CT	eP	Z	16	57	32				
	RX	eL	NE	17	22					
		Epicentre:		16	46	32.9	21.7N	141.3E	13 km	USCGS
26	TU	P	N	02	43	04 $\frac{1}{2}$				
		S	N			58 $\frac{1}{2}$				
	KP	P	Z	02	43	11 $\frac{1}{2}$				
		S	Z			44 11 $\frac{1}{2}$				
	CT	P	Z	02	43	21				
		(S)	Z			44 24 $\frac{1}{2}$				
	TO	P	Z	02	43	21				
	WN	eP	ZNE	02	43	41				
		S	ZNE			45 06 $\frac{1}{2}$				
	CB	e(P)	E	02	44	01				
		S	E			45 30 $\frac{1}{2}$				
	GP	P	N	02	44	22 $\frac{1}{2}$				
		(S)	N			46 10				
		e	N			14				
	KM	e?	X	02	44	29 $\frac{1}{2}$				
		e	X			35 $\frac{1}{2}$				
		S	X			46 10 $\frac{1}{2}$				
		Epicentre:		02	41	54	36S	178 $\frac{1}{2}$ W	N	NZ(D) 5.6 NZ
							Additional readings from Charters Towers used to determine epicentre.			
26	KP	eP	Z	07	06	50				
	CT	P?	Z	07	07	06				
		e	Z			08				
	CB	eP	E	07	07	23				
		eS	E			11 20				
	WN	eP	ZN	07	07	25				
		eS	N			11.4				
		eL	ZN			14				
	KM	e(P)	X	07	07	45				

Date	STN	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
JUN	GP	eP	N	07	07	49				
	RX	eL	NE	07	13	16				
		Epicentre:		07	02	57.7	21.3S	170.1E	89 km	USCGS
26	KP	P	Z	13	53	20				
		Epicentre:		13	48	57.2	21.0S	174.4W	25 km	USCGS
26	KP	P	Z	15	00	20				
	SU	eL	N	15	22					
	RX	eL	N	15	35					
		Epicentre:		14	47	26.1	52.4N	174.5E	60 km	USCGS
27	KP	P	Z	07	17	15				
	RX	eL	N	07	50					
		M	N			51			2 22	6.0
	WN	eL	Z	08	05					
		Epicentre:		07	03	42.2	27.8N	99.4E	33 km	USCGS
29	SU	eP	N	09	26	01				
		e(L)	N			30				
	ON	eP	E	09	28	06				
		eS	E			32 26				
	TU	eP	N	09	28	36				
		eS	N			33 11				
	TO	eP	Z	09	28	36				
	CT	eP	Z	09	28	36				
	WN	P	Z	09	28	51				
		ePP	Z			29 42			30 6	
		eS	NE			33 37				
		eL	ZN			39				
	CB	eP	E	09	28	51				
		eS	E			33 35				
	GP	e(P)	N	09	29	07				
	RX	e(PP)	N	09	30	32				
		e(S)	NE			34 22				
		eL	E			38				
		M	E			44			40 13	6.2
		Epicentre:		09	22	55.8	13.8S	166.0E	37 km	USCGS
30	SU	e(P)	N	04	19	42				
		e	N			20 18				
	ON	eP?	E	04	22	09				
	KP	P	Z	04	22	23				
		e	Z			28 48				
	TU	eP	N	04	22	24				
		eS	N			25 48				
	TO	eP	Z	04	22	34				
	CT	P	Z	04	22	34				
	WN	eP	ZNE	04	22	56				
		e(S)	E			26 44				
		e	N			48				
	CB	eP	E	04	23	01				
		e	E			03				
		eS	E			27 00				
	KM	eP	X	04	23	19				
	GP	e(P)	N	04	23	22				
		e(S)	N			27 40				
		Epicentre:		04	18	10.9	20.4S	176.0W	170 km	USCGS
JUL 1	SU	eL	N	01	53					
									7 7	
1	KP	eP	Z	03	58	05				
		Epicentre:		03	52	35.8	13.8S	165.9E	74 km	USCGS
1	SU	eS	N	18	53	24				
	ON	eP	E	18	54	47				
	KP	P	Z	18	55	01				

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
JUL	CT	eP	Z	18	55	07			
	WN	P	Z	18	55	29			
	Epicentre:			18	50	57.5	17.9S	178.4W	601 km USCGR
1	SU	eP	N	21	09	36			
		eS	N		10	20			
		eL	N			40		43 6	
2	ON	P	E	08	47	(51)			
	KP	P	Z	08	47	54			
		i	Z			58			
	TU	eP	N	08	47	56			
		eS	N		48	41			
	TO	e(P)	Z	08	48	08			
	WN	S	ZNE	08	49	46			
	GP	eS	N	08	50	52			
	Epicentre:			08	46	56	35.3S	178.4E	220 km NZ(C) 5.0 NZ
	Additional readings from Brisbane and Charters Towers used to determine epicentre.								
2	KP	P	Z	10	21	09			
		e	Z			13			
	Epicentre:			10	10	16.3	20.7N	142.6E	64 km USCGR
2	KP	P	Z	11	48	08			
		e	Z			17			
	WN	eP	Z	11	48	37			
	Epicentre:			11	43	36.6	19.2S	174.8W	114 km USCGR
2	KP	eP	Z	16	52	49			
	SU	eS	N	16	52	52		5 8	
	CT	eP	Z	16	53	03			
	RX	eL	ZNE	17	06			2 15	2 15
	Epicentre:			16	47	22.7	13.9S	166.1E	33 km USCGR
4	KP	eP	Z	02	24	34			
	CT	eP	Z	02	24	51			
	SU	eL	N	02	25				
	Epicentre:			02	19	48.7	17.9S	167.4E	56 km USCGR
4	KP	P	Z	06	20	53			
	CT	P	Z	06	21	01			
	WN	eP	Z	06	21	10			
	Epicentre:			06	10	44.8	17.9N	146.4E	145 km USCGR
4	RX	P*	ZNE	08	23	55			dw
		S*	ZNE		24	12			sw
		i	Z			16			u
	KM	ePn	X	08	24	20			
		eP*	X		29				
		eSn	X		54				
		eS*	X		25	05			
	GP	ePn	N	08	24	24			
		e	N		27				
		ip*	N		33				
		S*	N		25	14			
	CB	Pn	E	08	24	41			
		Sn	E		25	34			
	WN	ePn	ZN	08	24	56			
		eP*	Z		25	10			
		Sn	NE		26	01			
		e	NE			07			
	CT	ePn	Z	08	25	21			
		e	Z			23			
	TO	ePn	Z	08	25	22			
		e	Z			30			
		eSn	Z		26	45			

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
JUL	KP	Pn	Z	08	25	33			
		Sn	Z		27	04			
	ON	e(P)	E	08	25	52			
		e(S)	E		27	38			
	Epicentre:			08	23	33	44.4S	168.3E	S NZ(C) 5.5 NZ
	Felt: Throughout Otago and Southland. Maximum MM4 at Milford Sound.								
4	ON	eP	E	12	09	14			
	KP	eP	Z	12	09	26			
		i	Z			27			
	CT	eP	Z	12	09	37			
		i	Z			38			
		S	Z		11	28			
	TO	P	Z	12	09	37			
		e	Z		11	17			
	WN	eP	Z	12	10	00			
		eS	ZNE			12 03			
	CB	eS	E	12	12	19			
	GP	eS	N	12	13	06			
	Epicentre:			12	07	25.0	30.3S	179.6W	449 km USCGR
4	CT	eP	Z	19	23	19			
	RX	e(SS)	NE	19	25	18		3 10	6 9
		eL	NE			25.9		19 12	22 11
		eL	Z			26.3	10 12		
	WN	eL	ZN	19	27.3		12 16	10 12	
	SU	eL	N	19	39				
	Epicentre:			19	17	46.7	55.8S	147.4E	39 km USCGR
4	RX	eL	NE	20	06			4 12	4 10
	Epicentre:			19	58	34.4	55.4S	147.8E	122 km USCGR
5	KP	eP	Z	02	33	57			
		e	Z			34 07			
	CT	eP	Z	02	34	02			
		e	Z			11			
	SU	eL	N	02	50			9 20	
	Epicentre:			02	22	02.9	29.2N	129.5E	97 km USCGR
5	RX	eP	ZN	02	32	55		2 8	2 10
		eL	NE			36 36		9 12	9 12
		eL	Z			37 24	15 20		
	WN	eL	ZN	02	41.2		18 20	23 20	
	Epicentre:			02	28	38.2	58.2S	150.4E	25 km USCGR
6	SU	ip	N	22	11	45			
	KP	P	Z	22	13	42		92 4	
	TU	eP	N	22	13	57			
		eS	N		17	46			
	CT	P	Z	22	13	58			d
	CB	eP	E	22	14	08			
		e	E			15			
		eS	E			18 06			
	WN	ip	Z	22	14	13		23 14	
		ip	NE			13			6.4
		e	Z			18		17 5	6.8
		S	ZNE			18 10			
		L	ZN			19.9	72 18	100 18	
	KM	eP	X	22	14	28	85 20	82 20	7.0
		eS	X			18 35			6.3
	GP	P	N	22	14	36			
		eS	N			18 45			
	RX	P	Z	22	14	50		16 14	
		P	NE			22 14 50			6.6
		eS	ZNE			19 12	38 18	15 18	4 13
		eL	E			20 1		86 20	16 13
		eL	N			21 1			47 33
						21 1		80 25	6.8

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
JUL		M1 E	22 $\frac{1}{2}$			81 22	6.3
		eL Z	23				
		M2 ZN	24 $\frac{1}{2}$	90 16	75 18		
		Epicentre:	22 09 31.4	20.0S	169.0E	47 km	USCGS
7	KP	eP Z	13 18 14				
		e Z	19				
	CT	eP Z	13 18 28				
	WN	eP ZNE	13 18 36				6.4
		PP Z	20 28	5 7			6.9
		SS ZN	21 49	4 8	13 6		
		SS ZN	28 15	5 10	7 10		
		L ZN	31	37 20	26 20		6.3
	GP	eP N	13 18 40			9 10	6.5
	RX	S ZNE	13 25 04	4 10	10 20	7 20	6.0
		eL ZNE	28.2	10 20	8 22		
		Epicentre:	13 10 43.8	5.7S	149.7E	57 km	USCGS
7	KP	eP Z	14 46 04				
	CT	eP Z	14 46 20				
		Epicentre:	14 41 53.0	20.4S	169.2E	100 km	USCGS
7	KP	P Z	15 45 06				
7	SU	P N	22 21 50		2 2		
		S N	23 45		12 6		
		i N	24 20		29 10		
	KP	eP Z	22 23 20				
		e Z	28				
	CT	eP Z	22 24 02				
	WN	eP Z	22 24 25				
		eL ZN	22 31	11 20			
	GP	eP N	22 24 41				5.2
	RX	eS N	22 29 37		2 18		
		eL NE	32		3 25	4 22	
		M N	35		7 18		
		eL Z	36	8 16			
		Epicentre:	22 19 34.2	20.1S	169.2E	89 km	USCGS
8	KP	eP Z	01 42 38				
8	SU	iP N	02 37 41 s		28 6		
		eS N	39 50		62 10		
	AK	P N	02 39 25				
		S N	42 40				
		eL N	45.0				
		M N	48				
	KP	eP Z	02 39 39				
		e Z	40 10				
	CT	eP Z	02 39 55				6.4
	WN	eP Z	02 40 12	14 10			6.0
		eP NE	12		5 10		6.0
		S ZNE	44 05		7 10		
		eL ZNE	46.7	75 15	59 15		
	GP	eP N	02 40 34				6.2
	RX	eP Z	02 40 48	4 6			5.9
		eP N	48		3 10	10 10	6.2
		S NE	45 12		13 12	14 25	
		eLq NE	47		6 30	36 18	
		M1 NE	50		36 18	36 18	
		eLr Z	50				
		M2 ZNE	52	32 16	56 15	43 14	
	ON	eL E	02 43				
		Epicentre:	02 35 20.1	20.0S	168.8E	52 km	USCGS
8	KP	eP Z	11 26 27				
		Epicentre:	11 16 16.1	18.5N	145.4E	193 km	USCGS

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
JUL	8	SU	e N	15 11.1			
			eL N	13.0		14 10	
		KP	eP Z	15 12 52			
8	SU	P N	15 36 59				
	ON	eP E	15 38 31				
		eS E	41 30				
		KP	P Z	15 38 57 d			
	CT	eP Z	15 39 11				
	WN	eP Z	15 39 25	7 7			6.2
		eP N	25		5 5		6.3
		S ZN	43 29	13 9	21 14		6.6
		L ZN	46.1	60 20	43 15		
	GP	eP N	15 39 48				
	RX	eP ZN	15 40 03	7 6	3 16		6.4
		e N	41 05		4 12		
		S NE	44 30		21 14	6 10	6.4
		eLq NE	46		11 30		
		M1 NE	48		25 20	45 18	6.2
		eL Z	49 $\frac{1}{2}$	18 22			
		M2 ZNE	52	28 15	44 15	35 15	
		Epicentre:	15 34 38.5	20.1N	169.0E	56 km	USCGS
8	ON	eP E	15 44 09				
	KP	P Z	15 44 31				
8	SU	eP N	21 16 15				
		eL N	18 15		24 9		
	KP	eP Z	21 18 14				
		e Z	20				
	CT	eP Z	21 18 39				
	GP	e(P) N	21 19.1				
	WN	eS ZN	21 22 56	3 11	4 10		5.8
		eL ZN	25.1	11 13	16 20		5.8
	RX	S NE	21 24 06		3 14		5.7
		eL N	26		5 24		
		eL E	26.7			16 19	
		M N	29		12 17		
		eL Z	29	14 17			5.9
		Epicentre:	21 13 59.4	20.2S	174.4W	25 km	USCGS
8	SU	eS N	21 51 15				
		eL N	53		61 12		
	KP	eP Z	21 53 00				
	CT	eP Z	21 53 19				
		e Z	31				
	WN	eP Z	21 53 37	4 11			5.7
		eP N	37		4 5		6.2
		eS ZN	57 32	5 10	6 6		6.1
		eL ZN	22 00 00	18 20	10 15		
	GP	eP N	21 53 55				
	RX	eS N	21 58 38		4 11		5.8
		eL NE	22 01 $\frac{1}{2}$		6 20	13 18	
		eL Z	03 $\frac{1}{2}$	18 15			
		Epicentre:	21 48 46.2	20.2S	169.0E	68 km	USCGS
8	KP	P Z	22 51 39				
10	KP	P Z	12 20 12				
		Epicentre:	12 16 29.4	20.7S	179.5W	564 km	USCGS
10	ON	eP E	14 23 24				
	KP	eP Z	14 23 34				
		i Z	37				
	TU	eP N	14 23 37				
		eS N	25 17				
	WN	eP ZNE	14 24 09				
		eS NE	14 26 17 $\frac{1}{2}$				

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
JUL	CB	eS	E 14 26 29				
	GP	s	N 14 27 16				
	Epicentre:		14 21 31.0	30.2S	179.4W	334 km	USCGS
11	KP	eP	Z 05 48 26				
	TU	eS	N 05 50 25				
	WN	eS	ZNE 05 51 33				
	Epicentre:		05 45 29.5	27.3S	177.1W	58 km	USCGS
11	RX	eL	ZNE 10 20				
	Epicentre:		09 31 57.2	8.3N	93.3E	163 km	USCGS
11	KP	P	Z 18 44 36				
	CT	P	Z 18 44(39)				
	WN	P	Z 18 44 39				
	Epicentre:		18 35 54.6	6.7S	125.8E	579 km	USCGS
12	KP	P	Z 04 57 30				
	Epicentre:		04 47 29.0	3.3N	127.9E	92 km	USCGS
12	KP	eP	Z 14 40 32				
	WN	eP	ZN 14 41 14	2 8			5.3
		e(s)	ZN 43 48	2 8			
		eL	ZN 46.8	9 20	8 20		
	SU	eL	N 14 42		20 10		
	AK	eL	N 14 44				
	RX	eL	ZNE 14 49		2 15	2 15	
	Epicentre:		14 36 57.4	22.8S	171.3E	65 km	USCGS
13	KP	P	Z 07 24 11				
	Epicentre:		07 18 59.2	16.3S	172.7W	25 km	USCGS
13	KP	P	Z 10 39 25				
	Epicentre:		10 31 55.6	5.5S	150.8E	25 km	USCGS
13	KP	eP	Z 13 49 13				
	Epicentre:		13 45 02.4	21.3S	175.7W	29 km	USCGS
14	KP	P	Z 03 32 12				
15	KP	P	Z 00 29 15				
	CT	P	Z 00 29 19				
	Epicentre:		00 17 49.5	13.1N	120.4E	52 km	USCGS
15	KP	P	Z 06 08 03				
	Epicentre:		06 03 43.2	20.1S	169.1E	25 km	USCGS
15	RX	eL	ZNE 08 06	2 16	2 18	1 16	
	WN	eL	ZNE 08 10	3 20			
	Epicentre:		07 57 20.5	57.8S	148.5E	60 km	USCGS
15	KP	P	Z 14 04 52				
	CT	P	Z 14 04 55				
	Epicentre:		13 55 26.5	6.8S	116.9E	565 km	USCGS
16	SU	S	N 05 25 25		3 4		
	KP	P	Z 05 27 02				
	TO	eP	Z 05 27 10				
	WN	eP	Z 05 27 31				
	Epicentre:		05 22 36.5	19.0S	175.4W	200 km	USCGS
16	SU	eP	N 06 49 00				
	S	N	50 10		13 4		
	KP	ip	Z 06 51 51 d				
	CT	eP	Z 06 52 02				
	WN	P	ZNE 06 52 21				
	Epicentre:		06 47 19.7	18.6S	175.7W	172 km	USCGS

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
JUL 16	AK	P	N 14 04 53				
	eL	N	08 55				
	KP	eP	Z 14 05 14				
	i	Z	20				
	TO	eP	Z 14 05 29				
	WN	P	Z 14 05 53	7 8			6.0
	S	NE	53		4 5		6.0
	L	N	09 45		5 10		6.0
	L	ZN	11.1	32 20	23 20		5.9
	GP	eP	N 14 06 11				
	RX	eS	N 14 10.9		4 8		5.7
	eL	N	13		5 24		
	eL	NE	14		5 15	9 15	
	Epicentre:		14 01 38.7	22.7S	171.2E	56 km	USCGS
16	TU	eP	N 20 01 27				
	S	N	02 30				
	KP	eP	Z 20 01 33				
	eS	Z	02 40				
	CT	eP	Z 20 01 42				
	e	Z	20 01 54				
	ON	e(P*)	E 20 01 51				
	WN	e	Z 20 02 10				
	eS	ZNE	03 39				
	GP	eP	N 20 02 49				
	eS	N	04 43				
	AK	eL	N 20 03.0				
	KM	eS	X 20 04 40				
	Epicentre:		20 06 06	35.1S	178.2W	N	NZ(D) 5.3 NZ
	Additional readings from Brisbane, Charters Towers, Mundaring and Reoul I. used to determine epicentre.						
16	SU	S	N 23 05 54		4 2		
	ON	P	E 23 07 17				
	KP	P	Z 23 07 30 d				
	WN	P	ZNE 23 07 58				
	Epicentre:		23 03 26.9	18.0S	178.3W	591 km	USCGS
17	KP	P	Z 15 13 13				
	CT	eP	Z 15 13 20				
	Epicentre:		15 04 46.8	2.6S	141.9E	60 km	USCGS
17	KP	eP	Z 16 32 24				
	CT	eP	Z 16 32 29				
	Epicentre:		16 20 22.6	35.7N	141.2E	75 km	USCGS
17	KP	eP	Z 17 15 37				
	Epicentre:		17 08 17.2	5.4S	152.4E	64 km	USCGS
18	KP	eP	Z 07 19 47				
	Epicentre:		07 16 59.2	27.8S	176.8W	60 km	USCGS
18	KP	eP	Z 13 12 47				
	Epicentre:		13 03 28.3	5.9S	128.5E	25 km	USCGS
18	ON	eP	E 14 15 33				
	KP	ip	Z 14 15 40 u				
	CT	P	Z 14 15 45 1/2 d				
	TU	e(P)	N 14 15 47				
	CB	eP	E 14 15 48				
	WN	ip	ZN 14 15 51				
	eL	ZN	34				
	KM	eP	X 14 15 54				
	RX	eL	NE 14 32		67 24	47 20	6.7
	Epicentre:		14 03 36.5	29.4N	131.6E	21 km	USCGS

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
JUL 18	KP	eP	Z	15	28	16			
	CT	eP	Z	15	28	21			
	Epicentre:			15	16	12.5	29.5N	131.3E	35 km USCGR
18	KP	ip	Z	14	46	05 u			
	CT	P	Z	14	46	10			
	WN	P	Z	14	46	18			
	Epicentre:			14	34	07.3	29.9N	131.2E	72 km USCGR
18	KP	eP	Z	16	32	09			
	Epicentre:			16	20	08.8	29.5N	131.2E	62 km USCGR
19	CT	P	Z	04	02	54			
	KP	P	Z	04	02	59			
	Epicentre:			03	50	42.0	58.8S	25.3W	39 km USCGR
19	KP	P	Z	10	47	48			
	CT	eP	Z	10	47	53			
	Epicentre:			10	35	41.4	29.8N	131.5E	20 km USCGR
19	KP	P	Z	12	10	48			
	CT	P	Z	12	10	53			
	Epicentre:			11	58	43.7	29.6N	131.5E	31 km USCGR
19	SU	eL	N	18	05				
	KP	eP	Z	18	05	03			
	CT	eP	Z	18	05	13			
	WN	eP	Z	18	05	35			
	Epicentre:			18	00	28.3	19.8S	173.9W	66 km USCGR
19	KP	eP	Z	18	29	17			
	i		Z			20			
	ON	eP	E	18	29	36			
	CT	eP	Z	18	29	58			
	TO	eP	Z	18	29	58			
	WN	ip	ZN	18	30	19			
		S	ZN			33			
	CB	eP	E	18	30	23			
		eS	E			33			
	Epicentre:			18	26	37.9	23.5S	179.9E	531 km USCGR
19	KP	P	Z	19	36	37			
	Epicentre:			19	31	54.7	18.0S	167.7E	50 km USCGR
20	KP	P	Z	03	16	44			
	Epicentre:			03	04	41.7	29.5N	131.2E	47 km USCGR
20	KP	P	Z	09	14	43			
	Epicentre:			09	02	31.9	28.4N	133.6E	25 km USCGR
20	ON	eP	E	15	14	21			
	KP	P	Z	15	14	34			
	CT	eP	Z	15	14	43			
	Epicentre:			15	10	26.7	17.5S	178.7W	570 km USCGR
20	ON	eP	E	20	00	00			
	KP	eP	Z	20	00	00			
	CT	eP	Z	20	00	13			
	GP	eP	N	20	01	22			
		eS	N			03			
	TU	S	Z	20	01	25			
	WN	eS	ZNE	20	02	33			
	KM	eS	X	20	03	35			
	SU	eL	N	20	05				
	Epicentre:			19	58	03.3	31.8S	177.2W	44 km USCGR

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
JUL 21	SU	eL	N	01	14	06			
	KP	P	Z	01	14	17			5 11
	CT	P	Z	01	14	35			
	Epicentre:			01	10	36.2	22.2S	171.6E	117 km USCGR
21	SU	eP	N	13	09	26			
	eL	N				11			25 10
	KP	P	Z	13	11	36			
	CT	P	Z	13	11	49			
	TO	eP	Z	13	11	49			
	RX	eL	N	13	23				4 19
	Epicentre:			13	07	25.4	19.4S	169.2E	167 km USCGR
22	ON	P	E	03	26	39			
	KP	P	Z	03	26	39.4			
	CT	P	Z	03	26	51			
		S	Z			27			
	TO	eP	Z	03	26	51			
	eS	Z				27			
	WN	P	ZE	03	27	14			
		S	ZE			28			
	GP	eP	N	03	27	50			
		S	N			29			
	CB	eS	E	03	28	51			
	Epicentre:			03	25	29			
							35.0S	179.6E	290 km NZ(C) 5.2 NZ
							Additional readings from Brisbane, Canberra, Charters Towers, used to determine epicentre.		
22	KP	P	Z	05	24	59			
	CT	eP	Z	05	25	11			
	Epicentre:			05	21	20.9	20.7S	178.8W	584 km USCGR
22	KP	P	Z	10	32	23			
	CT	eP	Z	10	32	34			
	GP	eP	N	10	33	33			
	Epicentre:			10	27	51.8	20.2S	174.0W	25 km USCGR
22	RX	L	NE	18	21	0			
	eL	Z				22.5			7 18
	WN	eL	N	18	24				8 16
	Epicentre:			18	12	31.1	54.0S	141.2E	84 km USCGR
23	SU	eP	N	14	06	15			
	eS	N				08			10 4
	ON	eP	E	14	07	52			45 12
	AK	eP	N	14	08	00			
		eS	N			11			
		eL	N			13			
	KP	eP	Z	14	08	16			
	CT	P	Z	14	08	32			
	TU	eP	Z	14	08	33			
	WN	P	Z	14	08	47.7			3 8
		P	NE			47.5			
		e	ZN			09			4 5
		S	ZN			13			5 6
		L	ZN			15.6			6.2
	GP	P	N	14	09	08			21 14
	RX	eLq	N	14	13.9				10 22
		eL	E			15.7			
		eL	Z			17			21 28
		M				18			
	Epicentre:			14	03	39.8	18.5S	168.2E	44 km USCGR
23	ON	eP	E	14	20	46			
	KP	P	Z	14	21	12			
	TU	e	Z	14	21	3			

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
JUL	CT	P	Z	14	21	25	18.4S	168.1E	48 km	USCGS
	Epicentre:		14	16	34.3					
23	KP	P	Z	14	49	17				
	CT	eP	Z	14	49	22	6.9N	123.5W	89 km	USCGS
	Epicentre:		14	38	03.5					
23	SU	eP	N	15	32.9			16 2		
	eL	N		35				55 11		
	KP	P	Z	15	33	32				
	CT	eP	Z	15	33	45	18.3S	168.2E	44 km	USCGS
	Epicentre:		15	28	52.6					
23	ON	eP	E	15	34	31				
	KP	P	Z	15	34	54				
	CT	P	Z	15	35	07				
	i	Z				11				
	TU	eP	Z	15	35	08				
	WN	P	ZNE	15	35	27				
	S	ZN				39 38	3 8	5 6		6.2
	L	ZN				42.0	24 16	15 15		
	GP	eP	N	15	35	41		8 24		5.8
	RX	eS	N	15	40	36			14 26	
	eLq	E				42.0				
	eL	Z				44	24 22			
	M	NE				45		21 25	17 20	
	Epicentre:		15	30	22.8	18.5S	168.0E	107 km		USCGS
23	KP	eP	Z	15	51	55				
23	SU	iP	N	21	53	35 s				
	ON	eP	E	21	55	21				
	eL	E				58 20				
	CT	eP	Z	21	55	22				
	KP	P	Z	21	55	46 d				
	i	Z				48 d				
	eL	Z				59.5				
	ScP	Z				22 03 35				
	CB	P	E	21	56	15				
	S	E				22 00 24				6.8
	WN	iP	Z	21	56	15	72 13			7.4
	iP	NE				15		60 7		7.9
	S	ZNE				22 00 28	70 8	1050 22		7.0
	L	ZN				02.2	320 20	1100 20		
	KM	eP	X	21	56	23				
	eS	X				03				
	eL	X								
	GP	P	N	21	56	35				
	eS	N				22 00 59				7.3
	RX	P	Z	21	56	38	93 14			7.4
	S	NE				38		99 20	11 13	
	P	NE				40		430 22	103 17	7.6
	eL	ZNE				22 05	1270 20	840 26	850 26	
	Epicentre:		21	51	07.5	18.3S	168.3E	44 km		USCGS
23	ON	eP	E	22	06.1					
	KP	iP	Z	22	06	33 d				
	CT	P	Z	22	06	46				
	WN	eP	Z	22	07	03				
	GP	eP	N	22	07	22	18.4S	168.3E	37 km	USCGS
	Epicentre:		22	01	55.3					
23	KP	P	Z	22	45	41	18.1S	167.9E	139 km	USCGS
	Epicentre:		22	41	09.4					
23	KP	P	Z	23	26	46				
	TU	P	Z	23	27	01				

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
JUL	CT	eP	Z	23	27	01				
	Epicentre:		23	22	10.1	18.6S	168.0E	53 km		USCGS
23	ON	eP	E	23	50	31				
	KP	P	Z	23	50	55				
	CT	eP	Z	23	51	09				
	i	Z				51 13				
	TU	eP	Z	23	51	13				
	GP	eP	N	23	51	45				
	Epicentre:		23	46	17.2	18.4S	167.8E	25 km		USCGS
24	KP	P	Z	00	39	34				
	CT	eP	Z	00	39	49				
	Epicentre:		00	34	54.0	18.1S	168.2E	58 km		USCGS
24	SU	eP	N	01	32.5					
	ON	eP	E	01	34	13				
	KP	P	Z	01	34	27 d				
	e	Z				01 37 21				
	TU	eP	Z	01	34	29				
	CT	P	Z	01	34	36				
	WN	P	ZNE	01	34	55½				
	eS	ZNE				38 18				
	GP	eP	N	01	35	46				
	eS	N				38 47				
	Epicentre:		01	30	56.5	21.1S	179.3W	642 km		USCGS
24	KP	P	Z	01	51	08				
	Epicentre:		01	46	27.6	18.0S	167.9E	43 km		USCGS
24	KP	P	Z	02	03	34				
	CT	P	Z	02	03	48				
	TU	e(P)	Z	02	03	49				
	GP	eP	N	02	04	22				
	Epicentre:		01	58	52.3	18.2S	168.4E	23 km		USCGS
24	KP	eP	Z	02	53	01				
24	KP	P	Z	03	54	51				
24	KP	P	Z	08	58	11				
	e	Z				30				
	TU	P	Z	08	58	20				
	CT	eP	Z	08	58	22				
	Epicentre:		08	48	13.8	0.0	124.1E	159 km		USCGS
24	KP	P	Z	11	06	23				
24	KP	P	Z	13	17	33				
	CT	P	Z	13	17	50				
24	WN	iP*	ZNE	16	11	55 dn				
	i	Z				12 03				
	S*	NE				05½				
	CT	iPn	Z	16	12	10 d				
	e	Z				25				
	CB	(Pn)	E	16	12	11				
	(Sn)	E				33				
	TU	ePn	Z	16	12	21				
	eP*	Z				28				
	e	Z				33				
	KP	Pn	Z	16	12	26				
	eP*	Z				36				
	GP	ePn	N	16	12	33				
	e	N				48				
	i	N				58				
	eSn	N				13 12				
	eS*	N				25				

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
JUL	KM	epn	X 16 12 35				
		ep*	X 16 12 42				
		eSn	X 13 16				
	AK	e	N 16 12 52				
	ON	e(P)	E 16 13 02				
		ep*	E 13				
		eS*	E 14 08				
	Epicentre:			40.7S	175.0E	S	NZ(B) 5.2 NZ
	Felt:			Manawatu, Wellington and Southern Taranaki.			Maximum Foxton MM5.
25	KP	P	Z 01 35 07				
	CT	ep	Z 01 35 20				
	Epicentre:			18.3S	168.3E	99 km	USCGS
25	KP	P	Z 08 55 28				
	CT	P	Z 08 55 41				
		i	Z 56 45				
		e	Z 56 03				
	TU	ep	Z 08 55 43				
	WN	ep	Z 08 56 02				
	AK	eL	N 09 02				
	RX	eL	ZNE 09 06				
	Epicentre:			08 50 38.5	18.4S	167.7E	25 km USCGS
25	KP	P	Z 10 06 28				
	CT	ep	Z 10 06 37				
	Epicentre:			10 02 00.5	18.3S	175.7W	238 km USCGS
25	KP	ep	Z 11 12 55				
	Epicentre:			11 08 16.3	18.3S	168.2E	25 km USCGS
25	KP	ep	Z 18 07 07				
	CT	ep	Z 18 07 08				
	Epicentre:			17 56 48.4	8.7S	110.5E	245 km USCGS
25	KP	ep	Z 18 49 32				
	TU	ep	Z 18 49 38				
	WN	ep	Z 18 49 38				
	CT	ep	Z 18 49 39				
	Epicentre:			18 39 24.1	0.0	124.7E	43 km USCGS
25	WN	ip*	ZNE 19 59 48 u				
		S*	ZNE 20 00 02				
	CT	ip*	Z 20 00 02				
		S*	Z 26				
	TU	Pn	Z 20 00 04				
		Sn	Z 32				
	KP	epn	Z 20 00 17				
		ep*	Z 26				
	GP	epn	N 20 00 21½				
		Sn	N 01 01				
	ON	ep*	E 20 00 51				
		e	E 01 42				
		eSn	E 51				
	KM	Sn	X 20 01 08				
	Epicentre:			41.0S	176.1E	S	NZ(B) 4.9 NZ
26	KP	ep	Z 03 05 04				
	Epicentre:			02 55 59.9	7.5S	128.0E	96 km USCGS
26	KP	ip	Z 09 19 35¼				
	TU	Pz	Z 09 19 36				
		eSz	Z 57				
	AK	ip	N 09 19 43 n				
		is	N 20 10 s				
	CT	ip	Z 09 19 44 d				
		S?	Z 20 08				

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
JUL	ON	1P	E 09 19 50				
		e	E 20 30				
	WN	P	ZNE 09 20 (05) d				
		S	ZNE (54)				
	CB	ep	E 09 20 17				
		S	E 21 15				
	KM	ep	X 09 20 40				
		S	X 21 52				
	GP	ep	N 09 20 44				
		S	N 22 00				
	RX	eS	N 09 23 14				
	Epicentre:			09 19 02	37.6S	176.9E	230 km NZ(B) 6.3 NZ
26	KP	ep	Z 12 32 04				
	CT	ep	Z 12 32 18				
27	KP	ep	Z 02 08 50				
	ON	ep	E 02 08 51				
	CT	ep	Z 02 09 10				
	AK	eL	N 02 11				
	WN	eS	ZNE 02 11 33				
	GP	eS	N 02 12 44				
	SU	eL	N 0. 13				
	Epicentre:			02 07 24.4	30.4S	178.7W	10 10 482 km USCGS
27	KP	P	Z 08 31 38				
		e	Z 51				
	Epicentre:			08 27 46.9	17.7S	178.1W	562 km USCGS
27	KP	ep	Z 10 34 53				
	Epicentre:			10 30 17.2	17.9S	167.8E	60 km USCGS
27	KP	P	Z 11 38 07				
	CT	ep	Z 11 38 27				
	Epicentre:			11 33 48.4	19.1S	169.3E	158 km USCGS
27	KP	P	Z 13 51 08				
		e	Z 18				
	ON	ep	E 13 51 14				
	CT	P	Z 13 51 17				
		e	Z 32				
	WN	ep	Z 13 51 49				
		S	ZNE 52 58				
		e	NE 53 45				
	CB	eS	E 13 53 24				
	KM	eS	X 13 54 04				
	GP	eS	N 13 54 06				
	Epicentre:			13 50 25	36.3S	178.2E	S NZ(D) 5.0 NZ
27	CT	P	Z 15 34 00				
		ep*	Z 13				
	KP	P	Z 15 34 50				
		i	Z 35 02				
	ON	ep	E 15 34 57				
	WN	ep	Z 15 35 35				
		ep*	Z 45				
		S	ZNE 36 42				
		e	NE 37 28				
	CB	e(P)	E 15 36 02				
		e(S)	E 37 07				
	GP	ep?	N 15 36 07				
		eS	N 37 49				
	KM	eS?	X 15 36 47				
	AK	eL	N 15 37.0				
	RX	eL	ZNE 15 41				
	Epicentre:			15 34 08	5 15	4 16	4 15 NZ(D) 5.2 NZ

Additional readings from Brisbane, Charters Towers, Hallett and Raoul Is. used to determine epicentre.

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
JUL 27	CT	P	Z	20	26	06				
		e	Z			16				
	KP	P	Z	20	26	55				
		eP	E	20	27	01				
	ON	e	Z	20	27	58				
		s	ZNE			28				
	GP	S	N	20	29	53				
		eL	N	20	30	4				
	Epicentre:			20	26	13	36.3S	178.2E	S	NZ(D) 5.0 NZ
	27	SU	eL	N	21	25				
28	SU	P	N	06	14	07				
		eL	N		17					
	KP	P	Z	06	16	18				
		eP	Z	06	16	31				
	TU	eP	Z	06	16	32				
		eP	Z	06	16	48				
	WN	P	Z	06	16	48	9 7			6.4
		P	NE			48				6.5
	PP	N		17	30					
		iS	ZNE		21	01	11 9			
L	ZNE		25			48 14				4.6 13
	eP	N	06	17	08					7 12
RX	eS	NE	06	21	55					24 25
	eL	NE		24						35 20
Epicentre:			06	11	38.7	18.6S	167.7E	41 km	USCGS	
28	KP	P	Z	12	43	52				
		eP	Z	12	38	45.3	17.1S	173.0W	25 km	USCGS
28	KP	eP	Z	13	30	54				
		eP	Z	13	31	01	0.6S	122.4E	35 km	USCGS
Epicentre:			13	20	33.8					
28	KP	P	Z	17	21	08				
		eP	N	17	22	02				
Epicentre:			17	17	07.8	20.5S	169.9E	147 km	USCGS	
29	TU	eP	Z	10	36	34				
		P	Z	10	36	41				
Epicentre:			10	31	52.5	16.6S	174.1E	132 km	USCGS	
29	KP	P	Z	16	31	02				
		eP	Z	16	31	02				
TU	eS	Z		33	42					
	eP	Z	16	31	12					
GP	eS	N	16	35	45					
	eL	N	16	39						
RX	eL	Z	16	42						
	M	N		43						
Epicentre:			16	27	19.0	23.9S	176.1W	23 km	USCGS	
29	RX	eL	NE	22	52.7					
29	KP	eP	Z	23	56	24				
		i	Z		26					
TU	eS	Z	23	58	50					
	eS	N	00	00	25					
30	KP	P	Z	14	10	55				
		i	Z		58					
TU	eP	Z	14	11	10					
	eP	Z	14	11	10					
Epicentre:			14	06	17.9	18.1S	168.7E	48 km	USCGS	

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
JUL 30	KP	eP	Z	15	40	42			
		Epicentre:	15	36	13.7	20.6S	174.1W	25 km	USCGS
31	WN	eP	Z	00	26	41			
		P	Z	00	26	44			
CT	iP	Z	00	26	45 u				
	e	Z		28	25				
Epicentre:			00	15	55.3	5.3S	107.2E	224 km	USCGS
31	KP	eP	Z	06	21	52			
		eP	Z	06	22	07			
GP	S	N	06	25	26				
	31	KP	eP	Z	08	35	18		
eP			Z	08	35	32			
Epicentre:			08	30	56.6	18.6S	168.0E	193 km	USCGS
AUG 1	ON	P	E	00	56	09			
		e	E		13				
	TU	P	Z	00	56	12 $\frac{1}{2}$			
		S	Z		57	21			
	KP	P	Z	00	56	16			
		e	Z		57	05			
	(S)			Z		27 $\frac{1}{2}$			
	CT	P	Z	00	56	26 $\frac{1}{2}$			
		e	Z		37				
	WN	eP	ZNE	00	56	49 $\frac{1}{2}$			
S		ZNE		58	28 $\frac{1}{2}$				
GP	e(P)	N	00	57	28				
	e	N		35 $\frac{1}{2}$					
CB	e	E	00	57	50 $\frac{1}{2}$				
	S	E		58	49 $\frac{1}{2}$				
KM	eS	X	00	59	30 $\frac{1}{2}$				
	Epicentre:		00	54	43	33.0S	179 $\frac{1}{2}$ W	N	NZ(D) 5.8 NZ
Additional readings from Raoul I. and Charters Towers used to determine epicentre.									
1	SU	e(S)	N	01	21				
		eL	N		24				
KP	P	Z	01	23	08				
	e	Z			13				
CT	eP?	Z	01	23	06				
	e	Z			23				
TU	eP	Z	01	23	22				
	eL	NE	01	34					
Epicentre:			01	17	44.7	14.2S	166.7E	26 km	USCGS
1	KP	P	Z	05	46	09			
		e	Z		14				
CT	eP	Z	05	46	19				
	eP	Z	05	46	21				
CB	eP	E	05	46	30				
	eP	Z	05	46	32 d				
WN	eP	NE	05	46	32	7 4			
	e	ZN		47	48				
eS	E		51	52					
	eL	ZN		55					
KM	e(P)	X	05	46	43				
	e(P)	N	05	46	46				
RX	eP	ZN	05	46	53				
	e	N		52	22				
Epicentre:					34				

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
AUG		eL M	ZNE N	05	56							
		Epicentre:		05	39	53.2	9.8S	160.5E	70 23	50 km	USCGS	6.5
1	WN	eP eS eL M	Z N ZN N	07	33	22						
		Epicentre:		07	33	40			5 16			6.1
	KP	P	Z	07	33	40						
	TU	eP	Z	07	33	49						
	RX	eS e(L)	E ZN	07	43	00						
		Epicentre:		07	21	12.3	56.8S		25.1W	44 km	USCGS	
1	KP	P	Z	09	36	51						
		Epicentre:		09	24	22.4	56.6S		24.0W	61 km	USCGS	
1	WN	eP eL M	Z ZN N	09	46	51						
		Epicentre:		09	46	51			2 15			5.9
	CT	eP	Z	09	47	01						
	TU	eP	Z	09	47	03						
	KP	P	Z	09	47	06						
	RX	eS e(L)	E N	09	56	28						
		Epicentre:		09	34	40.7	57.1S		26.1W	31 km	USCGS	
1	KP	P	Z	16	21	41						
		Epicentre:		16	18	50.5	25.0S		179.6E	530 km	USCGS	
	WN	eP eS	Z ZNE	16	22	16						
	CT	e	Z	16	23	46						
	TU	e(S)	Z	16	24	07						
	CB	eS	E	16	25	08						
	KM	eS	X	16	25	40						
	GP	eS	N	16	25	47						
1	RX	e(L)	ZNE	19	05							
1	SU	e	N	22	14	05						
		Epicentre:		22	11	49.3	18.0S		167.6E	214 km	USCGS	
2	RX	eS eL M	NE NE N	01	29	46						
		Epicentre:		01	17	08.1	53.3S		134.9W	22 km	USCGS	
2	SU	e	N	02	06	37						
		Epicentre:		02	08	26						
	KP	P	Z	02	08	26						
	TU	e(P)	Z	02	08	46						
	CT	e(P)	Z	02	08	49						

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
AUG	WN	eL	N	02	18							
	RX	eL	ZNE	02	18							
		Epicentre:		02	03	56.0	18.9S		168.0E	18 km	USCGS	
2	CB	e(P)	E	02	43	30						
		Epicentre:		02	43	30						
	CT	eP	Z	02	43	52						
	TU	e(P)	Z	02	43	53						
	KP	eP	Z	02	43	55						
	RX	e	Z	03	21							
		Epicentre:		02	31	24.8	56.7S		24.8W	25 km	USCGS	5.8
2	CT	e	Z	04	11	42						
		Epicentre:		03	59	29.9	57.6S		26.6W	67 km	USCGS	
2	SU	e(L)	N	04	58							
		Epicentre:		04	54	37.5	22.7S		171.8E	39 km	USCGS	
2	KP	P	Z	05	58	44						
		Epicentre:		05	58	54						
2	KP	P	Z	13	25	32						
		Epicentre:		13	25	32						
	TU	e(P)	Z	13	25	32						
	CT	P	Z	13	25	50						
	WN	S	ZNE	13	28	03						
	CB	e(S)	E	13	28	21						
	GP	(S)	N	13	29	10						
	KM	(S)	X	13	29	19						
	SU	e	N	13	32							
		Epicentre:		13	23	37						
							32S	177 $\frac{1}{2}$ W	N?	NZ(D)	5.6 NZ	
							Additional readings from Raoul I. and Charters Towers used to determine epicentre.					
2	KP	P	Z	20	20	20						
		Epicentre:		20	14	50.2	12.6S		165.5E	129 km	USCGS	
2	KP	P	Z	23	42	26						
		Epicentre:		23	38	31.2	20.4S		177.6W	325 km	USCGS	
3	KP	eP	Z	04	53	22						
		Epicentre:		04	53	36						
3	KP	P	Z	07	01	02						
		Epicentre:		06	51	44.1	3.5S		130.8E	22 km	USCGS	
3	TU	eP	Z	09	28	22						
		Epicentre:		09	28	31						

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
AUG	KP	eP	Z	09	28	25 $\frac{1}{2}$				
		eS	Z		29	39 $\frac{1}{2}$				
	CT	eP	Z	09	28	38				
		e	Z			39 $\frac{1}{2}$				
	WN	e?	Z	09	29	54				
		S	Z			29	58			
	CB	eS	ZNE	09	30	39				
		eS	E	09	31	00				
	GP	eS	N	09	31	45				
		Epicentre:		09	26	51				
33 $\frac{1}{2}$ S 178 $\frac{1}{2}$ W N NZ(D) 5.5 MZ Additional readings from Raoul I. and Charters Towers used to determine epi- centre.										
3	KP	e(P)	Z	15	16	22				
		e?	Z		17	28				
3	TU	eS	Z	15	17	32				
		e(P)	Z	15	21	17				
3	KP	e	Z			33				
		e(P)	N	15	22	30				
	GP	e(S)	N			25	12			
		e	N			18				
	TU	e	N			31				
		eS	Z	15	23	03				
	CT	eS	Z	15	23	37				
		eS	ZNE	15	24	10				
	3	KP	P	Z	16	37	31			
			eS?	Z	16	40	50			
3	TU	eS	Z	16	33	50.1	21.1S	177.0W	346 km USCGR	
		Epicentre:		16	33	50.1				
3	KP	P	Z	23	43	31				
		P	Z	23	43	39 u				
	TU	P	Z	23	43	40				
		eL	NE	24	10					
	Epicentre:		23	33	37.7	12.1N	143.8E	20 km USCGR		
4	KP	e(P)	Z	09	05	32				
		Epicentre:		09	00	15.8	15.2S	173.1W	100 km USCGR	
4	KP	e?	Z	17	52	24				
		e?	Z	17	52	37				
	SU	eL	N	17	55					
		e(S)	E	17	55	36				
	RX	eL	E	18	00			1 21		
4	KP	eP	Z	18	23	38				
		eP	Z	18	23	52				
	CT	eP	Z	18	23	55				
		eL	N	18	24					
	Epicentre:		18	19	22.8	19.9S	169.7E	119 km USCGR		
4	SU	eL	N	23	29					
		eL	ZNE	23	40					
Epicentre:		22	52	49.2	45.3N	151.1E	20 km USCGR			
4	SU	eP	N	23	34	13				
		S	N			35	45 n			
	KP	P	Z	23	35	16 u				
		eP	Z	23	35	19				
	TU	e	Z			23				
		S	Z			37	48			
	CB	eP	E	23	35	55				
		eS	E			38	47			

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
AUG	WN	eS	N	23	38	36				
		e	NE			41				
	KM	eS	X	23	39	16				
		eS	N	23	39	27				
	GP	eS	N	23	39	27				
		Epicentre:		23	32	24.9	25.4S	179.7W	495 km USCGR	
	5	SU	eL	N	00	58				
			RX	e(L)		01	09			
	5	TU	eP	Z	01	13	30			
			Epicentre:		01	07	49.1	13.7S	166.0E	40 km USCGR
5	KP	eP?	Z	06	45	46				
		GP	e(P)	N	06	47	07			
	TU	eS	N			50	04			
		e(S)	Z	06	48	51				
	SU	eL	N	06	49					
		WN	e?	E	06	49	04			
	CB	eS	E	06	49	23				
		RX	eL	NE	06	54				
	Epicentre:		06	43	05.0	28.2S	176.7W	66 km USCGR		
	5	SU	eS	N	08	19	25			
KP			P	Z	08	21	06			
TU		eP?	Z	08	21	08				
		KM	e	X	08	22	01			
GP		e	N	08	22	10				
Epicentre:		08	16	47.5	19.2S	176.0W	229 km USCGR			
6	KP	eP	Z	03	31	06				
		Epicentre:		03	20	39.0	26.7N	141.8E	36 km USCGR	
6	KP	P	Z	10	30	20				
6	KP	eP	Z	10	44	37				
		TU	e(P)	Z	10	44	46			
Epicentre:		10	34	33.4	2.7S	122.0E	69 km USCGR			
6	KP	P	Z	17	15	41				
		Epicentre:		17	07	11.3	3.2S	139.6E	79 km USCGR	
7	KP	eP	Z	04	32	27				
		TU	eP	Z	04	32	38			
	RX	eL	NE	04	47					
		M	N			53				
	Epicentre:		04	22	20.5	2.7S	121.6E	18 km USCGR 5.8		
7	KP	eP	Z	10	53	30				
		e	Z			52				
7	TU	eP	Z	10	53	39				
		Epicentre:		10	43	20.9	0.3N	124.0E	76 km USCGR	
7	KP	P	Z	12	25	05				
		e	Z			15				
	TU	e	Z			29				
		eP	Z	12	25	07				
	SU	e(S)	Z			27	14			
		e(P)	N	12	25	07				
	WN	e	N			15				
		e(S)	N			27	08			
	WN	e?	Z	12	25	57				
		eS	ZN			28	21			
KM	eL	ZN			32					
	eP	X	12	26	22					
eS	X			29	24					

Date	STN	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
AUG	GP	e(P)	N	12 26 29				
		e	N	40				
		e	N	29 26				
		e(S)	N	28				
	CB	eS	E	12 28 39				
	RX	eL	NE	12 33		3 20	39 km	5.3
	Epicentre:			12 22 23.3	28.1S	176.5W		
7	KM	e	X	16 16 14				
	KP	e?	Z	16 16 56				
		e	Z	17 04				
	RX	eL	NE	16 19				
	WN	eL	ZN	16 24				
	Epicentre:			16 11 41.4	61.1S	160.4E	49 km	USCGS
7	KP	P	Z	17 00 34				
	TU	eP	Z	17 00 35				
		e(S)	Z	02 27				
	GP	e(P)	N	17 01 48				
		e	N	04 47				
		e(S)	N	51				
	WN	eS	ZNE	17 03 45				
	CB	eS	E	17 03 59				
	KM	e(S)	X	17 04 42				
	Epicentre:			16 57 50.0	27.5S	177.1W	60 km	USCGS
7	KP	e(P)	Z	23 32 45				
	TU	e?	Z	23 34 58				
	Epicentre:			23 30 01.7	28.2S	176.7W	25 km	USCGS
8	SU	e	N	00 21 31				
		eL	N	25				
	TU	e(P)	Z	00 21 34				
		eS	Z	23 41				
	KP	e(P)	Z	00 21 35				
	WN	eS	N	00 24 49				
		eL	ZN	28				
	CB	e(S)	E	00 25 11				
	KM	eS?	X	00 25 38			4 20	
	RX	eL	NE	00 29				
	Epicentre:			00 18 52.3	28.1S	176.5W	51 km	USCGS
8	KP	eP	Z	07 25 18				
	RX	eL	NE	07 39				
	Epicentre:			07 18 34.9	8.1S	156.6E	61 km	USCGS
8	KP	P	Z	09 16 40				
	TU	eP	Z	09 16 50				
	Epicentre:			09 07 53.3	6.8S	125.9E	437 km	USCGS
8	KP	P	Z	12 31 16				
	TU	e(P)	Z	12 31 23				
	TO	eP	Z	12 31 23				
	CB	e(P)	E	12 31 36				
	SU	e?	N	12 35 58				
		eS	N	38 43				
		eL	N	50				
		M	N	58		9 20		6.2
	RX	eSKS	N	12 42 32				
		e(SP)	N	44 43				
		eSS	N	50				
		eL	N	13 03				
		M	N	05		2 26		6.0
	WN	eL	ZN	13 10				
	Epicentre:			12 18 18.9	50.9N	170.7W	24 km	USCGS
9	SU	P	N	16 04 54 s				
		e(S)	N	16 06 45				

Date	STN	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
AUG	AK	e(P)	N	16 06 53				
		eS	N	10 25				
	CT	eP	Z	16 07 16				
		e	Z	20				
		e	Z	24				
	TU	eP	Z	16 07 17				
		e(S)	Z	11 13				
	CB	eP	E	16 07 31				
		eS	E	11 35				
	WN	eP?	Z	16 07 32	5 5			
		e	ZN	36				
		e?	N	40				
		eL	ZN	12 36				
		eL	ZN	15				
	KM	eP	X	16 07 43				
	GP	eP	N	16 07 51				
	RX	e	N	16 08.1				
		e(S)	N	12 38				
		eL	ZNE	16				
		M	N	16				
	Epicentre:			16 02 36.1	19.1S	168.7E	69 km	USCGS
10	TU	eP	N	01 45 36				
		e	N	46				
	CT	eP	Z	01 45 49				
	Epicentre:			01 43 46.2	30.4S	179.8W	303 km	USCGS
10	RX	e(L)	NE	01 52				
10	TU	eP	Z	06 40 54				
		eS	Z	44 11				
	CT	eP	Z	06 41 02				
		eS	Z	44 24				
		e	Z	49				
	WN	eP	Z	06 41 22				
		e	N	26				
	CB	eP	E	06 41 28				
		eS	E	45 01				
	KM	eP	X	06 41 43				
	GP	eP	N	06 41 51				
	Epicentre:			06 37 04.7	20.8S	178.0W	377 km	USCGS
10	CT	e?	Z	07 35 20				
	TU	e?	Z	07 38 44				
	Epicentre:			07 32 05.3	20.1S	174.5W	100 km	USCGS
11	KP	eP	Z	06 20 29				
	Epicentre:			06 08 18.2	32.6N	131.4E	25 km	USCGS
11	KP	P	Z	09 13 11				
	SU	e	N	09 15 05				
	Epicentre:			09 08 23.9	17.8S	167.8E	48 km	USCGS
11	SU	eP?	N	10 27 32				
		e	N	28 06				
		e(S)	N	29 10				
	ON	eP	E	10 29 11				
		e	E	19				
		e?	E	34 45				
	KP	P	Z	10 29 35				
		e	Z	41				
	CT	P	Z	10 29 48				
		e	Z	51				
	TU	e(P)	Z	10 29 49				
		e	Z	59				
		e(S)	Z	33 50				
	CB	e(P)	E	10 30 03				

Date	STN	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
AUG	WN	P	ZN	10	30	07				
	KM	eP	X	10	30	14				
	GP	eP	N	10	30	24				
	Epicentre:			10	24	58.9	18.5S	168.2E	25 km	USCGS
11	CT	eP	Z	11	14	24				
	KP	P	Z	11	14	37				
		e	Z			45				
		e	Z			15 17				
	WN	eP	ZN	11	14	42				
	TU	eP	Z	11	14	46				
	Epicentre:			11	04	39.1	0.2N	124.0E	143 km	USCGS
11	SU	eP?	N	16	02	35				
		e	N			47				
		ePPP	N			06 56				
		S	N			11 30		30 12		
		eSS	N			15				
		eL	N			23		90 23		
		M	N			26				
		e(R2)	N	18	23					
		M	N			29		5 24		
AK	eP	N	N	16	04	05				
	SKS	N	N			14 23		60 10		
	eSS	N	N			20.1				
	eL	N	N			31				
	M	N	N			33		30 24		
	e(G2)	N	N	18	13					
ON	eP	E	E	16	04	06				
	e(SKS)	E	E			14 14				
KP	P	Z	Z	16	04	09				
	e	Z	Z			15				
	e	Z	Z			24				
	ePP	Z	Z			07 25				
TU	e(P)	Z	Z	16	04	13				
	e	Z	Z			27				
CT	eP	Z	Z	16	04	13				
	e	Z	Z			21				
	e	Z	Z			05 01				
	e(PP)	Z	Z			07 35				
	e	Z	Z			40				
WN	eP	ZN	Z	16	04	22	4 6			6.8
	e	Z	Z			34	10 4			
	e	N	N			05 29				
	eSKS	N	N			14 41		12 8		7.1
	e(S)	N	N			15.0				
	eSS	N	N			21				
	eSSS	N	N			24				
	eL	ZN	Z			34				
	M	ZN	Z			37		15 22		
	e(R2)	ZN	Z	18	21					
CB	e(P)	E	E	16	04	24				
	eSKS	E	E			14 38				
	eS	E	E			58				
KM	e(P)	X	X	16	04	26				
	eSKS	X	X			14 44				
GP	eP	N	N	16	04	31				
	e(SKS)	N	N			14 55				
RX	e(P)	Z	Z	16	04	46				
	e	Z	Z			05 14				
	SKS	ZNE	Z			15 32				
	e(S)	N	N			15.5		40 16		
	eSS	NE	NE			21				
	eSSS	NE	NE			25				
	eLq	NE	NE			29				
	eLr	ZNE	Z			34				
	M	NE	NE			38		40 23	20 24	

Date	STN	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
AUG		e(G2)	N	18	10					
		e(R2)	ZNE			21				
		M	N			24				
	Epicentre:			15	51	35.4	42.9N	145.1E	71 km	USCGS
11	KP	P	Z	22	47	30				
		e	Z			48 18				
	CT	eP	Z	22	47	33				
	WN	eP	Z	22	47	34				
		e	Z			48 30				
	TU	P	Z	22	47	39				
		e	Z			44				
	SU	e?	N	22	48	26				
		e	N			55 11				
	RX	eL	ZNE	23	07					
	Epicentre:			22	37	22.0	2.8S	122.1E	20 km	USCGS
11	KP	eP	Z	23	46	26				
	Epicentre:			23	33	51.9	42.8N	145.1E	72 km	USCGS
12	KP	e(P)	Z	05	35	17				
	CT	e(P)	Z	05	35	33				
	SU	e	N	05	36	20				
	Epicentre:			05	30	39.9	18.8S	167.9E	25 km	USCGS
13	KP	e(P)	Z	03	51	52				
		e?	Z			55 05				
	WN	e(S)	N	03	54	26				
	Epicentre:			03	49	26.1	27.4S	178.5W	601 km	USCGS
13	KP	eP	Z	06	13	09				
		e	Z			14				
	CT	P	Z	06	13	14				
	Epicentre:			06	01	02.0	25.3N	121.5E	25 km	USCGS
13	KP	P	Z	22	01	14				
	TU	e	Z	22	01	45				
		eS	Z			04 16				
	CT	P	Z	22	01	53				
		eS	Z			04 32				
	WN	e(P)	Z	22	02	18				
	Epicentre:			21	58	40.9	24.8S	179.1E	488 km	USCGS
14	KP	P	Z	06	41	04				
	TU	e(P)	Z	06	41	06				
		e(S)	Z			44 22				
	CT	eP	Z	06	41	13				
		e	Z			43 57				
	Epicentre:			06	37	19.6	19.6S	178.1W	535 km	USCGS
14	SU	eP	N	18	52	54				
		e	N			55 07				
ON	e	E	E	18	54	24				
KP	eP?	Z	Z	18	54	24				
	e	Z	Z			29				
		e	Z			33				
TU	e(P)	Z	Z	18	54	32				
		e	Z			42				
		eS	Z			57 13				
		e	Z			41				
TO	eP	Z	Z	18	54	43				
		e	Z			57 40				
		e	Z			47				
CT	eP	Z	Z	18	54	43				
		e(S)	Z			57 45				
WN	eP	Z	Z	18	55	06				
		eS	ZN			58 20				

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
AUG		eL	19	01								
	M	ZN		02				8	18			5.6
	GP	eP	18	55	42							
		eS		59	20							
	KM	e	18	55	46							
		eS		59	09							
	CB	eS	18	58	34							
	RX	eL	19	02								
		eL		04								
	M	ZN		06				14	18			5.8
		Epicentre:	18	50	50.3	24.3S		175.7W		21	km	USCGS
14	KP	eP	22	17	13							
	CT	e(P)	22	17	26							
		Epicentre:	22	04	59.0	31.8N		131.2E		14	km	USCGS
14	SU	eP	23	30	57							
	ON	eP	23	32	33							
	KP	eP	23	32	56							
		e		40	40							
	TU	eP	23	33	11							
		eS		37	01							
	CT	eP	23	33	11							
		e		14								
		e(S)		37	10							
		e		23								
	CB	eP	23	33	26							
	WN	ep	23	33	30	d						
		e(pp)		52								
		eS		37	25							
		eL		39								
	M	N		42								
	KM	e(P)	23	33	40							
	GP	eP	23	33	51							
	RX	M	23	(44)				40	18			
		Epicentre:	23	28	46.5	20.3S		169.4E		97	km	USCGS
15	KP	eP	17	56	32							
	TU	e(P)	17	56	45							
	CT	e(P)	17	56	45							
		Epicentre:	17	51	35.5	14.9S		167.7E		198	km	USCGS
15	KP	P	18	17	58							
15	KP	iP	19	15	48	d						
	TU	e(P)	19	15	54							
	CT	P	19	15	54	d						
		e		16	08							
	CB	eP	19	16	01							
	WN	eP?	19	16	03							
		Epicentre:	19	03	55.7	32.8N		142.4E		39	km	USCGS
15	KP	e?	19	47	09							
		Epicentre:	19	43	54.8	23.3S		180.0		595	km	USCGS
16	TU	eP	03	35	41							
		eS		37	08							
	ON	eP	03	35	42							
	KP	e(P)	03	35	44							
		e		36	07							
	CT	eP	03	35	55							
		e		36	07							
		e		37	47							
	WN	eS	03	38	17							
	CB	eS	03	38	36							
	KM	e(S)	03	39	17							
	GP	eS	03	39	22							

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
AUG	RX	eL	03	42								
		Epicentre:	03	33	52.6	31.8S		177.9W		70	km	USCGS
16	TU	e(P)	04	05	57							
		e(S)		07	24							
	KP	e(P)	04	06	02							
	CT	e(P)	04	06	23							
		e		33								
	WN	eS	04	08	33							
	CB	eS	04	08	54							
	GP	eS	04	09	40							
16	KP	P	16	05	(11)							
		Epicentre:	15	53	38.6	33.6N		137.2E		325	km	USCGS
16	TU	e(P)	19	20	53							
		eS		22	19							
	KP	eP	19	20	(56)							
	CT	eP	19	21	18							
		e		22	51							
		e		59								
	WN	eS	19	23	27							
	GP	e(S)	19	24	23							
		Epicentre:	19	19	01.3	31.7S		178.0W		51	km	USCGS
16	KP	e	22	32	(05)							
		Epicentre:	22	22	32.7	11.0N		124.8E		305	km	USCGS
17	TU	e(P)	01	06	28							
		eS		07	55							
	KP	e(P)	01	06	(32)							
	CT	e	01	06	58							
		e(S)		08	27							
	WN	eS	01	09	05							
	KM	eS	01	10	08							
	GP	eS	01	10	08							
		Epicentre:	01	04	35.2	31.5S		179.1W		45	km	USCGS
17	TU	eS	01	10	15							
	CT	e(S)	01	10	44							
	WN	eS	01	11	24							
	GP	eS	01	12	28							
17	RX	eL	05	26						1	20	
		Epicentre:	05	06	03.5	55.3S		124.3W		62	km	USCGS
17	KP	P	07	02	59							
		e		03	10							
		Epicentre:	06	51	13.6	33.0N		142.2E		123	km	USCGS
17	KP	e(P)	12	56	(42)							
	TU	e(P)	12	56	42							
		e(S)		58	07							
	ON	e(P)	12	56	47							
	WN	eS	12	59	15							
		Epicentre:	12	54	44.0	31.7S		178.7W		25	km	USCGS
17	KP	eP	17	54	02							
		Epicentre:	17	49	20.7	18.6S		168.8E		25	km	USCGS
17	SU	ep	21	27	20							
		e(PcP)		54								
		S		36	18					14	9	6.3
		eL		51								
	M	N		52								
	KP	eP	21	29	(00)					12	20	
	TU	ep	21	29	04							

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
AUG	CB	eP	E 21 29 11				
		eS	E 39 49				
	KM	eP?	X 21 29 13				
		eS	X 40 00				
	WN	eP	ZN 21 29 13				
		e(pP)	Z 52				
		eSKS	N 39 24				
		eS	N 52		10 8		7.0
		e(PS)	N 41 05				
	RX	eP	Z 21 30 04	4 5			7.0
	eSKS	NE 39 45		20 8		7.4	
	eS	NE 40 28					
	e	NE 41 39					
	M	N 22 06		3 21			
	Epicentre:		21 16 30.0	46.3N	149.3E	186 km	USCGS
18	KP	eP	Z 05 40(53)				
	Epicentre:		05 29 56.4	28.0N	139.9E	400 km	USCGS
18	ON	P	E 11 04 15				
		eS	E 06 33				
	KP	iP	Z 11 04(31) u				
		e(S)	Z 07(06)				
	TO	eP?	Z 11 04 34				
		e	Z 43				
	TU	eP	Z 11 04 36				
		eS	Z 07 08				
	CT	e?	Z 11 04 41				
		e	Z 44				
	e(S)	Z 07 19					
WN	eP	ZN 11 05 02					
	eS	ZN 07 58					
CB	eP	E 11 05 07					
	eS	E 08 02					
KM	eP	X 11 05 22					
	eS	X 08 31					
	e	X 46					
GP	eP	N 11 05 29					
	e(S)	N 08 41					
	e	N 50					
	Epicentre:		11 01 26.5	24.0S	179.9W	519 km	USCGS
18	KP	eP	Z 12 58(53)				
	CT	eP	Z 12 59 00				
	Epicentre:		12 51 25.3	6.8S	145.9E	194 km	USCGS
19	SU	e(S)	N 02 29 00				
19	KP	eP?	Z 02 55(42)				
	e	Z (50)					
	Epicentre:		02 42 58.2	43.1N	145.0E	32 km	USCGS
19	SU	e(P)	N 02 58 20				
		e	N 35				
		e(S)	N 42				
	KP	eP	Z 03 01(32)				
		i	Z 02(26) u				
	KP	eP?	Z 03 19(21)				
		e	Z 24(45)				
	SU	e(P)	N 03 20 40				
	TU	e	Z 03 24 02				
		e	Z 24 44				
	e	Z 25 52					
19	TU	eP	Z 05 22 34				
		epP	Z 24 53				
		e(SKS)	Z 32 20				

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
AUG	WN	eP	Z 05 22 36	3 5			
		e?	Z 24 45				6.9
		e(pP)	Z 25 03				
		e	N 30 19				
		e	N 31 50				
		e(SKS)	ZN 32 13				
		eS	N 33 18				
		eSP	Z 34 52				
		e(SS)	ZN 38 40				
		e(PKKP)	Z 45				
KP	eP	Z 05 22(37)					
	epP	Z 24(54)					
	ePP	Z 26(47)					
	e	Z 27(02)					
	eSKS1	Z 32(04)					
	eSKS2	Z 32(56)					
	e	Z 33(27)					
	e(PKKS)	Z 38(41)					
	e	Z 39(10)					
	CT	P	Z 05 22 37				
	epP	Z 24 54					
	e(SKS)	Z 32 16					
TO	eP	Z 05 22 37					
	e	Z 39 13					
RX	ePP	ZNE 05 24 58	7 16				
	e(pP)	Z 27 04				6.5	
	SKS	NE 32 22				22 10	
	eSP	ZNE 35 12				22 15	
	e(SS)	NE 39 09				35 16	
	e	NE 41					
	e	N 51.3					
GP	e(PP)	N 05 26 57					
	eSKS	N 32 14					
	e(SS)	N 38 54					
SU	e(PKP)	N 05 27 27					
	e(PPP)	N 30 11					
	eSKS	N 32 43					
	e(PS)	N 35 45					
CB	eSKS	E 05 32 13					
	e(PS)	E 36 23					
	e(SS)	E 39 05					
KM	eSKS	X 05 32 17					
	e(S)	X 33 33					
ON	eSKS	E 05 32 26					
	e	E 33 07					
	Epicentre:		05 09 49.5	10.7S	71.0W	649 km	USCGS
19	KP	P	Z 05 45(52) u				
	CT	eP	Z 05 45 58				
	e	Z 46 21					
TO	eP	Z 05 45 58					
TU	eP	Z 05 46 00					
RX	e(p)	Z 05 46 19					
SU	e(S)	N 05 53 27					
	eL	N 06 01					
	M	N 08					
WN	M	Z 06 00					
	M	ZN 06 17			24 19	40 23	6.6
	M	N 06 15			28 25	15 23	6.5
	Epicentre:		05 33 30.6	36.0N	136.5E	17 km	USCGS
19	KP	eP	Z 06 21(08)				
	CT	eP	Z 06 21 11				
19	KP	eP?	Z 14 23(03)				
	SU	eL	N 14 25				

Date	STN	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
AUG 19	CT	P	Z	20	38	42				
	KP	e	Z	20	38	(54)				
	Epicentre:			20	26	18.0	2.1N	96.9E	25 km	USCGS
20	SU	e	N	01	33	00				
		e(L)	N		34	50				
	CT	e?	Z	01	35	06				
		e	Z			19				
	TO	e?	Z	01	35	16				
	RX	eL	NE	01	41					
		eL	Z			45				
	WN	eL	ZN	01	45					
		M	N			46				
	Epicentre:			01	30	19.2	17.8S	169.0E	36 km	USCGS
20	CT	eP?	Z	02	29	59				
		eS	Z		32	18				
Epicentre:			02	26	46.8	16.5S	172.6W	25 km	USCGS	
20	SU	eP	N	05	05	30				
		eS	N		06	35				
	ON	eP	E	05	08	04				
	CT	P	Z	05	08	27				
	TO	eP	Z	05	08	27				
	WN	eP	N	05	08	46				
		e(S)	N		12	25				
		e	N			30				
		eScS	N		18	45				
	CB	eP	E	05	08	50				
		eS	E		12	28				
	KM	eP	X	05	09	04				
		e	X			13				
		e(S)	X		13	01				
		e(ScS)	X		18	48				
	GP	eP	N	05	09	10				
		eS	N		13	10				
		eScS	N		18	57				
	RX	e?	N	05	16	42				
		e	N		19	00				
	e(ScS)	N			12					
Epicentre:			05	04	14.3	17.8S	178.8W	592 km	USCGS	
21	TU	P	Z	01	47	24				
		e	Z			30 $\frac{1}{2}$				
		S	Z			45 $\frac{1}{2}$				
		e	Z			48				
	TO	eiP	Z	01	47	42				
		e	Z			44				
		e	Z			47				
		e	Z			50 $\frac{1}{2}$				
		e	Z		48	16 $\frac{1}{2}$				
		S	Z			19 $\frac{1}{2}$				
		e	Z			21 $\frac{1}{2}$				
	KP	P	Z	01	47	(45)				
		e	Z			(51)				
	WN	eP	Z	01	47	57				
	S	ZN		48	44 $\frac{1}{2}$					
	e	ZN			45 $\frac{1}{2}$					
GP	S	N	01	49	47					
KM	S	X	01	49	51 $\frac{1}{2}$					
Epicentre:			01	46	55	39.4S	179.4E	N	NZ(D) 5.1 NZ	
21	SU	eP	N	02	08	15				
		eS	N		09	26				
	KP	P	Z	02	10	(05)				
	TU	eP	Z	02	10	07				
		e(S)	Z		12	55				
	e	Z		13	03					

Date	STN	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
AUG	TO	eP	Z	02	10	14				
		e(S)	Z		13	13				
	WN	eP	ZN	02	10	33				
		eS	ZN			13				
	KM	e(P)	X	02	10	53				
		eS	X			14				
	GP	eP	N	02	10	58				
		eS	N			14				
	Epicentre:			02	06	43.4	22.7S	179.2W	554 km	USCGS
	21	SU	eP	N	16	08	45			
TU		eP	Z	16	11	45				
		eS	Z			15				
KP		eP	Z	16	11	(48)				
TO		eP	Z	16	11	55				
		e(S)	Z			16				
CT		e?	Z	16	11	57				
WN		eP	ZN	16	12	14				
		e	Z			39				
		eS	ZN			16				
KM		e(P)	X	16	12	41				
GP		e(P)	N	16	12	44				
		e(S)	N			17				
AK		eS	N	16	15	27				
RX	eL	NE	16	21						
Epicentre:			16	06	55.4	17.8S	174.4W	74 km	USCGS	
21	KP	eP	Z	17	13	(15)				
	TU	eP	Z	17	13	19				
	WN	eP	Z	17	13	26				
Epicentre:			17	00	37.0	40.9N	138.9E	49 km	USCGS	
22	KP	eP	Z	03	08	(17)				
	Epicentre:			03	03	56.6	17.7S	168.5E	77 km	USCGS
22	SU	e(P)	N	09	02	29				
	KP	eP?	Z	09	04	(54)				
		e	Z			05(06)				
	RX	eL	NE	09	14					
		eL	Z			17				
WN	eL	ZN	09	16						
Epicentre:			08	59	27.9	13.4S	166.7E	63 km	USCGS	
23	TO	eP	Z	16	27	48				
		e	Z			52				
	CT	e?	Z	16	27	49				
		e	Z			51				
KP	eP	Z	16	27	(56)					
23	CT	P	Z	16	47	33 u				
		e	Z			36				
		e	Z			38				
	TO	P	Z	16	47	33				
		e	Z			36				
		e	Z			47				
KP	eP	Z	16	47	(42)					
TU	eP	Z	16	47	43					
23	CT	eP	Z	17	25	52				
	TO	eP	Z	17	25	52				
		e	Z			26				
	KP	eP	Z	17	25	(59)				
TU	e(P)	Z	17	26	02					
24	KP	P	Z	01	53	(26)				
		e	Z			(40)				
		e	Z			(59)				

Date	STN	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
AUG	TU	e(P)	Z	01	53	26				
		e(S)	Z		54	55				
		e	Z		55	01				
	CT	P	Z	01	53	36				
		eS	Z		55	15				
	GP	e	Z			19				
		e(P)	N	01	54	32				
	WN	eS	N		56	57				
		eS	ZN	01	55	59				
	CB	eS	E	01	56	12				
eS		X	01	56	49					
Epicentre:				01	51	29	31S	180	400 km	NZ(D) 5.6 NZ
Additional readings from Raoul I. and Charters Towers used to determine epicentre.										
24	KP	P	Z	04	24	(46)				
24	KP	eP	Z	05	05	(16)				
Epicentre:				04	52	20.5	42.9N	145.3E	44 km	USCGS
24	KP	P	Z	09	16	(36) u				
		eP	Z	09	16	47				
	CT	eP	Z	09	16	47				
		e(P)	N	09	17	19				
Epicentre:				09	11	20.0	15.0S	167.6E	60 km	USCGS
24	KP	e(P)	Z	10	01	(47)				
24	KP	iP	Z	11	40	(10) u				
		P	Z	11	40	21				
CT	e	Z			58					
	P	Z	11	40	21					
	e	Z			41	01				
TU	e(P)	Z	11	40	32					
24	KP	e(P)	Z	17	29	(13)				
Epicentre:				17	25	39.1	6.0S	149.9E	96 km	USCGS
24	SU	(P)	N	20	57	22				
		e	N		59	35				
	e	N	21	00	45					
		eP	Z	21	02	(10)				
	TU	eP	Z	21	02	20				
	CT	eP	Z	21	02	24				
		eP?	Z	21	02	49				
	WN	e	Z			52				
		e(S)	ZN		06	42				
	AK	e(L)	ZN		09					
eL		N	21	03						
RX	eL	NE	21	10						
	M	NE			12				6 14	
Epicentre:				20	58	36.2	21.3S	173.1E	258 km	USCGS
24	KP	e(P)	Z	22	53	(37)				
Epicentre:				22	40	49.1	43.0N	145.0E	18 km	USCGS
26	KP	P	Z	02	49	(49)				
		eP	Z	02	50	01				
Epicentre:				02	45	34.8	20.1S	168.9E	125 km	USCGS
26	RX	eL	N	18	20					
		eL	N	18	02	35.9	13.9S	166.2E	66 km	USCGS
27	SU	e(S)	N	06	45	46				
		P	Z	06	47	(31)				
Epicentre:				06	43	29.9	18.5S	178.2W	488 km	USCGS
27	KP	eP	Z	16	34	(55)				
Epicentre:							46.6N	154.1E	31 km	USCGS

Date	STN	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
AUG 27	SU	e(P)	N	16	57	27				
		e?	Z	16	58	05				
	TU	e?	Z			09				
		e	Z			14				
		P	Z	16	58	(08)				
	TO	eP	Z	16	58	13				
		eP	E	16	58	19				
	CB	eP	ZN	16	58	21				
		eS	N	17	06	53				4 6
	WN	eL	ZN			22				
		M	N			24				3 22
	GP	eP	N	16	58	31				
		e	X	16	58	34				
	KM	eS?	NE	17	07	20				
		eL	NE			12				
RX	eL	Z			14					
	M	N			23					
Epicentre:				16	47	44.8	18.3N	146.6E	27 km	USCGS
27	TO	eP	Z	17	33	07				
		e	Z			23				
KP	e(P)	Z	17	33	(34)					
	e(P)	Z	17	23	19.1	18.0N	144.7E	109 km	USCGS	
27	KP	e(P)	Z	18	08	(21)				
		e(P)	Z	17	58	00.8	17.9N	146.4E	74 km	USCGS
28	KP	eP	Z	06	41	25				
		e	Z			44				
Epicentre:				06	28	19.4	15.1S	70.2W	185 km	USCGS
28	SU	e(P)	N	07	43	48				
		eS	N		45	43				
	KP	iP	Z	07	46	10 u				
		P	Z	07	46	18 u				
	CT	eP	Z	07	46	21				
		eP	E	07	46	35				
	WN	eS	E		50	37				
		iP	ZN	07	46	36 u				
	KM	eS	ZN		50	40				
		eP	X	07	46	47				
GP	eS	X		50	57					
	eP	N	07	46	54					
WN	eS	N		51	14					
	eS	N		51	14					
Epicentre:				07	41	24.5	12.7S	169.6E	662 km	USCGS
28	SU	e(P)	N	09	45	36				
		eS	N		46	40				
	KP	iP	Z	09	48	09 u				
		eP	Z	09	48	11				
	CT	eP	Z	09	48	17				
		eP	ZN	09	48	37				
	WN	eS	ZN		52	07				
		e(P)	X	09	49	01				
	KM	e(S)	X		52	38				
		e(S)	E	09	52	14				
Epicentre:				09	44	13.5	18.6S	178.0W	574 km	USCGS
28	KP	e	Z	12	27	03				
		e	Z	12	13	45.3	46.7N	153.9E	19 km	USCGS
29	KP	eP	Z	04	21	16				
		e	Z	04	21	29				
Epicentre:				04	15	50.8	14.0S	166.2E	60 km	USCGS
29	KP	eP	Z	10	55	18				
		eP	Z	10	44	44.6	7.2S	128.3E	166 km	USCGS

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
AUG 29	KP	eP	Z	15	04	16				
		e	Z			37				
	RX	eL	N	15	43		1 20	41 km	5.7	
	Epicentre:					14 51 14.2	52.2N	170.8W		
29	KP	P	Z	21	33	58 d				
	TU	eP	Z	21	39	09				
		e(S)	Z			43 22				
	CT	eP	Z	21	39	09				
		e(S)	Z			43 30				
	GP	e(P)	N	21	39	42				
	Epicentre:					21 33 43.0	15.4S	168.1E	25 km	
30	KP	eP	Z	02	23	41				
	CT	eP	Z	02	23	53				
		e	Z			26 34				
	GP	e	N	02	24	38				
31	TU	e	Z	00	25	27				
		e	Z			27 22				
		e(S)	Z			38				
	KP	e(P)	Z	00	25	28				
	SU	e(P)	N	00	25	37				
		eL	N			29				
	CT	eP	Z	00	25	45				
		eS	Z			27 59				
	WN	e?	Z	00	26	15				
		e	Z			29				
		e(S)	Z			28 42				
		eL	ZN			32				
	KM	e	X	00	26	43				
	GP	e(P)	N	00	26	45				
		e	N			54				
	eS	N			29 47					
CB	e(S)	E	00	29	00					
RX	eL	NE	00	33						
	Epicentre:					00 22 47.3	28.1S	176.7W	56 km	
31	TU	e(P)	Z	02	01	24				
	WN	eP	Z	02	01	24				
	CT	eP	Z	02	01	27				
		e	Z			03 35				
	KP	P	Z	02	01	29				
		e(pP)	Z			03 52				
	SU	e(SKKS)	N	02	12	20				
		e(sP)	N			15 40				
		Epicentre:					01 48 37.5	10.6S	70.9W	626 km
	31	TU	eP	Z	02	09	58			
		eSKS	Z			19 42				
		eSP	Z			22 10				
WN		eP	Z	02	09	58				
		epP	Z			12 09				
		e	Z			13.5				
		eSKS	ZN			19 37				
		eSP	ZN			22 19				
		e(sSP)	N			26.2				
		M	ZN			49				
							30 18	10 15		
KP		P	Z	02	10	01				
		e?	Z			12 09				
		e(pP)	Z			15				
		e(PP)	Z			14 20				
		e(SKS)	Z			20 06				
		e(SKKS)	Z			21				
		e(PKPP)	Z			26 05				
		e(sSP)	Z			33				
		e(SS)	Z			28 51				
CT		P	Z	02	10	01				
		epP	Z			12 14				

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
AUG		e	Z	13	15				
		ePP	Z	14	23				
		eSKS	Z	19	48				
		e(PKPP)	Z	26	33				
	GP	e(P)	N	02	10	01			
		ePP	N			14.4			
		eSKS	N			19 37			
		e(SKKS)	N			20 17			
		eS	N			46			
		e(PKPP)	N			26 11			
		e	N			34			
	RX	eP	Z	02	10	08			
		e(pP)	Z			12 22			
		ePP	NE			14 04			
		iSKS	NE			19 45			30 12
	i(SP)ZNE				22 38			30 15	
	e(PKPP)NE				26.5				
	e(SS)	N			28				
	e	N			39				
SU	e(PKP)	N	02	14	47				
	e(SKS)	N			19 50				
	e(sP)	N			23 40				
KM	eSKS	X	02	19	35				
	e(S)	X			20 59				
CB	eSKS	E	02	19	50				
	eSKKS	E			20 22				
	eS	E			55				
	e(PS)	E			23 48				
	Epicentre:					01 57 08.0	10.4S	70.7W	629 km
31	KP	e(P)	Z	03	08	33			
	TO	eP	Z	03	08	33			
31	KP	P	Z	03	34	54			
	KM	e	X	03	35	49			
	Epicentre:					03 30 19.6	15.2S	177.4W	439 km
31	KP	eP	Z	04	02	06			
	Epicentre:					03 56 44.4	15.3S	172.8W	25 km
31	KP	P	Z	23	33	13			
	CT	P	Z	23	33	19			
	e	Z			34 07				
	TO	eP	Z	23	33	19			
	TU	eP	Z	23	33	23			
	Epicentre:					23 24 42.6	3.2S	139.4E	108 km
SEP 1	RX	eP	Z	00	21	06			
	epP	ZN			36				6.7
	ePP	ZN			24 22				
	S	ZNE			30 29				
	eFS	ZNE			31 15				7.3
	SS	E			35 28				
	eL	E			41				
GP	eP	N	00	21	13				
	epP	N			47				
KM	eP	X	00	21	23				
	epP	X			55				
	eS	X			31 01				
WN	P	Z	00	21	24				6.7
	P	N			24				6.6
	pP	ZN			53				
	iS	ZN			31 05				12 6
	eL	ZN			43				3 5
									6 6
CB	eP	E	00	21	26				8 20
	epP	E			22 02				24 8
	eS	E			31 07				26 20
TU	P	Z	00	21	35				
	pP	Z			22 10				

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
SEP	CT	iP	Z	00	21	36		u	
		pP	Z	22	09				
		eS	Z	31	25				
	KP	P	Z	00	21	40			
		epP	Z	22	15				
		eS	Z	00	31	35			
		PKKP	Z	00	40	14			
		p'p'	Z	48	12				
		PKSPKP	Z	51	30				
	SU	SKS	N	00	33	38	6 12		
		S	N		34	40	6 7		
		eL	N		53				
		Epicentre:		00	09	34.6	59.3S	27.3W	131 km USCGS
1	ON	P	E	14	48	(11)			
	KP	P	Z	14	48	19			
	TU	P	Z	14	48	21			
		eS	Z		50	11			
	CT	P	Z	14	48	31			
		eS	Z		50	32			
	WN	eP	ZN	14	48	53			
		S	ZN		51	10			
	CB	eS	E	14	51	23			
	GP	eS	N	14	52	08			
1	SU	S	N	16	39	22	14 5		
	KP	P	Z	16	41	17			
	CT	P	Z	16	41	26			
		Epicentre:		16	36	49.9	16.4S	176.6W	437 km USCGS
1	SU	S	N	18	44	00	10 6		
	KP	P	Z	18	45	35			
	CT	eP	Z	18	45	43			
		Epicentre:		18	41	32.4	18.0S	178.3W	619 km USCGS
1	KP	eP	Z	19	11	43	6 22	1 22	3 22
	RX	eL	ZNE	19	39				
		Epicentre:		18	59	36.3	35.4N	138.8E	87 km USCGS
2	KP	eP	Z	00	39	08			
		e	Z		25				
	RX	eL	ZNE	01	04		2 22		
		Epicentre:		00	26	06.2	52.ON	170.9W	39 km USCGS
2	RX	eL	NE	03	54.7		9 11	9 12	
		eL	Z		55.5				
	WN	eL	ZN	03	57.5		4 10	9 15	
		Epicentre:		03	46	36.8	56.6S	147.1E	41 km USCGS
2	KP	eP	Z	06	21	39			
	SU	eL	N	06	25	47	4 15		
		Epicentre:		06	18	59.9	28.6S	176.5W	23 km USCGS
4	KP	P	Z	02	43	50			
4	KP	eP	Z	03	28	26			
		Epicentre:		03	17	24.6	30.ON	138.3E	492 km USCGS
4	KP	P	Z	10	02	05			
	RX	eL	NE	10	34				
		Epicentre:		09	49	10.7	51.4N	178.1W	35 km USCGS
4	KP	P	Z	13	39	08			
	WN	eP	Z	13	39	39			
4	SU	S	N	18	44	19	4 3		
	KP	P	Z	18	46	23			
	WN	eP	Z	18	46	52			

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
SEP		e	Z	47	01				
		Epicentre:		18	42	00.9	18.4S	175.7W	450 km USCGS
5	SU	eL	N	00	51				
	ON	eP	E	00	51	31	9 12		
	KP	P	Z	00	51	41			
	WN	eL	ZN	01	00				
	RX	eL	ZNE	01	03				
		Epicentre:		00	46	29.6	16.2S	172.6W	49 km USCGS
5	KP	e(PKP)	Z	01	00	46			
		Epicentre:		00	39	30.3	38.4N	23.5E	25 km USCGS
5	RX	eL	ZNE	12	30				
		Epicentre:		11	34	37.3	59.8N	150.6W	44 km USCGS
5	KP	P	Z	22	37	46			
		Epicentre:		22	33	34.6	20.2S	175.8W	181 km USCGS
6	KP	eP	Z	08	24	31			
		Epicentre:		08	14	17.4	2.8N	125.8E	58 km USCGS
6	SU	eL	N	12	26.7				
	KP	eP	Z	12	27	27	3 11		
7	KP	eP	Z	02	49	39			
		Epicentre:		02	46	43.9	24.5S	180.0	600 km USCGS
8	KP	P	Z	02	46	52			
	CT	eP	Z	02	47	02			
		Epicentre:		02	41	49.1	16.2S	175.0W	153 km USCGS
8	KP	P	Z	08	32	51			
		Epicentre:		08	29	03.5	20.1S	177.5W	552 km USCGS
8	RX	P	ZN	11	38	18 un	45 9	28 11	
		ePP	Z		41	14	30 8		7.2
		eS	NE		48	06		21 26	7.6
		i	N		48	40		31 11	7.2
		e	ZE		49	00			
		eL	N	12	03		27 17	110 40	
		M	ZN		09		103 20	80 18	
	GP	eP	N	11	38	23			
	KM	eP	X	11	38	32			
	WN	iP	Z	11	38	35 dn	37 7		
		iP	NE		35	dn			7.2
		eIPP	ZN		41	45	15 8	12 10	7.3
		iS	ZN		48	35	6 10	11 5	7.4
		PS	ZN		49	20	7 12	12 6	7.2
		eSS	ZN		53	10	7 12	11 13	
		e	Z		58		9 13		
		L	ZN	12	04.7		170 44	150 45	
		M	ZN		07.5		58 22	69 23	
	CB	eP	E	11	38	36			
		i	E		43				
		eS	E		48	34			
	TU	eP	Z	11	38	44			
	CT	P	Z	11	38	45 u			
		eS	Z		48	58			
	KP	iP	Z	11	38	51 d			
		p'p'	Z	12	05	01			
		pp'p'	Z		31				
		ePKSP'	Z		08	19			
	ON	P	E	11	39	02			
	SU	P	N	11	40	13			
		eS	N		51	08		3 8	
		iPS	N		53	43		19 15	
		eSS	N		59	30		24 10	
								28 16	

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
SEP	eL	N	12	15		56.1S	200 40	125 km	USCGS	
	Epicentre:		11	26	32.8		27.3W			
8	KP	P	Z	12	00	18				
8	KP	P	Z	12	46	36	25.1S	179.1W	450 km	USCGS
	Epicentre:		12	45	36.2					
10	KP	eP	Z	02	53	14	31.3S	178.1W	50 km	USCGS
	Epicentre:		02	51	05.9					
10	KP	e(P)	Z	11	51	03				
10	KP	P	Z	14	50	02	19.3S	175.8W	219 km	USCGS
	Epicentre:		14	45	43.4					
10	KP	PKP	Z	16	37	03	37.2N	36.6E	28 km	USCGS
	Epicentre:		16	17	20.0					
10	KP	eP	Z	18	20	13	17.8S	178.5W	619 km	USCGS
	Epicentre:		18	16	07.5					
11	KP	iP	Z	01	37	08 $\frac{1}{2}$ d				
	TU	P	Z	01	37	10				
	e	S	Z			37				
	TO	eP	Z	01	37	16				
	eS	S	Z			53				
	WN	eP	Z	01	37	37				
	S	ZNE	Z			38 32				
	GP	eP	N	01	38	11				
	S	N	Z			39 33				
	CB	S	E	01	38	45				
	KM	eS	X	01	39	22				
	Epicentre:		01	36	26	37.1S	177.1E	290 km	NZ(C) 5.0 NZ	
11	KP	eP	Z	20	06	57	4.1S	134.3E	19 km	USCGS
	Epicentre:		19	57	58.2					
12	SU	eS	N	00	20	31		5 8		
	KP	eP	Z	00	21	15	18.1S	177.9W	548 km	USCGS
	Epicentre:		00	17	10.9					
12	KP	iP	Z	01	18	55				
	TU	P	Z	01	19	08				
	TO	eP	Z	01	19	08				
	WN	eP	Z	01	19	23	18.3S	169.1E	208 km	USCGS
	Epicentre:		01	14	32.9					
12	KP	eP	Z	08	06	50	15.1S	173.6W	87 km	USCGS
	Epicentre:		08	01	34.9					
12	SU	eL	N	16	48	3		9 10		
12	CT	eP	Z	19	41	12				
	TO	eP	Z	19	41	12				
	KP	eP	Z	19	41	18				
	RX	eL	NE	20	08		4 20		6.0	
	Epicentre:		19	29	05.2	59.4S	29.2W	25 km	USCGS	
13	KP	eP	Z	03	13	25				
	CT	eP	Z	03	13	38				
	Epicentre:		03	05	35.9	5.6S	144.8E	100 km	USCGS	
13	KP	eP	Z	14	15	01				
	CT	P	Z	14	15	15	9.3S	112.9E	93 km	USCGS
	Epicentre:		14	04	40.1					

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
SEP	KP	P	Z	21	31	14				
	RX	eL	NE	21	51					
	Epicentre:		21	19	26.2	41.6S	73.2W	154 km	USCGS	
14	KP	ePKP	Z	06	22	27	33.6N	48.8E	30 km	USCGS
	Epicentre:		08	03	09.0					
14	SU	eS	N	18	47	5				
	KP	eP	Z	18	47	57				
	CT	eP	Z	18	48	07				
	WN	eS	ZNE	18	51	27				
	GP	eS	N	18	52	23				
	Epicentre:		18	44	47.0	23.6S	179.9W	521 km	USCGS	
15	CB	ePKP1	E	02	05	51				
	GP	ePKP1	N	02	05	52				
	KM	ePKP1	X	02	05	53				
	WN	PKP1	ZNE	02	05	55				
	e	Z	Z			06 10				
	CT	PKP1	Z	02	05	55 $\frac{1}{2}$				
	e	Z	Z			06 25 $\frac{1}{2}$				
	KP	PKP1	Z	02	05	56 $\frac{1}{2}$				
	ON	ePKP1	E	02	05	58				
	e	E	Z			06 08				
	TU	PKP1	Z	02	05	59				
	Epicentre:		01	46	08.4	35.1N	33.9E	25 km	USCGS	
15	KP	P	Z	21	28	07				
	e	Z	Z			29				
	TU	iP	Z	21	28	07				
	S	Z	Z			33 $\frac{1}{2}$				
	CT	P	Z	21	28	14				
	eS	Z	Z			49				
	TO	eP	Z	21	28	14 $\frac{1}{2}$				
	eS	Z	Z			49				
	ON	eP	E	21	28	16				
	WN	P	ZNE	21	28	37				
	S	ZNE			29 30					
	GP	eP	N	21	29	12				
	S	N	Z			30 32				
	CB	eS	E	21	29	46				
	KM	eS	X	21	30	22				
	Epicentre:		21	27	29	37.3S	177.1E	250 km	NZ(B) 5.2 NZ	
16	KP	P	Z	12	20	49 d				
	CT	P	Z	12	20	56				
	Epicentre:		12	09	49.8	28.3N	138.6E	388 km	USCGS	
16	SU	P	N	19	50	50 n				
17	KP	ePKP	Z	05	49	44	37.6N	57.3E	25 km	USCGS
	Epicentre:		05	30	07.3					
17	KP	eP	Z	08	54	05				
	CT	P	Z	08	54	06				
	i	Z	Z			16				
	TU	e(P)	Z	08	54	10				
	Epicentre:		08	41	53.6	23.9N	122.2E	35 km	USCGS	
17	SU	eS	N	23	34	00				
	e(PoS)	N	Z			50				
	Epicentre:		23	22	06.3	5.9S	147.4E	45 km	USCGS	
18	RX	P*	ZNE	00	10	00 dn				
	S*	ZNE	Z			18				
	KM	ePn	X	00	10	08				
	eP*	X	Z			13				
	eS*	X	Z			40				

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
SEP 27	ON	eP	E	06	37	58			
		s	E	41	07				
	KP	P	Z	06	38	12			
	TU	P	Z	06	38	13			
	CT	P	Z	06	38	19			
	WN	P	ZNE	06	38	39			
		esP	Z	40	50				
		eS	ZNE	42	23				
		ScP	ZN	44	50				
		iScS	ZNE	48	38		9 5		
	CB	eP	E	06	38	43			
		s	E	42	24				
	KM	eP	X	06	38	57			
		eS	X	42	49				
	GP	P	N	06	39	04			
		eS	N	43	02				
		ScS	N	48	50				
	Epicentre:			06	34	03.7	17.4S	178.7W	576 km USC GS
27	WN	P	Z	12	19	33			
	CT	iP	Z	12	19	44 u			
	TU	eP	Z	12	19	44			
	KP	P	Z	12	19	49			
	RX	eL	NE	12	50				
	Epicentre:			12	07	39.2	59.4S	24.2W	110 km USC GS
28	GP	eP	N	01	35	25			
	WN	P	Z	01	35	30			
	KP	P	Z	01	35	31			
	TU	ep	Z	01	35	39			
	ON	(P)	E	01	35	48			
	Epicentre:			01	23	59.6	3.9S	102.0E	78 km USC GS
28	TU	P	Z	02	24	57			
	i	Z	Z	25	58				
	S	Z	Z	25	17				
	KP	P	Z	02	25	12			
	CT	P	Z	02	25	14			
	WN	P	ZNE	02	25	35			
		S	ZNE	26	25 $\frac{1}{2}$				
	CB	eP?	E	02	25	51			
		S	E	26	52				
	GP	eP	N	02	26	21			
		S	N	27	29				
	KM	S	X	02	27	31			
	Epicentre:			02	24	30	38.2S	178.7E	140 km NZ(C) 5.0 NZ
28	KP	eP	Z	17	44	26			
	CT	P	Z	17	44	35			
	TU	eP	Z	17	44	38			
	Epicentre:			17	37	10.1	5.5S	152.2E	113 km USC GS
29	KP	eP	Z	05	37	0			
	TU	e	Z	05	37	.1			
		eS	Z	38	48				
	CT	eP	Z	05	37	.6			
		eS	Z	39	15				
	WN	eS	ZNE	05	39	54			
	GP	eS	N	05	40	59			
	Epicentre:			05	34	51.7	30.2S	177.7W	58 km USC GS
29	KP	eP	Z	11	27	13			
	CT	P	Z	11	27	25			
	Epicentre:			11	24	04.8	23.6S	179.6W	589 km USC GS
29	KP	P	Z	19	16	25			
	dP	Z	Z	46					

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
SEP	WN	P	ZNE	19	16	31			
	TU	P	Z	19	16	34			
		pP	Z	57					
	RX	eL	NE	19	31				
	Epicentre:			19	06	13.4	0.5N	122.4E	5 30 110 km USC GS
30	SU	eP	N	15	48	09			
		S	N	37					
OCT 1	KP	eP	Z	07	47	44			
		e	Z	48	42				
	CT	e(P)	Z	07	48	03			
	Epicentre:			07	44	16.0	22.2S	172.8E	122 km USC GS
2	ON	P	E	05	54	45 $\frac{1}{2}$ e			
		e	E	53					
		e	E	55	10				
		e(S)	E	41					5.0
	KP	P	Z	05	54	54 d			
		e	Z	57	41				
	CT	P	Z	05	55	08			
		e	Z	56	24				
	TO	eP	Z	05	55	08			
		e	Z	12					
	WN	e?	Z	05	55	49			
		e	ZNE	57					
		e	N	56	00				
		e	N	43					
		e?	N	57	01				
		e	N	10					5.4
		e	N	58	18				
		e(L)	ZN	39					
	CB	e?	E	05	55	50			
		e	E	55					
	KM	e	X	05	56	30			
	GP	e(S)	N	05(58)					
	RX	eL	NE	06	00				
		eL	Z	02					
		M	N	03					
	Epicentre:			05	53.6		33 $\frac{3}{4}$ S	179 $\frac{1}{2}$ E	N NZ(D) 5.2 NZ Additional readings from Charters Towers and Raoul I. used to determine epicentre.
2	KP	e	Z	06	12	35			
	ON	e	E	06	13	10			
2	KP	eP	Z	06	32	31			
		epP	Z	44					
	CT	P	Z	06	32	31			
	TO	eP	Z	06	32	31			
		e	Z	49					
	Epicentre:			06	21	32.8	7.6S	107.0E	85 km USC GS
2	KP	e?	Z	06	49	55			
	CT	P	Z	06	50	31			
	TO	e	Z	06	50	33			
		e	Z	51	02				
2	ON	eP	E	07	03	46			
		e	E	54					
		e	E	04	01				
		eS	E	36					
	KP	P	Z	07	03	54 d			5.2
	CT	P	Z	07	04	08 d			
		e	Z	13					
	TO	P	Z	07	04	08 d			
		e	Z	13					

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
OCT	WN	e?	Z 07 04 48				
		e	ZNE 51				
		e	N 05 14				
		e	ZE 23				
		e	NE 06 06				5.4
		e(L)	ZNE 08				
		CB	e E 07 04 51				
		GP	eP N 07(05)				5.4
		KM	e X 07 05 16				
		e	X 24				
		eL	X 10				
		RX	eL NE 07 09				
		eL	Z 11				
		M	N 11				
Epicentre:			07 02.7	34S	179E	N NZ(D)	5.3 NZ
Additional readings from Charters Towers and Raoul I. used to determine epicentre.							
2	KP	P	Z 12 01 24				
	CT	e?	Z 12 01 30				
	TO	e	Z 12 01 34				
Epicentre:			11 52 33.8	1.5S	138.3E	41 km	USCGS
2	KP	P	Z 13 08 22				
Epicentre:			13 02 59.8	13.4S	167.7E	62 km	USCGS
2	KP	P	Z 15 31 26				
	ON	e(P)	E 15 31 27				
	CT	e(P)	Z 15 31 43				
	TO	e	Z 15 31 50				
2	KP	P	Z 19 10 26				
3	KP	P	Z 06 08 27				
	e	Z 40					
	TU	eP	Z 06 08 42				
	CT	eP	Z 06 08 42				
	TO	eP	Z 06 08 42				
Epicentre:			06 03 40.1	17.6S	167.5E	33 km	USCGS
3	KP	eP	Z 18 31 05				
	CT	e(P)	Z 18 31 20				
	RX	eS	N 18 36 34				
	eL	ZNE 40					
	WN	eL ZN 18 38					
	M	ZN 39					
Epicentre:			18 27 05.3	20.5S	170.7E	39 km	USCGS
3	WN	eL	ZN 19 17				
	RX	eL	N 19 17				
3	ON	P	E 22 23 58				
	eS	E 25 19					
	KP	P	Z 22 24 08				
	e	Z 25 12					
	TU	e(P)	Z 22 24 08				
	e	Z 25 32					
	e(S)	Z 35					
	CT	P	Z 22 24 18				
	e	Z 35					
	eS	Z 25 53					
	WN	eP	Z 22 24 41				
	e	Z 26 23					
	eS	ZNE 36					
	CB	e(P)	E 22 24 48				
	e	E 26 45					
	e(S)	E 49					
Epicentre:			22 22 15.6	31.4S	179.6W	372 km	USCGS

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
OCT	4	ON	eP E 02 28 35				
		KP	eP Z 02 28 53				
			ePcS	Z 36 02			
	CT	eP Z 02 29 00					
			ePcS	Z 36 04			
	TU	eP Z 02 29 04					
			e?	Z 33 43			
			ePcS	Z 36 04			
	TO	e Z 02 29 09					
			ePcS?	Z 36 05			
	WN	ePP N 02 30 20					
			eS?	N 34 10			
			eL	ZN 39.3	10 19	9 17	
			eLq	NE 02 37		5 20	6 17
		eLr	Z 39	8 18			
Epicentre:			02 23 23.5	13.2S	166.5E	66 km	USCGS
4	KP	eP	Z 03 25 56				
	CT	e(P)	Z 03 26 24				
		eS	Z 28 33				
	TO	e(P)	Z 03 26 29				
	TU	eS	Z 03 28 14				
Epicentre:			03 23 18.3	28.5S	176.7W	100 km	USCGS
4	KP	eP?	Z 04 19 58				
Epicentre:			04 15 46.6	19.1S	176.7W	211 km	USCGS
4	KP	eP	Z 07 11 49				
	CT	eP	Z 07 11 58				
	TO	e	Z 07 11 59				
	TU	eS	Z 07 15 07				
Epicentre:			07 08 09.2	21.2S	177.8W	475 km	USCGS
4	KP	eP	Z 21 34 11				
	CT	eP	Z 21 34 24				
Epicentre:			21 29 15.0	17.6S	173.4W	80 km	USCGS
5	SU	eP	N 18 11 09				
	ON	eP	E 18 12 36				
	KP	eP	Z 18 13 06				
	TU	eP	Z 18 13 20				
	eS	Z 17 14					
	CT	eP	Z 18 13 20				
	eS	Z 17 58					
	TO	eP	Z 18 13 20				
	CB	e?	E 18 13 36				
	GP	eP	N 18 13 58				
Epicentre:			18 08 43.4	19.4S	169.0E	58 km	USCGS
5	KP	eP	Z 19 38 02.1				
Epicentre:			19 27 45.5	18.6N	146.9E	47 km	USCGS
6	SU	eS	N 18 47 00				
	ON	eP	E 18 48 50				
	KP	eP	Z 18 49 03				
	TU	eP	Z 18 49 05				
	CT	eP	Z 18 49 11				
	TO	eP	Z 18 49 12				
	WN	eP	Z 18 49 31				
	KM	e?	X 18 49 54				
Epicentre:			18 44 28.6	16.1S	176.3W	361 km	USCGS
6	ON	eP	E 19 43 52				
	KP	iP	Z 19 44 11				
	e?	Z 13					
	TU	eP	Z 19 44 22				
	TO	eP	Z 19 44 23				
Epicentre:			19 39 12.6	15.4S	167.8E	161 km	USCGS

Date	STN	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.	
OCT 8	ON	eP	E	23	51	16					
	KP	eiP	Z	23	51	26				u	
		e	Z			31					
	CB	eP	E	23	51	26					
	KM	e?	X	23	51	28					
		eP	X			34					
	TO	eP	Z	23	51	30					
	WN	eP	ZNE	23	51	33					
	GP	eP	N	23	51	34					
	TU	eP	Z	23	51	35 $\frac{1}{2}$					
	Epicentre:			23	41	32.2	1.6N	127.3E	102 km	USCGS	
	9	KP	eP	Z	11	10	13				
		Epicentre:			11	04	45.6	13.2S	167.8E	26 km	USCGS
	10	SU	eP	N	01	53	20				
e(s)		N				55					
10	ON	eP	E	03	47	40					
		e?	E			50					
		eS	E			14					
	KP	eP	Z	03	47	54					
		eS	Z			50					
	TU	eP	Z	03	47	58					
		e(s)	Z			50					
		e(s)	Z			16					
	CT	eP	Z	03	48	06					
		eS	Z			50					
	WN	eP	ZE	03	48	26					
		e?	ZE			49					
		e?	ZE			51					
		eS	ZE			32					
	CB	eP	E	03	48	29					
	KM	eP	X	03	48	43					
		eS	X			52					
	Epicentre:			03	44	38.3	22.9S	180.0	576 km	USCGS	
	10	ON	eP	E	08	32	40				
KP		eP	Z	08	32	57					
TO		eP	Z	08	33	06					
TU		eP	Z	08	33	09					
WN		e?	Z	08	33	17					
KM		eP	X	08	33	17					
Epicentre:				08	25	54.6	5.4S	154.3E	154 km	USCGS	
10	KP	eP	Z	17	33	34					
	CT	eP	Z	17	33	39					
	TO	eP	Z	17	33	39					
	WN	eP	Z	17	33	43					
		eL	N			52					
		eL	Z			54		3 15			
	TU	eP	Z	17	33	44					
	RX	eL	NE	17	45						
		eL	Z			52					
	Epicentre:			17	24	58.9	4.7S	138.2E	36 km	USCGS	
10	SU	e(s)	N	18	47	05					
	ON	eP	E	18	48	50					
	KP	eP	Z	18	49	03					
	TU	eP	Z	18	49	05					
		eS	Z			53					
	CT	eP	Z	18	49	11					
	TO	eP	Z	18	49	12					
	WN	eP	ZE	18	49	31					
		eScS	ZE	19	00	23					
	KM	e?	X	18	49	54					
	GP	e?	N	18	50						
Epicentre:			18	44	28.6	16.1S	176.3W	361 km	USCGS		

Date	STN	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
OCT 11	ON	eP	E	00	32	14				
	TU	eP	Z	00	32	15 $\frac{1}{2}$				
		e	Z			34				
		e	Z			17				
	KP	eP	Z	00	32	22				
		e	Z			33				
		e	Z			34				
	TO	eP	Z	00	32	37				
		e	Z			34				
	CT	eP	Z	00	32	(40)				
	WN	eP	Z	00	33	00				
		e	ZE			06				
		eS	ZE			35				
	GP	eP	N	00	33					
		eS	N			36				
	KM	eP	X	00	33	34				
		eS	X			36				
	CB	eS	E	00	35	46				
	Epicentre:			00	29	36.4	28.8S	175.9W	88 km	USCGS
11	KP	eP	Z	09	33	59 $\frac{1}{2}$				
	TU	eP	Z	09	34	11				
	TO	eP	Z	09	34	11				
	CT	eP	Z	09	34	12				
	WN	eP	Z	09	34	27				
Epicentre:			09	28	17.7	11.6S	166.3E	52 km	USCGS	
11	KP	eP	Z	14	50	15				
11	ON	eP	E	16	06	58				
	KP	eP	Z	16	07	13				
		e	Z			16				
	TU	eP	Z	16	07	18				
		eS	Z			09				
	CT	eP	Z	16	07	27				
		e(s)	Z			10				
	TO	eP	Z	16	07	27				
		e	Z			29				
		e(s)	Z			10				
WN	eP	ZE	16	07	47					
	eS	ZE			10					
Epicentre:			16	04	18.0	24.5S	179.8E	560 km	USCGS	
11	KP	eP	Z	22	07	21				
	TU	eP	Z	22	07	30				
	CT	eP	Z	22	07	32				
	Epicentre:			22	01	37.9	10.5S	165.9E	135 km	USCGS
12	TU	eP	Z	00	17	31				
		eS	Z			18				
	KP	eP	Z	00	17	35				
	ON	eP	Z	00	17	38				
	CT	e?	Z	00	18	00				
	e(P)	Z			06					
12	KP	eP	Z	03	53	07				
	TU	eP	Z	03	53	17				
	CT	eP?	Z	03	53	18				
	Epicentre:			03	42	50.9	5.4N	126.0E	124 km	USCGS
12	KP	eP	Z	05	35	25				
	TU	eP	Z	05	35	26				
		eS	Z			36				
	CT	eP	Z	05	35	35				
		eS	Z			37				
	TO	eP	Z	05	35	37				
		e	Z			37				
		e	Z			18				
	ON	eS	E	05	36	32				
	WN	eS	ZE	05	38	46				

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
OCT 12	CT	eP	Z	06	09	43			
	TO	eP	Z	06	09	46			
	KP	eP	Z	06	09	48			
	WN	eP	E	06	10	02½			
	RX	eL	N	06	25				
		eL	ZE		29				
Epicentre:			06	01	25.5	2.9S	144.9E	25 km	USCGS
12	ON	eP	E	07	38	02			
	KP	eP	Z	07	38	13			
	TU	eP	Z	07	38	16			
		e(s)	Z		39	30			
	CT	eP	Z	07	38	31			
		e	Z		39	56			
	WN	eP	ZE	07	38	48			
		eS	ZE		40	35			
	CB	eS	E	07	40	52			
	KM	eS	X	07	41	32			
Epicentre:			07	36	30				
32.0S 179½E N? NZ(D) 5.6 Mz Additional readings from Raoul I. and Charters Towers used to determine epicentre.									
12	KP	eP	Z	08	31	34			
	CT	eP?	Z	08	31	42			
	RX	eL	ZNE	08	47				
	Epicentre:			08	24	10.0	5.6S	151.9E	41 km
Felt: Gavin and Rabaul									
12	RX	eL	E	22	05	.1			
		eL	N		05	.8			
		eL	Z		06	.1	1 18		
	WN	eL	ZN	22	11				
	Epicentre:			21	57	35.0	60.7S	153.8E	25 km
13	KP	e(P)	Z	01	49	17			
		e(s)	Z		51	54			
13	TO	eP	Z	05	11				
	WN	e?	ZE	05	11	04			
		e(P)	ZE		15				
	KM	eP	X	05	11	15			
	CB	eP?	E	05	11	21			
	CT	eP	Z	05	11	25½			
	TU	eP	Z	05	11	27			
	KP	eP	Z	05	11	30			
	RX	eL	NE	05	37				
		eL	Z		05	40			
Epicentre:			04	59	04.8	55.9S	27.2W	67 km	USCGS 5½-5½ Mz
13	WN	eP?	Z	10	58	38			
	TO	eP	Z	10	58	43			
	CT	eP	Z	10	58	43			
	KP	eP	Z	10	58	49			
	RX	eL	N	11	22				
		eL	E		25				
	eL	Z		30					
Epicentre:			10	46	47.7	60.3S	34.3W	44 km	USCGS 5½-5½ Mz
13	SU	IP	N	17	29	54 n			
		eS	N		31	03			
	KP	eP	Z	17	32	13			
	TU	eP	Z	17	32	15			
		e(s)	Z		35	13			
	TO	eP	Z	17	32	25			
		e(s)	Z		35	41			
	CT	eP	Z	17	32	26			
		e(s)	Z		35	37			
	WN	eP	ZE	17	32	45			

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
OCT	CB	eP	E	17	32	55			
		eS	E		36	31			
	KM	eP	X	17	33	12			
		eS	X		37	00			
	RX	eL	NE	17	40				
	Epicentre:			17	28	21.5	22.0S	176.9W	155 km
Felt: Nukualofa, Tonga.									
14	GP	e	N	16	(18)				
	WN	e?	Z	16	18	01			
		e?	Z			06			
		e(P)	Z			54			
		e	N		23	15			
		eL	ZN		26	0			
	ON	eP	E	16	18	04	4 18	4 15	
	KP	eP	Z	16	18	21			
	CT	eP	Z	16	18	34			
	TO	eP	Z	16	18	35			
TU	eP	Z	16	18	36				
RX	eLq	N	16	24	.3			2 19	
	eLq	E		25	.7				
	eLr	Z		27	.6			4 20	
Epicentre:			16	13	48.7	3 17 19.1S	168.4E	28 km	USCGS
Felt: Port Vila									
14	KP	eP	Z	22	48	52			
	CT	eP	Z	22	49	10			
	TO	e	Z	22	49	24			
		e?	Z		50	25			
	ON	e	E	22	49	51			
		e	E		57				
WN	e	E	22	51	06				
16	KP	eP	Z	03	31	56			
	TU	eP	Z	03	31	58			
		eS?	Z		35	34			
Epicentre:			03	27	44.1	19.9S	176.1W	224 km	USCGS
17	RX	eLq	E	05	00	.5			
		eL	N		07	.0			
		e(Lr)	Z		08	.7			
		e(Lr)	E		09	.3	5 20	3 22	
	WN	e	N	05	09	.8			2 14
		e(Lr)	Z		12	.0			
Epicentre:			04	27	33.5	4 19 55.8S	0.5E	25 km	USCGS
18	ON	eP	E	02	52	12			
	KP	eP	E	02	52	14			
	TU	eP	Z	02	52	15			
		eS	Z		53	59			
	TO	eP	Z	02	52	26			
	CT	eP	Z	02	52	29			
	WN	eP?	Z	02	53	09			
		eS	ZNE		55	05			
	CB	eP?	E	02	53	17			
		eS	E		55	23			
KM	eS	X	02	56	01				
RX	eL	NE	02	59	½				
	eL	Z		03	00.8				
Epicentre:			02	49	59.6	29.9S	177.6W	65 km	USCGS
Felt: Raoul I. MM6-7									
18	KP	eP	Z	04	00	16			
	TU	eP	Z	04	00	19			
		e(S)	Z		03	09			
	TO	eP	Z	04	00	26			
	Epicentre:			03	56	30.1	20.0S	177.7W	519 km
18	KP	eP	Z	07	35	46			
	Epicentre:			07	31	39.3	17.4S	178.6W	576 km

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
OCT 18	TU	eP	Z	17	04	10				
	RX	eP	Z	17	04	12				
		eS	ZNE		14	08				
		e(SS)	NE		19	06		6 14	10 13	
		eLq	NE		25.7			9 28	9 18	
		eLr	ZNE		28.8					
	CT	eP	Z	17	04	13	17 35	13 17	24 18	
		ePP	Z		07	24				
	WN	eP	ZNE	17	04	15				
		e(S)	ZN		14	08				
		eScS	ZN		39					
		e	N		18	12				
		eLq	N		25.7					
		eLr	ZN		28.9					
KP	eP	Z	17	04	17	13 17	10 16			
	ePP	Z		07	34					
CB	eP	E	17	04	24					
KM	eP	X	17	04	25					
	Epicentre:		16	52	00.2	36.7S	72.6W	67 km	USCGS 6½ PAS	
18	CT	eP	Z	18	22	45				
	KP	eP	Z	18	22	48				
		Epicentre:		18	10	30.4	36.9S	73.5W	55 km	USCGS
19	RX	e(L)	E	09	11.8					
		eL	NE		20.6					
	WN	eL	Z	09	25.5					
	Epicentre:		08	31	29.3	36.9S	72.7W	61 km	USCGS	
19	TU	eP	Z	11	31	26				
		epP	Z		32	02				
	CT	eP	Z	11	31	29				
		epP	Z		32	07				
	TO	eP	Z	11	31	29				
		epP	Z		32	09				
	CB	eP	E	11	31	31				
	KP	eP	Z	11	31	33				
		epP	Z		32	10				
	KM	eP	X	11	31	33				
		Epicentre:		11	19	19.6	37.1S	69.8W	155 km	USCGS 6½ PAS
	19	KM	eP	X	19	31	25			
		WN	eP	Z	19	31	38			
		e(S)	N		36	00				
		e(PcP)	Z		14					
		eL	ZN		38					
CT		eP	Z	19	32	00	7 16	6 11		
TU		eP	Z	19	32	07				
RX		eLq	NE	19	34.1			9 12	12 12	
		eLr	Z		35.0					
		Epicentre:		19	26	32.2	55.3S	146.4E	50 km	USCGS
20	CT	iP!	Z	07	44	53				
	TO	iP	Z	07	44	53				
		eS	Z		45	16				
	WN	eP	ZNE	07	44	59				
		eS	ZNE		45	26				
	KP	iP!	Z	07	45	00				
	CB	iP	E	07	45	00				
		e(S)	E		28					
	TU	iP	Z	07	45	05				
		e(S)	Z		29					
	KM	eP	X	07	45	20				
		eS	X		46	01				
		Epicentre:		07	44	24	39.5S	174.0E	159 km	NZ(C) 5.0 NZ
21	TU	eP	Z	05	55	10				
		e(S)	Z		47					

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
OCT	KP	eP	Z	05	55	15				
	TO	eP	Z	05	55	25				
		e?	Z		56	15				
	WN	eS	ZNE	05	56	55				
	CB	eS	E	05	57	20				
	GP	eS	N	05	58(04)					
	21	SU	eS	N	11	46	06			
	ON	eP	E	11	47	31				
	KP	eP	Z	11	47	44				
	TU	eP	Z	11	47	47				
	eS	Z		50	57					
	TO	eP	Z	11	47	59				
	Epicentre:		11	43	41.3	18.0S	178.5W	618 km	USCGS	
21	ON	eP	E	17	39	54				
	KP	eP	Z	17	40	12				
	TU	eP	Z	17	40	23				
	TO	eP	Z	17	40	23				
	WN	eP	ZNE	17	40	39				
	KM	eP	X	17	40	45				
	GP	eP	N	17	40(58)					
		Epicentre:		17	34	36.8	10.8S	166.0E	192 km	USCGS
	22	SU	eP	N	09	51	45			
		eS	N		52	46				
ON	eP	E	09	54	12					
	e	E		58.0						
KP	eP	Z	09	54	37					
TU	eP	Z	09	54	50					
TO	eP	Z	09	54	53					
WN	eP	ZNE	09	55	12	4 8	4 8			
	e?	Z		56	32	2 5				
	eS	ZNE		59	14	3 10	9 10			
	e	N		44			12 11			
	e	Z		57		4 5				
	eLq	ZN	10	01.0		14 20	15 20			
	e(Lr)	ZN		03.0		8 12	14 13			
CB	eP	E	09	55	16					
KM	eP	X	09	55	36					
RX	e(Lq)	NE	10	00.4			6(10)	7 10		
	e(Lr)	ZNE		01.4			4 20	11 15		
	Epicentre:		09	50	43.6	19.9S	172.4E	181 km	USCGS 5½ BRK	
22	ON	eP	E	14	44	56				
		eS?	E		48	09				
	KP	eP	Z	14	45	08				
	TU	eP	Z	14	45	10				
		eS	Z		48	35				
	TO	eP	Z	14	45	18				
	WN	eP	Z	14	45	36				
	KM	eP	X	14	46	01				
		Epicentre:		14	40	56.6	17.6S	179.6W	549 km	USCGS
	22	KP	eP	Z	17	24	38			
22	SU	e(L)	N	18	44	29				
		eL	N		45	18				
	KP	eP	Z	18	45	08				
	TU	eP	Z	18	45	22				
	TO	eP	Z	18	45	24				
	RX	eL	NE	18	53					
		eL	Z		58					
	WN	eL	ZN	18	55.6					
		Epicentre:		18	40	25.4	17.7S	168.2E	41 km	USCGS
	23	RX	eP	ZE	00	20	09	5 7		
		eS	NE		29	34		3 10	6 12	
		e(ScS)	Z		30	12				

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
		eLq	E 39 36			6 22	
		e(Lq)	N 43.3				
		eLr	Z 46.2				
	GP	eP	N 00 20 15				
	WN	eP	ZN 00 20 24	4 6			
		eS	N 30 10				
		e(ScS)	N 43				
		eL	ZN 44	9 20	7 20		
	CB	eP	E 00 20 30				
	CT	eP	Z 00 20 34				
	TO	eP	Z 00 20 35				
	TU	eP	Z 00 20 35				
	KM	e(P)	X 00 20 35				
	KP	eP	Z 00 20 39				
	ON	eP	E 00 20 53				
	SU	e?	N 00 35 26				
		e	N 39 48				
		eL	N 55				
	Epicentre:		00 08 33.3	60.4S	33.4W	25 km	USCGS
23	CT	eP	Z 01 36 47				
	TO	eP	Z 01 36 47				
	KP	eP	Z 01 36 50				
		epP	Z 37 13				
	Epicentre:		01 24 00.6	28.9S	70.5W	125 km	USCGS
23	KP	e(P)	Z 02 03 57				
23	ON	eP	E 14 49 43				
	KP	eP	Z 14 49 51				
		e	Z 54				
		e(S)	Z 57 46				
	CT	eP	Z 14 49 55				
		e	Z 50 00				
		eS	Z 58 42				
	TO	eP	Z 14 49 56				
		eS	Z 58 38				
	TU	eP	Z 14 50 02				
		eS	Z 57 59				
	WN	eP	ZN 14 50 02				
		eS	N 58 24				
		eLq	ZN 15 05.7				
		eLr	ZN 13.3	10 17	9 20		
	KM	eP	X 14 50 03				
	GP	eP	N 14 50 05				
	SU	e(S)	N 14 57.0				
		eL	N 15 03.8				
	RX	eL	ZNE 14 58.4	12 18	7 18	6 17	
	Epicentre:		14 39 33.5	3.5N	126.4E	25 km	USCGS
23	KP	eP	Z 15 02 45				
	CT	eP	Z 15 02 50				
		e	Z 11 50				
		e	Z 14 46				
	TO	eP	Z 15 02 51				
		e	Z 11 57				
		e	Z 14 39				
	TU	eP	Z 15 02 55				
	Epicentre:		14 52 28.2	3.5N	126.6E	32 km	USCGS
23	TO	eP	Z 16 38 19				
	CT	eP	Z 16 38 20				
		e?	Z 40 34				
		e	Z 54				
	KP	eP	Z 16 38 26				
23	SU	e(L)	N 17 16.0				
	ON	eP	E 17 16 49				

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
OCT	KP	eP	Z 17 17 02				
	TU	eP	Z 17 17 04				
		eS	Z 21 14				
	CT	eP	Z 17 17 12				
	TO	eP	Z 17 17 12				
	WN	eP	Z 17 17 33				
		eS	Z 21 22				
	CB	eP	E 17 17 40				
	KM	eP	X 17 17 58				
	GP	eP	N 17 18 07				
	Epicentre:		17 11 55.3	16.8S	173.6W	49 km	USCGS
23	KP	eP	Z 19 24 41				
	Epicentre:		19 20 55.7	20.1S	177.9W	553 km	USCGS
23	KP	eP	Z 20 48 41				
	CT	eP?	Z 20 48 47				
	TU	eP	Z 20 48 50				
	ON	e	E 20 49 44				
		e	E 55 36				
	Epicentre:		20 38 23.7	3.4N	126.5E	23 km	USCGS
24	KP	eP	Z 07 37 55				
	Epicentre:		07 25 19.9	45.0N	146.4E	82 km	USCGS
24	SU	eP	N 07 36 45				
		eS	N 37(05)				
	ON	eP	E 07 40 50				
	KP	iP	Z 07 41 09 d				
	TU	eP	Z 07 41 11				
	CT	eiP	Z 07 41 22				
	TO	eP	Z 07 41 22				
	KM	eP	X 07 42 03				
	WN	eL	N 07 46.8				
	RX	eL	N 07 50				
		eL	E 51				
	Epicentre:		07 36 17.1	16.5S	178.3E	40 km	USCGS
24	KP	e(P)	Z 12 30 05				
	CT	e?	Z 12 30 05				
		e	Z 12				
	TO	e	Z 12 30 06				
24	ON	eP	E 15 40 13				
	KP	eP	Z 15 40 15				
	CT	eP?	Z 15 40 20				
		e?	Z 41 01				
	TU	eP	Z 15 40 25				
	TO	e?	Z 15 41 00				
	Epicentre:		15 30 11.9	0.3N	123.9E	130 km	USCGS
25	TU	eP	Z 12 50 26				
		eS	Z 51 26				
	KP	eP	Z 12 50 31				
	CT	eP	Z 12 50 42				
	TO	eP	Z 12 50 42				
	WN	eS	ZNE 12 52 32				
	CB	eS	E 12 52 57				
	KM	eS	X 12 53 34				
	GP	eS	N 12 53 44				
	Epicentre:		12 49 08	34.6S	179.2W	N	NZ(D) 5.3 NZ
				Additional Readings from Charters Towers and Brisbane used to determine epicentre.			
25	SU	eP	N 14 22 21				
		eL	N 24.2				
	KP	eP	Z 14 24 50				
	TU	eP	Z 14 24 51				
		eS	Z 28 39				

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
OCT	CT	eP	Z	14	25	03						
	TO	eP	Z	14	25	03						
	AK	e	N	14	28	22						
		e(L)	N		30.0							
		eL	N		31.0							
	WN	eL	N	14	31	14						
	RX	eL	N	14	33.6			8	16			
		eL	E		34.6					6	15	
		eL	Z		35.6							
		Epicentre:		14	20	20.8	20.3S		9	16	174.1W	25 km
25	SU	eL	N	22	42.0							
	Epicentre:		22	38	06.6	20.3S				173.2W	25 km	USCGS
26	CT	eP	Z	00	46	27						
	TO	eP	Z	00	46	27						
	TU	eP	Z	00	46	30						
	WN	eP	Z	00	46	33						
		e	ZN		48	48						
		e?	Z		49	30						
		eS	N		53	18						
		e(ScS)	Z		56	44						
		e(S)	N		57	00						
		e(Lq)	N		58.6				7	15		
	e(Lr)	ZN	01	00			18	20	20	16		
	SU	e	N	00	49	00						
		eS	N		50	20						
		eL	N		52.5							
	RX	eS	ZNE	00	53	36		5	12	9	20	
		eLr	ZNE	01	00.5			16	17	13	18	
	Epicentre:		00	38	20.3	3.1S				147.4E	14 km	USCGS 6 1/2 PAS BX
26	SU	eP	N	01	08	53						
		eS	N		09	32						
26	TU	eP	Z	11	16	17						
	CT	eP	Z	11	16	18						
	TO	eP	Z	11	16	19						
	SU	eL	N	11	18	26						
		Epicentre:		11	11	26.2	17.9S				167.7E	124 km
26	CB	eP	E	15	39	03						
	CT	eP	Z	15	39	12						
		e	Z		46	01						
	TO	eP	Z	15	39	12						
		e	Z		46	01						
	TU	eP	Z	15	39	15						
		e	Z		45	48						
	SU	e	N	15	46							
	RX	eS	NE	15	48	38						
		eL	ZNE	16	07.6			4	20	3	19	6
	WN	eS	N	15	49	07						
		eL	Z	16	10.0			7	22			
		eL	ZN	12.6				3	21	3	20	
	Epicentre:		15	27	02.0	0.4S				98.6E	87 km	USCGS
26	CT	e(P)	Z	19	40	27						
	TO	eP	Z	19	40	41						
	Epicentre:		19	28	37.3	0.3S				98.5E	58 km	USCGS
27	KP	eP	Z	02	41	57						
	CT	e?	Z	02	42	02						
	TU	eP	Z	02	42	11						
	SU	e(L)	N	02	43	51						
	RX	eL	NE	02	53							
	Epicentre:		02	37	10.4	17.9S				167.7E	17 km	USCGS
28	SU	e	N	01	37	21						

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.				
OCT	KP	e	Z	01	39	03										
	TU	e	Z	01	39	03										
	Epicentre:		01	34	59.5	17.7S				178.5W	605 km	USCGS				
28	KP	eP	Z	06	06	20										
	CT	eP	Z	06	06	30										
	TU	eP	Z	06	06	31										
	TO	eP	Z	06	06	31										
	SU	e(S)	N	06	06	40										
	RX	eL	N	06	17											
	Epicentre:		06	00	33.7	11.6S				1	22	166.4E	34 km	USCGS		
28	KP	eP	Z	06	24	39										
	TU	eP	Z	06	24	53										
		e?	Z		32	24										
	CT	eP	Z	06	24	55										
	TO	eP	Z	06	24	55										
	Epicentre:		06	20	00.8	18.7S				168.9E	25 km	USCGS				
28	SU	e(S)	N	06	50	20										
	KP	eP	Z	06	51	59										
	Epicentre:		06	48	08.8	18.9S				178.1W	531 km	USCGS				
28	KP	eP	Z	09	27	10										
	Epicentre:		09	22	39.9	20.3S				174.1W	76 km	USCGS				
28	SU	eP	N	17	39	08										
	e?	N			32											
28	SU	e(P)	N	22	47	47										
		e(L)	N		50	08										
	ON	eP	E	22	49	39										
	KP	eP	Z	22	49	57										
	TU	eP	Z	22	50	08										
	CT	eP	Z	22	50	09										
	TO	eP	Z	22	50	09										
	GP	eP	N	22	50	41										
	RX	e(PP)	N	22	52	02										
		eS	N		56	08										
		e	E		58	12										
		e(Lq)	E		59.8											
		e(Lq)	N	23	00.5											
		eLr	Z		02.6											
		M	ZNE		06 1/2						1	13	9	14	18	13
		WN	eL	N	22	59.0										
	Epicentre:		22	44	33.6	13.9S				166.0E	89 km	USCGS				
28	KP	eP?	Z	23	36	44										
	Epicentre:		23	31	32.7	13.9S				166.3E	225 km	USCGS				
29	KP	eP?	Z	02	27	51										
	Epicentre:		02	22	20.5	13.7S				165.7E	25 km	USCGS				
29	RX	eL	N	10	01.8											
30	ON	eP?	E	17	37	29										
	KP	eP	Z	17	37	31										
	CT	eP	Z	17	37	39										
		eS	Z		39	48										
	TO	eP	Z	17	37	44										
		eS	Z		39	48										
	WN	eP	ZNE	17	38	04										
		eS	ZNE		40	26										
	KM	eP	X	17	38	39										
		eS	X		41	19										
GP	eP	N	17	38	42											
	eS	N		41	31											
CB	eS	E	17	40	49											
	Epicentre:		17	35	03.3	28.5S				178.1W	219 km	USCGS				

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
OCT 30	KP	eP	Z	21	27	12				
	TU	eP?	Z	21	27	17				
	CT	eP	Z	21	27	17				
	TO	eP	Z	21	27	17				
	CB	eP	E	21	27	51				
	Epicentre:			21	15	35.2	28.9N	141.8E	80 km	USCGS
	31	KP	e(P)	Z	01	56	50			
		Epicentre:			01	43	53.3	51.9N	171.6E	35 km
	31	ON	eP	E	03	47	42			
		TU	eP	Z	03	47	45			
KP	eS	Z		49	19					
	e	Z		54	37					
	eP	Z	03	47	47					
	iPcP	Z		54	09					
	e(pPcP)	Z			29					
CT	eP	Z	03	48	00					
	e(S)	Z		50	02					
	iPcP	Z		54	14					
	e(pPcP)	Z			39					
TO	eP	Z	03	48	00					
	e(S)	Z		49	41					
	iPcP	Z		54	14					
	e(pPcP)	Z			38					
WN	eP	E	03	48	47					
	eS	ZNE		50	26					
	e	ZNE		55	16					
GP	eP	N	03	49	02					
	eS	N		51	29					
	e	N		56	13					
CB	e(S)	E	03	50	45					
	e	E		55	28					
KM	e(S)	X	03	51	29					
	e(L)	N	03	52	8					
Epicentre:			03	46	03.2	31.2S	178.3W	232 km	USCGS	
31	KP	eP	Z	08	49	33				
	e	Z			38					
	TU	eP	Z	08	49	40				
	CT	eP	Z	08	49	40				
Epicentre:			08	39	09.2	22.2N	143.0E	264 km	USCGS	
NOV 2	KP	P	Z	05	26	45				
	Epicentre:			05	22	41.4	17.9S	178.5E	598 km	USCGS
	3	KP	P	Z	15	26	36			
		TU	eP	Z	15	26	47			
		CT	P	Z	15	26	51			
GP		eP	N	15	27	19				
Epicentre:			15	20	44.5	10.5S	165.8E	66 km	USCGS	
3	KP	eP	Z	21	10	24				
	Epicentre:			21	05	49.7	20.0S	173.8E	25 km	USCGS
3	KP	eP	Z	22	06	41				
	Epicentre:			22	06	41				
3	KP	eP	Z	22	19	35				
	CT	eP	Z	22	19	44				
	SU	L	N	22	20	10	17 10			
	WN	eL	Z	22	25					
	RX	eL	NE	22	29					
	Epicentre:			22	15	46.1	22.5S	170.2E	91 km	USCGS
4	KP	P	Z	03	13	09				
	TU	P	Z	03	13	20				
	GP	eP	N	03	13	21				
	Epicentre:			03	04	21.2	2.9S	137.2E	51 km	USCGS

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
NOV 5	GP	eP	N	23	58	19				
	eS	N		59	40					
	KM	eP	X	23	58	27				
	eS	X		59	55					
	RX	eS	ZNE	23	58	36			5 14	10 14
		eL	NE		59	06				
	CB	eL	Z	00	00	15	4 10			
		eP	E	23	58	48				
		eS	E	00	00	35				
	TU	eP	Z	23	59	51				
WN	eS	N	00	00	58					
Epicentre:			23	56	25.4	49.4S	163.3E	35 km	USCGS	
6	SU	P	N	05	31	30			18 9	
	S	N		33	50				75 23	
ON	eP	E	05	33	43					
	e	E		34	10					
TU	eP	Z	05	34	00					
GP	eP	N	05	34	42				5.9	
	e(P)	Z	05	35	10	2 7				
WN	e	Z		40	12	4 14				
	eL	Z		44	2	20 17				
	S	N	05	38	07					
RX	eLq	N	05	40						
Epicentre:	eLr	ZE		43				9 30		
	M	NE		48				8 16		
			05	28	39.3	13.3S	166.0E	210 km	USCGS	
7	ON	e	E	12	17	51				
	KP	eP	Z	12	17	51				
WN	e	Z		18	05					
	P	Z	12	18	48					
SU	eL	Z		24		3 18				
	eL	N	12	20				16 13		
TU	eS	Z	12	20	09					
AK	eL	N	12	21						
GP	eS	N	12	22	27					
RX	eL	NE	12	26				2 20	3 20	
	eL	Z		27 ¹		4 18			5.3	
Epicentre:			12	15	03.6	26.9S	176.3W	54 km	USCGS	
7	TU	P	Z	21	11	12 ¹				
	i	Z			32					
ON	S	N		12	24					
	eP	E	21	11	14					
KP	i	E		18						
	eP	Z	21	11	15					
TO	eP	Z	21	11	30					
WN	e	Z		39						
	S	ZNE	21	13	30					
CB	eL	Z		42						
	eL	Z	21	15	3					
KM	eS	E	21	13	51					
	e(S)	X	21	14	34					
GP	S	N	21	14	37					
RX	eL	NE	21	18						
	eL	Z		19 ¹						
Epicentre:			21	09	56	34.4S	179.4W	S	NZ(D) 5.4 NZ	
8	KP	eP	Z	19	37	23				
	Epicentre:			19	28	39.9	3.9S	136.2E	54 km	USCGS
8	KP	eP	Z	22	49	57				
	Epicentre:			22	37	17.9	29.3S	70.7W	61 km	USCGS
9	SU	eP	N	01	11	27			6 3	
	eL	N		13	5				43 10	

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Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
NOV	KP	eP	Z	01	13	06				
		i	Z			10				
	TO	eP	Z	01	13	22				
	TU	eP	Z	01	13	24				
	GP	eP	N	01	14	05				
	WN	eL	Z	01	19	1/2	13 16			
	RX	eL	E	01	20			4 20		
		eL	ZN		21	1/2			5.5	
		Epicentre:		01	09	16.0	22.0S	170.1E	33 km	USCGS
	9	KP	eP	Z	04	32	56			
	epP	Z		33	30					
	Epicentre:		04	19	42.0	22.9S	67.9W	84 km	USCGS	
9	KP	eP	Z	17	45	09				
	SU	eL	N	17	46					
	Epicentre:		17	39	42.8	13.7S	165.7E	92 km	USCGS	
9	KP	P	Z	18	46	18				
	CT	P	Z	18	46	22				
	Epicentre:		18	37	11.8	5.9S	129.8E	87 km	USCGS	
9	SU	IS	N	23	09	58				
	KP	ep	Z	23	11	42		8 6		
	Epicentre:		23	06	55.5	15.8S	174.9W	289 km	USCGS	
10	KP	eP	Z	07	38	44				
	CT	P	Z	07	38	49				
	Epicentre:		07	30	00.6	2.5S	138.3E	52 km	USCGS	
10	SU	eL	N	12	04			9 10		
10	SU	eP	N	18	02	10				
	IS	N		03	12					
	ON	P	E	18	04	42				
		eS	E	18	07	54				
	KP	P	Z	18	04	54				
		e	Z		06	14				
		e	Z		07	26				
10	TU	ep	Z	18	04	58				
	TO	eP	Z	18	05	03				
	WN	p	Z	18	05	22				
	GP	ep	N	18	05	47				
	AK	S	N	18	08	05				
	Epicentre:		18	00	49.6	17.5S	178.8W	586 km	USCGS	
12	SU	eL	N	01	05	1/2		9 10		
12	RX	P*	ZNE	10	15	45			dw	
		S*	ZNE		16	02			unw	
	KM	eP	X	10	16	16				
		eS	X			59				
	GP	eP	N	10	16	17				
		eS	N			54				
	CB	ep	E	10	16	39				
		S	E			17				
	WN	ep?	Z	10	16	54				
		e	ZN			17				
		S	ZNE			06				
	TO	ep	Z	10	17	21				
	CT	P	Z	10	17	21 1/2				
		e	Z			30				
	KP	P	Z	10	17	31				
		e	Z			40				
		e	Z			19				
	TU	eP	N	10	17	41				
	ON	eP	E	10	17	53				
		eS	E			43				

NEW ZEALAND STATIONS AND SUVA 1961

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.	
NOV	Epicentre:					10 15 21	44.8S	167.7E	S	NZ(C) 5.2 NZ
Felt: Otago and Southland. Maximum Cromwell, MML.										
12	SU	L	N	14	14.5			23 8		
12	SU	S	N	18	15	14		10 8		
	ON	P	E	18	15	19				
	KP	P	Z	18	15	33				
		i	Z			36				
		e	Z			18 14				
	TU	eP	Z	18	15	36				
		eS	Z			18 17				
	CT	P	Z	18	15	43				
		S	Z			18 31				
	WN	P	ZNE	18	16	04				
		S	ZNE			19 03				
	GP	ep	N	18	16	30				
		S	N			19 47				
	CB	ep	E	18	16	08				
		eS	E			19 10				
	Epicentre:		18	12	22.0	23.2S	180.0	556 km	USCGS	
13	KP	P	Z	07	48	45				
	CT	P	Z	07	48	49				
	TU	eP	Z	07	48	54				
	RX	eL	ZNE	08	06					
	Epicentre:		07	39	53.0	3.8S	136.3E	34 km	USCGS	
13	KP	P	Z	16	36	43				
	Epicentre:		16	31	26.6	14.9S	167.0E	43 km	USCGS	
14	SU	eL	N	07	42			9 8		
14	ON	P	E	12	40	14				
	TU	P	Z	12	40	14				
		S	Z			41 16				
	KP	P	Z	12	40	16				
	CT	P	Z	12	40	27				
		i	Z			40				
		e	Z			42 16				
	WN	ep	ZN	12	40	55				
		e	Z			41 15				
		S	ZNE			24				
		e	ZE			42 03				
	CB	eS	E	12	42	46				
	KM	eS	X	12	43	29				
	GP	eS	N	12	43 1/2					
	RX	eL	NE	12	46					
	Epicentre:		12	39	00	34.5S	179.8W	N	NZ(C) 5.5 NZ	
14	SU	eL	N	13	06			12 9		
14	KP	P	Z	15	23	56				
	Epicentre:		15	20	30.6	21.9S	179.0W	590 km	USCGS	
14	KP	ep	Z	17	25	26				
	CT	ip	Z	17	25	26 1/2 d				
	TU	ep	Z	17	25	33				
	Epicentre:		17	14	00.1	5.7S	104.3E	16 km	USCGS	
15	ON	ep	E	07	29	40				
	KP	P	Z	07	29	48				
	TU	ep	Z	07	29	48				
	CT	ep	Z	07	29	52				
	WN	ep	Z	07	30	04		3 5		
		ePP	Z			33 26		3 6		
		eSKS	Z			40 24		3 7	6.8	

NEW ZEALAND SEISMOLOGICAL REPORT 1961

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.	
NOV		eSP	Z	41	50								
		eSS	Z	46	20		7 12						
		eL	Z	08	00.0		2 12						
	SU	S	N	07	37	09		30 21					
		eL	N		48.9				13 8				
	AK	S	N	07	40	04			54 22				
		eSS	N		45	50							
	RX	eL	N		57								
		SKS	NE	07	40	40							
		eS	NE		41	15			5 11		8 11		
		SS	NE		47	04			9 18				
		SSS	N		51	02			11 20				6.9
		eL	ZNE	08	00	00			9 24				
		Epicentre:		07	17	12.4	43.1N	145.1E		43	9	24	USCGS
	15	RX	eP?	Z	10	20	29						
S*			NE		44								
GP		Pn	N	10	20	55							
		e(S)	N		22	09							
KM		e(P)	X	10	20	57							
		eSn	X		21	34							
CB		Pn	E	10	21	15							
		Sn	E		22	16							
CT		Pn	Z	10	21	56							
		ePn	Z	10	21	56							
TO		eSn	Z		23	28							
		Pn	Z	10	22	07							
KP		eSn	Z		23	49							
		e(P)	Z	10	22	17							
ON		ePn	E	10	22	25							
	eSn	E		24	16								
	Epicentre:		10	19	56	44.7S	167.4E	S				NZ(C) 5.0 NZ	
	Felt:						Cromwell	MM2.					
15	KP	P	Z	13	46	56							
		Epicentre:		13	41	37.8	15.3S	173.3W		34			USCGS
15	WN	eL	Z	19	38.0			5 15					
		eL	NE		40				2 20				
		eL	Z		42			8 19					
	Epicentre:		19	26	51.5	21.1S	175.8W		25			USCGS	
16	KP	eP	Z	16	08	06							
		TU	eP	Z	16	08	19						
	CT	P	Z	16	08	24							
		eP	Z	16	08	42							
	RX	eS	NE	16	14	00			3 8		3 10		
		eL	NE		16				2 20		6 16		
	Epicentre:		16	03	54.8	20.2S	172.9E		32			USCGS	
16	KP	eP	Z	22	14	11							
		Epicentre:		22	01	43.8	56.6S	25.7W		41			USCGS
17	KP	eP	Z	08	17	54							
		Epicentre:		08	13	49.8	17.7S	178.6W		598			USCGS
17	SU	e(P)	N	19	05	30							
		S	N		06	34							
	ON	eP	E	19	08	01			16 3				
		eP	Z	19	08	14							
	CT	eS	Z		11	49							
		eP	Z	19	08	35							
	Epicentre:		19	03	55.4	19.6S	175.5W		220			USCGS	
18	KP	eP	Z	07	40	11							
		Epicentre:		07	27	40.3	56.2S	25.2W		25			USCGS

NEW ZEALAND STATIONS AND SUVA 1961

Date	STN	Phase	h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
NOV 18	SU	P	N	11	19	22					12 5	
		eL	N		22						49 15	
	ON	eP	E	11	19	45						
		e	E		20	01						
	TU	eP	Z	11	19	52						
		eS	Z		22	04						
	KP	eP	Z	11	19	52						
		eP	Z	11	20	14						
	CT	eP	Z	11	20	40						
		P	Z	11	20	40						
	WN	S	Z		23	19						
		eL	N	11	22							
	AK	eL	N	11	24	23						
		eS	N	11	24	23						
	RX	eL	ZNE	11	28							
Epicentre:		11	16	56.8	8 18		4 20		7 22		5.6	
	Epicentre:		11	16	56.8	27.0S	176.3W		61			USCGS
18	ON	eP	E	11	51	53						
		TU	eP	Z	11	52	06					
	KP	P	Z	11	52	06						
		eP	Z	11	52	41						
	Epicentre:		11	47	56.6	21.4S	175.8W		114			USCGS
18	KP	eP	Z	22	22	14						
		e(P)	Z	22	22	17						
	Epicentre:		22	09	53.4	23.7N	121.8E		60			USCGS
19	CB	eP	E	23	31	50						
		KM	eP	X	23	31	51					
	KP	P	Z	23	31	54						
		pP	Z		32	36						
	CT	P	Z	23	31	56						
		WN	P	Z	23	31	59					
	GP	eP	Z	23	31	59						
		P	Z	23	32	03						
	RX	epP	Z		50							
		eL	NE	23	46.7						4 26	
	Epicentre:		23	21	55.5	0.8N	124.3E		157			USCGS
20	ON	eP	E	11	48	02						
		KP	eP	Z	11	48	18					
	TU	eP	Z	11	48	33						
		P	Z	11	48	34						
	WN	P	ZN	11	48	57						
		eS	N		52	42						
	KM	eL	NE		54							
		eP	X	11	49	09						
	GP	eP	N	11	49	10						
		eP	Z	11	49.4							
RX	eP	N	11	49.4								
	e	E		50	26							
20	CT	S	NE		53						3 10	
		eL	NE		57						3 10	
	eL	NE		58							3 11	
		eL	Z		58						20 15	
	Epicentre:		11	44	19.4	21.8S	169.9E		33			USCGS
20	KP	eP	Z	12	25	48						
		eP	Z	12	26	12						
20	KP	eP	Z	13	08	07						
20	CT	eP	Z	18	18	06						
		KP	eP	Z	18	18	10					
	TU	eP	Z	18	18	10						
		eP	Z	18	18	23						
20	CT	P	Z	18	55	35						
		i	Z		56	00						
	KP	e(P)	Z	18	55	36						
Epicentre:		18	51	36.7	21.7S	170.0E		24			USCGS	

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
NOV 20	KP	P	Z	19	16	05			
	CT	P	Z	19	16	13			
	TU	P	Z	19	16	18			
	Epicentre:			19	08	06.6	5.0S	144.4E	65 km
21	KP	P	Z	11	16	54			
		pP	Z		17	14			
	WN	P	Z	11	16	57			
		pP	Z		17	18			
	TU	P	Z	11	17	02			
Epicentre:			11	06	38.1	0.9N	122.5E	85 km	USCGS
22	KP	eP	Z	02	49	25			
	SU	eL	N	02	50				
	RX	eL	ZNE	02	58				
	Epicentre:			02	45	26.7	21.6S	169.9E	74 km
22	KP	eP	Z	10	40	09			
	CT	eP	Z	10	40	30			
	WN	e(P)	Z	10	40	57			
Epicentre:			10	36	12.7	21.4S	170.2E	52 km	USCGS
22	KP	P	Z	11	10	40			
	TU	eP	Z	11	10	55			
	CT	P	Z	11	10	56			
	WN	P	Z	11	11	15			
		eS	Z		15	18			
		eL	Z		17.0		2 7		
	GP	eP	N	11	11	42	4 15		
	RX	eS	NE	11	16	10			
		eL	NE		18½			2 16	
		eL	Z		19			2 22	2 20
Epicentre:			11	06	40.5	21.5S	169.8E	41 km	USCGS
22	TU	eP	Z	20	42	18			
		S	Z		44	36			
	ON	eP	E	20	42	19			
	CT	e(P)	Z	20	42	45			
		e(S)	Z		45	06			
	SU	eL	N	20	44.5				
	WN	S	ZNE	20	45	44		30 14	
		eL	Z		20	48			
	CB	eS	E	20	46	03		3 14	
	KM	eS	X	20	46	40			
	GP	S	N	20	46	46			
	RX	eL	NE	20	50				
	eL	Z		52					
Epicentre:			20	39	18.6	26.8S	176.6W	77 km	USCGS
23	ON	P	E	05	56	40			
	KP	eP	Z	05	56	45			
		i	Z		52				
	CT	eP	Z	05	56	54			
	WN	S	ZNE	05	59	12			
	CB	eS	E	05	59	30			
GP	S	N	06	00	18				
Epicentre:			05	54	59.4	32.2S	178.8W	112 km	USCGS
23	KP	eP	Z	15	31	27			
	Epicentre:			15	26	58.3	18.5S	175.1W	168 km
25	KP	P	Z	06	22	14			
	Epicentre:			06	18	11.2	18.0S	178.4W	593 km
25	KP	P	Z	14	18	23			
		PcP	Z		20	43			
		pPcP	Z		21	00			
	CT	P	Z	14	18	32			

Date	STN	Phase	h	m	s	Az Tz	An Tn	Ae Te	Mag.
NOV	WN	eP	Z	14	18	45			
	GP	eP	N	14	18	52			
	RX	eL	ZNE	14	32				
	Epicentre:			14	11	23.2	6.3S	154.8E	83 km
25	KP	P	Z	14	54	18 d			
	CT	P	Z	14	54	21½			
	TO	P	Z	14	54	21½			
		eS	Z			57			
	WN	P	ZNE	14	54	42			
		S	ZNE		55	34			
	GP	eP	N	14	55	20			
		S	N		56	37½			
	CB	eS	E	14	56	03			
	KM	eS	X	14	56	39			
	Epicentre:			14	53	35	38.0S	178.5E	220 km
26	ON	P	E	03	33	50			
	TU	eP	Z	03	33	51			
		S	Z		34	48			
	KP	P	Z	03	33	53			
	CT	P	Z	03	34	04			
	WN	eP	ZE	03	34	28			
		S	ZNE		35	53			
	CB	S	E	03	36	14			
	KM	eS	X	03	36	50			
	Epicentre:			03	32	37	34.5S	179.9W	160 km
Additional readings from Brisbane, Savannah, and Charters Towers used to determine epicentre.									
26	KP	P	Z	18	20	03			
	Epicentre:			18	12	18.9	5.6S	146.3E	52 km
26	KP	eP	Z	22	58	50			
	Epicentre:			22	54	46.3	22.3S	175.5W	25 km
27	KP	P	Z	06	09	20			
	CT	P	Z	06	09	25			
	Epicentre:			05	57	07.6	31.6N	131.1E	25 km
27	ON	eP	E	17	20	18			
	RX	eP	ZNE	17	20	28			
		eS	NE		28	20			4 8
		eSS	NE		32	26			4 22
		eSSS	N		34	52			8 26
		eLq	N		39				7 28
		eLr	ZE		44				26 20
	KP	P	Z	17	20	29			15 20
		ePP	Z		22	30			
	CT	P	Z	17	20	33			
WN	P	ZNE	17	20	34			4 7	
	ePP	Z		22	46			2 6	
	ePPP	Z		24	08			4 8	
	eLr	Z		39.7				2 30	
	M	Z		48				18 18	
GP	eP	N	17	20	36				
SU	S	N	17	27	28			12 8	
Epicentre:			17	10	33.3	0.6S	127.1E	25 km	USCGS
27	RX	eP	ZN	23	34	24			1 7
		eL	ZNE		38				4 20
	WN	eP	Z	23	35	32			1 6
		eL	Z		43				6 14
Epicentre:			23	30	46.4	60.6S	156.9E	46 km	USCGS
28	SU	iS	N	00	39	30			5 4
	KP	P	Z	00	41	09			
	Epicentre:			00	37	12.3	19.1S	177.5W	530 km

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.	
NOV 28	RX	eP	18 38 48	4 8	7 12	4 14	USCGS	
		eL	18 43					
	WN	eL	18 46					
	AK	eL	18 51					
	Epicentre:			18 34 37.4	56.9S	143.5E		51 km
	28	KP	eP	23 00 17	14.8S	167.3E		146 km
	Epicentre:			22 55 09.4				
	29	ON	eP	21 58 53	7 14	5 11		
		KP	P	21 59 25				
		CT	eP	21 59 38				
TU		eP	21 59 42					
SU		eL	22 00 00					
WN		P	22 00 09					
		eL	22 06 $\frac{1}{2}$					
GP		eP	22 00 25					
RX		eS	22 05 00					
		eL	22 08 $\frac{1}{2}$					
Epicentre:			21 55 44.7	23.1S	170.9E	29 km		
29	KP	P	22 20 19	18.0S	168.3E	52 km		
Epicentre:			22 15 37.0					
29	TU	P*	23 16 24 $\frac{1}{2}$	38.2S	178.8E	S		
		S*	23 16 46 $\frac{1}{2}$					
	KP	Pn	23 16 37					
	CT	Pn	23 16 41					
		e	23 16 51					
	TO	Pn	23 16 42					
		eP*	23 16 49					
	WN	ePn	23 17 03					
		e	23 17 08					
		eP*	23 17 13					
	Sn	23 17 54						
ON	ePn	23 17 03						
	eSn	23 17 50						
CB	ePn	23 17 19						
	eSn	23 17 18						
GP	eP	23 17 41						
	S	23 18 59						
KM	eP	23 18 02						
	S	23 18 58						
Epicentre:			23 15 57	38.2S	178.8E	178.8E S		
Felt: Coastal areas south of East Cape, MM3-4.								
30	SU	eP	14 16 33	14.6S	170.9E	82 km		
		eS	14 18 03					
	KP	P	14 19 42					
	TU	eP	14 19 52					
	RX	eL	14 29					
Epicentre:			14 14 35.5					
30	KP	eP	18 32 05	18.2S	168.0E	68 km		
	TU	eP	18 32 33					
	WN	eP	18 32 39					
	Epicentre:						18 27 27.3	
DEC 1	TU	eP	09 25 16	6.0S	130.8E	85 km		
	Epicentre:						09 16 06.9	
	2	SU	eS				14 10 03	
		e	14 11 00					
	KP	eP	14 10 40					
	i	14 11 51						
CT	eP	14 11 01						
		14 11 24						
Epicentre:			14 11 01	16.2E	219 km	USCGS		

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.		
DEC 2	SU	eL	18 49.7	22.7S	175.1W	89 km			
	KP	eP	18 49 52						
	WN	eL	18 58						
	Epicentre:						18 45 51.6		
3	KP	P	08 52 23	25.0N	122.9E	91 km			
Epicentre:			08 40 20.6						
3	ON	eP	16 19 51	11.6S	166.1E	122 km			
	KP	P	16 20 10						
	SU	S	16 20 18						
	WN	eP	16 20 37						
		eL	16 31						
	RX	eL	16 14 31.4	4 26	2 22				
Epicentre:			16 14 31.4						
3	KP	P	20 07 21	43.6N	134.9E	420 km			
Epicentre:			19 55 05.3						
4	KP	eP	05 40 40	5.2S	151.6E	59 km			
	RX	eL	05 57						
Epicentre:			05 53 18.5						
5	RX	P	13 05 43	52 17	50 12	130 20			
		S	09 34						
		L	10 11						
		M	11						
	KM	eP	13 06 14						
	GP	eP	13 06 20						
		eL	11 $\frac{1}{2}$						
	CB	eP	13 06 27						
	WN	eP	13 06 36						
		eS	11 23						
	eL	14							
CT	P	13 06 51							
KP	eP	13 07 01							
TU	eP	13 07 02							
SU	S	13 16 04							
	eL	22.0							
Epicentre:			13 01 04.7	50.8S	139.8E	64 km			
5	SU	e(P)	13 05 06	54 10					
	S	06 52							
ON	P	13 06 58							
KP	P	13 07 21							
	ScP	14 26							
CT	P	13 07 30							
	ScP	14 27							
TU	eP	13 07 31							
WN	P	13 07 46							
CB	eP	13 07 48							
KM	eP	13 07 55							
GP	eP	13 08 03							
Epicentre:			13 02 31.9	16.0S	168.1E	145 km			
6	KP	P	06 01 46	13.7N	93.6E	53 km			
CT	eP	06 01 47							
Epicentre:			05 48 39.3						
6	SU	P	13 37 42	23.5S	176.0W	18 km			
		e(S)	13 39 27						
		eL	13 40						
	KP	eP	13 39 33						
	WN	eS	13 43 26						
	KM	eS	13 44 18						
	RX	eLq	13 47						
		eLr	50						
	Epicentre:						13 35 43.8	16 16	7 32
								13 17	5 32
Epicentre:			13 35 43.8	23.5S	176.0W	18 km			
USCGS 5 $\frac{3}{4}$ -6 PAS									
USCGS 6 $\frac{1}{2}$ PAL									

Date	STN	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
DEC 6	KP	eP	Z	15 50 35				
	Epicentre:			15 40 30.6	8.2S	117.4E	64 km	USCGS
6	KP	P	Z	16 52 26				
	TU	eP	Z	16 52 29				
	CT	P	Z	16 52 30				
	RX	eSKS	N	17 03 28				
		eS	NE	04 13		4 10	3 10	
		eL	ZNE	28		3 22	2 20	6.6
	SU	eL	N	17 12		2 25		6.0
	Epicentre:			16 39 31.5	49.4N	155.2E	22 km	USCGS 6-6 $\frac{1}{2}$ PAS 6 $\frac{1}{2}$ BRK
7	SU	eP	N	00 20 15				
	S	N	N	21 32		3 5		
	eL	N	N	22 $\frac{1}{2}$		15 12		
	KP	eP	Z	00 22 18				
	CT	eP	Z	00 22 30				
		eS	Z	25 26				
	RX	eL	NE	00 31		10 16	10 16	
		eL	Z	32 $\frac{1}{2}$				
	Epicentre:			00 18 26.0	23.4S	175.9W	45 km	USCGS
7	SU	eL	N	16 33 $\frac{1}{2}$		7 12		
	Epicentre:			16 29 13.3	25.4S	175.4W	79 km	USCGS
8	SU	eL	N	03 50 $\frac{1}{2}$		4 15		
	Epicentre:			03 46 24.5	23.6S	175.8W	45 km	USCGS
8	KP	P	Z	09 45 09				
	CT	eP	Z	09 45 15				
	Epicentre:			09 36 24.9	1.8S	139.4E	55 km	USCGS
9	SU	eL	N	02 55				
	RX	eL	N	03 10				
	Epicentre:			02 15 22.0	56.3N	153.9W	31 km	USCGS 5 $\frac{1}{2}$ - $\frac{1}{2}$ BRK 5 $\frac{1}{2}$ PAL
9	KP	eP?	Z	04 12 08				
		e(P)	Z	17				
	CT	eP	Z	04 12 17				
	WN	eL	Z	04 44				
	SU	eL	N	04 49				
	Epicentre:			03 58 55.4	14.9S	75.7W	39 km	USCGS
9	KP	P	Z	04 27 03 $\frac{1}{2}$				
	CT	Pn	Z	04 27 11				
		(P*)	Z	21				
		e	Z	28 10				
	TO	ePn	Z	04 27 11				
		e	Z	24				
		e	Z	28 08				
	ON	Pn	E	04 27 13				4.9
		eS*	E	28 25				
	WN	ePn	Z	04 27 36				5.5
		S	ZNE	28 48				
	CB	ePn	E	04 27 51				5.2
		Sn	E	29 13				
	GP	ePn	N	04 28 15				5.6
		Sn	N	29 54				
	KM	eSn	X	04 29 51				5.2
	Epicentre:			04 26 03	36.5S	179.8W	S	NZ(C) 5.4 NZ
9	RX	eP	ZN	11 29 46		6 8		6.7
		eS	NE	39 26				6.8
		eSKS	NE	40 00		11 8		
		SS	E	44 10		6 22		
		eLq	NE	49 $\frac{1}{2}$		6 18		
						12 26		6.22

Date	STN	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
DEC		eLr	Z	54				
		M	E	55				
	WN	P	ZN	11 29 47		9 8	8 18	6.2
		SP	Z	40 00		4 9		6.8
		eL	Z	52		16 23		
	CT	P	Z	11 29 50				
	CB	eP	E	11 29 54				
	KP	P	Z	11 29 55				
	SU	P	N	11 31 05			4 7	
		S	N	42 00			6 6	
		eSS	N	47 50			6 12	
		eL	N	58 $\frac{1}{2}$			3 30	
	Epicentre:			11 18 08.9	43.7S	75.2W	34 km	USCGS 6 $\frac{3}{4}$ PAS 6 $\frac{1}{2}$ (BRK) 5 $\frac{3}{4}$ -6 PAL
9	SU	P	N	19 51 09				
	S	N	N	52 09				
	ON	P	E	19 52 51				
		S	E	55 26				
	KP	P	Z	19 53 05				
	WN	P	Z	19 53 39				
		eS	ZNE	56 48				
	CB	eP	E	19 53 39				
		eS	E	56 46				
	GP	eP	N	19 54 00				
		eS	N	52 28				
	Epicentre:			19 49 41.3	21.7S	179.9E	620 km	USCGS
9	SU	eL	N	21 46				
	Epicentre:			21 41 42.1	23.0S	176.8W	25 km	USCGS
10	ON	P	E	08 29 42				
	KP	P	Z	08 29 43				
	CT	eP	Z	08 29 53				
		i	Z	30 02				
	WN	eP?	Z	08 30 20				
		eS	ZE	31 42				
	CB	eS	E	08 31 58				5.0
	GP	eS	N	08 32 48				5.1
	Epicentre:			08 28 34	35S	180	N	5.3 NZ(D) 5.1
10	ON	eP	E	16 56 01				
	KP	P	Z	16 56 15				
	Epicentre:			16 50 54.1	16.3S	172.6W	35 km	USCGS
11	KP	eP	Z	05 11 05				
		i	Z	07				
	CT	eP	Z	05 11 16				
		e	Z	13 09				
	WN	eP	ZE	05 11 40				
		S	ZNE	13 51				
	CB	eP	E	05 11 46				
		eS	E	14 02				
	GP	eS	N	05 14 48				
	Epicentre:			05 08 51.2	29.8S	179.1W	300 km	USCGS
11	KP	PKP	Z	17 13 34				
	Epicentre:			16 53 05.3	36.5N	23.5E	25 km	USCGS
12	KP	eP	Z	04 04 39				
	Epicentre:			03 55 10.2	4.3S	127.2E	65 km	USCGS
12	KP	eP	Z	17 33 46				
	CT	P	Z	17 33 53				
	Epicentre:			17 23 04.0	21.7N	146.0E	24 km	USCGS
12	KP	eP	Z	23 18 52				
		pp	Z	19 13				
	Epicentre:			23 06 18.4	43.5N	146.2E	44 km	USCGS

Date	STN	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.									
DEC 13	CT	eP	Z	11	34	46	50.9S		73.0W		82 km	USCGS										
				11	34	53																
				11	23	28.9																
Epicentre:				11	23	28.9																
13	SU	e	N	16	52	42	5 18		2 20	3 22		USCGS										
				eL	N	16								54	22							
				ON	eP	E								16	54	14						
				KP	P	Z								16	54	27						
				CT	eP	Z								16	54	41						
				WN	eP	Z								16	55	05						
				eL	Z	17								02								
				RX	eL	NE								17	00							
				eL	Z	17								04								
				Epicentre:										16	49	50.4	18.9S	168.4E	30 km	USCGS	5.5	
14	KP	iP	Z	07	18	54 d	6 1E				44 km	USCGS										
				e	Z	07								19	00 u							
				CT	iP	Z								07	19	04						
				WN	eP	Z								07	19	05						
				eL	Z	07								19	10							
				GP	eP	N								07	19	10						
				RX	eS	NE								07	26	18						
				SU	eL	N								07	27							
				Epicentre:										07	10	23.2	3.1S	140.9E	44 km	USCGS		
				14	KP	eP								Z	09	40	15					
CT	P	Z	09				40	29														
14	KP	eP	Z	12	24	30	7.8S		120.5E	62 km		USCGS										
				WN	P	Z								12	24	31						
				Epicentre:										12	14	38.9						
14	SU	eP	N	18	50	14	17.1S		9 6		394 km	USCGS										
				S	N	18								51	12							
				KP	eP	Z								18	52	49						
				Epicentre:										18	49	02.4						
14	ON	P	E	23	28	33	26.1S		179.3E	497 km		USCGS										
				eS	E	23								30	35							
				KP	P	Z								23	28	49						
				eS	Z	23								31	05							
				CT	eP	Z								23	28	59						
				eS	Z	23								31	21							
				WN	P	ZNE								23	29	24						
				e	ZNE	23								31	57							
				CB	eP	E								23	29	26						
				eS	E	23								32	09							
				KM	eP	X								23	29	43						
				eS	X	23								32	40							
				GP	eP	N								23	29	50						
				S	N	23								32	50							
				Epicentre:										23	26	02.8						
				15	KP	P								Z	12	44	00	5.5S		147.2E	181 km	
CT	P	Z	12				44	08														
Epicentre:							12	36	30.7													
16	WN	eS	ZNE	09	23	23	26.3S		177.5W	61 km		USCGS										
				CB	eS	E								09	23	39						
				GP	eS	N								09	24	26						
				Epicentre:										09	16	57.6						
16	SU	eL	N	10	03		3 16		14 10	3 16		USCGS										
				RX	eL	NE								10	12							
				eL	Z	10								14								
				Epicentre:										09	59	11.8	23.9S	175.4W	25 km	USCGS		

Date	STN	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.														
DEC 16	ON	eP	E	20	37	47	28.5S		179.4W	421 km		USCGS															
				S	E	20								39	34												
				KP	eP	Z								20	37	57											
				CT	eP	Z								20	38	12											
				eS	Z	20								40	18												
				WN	eP	ZNE								20	38	34											
				eS	ZNE	20								40	59												
				GP	eP	N								20	39	05											
				S	N	20								41	50												
				SU	S	N								20	39	59											
				CB	eS	E								20	41	09											
				KM	eS	X								20	41	44											
				Epicentre:										20	35	37.4											
				17	KM	eP								X	22	17	28	5 15									
															WN	eP	ZNE								22	17	47
															eL	Z	22								22	26	
M	Z	22	24				8																				
CT	eP	Z	22				18	03																			
RX	eLq	NE	22				20	4																			
eLr	Z	22	21				7																				
SU	eL	N	22				34																				
Epicentre:							22	12	32.3	54.5S	143.9E	45 km	USCGS														
17	RX	eL	NE				22	29		11 10			12 11		20 13												
				eL	Z	22	29	1/2																			
18	KP	eP	Z	22	29	11	21.3S		174.2W	25 km		USCGS															
				SU	e(L)	N								22	30												
				Epicentre:										22	24	49.8											
19	KP	P	Z	15	51	40	5.0N		127.2E	33 km		USCGS															
				Epicentre:										15	41	15.0											
20	RX	(sSKS)	N	13	52	04	7 15																				
				e	N	13									53	08											
				PS	E	13									54	54											
				SS	N	13									59	56											
				sSS	N	14									00	56											
				eSSS	N	14									04	03											
				esSSS	N	14									05	10											
				G	N	14									11	8											
				KP	PKKP	Z									13	54	59										
				e	Z	13									55	16											
				pPKKP	Z	13									55	16											
CT	PKKP	Z	13	55	01																						
e	Z	13	55	13																							
pPKKP	Z	13	55	53																							
Epicentre:				13	25	34.4	4.6N	75.6W	176 km	USCGS	6 3/4 PAS 6 PAL																
20	KP	eP	Z	23	52	54	15.8S		169.1E	36 km		USCGS															
				CT	P	Z								23	53	08											
				Epicentre:										23	47	48.6											
22	KP	P	Z	10	42	33	2.8S		136.7E	38 km		USCGS															
				CT	P	Z								10	42	39											
				Epicentre:										10	33	42.5											
22	KP	P	Z	22	16	19	14.7S		167.3E	74 km		USCGS															
				CT	P	Z								22	16	31											
				Epicentre:										22	11	07.6											
22	KP	P	Z	22	56	36																					
				epP	Z	22								57	14												
				CT	P	Z								22	56	43											
				epP	Z	22								57	20												
				CB	eP	E								22	56	49											

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
DEC	WN	P	Z	22 56 51			
		i	ZNE				
		epP	Z	57 24			
	GP	eP	N	22 57 01			
		Epicentre:		22 46 24.6	18.6N	145.6E	155 km USCGS
24	KP	P	Z	02 48 39			
		PcP	Z	50 23			
	CT	P	Z	02 48 46			
		e	Z	53			
	GP	eP	N	02 48 56			
	RX	eL	NE	03 03			
	WN	eL	Z	03 04			
		Epicentre:		02 40 07.6	3.4S	140.3E	29 km USCGS
24	KP	eP	Z	03 59 33			
		Epicentre:		03 50 45.6	3.2S	140.1E	39 km USCGS
24	SU	P	N	09 21 00			
		eL	N	23.8	4 6		
	ON	eP	E	09 23 20	15 12		
	KP	P	Z	09 23 31			
	RX	eL	NE	09 36			
		Epicentre:		09 19 02.7	20.4S	173.6W	45 km USCGS
24	KP	eP	Z	16 31 33			
		Epicentre:		16 23 02.4	3.4S	140.1E	44 km USCGS
24	KP	eP	Z	17 06 53			
		e	Z	07 02			
	CT	eP	Z	17 07 00			
		e	Z	08			
25	KP	P	Z	00 10 26			
	WN	eL	Z	00 21			
	RX	eL	ZNE	00 21	4 20	1 20	2 20
		Epicentre:		00 01 52.1	3.4S	140.3E	22 km USCGS 5.7
25	KP	P	Z	08 10 34			
	CT	P	Z	08 10 37			
		Epicentre:		08 00 59.3	3.7S	127.7E	47 km USCGS
25	KP	P	Z	08 23 02			
		Epicentre:		08 13 07.2	1.1S	126.7E	25 km USCGS
25	KP	P	Z	09 18 41			
		e	Z	19 37			
	CT	P	Z	09 18 44			
		Epicentre:		09 09 07.4	3.7S	127.7E	54 km USCGS
25	KP	P	Z	09 23 45			
	CT	eP	Z	09 23 51			
		Epicentre:		09 14 12.1	3.8S	127.5E	42 km USCGS
25	KP	eP	Z	09 31 01			
		Epicentre:		09 21 22.5	3.7S	127.3E	27 km USCGS
25	SU	eP	N	13 57 36			
		S	N	59 25	4 7		
		eL	N	14 00.5	7 15		
	ON	P	E	13 59 53	14 10		
	KP	P	Z	14 00 06			
	CT	eP	Z	14 00 16			
		eS	Z	04 04			
	WN	P	Z	14 00 39			
		eS	NE	03 39			

Date	STN	Phase	h m s	Az Tz	An Tn	Ae Te	Mag.
DEC	GP	eP	N	14 01 17			
		eS	N	05 50			
	RX	eL	ZNE	14 13			
		Epicentre:		13 55 38.8	20.4S	173.7W	64 km USCGS
25	KP	P	Z	22 35 31			
	CT	P	Z	22 35 32			
		Epicentre:		22 25 00.2	8.9S	110.2E	155 km USCGS
26	CB	eP	E	04 34 46			
	KM	eP	X	04 34 46			
	GP	P	N	04 34 51			
	WN	eP	Z	04 34 55			
	KP	iP	Z	04 34 56 u			
		epP	Z	36 42			
	CT	iP	Z	04 34 57 u			
		eS	Z	43 09			
		e	Z	45 16			
		Epicentre:		04 24 55.4	5.5S	110.7E	566 km USCGS
26	RX	ePP	N	06 40.0			
		eSKS	N	44.8			
		eL	N	58			
		Epicentre:		06 17 30.6	44.2N	38.1E	22 km USCGS 6.0
27	KP	eP	Z	02 34 17			
		Epicentre:		02 25 48.2	2.7S	141.3E	22 km USCGS
27	ON	eP	E	07 21 50			
	KP	P	Z	07 22 01.2			
	CT	P	Z	07 22 10			
	WN	P	Z	07 22 29			
		Epicentre:		07 18 04.5	18.7S	177.5W	616 km USCGS
27	KP	eP	Z	11 56 12			
	CT	eP	Z	11 56 27			
		Epicentre:		11 51 06.9	17.6S	173.5W	25 km USCGS
27	SU	eP	N	23 53 10			
		eS	N	57 20			
		eL	N	59			
		M	N	00 03			
	ON	P	E	23 49 25.7			
		e	E	36.6			
		e	E	56.5			
		e	E	50 58.6			
		eS*	E	51 07.2			
	KP	iP	Z	23 48 51.2 u			
	CT	iP!	Z	35.5 u			
		i(Pg)	Z	46.0			
	WN	iP	ZNE	23 48 16.0 unW			5.2+
	KM	eP	X	23 48 52.9			
		eP*	X	49 02.7			
		ePg	X	10.1			
		e	X	15.2			
		e	X	27.4			
	GP	P	N	23 48 48.7			
		P*	N	57.4			
		Pg	N	49 07.3			
		e	N	24.4			
	RX	eP	Z	23 49 29.5			
		Epicentre:		23 48 01.3	41.7S	176.7E	S NZ(B) 6.3 NZ
		Felt:					Southern half of North Island and northern Marlborough. Maximum intensity MM5 in eastern Wairarapa. See isoseismal Map.

Date	STN	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
DEC 28	KP	P	Z	18	22	07							
	Epicentre:			18	18	04.4	17.7S		178.6W		592 km		
28	SU	P	N	23	58	57				5	6		
	eS		N	01	26								
	CT	P	Z	24	01	39				12	10		
	CB	eP	E	24	01	52							
	WN	P	Z	24	01	56							
	RX	eL	Z	24	12								
	S	E		24	07	38	3	18					
	eL	ZNE		10							3	8	
	Epicentre:			23	55	57.6	12.4S		166.3E	2	22	1	18
29	CT	eP	Z	10	07	53							
	GP	eP	N	10	09	26							
	Epicentre:			10	00	33.1	6.3S		154.5E		44 km		
30	SU	eP	N	00	50	38				2	3		
	eS		N	59	53					4	8		
	PS		N	00	30					12	10		
	eL		N	12						14	18		
	KP	P	Z	00	52	21							
	ePKKP		Z	59	18								
	CT	P	Z	00	52	27							
	RX	eSKS	N	01	03	31							
	eS	E		04	24					1	7		
	e	E		05	14						3	13	
	eL	NE		20							6	11	
	eL	Z		27									
	M	ZNE		02	02								
	Epicentre:			00	39	24.1	11	20	11	20	4	20	
							52.3N		177.7E		52 km		
30	SU	P	N	09	01	30							
	i		N	03	35					12	4		
	L		N	04	30					14	7		
	KP	eP	Z	09	03	30				29	10		
	AK	eL	N	09	08.6								
	RX	eL	NE	09	12						4	20	
	eL	Z		14.7							3	18	
	Epicentre:			08	59	31.7	22.9S		175.2W		41 km		
30	KP	eP	Z	10	27	34							
	CT	P	Z	10	27	40							
	Epicentre:			10	14	37.2	52.0N		178.2E		62 km		
30	KP	eP	Z	16	54	50							
	Epicentre:			16	41	55.5	51.7N		178.5E		63 km		
30	KP	eP	Z	18	29	03							
	e		Z	21									
	Epicentre:			18	18	32.6	8.7N		126.3E		119 km		
31	KP	P	Z	13	55	49							
	epP		Z	56	25								
	CT	eP	Z	13	55	54							
	WN	P	Z	13	55	56							
	GP	eP	N	13	56	00							
	Epicentre:			13	46	01.8	1.6N		127.3E		140 km		

AFIAMALU AND APIA

Readings from the station at Apia are given only during those periods when Afiamalu was not operating. Amplitudes given are in millimetres, measured directly from the photographic paper records.

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn
JAN 1	AA	eP	N	16	40	16				
		e	N		41	03				
		eS	N			47				
1	AA	eS	N	22	17	24				
2	AA	iP	N	10	16	34 n				
		S	N		20	47				
		e(L)	N		21.5					
2	AA	P	N	20	10	46				
		S	N		11	09				
3	AA	e	N	19	38	27				
4	AA	iP	N	13	27	33 s				
		eS	N		29	07				
4	AA	iP	N	16	03	43 s				
		iS	N		04	13 n				
5	AA	P	N	05	41	37				
		S	N		42	45.2				
5	AA	P	N	12	15	15				
		S	N			42				
5	AF	iP	ZN	14	17(16)	d	0.8	2	0.8	1
		S	ZN		25(53)		3.5	10	1.6	12
		ScS	ZN		26(22)		3.9	8	2	17
		eL	ZN		35.9		4	20	2	20
5	AF	eP	Z	15	20(43)					
5	AF	P	ZN	16	02(14)		1.1	2	0.6	1
		e	Z		03(01)		1.2	5		
		eS	ZN		08.8		1.3	18	0.8	10
		L	ZN		12.3		2	20	1.2	20
5	AF	P	ZN	18	02(16)					
		i	ZN		(21)					3.5
		S	ZN		06(00)		6	10		3.8
		Lq	ZN		06.3		10	14		3.5
		Lr	ZN		07.3		24	20		4.5
5	AF	iP	ZN	18	19(04)	d				
		S	ZN		23(00)		9	8		3.5

Date	Stn	Phase	h m s	Az Tz	An Tn
JAN		Lq Lr	23.3 24.2	14 14 26.5 20	5.5 20
5 AF	iP (S)	Z Z	13 01(47) 03(23) u		
6 AF	iP S	ZN ZN	00 01(50) 05(08)	0.7 2 0.5 1	0.5 2 0.6 1
6 AF	iP iS	Z Z	18 10(02) (20) us	1.8 1 2.3 1	1 1 1.5 1
7 AA	iP S	N N	18 19 35 54		Felt Apia MM2
8 AF	iP iS	ZN ZN	01 14 05 26 un?	2.3 1 3 1	1.1 1 4 1
8 AF	P S	ZN ZN	03 14 50 15 58	0.5 1 0.8 1	0.5 1 0.7 1
8 AF	P	ZN	07 33 36	0.6 1	
8 AF	P eL	ZN ZN	07 36 06 40.9	0.5 1	
8 AF	P S	ZN ZN	10 04 07 06 30	0.5 1 0.7 1	0.5 1 0.8 1
8 AF	P S	ZN ZN	20 18 55 20 34		
8 AF	iP	ZN	23 54 01 u	2.5 1	1.1 1
9 AF	P S	ZN ZN	04 46 04 56	0.5 1 0.8 1	0.7 1
9 AF	P S	ZN ZN	07 57 50 08 00 34	0.6 1	
9 AF	P eL eL	ZN Z N	10 17 44 23 24	0.9 1 1.8 16	0.7 16
9 AF	iP e(S)	Z Z	12 48 12 u 50 47		
9 AF	P eS	Z Z	13 34 17 35 50	0.5 1	
10 AF	P S ScS eSS eSSS L	Z ZN ZN ZN ZN ZN	14 33 26 42 32 43 29 47.0 49.9 53.6	2.5 10 2.6 8 5 20	1.6 14 1.3 5 2.2 20
11 AF	iP	ZN	09 37 08 d	0.8 1	0.5 1
11 AF	eL	ZN	12 36		
11 AF	iP S eT	ZN ZN ZN	17 21 30 u 22 00 23 51	0.6 1 2.8 1 0.6 1	0.7 1 1.8 1 0.7 1
12 AF	P	ZN	05 20 35		

Date	Stn	Phase	h m s	Az Tz	An Tn
JAN 12	AF	P (S)	Z Z	06 43 29 44 29	
12 AF	P (S)	ZN ZN	09 30 39 33 20		
12 AF	P (S)	ZN ZN	15 51 33 53 08		
15 AA	P eS	N N	16 48 56 51.6		
16 AA	P S	N N	04 10 50 11 27		
17 AF	P PP S Lq Lr	ZN Z ZN N Z	23 09 57 10 36 13 37 14.2 15	2 4 2.4 5	0.8 1 1.5 5 1.5 10
17 AF	iP eS	ZN ZN	23 57 59 u? 58 45	4.5 12 1 1	
18 AF	P	Z	05 00 42		0.5 1
18 AF	P	Z	09 10 28		
18 AF	P S eL	ZN ZN ZN	15 12 28 14 21 15.9	0.6 1 0.5 1 2 8	0.6 1 0.6 1 1 10
18 AF	e (S) L	Z ZN ZN	15 23 55 24 18 25.4	3.4 8	2 8
18 AF	P iS L	ZN ZN ZN	20 53 12 55 14 d 56.5	3.5 7	2 8
19 AF	iP S	Z ZN	02 12 11 u 37	0.8 1 1.3 1	1.3 1
19 AF	P? (P) eS eLq Lr	Z ZN ZN N ZN	04 25 58 26 03 30 09 30.7 31.6	2 4 2 10 2 20	0.7 1 1.2 3 1 16 1.3 20
19 AF	iP PP eS Lq Lr	Z Z N ZN Z	05 58 39 d 59 03 02 09 03.6 06	1.5 3 2.5 3	1 2
19 AF	iP S	Z Z	10 08 01 u 18	2.5 25 2.3 13	1 5 1.5 17
19 AF	P?	Z	17 33 26	1.2 1 3 1	0.8 1 2.2 1
20 AF	P S eT	Z Z Z	17 01 20 02 53 09 57	0.6 1 0.7 1	0.5 1 0.8 1 1 3
20 AF	P eL	ZN ZN	17 20 44 42	1.5 4	

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn
AN 22	AA	P S	N N	02	13	55			
					14	12			
22	AA	eP	N	03	01	45			
22	AA	eP e e s	N N N N	03	29	13 30 18 31 16 33 30			
22	AA	eP iS	N N	05	53	32 51 s?			
22	AA	eP eS	N N	09	30	21 37			
22	AA	eP S	N N	16	13	02 15 31			
23	AF	P	Z	04	59	28			
24	AF	e	ZN	01	07	09			
24	AF	iP e (S) (SS)	ZN N N N	07	29	24 d 32 48 33 15 35 40		1.5	2
24	AF	P S	ZN ZN	23	46	41 47 58	1.2	1	
25	AF	iP S Lq Lr	ZN Z N Z	05	26	17 d 30 16 31 4 32.1	1.8 2.5	2 8	0.5 1 1.5 10
25	AF	P e(S) Lq Lr eT	ZN N N Z ZN	16	46	12 46.7 46.9 47.1 49.5	0.8 5 0.8	1 7 1	0.7 1 1 1
25	AF	iP S	Z Z	17	50	0 2	1.6	1	1.2 2 3 1
25	AF	(P) (S)	Z Z	22	55	44 58 09			
26	AF	P S	ZN ZN	06	10	49 13 37			
26	AF	P e e	ZN Z Z	13	16	40 17 27 19 06	1.1	1	2 1
26	AF	P e(S) Lq Lr	ZN ZN N Z	16	17	40 21 10 21.7 22.7	6	10	2.5 1.5 5 10 6 18
26	AF	P?	Z	17	54	10	16	20	
26	AF	iP (S) eL	ZN ZN ZN	18	53	16 d 8 56 51 58.5	2 2.6 3.3	2 8 20	1.2 1.5 1
26	AF	P	ZN	21	23	51			

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn
JAN 27	AF	P	Z	00	58	54	0.5	1	
27	AF	P?	Z	03	15	52			
27	AF	P eL	ZN ZN	14	51	15 56.9	1 2.1	2 15	0.7 2
27	AF	iP Lq Lr	ZN N Z	15	10	18 d 14.5 15.8			1 10
27	AF	P S	ZN ZN	15	14	42 16 51	0.5 0.5	1 1	0.5 1
28	AF	eiP	ZN	05	16	48 ud	0.7	1	0.7 1
28	AF	P	Z	14	16	40			
28	AF	P	ZN	14	26	48			
28	AF	e	Z	14	34	32			
28	AF	eP	Z	14	39	37			
28	AF	eP?	Z	14	59	34			
28	AF	P	ZN	17	38	53	0.5	1	
28	AF	P Lq Lr	ZN N Z	19	47	26 51.6 52.8	3.5 6.5	2 20	1.5 2 2.5 20
28	AF	e(P)	Z	19	54	02			
29	AF	P	Z	00	55	15			
29	AF	iP (S)	ZN ZN	15	18	23 d 19 24			
29	AF	P S	ZN ZN	20	35	01 36 12	2.5 0.5	1 1	1 1 1 1
30	AF	eP eS	Z Z	00	11	30 14 03			
30	AF	iP S	ZN ZN	09	29	16 u 36	1.5	1	0.8 1 2 1
30	AF	iP (S)	ZN ZN	16	11	34 u 12 53	0.7	1	
31	AF	P	ZN	06	17	59			
31	AF	P S	ZN ZN	13	56	29 58 11	1.3 0.5	1 1	1 1 0.8 1
FEB 1	AF	P eS	Z Z	20	11	09 12 42	1 0.5	1 1	
2	AF	eP e(S)	Z Z	07	41	12 42 43			
3	AF	P e? S	ZN Z ZN	12	38	28 42 56 43 03	1.5	1	1 1 0.5 1
4	AF	iP S	ZN N	02	55	22 ds 40			3.1 1 26± 1

Date	Stn	Phase	h m s	Az	Tz	An	Tn
FEB 4	AF	1P (S)	Z ZN	03 18 34 d 20 16			
4	AF	P?	Z	09 01 32			
4	AF	P	ZN	15 30 35	0.5	1	0.5 1
		S	Z	31 21			
		Lq	ZN	31.6			3.5 14
		Lr	Z	32.2	6.6	6	
4	AF	P	Z	19 20 59	0.4	1	
		eL	Z	48			
5	AF	1P	ZN	07 41 50 d	3	1	1.2 1
		S	ZN	43 18	1	1	1.2 1
6	AF	P	ZN	06 29 43	0.5	1	0.5 1
		S	ZN	31 09			
6	AF	P	Z	18 26 36			
6	AF	P	ZN	19 35 47	0.5	1	
		PcP	Z	38 09	0.5	1	
6	AF	1P	ZN	21 51 48 us	1.6	3	0.8 1
		i	ZN	50	3.4	2	1 1
		1(pP)	Z	52 00	9.8	2	2.9 2
		(PcP)	Z	55 16			
		e	ZN	56 00	1.5	6	0.8 6
		S	ZN	57 03	3.4	20	1 17
		Lq	N	59.0			2 20
		(SS)	Z	59.5	2.5	23	
		Lr	Z	22 01.0	9.5	20	
6	AF	P	Z	22 04 13			
		i	Z	24			
7	AF	1P	ZN	01 48 36 u?	1	2	0.5 1
		eL	ZN	54.3	2	20	
7	AF	P	ZN	03 50 25			0.6 1
		S	ZN	52 36			
7	AF	P	ZN	04 04 43	0.4	1	0.5 1
		eL	Z	11.6	0.8	15	
7	AF	P	ZN	05 24 14	0.5	1	
		PcP	Z	31	0.8	2	
7	AF	eP	Z	06 07 06			
7	AF	P	Z	06 23 07	0.5	1	
8	AF	P	Z	02 41 08			
		i	ZN	11	2	2	0.9 1
8	AF	P	ZN	04 37 38	0.6	1	0.5 1
		S	ZN	40 00	1	1	0.9 1
8	AF	eP	Z	12 01 14	0.8	1	0.7 1
		i	ZN	16			
		S	ZN	02 13	3	1	2.5 1
		T	ZN	06.5	1	1	0.8 1
8	AF	eP	Z	15 03 33	0.4	1	
		eS	Z	05 52			
8	AF	P	ZN	15 58 04	0.5	1	

Date	Stn	Phase	h m s	Az	Tz	An	Tn
FEB 8	AF	1P	ZN	16 59 28 d	1	1	0.6 1
		S	ZN	17 01 06	0.5	1	0.5 1
8	AF	1P	ZN	17 52 50 un	7.5	1	2.1 2
		1S	ZN	54 29 u?n	3.5	2	3.5 2
		T	ZN	59 27	1.2	2	1 2
9	AF	P	Z	00 05 48			
9	AF	1P	ZN	02 11 49 d	6.5	3	3.5 3
		1S	ZN	14 35 n	4.5	1	5.6 1
		L	ZN	15.6	6	28	3 25
		T	ZN	26	4	5	2.8 5
9	AF	eP	ZN	09 08 58	1	2	0.8 1
11	AF	1P	ZN	16 47 21 d	1.8	1	1.5 1
		S	ZN	48 18	2	1	1.2 1
11	AF	(S)	ZN	16 49 18	6	1	4.5 1
11	AF	1P	ZN	21 04 39 d	4	1	2.2 2
		S	ZN	07 29	4	1	3.3 1
		L	ZN	08.4	4.5	28	2.5 25
12	AF	e(P)	Z	06 24 09	0.8	1	
		e(S)	Z	25 43	0.5	1	
12	AF	e(P)	Z	06 37 31	0.5	1	
		e(S)	Z	39 55	0.4	1	
12	AF	1P	Z	12 10 17 d			
		e(T)	Z	14 43			
12	AF	1P	Z	13 00 40 d			
12	AF	1P	Z	22 04 37 d	2	5	
		S	Z	13 37	3.3	20	
		eSS	Z	17 40	2	16	
		(SSS)	Z	21 25	2.5	18	
		Lr	Z	24.2	11.5	21	
12	AF	P	Z	23 37 38	1.8	5	
		eS	Z	46 41			
		eSS	Z	50.6			
		e(SSS)	Z	53.9	1	15	
		eLr	Z	57.8	2	20	
13	AF	1P	ZN	06 46 10 ds			10 1
		(S)	N	49			35 2
13	AF	1P	ZN	16 27 18 u	0.8	1	
13	AF	P	ZN	16 38 35	1.2	3	0.7 2
		eL	ZN	17 00			
14	AF	P?	Z	03 33 01	0.7	1	
		eL	ZN	54.6	1	20	
14	AF	P	ZN	15 51 46	2.8	1	1 2
		S	ZN	52 27	2.4	1	1.7 1
		L	ZN	52.7	6.3	5	3.6 10
15	AF	eP	ZN	06 30 16	0.5	1	0.5 1
		S	ZN	32 33	1	1	1 1
		T	ZN	43 40	0.5	1	0.5 1
16	AF	e(P)	ZN	13 28.6	0.5	1	0.5 1
		e(S)	ZN	30.6	0.5	1	0.5 1
		eL	ZN	32.2	2	8	1 5

Date	Stn	Phase	h m s	Az	Tz	An	Tn
FEB 16	AF	eL	ZN 13 42.8	2.5	10	1.2	10
16	AF	eP	ZN 15 58 16	0.5	1	0.5	1
		S	ZN 16 00 16	0.8	1	0.7	1
17	AF	eP	Z 00 23 44	0.5	1	0.7	1
		S	ZN 24 43	0.6	1	1.2	5
		eL	N 25.2	1.4	8	0.7	1
		T	ZN 28 38	1	1		
19	AF	iP	ZN 10 31 59 d?	1.1	1	0.9	1
		S	ZN 32 19	3.7	1	2.9	1
19	AF	P	ZN 15 02 25	0.6	1	0.5	1
19	AF	iP	ZN 16 46 30 d	1.3	2	0.8	2
		(S)	ZN 47 15	0.5	1	0.6	2
20	AF	iP	ZN 23 58 57 u	1.2	1	0.7	1
		iS	ZN 59 15 n	2.1	1	2.4	1
22	AF	P	ZN 16 31 52	0.6	1	0.5	1
		(S)	ZN 32 40	1.2	1	0.8	1
		T	Z 35 30	0.8	1	0.6	1
22	AF	(P)	Z 19 57 07				
		(S)	Z 58 40				
22	AF	iP	ZN 21 57 03 d	2.3	1	1	1
		S	ZN 59 50			1.2	2
		L	ZN 22 00.9	2.5	30	1.2	20
		eT	ZN 09	0.8	1	0.6	1
23	AF	eP	Z 04 27 43			0.9	1
23	AF	iP	ZN 19 42 03 d			2.8	1
		S	ZN (19)				
24	AF	iP	ZN 23 28 26 u?			0.5	1
24	AF	P	ZN 23 57 03	0.6	1	0.5	1
		(S)	ZN 58 37			0.5	1
25	AF	iP	ZN 00 52 07 d	0.6	1	0.7	1
		S	ZN 53 37				
25	AF	iP	ZN 04 57 50 u	1	2	0.6	1
		S	ZN 59 46	1	2	0.8	2
25	AF	P	ZN 08 27 11	1	2	0.6	1
		S	ZN 29 23	0.6	1	0.7	1
25	AF	iP	Z 11 10 52 d				
		eS	Z 11 41				
25	AF	eP	ZN 15 02 54	2.2	2	1	1
		S	ZN 03 05	4.7	3	1.6	2
		Lq	N 03.6			13.5	12
		Lr	Z 03.9	21.5	10		
		T	ZN 06.3				
25	AF	eP	ZN 17 56 32	0.5	1	0.5	1
		S	ZN 57 18	0.8	1	0.7	1
26	AF	iP	Z 02 58 22	0.3	1		
		S	ZN 03 00 00				

Date	Stn	Phase	h m s	Az	Tz	An	Tn
FEB 26	AF	S	ZN 06 06 53				
		Lq	N 13.4	2	15	1	12
		Lr	ZN 14.1				
26	AF	P	ZN 18 22 05	3.5	20	2	12
		i	Z 08				
		PcP	ZN 15	1.6	3	0.5	1
		i	ZN 25				
		ePP	Z 25 10	7.5	8	1.3	9
		ePPP	Z 26 58	3.2	3	1	2
		S	ZN 31 23	3.5	8		
		(PS)	ZN 40	2	15		
		SS	ZN 35 00	8.3	10	2	10
		eSSS	ZN 38 56	8.5	27	6	27
		Lq	ZN 41.3	4	22	2	23
		Lr	ZN 43.3	1.5	20	1.3	20
				3.3	20	2.5	23
				13.5	20	5.5	20
27	AF	iP	ZN 11 57 18 us	4	1	1.6	1
		iS	ZN 54 u?n			11.5	1
MAR 1	AF	P	Z 02 05 30	0.3	1		
		S	ZN 06 18	0.8	1	0.7	1
1	AF	iP	Z 04 26 32 d	1	2	0.5	1
1	AF	iP	ZN 06 19 07 u	0.6	1	0.5	1
		S	ZN 29	1.5	1	1	1
1	AF	P	ZN 06 43 35 u?	0.6	1	0.5	1
		i	Z 40				
		S	ZN 45 03	0.6	1	0.5	1
2	AF	iP	ZN 05 50 12 d	0.9	1	0.8	1
		S	ZN 31	0.5	1	0.5	1
				2	1	1.3	1
3	AA	P	N 17 03 50				
3	AA	eP	N 21 38 14				
		eS	N 31				
4	AA	iP	N 10 34 40.5				
		iS	N 35 00				
4	AA	eP	N 15 03 07				
		S	N 29				
4	AA	e	N 20 05.6				
5	AA	eP	N 05 53 56				
		S	N 54 16				
5	AA	eP	N 10 41 55				
		e	N 42 58				
		eS	N 43 33				
5	AA	eP	N 21 28 04				
		S	N 29 28				
7	AA	eP	N 08 01 36				
		S	N 56				
7	AA	P	N 10 14 08				
		i	N 14				
		S	N 16 39				
		eL	N 17.5				
7	AA	eP	N 16 09 41				
		S	N 10 06				

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn
MAR 7	AA	e(P) e e(S)	N	19	52	20				
			N		54	15				
			N			39				
8	AA	P S	N	00	40	44				
			N		41	34				
8	AA	P eS	N	08	30	31				
			N		32	03				
8	AA	eP IS	N	11	06	21				
			N			46 s				
8	AA	eP S	N	18	22	15				
			N			40				
11	AF	iP IS	ZN	02	26	00 d s	4	1	2.6	1
			ZN			23 n	34±	1	32±	1
11	AA	P S	N	08	56	43				
			N		57	03 s				
11	AA	P S	N	13	02	34				
			N		03	07				
11	AA	eP S	N	15	43	34				
			N			55				
12	AA	eP eS	N	23	25	07				
			N			44				
12	AA	e e	N	23	38	07				
			N		23	38 45				
13	AA	eP S	N	07	46	24				
			N		48	49				
13	AA	eP S	N	10	21	11				
			N			37				
13	AA	eP?	N	21	18	17				
14	AA	eP S	N	04	19	27				
			N			20 13				
15	AA	eP S	N	01	06	50				
			N			07 10				
16	AF	iP IS	ZN	04	33	32 d	0.8	1	0.8	1
			ZN			35 52 u	1	1	1	1
16	AF	iP S	Z	05	22	21 d	0.5	1	0.8	1
			ZN			43	1.1	1		
16	AF	iP S T	ZN	07	53	54	0.8	1	0.7	1
			ZN			54 41	2	1	1.6	1
			ZN			58 41	2	1	1.6	1
			ZN							
16	AF	iP PP	ZN	11	27	47 u			0.5	1
			ZN			29 52				
16	AF	P	ZN	13	56	11			0.7	1
16	AF	P	ZN	18	31	47			0.6	1
16	AF	P S	ZN	20	07	44			0.5	1
			ZN			09 36			1	1

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn
MAR 16	AF	P S	ZN	22	35	40			0.5	1
			ZN			37 38			0.6	1
16	AF	iP S	ZN	23	15	11 u			0.5	1
			ZN			16 53			0.5	1
17	AF	P S	ZN	13	59	(24)				
			ZN			14 01 (16)			0.5	1
17	AF	P S eL	ZN	14	08	(27)			1	1
			ZN			10 (23)			1	1
			N			12.6			2.5	20
17	AF	iP S	ZN	16	18	(40) d			0.5	1
			ZN			20 (36)			0.5	1
18	AF	P S	ZN	06	02	(01)				
			ZN			(14)			2.3	1
18	AF	P S	ZN	08	29	(15)			0.4	1
			ZN			31 (08)			0.8	1
18	AF	iP S	ZN	09	31	(21) d			0.5	1
			ZN			33 (51)			0.5	1
18	AF	eP eS	ZN	09	44	(01)			0.5	1
			ZN			46 (43)			0.6	1
18	AF	P S T	ZN	11	38	(30)			0.7	1
			ZN			39 (06)			2.1	2
			ZN			41 (44)			2.5	1
18	AF	P S T	ZN	13	17	(01)			0.6	1
			ZN			(38)			2	3
			ZN			20 (22)			2.5	3
18	AF	eP eS eLq Lr	ZN	15	02	(50)			1	1
			N			09 (10)			2.5	20
			N			11.9			2.5	30
			N			15.2			5.5	23
18	AF	iP e(S) L T	ZN	23	13	(40) d			0.8	1
			N			14 (02)			1	1
			N			14.3			4.5	6
			N			16 (59)			0.6	1
18	AF	iP T	ZN	23	25	(06)			1.1	1
			ZN			28.5			0.6	1
18	AF	P S	ZN	23	46	(19)				
			ZN			47 (36)			0.5	1
19	AF	P S	ZN	00	07	(50)			0.5	1
			ZN			08 (49)			0.8	1
19	AF	P (S)	ZN	07	16	(31)			0.6	1
			ZN			18 (26)			0.6	1
19	AF	P eL	ZN	07	19	(06)			0.8	2
			N			23.2			1.8	18
19	AF	P eL	ZN	12	09	(30)			1	1
			N			13.5				
19	AF	P S	ZN	20	36	(35)			0.8	1
			ZN			38 (29)			0.8	1
20	AF	iP S	ZN	09	41	(57) u			0.6	1
			ZN			42 (15)			1.5	2

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn
MAR 20	AF	iP	ZN	15	54	(50)	us	21.5±2	
20	AA	eP	N	23	45	09			
		eS	N	46	59				
21	AF	iP	ZN	02	41	58	d	0.8 1	
		iS	ZN	42	38	s		1.5 1	
21	AF	(P)	ZN	06	07	30		0.6 1	
		(S)	ZN	09	16			0.6 1	
21	AF	(P)	ZN	07	40	24		0.6 1	
		(S)	ZN	42	18				
21	AF	P	Z	09	25	00		0.5 1	
		S	Z	26	58			0.8 1	
21	AF	iP	ZN	09	45	51	d	0.8 1	
		eT	ZN	49	03			0.7 1	
21	AF	e(P)	ZN	14	24	31			
		e(S)	ZN	27	17				
21	AF	P	ZN	19	59	02		0.6 2	
		eS	ZN	20	02	28		1 4	
		eL	N	08.2				1.8 7	
22	AF	eP	Z	04	20	21			
		eL	N	39.1					
22	AF	P	ZN	06	36	34		0.5 1	
		S	ZN	38	26			0.3 1	
22	AF	P	ZN	13	58	28		0.3 1	
22	AF	iP	ZN	21	31	40	d	1.5 1	
		S	ZN	33	59			0.8 2	
24	AF	P?	Z	23	08	10			
24	AF	P?	Z	23	45	42		0.6 2	
		(P)	Z	52				1.1 2	
25	AF	iP	ZN	14	17	22	u	0.5 1	
25	AF	P	ZN	17	06	05		0.7 1	
		S	ZN	24				2 1	
25	AF	iP	Z	20	14	09	d	0.6 1	
		iS	Z	27	n			1.6 1	
25	AF	iP	ZN	21	59	46	d	1.4 1	
		iS	ZN	22	00	05	n	3.4 1	
26	AA	e(P)	N	08	16	42			
		S	N	17	39				
27	AA	P	N	16	33	47			
		S	N	36	52				
28	AA	eP	N	09	46	36			
29	AF	iP	ZN	17	06	09	d	0.5 1	
		S	ZN	28				1.5 1	
30	AF	iP	ZN	05	28	48	u	0.6 1	
		S	ZN	29	42			1.1 1	

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn
MAR 30	AF	iP	ZN	07	59	45	d	1.1 1	
		S	ZN	08	00	02		3.5 1	
30	AF	iP	ZN	08	50	14	d	50.5 1	
30	AF	iP	ZN	15	24	(49)	d	2.1 1	
		S	ZN	25	(07)			5.1 1	
APR 4	AA	P	N	07	49	40			
		S	N	51	01				
4	AA	eP	N	15	36	45			
		S	N	37	06				
5	AF	P	ZN	22	13	47		0.6 1	
		S	ZN	14	40				
6	AF	P	Z	09	05	29		0.5 1	
		(S)	ZN	06	57				
6	AF	P	Z	14	18	03			
6	AF	P	ZN	15	37	55		1.1 1	
7	AF	P	Z	17	39	01		1.1 1	
		S	ZN	40	23				
8	AF	P	ZN	16	04	13		1 2	
		L	Z	09.4				3 20	
8	AF	L	ZN	18	40.2			4 20	
8	AF	P	ZN	21	45	46		0.6 1	
		pP	ZN	46	08			0.6 1	
9	AF	eP	Z	08	47	(59)		4.0 10	
		e(S)	ZN	48	(59)				
9	AF	P	ZN	09	24	(40)		1.0 1	
		iS	ZN	27	(15)			1.3 1	
9	AF	eP	ZN	15	47	(17)		0.7 1	
		eS	ZN	56	(56)			0.5 1	
		eLq	N	16	07	(24)		0.5 1	
		eLr	ZN	10	(04)				
		M	ZN	17				3 20	
10	AF	iP	ZN	08	04	(48)	dn	3 1	
		eS	ZN	05	(07)			19 1	
10	AF	iP	ZN	17	42	23	u	0.7 1	
		S	Z	43	56				
11	AF	eP	ZN	00	30	(02)		0.9 1	
		S	ZN	31	(41)			0.4 1	
12	AF	P	Z	22	33	09		1.6 2	
		eL	Z	59.9				1.5 25	
13	AF	eP	ZN	17	13	07		1.7 1	
		eS	ZN	33				11½	
15	AF	eP	Z	01	22	40			
16	AF	eP	Z	11	52	03			
17	AF	eP	Z	04	39	26			
		S	ZN	41	01				

1.5 1

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn		
APR 17	AF	iP iS	ZN ZN	07	46 47	34 23	u s	1.3 4	1 1		
17	AF	iP eS	ZN ZN	13	13 14	56 22	u	2.4 3½	1 1		
17	AF	eP eS	ZN ZN	20	50 52	28 16		1.1 0.8	1 1		
18	AF	iP eS (Lr) T	ZN ZN Z ZN	02	39 40 41 42	56 18 28 00	u	6 12	1.8 4 7	1 2	
19	AF	eP eLr	ZN Z	07	43 49.2	39		1.9 1.1	2 22	0.3 1	
19	AF	P S	ZN ZN	08	54 56	03 19		0.5 0.6	1 1	0.3 0.4	1 1
19	AF	P	ZN	16	23	30		0.6	1	0.3	1
19	AF	eP eS	ZN ZN	16	32 34	22 27		0.6 0.5	1 1	0.3 0.3	1 1
19	AF	eP eS	Z ZN	21	40 42	36 32					
20	AF	iP S	ZN ZN	02	12 51	18 s	u	5 14	1 1	1.9 8	1 1
20	AF	eP eS eL	Z ZN Z	19	23 27 30.4	51 14		0.8 0.6 1.4	1 1 15	0.3	1
20	AF	iP	ZN	21	39	42 un					
20	AA	iP eS	N N	21	39 40	42.8 02					
22	AF	eP	Z	10	40	19		0.7	1		
22	AF	eP	Z	19	06	49		0.5	1		
23	AF	eP? e(P)	Z Z	05	25	11 54					
23	AF	eP eS eLr M	ZN ZN ZN ZN	09	12 21 32.4 45	(14) (42)		1.2 2.5 5	18 40 20	1.2 1.8	20 18
24	AF	P eS	Z Z	13	27 28	44 45					
25	AF	eP?	Z	00	38	59					
25	AF	P i eS eLr	Z Z ZN ZN	11	21 22 24 26.9	10 50 45		0.7 2.2 1.6	1 10 11		
25	AF	P (S)	Z Z	11	36 41	25 40					
26	AF	eP S	Z ZN	07	25 27	18 13		0.9 0.9	1 1	1.0	1

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn		
APR 26	AF	eL	ZN	08	09.6			2.3	28	0.9	28
27	AF	P eS	Z Z	00	28 31	47 06		0.7 0.7	1 1		
29	AF	iP e(S) eL	Z N ZN	09	30 40.1 50.2	34 d		1.0 1.0	2 35		
30	AF	eL	ZN	11	46.1			0.8	28	0.4	30
30	AF	iP eS	ZN ZN	14	48 49	53 30	u?	13 49	1 1		
30	AF	eP eS eT	Z ZN Z	21	35 37 49	36 57 30		0.6 0.7 0.8	1 1 1	0.4	1
MAY 1	AF	eP S eT	Z ZN Z	03	46 47 50	23 17 29		0.6 1.0 0.8	1 1 1	0.4	1
2	AF	iP eS	Z ZN	01	32 34	37 07	d	0.6 0.6	1 1	0.3	1
2	AF	iP eS?	ZN ZN	18	51 48	28 u					
2	AF	eP eS eLr eT	Z ZN Z Z	19	41 44 45 54	33 15 12 52		0.7 0.8 1.3	1 1 15	0.3	1
2	AF	eP eS eLq eT	Z ZN N Z	19	42 45 46 55	57 29 12 08		0.9 0.7 1.0	1 1 1	0.5 0.6	1 13
2	AF	eP eS	Z Z	20	53 57	59 28					
2	AF	eP eS eL M eT	ZN ZN Z Z Z	22	48 50 51.4 05 23	37 23 4		4 2.3 29 0.7	1 1 8 1	0.4 1.0 7	2 1
2	AF	P eS eT	ZN ZN Z	23	27 29 40	20 07 43		1.0 0.6 0.7	2 1 1	0.4 0.3	1 1
3	AF	eP eS eT	Z Z Z	16 17	57 00 10	33 09 45		0.7 0.6 0.7	1 1 1		
3	AF	eP eS eT	Z Z Z	17	06 08 19	26 52 25		0.6 0.6 0.6	1 1 1		
3	AF	eP eS eT	Z Z Z	19	04 06 17	01 33 17		0.6 0.6 0.5	1 1 1		
4	AF	iP S	ZN ZN	03	34 36	58 28	d	1.6 0.8	1 1	0.4 0.5	1 1
4	AF	eP S T	Z ZN ZN	10	31 32 38	05 22 26		0.5 0.7 0.7	1 1 1	0.4 0.3	1 1

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn
MAY 5	AF	eP eS eT	Z Z Z	06	42 21 44 55 55 45	0.7 1 0.7 1 0.6 1			
5	AF	P eS eT	Z Z Z	08	47 35 50 10 09 00	0.8 1 0.5 1 0.6 1			
5	AF	eP eS eLq eLr M eT	ZN ZN ZN ZN Z ZN	13	46 37 49 06 47 50 37 14 05 13 59 16	1.3 1 0.8 1 4 14 19 7 0.6 1		0.6 1 0.5 1 1.2 10 8 8 0.3 1	
5	AF	eP eS eL eT	Z Z ZN ZN	15	32 11 34 32 35.6 45.1	0.7 1 0.6 1 1.5 10 0.7 1		0.3 1 0.4 1 0.4 1	
5	AF	eP eS eT	Z Z Z	19	05 36 08 05 19				
5	AF	eP eS eT	Z Z Z	20	40 33 43 02 53	0.7 1 0.5 1 0.7 1			
5	AF	eP S eT	Z Z Z	20	50 17 52 53 21 03	0.6 1 0.6 1			
6	AF	eP eS	Z Z	11	48 45 53 01	0.5 1 0.5 1			
6	AF	P L	ZN ZN	23	17 56 d 23 07	4.2 2 4 22		1.2 2	
7	AF	P eS eLq Lr	ZN Z ZN ZN	00	32 46 37 47 40.1 42 10	0.7 1 2.2 20 4 25		0.4 1 1.0 25 0.8 22	
7	AF	P eS eL eT	ZN ZN ZN ZN	04	38 13 39 29 40 50 45 30	1.3 1 2.3 1 7 9		0.6 1 1.7 1 2.5 12	
7	AF	eP	ZN	04	43 52	1.4 2		0.5 1	
7	AF	iP eS	ZN ZN	07	48 05 u 35	1.7 1 4 1		0.7 1	
7	AF	eP eLr	ZN Z	10	33 19 52.7	0.7 1 1.8 30		0.3 1	
7	AF	iP ePP	ZN Z	14	58 35 u 15 00 11	0.6 1		0.3 1	
7	AF	eP	Z	22	47 07	0.6 1		0.3 1	
8	AF	eP eS eT	ZN ZN ZN	14	28 12 30 44 41	0.6 1 0.6 1 0.6 1		0.3 1 0.3 1 0.3 1	
8	AF	eP	Z	16	31 20				

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn
MAY 9	AF	eP eS eL M T	Z Z Z ZN Z	08	19 23 21 50 23.3 35 32 42	0.6 1 0.5 1 0.7 1 2.0 0.6 1			0.6
10	AF	iP eS	ZN ZN	10	05 41 ds 06 02	18 1		7 1	
10	AF	P S eT	Z ZN Z	23	27 (23) 29 (28) 40	0.7 1 0.5 1		0.4 1	
11	AF	iP S	ZN ZN	05	28 (28) u 29 (55)	1.0 1 1.8 1		0.5 1	
11	AF	eL	ZN	09	19.0	2.0 25		0.9 20	
12	AF	P S eL eT	Z Z ZN ZN	04	47 52 50 29 51.2 05 01	0.5 1 0.5 1 1.2 15			
13	AF	eP eS eL M T	ZN ZN ZN Z ZN	13	45 09 47 44 48.4 50 58 52	0.6 1 0.5 1 1.9 10 0.8 1		0.3 1 0.4 1	
13	AF	eP eS eL M eT	ZN ZN ZN ZN ZN	14	22 07 24 34 25.1 38 34	1.5 1 0.9 1 11 8 0.9 1		0.4 1 0.5 1 4 8 0.5 1	
13	AF	iP eS	ZN ZN	14	54 48 ds 56 18	18 1 3 1		3 1 2.3 1	
14	AF	eP eS eL M T	ZN ZN ZN ZN ZN	02	46 43 49 13 50.2 03 03 02 59 46	0.8 1 0.8 1 5.2 7 0.6 1		0.3 1 0.4 1 1.9 7 0.3 1	
14	AF	P eS	Z Z	12	50 59 52 58	0.6 1 0.6 1			
14	AF	iP S	ZN ZN	13	20 52 d 21 26	1.3 1 6 1		0.6 1 3 1	
14	AF	eP S eL M T	ZN ZN Z ZN Z	13	42 02 44 34 45.5 59 55 27	0.7 1 0.6 1 3 7 0.7 1		0.3 1 0.3 1 1.1 7	
15	AF	iP	ZN	19	16 56 u	0.8 1		0.3 1	
15	AF	P	Z	19	54 01	0.7 1			
15	AF	iP iS	ZN ZN	20	55 47 u 57 23 n	7 3 12			
16	AF	eP S	Z ZN	17	10 09 11 45	1.0 1		0.6 1	

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn	
MAY 16	AF	eP	ZN	17	30	55	1.1	1	0.4	1
		eS		ZN	32	37	0.9	1	0.6	1
		eL		Z	34.3					
		M		ZN	48		4	8	2.1	8
		eT		ZN	44		0.8	1	0.7	1
16	AF	eP	Z	21	56	37				
17	AF	eP	ZN	19	40	12	2.2			
		eS		ZN	49.1		2.0	20	0.8	25
		e(SSS)		Z	56.5		1.0	25		
		Lr		ZN	59.7		3	25	1.5	25
17	AF	iP	ZN	22	36	14	35	1	10	1
		eS		ZN	33		40	1		
19	AF	eP	Z	01	46	05				
		eS		ZN	47	55	0.8	1	0.3	1
19	AF	eP	ZN	02	24	20	0.8	1	0.3	1
		S		ZN	26	30	0.6	1	0.4	1
19	AF	eP	ZN	03	43	07	4	1	1.9	1
		S		ZN	28		24	1	8	1
20	AF	eP	ZN	14	18	14	1.9	1	0.8	1
		S		ZN	19	13	3	1	1.9	1
21	AF	eP	Z	06	31	44				
		eS		Z	33	29				
21	AA	eP	N	08	44	37				
		eS		N	45	21				
21	AA	eP	N	18	14	19				
		eS		N	15	07				
		eT		N	18					
21	AF	P	Z	21	47	(52)				
22	AA	eP	N	13	46	19				
		eS		N	47	41				
		eL		N	48	33				
		M		N	55					
		eT		N	53					
22	AA	eP	N	17	34	37				
		eS		N	36	24				
		eL		N	37					
22	AF	eP	ZN	23	(48)		0.7	1	0.3	1
		eS		ZN	(50)		0.6	1	0.4	1
		eT		ZN	(59)		0.6	1	0.4	1
23	AF	PKP	ZN	03	(05)		4	2	0.7	2
23	AF	P	Z	12	42	17				
		eS		Z	44	53	0.7	1		
25	AF	eP	Z	13	45	(32)				
		eS		Z	48	(04)				
25	AA	eP	N	17	36	06				
		eS		N	37	42				
25	AA	eP	N	18	43	00				
		eS		N	44	39				
25	AA	eP	N	21	08	54				

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn	
MAY 26	AF	eP	Z	06	(11)					
26	AA	eP	N	12	38	07				
		eS		N	39	39				
27	AF	eP	Z	07	29	21				
28	AF	eP	Z	02	38	49				
28	AF	P	Z	04	12	25	1.1	1		
28	AA	eP	N	12	42	49				
		eS		N	44	45				
28	AA	eP	N	19	31	41				
		eS		N	34	04				
31	AF	eP	Z	05	16	35				
31	AF	eP	Z	13	25	49				
		eS		Z	28	12				
31	AF	eP	Z	19	23	02				
JUN 1	AF	eP	ZN	23	49	13	2.2	1	0.4	1
		eLq		Z	24	39.2	2.0	50		
		eLr		Z	49		3	23		
2	AF	eP	ZN	05	05	58	0.9	1	0.3	1
		eS		ZN	08	31	0.8	1	0.5	1
		eT		Z	19		0.7	1		
2	AF	ePKP	ZN	05	11	02	2.2	1	0.5	1
2	AF	ePKP	Z	06	04	48				
		oLr		Z	42		2.1	20		
		M		Z	47					
2	AF	ePKP	Z	07	22	02				
3	AF	eP	Z	03	45	04	0.5	1		
		P		ZN	20	33	51			0.5
		eS	ZN	34	21				1.7	1
5	AA	eP	N	03	47	34				
		eS		N	49	14				
6	AF	iP	ZN	08	12	28	20	1	7	1
		S		ZN	52				126	1
7	AF	PKP	Z	14	35	23	1.5			
7	AF	eP	ZN	15	42	45	0.9	0.4		
7	AF	iP	ZN	22	55	18	1.6	1	1.0	1
		eS		ZN	46		4	2	5	2
		eT		ZN	57	40	14	2	9	2
8	AF	iP	ZN	08	55	07	4	1	1.6	1
		S		ZN	27		22	1	>29	1
8	AF	P	Z	15	54	45	0.9	1		
10	AF	eS	Z	20	49	53	2.7	13		
		eL		ZN	57	55				
		M		ZN	21	01	7.5	17	1.4	15

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn
JUN 11	AA	eP eS	N N	22 24 26 09					
13	AA	eP eS	N N	13 20 24 16					
13	AA	eP eS	N N	21 39 41 24					
17	AF	eP eS	ZN ZN	05 00 02 06	0.5 0.7	1 1	0.3 0.4	1 1	
17	AF	eP eS	Z Z	09 37 40 39					
17	AF	iP	ZN	15 33 07 d?	0.6	1	0.4	1	
17	AF	eL M	Z ZN	15 45.9 48	1.1	20	0.5	20	
17	AF	iP S	ZN ZN	21 51 41 d 53 29	1.1 0.8	1 1	0.5 0.5	1 1	
18	AF	P S	ZN ZN	12 38 49 40 20	0.5 1.0	1 1	0.3 0.9	1 1	
18	AF	iP eS	ZN ZN	13 59 14 ds 14 02 30	8 2.2	1 1	6 $\frac{1}{2}$ 2.0	1 1	
18	AF	eP	ZN	16 50 02	0.8	1	0.5	1	
18	AF	e(SS) eL	ZN ZN	22 33.3 34.9	1.8	10	0.6 0.6	18 10	
19	AF	eP eS	ZN ZN	00 49 58 51 52	0.5 0.8	1 1	0.3 0.8	1 1	
19	AF	P eS	ZN ZN	06 31 57 34 16	0.6 0.5	1 1	0.3 0.3	1 1	
20	AF	P	Z	03 41 15					
20	AF	eP eS eL M	ZN ZN ZN Z	14 31 29 35.2 36.8 39	0.6	1	0.3	1	
21	AF	eP eS	Z ZN	06 09 06 10 37					
21	AF	eP eS eT	ZN ZN ZN	18 15 16 16 15 19 45	0.6 1.0 0.8	1 1 1	0.3 0.7 0.5	1 1 1	
21	AF	iP	ZN	20 36 40 u	1.8	2	0.4	1	
23	AF	eL	ZN	09 26.2	1.5	25	0.6	25	
23	AF	P	Z	10 14 32					
24	AF	iP eS	ZN ZN	03 03 10 d 04 45	0.7 1.2	1 1	0.4 0.7	1 1	
25	AF	eP eS	ZN ZN	09 12 00 13 30	0.9 1.2	1 1	0.3 0.9	1 1	
25	AF	eL	ZN	17 13					
26	AF	iP	ZN	02 46 56 u?	0.8	1	0.4	1	

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn
JUN 26	AF	P eL	ZN N	07 07 07 11.3					
26	AF	eP eS eT	ZN ZN ZN	13 50 46 52 07 58 17	0.5 0.8 0.7	1 1 1	0.3 0.7 0.3	1 1 1	
26	AF	eL	ZN	15 19.4	1.4	25			
27	AF	eL	Z	07 48.4	1.5	27			
29	AF	eP eS eL M	ZN ZN N ZN	09 27 45 32 26 34 07 38	10 7	6 12	1.3 2.1	6 11	
29	AF	P eS	ZN ZN	10 26 46 28 55	2.1 0.6	1 1	0.8 0.3	1 1	
30	AF	P eS	ZN ZN	04 19 59 21 14	1.2 1.6	1 1	0.6 1.8	1 1	
JUL 1	AF	P S	ZN ZN	13 35 03 36 40			0.25 0.3	1 1	
1	AF	eP eS	ZN ZN	18 52 52 54 22	1.5 1.1	1 1	0.5 1.0	1 1	
2	AF	eP eS	ZN ZN	11 45 03 46 03	0.8 1.9	1 1	0.5 1.3	1 1	
4	AF	iP eS	ZN ZN	12 11 07 d 14 12	0.6 0.6	1 1	0.3 0.3	1 1	
6	AF	iP Lr M	ZN ZN ZN	22 13 52 u 17.4 19	29 55	4 20	8 12	1 20	
7	AF	eP ePP eS eLq eLr M	ZN Z ZN ZN Z Z	13 18 05 19 25 23 56 26 48 28.6 30	2.3 3 2.2 2.0	1 7 30 20	0.7 1 2.5 2.0	1 1 20 20	
7	AF	eP	ZN	14 46 13	0.7	1	0.5	1	
7	AF	P eS eL	ZN Z ZN	22 23 58 27.7 29.2	4 1.4 3	4 15 20	1.1 1.4 3	4 15 20	
7	AF	iP eS	ZN ZN	22 48 38 u 58	17 6.4	1 1	6 1	1 1	
8	AF	eP eS eL	ZN N ZN	02 39 51 42 58 45.1	4 11	1 20	0.6 0.9 3	1 16 16	
8	AF	eP eS eL	ZN ZN ZN	15 39 06 42 54 44.3	7 3 $\frac{1}{2}$ 17	4 12 17	1.5 2.3 5	4 12 14	
8	AF	P	Z	15 44 41					
8	AF	P eS eL	ZN N ZN	21 18 26 22 26 23.6	2.0 3	4 17	0.5 1.0	1 15	

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn
JUL 8	AF	eP ZN	21	53	10	3	4	1.5	2
		eS N		57	28				
		L ZN		58	30				
8	AF	eP ZN	22	14	47	0.9	1	0.3	1
		eS ZN		16	04				
		T ZN		21	48				
10	AF	iP ZN	12	18	48 d	0.6	1	0.3	1
		eS ZN		20	30				
10	AF	P ZN	14	25	19	0.5	1	0.25	1
		S ZN		28	21				
11	AF	eP ZN	05	48	18			0.4	1
		eS ZN		51	21				
11	AF	P ZN	11	26	00	0.8	1	0.3	1
		eS ZN		27	41				
11	AF	eP Z	16	28	45	0.6	1	0.4	1
		eS ZN		30	11				
11	AF	P Z	18	45	25				
12	AF	eP ZN	14	41	11	0.8	1	0.3	1
13	AF	iP ZN	07	19	40 u	1.2	1	0.8	1
		eS ZN		20	09				
13	AF	eP ZN	13	47	08	0.6	1	0.3	1
		eS ZN		48	33				
13	AF	eP ZN	22	12	59	0.8	1	0.3	1
		S ZN		15	20				
14	AF	eP Z	04	24	19				
15	AF	eP Z	14	05	49	0.5	1	0.25	1
		eS ZN		20	35 30				
15	AF	P Z	20	35	30	0.6	1	0.25	1
		eS ZN		37	08				
16	AF	P ZN	05	24	06	1.0	1	0.5	1
		S ZN		25	09				
16	AF	P ZN	06	48	53	3½	1	0.9	1
		S ZN		49	55				
16	AF	eP ZN	14	05	51	1.0	1	0.3	1
		eS ZN		09	39				
		eL ZN		10.9					
16	AF	eP ZN	15	35	07	0.5	1	0.2	1
		eS ZN		36	06				
		eT ZN		40	58				
16	AF	eP Z	20	04	46	2	4	0.2	1
		eS ZN		08	44				
16	AF	eP ZN	23	05	21	3	1	0.6	1
		eS ZN		06	49				
17	AF	eP Z	16	31	10	0.8	22		
		eL Z		51	48				
18	AF	eP Z	07	20	16	0.5	1	0.5	1
		eS Z		22	49				
		eT Z		33					

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn		
JUL 18	AF	iP ZN	14	14	48 d	9	2	1.6	2		
		PP Z		17	12						
		eS ZN		23	37						
		eLq ZN		31	29						
		eLr ZN		34.7							
		M ZN		39			6½	20	3	21	
18	AF	iP ZN	14	45	12½ d	0.7	1	0.3	1		
18	AF	P ZN	15	27	25	0.6	1	0.2	1		
18	AF	P Z	16	31	17						
19	AF	eP ZN	12	09	25	0.9	1	0.3	1		
19	AF	eP ZN	18	01	54	0.7	1	0.4	1		
		eS ZN		03	02						
		eL ZN		47							
		eT ZN		07	44			1.4	1	0.6	1
19	AF	eP ZN	18	29	20	0.7	1	0.25	1		
		eS ZN		31	30						
20	AF	P Z	03	15	52						
20	AF	eP Z	09	13	50						
20	AF	iP ZN	15	12	19 ds	4	1	1.3	1		
		eS ZN		13	49						
20	AF	eP ZN	17	24	35	0.5	1	0.2	1		
		eS ZN		26	37						
20	AF	eP ZN	20	02	20	0.5	1	0.3	1		
		eS ZN		04	36						
		eT ZN		20							
21	AF	eP ZN	07	49	04	0.7	1	0.2	1		
		eS ZN		13	11 30						
21	AF	eP Z	19	07	31	0.8	1	0.2	1		
		eS ZN		09	06						
22	AF	eP ZN	02	45	04	0.5	1	0.5	1		
		eS ZN		47	08						
		eT ZN		56							
22	AF	eP ZN	05	23	36	0.5	1	0.25	1		
		S ZN		25	22						
22	AF	eP ZN	10	29	26	1.6	1	0.7	1		
		eS ZN		30	38						
		eT ZN		35							
23	AF	eP ZN	14	08	13	5	5	0.5	1		
		eS N		12	24						
		L ZN		13	19						
23	AF	eP ZN	14	21	08	0.7	1	0.3	1		
23	AF	eP ZN	14	47	06	0.7	1	0.3	1		
23	AF	eP Z	15	33	27						
23	AF	eP ZN	15	34	47	3	1	0.5	1		
		eS N		38	44						
		L ZN		39	58						
					1.9	19	10	20			

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn
AUG 9	AF	iP ZN	16	07	00	6	2	2.2	2
		eS Z		10	50	2.2	10		
		eL ZN		12	10	6	23	1.8	20
10	AF	eP ZN	06	39	10	1.6	1	1.5	1
		S ZN		40	47	3	1	2.5	1
10	AF	eP ZN	07	33	39	0.5	1	0.6	1
		eS ZN		34	55	0.5	1	0.7	1
11	AF	eP ZN	10	29	30	2.1	1	1.2	1
11	AF	eP ZN	16	02	50	4 $\frac{1}{2}$	5	2.0	4
		S ZN		11	40	5 $\frac{1}{2}$	25	4	15
		eSS Z		15	6	4	40		
		eSSS Z		18	8	4	30		
		eLq N		20	3			1.8	30
		eLr ZN		22	2			6	30
11	AF	iP Z	22	48	12 $\frac{1}{2}$	3	3		
13	AF	eP ZN	22	01	39	0.8	1	0.8	1
		eS Z		04	00				
14	AF	iP ZN	06	39	17			0.6	1
		eS ZN		40	50			1.1	1
14	AF	eP ZN	08	53	21	3	1	2.2	1
		eS ZN		55	14	6	1	5	1
		eL ZN		56	05	5 $\frac{1}{2}$	10	3 $\frac{1}{2}$	12
		eT ZN		09	01	1.1	1	0.8	1
14	AF	eP ZN	23	33	05	3 $\frac{1}{2}$	2	1.7	1
		eS ZN		36	35				
		eLq N		37	45			2.5	10
		eLr ZN		38	3	8	20	3	15
16	AA	eP N	03	38	10				
17	AA	eP N	21	27	21				
18	AA	eP N	11	04	12				
		eS N		06	27				
19	AF	eP Z	05	22	26				
		epP Z		24	42				
		iSKS ZN		32	06			6	5
		e(PKKP)Z		38	57				
		eSSS N		44	4				
19	AF	eP Z	05	44	42				
		S N		53	53			2.3	15
		eSSS N		06	02			2.3	30
		eL N		05	3			4	20
19	AF	P Z	14	20	57				
		eS Z		22	27				
20	AF	eP Z	01	34	54	1.9	4		
		eL ZN		40	02	2.0	20		
20	AF	iP ZN	02	27	28	4 $\frac{1}{2}$	1	3	1
		S ZN		56		4 $\frac{1}{2}$	1	22	1
20	AF	iP Z	05	06	08	13	1		
		eS Z		07	42	5 $\frac{1}{2}$	1		

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn	
AUG 21	AF	P ZN	02	09	13	2.2	1	1.3	1	
		eS ZN		11	15	1.4	1	1.5	1	
21	AF	eP ZN	16	08	00	14	1	13	1	
		eS ZN		48		23	1	40	1	
22	AF	P ZN	09	04	13	0.6	1	0.6	1	
		eS ZN		08	05	1.2	23			
		eL Z		09	37	2.2	15			
24	AF	P Z	17	32	54					
24	AF	eP Z	21	01	50	1.4	4			
		eS N		05	0					
		eL ZN		05	29	2.1	20	1.2	11	
27	AF	P ZN	06	45	21	0.8	1	0.5	1	
		S ZN		46	46	0.8	1	0.9	1	
27	AF	eP Z	16	33	22					
		eL ZN		52	6					
27	AF	eP ZN	16	56	53	1.3	1	1.0	1	
		eS ZN		17	03	53				
		eSS Z		06	3	1.6	20			
		eLq N		09	14					
		eLr ZN		11	2	2.3	27	1.2	27	
28	AF	iP ZN	07	45	04	1.7	1	0.8	1	
		u								
28	AF	iP ZN	09	46	06	2.3	1	1.6	1	
		iS ZN		47	33	3 $\frac{1}{2}$	1	4 $\frac{1}{2}$	1	
28	AF	eP Z	20	35	37	1.1	1			
		eL Z		51	4	1.2	20			
29	AF	eP Z	10	07	50					
		eS Z		10	19					
		eT Z		21						
29	AF	eP Z	21	38	24	0.5	1			
31	AF	eP ZN	00	26	08	1.1	1	1.1	1	
		eS ZN		28	47	0.7	1	0.9	1	
		eL ZN		29	8					
		eT ZN		40		0.7	1	0.8	1	
		M ZN		43						
31	AF	eP Z	02	01	39	2.0	4			
		eSP Z		13	22	4	12			
		e Z		19	15	4 $\frac{1}{2}$	7			
31	AF	P Z	02	09	46	3	6			
		epP Z		11	46	4 $\frac{1}{2}$				
		ePP Z		13	43	5	5			
		e Z		19	15	4 $\frac{1}{2}$	7			
		iSKS ZN		28	n	7	10	10	4	
		SP ZN		21	48	12	16	4	13	
		e Z		26	18					
31	AF	iP Z	03	31	47					
		eS Z		33	00					
31	AF	iP ZN	03	57	17	5	1	2.5	1	
		S ZN		38				43	1	

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn	
SEP 1	AF	eP	Z	00	23					
		ePP	Z		27					
		eSKS	N		33	44				
		eS	ZN		34	46				
		ePS	ZN		36	17	2.0	28	1.3	
		eSS	N		40	39			1.4	23
		eLq	ZN		52	05				
		eLr	ZN		57.2					
		M	ZN	01	04		1.8	20	1.4	20
		7	AF	eP	ZN	16	27			
eS	Z				28	37			0.5	1
1	AF	P	ZN	16	38					
		eS	ZN		39	20			3	1
1	AF	P	ZN	18	43					
		eS	ZN		45	00			1.3	1
1	AF	eP	Z	19	02					
		eS	Z		44	45	1.1	1	1.1	1
4	AF	eP	Z	22	35					
		eS	ZN		36	32	0.6	1	0.8	1
5	AF	P	ZN	00	47					
		eS	ZN		07	36	6	1	3	1
5	AF	eP	ZN	11	46					
		eL	ZN		12	09.2	3	5	0.6	1
8	AF	iP	ZN	02	42					
		S	ZN		52		3½	1	4½	1
8	AF	eP	Z	08	31					
		eS	ZN		32	39	0.6	1	1.0	1
8	AF	eP	Z	11	40					
		ePP	ZN		44	29	2.3			
		PPP	Z		46	50	5	23	1.9	25
		eSKS	ZN		51	00	3½	6	2.4	25
		ePS	ZN		53	55	3½	20	4	12
		PPS	Z		54.29		4	15		
		eSSS	Z	12	03.6		3	40		
		eLq	ZN		10.1		3	35	1.7	22
		eLr	ZN		14.5		16	48	7	40
		M	ZN		21		11	20	5	20
8	AF	eP	Z	12	46					
		eS	Z		48	49				
10	AF	P	Z	14	47					
		eS	ZN		48	28	1.2	1	1.4	1
10	AF	eP	ZN	18	12					
		eS	ZN		15	00	0.7	1	0.6	1
		eT	ZN		26		0.6	1	0.6	1
10	AF	P	ZN	18	18					
		eS	ZN		19	35	0.8	1	0.8	1
12	AF	P	Z	00	18					
		S	ZN		20	24	0.5	1	0.8	1
12	AF	iP	ZN	08	02					
		S	ZN		27	27	0.9	1	1.3	1

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn	
SEP 12	AF	eP	Z	12	00					
		eS	ZN		02	15	0.5	1	0.5	1
13	AF	eL	ZN	21	58.2					
14	AF	eP	ZN	18	47					
		eS	ZN		49	36	0.8	1	0.6	1
14	AF	eP	ZN	22	40					
		eS	ZN		41	20	0.6	1	0.7	1
14	AF	eP	ZN	22	40					
		eT	ZN		46		0.7	1	0.7	1
15	AF	ePKP ₁	Z	02	05					
		iPKP ₂	ZN		53		1.0	1	1.9	1
17	AF	iP	ZN	23	29					
		S	ZN		46	u	3½	1	1.0	1
18	AF	eP	ZN	15	41					
		eS	N		44	18	2.6	3	1.7	1
		eL	ZN		45	15	1.4	20	1.2	17
19	AF	eIP	ZN	18	27					
		eS	ZN		29	42	1.1	1	0.8	1
19	AF	eP	ZN	22	30					
		e(S)	ZN		31	38	1.2	1	1.5	1
		T	ZN		35	38	0.4	1	0.5	1
20	AF	eP	Z	19	10					
		ePP	Z		12	30	0.8	1	0.9	1
20	AF	eS	N		16					
		SS	ZN		19	32	1.4	17	1.0	15
		Lq	N		21	30	1.7	30	1.7	30
		Lr	Z		22	58	2.2	20	2.2	20
22	AF	eP	Z	16	06					
		eS	ZN		08	03	4	20	0.9	1
23	AF	eP	Z	08	19					
		eS	ZN		22	39			0.6	1
		T	Z		34	45				
24	AF	eP	Z	21	51					
25	AF	iP	ZN	15	55					
		eS	ZN		57	01	1.1	1	0.6	1
26	AF	eP	ZN	07	15					
		eS	ZN		17	24	0.7	1	0.6	1
26	AF	eP	ZN	07	15					
		eT	ZN		27		0.6	1	0.6	1
27	AF	iP	ZN	00	47					
		S	ZN		48	25	5	1	2.5	1
27	AF	iP	ZN	06	35					
		iS	ZN		37	23 s	8	1	10	1
27	AF	eL	ZN	20	10					
		eS	ZN		23	3 s	7	1	7	1
27	AF	eL	ZN	20	10					
		eS	ZN		23	3 s	1.6	16	5½	1
28	AF	iP	ZN	01	36					
		eL	ZN		04	00.4	1.3	1	0.6	1
28	AF	eL	ZN	04	00.4					
		eS	ZN		04	00.4	1.8	20		
29	AA	eP	N	11	26					
		eS?	N		28	54				
29	AF	eP	ZN	19	16					
		i(P)	ZN		16(35)	(54)	2.3	2	0.6	1
29	AF	eP	ZN	19	16					
		i(P)	ZN		16(35)	(54)	2.5	1	0.7	1

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn	
OCT 1	AA	eP	N	23	33	50				
		eS		N			34	22		
4	AF	eP	ZN	02	28	06				
		eS		Z			32	07	0.7	1
		eL		Z			33	38	2.5	23
								1.3	30	
								2.6	20	
4	AF	eP	ZN	04	17	27				
		eS		Z			18	41	0.5	1
								0.6	1	
								0.5	1	
4	AF	eP	Z	07	10	17				
		eS		Z			11	58		
								0.8	1	
4	AF	eP	ZN	21	30	07				
		eS		Z			48		0.7	1
		eT		Z			34		1.3	1
								2.1	1	
								2.6	1	
5	AF	P	ZN	18	13	08				
								1.3	1	
8	AF	eP	ZN	23	51	47				
								1.7	2	
								0.8	1	
9	AF	eP	ZN	01	39	02				
		eS		Z			40	34	1.4	1
								0.7	1	
								0.8	1	
10	AF	iP	ZN	03	47	16				
		s		Z			49	19	6	1
								1.3	1	
								4	1	
								1.4	1	
10	AF	eP	Z	08	32	28				
10	AF	P	ZN	18	45	47				
		S		Z			46	47	7	1
		e		Z			50	08	3½	1
								1.0	1	
								2.1	1	
								3	3	
								0.8	1	
11	AF	eP	Z	00	33	16				
		eS		Z			35	40	1.2	1
		eT	Z			46	30			
								0.7	1	
11	AF	iP	ZN	06	19	30				
		iS		Z			47		5	1
								9	1	
								2.3	1	
11	AF	eP	Z	09	33	07				
		eS		Z					0.6	1
								0.8	1	
								0.5	1	
								0.6	1	
13	AF	eP	Z	17	30	32				
		i		Z			34		2.5	1
		iS		Z			32	11	4	1
		eT		Z			35		1.5	1
		M	Z			40		3	1	
								1.6	1	
								1.3	1	
								2.2	4	
16	AF	eP	Z	03	29	(20)				
		eS		Z			30	(35)	0.5	1
								0.9	1	
								0.9	1	
								0.9	1	
18	AA	eP	N	02	53	49				
		eS		N			56	44		
18	AA	eP	N	03	58	31				
		eS		N			04	00	05	
18	AA	eP	N	06	39	07				
		eS		N			26			
18	AA	eP	N	07	05	10				
		eS		N			07	27		

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn	
OCT 18	AA	eP	N	07	33	30				
		eS		N			35	07		
18	AF	eP	Z	17	04	(55)				
		eS		Z			15	(35)	5	5
		eSS		Z			21.2		2.3	20
		eLq		Z			28.4		2.5	19
		eLr		Z			32.6			
		M		Z			36		8	17
								1.6	25	
								1.3	20	
								1.3	23	
19	AF	P	Z	11	32	06				
		pP		Z			44			
19	AF	eP	Z	19	35	47				
19	AF	P	ZN	20	25	45				
		S		Z			26	16	2.0	1
								7	1	
								1.1	1	
								8½	1	
21	AF	iP	ZN	11	45	36				
		s		Z			47	15	3	1
								2.2	1	
								1.3	1	
								1.9	1	
21	AF	eP	ZN	16	46	06				
		eS		Z			47	45	0.5	1
								0.6	1	
21	AF	eP	ZN	17	39	12				
		eS		Z					3½	3
								0.7	1	
22	AF	eP	ZN	09	54	07				
		eS		Z			57	15	1.9	1
		eL		Z			58	08	1.8	11
								7	20	
								2.5	1	
								0.7	1	
22	AF	iP	ZN	14	42	57				
		eS		Z			44	37	2.5	1
								0.7	1	
								1.3	1	
								0.6	1	
22	AF	P	ZN	18	44	48				
								0.5	1	
23	AF	eL	ZN	00	56					
		M		Z			01	02	3½	18
								1.6	18	
23	AF	P	Z	14	50	07				
		ScP		Z			54	59	3	2
		eS		Z			58.7		1.6	25
		eSSS		Z			15	05.9	1.0	30
		eLr		Z			09.5			
		M		Z			14		3	20
								0.9	20	
23	AF	iP	ZN	15	03	02	d?	0.6	1	
								0.5	1	
23	AF	iP	ZN	17	12	48				
		eS		Z			13	21	29	1
								24	1	
								15	1	
								24	1	
23	AF	iP	ZN	19	22	57				
		s		Z			24	30	0.9	1
								1.8	1	
								0.4	1	
								2.0	1	
24	AF	iP	ZN	07	38	40				
		eS		Z			40	50	0.7	1
								1.9	15	
								0.7	1	
								1.3	12	
25	AF	eP	Z	09	07	30				
								1.5	1	
25	AF	eP	ZN	12	54	00				
								0.6	1	
								0.4	1	
25	AF	eP	ZN	14	21	57				
		eS		Z			23	04	0.9	1
		eL		Z			28		3	1
		eT		Z			28	16	7	14
								1	1	
								5	14	
								1.1	1	
25	AF	eP	ZN	22	39	40				
		eS		Z			40	19	0.7	1
		eT		Z			46	02	1.1	1
								0.9	1	
								0.8	1	

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn	
OCT 26	AF	eP	Z	00	46	15	2.5	3		
		ePP	Z		48	25	3.2	5		
		eS	Z		53	02	3			
		eSS	ZN		55	35			4	20
		eL	ZN		57.7					
		M	ZN	01	00		4	20	1.2	18
		eP	Z	11	15	50	0.5	1		
		P	ZN	15	40	03	1.9	5	0.3	1
		eP	ZN	15	46	07	0.9	1	0.5	1
		28	AF	iP	ZN	01	36	50	0.7	1
eS	ZN				38	19	1.1	1	1.2	1
28	AF	eP	ZN	06	05	26	1.1	1	0.3	1
		eL	Z		11.0		1.2	25		
28	AF	eP	ZN	06	24	34	0.5	1	0.4	1
28	AF	iP	ZN	06	49	47	0.9	1	0.6	1
		iS	ZN		51	14	0.9	1	1.0	1
28	AF	P	ZN	09	24	06	0.6	1	0.6	1
		eS	ZN		25	14	1.2	1	0.9	1
		T	ZN		29	10	1.2	1	0.7	1
28	AF	eP	ZN	22	49	17	0.8	1		
		ePP	Z		37		4.2	6		
		eS?	ZN		53	12				
		ePcP	Z		17					
		eL	ZN		55.8		2.3	17	2.0	10
eScP	Z		57	00						
29	AF	eSSS	N	09	42.3					
		eLq	N		45.6					
30	AF	P	ZN	17	38	34	0.9	1	0.7	1
		eS	ZN		41	19	3.2	1	3	1
		eT	ZN		48		1.0	1	0.7	1
31	AF	eP	ZN	03	49	55	0.7	1	0.5	1
		eS	ZN		52	53			0.4	1
		eT	ZN	04	07		0.5	1	0.5	1
10V	1	AF	eP	ZN	10	44	13		0.4	1
			eS	ZN		45	46			0.5
1	AF	P	ZN	20	12	36	1.7	1	0.8	1
			eS	ZN		14	00	0.5	1	0.5
2	AF	iP	ZN	05	24	36	1.5	1	0.8	1
			S	ZN		26	12	0.6	1	0.6
3	AF	eP	Z	15	25	51				
3	AF	eP	Z	21	07	21				
			eS	ZN		08	33	0.8	1	0.6
		eT	ZN		12	26	0.9	1	0.6	1
3	AF	eP	ZN	22	05	50	0.9	1	0.6	1
			eS	Z		07	55	0.7	1	
3	AF	eP	ZN	22	20	01	0.7	1	0.5	1
4	AF	eP	Z	23	40	02				
			eS	ZN		41	53	0.6	1	0.8

Date	Stn	Phase	h	m	s	Az	Tz	An	Tn		
NOV 5	AF	eP	Z	13	08	12					
		eS	ZN		10	27					
		eT	ZN		20		0.6	1	0.5	1	
6	AA	eP	N	05	33	23					
7	AA	eP	N	00	42	27					
			eS	N		44	16				
7	AA	eP	N	12	18	16					
			eS	N		20	38				
9	AA	eP	N	01	13	36					
9	AF	iP	ZN	18	46	59	1.2	1	0.6	1	
			S	ZN		23	07	55		2.7	1
					40			19	1		
10	AF	iP	ZN	18	02	43	16	1	7	1	
			eS	ZN		04	12	4	1	3	1
12	AF	iP	ZN	14	12	30	1.2	1	1.0	1	
			eS	N		13	17			3	12
			eL	ZN		38		4	5	3.2	6
			T	ZN		15	46	0.9	1	0.8	1
12	AF	P	ZN	18	15	01	1.0	1	0.7	1	
			S	ZN		17	09			0.8	1
13	AF	eP	ZN	07	49	06	0.7	1	0.4	1	
14	AF	P	ZN	17	26	29	1.0	1	0.8	1	
15	AF	eP	ZN	07	28	21	2.6	4	0.6	1	
			eS	ZN		37	15	1.8	18	1.6	
			eSS	Z		41.2		1.8			
			eSSS	Z		44.5		2.0	25		
			eLq	N		45.6					
			eLr	ZN		48.3					
			M	ZN		53		6	20	3	20
15	AF	iP	ZN	13	42	07	9	1	5	1	
			S	ZN		26		23	1	41	1
15	AF	eP	Z	19	28	51			1.5	14	
			eS	ZN		31	06	3		2.2	9
			eL	ZN		38		4.2	9		
16	AF	eP	ZN	16	07	35	1.2	1	1.1	1	
			eS	ZN		11	25	4	20	1.3	12
17	AF	P	ZN	08	15	44	1.0	1	0.6	1	
			eS	ZN		17	13	0.5	1	0.5	1
17	AF	P	ZN	19	05	31	1.8	1	2.0	1	
			eS	ZN		06	40	7	1	5.2	1
18	AF	eP	ZN	11	20	00	2.6	1	0.8	1	
			eS	ZN		22	29	1.3	1	1.3	1
			eL	ZN		24	10	4.2	9	2.2	9
			eT	ZN		32		0.7	1	0.7	1
18	AF	eP	ZN	11	49	55	0.5	1	0.5	1	
			eS	ZN		51	17	1.0	1	0.9	1
18	AF	eP	ZN	22	21	32			0.5	1	

Date	Stn	Phase		h m s	Az	Tz	An	Tn
NOV 19	AF	iP	ZN	23 32 22 d	2.0	1	0.9	1
20	AF	P	ZN	11 48 41	3½	3	1.0	1
		eS	ZN	52.3	2.1	15		
		eL	ZN	53.6	6	15	3	15
20	AF	eP	Z	12 26 13				
20	AF	eP	ZN	13 08 27	1.3	1	1.0	1
20	AF	eP	ZN	18 56 00	0.8	1	0.7	1
21	AF	eP	ZN	11 17 23	1.4	1	0.5	1
22	AF	eP	Z	02 49 45	0.6	1		
22	AF	P	ZN	11 11 02	1.2	1	0.7	1
22	AF	eP	ZN	20 42 19	0.7	1	0.6	1
		eS	ZN	44 43	0.7	1	0.5	1
		eT	ZN	53 19	0.6	1	0.6	1
23	AF	eP	Z	15 28 18				
		eS	ZN	29 15	0.9	1	0.8	1
23	AF	P	ZN	17 01 18	0.5	1	0.5	1
		eS	Z	03 14				
25	AF	eP	Z	06 20 03			0.5	1
		eS	ZN	21 36				
25	AF	eP	Z	14 17 55				
25	AF	eP	ZN	22 56 54	1.4	1	1.0	1
		eS	ZN	58 27	0.8	1	1.1	1
		eT	ZN	23 05	0.6	1	0.6	1
27	AF	eP	ZN	17 20 55	4	3	0.5	1
		eS	ZN	29 25				
		eSSS	ZN	35 25			1.7	25
		eLq	N	36.5			1.1	30
		eLr	ZN	40.4	2.1	30		
28	AF	iP	Z	00 39 01 u			0.6	1
		eS	ZN	40 30				
29	AF	eP	ZN	22 00 04	0.8	1	0.7	1
29	AF	eP	Z	23 21 36				
30	AF	eP	Z	14 18 28			1.2	8
		eS	N	23 32				
30	AF	eP	Z	18 31 58	0.5	1		
30	AF	iP	ZN	20 05 25 u	0.9	1	1.0	1
DEC 1	AF	eP	ZN	15 07 17	0.5	1	0.6	1
		eS	ZN	09 29	0.9	1	0.8	1
1	AF	iP	ZN	21 24 15 u	2.0	1	0.8	1
		eS	Z	33.7	1.0		1.2	20
		eL	N	44.0				
2	AF	eP	ZN	18 47 55	0.8	1	0.7	1
		eS	ZN	49 34	0.5	1	0.6	1
		eT	ZN	56			0.5	1

Date	Stn	Phase		h m s	Az	Tz	An	Tn
DEC 3	AF	eP	ZN	16 18 45	2.5	3	0.8	1
		eLq	ZN	23 22	1.9	10	1.2	12
		Lr	Z	24 42	3	27		
4	AF	eP	ZN	00 55 21	0.5	1	0.6	1
		S	ZN	57 28	0.6	1	0.6	1
		eT	ZN	01 06 42			0.5	1
4	AF	eP	Z	05 40 23				
5	AF	eS	ZN	13 17.8	3	15		
		e(SSS)	N	23.6				
		Lr	ZN	26 37	5	20		
5	AF	eP	ZN	13 06 50	3½	4	1.9	4
		eS	ZN	10.3			1.4	25
		iScP	Z	14 19				
5	AF	eP	ZN	22 41 25			0.6	1
		eS	ZN	43 09	0.4	1	0.6	1
6	AF	iP	ZN	13 38 39 u	2.2	1	1.7	1
		S	ZN	40 02	3	1	2.4	1
		Lq	ZN	46	2.5	6	2.3	4
		Lr	ZN	41 19	16	9	5½	10
		eT	ZN	46	0.5	1	0.7	1
6	AF	P	ZN	15 20 31	0.6	1	0.6	1
		eS	ZN	22 19	0.7	1	0.7	1
		T	ZN	31 04	0.5	1	0.5	1
6	AF	eS	ZN	16 59 15			1.4	27
		eL	ZN	10.4	3	24	1.5	24
7	AF	eP	ZN	00 20 50	1.8	1	1.0	1
		eS	ZN	22 44	1.0	1	1.1	1
		eL	ZN	24 02	4½	10	1.8	10
		eT	ZN	30 50	0.5	1	0.6	1
7	AF	eP	ZN	14 26 22	0.5	1	0.9	1
		eS	ZN	28 10	0.6	1	0.9	1
		eT	ZN	36 51	0.5	1	0.7	1
7	AF	P	ZN	16 31 39	0.6	1	0.8	1
		eS	ZN	33 31	0.7	1	0.8	1
		eL	Z	35 10				
		eT	Z	41				
8	AF	eP	ZN	03 48 51	0.5	1	0.6	1
		eS	ZN	50 39	0.4	1	0.6	1
8	AF	eP	ZN	09 45 18	0.4	1	0.6	1
9	AF	eP	ZN	14 45 39	0.6	1	0.5	1
		S	ZN	46 59	0.5	1	0.6	1
9	AF	eL	ZN	02 48.4	1.3	22	0.9	23
9	AF	eL	Z	04 42.6	1.1	20		
9	AF	eP	ZN	04 30 55	0.7	1	0.6	1
		eS	ZN	35 00	0.3	1	0.6	1
9	AF	P	ZN	11 30 42½	4½	3	1.8	4
		PP	Z	33 38				
		S	ZN	41 23	2.5	18	1.5	21
		SS	ZN	46 25	3	18	1.0	22
		Lq	ZN	53.2	1.7	17		

Date	Stn	Phase	h m s	Az	Tz	An	Tn
DEC		Lr M	ZN ZN	12 56.5 01	5 30 3½ 18	2.4 29 1.9 18	
9 AF	iP	S	ZN ZN	19 52 37 u 54 10	9 1 5 1	5 1 7 1	
9 AF	eP		ZN ZN ZN	21 44 09 45 27 54	0.4 1 0.5 1 0.4 1	0.6 1 0.7 1 0.5 1	
10 AF	iP	eS	ZN ZN	16 51 02 u 55	2.6 1 15 1	2.5 1 22 1	
11 AF	eP	eS	Z Z	05 12 37 15 37	0.5 1		
11 AF	eP	eS	Z Z	18 08 31 10 52			
13 AF	eP	eS	ZN N	16 54 24 58.5	0.6 1	0.6 1	
14 AF	eP	eS	ZN ZN ZN	04 41 48 42 59 48 18	0.5 1 0.6 1 0.6 1	0.6 1 0.8 1 0.8 1	
14 AF	eP	eS	ZN N ZN	07 19 02 25 55 33 27	2.0 1 1.7 20	0.9 1 1.1 15 1.2 14	
14 AF	eP	S	ZN ZN	18 50 55 52 29	0.4 1 0.4 1	0.6 1 0.8 1	
14 AF	iP	S	ZN ZN	23 29 10 d 31 40	1.0 2 0.8 1	0.8 1 1.2 1	
15 AF	iP		ZN	12 43 52 u	1.0 1	0.8 1	
16 AF	eP	eS	ZN ZN ZN	09 20 07 22 25 30	1.1 1 0.9 1 0.5 1	0.9 1 1.2 1 0.6 1	
16 AF	eP	eS	ZN ZN ZN ZN	10 01 40 03 28 04 52 12	1.0 1 0.6 1 3 10 0.5 1	0.8 1 0.9 1 0.7 1	
16 AF	P	eS	ZN ZN	20 39 02 41 44	0.7 1 0.6 1	0.7 1 0.7 1	
16 AF	iP		ZN	21 16 24 u	1.7 1	1.0 1	
17 AF	eP		Z	22 21 39	0.6 1		
18 AF	eP	eS	ZN ZN ZN	22 26 40 27 58 33	0.5 1 1.0 1 0.6 1	0.5 1 1.1 1 0.7 1	
20 AF	eP	eSP	Z Z	13 38 55 52.1			
	eLq	N	ZN	14 05.4 10.9	4½ 20	1.2 20	
24 AF	P	i	Z ZN	02 48 52 49 02½	0.7 1	0.8 1	

Date	Stn	Phase	h m s	Az	Tz	An	Tn
DEC 24 AF	eP	ZN	09 20 31	0.9 1		0.9 1	
	eS	ZN	21 46	1.7 1		2.4 1	
	eL	ZN	22 48	3 8		2.6 7	
	eT	ZN	26 49	1.0 1		1.0 1	
25 AF	P	ZN	05 45 47	0.8 1		0.8 1	
	S	ZN	47 18	0.7 1		0.9 1	
25 AF	eP	Z	13 57 10	1.3 1			
	eS	Z	58 20	3½ 1			
	eL	Z	58.9	6 9			
	eT	Z	14 03	3½ 1			
26 AF	eP	ZN	04 35 54			0.7 1	
27 AF	iP	ZN	07 19 56	0.9 1		0.8 1	
	S	ZN	21 28			0.5 1	
27 AF	eP	ZN	11 52 07	0.7 1		0.9 1	
	eS	ZN	48	3 1		3 1	
	eT	ZN	55	1.1 1		1.1 1	
27 AF	eP	Z	23 54 16	0.6 1			
	eS	Z	58.8	2.2 17			
	eLq	Z	24 00.3	2.6 15			
	eLr	Z	03.0	4 30			
28 AF	eiP	ZN	18 19 55 du	0.6 1		0.6 1	
	eS	ZN	21 26	0.4 1		0.5 1	
29 AF	eP	Z	00 00 36	2.3			
	i	ZN	39 d	5½ 1		1.6 1	
	eS	ZN	04.8			1.1 20	
	eL	Z	06.0	2.5 28			
30 AF	eP	ZN	00 50 14	2.5 3		0.5 1	
	eS	ZN	58.7	2.2 15		1.9 23	
	eSS	Z	01 02.5	1.6 12			
	eLq	ZN	06.7	1.7 18		1.2 24	
	eLr	ZN	09.0	4½ 24		2.3 24	
30 AF	P	ZN	09 01 41	1.5 1		1.2 1	
	eS	ZN	03 19	0.9 1		1.9 1	
	eL	ZN	04 30				
	eT	ZN	09 58	0.7 1		0.7 1	
	M	ZN	13	8 9		5 10	

RAOUL ISLAND

Trace amplitudes given in the column Az are in millimetres, measured on the screen of a viewer magnifying the original 35 mm film record by a factor of 8.

Date	Phase	h m s	Az	Date	Phase	h m s	Az
JAN 3	eP	09 25 25±	3	JAN 3	eP	11 38 17	6
	eS	40±	6		eS	30	44
3	eP	10 23 12	2.5	3	e(P)	13 40 48	2.1
	eS	20	4		eS	41 07	3.5
3	iP	11 35 15	11	3	eP	15 11 57	5½
	eS	34	50±		eS	12 16	22

Date	Phase	h	m	s	Az	Date	Phase	h	m	s	Az
JAN 3	i	19	39	41	Large	JAN 19	eP eS	01	37	11 30	6 20±
3	iP eS	22	28	59 23	28± 60±	19	eP eS	12	55	24 48	2½ 10
4	eP eS	04	26.0	13	5 16±	20	eP eS	17	00	53 02 15	¾ 6
4	e	06	22	48	4	22	iP	16	10	18	25±?
4	iP	07	56	49	60?	22	eP eS	16	49	18 50±	¾ 6½
4	e(P) e?	20	03(20)	39	5½ 5½	23	eP	04	28	33	18±
5	e	16	02	01	3.5	24	eP eS	13	12(34)	(44)	15 35±
5	e(P) eS?	23	58.1	.9	11 25	25	iP	19	07	46	Large
6	iP	10	09	32	20	25	eP eS e	22	53	19 52 55 31	11 15± 16
7	e	05	13	23	6½	26	eP eS	16	59	52½ 53 15±	3 15
7	iP e?	11	31	45½ 32.0	11 4	27	iP eS	03	29	47 57	18 27
8	e	04	42±		4±	28	eP eS	02	51	37 56	6 22
8	eP	07	00±		15±	28	eP eS	03	04	48 05 06	2½ 9
8	iP e	10	02	23½ 03 22±	26± 9½	28	eP eS	07	49	21 40	5 16
8	iP	14	42	19	55±	30	eP	00	08	33	80±
8	eP e(S)	16	25	51 26 35	4½ 4	30	eP eS	05	47	14 47	3 6
8	eP eS	17	32	10 25	8½ 20±	31	iP eS	20	18	35 50	18 44
8	e(P)	23	37	53	8	FEB 1	eP eS	04	33	10 44	6 10
9	P eS	04	39	29½ 47	4½ 5±	1	iP eS	20	08	56½ 36	3 6
9	eP	07	54	47	57±	3	e e eS	12	36(16)	36 55 37 14½	3½ 43
10	eP	15	20	31	9	5	eP e(S)	08	33	32 34 05	6 10½
10	eP	16	15	40	4½	5	eP e(S)	12	47	14 43	5½ 8½
11	e(P)	04	20	29±	3½±	6	iP	21	51	49	11
14	eP eS	11	36	28 43	11± 25±						
14	eP eS?	23	30	46 31 17	6± 16±						
15	iP eS?	22	47	34 53±	6 16±						
17	iP eS	11	01	04 15	(34) (87)						

Date	Phase	h	m	s	Az	Date	Phase	h	m	s	Az
FEB 7	iP eS	02	06	54 07 04	17½ 15±	FEB 22	iP	21	53	51½	Large
8	eIP eS	04	35	36½ 36 19±	16± 25±	22	eP eS	22	11	37 50	4± 14
8	iP eS	06	22	46½ 23 02	28± 42±	22	eP eS	23	32	56 33 10	6± (24±)
8	eP eS?	15	01	13½ 52±	7 6	23	eP eS	02	38	01 17	3½ 10
8	eP eS	17	52	51½ 54 32	6 32	24	iP	14	06	12	12½
8	eP e(S)	20	42	04 34	6 7	25	e	00	57	31	2½
9	iP	02	08	35½	very large	25	eP eS	08	26	12 30½	10 4
9	eP eS	05	53	08 22	15± 24±	25	eP eS	13	55	04 55	2 2½
9	eP eS	08	46	03 33	10½ 26	26	iP eS	06	59	41 07 00 02	5 12
9	eP eS	10	47	34 48 02±	9½ 24	26	e(S)	18	22	46	4
9	iP eS	18	02	33½ 47	4 18	27	iP eS	23	16	48 02	4 14
10	iP	00	37	48	70±	28	e	01	01.5		4
11	e(S)	16	50	15	6	MAR 2	eP eS	14	45	29 33	12 33
11	iP	21	01	27½	80 Felt MM-7	3	eP eS	08	18	10 46	5½ 20±
12	e e?	03	56	42 57 06	2½ 4½	5	e(P)	01	31	59	4
13	eP eS	13	54	03 55(11)	4½ 4	5	eP eS	04	29	04½ 27	3 5½
14	eP eS	13	10	35 47	5½ 23±	5	eP eS	21	28	06 29 44	2.2 5½
14	iP e(S)	13	56	46 57 13±	13 13±	6	eP	10	41	24	3
15	iP eS	06	28	03 41	9½ 23½	6	iP eS	14	45	28 51	4 6
17	eP eS	12	09(16)	41	3 8	7	iP eS	01	06	14 21½	24 53
19	iP S?	10	52	09 41	12± 24±	7	eP eS	05	02	59 29	3½ 7½
20	eP eS	08	04	16 48	3½ 5	7	iP	10	11	12½	Large
20	eIP e e(S)	14	08	29 33½ 42½	20± 17± 37	7	iP eS	10	46	31 57	15± 35±
21	iP eS	18	59	23½ 45	5 6	7	eP eS?	11	50	07 (27)	6± 12±
						7	eP eS	12	01	50 13	4 8



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Date	Phase	h m s	Az	Date	Phase	h m s	Az
MAR 7	eP eS	12 05 58 06 26	4½ 10	MAR 13	eP eS	07 44 39 45 29	2½ 5
7	eP eS	13 28 33½ 29 07	5½ 15±	13	iP	09 16 37	72
7	eP eS	13 31(58) 32 07	5 6	13	eP	09 29 52	5
7	e(P)	13 40 51	5½	13	e? e(P)	09 42 59 43 02½	1½ 6
7	eP eS	15 49 58 16½	4½ 17	13	eP	11 50 58	4
7	eP eS	17 39(11) 33	3½ 8	14	iP eS	13 31 57 32 07	3½ 14
7	eP?	17 41 25	4	15	eiP eS	07 49(32) (56)	3½ 9
7	iP	19 49 13	Large	15	iP eS	09 20(05) (27½)	5 6
7	eP eS e	23 42(21) 44 44 29	5± 10± 4½	15	eP	11 33(00)	56
8	eP eS	01 57 7½ (27)	6± Fairly Large	16	eP eS	08 42 34 54	11 20
8	eP eS	05 21 50 17	6 Large	16	eP eS	11 26 39 27 53	5 5½
8	iP	05 28 48	Large Felt MM-4	16	e(S)	20 07 42½	4
8	eP eS	12 42 43 43 12	5½ 18	16	eP e e	20 17 38 47 18 07	3½ 10 32
8	eP eS	13 25 13 51	13 19	16	eS	22 35 46	4
9	eP eS	02 04(27) 55	5 11	17	e	11 47 22	5
9	e	03 12.8	5½	17	eP eS	14 08 05 09 07	4½ 4½
9	eP eS	12 56 50 57(12)	6 12	17	e	16 19 22	5½
9	eP eS	13 14 37 15(92)	5½ 18	17	eP eS	20 12 02 13 09	6 6
9	eP? e(S)	13 58 41 59(02)	6 18±	17	e	22 23 17	6
9	eP eS	21 10 27 38	5 17	17	eP eS	22 42 02 19	5 8±
9	eP eS	21 57 10 22	7 26±	17	eP eS	22 50 48 51 00	5 16
10	eP eS	01 15 00 29	3½ 10	18	e	01 54 09	4
11	iP eS e	01 04 22 43 06(42)	15± 21± 11	18	iP eS?	03 42 28 37	20 Large
11	e(P)	08 45(40)	7	18	eP eS	08 28(07) 29(13)	4 6
				18	iP	09 41(01)	Large
				19	iP	13 29 13	5½
				19	e	15 01 38	5

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Date	Phase	h m s	Az	Date	Phase	h m s	Az
MAR 19	eP eS	20 35 22 36 24	3 9±	MAR 31	eP eS	20 58 20 59 25	1.6 4
20	eP eS	03 04 34 42½	3 8	APR 3	eP? eS	02 24 21½ 42	2.2 3½
20	eP eS	15 55 49 57.8	20 43	3	e? e e e	02 52 34 47 54 00 56 24	0.7 0.8 2.5 5
20	eP eS	23 43 56 45 01	6 24	3	eP eS	04 38 52 39 06½	3½ 5½
21	eP? eS	05 54 04 33	2½ 10	3	e e e e e	13 10 33 11 09 12 37½ 13 23½ 14 28 15 09	2.0 2.5 3½ 5 3½ 2.5
22	iP eS	13 18 18 49	4½ 5½	4	eP eS	07 50 05 47	2 9
22	iP	21 30 16	(23)	4	eP eS	14 11 37½ 50	2.5 11
24	eP eS	11 01 49½ 02 10	6± 11	5	e	00 33 39	4½
26	eP eS	15 53 58 54 13	4 17	5	eP? eS	14 27 16 38	2 5½
26	e	18 12 43	5	5	e	14 57 10±	3
28	e	09 46 17	2.2	5	eP eS e	18 54 13 33 56 40	2.4 5
28	eP eS	14 09 13 50	2 2½	7	eP eS	11 58 08 28	3 10½
29	eP eS	15 44 01 27	5 25	8	eP eS	15 33 52 34 11	5½ 16
30	eP eS	08 24 29 58	2 3½	9	e	09 08 15± 10 48	3 3½
30	eP eS	08 46 45 58	6 25	9	iP eS	09 23 03 24.3	30 11½
30	eP eS	13 26 06 13	2± 12	9	eP? e(S)	10 38 23 48	2.2 5½
30	eP eS	15 38 12 29	2 5½	10	iP e(S)	03 07 09½ 30	20 Large
30	eP e(S) e?	20 56 08 26 57.1	2.2 3.0 4	10	eP eS	09 57 48 58 07	12 50±
30	eP? e(S) e	23 18 00 13 20 13	2.0 4½ 2.5	12	eP eS	13 50 44 51 00	2.5 11
31	eP eS	03 14 01 14	4½ 7½	13	eP eS	08 58 38 59 04	2.1 5.5
31	e?	07 18 43	3				
31	eP eS	09 46 15½ 45	5 18±				
31	eP eS	11 52 55 53 09	4 10½				
31	eP eS	12 18 44 59	3 10½				

Date	Phase	h	m	s	Az	Date	Phase	h	m	s	Az
APR 13	eP eS	10	48	42 55	3 18	APR 22	e	01	19	05	4
13	e e	21	04	50 07 00	4 $\frac{1}{2}$ 2 $\frac{1}{2}$	22	eP eS	10	36	43 18	4 12
14	eP eS	02	27	13 45	2.2 6	22	eP eS	20	56	12 34	3 $\frac{1}{2}$ 4
14	eP e(S)	04	03	04 34	11 31	23	eP eS	00	22	51 23 15	2.5 3 $\frac{1}{2}$
15	eP eS	09	37	06 45	5 19	23	eP eS	18	21	05 17	2 $\frac{1}{2}$ 12 $\frac{1}{2}$
16	eP eS	02	02	33 43	2.0 7 \pm	23	eP eS	23	40	15 29	3 6
16	e	09	06	20	3 $\frac{1}{2}$	24	eP eS	12	48	37 49 15	3 5
16	eP eS	10	47	55 $\frac{1}{2}$ 48 10	5 11	24	iP	13	10	10	Large
16	eP eS	11	36	27 41	2.2 5	24	iP eS	13	37	00 (08)	40 78
16	iP	16	48	36	Large	24	iP eS	13	41	40 48	16 31
16	iP eS	18	10	15 $\frac{1}{2}$ 27	Felt Force $\overline{1V}$ "19" $\overline{111}$ (32)	25	eP e e(S)	11	17	35 04 15 20	7 $\frac{1}{2}$ 12 11 27 \pm
17	eP eS	02	57	06 22	1.6 5	25	e	11	56	48	5 $\frac{1}{2}$
17	e(S)	04	41	12	2.1	25	iP eS	15	44	23 54	10 18
17	eS	20	51	42	2 $\frac{3}{4}$	25	eP eS	19	37	05 32	5 18
18	e	02	17	27	3 \pm	25	eP eS	20	52	20 51	3 $\frac{1}{2}$ 6
18	eP eS e	04	11	50 12 39 13 33	3 $\frac{1}{2}$ 10 4	25	e(P) e(S)	23	47	19 36	4 $\frac{1}{2}$ 4 $\frac{1}{2}$
18	e	04	17	19	3	26	eP eS	05	57	03 29	4 6
18	e	04	31	19	2.5	26	e(P) e(S)	13	16	03 40	2.3 4
18	iP eS	21	47	08 16	(27) Large	27	eP eS	20	55	56 56 25	4 $\frac{1}{2}$ 3
19	iP eS	08	51	57 39	5 7	28	iP eS	05	37	46 $\frac{1}{2}$ 55	8 $\frac{1}{2}$ 50
20	eP eS	07	24	50 25 14	2.3 4 $\frac{1}{2}$	28	iP eS	08	29	13 30 15	4 $\frac{1}{2}$ 2.2
20	iP	17	34	00 14	9 45	30	eP eS e	07	10	44 58 12 53	3 $\frac{1}{2}$ 18 \pm 11
20	eP eS	19	20	20 21 00	7 19	MAY 2	eP eS	14	53	08 31	5 12
21	eP e? e(S)	13	49	38 50 08 20	2.1 3 $\frac{1}{2}$ 10						

Date	Phase	h	m	s	Az	Date	Phase	h	m	s	Az
MAY 2	eP	19	38	42	Large	MAY 5	e	14	39	27	4 $\frac{1}{2}$
2	e(P)	20	00	47	4M	5	e	14	44	04	4 $\frac{1}{2}$
2	eP	20	50	22	7 $\frac{1}{2}$ \pm M	5	e?	14	59	43	3
2	eP	22	45	15	Large	5	eP e(P) eS	15	29	00 24 51	3 8 $\frac{1}{2}$ 37
2	eP e(S)	23	23	21 44	5 6	5	e?	16	08	33	3 $\frac{1}{2}$
2	eP	23	24	31	80 \pm	5	eP? e(S)	18	31	40 59	2.0 5 $\frac{1}{2}$
2	eP eS	23	28(34) 29.0		20 \pm 50 \pm	5	eP eS	19	02	47 03 15	5 $\frac{1}{2}$ 13 $\frac{1}{2}$
2	eP e(S)	23	34	50 18	2.2 5	5	eP e? eS	20	37	44 52 38 13	5 $\frac{1}{2}$ 12 24
2	eP	23	52	51	10M	5	eP e?	20	39	47 40 26	8 5 $\frac{1}{2}$
3	eP eS	02	01	03 32	4 5 $\frac{1}{2}$	5	eP eS	20	47	29 56	6 12
3	eP e(S)	08	03	33 57	1.8 2.5	5	eP eS	22	15	10 35	2.3 6
3	eP eS	13	00	34 58	1.8 5	5	e	23	31	35	2.5
3	eP eS	15	43	36 44 01	3 $\frac{1}{2}$ 5	6	eP eS	00	20	27 52	2.0 3 $\frac{1}{2}$
3	e?	15	45	32	1.8	6	e	16	48	02	3
3	e? e(P) e(S)	16	54	00 42 04	1.8 11 36	6	eP	23	17	27	2.2
3	eP eS	17	03	37 $\frac{1}{2}$ 52	10 52	7	eP	00	32	16	2.2
3	eP eS	19	01	12 35	6 20 \pm	7	eP eS	02	04	11 37	1.9 3 $\frac{1}{2}$ \pm
3	eP eS?	23	39	47 14	3 4 $\frac{1}{2}$	7	eP eS	04	38	30 40 07	2 $\frac{3}{4}$ 5
4	eP eS	09	45	54 46 19	3 $\frac{1}{2}$ 4 $\frac{1}{2}$	7	e e?	06	20	01 13	3 5
4	e(P)	22	33	00	3 $\frac{1}{2}$	7	eP eS	07	47	20 48 09	5 11
5	eP	06	39	36	21	8	e(S)	08	42	47	8
5	e(P)	06	41	.6	17	8	eP eS	09	00	24 52	3 $\frac{1}{2}$ 7
5	e(P) e(S)	07	00	06 31	4 5 $\frac{1}{2}$	8	eP e e(S)	14	25	20 30 42	4 7 $\frac{1}{2}$ 15
5	eP eS	08	44	48 13	5 42 \pm	8	eP eS	20	11	19 43	12 15
5	e?	13	01	48	4	8	eP? eS	22	53	12 42	3 $\frac{1}{4}$ 5
5	eP eS	13	43	50 44 08	22 75						

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Date	Phase	h m s	Az	Date	Phase	h m s	Az
MAY 9	eP eS	05 06 53 07	5½ 9½	May 14	eP eS	13 39 14 37	6 19
9	eP eS e?	07 25 29 56 27 29	5 17 4½	14	e? e	20 02 32 42	2.1 3½
9	eP eS e?	08 16 36 17 00 18 50	10 30 8	15	e(P) eS	00 31 47 32 03	2.5 14
9	eP eS?	09 40 14 42	3 3½	15	eP eS	04 34 13 22	5½ (38)
10	eP eS	08 34 18 32	3½ 10±	15	e e	08 09 39 05	2.3 6
10	eS	10 11 00	3½	15	e	10 08 25	3
10	e	10 22 05	2½	15	eP	19 16 46	2.2
10	e	13 15 54	2.5	15	eiP e e	20 55 51 57 18 35	14 7½ 31±
10	eP e? eS	23(25)34 52 (26)18	1.9 3½ 12±	16	eP eS	09 34 41 35 07	2½ 5½
10	e	23 30 39	2.5	16	e(P) e(S)	12 57 50 58 20	1.8 2.5
11	eP e? eS	05 28 53 30 31 30 52	1.9 1.9 5	16	eP eS?	17 28 02 21	20± Large
11	eP eS	12 06 46 07 20	2.5 3	16	e(P) e(S)	17 44 52 45 23	1.6 1.7
11	e?	12 26 21	1.3	17	e?	00 49 34	1.0±
11	e	18 35 37	3	17	e(P) e(S)	04 53 14 35	>1 1.0±
12	eiP	01 27 33	Large	18	eP eS	07 05 34 54	2½ 3½
12	eP	04 44 59	Large	18	eP eS?	18 55 18 56 27	6 1.8
12	eP eS	07 24 36 58	7± 23	19	eP	01 46 44	1.5
13	eP e? eS?	13 42 23 27 47	6 24 49±	19	eP eS	02 23 28 24 54	2.0 3
13	eP eS	14 18 02 22	5 7	20	e(P)	00 39 22	6
13	e(P)	14 19 17	55	20	e	02 32 19	3
13	e(P) e(S)	14 27 21 46	2½ 6	20	iP e	04 46 33½ 47 21	
13	e	14 57 36	5	20	eP eS	08 29 34 48	3½ 6±
14	eS	00 17 28	3½	21	e(P) e(S)	01 52 01 14	0.8 3½
14	eP eS	02 43 53 19	6 30	21	eS	06 32 06	2.3
14	eP eS	03 13 57 14 28	5 25	21	e	18 25 33	3½
				21	i!	21 19 19	Large

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Date	Phase	h m s	Az	Date	Phase	h m s	Az
MAY 22	eP eS	13 46 31 48 06	6 12	MAY 28	i!	19 29 24	Large
22	e?	13 57 17	3	28	e	20 21 28	3
22	iP!	17 33 59	Large	29	eP	08 22 11	Large
22	e	17 50	3	29	e(P)	20 19 59½	6
22	e	17 55	3	30	eP eS	02 28 15½ 36	2.1 6
22	e e?	21 52 19 53.0	2½ 3½	30	eP eS	19 57 46 58 25	2.0 4
22	eP eS	23 48 06 49 08	3½ 15±	31	eP eS	02 40 45 57	2.3 6
23	eP eS	11 32 37 33 01	2½ 6	31	e(P)	10 34 05½	1.7
23	iP eS	12 39 41½ 40 11	7½ 8	31	e(P)	12 54 56	3
25	e(P)	08 23 15	5½	31	eP eS	13 24 25 25 34	1.0 2.2
25	e? e	08 26 20 25	1.3 4	JUN 2	eiP eS?	05 03 14 45	20± Large
25	e(P)	08 31 26	11	2	eP eS	06 53 28 54	2½ 4
25	e(P)	08 35 14	2.2	2	e	07 00 32	2.2
25	eP eS	11 05 33 55	2.0 8.0	3	eP eS	10 25 27 43	5 12
25	e e?	11 55 25½ 54½	2.1 3.0	4	eP eS	06 00 00 22	1.7 3
25	iP eS?	13 42 49 09	21 60±	4	eP e eS	14 00 50 10 03 01	4 1.8 1.8
25	e	13 52 37	2.4	4	e(P) e(S)	20 09 15 10 42	1.4 2.1
25	eP eS	17 35 35 36 41	2.5 3½	5	eP eS	03 47 31 49 20	2.1 1.7
25	eS	18 43 36	1.7	8	e(P)	01 36 00	5½
25	e	22 43 31	2.5	9	e(S)	15 52 17	12±
26	eP eS	13 05 09 21	2.5 6	11	eP eS	09 38 42 57	2.5 5
26	e	13 11 55	1.8	11	eP eS	11 52 54 53 06	5 17±
26	e	15 04 25 44	1.5 5	11	e(P)	14 49 47½	5
26	e	21 31 20	3½	12	eP eS	00 21 45 22 05	10 22
27	eP eS	03 20 16½ 32	1.9 3	12	eP eS	10 31 49 32 07	4 6±
27	e	05 03 49	3½	12	eP eS	22 39 15 (26)	5 10±
27	e	05 36 33	4½±				
28	eP	12 41 50	30				

Date	Phase	h m s	Az	Date	Phase	h m s	Az
JUN 13	e	01 19(52)	8±	JUN 25	eP eS	18 40(05) (30)	3½ 5½
13	eP eS	13 17(42) 18 07	5 34	26	e	02 44(31)	4
17	eP eS	02 40 20 36	4 7±	26	eP eS	13 51 03 52 36	2.2 2.5
17	e	06 53 17	7½	26	eP eS	14 30 56 31 10	1.8 4.5
17	eP eS	09 35 01 30	7½ 20	26	e(P)	15 26 51	3
17	eP eS	21 51 30 53 11	5½ 5	27	eP eS	04 31 57 32 19	5 15
18	eiP eS	10 47 44 59	12 10	27	eP e(S)	08 58 35 49	2½ 5
18	e(S)	12 48 22	10	27	iP	10 40 58	85
18	iP eS	13 56 21½ 57 15	45 110	27	e(P)	11 35 10	3½
19	e(S)	00 50(25)	3½	27	iP	14 35 55½	110
	e	38	5	27	e(P)	17 24 54	6
	e	42	6	27	eP eS	21 07 21 35	8½ 17
	e	46	7	28	e(P)	01 16 59	15
	e	58	5	28	eP	06 03 10	40±
19	eP? e(S)	02 23 17 45	2.2 2.3	28	eP e(S)?	06 17 56 18 05	23± 63±
19	e(P)	05 55 00	2.5	28	eP	08 10 34	1.6
19	eP	06 30 40	4½	28	eS	11 05	3
19	e(P)	10 22 28	2.3	28	iP	08 23 11	40±
	e	39	1.5	28	eP	16 45 14	2½
	e	49	1.3	28	eS	26	5½
19	e?	17 51 47	2.2	28	iP	20 36 25	Large
21	eP e?	00 00 11 01 07	6± 1.5	29	eP eS	07 14 14 44	2.0 5
21	eP e?	00 49 58 50 34	8± 2.5	29	eP	19 53 28	30±
21	eP eS	06 43 25 38	3 7½	29	eP eS	20 25 15 36	3 6
21	eP eS	10 15 57 16 15	2.5 5	30	eP	02 41 21	4
21	iP e(S)	13 47 40 52	17 37	30	eS	42	12
21	e	19 05 09	5½	30	iP e(S)	03 32 54 33 06	9± 10±
21	iP	20 33 13	17±	30	e(S)	04 21 58	12
23	eP eS	09 35 37 52	4½ 5½	30	eP eS	04 45 13 44	2½ 6
23	eP eS	10 43 58 44 11	2.0 6	30	eP eS	14 09 15 33	2.3 5½

Date	Phase	h m s	Az	Date	Phase	h m s	Az
JUN 30	eP eS	19 20 06 41	4½ 10±	JUL 11	eP	05 45 58	Large
JUL 1	iP	03 09 01	Large	11	eP eS	06 28 28 47	3½ 8
1	eP eS?	03 41 20 35	5± 12±	12	e	03 38 42	10±
1	eP e(S)	05 08 02 17	4± 10±	12	eP eS	12 08 33 42	2.4 6½
1	eP	18 55 36	2.2	13	eP? eS	13 47 03 48 25	1.5 12
1	eP eS	22 24 29 43	4½ 20	13	e	16 08 56	3½
2	e	02 56 42	4½	13	eP eS	20 18 59 09	5± 6±
2	e	05 38 21	5½	13	eP	22 11 24	4½
2	e(P)	08 49 21	3½	14	eP e(S)	03 38 30½ 39 31	3 1.7
4	eP eS	12 08 22 52	5 17	14	eP eS	03 56 35 44	2.3 6
4	iP eS	13 27 30 46	5 6	14	eP eS	14 05 56 06 15	2.0 3.0
5	eP eS	02 33 44 58	5 8	14	eP eS	16 44 27 45 05	4½ 17½
5	e(P)	08 16 35	3	14	e	16 47 16	4½
5	eP e(S)	19 06 56 09	3½ 4½	14	e?	23 38 29½	1.6
5	eP eS	22 33 01 18	4½ 12	15	eP e e	20 37 09 41 35 44 16	2.2 1.8 1.7
6	eP eS	00 16 58 19	3½ 7½	16	e(P)	01 26 14	3
6	iP e(S)	08 03 40 04 23	10 12	16	e(P)	05 26 55	2½
6	eP eS	15 02 44 55	3½ 5	16	eP	06 51 45	3
6	e(P) e(S)	20 53 21 43	2.4 4½	16	eP eS	13 16 34 58	3½ 4½
6	eP	22 13 09	4	16	eP eS	20 01 30 02 11	5½ 13
7	eP eS	01 39 38 53	1.6 7±	17	e	22 12 47	3½
7	eP eS	09 20 12 46	3½ 5½	17	eP eS	23 17 12 36	3½ 5½
7	eP eS	22 17 03	3½	18	eP eS?	07 17 27½ 55	31± 37±
8	e(P)	09 16 00	2½	18	e(P)	14 15 25½	4½
8	eP eS	13 02 50 03 11	2½ 5	18	eP eS	21 50 17 38	4 11
10	eP e(S)	14 22 18 46	7½ 11±	19	e(P)	18 28 17	5±

Date	Phase	h m s	Az	Date	Phase	h m s	Az
JUL 20	eP eS	07 10 41 57½	2½ 4½	JUL 30	eP e(S)	17 32 30 34 07½	4½ 2½
20	eP eS	15 13 03 15 15	1.8 4	31	eP eS	02 48 53 49 06	8 30±
20	eP eS	17 23 08 24 00	3 6	31	e	06 21 24	5½
20	eP eS	19 58 45 59 18	15± 25±	31	e(P) eS	14 38 08 23	1.8 3½
21	e(P)	04 29 48	5	31	eP eS	17 09 30 50	1.9 3¼
23	e	21 55 13	10	AUG 1	eP eS	00 55 42 56 28	6 10
24	eP eS	01 32 59 34 36	11 11±	1	eP eS	02 14 33 52	7 10
26	e(S)	07 29 26	6±	1	eP e?	05 45 45 19	2½ 2.1
26	eP eS	09 21 11 22 45	2± 8	1	eP eS	16 20 12 21 19	6 6
26	e	22 58 05	2.2	1	eP eS	17 17 43 18 11	2½ 6
27	eP eS	00 51 28 52 30	2½ 1½	1	e	17 21 35 46	1.8 3.5
27	iP	02 06 54	Large	1	e	18 19 30 23 16	3 2½
27	eP eS?	03 09(05) 10 06	3 3½	2	e(S)	02 21 21	6
27	e?	03 33 54	1.8	2	eP eS	13 24 13 45	7 10±
27	e	09 57 07	4½	2	eP?	16 45 22 33	1.6 6
27	eP	11 37 55	3½	3	e	04 02 26	6
27	e	13 52 37	2.2	3	e	04 51 52	2.2
27	e?	14 53 00	2	3	e	05 07 28	4
27	e(P) e(S)	15 35 30 36 19	2.3 5½	3	eP? e(S)	09 28 22 44	
28	eP	06 15 47	1½	3	e(P) e	12 15 20½ 16 10 50	4 2½ 2½
28	eP	08 32 08	6	3	iP e(S)	15 18 50 19 00	40± 105±
29	eP e(S)	10 27 44 51½	10 82±	3	e(S)	16 36 55	2½
29	eP eS	11 31 15 26	2½ 12	3	e	20 43 54	2.3
29	eP eS	16 28 39 39	13 25±	4	eP eS	01 30 43 31 05	1.8 3.5
29	e	16 32 29	3	4	e	05 00 29	2.4
29	eP eS	20 02 48 57	1.9 6				
30	eP eS	00 42 41 53	3 5				

Date	Phase	h m s	Az	Date	Phase	h m s	Az
AUG 4	eP eS	17 50 11	31±	AUG 8	eP eS	10 16 12 46	1.6 4.5
4	eP eS	21 24 46 56	2½ 6½	9	eP e?	16 06 23 34	1.8 6
4	eP eS	21 41 15½ 35	5½ 11	9	e	22 24 37	1.9
4	eP eS	23 33 46 34 47	10 11	10	iP	01 43 37	Large
5	eP eS	04 16 58 17 22	6 10±	10	e(S)	06 40 37	6
5	iP eS?	06 43 28½ 45	22 37	10	eP eS	10 52 20 29	2½± 19
5	eP e(S)	08 02 35 05	2½ 4	10	e? e	11 41 20 41	V Small 2½
5	iP eS?	14 41 58 42 05 43 13	12± 24± 5±	11	eP	08 27 46½	Large
5	eP eS	19 32 45 59	3½ 10	11	eP	10 29 01	2.0
6	eP eS	22 02 33 53	5 6	11	eP eS	13 39 49 59	5½ (18)
7	eP eS	09 50 53 02	2½ 12	11	eP	22 33 25	16±
7	eiP eS?	12 22 51 23 21	28+ 65±	12	e	09 19 36	3½
7	iP	16 58 14	78±	12	e	13 59 09	3
7	eP e(S) e(S)	17 18 48 19 03 13	3½ 5½ 9	12	eP eS	15 16 13 45	2 8½
7	eP eS	18 28 04 18	4½ 12±	12	eP eS	21 33 09 26	25± 43±
7	eP eS	19 30 11 26	2½ 4½	12	eP eS	21 36 57 37 19	5 12±
7	eP eS	19 56 37 58	4 12	12	eP e(S)	21 39 21 39	2½ 5
7	eP eS	23 30 33 51	5 21	13	e(P) eS	01 07 33 55	3 5
8	eP eS	00 00 08 37	4½ 6	13	eP eS	03 48 56 49 13	4½ 13
8	eP	00 19 19	25±	13	eP eS	08 07 25 45	3 6
8	eP eS	01 26 46 27 07	2 4½	13	eP eS	15 03 06 35	12 19
8	eP eS	04 48 18 40	2.2 7	13	eP eS	22 00 14 01 22	6 2.3
8	e	09 04 48	3	14	e	07 48 19	3½
				14	eP e(S)	18 13 03 15	5½ (25)
				14	eiP eS	18 52 10 53 10	22 30±
				14	e(P) e	23 32 30 48	1½ 2

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Date	Phase	h m s	Az	Date	Phase	h m s	Az
AUG 14	eP eS	23 39 07 40 29	4½ 2½	AUG 18	e	21 51 06	2.2
15	eP e(S)	05 52 04 15	10 35±	19	e(S)	01 48 28	5
15	e	09 37 58	3½	19	e	02 28 43	3½
15	eP eS	17 15 58 16 14	4 9½	19	eP e(S) M	02 59 53 03 00 11 28±	3½ 5 22½
15	eP eS	19 45 28 46 59	3½ 2	19	e(S)	13 43 47	3½
15	eP eS	20 02 26 38	2½ 3½	20	eS	02 32 26	4
16	eP eS?	03 34 30 51	17 34	20	eP e(S) e(S)	05 06 45 08 40 53	6 3½ 10½
16	eP eS	04 04 48 05 19	4 5	20	eP eS	20 07 21½ 37½	3 7
16	eP eS	08 51 59 52 29	4½ 5	21	e(P) e(S)	00 31 25 39	3 6
16	e? e(S)	10 40 13 31	2½ 3½	21	e	00 45 52	7
16	eP eS	13 12 59 13 32	2.3 4	21	eP e eS	02 08 28½ 31½ 09 51	5 16 24
16	e(P) e(S)	13 37 36 47	2½ 3½	21	eP eS	16 09 49 11 43	3 4½
16	e	15 15 18	3	21	eP	16 24 07	4½
16	e(P)	15 27 23	4	21	e	18 46 09	3½
16	eP eS	19 19 42 20 23	5 11	23	e	20 09 36	4½
16	e(P)	20 27 31	4½	24	e	01 53 13	5½
17	eP eS	12 55 27 59	5½ 13	24	eP eS	04 49 10 22	2½ 5
17	eP eS	13 18 27 42	3 5½	25	e(S)	23 56 36	5½
17	e	21 50 07	2½	28	eP eS	01 27 19 34	2½ 7½
18	eP eS	00 21 40 22 00	3½ 10	28	eiP	07 45 20	9
18	eiP eS	03 33 46 34 41	4 2½	28	eP eS	08 34 10 24	1.8 7
18	e(S)	07 43 45	6	28	e(P)	08 54 58	6½
18	e	08 43 30	2½	28	eS	09 48 31	4½
18	eiP eS	11 02 58 04 12	15 14	29	iP e	10 04 46 07 04	11± 6
18	e(S)	11 28 09	4	29	e	17 51 34	4½
18	e	18 40 09	2½	29	eP eS	19 27 29 (40)	1½±
				30	e	02 23 44	2

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Date	Phase	h m s	Az	Date	Phase	h m s	Az
AUG 30	eP? e(S)	15 16 14 37	3½ 6	SEP 6	e	09 38 38½	4
30	iP eS	20 54 08 45	6 9	6	eP eS	17 13 27 46	6 7
30	eP eS	23 39 47 58	2½ 10	6	iP eS	20 48 18½ 35	6 16
31	eiP	00 23 14	3	7	eP e(S)	01 46 59 31	3½ 4½
31	eP eS	01 13 52 20	7½	9	eP eS	06 11 54½ 12 19	3½ 5
31	eP eS	03 05 19 43	2½ 5	10	eP eS	02 51 41 58	10 16
31	eP eS	13 01 50 02 12	5 10	10	iP	18 09 37	Large
SEP 1	eP	00 22 14±	1.8	10	e	23 58 32	11±
1	eP e(S)	00 51 56 52 18	2½ 3	12	eP	01 17 36	4½
1	eP eS?	01 01 36 46	3½ 15±	14	e(P)	05 06 44	9
1	eP eS	08 07 21 41	5½ 5½	14	iP!	17 36 37½	(35)
1	eP e? e(S)	14 46 59 21½ 33	2½ 3 9	14	e	18 14 16	6
1	eP eS	16 39 39 42 01	1.3 1.5	14	eP eS	18 46 26 47 41	6 3
1	eP eS	18 05 58 06 12½	3½ 9	14	e	23 50 28	2½
1	eP e(S)	18 14 40 57	1.6 3½	15	e	01 12 23	3½
1	e? e(S)	18 45 52 46 07	1.1 2½	15	e	04 38 30	5
2	eP	06 19 24	Large	15	e	11 44 38	5½
4	eP e(S)	08 49 08 20½	6 20±	15	e	15 40 31	2.3
4	eP eS	13 37 39 39 00	2.3 1.7	15	e	18 37 53	4
4	e(P)	18 46 50½	1.7	15	i(P)	18 37 53	4
4	eP eS	22 35 43 37 21	1.7 3.0	17	e	00 13 36	4
6	eP e(S)	02 27 37 28 06	2.3 3	17	eP eS	03 09 07 24	2 2
6	e?	06 00 17	2½	17	e	05 49 58	1.8
6	eiP eS	06 01 54 02 09½	4 12	17	e	09 28 03	2½
				17	eP? e(S)	14 47 09 31	1.8 3½
				17	e	20 55 24	3½
				17	eP	23 29 30½	2½
				19	eP e(S)	19 12 42 57	6± 25±
				20	iP eS	06 30 27 31 33	7 2.3
				22	eP eS	06 19 50 20 04	7 16±

Date	Phase	h m s	Az	Date	Phase	h m s	Az
SEP 22	eIP eS	16 06 45 08 33	2 $\frac{1}{2}$ 1.5	OCT 11	eP e? eS	00 29 43 55 59 30 08	3 3 $\frac{1}{2}$ 10 80 \pm
23	iP	08 16 40 $\frac{1}{2}$	Large				
27	eP eS	06 36 40 47	Felt MM IV (11) 12	11	eIP eS	14 48 39 49 36	3 $\frac{1}{2}$ 2
28	iP eS	04 42 17 $\frac{1}{2}$ 34	9 15	11	eP eS	16 05 45 06 58	3 $\frac{1}{2}$ 3 $\frac{1}{2}$
28	eP eS?	12 10 18 26	17 \pm 60 \pm	11	e	19 57 31 $\frac{1}{2}$	1.8
29	eP eS?	05 35 10 22	Large v large	12	eP eS	07 37 25 58	2.0 9.0
30	eIP	03 20 22	Large	12	iP eS	14 48 46 49 08	18 $\frac{1}{2}$ 21
OCT 1	iP!	20 38 59	Large	13	e(P) eS	17 30 15 31 25	3 $\frac{1}{2}$ 12 $\frac{1}{2}$
2	eP e(S)	05 54 51 55 54	4 $\frac{1}{2}$ 3 $\frac{1}{2}$	14	eP eS	11 24 00 41	5 20 \pm
2	eP e(S)	06 08 54 10 03	3 2	14	eP eS	16 30 28 43	14 35 \pm
2	eP e(S)	07 03 50 04 52	8 $\frac{1}{2}$ 3 $\frac{1}{2}$	16	eP eS	00 09 36 10 25	2 $\frac{1}{2}$ 3
3	eP e(S)	17 31 20 45	3 $\frac{1}{2}$ 5 $\frac{1}{2}$	16	eS	03 31 41	2.3
3	eP eS	21 42 02 $\frac{1}{2}$ 23	4 9	16	eP e(S)	12 04 40 07 45	
3	eP eS	22 23 15 24 01	12 15	18	iP!	02 50 13	v large
4	eP eS	03 23 42 24 08	10 \pm 18 \pm	18	iP eS	07 02 55 30	12 14
4	eS	07 11 35	2	18	eP eS	16 21 16 52	4 11 $\frac{1}{2}$
4	eP eS	11 00 30 01 09	2 5 $\frac{1}{2}$	19	iP eS	15 48 41 57	5 10 \pm
4	eP eS	19 02 42 51	4 30 \pm	21	eP eS	05 53 08 $\frac{1}{2}$ 23	7 15 \pm
6	eP eS	10 53 12 47	2 $\frac{1}{2}$ 5 4 $\frac{1}{2}$	21	eS	11 48 20	1.7
6	eP eS	20 29 42 (55)	2 $\frac{1}{2}$ 5 $\frac{1}{2}$	21	eP eS	23 14 32 15 07	3 $\frac{1}{2}$ 12
9	eP eS	01 38 44 40 02	5 5 $\frac{1}{2}$	22	eP	14 45 46	1.9
9	eP eS	06 20 49 21 14	6 13	23	eP eS	17 15 00 17 13	5 3 $\frac{1}{2}$
10	eP eS	03 46 26 47 52	12 5	23	eS	19 24 44	1.2
10	eP e eS	18 47 25 38 49 45 $\frac{1}{2}$	1.7 2.3 4	25	eP e eS	12 50 39 51 05 30 $\frac{1}{2}$	1.7 2.3 3 $\frac{1}{2}$
				25	eP eS	14 22 37 24 16	2.2 3 $\frac{1}{2}$

Date	Phase	h m s	Az	Date	Phase	h m s	Az
OCT 28	eS	06 52 12	4 $\frac{1}{2}$	DEC 2	eP S	18 47 27 48 46	3 5
30	iP	17 35 36	80 \pm	4	eP	00 53 44 54 32	4 6
30	iP eS?	22 11 25 38 $\frac{1}{2}$	30 \pm 37 \pm	5	eP	13 06 37	4
31	e(P) e(S)	09 47 48 48 32	2 $\frac{1}{2}$ 3 $\frac{1}{2}$	6	eP S	13 37 10 38 13	7 11
NOV 2	iP eS	23 36 22 31	20 60	7	e(S)	16 31 38	5
5	eP eS	13 05 42 06 21	7 12	8	eS	13 48(55)	
7	P eS	00 42 08 00 43 47	5	9	eS	04 28 39	13
7	eIP eS	12 15 42 12 16 13	35 49	9	eP eS	19 51 29 53	14 16
7	P	21 10 42	6	11 (i)P S	05 09 34 10 02	16 15	
9	eP eS	17 51 40 52 05	7 24	11	P eS	18 05 46 06 18	11 18
10	iP eS	18 03 23 05 30	17 13	13	P S	03 40 03 36	8 19
12	eP eS	18 14 00 15 25	6 8	14	eP (eS)	18 51 03 52 50	
13	eP eS	07 51 34 52 15	6 6	14	iP S	23 27 27 28 33	38 18 $\frac{1}{2}$
	eP eS	19 45 48 45 59	18 77	15	iP S	16 31 04 33	19 11
14	eP eS	12 40 08 40 59	5 11	16	P S	09 17(35) 18	13 24
18	iP	11 17 33	100	16	P	10 00 42 01 50	4 5
22	iP	20 39 54	55	24	eP	09 21 16	2
23	P eIS	05 55 43 56 15	12 40	25	P S	13 57 50 59 33	9 $\frac{1}{2}$ 28 $\frac{1}{2}$
25	iP eS	22 56 32 57 51	8 11	27	S	23 53 26	4
26	eP	03 34 52	4	30	eP S	09 00 58 02 14	4 $\frac{1}{2}$ 3

HALLETT STATION

The amplitudes given on this section of the report are in millimetres, read directly from the photographic paper records.

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
JAN 1	P	Z	13 19 05						
	eL	ZNE	34.7	1.7	17	2.2	17	1.6	15
1	P?	Z	19 42 34						
	L	ZNE	59.9	1.9	30	2.3	30	2	20
1	eP?	Z	20 28 28						
	eS	ZNE	33 35						
	L	ZNE	36.6	4.5	25			4.5	25
2	S	ZNE	03 34 02	1.3	26	1.8	26	3.1	25
	L	ZNE	41.9	3.2	20	5.1	22	3.5	20
2	iP	ZNE	10 21 51 d	14.4	12	7.3	14	3	8
	PcP	ZNE	22 18	11	14	6.5	16	3.4	12
	PP	ZNE	24 06	5.1	11	5.9	15	3.4	10
	e	ZNE	25 50	6.2	14	4.5	12	3.5	15
	iS	ZNE	29 55	15	16	16.1	17	7.5	20
	Lq	ZE	37.0	7.5	36			10.1	40
	Lr	ZN	40.0	26	20	19.8	42		
	P'P'	Z	51 10						
2	P?	Z	21 03 10						
2	P	Z	23 17 35						
3	eP	Z	11 52 07	0.8	16				
	e	Z	55 51						
	eS	ZNE	12 01 37	1.2	18				
	eL	ZNE	14.1	1.9	18				
3	P	Z	19 38 06						
	eL	Z	20 00.5	1.2	20				
3	e?	Z	20 16 39						
3	e	Z	20 27 17						
	e	Z	39.4						
3	P	Z	22 08 28						
	Lq	E	10.7					3.1	15
	Lr	ZN	10.7	3.9	16	3.5	19		
3	eL	ZNE	22 48.7	1	20				
4	eL	Z	12 03.9	1.2	20				
5	PKP	Z	14 25 25	2.4	15				
	PP	ZNE	27 17	3.5	16				
	PKS	Z	28 33	3.8	21				
	SKS	ZNE	32 21	1.6	16	3.8	23	2.1	10
	SKKS	ZNE	34 02	2.1	15	5.1	26	2.2	13
	PS	ZNE	36 41	4.5	20	2.9	23	2.4	15
	PPS	ZNE	38 42	3.5	12	4.3	20	2.6	16
	PPPS	ZNE	40 36	2.6	20	4.6	20	2.5	15
	(SKKS)	ZN	42 10	3.3	18				
	SS	ZNE	44 06	3.6	18	5	24	9	22
	PPSPS	ZNE	44 49	5.3	28	18	33	5.3	29
	SSS	ZNE	48 35	4	20	7.1	22		

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Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
JAN 5	e	NE	51 58			6.5	25	4.5	23
	Lq	NE	58.3			16.2	25	16	25
	Lr	Z	15 02.8	27	25				
5	iP	ZNE	16 05 03 d	4.5	5	3	10	1.8	6
	PcP	ZNE	34	8	14	3.5	14	5.5	20
	PP	ZNE	07 37	9.6	22	5.7	28	5.7	26
	e	ZNE	10 10	7	20	6	26	7.6	17
	e	E	12 26					11.6	21
	S	ZNE	14 06	12.6	13	14	16	19	17
	ScS	ZNE	(17)	26	21	12	22	15.5	20
	SS	ZNE	19	11.2	21	11.5	23	7.3	16
	SSS	ZE	22 28	9.5	26			5.5	10
	e(Lq)	ZNE	24						
	Lr	ZNE	27.7	27.5	42	20	35	10.8	20
	P'P'?	Z	35 43						
5	iP	ZNE	18 06 52 u?	11.5	18	7.4	18	2.5	15
	PP	ZN	08 58	5.2	23	5.1	18		
	PcS	ZN	11 56	4.5	18	3.2	16		
	iS	ZNE	14 07	10	22	24	20	29	18
	SS	ZNE	18 00	15.5	26	14	24	15	20
	Lq	ZNE	19.8	16	27	13.5	24	74	26
	Lr	ZN	21.1	90	23	54	22		
5	P	Z	18 23 38						
	iS	ZNE	30 52	25	24	45.5	20	38	14±
	Lq	ZNE	36	36	24±	25	27±	76	22±
	Lr	ZNE	38	140	25	90	21	76	20
6	P?	Z	00 04 55						
	S	NE	12 11			1.8	15	2.8	12
	Lq	ZNE	15.3			3	22	5	15
	Lr	ZN	16.8	4.7	17	3.8	20		
7	P	ZN	18 25 48						
	PP	Z	27 50	1.5	20	1.1	20		
	eS	ZNE	32 13	1.1	20	1.5	22	2	20
	sS	N	33 40			3.7	30		
	eSS	ZNE	36 06	2.3	20	1.9	18	2.4	30
	eL	ZNE	40.9	2.5	35	3.0	30	2.7	20
8	P	Z	01 27 30						
	(s)	E	40 23					1.5	22
	eL	ZE	51	0.8	18			1.3	15
8	eP	Z	03 08 40						
	S	E	03 18 34					2.0	18
	e(SS)	E	24 12					2.5	13
	e(SSS)	E	26 50					1.8	15
	M	ZNE	41.2	2.5	20	2.5	20	2	20
8	P	ZE	07 40 31						
	e	E	50 28					1.8	18
	(SS)	ZE	53 20	0.8	18			2.6	21
	Lq	E	55.8					4.1	18
	Lr	ZN	57.3	3.1	18	2.5	16		
8	P?	Z	09 51 27						
	i?	Z	52 00						
8	e?	Z	12 00 05						
8	eP	Z	14 58 28						
	eL	ZNE	15 16.3	1.5	22	2.5	26	6	20

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Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JAN 9	P	Z	08	02	35	0.7	15				
	eS	Z		09	17	0.8	18				
	(SSS)	Z		13	29	1.3	12				
	Lq	NE		13.8							
9	Lr	Z		15.7		2.5	20			2.3	17
	eP?	Z	10	22	07	1	15				
	e?	Z			32						
	e(S)	ZNE		29	14	0.8	15	1.4	15	1.8	16
10	e(SS)	ZE		32	08	1	20				
	Lq	E		35						3	22
	Lr	ZNE		37.1		4.5	17	3.1	20	5.1	16
	PKP	Z	14	41	12	1.1	19				
11	PP	ZN		42	51	3.6	18				
	SKS	ZN		48	16	1.8	16	2.1	16		
	SKKS	ZN		49	43	2.5	15	4.1	25		
	e(PS)	ZE		52	12	2.0	18				
	iPS	ZNE		45	s?	10.1	22	4.5	21	4.0	20
	eSKKP	Z		54	30						
	e	N		56	08			3.1	21		
	SS	ZN		58	31	4.7	25				
	SS	ZNE		59	20	6.9	25	16.5	36	5.3	20
	e	ZNE	15	03	09	3.5	21	4.0	22	5.5	18
	SSS	ZN		04	27	4.0	27	7.5	31		
	Lq	NE		13.2		5.2	50	10.8	31		
	Lr	ZNE		18.5		29.5	24	19	33	7	22
	11	PKP	Z	12	18	46	0.8	12			
PP		Z		20	41	1.1	22				
SKS		Z		25	55	1.0	16				
(FKKP)		Z		29	05						
e(PS)		ZE			18	1.2	18				
PS		E		31	32					1.5	18
e(PKKS)		Z		32	18					1.6	15
(SS)		E		37	40						
SS		ZNE		54		1.8	21	4.5	25	2.5	15
e		Z		39	55	1.5	20			2.3	23
e		Z		54	44	1.3	20				
L		N	13	03.5		8.2	18	4.1	20	2.5	19
L		ZNE		05.3							
11		P	Z	16	36	01					
	L	ZNE		39.9		2.4	16			1.8	16
11	P	Z	19	40	38						
	(PP)	ZNE	21	41	48	3.2	12	2.6	12	1.5	12
	e(S)	NE		42	26	1.6	12	2.6	25	2.0	15
	(L)	ZNE		44	43			1.6	8	1.8	12
12	M	ZNE		45.8		5.5	16	3.6	12	7.5	18
		ZNE		47		17	17	9.2	19	10.5	15
	eL	ZNE	05	42.5		1.8	15	1.4	15	2	15
13	P	Z	19	28	33						
	S	ZNE		36	32	1.8	18	8.9	18	3.4	17
	L	ZNE		45.5		4.9	20	4	20	7	18
14	iP	ZNE	00	39	38 d	2.1	13	2.0	11	1.1	15
	S	ZNE		43	50	2.7	15	1.7	10	3.6	14
	L	ZNE		44.5		9.8	18	5.2	22	5.8	15
14	iP	Z	05	43	36 u						
	eL	ZNE		06	06	1.0	18				
14	e(L)	Z	17	00							

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Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JAN 14	e(L)	Z	17	39.5		1.0	22				
	L	ZNE		41.6		3.2	18	2	20	2.2	20
15	P	ZNE	01	07	52	1.8	19				2.4
	iS	ZNE		12	05	6.8	14	10.2	22	11.5	16
	Lq	NE		13.1				5.0	15	23.2	10
	Lr	ZN		13.4		30±	15	12.4	14		
15	P	ZN	10	18	18	1.1	11				
	S	ZNE		22	27	1.7	15	1.1	10	1.8	16
	L	ZNE		23.3		5.7	18	3.6	18	3.6	15
15	iP	ZNE	16	53	38 u	3.2	12	2.1	6		
	pp	ZN		54	10	2.2	14	1.5	10		
	pPP	ZN		56	18	2	14	2.1	10		
	S	ZNE	17	00	52	2.0	15	3.8	16	4.5	15
15	sS	NE		01	42			3.5	22	3.5	16
	ScS	NE		03	16			1.5	12	3.4	16
	eL	ZNE		09.3		4.5	17	2.5	17	3.4	16
15	eL	ZN	20	23.0		1	15				
16	e	Z	04	41	30	1.1	14				4.4
	Lq	E		41.6							
	Lr	ZN		42.9		2	15	1.5	14		
16	P	Z	07	34	42	1.8	14				
	PP	ZNE		39	20	3.3	21				
	e	ZNE		40	07	4.8	16	2.6	18	2.6	16
	PPF	ZN		42	09	3.7	16				
	eSKS	Z		44	57	2.8	16				
	(SKKS)	NE		45	19			5.8	24	5.3	16
	e	ZN		46	18	3.7	15	4.9	16	4.4	13
	S	ZNE		47	00	3.0	16	6.5	22	11.5	18
	SP	ZE		49	27	18.3	18				
	PS	NE		45				10.6	25	7.5	19
	e	N		50	46			7.1	16		
	(PPS)	Z		51	02	12.0	15				
	SS	ZNE		55	45	8.3	21	33.5	25	18	19
	SSS	E		59						15.5	18
eLq	NE	08	05.5		29	20					
Lr	Z		10								
16	L	ZN	09	34.8		15.5	22	10.5	22		
	e(PP)	Z	11	39.8		1.3	18				
	PS	Z		48	21	2.0	15				
16	SS	ZNE		54	19	3.3	22	3.3	25	1.8	16
	eL	Z	12	09.6							
16	PP?	Z	12	31	33	3.1	20				
	PPP?	Z		33	32	2.0	17				
	(SKKS)	NE		37	30					2.4	20
	S	ZNE		39	18	2.5	16			4.9	18
	PS	ZNE		41	00	7.5	17	2.2	16	4.3	16
	SS	ZNE		46	56	4.0	23	17.5	26	9.0	20
	(SSS)	E		51	18					6.0	19
	eL	ZNE	13	04.7		12	20	7.5	22	5.3	18
16	PS	ZNE	16	09	48	5.1	18				
	SS	ZNE		15	52	2.9	25	8.5	26	4.5	20
	e(L)	Z		33.2		4.4	23				
	M	ZN		41		6.5	23	5.3	22		
17	P	ZE	01	42	17	2.6	13	1.8	14		
	S	ZE		46	26	4.4	16	6.0	14		
	L	ZE		47.3		11.2	17	8.6	15		

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
JAN 17	P	ZNE	17 59 27	2.4	12	1.9	8	1.4	7
	S	ZNE	18 03 30	3.5	16	3.3	8	4.3	15
	L	ZNE	04.4	10.5	18	6.1	20	7.4	16
17	eP	ZE	23 14 27	1.5	11				
	ePP	Z	16 26	1.6	11				
	S	ZNE	21 51	1.1	13	2.5	11	4.2	13
	e(ScS)	NE	23 52			1.5	12	3.0	15
	SS	ZE	25 42	2.0	15			2.3	15
	Lq	E	27 04					5.7	21
	Lr	ZNE	29.4	8.7	17			17.3	17
18	eL	ZE	08 09.8	1.5	20			2.5	20
18	iP	Z	09 15 46 u						
	(PP)	Z	17 40	1.9	15				
	S	ZE	24 18	1.6	10			2.3	8
	e(L)	Z	35 06	2.3	10				
18	P?	Z	15 17 51	2.3	10				
	(PP)	Z	20 21	1.8	11				
	S	E	25 44					3	14
	e(Lq)	E	31.8						
18	Lr	ZE	34.7	2.5	19			3.3	13
	(L)	ZNE	15 56	2.5	11			3.2	14
18	e	E	21 11 48					5	11
	L	ZN	15.4	3.3	21				
19	P	Z	04 30 56						
	S	E	39 12					3.6	15
	(Lq)	E	47.5					5.0	13
	L	ZE	49.2					5	20
19	P?	Z	06 03 30						
	S	E	10 53					3.6	11
	SS	ZE	14 22	3.1	12			4.6	11
	Lq	E	16.1					5.8	20
	Lr	ZNE	19.0	7	19	3.6	20	8.8	16
19	eL	ZE	18 23	3.6	22				
20	PP	Z	17 31 52	3.4	14				
	eL	Z	18 10	4.5	24	4.2	26		
21	e(S)	ZN	15 17 04	1.4	15	2.3	23		
	L	ZN	17.9	2.6	18	5.0	20		
21	P?	Z	15 33 51						
24	S	ZN	07 42 15	3.1	14	6.5	18		
	(sS)	N	43 17			4.5	21		
	SS	ZN	46 21	2.2	13	1.9	15		
	(SSS)	ZN	49 13	4.0	18	2.0	17		
	L	ZN	51.1	3.5	40				
24	P	ZNE	08 05 34	3.6	13	2.2	11	2.7	12
	Lq	NE	08.2			6.3	17	9.5	10
	Lr	ZNE	08.5	4.5	13	2.7	14	5.4	10
25	P	ZN	05 31 21	2.8	15	2.0	12		
	S	ZNE	39 30	1.8	11	2.6	13	4.0	11
	SS	ZNE	43 11	1.5	11			2.1	13
	Lq	E	46.3					4.0	31
	Lr	ZNE	48.2	3.0	20	3.0	20	4.5	20
25	eL	ZN	13 16.3	1.5	20				

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
JAN 25	eL	ZN	17 12.2	1.5	28				
	Z		18 00.5	1.5	30				
25	eL	Z	20 03.6						
25	eL	Z	00 58.7	2.1	15				
26	eL	Z	07 43.1	7.3	20	7.6	18	13.6	12
	Lq	NE	43.3						
26	Lr	NE							
	Lr	ZN							
28	L	ZNE	04 03.5	5.5	20	3.5	20	4.8	20
28	eL	ZNE	11 41						
28	eL	N	14 25.1	2.6	20	3.8	18		
	eL	ZE	27					4.1	10
28	eL	Z	18 01.5						
28	P	ZN	19 52 00	5.5	17	4.0	18		
	PP	ZN	54 07	4.0	15	4.7	15		
	e	ZN	55 20	3.5	15	2.1	14		
	PcS	ZN	57 18	2.5	12	2.5	13		
	S	ZE	59 28	2.5	10			12.5	21
	(S)	N	43			10.5	27		
	Z		58	4.0	15			6.5	14
	e	ZE	20 01 59	3.8	16				
	ScS	ZE	02 40			3.5	15		
	e(SS)	N	03 00			5.1	22	8.5	15
	SS	NE	03 00			5.8	18	5.1	18
	e	ZNE	44	5.1	18	6.5	18	24.5	23
	Lq	NE	04.7						
	(SSS)	Z	05.8	6.4	20				
Lr	ZNE	07.4	25	24	17.5	23	24.1	15	
29	L	Z	01 20.9	1.5	20				
30	L	ZN	13 21.6	1.5	20				
31	PKS	ZN	01 11 07	3.2	9	2.5	15		
	eSS	NE	27 30					3.0	20
	e	ZN	29 52	1.1	15	3.3	16		
	eSSS	NE	32 52			3.0	16		
	e?	E	42.5					2.1	33
L	ZN		1.9	28	2.5	32			
	L	ZNE	47.7	6.0	20	6.8	20	4.0	20
31	L		50.2						
	eL	Z	06 37.8	2.4	15	2.0	16	3.3	18
FEB 1	eL	Z	06 55.8						
2	eL	ZN	05 54.8	1.8	20	2	26		
2	P?	Z	07 54 31						
2	P	Z	11 26 10						
3	L?	Z	11 23.0	1.5	20				
3	P?	Z	13 35 27						
4	P	Z	01 25 01						
4	eL?	Z	03 20.6	1.1	15				
4	P	Z	15 35 23						

Date	Phase	h m s	Az	Tz	An	Tn	Ae	Te
FEB 4	S e(SS) e L	N E E NE	15 46 49 49 31 54 26 56.6		2.7 23		2.5 14 2.0 15 3.1 20	
4	PP SS L	Z NE N	19 27 23 41 32 20 06.7		4.0 20		3.0 20 3.5 18	
5	P	Z	07 48 35					
5	L	ZNE	11 22.3	1.2 15	1.8 15		1.7 12	
5	PS SS eL	Z ZE ZE	16 05 50 11 45 26.5	1.1 23 1.4 20 1.6 30			3.1 20	
5	S ScS SS (SSS) Lq Lr	ZNE N ZNE Z NE ZE	18 08 03 10 14 11 48 13 40 14.0 17.4	1.0 8 1.5 8 2 15 7.3 18	3.5 19 4.0 20 8.9 25		3.5 21 2.1 20 3.0 25 8.1 18	
5	i? i?	Z Z	18 51 20 25					
6	eS L L	N N E	11 37 20 38.2 38.6		2 15 20 18		8.6 11	
6	P PP S (ScS) e e e e	ZNE NE ZNE N E ZE ZE ZN	21 55 57 58 37 22 04 44 05(40) 08 34 09 04 12.5 13.5	7 12	6.5 25 3.5 20 10.8 18 40 25 20 30 40± 20		3.0 12 2.0 10 14.4 17 5.2 18 10 16 24.5 40	
7	eL	ZNE	02 15.0	2.3 16	1.8 16		2.3 20	
8	iP	Z	02 46 28 d					
9	iP e e e e S (Lq) SS e Lr	ZNE ZNE ZNE Z ZN N ZNE E ZN N ZN	02 16 28 50 18 34 19 38 21 39 22 06 58 26.3 26 25 40 28.5	dn?s?8.1 6 7.2 8 5.5 9 2.5 10 3.1 8 11.9 15 17.5 20 21.2 24	4.5 6 3.1 6 2.9 7 2.5 6 18.5 14 3.5 6 7.0 14 16.8 25		2.3 8 1.9 5 2.6 6 8.8 16 18.5 23	
9	P PP PcS (sS) e e e eL	ZE Z ZN ZNE E E NE ZNE	20 32 35 34 49 37 17 41 57 42 50 46 14 44 55.4	1.6 9 1.3 10 1.6 15 3.0 28			3 10 1.8 14 1.9 13 3.9 17 3.3 20	
10	S? eL	E ZNE	03 18 13 19.5	1.5 13			2.0 5 2.5 13	

Date	Phase	h m s	Az	Tz	An	Tn	Ae	Te
FEB 10	e? L	E Z	13 56 02 58.1				2.1 10	
11	eL	Z	07 10				2.0 15	
11	iP pP pPcP PcS S SS Lq Lr	ZNE Z ZN ZE ZNE ZNE NE ZN	21 09 17 d 38 11 27 14 25 15 38 19 05 19.4 21.3				7.3 7 6.4 8 5 8 2.6 12 8.5 15 12 22 16 27 14.8 29	3.6 6 3.1 8 3.1 12 8 16 6.5 14 17.1 20
12	P (PP) (PP) (SKS) (SKKS) (SP) (PS) (PPS) (PPPS) e e (SS) e e (SSS) e e (L) e e e	Z ZN ZN ZN ZNE NE ZE ZNE N Z ZNE Z NE Z N ZNE ZN Z NE	22 08 46 13 40 55 17 45 19 14 20 35 21 22 22 47 23 16 24 40 26 51 29 10 30 34 32 36 33 40 34 20 36 25 37 10 38 20 40 50 41 42					
13	P PcP (PP) e PcS S (sS) ScS (pScS) Lq e Lr	ZNE ZN ZE E ZE ZNE NE E ZN E ZN ZN	06 55 20 56 20 51 59 30 07 00 25 03 22 04 40 05 17 06 23 09.2 09 51 11.9				1.4 8 2.0 7 2.1 11 2.0 9 6.0 18 6.8 16 5.0 15 3.0 18 14.8 18	1.2 8 1.6 7 1.9 10 7.5 18 4.1 20 6.0 13 3.0 16 4.8 14 24.8 19
13	eL	ZN	17 25.5	2.2 24				
14	eL	ZNE	04 20.6	2.6 28			2.5 28	
14	eL	ZN	04 31	2 20			1.6 20	
14	eL	ZE	06 16				2 20	
14	L	ZNE	22 19.4	3 8			4.1 12 5.6 15	
15	PKP PP SKKS PS PPS e eSS e(L)	ZE ZNE ZNE Z ZNE ZN ZE Z	11 13 18 14 52 21 40 24 25 25 49 29 40 31 30 41.3				3.5 18 4.1 23 2.1 30 4.1 28	2.1 10 3.9 16
				2.7 28				

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
FEB	Lq	NE	43.0						
	Lr	Z	44.4			3.5	27	3.0	20
	M	ZNE	46	5.5	23	5.0	25	3.1	20
FEB 16-21 inclusive. Records unreadable owing to severe microseism storm.									
22	(s)	NE	22 08 20			10.8	18	5.1	17
	L	NE	11.7			5.1	20	7.2	26
25	eL	NE	15 26.5			4.2	15	7.5	14
26	PcS	NE	06 03 43						
	S	ZNE	06 16	8.1	21	3.5	17	2.8	8
	ScS	ZN	08 37			2.6	10	14.3	20
	SS	ZNE	10 16	4.5	16				
	eSSS	ZN	11 24	3.1	15	3.5	17	6.0	14
	Lq	N	12.3			11	17		
	Lr	E	13.7					4.7	14
26	P	ZNE	18 25 12	8.9	15	3.7	15	3.0	16
	PP	ZNE	29 36	20	18	10.9	16	12.5	15
	PPP	Z	32 00	7.2	15				
	e	NE	33 48			6.5	16	7.0	14
	1SKS	NE	35 49			33	18	29.5	16
PS	NE	38 53			65±	26	39	23	
27	eL	Z	06 08						
27	P?	Z	10 39 18						
	Lq	N	55.4			3	20		
	Lr	ZNE	58	2.5	18	2.6	18	3	16
27	eL	ZN	14 14						
27	L	ZNE	17 01.5	1.5	20	3	20	2.5	15
27	L	ZNE	17 51.0	2.6	20	2.9	20	2.6	14
28	P	ZNE	07 37 28	2.5	10	2.7	14		
	S	ZNE	41 31	3.2	15	3.0	13	4.7	15
	Lq	E	42.0					6.5	15
	Lr	ZN	42.4	7.3	20	6.4	16		
MAR 1	P	ZN	09 33 45	1.9	11	1.9	12		
	eS	ZN	38 02	1.5	14	1.8	13		
	Lr	ZN	38.7	4.5	20	4.1	18		
	7	1S	ZNE	06 59 52 w?	6.0	22	10.0	18	14.5
7	eScS	NE	07 02 17			2.8	10		
	eSS	ZNE	03 35	4.5	16	3.7	25		
	eLq	NE	05 28			5.5	20		
	Lr	ZNE	06.6	12.5	32	13	16	15	15
7	iP	ZNE	10 18 50 u?n?						
	S	Z	25 24						
	(SS)	Z	29 14						
	Lr	Z	31.7	9.5	13				
7	S	ZNE	19 25 14	2.1	9	5.4	24	7.0	23
	ScS	N	27 53			2.3	14		
	SS	ZNE	29 25	3.6	18	7.6	21		
	Lq	N	32.0			13	30		
	Lr	ZE	34.3	14	16			9.9	18
7	eL	ZN	23 46.4	2.3	20	2.6	20		
				5.5	25	4.5	25		

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
MAR 11	eL	ZNE	09 34.0	9.2	20	6.5	20	5.5	20
	12	L	ZNE	23(36)	6.5	22	7.5	15	7.5
15	P	Z	10 26 11	2.2	8				
	S	ZNE	35 18	3.2	13	5.5	15		
	SS	ZN	39 45	4.9	31	5.6	15		
	e	N	41 52			3.7	22		
	eSSS	N	42 53			2.5	20		
	e	Z	44.8	3.9	20				
	Lq	E	10 45.1			6	25		
16	Lr	ZNE	47.2	9.5	27	10.2	16	5.5	20
	P'P'?	Z	54 35	10.5	20				
	eL	ZN	11 10.2	2.7	18	3	15		
16	iP	ZNE	13 56 44 d?	10.7	11	3.6	13	4.5	11
	ePP	ZN	59 05	3.6	10	2.8	12		
	ePPP	ZE	14 00 55	3.6	13			4.3	10
	S	ZNE	05 55	8.1	37	9.1	21	16.3	40
	SS	ZNE	10 35	15.5	42	11	18	12	34
	SSS	NE	14 04	8.5	26	9	17		
	(SSS)	Z	24					8.5	32
	Lq	E	14.9			7	25		
	(Lq)	N	16.0						
	Lr	ZNE	18.2	58.5	50	18.5	20	35	52
16	P	Z	18 32 24	4.2	6				
	eSS	N	46 16			3.7	20		
Lr	ZNE	54.8	7.6	36	5.6	20	7.3	36	
17	S	N	14 22 54					5.6	19
	eL	ZN	29	8	18	6.5	18		
L	ZN	33							
17	S	N	20 26 39					8.5	18
	eL	Z	33	17.5	18	14±	28		
L	N	35.3							
18	P	Z	08 53 34						
18	iP	ZN	15 00 00 u?s						
19	e	NE	07 39						
	L	ZN	41.2						
M	ZNE	45	9.5	20	7.5	18	7.8	16	
19	L	ZNE	12 36.3	5.5	18	5.5	18		
20	L	ZNE	07(08)			7±	20	10±	20
25	eL	N	21 29.5					6.1	18
	L	ZNE	31.9					6.8	18
26	eL	NE	21 05			3	15		
28	iP	Z	09 47 50 d						
APR 4	eLr	Z	10 47.5	4	45				
	M	Z	52.0	13	30				
	M	Z	11 02.0	15	19				
5	eP	Z	21 34 36						
	Lr	Z	21 39 30	6	22				
	M	Z	21 40.3	9	18				
6	eL	Z	07 06.8	2	12				

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
APR 6	(SKS)	Z	14	28	35						
	eLr	Z	14	46.6							
6	eLr	Z	19	11.8							
	M	Z	19	19.6		2	20				
8	P?	Z	16	09	10						
	Lr	ZN	25	30		4	30				
8	eP	Z	18	10	01						
	PP?	Z(N)	12	37							
	iS	NE	18	22	sw						
	SS	NE	22	30							
	Lq	NE	25	32							
	eLr	NE	28.6								
	M	ZNE	34.0			18	18	16	19	9	18
	P	Z	21	49	27						
	S?	ZE	22	00.0							
9	eLr	Z	08	18.1							
9	eLr	Z	09	15.5							
9	iP	Z	09	29	07 a						
9	ePP	Z	15	53	12						
	SKS	ZNE	59	39							
	PS	ZNE	16	02	15						
	SS	ZNE	07	46							
	(SSS)	ZN	11.6								
	eLr	Z	22								
	M	ZN	34.0			13	20	7	20		
9	eLr	Z	17	57.3							
	M	Z	18	01.0		7	21				
12	eLr	Z	11	38.5							
12	ePP	Z	22	39	01						
	eSKS	E	45.2								
	eS	N	46.6								
	ePS	ZE	48.3								
	eLr	ZE	23	09	58	10	26			8	27
13	ePP	Z	16	55	46						
	PKS	Z	57	11							
	eSS	E	17	13.5							
	SSS	E	17	41							
	eLr ₁	ZNE	35.0								
	M	ZNE	40.0			29	29	11	29	18	29
	M	ZNE	50.0			28	18	17	18	17	18
	eLr ₂	ZNE	18	26							
16	eLr	Z	12	39.8							
17	iP	Z	20	47	03 (a)						
17	e(L)	Z(NE)	21	20	13	2	16				
18	eL	Z	04	08.8							
18	eP	Z	06	36.1							
18	e(L)	Z	06	49.7							
18	eLr	Z	14	22.5							
18	eL	Z	14	39.6							

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
APR 18	eL	Z	15	01.8							
18	eL	Z	19	18.2		1	25				
	M	Z	19	23		1	18				
18	eL	Z	20	12							
18	eL	Z	22	24.7							
18	(S)	Z	22	39.2							
	(SS)	Z	41.7								
	eLr	Z(NE)	45.7								
18	eL	Z	23	44.8							
19	eL	Z	00	17.3							
19	eLr	Z	01	00.0							
19	eL	Z	01	48.7							
19	eL	Z	03	03							
19	eP	Z	05	56.0							
19	eL	Z	06	13.6							
19	eL	Z	07	14.0							
19	iP	Z	07	48	32 u						
	eLr	Z	08	04.8							
19	eL	Z	08	12.5							
19	eL	Z	11	27.6							
19	eLr	Z	17	11.2							
19	eLr	Z	21	18.7							
20	eP	Z	19	27	00						
	ePcP	Z	28	56							
	S(Z)	N(E)	33	18							
	(SS)	N	35	58							
	(Lq)	E	36	24							
	ScS	Z	37	22							
	Lr	Z	38	19							
	M	Z	40.5							4	20
20	iP	Z	21	49	02 d						
	PP?	Z	51.3								
	S	(Z)N	57	13						4	24
	Lr	Z	22	05.4		8	35				
21	eL	Z	00	19.8							
21	L	ZN(E)	07	07.6							
	M	Z	10			2	20				
21	eP	Z	13	56	25						
	eLr	ZN	14	07.6							
21	SS	N	20	47	20						
	eLr	ZN	21	08							
21	SS	N	22	05	58						
	eLr	ZN	29.6								

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
APR 22	P?	Z	00	41	.6						
	(S)	(Z)N(E)		50	52						
	(SS)	(Z)N		54	.7						
	Lr	ZNE	01	01	.9						
22	P	Z	19	10	34						
	S	N		19	.6						
	SS	Z(N)		24	.3						
	Lr	ZNE		32	.1						
	M	ZN(E)		37	.5	3	18	2	20		
23	eLr	ZN	06	02	.7						
23	ePP	Z(N)	09	21	.8						
	(SKS)	(Z)N		27	21						
	(SKKS)	(Z)N		28	.6						
	?	E		29	.8						
	PS	ZNE		31	33			12	18		
	SS	(Z)NE		38	12			22	26		
	eLq	NE		49	.8						
	Lr ₁	ZNE		56							
M	ZN		10	03	9	25	8	25			
M	ZNE		10	13	13	20	9	20	6	19	
Lr ₂ ?	ZNE		11	00							
23	(p)	Z	11	28	57						
25	P	Z(N)	11	24	17						
	S	N(E)		30	25						
	Lq	E		33	.5						
	Lr	N		35	.3						
	M	N		41				10	17		
26	PS	ZN	08	08	45						
	?	ZN		10	15						
	SS(Z)	N		15	05						
	eLr	Z		37							
26	P	Z	17	05	16						
29	Lr	ZNE	10	14	.8						
29	PKP ₂	Z	09	51	17						
	PP	Z		55	19						
	PcPP'	Z		58	16						
	eLq	N	10	42	.5						
	Lr	ZN		54							
30	P	Z	00	16	54						
	S?	E		22	.2						
	Lr	ZN		25	.5						
30	eL	Z	09	16							
30	P	Z	14	58	09						
	S	ZN(E)	15	06	18 (u)s			7	22		
	ScS	N(E)		08	19						
	SS	ZN		10	03						
	(Lq)	E		12	14						
	(SSS)	ZN		12	57						
	Lr	ZN(E)		15	10	7	30	6	31		
	M	ZN		22	.0	9	19	10	18		
MAY 2	P?	Z	16	51	16						
2	eP	Z	19	00	41						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAY 2	P	Z	19	46	28						
	S	ZNE		53	05 sw						
	SS	ZE		56	25						
	(Lq)	E		57	.1						
	Lr	ZN		59	.6						
	M	ZN	20	02	.3	6	20	6	20		
2	P	Z	19	47	54						
	S	ZNE		54	27						
	SS	ZE		57	50						
2	eP	Z	20	57	11						
	S	ZNE	21	03	25						
	SS	NE		06	14						
	eLr	ZN		08	.7						
2	iP	ZNE	22	53	00 dn						
	PP	ZNE		54	44						
	(PcS)	ZN(E)		57	44	5	12	5	12		
	S	ZNE		59	44 dsw	24	16	30	19	65	19
	(SS)	ZE	23	01	59						
	(Lq)	ZNE		03	00	30	18	30	18	30	21
	Lr	ZNE		06	04	70	23	70	23	42	21
2	eP	Z	23	32	20						
5	eP	Z	08	52	33						
	S	NE		59	09						
	eLq	(N)E	09	03							
	Lr	ZNE		06	.0						
5	P	Z	13	51	35						
	(pP)	ZN		52	04						
	PP	Z		53	21						
	S	NE		58	19			11	17	12	18
	(ScS)	Z	14	01	52						
	Lq	E		02	02						
	Lr	ZNE		03	.7						
	M	ZN		14	07	13	21	10	20		
5	eP	Z	15	37	07						
	S	NE		43	48						
	Lq	E		47	.3						
	Lr	ZNE		50	.9						
5	eL	Z	20	59	.8						
	eL	Z	22	13	.3						
6	eP	Z	22	45	12						
	PP?	Z		48	53						
6	iP	Z	23	32	56 d						
	S	NE		30	42						
	(ScS)	N		32	40						
	eLq	E		37	.1						
	eLr	ZNE		39	.6						
6	iP	Z	23	45	44						
7	iP	ZN	00	36	26 ds	7	22				
	(PcP)	E		36	54						
	S	ZNE		45	16	5	17				
	SS	ZN(E)		49	44						
	(SSS)	Z		53	10						
	Lq	E		53	15						
Lr	ZN		56	.9	8	30	6	30			
M	ZN		58	.5	15	21	8	22			

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAY 7	iP	Z	04	43	36 (d)						
	S	ZNE		53	05						
	SS	ZNE		57	51						
	eLq	N(E)	05	02.4							
	eLr	Z(N)E		06.6							
	M	ZNE		09		10	25	3		9	25
7	P	Z	04	45	39						
	eLr	Z	05	01.7		2	27				
7	iP	Z	10	35	04 d						
	S	(Z)NE		45	27						
	SS	NE		51	09						
	(Lq)	NE		57.6							
	Lr	ZNE	11	02.4							
	M	ZNE		06		6	36	4	35	3	37
8	P	Z	19	35	17						
	S	ZNE		44	54						
	SS	ZNE		49	45						
	(Lq)	N		55.0							
	Lr	ZE		57.2							
	M	ZE	20	01		5	21			4	22
9	(S)	E	08	31	12						
	Lr	ZNE		36.5							
10	eP	Z	10	15	05						
	eLr	Z		30.8							
11	iP	Z	05	35	17 d						
11	iP	Z	08	48	47 d						
	(PcP)	Z		49	24						
	S	ZNE		57	01						
	SS	ZNE	09	01	27						
	Lq	N(E)		04.3							
	Lr	ZE		07.4		3	25				
	M	ZNE		13		11	17	7	17	9	17
12	eP	Z	04	52	42						
	S	NE		59	17						
	(SS)	E	05	02	52						
	Lq	E		04.0							
	eLr	Z(N)		06.6		2	20				
13	eP	Z	13	50	06						
	S	E		56	43						
	eLq	E	14	01.1							
	eLr	Z		03.6							
13	P	Z	14	27	00 (d)						
	iS	E		33	42						
	(ScS)	E		37	17						
	Lq	E		37.8							
	Lr	Z		39.4							
	M	ZE		42		9	19			7	20
13	iP	Z	15	01	40 (u)						
	i(PP)	Z	03	26							
	S?	(Z)(N)E		08.2							
13	eP	Z	23	39	59						
	eL	ZNE		41.8							

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAY 14	eP	Z	02	51	37						
	S	NE		58	24						
	Lq	E	03	03.0							
	Lr	Z		05.3		2	25				
14	eP	Z	13	46	57						
	eS	N		53	56						
	eL	Z	14	00.8							
14	eL	ZN	18	10.2							
15	eP	Z	05	38	18						
15	iP	Z	19	21	54 d						
	Lr	ZN		39.0							
15	pP	Z	19	58	57						
15	eP	Z	21	02	17						
16	iP	Z	14	44	48 d						
	iS	Z		46	21						
16	eP	Z	17	35	53						
	S	NE		42	32						
	ScS	E		46	07						
	Lq	Z		47.0							
	Lr	Z		49.0							
16	ePP	Z	22	03	59						
	eLq	ZN		37							
17	(PKP)	Z	19	48	20						
	SS	N	20	07.3							
	Lq	E		20							
	Lr	ZN		26.6							
21	eL	Z	18	24.3							
21	eP	Z	21	47	35						
	S	N		53	44						
	Lr	ZN		58.0							
22	iP	ZN	13	53	40 u						
	(PP)	N		55	50						
	S	NE	14	01	09			8	15	12	14
	ScS	E		03	34						
	Lq	E		05.3							
	Lr	N		08.5							
	M	NE		12.5				25	19	15	20
22	P	ZNE	17	41	17						
	PcS	N		46	43						
	iS	NE		48	28			23	18	21	
	ScS	E		51	08						
	Lq	NE		52.3							
	Lr	N		55.6				8	32		
23	PKP	Z	03	04	33						
	PP	ZE		07	36						
	(PKS)	N		08	23						
	(PPP)	Z		10	34						
	SKKS	NE		14	33						
	SKSP	ZE		17	40						
	PPS	NE		20	23						
	SS	NE		26	25						
	SSS	N		31	00						
	Lq	N		40.9							

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	
MAY 23	Lr ₁	ZNE	53.5			7	38	3				
	M	ZNE	04 06			22	23	14	22	5	32	
	Lr ₂	ZNE	30							8	22	
	M	ZNE	42			8	22	4	22	5	20	
23	eP	Z	05 56	34								
	S	ZNE	58	48								
	M	ZNE	59.5			15	17	10	16	28	12	
23	P?	Z	09 54	51								
	L	ZNE	57	28								
23	L	ZNE	10 14	35								
23	L	ZE	17 34	14								
	eL	Z	03 48	5								
	eL	Z	05 02	8								
	eL	ZN	10 35	5								
27	eL	Z	12 25									
27	eP	Z	17 05	01								
	eS	E	15	19								
	eLr	Z	33									
28	eL	Z	04 38									
29	eL	N	7 02									
29	eP	Z	07 38	23								
	S	NE	46	42								
	eLr	N	54									
29	eL	N	11 56									
30	eP	Z	17 29	22								
	eL	ZNE	31	46								
31	SS	E	14 53	37								
	Lr	Z	15 10	6								
31	eP	Z	19 26	52								
	S	ZNE	35	43								
	SS	Z	40	18								
	Lr	Z	47.5									
JUN 1	PKP	Z	23 48	04								
	PP	Z	48	42								
	PS	ZNE	58	26								
	PPS	NE	59	38								
	SSS	ZNE	00 08	51								
	Lq	N	16.0									
	Lr	ZNE	21.3									
	M	ZNE	25			13	35	8	26	9	35	
	M	ZNE	31			18	20	11	21	18	20	
	M	ZNE	35			30	18	19	17	26	18	
2	PKP	Z	05 09	45								
	PP	ZE	10	22								
	PS	ZNE	19	54								
	PPS	ZE	21	15								
	SS	E	26	00								
	SSS	Z	30	50								
	Lr	Z	44.0									
	M	ZNE	57			30	20	27	20	24	19	

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	
JUN 3	?	ZNE	01 36	05								
	eP	Z	02 02	53								
	eL	ZN	13.5									
3	eL	ZN	03 49	9								
3	eL	Z	04 09	9								
3	eP	Z	06 06	18								
	eL	Z	22.8									
3	eL	Z	06 28	3								
3	eL	Z	16 24	5								
4	PKP	Z	07 51	57								
	Lr	ZNE	08 31	3								
4	PKP	Z	08 01	59								
	PP	Z	03	25								
	PS	N	12	58								
	(PPS)	E	14	35								
7	SS	N	14 48	22								
	eLr	ZE	15 04	6								
8	eL	Z	16 17	8								
9	P	Z	22 17	06								
10	SS	ZE	09 24	00								
	Lr	Z	38.0									
10	P	Z	20 42	19								
	S	ZNE	51	00		5	15			15	20	
	SS	ZN	55	00					8	20		
	Lq	N	58	35						15	28	
	Lr	ZE	21 01	25		17	30					
11	PKP	Z	05 29	25								
	PP	Z	31	11								
	PS	ZE	40	57								
	(PPS)	E	42	42								
	(PPPa)	ZE	46	05								
	PSPS	ZNE	48	40								
	SSS	N	52	15								
	Lq	N	06 02	5					13	52		
Lr ₁	ZE	09.0			40	52				16	50	
	M	ZNE	16			75	21	39	19	65	21	
	Lr ₂	Z	07 06	6		8	45					
11	eL	Z	13 31	0								
12	P	Z	07 40	30								
	S	ZNE	44	49								
	eLr	Z	46.2									
12	P	Z	18 04	08								
13	?	Z	12 32	22								
13	P	Z	21 46	51								
	pP	Z	47	27								
	S	NE	54	02								
	sS	NE	55	02								
	ScS	E	56	19								
	SS	NE	57	57								
	SSS	NE	59	57								

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUN 14	eLr	Z	21	25	.3						
15	eL	ZNE	03	39	.5						
	eL	ZE	21	10	.7						
16	(eP)	Z	03	43	.7						
	S	NE		50	40						
	SS	NE		54	33						
	Lr	ZNE		59	.0						
16	iP	Z	07	18	14 (u)						
	S	Z		26	22						
	Lq	Z		33	.0						
	Lr	Z		35	.5	2	30				
16	(PP)	Z	10	50	36						
	SKS	E		56	33						
	PS	E		59	29						
	Lr	ZE	11	21	.7						
17	P	Z	11	09	15						
	S	E		19	49						
	Lr	Z		37	.0						
17	SKS	E	15	32	18						
	PS	ZE		35	11						
	SS	ZNE		41	28	8	27			12	21
	sSS	Z		42	48						
	Lr	ZE		57	.2						
17	P	Z	15	35	29						
	S	Z		45	11						
18	iP	Z	03	23	18 d						
	(pP)	Z		25	28						
	(s)	E		32	09						
18	eP	Z	14	02	27						
	dP	Z		03	48						
	(s)	E		08	09						
	sS	E		10	34						
	SS	ZNE		11	50						
18	?	ZN	16	17	12						
	?	Z		20	52						
18	iP	ZE	22	18	47 (d)						
	S	ZNE		23	28						
	Lq	NE		24	00						
	Lr	Z		25	00	34	25	30	19	10	18
19	iP	Z	01	58	24 u						
20	Lr	ZE	04	14	.3						
20	eP	Z	14	35	56						
	?ScP	Z		41	28						
	S	N		43	24						
	Lq	E		48	.3						
	Lr	ZNE		50	.6						
20	iP	Z	16	42	31 d						
21	iP!	ZNE	20	36	23 d						
	Lr	ZE		59	.2						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUN 23	Lq	NE		47	.3						
	Lr	Z		51	.9						
	M	ZNE		59	.5	4	19	3	20	2.5	19
24	SS	ZE	05	41	40						
	eLr	Z		57	.8						
24	eP	Z	09	48	45						
	Lq	E	10	14	.0						
	eLr	Z		17							
25	e	Z	17	03	58						
	?	E		11	15						
	?	NE		12	35						
	?	NE		17	40						
25	eP	Z	19	42	13						
26	eL	Z	03	00	.8						
26	eP	Z	07	11	51						
	S	NE		19	12						
	ScS	N		21	15						
	(SS)	ZN		23	12						
	Lq	E		24	35						
	Lr	Z		26	.0						
26	(SKS)	Z	15	14	57						
	PS	Z		19	29						
	(PPPa)	Z		25	13						
	SS	Z		27	00						
	Lr	Z		44	40						
27	PP	Z	07	22	54						
	SKKS	N		30	31						
	PS	ZE		32	17						
	PPS	ZNE		33	31						
	SS	NE		38	20						
	(SSS)	E		42	25						
	(Lq)	E		48	.3						
	Lr	ZNE		51	.9				5	45	4 43
28	eL	Z	13	53	.3						
29	eL	Z	01	49	.3						
29	iP!	ZNE	09	32	52 un(e)						
	PcP	E		33	55						
	(PP)	ZNE		35	16						
	(PPP)	E		36	25						
	(Pcs)	ZN		37	.4						
	S	ZNE		40	32						
	Lq	E		47	.6						
	Lr	ZNE		49	.9						
	M	ZNE		54		18	20	2	19	13	17
JUL 1	iP	Z	13	23	00 (d)						
	Lr	Z		48	.5						
1	eL	Z	21	35	.2						
2	eL	N	10	36	.3						
2	eP	Z	16	57	19						
	(s)	ZE	17	05	.2						
	eLr	ZNE		14	.5						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUL 2	eL	Z	21	49	.6						
3	eL	ZE	15	30	.5						
4	iP	Z	06	23	41 d						
4	eL	Z	08	36	.4						
4	eP	ZNE	19	22	08						
	L	ZNE		25	.9						
	M	ZN		28		11	16	16	15		
4	P	Z	20	02	56						
	L	ZNE		06	.5						
5	P	ZNE	02	32	24						
	L	ZNE		35	20						
	M	ZNE		37		54	20	44	15	60	11
5	iP	Z	18	55	17 u						
5	iP	Z	23	41	26 u						
6	iP!	ZNE	22	18	35 ds			15	20		
	PP	N		20	28			8	18		
	PcS	N		23	40						
	iS	NE		25	49 ne			55	21	25	21
	ScS	NE		28	.0			10	21	8	25
	e	NE		29	43			15	17	15	17
	L	NE		31	.3			18	40	105	38
	M	NE		35				75	38	28	27
7	P	Z	07	52	37						
	Lr	Z	08	11	.3						
7	eP	Z	12	42	46						
	Lq	E		55	.7						
	Lr	N		58	.6						
7	iP!	Z	13	21	45 u						
	(PP)	N		23	51						
	iS	NE		30	38 s(w)			14	18	15	
	Iq	E		38	.6					10	29
	Lr	N		41	.8			5	40		
	M	ZN		45		18	23	15	25		
7	iP	Z	22	28	40 d						
	ipP	Z		28	50 d						
	S	NE		35	58						
	Lq	E		42	.0					3	30
	Lr	N		44	.3			4	25		
8	P	ZN	02	44	29						
	PP	Z		46	31						
	S	ZNE		51	57	4		7	17	10	15
	ScS	NE		54	22			4	13	6	16
	Lq	E		57	.3					20	25
	Lr	ZN		58	.7	11	30				
	M	ZN	03	05		23	18	18	17		
8	iP	ZNE	15	43	49 d	8	18	4	17		
	PcP	ZNE		44	55						
	PP	ZN		45	53						
	PcS	ZE		49	00						
	S	ZNE		51	10	4	13	10	18	9	18
	ScS	E		53	37						
	eLq	E		55						30	26
	eLr	ZN		57							
	M	ZN	16	00		23	27	11	27		

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUL 8	iP	Z	15	49	23 (d)						
8	P	ZN	21	23	06						
	PP	N		25	12						
	S	NE		30	37						
	ScS	E		32	57						
	SS	NE		34	07						
	Lq	E		36	.0						
	Lr	N		39	.0						
8	P	Z	21	57	53						
	S	NE	22	05	18						
	Lq	E		10	.6						
	Lr	N		13	.7						
10	iP	ZE	04	02	01 (u)						
	ppP	Z		02	36						
	S	Z		12	00						
11	eP	Z	09	45	01						
	(SKS)	Z		55	39						
	(PS)	N		56	49						
	SS	ZNE	10	03	26						
	(SSS)	Z		07	17						
	Lr	ZE		16	.3	3	30			4	27
12	P	Z	04	59	33						
12	eLr	ZNE	15	00							
12	eL	Z	23	05							
15	iP	Z	00	30	55 d						
	PP	Z		34	33						
15	L	ZNE	08	04	24			5	13	9	14
	M	ZNE		06						9	14
16	P	Z	02	57	32						
16	iP	Z	05	31	47 (u)						
16	iP	Z	06	56	33 d						
16	P	ZN	14	10	26						
	PP	ZN		12	27						
	S	ZNE		17	42						
	e	Z		19	35						
	e	ZN		21	20						
	Lq	E		22	.6						
	Lr	ZN		25	.0						
	M	ZN		30		4	30	11	17	11	17
16	P	Z	20	07	27						
	(PP)	N		09	00						
	(S)	N		13	27						
	eLq	E		16	.3						
	eLr	Z		18	.2						
17	eL	ZE	01	53	.6						
17	eP	Z	15	16	07						
	SS	ZNE		28	38						
	eL	Z		41	.3						
17	eL	N	16	54	.4						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUL 18	eP	ZN	14	17	46						
	e	Z		21	14						
	iPP	ZN		22	09						
	?	NE		23	48						
	PPP	NE		24	20					2	13
	(PKS)	E		26	01						
	SKS	NE		28	24						
	SKKS	N		29	36						
	PS	ZN		31	34						
	PPS	ZNE		32	29						
	(PKKP)	Z		33	50						
	?	NE		34	39						
	SS	ZNE		37	00					18	30
	Lq	E		47.0							
	Lr	ZN		53.7		19	33				
M	ZN		57		38	26	20	25			
M	ZN		15	01	50	21	33	21			
18	PP	Z	14	52	31						
19	iP	Z	03	59	26						
	pP	Z			34						
(S)	N		04	06	37						
(Lr)	Z				14.4						
20	iP	Z	20	05	46						
	(S)	N		12	00						
(Lr)	Z			17							
21	P	Z	01	19	22						
	pP	Z			46						
21	P	Z	13	16	26						
	pP	Z			45						
eL	ZN			34.4							
21	eP	Z	15	27	50						
	L	Z			34.2						
22	eP	Z	10	37	10						
	P?	Z	10	45	06						
22	eP	Z	18	17	21						
	PP	Z			54						
	(PcP)	Z		20	14			8	16	6	14
	S	NE			21	34					
	Lq	E			22.5			4	15		
	Lr	N			23.3						
23	P	Z	14	13	01						
	PcP	Z		14	24				8	18	
	S	ZNE		20	35						
	ScS	E		22	36						
	SS	Z		24	05					14	32
	Lq	E			26.5						
	Lr	ZN			29.2			17	28	12	21
M	ZN			31							
23	P	Z	14	25	56						
	PP	ZN			27	43					
23	P	Z	14	50	51						
	(S)	ZN	15	01	34						
Lr	ZNE			19.3							
23	iP	ZNE	22	00	31	dse					
	S	ZE		08	10						
	Lr	Z			16.7						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUL 23	iP	Z	22	11	18						
24	iP	Z	01	39	10						d
	(PcP)	Z			40	18					
24	P	Z	01	55	52						
24	iP	Z	02	08	17						u
24	P	Z	08	59	58						
24	P	Z	18	21	17						
25	P	Z	03	00	11						
	pP	Z		02	20						
25	P	Z	08	10	26						
25	P	Z	09	00	05						
25	P	Z	18	51	21						
26	P	Z	09	25	48						
26	P	Z	14	29	44						
26	P	Z	18	48	43						
	L	ZNE			50	28					
26	P	Z	20	12	04						
27	P	Z	02	14	35						
	S	N			21	13					
	Lr	ZNE			25.5						
27	eP	Z	15	40	52						
	S	NE			46	50					
	Lq	E			49	27					
	Lr	ZN			51	18	2	22			
	M	ZN			57.5		4	15	4	16	
28	P	Z	01	18	38						
	pP	ZE			19	26					
	PP	ZE			22	26					
	e	N			28	15					
	SKS	ZNE			29	03					
	SP	ZNE			30	05					
	PPS	ZNE			31	40	5	22	4	17	7
	SS	ZE			36	30	2	25			4
	Lq	N			43.5				2	26	
	Lr	ZE			49.5		6	40			5
28	P	Z	06	20	59						
	IS	E			28	36					e
	iScS	E			30	55					
	Lq	E			32	31					
	eLr	ZN			37.0						
	M	E			39						18
	M	ZN			46		15	15	18	15	18
28	Lr	Z	11	03.0							
28	Lr	Z	11	27.6							
28	P	Z	13	32	33						
	L	Z			58.4						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUL 29	eP	Z	10	41	23						
	Lq	E			53.5						
	Lr	Z			58.4	2	24			3	34
29	iP	ZN	16	35	06 d						
	pP	Z			36 11						
	S	N			43 06						
	Lq	E			47.0						
	Lr	ZN			49.4						
30	iP	Z	14	15	30 (a)						
30	(P)	Z	15	45	30						
	(Lr)	Z			16 02						
31	iP	Z	00	27	26 u						
	(pP)	Z			28 36						
AUG 1	eP	Z	01	02	11						
1	eP	Z	01	27	39						
	eL	N			48.2						
1	iP	ZNE	05	50	17 ds						
	ipP	Z			22						
	iS	ZNE			58 54 (n)e	6	13	9	15	25	16
	ScS	ZNE			59 31						
	SS	NE	06	02	50						
	Lq	ZNE			06 10	10	41	12	40	76	39
	Lr	ZN			08.7	32	35	20	33		
	M	ZN			18	14	18	24	17		
	eP'p'	Z			19 16						
1	iP	Z	07	30	12 d						
	ipP	Z			22						
	PP	ZNE			32 10						
	S	NE			37 30						
	ScS	E			40 02						
	e	ZNE			41 10			15	13		
	Lq	E			42.1						
	e	ZN			43.00				23	20	
	eLr	Z			45.3						
	M	ZN			54	26	18	61	18		
	M	ZN			59	30	15	55	15		
	M	ZN	08	06		16	14	35	14		
1	eP	Z	09	33	20						
1	iP	ZN	09	43	37 u						
	PP	ZN			45 34						
	S	ZNE			51 00						
	ScS	E			53 29						
	SS	ZNE			54 26						
	Lq	E			55.6					14	24
	eLr	ZNE			59.0						
	M	ZN	10	08		9	16	31	17		
1	eP?	Z	10	06	47						
1	eP	Z	14	51	24						
	eL	ZNE			15 13.8						
2	eP	Z	01	23	15						
	(PcP)	Z			25 47						
	S	Z			25 47						

7 21

2 15
16 15

7 21

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
AUG 2	eP	Z	02	13	15						
2	eP	Z	02	40	26						
	(PP)	ZN			42 00						
	S	NE			47 10						
	ScS	E			50 16					5	22
	Lq	E			52 31						
	eLr	ZN	03	04		4	17	10	18		
3	iP	Z	07	03	16 (u)						
	S	ZNE			12 52						
	(SSS)	Z			20 55						
	Lr	Z			26.8	1.5	45			4	17
	M	ZN			36	7	18				
3	eL	ZE	14	00							
3	eL	ZNE	16	00							
4	eL	Z	00	12	8						
4	e	N	08	58	22						
4	eP	Z	17	57	53						
	S	ZNE			18 04 37						
	SS	Z			08 17						
	Lq	N			09 22						
	Lr	Z			11 02						
4	eP	Z	23	40	17						
	eL	Z			48.5						
5	eL	Z	00	06	9						
5	eL	Z	01	10	1						
5	iP	Z	01	17	46 u						
5	eP	Z	06	51	22						
	S	NE			58 03						
	(SS)	Z			07 01 20						
	Lq	E			02 48						
	Lr	Z			04 22						
5	iP!	Z	09	39	53 u						
7	P	Z	04	34	07						
	S	N			43 48						
	Lr	Z			58.3					4	50
	M	ZN	05	05		6	19			5	18
7	P?	Z	04	36	34						
7	eP	Z	12	30	38						
	iS	E			37 22						
	SS	ZE			40 41						
	Lq	NE			41 58						
	Lr	Z			43.5						
7	P	ZNE	16	14	29						
	S	ZNE			16 36						
	L	ZNE			17 09						
	M	E			17.3						
	M	ZN			18					29	20
8	eP	Z	00	27	04						
	S	NE			33 47						
	ScS	E			37 09						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
AUG 8	Lq	NE		38	22						
	Lr	Z		40.2		2	25	2.5	14	2.5	16
8	iP	Z	06	38	46						
	e	Z		40	36						
8	eP	Z	07	29	06						
8	eP	Z	08	00	14						
8	iPKP	Z	12	37	18 (u)						
	PS	Z		48	56						
	PSPS	ZN		56	07	6	35	5	22		
	SSS	ZE	13	00	40						
	Lq	E		10.3							
	Lr	Z		14.5		5	35			2	26
	M	Z		30		5	19				
8	iP	Z	15	56	43						
	L	ZE		59	24						
9	iP!	Z	16	11	51 d						
	ipP	Z		12	11 (a)						
	S	N		19	21						
	eLq	E		25.2							
	eLr	ZN		27.0							
11	eP	Z	10	12	49						
11	iP	Z	10	34	20 u						
	e	Z		40	05						
	Lq	E		48.2							
	Lr	ZN		50.2							
11	P	Z	11	16	24						
11	P	Z	16	06	42						
	PKP	Z		10	15						
	PP	ZNE		11	26						
	SKS	NE		17	02						
	SKKS	ZNE		18	17						
	S	E		19	07						
	PS	ZNE		20	47	36	23	19	18	9	27
	(PPS)	Z		22.5							
	SS	ZNE		27	19						
	SSS	N		31	42						
	eLq	E		38.7							
	eLr	Z		45							
	M	ZN		55		45	22	28	22		
11	iP	Z	22	49	07 (u)						
	S	ZNE		58	47						
	SS	ZN	23	03	40						
	Lq	E		07.2							
	Lr	Z		13.5		3	41				
	M	ZN		20		8	19	6	20		
	(SKPP')	Z		20	07						
12	eP	Z	05	40	01						
12	eP	Z	22	44	06						
13	eP	Z	02	44	12						
13	eP?	Z	07	16	21						
14	iP	Z	18	59	38 u						
	S	NE		19	06						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
AUG 14	SS	NE		10	12						
	Lr	Z		13.5		2	34				
14	iP	ZN	23	37	50 (a)						
	pP	Z		38	04						
	PcP	Z		39	12						
	PP	ZN		39	52						
	S	NE		45	12				13	21	
	Lq	E		51.1							22
	Lr	ZN		53.3		35	20	18	23		47
15	eP	Z	12	18	20						
	i(pp)	Z		45							
15	eP	Z	18	01	05						
15	eL	Z	19	57.3							
16	iP	Z	00	24	45						
16	P	Z	03	41	33						
	eLq	E		51.1							
	eLr	Z		52.7							
16	eP?	Z	04	16	27						
16	SS	N	16	46	50						
	eL	Z		17	05						
16	P	Z	22	34	58						
17	eP	Z	05	09	48						
17	eP	Z	05	12	21						
	S	N		17	29						
	Lq	N		18	53				2	25	
	M	N		20.5					11	12	
17	eP	Z	06	45	55						
	S	ZNE		53	40						
	Lq	N		59.3							
	eLr	ZE	07	02		3	27				2
17	eP	Z	17	58	45						
17	ePKP	Z	21	34	18						
	PP	ZN		36	23						
	(pPP)	ZN		36	58						
	SKS	N		42	51						
	PKKP	Z		45	16						
	SP	ZNE		46	07						
	SS	E		52	38						
	(Lr)	Z		22	11.5				5	40	
18	iP	Z	11	09	26 d						
	pP	Z		11	08						
19	iP!	ZNE	05	21	38 use 28 (12)				4	12	8
	pP	ZNE		23	53 dnw						
	PP	Z		25	15						
	i	Z		29	14						
	iSKS	ZNE		31	08 (u)nw30				16	43	12
	e	Z		31	25						70
	SP	ZE		32	28				79	21	
	sS	ZNE		35	26						60
	sSP	E		36	13						23
	SS	NE		37	53						
	e	NE		41	00						

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Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
AUG 19	e	ZE			44						30
	(Lq)	E			46.6						
	(Lr)	Z			51.5						
19	(PP)	Z	05	52	40						
	(PPP)	ZE			55						30
	eLr	Z	06	26							
19	eP	Z	16	13	12						
19	eL	N	20	13	42			4	12		
19	eP	Z	20	39	06						
	eL	Z	21	08							
20	eP	Z	01	39	46						
	S	NE			47						18
	ScS	NE			49						24
	SS	E			51						10
	Lq	E			53	1.5	30				48
	Lr	Z			56.5	4	16				
	M	Z	02	03							
20	iP	ZE	05	12	56						u
	pp	ZE			14						45
	(PP)	Z			15						44
	S	NE			19						56
	(SS)	ZNE			23						26
	e	ZE			26						56
	p'p'	Z			42						32
20	P	Z	10	30	44						
21	iP	Z	01	40	20						u
21	P	Z	02	14	53						
21	iP	Z	16	16	25						
	S	NE			24						07
	eLq	NE			29.7	2	32				
	Lr	Z			31.9						
22	eP	Z	06	31	16						
22	iP	Z	09	09	25						
	S	N			17						40
	eLr	Z			28.2						
23	eL	Z	05	19	0						
24	eP	Z	09	21	06						
24	eP?	Z	15	15	16						
24	eP	Z	17	36	29						
24	eP	Z	21	07	15						
	eS	N			14	3	31				36
	eLr	Z			22.4						
25	eP?	Z	05	39	13						
26	P	Z	18	12	27						
26	P	Z	19	02	(52)						
27	iP	Z	02	05	01						

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Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
AUG 27	iP	Z	17	00	51						
	Lr	Z			32.6	3	36				
27	iP	Z	17	14	08						u
27	P?	Z	17	48	06						
27	eP	Z	18	11	03						
27	eP?	Z	19	44	54						
28	eP?	Z	01	42	34						
	S?	Z			42						44
28	iP	Z	06	40	34						u
	pP	Z			41						21
28	P	Z	07	50	32						
28	eL	Z	15	24	0						
28	iP	Z	20	36	34						d
	S	ZE			45						12
	Lr	Z			55.7	1	40				
28	iP	Z	21	39	39						u
29	eP?	Z	04	01	42						
29	eP	Z	04	25	36						
29	eP	Z	10	55	42						
29	eLr ₁	Z	15	48	3						
	eLr ₂	Z	16	45	0						
29	iP	Z	21	43	30						
29	P?	Z	22	52	00						
30	eL	Z	04	26							
30	eL	Z	05	27	6	1	15				
31	P	Z	00	30	59						
	S	ZNE			37						44
	ScS	ZE			41						00
	Lq	NE			42.1						
	Lr	Z			44.0	3	21				
31	iP!	ZNE	02	00	28	ue	10	14			
	pP	ZNE			02	40	udw	13	15		
	PP	Z			04	06		7	22		
	SKS	ZNE			10	00		10	16	8	13
											14
											16
31	iP!	ZNE	02	08	58	use	40	15		7	13
	pP	ZNE			11	14	dw	45	17		
	PP	ZN			12	40					
	1SKS	ZNE			18	35	u(s)w	46	18	60	15
	(SP)	ZE			20	10		93	23		110
											17
SEP 1	iP	ZNE	00	18	08						u
	pP	ZNE			37						
	PP	ZNE			20	03	32	17		20	13
	ScP	ZN			23	10				7	12
	pPcS	N			24	07					
	S	ZNE			24	47	45	12		60	92
	ScS	ZE			27	42					22

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
SEP 1	SS eLr	ZNE Z	28	40		47	21	41	13	70	
			31.5			>110	55				
1	P	Z	16	45	55						
1	P	Z	18	50	17						
1	eP	Z	9	04	42						
	PP	Z		08	58						
	SKS	E		15	24						
	PS	ZE		18	15						
	PPS	ZE		19	10						
	SS	ZNE		24	20	8	23	2	18	11	18
	SSS	ZE		28	00						
	(Lq)	N		35.0							
	Lr ₁	ZE		39.7		5	35			3	40
	M	ZE		47.5		6	15			3	15
	eLr ₂	Z	20	51		3	60				
2	eP	Z	00	58	52						
	L	ZNE	01	01	25						
2	eP	Z	03	50	45						
	S	ZNE		54	12						
	eL	ZNE		55.0							
2	eP?	Z	06	34	00						
	L	Z		40.8							
2	L	Z	10	23.3							
2	L	Z	11	34.7							
2	eP	Z	12	37	47						
	L	Z		39.9							
2	eP	Z	15	19	54						
3	P?	Z	05	30	07						
4	eL	Z	04	48.8							
4	iPKP	Z	10	08	07 d						
	L	Z		45.7							
5	eP	Z	00	56	11						
5	ePKP	Z	11	53	46						
	PKS	ZN		57	17						
	Lr	Z	12	35.7		2	41				
6	e?	Z	05	59	22						
6	iP	Z	07	08	33 (a)						
6	iP	Z	08	26	26 d						
6	eP	Z	15	42	59						
	eL	Z		16	10						
7	e?	Z	02	28	33						
7	e?	Z	04	29	53						
8	iP!	ZNE	11	35	25 dnw150	16		72	16	28	13
	PcP	Z		36	42						
	PP	Z		37	19						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
SEP 8	PcS	Z		40	31						
	S	ZN		43	10						
	Lq	E		46.5							
	Lr	ZN		50.0							
9	eL	Z	10	10.2							
9	P	Z	15	34	11						
	Lr	Z		55.6							
9	eL	E	19	54.9							
9	P?	Z	21	06	29						
10	P	Z	04	56	36						
	pP	Z		58	31						
11	e?	Z	18	24	36						
11	P?	Z	19	23	46						
11	eP	Z	20	09	20						
	eL	Z		33.9							
11	P?	Z	21	40	54						
12	P	Z	01	23	37						
	pP	Z		24	23						
12	P?	Z	15	09	04						
12	P	Z	19	37	42						
	S	E		44	39						
	Lq	E		47	52						
	Lr	N		51.7							
12	eL	E	23	46.8							
13	eL	Z	14	40							
13	iP?	Z	17	17	15						
	e	Z			21						
	S?	Z			24						
	?	Z			42						
13	iP	ZNE	21	29	07 u						
	S	ZNE		37	15						
	SS	ZNE		41	07						
	Lr	ZE		45	48	5	30				
14	eP?	Z	14	32	35						
14	eP	Z	18	36	50						
	S	ZNE		41	15						
14	P?	Z	18	43	15						
15	PKP	Z	02	05	24						
	PP	Z		08	06						
	PKS	E		09	05						
	Lr	Z		53.0							
15	P?	Z	07	35	04						
15	P?	Z	17	00	59						
15	P?	Z	19	32	23						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
SEP 15	P?	Z	20	06	31						
16	P?	Z	22	01	31						
17	P	Z	01	23	10						
17	PP	Z	08	59	56						
	SKS	ZE	09	06	26						
	PS	ZE		08	56						
	SS	NE		14	26						
	Lr	Z		30.0							
17	eP	Z	09	52	37						
	i	Z			43						
	IS?	Z			47						
17	1P?	Z	20	46	42						
17	1P	Z	23	33	01 d						
	S	ZNE		41	51						
	ScS	E		43	01						
	SS	ZNE		46	11						
	SSS	ZE		50	00						
	Lr	ZN		53.7		5	37				
18	eP?	Z	01	52	30						
18	eP?	Z	08	03	14						
18	eL	Z	12	10	0						
18	1P	Z	15	46	38 u						
	S	ZNE		54	01						
	Lq	E		59.3							
	Lr	ZN	16	01	8	4	33	2	35	3	35
19	1P	ZNE	02	37	04 d						
	pP	ZNE		39	05						
	(PP)	ZE		39	58						
	S	NE		46	27			9	15	9	14
	sS	NE		50	02						
	SS	NE		52	02						
	sSS	ZNE		55	22						
19	eP?	Z	03	06	17						
19	eL	Z	10	06	5						
19	eL	Z	10	36							
19	1P	Z	21	43	15 u						
	PP	Z		45	02						
	S	N		50	20			4	20		
	Lq	E		53	43					5	25
20	P	Z	19	14	45						
	S	ZN		23	52						
	SS	ZN		28	25						
	Lq	E		34.0							
	Lr	ZN		35.4							
21	eP	Z	18	30	48						
23	eL	Z	03	13							

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
SEP 24	eL	Z	18	19							
24	eL	Z	19	56							
24	eL	Z	22	32							
25	eLr	Z	06	12							
26	L	Z	04	28	50						
26	eP?	Z	07	21	25						
	L	Z		36.0							
27	1P!	Z	06	42	49						
	IS!	ZNE		49	58 e					10	14
	ScS	E		51	42						
	sScS	E		56	58						
27	P	Z	12	16	11						
	S	ZNE		23	16						
	ScS	E		26	00						
	Lq	E		26.8							
	Lr	ZN		30.0		6	26				
27	eL	Z	20	25	0						
28	P	Z	01	36	04						
	1P?	Z			20						
	S	ZE			46						
	Lr	ZE			01.0						
28	eL	Z	04	18	6						
28	eL	Z	21	59	0						
29	eP	Z	19	18	04						
	S	NE		27	58						
	SS	E		33	28						
	eLq	NE		40.0				6	50	4	50
	Lr	Z		44.0		4	42				
30	P	Z	11	45	55						
	L	ZNE		47	40	3	22				
30	eL	NE	19	40							
30	P?	Z	22	55	50						
00T 1	eP?	Z	04	57	00						
1	eL	Z	08	12	5						
1	eP?	Z	22	55	50						
1	eP?	Z	23	26	31						
2	P	Z	06	01	03						
	PP	Z		02	32						
	S	ZNE		07	06						
	Lq	E		09.6							
	Lr	ZN		11.3		7	25	5	29		7
2	P?	Z	06	13	08						
2	P	Z	06	15	06						
2	P	Z	06	33	10						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
OCT 2	P	Z	07	10	02						
	PP	Z		11	43						
	S	Z		16	08						
	Lq	E		18.9							
	Lr	ZN		20.0		23	26	14	33	21	27
3	eL	Z	18	52.1							
3	P	Z	19	09	45						
	eL	Z		28.5							
3	P	Z	22	29	31						
4	eP?	Z	02	18	27						
4	iP!	Z	02	33	25 u	2.5	0.1				
	S	ZN		41	31						
	Lq	E		48.4							
	Lr	Z		51.0		2	30				
	M	Z		56		6	20				
4	eP?	Z	03	05	10						
4	eL	Z	08	37.2							
5	iP	Z	18	17	54						
	Lr	Z		33.9							
6	eP?	Z	15	14	17						
8	P?	Z	02	47	16						
	?	Z		20							
8	iP	Z	12	52	41 (a)						
	pP	Z		58							
8	iP!	Z	23	53	23 d						
9	eP	Z	09	27	31						
9	eP	Z	18	20	36						
9	eP	Z	18	41	47						
10	iP!	Z	08	36	36 d						
10	P	Z	17	36	10						
	eLr	ZNE		57							
	M	Z		18	06	15	15				
11	iP	Z	00	37	44 u						
	eL	Z		50							
11	iP	Z	09	38	24 d						
	eL	Z		57							
11	P?	Z	17	22	08						
12	eL	Z	01	44							
12	P	Z	03	55	04						
	eL	N		06	36						
12	eP	Z	22	00	40						
	eL	ZNE		03	06						
	M	ZE		05		6	12				
13	P	Z	02	34	12						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
OCT 13	iP	Z	05	08	06 d						
	i	Z		13	02						
	S	E		15	15						
13	eIP	Z	10	55	14						
	e	Z		56	46						
	S	N	11	02	05						
	Lq	E		05	38						
	Lr	N		08.5							
13	iP	Z	17	37	08 (u)						
	S	E		44	13						
14	iP	Z	16	36	05 u						
	eL	ZE		38							
	M	Z		42		2	22				
14	P?	Z	22	13	12						
16	eL	ZNE	15	16							
17	eP	Z	04	36	46						
	(PP)	Z		38	46						
	S	ZNE		44	16	7	30	12	22		
	eLq	E		48.5						6	35
	Lr	ZN		51.8		7	55	2	60		
	M	ZN		57		24	23	12	20		
17	eP	Z	10	01	22						
17	eL	Z	11	46.6							
18	eP	Z	02	57	55						
18	iP!	ZNE	17	02	20 d(n)w9		8				
	(PcS)	N		06	33						
	iS!	ZNE		10	53 sw	12	18	30	26	33	18
	ScS	NE		12	13				29	19	19
	SS	N		14	53						
	Lq	NE		18	13					28	30
	eLr	Z		21		12	30			15	45
M	ZNE		24		8	21	36	18	51	18	
19	eP	Z	08	41	49						
	eL	Z	09	02							
19	eP	Z	09	17	04						
	L	ZN		21	37						
19	iP	Z	11	29	33 u						
	ipP	Z		30	09 u						
	S	NE		37	51						
	sS	NE		39	00						
19	eP	Z	14	01	32						
19	eP	Z	19	31	02						
	i	Z		10							
	iS	ZE		35	06						
	L	Z		35.6							
	M	ZE		37		38	16			28	13
21	iP!	Z	17	44	34 d						
22	eP	Z	09	59	36						
	S	ZNE	10	07	10						
	SS	ZN		11	00						
	Lq	E		12.6						7	36
	Lr	ZN		15.0		6	40	3	38		

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
OCT 22	eP	Z	14	49	45						
22	eP	Z	18	49	51						
23	eP	ZNE	00	17	02	9	10	5	10	3	8
	PP	NE		19	00						
	S	NE		23	59					20	16
	SS	E		27	02						
	Lq	E		27	35					52	28
	(Lr)	Z		28	40	8	26				
	M	Z		41		85	16				
23	1P	Z	01	35	11 u						
23	1P	Z	14	51	50 (u)						
	e	ZNE		52	00	8	10				
	e	Z		56	43						
	S	E		15	02					8	25
	M	Z		29		25	18				
23	eP	Z	15	04	35						
23	eP	Z	16	34	51						
23	eP	Z	17	21	37						
23	eP	Z	20	50	38						
24	e	Z	07	43	13						
	PKP	Z		57							
24	P	Z	07	45	55						
24	(P)	Z	08	35	52						
	(pP)	Z		36	13						
24	(P)	Z	09	07	17						
	(pP)	Z		33							
24	e	Z	10	34	09						
24	i	Z	18	13	12						
	(SS)	E		24	00						
	Lq	E		30	06					1	20
	Lr	Z		38.3						3.5	15
25	P	Z	09	07	12						
	L	ZE		35							
25	P	Z	14	29	39						
	S	E		37	10						
26	P	ZN	00	49	35						
	S	ZNE		58	52						
	SS	ZN	01	03	00						
	Lq	E		06.5						6	30
	Lr	Z		10.7		18	42				
26	eP	Z	08	26	23						
26	eP	Z	11	20	52						
26	eP	Z	15	39	34						
	(pP)	Z		44							
	S	ZNE		50	00						
	SS	ZN		55	20						
	(Lq)	E	16	02	10						
	Lr	Z		05.9							
	M	Z		08		9	24				

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
OCT 26	eP	Z	19	41	14						
	Lr	Z		20	08.5						
27	P	Z	02	46	47						
	pP	Z		52							
27	P?	Z	06	57	20						
28	P	Z	01	43	41						
28	1P!	Z	06	10	44 d						
	eLr	Z		31.9		1.5	24				
28	1P	Z	06	29	25 d						
28	P	Z	06	56	41						
28	eP	Z	09	31	54						
28	PKP	Z	11	05	51						
28	1P!	Z	14	59	26 d						
	S	E		15	07						
	ScS	E		08	29						
	eLr	ZE		19.3							
28	1P	Z	22	54	25	3	14				
	(pP)	Z		35							
	PP	Z		56	32						
	PoS	N		59	32						
	S	NE		23	02						
	Lq	E		10.2						5	22
	Lr	Z		13.3							
	M	Z		15.7		7	20				
28	eP	Z	23	41	08						
29	P	Z	02	32	19						
29	PKP	Z	09	31	25						
	Lr	Z		10	04.3						
30	ePKP	Z	02	03	48						
	eL	Z		03	13						
30	e	Z	03	45	37						
30	e	Z	04	05	51						
30	eL	Z	09	52.3		1	58				
	M	Z		10	04	3.5	25				
30	1P!	Z	17	42	55 d						
	S	NE		55	49						
31	P	Z	03	31	28						
31	eP	Z	03	53	32						
	L	N		15	46						
	eL	Z		47.5							
	M	N		49						3	10
	M	Z		50							
NOV 2	eP	Z	05	31	19						
3	P	Z	04	14	00						
3	eP	Z	15	31	02						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
NOV 3	P	Z	22	24	36						
	eLr	Z			39.7						
4	P	Z	03	15	45						
	Lr	Z			45.5						
4 (eP)		Z	16	00	31						
5	P	Z	00	30	12						
5	PKP	Z	08	55	35						
5	eP	Z	10	18	13						
	L	ZE			20.2						
5	eP	ZN	24	01	35						
6	eP	Z	05	25	47						
	iP	ZN	05	38	17 d						
	pP	Z			47						
	PcP	Z			39 07						
	S	ZNE			46 25						
	Lq	E			53.4						
	Lr	ZNE			55.9					4	42
	M	Z	06	01		2	32				
						8	21				
6	P	Z	07	22	18 u						
	(pP)	Z			42						
6	P	Z	13	20	51						
7	P	Z	00	48	21 (d)						
7	P	Z	01	25	46 (u)						
	e	N			36 28						
7	eP	Z	12	23	25						
	S	E			30 16						
7	e	E	21	26.3							
	Lr	Z			29.0						
8	S	N	20	49.2							
	eL	N			50.3						
	M	N			52 25			10	12		
9	eP	Z	01	18	11						
	pP?	Z			22						
	S	E			25.5						
	Lq	E			30.5						
	Lr	E			33					3	19
9	iP	Z	04	31	29 u						
	PcP	Z			38						
	i(pPcP)	Z			32 02						
	(sPcP)	Z			15						
	S	NE			41 12						
9	P	Z	17	49	35 d						
9	P	Z	18	48	22 d						
9	P	Z	23	16	16 u						
10	P	Z	02	20	02 u						
	S	NE			30 24						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
NOV 10	eP	Z	07	41	24 u						
	eL	ZN	08	09		7	40	3	32		
10	P	Z	18	09	32 u						
	pP	Z			11 21 u						
	S	E			16 38						
	sS	N			20.5						
11	SSS	ZN	13	05.1							
	Lr	ZNE			21	2	15	2	15	3	52
11	iP!	ZN	15	43	16						
	S	ZNE			45.1						
12	L	ZNE	03	10.7		4	19				
13	L	ZNE	08	13.3		8	30	7	32		
14	e(P)	Z	05	08	07						
	L	ZNE			35.8				5	36	
14	e(P)	Z	17	26	04						
15	PKP	Z	07	35	54 d						
	SKS	N			42.7						
	SKKS	N			44.1						
	PS	ZNE			46 30						
	(PPS)	NE			48.8						
	SS	NE			53.0						
	Lq	E	08	05							
	Lr	NE			14						
	M	N			20 42				10	24	
	15	Lr	Z	19	52		5	36			
16	eP	Z	16	13	05						
	S	ZE			20 01						
	L	ZNE			28 34	4	39				
	M	Z			31 20	15	38				
17	e(P)	Z	19	13	00						
17	eP	Z	22	22	09						
18	(P)	Z	03	38	20 u						
18	eP	Z	06	18	20						
	S	NE			24 05						
18	iP	ZN	11	25	18 d						
	pP	Z			32						
	S	ZNE			32 05						
	L	NE			40 31						
	M	N			41 12				4	19	
19	iP!	Z	23	33	42						
20	P	ZN	11	53	18 u						
	PP	ZN			55.3						
	S	NE	12	00.5							
	Lq	ZE			05 50						
	Lr	ZNE			08 14						
	M	E			12.0						9 96
	M	Z			17 33	7	40				
20	ePKP	Z	18	17	38						
	e	Z			20.2						
21	eP	Z	11	18	32						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
NOV 22	eP	Z	02	54	13						
	Lq	E	03	06	50						
	Lr	ZNE		10.0							
	M	Z		11	40	2	40				
22	P	Z	10	45	10	u					
22	iP	Z	11	15	37	u					
	S	NE		22	48						
	ScS	NE		25	35						
	SS	ZN		27.0							
	Lq	E		28.2							
	Lr	ZNE		31.1							
M	Z		36	24	5	32					
22	eP?	Z	13	14	02						
	L	ZE		48.2							
22	iP	Z	20	47	49	u					
	S	ZNE		54	31						
	(ScS)	E		57	28						
	SS	ZE		58	09						
	Lq	E		58	41						
	Lr	ZNE		21	01.1						
M	Z		06	58	7	34					
22	P	Z	22	42	08	u					
23	P	Z	06	02	38						
25	iP!	Z	14	22	07						
	S	ZE		31	04						
	L	Z		42	47						
25	P	Z	23	03	50	d					
26	L	Z	09	45	44						
26	L	Z	10	45	26						
27	iP	Z	02	03	07	d					
27	eP	Z	06	11	28						
	ePP	Z		15.9							
	(PKP)	Z		16	10						
	SKS	NE		22	11						
	(PS)	Z		25	09						
	e	N		43	30						
	L	ZNE		49							
	M	Z		56	12	2	64				
					5	40					
27	eP	Z	11	00	09	d					
27	iP	ZNE	17	22	28	u					
	S	ZNE		32	18						
	(SS)	ZN		37.2							
	(SSS)	Z		41							
	Lq	ZN		42.3							
	Lr	ZNE		47.1							
	M	Z		57.4		15	36				
27	P	ZNE	23	33	52	d					
	S	ZNE		36	28						
	L	ZNE		37.1							
28	P	Z	02	52	11						
	(pP)	Z		15							

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
NOV 28	e	Z	14	54.7							
	28	eP	ZNE	18	38	53					
		S	ZNE		42	18					
		L	Z		43.1						
M	Z		44	45	11	15					
29	P	Z	09	39	37	d					
	S	E		49	00						
	SS	E		53	31						
	Lq	E		57.0							
	Lr	E	10	00							
M	Z		09	22	4	18					
29	P	Z	22	04	36	d					
	S	ZN		11	51						
	e	ZNE		15	39						
29	L	ZNE		20.5							
	M	Z		24	14	3	17				
29	eP	Z	22	25	03						
29	L	ZE	23	32							
30	P	Z	10	23	07	u					
	S	ZNE		24	53						
	L	ZNE		27.5							
30	eP	Z	14	24	24						
30	L	Z		42.2							
30	eP	Z	18	36.9							
DEC 1	e	Z	08	08.5							
1 (eP)	e	E	21	26	40						
	ePP	Z		30	56						
2	eP?	Z	05	01	33						
2	L	ZNE	13	59							
3	L	ZE	01	46						1	17
3	eP	Z	16	24	33						
	S	E		33	15						
	Lq	E		40.1							
	Lr	ZNE		43.5							
M	Z		47	16	5	40					
3	e	Z	19	03	23						
4	eP?	Z	05	44	27						
	L	ZE		06	06						
4	L	ZE	13	33							
4 (iP!)	Z	21	53	11							
5 (iP)	Z	00	50	32	d						
5	eP	Z	06	53	42						
5	iP	ZNE	13	06	32						
	S	ZNE		11	03						
	iP!	Z	13	11	55						
5	L	ZNE		13							
	M	Z		14		115	20				
6 (eP)	Z	04	16.1								

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
DEC 6	L M	ZE E	06	35.8						7	30
				54	16						
6	(P)	Z	07	20	06						
6	eP S SS L M	Z ZNE Z Z Z	13	44	36 d						
				51	46 d						
				55	5						
				59		7	50				
			14	03	23	25	34				
6	eFKP? PP SKS PS SS SSS e Lq Lr M	Z ZE NE ZE N N N NE ZNE Z	16	58.5							
			17	00	08						
				05	30						
				10	00						
				17	5						
				21	3						
				24	9						
				31	0						
				36	4	4	29				
				38	54	8	28				
7	P S L M	Z NE ZNE Z	00	27	16 u						
				34	30						
				42	9	1	26	1	18	3	30
				46	00	5	38				
7	S L	E Z	16	45	20						
				56							
8	L	Z	06	43							
8	eP L M	Z ZNE Z	09	47(52)	u						
			10	11	3						
				17	19	5	42				
9	eFKP? SKP SS SSS? Lr P M M	Z Z E E ZNE Z Z E	02	36.6							
				37	58						
				54	4						
				59	6						
				15		1	20			3	38
			04	11	25 u						
				40	28	7	38				
				45	10					13	32
9	L	ZE	11	10	0	2	24				
9	iP pP PcP PP PPP e S SS L M M	ZNE Z ZE ZE ZNE Z ZNE ZNE E E Z	11	27	42						
				50							
				28	8						
				29	46						
				31	05						
				33	15						
				35	34						
				39	30						
				42						50	15
				50							
				51		22	13				
11	L?	E	14	40	0					1	17
13	eP L	Z E	11	32(16)						2	19
				48							
13	eP? L M	Z E E	16	59(13)						5	30
				17	13						
				20	25						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
DEC 14	eP S Lr Lq M	Z NE E ZNE Z	07	21(43)							
				31	06						
				40							
				43							
				51.6		12	15				
16	eP S ScS eL	Z E E ZE	10	08	13						
				15	17						
				18.0							
				20.5						7	52
17	iP e S Lq M	ZNE Z ZE ZNE E	22	17	14						
				18.6							
				20	45						
				21	08	21	15				
				23						39	11
18	iP S	Z ZNE	10	04	38 d						
				06	41						
20	e	Z	03	20	38						
20	P pP PP pPP? e SKS S SP PS? pPS sPS SS sSS SSS Lq M	Z ZE ZE E ZE NE ZN NE Z Z Z NE NE N N E	13	39	09 u						
				54							
				43	20						
				44.1							
				48	35						
				49	36						
				50	31						
				51	52						
				52	15						
				53	04						
				53.3							
				57	54						
				58	57						
			14	01.6							
				08.1							
				24.4						14	15
21	eL	ZN	12	37		1	20				
22	eL	ZNE	11	13.6		1	20				
24	eS Lq Lr M	ZE E ZNE Z	03	00.8							
				10.5							
				12.8							
				19	22					2	30
										1	20
24	L	ZE	08	12							
24	L	ZNE	09	45							
24	(SKS) (SS) L M	E ZE ZNE Z	14	48	06						
				54	57						
				07.5							
				09	57	6	19				
24	P	ZE	23	52	41 u						
25	S (ScS) SS Lq Lr M	ZNE NE ZNE NE ZNE E	00	02.0							
				04	08						
				05.1							
				08							
				12							
				16.5							
25	eP S	Z E	08	12	32						
				22	09						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
DEC 25	eP	Z	14 01(50)						
	S	ZNE	12.5						
	ScS?	E	14.8						
	Lq	E	18.4						
	Lr	ZNE	20.1	1	11				
26	iP	ZE	04 35 48						
	pP	Z	37 43						
	(PP)	ZE	38.7						
	S	ZNE	44 52					5	26
	sS	NE	48 11						
	sScS	ZNE	49 23					5	34
	SS	ZN	50.1						
	sSS	N	52 52						
	SSS	NE	53 31						
	Lq	NE	55.9						
26	P	ZN	06 27 41						
	PPP?	ZNE	31.0						
	S	ZNE	35(52)						
	ScS	N	37 37						
	SS	ZE	39 57						
	Lq	NE	41				67	32	
	M	E	48						
27	e	Z	15 52(20)						
27	eL	ZN	17 38						
27	e	ZNE	18 29.0						
27	P	ZN	23 54 21						
	PP	Z	55 17						
	PcP	Z	57(27)						
	S	ZE	59(27)				22	19	
29	eiP!	Z	00 05 53						
	pP	Z	06 09						
	PcP?	Z	34						
	S	E	14 06						
	(ScS)	E	15.9						
	(SS)	Z	17						
	Lr	Z	24						
	M	Z	27 52	2.5	20				
30	(PP)	Z	01 00 52						
	(SS)	E	16 14						
	M	Z	54	24	20				
30	S	E	09 15 49						
	Lq	E	20.5						
	Lr	ZNE	23.5	2	22				

SCOTT BASE

The amplitudes quoted in this section are in millimetres, measured on the screen of a viewer enlarging the original 35 mm. film by a factor of 8.

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te	
JAN 1	eP?	ZE	08 03 27							
	eP	N	19 41 51							
1	eP	ZN	20 28 51							
	iP	ZNE	10 22 28	dnw 14	3	3	6			
	PP	Z	25 12							
	ePPP	Z	26 26					3	6	
	S	NE	31 09					2	11	
	SS	N	35.5					2	14	
	SSS	N	37.9					2	20	
	L	ZN	39		1	13		2	20	
	M	ZN	46		1	20		2	20	
	2	eP	ZNE	21 03 18						
	2	eP	ZNE	23 17 08						
	3	eP	ZNE	11 52 12						
	3	eP	Z	17 53 25						
3	eP	ZNE	19 38 28							
3	e?	Z	20 16 34							
3	eP	ZNE	20 16 57							
3	eP?	ZN	22 09 45					1	17	
3	eL	NE	13.7							
3	eP?	Z	22 37 25							
3	eP	ZE	23 15 37							
4	eP	Z	02 02 03							
4	eP	ZNE	11 41 33							
4	eP?	E	19 29 04							
5	PKP	Z	14 25 37	d	1	4				
	ePP	Z	27 52							
	PKS	Z	28 52		4	6				
	(SKS)	Z	32 12							
	(SKKS)	Z	34 21							
	(SKKKS)	NE	34 43							
L	ZE	15 08.3		1	25			1	24	
5	ePKP	Z	15 28 37							
5	P	ZNE	16 05 31	de						
	PcP	ZNE	43							
	(pP)	ZNE	06 04							
	e	Z	09 56							

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JAN 5	S	ZNE	14	54		2	11	4	8	8	9
	SS	E	21	50						2	20
	e(Lq)	E	28							1	17
	Lr	E	34							2	19
5	P	ZNE	18	07	34						
	PcP	Z	08	40	d?e?						
	S	E	15	33						7	9
	SS	E	20	12						4	22
	Lr	E	22	15						8	18
5	P	ZNE	18	24	21						
	S	ZNE	32	13	e	2	11	2	19	20	16
	SP	N	(40)					4	8	6	14
	ScS	NE	34	09				5	8	6	14
	SS	E	35.9					6	8	6	14
	Lq	NE	38.7					4	18	8	23
Lr	NE	42					6	27	10	22	
6	PKP	Z	06	40	46						
	(PKS)	ZE	44	04							
6	PKP?	Z	23	29	39						
7	P	ZNE	18	25	08						
	PcP	ZNE	26	18	u						
	(PP)	Z	32								
	(PcS)	Z	30	56							
	S	ZNE	31	44							
	PS	E	32	04							
eL	E	40									
8	eP	ZNE	01	28	04						
8	eP	ZNE	03	09	11						
	e	N	17	40							
8	eP	Z	07	38	48						
8	P	Z	07	41	18						
	eL	E	59							1	20
9	P	ZN	08	03	16						
9	P	Z	10	23	04						
	pP	Z	26								
	S	E	30	38						1	5
	eL	ZN	38	09						1	15
9	PKP	Z	22	35	35						
10	eP	ZE	09	24	20						
	eS	ZNE	32	27							
	(ScS)	E	54								
	eP'p'	Z	52	07							
10	PKP	Z	14	41	22	1	6				
	PP	Z	43	10		1	6				
	e	N	44	05							
	PKS	ZNE	44	33		1	7	1	9	1	8
	e	E	47	17							
	e	E	34								
	SKS	Z	48	34							
	SKKS	NE	50	20							
	PKKP	ZE	51	28		2	8	1	9		
	PS	ZNE	53	31		1	8	1	9	1	9

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JAN 10	PKKS	Z	54	28							
	SS	ZNE	15	00	40			2	9	2	11
	L	ZNE	22			2	21	2	22	2	23
11	ePKP	Z	12	17	37						
	e(SKP)	ZE	20	56							
	PKKP	Z	27	37							
11	ePKP	Z	12	19	03						
	SKP	ZE	22	24							
	SKKP	Z	31	27							
	eL	E	52								
11	iP	ZNE	16	36	58					dn	
	e	ZNE	40	08							
	PcP	Z	41								
	S	ZNE	41	13							
	PcS	ZE	44	15							
	(ScS)	NE	47	40							
11	eP?	ZE	19	39	31					e	
	e	Z	40	25							
	e	ZE	41	08		1	5				
11	eP	ZNE	21	42	40			1	18	1	22
	eL	ZNE	50							2	20
12	eP	Z	05	25	56						
	PcP	Z	26	40							
	(PcS)	Z	30	29							
	eS?	E	33	45							
12	ePKP	ZNE	14	32	43						
	PKS	Z	35	48							
	e	Z	36	15							
	(SKS)	Z-	40	17							
	(PKKP)	Z	42	36							
13	iP	ZNE	19	27	53			us?w	1	6	
	pP	Z	28	25							
	(PcP)	Z	29	13							
	(ScP)	NE	32	26							
	S	E	35	14							
14	eL	ZN	46					1	19		
14	ePKP	Z	02	45	42						
14	eP	ZE	05	44	07						
14	ePKP	Z	16	58	13						
15	P	Z	01	08	26			d	1	5	
	PcP	Z	12	17							
	eS	ZNE	49			1	4		1	8	2
	PcS	ZE	15	50							
	SS	NE	14	18					1	11	1
	eLq	E	15.4								2
	Lr	ZNE	16.7			2	15		4	14	9
15	iP	ZNE	16	54	19			usw		Large	
	PcP	ZE	49						3±	4	
	pP	Z	56								
	sP	NE	55	08							
	sPcP	ZNE	56	09							
	S	NE	17	02	10					1	6
	SS	E	05	34							3
	eL	E	08								2

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JAN 15	eP	Z	20	45	20						
	e	ZE			57						
	e	E			47 37					1	7
	eS?	E			54 32					1	7
16	ePKP	Z	04	17	33						
16	eP	ZE	04	25	07						
16	PKP?	ZNE	07	38	48						
	PP	ZNE			39 53	1	4	1	10	1.5	9
	PKS	ZE			42 27	1	6			1	7
	SKS	ZE			45 41	1	10			1	5
	SKKS	NE			46 52					1.5	12
	e	E			47 38					1.5	11
	PS	ZE			49 29	1.5	21			2	18
	PKKP	Z			50 30					1.5	18
	PPS	ZE			44	1	15			4	15
	SS	ZNE			55 38	1	19	3	25		
	SSS	N			59			1.5	25		
	L	ZNE		08	11	48	1.5	18	2	19	3
16	eL	E	11	10							
16	eL	E	11	35							
	M	E			50					2	30
16	ePP	Z	11	39	40						
	e	Z			41 14						
	(SKS)	E			44 21						
16	ePKP	Z	12	31	22						
	PP	ZE			32 10						
	e	ZE			32						
	eL	E	13	09	6					2	25
M	E			21					3	20	
16	ePKP?	Z	15	59	45						
17	eP	ZE	18	00	29	1.5	5				
	eS	NE			05 40						
	eLr	Z			07.5	1.5	18				
17	1P	Z	23	15	10	1	5				
	eS	NE			23 23						
	eL	E			34.5	1	16				
18	eP	ZE	04	31	47						
	eS	ZN			40 17						
	e(PS)	Z			44						
	eP	ZN	09	16	23						
eS	ZN			24 05							
e(ScS)	ZN			25 27							
e(SS)	ZN			27 56							
eLq	E			32.5					2	47	
Lr	E			37							
18	PP	Z	17	08	11						
	SKS?	ZN			13 30						
	PKKP	Z			17 33						
19	eP	Z	04	31	49						
	(ScS)	Z			41 47						
19	eP	Z	06	03	59						
	e(PcP)	Z			05 32						
	e?	Z			08 18						
	e?	E			43						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	
JAN 19	PKP	Z	17	41	22							
	PP	ZE			43 12					1	9	
	e(PKS)	Z			44 29							
	SKS?	E			48 40							
	e	E			52 16					1	7	
	(PS)	E			53 26					1.5	8	
	SKKS	E			58 18					1	8	
	SS	E	18	00	08					2	9	
	(SSP)	E			32					2	8	
	eL?	E			12.1							
	20	PKP	Z	17	28	44						
ePP		ZE			30 51							
PKS		ZE			31 39					1	7	
SKS		E			35 33					1	8	
(SKKS)		E			37 47					1	7	
PS		E			40 58							
e(SSS)		E			52.3					1	8	
eL?		Z	18	08								
22		1P	ZE	03	34	51	dw?	10	6			
		PcP	Z			35 20						
	e	ZE			37 03							
	PP-	Z			37 27	4	6					
	(PcS)	E			39 46							
	e	Z			42 33							
	s	ZE			43 43	3	6			5	6	
	e	Z			44 38							
	SS	ZE			47 47	3	10			3	15	
	Lq	ZE			51.1	2	16			3	26	
e	Z			52 48								
Lr	ZE			55.5	26	17			12	17		
22	e	ZE	03	37	03							
	e	Z			42 43							
	e	Z			44 38							
	e	Z			52 48							
22	1P	Z	04	15	07	d						
22	eP	Z	06	27	06							
	(ScS)	Z			37 23							
22	1P	Z	16	18	30	d?	2	5				
	e(PcP)	E			19 44							
	(PP)	Z			56	1	5					
eL	Z			33.7	1	2						
22	eP	Z	19	15	49	1	6					
	eL	Z			38.6	1	18					
24	1P	ZE	07	35	10	dw						
24	eP	ZE	08	06	32							
	e(SS)	E			10.0					1	10	
	Lq	E			11.3					1	19	
	Lr	E			12.6					10	11	
25	eP	ZE	01	06	20	1.5	5					
25	eP	Z	05	31	59							
	PcP	Z			32 37							
25	eP	Z	06	17	20							
25	eP	Z	17	32	54							

Date	Phase		h	m	s	Az	Tz	An	Tr	Ae	Te
JAN 26	iP	Z	16	23	04						
	i	Z			19						
	eS	E			30					4	11
	e?	Z			32(08)	8	6				
	(ScS)	E			32					5	7
	Lq	E			37						
	Lr	ZE			40.8	3	21			4	17
	M	ZE			45	8	16			7	16
26	iP	ZE	18	58	40						dw
	e	ZE	19	01	30						
26	eP	Z	20	04	07						
26	eP	Z	21	30	41						
28	iP	Z	19	53	49						d
	e?	E	20	00	54						
	eL	ZE			12.7	2	21			2.5	15
29	eP	Z	01	00	35						
29	iP	ZE	09	03	30						de?
	i	Z			52						d
	i	Z			04						
	e	Z			06						
29	PKP	Z	13	43	06						d
	i(SKP)	Z			46						u
	PKS	Z			46						
30	iPKP	ZE	12	32	14						u
	i	E			32						

FEB 1-6 Recording interrupted for adjustment and overhaul of equipment.

5	eP	Z	18	00	(12)	1	4				
	eLq	Z			13	1	15				
	eLr	Z			17	2	18				
6	P	Z	21	56	32	5	3				u
	S	Z	22	05	37	2	8				
	SS	Z			(10.6)	1	11				
	(SSS)	Z			(12.8)	1	10				
	Lq	Z			16	1	25				
	Lr	Z			18	2.5	23				
7	eP	Z	01	54	28	1	4				d?
	eS	Z	02	02	54	1	5				
	Lr	Z			16	1	32				
7	eP	Z	03	08	57						
	eLr	Z			30	1	25				
7	iP	Z	04	10	36						d
7	eP	Z	05	23	48						
8	iP	Z	05	43	10						d
	e?	Z			57	1	4				
8	iP	ZE	08	15	54						d?e
8	iP	Z	17	59	51						d
	ipP	Z	18	01	39						
	esPcP	Z			03						
	ScP	Z			48						
	(PcS)	Z			04						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
FEB 8	e?	Z	07	12							
	i(s)	Z			24						d
9	iP	Z	02	17	11					9	6
	ipP	Z			24					5	5
	PcP	Z			18					3	4
	PP	Z			40						
	i	Z			19					2	4
	PcS	Z			22					3	5
	iS	Z			24(26)					2	9
	SS	Z			28					1	30
	eL	Z			31						
11	eP	Z	01	12	47						
	eS	E			20						32
11	eP?	Z			11						39
11	e	ZN			18						47
11	iP	ZN	21	10	00					13	5
	PP	Z			11					7	4
	sp	ZN			26					5	4
	PcP	Z			11					3	6
	PP	ZN			12					2	8
	S	ZN			17					12	2
	SS	ZN			21.3					2	9
	eL	ZN			24					1	28
12	eP	N			13						07
13	eP	N	06	55	40						
	eS	NE	07	03	(39)					2	7
	SS	N			(08.6)					1	8
	eL	E			11						1
13	eP	ZE	16	29	03						
	(PcP)	E			17						
15	ePKP?	N			11						04
16	eP	N			20						38
17	eP?	N			06						25
17	ePKP?	N			07						08
17	eP	N			12						50
	S	N			58						17
17	eP	N			19						06
20	eP	N			14						28
22	eP?	N			15						55
23	eP?	Z			05						01
26	eP	N	05	58	43						
	eS	E	06	06	32						
	eSS	E			10						38
	eLq	E			15.5						
	Lr	ZE			17.5					2	18
26	PKP?	N	18	29	34						
	PKP?	N			40						
	PP	ZE			30					6	6
	SKS	ZNE			36					1.5	9

Feb 18-19 Microseism storm.
Microseism level remains high
throughout March.

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
FEB 26	SKKS	NE	37	08				2	13	1	14
	e	N	38	49				1	11		
	SP	ZNE	39	36	2.5	8		2	10	4	11
	PPS	N	41	05				1.5	10		
	SS	NE	45	36				3	35	7	32
	SSS	N	49	21				2.5	30		
	eLq	E	55.8								
Lr	ZNE	19	05		3	22	3	20	3	31	22
MAR 1	eP	Z	03	34	40						
1	eP?	Z	13	25	21	1	7				
3	eP?	N	06	35	22						
5	eP	NE	01	37	16						
5	eP?	N	02	13	40						
7	eP	ZNE	06	52	06 d	1	6				
	ePP	Z	54	01		1	5				
	eS	Z	59	30		1	6				
	eLr	Z	07	09.5							
	7	iP	ZNE	10	19	35 dse	46	6	16	7	2
PP	ZN		21	30		10	8		8		
(PPP)	Z		22	10		7	7				
S	ZNE		26	49		31	12	6	16	17	9
SS	ZN		30	26		4	12	6	16		
SSS	Z		31	50		5	12				
Lq	NE		33	03				12	13	19	17
Lq	ZN		34	13		10	24	18	25		
Lr	E		34	41						20	13
Lr	ZN		35			20	22	20	21		
M	ZN		48			35	15	32	15		
7	eP	ZNE	19	17	44						
	PcP	Z	18	59							
	S	E	25	21						1	14
	eLq	N	32					1	17		
	Lr	ZE	36			1.5	18			2	19
7	eP?	Z	19	57	37						
7	eP	ZE	23	23	29						
	PcP	Z			48						
8	eP	ZE	03	38	39						
	eS	E		48	07						
8	eP	Z	05	37	21						
13	eP	Z	20	43	38						
14	eP?	Z	04	28	15						
14	PKP	Z	12	18	23						
15	iP	ZE	10	26	38 d	2	5				
	PcP	Z			52						
	PP	Z		28	52	1	5				
	PPP	Z		29	40	1	5				
	S	Z		36	15	1	5				
	SP	Z			45	1	5				
	SSS	Z		44	08						
	eP'P'	Z		54	06						
15	iP	Z	13	12	31 d?						
	e	Z			39						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAR 16	eP	Z	04	08	36						
16	iP	Z	04	39	14 d?						
16	eP	Z	08	02	48						
16	eP	Z	11	31	15						
	PcP	Z			32						
	e	Z			32						
16	iP	ZN	13	57	03 u	5	5	1	5		
	PcP	ZN			14	6	6	1	8		
	PP?	Z			23						
	i	Z			53	3	6				
	PP	Z		59	41	2	7				
	PPP	Z			56						
	e	Z	14	00	40	2	6				
	PPP	Z		01	37	1.5	7				
	eS	ZN		06	09	1	5	1.5	5		
	SP	N		07	10			1.5	5		
eLq	N		18				1	28			
Lr	N		21.5				1.5	25			
Lr	Z		23		2	23					
16	eP	Z	18	32	43						
16	eP	Z	22	42	48						
16	eP	Z	23	22	17						
17	eP	Z	05	02	34						
17	eP	Z	06	21	05						
17	eP	Z	14	07	07						
17	eP	Z	14	16	14						
17	eP	Z	16	26	29						
	ePcP	Z			27 30						
17	eP	Z	20	20	06	2	6				
	ipP	Z			20 d						
	iPcP	Z			21 08 d						
PP	Z			22 08	2	6					
17	eP	Z	22	30	21						
18	e	Z	02	01	11						
18	eP	Z	02	20	10						
	eL	Z			40	1	26				
18	eP	Z	08	36	19						
18	iP	Z	09	48	59 d?						
18	e?	Z	13	54	52						
18	iP	ZNE	15	00	52 u	8	3				
	i	Z			01 09 u	5	5				
	i	Z			34 d	8	5				
	PP	Z			47	7	4				
	PPP	Z			02 02	7	5				
	S	NE			05 35			20	10	14	9
	SS	E			06 44					15	8
	Lq	ZNE			08	20	25	21	22	21	21
	Lr	ZNE			09	33	15	34	13	53	113
	M	ZNE			10.5	51	12	48	11	100±	11

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAR 19	PKP?	Z	05	10	16						
19	iP	Z	05	11	09 d						
19	e?	Z	05	29	43						
19	P	Z	07	25	15	2	5				
	eLr	Z		43		1.5	25				
19	eP	Z	08	03	54						
19	eP	Z	12	16	08						
	pP	Z		16	u						
19	eP	Z	12	58	51						
19	eP	Z	20	43	24						
20	ePP?	Z	06	34	36	2	5				
	(PKS)	Z		37	53	1.5	5				
	SKS	Z		41	39	1.5	5				
	SKKS	Z			55	2	6				
	eL	Z	07	03							
20	iP	ZN	16	03	07 d						
	sP	ZN		04	08						
	PcP	ZN			17						
	PP	Z		05	24						
	PPP	Z		06	24						
	ScP	ZN			56						
	S	ZN		11	12						
	(ScS)	N		12	27						
	P'p'	Z		32	33						
20	e?	Z	17	22	25						
20	iP	Z	23	52	08 u						
	PcP	Z		53	12						
21	eP	Z	09	31	24						
21	eP	Z	20	04	21						
22	eP	Z	04	25	10						
23	eP	Z	01	59	47						
23	eP	Z	21	07	45						
25	eP	Z	02	23	42						
25	eP	Z	19	39	32						
25	eP	Z	21	08	32						
26	eP	Z	14	41	59						
27	eP	Z	04	34	43						
	(PcP)	Z		35	09						
27	eP	Z	06	16	35						
27	eP	Z	06	50	22						
27	eP	Z	16	37	44						
	PcP	Z		38	42						
	(pP)	Z		39	20						
	SP	Z		40	05						
	pPcP	Z			17 d						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAR 28	iP	ZNE	09	48	07	2.5	4				
	PcP	Z		15		4	5				
	sP	ZN		44		5	4	2	6		
	sPcP	NE		49	15			4	7	2	10
	PP	ZN		51	15	1	8	2	7		
	PPP	Z		53	15	4	7				
	S	ZNE		58	10	1	13	4	11	3	12
	SP	ZNE		59	05	1.5	7	9	8	3	12
	SS	N	10	03	15			3	10		
	(sSS)	N			46			2.5	11		
	PKKP	Z		06	43						
	eLq	E		07						1	30
	Lr	ZNE		10.5		1	20	2	20	2	23
	e	Z		14	41						
28	PKP	Z	12	48	20						
	PKS	ZNE		51	37	1	4				
28	eP	ZE	13	52	19						
28	ePKS	Z	14	21	26						
28	eP	Z	21	13	32						
	(PcP)	Z			41						
	pP	Z		14	02						
30	eP	Z	01	34	22						
30	eP	Z	09	00	19	1	8				
	PP	Z		02	35	1	6				
31	e?	Z	11	36	56						
31	eP?	Z	22	15	58						
APR 1	PKP	Z	15	37	36						
2	eP	Z	11	25	56						
2	eP	Z	22	23	27						
4	eP	Z	05	11	11						
	(PcP)	Z			27						
4	eP	Z	07	57	23						
	pPcP	Z		58	34						
4	eP	Z	10	46	31						
	PcP	Z			45						
5	iP	Z	21	35	31 d						
	eL	NE		43.2				1	16	1	23
6	eP	Z	07	19	31						
6	eP	Z	14	17	58						
6	e?	Z	15	09	52						
6	iP	Z	15	43	24 d						
	e	Z			36						
6	ePKP	Z	18	31	28						
6	eP	Z	19	43	14						
6	eP	Z	22	39	19						
7	ePKP	Z	21	36	52						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
APR 8	eP	Z	04	35	24						
8	eP	Z	05	00	13						
8	eP	Z	09	17	05						
8	eP	Z	16	09	48						
8	eP	Z	16	14	16						
	e	Z			21						
8	eP	Z	18	09	43	1	5				
	e	Z			10 13	1	7	1	7		
	e	Z			37	1	5	2	6		
	S	Z			17 52	1	7	1	10	1	7
	eSS	N			21 56			1	9		
	SSS	N			23 12			1	7		
	eLq	N			24.7			1	26		
	Lr	N			27			1	23		
	p'p'	Z			39 26						
8	eP	Z	21	49	47						
8	eP?	Z	21	56	58						
9	eP	Z	00	42	58						
9	eP	Z	08	56	43						
9	iP	ZNE	09	29	47						
	ScP	Z			33 44						
	pScS	Z			41 10						
9	eP?	Z	09	48	41						
9	(PP)	Z	15	53	31	0.5	5				
9	e	Z	16	07	43						
9	iP	Z	17	24	25 d						
9	eP	Z	17	29	52						
10	e?	Z	06	59	40						
10	eP	Z	19	52	23						
10	eP	Z	20	48	34						
11	ePKP	Z	03	01	13						
11	eP	Z	16	21	06						
11	eP	Z	18	44	04						
12	eP	Z	03	15	16						
12	eP	Z	07	59	21						
12	eP?	Z	09	05	04						
12	(PKP)	Z	15	20	45						
12	eP	Z	17	30	03						
	e	Z			41						
12	(PKP)	Z	17	47	13						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
APR 12	ePP	Z	22	38	53						
13	ePKP	Z	16	53	46						
	ePP	Z			55 45						
	eL	ZNE			17 36	0.5	25	0.5	25	1	25
13	eP	Z	17	23	09						
13	eP	Z	23	53	52						
14	eP	Z	04	11	03						
16	SKP	Z	12	03	02						
16	eP	Z	12	17	25						
16	e	Z	12	24	32						
16	eP	Z	16	57	03						
16	eP	Z	23	24	38						
17	eP	Z	02	42	59						
17	eP	Z	07	54	03						
17	e	Z	12	16	45						
	e	Z			17 24						
17	e	Z	20	13	29						
17	iP	Z	20	46	49 u						
17	iP	Z	20	57	11 d						
18	eP	Z	02	49	58						
18	eP	Z	04	18	58						
18	eP	Z	13	55	40						
18	eP	Z	18	59	21						
19	eP	Z	06	08	36						
19	iP	Z	07	49	11 d						
19	eP	Z	11	15	42						
19	PKP	Z	16	31	22						
19	e	Z	16	39	15						
19	PKP	Z	18	33	09						
	e	Z			24						
19	ePKP	Z	22	26	46						
20	eP	Z	00	26	26						
20	eP	Z	07	48	45						
20	eP	Z	19	27	45						
20	e?	Z	21	49	22						
20	iP	Z	21	49	40 d	0.5	5				
	sP	Z			54						
	i	Z			58						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
APR 21	eP	Z	13	57	05						
21	PKP	Z	20	29	40						
	e	Z			54						
21	PKP	Z	21	46	04						
	eSKP	Z			49 23						
22	eP	Z	00	42	08						
22	eP	Z	19	11	04 d						
22	eP?	Z	19	14	44						
23	(PKP)	Z	05	32	46						
23	ePKP	Z	09	20	37						
	i	Z			56 d						
	(PP)	Z			22 07	0.5	6				
	PKS	Z			24 19						
	PKKP	Z			30 31						
	(PS)	N			32 18			0.5	6		
	(PPS)	N			33 36			0.5	7		
	PKKS	Z			34 15						
	e	Z			39 48	0.5	6				
	(SSS)	N			42 13						
	eLr	ZNE	10	08							
23	PKP	Z	17	10	15						
24	eP	Z	13	18	44						
25	PKP	Z	01	36	46						
25	iP	Z	02	43	44 d						
25	eP	Z	11	25	05	0.5	7				
	eL	N			39.5			1	22		
26	e?	Z	00	58	08						
26	eP	Z	02	33	07						
26	eP	Z	06	31	40						
	e	Z			51						
26	eP	Z	07	31	43						
	epP	Z			33 35						
26	e	Z	07	57	50						
	PKP	Z			58 05						
26	iP	Z	17	05	33 d						
	(PcP)	Z			43						
26	eP	Z	17	13	43						
26	e?	Z	23	11	41						
	e	Z			12 16						
27	eP	Z	00	34	22						
	PcP	Z			35 37						
27	eP	Z	18	04	32 u						
29	eP	Z	06	50	31						
29	PKP	Z	09	50	49						
	a	Z			54 44						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
APR 30	eP	Z	00	17	03						
30	PKP	Z	07	53	43						
30	e	Z	11	21	35						
30	PKP	Z	11	34	03						
	e	Z			17						
30	P	Z	14	58	46						
	PcP	Z			59 12						
MAY 1	eP	Z	03	55	12						
2	e	Z	10	47	51						
2	eP	Z	19	01	29						
2	iP	Z	19	47	20 d						
2	P	Z	19	48	40						
2	e?	Z	20	56	29						
2	eP	Z	20	57	50 d	0.5	7				
	(sP)	Z			58 08						
	PcP	Z			29						
2	P	ZN	22	53	44 d	1	3	1	3		
	(pP)	ZN			54						
	(sP)	Z			54 06						
	PcP	Z			47						
	S	ZN	23	01	10	1	10	3	14		
	SS	ZN			04 49	1	20	2	11		
	e	N			07.5			1.5	10		
	eLq	N			08.5			1	13		
	Lr	ZN			10	1	20	2.5	23		
2	eP	ZN	23	33	05						
	PcS	Z			38 09						
3	eP	Z	17	03	10						
3	eP	Z	17	12	07						
3	eP	Z	19	09	42						
4	eP	Z	20	33	31						
4	eP?	Z	22	35	47						
5	eP	Z	06	48	03 d						
	i	ZE			11						
	PcP	Z			49 14						
5	eP	ZE	08	53	15 d?						
	PcP	Z			54 20						
5	e?	ZE	09	04	03						
5	eP	ZE	13	52	19 d	0.5	6				
	PcP	Z			53 27						
	eS	NE			59 30			0.5	7	1	12
	eLq	E	14	05.6						1	19
	Lr	Z			07.5	0.5	20				
	Lr	N			10			1	22		
5	eP	Z	15	37	50						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAY 5	eP	Z	19	11	15						
	PcP	Z		12	17						
5	eP	Z	20	46	17						
5	eP	Z	20	55	55						
6	eP	Z	21	29	15						
6	eP	ZE	22	45	28						
6	iP	ZN	23	23	35						de
	pP	Z			45						
	(sP)	E			52						
6	eP	ZE	23	46	35						
7	iP	ZNE	00	36	57	d	0.5	7			
7	iP	ZNE	04	43	47	dw					
	PcP	Z			58						
	e(S)	NE			53	08		1	8	1	8
	eL	E	05	09							
7	P'P'	Z			11	10					
	iP	Z	07	54	20	d					
7	iP	ZNE	10	35	22	dw	0.5	5			
	pP	Z			48						
	e	N			46	28		1.5	7		
	SS	N			51.7			1	7		
7	eL	Z	11	10							
	eP	Z	15	02	14						
7	e?	Z	17	01	28						
7	eP	Z	19	32	54						
8	eP	Z	08	37	01						
8	eP	Z	14	33	55						
8	eP	Z	16	36	05						
8	eP	Z	18	44	35						
8	iP	Z	23	04	16	d?					
9	eP	ZE	08	25	04						
	PcP	Z		26	09						
9	eP	Z	09	27	42	d					
9	eP	Z	11	17	44						
9	eP	Z	12	00	41						
	PcP	Z			57						
9	eP	Z	13	37	10						
9	eP	Z	17	11	32						
10	iP	Z	06	25	05	d					
	epP	Z			31						
10	iP	ZE	10	15	39	d					

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAY 11	e?	ZE	05	35	07						
	iP	ZE			55	d					
	pP	Z			37	34					
11	iP	Z	08	48	30	d					
	PcP	Z			49	13					
	eS	E			56	35					
	e(Lq)	N	09	03.7				1	20		
	eLr	ZN			09			1	22		
11	P'P'	ZE			18	06					
	PKP	Z	13	55	35						
12	eP	Z	03	52	51	d					
12	eP	Z	04	53	28						
12	eP	Z	06	36	43	u?					
	PcP	Z			37	12					
	sP	Z			22						
12	eP	Z	07	33	04						
12	epP	Z			12						
	eP	Z	13	09	03						
12	eP	Z	21	35	45						
13	eP	Z	13	50	48	d					
	pP	Z			57						
13	eP	Z	14	26	29						
13	eP	ZNE	14	27	44	d	0.5	5	1	8	
	i	Z			53	d					
	ePcP	Z			28	58					
	S	ZNE			35	08	0.5	5	1	2	0.5
	eSS	N			38	15			1	15	
	eLq	NE			41.4						
13	eLr	ZN			43.6		0.5	22	1	20	
	iP	ZE	15	02	19	de?					
	pP	Z			04	07					
13	P'P'	Z			31	37					
	eP	ZE	00	20	07		1	7			
14	PcP	Z			22	08					
	P	ZE	02	52	21	u?					
14	eP	Z	03	16	14						
14	eP	Z	08	31	21						
14	eP	Z	12	57	20						
14	eP	Z	13	30	18						
14	eP	Z	13	47	41						
	(pP)	Z			55						
15	eP	Z	01	39	20						
15	eP	Z	11	25	05						
15	iP	ZE	19	22	32	de?					
	pP	Z			48						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAY 15	iP	Z	19	59	35	d					
15	iP	Z	21	02	55	u					
	eS	E	10	41							
15	iP	Z	21	04	18	d					
16	eP	ZE	17	35	30						
17	eP	Z	01	05	55						
17	PKP	Z	19	48	29						
	PKS	Z	51	50							
17	eP	Z	22	46	16						
18	EP	Z	20	50	25						
18	eP?	Z	22	20	15						
18	eP	Z	23	20	16						
19	eP	Z	01	02	52						
19	eP	Z	01	52	51						
19	P	Z	02	30	19	d					
19	eP	Z	03	53	00						
19	e(PKP)	Z	16	55	48						
19	ePKP	Z	21	49	19						
21	eP	Z	06	38	52						
21	eP	Z	08	53	32						
21	eP	Z	17	54	36						
	i	Z	51	d							
21	iP	Z	18	23	09	d					
21	eP	Z	21	22	18						
21	iP	ZNE	21	48	13	d					
	PcP	Z	49	58							
	ePcS	Z	53	54							
	eS	N	54	42		0.5	6				
	eL	N	58.6			0.5	28				
22	eP	Z	11	47	25						
22	P	ZE	13	54	20	u?e	0.5	8			
	PcP	Z	58								
	S	ZN	14	02	26		0.5	6	1	10	
	Lq	N	11.3						1	24	
	Lr	ZN	13.4				1	24	1.5	20	
22	P	ZNE	17	41	58		1	5			
	i	Z	42	17	u		2	5			
	(PcP)	Z	43	07			1	4			
	PP	Z	44	07			0.5	6			
	S	ZNE	49	41			0.5	8	1.5	7	
	(PS)	NE	50	16					1	7	10
	eL	ZN	58.6				0.3	33	1	33	

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAY 23	ePKP	Z	03	04	23						
	iPKP	ZNE	37			0.5	10				
	PP	Z	07	11		1	7				
	PKS	NE	08	05				1	7	0.5	9
	(SKKS)	N	13	38				1	8		
	PS	N	17	43				0.5	12		
	e	N	26	47				1	8		
	eL	ZNE	00.5			1	21	1	25	1	20
23	iP	ZN	05	57	58	dne	0.5	3	0.5	8	
	(PP)	Z	58	23		0.5	5				
	S	ZNE	01	07		0.5	10	1	9	1	8
	eLq	NE	02.1					1	15	1	16
	Lr	ZE	02.7			1	13			2	13
24	eP	Z	17	29	49						
	i	Z	56	d							
25	eP	Z	04	55	25						
25	eP	Z	13	51	11						
	PcP	Z	52	28							
25	eP	Z	17	43	24						
25	eP	Z	18	50	17						
25	eP	Z	19	45	18						
25	iP	Z	21	17	21	d					
	pp	Z	51								
26	eP	Z	03	31	52						
	PcP	Z	32	55							
26	eP	Z	04	45	53						
26	eP	Z	06	16	44						
26	eP	Z	08	53	53						
26	eP	Z	12	45	21						
26	eP	Z	22	15	53						
27	iP	Z	17	05	06	d					
27	eP	Z	17	39	17						
28	eP	Z	02	41	53	d					
28	eP	Z	04	11	59						
28	eP	Z	07	40	44						
28	eP	Z	10	58	54						
28	eP	Z	12	50	21						
28	eP	Z	19	37	16						
	ipP	ZE	38	16	d						
29	e	Z	06	59	37						
29	eP	ZE	07	38	08	d	0.5	5			
	pp	Z	18								
	S	N	46	04				1	7		
	SS	N	50	08				1	7		
	eSSS	N	52	27				0.5	6		



Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAY 29	eP	Z	18	00	47						
30	eP	Z	12	38	28	de?					
30	P	ZNE	17	30	42						
30	eP	Z	22	16	24						
	e	Z			43						
31	iP	ZNE	05	22	07	d					
	eS	NE			30	07					
	(SS)	N			33	41		1	8		
	eL	N			41.1			1	7		
								0.5	23		
31	eP	Z	13	32	10						
31	PKP	Z	14	58	19						
31	eP	Z	16	40	46						
31	eP	ZNE	19	27	22	1	7				
	PcP	Z			32						
	PP	NE			29	51		1	7		
	eS	N			36	48					
	PS	N			37	26			1	6	
	SS	N			41	22		1.5	7		
	eL	N			47.4			1	8		
JUN 1	eP	Z	11	31	15						
1	ePKP	Z	18	08	42						
1	eP	Z	18	59	14						
1	e(PKP)	Z	23	47	55	0.5	6				
	PP	ZNE			48	09		1	6		
	eLq	N			24	17.5					
	Lr	ZNE			24			0.5	31		
								1	25		1 22
2	PP	Z	00	27	43						
2	eP	Z	04	48	28						
	e(PcP)	Z			55						
2	ePKP	Z	05	09	45						
	PP	ZNE			56			1	5		
	e?	ZE			20	01					
	eL	NE			42						
	M	ZN			53			1	20		0.5 23 20
2	P	Z	05	11	50						
2	PP	Z	05	41	13	0.5	7				
2	PP	Z	06	03	39						
2	PP	Z	07	21	32						
2	eP	Z	12	57	54						
2	eP	Z	18	39	26						
3	PKP	Z	01	32	51						
	SKP	NE			36	17					
	SKKP	N			45	07					
3	eP	Z	03	25	56						
3	eP	Z	03	28	38						
	ipP	Z			45	d					

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUN 3	eP	Z	03	50	26						
	epP	Z			35						
3	eP	Z	06	06	52	0.5	5				
3	eP	ZE	06	07	(05)						
3	eP	Z	09	26	(10)						
3	PP	Z	15	42	10						
4	PKP	Z	07	51	58						
	PP	Z			53	31		1	5		
	(PKS)	Z			55	51					
	PPP	Z			56	12		1	7		
	(SKS)	E			58	53					
	PS	N	08	03	34				1	7	
	eL	ZNE			38.6			1	22	0.5	18
											1 20
4	eP	Z	08	56	46						
4	eP	Z	14	07	32						
4	ePKP	Z	14	10	53						
4	eP?	Z	15	26	20						
4	eP	Z	23	05	04	d					
	epP	Z			55						
5	iP	Z	03	54	27	d					
5	eP	Z	06	17	55						
5	iP	Z	17	41	23	d					
	PcP	Z			42						
6	iP	Z	08	22	17	d					
	pP	Z			41	d					
6	e	Z	13	27	33						
6	eP	Z	23	51	38						
7	P	ZE	14	28	54	1	7				
	e(L)	Z			59			0.5	30		
7	iP	Z	15	48	47	d					
7	eP	Z	19	30	30						
7	eP	Z	23	05	08						
8	eP	Z	09	05	03						
	(PcP)	Z			49						
8	eP?	Z	09	45	20						
8	iP	ZE	15	55	34	d		1	4		
	ipP	Z			41	d					
	PP	Z			58	13		0.5	8		
	S	ZN			16	05	07	1	4		0.5 7
	(SP)	Z			24			0.5	7		
	eL	N			19.7			1	20		
8	eP	Z	16	58	43						
9	ePKP	Z	09	56	06						
	ePP	Z			58	53					

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	
JUN 9	eP e(s)	Z	14	48	34							
		ZE		49	09							
	e	Z			21				d			
9	eP	Z	15	30	49							
9	eP	Z	19	03	29				u?			
9	eP	Z	21	39	53							
9	eP	Z	22	17	27							
10	eP	Z	00	49	45							
10	eP	Z	08	59	27							
10	eP	Z	09	05	37							
10	e	Z	09	11	43							
10	eP	Z	09	22	31							
10	P	ZE	11	55	25				d			
10	iP PcP ePP eS eLq Lr P'p'	ZE	20	42	27	1	6					
		Z		43	06							
		Z		44	36	1	6					
		ZN		51	08	1	8	1	6			
		N		59.5				1	25			
		ZNE		21	02.5		1	24	1	20	1	23
		Z		11	24							
		ZNE		05	29	20						
		Z		30	54		1	4				
		ZNE		32	37		1	5	1	7		
11	PKP PP SKP PKS (SKS) PKKP PS (PKKS) PKKS e (SS) Lq Lr	ZN		36	27	1	7					
		Z		39	23							
		Z		40	46	1	5					
		Z		42	09							
		Z		42	57							
		Z		44	09							
		N		47	08			1	8			
		NE		06	00.2		1	30	1	30		
		ZNE		05.6		2.5	19	2	19	2.5	19	
		Z		05	49	25						
11	ePKP?	Z	06	38	15							
11	(PKP)	Z	06	50	34							
11	PKP (PP) PKS PS (PKKS) SS e SKKS eL	Z	12	50	24							
		Z		52	07	0.5	6					
		Z		53	56	1	8					
		E		01	26							
		ZN		04	31			1.5	8			
		E		08	27					1	8	
		E		09	20					1	8	
		E		15	06					1	8	
		Z		27.6		1	30					
		11	PKP	Z	14	16	52					
11	iP e	Z	14	56	44				d			
		Z		58	26							
11	eL	Z	15	10		1	21					

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUN 11	iP epP	Z	22	31	51					d?	
		Z		33	52						
12	eP ePcP	Z	07	06	16						
		Z			33						
12	iP PcP eL	ZE	07	41	20					d?	
		Z		44	31						
		ZNE		49.6		1	25			1	25
12	(PP)	Z	10	17	09			1	7		
12	e i e e e	Z	13	26	34						
		Z		27	10						
		Z			22					d	
		Z		46	59						
		Z		47	28					34	
12	eP pP	Z	18	04	40					d	
		Z		05	07						
13	PKP ePP SKP	Z	02	43	42						
		Z		45	43	0.5	7				
		Z		46	50						
13	eP PP	Z	07	28	05						
		Z		31	11						
13	eP PcP	ZE	12	08	04					u	
		Z			12						
13	iP i	Z	13	24	38					d	
		ZE		26	10					u	
13	eP	Z	17	24	18						
13	iP ipP PcP eS e e	ZE	21	47	31					1	5
		Z		48	07					1	4
		Z			17					1	5
		ZE		55	10					1	12
		Z		22	17	09					
13	eP	Z	22	23	20						
14	eP e	Z	00	26	55					d	
		Z	20	51	06					1	4
	e	Z		53	55						
15	eP	Z	07	06	43						
15	e? e? e	ZN	20	34	51						
		ZNE		35	24						
		E			30						
15	e	Z	21	10	04						
15	PKP eSKP	Z	23	43	37						
		Z		47	18						
16	e e e	Z	03	42	58						
		Z		44	32						
		Z		45	47						
16	P ePP e(s)	ZNE	07	17	56						
		Z		19	49					1	5
		Z		25	28					1	5

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUN 16	eL	ZN			36	1	21	1	25		
16	eP	Z	10	46	24						d
	e	Z		49	47						
	PP	Z		50	15						
	e(SKS)	Z		56	23	0.5	6				
	SP	Z		59	17						
	PS	N			30			1	8		
	PKKP	Z	11	01	50	1	5				
	e(SS)	Z		05	27	0.5	4				
	eL	ZN		22		1	30	1	30		
16	PKP	Z	15	19	12						
	e	Z		22	21						
	PKS	Z			38						
16	eP	Z	15	57	56						
17	eP	Z	09	42	43						d
17	iP	Z	11	09	05						d
	eL	Z		40		1	25				
17	eP	Z	14	45	35						
17	iP	ZE	15	35	54						dw
17	eL	Z	15	55		1	35				
17	iP	Z	21	58	23						d
	epP	Z		22	00	21					
18	iP	ZNE	03	23	30						dsw
	epP	Z		25	41						
	eS	Z		32	41						
18	eP	Z	08	28	53						
18	e(SKS)	Z	10	35	56						
18	iP	Z	13	34	06						d
18	iP	ZN	14	03	11						d
	pP	Z		04	34						
	i	Z		05	45						
	iScP	ZNE		07	48						de
	PcS	Z		08	40						
	eS	ZE		09	34						
	sScP	Z		10	51						
	(sS)	E		12	55						
18	eP	Z	16	56	18						
18	eP	Z	17	43	09						
	e	Z			34						
18	eP	ZN	22	19	09	1	4				
	i	Z		11							u
	i	Z		23							u
	S	NE		23	54			1.5	8	1	9
	Lq	ZNE		25	5			1.5	18	1	18
	Lr	ZE		26	4	2	20			2	23
19	eP	Z	00	56	29						
19	eP	Z	01	58	39						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUN 19	eP	Z	02	36	06						
19	e	Z	02	56	10						
	e	Z	03	02	52						
19	iP	Z	06	37	43						d
19	e	Z	07	02	22						
19	e(PKP)	Z	07	57	22	0.5	6				
	e?	Z	08	00	11						
	SKP	Z			51	1	7				
	SKS	Z		04	22	0.5	7				
	PKKP	Z		07	08	0.5	7				
	SP	Z		08	28	1	6				
	eL	Z		40		1	23				
19	ePKP	Z	08	18	33						
19	ePKP	ZE	17	23	17						
	pPKP	Z		24	09						
	ePP	Z		25	19						
	epPP	Z		26	26						
	(sPP)	E			40						
	SKKS	Z		31	19						
19	(PKP)	Z	22	36	51						
20	ePP	Z	03	40	26						
20	iP	Z	14	36	39						d
	PP	Z		38	59	1	8				
	eL	ZN		56.5		1	30	0.5	30		
20	eP	Z	16	43	09						
	(PcP)	Z			33						
	e	Z			55						
21	eP	Z	06	16	21						
21	PKP	Z	06	58	14						
21	eP	Z	07	44	55						
21	eP	Z	09	16	15						
	epP	Z		18	25						
21	eP	Z	16	48	31						
21	eP	Z	18	24	09						
21	iP	ZNE	20	36	33	1	.5				dw
	(PcP)	Z			40						
	pP	Z		37	08						
	e(PP)	Z		39	17						
	eS	N		46	07						
	SSS	E		54	09					0.5	8
	P'PKS	Z		21	07	15					
22	ePKP	Z	01	15	23						
22	eP	Z	03	33	01						
22	iP	Z	05	43	17						d
22	e?	Z	21	13	28						
	e	Z		14	05						
	e	Z			14						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUN 23	e	Z	03	13	06						
23	PKP	Z	09	15	01						
23	PKP	Z	09	41	49						
23	eP	Z	10	18	43						
23	eP	Z	16	55	16						
23	eP	Z	19	49	38						
24	eP	Z	03	10	19						
24	P	Z	09	48	50						
24	eP	Z	16	13	37						
24	P	Z	16	30	41						
	pP	Z		31	29						
	pPcP	Z			39						
24	eP	Z	17	08	06 d						
24	eP	Z	19	46	29						
25	iP	Z	09	19	19						
25	PP	Z	17	04	28	1	4				
25	eP	Z	19	42	03						
26	eP	Z	02	49	54						
	PcP	Z		51	44						
26	iP	Z	07	12	33 u?	0.5	5				
	e(PP)	Z		14	27	0.5	6				
	eS	Z		20	29	0.5	5				
	eL	N			35						
26	eP	Z	13	58	48						
26	PKP	Z	15	06	30	0.5	5				
	e	Z		07	24						
	PP	Z		08	47						
	SKP	Z		09	48						
27	ePKP	Z	07	22	19						
	ePP	Z		23	04						
27	PKP	Z	08	11	35						
	e	Z		12	08						
	pPKP	Z			42						
	SKP	ZE		14	37						
	(PKS)	Z			57						
27	eP	Z	10	49	38						
27	eP	Z	14	44	35						
28	eP	Z	06	26	29						
28	eP	Z	13	27	29						
	(PcP)	Z			38						
28	eP	Z	20	45	04						
29	eP	Z	01	24	27						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUN 29	iP	ZNE	09	33	30 u	2.5	7	1	7		
	PcP	Z		34	06 d						
	e(PP)	Z		35	52	1	4				
	eS	ZNE		41	56			1.5	13		
	SS	ZN		46	18	1	13	1	11		
	eSSS	N		49	18			1	10		
	eLq	N		50.8				1	25		
	Lr	Z		54.9		1	20	1	19		
29	SKP	Z	14	25	01						
	e	Z		38	08						
29	eP	Z	15	21	40						
29	P	Z	15	50	04						
	pP	Z			23						
29	e?	Z	16	53	09						
	e	Z			41						
29	i	Z	18	53	32						
29	e	Z	20	39	43						
	e	Z		41	34						
30	eP	Z	04	27	52						
	epP	Z			21						
30	e	Z	06	27(35)							
	e	Z		55							
30	eP	Z	19	02	33						
JUL 1	eP	Z	03	59	13						
1	eP	Z	04	03	13						
1	eP	Z	11	51	05						
1	iP	ZE	13	22	51 d						
	pP	Z		23	10						
1	eP	Z	19	00	16						
	e	Z			26						
	epP	Z		02	13						
2	eP	Z	05	24(31)							
2	eP	Z	08	54	49						
2	eP	Z	11	53	34						
2	P	ZE	16	57	57	0.5	6				
	epP	Z		58	06						
	ePcP	Z			37						
	eL	Z		17	18						
4	eP	Z	02	29	55						
	pP	Z		30	03						
4	P	Z	06	24	04						
4	P	Z	08	30	17						
	ePcP	Z		32	56						
	e	ZE		33	26						
	e	ZE		34	24						
4	eP	Z	12	15	27						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUN 23	e	Z	03	13	06						
23	PKP	Z	09	15	01						
23	PKP	Z	09	41	49						
23	eP	Z	10	18	43						
23	eP	Z	16	55	16						
23	eP	Z	19	49	38						
24	eP	Z	03	10	19						
24	P	Z	09	48	50						
24	eP	Z	16	13	37						
24	P	Z	16	30	41						
	pP	Z		31	29						
	pPcP	Z			39						
24	eP	Z	17	08	06 d						
24	eP	Z	19	46	29						
25	iP	Z	09	19	19						
25	PP	Z	17	04	28	1	4				
25	eP	Z	19	42	03						
26	eP	Z	02	49	54						
	PcP	Z		51	44						
26	iP	Z	07	12	33 u?	0.5	5				
	e(PP)	Z		14	27	0.5	6				
	eS	Z		20	29	0.5	5				
	eL	N			35						
26	eP	Z	13	58	48						
26	PKP	Z	15	06	30	0.5	5				
	e	Z		07	24						
	PP	Z		08	47						
	SKP	Z		09	48						
27	ePKP	Z	07	22	19						
	ePP	Z		23	04						
27	PKP	Z	08	11	35						
	e	Z		12	08						
	pPKP	Z			42						
	SKP	ZE		14	37						
	(PKS)	Z			57						
27	eP	Z	10	49	38						
27	eP	Z	14	44	35						
28	eP	Z	06	26	29						
28	eP	Z	13	27	29						
	(PcP)	Z			38						
28	eP	Z	20	45	04						
29	eP	Z	01	24	27						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUN 29	iP	ZNE	09	33	30 u	2.5	7	1	7		
	PcP	Z		34	06 d	2	6				
	e(PP)	Z		35	52	1	4				
	eS	ZNE		41	56			1.5	13		
	SS	ZN		46	18	1	13	1	11		
	eSSS	N		49	18			1	10		
	eLq	N		50.8				1	25		
	Lr	Z		54.9		1	20	1	19		
29	SKP	Z	14	25	01						
	e	Z		38	08						
29	eP	Z	15	21	40						
29	P	Z	15	50	04						
	pP	Z			23						
29	e?	Z	16	53	09						
	e	Z			41						
29	i	Z	18	53	32						
29	e	Z	20	39	43						
	e	Z		41	34						
30	eP	Z	04	27	52						
	epP	Z			21						
30	e	Z	06	27(35)							
	e	Z		55							
30	eP	Z	19	02	33						
JUL 1	eP	Z	03	59	13						
1	eP	Z	04	03	13						
1	eP	Z	11	51	05						
1	iP	ZE	13	22	51 d						
	pP	Z			23 10						
1	eP	Z	19	00	16						
	e	Z			26						
	epP	Z		02	13						
2	eP	Z	05	24(31)							
2	eP	Z	08	54	49						
2	eP	Z	11	53	34						
2	P	ZE	16	57	57	0.5	6				
	epP	Z		58	06						
	ePcP	Z			37						
	eL	Z		17	18						
4	eP	Z	02	29	55						
	pP	Z			30 03						
4	P	Z	06	24	04						
4	P	Z	08	30	17						
	ePcP	Z			32 56						
	e	ZE			33 26						
	e	ZE			34 24						
4	eP	Z	12	15	27						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUL 4	P	ZE	19	22	56	1	4				
	e(PP)	ZNE	23	21		1	5	0.5	5		
	PcP	Z	26	46							
	eS	NE	27	07				1	13	0.5	5
	eLq	NE	29.2					0.5	20	1	15
	Lr	ZNE	30.1			1	15	1	13	2	13
4	P	ZNE	20	03	35 d	0.5	5				
	pP	Z	14								
	ePcP	Z	07	26							
	eS	E	49								
	eL	ZNE	11			0.5	14	1	15	1	13
5	P	ZNE	02	33	17 u?n?	1.5	6	1	6	1	6
	PP	ZNE	46			1	6	0.5	5		
	eS	NE	36	47				0.5	7		
	(SS)	N	37	07				2	7		
	SS	ZE	18			1	5			2	7
	PcP	Z	22								
	eL	ZNE	38.5			1	18	1.5	16	2	15
5	eP	Z	23	41	52						
6	e?	Z	07	49	24						
6	eP	Z	18	45	20						
6	iP	ZNE	22	19	18 dnw?	7	4	1.5	4	1	4
	PP	ZN	21	26		1.5	5	1	4		
	S	ZNE	27	16		1	13	2	9	2	11
	PS	ZNE	38			1	5	1.5	6	2	7
	(ScS)	E	29	13						1.5	10
	e	E	30	45						1	18
	SS	ZN	31	04		1	18	1	12		
	Lq	NE	33.9					1	30	3	33
	Lr	ZNE	36.8			2	23	3	28	1.5	25
	e	ZE	48	30							
	(P'P')	Z	49	07							
	e	ZE	51	38							
6	eP	Z	23	16	03						
7	P	Z	03	31	33						
7	e	ZE	03	53	29						
	e	ZE	54	03							
7	P	Z	07	53	11						
7	P	ZE	12	43	29						
	e	Z	47	37							
7	eP	ZNE	13	22	09	1	6	0.5	8		
	i	Z	14								
	e	Z	31	24							
	S	ZNE	35			1.5	7	2	10	2.5	10
	SS	NE	36	06				1	13	1	10
	eSSS	NE	39	56				1	17	1	16
	eLq	E	41.7							1	40
	eLr	ZNE	47			1	22	1	22	1	23
	eP'PKS	Z	53	22							
7	iP	Z	14	51	37 d						
7	P	Z	15	41	03 d						
7	eP	Z	20	10	15						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUL 7	iP	ZNE	22	29	21 dn?e	1	4				
	ipP	Z	31			1	4				
	PcP	Z	30	13							
	ePP	Z	31	50		0.5	5				
	eS	ZNE	37	18							
	eSP	ZNE	31					0.5	7		0.5 7
	eL	ZN	46.2			0.5	20	0.5	25		
7	eP	Z	22	58	37 d						
7	eP	Z	23	40	50						
7	eP	Z	23	52	43						
8	eP	ZNE	02	45	09	1	5	0.5	8		
	i	Z	11		d						
	PP	Z	47	17		1	6				
	S	ZNE	53	11		1	7	1	7	1	10
	ScS	N	55	02				1	6		
	SS	N	57	08				0.5	10		
	e(Lq)	Z	59.8			1	27				
	Lr	N	03	03.4				1	20		
	Lr	ZNE	04.8			1	20	1	20		0.5 20
	e(P'P')	Z	03	14	34						
8	eP	Z	03	28	23						
8	P	Z	03	35	08						
8	e	Z	10	29	30						
8	e	Z	10	46	26						
8	P	Z	15	18	23 d						
8	iP	ZNE	15	44	29 dn	2	7	1	8		
	PcP	Z	45	21							
	S	ZNE	52	29		1	7	1.5	10	2	6
	eScS	N	54	14				1	7		
	eSS	NE	56	17				1	8		0.5 12
	eLq	E	59.5					1	33		
	Lr	ZNE	16	02.5		1	20	1	23		1 15
	eP'P'	Z	14	12							
8	P	ZNE	15	50	03	1	6				
	ePP	Z	52	19							1 10
	eS	E	58	06							
8	e	Z	16	34	39						
	e	Z	43	49							
8	P	Z	19	19	30						
8	P	Z	21	23	47 d						
8	iP	ZNE	21	58	34 d	1	7	0.5	8		
	i	Z	50								
	iPcP	Z	59	22	d						
	ePP	Z	22	00	56						
	eS	ZNE	06	33						0.5	8
	eLr	Z	16.7			1	27				
8	P	Z	22	23	03						
8	eP	Z	22	36	26						
9	e	Z	04	08	21						
	e	Z	56								

Date	Phase		h	m	s	Az	'z	An	Tn	Ae	Te
JUL 10	eP?	Z	03	41	07						
10	P	Z	04	01	48						
	epP	Z		02	22						
10	eP	Z	12	25	05						
11	P	ZNE	05	54	29						
11	P	Z	09	45	04	1	4				
	e(SKS)	E		55	26					0.5	7
	(SKKS)	E			47					1	6
	e	N		57	26			1	7		
	e	ZN			43			1	5		
	SS	NE	10	02	15			0.5	8	0.5	7
	eL	ZNE		16		0.5	30	0.5	22	1	26
11	eP	Z	16	36	26						
11	P	ZNE	18	46	38	u?e					
12	P	ZNE	04	59	52						
12	P	ZNE	14	46	27						
12	e	Z	17	45	30						
	e	ZNE		46	05						
13	eP	Z	07	29	27						
13	e?	ZNE	10	43	11						
	i(P)	ZNE		27	a						
13	e	ZNE	12	15	40						
	e	ZNE		16	07						
13	iP	Z	13	54	50	a					
13	eP	ZE	15	06	36						
13	ePP	ZE	22	02	49						
13	eP	ZE	22	18	35						
	epP	Z		20	15						
14	e?	Z	02	43	07						
15	eP	Z	00	31	09						
15	ePKP	Z	06	02	13						
15	eP	Z	06	13	31						
15	e	Z	07	32	05						
	e	Z		42							
15	eP	ZE	08	02	00	1	6				
	PP	Z			18	1	5				
	eS	E		05	51						
	(PcP)	E		06	16						
	eL	NE		08				1	15	1	15
	eL	Z		11		1	10				
15	eP	Z	12	05	57						
15	eP	Z	14	06	18						
15	eP	Z	20	25	36						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUL 15	P	Z	20	42	29						
	epP	Z		44	16						
16	eP	Z	02	02	35						
16	eP	Z	02	58	09						
	epP	Z			35						
16	P	Z	05	32	25						
16	P	ZNE	06	57	12	e?					
	ePcP	Z			57						
16	iP	ZNE	14	11	09	u					
	ePcP	Z			19						
16	P	ZNE	20	08	12						
	ePcP	Z		09	55						
	(ScP)	N		13	47						
	eS	ZN		14	37						
16	PKP	Z	21	27	49						
16	eP	Z	23	12	47						
17	eP	Z	09	27	49						
17	eP	Z	14	16	54						
17	SKP	Z	15	16	32						
17	eP	Z	15	44	35						
17	PKP	Z	16	39	04						
18	e?	Z	05	22	35						
18	P	Z	07	26	03						
18	P	Z	13	15	09						
18	P	Z	14	18	06						
	e	Z		21	20						
	PKP	Z		22	07						
	PP	Z			36	2	3				
	SKP	Z		25	35						
	PKS	N			43			1.5	9		
	SKS	ZN		28	37	1	8	1	8		
	PS	ZN		32	03	1.5	9	1.5	11		
	PPS	E		33	10					1	10
	PKKP	Z			16						
	SS	ZN		37	39	2	9	1	12		
	SKKS	Z		40	35	1	8				
	SSS	N		42	14			1	10		
	Lq	NE		49				1	27	1	25
	eLr	ZN		59		2	22	2	25		
18	e	Z	14	52	31						
	PKP	Z		53	00						
	e(FKS)	Z		56	33						
18	ePKP	Z	15	35	10						
18	eP	Z	16	33	54						
18	ePKP	Z	17	07	35						
19	ePKP	Z	00	01	38						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUL 19	iP	Z	03	58	44 d						
	PcP	Z	04	00	28						
	eS	NE		04	06						
19	ePKP	Z	06	52	17						
19	e	Z	12	17	27						
	PKP	Z			43						
19	P	Z	18	10	26						
19	P	Z	18	35	22						
19	e	Z	20	01	11						
20	eP	Z	07	00	49						
20	eP	Z	09	14	18						
20	iP	Z	15	19	50 d						
20	P	ZNE	20	06	30	1	3				
	PcP	Z		08	04						
	ePP	Z			15	1	6				
	Lr	Z		20	.9	1.5	18				
21	P	Z	01	20	03	1	7				
	(pP)	Z			27						
21	eP	Z	07	54	50 d						
21	eP	Z	13	17	07						
21	ePKP	Z	19	09	52						
21	eP	Z	19	14	56						
22	eP	Z	02	51	56						
22	eP	Z	03	33	16						
22	e	Z	03	46	14						
	e	Z		49	28						
22	eP	Z	05	30	21						
22	e	ZNE	06	00	48						
22	eP	Z	10	08	15						
22	eP	Z	10	37	49 d						
22	e	Z	14	02	40						
22	e	Z	14	07	43						
	e	ZNE			48						
22	i	Z	18	07	58 d						
22	eP	ZNE	18	17	55	1.5	4				
	e	ZE			22 37						
	Lr	ZNE			26.2	1	15	0.5	15	1	13
23	eP	Z	11	25	40						
23	eP	Z	11	40	37						
23	P	ZE	14	13	40	1	4				
	ePP	Z		15	18	1	4				

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUL 23	eL	ZE			29.8	1	21				
	eP'p'	Z			43 07						
23	eP	Z	14	26	36						
23	eP	Z	14	51	05						
23	e	Z	15	20	07						
23	eP	Z	15	38	56						
23	iP	Z	15	40	18.4 d?	1	4				
	i	Z			26						
	PcP	Z			41 07	0.5	3				
23	eP	Z	15	56	28						
23	eP	Z	15	57	23						
23	eP	Z	18	08	34						
23	iP	ZNE	22	01	10 d	10	9	1	9	0.5	8
	PcP	Z			55						
	e	Z			09 09						
	S	ZNE			21	7	8	1.5	6		
	(ScS)	E			10 47					2.5	18
	SS	ZE			13 14	2	11			2	22
	Lq	E			16.2					6	30
	Lr	ZNE			19.7	9	30	2	30	3	27
	M	ZE			23	9	18			12	17
	P'p'	Z			30 30						
23	iP	ZE	22	11	58 d						
	eP'p'	Z			41 29						
23	eP	Z	22	25	33						
23	eP	Z	22	51	05						
23	eP	Z	23	32	10						
23	iP	ZE	23	56	20 d						
24	eP	Z	00	44	54						
24	e	Z	01	05	14						
24	iP	ZE	01	39	50 d	1	3				
	i	Z			40 14 d						
	epP	Z			41 45						
	ScP	Z			43 36						
24	eP	Z	01	56	30						
24	e	Z	02	01	30						
	e	Z			02 08						
24	iP	Z	02	08	58 d						
24	eP	Z	02	53							
24	eP	Z	03	17							
24	eP	Z	03	25	(07)						
24	eP	Z	03	51	05						
24	eP	Z	03	54	49						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUL 24	eP	Z	08	39	06						
	24	iP	ZE	09	01	16	d				
	24	e	ZE	10	03	30					
	24	eP?	Z	10	19	52					
	24	e	Z	10	43	26					
	24	e	Z	10	51	53					
		e	Z		52	18					
	24	eP	Z	11	11	48					
	24	eP	Z	13	22	58					
	24	eP	Z	16	18	53					
	24	eP	Z	18	21	38					
	24	eP	Z	20	16	14					
	25	eP	Z	01	40	32	u?				
	25	eP	Z	03	00	02	u				
		pP	Z		02	09					
		(eP)	Z		03	03					
	25	eP	Z	08	10	07					
	25	P	Z	09	00	50					
	25	eP	Z	10	11	45					
	25	e	Z	12	18	55					
	25	eP	Z	18	08	05					
	25	P	Z	18	51	39					
	26	eP	Z	01	43	51					
	26	eP	Z	03	07	20					
	26	iP	Z	09	26	36	u	1.5	4		
		PP	Z		28	11		1	5		
		PcP	Z			32					
		e(S)	Z		32	34					
		eL	Z		38.2						
	27	eP	Z	02	15	19					
	27	eP	Z	06	21	17					
	27	iP	Z	08	37	06	d				
	27	eP	Z	11	43	31					
		pP	Z		44	09					
	27	eP	Z	13	58	10					
	27	eP	Z	15	41	41					
	27	eP	Z	15	41	53					
	27	eP	Z	15	57	06					

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUL 28	eP	Z	00	13	43						
	28	P	Z	01	18	31	1.5	5			
		pP	Z		19	11	1	4			
		ePP	Z		22	06	1	11			
		eS	Z		29	31	1	5			
		eSP	Z		30	55	1	7			
		eL	Z		47		1	27			
	28	eP	Z	05	04	55					
	28	eP	Z	06	21	39	1	7			
		PcP	Z		22	19	1	4			
		eS	E		29	48				1	7
		eL	ZE		41.7					0.5	33
		M	Z		53		1	16			
	28	eP	Z	12	49	04					
	28	eP	Z	13	32	47					
	28	ePKP	Z	15	38	33					
		e	Z		40	41					
	28	eP?	Z	17	09	50					
	28	iP	Z	17	26	42	u				
	29	eP	Z	02	01	44					
	29	eP	Z	10	41	56					
	29	eP	Z	12	03	52					
	29	iP	Z	16	36	48	d	1	5		
		PcP	Z		37	51					
		eS	Z		44	27	0.5	6			
		eL	Z		53.6		0.5	27			
	29	P	ZE	22	49	27	1	4			
		e	Z		50	30	1	7			
		e(S)	ZE		51	56	1	8			
	29	eP	Z	23	47	20					
	30	iP	Z	14	16	19	d?				
		e	Z			30					
	30	eP	Z	15	46	10					
	30	eP?	Z	17	53	56					
	30	iP	Z	00	27	35	u	0.5	4		
	31	e?	Z	07	40	15					
	31	e(P)	Z	08	40	36					
	31	eP	Z	20	05	14					
	31	eP	Z	22	22	18					
	31	eP	Z	23	07	13					
	31	iP	ZE	23	47	48	d?e				

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUL	e	Z		49	28						
AUG 1	eP	Z	01	02	57 d						
	pP	Z		03	13						
	e	Z		04	26						
	PcP	Z			35						
	pPcP	Z			52						
	e(S)	Z		09	35						
1	iP	ZE	01	28	17 d						
	i	Z			21						
1	eP	Z	02	14	32						
1	eP	Z	05	17	13						
1	iP	ZNE	05	50	52 d	2.5	4	0.5	4		
	PcP	ZE		52	12 e	1	3			0.5	4
	PP	ZE		53	13	1	8			0.5	5
	e	Z		54	40	1.5	5				
	PPP	Z			49	1.5	5				
	PcS	Z		55	17						
	eS	E		59	33						
	PS	ZNE	06	00	02	1.5	12	0.5	9	2	17
	SS	E		03	.8					0.5	8
	eL	ZNE		11		1	30	0.5	28	1	24
	P'P'	ZE		19	10	1	7				
	M	Z		24		1.5	17				
1	iP	Z	07	29	30 d	2	6				
	(PcP)	Z		31	15	1	6				
	PP	Z			22	1.5	5				
	PPP	Z			54	1.5	6				
	PcS	ZNE		35	06			0.5	7		
	eS	N		36	07						
	S	ZE			15	1	6			2	9
	e	Z		38	37	1.5	8				
	SS	NE		39	21			1	9	1	9
	e	Z			54	1.5	10				
	eL	ZNE		43	.7					1	25
	M	ZN		48		2.5	17	1	20		
1	eP	Z	09	32	39 d						
	PcP	Z		34	12						
	ScP	Z		38	14						
	eS	Z		39	26						
1	P	ZNE	09	42	55	2	6				
	PP	ZE		44	37	1.5	4				
	ScP	Z		48	28						
	eS	NE		49	35			0.5	10	1	10
	eSS	E		52	.6					0.5	7
	e	Z		53	22	1				1	22
	eL	ZNE		57	.4	1	18	0.5	20	1	15
1	eP	Z	14	50	45						
	PcP	Z		52	18						
	(PcS)	Z		56	26						
1	eP?	Z	15	02	30						
1	e?	Z	15	56	15						
1	eP	Z	16	27	23						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
AUG 1	eP	Z	17	15	27						
1	eP	Z	19	37	50						
1	eP	ZE	22	21	36 d						
2	P	ZNE	01	23	34						
	PcP	ZE		26	20			0.5	22	0.5	32
	eLq	NE			30.8						
	eLr	Z			32.3	1	27				
2	eP	Z	02	13	55						
2	eP	ZNE	02	39	45	0.5	5				
	e(PcP)	N		41	21						
	PcS	Z		43	26	0.5	5				
	e	Z		45	26						
	eS	E		46	15						
	e	Z		50	09						
	eL	Z		51	.4	0.5	30				
2	eP	ZNE	04	07	38						
2	eP	Z	05	04	08						
2	e	E	22	55	31						
3	e?	Z	00	42	36						
	e?	Z		46	09						
3	ePKP	Z	03	26	34						
3	eP	Z	04	58	57						
3	eP	Z	06	35	31						
3	e?	ZNE	07	03	15						
	eP	ZNE			35						
	PcP	ZN			48						
3	eP	Z	07	43	50						
3	eP	Z	15	27	30						
3	P	Z	23	46	43						
4	eP	Z	09	10	41						
4	eSKP	Z	10	58	53						
4	e(P)	Z	17	58	37						
	e	Z			47						
4	e	Z	18	09	52						
4	e	Z	18	23	37						
	i	Z		24	11 d						
4	iP	Z	18	29	08 d						
	pP	Z			34						
4	ePKP	Z	23	11	58						
4	iP	Z	23	40	59 u						
	e	Z		42	01 d?						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
AUG 5	iP	Z	01	18	24						
5	ePKP	Z	02	45	42						
5	e	Z	06	52	07						
	eP	Z		09	u?						
5	eP	Z	08	26	29						
5	iP	ZNE	09	39	38	0.5	4				
	epP	Z		40	09						
	sScS	NE		50	34						
	eL	Z	10	04.3		0.5	28				
6	eP	Z	10	46	30						
6	eP	Z	14	35	30						
6	eP	Z	17	18	52						
7	e	ZNE	01	40	03						
7	eP	Z	02	02	15						
7	eP	Z	02	19	01						
7	iP	ZNE	04	34	23	0.5	5				
	eS	ZNE		44	17	0.5	7				
	eL	Z		58.6		1	21				
7	eP	Z	10	55	34						
7	eP	ZNE	12	31	21	0.5	5				
	PcP	Z		32	41						
	ePP	ZE		33	20	0.5	3				
	eS	ZE		38	26	0.5	5				
	PS	Z		46		0.5	4				
	e(Lq)	Z		43.6		0.5	27				
	eLr	Z		46		0.5	20				
	M	ZE		54		1	17			0.5	17
7	e?	Z	14	40	03						
7	iP	ZNE	16	15	38	1	6	0.5	6		
	i	ZN		54	d	1	7				
	eS	NE		18	41						
	eLq	N		19.5				0.5	23		
	eLr	ZNE		19.9		1	17	0.5	16	0.5	17
	M	ZNE		21		1.5	11	1	11	1.5	12
7	iP	Z	17	06	46						
	i	ZNE		49.4	use						
	PcP	Z		08	03						
7	e	ZNE	18	16	39						
	i	ZNE		44	u						
	i	ZE		50	d						
7	eP	Z	23	39	07						
	ePcP	Z		40	21						
8	eP	ZN	00	27	45	0.5	4				
	epP	ZE		52							
	e	ZNE		34	13	0.5	6				
	eS	ZNE		51		0.5	6			0.5	9

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
AUG	e	E	37	27						0.5	8
	e	N	38	53							
	eLq	E	41.6							0.5	33
	eLr	ZE	44			0.5	30			0.5	18
8	e	ZNE	02	45	08						
8	e	ZNE	03	24	05						
8	e	ZNE	03	52	46						
	e	E	56	05							
8	ePKP	ZN	05	55	32	0.5	6				
	SKP	Z		58	49						
	pSKP	Z		59	14						
	sSKP	Z		22							
8	e	Z	06	40	03						
8	eP	Z	07	29	43						
8	eP	ZN	08	00	24						
	(ScP)	ZNE		05	10						
8	e	NE	08	31	56						
	e	ZE		32	05						
8	eP?	Z	09	18	52						
8	e	Z	12	37	11						
	PKP	ZNE		29		1	6				
	ePP	Z		39	42	0.5	8				
	SKP	ZN		40	41	1	6				
	e	ZN		41	15						
	e	ZN		54							
	e	Z		49	50						
	e	ZN		57	19						
	eSS	ZE		58.3		0.5	8			0.5	7
	eL	N	13	21				0.5	38		
8	P	ZNE	15	57	51						n?
8	ePKP	Z	16	01	36						
8	e	ZNE	16	52	42						
	e	ZNE		53	11						
9	eP	Z	00	29	13						
9	e	ZNE	00	54	54						
9	eP	Z	01	36	09						
9	iP	ZNE	16	12	31	2	5				
	ipP	ZE		43	ue						
	PcP	Z		13	18	1	4				
	ePP	Z		14	54	1.5	7				
	eS	NE		20	31			0.5	7		
	ePS	N		53				0.5	10		
	P'P'	Z		42	10						
9	eP?		23	12	04						
11	e(PKP)	Z	01	02	45						
	e	Z		57							

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	
AUG 11	eP (PcP) (PP) e(S)	ZNE N Z NE	10	35	00 41 37 18 43 04	0.5	6					
11	eP epP	ZNE N	11	16	41 17 18	0.5	6					
11	PKP PP pPP sPP PKS SKS SKKS PKKP SP (PS) (SPP) (PPS) (SKKP) (PKKS) e SS SSS eL M	ZNE Z Z ZE N NE N N Z Z Z Z N Z NE N ZN ZN	16	10	25 n 12 07 51 13 08 51 17 24 18 45 20 29 21 39 58 22 45 23 05 24 11 31 26 50 28 29 33 10 48 55	1 1 2 1 1 1 1 1.5	6 5 4 13 10 5 10		1 7 7	0.5	6	
11	iP	ZNE	22	49	25 u	1	4					
11	ePKP e	NE Z	23	52	45 54							
12	e	Z	03	05								
12	eP?	Z	05	40	44							
12	e	Z	21	41	44							
12	eP	Z	22	44	27							
13	e? e?	ZNE ZNE	02	32	11 d 37 04							
13	e	ZNE	02	39	05							
13	eP PcP	ZNE Z	02	44	36 d 45 10							
13	e e	N ZN	03	56	25 29							
13	e	ZNE	07	18								
13	e	ZNE	10	56								
14	eP	Z	06	46	25							
14	eP	ZN	13	47	13							
14	iP i pP PcP e	ZNE ZNE Z Z N	19	00	19 us? 27 de 37 d 01 24 02 24	1	7					

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
AUG	ePP e(SP) e(PS)	Z Z Z			37 08 07 19	1 0.5 0.5	7 8 9				
14	P 1 ePcP eLq Lr M eP'p'	ZNE N Z ZE ZN ZN Z	23	38	30 une 46 n 39 19 53 56.3 01 08 25	2 0.5 1 1.5	5 5 47 28 18	0.5 1	7 31 20		1 30
15	eP	Z	10	01	45						
15	ePKP ePP eSKP eSKS eSKS eSKKP eSS eL	Z Z Z Z Z Z Z Z	19	22	29 23 12 26 07 29 17 37 37 08 38 33 54.6	0.5 0.5 0.5 0.5 0.5 0.5 0.5	7 7 7 5 8 7 7				
15	eP	Z	19	52	35						
15	e? e e e e	NE ZNE N N NE	22	57	19 27 32 39 58 06						
16	eP epP PcP	ZNE ZN Z	03	42	18 35 43 52						
16	eP?	NE	04	12	28						
16	P	ZE	16	28	49	0.5	3				
16	eP	Z	19	27	28						
17	eP	ZNE	01	13	05						
17	eP eL	ZN ZNE	05	12	35 18.7	0.5	4	1	18	0.5	22
17	eP ePP	ZE Z	06	46	03 48 05	0.5 0.5	7 7				
17	eP	Z	13	03	(19)						
17	eP	Z	17	59	26 d?						
17	PKP pPKP e PP e pPP SKP PKS (sSKP) SKS SKS e	Z Z N ZN E Z Z E Z E N NE	21	35	12 53 36 35 53 37 20 32 38 33 45 39 54 41 58 42 03 49	1 1 1.5	3 7 7	1 1	8 7	0.5	9 5 6 5

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
AUG	SKKS	N	43	37				1	8		
	e	E		48						0.5	7
	(pSP)	Z	48	24							
	(sSP)	Z		47							
	SS	NE	53	37				1.5	16	1.5	8
	sSS	E		53						1.5	15
	SSS	N	22	08	32			0.5	8		
	eL	N		22.7				0.5	27		
18	e	Z	05	57	46						
18	iP	ZNE	11	10	07	de	1	2 $\frac{1}{2}$	0.5	1 $\frac{1}{2}$	
	e	Z		54							
	PcP	ZNE	11	03			0.5	4	0.5	7	
	e	Z		40			1	3			
	pP	Z		49			1	2 $\frac{1}{2}$			
	e	Z	12	08							
	PP	ZN		14			0.5	4	0.5	8	
	e	N	13	24				0.5	8		
	(sPcP)	Z		38			0.5	6			
	(ScP)	Z		14	20		0.5	6			
	(PcS)	Z		15	13		0.5	8			
	e?	Z		16	20		0.5	8			
	S	E		17	09					1	7
	(sScP)	E		18	29					0.5	8
	(pScS)	ZE		21	08		0.5	5		0.5	8
19	eP	Z	01	22	29						
19	ePKP	Z	03	01	54		1	4			
	PP	Z		03	25		1	7			
	ePKS	ZN		05	24		0.5	8	0.5	6	
	eSKS	E		08	55					0.5	6
	e(PKPP)	E		11	52					0.5	5
	ePS	E		13	07					0.5	7
	(PKKS)	E		15	33					1	8
19	iP	ZNE	05	21	28	unw	24	4	2	7	
	e	NE		45				3	3		
	e	ZNE	22	04			7	4	2	2	3.5 4
	e	NE		19				2	3		4 3
	pP	ZE	23	44		10	12				5.5 13
	e	N	24	04				3	6		
	e	Z		50				3	3		
	PP	ZNE	25	05				6	7		4 6
	e	Z		20				5	13		
	e	E		31							2 17
	pPP	Z	26	38			3	5			
	SKS	ZNE	30	55			3	8	5	7	15 8
	iS	ZNE	31	10		10	6	18	7	40	7
	SP	ZNE	32	17		12	15	7	16	17	18
	e	ZN		51			6	3	10	6	
	(SPP)	ZE	33	15			6	10	10	8	
	e	E		43							5 7
	(pScS)	ZN		49			5	9	4	10	
	sS	N	35	13				13	12		
	i	Z		30		u	6	9			
	e	E		37	09						9 15
	SS	ZN		17		n	3	16	12	11	
	e	Z		39	51			3	7		
	e	Z		40	09			3	19		
	(sSS)	NE		40.3					6	15	7 28
	G	ZE		44			4	18			4 21
19	P	ZNE	05	29	04		2	4			

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
AUG	(PP)	ZN	32	51				6	3		
	(sPP)	Z	35	30	u			6	9	10	6
	(SP)	Z	40	09				3	19		
	e?	NE	45	02							
	e	ZNE	47	20				3.5	5		
	e	E	49	42							4 14
	i	ZN	52		d			3	6		
	e	ZE	51	46							5 17
19	(P)	ZNE	05	47	20			3.5	5		
	PP	ZNE		53	09			3	8		
	e	ZE		50				2.5	4		
	(PKS)	ZE		55	52			5	17		
	eSKS	N		59	10						5 18
	e	Z	06	02	55			2	6		
	eSS	Z		09	11			2	13		
	e	Z		21.7							1.5 13
	e(L)	Z		29.5							
19	e(PKP)	Z	08	26	03						
	e	Z		47							
19	e(PKP)	Z	13	03	48			0.5	7		
19	eP	ZNE	16	13	02	u					
19	eP	ZE	20	39	10						
19	eP	Z	21	57	15						
20	eP	Z	01	40	19						
20	iP	ZNE	05	13	34	u		2	3	0.5	2
	ipP	ZN		15	27	u		2	3	0.5	2
	ipp	Z		16	06	u					
	sP	Z		25				1.5	25		
	pPP	Z		17	39			1.5	6		
	S	ZNE		21	12			1.5	6		2 7
	ScS	E		22	23						
	e	N		32							
	e	N		23	22					0.5	5
	e	N		24	10					0.5	8
	e	Z		42	43						
	i(P'P')	Z		54							
20	eP	Z	10	31	15						
21	eP	ZNE	16	17	03	u?		1	5		
	ipP	ZNE		22	d			1.5	3	0.5	2
	PcP	Z		45							
	sPcP	ZE		18	07						
	e(PP)	E		19	35						0.5 6
	(PcS)	E		21	31						0.5 6
	eS	NE		25	19					0.5	4
	(sS)	E		49							1 8
	ScS	E		26	41						1 7
	P'P'	Z		46	32						0.5 6
21	ePKP	Z	17	19	25						
	e?	Z		20	30						
	ePP	Z		50							
	SKP	Z		22	47						
22	eP	Z	03	14	02						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
AUG 22	e	Z	06	41	43						
22	iP	ZNE	09	10	02	u	1	3			
22	e	ZNE	09	21	59						
23	ePKP	Z	04	31	44						
23	eP?	Z	14	50	30						
23	eP	Z	23	02	55						
24	ePKP	Z	05	11	13						
	epPKP	Z			26						
24	eP	Z	09	21	44	d					
24	eP?	Z	10	07	10						
24	eP	Z	17	37	02						
24	eP	ZNE	21	07	56						
	eL	E			26					0.5	25
24	ePKP	Z	22	59	44						
	e	Z			58						
25	eP	ZE	21	37	44						
	e	ZE			54						
26	eP	ZE	02	55	19 $\frac{1}{2}$						
26	eP	Z	05	19	30						
26	eP	ZE	18	13	05						
26	eP	ZE	18	50	21	d	0.5	5			
	e(Pp)	Z			51						
	ePcP	Z			52						
26	eP	Z	19	01	26						
26	e	ZNE	23	05	10						
	i	Z			33	d					
	e	ZNE			06						
27	P	ZNE	02	04	36	u	1	3			
27	e	ZNE	03	45	00						
	e	ZNE			33						
	e	ZNE			46						
27	eP	Z	06	52	50						
	PcP	Z			53						
	epP	Z			54						
27	P	ZE	15	39	12						
	e	Z			59						
27	ePKP	Z	16	41	08						
	SKKP	Z			54						
	e	Z			56						
27	eP	ZE	17	01	14						
	e	Z			04						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
AUG	PP	Z	05	15		1	6				
	e	Z	10	03							
	e	SKS	11	48				1	7	1	7
	e	Z			57						
	e	SKKS	12	06		1	5				
	eS	ZN			24	0.5	5	0.5	7		
	e	Z	13	25		0.5	7				
	e	SP			44	1	6	0.5	7		
	SS	ZN	18	54		1	7				
	eLr	ZN	33.6					0.5	25		
27	eP	ZNE	17	14	26	u?					
	(sP)	Z			15		0.5	6			
	e	Z			39						
	e	ZN	16	08		1	5	1	7		
	e	Z	26	29		1	6				
27	ePKP	Z	21	15	16						
	e(pPKP)	Z			30						
28	i	Z	04	19	12						
28	iP	Z	06	40	24	d	1.5	4			
	PcP	Z			38		0.5	3			
	pP	Z	41	08		1	5				
	pPcP	Z			25						
	(sPcP)	Z			47						
	eSKS	E	50	23							0.5
	e	E	51	09							
	SP	Z			21	1	6				
	PS	E			46						0.5
	e	ZN	52	55		1	7	0.5	7		
	e	Z	55	05		1	7				
	SS	E	56	16							0.5
28	iP	Z	07	51	08	u?					
	e(PcP)	Z			35						
	epP	Z	53	14							
	(P'P')	Z	08	20	31						
28	eP	Z	09	53	28	d?					
	epP	Z			55						
28	eP	ZE	20	36	43	u?	1	4			
	(PP)	Z			39		1	7			
	eLr	ZN			57.2		1	18	0.5	19	
	eP'p'	Z	21	05	20						
	e	Z			06						
28	iP	ZNE	21	39	29	u	1	3			
	e	E			51	e					
	sP	Z			40		1	5			
	e	E			17						
	eL	Z	22	18							
29	eP	Z	04	26	21						
	epP	Z			30						
29	ePKP	Z	06	14	32						
	e	Z			41						
	e	Z			17						
29	eP?	Z	08	02	05						
29	eP	Z	10	56	02						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
AUG 29	ePKP	Z	15	10	24						
	e(PP)	Z		12	27	0.5	4				
	SKP	Z		13	43	1	3				
	ePKS	Z			52						
	e(PKKP)	Z		20	23						
29	eP?	Z	17	41	43						
29	P	ZNE	21	44	09 u?	1	3				
	epP	Z			40						
30	SKP	Z	02	48	16						
30	eP	Z	03	58	34						
	epP	Z			42						
30	eP	Z	19	20	38						
	ePcP	Z			35						
30	eP	Z	22	27	52						
31	P	Z	00	31	42	0.5	4				
	e	ZE			49						
	PcP	Z		33	06	1	5				
	(PcS)	Z		37	15	0.5	5				
	e	NE		39	04					0.5	6
	e?	N			23						
	(SS)	Z		42	20	0.5	4				
	eLq	E		45						0.5	15
	eLr	Z		48		0.5	23				
	31	iP	ZNE	02	00	17½ u	6	4			
pP		ZE		02	28	3	6			1.5	7
e(sP)		Z		03	16	2	4				
e		Z			39	2	5				
PP		Z			46	2	4				
epPP		Z		05	36	1.5	8				
i		Z			45 u						
e		Z		07	12	1.5	4				
e		Z		08	39	1.5	4				
e		ZE		09	18	3.5	8			1.5	3
e		E			42					2	3
e		E			48					5	7
SKS		E			05	6	6				
s		Z		10	05						
e(sS)		Z		13	42						
SS	Z		16	00	3	4					
SSS	Z		19	19	4	3					
P'P'	Z		26	15							
31	P	ZNE	02	08	47	18	7½	2.5	8	4	7
	(pP)	Z		10	56					6	16
	pP	ZE		11	04	15	5½				
	e	Z		13	18	3	3½				
	e	Z			23						
	e	N		14	04			4	14		
	e	Z			20	2	6				
	ePPP	Z		18	10	2.5	8				
	SKS	Z			20	5	12	7	7	22	9
	S	ZNE			20	13	10	12	7	40±	9
	e	ZNE			34					19	18
	SP	E		19	40						
	SPP	ZN			53	9	12	7	8	6	8
	e	E			53					8	18
	e(sS)	NE		22	32					7	9
	e	ZE		24	06	3	10			11	12
	SS	NE			26						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
AUG	SSS	ZE			27	2.5	16			8	29
	eP'P'	Z		34	36	1	2				
	e	Z			52	5	7				
	e(SKPP')	Z		37	17						
31	eP	Z	03	40	07						
31	eP	Z	04	07	15						
SEP	P	ZNE	00	17	25 ne	13	3	4	7	1.3	6
	pP	ZNE			54	35	4	6	5	4	5
	PP	ZNE			18 59	22	4			17	4
	ScP	Z			22 50	10	3				
	S	ZNE			23 43	10	4	31+	14	25+	7
	(sS)	N			24 42			20	15		
	e	ZN			25 38	3	5	5	6		
	SS	ZNE			27 05	17	7	22	13	40±	18
	eL	NE			29.8			9	42	14	42
	e	ZN			31.5	7	10	10	8		
	eLr	ZN			35	9	16	11	16		
	1	e	Z	09	34	41					
1	eP	Z	14	54	19						
1	eP	Z	16	46	32						
1	eP	Z	18	50	48 d						
	pP	Z		52	47						
1	eP	Z	19	04	52	1	4				
	ePP	Z		08	59	1	4				
	eSS	N		24	12			0.5	6		
	eL	ZNE		36		0.5	23	0.5	23		
1	e(PP)	Z	19	20	08						
1	eP	Z	20	10	19						
2	ePKP	Z	00	45	14						
	SKP	Z		48	34						
2	eP	Z	00	59	44	1.5	4				
	i	Z			50 u						
	eS	E	01	02	49						
	eL	ZNE			05.3	1	10	1.5	12	2	13
2	eP	ZNE	03	51	36 d	1	7				
	eS	N		55	42			0.5	7		
	eL	E		58	27					1	15
	eL	ZN		59	08	1	13	1	13		
	M	ZNE	04	01.5		2	10	3	9	4	9
2	eP	Z	06	28	03						
2	eP	Z	12	39	06						
3	e	Z	06	15	51						
3	eP	Z	09	17	52						
3	e	Z	14	22	59						
3	e	Z	15	23	31						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
SEP 4	e	Z	03	41	05						
4	e	Z	03	46	57						
4	PKP	Z	10	08	18	1	3				
	ePP	Z	10	33		0.5	4				
	SKP	Z	11	35		1.5	3				
4	eP	Z	13	44	41						
4	eP	Z	16	21	26 d						
	epP	Z		22	06						
4	e	Z	17	30	01						
	e	Z			16						
4	eP	Z	22	43	15						
5	eP	Z	00	56	52						
5	PKP	Z	06	31	54						
5	ePKP	Z	11	53	52						
	PKP	Z		54	03	1	4				
	PP	Z		57	02	1	5				
	e	Z	12	09	27	1	27				
6	eP	Z	07	09	03						
6	iP	ZE	08	26	43 de?	1	3				
6	eP	Z	15	42	51						
8	e	Z	00	22	18						
8	ePKP	Z	00	24	28						
8	eP	Z	03	10	54						
8	iP	ZNE	11	34	45 dne	55	8	18	8	12	5
	e	NE		35	00			9	7	13	8
	pP	Z			14						
	(sP)	Z			35 d						
	i	Z	36	00	u						
	PcP	Z		18		22	10				
	e	Z		26							
	(PP)	N	36	31			16	8			
	e	E		52					7	6	
	e	E	37	08					8	5	
	PcS	ZNE	40	04				7	10	5	10
	(pPcS)	Z		28		7	9				
	S	ZNE	41	20				7	4	9	8
	e	NE		47				10	12	16	23
	e	Z	43	19							
	(ScS)	NE		31				6	18	9	7
	SS	N	44	18				9	6		
	e	E		32						10	7
	e	N	45	00				7	10		
	e	Z		19		12	8				
	e	NE		33				16	10	27	25
	eL	ZNE	48	6		12	28	18	35	12	31
	M	ZNE	56			13	19	21	19	21	14
	e	Z	12	05	18						
	(P'P')	Z		48							
	e	Z	07	11							

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
SEP	e	Z	08	18							
8	eP	Z	12	52	16						
8	eP	Z	17	42	36						
9	eSKP	Z	09	32	53						
9	iP	ZNE	15	34	48 d						
10	eP	Z	02	59	35						
	PcP	Z	03	01	06						
10	iP	ZE	04	56	19 d?						
	epP	ZE		58	07						
10	e	Z	09	43	52						
10	iP	Z	11	52	50 d						
	i	ZE		55	de?						
10	eP	Z	15	56	45						
10	eP	Z	17	55	18						
10	eP	ZNE	18	17	51						
	ipP	ZE		18	28 u?w?						
10	eP	Z	18	25	23						
	epP	Z		27	22						
11	eP	Z	01	43	48 d?						
11	e(SKP)	Z	03	09	05						
11	e	ZE	04	04	04						
11	eP	ZE	06	07	27						
11	eP	ZE	11	49	09						
11	eP	Z	14	57	08						
11	eP	ZE	20	09	43						
	i	ZE		10	11 d						
11	e	Z	20	14	11						
	i	Z		50	d						
12	ePKP	Z	00	06	12						
12	iP	ZE	00	26	31 d						
	e(pP)	Z		28	18						
12	iP	ZE	01	24	15 u						
	pP	Z		25	03						
12	e	Z	05	18	22						
12	ePKP	Z	05	57	27						
12	eP	Z	08	12	03						
12	e	Z	10	10	03						
	e	Z			37						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
SEP	e	Z	11	08							
	e	Z		27							
12	eP	Z	11	30	07						
12	eP	Z	12	07	38						
12	iP	Z	19	37	01 d	2	5				
	ePP	Z		38	42	1.5	4				
	(PPP)	Z		39	15	1.5	6				
	PcS	Z		42	49	2	6				
	S	NE		43	17			1	7	2	10
	eSS	NE		46	10			1.5	15	3.5	23
	eL	ZNE		52.7		2	15	1.5	15	3	15
12	ePKP	Z	19	37	35	2	5				
	(PP)	Z		39	15	1.5	6				
	PKS	Z		41	28	1.5	6				
	SKS	E		44	26					1.5	5
	(PKKP)	Z		47	35	1.5	7				
	e(L)	Z	20	10	07	1.5	14				
13	eP	Z	03	17	08						
13	e	Z	06	44	04						
	e	Z			35						
13	e	Z	10	03	32						
13	eP	Z	14	16	07						
13	i	Z	21	28	48 u	4	5				
	i	ZNE		49 $\frac{1}{2}$	de						
	i	ZNE		29	08 de						
	PP	ZN		31	06	1	6	0.5	4		
	eS	E		36	35						
	eL	ZN		47		1	25	1	15		
	e(P'P')	Z		58	19						
	e	Z			28						
15	PKP	ZN	02	05	22 u	1	6	0.5	6		
	PP	Z		07	45	1	4				
	SKP	Z		08	41	1	5				
	PKS	ZN			54	1	5	0.7	5		
	(PPP)	Z		10	12	0.5	6				
	e	N		23	14			0.5	8		
	eL	Z		56		0.5	30				
	eL	N		58				0.5	20		
15	eP	Z	10	17	29						
15	eP	Z	21	35	29						
16	e	Z	11	17	17						
16	eP	Z	20	14	30						
16	P	Z	21	27	37	0.5	4				
17	eP	Z	01	23	31						
17	e	Z	03	07	00						
17	eP	Z	03	17	05						
	e	Z		14							

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
SEP 17	i	Z	05	55	04 d						
17	eP	Z	06	18	18						
17	ePP	Z	09	00	22	0.5	5				
17	eP	Z	15	54	30						
17	iP	ZNE	23	33	30 d	0.8	3	0.5	5		
	pP	Z		44		1	3				
	e	Z		34	20	0.7	4				
	PP	Z		36	09	0.7	5				
	ePPP	Z		38	04	0.5	5				
	eS	ZNE		42	51	0.5	5	0.5	9	0.5	9
	(PS)	Z		43	44	1	5				
	eL	Z		57.2		0.5	28				
18	eP	Z	09	29	48						
18	ePKP	Z	11	20	13						
	e	Z			19	0.8	4				
	e	Z			22						
	ePP	Z			54	0.5	8				
	e(L)	Z		12	01						
18	eP	Z	12	26	43						
18	iP	ZNE	15	47	20 u	1	2				
	eL	Z	16	06		0.5	30				
19	iP	Z	02	36	48 d						
	i(P)	ZNE		52	u	2	4	0.5	5	0.5	6
	e	Z		37	33	1	4				
	(pP)	N		38	47			0.5	5		
	pP	Z			51	2	4				
	e	Z			39	1	4				
	S	ZNE			45	1	6	1.5	8	0.5	8
	sS	ZNE			49	1	7	1	7	0.5	9
	SS	N			51			0.5	9		
	e	Z			52	1	5				
	(PKKP)	Z			55						
	(SSS)	N			56			0.5	11		
19	eP	Z	06	23	11						
19	eP	Z	09	31	17						
19	iP	Z	09	42	03 u?	0.8	3				
19	iP	Z	13	56	46 d						
19	iP	Z	18	34	20 d						
19	iP	ZN	21	42	33 u	1.5	4				
	PP	Z		44	07	1	5				
	PcP	Z			28	1	2				
	e(S)	ZN		48	22	0.7	6	0.6	6		
	e(SS)	E		51	48					0.5	11
	eLr	NE		56.4				0.5	20	0.5	26
19	eP	Z	22	39	28						
20	e	Z	19	15	15						
	iP	Z			18 u	2	4				
	e	Z			42	2	5				

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
SEP	PP	Z	18	08							
	S	E	24	46						1	10
	PS	Z	25	43	1.5	6					
	SS	NE	29.6					1	8	1	8
	eL	ZN	39					0.5	23		
22	eP	Z	16	13	39						
22	e	Z	20	13	37						
	eP	Z	44								
23	eP	Z	03	14	33						
23	eP	Z	08	25	15						
	i	ZE	19	ue							
24	eP	Z	04	48	15						
24	eP	Z	17	01	02						u?
	PcP	Z	02	40	d?						
	ScP	Z	06	23							
24	e	Z	18	04	41						
24	ePP	Z	22	00	13	0.5	5				
25	ePKP	Z	02	46	21						
	e	Z	29								
	SKP	Z	49	53							
25	e	Z	04	54	16						
25	eP	Z	10	59	10						
25	eP	Z	14	18	22						
25	ePKP	Z	20	41	34						
26	eP	Z	07	22	08						
26	eP	Z	10	01	03						
	epP	Z	38								
27	eP	Z	00	57	46						
27	iP	ZNE	06	43	26	un?w	1.5	3			
	pP	Z	45	25			0.5	3			
	PP	Z	46	35			0.5	4			
	S	ZNE	51	04							
	(ScS)	ZNE	52	18		1	3	1	12	1	4
	SS	ZNE	55	24		1	14	0.5	23	0.5	19
27	eP	Z	10	59	07						
27	eSKP	Z	11	43	21	0.5	3				
27	iP	ZN	12	15	31	1.5	4	0.5	5		
	i	ZN	34	u							
	i	Z	16	09	d						
	PP	Z	21			1	5				
	PPP	ZE	17	13		1	4				
	e	Z	21	43		1	7				
	S	NE	52					1.0	10	0.5	8
	SS	ZNE	25	05		1	14	1	10	1	11
	(ScS)	N	27								

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
SEP	Lr	ZN	27			1.5	22	2	18		
27	SKP	Z	19	43	19						
27	PKP	Z	19	46	11						
	PP	Z	47	47							
	SKP	Z	49	32							
28	iP	ZE	01	36	09	1	3				
	pP	ZE	25			1.5	3				
	sP	Z	36								
	PP	Z	39	04							
	S	N	46	06				0.5	7		
	SKS	ZE	13			1	6			0.5	10
	PS	ZN	47	05		0.5	5	0.5	7		
	(SSS)	N	54	34				0.5	6		
	eLr	N	02	00.6				0.5	30		
28	e?	Z	03	37	44						
28	ePKP	Z	03	43	15						
28	e	Z	05	16	15						
	i	Z	55								
28	PKP	Z	05	19	22						
28	e	Z	06	23	49						
28	PKP	Z	22	55	15						
29	iP	Z	05	43	31						d
	PcP	Z	44	56							
29	SKP	Z	08	46	40						
29	eP	Z	08	59	06						
29	ePKP	Z	17	09	25						
29	iP	ZE	19	18	23	1	5				d
	pP	ZE	44								
	S	ZN	28	24						1.5	8
	SP	Z	29	16							
	e(PS)	N	34								
	e(SSS)	Z	37	14						1	32
	eL	NE	41								0.5 34
30	e	Z	02	06	09						
	e	Z	53								
OCT	1	eP	Z	07	53	40					
2	iP	ZNE	06	01	48	u	1	4			
	pP	Z	56			2	4				
	PP	ZE	03	28		1	4				
	ScP	Z	07	31							
	(SS)	N	11	23						0.5	8
	(SSS)	N	12	11						0.5	13
	eLq	E	12.6								0.5 20
	eLr	ZNE	14.7			1.5	18	1	20		0.5 19
2	iP	Z	06	15	50	d					
	PP	Z	17	31							

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
OCT 2	eP pP	Z Z	06	33	18 d 35						
2	iP ipP PP S SS eLq eLr	ZN Z ZN N N NE ZN	07	10	48 d 57 u 13 30 17 33 20 32 21.1 23.2	1.5	7	1	7		
2	ePKP	Z	07	41	02						
2	e	Z	08	11	13						
2	eP e	Z Z	12	04	29 05 14						
2	eP	Z	13	13	31						
2	e e e	Z Z Z	15	42	07 39 43 09						
3	eP e	Z Z	06	13	47 d 14 05						
3	eP	Z	18	36	56						
3	eP	Z	19	10	23						
3	iP	Z	22	30	16						
4	iP eL	ZNE ZN	02	33	56 dw? 57.3	1	2				
4	eP epP	Z Z	03	32	10 32			0.5	20		
4	iP epP	Z Z	07	17	15 d 18 49						
4	eP	Z	21	39	24						
5	iP pP PcP eSS eP'p'	ZNE Z Z Z Z	18	18	35 dw? 47 19 15 33 14 48 19	1	2				
5	e(PKP)	Z	22	53	23						
6	eP	Z	06	57	50						
6	iP	Z	19	49	22 d						
7	eP	Z	08	23	36						
7	eP?	Z	08	26	41						
7	eP	Z	17	38	25 u?						
7	eP	Z	19	32	54						
8	eP	Z	12	52	40						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
OCT 8	iP ePP eS (SP) eL	ZNE Z ZN Z Z	23	53	44 d 56 55 00 03 43 04 14 20.3	1	3				
9	eP	Z	01	46	38			0.5	7	0.5	8
9	eP	Z	06	32	49						
9	eP	Z	10	39	02						
9	eP	Z	10	53	43						
9	eP	Z	11	15	22						
10	iP (pP) i	ZNE Z ZE	03	53	25 dn?e? 55 04 20 d						
10	eP	Z	04	11	42						
10	iP	ZNE	08	37	08 uw						
10	e	ZE	08	54	45						
10	iP eS ePS e(Lq) Lr	ZNE NE NE E NE	17	36	38 d? 46 14 47 04 58.1 04			0.5	8	0.5	10
								1	14	1	17
10	eP	ZE	18	54	17						
11	iP PcP eL	ZNE Z Z	00	38	27 u 39 46 u 54.5			0.5	2		
11	ePKP e	Z Z	07	23	26 47						
11	eP	ZNE	09	39	02						
11	eP	Z	10	53	16						
11	eP	Z	12	40	45						
11	iP e	ZE Z	16	12	51 d 13 47						
11	e e	ZNE ZNE	18	05	14 06 31						
12	eP epP	ZE Z	03	55	19 d? 45						
12	eP	Z	08	35	45						
12	eP e ePcP eLr	ZE Z Z ZNE	22	01	36 03 07 06 24 07.2			0.5	5		
						1	8	1	11	1	12
13	eP	Z	02	34	29						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	
OCT 13	iP	ZNE	05	07	26	dse?	1.5	3	0.5	4		
	PcP	Z		09	09		0.5	3				
	PP	Z			17		1	4				
	ScP	Z		12	39							
	eS	NE		14	04					0.5	4	
	eL	ZNE		20	5		0.5	23	0.5	17	0.5	17
13	iP	ZNE	10	54	34	d	0.5	4				
	PP	Z		56	15		0.7	5				
	PcP	ZE			30							
	(PcS)	N	11	00	35			1	13			
	eS	E			50					0.5	8	
13	eSS	E		03	5					1	17	
	eL	ZNE		07			0.5	13	0.5	19	0.5	15
13	eP	ZE	17	37	49							
14	iP	ZE	16	23	46	u						
15	eP	Z	17	20	06							
	epP	Z			30							
16	iP	Z	03	37	21	d						
16	eP	Z	08	05	45							
16	eP	Z	11	53	04							
16	eP	Z	18	06	19							
17	e	Z	02	56	34							
	e	Z			56							
17	eP	ZE	04	36	03	d	0.5	4				
	iPP	ZN		37	58		1.5	5	0.5	5		
	e	Z		39	33							
	ePPP	Z			50		0.5	7				
	eS	ZNE		43	04		0.5	9	1.5	10	0.5	6
	(ScS)	E		46	07					0.5	8	
	SS	ZE			22		0.5	11			1	27
	SS	N			30				0.5	16		
	e(Lq)	E		48	7							
	Lr	ZNE		51			1	22	1	23	1	16
17	eP	Z	10	03	04							
18	eP	Z	01	48	25							
18	eP	ZNE	02	58	39	d?	1	3				
	pP	E			57							
	PcP	Z	03	00	04							
18	eS	ZN		05	29		0.5	4	0.5	6		
	e	Z	05	41	37							
18	eP	Z	07	41	02							
18	e(PKP)	Z	11	03	22							
18	iP	ZNE	17	02	04	d	3.5	7	0.5	7	1	7
	PcP	ZN			54		2.5	4				
	ePP	N		04	30							
	S	ZNE		10	24		2	12	2.5	13	2.5	11
	SS	NE		14	27				2	9	1	13
	SSS	NE		17	10				2	19	1.5	16

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	
OCT	Lq	NE			18.9			2	26	1.5	24	
	Lr	ZNE			21.4		1	20	2.5	18	3	16
	eP'P'	Z			31							
	i	ZE			35						d	
18	eP	ZNE	18	20	35							
	PcP	Z		21	25							
19	eP	Z	08	41	33							
19	eP	ZNE	09	17	43	d?	1	5				
	e	Z		18	40		0.5	3				
	eL	NE			25.2				0.5	15	0.5	14
19	iP	ZNE	11	29	15	u	0.5	3				
	ipP	Z			51		1	4				
	sp	ZNE		30	05		1	4				
	e	E			12							
	(pPcP)	Z		31	19							
	PP	Z			33				0.5	4		
	SP	ZNE		37	23		0.5	6	1	8	0.5	7
	PS	E			51						0.5	6
	sS	ZNE		38	21		0.5	5	1	9	1	9
	(ScS)	NE			50				0.5	7	0.5	6
19	p'p'	ZE		58	42							
	P'2P'2	ZN		59	22							
19	eP	Z	13	41	32							
	epP	Z			48							
19	iP	ZNE	19	31	46	dnw	2.5	5	1	6	1	6
	PP	Z		32	27		1	3				
	PcP	Z		35	28							
	S	ZNE		36	08		1	7	1	16		
	e(SS)	ZE		37	19		1	6				
	eLq	NE			38.2				1	20	1	19
	Lr	ZNE			39.0		1	15	1	13	1	15
	ScP	Z		39	06							
19	M	NE		41				2	10	2.5	10	
	eP	Z	20	34	50							
19	e	Z		35	11							
	PcP	Z			31							
20	eP	Z	04	01	03	d?						
20	eP	Z	08	17	48							
21	iP	ZN	11	52	59	u						
	ePcP	Z		53	32				0.5	4		
	pP	Z		54	53							
21	e	ZN	12	05	20							
21	iP	ZN	17	45	11							
22	iP	ZN	10	00	18	d	0.5	2				
	PcP	Z		01	12		0.5	3				
	(pPcP)	Z			36							
	PP	Z		02	29		0.5	3				
	eL	Z			17		1	23				
22	eP	Z	15	50	24							
	epP	Z		52	16							

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
OCT 22	eP	Z	18	50	31						
23	P	ZNE	00	16	22	3	7	1	7	0.5	5
	PP	ZNE		18	05	3	5	1	5	1	5
	PcP	Z		22	22						
	S	NE		22	37			1.5	10	1.5	10
	(SS)	NE		25	32			3	25	5	21
	(ScS)	Z		26	25						
	Lq	N		27.2				1	29		
	Lr	ZNE		29.8		2.5	18	2	18	2	17
23	eP	Z	01	34	55						
	ScP	Z		39	05						
23	eP	Z	01	59	40						
23	eP	Z	02	43	18						
23	eP	ZNE	14	52	07	1.5	7	0.5	10	1	10
	PP	Z		55	23	1	10				
	e	N		15	02			0.5	9		
	S	ZNE		03	10	1	6	1	10	1.5	8
	e	N		03	10			1.5	8		
	SP	Z		03	18	1	5				
	eSS	ZNE		08	14	0.5	20				
	eL	ZN		19				1.5	30		
23	eP	ZE	15	05	02						
	e	Z		10	14						
23	eP	ZE	16	34	08						
	eS	ZE		35							
23	iP	Z	17	22	15 d						
	(sP)	Z		34							
23	eP	Z	19	30	02						
23	eP	Z	20	51	04						
24	eP	Z	01	32	05						
24	PKP	Z	07	44	07						
24	iP	ZE	07	46	36 u						
	e	Z		43							
24	eP	ZE	15	42	19						
24	eP	ZE	18	12	30						
	ePP	Z		14	06						
	PcP	Z		18	20						
	PcS	ZE		18	34						
	eS	ZE		24.2				0.5	19		
	eL	N		24.2							
24	eP	Z	22	38	07						
25	eP	Z	09	07	05						
	e	Z		23							
	pP	Z		28							
	sP	Z		40							
	PP	Z		10	19						
25	eP	Z	12	57	30						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
OCT 25	eP	ZN	14	30	18					0.5	7
	pP	Z			40						
	PcP	ZNE		31	06					0.5	2
	PP	Z		32	24						
	eL	NE		47.7						0.5	25
25	e?	Z	16	22	28						
25	eP	Z	22	48	05						
26	iP	ZNE	00	50	05 d	1	6	0.5	2	0.5	3
	e(PP)	Z		52	38	1	5				
	eS	N		59	45			1	7		
	SP	ZN	01	00	09	1	8	1.5	8		
	PS	E		29						1	10
	SS	N		04	24			1	8		
	eLq	NE		10.4				1	27		
	Lr	ZNE		14.3		1	21	1	32	1	25
	M	NE		21				1	20	1	19
26	eP	Z	08	26	05						
26	eP	Z	11	21	22						
26	eP	ZN	15	39	41 u						
	i	ZNE		47	de?	1	3	0.5	4		
	PP	ZN		43	03	0.5	3	0.5	4		
	ePPP	Z		44	55						
	e	Z		49	58						
	s	NE		50	05			1.5	8	1	6
	PS	N		51	17			1	7		
	eSS	N		55	43			0.5	8		
	eSSS	N		59	20			0.5	7		
	eLr	ZN	16	08.6		1	22	0.5	24		
26	eP	Z	15	51	22						
26	eP	Z	16	18	24						
26	eP	Z	19	41	07						
	i	Z		17							
27	eP	Z	02	47	16						
27	eP	Z	10	42	39						
28	eP	Z	01	46	06						
28	eP	Z	06	11	20 d						
28	eP	Z	06	30	05						
28	eP	Z	06	57	18						
28	eP	Z	09	32	33						
28	ePP	Z	11	07	50						
28	eP	ZNE	14	59	09 d						
28	eP	Z	18	34	05						
28	iP	ZNE	22	55	03 u	1	6				
	ePP	Z		57	32						
	ePPP	Z		58	55						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	
OCT	eS	Z	23	03	33							
	PS	N		04	05			1	10			
	eLq	E		11.7						0.5	22	
	eLr	NE		17				0.5	20	0.5	14	
28	eP	Z	23	41	47							
29	eP	Z	00	06	35							
29	eP	Z	02	33	05							
29	ePKP	Z	09	31	30							
30	ePKP	Z	02	35	34							
30	ePKP	Z	16	15	50							
	SKP	Z		19	09							
	e	Z		30								
30	iP	ZNE	17	43	37	0.5	2	0.5	2			
	i	Z		44	07							
	PcP	Z			48							
	e	Z		45	13							
	e(PP)	Z			23			0.5	6			
31	eS	N	50	25								
31	ePKP	Z	02	03	01							
31	eP	Z	03	31	33							
31	eP	Z	03	54	15							
NOV	1	e	ZE	11	47	12						
		e	Z		48	22						
	4	eP	ZE	03	16	09						
	4	ePKP	Z	03	57	33						
		e	Z			49						
	4	ePKP	Z	18	36	06						
	4	eP	Z	23	46	20						
	5	eP	Z	10	18	49						
	5	e(PKP)	Z	10	55	24						
	5	eP	Z	13	13	52						
	5	eP	Z	17	22	05						
	6	eP	Z	00	02	23						
		pP	Z			32						
	6	eP	Z	05	25	36						
	6	eP	ZNE	05	38	55			0.5	6		
		pP	Z		39	16						
PcP		Z			24							
eS		NE		47	26			0.5	7	1	7	
eLq		E		56.1						0.5	35	
6	Lr	NE	06	00				0.5	27	0.5	22	
	eP	Z	07	21	59							

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	
NOV	6	eP	Z	13	21	15						
	7	eP	Z	00	48	59						
	7	eP	Z	01	26	03						
	7	eP	ZE	12	24	07						
	7	eP	ZE	21	17	57						
	9	eP	ZNE	01	18	52						
		eL	ZNE		35		0.5	20	0.5	22	0.5	19
	9	eP	ZNE	04	31	14						
		e(pP)	Z			32						
	9	eP	Z	18	48	50						
	9	eP	ZE	23	16	53						
	10	iP	ZNE	02	19	51						
	10	eP	Z	07	41	48						
	10	iP	ZNE	18	10	10						
		ipP	ZNE		12	03						
	11	eP	Z	08	59	24						
	12	eP	Z	10	21	46						
12	eP	Z	14	22	04							
12	iP	ZNE	18	21	06							
	PcP	Z			59							
13	eP	Z	16	41	51							
13	eP	Z	19	54	09							
14	eP	Z	12	47	03							
	PcP	Z		48	44							
14	eP	Z	15	29	23							
14	eP	Z	17	26	05							
15	PKP	ZNE	07	36	03			0.5	4			
	e	Z		37	30							
	ePP	ZE			45							
	SKP	Z		39	37			0.5	7			
	ePPP	Z		40	13							
	SKS	ZN		43	04			0.5	7	0.5	9	
	(SKKS)	N		44	28					0.5	20	
	SP	Z		47	25			0.5	8			
	(SKKS)	ZNE		53	25			0.5	8			
	eSS	N		54	06					1	26	
eLq	N		08	07.5								
	Lr	ZN		13		0.5	22	1	24			
15	eP	Z	13	52	04							
15	eP	Z	19	36	42							
15	eP	Z	22	10	03							

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
NOV 16	eP	ZNE	16	13	45						
	ePP	Z		16	06						
	eS	ZN		21	43						
	ScS	ZN		23	27						
	eLr	N		31	.7			0.5	26		
17	eP	Z	08	23	08						
17	eP	ZE	09	24	17						
	e	Z		32							
	e	Z		26	16						
17	e	Z	16	10	49						
17	eP	Z	19	13	39 u?						
17	eP	Z	22	22	41						
18	eP	Z	06	14	37						
18	eP	Z	07	36	04						
18	P	ZNE	11	26	02						
	e	Z		27	07						
	PcP	Z		15							
	e(PP)	Z		48							
	eS	NE		33	25			0.5	5	0.5	6
	e(SS)	N		36	36			0.5	6		
20	eP	ZNE	11	53	58						
	PcP	N		54	52						
	eS	N	12	02	35						
	eL	N		12				1	22		
20	eP	Z	12	31	28						
20	eP	Z	13	13	51						
20	ePKP	Z	18	17	25						
20	eP	Z	19	01	21						
20	e	Z	23	28	02						
21	eP	Z	11	18	51						
22	eP	Z	02	55	05						
22	eP	ZNE	11	16	19						
22	eP	ZNE	20	48	22						
22	eP	ZNE	22	42	15						
23	eP	Z	06	03	25						
25	eP	Z	06	27	16						
25	eP	ZNE	14	22	38						
	PcP	Z		52							
25	eP	Z	23	04	30						
	pP	Z		38							
26	eP	Z	03	42	16						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
NOV 26	eP	Z	05	36	08						
27	eP	ZNE	02	02	28						
27	eP	ZNE	17	22	48	0.7	5	0.5	3	0.5	2
	ePP	ZNE		25	48	0.5	6	1	6	1	5
	ePPP	E		27	41					0.5	7
	S	NE		32	53			1	7	0.5	9
	(ScS)	NE		33	14			0.5	7	1	8
	PS	E		45	38					1.5	9
	eL	E		45						0.5	2
	M	ZNE		57		0.5	18	1	18	2	23
27	P	ZNE	23	35	02	0.5	3	1	6	0.5	6
	S	NE		38	21			1	10	0.5	9
	PcP	Z		39	35						
	eLq	N		39.8				1	16		
	eL	E		40.2						2	12
	eLr	ZN		40.8			0.5	13	2	12	
28	eP	ZNE	18	39	35						
	eS	N		43	37			1	11		
	eL	N		46.1				0.5	14		
	eLr	NE		47.9				1	11	1	12
29	eP	Z	09	39	01						
29	eP	ZNE	22	05	17						
	i	Z		23	d?						
29	eP	Z	23	23	44						
30	eP	Z	14	25	03						
30	eP	Z	16	58	41						
30	eP	ZNE	18	37	30						
30	eP	Z	21	55	40						
DEC 1	eP	Z	07	06	14						
1	ePKP	Z	07	53	36						
1	eP	Z	09	27	37						
1	ePP	ZNE	21	31	26	0.5	5				
	pPP	Z		32	13						
2	ePKP	Z	12	59	36						
	e	Z		13	02	22					
2	eP	Z	14	16	05						
2	eP	Z	18	55	26						
3	ePKP	Z	08	58	45						
3	e	Z	09	35	08						
	e	Z		36							
3	eP	Z	12	20	12						
3	eP	ZNE	16	25	11 u?						
	e	Z		26	20						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
DEC 3	ePKP	Z	20 13 18						
4	eP	Z	05 44 50						
4	ePKP	Z	12 57 04						
5	eP	Z	06 53 18						
5	eP	ZNE	13 07 07	0.5	5	0.5	5	0.5	5
	ePP	ZE	08 06	0.5	7			1	6
	PcP	Z	10 15						
	eS	NE	11 58			1.5	11	1.5	10
	SS	ZNE	13 40	1	7	2	10	1.5	7
	eLq	NE	14.5			5	27	7	21
	eL	Z	15.2	0.5	20				
	eLr	NE	16.1			15	16	17	14
	M	Z	17	2	17				
5	iP	ZNE	13 12 33	0.5	4	1.5	9	1.5	6
	i	ZN	13 45						
	i(PcP)	N	13 13			1	5		
	i(pp)	ZE	21	1	6				
	eS	E	20 35						
6	eP	ZNE	13 45 18						
	ePP	Z	47 35						
	eS	NE	52 57						
6	eP	Z	15 27 41						
6	eP	ZNE	15 52 05						
6	PKP	ZNE	16 58 36						
	pPKP	Z	49						
	ePP	ZN	17 00 39	0.5	6	0.5	7		
	(pSKP)	Z	02 17						
7	eP	ZNE	00 27 27						
7	eP	Z	14 33 33						
7	eP	Z	16 38 43						
8	eP	Z	03 55 57						
8	eP	Z	06 19 23						
8	eP	Z	08 24 25						
8	eP	ZNE	09 48 16						
8	eP	Z	14 37 19						
8	eP	Z	14 52 19						
9	ePKP	Z	02 34 32						
9	eP	ZNE	04 11 09						
9	eP	Z	04 33 46						
	sP	Z	34 09						
9	eP	Z	10 29 46						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
DEC 9	iP	ZNE	11 27 23	1	6	1	7	1.5	6
	ePP	ZNE	29 34			1	5		
	eS	NE	34 55			2	9	1.5	8
	eLq	NE	40.8			2	23	1	24
	Lr	NE	43.5			2	15		
9	P	ZNE	19 58 30						
	PcP	Z	59 20						
	epP	Z	20 00 30						
9	eP	Z	22 50 18						
13	ePP	Z	08 59 28						
13	eP	Z	11 31 53						
13	eP	Z	16 59 51						
14	eP	ZNE	07 22 10	0.5	3				
	eS	E	31 56					1	8
	PS	E	32 37					0.5	8
	eL	NE	46			0.5	18	0.5	18
14	eP	Z	12 26 20						
14	eP	ZNE	18 58 12						
16	eP	ZNE	10 08 50						
16	eP	ZNE	20 43 55						
17	eP	Z	21 44 14						
17	eP	ZNE	22 17 52	0.5	5	0.5	7	0.5	4
	ePP	N	18 35						
	PcP	ZN	21 35						
	eS	NE	22 08			1	15	1	5
	eLq	N	23 19			1	20		
	PcS	ZN	25 10						
	eLr	ZNE	25.6	0.5	15	1.5	16	2.5	15
17	P	ZNE	22 25 53	0.5	5				
	ePP	N	26 35						
18	eP	Z	12 20 44						
18	eP	Z	22 34 49						
19	eP	ZNE	15 53 54						
20	eP	Z	01 56 57						
20	eP	ZE	13 39 06						
	ePP	ZE	43 06	0.5	6				
	SKS	E	49 26					1.5	7
	S	NE	50 20			1	21	1	9
	e	ZNE	51 50						
	SP	Z	52 04	0.5	5				
	SS	N	57 25			1	19		
	SSS	NE	14 01 28			1	27	1	20
20	eP	Z	23 57 46						
21	eP	ZNE	12 15 59						



Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
DEC 22	eP	Z	01	15	36						
22	eP	Z	22	21	29						
23	e(P)	Z	04	00	35						
24	eP	Z	23	53	12						
	eS	N	00	01	06						
	PS	NE			24			0.5	13	0.5	7
	eLq	NE			07.8			0.5	21	0.5	23
	eLr	NE			10			0.5	21	0.5	18
25	eP	ZNE	08	12	49						
25	eP	Z	08	25	17						
25	eP	ZNE	09	21	03						
25	eP	Z	09	33	15						
25	iP	ZN	14	05	29						u?n?
25	eP	Z	22	36	20						
26	iP	ZNE	04	35	59						u
	pp	Z			57						
	e	ZNE			43						
	eS	NE			45			0.5	6	1	6
	e	N			46						
	sS	ZN			48						
26	iP	ZNE	06	27	00						d?
	ePcP	N			28						
	ePP	Z			29						
	eS	NE			34			1	12	1.5	13
	eSS	NE			38			0.5	10	1	10
	eLq	E			40.2					1	23
	eLr	NE			43			1	26	2.5	23
26	eP	ZNE	06	45	52						
27	iP	Z	07	27	17						u?
27	e	Z	07	46	57						
27	eP	Z	12	01	26						
27	e(P)	Z	17	00	12						
27	eP	Z	23	29	42						
27	eP	ZNE	23	55	10		0.5	5	0.5	3	
	PcP	Z			57						
	eS	NE			00			1	15	2.5	16
	PcS	ZNE			01						
	eLr	NE			03.6			1	13	3	26
	ScS	Z			05						
	M	N			07.5			3	14		
29	eP	ZE	00	06	32						u?w
	i	ZN			33						ds
	eS	NE			15						
30	PKP	ZN	00	58	33						
	ePP	ZN	01	00	41						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
DEC	SKP	ZE			01		5				
	eL	E			33					1	5
										1	21
30	eP	ZN	09	09	08						
	e	Z			22						u
31	eP	ZN	13	58	07						

INSTRUMENTALLY DETERMINED EPICENTRES

The following list includes the epicentres of all instrumentally recorded earthquakes of magnitude 4 and above, together with those shocks of lesser magnitude reported to have been felt. Reports that cannot be verified, either instrumentally or by an independent observation, are tabulated separately in the index of felt earthquakes. An explanation of the notation will be found at the beginning of the section 'Station Readings'. These epicentres have been plotted on the folding maps at the back of the bulletin.

No.	Date	h	m	s	Epicentre	Depth	Mag.	Class
61/ 1	JAN 1	13	14	47	33.2 S 177.8 W	S	5.4	D
2	9	03	34	41	41.1 S 174.9 E	58 km	3.4	B
3	10	08	16	44	41.2 S 176.0 E	N	3.8	C
4	17	21	15	18	34.7 S 179.5 E	N	5.0	D
5	18	04	55	50	35.9 S 179.1 E	S	5.2	C
6	18	13	58	39	34.2 S 178.1 E	>N	4.8	D
7	22	12	47	24	35 S 177.4 E	N	5.2	D
8	25	04	28	37	38.6 S 176.1 E	135 km	4.6	B
9	25	10	46	40	44.4 S 167.6 E	S	4.3	C
10	31	01	29	21	37.9 S 177.7 E	S	5.1	D
11	FEB 1	01	49	2	Near Kawerau (34)	-	3.4	-
12	3	12	33	28	37.6 S 175.8 E	320 km	6.0	C
13	4	19	40	5	40.7 S 176.6 E	N	3.7	D
14	5	10	42	8	Near Rotorua (33)	-	2.2	-
15	8	00	41	20	38.5 S 175.8 E	160 km	4.2	C
16	8	12	12	3	37.2 S 177.3 E	250 km	4.5	D
17	9	22	30	09	37.0 S 177.2 E	250 km	5.3	C
18	11	19	23	25	38.2 S 176.3 E	160 km	4.5	D
19	13	09	32	43	38 S 177 E	N	2.7	D
20	15	12	04	22	40.7 S 175.8 E	S	3.4	D
21	16	05	45	7	41.3 S 172.5 E	S	3.5	D
22	18	01	11	59	40.6 S 176.1 E	S	3.1	D
23	19	09	45	6	44.2 S 166 E	S	4.8	D
24	19	14	26	50	40.8 S 175.4 E	S	3.3	D
25	21	09	59	3	43 S 168 E	S	3.9	D
26	22	06	09	23	41.6 S 173.7 E	S	3.2	D
27	23	06	58	52	41.2 S 172.8 E	S	3.3	D
28	23	08	42	15	40.6 S 176.8 E	S	4.1	D
29	24	02	19	23	38.6 S 176.9 E	S	4.4	C
30	25	00	40	49	38.4 S 176.0 E	180 km	4.5	C
31	26	05	31	20	38.6 S 176.0 E	140 km	3.7	D
32	27	10	35	35	39.2 S 175.4 E	100 km	3.5	C
33	27	23	59	23	38.3 S 175.9 E	200 km	4.5	D
34	MAR 1	09	29	14	51 S 169 E	N	5.3	D
35	2	21	13	30	41.8 S 174.4 E	N	4.2	C
36	3	05	02	35	39.3 S 175.0 E	220 km	4.4	B
37	4	23	13	56	39.6 S 176.6 E	S	4.1	B
38	11	09	56	41	41.3 S 174.6 E	S	3.9	B
39	11	16	40	27	45.2 S 166.6 E	S	4.3	D

No.	Date	h	m	s	Epicentre	Depth	Mag.	Class
61/40	MAR 13	22	04	08	35 S 179.4 W	N	5.2	D
41	15	23	12	34	39.1 S 178.5 E	S	5.0	B
42	18	18	30	34	41.1 S 174.3 E	S	5.3	B
43	20	06	07	42	40.3 S 174.3 E	S	5.1	B
44	22	01	33	05	44.2 S 167.0 E	S	4.1	D
45	22	07	36	39	41.5 S 172.5 E	135 km	4.0	B
46	25	20	31	26	41.2 S 172.3 E	S	3.9	C
47	26	09	31	42	37.7 S 178.0 E	S	4.4	B
48	APR 2	19	32	34	39.65 S 174.95 E	S	3.3	B
49	5	04	02	38	40.8 S 174.3 E	S	3.0	D
50	6	07	12	15	40.4 S 174.3 E	N	5.3	D
51	6	19	33	22	37.0 S 177.8 E	250 km	4.5	D
52	6	21	58	25	41.3 S 174.9 E	S	3.3	D
53	8	23	51	56	38.3 S 176.2 E	180 km	4.5	D
54	9	01	22	57	33.2 S 179.1 W	N	4.8	D
55	9	01	25	24	33.2 S 179.1 W	N	5.0	D
56	9	16	36	21	40.6 S 176.7 E	S	3.8	D
57	10	17	25	08	40.10 S 174.10 E	90 km	3.8	B
58	11	00	11	44	38.3 S 176.4 E	160 km	4.5	D
59	11	08	08	50	39.0 S 175.0 E	220 km	4.5	D
60	11	19	24	32	39.3 S 174.0 E	230 km	4.3	C
61	13	09	46	40	38.2 S 175.8 E	180 km	4.1	D
62	13	22	07	0	37.3 S 177.0 E	170 km	4.4	D
63	14	07	15	7	36 S 178 E	N	4.3	D
64	15	04	10	03	38.7 S 175.4 E	210 km	5.2	D
65	15	09	27	07	42.7 S 177.9 E	N	5.4	D
66	15	09	27	16	42.7 S 177.9 E	N	4.8	D
67	15	09	36	3	33.2 S 178.2 W	N	5.5	D
68	16	02	51	32	37.5 S 177.3 E	100 km	4.1	C
69	18	01	53	7	34.7 S 178.9 E	N	4.1	D
70	18	02	00	0	34.7 S 178.9 E	N	4.4	D
71	18	02	13	0	34.7 S 178.9 E	N	4.4	D
72	18	02	32	3	34.7 S 178.9 E	N	4.1	D
73	18	02	41	7	34.7 S 178.9 E	N	4.4	D
74	18	02	43	0	34.7 S 178.9 E	N	4.1	D
75	18	03	19	8	34.7 S 178.9 E	N	4.0	D
76	18	03	27	5	34.7 S 178.9 E	N	3.8	D
77	18	03	50	46	34.7 S 178.9 E	N	4.7	D
78	18	04	10	46	33.3 S 179.4 W	N	5.6	D
79	18	04	24	4	34.7 S 178.9 E	N	4.2	D
80	18	05	00	2	34.7 S 178.9 E	N	3.9	D
81	18	05	46	8	34.7 S 178.9 E	N	3.9	D
82	18	06	16	5	34.7 S 178.9 E	N	4.1	D
83	18	06	19	4	34.7 S 178.9 E	N	4.2	D
84	18	06	31	44	34.3 S 179.3 E	N	4.7	D
85	18	06	42	5	34.7 S 178.9 E	N	4.2	D
86	18	06	49	3	34.7 S 178.9 E	N	4.0	D
87	18	07	27	4	34.7 S 178.9 E	N	3.8	D
88	18	07	48	7	34.7 S 178.9 E	N	3.9	D
89	18	07	52	7	34.2 S 179 E	N	4.4	D
90	18	08	20	3	34.7 S 178.9 E	N	4.1	D
91	18	08	54	8	34.7 S 178.9 E	N	4.0	D
92	18	09	22	9	34.2 S 179 E	N	4.2	D
93	18	09	40	7	34.7 S 178.9 E	N	4.1	D
94	18	09	46	1	34.7 S 178.9 E	N	3.9	D
95	18	10	06	53	41.1 S 174.8 E	N	2.8	D
96	18	10	24	3	34.7 S 178.9 E	N	4.0	D
97	18	10	26	7	34.7 S 178.9 E	N	4.2	D
98	18	10	45	8	34.7 S 178.9 E	N	4.3	D
99	18	10	57	8	34.7 S 178.9 E	N	4.0	D
100	18	11	18	4	34.7 S 178.9 E	N	4.2	D
101	18	11	30	3	34.7 S 178.9 E	N	4.3	D
102	18	11	31	8	34.7 S 178.9 E	N	4.1	D
103	18	12	47	5	34.7 S 178.9 E	N	4.3	D
104	18	13	13	3	34.7 S 178.9 E	N	4.3	D

No.	Date	h m s	Epicentre	Depth	Mag.	Class
61/105	APR 18	13 47.2	34.7 S 178.9 E	N	4.3	D
106	18	13 58.3	34.7 S 178.9 E	N	4.2	D
107	18	14 19.7	34.7 S 178.9 E	N	4.3	D
108	18	14 42.6	34.7 S 178.9 E	N	4.4	D
109	18	16 23.3	34.7 S 178.9 E	N	4.2	D
110	18	18 13.9	34.7 S 178.9 E	N	4.2	D
111	18	18 17.3	34.7 S 178.9 E	N	4.3	D
112	18	18 54.2	34.7 S 178.9 E	N	4.3	D
113	18	18 59.8	34.7 S 178.9 E	N	4.2	D
114	18	19 52.6	34.7 S 178.9 E	N	4.2	D
115	18	20 01.9	34.7 S 178.9 E	N	4.0	D
116	18	20 13.1	34.7 S 178.9 E	N	4.2	D
117	18	21 07.3	34.7 S 178.9 E	N	4.2	D
118	18	21 37.8	34.7 S 178.9 E	N	4.1	D
119	18	22 05.4	34.7 S 178.9 E	N	4.4	D
120	18	22 06.4	34.7 S 178.9 E	N	4.4	D
121	18	22 18 33	40.35S 173.9 E	S	3.6	D
122	18	22 22.1	34.3 S 179.2 E	N	4.2	D
123	18	22 26 30	34.3 S 179.2 E	N	5.0	D
124	18	22 32.7	34.3 S 179.2 E	N	4.1	D
125	18	22 53.3	34.3 S 179.2 E	N	4.0	D
126	18	23 14.5	34.3 S 179.2 E	N	4.0	D
127	18	23 29.5	34.3 S 179.2 E	N	4.1	D
128	18	23 35.7	34.3 S 179.2 E	N	4.2	D
129	18	23 45.7	34.3 S 179.2 E	N	4.0	D
130	18	23 46.7	34.3 S 179.2 E	N	4.1	D
131	18	23 58.5	34.3 S 179.2 E	N	4.5	D
132	19	00 06.5	34.3 S 179.2 E	N	3.9	D
133	19	00 08.8	34.3 S 179.2 E	N	3.9	D
134	19	00 09.9	34.3 S 179.2 E	N	3.9	D
135	19	00 13.1	34.3 S 179.2 E	N	4.1	D
136	19	00 19.4	34.3 S 179.2 E	N	4.4	D
137	19	00 23.6	34.3 S 179.2 E	N	4.1	D
138	19	00 28.5	34.3 S 179.2 E	N	4.0	D
139	19	00 29.6	34.3 S 179.2 E	N	3.9	D
140	19	00 36.0	34.3 S 179.2 E	N	4.4	D
141	19	00 41.1	34.3 S 179.2 E	N	5.1	D
142	19	00 47.4	34.3 S 179.2 E	N	4.3	D
143	19	00 52.2	34.3 S 179.2 E	N	4.3	D
144	19	00 57.9	34.3 S 179.2 E	N	4.0	D
145	19	00 59.2	34.3 S 179.2 E	N	3.9	D
146	19	01 02.4	34.3 S 179.2 E	N	4.4	D
147	19	01 07.9	34.3 S 179.2 E	N	4.2	D
148	19	01 17.9	34.3 S 179.2 E	N	4.0	D
149	19	01 30.4	34.3 S 179.2 E	N	4.5	D
150	19	01 37.2	34.3 S 179.2 E	N	4.1	D
151	19	01 39.9	34.3 S 179.2 E	N	4.3	D
152	19	01 59.1	34.3 S 179.2 E	N	4.4	D
153	19	02 06.2	34.3 S 179.2 E	N	4.5	D
154	19	02 27.2	34.3 S 179.2 E	N	4.3	D
155	19	02 44.8	34.3 S 179.2 E	N	4.5	D
156	19	02 58.5	34.3 S 179.2 E	N	4.6	D
157	19	03 10.0	34.3 S 179.2 E	N	4.3	D
158	19	03 25.1	34.3 S 179.2 E	N	4.4	D
159	19	03 38.0	34.3 S 179.2 E	N	4.4	D
160	19	04 07.6	34.3 S 179.2 E	N	4.6	D
161	19	04 12.4	34.3 S 179.2 E	N	4.3	D
162	19	04 30.5	34.3 S 179.2 E	N	4.4	D
163	19	04 38.5	34.3 S 179.2 E	N	4.4	D
164	19	04 45 32	34.3 S 179.2 E	N	4.5	D
165	19	05 01.0	34.3 S 179.2 E	N	4.2	D
166	19	05 05.1	34.3 S 179.2 E	N	4.6	D
167	19	05 54.4	34.3 S 179.2 E	N	4.5	D
168	19	06 30.1	34.3 S 179.2 E	N	4.5	D
169	19	06 41.0	34.3 S 179.2 E	N	4.2	D

No.	Date	h m s	Epicentre	Depth	Mag.	Class
61/170	APR 19	06 55.1	34.3 S 179.2 E	N	4.5	D
171	19	06 58.0	34.3 S 179.2 E	N	4.3	D
172	19	07 07.7	34.3 S 179.2 E	N	4.4	D
173	19	07 19.6	34.3 S 179.2 E	N	4.2	D
174	19	07 34.5	34.3 S 179.2 E	N	4.4	D
175	19	07 49.5	34.3 S 179.2 E	N	4.0	D
176	19	08 08.1	34.3 S 179.2 E	N	4.3	D
177	19	08 45.6	34.3 S 179.2 E	N	4.5	D
178	19	09 06.4	34.3 S 179.2 E	N	4.4	D
179	19	09 30.1	34.3 S 179.2 E	N	4.4	D
180	19	10 23.4	34.3 S 179.2 E	N	4.3	D
181	19	10 29.6	34.3 S 179.2 E	N	4.3	D
182	19	10 33.1	34.3 S 179.2 E	N	4.0	D
183	19	10 55.3	34.3 S 179.2 E	N	4.0	D
184	19	11 08.0	34.3 S 179.2 E	N	4.2	D
185	19	11 15.1	34.3 S 179.2 E	N	4.2	D
186	19	13 03.4	34.3 S 179.2 E	N	4.0	D
187	19	13 56.1	34.3 S 179.2 E	N	4.4	D
188	19	16 30.2	34.3 S 179.2 E	N	4.2	D
189	19	17 05.8	34.3 S 179.2 E	N	4.5	D
190	19	19 49.3	37.6 S 177.4 E	120 km	4.1	D
191	19	20 54 58	43.0 S 170.7 E	N	3.9	D
192	20	03 47 42	36.2 S 179.4 E	S	5.2	C
193	20	09 05 24	34 S 178.4 E	N	4.2	D
194	20	10 57 03	40.0 S 174.2 E	N	4.4	C
195	20	19 19 25	33 S 178 W	N	5.8	D
196	20	21 25.0	34 S 179 W	N	4.9	D
197	21	13 48 43	33 S 178 W	N	5.6	D
198	22	10 36.0	32 S 177 W	N	5.4	D
199	23	21 31 15	37.3 S 176.9 E	170 km	3.9	D
200	24	02 07.6	35.4 S 179 W	N	5.0	D
201	24	12 47 37	33 S 178 W	N	5.2	D
202	24	16 11.2	33 S 178 W	N	5.1	D
203	25	11 10.5	33 S 178 W	N	4.6	D
204	25	11 16 42	33 S 178 W	N	5.9	D
205	25	11 35.9	33 S 178 W	N	4.7	D
206	25	11 55 14	33 S 178 W	N	5.2	D
207	25	12 31.9	33 S 178 W	N	4.7	D
208	25	13 43.1	33 S 178 W	N	4.8	D
209	25	19 36 29	32 S 178.1 W	N	5.4	D
210	25	20 51.6	31 S 176.2 W	N	5.2	D
211	26	00 12.8	33 S 178 W	N	4.9	D
212	26	01 45.4	31 S 176.2 W	N	5.0	D
213	26	05 56.1	32.1 S 178 W	N	5.3	D
214	26	08 28.6	32.1 S 178 W	N	5	D
215	26	09 55.9	36.6 S 178.0 E	S	4.4	D
216	26	10 20.2	36.6 S 178.0 E	N	3.2	D
217	26	13 14 55	33 S 178 W	N	5.3	D
218	26	15 21 29	33 S 178 W	N	5.0	D
219	26	22 26 35	39.5 S 175.4 E	S	3.0	C
220	30	00 52 21	37.9 S 176.9 E	N	3.2	C
221	30	09 19 15	37.4 S 177.0 E	220 km	4.9	C
222	30	12 17 40	43.35S 171.50E	S	3.8	B
223	30	15 04 13	41.55S 171.80E	S	3.8	B
224	MAY 1	08 04 18	44.6 S 166.9 E	S	4.6	D
225	2	06 57 20	38.6 S 175.5 E	160 km	4.6	D
226	5	03 44 20	41.2 S 172.3 E	S	4.8	B
227	7	11 53 13	37.0 S 177.1 E	285 km	4.8	D
228	10	07 43 09	39.5 S 175.0 E	120 km	4.4	B
229	12	09 37 07	41.2 S 173.9 E	S	4.0	D
230	12	14 46 28	38.5 S 179.2 E	S	4.4	C
231	12	15 26 17	39.2 S 176.0 E	S	4.3	C
232	13	22 46 54	37.2 S 177.3 E	230 km	4.7	C
233	14	00 12 36	40.35S 176.05E	S	5.4	B
234	15	15 49 59	40.3 S 176.1 E	S	3.7	C

No.	Date	h m s	Epicentre	Depth	Mag.	Class
61/235	MAY 21	05 15 45	41.6 S 174.9 E	S	3.3	O
236	24	21 57 56	37.5 S 176.5 E	200 km	4.6	B
237	25	16 05 55	38.3 S 176.0 E	175 km	4.5	B
238	JUN 1	03 10 55	38.6 S 175.8 E	160 km	4.5	D
239	3	00 37 14	Near Gisborne (45)	-	3½	-
240	3	05 58 47	33 S 178 W	N	5.2	D
241	7	12 28 38	41.0 S 172.6 E	S	4.8	C
242	7	15 29 28	41.1 S 174.6 E	S	4.2	C
243	11	00 46 10	40.7 S 173.3 E	N	3.4	D
244	13	13 16 24	33½ S 180	N	6.1	D
245	14	17 23 48	40.25S 174.6 E	S	4.5	C
246	15	04 21 39	37.3 S 177.0 E	260 km	4.7	D
247	15	10 57 40	35.7 S 178.6 E	160 km	4.9	D
248	16	06 25 12	37.6 S 178.6 E	N	5.0	D
249	16	11 05 00	41.7 S 172.1 E	N	2.8	D
250	18	13 55 13	31½ S 180	450 km	7.4	D
251	21	21 22 16	40.6 S 177.05E	S	4.1	C
252	23	04 46 32	41.35S 172.5 E	S	4.7	C
253	25	12 53 58	38.3 S 176 E	150 km	5.1	D
254	26	02 41 54	36 S 178½ W	N	5.6	D
255	27	13 00 53	41.1 S 174.7 E	S	3.8	D
256	JUL 2	08 46 56	35.3 S 178.4 E	220 km	5.0	C
257	4	08 23 33	44.4 S 168.3 E	S	5.5	C
258	4	08 27 14	44.4 S 168.3 E	S	4.5	C
259	4	20 50 55	39.1 S 174.5 E	185 km	4.1	C
260	7	17 38 35	40.3 S 173.8 E	185 km	4.9	C
261	9	14 04 36	40.6 S 174.0 E	S	4.5	B
262	10	16 30 17	38.1 S 177.5 E	S	2.9	D
263	11	10 52 07	38.9 S 178.1 E	S	4.1	D
264	16	20 00 06	35.1 S 178.2 W	N	5.3	D
265	18	14 32 46	39.3 S 175.0 E	S	3.3	C
266	21	21 12 45	40.1 S 177.1 E	S	3.9	C
267	21	23 05 01	43.8 S 169.9 E	S	3.8	D
268	22	03 25 29	35.0 S 179.6 E	290 km	5.2	D
269	22	15 27 05	44.4 S 168.2 E	S	4.0	C
270	22	17 08 26	39.4 S 173.2 E	N	4.2	C
271	23	16 27 23	41.4 S 171.9 E	S	3.6	C
272	24	05 13 04	40.8 S 174.9 E	N	3.5	C
273	24	16 11 43	40.7 S 175.0 E	S	5.2	D
274	24	20 15 51	40.6 S 174.5 E	S	3.6	C
275	25	19 59 29	41.0 S 176.1 E	S	4.9	B
276	26	09 19 02	37.6 S 176.9 E	230 km	6.3	B
277	27	13 50 25	36.3 S 178.2 E	S	5.0	D
278	27	14 50 49	36.3 S 178.2 E	S	4.9	D
279	27	15 34 08	36.3 S 178.2 E	S	5.2	D
280	27	20 26 13	36.3 S 178.2 E	S	5.0	D
281	30	12 51 25	41.2 S 173.9 E	S	4.0	B
282	AUG 1	00 54 43	33.0 S 179½ W	N	5.8	D
283	2	13 23 37	32 S 177½ W	N	5.6	D
284	2	18 45 35	37.7 S 177.7 E	S	4.8	D
285	3	09 26 51	33½ S 178½ W	N	5.5	D
286	7	00 02 57	39.2 S 177.0 E	S	4.3	C
287	9	04 09 55	40.0 S 177.0 E	N	3.8	C
288	10	19 17 15	40.8 S 175.8 E	S	4.8	C
289	11	05 27.0	33½ S 179½ W	N	4.9	D
290	12	17 10 44	41.1 S 175.65E	S	4.8	B
291	12	21 32 42	41.3 S 175.5 E	S	3.9	D
292	13	14 55±	Near Waipawa and Waipukurau (60)	-	-	-
293	15	08 47 14	41.4 S 174.4 E	S	3.5	C
294	17	13 23 05	38.85S 175.7 E	120 km	4.2	D
295	18	11 26 20	34 S 180	N	4.8	D
296	20	03 35 20	42.2 S 174.4 E	N	3.3	D
297	20	16 48 46	40.4 S 177.2 E	N	3.1	D
298	20	18 09 09	38 S 177 W	350 km	4.1	D
299	21	01 46 55	39.4 S 179.4 E	N	5.1	D

No.	Date	h m s	Epicentre	Depth	Mag.	Class
61/300	AUG 22	03 18 08	40.9 S 175.7 E	S	3.9	B
301	22	04 12 54	38.9 S 174.9 E	220 km	4.7	D
302	22	03 52 29	36.8 S 177.0 E	250 km	4.7	C
303	27	11 47 18	38.6 S 175.2 E	220 km	4.6	D
304	27	16 23 36	39.3 S 174.9 E	150 km	4.2	D
305	SEP 3	20 45 17	37.7 S 176.2 E	310 km	4.8	B
306	4	04 07 06	38.5 S 175.8 E	170 km	4.5	C
307	5	13 27 57	44.8 S 169.2 E	S	4.0	D
308	9	07 43 02	42.5 S 172.9 E	S	3.4	B
309	11	01 36 26	37.1 S 177.1 E	290 km	5.0	C
310	11	15 34 54	38.3 S 177.9 E	S	4.3	C
311	15	20 49 01	38.8 S 176.0 E	S	3.5	C
312	15	20 56 33	38.8 S 176.0 E	S	4.1	C
313	15	20 58 26	38.8 S 176.0 E	S	3.7	C
314	15	21 27 29	37.3 S 177.1 E	250 km	5.2	B
315	16	00 55 30	38.9 S 176.1 E	110 km	4.6	B
316	17	08 01 48	39.25S 174.8 E	170 km	4.2	B
317	18	00 10 30	43.9 S 168.8 E	S	5.4	C
318	18	09 23 45	45.4 S 167.0 E	S	5.0	C
319	19	07 54 14	39.3 S 174.9 E	220 km	4.9	C
320	22	11 24 03	41.8 S 174.3 E	S	3.5	C
321	25	14 10 58	37.1 S 176.8 E	285 km	5.7	B
322	25	14 36 45	37.4 S 177½ E	S	4.1	D
323	26	08 00 42	37.7 S 177.3 E	160 km	4.8	B
324	26	15 24 50	40.3 S 176.1 E	S	3.7	C
325	28	02 24 30	38.2 S 178.7 E	140 km	5.0	C
326	30	17 27 27	40.5 S 176.3 E	S	3.4	D
327	OCT 1	23 21.9	33½ S 179½ E	N	3.8	D
328	2	03 21.0	33½ S 179½ E	N	3.9	D
329	2	03 26.8	33½ S 179½ E	N	4.1	D
330	2	05 53.6	33½ S 179½ E	N	5.2	D
331	2	05 59.3	33½ S 179½ E	N	4.3	D
332	2	06 01.5	33½ S 179½ E	N	4.1	D
333	2	06 07 40	33½ S 179½ E	N	4½	D
334	2	06 36.1	33½ S 179½ E	N	4.1	D
335	2	07 02.7	34 S 179 E	N	5.3	D
336	2	07 28.9	33½ S 179½ E	N	3.6	D
337	2	07 34.4	33½ S 179½ E	N	3.7	D
338	2	07 54.9	33½ S 179½ E	N	3.5	D
339	2	07 41.0	33½ S 179½ E	N	3.9	D
340	2	08 03.0	33½ S 179½ E	N	4.4	D
341	2	08 53.2	33½ S 179½ E	N	3.7	D
342	2	12 02.7	33½ S 179½ E	N	4.0	D
343	2	12 49.9	33½ S 179½ E	N	4.1	D
344	2	15 30.1	33½ S 179½ E	N	4.0	D
345	3	13 52.5	37.3 S 179.3 E	S	3½	D
346	4	16 06 00	38.5 S 176.0 E	172 km	4.2	C
347	8	02 56 39	38.5 S 177.5 E	121 km	4.6	C
348	8	12 54 57	40.25S 174.9 E	N	4.1	C
349	9	10 08 49	35.5 S 179.0 E	285 km	4.7	C
350	12	07 36 30	32.0 S 179½ E	N	5.6	D
351	15	03 54 05	37.6 S 176.0 E	96 km	4.2	D
352	20	07 44 24	39.5 S 174.0 E	159 km	5.0	C
353	20	08 26 11	39.5 S 174.0 E	172 km	4.4	C
354	21	18 21 25	38.7 S 174.9 E	235 km	4.5	C
355	23	16 16 36	38.7 S 176.5 E	159 km	4.5	B
356	24	10 37 36	37.2 S 176.7 E	247 km	4.7	C
357	25	12 49 08	34.6 S 179.2 E	N	5.3	D
358	27	16 43 21	38.3 S 176.4 E	N	4	C
359	27	23 15 46	38.3 S 176.1 E	172 km	4.5	C
360	29	17 57 24	40.1 S 174.5 E	96 km	4.8	B
361	30	11 19 46	40.5 S 173.2 E	134 km	4.5	C
362	30	12 20 02	40.2 S 174.9 E	N	3.7	D
363	NOV 7	21 09 56	34.4 S 179.4 W	S	5.4	C
364	12	10 15 21	44.8 S 167.7 E	S	5.2	C

Date	h	m	s	Epicentre	Depth	Mag.	Class
NOV 14	12	39	00	34.5 S 179.8 W	N	5.5	C
15	01	55	37	37.9 S 177.1 E	N	4.8	C
15	10	19	56	44.7 S 167.4 E	S	5.0	C
17	16	49	04	39.2 S 177.6 E	S	4.6	B
18	00	07	01	39.1 S 177.2 E	S	4.1	C
19	04	15	38	40.4 S 176.3 E	N	4.0	B
19	08	46	28	35.9 S 177.9 E	N	4.6	D
19	14	20	43	38.2 S 175.9 E	200 km	4.6	B
20	17	25	07	39.1 S 174.9 E	210 km	4.6	B
21	10	38	07	41.9 S 172.8 E	S	4.1	B
22	02	49	55	41.7 S 172.0 E	S	3.1	C
22	18	07	14	39.8 S 174.5 E	S	3.1	C
23	21	03	37	38.7 S 175.4 E	115 km	4.2	C
24	03	58	47	41.5 S 174.9 E	S	3.4	C
25	14	53	35	38.0 S 178.5 E	220 km	5.2	C
26	03	32	37	34.5 S 179.9 W	160 km	5.6	C
27	07	04	01	41.25S 172.3 E	S	4.7	B
27	07	24	19	41.25S 172.3 E	S	3.8	B
29	12	06	09	40.3 S 175.8 E	S	3.3	C
29	23	15	57	38.2 S 178.8 E	S	5.0	B
DEC 1	14	50	14	38.2 S 175.5 E	S	4.3	C
1	15	23	38	37.8 S 177.5 E	253 km	4.5	D
9	04	26	03	36.5 S 179.8 W	S	5.4	C
10	08	28	34	35 S 180	N	5.1	D
11	06	45	50	38.3 S 176.0 E	155 km	4.4	C
12	14	14	56	39.1 S 178.6 E	S	4.8	C
19	03	29	03	40.1 S 177.0 E	S	4.1	C
20	23	26	01	44.8 S 167.7 E	S	4.5	C
22	13	38	59	35.3 S 178.8 E	S	4.8	D
27	23	47	53.2	41.7 S 176.7 E	S	6.3	B
27	23	58	23	41.4 S 176.4 E	S	3.9	D
28	00	14	37	41.6 S 176.4 E	S	4.4	D
28	00	40	15	42.0 S 176.5 E	S	4.9	C
28	01	44	11	41.9 S 176.5 E	S	3.6	C
28	03	24	48	42.3 S 176.6 E	S	4.0	C
28	05	38	09	41.6 S 175.9 E	S	4.3	D
28	06	32	58	41.8 S 176.0 E	S	4.0	B
28	09	13	08	41.6 S 175.8 E	S	3.4	D
28	09	42	50	41.9 S 176.4 E	S	3.7	C
28	10	08	02	41.8 S 175.9 E	S	3.7	C
28	10	47	00	41.7 S 175.9 E	S	3.6	B
28	11	57	51	42.0 S 176.3 E	S	3.8	C
28	12	46	00	41.6 S 175.8 E	S	4.2	C
28	23	35	30	41.9 S 175.5 E	S	3.1	D
28	23	53	01	42.0 S 175.6 E	S	3.4	D
29	00	14	26	39.8 S 175.9 E	S	3.1	C
29	02	26	48	41.6 S 175.7 E	S	3.2	D
29	05	54	15	41.7 S 175.8 E	S	3.3	C
29	08	00	45	41.8 S 175.6 E	S	3.0	D
29	11	15	35	41.5 S 175.9 E	S	2.9	D
29	13	27	17	41.6 S 175.8 E	S	3.1	D
29	13	58	41	41.1 S 174.4 E	S	4.0	C
29	17	33	28	41.7 S 176 E	S	3.1	D
29	19	46	10	41.1 S 174.5 E	S	2.8	D
29	23	11	58	41.7 S 175.9 E	S	3.8	B
30	01	28	01	41.6 S 175.9 E	S	3.7	B
30	02	15	00	41.6 S 175.8 E	S	3.8	C
30	02	21	28	41.8 S 176.0 E	S	4.0	C
30	02	25	38	41.8 S 176.1 E	S	3.6	C
30	04	14	25	39.1 S 178.1 E	S	4.4	D
30	08	47	05	42.1 S 174.2 E	S	3.1	D
30	09	09	20	41.8 S 176.0 E	S	3.7	C
30	09	38	17	41.7 S 176.1 E	S	3.6	B
30	10	27	04	41.7 S 176 E	S	2.9	D
30	12	14	20	41.7 S 176 E	S	3.0	D

No.	Date	h	m	s	Epicentre	Depth	Mag.	Class
61/431	DEC 30	12	35	46	41.7 S 175.9 E	S	3.3	B
432	30	13	02	15	41.6 S 176.0 E	S	3.4	C
433	30	14	38	13	41.7 S 176.1 E	S	3.4	C
434	30	15	47	35	41.6 S 175.8 E	S	3.2	D
435	30	20	04	32	41.4 S 176.0 E	S	3.0	D
436	30	20	06	23	41.7 S 175.9 E	S	3.3	C
437	30	22	01	44	41.7 S 176 E	S	3.2	D
438	30	22	54	49	41.8 S 176.3 E	S	4.0	C
439	31	00	45	06	41.7 S 175.7 E	S	3.4	C
440	31	05	19	33	41.7 S 175.7 E	S	3.4	C
441	31	06	14	52	40.3 S 174.4 E	S	2.7	D
442	31	10	40	36	41.6 S 175.8 E	S	3.8	C
443	31	14	34	11	41.8 S 176.0 E	S	3.4	C
444	31	18	20	10	41.6 S 175.7 E	S	3.4	C
445	31	20	52	12	41.7 S 175.8 E	S	3.8	B
446	31	22	13	15	39.2 S 175.9 E	S	3.3	C

In addition to the shocks listed above, the records of the stations at Karapiro and Tongariro recorded many small tremors on April 18 and 19. There are insufficient data to enable epicentres to be found, but they appear to be aftershocks from the region of 34.38 179.2E. On that interpretation, the following additional shocks had magnitudes of 4 or greater:

1961	APR 18d	17h	04.7	M = 4.0	1961	APR 19d	08h	02.4	M = 4.0
		20h	49.6	M = 4.0		08h	03.1	M = 4.0	
		19d 01h	19.5	M = 4.0		08h	05.2	M = 4.1	
			27.6	M = 4.0		08h	10.3	M = 4.1	
			28.8	M = 4.0		08h	31.5	M = 4.0	
			28.6	M = 4.1		08h	49.1	M = 4.2	
			31.6	M = 4.1		09h	04.2	M = 4.0	
			41.6	M = 4.1		11h	54.8	M = 4.0	
			49.3	M = 4.1		12h	24.2	M = 4.0	
			03.0	M = 4.1		12h	32.7	M = 4.1	
			04.5	M = 4.0		13h	09.5	M = 4.0	
			24.7	M = 4.0		13h	36.4	M = 4.0	
			32.9	M = 4.1		13h	38.4	M = 4.0	
			35.1	M = 4.1		15h	05.2	M = 4.0	
			00.1	M = 4.0		16h	21.8	M = 4.1	
			26.3	M = 4.2		16h	35.1	M = 4.0	
			26.9	M = 4.1		17h	49.5	M = 4.2	
			59.5	M = 4.1		17h	53.1	M = 4.0	
			15.5	M = 4.2		17h	55.7	M = 4.1	
			44.2	M = 4.1		23h	39.3	M = 4.0	

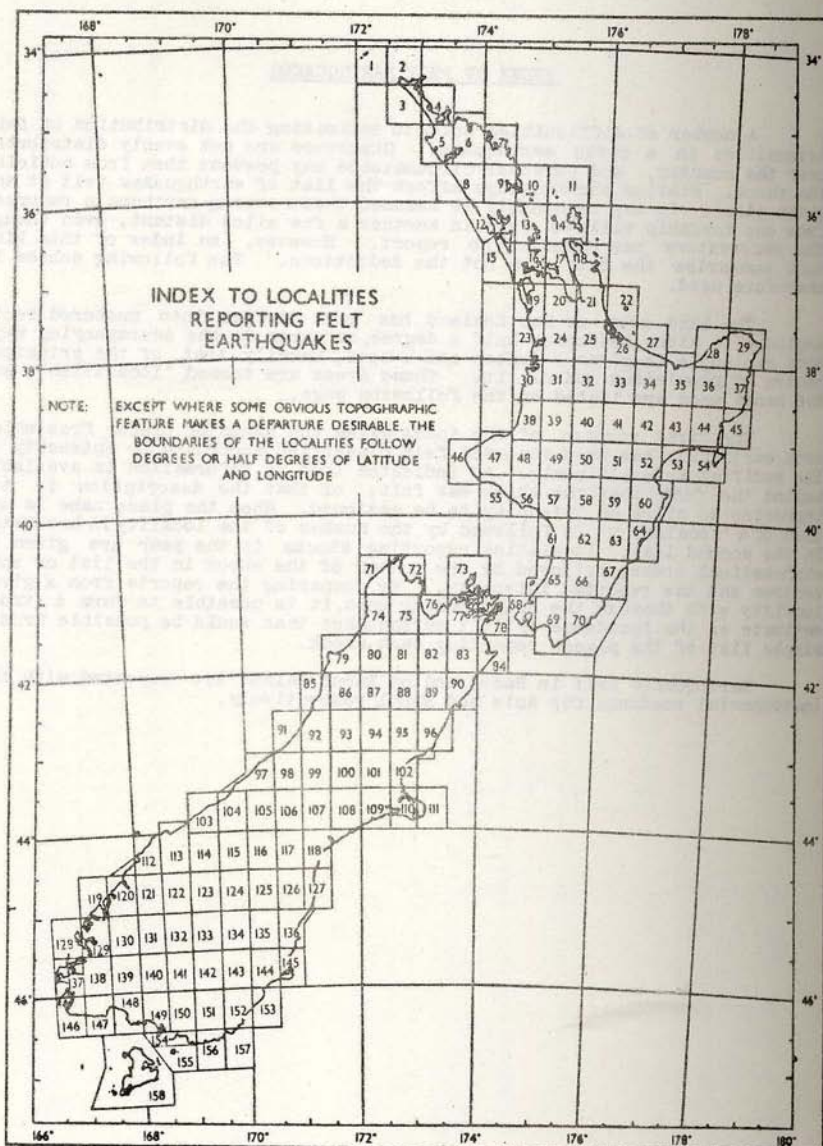
INDEX OF FELT EARTHQUAKES

A number of difficulties arise in estimating the distribution of felt intensities in a given earthquake. Observers are not evenly distributed over the country, and personal circumstance may prevent them from noticing the shock. Similar shortcomings affect the list of earthquakes felt at any given place. It may reasonably be assumed that a strong earthquake reported from one township will be felt in another a few miles distant, even though the observatory has received no report. However, an index of this kind must summarise the data and not the deductions. The following scheme is therefore used.

The land area of New Zealand has been divided into numbered rectangles, with sides measuring half a degree, as shown in the accompanying map. Each rectangle is given a number and a name, usually that of the principal centre of population within it. These areas are termed 'localities', and the names used are listed on the following page.

The first section of the index gives the names of places from which each earthquake has been reported felt, classified according to intensity on the Modified Mercalli scale. A? indicates that no information is available beyond the fact that the shock was felt, or that the description is too imprecise to allow an intensity to be assigned. When the place name is not that of a 'locality' it is followed by the number of the locality in brackets. In the second list, localities reporting shocks in the year are given in alphabetical order, followed by the number of the shock in the list of epicentres and the reported intensity. By comparing the reports from a given locality with those of the neighbouring ones, it is possible to form a truer estimate of the incidence of felt earthquakes than would be possible from a simple list of the places reporting each shock.

Earthquakes felt in Samoa and on Raoul Island are reported with the instrumental readings for Apia and Raoul respectively.

**LIST OF REPORTING LOCALITIES**

1	Three Kings	54	Mahia	107	Mt. Somers
2	Te Reinga	55	Hawera	108	Ashburton
3	Ninety Mile Beach	56	Waverley	109	Rakaia
4	Doubtless Bay	57	Wanganui	110	Christchurch
5	Kaitia	58	Taihape	111	Akaroa
6	Kaikohe	59	Ruahine	112	Big Bay
7	Bay of Islands	60	Hastings	113	Jacksons Bay
8	Dargaville	61	Bulls	114	Makarora
9	Whangarei	62	Palmerston North	115	Lake Ohau
10	Bream Head	63	Dannevirke	116	Pukaki
11	Moko Hinau	64	Porangahau	117	Fairlie
12	Kaipara	65	Otaki	118	Timaru
13	Warkworth	66	Masterton	119	George Sound
14	Barrier Islands	67	Castlepoint	120	Milford
15	Helensville	68	Wellington	121	Glenorchy
16	Auckland	69	Featherston	122	Arrowtown
17	Waiheke	70	Martinborough	123	Wanaka
18	Coromandel	71	Mt. Stevens	124	St. Bathans
19	Pukekohe	72	Takaka	125	Kurow
20	Mercer	73	D'Urville Is.	126	Duntroon
21	Thames	74	Karamea	127	Waimate
22	Mayor Is.	75	Motueka	128	Secretary Is.
23	Raglan	76	Nelson	129	Doubtful Sound
24	Hamilton	77	Blenheim	130	Te Anau
25	Matamata	78	Picton	131	Livingstone Mt
26	Tauranga	79	Westport	132	Kingston
27	Whakatane	80	Murchison	133	Alexandra
28	Te Kaha	81	Glenhope	134	Poolburn
29	East Cape	82	Wairau	135	Ranfurlly
30	Kawhia	83	Awatere	136	Oamaru
31	Te Kuiti	84	Cape Campbell	137	Resolution Is.
32	Tokoroa	85	Greymouth	138	Pillans Pass
33	Rotorua	86	Reefton	139	Monowai
34	Murupara	87	Maruia	140	Mossburn
35	Opotiki	88	Hanmer	141	Waikaia
36	Motu	89	Clarence	142	Roxburgh
37	Tolaga Bay	90	Kaikoura	143	Lawrence
38	Mokau	91	Hokitika	144	Outram
39	Taumarunui	92	Kumara	145	Dunedin
40	Tokaanu	93	Arthur's Pass	146	Puysegur Pt.
41	Taupo	94	Lake Sumner	147	Poteretere
42	Te Whaiti	95	Culverden	148	Tuatapere
43	Tuai	96	Cheviot	149	Invercargill
44	Whakapunaki	97	Franz Josef	150	Gore
45	Gisborne	98	Hari Hari	151	Clinton
46	Cape Egmont	99	Whitcombe Pass	152	Balclutha
47	New Plymouth	100	Lake Coleridge	153	Waihola
48	Whangamomona	101	Oxford	154	Bluff
49	Ohakune	102	Rangiora	155	Ruapuke
50	Chateau	103	Haast	156	Tahakopa
51	Kaweka	104	Bruce Bay	157	Owaka
52	Napier	105	Mt. Cook	158	Stewart Is.
53	Wairoa	106	Tekapo		

PLACES REPORTING FELT EARTHQUAKES

61/2	Jan	9d	03h 34m	MM3	Lower Hutt (68)
61/10	Jan	31d	01h 29m	MM3	Opotiki (35)
61/11	Feb	1d	01h 49m	MM3	Kawerau (34)
		MM2			Te Teko (34)
61/12	Feb	3d	12h 33m	MM4	(See isoseismal map)
		MM3-4			Sherenden (52); Kotemaori (53); Tikokino (59); Waipawa (60); Tangimoana (61); Awahau North (62); Eketahuna (66).
		MM3			Gisborne (45); Palmerston North (62); Matarau, Rangitukia (29); Matawai (36); Tolaga Bay, Ruangarehu (37); Tuai (43); Waerenga-o-Kuri (44); Gisborne (45); Tutira (52); Wairoa (53); Mangamahua, Okoia, Pari Luahua (57); Apiti (58); Oruawharao (60); Porangahau (64); Waitarere (65); Bushgrove, Whangaehu (66); Harakeke (76).
		MM2			Gisborne (45); Wairoa (53); Kimbolton (62); Dannevirke (63).
		MM1			Havelock North (60).
					'Not Felt' reports were received from Martinborough, Castlepoint, New Plymouth, Taupo, Taumaranui, Seddon, Ohakune, Greytown, East Cape, Masterton, Kawhia, Chateau Tongariro, Picton, Te Kuiti, Thames, Murupara, Bulls, Opotiki, Whakatane, Wainuiomata, and places in localities 18-20, 24, 26, 31-34, 38, 40, 41, 47-50, 56, 59, 60, 62, 65, 67-70, 77, 78, 83, 89 and 90.
61/13	Feb	4d	19h 20m	MM3	Wellington (68)
61/14	Feb	5d	10h 42 m	MM3	Rotorua (33)
61/19	Feb	13d	09h 32m	MM1	Te Teko (34)
61/20	Feb	15d	12h 04m	MM3	Eketahuna (66)
61/21	Feb	16d	05h 45m	MM3	Tadmor (75)
61/28	Feb	23d	08h 42m	MM3	Porangahau (64)
61/35	Mar	2d	21h 13m	MM3	Wellington (68)
		MM2			Wellington (68)
61/38	Mar	11d	09h 56m	MM4	Lowry Bay (68)
		MM3			Lower Hutt (68)
		MM2			Island Bay (68)
61/41	Mar	15d	23h 12m	MM3	Gisborne (45)
		MM2			Wellington (68)
61/42	Mar	18d	18h 30m	MM4	Wellington, Titahi Bay, Lower Hutt, Stokes Valley, Wainuiomata, Khandallah (68); Upper Hutt (69); Farewell Spit (72); Fabians Valley (83).
		MM3-4			Cheviot (96)
		MM3			Gebbies Pass (110)
		MM2			Magnet Bay (110)
61/43	Mar	20d	06h 07m	MM4	Cape Egmont (46); Foxton (61); Otaki (65); Lower Hutt (68); Collingwood (72); Blenheim (77); Picton (78).
		MM3-4			Ohakune (49); Hawera (55); Wanganui (57); Eketahuna (66).
		MM3			
		MM2			Khandallah (68)
61/50	Apr	6d	07h 12m	MM4	Foxton (61); Khandallah (68); Nelson (76); Akaroa (110).
		MM3			Newlands, Paremata (68); Eketahuna (66); Hunterville (58).
		MM2			Hawera (55); Wanganui (57).
61/52	Apr	6d	21h 58m	MM3	Wellington (68)
61/194	Apr	20d	10h 59m	MM4	Farewell Spit (72)
61/223	Apr	30d	15h 04m	MM3	Westport (79)
61/224	May	1d	08h 04m	MM5	Milford Sound (120)
61/226	May	5d	03h 44m	MM4	Collingwood (72); Karamea (74); Tadmor (75).
61/233	May	14d	00h 12m	MM5	(See isoseismal map)
		MM4-5			Dannevirke (63)
		MM4			Hatuma, Ngapaeruru (63).
					Taupo (41); Tuai (43); Puranui (48); Waiouru (50); Waitahinga (56); Wanganui, Marangai (57); Taihape (58); Ashley Clinton (59); Hastings, Waipawa (60); Bulls, Glen Orua, Marton, Ohakea, Opiki, Upper Tutaenui (61); Palmerston North, Bunnythorpe, Mangamutu, Linton, Ormondville, Pahiatua, Tokomaru (62); Dannevirke, Hatuma, Motea, Oruawharo, Ruaroa, Te Rehunga, Te Uri, Waitahora (63); Porangahau,

			Herbertville, Rotokai, Wanstead (64); Ohau, Paiake (65); Masterton, Alfredton, Bageshot, Bush Grove, Hukanui, Kopuaranga, Mangamaire, Mount Bruce, Tawataia, Whangaehu (66); Mataikona, Tinui (67); Hikawera, Longbush (70).
MM3-4			Napier (52); Blackburn, Waikarara (59); Waipukurau (60); Bulls, Fielding, Kimbolton (62); Ngamoko (63); Levin (65); Masterton, Mauriceville, Mount Bruce (66); Featherston (69); Longbush, Pukeatua (70).
MM3			Kawhia (30); Mangakino (32); Opotiki (35); Ongarue (39); Tongariro (40); Napier (52); Tiraukawa (58); Ashley Clinton, Wharawhara (59); Hastings, Havelock North, Otane, Waipawa, Waipukurau (60); Foxton, Marton (61); Palmerston North, Ashhurst, Awahou North, Komako (62); Dannevirke (63); Koputaroa, Ohau, Waitare Beach (65); Masterton, Bideford, Mangahao, Waingawa (66); Pongaroa, Tiraumea (67); Wellington, Baring Head, York Bay (68); Greytown (69); Carterton, Gladstone, Lagoon Head, Te Wharau (70).
MM2-3			Owhaoko (51); Aramui (60); Nganui Forest (70).
MM2			Tihoi (40); Wairoa (53); Masterton (66); Khandallah (68); Pounui, Upper Hutt, Wairongomai (69); Martinborough, Te Awaiti (70).
MM1			Gisborne (45). The northern boundary of the felt area is defined by 'Not Felt' reports from localities 31-34.
61/234	May	15d MM2	15h 49m Dannevirke (63)
61/235	May	21d MM3	05h 15m Lowry Bay (68)
61/239	Jun	3d MM1	00h 37m Gisborne (45)
61/241	Jun	7d MM4-5 MM3	12h 28m Collingwood (72) Tadmor (75)
61/242	Jun	7d MM4 MM3-4 MM3	15h 29m Waikanae (65); Johnsonville, Tawa Flat (68). Raumati (65); Khandallah, York Bay (68). Paraparaumu (65); Wellington, Lower Hutt (68).
61/245	Jun	14d MM4 MM3 MM2 MM1	17h 23m Taihape (58); Foxton (61). Wellington (68); Paraparaumu (65). Dannevirke (63); Raumati (65); Eketahuna (66). Bunnythorpe (62)
61/249	Jun	16d MM4	11h 05m Murchison (80)
61/250	Jun	18d MM3 MM2	13h 55m Putaruru (32); Wairoa (53). Waipawa (60)
61/252	Jun	23d MM4	04h 46m Karamea (74); Tadmor (75).
61/255	Jun	27d MM1	13h 00m Paraparaumu (65)
61/257	Jul	4d MM4 MM3	08h 25m (See isoseismal map) Milford Sound (120); Beaumont (143). Haast (103); Bruce Bay (104); Wanaka (123); Te Anau (130); Fruitlands (133); Naseby (135); Eastern Bush (139); Dunedin (145); Hedgehope (150); Glenledi (153).
		MM2-3 MM2	Manapouri (139); Roxburgh (142). Cromwell (133); Tuatapere (148).
61/261	Jul	9d MM3	14h 05m Collingwood (72)
61/262	Jul	10d MM4 MM3	16h 30m Waitangirua (36) Motu (36)
61/263	Jul	11d MM3	10h 52m Gisborne (45)
61/265	Jul	18d MM3	14h 32m Ohakune (49)
61/267	Jul	21d MM4-5	23h 05m Bruce Bay (104)
61/271	Jul	23d MM3	16h 27m Murchison (80)
61/273	Jul	24d MM5 MM4	16h 11m Foxton (61) Levin, Otaki, Ohau, Paraparaumu (65); Martinborough (70).
		MM3-4 MM3 MM2-3 MM2 MM1 ?	Waimarino (49); Hawera (55); Kelburn, York Bay (68). Paraparaumu (65); Lower Hutt, Porirua, Wellington (68). Canvastown (77). Palmerston North (62); Dannevirke (63); Wellington (68). Bunnythorpe (62). Wanganui (57); Woodville, Palmerston North (62); Otaki (65); Titahi Bay, Porirua East (68); Murchison (80).
61/275	Jul	25d MM3	19h 59m Porirua (68)
61/276	Jul	26d MM4	09h 19m (See isoseismal map) Whakamarama, Rangiruru (26); Whakatane (27); Cape Runaway, Porpo Valley, Aorangi, Hicks Bay (29); Murupara (34); Opotiki (35); Owhena, Whatatutu, Otoko, Puha (36); Tokomaru Bay, Tauwhareparae, Kaiangawahia, Te Puia, Tolaga Bay, Mangatuna (37); Morere (44); Wairoa (53); Glen Oroua (61); Hatuma, Waitahora (63); Otaki Beach (65); Masterton (66); Longbush (70).
		MM3	Chiltern (18); Paeroa, Whangamata (21); Roto-o-rangi (24); Matamata (25); Ohauti, Te Puke, Lower Kaimai (26); Hicks Bay, Te Araroa (29); Kawhia (30); Galatea, Waiohau (34); Opotiki, Ruatoki, Pihanga, Waimana (35); Motu, Waitangirua, Te Karaka (36); Panikau, Tokomaru Bay, Te Puia, Hautanoa (37); Uruti (38);

Taupo, Broadlands (41); Waikaremoana (43); Waingake, Ormond, Tiniroto, Mangapoike (44); Gisborne (45); Wairoa (53); Waitotara (55); Waipawa (60); Kimbolton (61); Fielding (62); Dannevirke (63); Masterton (66); Greenhollow (67); Porirua, Wainuiomata, York Bay (68); Te Awaiti, Martinborough (70); Grovetown (77); Ocean Bay (78).

MM2 Karapiro (25); Canvastown (77).

MM1 Wanganui (57); Bunnythorpe (62).

All places north of localities 16, 17, 19 and 20, and south of localities 73, 77 and 84 reported 'Not Felt'. Between these limits, 'Not Felt' reports were also received from places in localities 20-27; 29-35, 38-41, 46, 47, 55, 62, 66-68, 70 and 73. This does not imply that there are no felt reports from these same localities.

61/288	Aug	10d	19h 17m	MM4 Eketahuna (66); Wellington (68).
		MM3		Bunnythorpe (62); Foxton (61); Otaki (65); Paraparaumu, Lower Hutt (68).
		MM2		Dannevirke (63); Wellington, York Bay (68).
61/290	Aug	12d	17h 10m	MM4 Masterton, Eketahuna (66); Porirua (68).
		MM3		Lower Hutt (68)
		MM2		Bunnythorpe (62); Dannevirke (63).
		MM1-2		Foxton (61); Kelburn (68).
61/292	Aug	13d	14h 55m	? Waipukurau, Waipawa (60).
61/293	Aug	15d	08h 47m	MM4 Lowry Bay (68)
		MM3		Karori, Wellington (68).
61/297	Aug	20d	16h 48m	MM4 Napier (52)
61/307	Sep	5d	13h 27m	? Cromwell (133)
61/310	Sep	11d	15h 34m	MM4 Tokomaru Bay (37)
61/317	Sep	18d	00h 10m	MM4 Haast (103); Wanaka (123).
61/321	Sep	25d	14h 12m	MM2 Dannevirke (63)
61/323	Sep	26d	08h 00m	MM3 Motu (36)
61/324	Sep	26d	15h 24m	MM3 Dannevirke (63)
61/326	Sep	30d	17h 27m	MM2 Dannevirke (63)
61/348	Oct	8d	12h 54m	MM3 Porirua (68)
61/352	Oct	20d	07h 44m	MM2 Dannevirke (63); Lower Hutt (68).

61/358	Oct	27d	16h 43m	? near Rotorua (33)
61/360	Oct	29d	17h 57m	MM3 Awakino (38)
61/364	Nov	12d	10h 15m	MM4 Cromwell (133)
		MM3		Tuatapere (148)
		?		Queenstown (132); Dunedin (145).
61/366	Nov	15d	10h 19m	MM2 Cromwell (133)
61/370	Nov	19d	04h 15m	MM2 Dannevirke (63)
61/375	Nov	22d	02h 49m	MM4 Murchison (80)
61/376	Nov	22d	18h 07m	MM3 Wanganui (57)
61/378	Nov	24d	03h 58m	MM2 Wellington, Lowry Bay (68)
61/381	Nov	27d	07h 04m	MM4 Karamea (74); Tadmor (75).
		MM3		Westport (79); Murchison (80).
61/383	Nov	29d	12h 06m	MM1 Dannevirke (63)
61/384	Nov	29d	23h 15m	MM4 Motu (36); Te Puia, Tokomaru Bay (37).
		MM3		East Cape (29); Gisborne (45).
61/385	Dec	1d	14h 50m	MM3-4 Acacia Bay (41)
61/390	Dec	12d	14h 14m	MM4 Gisborne (45)
61/394	Dec	27d	23h 47m	MM5 Fern Glen, Te Kopi (66); Martinborough, Hikawera, Te Awaiti, Waikoukou, Waimoana (70).
		MM4-5		Masterton, Craigie Lea (66); Rongotai (68).
		MM4		Mahaki (44); Waitahera (45); Raurimu (49); Puketitiri (52); Omoana (56); Marangai (57); Hunterville (58); Poukawa, Waipukurau (60); Foxton, Linton, Opiki (61); Makairo, Woodville (62); Motea, Te Uri (63); Trimbleton (64); Muhunoa West, Raumati South, Shannon, Waikanae Beach (65); Masterton, Bideford, Bush Grove, Eketahuna, Glenburn, Hukanui, Kopuaranga, Mt. Bruce, Ovingdean, Te Ore Ore, Whangaehu, Wairere (66); Castlepoint (67); Baring Head, Porirua, Mahina Bay, Tawa, Titahi Bay (68); Cape Palliser, Greytown, Palliser Bay, Pirinoa, Waiorongomai (69); Eringa, Gladstone, Morrisons Bush, Ngapuhi, Ponatahi, Puruatanga (70).
		MM3		Waitangirua (30); Mangakino (32); Ngakuru (33); Tokomaru (37); Owango (39); Hautu (40); Eltham, Purangi, New Plymouth (47); Rukunooana (48); Raetini (49); Taurewa (50); Hawera, Patea (55); Waitahina, Waitotara,

Waverley (56); Okoia, Parihauhau (57); Taihape, Ngaurukehu, Ohingaiti, Rewa (58); Otane (60); Bulls, Marton, Parewanui (61); Feilding, Bunnythorpe, Kimbolton, Komako, Mangamaire, Toi Flat (62); Dannevirke (63); Porangahau, Hatuma (64); Otaki Beach, Levin, Paraparaumu, Muhunoa East (65); Bideford, Bastry (66); Pongaroa (67); Wellington, Kilbirnie, Linden, Lower Hutt, Orongorongo Valley, Pauatahanui, Trentham (68); Featherston, Pirinoa, Tapokopoko, Te Hopai (69); Martinborough (70); Takaka (72); Greville Harbour (73); Riwaka Valley (75); Onamalutu, Opouri Valley, Waikakaho (77); Titirangi Bay (78); Nikau Bay (79); Seddon (84).

MM2 Hicks Bay (29); Mahoe (47); Mangamahu (57); Ohakea (61); Porangahau, Motuotaria (64); Mangles Valley (80).

MM1 Oruawharo (43); Inglewood (47); Paekakariki (68); Ocean Bay (78); Waipapa (90).

The limits of the felt area are established by numerous 'Not Felt' reports. See isoseismal map.

61/417 Dec 29d 13h 58m
MM3 Kelburn, York Bay (68).

61/446 Dec 31d 22h 14m
MM3 Ohakune (49)

UNCONFIRMED FELT REPORTS

The following earthquakes reported to the Observatory cannot be confirmed either by instrumental reading or by an independent report:

1961	Jan	17d	23h 27½m	Cromwell (142)	MM1
		20d	18h 14m	Norfolk Is.	MM3
			19h 09m	Norfolk Is.	'weak tremors'
			21h 10m	Norfolk Is.	'weak tremors'
Feb		3d	21h 28m	Norfolk Is.	'weak tremors'
		3d	16h 10m	Te Aroha (25)	MM4
		4d	19h 00m	Whakatane (27)	MM4
		4d	04h 00m	Wellington (68)	MM3
Mar		29d	10h 50m	Kawerau (34)	MM3
		31d	05h 35m	Kawerau (34)	MM4
May		5d	01h 31m	Kawerau (34)	MM1
Jul		16d	06h 50m	Haapai, Tonga	-
		22d	15h 04m	Bruce Bay (104)	MM4
Sep		13d	19h 14m	Bruce Bay (104)	MM3
		13d	07h 30m	Waitangirua (36)	MM3
Oct		13d	17h 03m	Nukualofa, Tonga	'slight'
Nov		4d	17h 00m	Wanganui (57)	MM3
		17d	03h 02m	Little Barrier Is. (14)	-
Dec		29d	early morning	Waiheke Is. (17)	-

EARTHQUAKES FELT WITHIN STATED LOCALITIES

Localities in which earthquakes have been felt during 1961 are listed in alphabetical order, preceded by their number on the reference map. The figure following the name of the locality is the number of the epicentre followed by the maximum intensity (in brackets) reported within the district covered by the locality name. The instrumental magnitude may be found in the epicentre list, and the places that actually reported the shock from the table of 'Places Reporting Felt Earthquakes'.

133	Alexandra	257 (3), 307 (?), 364 (4), 366 (2)
111	Akaroa	50 (4)
83	Awatere	42 (4)
77	Blenheim	43 (4), 273(2-3), 276 (3), 394 (3)
104	Bruce Bay	257 (3), 267(4-5)
61	Bulls	12 (4), 43 (4), 50 (4), 233 (4), 245 (4), 273 (5), 276 (4), 288 (3), 290 (1), 394 (4)
84	Cape Campbell	394 (3)
46	Cape Egmont	43 (4)
67	Castlepoint	233 (4), 276 (3)
50	Chateau	233 (4), 394 (3)
96	Cheviot	42(3-4)
110	Christchurch	42 (3)
18	Coromandel	276 (3)
63	Dannevirke	12 (2), 233 (5), 234 (2), 245 (2), 276 (4), 288 (2), 290 (2), 321 (2), 324 (3), 326 (2), 352 (2), 370 (2), 383 (1), 394 (4)
73	D'Urville Is.	394 (3)
29	East Cape	12 (3), 276 (4), 384 (3), 394 (2)
69	Featherston	42 (4), 233(3-4), 394 (4)
45	Gisborne	12(3-4), 41 (3), 233 (1), 239 (1), 263 (3), 276 (3), 384 (3), 390 (4), 394 (4)
150	Gore	257 (3)
103	Haast	257 (3), 317 (4)
24	Hamilton	276 (3)
60	Hastings	12 (4), 233 (4), 250 (2), 292 (?), 394 (4)
55	Hawera	43(3-4), 50 (2), 273(3-4), 394 (3)
90	Kaikoura	394 (1)
74	Karamea	226 (4), 252 (4), 381 (4)
51	Kaweka	233(2-3)

30	Kewhia	233 (3), 276 (3), 394 (3)
132	Kingston	364 (?)
143	Lawrence	257 (4)
70	Martinborough	233 (4), 276 (4), 394 (5)
66	Masterton	12 (4), 20 (3), 43 (3), 50 (3), 233 (4), 245 (2), 276 (4), 288 (4), 290 (4), 394 (5)
25	Matamata	276 (3)
120	Milford	224 (5), 257 (4)
38	Mokau	276 (3), 360 (3)
139	Monowai	257 (3)
36	Motu	21 (3), 226 (4), 241 (3), 252 (4), 381 (4), 394 (3)
80	Murchison	249 (4), 271 (3), 273 (?), 375 (4), 381 (3), 394 (2)
34	Murupara	11 (3), 13 (1), 276 (4)
52	Napier	12 (4), 233(3-4), 297 (4)
76	Nelson	12 (3), 50 (4)
47	New Plymouth	394 (3)
49	Ohakune	43(3-4), 265 (3), 273(3-4), 394 (4), 446 (3)
35	Opotiki	10 (3), 233 (3), 276 (4)
65	Otaki	12 (3), 43 (4), 233 (4), 242 (4), 245 (3), 255 (1), 273 (4), 276 (4), 288 (3), 394 (4)
62	Palmerston North	12 (4), 233 (4), 245 (1), 273 (2), 276 (1), 288 (3), 290 (2), 394 (4)
78	Picton	276 (3), 394 (3)
64	Porangahau	12 (3), 28 (3), 233 (44), 394 (4)
135	Ranfurly	257 (3)
33	Rotorua	14 (3), 358 (?), 394 (3)
142	Roxburgh	257(2-3)
59	Ruahine	12 (4), 233 (4)
58	Taihape	12 (3), 50 (3), 233 (4), 245 (4), 394 (4)
72	Takaka	42 (4), 43 (4), 194 (4), 226 (4), 241(4-5), 261 (3), 394 (3)
39	Taumarunui	233 (3), 394 (3)
41	Taupo	233 (4), 276 (4), 385(3-4)
26	Tauranga	276 (4)

21	Thames	276 (3)
40	Tokaanu	233 (3), 394 (3)
32	Tokoroa	233 (3), 250 (3), 394 (3)
37	Tolaga Bay	12 (3), 276 (4), 310 (4), 384 (4)
43	Tuai	12 (3), 233 (4), 276 (3), 394 (1)
48	Tuatapere	257 (2), 364 (3)
53	Waihola	257 (3)
53	Wairoa	12 (4), 250 (3), 276 (4)
423	Wanaka	257 (3), 317 (4)
57	Wanganui	12 (3), 43 (3), 50 (2), 233 (4), 273 (?), 276 (1), 376 (3), 394 (4)
56	Waverley	233 (4), 394 (4)
68	Wellington	2 (3), 13 (3), 35 (3), 38 (4), 41 (2), 42 (4), 43 (4), 50 (4), 52 (3), 233 (3), 235 (3), 242 (4), 245 (3), 273(3-4), 275 (3), 276 (3), 288 (4), 290 (4), 293 (4), 348 (3), 352 (2), 378 (2), 394(4-5), 417 (3)
79	Westport	223 (3), 381 (3), 394 (3)
44	Whakapunaki	276 (4)
27	Whakatane	276 (4), 394 (4)
48	Whangamomona	233 (4)

PUBLICATIONS

During 1961, the following papers by members of the Seismological Observatory staff were published:

- E-136 New Zealand Seismological Report, 1955.
- S-108 F.F. EVISON: Rock Magnetism in Western Europe as an Indication of Continental Growth.
Geophys. J. 4, pp 320-335.
The paleomagnetic interpretation of rock magnetism has led to an increasingly elaborate set of geodynamic postulates, which now include polar wandering, continental drift, and the rotation of continents and parts of continents. An alternative approach is suggested by the hypothesis of widespread continual plastic flow of basement rocks. Remanence data for western Europe are analysed from this viewpoint, assuming that the position of the poles has always been virtually the same as at present. The inferred pattern of flow is away from the high-standing interior, and towards the north-eastern Atlantic Basin. The amount of flow increases with the age of the rock; an accelerated rate of flow is indicated during the Hercynian revolution and a relatively slow rate in more recent times. These results are in accord with the concept of continental growth by plastic flow under gravity.
- S-109 G.A. EIBY and M.G. MUIR: Tables to facilitate the study of near Earthquakes.
A set of travel-time and other tables for earthquakes at distances up to 15° and depths down to 0.05r (348 km), based upon the tables of Jeffreys and Bullen, but with the argument in time at intervals of 1 sec., and with depths interpolated to 0.002r. These tables are intended for the determination of epicentres and focal depths of earthquakes recorded at a network of local stations.
- S-110 F.F. EVISON: Earthquakes in New Zealand.
N.Z. Official Year Book, 1961.
A brief account of the seismicity of New Zealand, and its geophysical background, the activities of the Seismological Observatory, Wellington, and the principal New Zealand earthquakes in 1961.
- S-111 F.F. EVISON and P. WHITTLE: The Antipodal Location of Continents and Oceans.
Geological Mag., 98, pp 377-379.
Five-sixths of all the continental area on the Earth's surface has antipodes in oceanic regions. This proportion is not significantly different from the assumption that the con-

G.A. EIBY: The Problem of Seismic Zoning.

N.Z. Engineering, 16, pp 315-316.

Present knowledge of New Zealand seismicity does not permit the conclusion that there are areas of the country where major earthquakes are significantly less frequent, or where the magnitude of the largest foreseeable earthquake is less than elsewhere. Any attempt to zone the country for building-code purposes should therefore be based upon foundation characteristics rather than upon consideration of relative seismicity.

LIST OF MAPS

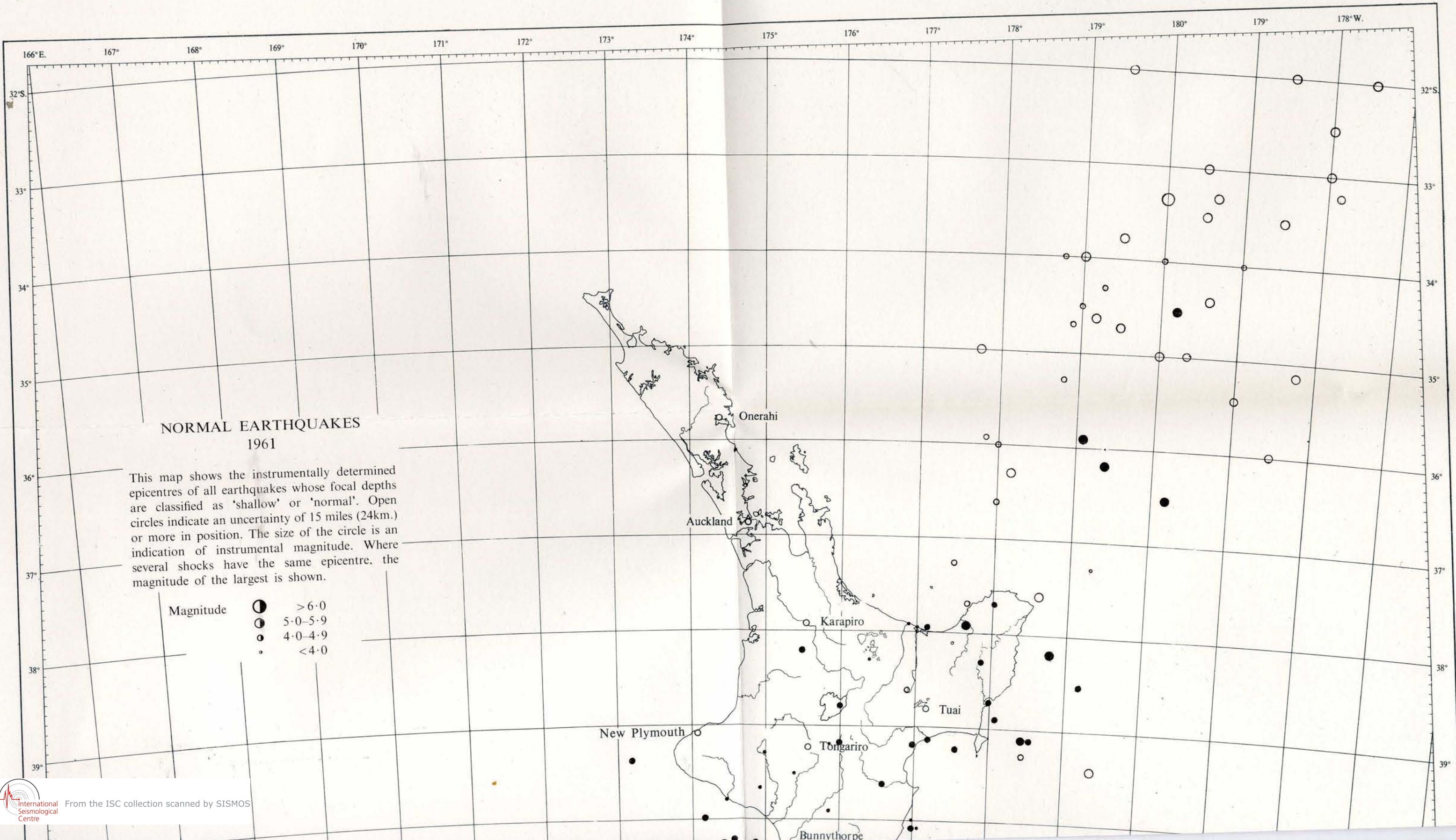
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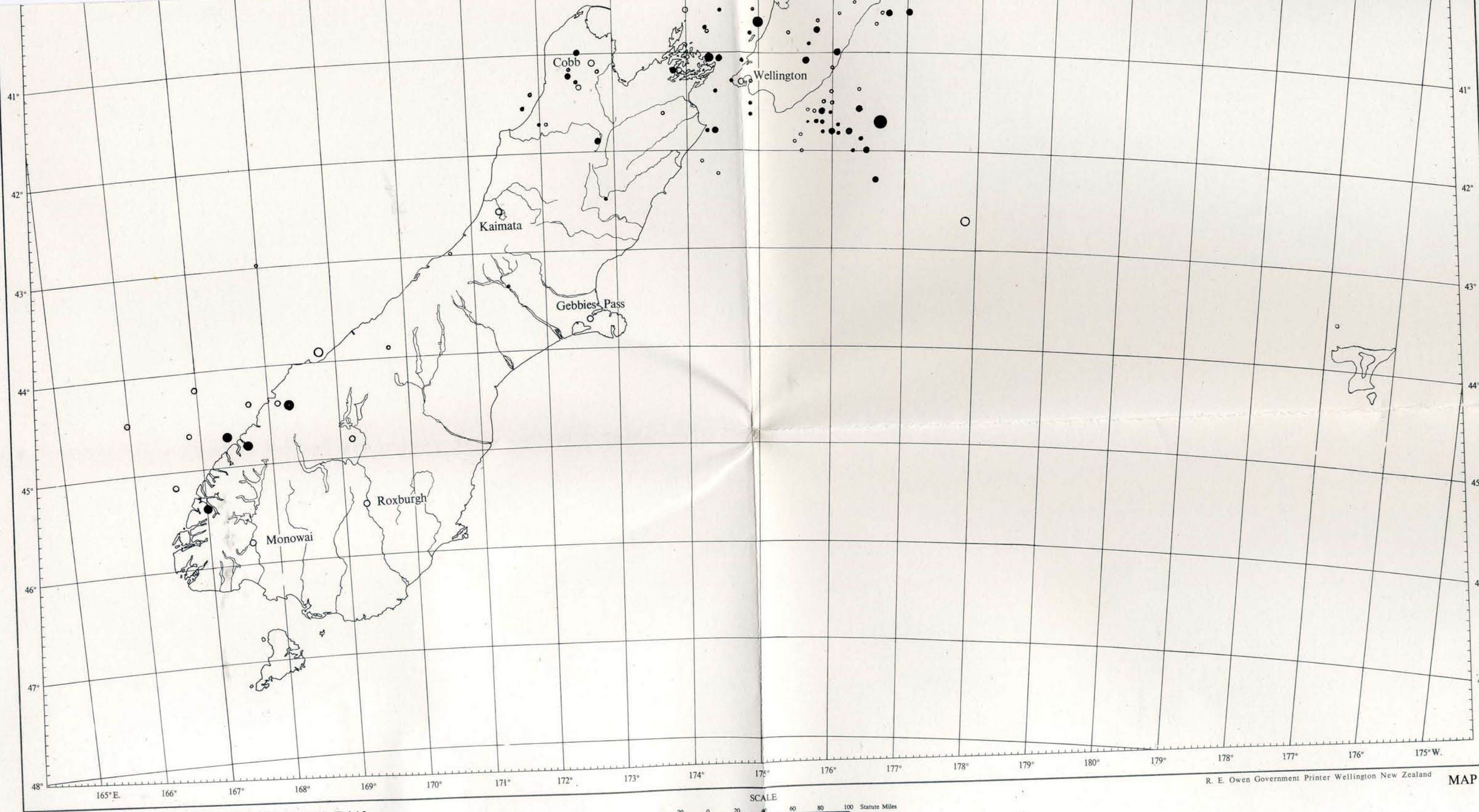
1. Epicentres of Normal Focus Earthquakes in 1961
2. Epicentres of Deep Focus Earthquakes in 1961
3. Isoseismals for the Earthquake of 1961 Feb 3
4. Isoseismals for the Earthquakes of 1961 May 14 and 1961 Jul 4
5. Isoseismals for the Earthquake of 1961 Jul 26
6. Isoseismals for the Earthquake of 1961 Dec 27

NORMAL EARTHQUAKES 1961

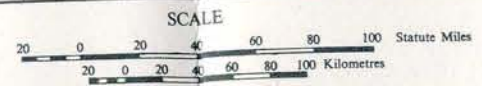
This map shows the instrumentally determined epicentres of all earthquakes whose focal depths are classified as 'shallow' or 'normal'. Open circles indicate an uncertainty of 15 miles (24km.) or more in position. The size of the circle is an indication of instrumental magnitude. Where several shocks have the same epicentre, the magnitude of the largest is shown.

Magnitude	●	> 6.0
	○	5.0-5.9
	◐	4.0-4.9
	•	< 4.0



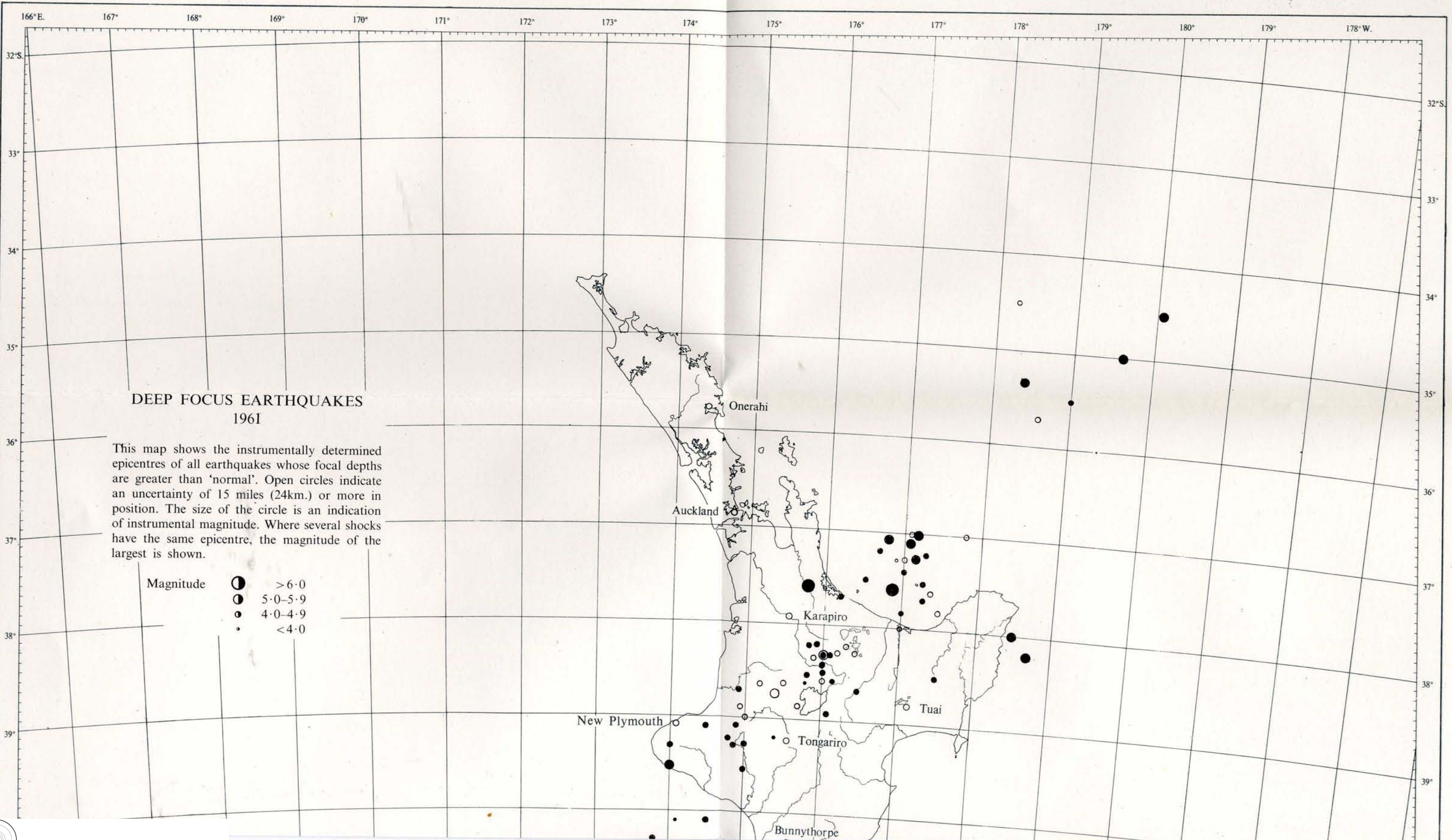


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MAP

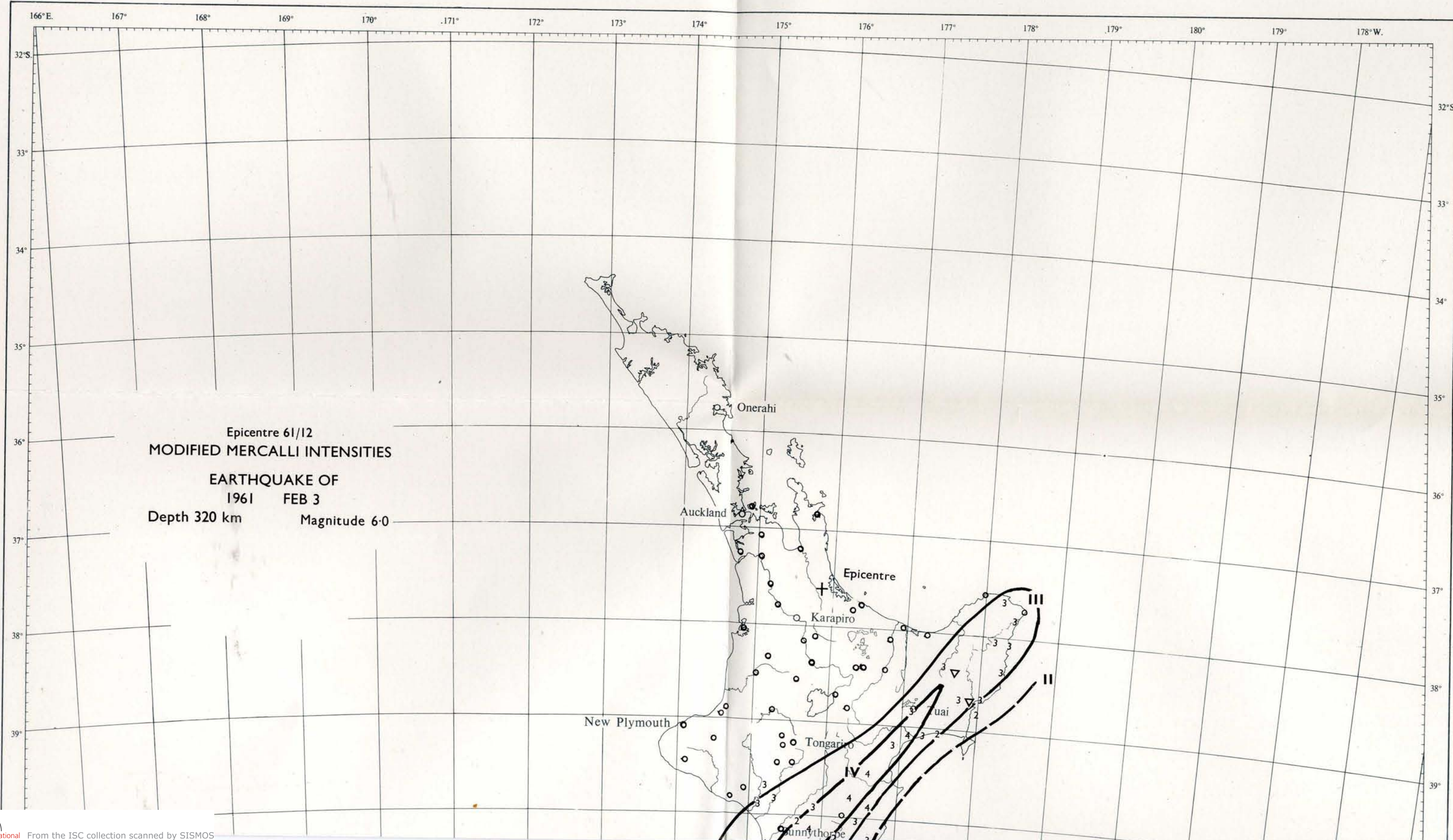


**DEEP FOCUS EARTHQUAKES
1961**

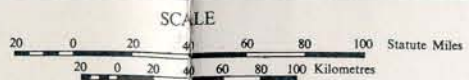
This map shows the instrumentally determined epicentres of all earthquakes whose focal depths are greater than 'normal'. Open circles indicate an uncertainty of 15 miles (24km.) or more in position. The size of the circle is an indication of instrumental magnitude. Where several shocks have the same epicentre, the magnitude of the largest is shown.

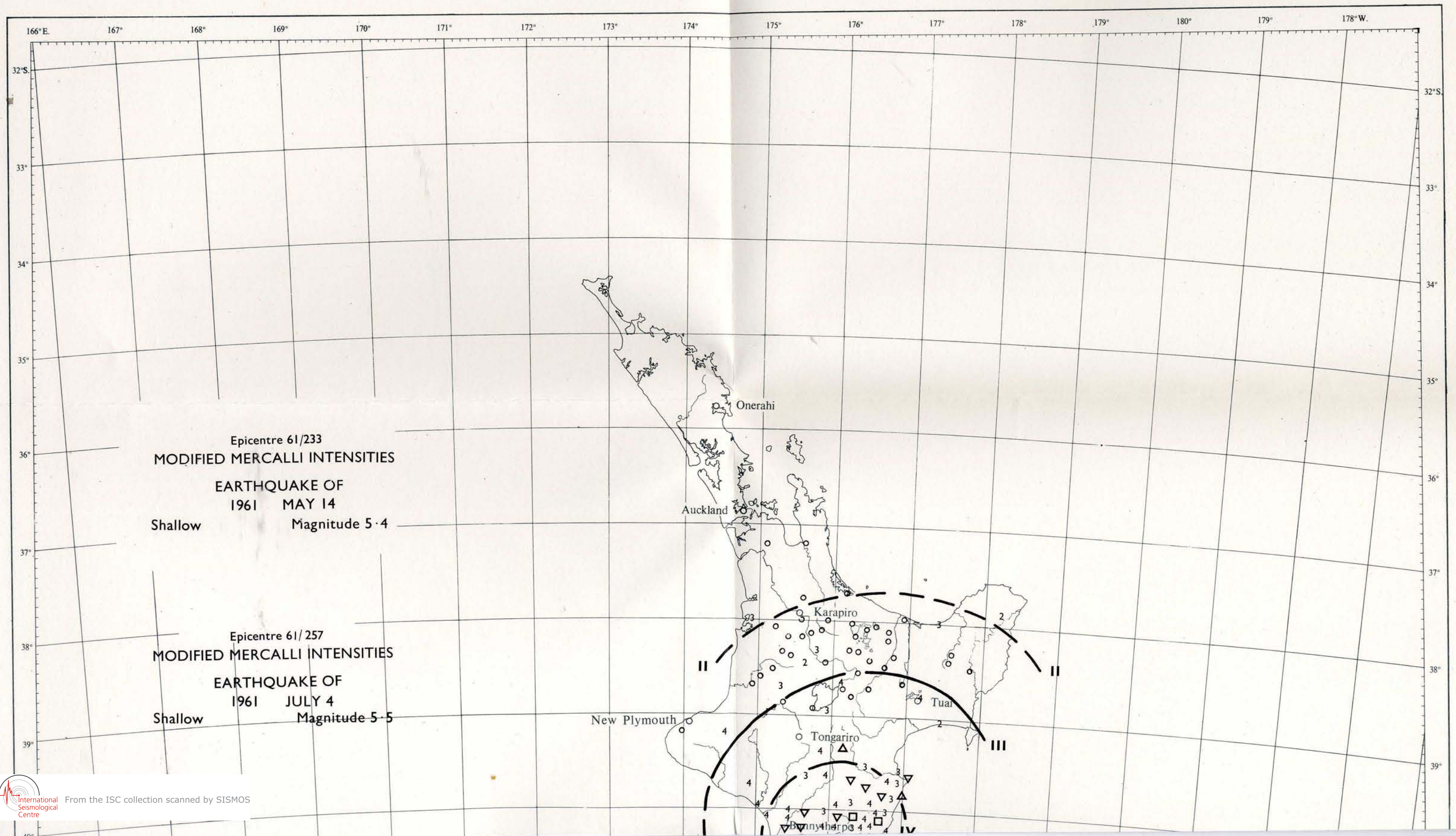
- Magnitude
- > 6.0
 - 5.0-5.9
 - 4.0-4.9
 - < 4.0





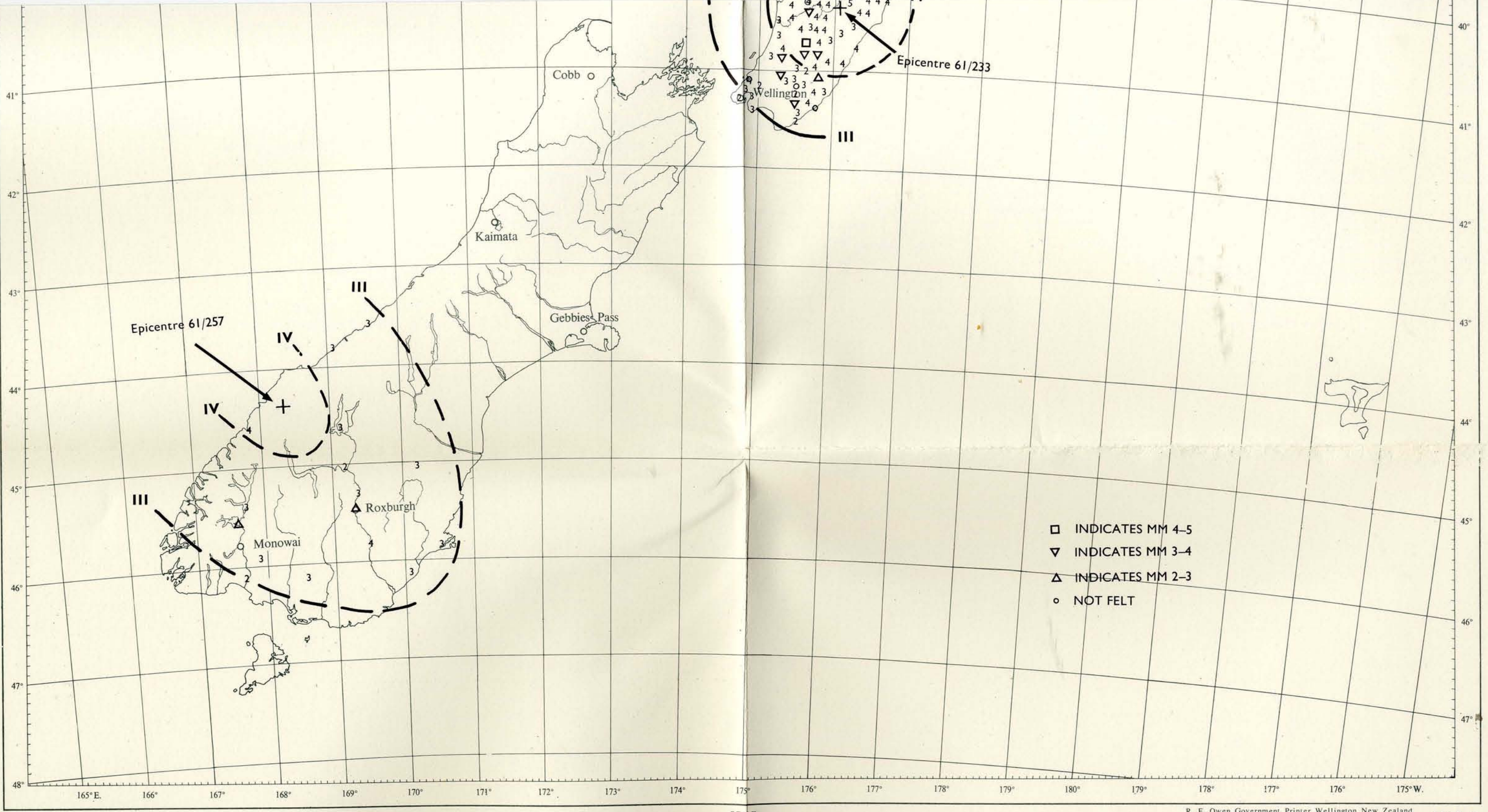
Epicentre 61/12
MODIFIED MERCALLI INTENSITIES
EARTHQUAKE OF
1961 FEB 3
Depth 320 km Magnitude 6.0



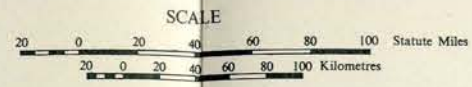


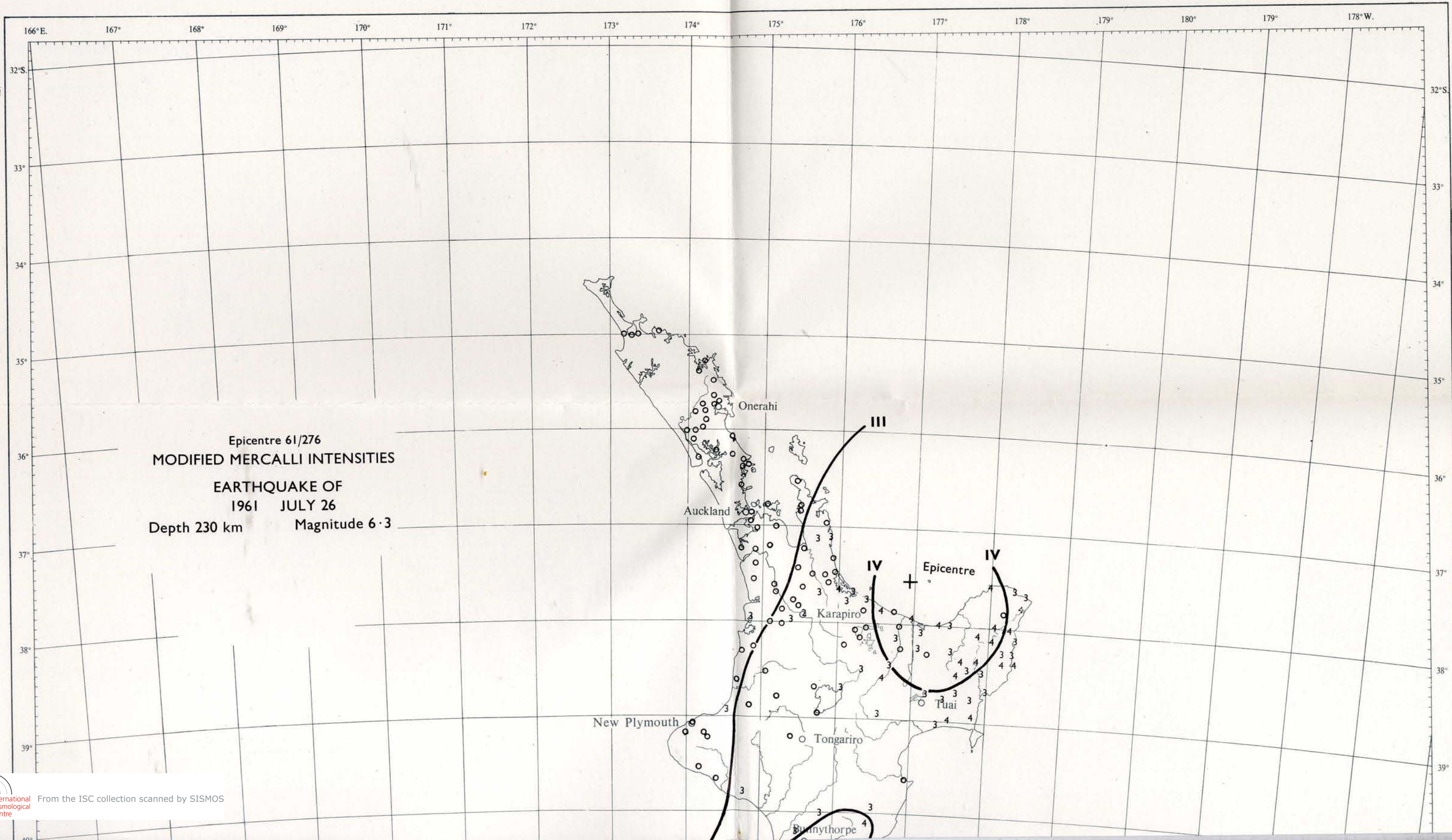
Epicentre 61/233
MODIFIED MERCALLI INTENSITIES
 EARTHQUAKE OF
 1961 MAY 14
 Shallow Magnitude 5.4

Epicentre 61/257
MODIFIED MERCALLI INTENSITIES
 EARTHQUAKE OF
 1961 JULY 4
 Shallow Magnitude 5.5

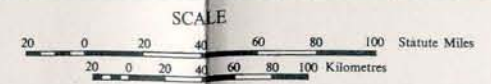


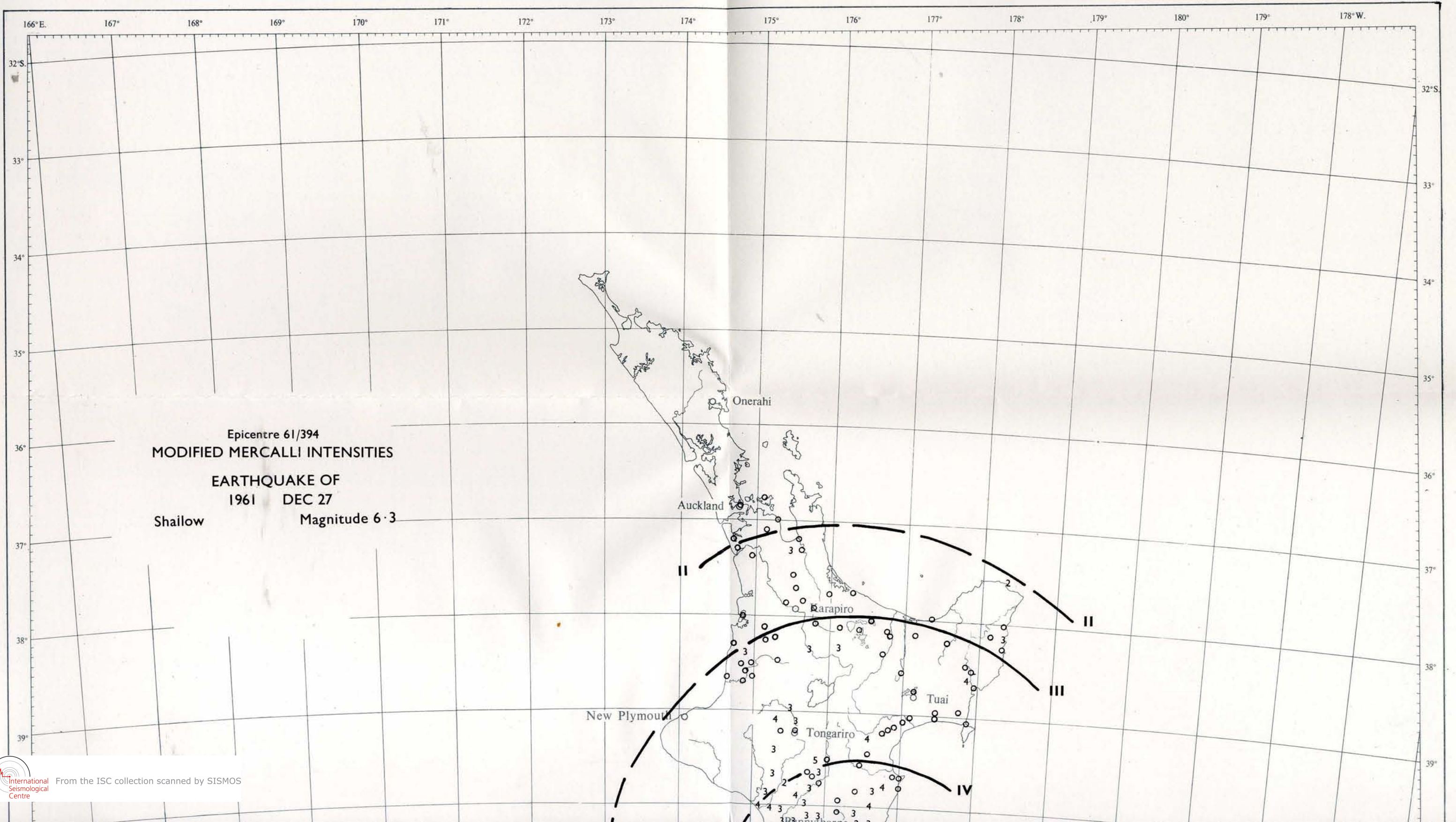
- INDICATES MM 4-5
- ▽ INDICATES MM 3-4
- △ INDICATES MM 2-3
- NOT FELT





Epicentre 61/276
MODIFIED MERCALLI INTENSITIES
EARTHQUAKE OF
1961 JULY 26
Depth 230 km Magnitude 6.3







▽ INDICATES MM 3-4
 o NOT FELT

