New Zealand Department of Scientific and Industrial Research
GEOPHYSICS DIVISION

NEW ZEALAND

SEISMOLOGICAL REPORT

1962

SEISMOLOGICAL OBSERVATORY BULLETIN
E – 143

R. E. OWEN, GOVERNMENT PRINTER, WELLINGTON, NEW ZEALAND—1966

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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 1962

CONTENTS

	Page
Introduction	1
Scientific Staff	2
Principal N.Z. Earthquakes in 1962	3
Stations of the N.Z. Network	5
Timing Arrangements	11
Station Readings	12
N.Z. Stations and Suva	12
Afiamalu and Apia	176
Raoul Island	201
Hallett	207
Scott Base	242
Instrumentally Determined Epicentres	267
Index of Felt Earthquakes	275
Publications by Staff Members	296
List of Maps	29[illegible]

INTRODUCTION

The New Zealand Seismological Report for 1962 follows the style of its predecessors. It is intended to summarise all standard measurements carried out at the Seismological Observatory, Wellington and its out-stations, and to provide 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 therefore includes a descriptive account of the most important seismic events of the year, and maps showing their magnitude, distribution, and felt effects.

The greater part of the information for 1963 and 1964 is 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 not regularly included in this report are issued as a series of S-Bulletins. Abstracts of those issued in 1962 are listed in the back of this report. The Observatory is prepared to consider additional arrangements to exchange material of this kind with other organisations.

SCIENTIFIC STAFF 1962

WELLINGTON

Superintendent:	F.F. Evison M.A., B.Sc.(N.Z.); Ph.D.(Lond.);D.I.C.
Seismologists:	R.D. Adams M.A.,M.Sc.(N.Z.); Ph.D.(Cantab.); J.H. Christie (nee LeFort) M.Sc.; G.A. Eiby M.Sc.; M.G. Muir M.Sc.; M.J. Randall M.Sc.; A.A. Thomson M.Sc.
Technicians:	M.A. Lowry; J.A. Macdonald (from February); A.M. Maher; R.C. Martindale; R.H. Orr.

APIA

Observer-in-Charge:	J.G. Keys (until November) P.J. Milne B.Sc. (from November)
Observer/Technician:	I. Anapu

RAOUL ISLAND

Observer:	N.L. Caine

HALLETT

Observer:	R.R. Exley

SCOTT BASE

Observer:	A.C. Langston

PRINCIPAL N.Z. EARTHQUAKES IN 1962

More epicentres were determined in 1962 than in previous years. This is the result of a small increase in the number of earthquakes, mainly but not wholly made up of aftershocks of the four largest shallow shocks and of an increase in the number of earthquakes being reported felt by the now greatly reorganised network of felt observers. Although there were no large earthquakes, the year was marked by an unusually wide selection of seismic events.

The largest earthquake (Epicentre 62/423, Map 4) occurred on October 15 It had a magnitude of 6.1, and a shallow origin off the coast of southern Westland to the north of Bruce Bay. Damage was confined to the fall of isolated chimney pots in the Fox Glacier - Bruce Bay area, and of goods from shelves at Fox Glacier, Lake Tekapo and Mount Cook. More spectacular effects were to be seen in the Southern Alps. The Chief Ranger at Mt. Cook, Mr. M. Burke, reports that "Magnificient avalanches fell from all glaciers and ice shelves in the Hooker and Tasman valleys, and the faces of both Mt. Cook and Mt. Sefton were almost completely obscured by billowing clouds of ice-dust and snow. Tourists on the Tasman Glacier trip were treated to a most impressive sight, as large avalanches fell from every peak on the main divide from Mt. Cook to the Minarets. I was a member of a party of four Rangers returning from the second Hooker swing bridge, who had a first class view of the avalanches on the slope of Sefton and of numerous rockfalls on the slopes of Mt. Wakefield above the track. Some rock fell quite close to the track in places." This account is confirmed by Mr. M. Barrie, a climber who was in the vicinity of the Ball Hut. He reports that his party was greatly delayed on its return journey to Husky Camp by the rock that had been shaken down on to the road. He further points out that falls were not restricted to moraine and other loose material, but also affected "virgin rock". It appears likely that felt intensities approached MM 7.

On May 10, an earthquake occurred which was felt over much of the South Island and at a few places in the North Island (Epicentre 62/165, Map 3). This was the first and largest of a sequence of more than 80 earthquakes centred at sea about 20 miles west of Westport. These earthquakes are the subject of a paper by Adams and Le Fort (N.Z.J. Geol. and Geophys., Vol 6 (4) pp 487-509, August 1963). The main shock had a magnitude of 5.9, and the largest aftershock, on May 17, a magnitude of 5.6. These shocks caused more damage than any other N.Z. earthquake since those in the Wairarapa in 1942, by reason of their shallow foci and their closeness to the town. Estimates made by the Earthquake and War Damage Commission value the damage at £125,000. Some 2,500 chimneys were damaged, and in Westport brick and plaster work also suffered. Electricity and water supplies were also disrupted. The area of chimney damage extended from Granity to Hokitika, a distance of about 90 miles. There were no casualties.

On the same day as the Westport earthquake, a shock of magnitude 5.7 took place on the Wairarapa coast (Epicentre 62/175). No intensities above MM 5 were reported, probably because the nearest parts of the coast are thinly populated. The position of this shock suggests a relationship to the aftershocks of the magnitude 6.3 earthquake of 1961 December 27,

(Epicentre 61/394), which continued until the middle of January and possibly for longer. The earthquake of May 10 was itself followed by a small sequence of aftershocks.

An earthquake near Aria on January 23 (Epicentre 62/40, Map 5) also caused some damage. This shallow earthquake of magnitude 5.5 is of interest because it lies further to the north than the majority of shallow shocks west of the N.Z. Sub-Crustal Rift. The felt area included Auckland city and extended southwards to Palmerston North and Shannon; but only isolated reports were received from places east of a line through Tauranga, Taupo, and Taihape. Chimneys fell at Aria and Mahoenui, and a chimney at Benneydale was cracked.

A swarm of small earthquakes in the Te Puke area began in mid September and continued until early October, the largest shock (Epicentre 62/394) had a magnitude of only 4.5, but the origin was shallow, and intensities at Te Puke, near the epicentre, were great enough to damage 14 chimneys and to move goods from shelves. Isolated cases of chimney damage were also reported from Tauranga, Mt. Manganui, and Omoheroa. The felt area was limited to a small part of the Bay of Plenty near the coast between Te Puke and Edgecumbe.

Other important large shallow shocks took place on April 17 (Epicentre 62/137), July 28 (Epicentre 62/304), and December 23 (Epicentre 62/485). These had magnitudes of 5.7, 5.4 and 5.3 respectively. The first of these epicentres is 30 miles off the north Canterbury coast, on the northern flank of the Chatham Rise. The felt area extended over the whole of the South Island north of Greymouth and Temuka, and over the southern part of the North Island. The second shock is in the northern part of Fiordland, and was fairly generally felt in Central Otago. The epicentre lies a little to the north of the other Fiordland shocks during the year, which show an unusual concentration in the neighbourhood of the magnitude 7.0 earthquake of 1960 (Epicentre 60/108). The third shock was centred about 40 miles east of East Cape, and was felt only at Tokomaru Bay.

There were three other shallow shocks of magnitude 5 or more. On January 10, a shock in the southern Ruahine Range (Epicentre 62/12) was felt over most of southern Taranaki and the Manawatu. Somewhat surprisingly, there was only one report from the Hawkes Bay side of the range, intensity MM 3 at Dannevirke. A shock of magnitude 5.0 on March 10, centred in the East Cape Peninsula (Epicentre 62/89) was reported only from Te Puia, and one on the following day, with an epicentre 20 miles west of Lake Taupo, (Epicentre 62/90) only from Wairoa and Gisborne. Shallow shocks of this magnitude could be expected to cause minor damage if they occurred close to a settlement.

North eastwards from the Bay of Plenty, there has been the usual vigorous activity extending twards the Kermadec Islands. Location and coverage of the shocks in this region is not as good as for shocks within New Zealand itself, but many of them are large. There have been several instances of a tendency for shocks in this region having a wide range of depths to form groups close in epicentre and time. An example is given by the shocks between 33°S and 34.5°S and about 178°W during February, which range in depth from 537km. to shallow. Another group in the same area occurs at the end of March.

The cluster of four shallow shocks with magnitudes greater than 5 near 38½°S and 179°W, on the edge of the Hikurangi Trench (See Map 1), is another example of the tendency of earthquakes to form a pattern in time and space, rather than to occur as random events.

Attention should be drawn to the small shallow shock at 46½°S, 169½°E on April 18 (Epicentre 62/141). This earthquake was felt at Quarry Hills, Waikawa, and Balclutha, and had a magnitude of 4.2. A shock of magnitude 4.7 from the same epicentre (within the limits of error) was recorded in 1957 (Epicentre 57/160). This earlier shock was felt in Dunedin. Earthquakes in this area must be carefully considered in any discussion of seismic risk in eastern Otago.

Another epicentre with an unusual position (62/351) lies east of Chatham and Pitt Islands, and marks the eastern extremity of the Chatham Rise. Earthquakes on the northern flank of the Rise are common (for example, epicentre 62/137), but no recent shock has been placed in this position. This is more likely to have been a result of less efficient recording in the past than of real absence of shocks.

No unusually deep earthquakes occurred during the year. The deepest entries in the epicentre list (Epicentres 62/28 and 62/61) lie far to the north-east of the country, where shocks of 450-550 km. depth are not uncommon. Epicentres 62/266 and 62/304 lie at the southern end of the Sub-Crustal Rift. The former earthquake had a depth of 190 km, and a magnitude of 5.4; the latter was larger (magnitude 5.7) and shallower (85 km), and was widely felt (Map 6). Both are among the larger shocks defining this part of the zone of deep-focus activity. Ten other shocks with depths between 150 and 350 km and magnitudes between 5 and 6 also lie within the Rift, extending southwards from the Bay of Plenty.

STATIONS OF THE NEW ZEALAND NETWORK

The number of changes to the recording network in 1962 has been greater than in any previous year. New stations were installed at Tarata in May, and at Wairakei in August. A short-period vertical-component Willmore instrument was added to the 3-component set of Galitzins at Roxburgh in June, and the Jones instrument at Tongariro was replaced by a standard Wood-Anderson in October.

In May, Wellington became a station of the World-Wide Standard Seismograph Network sponsored by the United States Coast and Geodetic Survey, and the Milne-Shaw and Galitzin-Wilip instruments were no longer operated. Since the standard equipment includes a set of short-period Benioff instruments, it was decided to halve the magnification of the Wood-Andersons, whose main use is now for magnitude determination.

The station at Afiamalu, in Samoa, also became a station of the World-Wide Standard Network in September.

The new station at Tarata, 9 miles east of Inglewood, Taranaki, replaces the station at New Plymouth which had to be discontinued in 1958. It is equipped with a Willmore short-period vertical-component seismometer.

The instrument at Wairakei is primarily intended to give information about an area from which geothermal steam is being extracted for electric power generation, but is expected to contribute useful additional data to other local earthquake studies. Owing to the nature of the site, the magnification has had to be kept low.

The Jones instrument at Tongariro, which has now been replaced by a standard Wood-Anderson torsion Seismometer was originally designed as a prospecting geophone for use in Persia during the pioneering era of exploration geophysics. Its chief disadvantages for local earthquake recording were that neither period nor magnification were very stable, and that the zero position was temperature sensitive. Nevertheless, it has contributed some ten years of useful arrival-time data to New Zealand seismology and earned an honourable retirement. Vertical

component readings for this part of the country are obtained from the Geophysical Survey's volcanological station at Chateau.

The installation of a short-period vertical component instrument at Roxburgh has already done much to improve the location of epicentres in the very active Fiordland region of the South Island. Further stations in the far south of the country are planned.

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.

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'.4 S
Longitude: 171°46'.5 W
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 Recent and Pleistocene Basalt.

Instrument	Compt.	Period	Damping	Magnification	
Wood-Anderson	N	0.80 sec	15:1	2050	Nominal
Wood-Anderson	E	0.80 sec	15:1	2050	

AFIAMALU (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	Compt.	To	Tg	V	
Benioff	Z	1 sec	0.2 sec	72,000	until September
			70	765	
	N	1	70		
Benioff	Z	1.0	0.75	20,000	from September
	N	1.0	0.75	30,000	
	E	1.0	0.75	30,000	
Press-Ewing	Z	30	100	750	
	N	30	100	750	
	E	30	100	750	

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	Compt.	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 Foundation: 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	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	Nominal

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

WAIRAKEI (WK)

Latitude: 38°37'.9 S
Longitude: 176°06'.2 E
Height above mean sea level: 350 metres
Geocentric direction cosines: a - 781 415
b + 053 234
c - 621 736

Lithological Foundation: Pumice breccia.

Instrument	Component	To	Tg	V
Willmore	Z	1 sec	0.25 sec	300 (nominal)

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	Date
Willmore	Z	To = 1 sec Tg = ¼ sec		3500	7/61

TARATA (TA)

Latitude: 39°11'.1 S
Longitude: 174°22'.8 E
Height above mean sea level: 130 metres, 400 ft
Geocentric direction cosines: a - 773 456
b + 076 110
c - 629 263

Lithological Foundation: Pliocene mudstone.

Instrument	Component	To	Tg	V
Willmore	Z	1 sec	0.25 sec	3,000

CHATEAU (CT)

This instrument is under the control of the Geophysical Survey, Geophysics Division, D.S.I.R. 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: 1135 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: 1131 metres, 3710 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	until Oct.30
Wood-Anderson	NW - SE	0.8 sec	Critical	2,800	from Nov. 1

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	Nominal
	NW(Y)	8	5:1	2	
	Z	2	5:1	2	

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	Until May 15
Galitzin-Wilip	Z	To = 10.6 Tg = 10	Critical	600	

Instrument	Component	To	Tg	V	
Willmore	Z	1.0 sec	0.25 sec	6,000	Until May 15
Wood-Anderson	N	0.8		2,800	
	E	0.8		2,800	
Benioff	Z	1.0	0.75	6,250	After May 15
	N	1.0	0.75	6,250	
	E	1.0	0.75	6,250	
Press-Ewing	Z	30	100	750	
	N	30	100	750	
	E	30	100	750	
Willmore	Z	1.0	0.25	6,000	
Wood-Anderson	N	0.8		1,400	
	E	0.8		1,400	
Imamura	Z	1		1	
	N	4		1	
	E	4		1	

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: Moraine 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
Galitzin	Z	To = Tg = 13 sec	Critical	450
	N	24	Critical	300
	E	24	Critical	300
Willmore	Z	To = 1 sec	Tg = 0.25 sec	10,000

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'.0 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 DSIR 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, and Wellington, by an arrangement that has been described by B.H. Olsson (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 '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 offosite to x, and j a movement opposite to y.

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

Magnitudes for local earthquakes are a means 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, by 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	P	Z	02 54 05					
	Epicentre			02 41 06.0	52 .3N	177 .9E	261km	USCGS	
1	KP	P	Z	07 02 54					
	Epicentre			06 49 57.9	51 .9N	177 .8E	59km	USCGS	
1	KP	(P)	Z	12 19 10					
	CT	eP	Z	12 19 20					
	WN	P	Z	12 19 41					
	GP	eP	N	12 20 11					
		eS	N	23 30					
	SU	eL	N	12 22					
	Epicentre			12 15 51.2	27 .1S	175 .4W	48km	USCGS	
1	KP	P	Z	15 34 53					
	CT	P	Z	15 35 09					
	Epicentre			15 31 10.5	22 .3S	171 .6E	83km	USCGS	
1	KP	P	Z	23 53 20					
	Epicentre			23 40 20.3	52 .4N	177 .7E	27km	USCGS	
2	SU	eL	N	05 56½					
	Epicentre			05 52 45.1	20 .1S	175 .1W	33km	USCGS	
2	SU	eP	N	11 49 44					
		eS	N	51 32					
		eL	N	52.0					
	KP	eP	Z	11 51 29½					
		i	Z	34					
	CT	P	Z	11 52 00					
	WN	e	Z	11 56.1					
		eL	Z	57.9					
	RX	eL	NE	11 59					
		eL	Z	12 00					
	Epicentre			11 47 31.0	21 .8S	169 .8E	56km	USCGS	
2	KP	P	Z	19 13 21					
	Epicentre			19 03 06.5	19.3N	145 .3E	178km	USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
JAN 2	KP	P	Z	23	09	24							
	ON	iP	E	23	09	26							5.3
		eS	E		10	16							
	CT	P	Z	23	09	34							
		e	Z			37							
		e(S*)	Z		10	53							
	WN	eP	Z	23	09	59							5.8
		e	N		10	12							
		e	E			16							
		e	NE			26							
		S	ZNE		11	18							
		i(S*)	ZE			53							
	CB	eP	E	23	10	10							5.3
		eS	E		11	38							
	KM	eP	X	23	10	40							5.9
		eS	X		12	17							
		e	X			36							
	GP	eP	N	23	10	41							6.3
		eS	N		12	21							
		e	N			42							
	RX	eL	N	23	16								
	Epicentre			23	08	17	35.4S		180.0		N	NZ(C)	5.7
							Mundaring, Charters Towers, Brisbane, Canberra, Apia, Byrd, and Mawson readings used to determine epicentre.						
3	SU	eL	N	00	52½								
3	KP	eP	Z	02	09	00							
	SU	eS	N	02	09	21							
	Epicentre			02	05	12.3	22.2S		168.7E		118km	USCGS	
3	SU	eP	N	06	51	57							
		S	N		54	14							
		e	N		57	.9							
	KP	eP	Z	06	53	44							
		e	Z			50							
		S	Z		57	20							
	CT	eP	Z	06	53	58							
		e	Z		54	14							
		S	Z		57	44							
	WN	eP	Z	06	54	20							
		eL	Z	07	00								
	RX	eL	NE	07	03								
	Epicentre			06	49	50.9	21.7S		170.0E		120km	USCGS	
3	SU	eL	N	11	25	.1							
	KP	P	Z	11	25	19							
	CT	P	Z	11	25	28							
		S	Z		29	10							
	Epicentre			11	20	53.5	20.6S		174.4W		32km	USCGS	
3	KP	eP	Z	12	41	55							
		i	Z		42	50							
3	KP	P	Z	18	06	01							
	Epicentre			17	53	05.3	52.2N		177.5E		68km	USCGS	
3	KP	P	Z	23	54	27							
	CT	eP	Z	23	54	43							
	WN	eP	Z	23	55	.1							
		e	Z		58	.9							
		eL	Z	00	00								
	GP	eP	N	23	55	24							
	RX	eL	NE	00	00	.1							
		eL	Z		03								
	Epicentre			23	50	28.8	21.5S		169.9E		75km	USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
JAN 4	KP	P	Z	04	27	57							
		pP	Z		28	37							
	Epicentre			04	16	01.7	35.1N		138.9E		178km	USCGS	
4	KP	P	Z	04	47	52							
		pP	Z		48	07							
	CT	eP	Z	04	47	55							
	SU	eS	N	04	54								
		eL	N	05	05								
	RX	eS	N	04	58	33							
		eL	N	05	15								
	WN	eL	Z	05	16								
	Epicentre			04	35	42.6	33.9N		135.2E		56km	USCGS	6
4	KP	P	Z	07	43	41							
	Epicentre			07	34	44.4	5.0S		130.4E		222km	USCGS	
4	CT	P	Z	20	12	51½							
		e	Z		13	00							
	Epicentre			20	00	54.4	1.6S		99.6E		59km	USCGS	
4	KP	eP	Z	21	37	03							
	CT	P	Z	21	37	08							
	Epicentre			21	24	54.5	24.6N		121.9E		38km	USCGS	
5	SU	P	N	00	24	40							
	ON	eP	E	00	28	28							
		eS	E		32	40							
		eL	E		34½								
	KP	P	Z	00	28	41							
	CT	eP	Z	00	28	59							
		ePcP	Z		32	47							
	WN	e	Z	00	30	.2							
		e	Z		35	.1							
		eL	Z		37								
		M	Z		41								
	RX	eS	NE	00	35	15							
		eLq	E		37½								
		M	NE		40½								
	Epicentre			00	23	32.1	15.5S		177.7W		24km	USCGS	6½-½
5	SU	eP	N	04	18	26							
		S	N		19	23							
		L	N			50							
5	SU	S	N	04	41	33							
		L	N			58							
5	SU	P	N	08	10	19							
		i	N		11	36							
		L	N		12	17							
	ON	eP	E	08	13	17							
		eL	E		21								
	KP	eP	Z	08	13	26							
		e	Z			28							
	CT	P	Z	08	13	38							
	WN	P	Z	08	13	56							
		eL	Z		21½								
		M	Z		26								
	CB	eP	E	08	14	04							
	GP	eP	N	08	14	27							
	RX	eL	NE	08	24								
		eL	Z		27								
		M	ZNE		29½								
	Epicentre			08	08	07.5	15.5S		172.5W		60km	USCGS	
5	SU	eP	N	11	54	21							
		eS	N		56	31							

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
JAN 5	ON	eP	E	11	56	19					
	KP	P	Z	11	56	39					
	CT	eP	Z	11	56	51					
	Epicentre			11	51	35.4	15.1S	167.6E	133km	USCGS	
5	CT	eP	Z	14	13	41					
		e	Z			47					
	KP	P	Z	14	13	50					
		e	Z		14	26					
	RX	eL	NE	14	26						
	Epicentre			14	01	41.7	1.6S	100.0E	25km	USCGS	
5	SU	L	N	14	11						
6	SU	eL	N	07	16	40					
7	KP	eP	Z	01	43	31					
	Epicentre			01	30	34.5	52.0N	177.8E	55km	USCGS	
8	RX	eLq	N	01	52						
		eLr	ZNE		59						
	WN	eL	Z	02	00						
		M	Z		06						
	Epicentre			01	00	24.2	18.5N	70.5W	63km	USCGS	6¼-7½
8	SU	eP	N	05	45	00					
		iS	N		46	25					
		i	N		47	00					
	KP	eP	Z	05	46	31					
		i	Z			34					
	CT	eP	Z	05	46	41					
		e	Z			54					
		e	Z		49	27					
		eS	Z			41					
	WN	eP	Z	05	47	05					
		e	Z			14					
		eS	NE		50	08					
		i	ZNE			13					
	CB	eS	E	05	50	25					
	KM	eS	X	05	51	01					
	Epicentre			05	43	02.2	24.2S	177.7W	133km	USCGS	
8	KP	eP	Z	17	10	52					
		e	Z			57					
	CT	eP	Z	17	11	08					
		e	Z			13					
		e	Z			22					
	Epicentre			17	03	18.9	6.4S	147.3E	104km	USCGS	
9	KP	P	Z	12	53	24					
		pP	Z			36					
	CT	e(P)	Z	12	53	39					
	WN	eP	ZN	12	53	47					
		eL	Z	13	24						
	Epicentre			12	40	49.3	42.9N	144.8E	78km	USCGS	
9	KP	eP	Z	15	04	16					
	Epicentre			14	53	13.3	24.5N	143.1E	26km	USCGS	
9	ON	eP	E	19	58	39					4.4
	KP	P	Z	19	58	48					
	CT	P	Z	19	58	58					
		eS	Z	20	00	18					
	WN	eP	Z	19	59	22					5.3
		S	Z	20	01	02					
	GP	e	N	20	02	03					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
JAN 9		eS	N			07					
	Epicentre			19	57	13	33S 179½W	N?		NZ(D)	5.0
							Charters Towers readings used to determine epicentre				
9	KP	eP	Z	22	07	13					
	Epicentre			21	57	28.8	13.0N	147.2E	57km	USCGS	
9	KP	P	Z	23	59	14					
	Epicentre			23	55	49.2	22.2S	179.5W	603km	USCGS	
10	RX	eL	NE	13	24						
		eL	Z		25						
10	CT	P*	Z	22	00	58.1					
	WN	iP*	ZN	22	01	06.2	us				4.9
		S*	NE			24					
		S	Z			27					
		i	NE			28½					
	CB	ePn	E	22	01	19					
		eP*	E			23					5.1
		eSn	E			49					
	TU	eSn	Z	22	01	24					
		(S)	Z			41					
	KP	iPn	Z	22	01	45.2					
	ON	eP	E	22	01	47					
		P*	E		02	03					4.8
		e	E			49					
		eS*	E			59					
	KM	eP*	X	20	01	50					
		eSn	X		02	24					
		e	X			31					
	Epicentre			22	00	39	40.15S	175.9E	S	NZ(B)	5.1
							Felt Hunterville, Raetihi (4), Ohakune, Hawera, Dannevirke (3), Stratford (2-3), Bunnythorpe (2)				
11	KP	P	Z	03	07	05					
	Epicentre			02	54	10.8	51.6N	176.9E	53km	USCGS	
11	KP	PKP_2	Z	05	25	54					
	CT	PKP_2	Z	05	25	55					
	Epicentre			05	05	01.6	43.5N	17.7E	25km	USCGS	
11	KP	P	Z	16	25	15½					
	GP	eP	N	16	26	19					
		S	N		27	39½					5.4
	CT	P	Z	16	25	23¾					
		e	Z		26	04					
		eS	Z			07					
	ON	e?	E	16	25	30					3.7
		S	E		26	01					
	WN	P	Z	16	25	44					5.2
		S	Z		26	40					
	CB	eS	E	16	26	51					4.9
	KM	eS	X	16	27	28					4.8
	Epicentre			16	24	30	37.0S	176.6E	335km	NZ(C)	5.1
11	KP	P	Z	23	19	13					
	Epicentre			23	14	34.3	18.7S	174.8W	151km	USCGS	
12	KP	P	Z	09	00	59					
	CT	P	Z	09	01	06					
		(pP)	Z			27					
	Epicentre			08	50	31.2	20.2N	145.9E	103km	USCGS	
12	KP	P	Z	11	07	59					
	Epicentre			10	55	00.8	52.4N	177.7E	49km	USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
JAN 13	KP	P	Z	03	08	51								
		Epicentre		03	04	55.7	19.1S		177.5W		542km		USCGS	
13	KP	P	Z	05	01	33								
		Epicentre		04	48	37.3	52.3N		177.4E		49km		USCGS	
13	KP	iPn	Z	11	06	06 d								
	CT	Pn	Z	11	06	12½								
		iP*	Z			20								
		e	Z		07	01								
	TO	eP	Z	11	06	13								
		e	Z			19½								
		e	Z			59½								
	ON	Pn	E	11	06	22½								
	WN	ePn	Z	11	06	35								
		eP*	Z			51½								5.3
		Sn	ZNE		07	36								
	CB	eSn	E	11	08	05								4.8
	KM	eSn	X	11	08	40								5.1
	RX	eL	N	11	12½									
		eL	ZE		13									
		Epicentre		11	05	16	37.2S		179.5E		S		NZ(C)	5.1
13	KP	eP	Z	11	46	35								
		Epicentre		11	41	10.1	15.1S		174.0W		25km		USCGS	
14	KP	P	Z	13	46	32								
	TU	eP	Z	13	46	38								
	CT	eP	Z	13	46	38								
		Epicentre		13	34	02.8	44.9N		140.8E		193km		USCGS	
14	KP	iP	Z	18	47	18								
		i	Z			24½								
	TU	eP	Z	18	47	28								
	CT	P	Z	18	47	29								
	WN	P	Z	18	47	43								
	GP	eP	N	18	48	00								
		Epicentre		18	41	49.5	11.4S		166.5E		229km		USCGS	
15	KP	eP	Z	18	28	50								
		e	Z		29	17								
		ePcP	Z		30	45								
	CT	P	Z	18	28	57								
		ePcP	Z		30	52								
		Epicentre		18	21	12.8	6.0S		146.8E		140km		USCGS	
15	KP	eP	Z	22	17	49								
		Epicentre		22	16	18.2	32.0S		178.4W		286km		USCGS	
16	ON	eP	E	11	37	47½								
		i	E		38	51								
	TU	eP	Z	11	37	53								
		e	Z			55								
		S	Z		39	32								
	KP	P	Z	11	37	54								
		e	Z		38	05								
	CT	eP	Z	11	38	04								
		eS	Z		39	08								
	WN	eP	Z	11	38	29								
		S	ZNE		40	40								
		eL	Z	11	43									
	CB	eP	E	11	38	45½								
		S	E		40	57								
	GP	eP	N	11	39	10								
		e	N			20								
		S	N		41	42								
	KM	eP	X	11	39	14								
		S	X		41	35								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
JAN	RX	eP	N	11	39	49								
		eL	NE		44½									
		eL	Z		45½									
		M	NE		46½									
		Epicentre		11	35	41.3	30.5S		177.9W		39km		USCGS	6½
17	KP	P	Z	11	34	06½								
	WN	P	Z	11	34	35								
		Epicentre		11	30	28.2	20.8S		178.4W		613km		USCGS	
17	KP	P	Z	15	39	31								
	WN	P	Z	15	39	38								
		Epicentre		15	29	06.6	4.3N		128.3E		25km		USCGS	
17	KP	P	Z	15	53	27								
	WN	eP	Z	15	53	37								
		Epicentre		15	43	18.3	3.9N		126.6E		74km		USCGS	
18	KP	P	Z	08	20	11								
		Epicentre		08	16	38.4	21.1S		178.7W		600km		USCGS	
18	ON	eP	E	11	50	50								
	KP	P	Z	11	51	06								
	CT	P	Z	11	51	18								
	WN	P	Z	11	51	39								
	CB	P	E	11	51	41								
	GP	eP	N	11	52	03								
		eS	N		55	06								
18	KP	P	Z	15	49	41								
	CT	P	Z	15	49	49½								
	TU	eP	Z	15	49	53								
	RX	eL	NE	16	04									
		Epicentre		15	42	25.5	5.3S		153.7E		83km		USCGS	
18	KP	P	Z	15	53	03								
	CT	P	Z	15	53	11½								
	TU	P	Z	15	53	15								
		Epicentre		15	45	40.9	4.2S		153.6E		127km		USCGS	
18	ON	eP	E	16	00	47								
	KP	iP	Z	16	01	04.7 u								
	CT	P	Z	16	01	13 u								
	TU	P	Z	16	01	16½								
18	ON	eP	E	16	03	33								
	KP	iP	Z	16	03	50 u								
	CT	P	Z	16	03	58 u								
	TU	P	Z	16	04	02								
18	KP	P	Z	22	09	07								
		Epicentre		21	59	44.1	4.4S		129.5E		21km		USCGS	
19	KP	eP	Z	05	59	05								
		Epicentre		06	01	09.5	51.5N		161.1E		29km		USCGS	
19	SU	eP	N	13	24	40								
		S	N		26	05								
		eL	N			45								
		Epicentre		13	22	37.0	21.5S		174.6W		25km		USCGS	
19	ON	P	E	13	38	40								
		S	E		40	02								5.1
	KP	eP	Z	13	38	49								
		i	Z			51								
	TU	eP	Z	13	38	51								
		eS	Z		40	21								
	CT	P	Z	13	38	59								

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
JAN 19		i	Z		39	01					
		eS	Z		40	37					
	WN	S	ZNE	13	41	18					5.9
	CB	eS	E	13	41	28					5.5
	KM	eS	X	13	42	04					5.5
	Epicentre			13	36	54	31½S 179½W 450 km			NZ(D)	5.5
							Charters Towers readings used to determine epicentre				
19	KP	eP	Z	20	54	25					
	Epicentre			20	43	24.4	10.8N 122.4E 99km			USCGS	
19	KP	P	Z	21	27	35					
		i	Z			47					
		pP	Z			54					
	CT	P	Z	21	27	49					
	Epicentre			21	18	58.5	2.9S 139.0E 76km			USCGS	
19	KM	eP	X	22	09	46					5.3
		S	X		11	19					
	RX	S	ZNE	22	09	58					
		eL	NE		10	.3					
		eL	Z		10	.7					
	CB	P	E	22	10	08					5.3
		S	E		11	57					
	WN	eP	Z	22	10	18					
	CT	P	Z	22	10	45					
		i	Z			48					
	KP	eP	Z	22	10	58					
		e	Z		13	49					
	TU	eP	Z	22	11	.0					
	Epicentre			22	07	47	48¾S 164½E N			NZ(D)	5.3
							Canberra, Fort Nelson, Melbourne, Charters Towers, Byrd, Port Moresby readings used to determine epicentre.				
19	KP	e	Z	22	38	47					
		PKP_2	Z			56					
	Epicentre			22	18	27.3	38.2N 22.1E 60km			USCGS	
20	KP	P	Z	20	21	49					
	CT	P	Z	20	21	57					
	Epicentre			20	14	32.7	6.6S 152.1E 33km			USCGS	
20	SU	eP	N	22	19	29					
		i	N			43					
		i	N			52					
	KP	eP	Z	22	23	52					
	CT	P	Z	22	24	01					
		e	Z			06					
21	SU	e(P)	N	12	53	15					
		iS	N			54					
	ON	P	E	12	55	44					
		S	E		58	55					
	KP	P	Z	12	55	59					
		pP	Z		57	19					
		eS	Z		59	21					
	TU	eP	Z	12	56	03					
		eS	Z		59	19					
	CT	eP	Z	12	56	07					
	CB	eP	E	12	56	30					
	Epicentre			12	51	52.1	17.7S 178.8W 558km			USCGS	
22	KP	P	Z	21	37	44					
	TU	P	Z	21	37	56					
	Epicentre			21	30	20.2	4.3S 152.5E 104km			USCGS	

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
JAN 23	CT	iP*!	Z	06	49	58.8 d					
	KP	iP*!	Z	06	49	59.0 d					
	TU	iPn	Z	06	50	14.5					
		iP*	Z			16.8					
		e	Z			19½					
		eS*	Z			44					
	WN	Pn	ZNE	06	50	24½					
		iP*	ZNE			32					5.5
		(S)	ZNE		51	03					
	CB	Pn	E	06	50	25					
		eP*	E			33					5.3
		Sn	E			57					
	ON	P	E	06	50	25½					
	KM	ePn	X	06	50	50½					
		eP*	X		51	05					5.8
		Sn	X		51	39					
	RX	eL	ZNE	06	54						
	Epicentre			06	49	42	38.55S 174.7E		S	NZ(B)	5.5
24	SU	P	N	04	49	09					
	ON	eP	E	04	51	06					
	KP	iP!	Z	04	51	28 u					
	TU	P	Z	04	51	38					
	WN	eP	Z	04	51	52					
	Epicentre			04	46	29.1	15.6S 167.6E 133km			USCGS	
24	KP	P	Z	15	51	54					
		pP	Z		52	16					
	Epicentre			15	39	46.0	24.4N 122.0E 58km			USCGS	
25	SU	eP	N	01	54	26					
		i	N			30					
		eS	N		57	35					
	KP	P	Z	01	56	15					
		e	Z		57	04					
	CT	eP	Z	01	56	25					
	TU	eP	Z	01	56	26					
	Epicentre			01	50	11.4	10.7S 161.8E 80km			USCGS	
25	KP	P	Z	09	35	19					
	Epicentre			09	25	25.9	12.3N 142.3E 145km			USCGS	
25	KP	eP	Z	10	11	11					
		e	Z			24					
	Epicentre			10	03	07.0	4.4S 152.7W 50km			USCGS	
26	KP	P	Z	05	34	15					
	CT	eP	Z	05	34	20					
		i	Z			21					
	TU	eP	Z	05	34	21					
	Epicentre			05	22	51.3	32.2N 138.1E 333km			USCGS	
26	KP	eP	Z	06	13	12½					
		i	Z			15					
	TU	eP	Z	06	13	13					
	CT	eP	Z	06	13	21					
		eS	Z		16	33					
	WN	eP	Z	06	13	43					
		e	Z			48					
		eS	NE		17	11					
	GP	eS	N	06	18	10					
	Epicentre			06	09	33.0	23.4S 176.1W 214km			USCGS	
26	KP	PKP_2	Z	08	38	10					
	Epicentre			08	17	37.0	35.1N 22.7E 32km			USCGS	5-5¼

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
JAN 27	CT	eP	Z	11	46	27					
	KP	P	Z	11	46	33					
	SU	eL	N	12	06						
27	ON	eP	E	13	42	13					
	KP	P	Z	13	42	24					
	TU	eP	Z	13	42	25					
		eS	Z		43	57					
	CT	P	Z	13	42	33					
		eS	Z		44	16					
	WN	eS	NE	13	44	54					5-5½
	GP	eS	N	13	45	50					5½-5½
	Epicentre			13	40	23	31½S 178½W			NZ	5¼
28	KP	P	Z	04	02	13					
		pP	Z			33					
	CT	P	Z	04	02	20					
	Epicentre			03	54	17.1	4.6S 144.0E 157km			USCGS	
28	SU	eP	N	05	42	25					
		M	N		46½						
	ON	eP	E	05	45	05					
		S	E		49	09					
	KP	eP	Z	05	45	15					
		e	Z			22					
		eS	Z		49	36					
	CT	eP	Z	05	45	27					
		e	Z			32					
		eS	Z		49	57					
	WN	eP	Z	05	45	58					
		eS	ZNE		50	33					
	RX	eS	N	05	52.0						
		eL	N		57						
		eLr	Z		59						
	Epicentre			05	40	08.2	17.2S 172.0W 25km			USCGS	
28	KP	P	Z	16	51	16					
	Epicentre			16	41	13.8	0.0 123.9E 101km			USCGS	
29	CT	eP	Z	11	49	40					
		e	Z			46					
	Epicentre			11	43	12.6	9.1S 157.5E 114km			USCGS	
29	TU	eP	Z	13	30	50					
	CT	eP	Z	13	30	50					
	Epicentre			13	25	03.8	12.5S 165.1E 100km			USCGS	
30	KP	P	Z	09	34	19					
		e	Z			30					
30	KP	P	Z	13	59	01					
	CT	P	Z	13	59	09					
	Epicentre			13	51	27.5	5.3S 146.8E 158km			USCGS	
30	SU	S	N	15	03	58					
	ON	eP	E	15	05	38					
	KP	iP	Z	15	05	50½ u					
	TU	eP	Z	15	05	52					
	CT	eP	Z	15	05	57					
	WN	eP	Z	15	06	18					
	Epicentre			15	01	12.4	16.2S 176.0W 383km			USCGS	
30	KP	P	Z	15	33	12					
		e	Z			37					
		e	Z			47					
		(pP)	Z		34	00					
	CT	eP	Z	15	33	20					
		e	Z			53					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
JAN	TU	e(P)	Z	15	33	21					
		e	Z			52					
	Epicentre			15	22	49.4	20.7N 144.5E 187km			USCGS	
30	SU	S	N	18	34	50					
		M	N		37	10					
	ON	eP	E	18	35	0					
	KP	P	Z	18	35	14					
		e	Z			16					
	TU	e(P)	Z	18	35	30					
	CT	eP	Z	18	35	30					
	WN	eP	Z	18	35	51					
		e	Z		36	13					
	GP	eP	N	18	36	0					
	RX	eL	ZN	18	45						
	Epicentre			18	30	52.3	18.8S 168.5E 79km			USCGS	
31	CT	eP	Z	03	51	52					
	Epicentre			03	46	49.0	17.6S 168.0E 46km			USCGS	
FEB 1	ON	eP	E	00	18	27					
	TU	eP	Z	00	18	28					
		eS	Z		20	07					
	KP	eP	Z	00	18	39					
	CT	eP	Z	00	18	54					
		e	Z		20	34					
	TO	eP	Z	00	18	56	Very emergent				
		e	Z		20	33					
	KM	eP	X	00	19	33					
		eS	X		22	16					
	WN	eS	ZNE	00	21	11					
	CB	eS	E	00	21	30					
	GP	eS	N	00	22	17					
1	TU	eP	Z	00	41	52					
		e	Z		43	26					
	ON	eP	E	00	41	54					
		e	E		44	42					
	KP	eP	Z	00	41	57					
		e	Z		43	35					
	TO	eP	Z	00	42	08	Very emergent				
		e	Z		43	53					
	CT	eP	Z	00	42	09					
		e	Z		43	56					
	WN	eP	ZNE	00	42	35	Small and very emergent on n and e				
		eS	ZNE		44	34	2.1 4				
		e	Z		45	25	3.2 7				
		e	Z		46	9	9.1 12				
		eL	Z		51	0	20.5 14				
	CB	eP	E	00	42	50					
		eS	E		44	55					
	KM	eP	X	00	43	11					
		e	X			21					
		eS	X		45	34					
	GP	eP	N	00	43	16					
		eS	N		45	39					
	RX	eS	N	00	44	03					
		e	NE		47	22		1.8 12	3.9 9		
		e(L)	ZNE		49		10.5 14	6.4 17	9.9 14		
		eL	ZNE		57	7	38.0 14	12.0 15	15.0 14		
	Epicentre			00	39	54.6	31.7S 177.3W 30km			USCGS	
1	KP	e(P)	Z	02	16	32					
	CT	e(P)	Z	02	16	47					
		e	Z			53					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
FEB 1	TU	eP	Z	18	59	20				
		e	Z	19	00	52				
	ON	e?	E	18	59	23				
	KP	eP	Z	18	59	23				
		e	Z	19	00	59				
	CT	eP	Z	18	59	35				
		e	Z	19	01	17				
		e?	Z			38				
	TO	eP	Z	18	59	35				
		e	Z	19	01	15				
	WN	eP	Z	19	00	01				
		eS	ZNE		02	00				
		eL	Z		04.4					
		M	Z		13		1.6 13			
	CB	eP	E	19	00	33	Very emergent			
		eS	E		02	19	Very emergent			
	KM	eP	X	19	00	36				
		eS	X		03	02				
	GP	eP	N	19	00	40				
		eS	N		03	05				
	SU	eL	N	19	04.7		Irregular			
	RX	eL	ZN	19	07.7		Traces Only			
		eL	E		08.6		Traces Only			
1	TU	eP	Z	20	23	08				
	KP	eP	Z	20	23	12				
		e	Z			35				
	ON	eP	E	20	23	22				
		e	E			58				
	CT	eP	Z	20	23	24				
		e(S)	Z		25	40				
	TO	eP	Z	20	23	43	Very emergent			
		e	Z		25	19	Possibly artificial			
	KM	e(P)	X	20	24	31				
		e(S)	X		27	12				
	GP	e(S)	N	20	27	13				
	SU	eL	N	20	27.6		Irregular			
	RX	eL	NE	20	30.5		Traces Only			
		eL	ZN		32.3		Traces Only			
2	ON	e?	E	17	35	07				
	KP	e(P)	Z	17	35	15				
	TU	e(P)	Z	17	35	15				
		e(S)	Z		38	31				
	CT	e(P)	Z	17	35	26				
		e(S)	Z		38	51				
	TO	e(P)	Z	17	35	26				
		e(S)	Z		38	51				
2	SU	eL	N	19	04.7		Period irregular			
	KP	e(P)	Z	19	10	59				
2	SU	eL	N	20	27.7		Period irregular			
3	ON	eP	E	00	46	39				
		e	E		47	40				
	KP	iP	Z	00	46	54 u				
	SU	eP	N	00	46.9		Time approx.			
		eS	N		52.5		Time approx.			
		eL	N		55.3		Time approx.			
	CB	eP	E	00	46	56				
		e?	E		47	05				
	CT	eP	Z	00	47	00				
	TO	eP	Z	00	47	00				
	TU	eP	Z	00	47	04				
	WN	eP	ZN	00	47	05	2.8 5			6.4
		eS	Z		54	30				
		e	Z		59	03				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
		eL	Z	01	10.1					
		M	Z		14		15 15			
	RX	eP	ZNE	00	47	06				
		e	NE		49	16				
		e	Z		50	45				
		eS	ZNE		54	29	4.8 15	5.8 15	5.0 15	6.1
		e(SS)	N		58	22		3.7 15		
		e(L)	Z	01	02.2					
		eL	ZE		06.1					
		L	N	Onset not clear						
		M	N		09			1.3 14		
		M	E		10				1.0 14	
		M	Z		11		2.0 17			
	KM	eP	X	00	47	09				
		e	X			36				
		e(S)	X		54	15				
	GP	eP	N	00	47	10				
	Epicentre			00	37	53.6	1.2S 137.8E 17km			USCGS
3	KP	eP	Z	13	29	26				
	TU	eP	Z	13	29	31				
		eS	Z		32	33				
	TO	eP	Z	13	29	43	Very emergent			
		e?	Z		31	18				
		e?	Z			33				
		eS	Z		33	05				
	WN	eS	ZN	13	33	39				
	GP	e?	N	13	34	41				
	RX	eL	E	13	38.8		Traces Only			
		eL	N		39.9		Traces Only			
	Epicentre			13	25	12.2	21.2S 175.5W 25km			USCGS
4	ON	e	E	00	09	34				
	KP	e	Z	00	09	55				
	TU	e	Z	00	11	04				
	TO	e	Z	00	11	21	Very emergent			
	WN	e	ZNE	00	12	13				
	GP	e	N	00	13	20				
	KM	e	X	00	13	47				
4	ON	eP	E	01	05	03				
	KP	eP	Z	01	05	19	Very emergent			
	TU	eS	Z	01	07	03				
	TO	eS	Z	01	07	24	Very emergent			
	WN	eS	ZNE	01	08	09				
	CB	eS	E	01	08	27	Very emergent			
	GP	eS	N	01	09	13				
	KM	eS?	X	01	09	14	Very emergent			
	Epicentre			01	02	34.6	29.1S 177.2W 43km			USCGS
4	KP	eP	Z	03	04	52				
	TU	eP	Z	03	05	00				
	TO	e	Z	03	05	36				
	RX	e	N	03	19	06				
		e(Lq)	N		25.6			2.2 20		
		eLq	E		29.0				2.5 15	
		eLr	Z		32.3		3.3 15			
	Epicentre			02	54	42.1	4.6S 119.0E 89km			USCGS
8	KP	eP	Z	11	57	38				
	TO	eP	Z	11	57	45				
	CT	eP	Z	11	57	45.5				
	TU	eP	Z	11	57	50				
	RX	e	E	12	03	38				
		e	NE		04.9					
		eL	N		09	14				
		M	N		10			2.8 15		

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
FEB		eL	E			10.5				
		M	E			19		3.3	17	
		eL	Z			18.9	Traces only			
	SU	eL	N	12	06	18.9				
	AK	e	N	12	09	41				
		e	N			13 35				
		eL	N			14 58		7.2	15	
	WN	eL	Z	12	16	16.6	Irregular			
	Epicentre			11	49	13.9	3.2S 141.3E 87km			USCGS
8	ON	eP	E	16	46	13				
		e	E			49				
	KP	eP	Z	16	46	35				
		e	Z			48				
		e	Z			47 03				
	TU	e?	Z	16	46	47				
		e(P)	Z			54				
		e	Z			47 02				
	CT	eP	Z	16	46	52				
	TO	eP	Z	16	46	52				
	Epicentre			16	42	04.4	19.2S 169.1E 43km			USCGS
8	TO	eP	Z	19	52	37				
	KP	eP?	Z	19	52	38				
	TU	eP?	Z	19	52	43				
	Epicentre			19	40	27.7	0.7N 98.6E 43km			USCGS
9	ON	eP	E	12	05	22				
		e	E		07	41				
	KP	eP	Z	12	05	37				
		e	Z		08	15				
	TU	eP	Z	12	05	41				
		eS	Z		08	09				
	WN	eP	ZNE	12	06	10				
		eS	ZNE		09	06				
	CB	eP	E	12	06	12				
		eS	E		09	09				
	KM	eP	X	12	06	30				
		eS	X		09	35				
	SU	e?	N	12	06	31				
	Epicentre			12	02	33.5	24.2S 179.5E 541km			USCGS
9	KP	eP	Z	22	01	24				
	WN	eP	Z	22	01	28				
	TU	eP	Z	22	01	33				
	Epicentre			21	51	13.2	0.6N 123.9E 50km			USCGS
11	KP	eP	Z	02	53	38				
		epP	Z		55	13				
	TU	eP	Z	02	53	45				
		epP	Z		55	22				
	TO	eP	Z	02	53	50				
		epP	Z		55	23				
	WN	eP	Z	02	53	53				
		epP?	Z		55	29				
	Epicentre			02	42	36.1	29.6N 139.0E 400km			USCGS
11	KP	eP	Z	19	02	50				
		epP	Z		03	14				
		e	Z			26				
		ePcP	Z		04	58				
	ON	eP	E	19	02	52	Very emergent			
		e	E		03	06				
		e(pP)	E			22				
	SU	e	N	19	02	53				
		e	N		03	37				
		e(S)	N		05	55				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
		e(SS)	N		07	25				
		e	N		11	59				
	CT	eP	Z	19	02	59				
		epP	Z		03	22				
	TU	eP	Z	19	03	03				
		epP	Z			27				
		e(S)	Z		09	40	Very emergent			
	CB	eP	E	19	03	05				
		e	E			36				
	WN	eP	ZNE	19	03	09	2.9	6		6.3
		epP	ZNE			30				
		e(PcP)	Z		05	32				
		e?	Z		08	52				
		e?	Z		10	00				
		e(ScS)	Z		13	30				
		eL	Z		19	0	9.0	18		
	KM	eP	X	19	03	19				
	GP	eP	N	19	03	23				
		e	N			54				
	RX	eP	ZNE	19	03	24	3.5	9	2.5 12	6.2
		e	ZE			56				
		ePP	N		05	08				
		e	ZE			54				
		eS	NE		09	36		8.4	20 6.3 17	6.1
		e(SS)	N		13	09				
		e	ZE			30	6.6	20	10 14	
		eL	ZNE			16.2	20	25	15 27 12 23	
	AK	e	N	19	05	47				
		e	N		06	38				
		e	N		09	20				
		e	N		10	02				
	Epicentre			18	55	32.0	4.5S 153.5E 100km			USCGS
11	KP	e(P)	Z	22	48	34				
	Epicentre			22	41	13.8	4.3S 153.7E 118km			USCGS
12	KP	eP	Z	17	37	39				
	Epicentre			17	25	56.9	34.4N 135.6E 317km			USCGS
12	ON	eP	E	20	56	18				
		e(S)	E		57	26				
	KP	eP	Z	20	56	24.5				
		e?	Z		57	20				
		eS	Z			42				
	TU	eP	Z	20	56	26				
		eS	Z		57	40				
	CT	eP	Z	20	56	34				
		eS	Z		57	56				
	WN	eP	ZNE	20	56	54				
		eS	ZNE		58	31				
		e	ZNE	21	11	50				
	CB	eP	E	20	57	00	Very emergent			
		eS	E		58	44	Very emergent			
	GP	eS	N	20	59	27				
	Epicentre			20	54	48	33.2S 179.2E 537km Charters Towers reading used to determine Epicentre			NZ(D) 5.7NZ
12	KP	eP?	Z	23	36	37				
	Epicentre			23	24	55.2	26.4N 140.9E 168km			USCGS
14	KP	eP	Z	02	01	14				
	CT	eP?	Z	02	01	16				
	TU	eP?	Z	02	01	33				
	Epicentre			01	53	33.9	4.3S 153.5E 119km			USCGS

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
FEB 14	KP	eP	Z	02	57	38							
	TU	eP	Z	02	57	47							
	Epicentre			02	47	30.7	0.1N		123.8E		96km		USCGS
	14 RX	eP	ZNE	06	48	16	20.5	11	6.2	14	6.3	11	7.1
		ePP	ZNE		51	24							
		eS	ZNE		58	06	14.5	16	24	15	44	18	7.2
		e	Z	07	03	00							
		eSS	NE			30							
		eLq	NE		09	26			62	28	30	30	
		eLr	Z		12	7	250	19					
		eLr	NE		13	0			73	19	108	18.5	
	GP	eP	N	06	48	17							
		eS	N		57	57							
		eL	N	07	12	46							
	WN	eP	ZNE	06	48	19	22	10					7.2
		e	Z		49	10							
		ePP	Z		51	24							
		eS	ZNE		58	08							
		eSS	Z	07	03	24							
		eL	Z		12	42							
		M	Z		15		66	19					
	TU	eP	Z	06	48	21							
	CB	eP	E	06	48	22	Very emergent						
		e(S)	E		58	21	Very emergent						
	CT	eP	Z	06	48	23							
		e	Z			55							
	KP	eP	Z	06	48	24							
		e	Z			28							
		e	Z			59							
		ePP	Z		51	39							
		eP'P'	Z	07	14	54							
	AK	eP	N	06	48	37			6.2	10			
		e(S)	N		58	48			14	12			
		e(PS)	N		59	54							
		eLq	N	07	10	21			55	26			
		eLr	N		13	58			49	21			
	ON	eP	E	06	48	48							
		e	E		58	57							
	SU	eP	N	06	49	29							
		ePP	N		53	11			8.2	10			
		e(PPP)	N		55	24							
		e(SKS)	N		59	46							
		e(PS)	N	07	01	38							
		e	N		03	28							
		eSS	N		06	50							
		eL	N		18	6							
		M	N		21				70	20			
	Epicentre			06	36	01.3	38.1S		73.1W		44km		USCGS
	14 KP	eP	Z	15	06	08							
	TU	eP	Z	15	06	13							
		e(S)	Z			38							
	CT	eP	Z	15	06	18							
	WN	eP	Z	15	06	40							
		eS	ZNE		07	33							
	Epicentre			15	05	31	37.1S		176.4E		260km		NZ(D) 4.6NZ
	14 RX	e	NE	23	03	8							
		e	Z		06	1	Traces only						
	15 KP	eP	Z	15	32	50							
		e	Z			54							
		e?	Z		33	19							
		eS	Z		38	44							
	CT	eP	Z	15	33	01							
		e?	Z		33	26							
		e?	Z			47							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
FEB	TU	eP?	Z	15	33	05							
		e?	Z			30							
	CB	eP	E	15	33	07							
	KM	eP	X	15	33	18							
	WN	eS?	ZNE	15	36	30							
		eLq?	Z		43	0	Traces only						
		eLr?	Z		49	5	Traces only						
	RX	e(S)	NE	15	39	40					2.0	16	
		e	NE		43	14					1.9	20	2.5 15
		eLr	ZNE		46		4.4	22			3.5	26	3.1 20
	Epicentre			15	25	29.5	4.4S		153.8E		109km		USCGS
	15 ON	eP	E	15	32	50							
	TU	eP?	Z	15	33	05							
		e?	Z			30							
		eS	Z		35	42							
	KP	eP	Z	15	33	06							
		e?	Z			19							
		eS	Z		35	29							
	CT	eP	Z	15	33	14							
		e?	Z			26							
		e?	Z			47							
		eS	Z		36	02							
	CB	eP	E	15	33	39							
		eS	E		36	39							
	GP	eP	N	15	34	02							
		eS	N		37	17							
	WN	eS?	ZNE	15	36	30							
		eLq?	Z		43	6	Traces only						
		eLr?	Z		49	5	Traces only						
	KM	eS	X	15	37	07							
	Epicentre			15	29	55.6	23.7S		179.7W		555km		USCGS
	15 ON	eP	E	20	59	37							
	SU	e	N	21	00	15	Traces only						
	WN	e	Z	21	06	24							
	RX	e	NE	21	08	4					2.9	17	2.0 15
		e	Z		10	6	4.6	17					
	Epicentre			20	55	59.7	23.9S		176.5W		25km		USCGS
	16 KP	eP	Z	09	23	50							
		eS	Z		24	10							
	CT	eP	Z	09	23	53							
		e	Z		24	21							
	WN	eP	ZNE	09	24	14							
		eS	ZNE			52‡							
	TU	eS?	Z	09	24	18							
	CB	eP	E	09	24	22							
		eS	E		25	06							
	KM	eS	X	09	25	44							
	GP	eS	N	09	25	55							
	Epicentre			09	23	23	38.3S		175.6E		197km		NZ(B) 4.2NZ
	17 RX	eP	ZN	03	47	44					3.2	12	5.5
		e(Lq)	NE		51	3					13	18	17 12
		eLr	Z		52	1	19	16					
	GP	eP	N	03	48	17							
		eL	N		55	00							
	KM	eP	X	03	48	29							
		eL	X		55	23							
	CT	eP	Z	03	49	07							
		e	Z			52							
	KP	eP	Z	03	49	11							
		epP	Z			18							
		e	Z		50	32							
	TU	e?	Z	03	49	15							
		e?	Z			39							

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
FEB	ON	eP	E	10	09	53				
		eS	E		11	57				
	AK	eP	N	10	10	00	Timing Doubtful			
		eS	N		11	03	Timing Doubtful			
	KP	iP	Z	10	10	08 u				
		e	Z		12	26				
		e	Z		17	24				
		e	Z	10	25	42				
	TU	eP	Z	10	10	11				
		eS	Z		12	24				
		e	Z		17	26				
		eScS	Z		21	02				
	CT	eP	Z	10	10	17				
		e	Z			18				
		e	Z			20				
		eS	Z		12	42				
		e	Z		17	25				
		eScS	Z		21	04				
	WN	eP	ZNE	10	10	38				
		eS	ZNE		13	13				
		e	Z		17	31				
		eScS	ZNE		21	10				
	CB	eP	E	10	10	41				
		eS	E		13	17				
	KM	eP	X	10	10	57				
		eS	X		13	41				
	GP	eP	N	10	11	03				
		eS	N		13	54				
		eScS	N		17	38				
	RX	eL	NE	10	18		Traces only			
		eL	Z		19		Traces only			
	Epicentre			10	07	26.6	25.9S 178.4E 655km		USCGS	
20	ON	eP	E	16	18	13	Very emergent			
		epP	E			27				
	KP	eP	Z	16	18	19				
		epP	Z			33				
		ePP	Z		21	49				
	CT	eP	Z	16	18	23				
		epP	Z			37				
		ePP	Z		21	59				
	TU	eP	Z	16	18	25	Very emergent			
		epP	Z			37				
		ePP	Z		21	56				
	WN	eP	Z	16	18	31				
		epP	ZN			45				
		eL	Z			50.9	Traces only			
	CB	epP	E	16	18	44				
	KM	e(pP)	X	16	18	49				
	GP	e(pP)	N	16	18	55				
	AK	eS	N	16	28	32	Timing doubtful			
	RX	e(sS)	N	16	29	46				
		e(SS)	N		35	40				
		eL	N		49.7		2.1 23			
		eL	ZE		50		Traces only			
	Epicentre			16	05	44.6	43.0N 144.9E 55km		USCGS	
20	KP	eP	Z	17	17	06				
	CT	eP	Z	17	17	07				
	TU	eP	Z	17	17	13				
	Epicentre			17	05	38.9	4.0S 104.2E 25km		USCGS	
20	CT	eP?	Z	20	19	34				
		e(pP)	Z			39				
	RX	eS	N	20	27	14	Traces only			
	Epicentre			20	11	13.7	50.6S 110.8E 31km		USCGS	

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
FEB 20	CT	e?	Z	22	15	53				
		e(P)	Z		16	18				
			Z	22	16	15				
	KP	eP	N	22	42	02	Traces only			
	RX	eLg	Z		58	03	Traces only			
		e(Lr)		22	02	38.2	26.1N 96.8E 25km		USCGS	
	Epicentre									
21	ON	eP	E	00	09	13				
	KP	eP	Z	00	09	26				
	CT	e?	Z	00	09	28				
		e(P)	Z			36				
		e	Z		12	14				
	WN	eP	ZNE	00	10	07				
		e	ZNE		12	52				
	KM	eP	X	00	10	50	Very emergent			
		eS	X		13	35	Very emergent			
	CB	eS	E	00	13	16				
	Epicentre			00	06	02.4	24.8S 177.1W 38km		USCGS	
21	CT	eP	Z	09	55	39	Very emergent			
	RX	eL	N	09	58	24				
	Epicentre			09	50	05.4	56.8S 146.7E 25km		USCGS	
21	KP	eP	Z	10	07	05	Very emergent			
	CT	eP	Z	10	07	12				
	Epicentre			10	01	19.0	12.0S 165.9E 25km		USCGS	
22	ON	eP	E	09	51	45				
	TU	eP	Z	09	51	50				
		eS	Z		52	57				
		e	Z		53	04				
	KP	eP	Z	09	51	52				
	CT	eP	Z	09	52	02				
		e	Z		53	29				
	WN	eP	ZNE	09	52	26				
		eS	ZNE		54	08				
	CB	e?	E	09	52	50				
		eS	E		54	25				
	KM	eP	X	09	53	03				
		eS	X		55	06				
	GP	eP	N	09	53	06				
		eS	N		55	12				
	RX	eP	Z	09	53	41				
		e	Z		54	16				
		eS	Z		56	15				
	Epicentre			09	50	23	33.5S 179.7W 285±km		NZ(D)	5.9NZ
							Charters Towers, Brisbane and Canberra Readings used to determine Epicentre.			
22	KP	eP	Z	16	50	05				
	Epicentre			16	38	01.4	29.4N 131.1E 25km		USCGS	
22	KP	eP	Z	22	42	10				
	TU	eP	Z	22	42	11				
		eS	Z			45				
	CT	eP	Z	22	42	17				
	WN	eP	ZNE	22	42	39				
		eS	ZNE		43	38				
	CB	eS	E	22	43	50				
	Epicentre			22	41	26	37.2S 177E 310km		NZ(B)	4.6NZ
23	KP	eP	Z	11	48	27				
	CT	eP	Z	11	48	36				
	GP	eP?	N	11	48	55				
	RX	eS	NE	11	55	18				
		e?	E		58	32		1.3 16		
		eL	NE	12	02	5		1.9 24		
	Epicentre			11	40	52.8	6.3S 147.0E 80km		USCGS	

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
FEB 23	KP	eP	Z	18	13	02					
	CT	eP	Z	18	13	10					
	CB	eP	E	18	13	14					
	TU	eP	Z	18	13	15					
		e?	Z		15	17					
	WN	eP	ZN	18	13	21					
	GP	eP	N	18	13	30					
	KM	eP?	X	18	13	33					
	SU	eL	N	18	18	8					
	RX	eS	NE	18	20	12		1.4 20	1.7 20		6.4
		eL	NE		25			4.7 23	4.2 20		5.3
		eL	Z		30	6	5.0 18				
	Epicentre			18	05	27.1	4.0S 152.6E 25km			USCGS	
23	KP	eP	Z	19	40	04					
	CT	eP	Z	19	40	06					
	TU	eP	Z	19	40	14	Very emergent				
	Epicentre			19	29	15.1	11.1N 125.8E 100km			USCGS	
23	SU	e(P)	N	20	28	24	Very emergent				
		eS	N		33	14					
		eSS	N		34	50					
		eL	N		36						
	CT	eP	Z	20	29	12					
	TU	eP	Z	20	29	16					
		e(ScS)	Z		39	51					
	CB	eP	E	20	29	16					
	KM	eP	X	20	29	22					
		eS	X		35	53					
	WN	eP	ZNE	20	29	23	5.7 3				6.8
		e(PP)	Z		31	18	Very emergent				
		eS	Z		35	47	Very emergent				
		eL	Z		42	5	7.1 20				
	GP	eP	N	20	29	32					
		eS	N		36	02					
	RX	eS	NE	20	36	08		4.5 22	6.0 22		6.0
		e	NE		39	42					
		eL	E		41	5			15 22		5.8
		eL	ZN		42	9	1.7 17	16 18			5.8
	Epicentre			20	21	28.6	3.8S 152.0E 25km			USCGS	
24	MN	iP	Z	08	00	05					
	RX	eP	ZE	08	00	16	d				
		eS	ZNE			34					
	GP	eP	N	08	00	50					
		eS	N		01	35					
		e	N		02	01					
	KM	e?	X	08	01	02					
		eS	X		01	36					
	CB	eP	E	08	01	13					
		eS	E		02	16					
	WN	eP	Z	08	01	26					
		eS	ZNE		02	38					
	CT	eP	Z	08	01	52					
		e	Z		02	02					
		e	Z		03	32					
		e	Z			45					
	KM	eP	Z	08	02	04					
		e	Z		03	49					
	ON	eS	E	08	04	19					
	Epicentre			07	59	51	44.9S 167.5E	N		NZ(C)	4.9NZ
24	MN	eP	Z	14	00	13					
	KP	eP	Z	14	00	15					
	CT	eP	Z	14	00	19					
	TU	eP	Z	14	00	23					
	Epicentre			13	48	44.8	9.5N 12.9E 25km			USCGS	

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
FEB 24	KP	eP	Z	14	33	04	Very emergent				
	CT	eP	Z	14	33	25	Very emergent				
	Epicentre			14	27	01.4	10.7S 161.3E 50km			USCGS	
24	KP	eP	Z	19	42	23					
	CB	eP	E	19	42	30					
	CT	eP	Z	19	42	31					
	TU	eP	Z	19	42	35					
	WN	eP	ZNE	19	42	35	Very emergent				
	KM	e	X	19	42	50					
	Epicentre			19	34	33.6	5.5S 146.1E 40km			USCGS	
25	TU	eP	Z	02	47	20					
		e(S)	Z		48	29					
	KP	eP	Z	02	47	26					
		e	Z		48	44					
	ON	eP	E	02	47	32					
	CT	eP	Z	02	47	42					
		e	Z		49	01					
	WN	eS	ZNE	02	49	43					
	CB	eS	E	02	50	04					
	KM	eS	X	02	50	45					
	GP	eS	N	02	50	47					
	Epicentre			02	45	50	34.4S 177.5W 159km			NZ(D)	5.3NZ
							Charters Towers Reading used to determine Epicentre				
25	ON	eP	E	12	54	16					
	TU	eP	Z	12	54	20					
		eSn	Z		55	34					
		eS*	Z			59					
	KP	eP	Z	12	54	21					
	CT	eP	Z	12	54	??	Time uncertain				
		e?	Z		56	16					
	WN	e	ZNE	12	56	40					
	CB	e	E	12	56	59					
	GP	e	N	12	57	46					
		e	N			53					
	Epicentre			12	52	44	33.2S 179.1W S			NZ(D)	5.2NZ
							Charters Towers reading used to determine Epicentre				
25	TU	eP	Z	13	57	56					
		eS	Z		59	09					
	KP	eP	Z	13	58	00					
	ON	eP	E	13	58	07					
	CT	eP	Z	13	58	17					
		e?	Z		59	42					
	WN	e	Z	13	59	08					
		eS	ZNE	14	00	17					
		eL	Z		02		Traces only				
	AK	e	N	13	59	9					
	CB	eS	E	14	00	38					
	GP	eS	N	14	01	23					
	RX	eL	NE	14	04						
		eL	Z		06		Traces only				
	Epicentre			13	56	22	34.5S 177W 159km			NZ(D)	5.3NZ
							Charters Towers Reading used to determine Epicentre				
25	KP	eP	Z	14	05	22					
	TU	eP	Z	14	05	39					
	CT	eP	Z	14	05	39					
	SU	e	N	14	05	44					
	CB	eP	E	14	05	54					
	WN	eP	ZNE	14	05	56					
	GP	eP	N	14	06	15					
	Epicentre			14	00	43.9	17.1S 168.4E 24km			USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
FEB 25	KP	eP	Z	20	15	34								
	Epicentre			20	10	56.3	17.7S		174.1W		60km		USCGS	
26	KP	eP	Z	01	46	04								
	CT	eP	Z	01	46	13								
	Epicentre			01	39	03.6	7.1S		155.2E		25km		USCGS	
26	TU	eP	Z	02	32	12								
		eS	Z		33	27½								
	KP	eP	Z	02	32	16								
	ON	eP?	E	02	32	19								
	CT	eP	Z	02	32	24								
	WN	e?	Z	02	33	30								
		eS	ZNE		34	35								
		e?	ZNE		35	40								
		eL	Z		37	.0	Irregular							
	RX	e?	Z	02	34	18								
		eL	E		38	.6					2.4	16		
		eL	N		39	.0			2.7	16				
		eL	Z		40	.5	Irregular							
	CB	eS	E	02	34	55								
	KM	eS	X	02	35	34								
	SU	eL	N	02	38	10	Irregular							
	Epicentre			02	30	34	33.8S		177.7W	N			NZ(D)	5.3NZ
							Charters Towers and Raoul Island Readings used to determine Epicentre.							
26	KP	eP	Z	08	55	06								
	CT	eP	Z	08	55	11								
	KM	e?	X	08	55	11	Very emergent							
	TU	eP	Z	08	55	15½								
	Epicentre			08	44	48.8	0.1S		122.3E		25km		USCGS	
26	CT	e(PKP)	Z	12	39	59								
	TU	e(PKP)	Z	12	40	00								
	KP	e(PKP)	Z	12	40	05								
		e?	Z		44	19								
26	SU	e	N	16	45	16								
		eL	N		46	43			26½	7				
	KP	eP	Z	16	48	41								
		e?	Z			58								
	TU	eP	Z	16	48	51								
	CT	eP	Z	16	48	54								
	RX	eL	NE	16	57					3	23			
	WN	eL	Z	16	58		Traces only							
27	RX	eP	Z	12	53	02								
		eS	NE	13	02	54				5.8	20			6.4
		eSS	NE		08	10				5.3	22	5.6	20	
		eLq	NE		14	.4				5.8	32	4.6	28	
		eLr	ZNE		17	.7	19	18		7.3	18	17	18	
	TU	eP	Z	12	53	04								
	CT	eP	Z	12	53	05								
	KP	eP	Z	12	53	09								
	WN	eL	Z	13	18	.7	5.3	16						
	SU	e(L)	N	13	24	27								
		eL	N			40				8.8	17			
	Epicentre			12	40	48.9	37.4S		73.2W		40km		USCGS	
27	KP	eP	Z	14	30	50								
	CT	eP	Z	14	30	55								
	TU	eP	Z	14	31	00								
		e?	Z			07								
	RX	eL	ZN	14	50		Traces only							
		eL	E		55		Traces only							
	Epicentre			14	21	24.5	2.7S		130.1E		40km		USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
FEB 28	KP	eP	Z	07	31	42								
	CT	eP?	Z	07	31	48								
	Epicentre			07	19	44.5	31.4N		139.2E		62km		USCGS	
28	TU	eP	Z	18	11	02								
		e(S)	Z		12	21								
	KP	e?	Z	18	11	30								
		e?	Z			39								
	CT	e?	Z	18	11	30								
		e	Z		12	39								
	WN	eS	ZNE	18	13	24								
	CB	eS	E	18	13	48								
	Epicentre			18	09	20	34.0S		177.5W	N			NZ(D)	5.4NZ
							Charters Towers Reading used to determine Epicentre.							
28	KP	eP?	Z	20	54	18								
	CT	eP?	Z	20	54	25								
	Epicentre			20	44	22.4	2.9S		140.7E		25km		USCGS	
MAR 1	RX	eL	NE	07	27	.0								
1	SU	e	N	23	42	52								
		e	N		44	17								
	AK	e	N	23	46	16								
		e	N		50	35								
	KP	eP	Z	23	46	26								
	TU	eP	Z	23	46	35								
	CT	eiP	Z	23	46	38½								
	WN	eP	ZNE	23	46	54								
		e	ZNE		47	44								
		eS	Z		51	30								
		eSS	Z		53	00								
		e(SSS)	ZE		53	22								
		e	Z		55	08								
		eL	Z			49								
	CB	eP	E	23	46	57								
		e	E		52	48								
	KM	eP	X	23	47	07								
		eS	X		51	57								
	RX	eP	ZN	23	47	31								
		eS	ZNE		52	44								
		e(SS)	NE		54	32								
		e(Lq)	N		55	50								
		e(Lr)	Z		58	10								
	Epicentre			23	41	14.5	14.0S		172.5W		73km		USCGS	6(Pas)
2	KP	eP	Z	13	12	57								
	WN	eP	ZN	13	13	34								
	RX	eP	Z	13	13	34								
		eS	NE		22	00								
		eL	NE		29	.6					2.0	20	1.4	20
	TU	eP	Z	13	13	36								
	Epicentre			13	02	59.0	5.4N		126.5E		30km		USCGS	
3	KP	eP	Z	12	25	22½								
	WN	eP	Z	12	25	25								
	RX	eP	Z	12	25	29								
		e(L)	E		38	24								
		eL	E		48	44							3.3	25
	TU	eP	Z	12	25	32								
	Epicentre			12	14	52.1	7.4N		126.5E		90km		USCGS	
3	ON	eP	E	16	05	(15)								
	KP	eP	Z	16	05	23								
	TU	eP	Z	16	05	26								
		e	Z			45								
		eS	Z		08	14								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
MAR	WN	eP	Z	16	05	36								
	Epicentre			16	01	55.0	21.5S		179.1W		613km		USCGS	
3	ON	eP	E	16	18	42								
	KP	eP	Z	16	18	54								
	TU	eP	Z	16	18	57								
		e	Z		23	05								
	CT	eP	Z	16	19	05								
	KM	eP	X	16	19	49								
	GP	eP	N	16	20	01								
	Epicentre			16	13	56.9	16.1S		174.2W		129km		USCGS	
4	KP	eP	Z	20	11	38½								
		e	Z		12	10								
	TU	eP	Z	20	11	42								
		e	Z		12	10								
	CT	iP	Z	20	11	43 u								
		e	Z		12	20								
	ON	eP	E	20	11	49								4.20
	WN	eP	NE	20	12	03								5.38
		eS	NE			52								
	CB	eP	E	20	12	08								4.97
		eS	E		13	02								
	KM	eP	X	20	12	29								5.13
		eS	X		13	37								
	GP	eP	N	20	12	33								5.80
		eS	N		13	48								
	RX	eS	Z	20	14	46								5.28
	Epicentre			20	10	58	37.7S		176.0E		310km		NZ(C)	5.3
5	CT	eP	Z	03	54	03								
	Epicentre			03	42	33.3	4.0S		103.3E		78km		USCGS	
5	CT	eP	Z	10	27	47								
	Epicentre			10	15	22.1	55.9S		27.9W		25km		USCGS	
5	CT	eP	Z	16	58	19								
	Epicentre			16	46	23.9	19.1N		121.1E		14km		USCGS	
6	RX	eP	Z	06	08	43								
		eL	E			48.0								
	GP	eP	N	06	08	52								
	KP	eP	Z	06	08	54								
	Epicentre			05	55	42.3	13.7N		93.7E		18km		USCGS	
6	RX	e	E	14	48	04								
6	ON	eP	E	15	53	03								
	KP	eP	Z	15	53	19								
	TU	eP	Z	15	53	19								
		e	Z		55	13								
	CT	eP	Z	15	53	29								
		e	Z		56	12								
	WN	eP	ZNE	15	53	51								
		e	ZNE		56	43								
	CB	eP	E	15	53	54½								
	KM	e?	X	15	54	16								
6	TU	eP	Z	18	54	53								
	CT	eP?	Z	18	55	12								
	Epicentre			18	49	22.0	12.1S		167.8E		60km		USCGS	
7	KP	eP	Z	10	44	08								
	CT	eP	Z	10	44	17								
	TU	eP	Z	10	44	20								
	Epicentre			10	36	47.7	5.3S		153.9E		25km		USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
MAR 7	SU	eP?	N	11	09	05								
		eS	N		15	21								
		e(SS)	N		19	24								
	ON	eP	E	11	10	21								
		eS	E		17	55								
	KP	eP	Z	11	10	33								
		eS	Z		18	20								
		e?	Z		38	36								
		e(P'P')	Z		39	19								
	CT	eP	Z	11	10	39								
		eS	Z		18	36								
		e(P'P')	Z		39	03								
	TU	eP	Z	11	10	41								
		e(PcP)	Z		11	00								
		e(pP)	Z		12	53								
	CB	eP	E	11	10	43								
		eS	E		18	38								
	WN	eP	ZNE	11	10	47								
		e(pP)	ZNE		13	00								
		eS	ZNE		18	44								
		e(P'P')	ZN		39	08								
	KM	eP	X	11	10	48								
		e	X		11	03								
		eS	X		18	45								
		e(P'P')	X		39	14								
	GP	eP	N	11	10	55								
		e	N		11	36								
		eS	N		19	00								
		e(P'P')	N		39	04								
	RX	eP	Z	11	10	59								
		eS	Z		19	08								
		e	Z		23	.0								
		e(P'P')	Z		39	06								
	AK	eS	N	11	18	00								
		eScS	N		19	17								
	Epicentre			11	01	00.4	19.3N		145.3E		680km		USCGS	7(Pas)
7	KP	eP	Z	14	08	41								
	CT	eP	Z	14	08	47								
	Epicentre			13	58	32.4	17.2N		147.1E		41km		USCGS	
7	CT	eP	Z	17	43	39								
	TU	eP	Z	17	43	44								
	Epicentre			17	34	25.6	2.1S		133.9E		89km		USCGS	
7	KP	iP	Z	23	05	49								
		e	Z		06	09								
	CT	eiP	Z	23	05	53 (u)								
		e	Z		06	17								
	TU	eP	Z	23	05	54½								
		e	Z		06	17								
	WN	eP	ZN	23	06	13								4.92
		eS	ZN			49								
	CB	eP	E	23	06	21								4.68
		eS	E		07	02								
	KM	e	X	23	06	(40)								4.97
	GP	eP	N	23	06	47								5.60
		eS	N		07	49								
	Epicentre			23	05	25	38.4S		175.6E		172km		NZ(C)	5.0
8	TU	eP	Z	10	34	54								
		eS	Z		35	44								
	ON	eP	E	10	34	56								
	KP	iP	Z	10	34	56½ d								
	CT	iP	Z	10	35	08								
		e	Z			13								
		e	Z		36	31								
	WN	ePn	ZN	10	35	31								5.90

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
MAR		e	Z			40					
		e	ZN			49					
		e	Z			58					
		eSn	ZN		36	55					
		e	Z		37	16					
		eS*	Z			29					
	CB	eP	E	10	35	48					5.45
		eS	E		37	15					
	GP	eP	N	10	36	17					5.30
		eS	N		37	58					
	RX	eP	Z	10	37	07					
		eS	Z		39	03					
		eL	E			40.5					
		eL	N			41.5					
		eL	Z			42.0					
	SU	eL	N	10	42	30					
	Epicentre			10	33	42	35.0S 179.5W	N		NZ(D)	5.7
							Brisbane, Canberra, Charters Towers, and Riverview readings used to determine epicentre.				
8	CT	eP	Z	21	00	02					
	KP	eP?	Z	21	00	06					
	RX	eS	NE	21	09	26					
		eL	NE		21			3	22		
	Epicentre			20	48	38.1	44.9S 79.4W	25km		USCGS	
9	SU	eP	N	06	58	29					
		iS	N		59	28	n				
	ON	eP	E	07	01	00					
	KP	iP	Z	07	01	14	u				
		e(S)	Z		04	38					
		eScP	Z		08	00					
	TU	eP	Z	07	01	16½					
		e(S)	Z		04	30					
		eScP	Z		08	02					
	CT	eP	Z	07	01	23					
		e(S)	Z		04	52					
		eScP	Z		08	03					
	WN	eP	ZNE	07	01	41					
		eS	ZN		05	16					
		eScP	Z		08	10					
	CB	eP	E	07	01	45					
		eS	E		05	27					
	GP	eP	N	07	02	07					
		eScP	N		08	25					
	RX	eP	Z	07	02	31					
		eScP	Z		08	26					
	Epicentre			06	57	08.7	18.4S 178.7W	472km		USCGS	
9	ON	eP	E	17	32	35					
	SU	e(S)	N	17	32	50					
	KP	iP	Z	17	32	50	d				
		eS	Z		35	26					
	TU	eP	Z	17	32	51					
		e	Z			52½					
		eS	Z		35	24					
	CT	eP	Z	17	33	00					
		eS	Z			34					
	WN	eP	ZNE	17	33	22					
		eS	ZNE		36	20					
	CB	eP	E	17	33	28½					
		eS	E		36	34					
	GP	eP	N	17	33	52					
		eS	N		37	13					
	Epicentre			17	30	02.0	24.5S 179.6W	586km		USCGS	

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
MAR 9	KP	eP	Z	22	15	19					
	CT	eP	Z	22	15	25					
	CB	eP	E	22	15	26					
	TU	eP	Z	22	15	31					
	WN	eP	Z	22	15	34					
	GP	eP	N	22	15	40					
	RX	eP	Z	22	15	40					
		eL	E		22	.2					
		eL	N		24	.4					
	Epicentre			22	07	35.6	5.8S 146.4E	76km		USCGS	
10	RX	eP	Z	01	17	42					
		e?	Z		18	28					
		eL	NE		22	.0					
		eL	Z		25	.0					
	GP	eP	N	01	17	50					
	WN	eP	E	01	17	56					
		eL	Z		27	.5					
	KP	eP	Z	01	18	32					
	Epicentre			01	12	45	65S 171½W	N			
							Australian Bureau of Mineral Resources				
10	TU	eP	Z	05	01	25					
		eS	Z		02	54					
	KP	eP	Z	05	01	36					
	CT	eP	Z	05	01	59					
		eS	Z		03	24					
	WN	eS	ZNE	05	04	00					
	CB	eS	E	05	04	21½					
	GP	eS	N	05	05	06					
	Epicentre			04	59	27.5	31.2S 178.3W	69km		USCGS	
10	ON	eP?	E	12	13	14					
	KP	eP	Z	12	14	02					
	TU	eP	Z	12	14	13					
	CT	eP	Z	12	14	13					
	GP	eP	N	12	14	44					
	RX	eP?	Z	12	15	12					
		eLq	E		25	.4			4.7	16	
		eLq	N		26	.4		2.5	15		
		eLr	Z		29						
	WN	eL	Z	12	26	.8					
	Epicentre			12	08	07.1	11.0S 165.6E	25km		USCGS	
10	TU	iP	Z	21	31	00	d				
	KP	iP	Z	21	31	10	d				
	CT	eP	Z	21	31	15	d				
		e	Z		23						
	ON	eP	E	21	31	35					4.30
		eS	E		32	17					
	WN	ePn	Z	21	31	38					5.25
		eP*	ZNE			51					
		eSn	ZNE		32	24					
		eS*	Z			43					
	CB	eP	E	21	31	56					4.90
		eS	E		32	48					
	GP	eP	N	21	32	17					5.62
		eS	N		33	29					
	Epicentre			21	30	40	38.0S 177.9E	S		NZ(C)	5.0
							Charters Towers readings used to determine epicentre.				
							Felt: Te Puia Springs (37)MM III				
11	SU	eP	N	07	20	35					
		eS	N		21	41					
	ON	eP?	E	07	23	48					
		eS?	E		27	53					
	KP	eP	Z	07	24	04					
	TU	eP	Z	07	24	13					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
MAR	CT	eP	Z	07	24	14½					
	GP	eP?	N	07	25	09					
	RX	eL	NE	07	32	.0			5.9 18		
	Epicentre			07	18	56.7	13.9S 172.1E	133km		USCGS	
11	TU	iP	Z	07	56	35¾ d					
		eSn	Z			47					
	CT	iPg	Z	07	56	37¾ d					
	KP	iPg	Z	07	56	41 d					
	WN	ePn	ZNE	07	57	01					5.10
		e	ZNE			10					
		e	Z			14					
		e	ZNE			21					
		eSn	ZNE			32					
		e	ZNE			51					
	ON	eP	E	07	57	12					4.40
		eS	E			51					
	CB	ePn	E	07	57	12					4.75
		ePg	E			28					
		eSn	E			53					
		eSg	E		58	16					
	KM	ePn?	X	07	57	36					5.43
		eP	X			40					
		eSn	X			33					
		e	X		59	17					
	GP	eP	N	07	57	37					
		eS	N		58	36½					
		e	N		59	05					
	RX	e(S)	Z	07	59	45					5.93
	Epicentre			07	56	21	38.8S 176.2E	N		NZ(D)	5.1
							Canberra and Charters Towers readings used to determine epicentre.				
							Felt: Wairoa MM IV, Gisborne MM II				
11	KP	eP	Z	15	36	29					
	TU	eP	Z	15	36	31					
	Epicentre			15	23	40.7	52.3N 178.0E	135km		USCGS	
11	KP	eP	Z	16	26	18½					
	TU	eP	Z	16	26	25					
	Epicentre			16	16	24.1	19.4N 144.9E	428km		USCGS	
11	ON	e?	E	19	29	45					
	KP	eP	Z	19	29	47					
		epP?	Z			30 02					
	TU	eP	Z	19	29	57					
		e?	Z			30 19					
		e?	Z			29					
	CT	eP	Z	19	29	58					
		epP	Z			30 10					
	RX	eP	Z	19	30	00					
		eS	NE			38 40					
		eSS	NE			43.5					
		e(SSS)	NE			46 16					
		e(Lq)	NE			50.9					
		eLr	ZN			54.4					
	CB	eP	E	19	30	02					
	KM	eP	X	19	30	06					
	GP	eP	N	19	30	07					
	WN	eP	Z	19	30	07					
		ePP	Z			32 42					
		eS	Z			39 22					
		eL	Z			52 08					
		e(P'P')	Z			58 41					
	SU	eS	N	19	37	.0					
		eScS	N			38					
		eL	N			43.0					
	Epicentre			19	19	05.6	9.0N 126.7E	25km		USCGS	

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
MAR 11	KP	eP	Z	20	09	19					
	KM	e?	X	20	09	21					
		e?	X			52					
	CT	eP	Z	20	09	29					
	TU	eP	Z	20	09	30					
	Epicentre			19	58	49.6	8.7N 126.3E	171km		USCGS	
12	TU	ePP?	Z	11	58	32					
	CT	ePP	Z	11	58	36½					
	KP	ePP	Z	11	58	37					
	RX	e	N	12	07	07					
		e(PS)	E		08	42					
		e(SS)	NE		14	35			3.3 22	20 24	
		e(Lq)	E		30	.2				7.7 26	
		eLr	ZNE		34	.0	8.7 15	5.7 16		9.0 20	
	Epicentre			11	40	12.8	8.1N 83.0W	113km		USCGS	
12	RX	eL	NE	14	00	.1					
12	KP	eP	Z	17	24	58					
	TU	eP	Z	17	25	08					
	CT	eP	Z	17	25	10					
	Epicentre			17	20	07.8	16.1S 168.2E	172km		USCGS	
13	KP	eP	Z	11	39	40½					
	CT	eP	Z	11	39	45					
	WN	eP	Z	11	39	47					
	GP	eP	N	11	39	49					
	TU	eP	Z	11	39	49					
	ON	e	E	11	41	22					
	Epicentre			11	29	48.6	2.9N 128.8E	152km		USCGS	
13	ON	e	E	05	38	40					
	SU	e(S)	N	05	38	53					
	KP	eP	Z	05	39	03					
	TU	eP	Z	05	39	19					
	CT	eP	Z	05	39	19					
	CB	eP	E	05	39	37					
	WN	eP	ZNE	05	39	38					
	GP	eP	N	05	40	03					
	RX	eP	Z	05	40	20					
13	KP	eP	Z	22	15	06					
	TU	eP	Z	22	15	08					
		eS	Z		16	22					
	CT	eP	Z	22	15	18					
	WN	eS	ZNE	22	17	22					4.62
	CB	eS	E	22	17	37					5.20
	GP	eS	N	22	18	25½					5.15
	Epicentre			22	13	54	34.2S 179.1E	N		NZ(D)	5.0
14	KP	eP	Z	08	38	03					
	Epicentre			08	27	22.4	8.8N 126.8E	28km		USCGS	
14	RX	e(P)	Z	00	34	41					
	KP	e(P)	Z	00	36	11					
		e	Z			32					
15	SU	e	N	13	08	33					
	KP	eP	Z	13	10	44					
		e	Z		12	09					
	TU	eS	Z	13	13	46					
	Epicentre			13	07	06.9	20.6S 178.8W	623km		USCGS	
15	CT	eP	Z	21	24	10					
		e	Z			20					
	Epicentre			21	13	04.1	7.1S 106.1E	83km		USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tr	Ae	Te	Mag
MAR 15	CT	eP	Z	23	04	15½							
	Epicentre			22	58	08.3	10.5S		162.6E	100km			USCGS
16	SU	e(L)	N	07	32	.1			7.0	7			
16	SU	e(P)	N	15	26	50							
		e(S)	N		28	10							
		eL	N		29	50							
	ON	eP	E	15	29	02							
		e?	E		30	30							
	KP	eP	Z	15	29	32							
	TU	eP	Z	15	29	43							
	CT	eP	Z	15	29	46							
	WN	eP	Z	15	30	06							
		eL	Z		36	.3							
	KM	e?	X	15	30	28							
		e?	X			55							
	RX	eP	Z	15	30	54							
		eL	E		35	.3							
		eL	N		38	.5							
		eL	Z		39	.4							
	Epicentre			15	26	00.6	21.7S		173.0E	216km			USCGS
16	SU	eP	N	19	46	18							
		e(L)	N		49	.0			56	24			
	ON	eP	E	19	48	15							
		e?	E			29							
	KP	eP	Z	19	48	34							
		e	Z			42							
		e(pP)	Z			45							
		e(ScP)	Z		55	26							
		e(sScP)	Z			46							
	TU	iP	Z	19	48	45½ d							
		epP	Z			55½							
	CT	eP	Z	19	48	46							
		epP	Z			56							
		eS	Z		53	50							
	WN	eP	Z	19	49	01							
		e	ZN			07							
		eS	N		54	04							
		eL	Z	20	00	.1							
	CB	e(pP)	E	19	49	09							
		eS	E		54	00							
	KM	eP	X	19	49	11							
		e(pP)	X			23							
		eS	X		54	19							
		e?	X		59	32							
	GP	eP	N	19	49	19							
		e	N		54	36							
	RX	eP	Z	19	49	32							
		epP	Z			40½							
		eS	NE		55	16							
		eL	NE		58	.4			4.6	16	8.2	19	
		eL	Z	20	01	.6	5.4	14					
	Epicentre			19	42	39.2	10.8S		165.7E	25km			USCGS
16	SU	eL	N	21	43	.0			19	6			
17	TU	eP	Z	04	20	26							
		e	Z			35							
	KP	eP	Z	04	20	28							
	ON	eP	E	04	20	30							4.70
	CT	eP	Z	04	20	40							
		e	Z			52							
	WN	eS	ZNE	04	22	52							5.20
	CB	eS	E	04	23	15							5.38

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
MAR	Epicentre			04	18	35	33½S		177W	N		NZ(D)	5.0
	Charters Towers, Brisbane, Umea, Helsinki, Nurmijarui, and Kajaani readings used to determine epicentre.												
17	TU	e(P)	Z	18	39	41							
		e(S)	Z		41	04							
	ON	e(P)	E	18	39	48							
	KP	e(P)	Z	18	39	57							
	CT	e(P)	Z	18	40	06							
	WN	e(S)	ZNE	18	42	08							
17	WN	eP'	Z	21	06	56							
		ePP	Z		09	29	2.1	6					
		eSKP	Z		10	30	3.0	8					
		e?	Z		11	54	3.2	7					
		e	Z		20	48	2.9	8					
		e(SKKS)	Z		22	46	2.8	7					
		eSS	Z		28	02	2.3	10					
		e(Lq)	Z		48	38	3.0	8					
		eLr	Z		54	30	27	18					
	CT	eP'	Z	21	06	59							
	TU	e?	Z	21	07	04							
	KP	eP'	Z	21	07	09							
	RX	eP'	Z	21	07	09							
		e	E	21	22	33					3	22	
		e(SKKS)	E		24	31					3.3	22	
		e	ZNE		26	00					6.0	26	
		e	ZNE		30	36			6.7	10	18	26	
		e	NE		35	40			9	27	9.3	23	
		e	E		39	24					8.4	25	
		eLq	NE		46	12			13	30	12	25	
		e(Lr)	Z		56	.9	23	29					
		eLr	Z	22	03	.6	23	17					
	SU	e(PKS)	N	21	10	42							
	Epicentre			20	47	31.7	10.6N		43.7W	25km			USCGS
17	ON	e(P)	E	21	32	14							
	KP	eP	Z	21	32	46							
		e	Z			52							
	CT	eP?	Z	21	32	55							
		e(P)	Z		33	07							
	TU	e(P)	Z	21	33	02							
	SU	eS	N	21	33	06							
	Epicentre			21	29	14.2	22.3S		169.7E	100km			USCGS
18	ON	eP	E	00	42	43½							5.25
	TU	eP	Z	00	42	51							
		e	Z		44	31½							
		e	Z			33							
	KP	eP?	Z	00	42	51½							
		e	Z			59							
		e	Z		43	16							
	CT	eP	Z	00	42	55							
		e	Z		43	23							
		e	Z		44	58							
	GP	e?	N	00	44	07							5.82
		eS	N		46	42							
	RX	eP	Z	00	44	44							
	WN	eS	ZNE	00	45	40							6.00
	CB	eS	E	00	45	56							5.67
	KM	eS	X	00	46	36							5.82
	Epicentre			00	40	10	30S		176W	N		NZ(D)	5.7
	Charters Towers, Brisbane, Uppsala, Skalstugan, Umea and Kiruna readings used to determine epicentre.												
18	ON	eP	E	01	29	30							
	CT	e?	Z	01	29	39							
		e	Z		32	27							

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
MAR	KP	eP	Z	01	29	46					
	TU	e?	Z	01	29	56					
		e	Z		31	45					
	WN	eS	NE	01	32	50					
		Epicentre		01	26	51.0	27.7S 177.3W 89km			USCGS	
	18 SU	e	N	02	24	22					
	18 SU	iP	N	03	09	06 n					
		iS	N		10	46 s		67 12			
		eL	N		11	24		275 5			
	ON	eP	E	03	10	56					
		eS	E		14	55					
		eL	E		16	51					
	KP	eP'	Z	03	11	17					
		ePcP	Z		14	16					
		e?	Z		16	22					
		e?	Z		18	39					
	TU	eP	Z	03	11	30					
	CT	eP	Z	03	11	30½					
	WN	eP	ZNE	03	11	47					
		e?	Z		17	30					
		e(ScP)	Z		19	08					
		eLr	Z			36	20 14				
	CB	eP	E	03	11	55					
	KM	eP	X	03	12	13					
	RX	eP	Z	03	12	26					
		eLq	NE			17.0		5 20	2.8 20		
		e(Lr)	NE			19.2		36 17	36 15		
		eLr	Z			20.5	32 13				
		Epicentre		03	06	39.4	16.1S 167.2E 200km			USCGS	
	18 SU	eS	N	13	41	36					
		eL	N			42.8					
		M	N			44		18 6			
	ON	eP	E	13	41	52					
	KP	eP	Z	13	42	22					
	TU	eP	Z	13	42	33½					
	CT	eP	Z	13	42	41					
	KM	eP	X	13	43	27					
	RX	eL	NE	13	49						
		Epicentre		13	38	40.8	22.3S 173.7E 100km			USCGS	
	18 KP	eP	Z	15	05	45					
	CT	eP?	Z	15	05	49					
	TU	eP?	Z	15	05	56					
		Epicentre		14	54	59.3	9.1N 126.4E 44km			USCGS	
	18 RX	ePKP	Z	15	51	00					
	KP	ePKP	Z	15	51	15					
	CT	ePKP	Z	15	51	16					
	TU	ePKP	Z	15	51	19					
		Epicentre		15	30	31.6	40.6N 19.6E 25km			USCGS	
	18 KP	iP!	Z	16	10	04					
	TU	iP	Z	16	10	07					
		eS	Z			24					
	CT	iP	Z	16	10	08 u					
	ON	eP	E	16	10	26					3.77
		eS	E		11	00					
	WN	eP	ZNE	16	10	30					5.56
		eS	ZNE		11	09					
	CB	eP	E	16	10	39					5.15
		eS	E		11	24					
	KM	eP	X	16	11	03					5.43
		eS	X		12	00					
	GP	eP	N	16	11	05					6.00

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
MAR		eS	N		12	11					
	RX	e	Z	16	13	15					
		Epicentre		16	09	39	38.3S 176.1E 180km			NZ(C)	5.5
							Felt: Lowry Bay (68) MM II				
	18 CT	eP	Z	20	31	28½					
	TU	eP?	Z	20	31	31					
		Epicentre		20	18	54.3	23.7N 114.5E 43km			USCGS	
	18 SU	e(L)	N	20	46	20		8.5 9			
	19 RX	eP	ZNE	04	53	42					
		e?	Z			56					
		eS	NE		57	08					
		e(L)	N		58	00		5.5 20			
		eLr	ZNE		58	5					
		M	ZNE		59		7 9	13 10	13 9		
	KM	e(P)	X	04	54	30					
	WN	eP	ZE	04	54	43					
		eL	Z	05	02	.3					
	CT	eP	Z	04	55	07					
	TU	eP	Z	04	55	11					
	ON	eP?	E	04	55	37					
	SU	eL	N	05	11	.8					
		Epicentre		04	49	31.7	57.3S 147.2E 25km			USCGS	
	19 ON	eP	E	06	04	29					
	CB	eP	E	06	04	33					
		eScS	E		14	10					
	RX	eP	Z	06	04	35					
		e	Z		05	02					
		e(ScP)	Z		09	07					
		eS	E		12	38					
		e(L)	N		19	.5					
		e?	N		22	14					
	KM	eP	X	06	04	36					
		eS	X		12	37					
	KP	eP	Z	06	04	37					
		e(PcP)	Z		05	11					
		eScP	Z		09	09					
	CT	eP	Z	06	04	40					
		e	Z		05	54½					
		eScP	Z		09	11					
		e	Z		14	22					
		eP'P'	Z		33	51					
	WN	eP	ZNE	06	04	41					
		e(PcP')	ZNE	06	05	08					
		eS	ZNE		12	48					
		e?	Z		13	06					
		eScS	NE		14	20					
	TU	eP	Z	06	04	46					
		e(PcP)	Z		05	13					
		eS	Z		13	07					
		Epicentre		05	54	24.4	0.3N 123.5E 53km			USCGS	
	19 ON	eP	E	08	09	22					4.70
	KP	eP	Z	08	09	31					
		e?	Z		10	56					
	TU	eP	Z	08	09	32					
		eS	Z		10	53					
	CT	eP	Z	08	09	41					
		eS	Z		11	06					
	WN	eS	ZE	08	11	47					5.55
	CB	eS	E	08	12	01					5.38
	KM	eS	X	08	12	38					5.40
		Epicentre		08	07	47	33S 179W 400km			NZ(D)	5.3
							Umea readings used to determine epicentre.				

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
MAR 19	ON	eP	E	08	45	15								
	KP	eP	Z	08	45	28								
		e	Z			31								
		e	Z		48	07								
	TU	eP	Z	08	45	33								
		e(S)	Z		48	15								
	CT	eP	Z	08	45	40								
		e	Z		48	23								
	WN	eS	ZN	08	48	57								
	CB	eS	E	08	49	03								
	KM	eS	X	08	49	32								
19	ON	eP	E	15	36	19								5.3o
		eS	E		37	38								
	KP	iP	Z	15	36	30½								
		e	Z		37	54								
	TU	eP	Z	15	36	31								
		e	Z		37	52½								
		eS	Z		38	00								
	CT	eP?	Z	15	36	40								
		eP	Z			42								
		e	Z		38	17								
	WN	eP	ZNE	15	37	02								6.2s
		eS	ZNE		38	53								
	CB	e(P)	E	15	37	10								5.6s
		eS	E		39	06								
	KM	eP	X	15	37	30								5.6s
		eS	X		39	42								
	RX	e(P)	Z	15	38	24								
		eS	Z		40	51								
	Epicentre			15	34	40	31.5S		180	400km			NZ(D)	5.8
19	KP	eP	Z	21	08	49								
	CT	iP	Z	21	08	50	d							
	TU	eP?	Z	21	08	56								
	Epicentre			20	57	24.2	4.3S		103.1E	100km			USCGS	
20	RX	eL	NE	11	32						1.6	18		
20	KP	eP	Z	19	03	45								
	CT	eP?	Z	19	03	52								
	TU	eP	Z	19	03	53								
	Epicentre			18	52	55.8	22.8N		143.2E	98km			USCGS	
21	SU	e	N	02	32	52								
		e(L)	N		34	.4				11	12			
	KP	eP	Z	02	34	10								
	TU	eP	Z	02	34	31								
		e(S)	Z		38	23								
	WN	eP	Z	02	34	49								
		eL	Z		41	.2								
		M	Z				4.2	15						
	AK	e	N	02	37	45								
		eL	N		42	38				3.5	11			
	RX	eS	NE	02	39	20								
		eLq	NE		41	.0								
		eLr	Z		43	.5								
		M	NE		44					2.8	15	3.2	13	
	Epicentre			02	30	18.5	22.2S		170.4E	25km			USCGS	
21	KP	eP	Z	03	26	06								
		e?	Z			19								
	Epicentre			03	18	29.1	6 .6S		150.1E	25km			USCGS	
21	SU	eP	N	22	56	48								
		eS	N		57	40								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
MAR 21	RX	eP	Z	23	07	18½								
		eS	NE		15	00								
		e	NE		22	.6								
	CB	eP?	E	23	07	26								
		eS	E		15	15								
	KP	eP	Z	23	07	35								
		e(pP)	Z		09	38								
	WN	eP	ZN	23	07	35								
		eS	N		15	28								
	CT	eP	Z	23	07	36								
		e?	Z		09	44								
	TU	eP	Z	23	07	42½								
		epP	Z		09	47								
		eS	Z		15	45								
	KM	e(S)	X	23	15	05								
	Epicentre			22	57	51.2	5.9S		113.0E	631km			USCGS	
22	CT	eP	Z	00	29	03								
		ePcP	Z			30								
	RX	eP	Z	00	29	12								
		e(PcP)	Z			45								
		e(pP)	NE		31	10								
		e	NE		35	20								
		e	NE		40	34								
		e	NE		44	.7								
	CB	eP	E	00	29	20								
		eS?	E		37	09								
	ON	eP	E	00	29	21								
	KM	eP	X	00	29	22								
	WN	eP	ZN	00	29	27½								
		e(S)	N		37	24								
	KP	eP	Z	00	29	28								
	TU	eP	Z	00	29	35								
		e(pP)	Z		31	35								
	Epicentre			00	19	43.1	5.9S		112.9E	611km			USCGS	
22	RX	eP	Z	00	47	04								
		e(PcP)	Z			36								
	KP	eP?	Z	00	47	19½								
	TU	eP	Z	00	47	27								
	Epicentre			00	37	36.8	6.0S		113.0E	595km			USCGS	
22	KP	eP?	Z	01	55	37								
	TU	eS	Z	01	59	48								
	Epicentre			01	50	52.4	18.9S		173.1W	60km			USCGS	
22	KP	eP	Z	06	26	18								
	CT	eP	Z	06	26	28								
	TU	eP	Z	06	26	30								
	Epicentre			06	21	08.1	15.8S		167.6E	15km			USCGS	
22	SU	iP	N	08	42	25								
22	KP	eP	Z	12	10	04								
		e	Z			10								
	CT	eP	Z	12	10	15								
		e	Z			20								
		e	Z		11	05								
	TU	e(P)	Z	12	10	22								
		e	Z		11	05								
	RX	eP	Z	12	11	03								
		e	Z			08								
		eL	NE		18	.0								
		eL	Z		23									
	Epicentre			12	05	03.2	16.3S		167.5E	45km			USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
MAR 22	ON	eP	E	15	21	20								
		ePP	E		23	09								
		eL	E		37	08								
	KP	eP	Z	15	21	29½								
		e	Z			34½								
	CB	eP	E	15	21	34								
		eS	E		28	22								
		eL	E		38									
	CT	eP	Z	15	21	36								
		eS	Z		28	28								
	TU	eP	Z	15	21	40								
		e	Z			46								
	WN	eP	Z	15	21	41								
		e	ZN			47	3.3	8						
		e	Z		22	40	2.8	6						
		e(PP)	Z		23	46	3.8	5						
		eS	ZN		28	36	1.8	5						
		eL	Z		39.7									
		M	Z		40		27	21						
	RX	e(P)	Z	15	21	46								
		eS	NE		28	46				7.0	24			
		e	E		29	50						4.5	17	
		eLq	NE		34.3					22	25	22	27	
		eLr	Z		37.0		25	24						
	KM	e	X	15	22	09								
		eS	X		28	26								
		eL	X		41									
	SU	e	N	15	23	21				6	4			
		eS	N		26	45			6.5	6				
		e(SS)	N		29	30				12	6			
		eL	N		31.3					30	19			
	Epicentre			15	13	03.9	3.2S	142.3E	25km				USCGS	5½(Brk)
22	KP	eP	Z	16	25	12								
	TU	eP	Z	16	25	22								
	CT	eP	Z	16	25	18								
	Epicentre			16	16	26.4	2.1S	139.3E	44km				USCGS	
22	TU	eP	Z	18	35	39								
		eS	Z		36	35								
	KP	eP	Z	18	35	44								
	CT	eP	Z	18	35	52								
		e	Z		37	06								
	WN	e	ZN	18	37	43								4.9
	CB	e	E	18	38	06								5.0
	KM	e?	X	18	38	47								5.1
	Epicentre			18	34	40	35½S	179½W	N				NZ(D)	5
22	RX	eP	Z	19	11	38								
	CT	eP	Z	19	11	41								
	KP	eP	Z	19	11	45								
	Epicentre			18	59	00.8	28.1S	67.5W	217km				USCGS	
22	TU	eP	Z	21	24	16								
		e	Z			29½								
		eS	Z		25	01								
	KP	eP	Z	21	24	20								
	CT	eP	Z	21	24	29								
	ON	eS	E	21	25	13								3.8
	WN	eS	ZNE	21	26	08								4.9
	CB	eS	E	21	26	28								5.1
	KM	eS	X	21	27	06								4.9
	Epicentre			21	23	31	36.3S	179.0E	N				NZ(D)	5.0
23	SU	e	N	00	16	55								
	ON	eP	E	00	19	29								
	KP	eP	Z	00	19	42								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
MAR	CT	eP?	Z	00	19	57								
	WN	eP?	N	00	20	09								
	Epicentre			00	15	34.4	17.4S	178.9W	576km				USCGS	
23	CT	eP	Z	05	46	42								
	KP	eP	Z	05	46	52								
	Epicentre			05	34	40.5	38.0S	72.8W	67km				USCGS	
23	ON	eP	E	14	47	45								
	KP	eP	Z	14	48	10								
	CT	eP	Z	14	48	24								
	TU	eP?	Z	14	48	35								
		e(P)	Z			38								
	CB	eP	E	14	48	38								
	WN	eP	ZN	14	48	47								
	RX	eP	Z	14	49	34								
		eL	NE		53.8									
		M	NE		55						3.8	17	9.2	18
	Epicentre			14	45	27.6	28.5S	167.6E	23km				USCGS	
23	SU	iS	N	15	11	32 n								
	ON	eP	E	15	11	44								
		e(S)	E		14	11								
	KP	eP	Z	15	12	00								
	TU	eP	Z	15	12	03								
		e(S)	Z		14	46								
	CT	eP	Z	15	12	10								
		e	Z		15	05								
	WN	eP	ZNE	15	12	29½								
		eS	NE		15	30								
	CB	eP	E	15	12	34								
		eS	E		15	37								
	KM	eP	X	15	12	50								
	RX	eP	Z	15	13	17½								
	Epicentre			15	08	45.5	22.8S	179.4E	608km				USCGS	
23	KP	e	Z	19	22	06								
	TU	e?	Z	19	22	09								
		e	Z		23	48								
	CT	e	Z	19	22	13								
	WN	e	ZNE	19	24	44								
	CB	e	E	19	25	01								
	ON	e?	E	19	25	36								
	KM	e	X	19	25	37								
24	SU	e(S)	N	01	37	51					15	14		
		e(L)	N		39	31					14	11		
	ON	eP	E	01	38	53								
		e	E		42	50								
	KP	eP	Z	01	39	08								
	TU	eP	Z	01	39	10								
		eS	Z		43	17								
	CT	eP	Z	01	39	18								
	KM	eP	X	01	40	10								
	RX	eL	E	01	50.7									
		eL	N		52.1									
		eL	Z		54.0									
	Epicentre			01	34	07.9	17.8S	173.0W	25km				USCGS	
24	SU	e	N	13	07.0									
		eL	N		12.3									
	ON	eP	E	13	07	01								
		e	E			41								
	KP	iP	Z	13	07	19 d								
		e(ScP)	Z		12	55								
	CB	eP	E	13	07	24								
		eS	E		13	45								

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
MAR	CT	iP	Z	13	07	26 d				
		i	Z		08	00				
		e(ScP)	Z		12	57				
		eS	Z		13	54				
	KM	eP	X	13	07	29				
		eS	X		13	49				
	TU	eP	Z	13	07	31				
		e(ScP)	Z		13	02				
	RX	eP	Z	13	07	37				
		e(ScP)	Z		13	08				
		eS	ZNE		14	08				
		e(SS)	NE		17	30				
		eLq	NE		21	.3				
		M	NE		23			3 22	3.3 20	
		eLr	Z		26	.6				
		M	Z		27		4.8 15			
	WN	eP	ZNE	13	07	41				
		eS	ZNE		14	04				
	Epicentre			12	59	30.9	5.7S 145.0E 111km			USCGS
24	KP	e(P)	Z	05	50	03				
	TU	eP?	Z	05	50	11				
	CT	e(P)	Z	05	50	19				
24	CT	e	Z	19	42	53				
	WN	e	ZNE	19	43	42				
24	ON	eP	E	19	51	02				
	KP	eP	Z	19	51	09				
	CT	eP	Z	19	51	17				
	KM	e	X	19	51	46				
	WN	e?	Z	19	51	51				
25	KP	eP	Z	11	06	07				
	CT	eP	Z	11	06	16				
	TU	eP	Z	11	06	17½				
	WN	e?	Z	11	06	28				
		e	Z			32				
		e	Z			38				
	Epicentre			11	00	19.0	11.3S 165.7E 85km			USCGS
25	KP	eP	Z	08	25	32				
	Epicentre			08	12	38.0	51.2N 169.8W 45km			USCGS
25	RX	e(P)	Z	14	28	57				
	WN	e(P)	Z	14	29	18				
	CT	e(P)	Z	14	29	26				
	TU	e(P)	Z	14	29	29				
	KP	e(P)	Z	14	29	32				
25	KP	eP	Z	21	54	44				
	CT	eP?	Z	21	54	54				
	WN	eP	Z	21	55	03				
	Epicentre			21	44	40.8	1.6N 127.2E 60km			USCGS
26	KP	eP	Z	03	20	44				
	TU	eP	Z	03	20	52				
	Epicentre			03	10	53.5	0.5S 127.6E 55km			USCGS
26	KP	eP	Z	15	28	19				
	CT	eP	Z	15	28	26				
	CB	eP	E	15	28	27				
	TU	eP	Z	15	28	31				
	WN	eP	ZN	15	28	35				
	Epicentre			15	20	41.8	5.5S 148.1E 122km			USCGS

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
MAR 26	RX	eP	Z	16	44	36				
		eLq	NE		54	.8				
		eLr	ZNE	17	08					
		M	ZNE		09					
	WN	eP	Z	16	44	37				
	TU	eP	Z	16	44	41				
	CT	eP	Z	16	44	43				
	CB	eP	E	16	44	46				
	KP	eiP	Z	16	44	48				
		epP	Z		45	03				
	KM	eP?	X	16	45	05				
	Epicentre			16	32	43.6	40.6S 73.3W 32km			USCGS
26	CT	eP?	Z	05	25	12½				
		eS	Z		27	12				
	TU	eS	Z	05	26	49½				
	WN	eS	ZNE	05	27	51				
	CB	eS	E	05	28	38½				
27	KP	eP	Z	05	31	49½				
	CT	eP	Z	05	31	54				
	TU	eP	Z	05	32	00				
	Epicentre			05	22	32.0	3.9S 129.1E 96km			USCGS
27	KP	eP	Z	14	54	04				
	CT	eP	Z	14	54	15				
	Epicentre			14	50	15.2	20.3S 177.6W 510km			USCGS
27	CT	eP	Z	16	15	12½				
		e	Z			15				
	KP	iP	Z	16	15	14½ d				
28	CT	eP	Z	04	17	36½				
		e	Z			43				
	KP	eP	Z	04	17	38				
	RX	eL	NE	04	47					
	Epicentre			04	05	24.6	1.4N 97.5E 74km			USCGS
28	ON	eP	E	06	19	20				
		e	E		21	03				
	KP	iP	Z	06	19	34½ u				
	TU	eP	Z	06	19	36				
		e(S)	Z		21	28				
		e(S)	Z			31				
	CT	eP	Z	06	19	44				
		eS	Z		21	44				
	TO	eP	Z	06	19	44				
		eS	Z		21	51				
	WN	eP	ZNE	06	20	07				
		eS	ZNE		22	25				
	CB	eP	E	06	20	14½				
		e(S)	E		22	35				
		e(S)	E			38				
	KM	eP	X	06	20	33				
		eS	X		23	08				
	RX	eP	Z	06	21	04½				
		eS	Z		24	19				
	Epicentre			06	17	10.2	28.7S 179.9W 375km			USCGS
28	TU	eP	Z	14	14	17				
		eS	Z		15	29				
	ON	eP	E	14	14	20				5.10
		e	E			25				
		e	E			38				
	KP	eP	Z	14	14	21				
		e	Z			33				
	CT	eP	Z	14	14	30				

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
MAR	TO	eP	Z	14	14	31							
		e	Z			16 01							
	WN	eP	ZNE	14	14	58½							
		eS	ZNE			16 40							5.6
	RX	eP	Z	14	16	23							
		eS	Z			18 50							
		eL	NE			20.5							
		eL	Z			22.5							
	CB	eS	E	14	17	01							
	KM	eS	X	14	17	40							5.5
	SU	eL	N	14	21	35							
	Epicentre			14	12	46	33.5S 178.0W 100km					NZ(D)	5.4
							Charters Towers, Brisbane, Canberra, Uppsala, Skalstugon and Umea readings used to determine epicentre.						
28	TU	eP	Z	18	36	08							
		eS	Z			37 22							
	ON	eP	E	18	36	11							
		e	E			28							4.8
	KP	eP	Z	18	36	11							
	CT	eP	Z	18	36	24							
		e	Z			37 47							
	TO	eP	Z	18	36	25							
		e	Z			37 47							
	RX	eP	Z	18	38	13							
		eL	NE			42.8							
	WN	eS	ZNE	18	38	30							5.5
	CB	eS	E	18	38	51							5.3
	KM	eS	X	18	39	31							5.5
	Epicentre			18	34	32	33.5S 178W		N			NZ(D)	5.3
29	KP	eP	Z	02	05	13							
	Epicentre			01	52	25.4	51.8N 157.2E 155km					USCGS	
29	TU	eP	Z	09	18	27							
		eS	Z			19 38							
	KP	eP	Z	09	18	31							
		e	Z			36							
		e	Z			54							
	CT	eP	Z	09	18	41							
		e	Z			54							
		e	Z		19	02							
		e	Z			30							
	RX	eP	Z	09	20	34							
		eL	NE			25							
		eL	Z			27							
	WN	eS	ZNE	09	20	51							5.1
	KM	eS	X	09	21	51							5.2
	Epicentre			09	16	55	33.5S 178.5W 70km					NZ(D)	5.2
							Charters Towers, Uppsala, and Umea readings used to determine epicentre.						
29	KP	eP?	Z	20	18	35							
		e(P)	Z			53							
	CT	eP	Z	20	18	59							
	TO	eP	Z	20	19	01							
	TU	eP	Z	20	19	04							
	RX	eP	Z	20	19	08							
		e(S)	N		26	23			1.2	21			
		e	E			42					3.0	22	
		e(L)	N		33	.4			1.4	20			
		eLq	NE		36	.9			1.8	26	3.8	36	
		eLr	Z		41	.6	5.9	20					
	Epicentre			20	09	01.9	0.5S 127.4E 25km					USCGS	
29	TU	eP	Z	22	42	59							
	CT	eP	Z	22	43	01							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
	TO	eP	Z	22	43	01							
MAR	Epicentre			22	38	27.8	20.1S 169.0E 51km					USCGS	
30	SU	e(L)	N	08	02	.3				9.1	8		
	KP	e(P)	Z	08	02	(41) (47)							
		e	Z										
	TU	e(P)	Z	08	02	58							
	CT	eP	Z	08	03	01							
	TO	eP	Z	08	03	01							
	RX	e(Lq)	NE	08	08	.5				1.3	13	3.8 15	
		e(Lr)	Z		12	.5							
30	TU	eS	Z	12	02	00							
30	ON	eP	E	14	25	49							
	KP	eP	Z	14	26	02							
	TU	eP	Z	14	26	02							
		eS	Z		27	50							
	CT	eP	Z	14	26	10							
		i(S)	Z		28	20½ d							
	TO	eP	Z	14	26	11							
		e	Z		27	53							
		e	Z		28	28							
	WN	eP	ZNE	14	26	34							
		eS	ZNE		28	54							
	CB	eP	E	14	26	45							
		eS	E		29	09							
	KM	eP	X	14	27	07							
		eS	X		29	46							
	RX	eP	Z	14	27	27							
		eS	Z		30	40							
	Epicentre			14	23	33.6	28.7S 179.0W 292km					USCGS	
31	KP	eP?	Z	02	54	08							
31	ON	eP	E	07	50	11							
	KP	eP	Z	07	50	15							
	TU	eP	Z	07	50	16							
		eS	Z		51	56							
	CT	e(P)	Z	07	50	31							
		eS	Z		52	25							
	TO	e(P)	Z	07	50	32							
		eS	Z		52	26							
	RX	eP	Z	07	52	09							
	WN	eS	ZNE	07	53	05							
	CB	eS	E	07	53	22							
	KM	eS	X	07	54	03							
31	RX	e(S)	E	08	05	26							
		eLq	NE		14	.2				1.5	22		
		eLr	Z		23								
	Epicentre			07	44	36.0	9.8N 121.6E 156km					USCGS	
31	TU	eP	Z	12	14	31							
	TO	eP	Z	12	14	31							
	CT	eP	Z	12	14	31½							
	KP	eP	Z	12	14	35							
APR 1	ON	eP	E	12	19	03							
	CB	eP	E	12	19	21							
		e	E			47							
	TO	eP	Z	12	19	23							
		e	Z			58							
	CT	P	Z	12	19	23							
		e	Z			58							
	TU	P	Z	12	19	29							
	SU	e(PP)	N	12	19	32							

Date		Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
APR			eL	N			27				
		WN	eP	ZE	12	19	32				
			e	ZE		20	00				
		RX	eP	Z	12	19	33				
			e(S)	N		26	22				
			eL	NE		33					
		KM	e(P)	X	12	19	37				
		Epicentre			12	11	09.2	4.2S 143.6E 80km			USCGS
	1	SU	e	N	15	39	53				
		CT	eP	Z	15	42	02				
		TO	eP	Z	15	42	03				
			e	Z			29				
		TU	eP	Z	15	42	04				
		RX	eL	E	15	50					
			eL	N		51					
		Epicentre			15	37	02.5	17.9S 167.2E 53km			USCGS
	2	CT	eP	Z	00	25	03				
		TO	eP	Z	00	25	03				
		TU	eP	Z	00	25	04				
		WN	eP	Z		25	12				
		RX	e(P)	Z	00	25	23				
		Epicentre			00	14	50.4	18.6N 145.5E 205km			USCGS
	2	TO	eP	Z	18	41	44				
		Epicentre			18	33	52.4	6.1S 146.7E 60km			USCGS
	3	SU	eP	N	16	28	40				
			e(S)	N		31	25				
		ON	eP	E	16	30	44				
		TU	eP	Z	16	31	04				
		CT	eP	Z	16	31	04				
			e	Z			14				
			eS	Z		36	13				
		TO	eP	Z	16	31	04				
			e	Z			14				
			eS	Z		36	11				
		WN	e	Z	16	31	16				
			e	ZE			19				
			e	NE			24				
			eS	NE		36	33				
		CB	eP	E	16	31	17				
			e(S)	E		36	26				
		KM	eP	X	16	31	29				
			e	X			36				
		RX	eP	Z	16	31	45				
			e	Z		32	00				
			eS	NE		37	24				
			eL	E		40					
			eL	ZN		42					
			M	E		45			10 17		5.9
		Epicentre			16	24	55.6	10.6S 164.9E 36km			USCGS
	3	TU	e(P)	Z	18	42	09				
		TO	e	Z	18	42	19				
		CT	e	Z	18	42	21				
		RX	eP	Z	18	43	16				
			eL	E	18	50					
		Epicentre			18	37	47.5	20.8S 169.4E 40km			USCGS
	4	ON	eP	E	02	00	15				
		TU	eP	Z	02	00	17				
			e	Z		01	29				
		CT	e?	Z	02	00	34				
			e	Z			43				
			e(S)	Z		02	26				

Date		Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
APR		TO	e	Z	02	00	36				
			e(S)	Z	02	02	26				
		WN	eS	Z	02	02	37				
	4	CT	eP	Z	09	32	23				
			eS	Z		35	31				
		TO	eP	Z	09	32	24				
			eS	Z		35	26				
		WN	eP	ZE	09	32	31				
			e	ZN			43				
			eS	NE		36	11				
		TU	eS	Z	09	35	13				
		Epicentre			09	28	30.4	22.0S 178.2W 268km			USCGS
	4	TU	eP	Z	12	01	39				
			e(S)	Z		02	57				
		CT	eP	Z	12	01	49				
			e(S)	Z		03	16				
			e	Z			20				
		TO	eP	Z	12	01	49				
			e	Z		03	14				
			e	Z			24				
		WN	eP	Z	12	02	12				
			eS	ZNE		04	00				
		CB	eS	E	12	04	14				
		Epicentre			11	59.9		Near 32½S 179½W 350km± Charters Towers Readings used to determine Epicentre.			NZ(D)
	4	RX	eL	E	14	54					
		Epicentre			14	02	32.2	8.0N 83.0W 23km			USCGS
	5	RX	eP	Z	12	36	09				
		CT	eP	Z	12	36	15				
		TO	eP	Z	12	36	15				
		Epicentre			12	24	34.5	44.9S 75.3W 25km			USCGS
	5	ON	eP	E	19	50	40				
		TU	eP	Z	19	51	15				
		CT	eP	Z	19	51	15				
		TO	eP	Z	19	51	15				
		CB	e(P)	E	19	51	31				
		SU	e	N	19	52					
		RX	eP	Z	19	52	01				
		Epicentre			19	45	58.4	16.2S 167.5E 35km			USCGS
	5	TU	eP	Z	20	09	29				
		CT	eP	Z	20	09	29				
		TO	eP	Z	20	09	29				
	6	CT	P	Z	04	30	14	u			
		TO	eP	Z	04	30	14				
		TU	e	Z	04	30	15				
			e	Z			34				
		CB	e	E	04	31	27				
		RX	eP	Z	04	31	27				
		Epicentre			04	26	08.6	17.7S 178.8W 593km			USCGS
	6	CT	eP?	Z	06	59	04				
			e	Z			09				
		TU	eP	Z	06	59	14				
		Epicentre			06	50	52.6	4.2S 143.3E 63km			USCGS
	6	CT	eP	Z	14	16	22				
		Epicentre			14	13	03.4	24.0S 179.5W 538km			USCGS

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
APR 6	RX	eS	E	17	09	22							
		eLq	N			16							
		eLr	E			19							
	Epicentre			16	50	14.2	26.7S		113.2W	33km			USCGS
6	ON	eP	E	20	27	37							
	TU	eP	Z	20	27	55							
		e	Z			30	39						
		e	Z				42						
	CT	eP	Z	20	28	02							
	WN	eP	Z	20	28	23							
	CB	eP	E	20	28	27							
	Epicentre			20	24	40.6	23.4S		179.7W	566km			USCGS
7	TO	eP	Z	06	31	20							
	TU	eP	Z	06	31	21							
	WN	eP	Z	06	31	28							
		e?	Z			46							
	RX	e(S)	NE	06	40	18							
		eL	NE		49								
		M	E		51						2	20	
	SU	eL	N	06	41				15	23			5.7
	Epicentre			06	21	38.4	10.0N		144.4E	50km			USCGS 6.1
7	TO	eP	Z	08	09	17							
	Epicentre			08	04	20.6	18.7S		168.7E	23km			USCGS
7	SU	e	N	10	34	54							
	Epicentre			10	32	28.1	15.2S		177.6W	446km			USCGS
8	TO	eP	Z	00	58	32							
	TU	eP	Z	00	58	33							
	Epicentre			00	53	16.6	16.1S		167.3E	67km			USCGS
8	TU	P	Z	04	37	07							
	Epicentre			04	28	40.5	4.1S		141.5E	115km			USCGS
8	SU	e	N	05	17	55							
	ON	eP	E	05	19	11							
	TU	eP	Z	05	19	26							
	TO	eP	Z	05	19	34							
	WN	eP?	Z	05	19	58							
		e	ZN		20	00							
	CB	eP	E	05	20	02							
	RX	eP?	Z	05	20	51							
	Epicentre			05	15	03.0	20.3S		175.7W	70km			USCGS
8	TU	eP?	Z	08	12	35							
		e	Z			39							
		e	Z			43							
		e	Z			59							
		e(S)	Z		13	04							
		e	Z			11							
	TO	eP?	Z	08	12	45							
		e	Z			50							
		e	Z			58							
		e(S)	Z		13	40							
	ON	eP	E	08	12	48							
		e	E		13	20							
	CB	e(P)	E	08	13	27							
	WN	e	NE	08	14	09							
9	KP	eP	Z	04	24	24							
		epP	Z		25	10							
	Epicentre			04	14	23.0	18.6N		145.5E	200km			USCGS

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
APR 9	RX	eP	Z	09	03	39							
	KM	eP	X	09	03	42							
	CB	eP	E	09	03	44							
	KP	P	Z	09	03	50							
	TO	P	Z	09	03	53							
	WN	eP	ZE	09	03	53							
	TU	eP	Z	09	04	00							
	Epicentre			08	54	22.7	8.6S		124.1E	46km			USCGS
9	KP	P	Z	20	19	13							
	TO	e?	Z	20	19	25							
	Epicentre			20	15	45.0	21.0S		177.3W	630km			USCGS
10	TU	eP	Z	04	49	11							
		epP	Z			45							
	RX	eP	Z	04	49	11							
		epP	Z			44							
	TO	eP	Z	04	49	14							
		epP	Z			47							
	KP	P	Z	04	49	17							
		epP	Z			50							
		e	Z		50	04							
	CB	eP	E	04	49	18							
		epP	E			52							
	Epicentre			04	36	27.5	28.6S		68.8W	130km			USCGS
10	KP	eP?	Z	13	12	13							
	ON	e?	E	13	12	48							
	TU	e?	Z	13	12	59							
		e?	Z		14	33							
		e(S)	Z			36							
	CB	e(S)	Z	13	15	59							
	Epicentre			13	10	34.6	30.1S		177.7W	46km			USCGS
10	KP	eP	Z	14	41	08							
	Epicentre			14	30	46.4	44.1N		73.1W	25km			USCGS
10	SU	eS	N	17	10	05							
	ON	eP	E	17	11	39							
	KP	P	Z	17	11	50							
	TU	e(P)	Z	17	11	50							
		eS	Z		16	03							
	CT	eP?	Z	17	11	55							
		e	Z			58							
	WN	eP	Z	17	12	17							
	CB	eP	E	17	12	22							
	RX	eP	Z	17	13	07							
	Epicentre			17	07	11.9	16.4S		175.3W	330km			USCGS
10	KP	ePKP$_2$	Z	21	57	53							
	CT	PKP$_2$	Z	21	57	53	d						
		e	Z		58	07							
	RX	e(PKP$_2$)	Z	21	57	42							
		e	Z		58	08							
	Epicentre			21	37	12.6	37.9N		20.1E	35km			USCGS
10	KP	eP	Z	24	06	05							
	CT	eP	Z	24	06	09							
	Epicentre			23	54	12.0	37.4N		135.4E	382km			USCGS
11	TU	eP?	Z	05	15	42							
		e	Z		16	11							
		e(S)	Z			55							
		e	Z			59							
	KP	e(P)	Z	05	15	45							
		e	Z			52							
		e	Z		16	10							
		e	Z			21							

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
APR		e(S)	Z			52				
		e	Z		17	03				
	CT	e?	Z	05	15	55				
		e	Z		16	12				
		e	Z			42				
		e	Z			47				
		e	Z			50				
	WN	e?	Z	05	16	15				
		eS	ZNE		18	03				
		e	ZNE		20	14				
	CB	eS	E	05	18	25				
	Epicentre			05	14	.2	Near 33½S 179W	N	NZ(D)	5.2
							Charters Towers readings used to determine Epicentre.			
11	CT	ePKP$_2$?	Z	11	08	11				
		e	Z			28				
	KP	ePKP$_2$	Z	11	08	12				
		e	Z			21				
	TU	e	Z	11	08	30				
	Epicentre			10	47	34.0	38.2N 20.0E 43km		USCGS	
				10	57	37.8	9.0N 126.9E 31km		USCGS	
							Movements recorded could refer to either shock			
11	KP	eP	Z	19	02	09				
	CT	e?	Z	19	02	17				
	TU	eP	Z	19	02	30				
	RX	eP?	Z	19	03	07				
		e	Z			17				
12	SU	e(P)	N	01	03	35				
		eS	N		12	05		150 20		7.8
	KP	eP	Z	01	04	58				
		e	Z		05	03				
		e	Z			10				
		e	Z			47				
		ePP	Z		08	11				
		eL	Z		33					
	TU	eP	Z	01	05	04				
		ePP	Z		08	34				
	CT	e(P)	Z	01	05	07				
		e	Z			18				
		ePP	Z		08	25				
	CB	e(P)	E	01	05	13				
	WN	e(P)	Z	01	05	22				
	RX	eP	Z	01	05	25				
		e	ZN		06	50				
		e(S)	NE		15	52		45 25		7.1
		eSS	N		22					
		eL	ZNE		34					
		M	ZNE		38		120 20	100 22	100 21	7.0
	Epicentre			00	52	47.0	38.2N 142.3E 68km		USCGS	
12	KP	e(P)	Z	05	28	36				
	Epicentre			05	16	05.0	38.2N 142.5E 26km		USCGS	
12	KP	eP	Z	05	58	48				
		e	Z			59				
		e(pP)	Z		59	10				
	CT	e	Z	05	59	22				
	RX	e?	Z	05	59	47				
	Epicentre			05	53	29.6	14.3S 166.8E 104km		USCGS	
12	CT	P	Z	16	48	58 u				
	KP	P	Z	16	49	01 u				
		e	Z			16				
	CB	e(P)	E	16	49	04				
	WN	ePP	ZNE	16	52	34				
	Epicentre			16	36	08.4	28.7S 71.9W 34km		USCGS	

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
APR 14	KP	iP	Z	00	42	34 u				
		e	Z		43	50				
	TU	eP	Z	00	42	35				
		e	Z		45	06				
		e(S)	Z			10				
	CT	P	Z	00	42	45				
		e	Z		45	21				
		e(S)	Z			28				
	CB	e(S)	E	00	46	11				
	KM	eS	X	00	47	17				
	Epicentre			00	39	.3	Near 25S 180 N?		NZ(D)	
							Charters Towers and Apia readings used to determine Epicentre.			
14	KP	eP	Z	17	02	28				
	Epicentre			16	50	05.8	38.2N 142.5E 53km		USCGS	
15	KP	e(P)	Z	22	43	28				
	CT	e	Z	22	43	30				
	Epicentre			22	31	06.2	56.6S 26.2W 25km		USCGS	
16	KP	eP	Z	13	31	41				
		e	Z			49				
		e	Z			51				
		epP	Z		32	13				
	CT	P	Z	13	31	47				
		pP	Z		32	17 u				
	TU	eP	Z	13	31	48				
		epP	Z		32	21				
	CB	eP	E	13	31	54				
		epP	E		32	24				
	WN	eP	ZN	13	31	55				
		epP	Z		32	25				
	RX	eP	Z	13	32	06				
		e	Z			17				
		epP	Z			34				
		e	Z			50				
	Epicentre			13	20	15.1	30.6N 140.6E 176km		USCGS	
17	KP	iP?	Z	07	01	39 d				
	Epicentre			06	48	44.7	31.3N 142.6E 23km		USCGS	
17	GP	iP	N	17	43	25½ s				
		e(S)	N			41				
	WN	iP	ZNE	17	43	31 use				
		e(Pg)	ZNE			39				
		e(S)	ZNE			50				
	CB	iP	E	17	43	35 w				
		e(S)	E			56				
	KM	iP	X	17	43	35 x				
		e	X			54				
	CT	eP	Z	17	44	00 d				
		i	Z			01 u				
	RX	P	Z	17	44	06				
		e(P*)	Z			15				
		e(Pg)	Z			27				
		e	Z			44				
		e(S)	Z			52				
		e	Z		45	03				
	TU	P	Z	17	44	11½ d				
		e(Pg)	Z			38				
		e	Z			55				
		e(S)	Z		45	04				
	KP	iP	Z	17	44	17 u				
	ON	eP	E	17	44	45				
		e	E			56				
		e	E		45	56				

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
		e(S)	E		46	02								
		e	E			19								
	Epicentre			17	43	04	42.7S		174.0E		S		NZ(C)	5½NZ
				17	43	03.4	42.6S		174.0E		25km		USCGS	
17	KP	eP	Z	21	06	23								
		e	Z			34								
	CT	eP	Z	21	06	39								
	Epicentre			20	54	13.4	38.4N		142.2E		110km		USCGS	
18	KP	eP	Z	04	07	18								
	CT	e?	Z	04	10	30								
	WN	e?	N	04	10	52								
		e(S)	N			56								
	Epicentre			04	04	18.0	18.8S		175.4W		166km		USCGS	
18	KP	eP	Z	19	28	03								
		e	Z			12								
		(PKKP)	Z		44	52								
		e	Z		45	08								
	CT	eP	Z	19	28	07								
	RX	e(SKS)	E	19	39	14								
		e(SP)	NE		41	18								
		e(SS)	NE		46	38								
		eL	ZNE		60									
		M	E		62						18	22		6.5
	SU	eL	N	20	02									
18	RX	e(L)	E	21	36									
	Epicentre			21	08	27.5	13.0S		166.8E		105km		USCGS	
19	SU	eP	N	22	(17)	50								
		eS	N		(19)	45								
	ON	eP	E	22	19	49								
		eS	E		23	31								
	KP	eP	Z	22	20	09								
	CT	eP	Z	22	20	21								
		e(S)	Z		24	30								
		e	Z			36								
	WN	eP	ZNE	22	20	36								
		e(S)	ZNE		24	51								
		e	Z			57								
	CB	e(P)	E	22	20	37								
		e?	E		24	52								
		e(S)	E			58								
	KM	e	X	22	20	48								
	GP	eP?	N	22	20	53								
		e	N			55								
	RX	eP	Z	22	21	07								
		e	Z			25								
		eS	NE		25	48								
		e(L)	NE		28									
	Epicentre			22	15	20.9	15.8S		168.0E		213km		USCGS	
20	KP	P	Z	00	44	18	u							
		e	Z			56								
	ON	P	E	00	44	22								
		e	E			29								
		e(S)	E		45	03								
	CT	P	Z	00	44	28								
		e	Z			35								
		e	Z		45	02								
		e	Z			20								
	WN	eP	ZNE	00	44	52								
		e	Z		45	16								
		eS	ZNE			55								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
			E	00	45	19								
APR	CB	e			46	12								
		eS	E											
			N	00	45	29								
	GP	e	N		46	59								
		eS	X	00	45	55								
	KM	e	X		46	51								
		eS		00	43	29								
	Epicentre						36.3S		178.4E		220±km		NZ(D)	5.ONZ
20	CT	ePKP	Z	06	06	42								
		ePKKP	Z		16	55								
	KP	PKP	Z	06	06	43								
		ePKKP	Z		16	57	u							
		e	Z			25								
		e	Z		20	11								
		e	Z			37								
	WN	PKP	Z	06	06	46								
	CB	ePKP	E	06	06	48								
	GP	ePKP	N	06	06	49								
	RX	PKP	Z	06	06	53								
		ePKKP	Z		16	39								
		e	Z		20	29								
		eSS	E		25	34								
		eSSS	NE		30									
		eL	ZE		47									
		M	ZE		50							14	22	6.6
	Epicentre			05	47	55.3	20.6N		72.2W		25km		USCGS	
20	KP	e(P)	Z	14	30	12								
	Epicentre			14	25	18.8	17.9S		169.9E		87km		USCGS	
21	KP	eP	Z	03	39	03								
	Epicentre			03	33	53.8	6.1S		146.1E		86km		USCGS	
21	SU	eS	N	07	49	16								
	KP	eP	Z	07	49	29								
		e	Z			45								
		e	Z			52								
	TU	eP	Z	07	49	32								
		e(S)	Z		52	04								
	CT	e(P)	Z		49	41								
		e(S)	Z		52	24								
	WN	P?	Z	07	49	42								
		eS	ZNE		52	57								
	ON	e(S)	E	07	51	36								
	CE	eS	E	07	53	00								
	Epicentre			07	46	18.5	23.7S		180.0		559km		USCGS	
21	KP	iP	Z	21	20	54	u							
	Epicentre			21	18	01.7	6.5S		144.6E		42km		USCGS	
22	SU	eS	N	02	13	54								
	ON	eP	E	02	14	01								
	KP	iP	Z	02	14	23	d							
	TU	eP	Z	02	14	36								
		eS	Z		18	14								
	CT	P	Z	02	14	36								
		e	Z		18	23								
	CB	eP	E	02	14	51								
	WN	P	ZNE	02	14	52								
		e	ZNE		18	01								
		e	ZNE			16								
	KM	e	X	02	15	03								
		e	X		18	44								
	RX	eP	Z	02	15	27								
		e	E		21	50								
	Epicentre			02	10	12.1	18.9S		169.5E		288km		USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
APR 22	RX	eL	ZNE	05	34									
		M	E		36						2	24		
		Epicentre			04	45	20.3		15.5N		93.1W	69km	USCGS	
	22 KP	P	Z	16	06	43	u							
		e	Z		07	01								
	TU	eP	Z	16	06	46								
	CT	eP	Z	16	06	53								
		e	Z		09	30								
		e	Z			51								
		Epicentre		16	03	09.5			21.1S		178.7W	578km	USCGS	
	22 KP	P	Z	16	45	39								
	CT	eP	Z	16	45	43								
	TU	eP	Z	16	45	51								
		Epicentre		16	38	17.8			5.1S		153.7E	28km	USCGS	
	22 KP	eP	Z	19	27	30								
		epP	Z		28	11								
	CT	eP	Z	19	27	34								
		e	Z		28	26								
	TU	eP	Z	19	27	36								
		epP	Z		28	17								
	RX	eP	Z	19	27	47								
		Epicentre		19	15	29.7			32.3N		130.3E	185km	USCGS	
	22 KP	P	Z	22	12	35								
		e(S)	Z			57								
	TU	eP	Z	22	12	38½								
		e	Z			45								
		e	Z			59								
		eS	Z		13	02								
	CT	P	Z	22	12	43								
		e	Z			53								
		e	Z		13	10								
		e(S)	Z			15								
	ON	eP	E	22	12	52								
	WN	P	ZN	22	13	05								
		e	Z			41								
		S	ZNE			50								
		e	ZE		14	08								
		e	E			21								
	CB	eP	E	22	13	14								
		e	E			35								
		e	E		14	04								
		e(S)	E			06								
	KM	e	X	22	13	40								
		eS	X		14	42								
	GP	eP	N	22	13	40								
		eS	N		14	52								
	RX	e	Z	22	15	13								
		eS	Z			55								
		Epicentre		22	12	06			37.65S		176.6E	200km	NZ(C)	5.4U
	23 KP	eP	Z	04	06	47								
		epP	Z		07	07								
	CT	eP	Z	04	06	52	d							
		Epicentre		03	54	38.4			36.0N		139.2E	115km	USCGS	
	23 SU	eP	N	06	09	07								
		eS	N		18	50								
		eL	N		30									
		M	N		32					120	30			
	ON	e(P)	E	06	10	36								
		e	E			59								
	KP	eP	Z	06	10	43	d							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
		e	Z		11	11								
APR	TU	eP	Z	06	10	47								
		e	Z		11	15								
		e(PP)	Z		14	15								
	CT	eP	Z	06	10	48								
		e(PP)	Z		14	16								
	CB	eP	E	06	10	53								
		eSKS	E		21	16								
		eS	E			48								
	WN	eP	ZNE	06	10	56								
		e(PP)	ZNE		14	28								
		eSKS	NE		21	17								
	KM	eP	X	06	11	02								
		e(SKS)	X		21	43								
	GP	eP?	N	06	11	03								
		e	N			08								
		e(SKS)	N		21	55								
	RX	P	Z	06	11	09								
		e	ZNE			12								
		e	Z			36								
		ePP	ZNE		14	46								
		eSKS	N		21	36								
		e	NE		28	16								
		eL	E		37									
		eL	ZNE		40									
		M	ZNE		43				100	29	90	29	110 29	
		Epicentre		05	58	04.9			42.9N		143.4E	25km	USCGS	
	23 KP	eP	Z	15	00	31								
	TU	eP	Z	15	00	41								
		Epicentre		14	51	26.0			6.9S		128.4E	83km	USCGS	
	24 KP	eP	Z	16	18	13								
		Epicentre		16	06	23.7			2.2S		76.1W	175km	USCGS	
	24 KP	e(P)	Z	18	16	34								
	CT	eP	Z	18	16	42								
	TU	eP	Z	18	16	43								
		Epicentre		18	09	30.0			5.8S		154.6E	92km	USCGS	
	25 SU	e(L)	N	05	45	00								
	25 SU	e	N	05	57	30								
		eL	N		60									
	KP	eP?	Z	05	59	22								
	CT	e(P)	Z	05	59	48								
	RX	eL	NE	06	09									
		M	E		10							1.5	18	
		Epicentre		05	55	20.4			20.9S		175.1W	103km	USCGS	
	25 KP	P	Z	15	59	44								
		e	Z			52								
	TU	e(P)	Z	15	59	49								
	CT	e(P)	Z	15	59	49								
		e	Z			58								
		e	Z	16	00	11								
	WN	eP?	Z	16	00	12								
	RX	eP	Z	16	00	17								
		eSKS	N		10	48								
		eSS	N		16	26								
		eL	ZNE		29									
		M	NE		33						5	22	5 22	6.1
	SU	eL	N	16	18						8	20		6.1
		Epicentre		15	47	29.4			38.4N		142.5E	56km	USCGS	

Date	Stn	Phase		h	m	s		Az Tz	An Tn	Ae Te	Mag
APR 25	KP	e(P)	Z	20	02	16					
	CT	e(P)	Z	20	02	24					
	Epicentre			19	49	57.3		38.4N 142.7E 120km			USCGS
25	TU	eP	Z	21	50	53					
		e	Z		51	16					
	CT	e?	Z	21	51	04					
		e?	Z			15					
		e	Z			50					
26	KP	eP	Z	05	18	59					
		e	Z		19	41					
26	SU	e(P)	N	07	27	43					
		e	N		28	07					
		iS	N			38	s				
	ON	eP	E	07	30	18					
		S	E		33	29	e				
	KP	P	Z	07	30	30					
		e(S)	Z		34	04					
	TU	eP	Z	07	30	33					
		e(sP)	Z		32	39					
		eS	Z		33	49					
		e	Z			55					
		e	Z		34	16					
		eScS	Z		40	47					
	CT	P	Z	07	30	33					
		e	Z			37					
		e	Z		34	20					
	WN	eP	Z	07	30	57					
		e	Z		34	25					
		eS	ZNE			37					
		eScS	NE		40	57					
	CB	eP	E	07	31	00					
		eS	E		34	40					
	KM	eP	X	07	31	16					
		eS	X		35	06					
		eScS	X		41	00					
	GP	eP	N	07	31	22					
		eS	N		35	18					
		eScS	N		41	08					
	RX	eP	Z	07	31	43					
		e(S)	Z		36	01					
		ePcS	Z		37	26					
		e	E		38	52				3 26	
	Epicentre			07	26	31.3		17.8S 179.1W 689km			USCGS
27	SU	e(P)	N	06	31	55					
		iS	N		33	10	n				
	ON	eP	E	06	33	23					
	KP	P	Z	06	33	39					
		eS?	Z		36	22					
	CT	eP	Z	06	33	49					
		e	Z			52					
		eS	Z		36	40					
	WN	eP	Z	06	34	08					
		e	Z		37	07					
		e(S)	Z			09					
		e	Z			25					
	GP	eP	N	06	34	34					
		eS	N		37	50					
	KM	e(P)	X	06	34	42					
		eS	X		37	36					
	RX	eP	Z	06	34	57					
		e(S)	Z		38	30					
		e	Z			37					
	Epicentre			06	30	24.9		23.1S 179.2E 576km			USCGS

Date	Stn	Phase		h	m	s		Az Tz	An Tr.	Ae Te	Mag
APR 27	RX	eP	Z	06	59	03					
		e(SKS)	E	07	08	42					
			Z	06	59	14					
	KP	e?	Z	06	47	27.0		44.4S 74.8E 31km			USCGS
	Epicentre										
27	KP	P	Z	16	29	56					
		e(P*)	Z		30	19					
		e(S*)	Z		31	34					
	CT	eP	Z	16	30	07					
			Z			18					
		e	Z		31	34					
		e(S)	Z			54					
		e	Z		32	02					
		eS*	Z	16	30	29					
	WN	eP	ZNE		32	12					
		eS	Z		33	01					
		eS*	N	16	33	15					
	GP	eS		16	28	17		33½S 178½W S			NZ(D) 5.4
	Epicentre							Charters Towers Readings used to determine Epicentre.			
28	RX	ePKP	Z	11	38	44					
		e	Z			59					
	KP	ePKP	Z	11	39	16					
		e	Z			44					
	Epicentre			11	18	57.4		36.4N 26.6E 40km			USCGS
28	RX	ePKP	Z	13	03	36					
	KP	ePKP	Z	13	04	05					
	Epicentre			12	43	49.1		36.3N 26.7E 48km			USCGS
29	KP	eP	Z	07	10	24					
		e	Z			34					
		e	Z			41					
	Epicentre			07	05	36.2		18.1S 173.9W 79km			USCGS
29	TU	eP	Z	15	16	11					
	CT	eP	Z	15	16	11					
	KP	e?	Z	15	16	33					
	RX	eP	Z	15	16	54					
	Epicentre			15	10	24.9		12.4S 166.5E 72km			USCGS
30	KP	P	Z	02	38	48	u				
		e(pP)	Z		39	12					
	TU	eP	Z	02	38	53	u				
		e	Z		39	17					
	CT	P	Z	02	38	53	u				
	CB	eP	E	02	38	58					
	GP	e(P)	N	02	39	10					
	RX	eP	Z	02	39	13					
		eL	NE	03	02						
	Epicentre			02	26	30.0		38.8N 140.9E 104km			USCGS
30	KP	eP?	Z	09	54	18					
		e	Z			22					
		e	Z		55	04					
	CT	P	Z	09	54	30					
	Epicentre			09	44	17.4		17.0N 147.3E 109km			USCGS
30	KP	P	Z	10	44	33	u				
		epP	Z			44					
	TU	eP	Z	10	44	46					
	CT	eP	Z	10	44	48					
	CB	eP	E	10	45	02					
	GP	e(P)	N	10	45	22					
	RX	e(P)	Z	10	45	42					
	Epicentre			10	40	14.4		20.1S 169.0E 49km			USCGS

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
APR 30	SU	eP	N	16	18	07				
		e(L)	N		19	24				
	ON	eP	E	16	21	20				
		eL	E		26					
	KP	eP	Z	16	21	33				
	TU	eP	Z	16	21	34				
	CT	eP	Z	16	21	43				
		e	Z			47				
		ePP	Z		22	12				
	WN	e(P)	ZNE	16	22	07				
		eL	NE		30					
	CB	eP	E	16	22	14				
	GP	eP?	N	16	22	28				
		e	N			40				
	KM	e(P)	X	16	22	35				
	RX	e	Z	16	23	17				
		ePP	N			56				
		eS	NE		27	52				
		eL	NE		30					
		M	E		31				70 24	
	Epicentre			16	16	47.8	17.9S	176.1W	26km	USCGS
30	SU	e	N	18	32	40				
		e(L)	N		33	35				
	ON	e?	E	18	35	28				
		e	E			36				
		eL	E		41					
	KP	eP	Z	18	35	41				
	TU	eP	Z	18	35	43				
	CT	eP	Z	18	35	52				
		epP	Z		36	20				
	CB	e	E	18	36	19				
	KM	e(P)	X	18	36	41				
	GP	eP	N	18	36	43				
	RX	e	Z	18	37	12				
		eL	NE		44					
		eL	Z		46					
		M	E		46				13 24	
	Epicentre			18	31	06.6	18.0S	176.4W	135km	USCGS
30	CT	eP	Z	20	49	44				
	RX	e?	Z	20	50	30				
		eL	E	21	19					
	TU	eP	Z	20	50	36				
	KP	eP?	Z	20	50	37				
		e	Z			40				
	Epicentre			20	39	45.1	6.4N	124.0E	28km	USCGS
30	WN	ePKP	NE	24	09	56				
	KP	ePKP	Z	24	10	01½				
	TU	ePKP	Z	24	10	03				
	CT	ePKP	Z	14	10	03				
	TO	ePKP	Z	24	10	03				
	Epicentre			23	50	33.5	72.0N	7.2E	25km	USCGS
MAY 1	KP	eP	Z	10	03	04				
	TO	eP	Z	10	03	07				
	CT	eP	Z	10	03	07½				
	WN	eP	NE	10	03	08				
	TU	eP	Z	10	03	13½				
	Epicentre			09	54	20.6	5.8S	125.5E	621km	USCGS
2	WN	eP?	N	09	09	31				
	RX	eP	Z	09	09	33				
	TO	eP	Z	09	09	35				
	CT	eP	Z	09	09	35½				
	KP	eP	Z	09	09	38				
		e(pP)	Z		10	46				
	Epicentre			08	56	29.0	23.6S	65.9W	163km	USCGS

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
MAY 2	RX	e?	Z	11	16	29				
		e?	Z		17	05				
		eP	Z	11	16	43				
	CT	eP		11	05	13.5	14.5N	120.2E	82km	USCGS
	Epicentre									
2	CT	eP	Z	12	46	11				
	KP	eP	Z	12	46	14				
	Epicentre			12	33	08.1	23.8S	66.4W	179km	USCGS
2	SU	eP	N	20	45	54				
	CT	eP	Z	20	47	03				
		eS	Z		49	33				
		e	Z			47				
	TO	eP	Z	20	47	06				
		eS	Z		49	36				
	WN	eS	NE	20	50	10				
	CB	eS	E	20	50	29				
	KM	eS	X	20	51	03				
	RX	eS	Z	20	52	17				
	Epicentre			20	43	53.8	26.3S	177.7W	183km	USCGS
2	CT	e(PKP$_1$)	Z	23	39	23				
		e(PKP$_2$)	Z			32½				
	Epicentre			23	18	28.4	74.9N	9.0E	23km	USCGS
3	RX	eP	Z	03	46	22				
		eS	NE		55	52				
		eLq	E	04	05.3					3.8 24
		eL	N		10.5				3.2 16	
		eLr	Z		12.6					
	CT	eP	Z	03	46	51				
	TO	eP	Z	03	46	51				
	KM	eP	X	03	46	52				
	CB	eP	E	03	46	54				
	KP	eP	Z	03	46	57				
	Epicentre			03	34	49.0	60.0S	32.9W	20km	USCGS
4	KP	eP	Z	13	29	13				
	TU	eP	Z	13	29	17				
		eS	Z		32	12				
	Epicentre			13	25	27.8	20.3S	177.8W	592km	USCGS
5	KP	eP	Z	11	23	52				
	CT	eP	Z	11	24	00				
	Epicentre			11	11	51.4	34.2N	139.2E	73km	USCGS
5	ON	eP	E	16	00	39				
	KP	eP	Z	16	00	46				
	TU	eP	Z	16	00	51				
		eS	Z		02	20				
	CT	eP	Z	16	01	04				
		eS	Z		02	52				
	RX	eP	Z	16	02	35				
	TO	eS	Z	16	02	55				
	WN	eS	NE	16	03	29				
	GP	eS	N	16	04	37				
	KM	eS	X	16	04	54				
5	TU	eP	Z	23	07	56				
		eS	Z		09	31				
	ON	eP	E	23	07	57				
	KP	eP	Z	23	08	00				
	CT	eP	Z	23	08	12				
		e(S)	Z		09	52				
		e	Z		10	02				
	TO	eP	Z	23	08	12				
		e(S)	Z		09	56				
	TA	eP	Z	23	08	20				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
MAY		e	Z		09	34				
		e(S)	Z		10	31				
	WN	eP	N	23	08	39				
		eS	N		10	36				
	CB	e(P)	E	23	08	59				
		eS	E		10	59				
	KM	eP	X	23	09	15				
		eS	X		11	36				
	GP	eP	N	23	09	17				
		eS	N		11	40				
	RX	eP?	Z	23	09	54				
		eP	Z			59				
		eS	Z		12	53				
	SU	eL	N	23	14	25				
	Epicentre			23	05	56.9	31.6S	176.7W	41km	USCGS
6	TU	eP	Z	03	20	41				
	CT	eP	Z	03	20	47½				
	TA	eP?	Z	03	20	54				
	KP	eP?	Z	03	21	00½				
	Epicentre			03	13	49.3	54.3S	136.6W	23km	USCGS
6	TU	eP	Z	03	40	38				
	CT	eP	Z	03	40	44				
	TO	eP	Z	03	40	44				
	KP	eP	Z	03	40	52				
	TA	eP?	Z	03	40	54				
	Epicentre			03	33	47.0	54.2S	136.5W	25km	USCGS
6	KP	eP	Z	12	12	21				
		e	Z			33				
		e	Z			38				
	TU	eP	Z	12	12	22				
		e	Z		15	17				
	CT	eP	Z	12	12	30				
		e	Z		15	44				
	TO	eP	Z	12	12	33				
	TA	eP	Z	12	12	36				
	WN	eP?	NE	12	12	45				
	Epicentre			12	08	45.6	20.8S	178.7W	587km	USCGS
6	RX	eP	Z	19	11	43				
	GP	eP	N	19	11	55				
	CB	eP	E	19	12	04				
	WN	eP?	NE	19	12	04				
	CT	eP	Z	19	12	10				
		e	Z		31	55	Possibly separate shock			
	TO	eP	Z	19	12	12				
		e(PP)	Z		15	19				
		e	Z		31	55	Possibly separate shock			
	TA	eP	Z	19	12	12				
	TU	eP	Z	19	12	12½				
	KP	eP	Z	19	12	15				
		e	Z		14	27				
		e(PP)	Z		15	22				
		e	Z		32	01	Possibly separate shock			
	ON	eP	E	19	12	29				
	SU	eP	N	19	13	53		24 20		
		e(PP)	N		17	34				
		e	N		21	53				
		e	N		26	50				
		eL	N			50.0				
	Epicentre			19	00	10.2	60.0S	32.8W	25km	USCGS
6	TO	eP	Z	22	05	47				
	CT	eP	Z	22	05	48				
	KP	eP	Z	22	05	53				
	Epicentre			21	53	48.5	60.2S	33.1W	37km	USCGS

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
MAY 6	TO	eP	Z	22	46	44				
	CT	eP	Z	22	46	45				
	KP	eP	Z	22	46	51				
	Epicentre			22	34	47.9	60.4S	33.6W	34km	USCGS
7	KP	eP	Z	05	04	40				
	TO	eP	Z	05	04	47				
	CT	eP	Z	05	04	48				
	TU	eP	Z	05	04	52				
	Epicentre			04	56	38.4	4.1S	143.7E	113km	USCGS
7	KP	eP	Z	08	18	14				
	CT	eP	Z	08	18	22				
	TO	eP	Z	08	18	22				
	TU	eP	Z	08	18	23				
	Epicentre			08	07	55.8	19.3N	145.4E	116km	USCGS
7	TU	eP	Z	13	08	52				
		eS	Z		10	23				
	KP	eP	Z	13	08	58				
		e	Z		09	10				
	ON	eP	E	13	09	00				
	CT	eP	Z	13	09	08				
		e	Z		10	55				
	TO	eP	Z	13	09	10				
		e	Z		10	59				
	TA	e?	Z	13	09	33				
	GP	eP	N	13	10	24				
		eS	N		12	35				
	WN	eS	NE	13	11	30				
	CB	eS	E	13	11	56				
	KM	eS	X	13	12	31				
	Epicentre			13	06	54.2	32.0S	176.5W	25km	USCGS
7	SU	eP	N	17	50	58				
		eS	N	18	00	24		48 24		
		eLq	N		11	35				
		eLr	N		15	40		27 19		
	KP	eP	Z	17	52	36				
	CT	eP	Z	17	52	42				
		e	Z		56	06				
	CB	eP	E	17	52	48				
	WN	eP	NE	17	52	49				
	KM	eP	X	17	53	05				
	GP	eP	N	17	53	05				
	RX	eP?	Z	17	52	34	8.4	5		7.3
		eS	NE	18	03	46				
		e	NE		04	22				
		e	NE		05	24				
		e(SS)	NE		10	31				
		e(SSS)	N		14	14				
		e	E		19	08				
		e(Lq)	NE		23	.0		14 23	15 23	6.55
		e(Lr)	Z		25	.5	22 22			
	Epicentre			17	39	50.3	45.3N	146.7E	25km	USCGS
7	CT	iP	Z	19	15	42				
	TA	eP	Z	19	15	42				
	KP	iP	Z	19	15	47				
	ON	eP?	E	19	16	01				
	Epicentre			19	03	32.1	59.5S	25.6W	25km	USCGS
8	KP	eP	Z	07	59	15				
		e(pP)	Z			47				
	TU	eP	Z	07	59	20				
	Epicentre			07	49	27.9	14.4N	145.1E	70km	USCGS

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag
MAY 8	SU	e(S)	N	08 00 40				
	KP	eP	Z	08 01 42				
	CT	eP	Z	08 01 50				
	Epicentre			07 57 30.3	17.9S 177.7W 409km			USCGS
9	KP	eP	Z	02 40 24				
9	KP	e	Z	11 34 52				
	CT	e	Z	11 35 02				
		e	Z	09				
	Epicentre			11 19 01.6	46.1N 152.9E 56km			USCGS
10	KM	1P!	X	00 27 30.7 ne				
	CB	1P!	E	00 27 34.9 e				
	GP	1P	N	00 27(49) n				
		1P*	N	(55½)				
		ePg	N	28(00)				
	WN	eP	NE	00 27 55.0				
		eP*	NE	28 02				
		ePg	NE	08				
		eSn	NE	27				
		eS*	NE	38				
		eSg	NE	47				
	TA	eP	Z	00 28 06.9				
		P*	Z	12.7				
		(Pg)	Z	23				
		eS	Z	42				
		eSg	Z	29 01				
	RX	eP	Z	00 28 15.5				
		i	Z	17.5				
		eP*	Z	26½				
		ePg	Z	39½				
		eSg	Z	29 35				
	CT	eP	Z	00 28 15.5				
		i	Z	17.9				
		eSg	Z	29 30				
	KP	eP	Z	00 28 27.1				
	TU	eP	Z	00 28 37.1				
		i	Z	39.5 u				
		e(Pg)	Z	57.5				
	ON	eP	E	00 28 48.4 e				
		iS	E	29 58.2 w				
	Epicentre			00 27 12.0	41.65S 171.32E 12km		NZ(A)	5.3NZ
					Felt Wanaka to South of North Island. Maximum MM 7 at Westport.			
10	WN	iP	NE	04 31 14½ w				
		eS	NE	(24)				
	TA	eP	Z	04 31 37				
		eS	Z	32 07				
	CB	eiP	E	04 31 37				
		eS	E	32(08)				
	TU	iP	Z	04 31 40 u				
	KP	P	Z	04 31 49½ u				
	KM	eP	X	04 31 55				
	ON	eP	E	04 22½				
	RX	eP	Z	04 32 33½				
	Epicentre			04 30 59	41.3S 175.9E S		NZ(B)	5.7NZ
					Felt North Taranaki to Nelson and Marlborough. Maximum MM 4-5 in Wairarapa and Wellington province.			
10	KP	eP	Z	05 25 16				
		e	Z	26 09				
	Epicentre			05 12 15.9	52.4N 170.9W 43km			USCGS
11	KP	e	Z	01 34 46				
		e	Z	35 57				
		e	Z	36 19				
	TU	eP	Z	01 35 09				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag
		eS	Z	36 31				
MAY		eP	Z	01 35 25				
	TA	eP	NE	01 37 41				
	WN	eS	E	01 37 56				
	CB	eS	N	01 38 43				
	GP	eS		01 33 20				
	Epicentre				31.5S 179.5E 350km		NZ(D)	5.6NZ
					Charters Towers readings used to determine epicentre.			
11	KP	eP	Z	05 00 41				
	TU	eP	Z	05 00 53				
	Epicentre			04 52 43.4	6.4S 143.6E 37km			USCGS
11	KP	eP	Z	07 13 25				
	TU	eP	Z	07 13 38				
	WN	eP	Z	07 13 44				
	GP	eP	N	07 13 47				
	Epicentre			07 05 52.5	6.6S 147.7E 42km			USCGS
11	ON	eP	E	12 10 53				
	KP	eiP	Z	12 11 10 u				
	TU	eP	Z	12 11 19				
		e	Z	50				
		eS	Z	15 01				
	TA	eP	Z	12 11 24				
	WN	iP	ZNE	12 11 37 dn				
		e(S)	ZNE	15 23				
		e	E	29				
	CB	eP	E	12 11 37½				
	GP	eP	N	12 11 56				
	RX	eP	Z	12 12 11½				
	KM	eP	X	12 12 50				
		e	X	15 48				
	Epicentre			12 06 42.1	14.3S 170.4E 623km			USCGS
11	ON	eP	E	13 38 23				
	KP	eP	Z	13 38 39				
	TU	eP	Z	13 38 43				
		eS	Z	40 05				
	WN	eS	ZNE	13 41 10½				
		eScS	ZNE	51 24				
		eScS	ZNE	47				
	CB	eS	E	13 41 28				
	GP	eS	N	13 42 14				
	Epicentre			13 35 31.3	28.5S 177.6W 115km			USCGS
11	SU	e	N	14 25 12				
		e(S)	N	35 15		9.5 11		
		e	N	38 20				
		e(SS)	N	41 16				
		e(Lq)	N	47.9		37 28		
		eLr	N	52.6		19 19		
	WN	eP	ZE	14 25 32	1.8 19			
		ePP	ZNE	29 32	2.0 26		5.0 12	
		eSKS	ZNE	36 06	3.7 19	27 20	63 26	
		eSP	Z	38 16				
		ePS	NE	38 24				
		e(SS)	ZNE	42 44				
		eSSS	ZE	47 42				
		eSKKS	E	49 26				
		e(L)	N	50.8		50 84		
		eLr	ZNE	56	25 19	57 14	108 14	
	RX	eP*	Z	14 25 45	3.7 6			7.1
		eSKS	NE	36 32				
		ePS	ZNE	39 04				
		e	N	43 00				
		eSS	E	45 18				
		e(SKKS)	Z	52 23				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
MAY		e(L)	N		54	42		31 36		
		eL	NE		59	.0		14 22	33 21	
		eLr	Z	15	00	.0	31 19			6.7S
	Epicentre			14	11	51.9	17.0N 99.7W 25km			USCGS
12	KP	eP	Z	12	16	27				
	CT	eP	Z	12	16	30				
	TU	eP	Z	12	16	32				
12	ON	eP?	E	22	07	30				
	KP	eP	Z	22	07	43				
	Epicentre			22	03	40.7	18.0S 178.0W 603km			USCGS
14	KP	eP	Z	01	29	53				
	CT	eP	Z	01	30	04				
	TU	eP	Z	01	30	09				
	Epicentre			01	25	15.0	18.4S 168.3E 58km			USCGS
14	RX	eP	Z	10	43	07				
	CB	eP?	E	10	43	16				
	KM	eP	X	10	43	18				
	WN	iP	ZNE	10	43	22½ u				
		e	N			49				
	KP	eP	Z	10	43	23				
	CT	eP	Z	10	43	24				
	TU	eP	Z	10	43	31½				
	Epicentre			10	33	25.5	9.0S 118.7E 30km			USCGS
14	SU	eP?	N	23	24	07				
		eL	N		25	20		18 9		
	KP	eP	Z	23	28	15				
	Epicentre			23	23	08.6	14.0S 178.2W 65km			USCGS
15	ON	eP	E	05	32	53				
		e(PP)	E		34	55				
		e	E		38	42				
		e(S)	E		40	05				
		e(Lq)	E		47	07				
		e(Lr)	E		49	44				
		eLr	E		50	55				
	CB	e(P)	E	05	32	55				
		eS	E		40	23				
		e(Lq)	E		47	17				
		e(Lr)	E		51	44				
	RX	eP	ZN	05	32	55		9.5 15		6.8
		ePP	N		35	06				
		eS	N		40	12		65 18		7.0
		e	N		42	.7				
		e(SS)	N		44	.0				
		e	N		45	.0		170 20		
		eLq	N		46	.2		114 14		
		eLr	N		47	.6		380±28		
	TA	eP	Z	05	32	56				
		e(PcP)	Z		38	13				
	CT	eP	Z	05	33	01				
		e	Z		35	26				
	KM	e(P)	X	05	33	03				
		e	X			06				
		eS	X		40	17				
		e?	X		45	02				
		eL	X		52	.6				
	GP	eP	N	05	33	03				
		epP	N			14				
		e	N		36	31				
		eS	N		40	35				
		eL	N		52	.1				
		M	N		55	.0				
	WN	eP	ZNE	05	33	03				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
		epP	ZNE			13				
MAY		eS	ZNE		40	38				
		eL	ZNE		52	.2	0.6 12	2.0 15	1.7 18	
	TU	eP	Z	05	33	09				
		e(pP)	Z			20				
	KP	eP	Z	05	33	58				
		ePP	Z		34	48				
		e	Z		35	12				
		e(PcP)	Z		38	11				
		e	Z		46	59				
		eLr	Z		53	43				
		eLr	Z		55	38				
	Epicentre			05	23	45.9	7.3S 128.2E 30km			USCGS
15	KP	eP	Z	06	52	13				
	TA	eP	Z	06	52	13				
	WN	eP?	Z	06	52	14				
	TU	eP	Z	06	52	23				
	Epicentre			06	42	58.9	7.2S 128.3E 52km			USCGS
15	TA	eP	Z	10	04	29				
	KP	eP	Z	10	04	30½				
	TU	eP	Z	10	04	40				
	Epicentre			09	55	16.5	7.2S 128.2E 30km			USCGS
15	RX	eP	Z	17	03	(17)				
		eL	N		16	44				
		M	N		21			3.0 18		
	KP	eP	Z	17	03	18				
	TU	eP	Z	17	03	26				
	WN	eP	Z	17	03	29				
	Epicentre			16	54	01.9	7.4S 128.0E 34km			USCGS
16	SU	eP	N	05	19	45				
		e	N		20	35				
		eS	N		22	02				
		eL	N			20				
		M	N		23			19 09		
	KP	eP	Z	05	22	13				
	TU	eP	Z	05	22	23				
	CT	eP	Z	05	22	27				
	RX	eL	E	05	31	06				
		eL	N		35	56				
	Epicentre			05	16	46.0	13.6S 167.3E 52km			USCGS
16	KP	e(P)	Z	06	15	43				
	CT	e(P)	Z	06	15	59				
	WN	e	ZNE	06	16	13				
16	KP	eP	Z	08	28	21				
	TU	eP	Z	08	28	31				
	Epicentre			08	18	30.7	0.9S 127.0E 34km			USCGS
16	CT	i(P*)	Z	10	28	36 u				
	KP	iPn	Z	10	28	43				
		e(ScP)	Z		40	23				
		e?	Z		44	34				
	TU	iPn	Z	10	28	44½				
		e	Z		29	29				
	TA	iPn	Z	10	28	51				
	WN	ePn	ZNE	10	29	09				
		e	ZNE			12½				
		eS*	ZNE			50				
	ON	ePn?	E	10	29	20				
		eP*	E			26				
		e(Pg)	E			32				
		e	E			45				

Date	Stn	Phase		h m s	Az Tz An Tn Ae Te	Mag
MAY	CB	ePn	E	10 29 21		
		eS*	E	30 11		
	GP	ePn	N	10 29 49		
		e(S)	N	31 02		
	RX	e(P)	Z	10 30 41		
		e(S)	Z	32 32		
		e	NE	33.0		
	Epicentre			10 28 27	38.7S 176.0E S NZ(C) 4.3NZ Brisbane, Umea, Charters Towers readings used to determine Epicentre. Felt: Taupo, Tokaanu, Whakamaru. Maximum MM 3.	
16	CB	eP	E	14 44 47		
	KP	eP	Z	14 44 49		
	TU	eP	Z	14 44 52		
	CT	eP	Z	14 44 56		
	WN	eP	Z	14 44 56		
	RX	eP	Z	14 44 56		
	Epicentre			14 35 29.6	7.3S 128.1E 34km	USCGS
16	SU	eP	N	17 35 57		
		eS	N	38 25		
		eLq	N	54		
		eLr	N	39 28	29 9	
	KP	eP?	Z	17 38 35		
		e(pP)	Z	40		
	TU	e(P)	Z	17 38 45		
	CT	eP?	Z	17 38 48		
		e(pP)	Z	59		
	RX	eP	Z	17 39 34		
		e(S)	NE	44 56		
		eLq	NE	47 30		
		M	NE	53	1.5 8	
	Epicentre			17 33 05.5	13.4S 167.3E 35km	USCGS
16	KP	eP	Z	23 10 24		
	TU	eP	Z	23 10 35		
	CT	eP	Z	23 10 36		
	RX	eP	Z	23 11 22		
	Epicentre			23 05 21.1	15.1S 167.6E 136km	USCGS
17	KM	iP!	X	02 20 08.4 sw		
	CB	iP	E	02 20(17.9) e		
		P*	E	(19)		
		eS	E	(34)		
	GP	eP	N	02 20 28.0 e		
		i(P*)	N	35		
		e(S*)	N	21 03		
	WN	ePn	ZNE	02 20 36.0		
		e	ZNE	37.0		
		eP*	ZNE	42		
		e(Pg)	ZNE	47		
		eSn	ZNE	21 08		
		eS*	ZNE	16		
		eSg	ZNE	24		
	TA	eP	Z	02 20 48.8		
		e(P*)	Z	54		
		ePg	Z	21 00		
		e	Z	18		
	RX	eP	Z	02 20 54.3		
		ePg	Z	21 15		
		eS	Z	(40)		
	CT	eP	Z	02 20 57.2		
		i	Z	59		
		e	Z	21 02		
	KP	P	Z	02 21 09.8		
		e	Z	(14)		

Date	Stn	Phase		h m s	Az Tz An Tn Ae Te	Mag
MAY	TU	eP	Z	02 21 14		
	ON	eP	E	02 21 29.6 e		
		S	E	22 42.5		
	Epicentre			02 19 52.2	41.8S 171.3OE 12km NZ(A) 5.6NZ Widely felt in north and central parts of South Island, Maximum MM 6 at Westport. Recorded extensively overseas.	
17	CB	eP	E	02 22 31		
		eS	E	46		
	GP	P*	N	02 22 47		
		S	N	23(16)		
	WN	eS	ZNE	02 23 20		
	Epicentre			02 22 08	41.7S 171.25E S NZ(C) 5.2NZ Felt Motueka, Lake Coleridge. MM 4-5 Greymouth; MM4 Nelson, Murchison; MM 3 Howard, Tadmore; MM 2 Bainham, Ross.	
17	CT	e?	Z	06 15 27		
		e(P)	Z	18 03		
	KP	e(P)	Z	06 18 12		
17	CT	eP	Z	16 13 05		
	TA	eP?	Z	16 13 06		
	TU	eP?	Z	16 13 07		
	KP	eP	Z	16 13 40.5		
	Epicentre			16 00 37.4	55.8S 27.0W 23km	USCGS
18	KP	iP	Z	02 53 23 u		
	TU	eP	Z	02 53 24		
	CT	e	Z	02 53 32		
		i	Z	37 d		
	TA	eP	Z	02 53 38		
	CB	e?	E	02 53(56)		
	Epicentre			02 49 50.4	21.2S 178.8W 549km	USCGS
18	CT	eP?	Z	05 08 35		
18	ON	eP	E	07 15 19		
	KP	eP	Z	07 15 19		
	TU	eP	Z	07 15 20		
		e	Z	49		
		e	Z	16 18		
		e	Z	17 05		
	CT	e	Z	07 15 28		
		e	Z	17 20		
	TA	e	Z	07 15 43		
		e	Z	17 20		
	WN	eP	ZNE	07 15 54		
		eS	ZNE	18 07		
	CB	eS	E	07 18 23		
	RX	eS	Z	07 20 13		
	Epicentre			07 12 55.0	29.3S 178.4W 192km	USCGS
18	KP	eP	Z	23 24 04		
	TU	eP	Z	23 24 04		
	TA	eP	Z	23 24 20		
	KM	eP	X	23 25 01		
	WN	eL	ZE	23 31.5		
		M	ZE	35	1.0 21 3.5 20	
	Epicentre			23 18 46.9	16.0S 173.0W 25km	USCGS
19	WN	eP	Z	15 11 54	2.7 8	
		e(PP)	Z	15 45	1.8 26	
		e	Z	21 08		
		eSKS	ZN	22 34	2.5 16	
		e(SP)	Z	24 38		

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
MAY		eSS	ZN		29	50					
		eSSS	Z		33	38					
		e(Lq)	N		37	24	3.3 28				
		e(Lr)	Z		42	40	14 32				
		M	Z		49	17	11 18				
	KP	ePP	Z	15	15	40					
	RX	ePP	NE	15	16	20					
		eSKS	NE		22	50					
		ePS	NE		25	34					
		eSS	NE		31	05					
		eSSS	NE		34	52					
		eLq	N		41	.0		26 36			
		eLr	NE		45	.6					
		M	NE		48			7.4 22	17 21		
	Epicentre			14	58	13.3	17.2N 99.5W 20km			USCGS	6.5 7-7¼
19	TU	eP	Z	18	32	56½					
	KP	eP	Z	18	33	11					
	CT	eP	Z	18	33	14					
	TA	eP	Z	18	33	35					
20	KP	eP	Z	08	12	44					
	CT	eP	Z	08	12	57					
	WN	eP	Z	08	13	14					
	Epicentre			08	09	14.4	21.3S 179.1W 608km			USCGS	
20	KP	eP?	Z	16	27	33					
	Epicentre			16	22	29.4	15.2S 167.2W 108km			USCGS	
20	KP	eP	Z	17	00	08					
		e(pP)	Z			49					
	TU	eP	Z	17	00	16					
		e	Z			19					
	Epicentre			16	49	46.8	6.2N 125.8E 133km			USCGS	
20	ON	eP	E	18	32	51					
	KP	eP	Z	18	32	54					
		e	Z		33	06					
	TU	eP	Z	18	32	55					
		e	Z		34	41					
		e	Z			47					
	GP	eP?	N	18	34	21					
		eS	N			48					
		e	N			54					
	RX	eP	Z	18	34	51					
	WN	eS	ZNE	18	35	48					
	Epicentre			18	30	38.9	30.0S 177.5W 25km			USCGS	
21	KP	eP	Z	01	44	10					
	TU	eP	Z	01	44	10					
	TA	eP	Z	01	44	28					
21	KP	eP	Z	02	04	30					
	TU	eP	Z	02	04	37					
	Epicentre			01	54	06.2	19.4N 145.6E 85km			USCGS	
21	WN	ePP	Z	12	21	31	1.8 12				
		ePKKP	Z		31	58					
		eSS	Z		37	02					
		e(SSS)	Z		40	24					
		e(SKKS)	E		42	18					
		e	Z		46	.3					
		e(L)	E		49	.0			12 60		
		eLr	Z		55	.9					
		M	Z	13	04		7 26				
	RX	ePP	E	12	21	32					
		eSKS	E		27	48					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
		e(SKKS)	N		28	39					
MAY		e	N		38	53					
		e	E		40	00					
		e	N		46	50					
		e	N		55	38					
		eLr	Z		57	22					
		e(Lr)	N		58	50					
		e(Lr)	E								
		M	ZNE	13	01		8.4 26	4.5 22	11.0 24		6.5
	SU	eL	N	12	49						
		M	N		59			14 20			
	Epicentre			12	02	50.6	37.3N 96.0E 25km			USCGS	6½-7¼
21	SU	iP	N	21	16	(52) n					
	ON	eP	E	21	19	21					
		e	E			38½					
		e	E		20	39					
		eS	E		22	33					
		ePcS	E		27	13					
	TU	eP?	Z	21	19	28					
		eP	Z			33					
		e	Z			47					
		eS	Z		23	03					
		eScP	Z		26	12					
		eScS	Z		30	20					
	KP	eP	Z	21	19	30					
		eScP	Z		26	14					
	CT	eP	Z	21	19	47					
		e	Z		22	35					
	TA	eP	Z	21	19	47					
		e	Z		22	35					
	WN	eP	NE	21	20	04					
		e	N			29					
		eS	NE		23	52					
		ePcS	N		26	59					
		eScS	E		30	27					
		e	N			33					
		e	E			35					
		e	N			40					
	GP	eP	N	21	20	24					
		eS	N		24	37					
		eScS	N		30	46					
	KM	eP	X	21	20	25½					
		e	X		22	04					
		e	X		24	45					
		e	X		30	37					
	RX	eP	Z	21	20	52	4.5 14				5.6
		e(pP)	Z		22	19					
		eS	NE		25	26		29 20	56 22		6.6
		e?	Z			57					
		e(PcS)	Z		27	00					
		e	Z		27	34					
		e	Z		31	28					
	Epicentre			21	15	31.0	20.0S 177.5W 379km Felt: Nukualofa, Tonga			USCGS	6¾-7
22	SU	e(L)	N	02	24	.8		6 5			
	KP	eP?	Z	02	25	26					
	TU	eP	N	02	25	50					
	Epicentre			02	20	10.4	14.7S 173.0W 46km			USCGS	
22	TA	eP	Z	04	47	09					
	RX	eS	NE	04	52	20		1.5 14	2.3 16		6.3
		eLq	NE		54	02		8 28	7 26		
		eLr	Z		56	12					
	Epicentre			04	40	14.4	55.5S 138.3W 42km			USCGS	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag
MAY 22	SU	e1P	N	08	09	35				50	5				
		eS	N		12	07				125	8				
	ON	eP	E	08	11	52									
	KP	eP	Z	08	12	07									
		ePP?	Z		13	14									
		eScP	Z		18	49									
	TU	eP	Z	08	12	17									
		e	Z			19									
		e(PP)	Z		13	44									
		eS	Z		16	56									
		e(SS)	Z		19	07									
	TA	eP	Z	08	12	18									
	CT	eP	Z	08	12	19									
	WN	eP	ZNE	08	12	34									
		epP	E		13	06									
		eS	ZNE		17	18		5.3	20	33	30	24	10		
		e(SS)	ZNE		19	28									
		eL	Z		21	03		28	52						
		M	Z		24			13	18						
	KM	eP	X	08	12	42									
		eS	X		17	35									
	GP	eP	N	08	12	51									
		eS	N		17	54									
		e(sScS)	N		24	08									
	RX	iP	ZNE	08	13	05	us	20	5						7.1
		ePP	ZNE		14	52									
		eS	ZNE		18	14		11	8	17	9	9.1	8		6.6
		eScP	Z		19	02									
		ePcS	E			36									
		e(Lq)	E		21	.5						20	25		
		e(Lq)	ZN		22	.1				32	23				
		eLr	Z		24	.4		22	20						
	Epicentre			08	06	38.7		12.3S		166.6E		151km		USCGS	5½-41
22	SU	eP	N	22	09	35				6.3	9				
		eS	N		14	00									
		eL	N		17	11									
		M	N		26					14	15				
	KP	eP	Z	22	10	55									
		e?	Z		12	23									
	TU	eP	Z	22	11	07									
		e	Z			40									
	WN	eP	Z	22	11	22		1.0	15						
		e(PP)	Z		12	40		1.0	15						
		eS	Z		17	25									
		e(ScS)	Z		22	08									
		eLr	Z		23	20									
		M	Z		27			13	20						
	RX	eP?	ZN	22	11	36									
		eS	NE		17	46				4.2	26	3.8	24		5.9
		e	E		21	14									
		eL	NE		25	14									
		M	NE		28					22	20	18	20		
	Epicentre			22	03	36.0		5.5S		152.0E		100km		USCGS	
23	WN	eLr	Z	06	53	.9									
		M	Z		57			0.7	20						
	RX	eL	NE	06	56										
		eL	Z	07	00										
	Epicentre			06	34	00.4		5.4S		152.0E		70km		USCGS	
23	ON	eP	E	08	21	45									
	KP	iP	Z	08	22	00	u								
		e(S)	Z		24	33									
	TU	eP	Z	08	22	01									
		e(S)	Z		24	32									

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
MAY	TA	eP	Z	08	22	19							
		e(S)	Z		25	06							
	WN	eP	NE	08	22	32							
		eS	NE		25	19							
	KM	eP	X	08	22	56							
		eS	X		26	05							
	RX	eP	Z	08	23	29							
		e	Z			45							
		eS	Z		27	18							
	Epicentre			08	19	00.7	25.4S		179.3W		363km		USCGS
24	KP	eP	Z	02	18	57							
	WN	eL	Z	02	32	.0							
		M	Z		34		0.9	20					
	Epicentre			02	11	35.8	5.4S		151.9E		55km		USCGS
24	KP	eP	Z	07	16	47							
	CT	eP?	Z	07	16	57							
	Epicentre			07	11	59.5	18.7S		173.2W		25km		USCGS
25	TU	eP	Z	04	23	58							
		e	Z		27	50							
	KP	eP	Z	04	24	00							
	CT	eP	Z	04	24	11							
		e	Z		27	58							
	TA	eP	Z	04	24	19							
	WN	eP	ZNE	04	24	35							
		eS	ZNE		28	39							
		eLq	ZNE		30	44	2.3	19		11 15		17 20	
		eLr	ZNE		32	.6	5.0	16		19 16			
	KM	eP	X	04	25	03							
		eS	X		29	37							
	GP	eP	N	04	25	04							
		eS	N		29	32							
	RX	eP	Z	04	25	31							
		e	NE		28	.8							
		eLr	Z		35	.7							
		M	NE		37					12 16		13 15	
		M	Z		38		6.4	16					
	Epicentre			04	19	57.0	20.7S		174.3W		281km		USCGS
25	KP	eP	Z	07	10	07							
		e	Z			11							
		e	Z			25							
	TU	e(P)	Z	07	10	24½							
	CT	eP	Z	07	10	25							
	WN	eP	ZN	07	10	42							
	KM	e	X	07	13	18							
		e	X			55							
	Epicentre			07	05	32.3	18.4S		168.4E		67km		USCGS
25	TU	eP?	Z	14	21	48							
		e	Z			53							
		eS	Z		23	23							
	KP	eP	Z	14	21	53							
		e	Z		23	50							
	CT	eP	Z	14	22	27							
		e	Z		23	50							
		e	Z		24	34							
	TA	e	Z	14	22	27							
		eS	Z		23	47							
	WN	e	ZNE	14	24	33							
	GP	eP	N	14	25	39							
	Epicentre			14	19	38.9	30.9S		177.2W		25km		USCGS
25	KP	eP	Z	16	48	22							
	TU	eP	Z	16	48	33							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag	
MAY	CT	eP	Z	16	48	36								
	WN	eL	E	16	54	9					2.7	28		
		eL	ZN			55.6	2.0	25	6.4	25				
	RX	eL	E	16	57									
25	KP	eP	Z	17	25	00								
		e	Z			17								
	TU	eP?	Z	17	25	03								
		eP	Z			05								
	CT	eP	Z	17	25	11								
		e	Z			27	53							
	TA	eP	Z	17	25	16								
	WN	eP	ZNE	17	25	31								
		eS	ZNE			28	22							
	GP	e(P)	N	17	25	39								
	KM	e(P)	X	17	25	52								
		eS	X			28	55							
	RX	eP	Z	17	26	19								
	Epicentre			17	21	57.6	24.1S		179.1E		576km			USCGS
26	ON	eP	E	02	16	37								
	KP	eP	Z	02	16	50	u							
		eScP	Z			23	27							
	TU	eP	Z	02	16	52								
		eS	Z			19	56							
	CT	eP	Z	02	16	59								
		e	Z			17	18							
		eS	Z			20	15							
		eScP	Z			23	29							
	TA	eP	Z	02	17	04								
	WN	eP	ZNE	02	17	18								
	KM	eP	X	02	17	45								
		eS	X			21	31							
	GP	eP	N	02	17	45								
		eS	N			21	26							
	RX	eP	Z	02	18	08								
	Epicentre			02	13	04.8	19.7S		178.0W		600km			USCGS
26	WN	eL	Z	07	50.0									
26	KP	eP	Z	09	58	45								
	CT	eP	Z	09	58	54								
	TU	eP	Z	09	58	57								
	KM	eP?	X	09	59	12								
	WN	eL	Z	10	12.2									
	RX	eL	E	10	16.8									
26	TA	eP	Z	19	56	57								
	KP	eP	Z	19	57	00								
	CT	eP	Z	19	57	00								
	WN	eL	Z	20	28									
	Epicentre			19	44	17.5	6.7N		94.6E		60km			USCGS
27	KP	eP	Z	05	40	04								
	TU	eP	Z	05	40	15								
		e	Z			54								
	WN	eL	Z	06	00	.7								
		M	Z			05	0.5	20						
	Epicentre			05	30	44.4	3.2S		129.5E		82km			USCGS
28	WN	eL	Z	03	31.0									
		M	Z			35	0.7	18						
	Epicentre			03	08	07.4	3.3S		146.0E		25km			USCGS
28	CT	eP	Z	10	21	31								
	KP	eP?	Z	10	21	32								
	Epicentre			10	09	57.6	31.1N		140.9E		158km			USCGS

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag	
MAY 28	KP	eP	Z	16	13	54								
	TU	eP	Z	16	14	05								
	CT	eP	Z	16	14	06								
	RX	eP	Z	16	14	54								
	WN	eL	ZNE	16	25									
	Epicentre			16	07	59.8	10.8S		165.8E		25km			USCGS
28	CT	eP	Z	24	01	43								
	KP	eP	Z	24	01	47								
	Epicentre			23	49	01.0	31.3S		68.3W		94km			USCGS
29	KP	eP	Z	21	13	11								
	Epicentre			21	00	16.4	51.8N		177.1W		25km			USCGS
29	WN	e(Lr)	Z	22	19	38								
		M	Z			21					1.5	22		
	RX	eL	E	22	21.7									
		eL	N			23.4								
	Epicentre			21	52	50.0	26.3S		113.7W		25km			USCGS
30	TU	iP	Z	04	57	38½	d							
		e	Z			54								
	KP	iP!	Z	04	57	42½								
	CT	iP	Z	04	57	51								
	ON	eP	E	04	58	08								
	WN	eP	NE	04	58	15								
		eS	NE			59	06							
	CB	eP	E	04	58	26								
		eS	E			59	27							
	KM	e	X	04	58	50								
		eS	X	05	00	05								
	GP	eP	N	04	58	(50)								
		eS	N	05	00	(10)								
	RX	eP	Z	04	59	31								
		e	Z	05	01	19								
	Epicentre			04	57	08	37.6S		178.0E		160km		NZ(D)	5.4NZ
	Charters Towers, Umea, Kiruna readings used to determine epicentre.													
30	SU	eP	N	16	59	50								
	TA	eP?	Z	17	01	54								
		eS?	Z			05	56							
	WN	eP	ZNE	17	02	07								
	KP	e?	Z	17	02	16								
		e?	Z			05	38							
	Epicentre			16	57	36.9	18.9S		177.9W		480km			USCGS
31	TU	eP	Z	03	20	29								
		eS	Z			22	04							
	KP	e?	Z	03	20	51								
	RX	eP	Z	03	22	14								
	WN	e	ZNE	03	23	12								
		eL	Z			25								
	Epicentre			03	17	57.2	30.1S		177.1W		15km			USCGS
31	SU	e?	N	06	38	25								
		eS	N			44	35							
		eL	N			51								
	KP	eP	Z	06	38	54								
	TU	eP	Z	06	39	01								
		e	Z			04								
		e?	Z			55								
	TA	eP	Z	06	39	01								
		e?	Z			42								
		e?	Z			40	35							
	WN	eP	ZNE	06	39	08					1.4	7		
		e	ZNE			40	54							
		eS	ZNE			47	54				3.8	7	23 7	14 9

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
MAY		e(PS)	NE			48 48								
		e	N			53 42								
		e	ZE			54 00								
		eL	ZNE			57.0	2.3	27	11	25	14	33		
	KM	eP	X	06	39	11								
	GP	eP	N	06	39	18								
	RX	eP	Z	06	39	19½								
		e	Z			40 31½								
		eS	NE			48 14								
		e?	N			50.5								
		eLq	NE			59			4.2	32	6.4	30		
		eLr	Z	07	01									
	Epicentre			06	28	26.2	22.1N		142.6E		257km		USCGS	6½
31	TU	eP	Z	08	39	38								
		e?	Z			41 38								
		e	Z			48								
	KP	eP	Z	08	39	45								
	TA	eP	Z	08	40	09								
	WN	eP	Z	08	40	28								
		eS	ZNE			42 28								
		eL	E			43.5					9.7	32		
		eL	Z			44.0	3.0	22						
	SU	e	N	08	40	58								
		eL	N			43 35			12	13				
	KM	eP	X	08	41	03								
		eS	X			43 25								
	RX	eP	Z	08	41	35								
		eS	Z			44 47								
		eL	E			46.4					2.5	20		
		eL	N			47.1			2.4	18				
	GP	eS	N	08	43	33								
	Epicentre			08	37	25.8	30.8S		177.3W		42km		USCGS	
31	KP	e(P)	Z	10	02	55								
31	SU	eL	N	15	00				3.5	8				
JUN 2	KP	eP	Z	05	43	43								
	CT	P	Z	05	43	49								
	Epicentre			05	35	36.1	3.5S		145.3E		42km		USCGS	
3	KP	eP	Z	14	28	58								
	TA	eP	Z	14	29	13								
	CB	eP	E	14	29	31								
	GP	eP	N	14	29	53								
	Epicentre			14	25	42.7	23.7S		179.7W		438km		USCGS	
5	TA	P	Z	16	52	43								
	RX	P	Z	16	52	43								
	KP	P	Z	16	52	44								
		e	Z			53 48								
	CT	P	Z	16	52	47								
	GP	P	N	16	52	49								
	TU	P	Z	16	52	54								
	Epicentre			16	43	44.8	7.1S		129.2E		124km		USCGS	
8	KP	P	Z	01	36	00								
	TU	eP	Z	01	36	02								
	WN	P	Z	01	36	28½								
	GP	eP	N	01	36	53								
	RX	P	Z	01	37	15								
		e	Z			36								
	Epicentre			01	31	59.9	18.1S		178.4W		603km		USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
JUN 9	KP	P	Z	01	08	42								
		e	Z		09	20								
			E	06	08	26								
	9 ON	eP	Z	06	08	41								
	KP	P	Z	06	08	57								
	TA	eP	N	06	09	38								
	GP	eP		06	04	55.8	21.1S		178.3E		339km		USCGS	
	Epicentre													
	10 KP	P	Z	03	04	02								
		e	Z			12								
		e	Z			51								
	SU	e	N	03	04	12								
	TU	eP	Z	03	04	17								
	Epicentre			02	59	44.8	20.9S		170.8E		31km		USCGS	
	11 KP	P	Z	02	10	10								
	CT	P	Z	02	10	25								
	Epicentre			02	05	43.3	19.0S		168.8E		85km		USCGS	
	11 SU	iP	N	04	37	14 n								
	ON	eP	E	04	38	45								
	KP	P	Z	04	38	59								
	TU	eP	Z	04	39	01								
		eS	Z		42	26								
	CT	P	Z	04	39	09								
		i	Z			14								
		eS	Z		42	34								
		e	Z			46								
	TA	P	Z	04	39	15								
	WN	eP	Z	04	39	28								
	Epicentre			04	35	00.6	19.6S		177.7W		370km		USCGS	
	11 KP	P	Z	17	08	06								
	TU	P	Z	17	08	17								
	CT	eP	Z	17	08	18								
	Epicentre			17	02	16.4	10.6S		164.7E		132km		USCGS	
	11 SU	e	N	18	48	40								
	KP	P	Z	18	50	44								
	12 SU	S	N	13	50	25								
	KP	P	Z	13	50	54								
	TU	P	Z	13	51	03								
	TA	eP	Z	13	51	03								
	CT	P	Z	13	51	05								
	WN	P	Z	13	51	19								
	RX	eP	Z	13	51	51								
	Epicentre			13	45	40.6	13.2S		167.2E		233km		USCGS	
	14 SU	eS	N	08	12	54								
		eL	N		25									
	RX	eSKS	N	08	16	19								
		eS	E		17	20								
		eSS	NE		24	22								
		eL	NE		39									
	WN	e	Z	08	18				1.1	26				
		eL	Z		35½				5.5	22				
	Epicentre			07	51	51.0	54.3N		169.1E		34km		USCGS	5¾-6¼
	15 ON	eP	E	05	57	48								
	KP	eP	Z	05	58	04								
		i	Z			08								
	CT	P	Z	05	58	16								
	15 WN	eL	ZNE	07	14				1.5	24	4.0	20	5.9	26
	RX	eL	E	07	15									
	Epicentre			06	30	37.0	20.4S		70.9W		60km		USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
JUN 15	CB	P	E	06	50	16							
		S	E			35½							4.7
	WN	iP	ZNE	06	50	23.8	dne						
		S	ZNE			48.0							5.4
	KM	P	X	06	50	24½							
		S	X			49							
	TA	iP	Z	06	50	31½	d						
		S	Z			51 02							
	CT	iP	Z	06	50	37	d						
		S	Z			51 15							
	KP	P	Z	06	50	48							
		S	Z			51 31							
	TU	P	Z	06	50	52							
		eS	Z			51 39							
	RX	iP	Z	06	51	01	d						
		S	Z			54½							
	ON	eP	E	06	51	12							
		e	E			53							
		eS	E			52 15							
	Epicentre			06	49	50	41.1S		172.7E	190km		NZ(C)	5.4
							Felt : Paturau MM 4 Waikanae Beach MM						
15	ON	eP	E	12	01	14							
	KP	iP	Z	12	01	34	u						
	TU	P	Z	12	01	42							
	TA	P	Z	12	01	43							
	CT	eP	Z	12	01	45							
	WN	eP	ZNE	12	02	00							
	GP	P	N	12	02	17							
	RX	P	Z	12	02	30							
	Epicentre			11	56	19.3	13.3S		167.0E	211km		USCGS	
15	KP	eP	Z	12	14	36							
	Epicentre			12	10	40.6	18.4S		176.7W	278km		USCGS	
16	TU	eP	Z	04	21	36							
	KP	P	Z	04	21	37							
	CT	eP	Z	04	21	52							
16	KP	eP	Z	05	33	14							
	Epicentre			05	21	12.7	26.6N		126.4E	38km		USCGS	
16	KP	P	Z	06	37	34							
		e	Z			38 04							
		pP	Z			11							
	CT	P	Z	06	37	36							
		ePP	Z			39 38							
	Epicentre			06	27	29.8	0.2S		122.8E	177km		USCGS	
16	ON	eP	E	17	53	22							
	KP	P	Z	17	53	44							
	CT	P	Z	17	53	59							
	WN	eL	ZE	18	01½								
	Epicentre			17	48	47.1	16.6S		167.7E	25km		USCGS	
16	KP	P	Z	21	47	48							
17	WN	eLr	Z	05	08		0.7	50					
	Epicentre			04	27	38.2	40.1S		45.7E	15km		USCGS	
17	KP	P	Z	13	28	05							
	TU	P	Z	13	28	16							
	CT	P	Z	13	28	17							
	SU	S	N	13	28	27							
	RX	eP	Z	13	28	59							
		eL	E			38							
	WN	eL	Z	13	37		1.3	20					
	Epicentre			13	22	21.4	10.7S		165.3E	106km		USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
JUN 17	KP	P	Z	14	01	21							
18	KP	P	Z	23	49	59							
		PcP	Z			52 05							
			Z			32							
		e	Z			55 54							
		ScP	Z			56 03							
		e	Z	23	50	07							
	CT	P	Z			40							
		e	Z			52 04							
		PcP	Z	23	50	16							
	WN	iP	Z			56 15	1.2	19	6.6	14			
		S	ZN			59 40	2.0	20	9.2	19	63	17	
		L	ZNE	23	50	26							
	GP	eP	N	23	42	31.3	4.8S		151.8E	47km		USCGS	
	Epicentre												
19	KP	P	Z	03	39	17							
	CT	P	Z	03	39	25							
	WN	eL	Z	03	53		0.8	20					
	Epicentre			03	32	01.8	5.6S		151.5E	130km		USCGS	
19	KP	iP	Z	06	18	17							
	TU	P	Z	06	18	20½							
		S	Z			45							
	CT	iP	Z	06	18	25							
		i	Z			57							4.5
	ON	P	E	06	18	31							
		S	E			19 05							
	TA	P	Z	06	18	32							
		S	Z			19 09							5.7
	WN	eiP	ZNE	06	18	47¼	us						
		S	ZNE			19 34							5.4
	CB	eP	E	06	18	57							
		S	E			19 49							5.9
	KM	eP	X	06	19	21							
		S	X			20 25							6.1
	GP	eP	N	06	19	23							
		S	N			20 36							
	RX	eP	Z	06	19	59							
		eS	Z			21 39							
		i	Z			42							
	Epicentre			06	17	49	37.5S		176.6E	185km		NZ(B)	5.8
19	ON	eP	E	15	50	02							
	KP	P	Z	15	50	14							
		pP	Z			25							
	TA	eP	Z	15	50	32							
	CT	eP	Z	15	50	36							
	Epicentre			15	45	03.2	17.0S		172.5W	29km		USCGS	
19	ON	eP	E	16	42	51							
		e	E			44 21							
		eS	E			45 45							
	KP	P	Z	16	43	06							
	TU	P	Z	16	43	09							
		S	Z			46 22							
		e	Z			45							
	CT	eP	Z	16	43	16½							
		eS	Z			46 31							
	TA	eP	Z	16	43	23							
	WN	S	ZNE	16	47	10							
	KM	eS	X	16	47	45							
	GP	eS	N	16	47	55							
	Epicentre			16	39	21.4	20.9S		177.8W	405km		USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
JUN 20	SU	S	N	00	08	30								
	KP	P	Z	00	10	05								
		i	Z			13								
	CT	eP	Z	00	10	19								
	Epicentre			00	05	46.9			19.4S	175.4W	244km		USCGS	
20	KP	P	Z	06	25	19								
		e	Z			46								
	Epicentre			06	16	22.6			6.9S	126.6E	272km		USCGS	
21	WN	eL	Z	05	32		0.8	26						
	Epicentre			04	43	43.3			5.7N	82.6W	23km		USCGS	6½
21	SU	S	N	08	41	19								
	WN	eP	Z	08	43	20								
		S	ZNE		47	11								
	CT	eS	Z	08	46	27								
	Epicentre			08	38	28.4			20.8S	175.6W	67km		USCGS	
21	KP	P	Z	23	01	54								
	Epicentre			22	52	52.0			7.4S	130.1E	52km		USCGS	
22	KP	P	Z	12	00	44								
	Epicentre			11	48	55.3			32.2N	142.4E	25km		USCGS	
22	KP	P	Z	15	03	14								
		pP	Z			31								
	Epicentre			14	55	39.8			6.9S	147.0E	70km		USCGS	
23	SU	e(P)	N	09	56	.1								
		eS	N	10	03	55								
		eL	N			22								
	TA	eP	Z	09	56	34								
	TU	P	Z	09	56	38								
		e	Z			55								
	WN	P	Z	09	56	41								
	RX	eS	NE	10	07	.1								
		eL	NE			20								
	Epicentre			09	44	37.7			25.7N	128.5E	36km		USCGS	
23	TU	eP	Z	10	10	20								
	Epicentre			09	58	26.0			19.1N	121.4E	40km		USCGS	
24	TU	eP	Z	01	34	40								
	Epicentre			01	21	18.5			25.6N	101.1E	35km		USCGS	
24	TU	eS	Z	12	01	19								
		e	Z			29								
	WN	eS	ZNE	12	02	23								
	Epicentre			11	56	24.7			27.7S	177.1W	52km		USCGS	
24	TU	P	Z	17	08	27								
	Epicentre			17	03	14.9			15.3S	167.6E	130km		USCGS	
25	ON	eP	E	01	35	01								
		S	E		37	47								
	TU	eP	Z	01	35	17								
		e	Z			35								
		eS	Z		38	08								
	TA	P	Z	01	35	29								
	WN	P	ZNE	01	35	41								
		eS	ZNE		38	46								
	Epicentre			01	31	41.9			20.8S	179.2W	645km		USCGS	
25	WN	eLr	ZN	07	04		1.0	19	2.9	15				
	RX	eL	E	07	06									
	Epicentre			06	26	49.6			37.3S	73.5W	40km		USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
JUN 25	KP	P	Z	11	22	32								
		e	Z			40								
		e	Z		23	44								
	TA	eP	Z	11	22	33								
		e	Z		23	06								
	CT	P	Z	11	22	35								
		ePP	Z		25	24								
	TU	eP	Z	11	22	38								
	WN	eP	ZNE	11	22	38	3.1	7	3.5	8	4.8	8		
		eS	ZNE		32	45			6.6	15	8.8	17		
		PS	ZNE		33	46								
		SS	NE		38	48			11	22	9.3	22		
		eLq	NE		44									
		eLr	ZNE		49		5	40						
	RX	eS	NE	11	32	50								
		SS	NE		38	22								
		eLq	N		49									
	Epicentre			11	10	23.3			24.3N	122.6E	33km		USCGS	5½-5¾
25	KP	eP	Z	12	59	59								
	TU	eP	Z	13	00	09								
	WN	eL	ZNE	13	33									
	Epicentre			12	49	41.8			3.7N	126.6E	25km		USCGS	
26	KP	eP	Z	10	01	50								
	Epicentre			09	54	35.1			7.1S	149.6E	59km		USCGS	
27	WN	eP	Z	03	37	28	0.9	6						
		ePcS	E		43	32								
		eSS	ZE		47	22	0.4	15						
		eL	Z		49		0.7	26						
	KP	eP?	Z	03	37	31								
		e	Z			41								
		e	Z			57								
	Epicentre			03	30	01.9			6.1S	148.8E	55km		USCGS	
27	ON	eP	E	08	20	01								
	KP	P	Z	08	20	12								
	WN	eP	ZNE	08	20	57								
		S	ZNE		22	58								
	TU	eS	Z	08	21	49								
	GP	eS	N	08	24	02								
	Epicentre			08	17	50.3			30.0S	177.7W	69km		USCGS	
27	KP	P	Z	13	45	27								
	Epicentre			13	33	21.5			39.1S	74.9W	40km		USCGS	
28	SU	L	N	04	47									
	WN	eLr	Z	04	57½		0.9	32						
	Epicentre			04	27	18.4			20.0N	155.6W	25km		USCGS	
28	TA	P	Z	19	00	30								
	KP	iP	Z	19	00	32.0	u							
		e	Z		01	05								
	CT	P	Z	19	00	35								
	WN	iP	ZNE	19	00	36.2	u	1.7	28			4.3	24	
		eLr	Z		19½									
		M	ZE		24									
	TU	P	Z	19	00	41½								
	Epicentre			18	50	27.5			0.2S	124.3E	58km		USCGS	
28	ON	eP	E	20	51	54								
	KP	iP	Z	20	52	07	u							
	TU	P	Z	20	52	10								
		eS	Z		55	56								
	CT	eP	Z	20	52	16								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
JUN	TA	P	Z	20	52	23								
	WN	eP	Z	20	52	37								
	SU	S	N	22	50	26								
	Epicentre			20	47	30.6			17.6S	175.2W	244km		USCGS	
29	KP	P	Z	00	57	16½								
		1	Z			18								
	TU	eP	Z	00	57	27								
	Epicentre			00	52	12.0			15.1S	166.9E	122km		USCGS	
29	CT	eP	Z	03	42	42								
	KP	eP	Z	03	42	48								
	Epicentre			03	30	18.8			56.2S	26.9W	25km		USCGS	
29	WN	eL	Z	10	56½		0.5	28						
	Epicentre			10	28	46.6			35.2S	106.0W	25km		USCGS	
29	KP	P	Z	12	14	15								
	Epicentre			12	09	32.5			17.9S	167.8E	44km		USCGS	
29	TA	eP	Z	13	58	25								
	KP	P	Z	13	58	27								
	WN	P	Z	13	58	31								
	TU	P	Z	13	58	37								
		e	Z		59	00								
	Epicentre			13	49	16.9			7.9S	127.3E	80km		USCGS	
29	SU	eL	N	17	05									
	WN	eLr	ZNE	17	24½		0.5	20						
	Epicentre			16	28	04.4			62.3N	152.4W	39km		USCGS	4¾-5
30	KP	P	Z	19	41	25								
	CT	eP	Z	19	41	30								
	WN	eL	ZE	20	04	20	1.3	21			4.5	23		
	RX	eL	E	20	08									
	Epicentre			19	29	51.0			16.5N	122.0E	40km		USCGS	
JUL 1	KP	eP	Z	01	37	21								
		e	Z			24								
	TU	eP	Z	01	37	31								
		e	Z			40								
	CT	e?	Z	01	37	34								
		e	Z			44								
	Epicentre			01	32	11.0			14.1S	167.2E	156km		USCGS	
1	KP	eP	Z	01	44	20								
	CT	eP	Z	01	44	21								
1	KP	e(P)	Z	05	11	14								
	TU	e(P)	Z	05	11	20								
	CT	eP	Z	05	11	28								
	RX	eL	E	05	20									
	Epicentre			05	07	37.0			23.8S	176.9W	25km		USCGS	
1	ON	e(P)	E	13	39	55								
	KP	eP	Z	13	40	03								
	TU	e(P)	Z	13	40	05								
	CT	eP	Z	13	40	15								
	Epicentre			13	35	05.1			15.7S	172.6W	65km		USCGS	
2	SU	e(P)	N	08	35	55								
		e(S)	N		38	55								
	ON	eP	E	08	38	12								
	KP	eP	Z	08	38	28 u								
		e	Z			36								
		e	Z		41	38								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
		e(PcS)	Z		45	11								
JUL		e	Z			16								
		e	Z	08	38	38								
	TA	e(P)	Z	08	38	39 u								
	TU	P	Z		39	20								
		e	Z		43	22								
		e	Z			28								
		eS	Z	08	38	40								
	CT	eP	Z		43	30								
		e	Z			35								
		eS	E	08	38	53								
	CB	eP	E		43	48								
		eS	ZNE	08	38	57								
	WN	eP	ZNE		43	51								
		eS	N			55								
		e	Z		44	00								
		e	Z		47									
		eL	X	08	39	08								
	KM	eP	X		44	07								
		eS	N	08	39	12								
	GP	eP	N		44	23								
		eS	N	08	40	54								
	RX	e	N		44	46								
		e(S)	E		45	20								
		e	NE		46									
		eL		08	32	37.9			10.3S	165.9E	50km		USCGS	
	Epicentre													
2	KP	eP?	Z	15	52	24								
		e	Z			29								
		e	Z			34								
		e	Z			39								
	TU	eP	Z	15	52	34								
		e	Z			50								
	CT	e?	Z	15	52	45								
		e	Z		53	09								
	Epicentre			15	42	22.1			0.2S	123.1E	136km		USCGS	
3	KP	P	Z	06	28	40 d								
	TU	e(P)	Z	06	28	43								
	TA	e(P)	Z	06	28	53								
	CT	e?	Z	06	29	14								
	Epicentre			06	23	36.0			17.5S	173.2W	25km		USCGS	
3	KP	eP	Z	08	39	31								
	Epicentre			08	34	28.5			17.2S	170.8W	25km		USCGS	
3	CT	eP	Z	18	20	04								
	TU	e(P)	Z	18	20	10								
	KP	e(P)	Z	18	20	13								
	WN	e	Z	18	25	22								
		eL	Z		27									
		M	Z		29						5.6	18		
	RX	eL	NE	18	27									
	Epicentre			18	13	35.6			56.3S	142.5W	25km		USCGS	
3	CT	eP	Z	18	29	23								
	TU	e(P)	Z	18	29	24								
	KP	eP	Z	18	29	30								
	RX	e(S)	NE	18	35	22								
		eL	N		38									
		M	N		40									
	KM	eL	X	18	42									
	Epicentre			18	22	06.3			54.6S	132.3W	25km		USCGS	
3	KP	P	Z	21	03	21 u?								
	Epicentre			20	59	04.8			17.8S	167.8E	23km		USCGS	

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
JUL 4	KP	eP	Z	11	35	51				
		e	Z		36	09				
4	KP	e(P)	Z	17	06	07				
	TU	e?	Z	17	06	23				
	WN	eL	Z	17	15					
	Epicentre			17	00	53.5	14.9S 167.8E 62km		USCGS	
4	KP	e?	Z	23	20	06				
	TU	e?	Z	23	20	09				
		eS	Z		21	52				
	GP	e	N	23	21	24				
		e(S)	N		24	00				
		e	N			10				
	WN	e	E	23	22	51				
		e(S)	E			54				
	Epicentre			23	17	38.0	23.5S 177.5W 25km		USCGS	
5	KP	e	Z	07	38	21				
	TU	eP	Z	07	38	32				
	CT	eP	Z	07	38	32				
	GP	eP	N	07	39	05				
	RX	eP	Z	07	39	17				
	Epicentre			07	32	33.2	11.3S 166.5E 33km		USCGS	
5	CT	eP	Z	17	52	58				
	Epicentre			17	40	55.3	30.9N 141.4E 23km		USCGS	
6	KP	eP	Z	01	27	26				
	Epicentre			01	15	34.8	32.6N 139.7E 62km		USCGS	
6	RX	eL	E	03	09					
	Epicentre			02	12	19.9	13.3N 58.0E 30km		USCGS	
6	KP	$ePKP_2$	Z	09	36	55				
		e?	Z		37	16				
		i	Z		48	03 d				
	WN	eL	Z	10	48		0.3 23			
	Epicentre			09	16	15.0	38.0N 20.2E 30km		USCGS	
6	SU	e	N	12	16					
	ON	eP	E	12	16	55				
	KP	eP	Z	12	17	09				
	TU	eP	Z	12	17	09				
		e	Z			12				
	CT	e?	Z	12	17	17				
		e	Z			19				
	TA	eP	Z	12	17	24				
	KP	e(P)	Z	12	18	03				
	GP	e(P)	N	12	18	10				
	RX	eP	Z	12	18	35				
	Epicentre			12	12	01.1	16.5S 174.1W 27km		USCGS	
6	KP	eP	Z	13	31	19				
	CT	e	Z	13	31	25				
		eS	Z		34	15				
	TU	e(S)	Z	13	33	39				
	WN	eS?	N	13	34	44				
	GP	e(S)	N	13	35	58				
	Epicentre			13	27	52.1	25.0S 176.7W 25km		USCGS	
6	RX	ePKP	Z	23	24	00				
		e	Z		25	04				
		ePP	E		26					
		eSKS	E		30	38				
		eSKKS	E		32	04				
		eSP	E		35					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
JUL		e(SS)	NE		42					
		eSSS	NE		46					
		eLg	N		55					
	CB	ePKP	E	23	24	00				
	TA	ePKP	Z	23	24	00				
	KP	ePKP?	Z	23	24	01				
		e	Z			03				
		e(PP)	Z		25	00				
		e	Z		26	53				
		e(PKS)	Z		27	17				
	CT	ePKP	Z	23	24	01				
	KM	ePKP?	X	23	24	01				
		e	X			15				
	WN	PKP	ZNE	23	24	03 d				
		e(PP)	Z		26					
		ePPP	Z		28					
		eSS	Z		42.2					
		eSSS	Z		46					
	TU	ePKP	Z	23	24	04				
	GP	e(PKP)	N	23	24	06				
	SU	e	N	23	32	17				
		e	N		40	25				
		e	N		41	55				
	Epicentre			23	05	32.2	36.6N 70.4E 203km		USCGS	
7	KP	eP	Z	06	25	37				
	SU	e(PS)	N	06	33	17				
		eL	N		47					
	WN	eSKS	Z	06	36	28				
		eSSS	Z		46					
		eLr	Z		55					
		M	Z	07	02		1.7 20			
	RX	eSKS	NE	06	36	54				
		eL	N		58					
		M	E	07	04				3 20	6.0
		M	ZN		08		7 19			
	Epicentre			06	12	48.9	51.3N 178.6E 60km		USCGS	
7	KP	e(P)	Z	11	56	31				
	TU	e(P)	Z	11	56	41				
	RX	eL	NE	12	16					
	WN	eL	Z	12	17					
		M	Z		18		0.8 20			
	Epicentre			11	47	19.4	7.3S 128.3E 30km		USCGS	
8	SU	e(P)	N	02	59	35				
		e(S)	N	03	00	13				
8	KP	eP	Z	03	34	52				
		e(pP)	Z		35	03				
	Epicentre			03	22	03.8	51.5N 178.5E 60km		USCGS	
8	KP	eP	Z	12	05	53				
	CT	eP?	Z	12	06	05				
	WN	eP	ZN	12	06	33				
		e(S)	NE		09	34				
		e	N			44				
	GP	eS	N	12	10	27				
	Epicentre			12	02	33.2	22.0S 179.8W 600km		USCGS	
8	KP	eP	Z	22	57	30				
		e	Z			49				
	CT	eP?	Z	22	57	49				
		eS	Z	23	00	08				
	TA	e(P)	Z	22	58	01				
	GP	eP	N	22	58	48				
		e	N		59	23				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
JUL		e	N	23	01	46				
		e(S)	N			51				
	WN	e	NE	22	59	48				
		eS	ZNE	23	00	42				
		eL	Z			04				
	RX	eL	E	23	05					
	Epicentre			22	54	44.7	28.1S	176.5W	25km	USCGS
9	RX	eP	Z	10	02	05				
		eS	Z		04	20				
	GP	eP	N	10	02	43				
		e(S)	N		05	30				
	WN	e	Z	10	03	42				
	Epicentre			09	59	07.8	56.0S	158.1E	25km	USCGS
9	KP	P	Z	16	36	23				
10	KP	e	Z	04	33	19				
	Epicentre			04	21	12.0	39.1S	75.4W	25km	USCGS
10	SU	eP	N	05	13	25				
		e	N			44				
		eS	N		14	39				
	ON	eP	E	05	15	29				
	KP	iP	Z	05	15	43	u			
		e(pP)	Z		17	32				
	TU	eP	Z	05	15	45				
		e(S)	Z		18	41				
	CT	eP	Z	05	15	51				
		e(S)	Z		19	04				
	TA	eP	Z	05	15	57				
	WN	eP	ZNE	05	16	11				
	GP	eP	N	05	16	37				
		e(S)	N		20	09				
		e	N			34				
	KM	e(P)	X	05	16	39				
	RX	eP	Z	05	17	00				
		e(sP)	Z		19	37				
		eScP?	Z		22	48				
	Epicentre			05	12	06.4	20.8S	178.7W	584km	USCGS
10	KP	eP	Z	12	59	35				
	GP	eP	N	13	00	45				
		eS	N		04	35				
	TU	e(S)	Z	13	02	38				
	Epicentre			12	56	03.8	22.3S	177.2W	333km	USCGS
10	KP	eP	Z	14	14	01				
	TU	eP?	Z	14	14	02				
		e	Z			04				
		e(S)	Z		15	43				
	WN	eP?	Z	14	14	22				
		eS	N		16	40				
	Epicentre			14	11	.9	Kermadec Island region h>N N.Z.			
10	KP	e	Z	18	45	07				
11	KP	P	Z	12	51	45	d			
	TA	e(P)	Z	12	51	45				
	RX	eP	Z	12	51	48				
	CT	eP	Z	12	51	49				
	TU	eP	Z	12	51	53				
	GP	e(P)	N	12	51	56				
	Epicentre			12	40	30.7	11.9N	122.1E	25km	USCGS

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
JUL 11	ON	eP?	E	16	54	29				
	TU	eP	Z	16	54	38				
		e	Z		55	58				
		eS	Z		56	04				
		e	Z			40				
		e	Z			52				
	KP	eP	Z	16	54	39				
		e	Z		55	12				
	CT	P	Z	16	54	50				
		e	Z		55	11				
		e	Z		56	27				
		e(S)	Z			33				
	TA	e	Z	16	55	03				
		e	Z			39				
	GP	e	N	16	56	06				
		e	N		58	16				
		eS	N			18				
	WN	eS	ZNE	16	57	13				
	CB	eS	E	16	57	29				
	KM	eS	X	16	58	09				
	Epicentre			16	52	44.8	31.9S	178.5W	37km	USCGS
12	KP	eP	Z	01	44	40				
	CT	eP	Z	01	44	50				
	TA	eP	Z	01	44	56				
	Epicentre			01	40	37.9	19.9S	177.5W	321km	USCGS
12	KP	eP	Z	04	09	18				
		i	Z			20	d			
	CT	eP	Z	04	09	27				
		e	Z			29				
		e	Z		10	58				
		e	Z		11	08				
	TA	eP?	Z	04	09	36				
		e	Z			38				
		e	Z		11	17				
	WN	eP	ZNE	04	09	53				
		eS	ZNE		11	35				
	KM	eP	X	04	10	22				
		eS	X		12	24				
	GP	e(P)	N	04	10	28				
		eS	N		12	35				
	CB	eS	E	04	11	49				
	Epicentre			04	17	41	Near 34S	178W	N	NZ(D) 5.4
12	SU	e?	N	09	35	42				
	KP	eP	Z	09	37	24				
	TA	eP	Z	09	37	40				
	WN	eP	Z	09	37	54				
	Epicentre			09	33	21.8	17.9S	178.7W	545km	USCGS
12	WN	eL	Z	23	28		2	26		
	RX	eL	E	23	31				6	28
	Epicentre			22	50	58.8	3.9S	104.1W	25km	USCGS
13	KP	eP	Z	03	43	00				
	WN	e	Z	03	43	02				
		e	Z			53				
		eL	Z	04	07					
		M	Z		10		1.7	20		
	TU	eP	Z	03	43	07				
	CT	e	Z	03	43	11				
	RX	eL	E	04	10					
		M	E		12				2	21
	Epicentre			03	32	00.5	10.4N	122.6E	66km	USCGS 5.8
		or		03	32	12.6	10.2N	121.7E	157km	USCGS

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
JUL 13	ON	eP	E	04	12	30				
		eS	E		13	40				
	KP	eP	Z	04	12	35				
		e	Z			37				
		e	Z		13	14				
		e	Z			25				
		e	Z			32				
	TU	eP	Z	04	12	35				
		e	Z			44				
		e	Z		13	26				
		e	Z			41				
		e	Z			45				
		e(S)	Z			51				
	CT	e(P)	Z	04	12	48				
		e	Z			52				
		e	Z		14	05				
	TA	eP	Z	04	12	59				
		eS	Z		14	33				
		e	Z			39				
	WN	eP	Z	04	13	13				
		e	Z			58				
		eS	ZNE		14	57				
		e	Z		15	33				
	KM	e	X	04	13	53				
		eS	X		15	52				
	GP	eP	N	04	13	50				
		eS	N		16	02				
	RX	e(P)	Z	04	14	29				
		e	Z		15	03				
		e	Z		17	03				
	CB	eS	E	04	15	13				
	Epicentre			04	10	59	33S	179W 200km		NZ(D) 5.9
14	KP	eP	Z	20	50	49 u				
		e(pP)	Z		51	03				
	Epicentre			20	38	01.3	50.2N	155.8E 60km		USCGS
14	KP	eP	Z	23	44	44				
	TU	eP	Z	23	44	52				
	Epicentre			23	34	33.7	18.7N	145.5E 198km		USCGS
15	KP	eP	Z	06	59	40				
		epP	Z	07	00	04				
		esP	Z			15				
	TU	eP	Z	06	59	45				
		epP	Z	07	00	10				
	CT	eP	Z	06	59	50				
		epP	Z	07	00	09				
	WN	eL	Z	07	27					
	Epicentre			06	47	22.5	39.8N	140.9E 103km		USCGS
15	CT	e(P)	Z	09	43	44				
	TU	e(P)	Z	09	43	45				
	Epicentre			09	33	39.3	14.7N	146.3E 25km		USCGS
15	KP	P	Z	19	38	27 u				
	TU	eP	Z	19	38	41				
	CT	eP	Z	19	38	43				
	WN	e	Z	19	39	07				
		eL	Z		45					
		M	Z		46		0.3 21			
	GP	eP	N	19	39	20				
	Epicentre			19	34	09.4	20.3S	169.2E 24km		USCGS
16	RX	eP	Z	02	09	34				
		e	Z			42				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
		e(S)	NE		13	25				
JUL		e(L)	NE		14					
		M	Z		15		3 20			
	WN	e(P)	Z	02	10	38				
		eL	NE		16					
		eL	Z		17					
		M	E		18				3.2 24	
		M	Z		19		4.7 19			
	CT	e?	Z	02	11	23				
	SU	e(S)	N	02	19	55				
		eL	N		26					
		M	N		30			4 17		
	Epicentre			02	04	52.6	52.1S	138.9E 14km		USCGS
16	KP	eP	Z	06	28	28				
	Epicentre			06	17	04.0	28.2N	142.5E 38km		USCGS
16	SU	e(S)	N	07	52	30				
		e	N		53	06				
	KP	eP	Z	07	54	14				
	Epicentre			07	50	09.8	17.8S	178.4W 519km		USCGS
16	KP	eP	Z	08	33	51				
	CT	eP	Z	08	34	04				
	WN	eP	Z	08	34	08				
	RX	eP	Z	08	34	46				
	Epicentre			08	28	10.8	11.8S	166.4E 57km		USCGS
16	SU	e(P)	N	09	28	45				
		e	N		29	10				
		eS	N		31	00				
	ON	eP	E	09	30	54				
	KP	P	Z	09	31	12 u				
		e(pP)	Z			45				
		eSP	Z		32	12				
	TA	eP	Z	09	31	22				
	TU	eP	Z	09	31	23 d				
	CT	P	Z	09	31	24 u				
	CB	eP	E	09	31	36				
	WN	eP	ZNE	09	31	37				
	GP	eP	N	09	31	56				
	RX	P	Z	09	32	08				
	Epicentre			09	25	55.4	13.0S	167.2E 180km		USCGS
16	WN	eL	Z	13	46					
		M	Z		47		0.4 25			
	Epicentre			12	54	40.6	62.3N	153.1W 39km		USCGS
16	WN	eL	Z	16	44		0.8 28			
	Epicentre			16	16	40.9	38.4S	108.6W 25km		USCGS
16	SU	e(S)	N	20	09	57				
	KP	P	Z	20	11	37 u				
		e	Z		12	08				
	TU	e(P)	Z	20	11	39				
	TA	e?	Z	20	11	54				
		e	Z		12	01				
	GP	e	N	20	12	37				
	Epicentre			20	07	13.4	19.9S	175.7W 114km		USCGS
17	WN	eP	Z	05	43	50				
		e(S)	Z		54	02				
		eL	Z	06	07					
		M	Z		11		0.8 18			
	CT	eP?	Z	05	43	56				
	KP	eP	Z	05	44	01				
		e	Z			11				

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
JUL	RX	e(S)	N	05	53	28							
		eL	N	06	04								
		Epicentre		05	32	08.8	43.0S	74.9W	26km				USCGS
17	KP	eP	Z	17	33	11							
	RX	eP	Z	17	33	39							
		e(SKS)	N		44	.1							
		eL	N	18	03								
		M	N		08				2	22			
	WN	e(PPS)	Z	17	46								5.9
		eL	Z	18	01								
		M	ZNE		06		1.7	21	3.2	21	2.7	24	
	SU	eL	N	17	53								
		M	N		56				5	20			
		Epicentre		17	20	22.9	43.1N	144.5E	30km				USCGS 6.0
18	TA	eP	Z	06	03	27							
	GP	e(P)	N	06	03	29							
	KP	eP	Z	06	03	31							
		e	Z		51								
	CT	eP	Z	06	03	33							
	TU	eP	Z	06	03	40							
		e	Z		04	08							
		Epicentre		05	53	48.1	9.6S	119.8E	68km				USCGS
18	TU	eP	Z	09	32	50							
		Epicentre		09	23	37.5	7.2S	119.9E	588km				USCGS
18	KP	eP	Z	10	20	13							
	TU	eP	Z	10	20	20							
		Epicentre		10	10	12.7	15.3N	148.1E	16km				USCGS
18	KP	e(P)	Z	14	45	42							
	CT	eP?	Z	14	45	48							
	TU	e(S)	Z	14	48	53							
	GP	eS	N	14	50	53							
		Epicentre		14	41	45.0	21.5S	175.8W	218km				USCGS
19	TA	eP	Z	00	59	37							
	CT	iP	Z	00	59	41	u						
	TU	P	Z	00	59	44							
	WN	eP	Z	00	59	51							
		eL	Z	01	12								
		Epicentre		00	52	13.9	5.1S	153.6E	49km				USCGS
19	KP	P	Z	03	44	21							
	TA	e	Z	03	45	06							
		Epicentre		03	39	45.3	17.3S	173.3W	15km				USCGS
19	KP	P	Z	12	51	42							
	TU	eP	Z	12	51	44							
	CT	eP?	Z	12	51	52							
	TA	eP	Z	12	51	57							
	WN	eP	ZNE	12	52	10							
	KM	eP	X	12	52	44							
	GP	e(P)	N	12	52	46							
19	KP	eP	Z	22	18	03							
		Epicentre		22	05	45.0	39.8N	140.7E	93km				USCGS
20	KP	eP	Z	16	31	43							
	TU	e(P)	Z	16	31	43							
		e	Z		32	02							
	CT	eP	Z	16	31	59							
	RX	eP	Z	16	33	19							
		eL	E		41								
		M	E		42						1.5	20	5.3

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
JUL	GP	e(S)	N	16	37	05							
	WN	eL	ZE	16	39								
		M	Z		40		0.5	17					
		Epicentre		16	27	20.9	21.0S	174.8W	28km				USCGS
20	KP	eP	Z	23	40	24							
	TU	eP	Z	23	40	39							
		Epicentre		23	31	37.8	5.6S	128.7E	297km				USCGS
22	KP	eP?	Z	00	25	01							
		Epicentre		00	16	07.2	3.2S	137.5E	104km				USCGS
22	KP	eP	Z	00	28	51							
	CT	e(P)	Z	00	28	59							
	TU	e(P)	Z	00	29	02							
	SU	eL	N	00	30								
	WN	e	Z	00	39	.5							
		eL	Z		41								
		M	Z		42		1.2	25					
		M	ZNE		45		2.0	19	5.7	17	6.7	18	
		M	ZNE		49		2.7	15					
	RX	eL	N	00	42								
		eL	E		44								
		M	ZNE		50								
		Epicentre		00	21	30.9	5.9S	151.7E	81km				USCGS
22	ON	eP	E	10	03	55							
	KP	P	Z	10	04	09	u						
	TU	e(P)	Z	10	04	13							
		eS	Z		07	21							
	CT	eP	Z	10	04	17							
		e	Z			20							
		e(S)	Z		07	34							
		e	Z			45							
	TA	e(P)	Z	10	04	22	d						
		i	Z			26							
	WN	P	ZNE	10	04	39							
22	ON	eP	E	13	43	01							
		e	E			16							
	KP	P	Z	13	43	19	u						
		e(pP)	Z			49							
		e	Z		44	02							
		ePcP	Z		46	07							
	TA	eP	Z	13	43	25							
		e(pP)	Z			57							
	CT	P	Z	13	43	28	u						
		e(pP)	Z		44	01							
		e	Z			11							
	TU	eP	Z	13	43	32							
	WN	eP	Z	13	43	40							
		eL	ZNE		54								
	GP	eP	N	13	43	53							
	RX	eP	Z	13	44	04							
		eL	E		53								
		Epicentre		13	36	49.7	8.4S	158.8E	107km				USCGS
22	ON	eP	E	18	12	42							
	KP	eP	Z	18	12	55							
		i	Z			59	u						
	TU	e	Z	18	13	05							
	CT	eP	Z	18	13	06							
		eS	Z		15	54							
	TA	e(P)	Z	18	13	13							
	WN	e(P)	ZNE	18	13	30							
		eS	NE		16	26							
	GP	eS?	N	18	17	33							
		Epicentre		18	09	57.7	24.0S	180.0	634km				USCGS

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
JUL 22	CT	e	Z	23	57	31							
		e	Z			43							
	KP	eP	Z	23	57	35							
	TU	e	Z	23	58	04							
	WN	e(L)	Z	24	17								
	Epicentre			23	49	27.0	3.5S		145.6E	28km			USCGS
23	KP	eP	Z	15	01	26							
	TU	e(S)	Z	15	04	33							
	GP	eS	N	15	06	24							
23	KP	P	Z	23	14	33							
	RX	eP	Z	23	15	27							
		eL	E			24							
	WN	eL	Z	23	22								
		M	Z			26		1.5	18				
	Epicentre			23	09	12.4	14.1S		166.8E	99km			USCGS
24	KP	eP?	Z	16	34	25							
		e	Z			29							
	WN	eL	Z	17	00								
	Epicentre			16	23	10.8	10.3N		121.5E	21km			USCGS
24	WN	e(PP)	Z	21	26	.1							
		ePS	Z		35	42							
		eL	Z			55							
		M	Z			56		1.7	32				
	RX	eL	NE	21	(57)								
	Epicentre			21	08	22.6	15.5N		92.5W	129km			USCGS
25	WN	eL	Z	00	56								
	Epicentre			00	11	52.2	14.4S		76.1W	46km			USCGS
25	KP	eP	Z	04	53	02							
	TU	e	Z	04	53	14							
25	WN	ePS	Z	05	00	.8							
		eSS	Z			12							
		eL	Z			30							
		M	Z			31		2.7	30				
	RX	e(PS)	E	05	(07)								
		eL	E		(32)								
		M	NE		(39)					2 19	2 19		6.1
	Epicentre			04	37	50.7	18.9N		81.1W	64km			USCGS 5¼-6
26	KP	e(P)	Z	04	35	58							
	Epicentre			04	23	11.9	47.1N		153.9E	35km			USCGS
26	WN	eL	Z	05	23								
	Epicentre			05	02	14.0	5.5S		151.1E	93km			USCGS
26	KP	e(P)	Z	07	08	35							
	WN	eL	Z	07	21								
		eL	Z			27							
	RX	eL	ZNE	07	28								
	Epicentre			07	01	01.8	5.3S		150.8E	71km			USCGS
26	KP	eP?	Z	08	28	51							
		e	Z			29 00							
		e	Z			15							
		e	Z			31 41							
		e	Z			32 18							
		ePP	Z			33 06							
		ePKKP	Z			44 43							
		e	Z			45 10							
	WN	P	Z	08	28	52		1.0	18				
		ePP	ZE			33 08		4.7	28				

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
JUL		e(PPP)	ZE		35								
		e	E		38	38							
		eSKS	ZNE		39	15						35 24	
		e(S)	NE		41								
		ePS	ZNE		42								
		ePPS	Z		43								
		eSS	ZNE		48	.1						400 24	
		G	NE		58	.9							
		R	Z	09	02								
		M	ZE		04		73	30					
		M	Z		08		214	18					
	TU	ePP	Z	08	33	02							
	SU	ePP	N	08	33	.1							
		e(SKKS)	N		40	20							
		e(SS)	N		47	08			35	16			
		e(SSS)	N		51	05			15	12			
		eG	N		56	.7			400	45			
		M	N	09	12				30	19			6.7
	RX	ePP	ZE	08	23	06							
		eSKS	E		39	56							
		e(S)	N		41	.4							
		ePS	ZNE		43	03							
		ePPS	E		43	.9							
		eSS	NE		49				22	18	100	23	
		eSSS	E		52	.5							
		eL	Z	09	05								
		M	ZE		07		40	20			70	22	6.9
	ON	ePP	E	08	33	14							
		ePS	E		42	24							
		ePPS	E		43	12							
		eSS	E		48	23							
	CB	ePS	E	08	42	38							
		eSS	E		48	42							
	GP	e(PPS)	N	08	43	27							
		eSS	N		48	42							
		eL	N	09	04								
	Epicentre			08	14	41.8	7.5N		82.7W	21km		USCGS	6¾-7
26	KP	P	Z	13	43	24							
	TU	eP	Z	13	43	25							
	TA	eP?	Z	13	43	25							
26	KP	eP	Z	21	44	50							
	WN	eL	Z	22	17								
	RX	eL	NE	22	18								
	Epicentre			21	32	17.9	56.4S		25.7W	25km		USCGS	
27	KP	eP	Z	01	27	27							
	Epicentre			01	16	50.8	21.7N		144.4E	100km		USCGS	
27	KP	eP	Z	06	16	57							
	TU	eP	Z	06	17	08							
	Epicentre			06	11	55.3	14.8S		167.6E	205km		USCGS	
27	WN	eL	Z	11	17								
		M	Z		18								
	RX	eL	E	11	18		0.3	20					
27	KP	eP	Z	11	56	48							
		e	Z		50								
	TU	eP	Z	11	57	00							
	Epicentre			11	51	41.0	15.5S		167.2E	139km		USCGS	
27	WN	eL	Z	13	29								
	Epicentre			12	38	35.1	51.6N		174.1W	60km		USCGS	
27	ON	eP	E	19	31	26							

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
JUL	KP	eP	Z	19	31	42				
	TU	eP	Z	19	31	53				
	WN	eP	Z	19	32	09				
	GP	eP	N	19	32	26				
	Epicentre			19	26	34.6	13.2S	167.1E	286km	USCGS
28	SU	e	N	00	07	05				
		e	N			35				
		eL	N		09					
	ON	eP	E	00	10	11				
	KP	P	Z	00	10	24				
		e	Z			42				
	TU	eP	Z	00	10	25				
		e(S)	Z		14	24				
	TA	eP	Z	00	10	39				
	WN	e(P)	Z	00	10	55				
		e	NE			58				
		e	Z		11	12				
		eL	ZE		15					
		M	Z		20		0.5 26			
		M	Z		23		0.6 20			
	KM	eP	X	00	11	18				
	GP	eP	N	00	11	26				
		e(S)	N		16	44				
	RX	e	Z	00	11	50				
		e	N		17	01		3 28		
		eL	NE		19.5					
		M	E		21				10 30	
	Epicentre			00	05	10.8	16.2S	173.2W	40km	USCGS
28	KP	eP	Z	14	10	10				
28	KP	eP	Z	19	55	08				
		e	Z			19				
	Epicentre			19	43	00.3	36.9N	141.9E	32km	USCGS
28	RX	P	ZNE	23	39	36				
		e	N			52				
		eS	E			54				
		e	Z			55				
	GP	eP	N	23	40	00				5.3
		e	N			10				
		e	N			14				
		e(Sg)	N			53				
		e	N			59				
	CB	eP	E	23	40	18				5.5
		e	E			41				
		e(S)	E		41	15				
		e	E			20				
	WN	eP	Z	23	40	31				5.0
		e	ZNE			36				
		e	E		41	38				
		e(S)	ZN			44				
		e	E			50				
	TA	eP	Z	23	40	49				
		e	Z		42	19				
	KP	eP	Z	23	41	10				
		e	Z			16				
		e	Z		42	46				
	TU	e	Z	23	41	18				
		e(P*)	Z			40				
		e	Z			48				
		eS	Z		42	51				
		e	Z		43	06				
	ON	eP	E	23	41	29				5.7
		e(S)	E		43	14				
		e	E			25				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
		e(Sg)	E		44	51				
JUL	Epicentre			23	39	12	44.1S	168.6E	S NZ(C)	5.4
							Felt: Otago and Southland; Maximum MM4 at Lake Wakatipu.			
29	KP	eP	Z	01	36	24				
		e	Z		37	53				
29	KP	P	Z	03	49	13				
	Epicentre			03	37	24.4	25.5N	125.4E	184km USCGS	
29	SU	e(L)	N	14	36					
29	CB	P	E	18	20	08				
	WN	P	ZNE	18	20	12 dnw				5.0 +
		S	ZNE			26½				
	GP	iP	N	18	20	27½				5.7
		S	N			54				
	TA	P	Z	18	20	28¼				
		S	Z			53				
	TU	P	Z	18	20	45				
		e	Z		21	18				
		eS	Z			26				
	KP	P	Z	18	20	47				
	RX	eP	Z	18	21	02				
		eS	Z			56				
	ON	eP	E	18	21	13				5.7
		eS	E		22	11				
	Epicentre			18	19	52	41.3S	173.4E	85km NZ(B)	5.7
							Felt: Central New Zealand; Taranaki and Hawkes Bay, to Southern Canterbury and Westland, Maximum MM 4-5 both sides of Cook Strait.			
30	KP	P	Z	14	09	11				
		e	Z		11	31				
		e(S)	Z		12	32				
	TU	e(P)	Z	14	09	12				
		e	Z		11	30				
		e	Z		12	18				
		e	Z			25				
	TA	eP	Z	14	09	26				
	ON	e?	E	14	11	12				
		e?	E			25				
	WN	eS	ZNE	14	13	33				
	GP	eS	N	14	14	36				
	Epicentre			14	04	38.2	19.9S	176.9W	33km USCGS	
30	KP	e?	Z	16	02	05				
		e	Z			25				
	SU	eL	N	16	04					
	TU	e?	Z	16	04	32				
	WN	eL	ZNE	16	07		1.1 24			
30	SU	e(P)	N	16	42	11				
		e	N			19				
		e(S)	N			45				
	KP	eP	Z	16	46	29				
	TA	e?	Z	16	46	46				
		e	Z			55				
30	SU	e	N	17	24	05				
		e(PP)	N		25	35				
		eL	N		32					
	ON	eP	E	17	24	49				
		e	E		25	14				
	KP	iP	Z	17	25	02 u				
		e(PP)	Z		26	55				
		ePPP	Z		28	12				
		eL	Z		40					

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
JUL	TA	eP	Z	17	25	05								
		ePPP	Z		28	16								
	CB	eP	E	17	25	08								
	TU	eP	Z	17	25	13								
		ePPP	Z		28	24								
		e(PcS)	Z		30	51								
	WN	P	ZNE	17	25	16								
		ePPP	Z		28	27								
		M	NE		40				240	16	280	19		
		M	E		44									
		M	N		46									
	GP	P	N	17	25	21								
		ePPP	N		28	33								
	RX	eP	Z	17	25	21								
		eL	NE		33									
		M	NE		43				70	19	70	18		
	Epicentre			17	16	44.4	3.3S	143.9E	25km				USCGS	6.8 7
30	KP	ePKP	Z	20	37	38								
	SU	e(SS)	N	20	53									
		G	N	21	03									
	Epicentre			20	18	49.3	5.0N	76.3W	45km				USCGS	6-6½
31	TU	eP	Z	02	27	37								
	Epicentre			02	19	05.2	3.2S	144.1E	20km				USCGS	
31	KP	e(P)	Z	05	21	34								
	Epicentre			05	19	17.5	32.5N	132.1E	33km				USCGS	
31	KP	eP?	Z	05	24	54								
		e	Z			59								
	TA	e(P)	Z	05	24	56								
	RX	eP	Z	05	25	01								
	TU	eP	Z	05	25	02								
	Epicentre			05	13	04.1	18.8N	120.8E	39km				USCGS	
31	RX	eP?	Z	11	38	31								
	KP	P	Z	11	38	33								
		e	Z			55								
	Epicentre			11	25	05.5	19.7S	67.7W	270km				USCGS	
AUG 1	RX	eiP	Z	03	49	51								
		eL	E	04	00									
	SU	e	N	03	52	00								
		eL	N		54	26								
	ON	eP	E	03	52	07								
	KP	eP	Z	03	52	07								
	TU	eP	Z	03	52	09								
		e	Z		54	19								
		e	Z			26								
	TA	e?	Z	03	52	48								
	WN	eP?	Z	03	52	57								
		eS	ZNE		55	31								
		eL	Z		57.5									
		M	Z		59		2.1	19						
	GP	eP?	N	03	53	32								
	KM	e?	X	03	55	58								
	Epicentre			03	49	11.9	27.0S	176.4W	33km				USCGS	
1	SU	eP	N	04	44	16								
		eS	N		50	00								
		eL	N		53	23								
		M	N		55									
	ON	eP	E	04	45	07								
		e(PP)	E		47	05								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
AUG	KP	eP	Z	04	45	14.4								
		e?	Z		46	59								
		e	Z		47	14								
	TA	eP	Z	04	45	17								
	CB	eP?	E	04	45	20								
		e	E			24								
		eS	E		52	07								
		eL	E	05	02									
		M	E		03									
	TU	eP	Z	04	45	26								
	WN	eP	ZNE	04	45	27½								
		e	ZE			32								
		ePP	Z		47	22								
		eS	ZE		52	(28)	3.2	26						
		e(Lq)	Z		57	26	5.5	22						
		eLr	Z		59.5		36	19						
		M	Z	05	04									
	RX	eP	Z	04	45	(33)								
		eS	NE		52	(16)								
		eLq	NE		57.6									
		eLr	Z	05	01.0									
		M	ZNE		02		34	25	19	25	25	25		6.35
	GP	eP	N	04	45	34								
	KM	eP?	X	04	45	35								
		e	X			39								
		eL	X	05	03.8									
		M	X		10									
	Epicentre			04	36	57.6	3.2S	143.7E	33km				USCGS	6½-¾PAS
1	ON	eP	E	05	24	17								
		e	E			19½								
	TU	eS	Z	05	26	39								
	Epicentre			05	21	25.5	27.1S	176.3W	34km				USCGS	
1	TU	e	Z	12	44	02								
		e	Z			17								
		e(S)	Z		45	04								
	SU	eL	N	12	44.5									
		M	N		45						10	13		
	GP	e(S)	N	12	46	20								
			N			28								
	WN	eL	Z	12	47.0									
1	ON	eP	E	12	50	52								
	TU	eP	Z	12	50	54								
		eS	Z		53	01								
	GP	eP?	N	12	52	07								
		eS	N		55	(23)								
	SU	eL	N	12	53.2									
		M	N		54									
	WN	eS	NE	12	54	09								
		eL	Z		56.2									
		M	Z		58		2.1	20						
	RX	eL	E	12	58.6									
		eL	N	13	01.0									
	Epicentre			12	47	46.6	27.1S	176.3W	33km				USCGS	
2	KP	eP	Z	13	34	05								
	TU	eP	Z	13	34	17								
	Epicentre			13	26	42.4	4.8S	152.1E	79km				USCGS	
3	ON	eP	E	07	23	59								
	KP	eP	Z	07	24	03								
		e	Z		25	14								
	TU	eP	Z	07	24	00								

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
AUG		e	Z			02					
		e	Z		25	08					
	TA	e	Z	07	24	40					
	CT	eP	Z	07	24	(23)					
		e	Z		26	(05)					
	WN	eS	ZNE	07	26	12					
	GP	eS	N	07	27	18					
	Epicentre			07	22	31	34S 179W	350km		NZ(D)	5.3
3	KP	iP	Z	09	09	29½ d					
		epP	Z		10	05					
		ePP	Z		13	20					
	TU	eP	Z	09	09	24					
		epP	Z		10	02					
	CT	eP	Z	09	09	(26)					
		e(pP)	Z		10	(11)					
		ePP	Z		13	(15)					
	WN	eP	ZNE	09	09	23 d	6.8 10				
		ePP	Z		13	05					
		e(SKS)	NE		19	42					
		e(PS)	ZE		21	11					
		e	NE		22	30					
		e(SSS)	ZNE		30	22					
		eLq	NE		34	.9					
		e(Lq)	Z		35	.0					
		M	ZNE		36		4.1 20	37 26	28 24		
	CB	eP	E	09	09	31					
	KM	eP	X	09	09	37					
	GP	eP	N	09	09	23					
	SU	eP	N	09	10	02					
		e(PP)	N		14	05					
		e(PS)	N		23	20					
		e(PPS)	N		24	11					
		e?	N			47					
	Epicentre			08	56	12.1	23.2S 67.5W	71km		USCGS	7-7½ PAS
3	KP	eP	Z	10	10	56					
	TU	eP	Z	10	11	10					
	CT	eP	Z	10	11	(07)					
	GP	eP	N	10	11	34.05					
	SU	e?	N	10	13	45					
	Epicentre			10	04	44.6	10.1S 161.2E	40km		USCGS	
3	KP	eP	Z	10	19	57					
	TU	eP	Z	10	20	19					
	TA	eP	Z	10	20	10					
	CT	eP	Z	10	20	(16)					
	WN	eP	ZNE	10	20	38					
		eL	Z		25	.0					
		M	Z		26						
	SU	eS	N	10	20	16		11 12			
		e(L)	N		21	15					
		M			22			13 10			
	GP	eP	N	10	21	03					
	Epicentre			10	16	26.7	23.3S 171.2E	39km		USCGS	
4	KP	eP	Z	05	44	06					
	TU	eP	Z	05	44	10					
	CT	eP	Z	05	44	14					
		eS?	Z		48	26					
	GP	eP	N	05	45	10					
	Epicentre			05	39	20.7	17.4S 174.7W	135km		USCGS	
5	ON	eP	E	15	13	53					
	KP	eP	Z	15	14	03					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
AUG	TU	eP	Z	15	14	09					
	TA	eP	Z	15	14	13					
	GP	e?	N	15	14	53					
	RX	eP	Z	15	14	56					
		eL	E			22.6					
		eL	N			26.0					
		eL	Z	15		22.7					
	WN	eL	Z			25					
		M	Z								
	Epicentre			15	08	34.1	13.7S 166.6E	60km		USCGS	
6	WN	ePKP	Z	01	55	17					
		eL	Z	02	49	.6					
		M	Z	03	13	18					
	TU	ePKP$_1$	Z	01	55	18					
		ePKP$_2$	Z			24					
	KP	ePKP$_1$	Z	01	55	19					
		ePKP$_2$	Z			25					
	TA	ePKP?	Z	01	55	21					
	Epicentre			01	35	30.5	32.0N 40.8W	48km		USCGS	6¼ PAS
6	WN	eL	Z	09	19	.0					
	Epicentre			08	41	17.8	58.4S 25.5W	54km		USCGS	
6	KP	iP	Z	15	32	23 d?					
	TU	iP	Z	15	32	33 d?					
	Epicentre			15	27	20.0	15.3S 167.5E	120km		USCGS	
							Felt: Santa Cruz Is.				
6	SU	eP	N	20	54	12			11½ 5		
		eS	N		56	10			25 7		
		eL	N		56	.7±			30 10		
	ON	eP	E	20	54	49					
		eS	E		57						
	KP	eP	Z	20	54	56					
		e	Z		55	09					
	TU	eP	Z	20	54	54					
		eS	Z		57	15					
	TA	eP	Z	20	55	19					
		e	Z			56					
	CT	eP	Z	20	55	09					
		e	Z			23					
		e(S)	Z		57	43					
	WN	eS	ZNE	20	58	18					
		M	ZNE		01						
	CB	e(S)	E	20	58	36					
	KM	e	X	20	56	19					
		eS	X		59	19					
	GP	eP	N	20	56	10					
		eS	N		59	28					
	Epicentre			20	51	56.8	26.9S 177.1W	50km		USCGS	6 BER
8	KP	eP	Z	12	05	03					
	TU	eP	Z	12	05	21					
	CT	eP	Z	12	05	15					
		epP	Z			20					
	WN	eL	Z	12	12						
	Epicentre			12	00	15.1	17.8S 168.0E	30km		USCGS	
8	KP	eP	Z	12	17	06					
	TU	eP	Z	12	17	25					
	TA	eP	Z	12	17	25					
	CT	eP	Z	12	17	21					
		epP	Z			26½					
	KM	eP	X	12	17	54					
	WN	eL	Z	12	25						

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
AUG		Epicentre		12	12	22.5	17.9S	168.0E	33km	USCGS	
8	TU	eP	Z	13	40	10					
	TA	eP	Z	13	40	05					
	CT	eP	Z	13	40	10					
		epP	Z			16					
	KM	eP	X	13	40	49					
	GP	eP	N	13	40	44					
	WN	eL	Z	13	46	.6					
		M	Z			48					
	Epicentre			13	35	11.2	18.0S	168.1E	33km	USCGS	
9	CT	eP	Z	06	32	59					
	KP	eP	Z	06	33	01					
	Epicentre			06	19	51.4	24.1S	66.5W	128km	USCGS	
9	CT	eP	Z	17	36	31					
	Epicentre			17	24	48.5	44.5S	73.4W	33km	USCGS	
9	KP	eP	Z	23	22	05					
	Epicentre			23	16	56	14.5S	167.4E	150km	NOUMEA	
10	WN	eL	Z	24	03	.1					
		M	Z			03	1.4 29				
	RX	eL	NE	24	01						
		M	N			01		3.0 22			
		M	E			02			4.4 11		
11	SU	iP	N	01	48	50 n					
		iS	N			49 53 n					
	KP	eP	Z	01	51	17					
		eScP	Z			57 54					
	TU	eP	Z	01	51	19½					
		e?	Z			53					
		eS	Z			54 15					
		eScP	Z			57 55					
		e	Z	02	01	32					
		e(ScS)	Z			39					
	TA	eP	Z	01	51	34					
	CT	eP	Z	01	51	26					
		eS	Z			54 34					
		eScP	Z			57 56					
	WN	eP	ZNE	01	51	47					
		eS	ZNE			55 04					
		e(L)	Z			55					
		eScS	NE	02	01	47					
	KM	eP	X	01	52	06					
		eS	X			55 42					
	GP	eP	N	01	52	13					
		eS	N			55 49					
		e?	N			58 12					
	RX	eP	Z	01	52	35					
		eS	Z			56 48					
		eScP	Z			58 18					
		eScS	Z	02	02	10					
	Epicentre			01	47	39.6	20.0S	178.8W	638km	USCGS	
11	SU	eP	N	06	49	22					
		eS	N			51 17		19 10			
	KP	eP	Z	06	52	46					
		eS	Z			56 24					
	TA	eP	Z	06	52	53					
	RX	e?	Z	06	59	34					
		eL	E	07	02	.6					
		eL	N			03.3					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
		M	E			05			2.8 20		
AUG		eL	Z			06.4					
		eL	N			07.9					
		M	N			08		3.0 15			
	Epicentre			06	47	41.7	15.7S	172.9W	157km	USCGS	
11	KP	iP	Z	08	27	37 d?					
		e(pP)	Z			28 13					
		e	Z			29 20					
		e?	Z			35 35					
		e?	Z			37 01					
	TU	eP	Z	08	27	45 u?					
	TA	eP	Z	08	27	40					
		e(pP)	Z			28 19					
	CT	iP	Z	08	27	42					
		epP?	Z			28 36					
	GP	eP?	N	08	27	53					
	RX	eP	Z	08	27	49					
		eS	N			37 52					
		e	E			38 08					
		e(PS)	N			38 40					
		eSS	NE			43 08					
		e(Lq)	N			49 53					
		e(Lq)	E			50 20					
	SU	eS	N	08	35	12		6.4 10			
	WN	e(S)	Z	08	37	.5					
		eL	ZE			50					
		M	Z			56	2.8 24				
	Epicentre			08	15	43.7	25.2N	123.3E	140km	USCGS	
11	SU	eS	N	11	41	10±					
11	KP	eP	Z	18	21	43					
	TU	eP	Z	18	21	54					
	Epicentre			18	12	53.7	06.6S	130.3E	173km	USCGS	
12	KP	ePKP	Z	05	09	18					
	Epicentre			04	49	28.4	37.5N	30.7E	33km	USCGS	
13	WN	e(PS)	ZE	07	02	52	0.8 32		5.6 32		
		eSS	ZE			08 22					
		eL	ZE			22.1					
		M	ZE			22½	1.8 32		8.5 32		
	RX	e	E	07	03	22					
		e	NE			09 04					
		eL	E			24.0					
		eL	N			25.9					
		eL	Z			28					
		M	NE	08	00			2.4 18	2.2 18		6.1
	Epicentre			06	35	56.0	2.1N	83.5W	33km	USCGS	
14	GP	eP	N	01	12	52					
		e(S)	N			15 00					
		e?	N			16 02½					
	RX	eP	Z	01	12	10					
		e	NE			12					
		e(S)	NE			13 10					
		e	Z			20					
		eL	Z			44	59 15				
	CT	eP	Z	01	13	55					
		e	Z			14 05					
		ePcP	Z			19 33					
	WN	eP	Z	01	13	37					
		e?	Z			15 08					
		eLq	NE			35					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
AUG		eL?	Z			50				
		eLr	Z		16	21				
		M	ZNE		18		30 19	145 17	160 21	
	CB	eP	E	01	13	25				
		e?	E		15	23				
	KM	eP	X	01	13	00				
		e?	X		14	44				
		e	X		15	32				
	ON	eP	E	01	14	53				
	KP	e(P)	Z	01	14	07				
	TU	eP	Z	01	14	20				
	TA	eP	Z	01	14	10				
15	KP	eP	Z	02	57	14½				
	TU	eP?	Z	02	57	20				
	CT	eP	Z	02	57	20				
	Epicentre			02	45	33.9	31.4N 139.2E 155km			USCGS
15	KP	eP	Z	08	39	29				
	TU	eP	Z	08	39	38				
	CT	eP	Z	08	39	33				
	Epicentre			08	29	46.7	4.7N 122.6E 620km			USCGS
15	KP	eP	Z	11	33	36				
		epP	Z			48				
		e	Z			57				
	Epicentre			11	20	44.5	51.8N 177.0W 53km			USCGS
16	KP	eP	Z	08	55	30				
		e?	Z		56	00				
	TU	e(P)	Z	08	55	39				
	CT	eP	Z	08	55	38				
	Epicentre			08	44.9		Near 18N 146E			BCIS
17	SU	eP	N	00	34	42				
		e(L)	N		35.4			11 12		
	KP	eP	Z	00	37	42				
	WN	eL	Z	00	45	28				
		M	Z		47		1 22			
	RX	eL	E	00	47.0					
		eL	N		52.0					
		eL	Z		52.8					
	Epicentre			00	32	26.9	15.8S 172.9W 33km			USCGS
17	KP	eP	Z	03	36	27				
	Epicentre			03	23	31.5	31.6S 67.7W 33km			USCGS
17	KP	eP	Z	05	15	41				
		e	Z		16	07				
	TU	eP	Z	05	15	49				
	TA	eP	Z	05	15	41				
	WN	eP	ZNE	05	15	47				
		ePP	Z		18	30				
		eS?	E		25	00				
		e?	N		26	22				
		e(Lq)	ZN		34.8					
		M	ZN		35					
		e(Lq)	E		35.7					
		M	E		36				14 32	
		M	Z		41		2.1 28			
	GP	eP?	N	05	15	52				
		e(P)	N		55					
	RX	eP	Z	05	15	46				
		e	NE		24	58				
		eLq	NE		34.0					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
		M	NE			35		3.8 22	2.9 18	6.0
AUG		eL	Z			35.8				
	SU	eS	N	05	23	48		4 5		
	Epicentre			05	04	31.5	10.6N 121.6E 33km			USCGS
17	KP	eP	Z	11	53	22				
	RX	eP	Z	11	54	37				
	Epicentre			11	48	47.3	15.2S 178.6W 391km			USCGS
17	KP	iP	Z	16	23	42				
	TU	eP	Z	16	23	44				
	CT	eP	Z	16	23	51				
	TA	eP	Z	16	23	57				
	Epicentre			16	19	47.3	19.3S 177.5W 528km			USCGS
17	SU	e	N	22	58	45				
		eS	N	23	00	06		5.1 11		
		e(L)	N		01	00		6.6 11		
		eL	N			25		13 11		
	KP	eP	Z	23	01	16				
	WN	eL	Z	23	10.0					
	RX	eL	E	23	11.6					
		eL	Z		16.6					
	Epicentre			22	55	55.4	15.4S 172.7W 33km			USCGS
18	KP	eP	Z	02	10	55				
	TU	eP	Z	02	11	09				
		e	Z			13				
	CT	eP	Z	02	11	09				
		e	Z			13				
	WN	eP	ZNE	02	11	28				
	GP	eP	N	02	11	48				
	RX	eP	Z	02	12	04				
	Epicentre			02	06	40.2	19.9S 170.2E 78km			USCGS
18	SU	eP	N	04	02	51		4.8 5		
	KP	eP	Z	04	05	04				
		e	Z			14				
	TA	eP	Z	04	05	18				
	CT	eP	Z	04	05	14				
		eS	Z		08	10				
	WN	eP	ZNE	04	05	33				
		eS	ZNE		08	35				
	GP	e?	N	04	06	18				
		e?	N			30				
		e?	N			59				
		eS	N		09	38				
	TU	eS	Z	04	07	55				
	KM	eS	X	04	09	12				
	Epicentre			04	01	33.5	21.9S 179.3W 516km			USCGS
18	WN	eL	ZNE	06	03.2					
		M	ZNE		05		0.7 25	1.4 22	2.2 22	
	Epicentre			05	42	02.8	3.5S 150.5E 19km			USCGS
18	WN	eL	ZNE	06	34.3					
		M	ZNE		36		0.7 20		2.2 18	
	Epicentre			06	12.9					BCIS
18	WN	eL	ZNE	08	43.2		0.7 24			
	Epicentre			08	22	13.3	4.7S 150.2E 82km			USCGS
18	WN	eL	ZE	17	35					
		M	ZE		36		0.3 24			
	Epicentre			16	43	54.3	62.3N 152.5W 32km			USCGS

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag
AUG 18	WN	eL	ZNE	18 37.6				
		M	ZNE	39	0.8 25			
	Epicentre			17 46 14.9	62.3N 152.5W 32km		USCGS	
18	SU	e(P)	N	20 46.3				
		e(S)	N	47 18		4.0 6		
	WN	eL	Z	20 53.5				
	Epicentre			20 44 27.2	22.7S 173.1E 82km		USCGS	
18	WN	eLr	ZN	23 09.4				
		M	ZN	12	0.6 15		2.0 15	
	RX	eL	NE	23 11.3				
	Epicentre			22 49 47.5	7.3S 156.1E 60km		USCGS	
19	WN	e	E	00 43 12				
		e	Z	44 28				
	Epicentre			00 23 03.9	19.9S 66.9W 240km		USCGS	
19	KP	eP	Z	04 19 21				
	Epicentre			04 14 10.9	16.1S 173.4W 33km		USCGS	
19	KP	eP?	Z	10 47 09				
	Epicentre			10 39 44.5	06.8S 149.5E 33km		USCGS	
19	KP	ePKP	Z	18 45 23				
		e(PP)	Z	38				
	CT	ePKP?	Z	18 45 21				
	RX	ePKP?	Z	18 45 25				
		eL	E	19 35				
	WN	e(PKS)	ZNE	18 58 14				
		e(SSS)	E	19 08 28				
		eL	E	17				
		eL	N	19				
		eL	Z	21				
		M	Z	32	7.6 26			
	Epicentre			18 26 38.6	44.6N 81.7E 33km		USCGS	
19	KP	eP?	Z	21 29 38				
	Epicentre			21 19 54.6	04.5N 123.2E 552km		USCGS	
19	KP	eP	Z	23 25 52 d?				
	TU	eP	Z	23 25 46				
	TA	eP	Z	23 25 52				
	CT	eP	Z	23 25 49 d?				
	WN	eP	Z	23 25 46				
	CB	eP	E	23 25 53				
	RX	eP	Z	23 25 48				
	KM	eP	X	23 26 16				
	Epicentre			23 12 50.4	26.6S 69.8W 51km		USCGS	
20	ON	eP?	E	11 26 01				
	KP	eiP	Z	11 26 13				
	TU	eP	Z	11 26 16				
	CT	eP	Z	11 26 21				
		e	Z	42				
		e?	Z	29 31				
	Epicentre			11 22 39.8	20.9S 178.8W 605km		USCGS	
20	KP	eP	Z	13 08 35				
	TU	eP	Z	13 08 43				
	CT	eP?	Z	13 08 35				
	WN	eL	Z	13 29.6				
	Epicentre			12 58 24.1	12.4S 112.1E 87km		USCGS	
20	WN	eP?	Z	15 24 25				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag
		eL	Z	15 47.1				
AUG	Epicentre			15 15 15.6	01.7S 133.8E 33km		USCGS	
20	ON	eP	E	23 23 41				
	KP	eP	Z	23 23 57				
		e	Z	24 00				
	TU	eP	Z	23 24 08				
	TA	eP	Z	23 24 10				
	CT	eP	Z	23 24 09				
		e	Z	12				
	GP	eP	N	23 24 36				
	RX	eP?	Z	23 24 53½				
		eL	E	33				
		eL	N	36				
	WN	eL	Z	23 31.4				
		M	Z	34	0.6 22			
	Epicentre			23 18 39.8	14.7S 166.6E 52km		USCGS	
21	ON	e?	E	07 26 50				
	KP	e	Z	07 26 27				
		e	Z	27 46				
	TU	e?	Z	07 26 21				
		e	Z	27 34				
	CT	e?	Z	07 26 52				
		e	Z	28 01				
	GP	e	N	07 29 48				
	Epicentre			07 24 45	35.0S 176.5W N NZ(D)			5.0± NZ
21	ON	eP	E	16 12 47				
		e	E	13 13				
	KP	eP	Z	16 12 46				
		e	Z	13 03				
	TU	eS	Z	16 14 48				
	GP	eP	N	16 14 10				
		eS?	N	17 08				
		e(S)	N	26				
	CT	eS	Z	16 15 27				
	WN	eL	Z	16 17.9				
		M	Z	23	1.2 16			
	RX	eL	E	16 20.3				
		eL	N	22.3				
	Epicentre			16 10 08.7	28.2S 176.7W 57km		USCGS	
21	KP	eP	Z	17 09 54				
	TU	eS	Z	17 14 17				
	CT	eS	Z	17 14 28				
	WN	e?	NE	17 15 27				
	GP	e(S)	N	17 16 31				
	Epicentre			17 04 35.2	15.5S 172.6W 33km		USCGS	
21	WN	eL	Z	19 15				
	Epicentre			18 09 06.8	41.5N 15.4E 36km		USCGS	
21	WN	eL	Z	19 42.4				
		M	Z	58				
	RX	eL	N	20 02				
	Epicentre			18 19 33.3	41.4N 15.5E 34km		USCGS	
21	ON	eP	E	21 08 31				
		e	E	41				
		e	E	11 48				
		M	E	14				
	KP	eP	Z	21 08 33				
		e	Z	48				
		eS	Z	10 32				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
AUG	CT	eP	Z	21	08	54				
		e	Z		09	39				
		eS	Z		11	02				
	GP	eP	N	21	09	54				
		eS	N		12	50				
	RX	eP	Z	21	10	29				
		eL	NE		15	2				
		eL	Z		18	6				
		M	ZNE		20		12 12	8.6 14	9.8 14	
	WN	eS	NE	21	11	46				
		e	ZNE		12	13				
		eL	NE		13	1				
		eL	Z		13	5				
		M	ZNE		15		12 16	47 17	34 17	
	CB	eS	E	21	12	06				
		e	E			35				
	KM	eS	X	21	13	00				
	Epicentre			21	06	00.1	28.7S	176.8W 55km		USCGS
21	KP	eP	Z	21	19	50				
	CT	eP	Z	21	19	54				
	WN	eP	Z	21	19	59				
		e(Lr)	ZE		37	1	21 30		55 29	
	BX	e(Lq)	N		35	7		26 30±		
		eL?	E		38	1			12 26±	
	Epicentre			21	09	50.3	29.6S	111.9W 33km		USCGS
21	TU	eS	Z	22	09	25				
	GP	eS	N	22	11	35				
	Epicentre			22	04	42	28.8S	176.5W 55km		USCGS
22	KP	eP	Z	04	43	43				
	Epicentre			04	32	29.4	26.1N	142.5E 29km		USCGS
22	KP	eP	Z	05	32	01				
	CT	eP	Z	05	32	16				
		eS	Z		34	37				
	GP	eP	N	05	33	29				
		eS	N		36	18				
	TU	eS	Z	05	34	05				
		e	Z			11				
	SU	eL	N	05	34	8				
		M	N			36		9.2 11		
	WN	eS	NE	05	35	14				
		eL	ZE		37	0				
		M	ZE			39	2.1 18		7.0 17	
	RX	eL	NE	05	39	5				
		M	NE			40			2.4 21	
	Epicentre			05	29	26.6	28.6S	176.7W 55km		USCGS
22	KP	eP	Z	09	16	36				
	CT	eP?	Z	09	16	51				
	Epicentre			09	12	49.7	20.3S	177.8W 503km		USCGS
22	CT	e(P)	Z	11	19	27				
		e(pP)	Z			38				
	Epicentre			11	11	56.3	49.7S	117.5E 33km		USCGS
22	ON	eP	Z	12	08	49				
	KP	eP?	Z	12	08	29				
		e(P)	Z			43				
	CT	eP	Z	12	09	02				
		e	Z			16				
		e	Z		10	52				
		e	Z		11	38½				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
AUG	TU	e	Z	12	10	40				
	GP	eP	N	12	10	06				
		eS	N		12	45				
	WN	eS	NE	12	11	40				
		eL	Z		12	13.9				
		M	Z		15			6.7 19		
	SU	eL	N	12	12					
		M	N		12				5.0 13	
	RX	eL	NE	12	15	8				
	Epicentre			12	05	54.9	28.6S	176.7W 56km		USCGS
22	WN	eL	Z	14	59	4				
		M	Z	15	01			0.4 18		
	RX	eL	E	15	00	8				
	Epicentre			14	31	44.2	29.5S	112.3W 33km		USCGS
22	KP	eP	Z	21	19	01				
	TU	eP?	Z	21	19	13				
	Epicentre			21	08	22.9	8.3N	123.8E 125km		USCGS
23	KP	eP	Z	13	07	50				
	Epicentre			13	03	44.5	17.5S	178.7W 571km		USCGS
23	ON	eP	E	15	40	31				
	KP	eP	Z	15	40	44				
	TU	eP	Z	15	40	45				
	CT	eP?	Z	15	40	54				
		e	Z		41	58				
	TA	eP	Z	15	41	01				
	RX	eP	Z	15	42	02				
		e(pP)	Z			13				
	Epicentre			15	29	46.6	22.9N	120.8E 17km		USCGS
23	KP	eP	Z	16	52	17				
	Epicentre			16	48	46.3	21.4S	179.1W 587km		USCGS
23	SU	eL	N	19	21					
	KP	e	Z	19	22	41				
		e	Z			50				
	Epicentre			19	17	26.6	15.6S	172.2W 33km		USCGS
24	KP	eP?	Z	04	04	39				
	TU	eP	Z	04	04	50½				
	Epicentre			03	58	46.2	11.2S	165.0E 32km		USCGS
24	SU	eP?	N	06	49	15				
		eS	N		50	20			22 5	
	ON	eP	E	06	49	53				
		eS	E		52	07				
	KP	eP	Z	06	50	10				
		e	Z		51	17				
	TU	eP	Z	06	50	12				
		e(S)	Z		52	37				
		e	Z		53	06				
	TA	eP	Z	06	50	20				
		e(S)	Z		52	57				
	WN	eP?	Z	06	50	39				
		eP	ZNE			42				
		e	Z		53	20		0.9 30		
		eS	ZNE		53	30				
	CB	eP	E	06	50	44				
		eS	E		53	35				
	KM	eP	X	06	51	01				
		eS	X							
	GP	eP	N	06	51	08				

ONLY THIS READING BELONGS TO THIS STOCK

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
AUG		eS	N		54	14				
	RX	eP	Z	06	51	29				
	Epicentre			06	47	08.1	24.5S 178.8E 526km		USCGS	
24	SU	iP	N	09	06	44				
		eS	N		08	17				
		eL	N			44				
		M	N		10			112 12		
	ON	eP	E	09	09	36				
		eL	E		15	40				
	KP	eP	Z	09	09	46				
	TU	eP?	Z	09	10	02				
	TA	eP	Z	09	10	03				
	WN	eL	ZNE	09	15.3		8.7 25	27 22	47 26	
		M	ZNE		19					
	RX	eL	NE	09	19.1					
		eL	Z		21					
		M	NE		23			8.9 24	14 17	
		M	Z		23		10 19			6.0
	Epicentre			09	04	22.9	15.0S 173.3W 33km		USCGS	
25	SU	iP	N	08	33	14				
		e?	N		35	23				
	ON	eP	E	08	35	14				
		eS	E		38	02				
	KP	iP	Z	08	35	28½				
		e?	Z		37	22				
		eScP	Z		42	12				
	TU	eP	Z	08	35	30				
		eS	Z		38	31				
		eScP	Z		42	15				
		eScS	Z		45	57				
	TA	eP	Z	08	35	42				
		e	Z		38	12				
		eScP	Z		42	16				
	CT	eP	Z	08	35	36				
		e	Z		36	19				
		e	Z		38	56				
		eScP	Z		42	17				
		eScS	Z		46	00				
		e	Z			45				
	WN	eP	ZNE	08	35	56	0.5 16			
		e(sP)	ZNE		38	22				
		eS	ZNE		39	15				
		eScP	ZNE		42	23½				
		eScS	ZNE		46	03				
		esScS	NE		50	05				
	CB	eP	E	08	36	00				
		eS	E		39	22				
	KM	eP	X	08	36	15				
		eS	X		39	48				
		eScS	X		46	08				
	GP	eP	N	08	36	21				
		eS	N		39	59				
		eScP	N		42	29				
		eScS	N		46	17				
	RX	eP	Z	08	36	46				
		e	Z		38	44				
		e(sP)	N		39	24				
		e(S)	ZE		40	47			3.6 20	
		eScP	Z		42	37½				
		eScS	ZE		46	30				
	Epicentre			08	31	48.7	20.5S 178.5W 561km		USCGS	
26	KP	eP	Z	00	51	05				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
AUG	TU	eP	Z	00	51	16				
	CT	eP	Z	00	51	17				
	Epicentre			00	45	28.5	11.3S 166.4E 135km		USCGS	
26	KP	eP	Z	07	01	01				
	TU	eP	Z	07	01	10				
	CT	eP	Z	07	01	07				
	RX	eL	E	07	26.0					
		eL	NE		29.1					
	WN	eLr	ZNE	07	27.3					
		M	ZNE		30		1.7 25	4.1 24	2.7 25	
	Epicentre			06	48	57.1	34.0N 139.2E 38km		USCGS	
26	KP	eP	Z	22	47	15				
	Epicentre			22	35	13.9	34.3N 139.3E 54km		USCGS	
26	KP	eP	Z	23	39	07				
		e	Z			50				
	TU	eP	Z	23	39	18½				
	TA	eP	Z	23	39	09				
	CT	eP	Z	23	39	13				
	RX	e	Z	23	39					
		e(S)	NE	23	46.5					
		e(Lq)	E		51					
		e(Lq)	N		53					
	WN	e(S)	Z	23	46.1					
		e	Z		50.1					
		eLr	Z		54.4					
		M	Z	24	00					
		eLr	E	24	00					
		M	E	24	00				4.3 16	
	Epicentre			23	30	38.0	3.7S 140.1E 50km		USCGS	
27	KP	eP	Z	02	31	07				
	TU	eP	Z	02	31	12				
	CT	eP	Z	02	31	11				
	Epicentre			02	18	58.8	40.2N 137.8E 274km		USCGS	
27	KP	eP	Z	05	06	51½				
27	KP	eP	Z	16	32	19½				
		epP	Z			30				
	TU	e(pP)	Z	16	32	36				
	CT	eP?	Z	16	32	24½				
		epP	Z			35				
	WN	eL	Z	17	00.0					
		M	Z		04		1.0 20			
	Epicentre			16	20	04.7	38.3N 142.4E 40km		USCGS	
27	KP	eP	Z	23	36	25				
	TU	eP	Z	23	36	31				
		e?	Z		38	24				
	Epicentre			23	28	45.2	06.0S 149.5E 48km		USCGS	
27	SU	e(P)	N	23	33	40			15 11	
		e	N		50	54				
	KP	eP	Z	23	33	51				
		e	Z			54				
	TU	eP	Z	23	34	07				
		e?	Z		38	24				
	TA	eP	Z	23	34	07				
	CT	eP	Z	23	34	08				
	WN	eP	NE	23	34	30				
		e(SS)	Z		38	19				
		eL	Z		39.1					

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag
AUG		M	Z	40				
	CB	eP	E	23 34 27				
	KM	eP	X	23 34 54				
	Epicentre			23 30 10.4	21.6S	171.5E 69km		USCGS
28	SU	eL	N	00 44.3				
	KP	eP	Z	00 45 17				
	TU	eP	Z	00 45 21				
	TA	eP	Z	00 45 36				
	WN	eL	Z	00 54.1				
	RX	eL	E	00 55.8				
	Epicentre			00 40 04.9	15.7S	173.1W 33km		USCGS
28	WN	eL	Z	08 52.0				
		eL	N	53.6				
		eL	E	55				
	Epicentre			08 13 12.4	34.2N	139.3E 38km		USCGS
28	SU	ePKP	N	11 19 46				
		e(PKS)	N	23(20)				
		e(SKKS)	N	35				
	KP	$ePKP_1$	Z	11 19 42				
		e	Z	55				
		e	Z	20 03				
		$iPKP_2$	Z	19 ½				
		e?	Z	27				
		e(SKP)	Z	23 12				
		ePP	Z	24 02				
	TU	$e(PKP_1)$	Z	11 19 44				
		e	Z	50				
		$ePKP_2$	Z	20 23½				
		ePP	Z	24 06				
	WN	$ePKP_1$	Z	11 19 41				
		e	ZNE	53				
		$ePKP_2$	Z	20 17				
		e(PPP)	Z	28 06				
		e	Z	32 08				
		e	Z	11 34 08				
		e	Z	37 18				
		e(Lr)	Z	12 14.7				
		eLr	Z	19.2				
		M	Z	26	1.5	22		
		e?	Z	36 08				
	GP	e	N	11 19 59				
		$ePKP_2$	N	20 11				
	RX	e	Z	11 19 45				
		$ePKP_2$	Z	59				
		e	Z	20 27				
		ePP	E	23 50				
		e	E	32 58				
		eSS	NE	43 05				
		ePSS	E	30				
		eSSS	E	49 40				
		e	E	53 02				
		eL	N	12 24				
	ON	$e(PKP_2)$	E	11 20 20				
	TA	$ePKP_2$	Z	11 20 16½				
	CB	$e(PKP_2)$	E	11 20 10				
	KM	e	X	11 20 08				
		$ePKP_2$	X	12				
		e	X	57				
	Epicentre			10 59 58.5	38.0N	23.1E 120km		USCGS 6¾ PKI
29	WN	eL	Z	03 32.5				
		M	Z	35	0.6	22		

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag
AUG 29	KP	eP	Z	22 48 59				
	TU	eP	Z	22 49 11				
	CT	eP	Z	22 49 10				
	WN	e(Lq)	Z	23 11.5				
		eLr	Z	14.5				
		M	Z	17	1.4	27		
	RX	eLq	NE	22 13				
	Epicentre			22 36 53.9	34.1N	139.1E 33km		USCGS
30	WN	eL	Z	14 30.5				
	Epicentre			13 35 28.7	41.8N	111.8W 37km		USCGS
30	SU	iP	N	17 19 58 n				
		e(S)	N	21 33				
		eLq	N	44				
		M	N	22		53 11		
	ON	eP	E	17 22 00				
		eL	E	27.5				
		M	E	28				
	KP	eP	Z	17 22 11				
	TU	eP	Z	17 22 12				
		e	Z	25 22				
		e	Z	32				
	CT	eP	Z	17 22 24				
		e	Z	26 05				
	TA	e	Z	17 22 34				
	WN	eP	ZNE	17 22 48				
		eS	ZNE	26 32				
		eLq	ZNE	27.5				
		eLr	Z	29.3				
		M	E	29			32 18	
		M	N	30		32 18		
		M	Z	31	8.1	16		
	CB	eP	E	17 22 56				
	KM	eP	X	17 23 14				
	GP	eP	N	17 23 16				
		eS	N	27 34				
	RX	eP	Z	17 23 43				
		eLq	NE	30.3				
		eLr	Z	33.6				
		M	ZNE	35	19 16	20 17	18 16	6.0
	Epicentre			17 17 51.9	21.2S	174.4W 33km	USCGS	
30	SU	eL	N	09 02.0				
		M	N	03		52 8		
	ON	eP	E	09 04 53				
	WN	eL	Z	09 12.2				
		M	Z	14	1.7	24		
	RX	eL	NE	09 16.5				
	Epicentre			09 00 04.8	15.3S	177.2W 59km	USCGS	
31	SU	e(P)	N	10 34.6				
		eL	N	35.6		21 14		
		M	N	36				
	ON	eP	E	10 38 16		200 8		
		e(S)	E	42 32				
		eL	E	44.7				
		M	E	45				
	TA	e?	Z	10 44.3				
	RX	eP	Z	10 39 56				
		eL	E	47.9				
		eL	N	49.4				
		M	NE	50		7.4 22	12 20	
		eL	Z	52.6				
		M	Z	54	4.7	14		

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
AUG	WN	eL	Z	10	44.3								
		M	Z		47		7.5	24					
		Epicentre		10	33	30.2	15.4S		177.3W	60km			USCGS
	31 TU	eP	Z	17	15	43							
	CT	e?	Z	17	15	30							
		e?	Z			37							
		eP	Z		16	03							
	SU	eS	N	17	22	55							
		e(PS)	N		23	25							
		eLr	N		35.2								
		M	N		40				6.2	19			
	WN	e(SKS)	Z	17	26	28							
		e(SP)	Z		28	48							
		e(SS)	Z		33	05							
		e(SKKP)	Z		36	05							
		eL	Z		45.3								
		M	Z		46								
		eLr	E		47.3								
		eLr	Z		48.3								
		M	ZE		49								
	RX	e(SKS)	N	17	26	54							
		e(PS)	N		29	02							
		e(Lq)	N		48.8								
		e(Lq)	E		49.2								
		eLr	Z		50.5								
		M	E		53						10	21	
		M	N		55					10 21			
		Epicentre		17	02	43.4	51.3N		179.7W	26km			USCGS
	31 WN	eL	Z	19	18								
SEP	1 KP	P	Z	03	58	58							
	WN	ePS	Z	04	11	28							
		eSS	Z		16	24							
		Lq	E		29								
		Lr	ZE		31								
	RX	eL	NE	04	35								
	SU	eS	N	04	05	35							
		eL	N		24								
		Epicentre		03	46	05.0	51.3N		179.7W	25km			USCGS 6½ PAS
	1 KP	eP	Z	04	54	33							
		Epicentre		04	41	41.5	51.3N		179.9W	37km			USCGS
	1 SU	P	N	04	54	35							
		S	N		56	42							
	ON	eP	E	04	56	40							
		S	E	05	00	19							
		e	E			50							
	KP	iP	Z	04	57	00							
		eS	Z	05	01	07							
		ScP	Z		03	55							
	TA	eP	Z	04	57	09							
	TU	P	Z	04	57	10.3 u							
		S	Z	05	01	13							
		eScP	Z		03	57							
	CT	P	Z	04	57	10.5							
		eS	Z	05	01	11							
	WN	P	Z	04	57	26							
		sP	Z		58	40							
		S	ZNE	05	01	37							
		eS	NE		02	26							
		(L)	ZNE		03.2								
	RX	P	Z	04	58	01.9							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
						53							
SEP		epP	Z	05	02	38							
		S	N		04	18							
		e	N		07								
		eL	E	05	01	53							
	KN	eS	X		04	52	14.5		15.9S	168.2E	244km		USCGS
		Epicentre											
	1 KP	P	Z	08	03	59.0 u							
		epP	Z		04	12							
	SU	eS	N	08	11	15							
	WN	eeP	Z		17	05							
		e(SSS)	Z		25	48							
		eL	Z		33.8								
		eL	Z		36.8								
	RX	eL	N	08	38								
		eL	E		40								
		Epicentre		07	51	08.2	51.3N		179.9W	42km			USCGS
	1 KP	ePKP	Z	19	40	02							
	WN	PKP	Z	19	40	03							
		PP	Z		42	48							
		PKS	Z		43	40							
		SKS	E		47	13							
		e	Z		48	23							
		PS	ZE		52	57							
		PPS	ZE		54	58							
		SS	E	20	00	20							
		e	E		01	03							
		SSP	E		01	30							
		SSS	ZE		06	08							
		Lq	E		20.5								
		Lr	ZE		26.6								
	SU	e(PKP)	N	19	40	20							
		PKS	N		43	19							
	RX	PKS	ZNE	19	43	30							
		SKKS	E		49	32							
		e	N		50	52							
		SS	E	20	01	10							
		eL	E		13								
		M	NE		37								
		Epicentre		19	20	38.5	35.6N		50.0E	21km			USCGS
	2 TU	ePn	Z	20	17	21							
		i	Z			25							
		Sn	Z			51							
		i	Z			57							
	KP	Pn	Z	20	17	39							
	CT	Pn	Z	20	17	40.0							
		e	Z		18	35							
	TA	Pn	Z	20	17	54							
		i	Z		18	00							
		eSn	Z			53							
	WN	Pn	ZNE	20	17	55							
		e	E		18	03							
		i	N			06							5.9
		e	Z			18							
		Sn	ZNE			56½							
		e	Z		19	02½							
	ON	Pn	E	20	18	03							
		eS	E		19	12							5.2
	CB	eP	E	20	18	18							
		S	E		19	29							5.6
	GP	eP	N	20	18	35							6.0
		e	N			39½							
		S	N		19	57							

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
SEP	KM	e(P)	X	20	18	45					
		S	X		20	04					
	RX	eP	Z	20	19	15					5.3
		eS	Z		21	10					
		eL	NE		22						
	Epicentre			20	16	42	38.6S	179.6W	N NZ(B)		
											5.7
	2 TU	P	Z	22	40	09.8					
		e	Z			13					
		S	Z			45					
	KP	P	Z	22	40	27					
	CT	eP	Z	22	40	27					
		i	Z			29					
		i	Z			33					
		S	Z		41	22					
	TA	eP	Z	22	40	42					
		e(S)	Z		41	52					
	WN	e(P)	ZE	22	40	49					
		e	NE			52					5.4
		S	ZNE		41	44					
	ON	eP	E	22	40	51					
	GP	e(P)	N	22	41	26					4.8
		S	N		42	45					5.0
	RX	e(P)	Z	22	42	13					
		eS	Z		44	08					
	CB	eS	E	22	42	17					
	KM	eS	X	22	42	53					4.9
	Epicentre			22	39	23	38.6S	179.0W	N NZ(C)		5.0
											5.1
	4 TU	P	Z	08	32	15¼					
		S	Z		33	13					
		e	Z			29					
	ON	P	E	08	32	17					4.5
	KP	P	Z	08	32	18					
	CT	P	Z	08	32	29					
		e	Z			40					
		eS	Z		33	42					
	TA	eP	Z	08	32	38					
	WN	S	ZNE	08	34	20					5.2
	GP	eS	N	08	35	24					5.2
	Epicentre			08	31	00	34.6S	179.6W	N NZ(C)		5.1
	4 KP	P	Z	19	33	37					
	CT	P	Z	19	33	47					
	TU	P	Z	19	33	48					
	Epicentre			19	28	37.0	15.5S	167.7E	133km	USCGS	
	5 WN	eL	Z	08	58						
	5 KP	P	Z	11	25	03					
		pP	Z			26					
	CT	eP	Z	11	25	34					
		epP	Z		26	02					
	Epicentre			11	17	06.7	3.3S	139.9E	110km	USCGS	
	6 SU	eL	N	10	53						
	WN	eL	ZNE	10	59½						
		eL	ZNE	11	05						
	RX	eL	E	11	03						
	Epicentre			10	49	00.7	21.2S	174.5W	110km	USCGS	
	6 WN	eL	Z	11	37.2						
		eL	Z		40.6						
	RX	eL	ZNE	11	40						
	Epicentre			11	10	50.3	4.0S	126.4E	33km	USCGS	

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
	6 CT	eP	Z	18	07	30					
SEP		eS	Z		09	06					
	WN	eP?	NE	18	07	55					
		S	NE		10	49					
	KP	eP?	Z	18	08	08					
		e	Z			17					
		e	Z			32					
		e	Z			47					
		e	Z								
	ON	eP	E	18	08	10					
	TU	eP	Z	18	08	16					
		S	Z		09	41					
	CB	eS	E	18	11	05					
	KM	eS	X	18	11	45					
	GP	eS	N	18	11	52					
	Epicentre			18	06	22.9	31.8S	178.8W	81km	USCGS	
	7 KP	P	Z	07	50	43					
		pP	Z		51	21					
	CT	P	Z	07	50	46					
		pP	Z		51	25					
	TU	eP	Z	07	50	53					
		epP	Z		51	34					
	WN	eL	Z	08	17.2						
	Epicentre			07	41	51.0	6.3S	130.0E	180km	USCGS	
	7 ON	eP	E	23	39	18					
		S	E		40	35					
	TU	eP	Z	23	39	29					
		i	Z			30½					
		eS	Z		40	52					
	KP	eP	Z	23	39	29					
		i	Z			30					
		eS	Z		40	55					
	TA	eP	Z	23	39	47					
	WN	S	ZNE	23	41	49					
	CB	eS	E	23	42	01					
	GP	eS	N	23	42	48					
	SU	eS	N	23	43	02					
		eL	N			40					
	Epicentre			23	37	27.5	26.3S	178.0W	50km	USCGS	
	8 SU	eP	N	07	28	56					
		S	N		30	34					
	KP	eP	Z	07	30	48					
	WN	eL	Z	07	36						
	Epicentre			07	27	06.7	22.4S	171.5E	76km	USCGS	
	9 KP	P	Z	01	45	45					
	CT	eP	Z	01	45	48					
	TU	P	Z	01	45	53					
	Epicentre			01	34	38.5	10.3N	121.4E	58km	USCGS	
	10 ON	P	E	15	47	15					
		S	E		49	55					
	KP	P	Z	15	47	29					
		ScP	Z		54	10					
	TU	P	Z	15	47	29					
		eS	Z		50	21					
		e	Z			31					
		ScP	Z		54	11					
		ScS	Z		57	52					
	CT	P	Z	15	47	35					
		eS	Z		50	43					
		ScP	Z		54	11					
		ScS	Z		57	55					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
SEP		e	Z		58	53				
	TA	P	Z	15	47	42				
		ScP	Z		54	12				
	WN	iP	ZNE	15	47	56.8 d				
		sP	ZNE		50	30				
		S	ZNE		51	04½				
		ScP	ZNE		54	18				
		ScS	ZNE		58	01				
		sScS	NE	16	02	22				
	CB	eP	E	15	48	00				
	KM	eP	X	15	48	15				
		eS	X		51	38				
	RX	P	Z	15	48	44½				
		i	Z		49	39				
		S	NE		52	00				
		ScP	Z		54	33				
		eL	NE		55½					
		eScS	NE		58	22				
	Epicentre			15	43	59.4	21.1S	179.2W	640km	USCGS
10	ON	eP	E	17	54	04				
	KP	iP	Z	17	54	16 d				
	TU	eP	Z	17	54	17				
	CT	P	Z	17	54	24				
	TA	P	Z	17	54	33				
		e	Z			49				
	WN	eP	Z	17	54	51				
		eL	NE	18	01½					
		eL	Z		02½					
	RX	eL	E	18	05					
		eL	ZNE		08					
	Epicentre			17	49	16.1	17.5S	173.6W	33km	USCGS
10	TU	eP	Z	22	30	56				
		eS	Z		32	27				
	CT	P	Z	22	31	06½				
		S	Z		32	46				
	RX	P	Z	22	31	34				
	KP	e	Z	22	32	01				
		e	Z			51				
	WN	eS	NE	22	32	23				
	CB	eS	E	22	33	00				
	TA	eS	Z	22	33	05				
	Epicentre			22	28	58	44.8S	175.4W	N NZ(C)	5.1
11	ON	P	E	01	20	10				
		i	E			22				5.1
	TU	eP	Z	01	20	10				
		e	Z		21	13				
		e	Z			32				
	KP	P	Z	01	20	13				
		i	Z			15				
		e	Z			23				
	CT	eP	Z	01	20	23				
		e	Z			33				
		e	Z		21	52				
		i	Z		22	10				
	WN	eP?	Z	01	21	11				
		S	NE		22	21				5.5
		L	ZE		23	.8				
	CB	eS	E	01	22	44				5.1
	KM	eS	X	01	23	27				5.1
	Epicentre			01	18	40	33.7S	178.7W	N NZ(D)	5.2
11	KP	eP	Z	02	29	44				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
	WN	eL	Z	02	38	.5				
SEP	Epicentre			02	24	22.9	15.2S	173.4W	33km	USCGS
11	WN	eL	Z	19	55	.5				
	Epicentre			19	46	21.5	22.4S	172.3E	33km	USCGS
12	WN	eL	Z	14	32					
	RX	eL	E	14	33					
12	KP	eP	Z	18	26	41				
	CT	P	Z	18	26	51				
		e	Z		27	09				
	GP	eP	N	18	27	05				
	RX	eL	E	18	39					
	WN	eL	Z	18	39½					
		M	Z		44					
	Epicentre			18	18	42.9	4.4S	145.4E	32km	USCGS
12	TU	PKP	Z	21	15	25				
	KP	PKP	Z	21	15	50				
		PKKP	Z		25	44				
	WN	ePP	Z	21	17	30				
		eSS	Z		34	53				
		e	ZN		39	12				
		eL	Z		55	.5				
		M	Z	22	03					
	Epicentre			20	57	00.4	36.5N	69.2E	50km	USCGS
13	WN	eL	Z	05	15					
	Epicentre			05	02	22.8	21.3S	174.7W	33km	USCGS
13	TU	eP	Z	12	15	28				
		S	Z		16	02				
	CT	P	Z	12	15	46				
		e	Z			56				
		S	Z		16	37				
	WN	eP?	Z	12	16	00				
		S	ZNE		17	02				5.1
	TA	e(P)	Z	12	16	03				
		e	Z			35				
		e	Z		17	09				
	CB	S	E	12	17	34				4.8
	GP	eS	N	12	18	04				5.0
	KM	eS	X	12	18	10				5.0
	Epicentre			12	14	42	38.9S	179.0W	N NZ(D)	5.0
13	CT	iP	Z	15	33	37.2				
		S	Z		34	18				
	TA	iP	Z	15	33	57.5 u				
		eS	Z		34	19				
	KP	iP	Z	15	34	00.0 u				
		iS	Z			23½				
	TU	iP	Z	15	34	04.8				
		i	Z			25½				
		S	Z			30				
	WK	e(P)	Z	15	34	07				
		eS	Z			23				
	WN	P	ZNE	15	34	11.2 u				
		S	ZNE			42½				
	CB	P	E	15	34	15½				
		S	E			50½				
	KM	eP	X	15	34	38				
		S	X		35	26				
	GP	P	N	15	34	42				
		S	N		35	38				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
SEP	RX	eS	Z	15	36	38				
		Epicentre		15	33	28	39.0S 175.0E 215km NZ(B)			
							Felt: Wanganui MM3			5.2
14	TU	eP	Z	15	57	24				
	CT	P	Z		57	31				
		i	Z			39				
	TA	eP	Z	15	57	40				
	WN	eL	Z	16	04					
		Epicentre		15	52	41.2	17.9S 176.5E 33km		USCGS	
14	TU	eS	Z	17	27	57				
	CT	eS	Z	17	28	25				
	WN	eS	ZNE	17	29	05				
	CB	eS	E	17	29	18				
	GP	eS	N	17	30	05				
		Epicentre		17	23	13.4	26.6S 178.5W 449km		USCGS	
14	ON	P	E	18	21	36				
	KP	P	Z	18	21	50				
		i	Z		22	51				
	TU	P	Z	18	21	54				
		eS	Z		25	12				
		e	Z			41				
	CT	eP	Z	18	22	00				
		i	Z			02½ u				
		S	Z		25	32				
		ScP	Z		29	00				
	TA	P	Z	18	22	07				
		e	Z		23	07				
	WN	P	ZNE	18	22	22 d				
		eS	ZNE		26	02				
	KM	eP	X	18	22	43				
	GP	eP	N	18	22	49				
		Epicentre		18	17	52.1	19.9S 177.6W 350km		USCGS	
15	TU	P	Z	19	07	17				
		eS	Z		08	17				
	CT	eP	Z	19	07	32				
		eS	Z		08	50				
	TA	eP?	Z	19	07	44				
	WN	eS	NE	19	09	26				5.2
	GP	eS	N	19	10	32				5.3
		Epicentre		19	05	51	35S 178W N NZ(D)			5.2
							Charters Towers readings used to determine epicentre			
15	KP	eP	Z	23	03	34				
	CT	eP	Z	23	03	37				
	TU	eP	Z	23	03	38				
	TA	eP	Z	23	03	38				
	WN	eP	Z	23	03	46				
		PP	Z		07	20				
		e(S)	Z		14	42				
		e	ZN		16	28				
		SS	ZN		20	27				
		Lr	ZNE		34.4					
	RX	e(S)	NE	23	15.4					
		ePS	N		16	38				
		eSS	NE		22.0					
		eLg	E		31					
		Epicentre		22	50	46.3	48.5N 156.8E 33km		USCGS	6½ PAS
17	KP	eP	Z	05	03	54				
		Epicentre		04	59	51.5	17.7S 178.6W 576km		USCGS	

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
SEP 17	ON	P	E	17	59	03				
		P	E	18	00	56				
		e	E		01	46				
		S	E							
	KP	iP	Z	17	59	16.8 u				
		e	Z	18	00	50				
		eS	Z		02	12				
	TU	eP	Z	17	59	19				
		eS	Z	18	02	11				
	CT	eP	Z	17	59	25				
		eS	Z	18	02	30				
		ScP	Z		05	58				
	TA	P	Z	17	59	31				
		e	Z	18	00	50				
		e	Z		01	07				
	WN	iP	ZNE	17	59	44.7 d				
		i	Z			57½				
		SP	ZNE	18	02	22				
		S	ZNE		03	06				
		ScS	NE		09	49				
	GP	P	N	18	00	09				
		eS	N		04	00				
	RX	e	X	18	02	09				
		Epicentre		17	55	45.4	21.0S 179W 601km		USCGS	
18	WN	PP	Z	00	47	32				
		SKS	E		53	50				
		PS	ZE		56	30				
		SS	ZNE	01	02	27				
		Lr	ZE		18.0					
	KP	ePP	Z	00	47	32				
	RX	eSKS	E	00	54	10				
		e	N		55	44				
		PS	E		57	38				
		PPS	E		58	18				
		SS	NE	01	03	20				
		eL	ZNE		20					
		Epicentre		00	29	05.2	7.5N 82.3W 33km		USCGS	7 PAS
18	KP	P	Z	06	20	33				
	CT	eP	Z	06	20	37				
	TU	P	Z	06	20	41				
	WN	eL	ZNE	06	36.1					
		Epicentre		06	10	26.3	2.3N 126.9E 33km		USCGS	
18	ON	eP	E	20	15	35				
	KP	P	Z	20	15	50				
	TA	eP	Z	20	16	04				
	CT	P	Z	20	16	05				
	TU	P	Z	20	16	05				
		eS	Z		19	45				
	WN	P	Z	20	16	25½				
		S	ZNE		20	12				
		L	XNE		21.5					
		Epicentre		20	11	47.5	21.0S 169.9E 81km		USCGS	
18	ON	eP	E	21	51	40				
	KP	eP	Z	21	51	52				
		e	Z		52	15				
	WN	eL	ZE	21	59.5					
		L	ZNE	22	00.2					
	RX	eL	ZNE	22	04					
		Epicentre		21	47	30.9	14.8S 178.1W 526km		USCGS	
19	KP	P	Z	00	19	05				
	TU	eP	Z	00	19	10				

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
SEP		Epicentre		00	06	58.7	42.0N	132.9E	436km			USCGS	
19	KP	P	Z	01	35	33							
		pP	Z			48							
		Epicentre		01	22	35.5	52.3N	173.4W	33km			USCGS	
19	KP	P	Z	05	19	48							
		Epicentre		05	07	39.1	48.1N	145.1E	466km			USCGS	
19	KP	eP	Z	07	58	37							
		e	Z			43							
	TU	eP	Z	07	58	46							
		e	Z			52							
	WN	eP	Z	07	58	56							
		eL	Z	08	19								
		Epicentre		07	48	35.2	11.5N	141.0E	61km			USCGS	
20	CT	eP	Z	06	28	29							
	KP	P	Z	06	28	30							
		Epicentre		06	16	30.4	30.3N	132.3E	59km			USCGS	
20	KP	eP	Z	16	46	54							
	CT	eP	Z	16	46	54							
	WN	eL	ZNE	17	05	.5							
		Epicentre		16	38	24.6	4.7S	139.4E	33km			USCGS	
21	ON	eP	E	08	47	28							
	KP	P	Z	08	47	40							
	CT	eP	Z	08	47	49							
		eS	Z		50	49							
	TU	eS	Z	08	50	32							
		Epicentre		08	44	11.0	21.2S	179.0W	624km			USCGS	
21	ON	eP	E	14	58	44							
	KP	P	Z	14	58	55							
		i	Z		59	02							
		e	Z	15	00	15							
	CT	eP	Z	14	59	04							
	TA	eP	Z	14	59	10							
	WN	P	Z	14	59	24							
		Epicentre		14	54	51.0	17.7S	178.7W	536km			USCGS	
21	CT	eP	Z	22	50	05							
	KP	eP	Z	22	50	10							
		Epicentre		22	38	51.7	57.7S	64.1W	51km			USCGS	
22	WN	eSS	ZNE	07	23	.4							
		eLq	N		33								
		eLr	Z		39								
	RX	eL	E	07	36	.							
		Epicentre		06	51	32.3	26.5N	97.0E	33km			USCGS	
22	TU	eP*	Z	15	08	41½							
		i	Z			44							
		Sn	Z		09	00							
		eS*	Z			08							
	KP	iP*	Z	15	08	46.6	d						
		eS*	Z		09	19							
	WK	eP*	Z	15	08	48							
		e(S*)	Z		09	25							
	CT	P*	Z	15	08	56½	u						
	ON	P*	E	15	09	00	e						5.0
		e(S)	E			37							
		iS*	E			42							
	TA	(P)	Z	15	09	07¾	d						

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
		iP*	Z			09							
			Z			50							
SEP		eSn	Z										6.0
	WN	eP	ZNE	15	09	20							
		i	Z			21½							
		e	ZNE			25							
		e	N			32							
		i	E		09	37							
		Sn	NE		10	16							
		S	Z			19							
		e	ZNE			40							
		(ScS)	E		23	28							
	CB	eP?	E	15	09	36							
		Sn	E		10	40							5.6
	GP	ePn	N	15	09	59							
		i	N		11	20							
		iSn	N			25							6.3
	KM	e(P)	X	15	10	04							5.7
		Sn	X		11	18							
	RX	e(P)	Z	15	10	48							
		Sn	Z		12	30							
		eL	ZNE		14½								
		Epicentre		15	08	04	36.9S	178.1E	S NZ(B)				5.8 NZ
23	KP	eP	Z	07	02	56							
	CT	eP	Z	07	03	06							
		eS	Z		05	56							
	TA	eP	Z	07	03	12							
	WN	eP	Z	07	03	26							
		eS	ZE		06	25							
		Epicentre		06	59	49.9	23.7S	179.9E	549km			USCGS	
24	KP	P	Z	05	39	15							
	TU	eP	Z	05	39	25							
	CT	eP	Z	05	39	28							
		e	Z			43							
	WN	eL	Z	06	01	.5							
		Epicentre		05	28	26.5	9.2N	126.6E	33km			USCGS	
24	KP	eP	Z	14	51	05							
	SU	eL	N	15	10								
	WN	eL	ZE	15	19½								
	RX	eL	NE	15	22								
		Epicentre		14	38	21.7	42.8N	145.3E	33km			USCGS	
25	WN	P	Z	00	28	56							
		PP	Z		30	35							
		PcS	ZNE		34	43							
		S	ZNE		35	18							
		SS	ZNE		38	16							
		Lq	NE		40	18							
		eLr	ZNE		42	.2							
	TU	eP	Z	00	28	57							
	KP	eP	Z	00	29	11							
	RX	S	NE	00	35	24							
	SU	eSSS	N	00	45	12							
		eL	N		47	.2							
		Epicentre		00	21	14.6	55.6S	124.3W	67km			USCGS	
25	KP	eP	Z	07	33	45							
	WN	eL	Z	07	40								
		Epicentre		07	30	09.3	24.0S	176.6W	33km			USCGS	
25	CT	eP	Z	15	00	00							
	WN	eL	Z	15	20								
		Epicentre		14	49	46.9	11.7N	138.6E	33km			USCGS	

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
SEP 26	SU	eP	N	12	47	11				
		eL	N			19.7				
	ON	eP	E	12	47	39				
		eS	E			51 28				
	TU	eP	Z	12	47	43				
		eS	Z			48 54				
	CT	eP	Z	12	47	57				
		eS	Z			50 42				
	KP	eP	Z	12	47	58				
	TA	eP	Z	12	48	07				
	WN	P	ZNE	12	48	26				
		S	ZNE			51 03				
		L	ZNE			51 6				
	GP	eP	N	12	49	02				
		eS	N			52 09				
	RX	eLq	E	12	55					
		eLr	ZN			58½				
	Epicentre			12	44	48.9	27.5S 176.4W 33km		USCGS	
27	TU	eP	Z	00	55	40				
		e	Z			56 24				
		e	Z			35				
	KP	P	Z	00	55	46				
		eS	Z			56 41				
	TA	e	Z	00	55	49				
		eP	Z			56 08				
		e	Z			26				
		e	Z			37				
	ON	eP	E	00	55	53				
		e	E			56 04				4.3
	CT	eP	Z	00	55	56				
		e	Z			57 02				
	WN	S	NE	00	57	44				
		i	NE			58 29				5.1
	CB	eS	E	00	58	05				
		e	E			51				4.9
	GP	eS	N	00	58	50				
		e	N			59 34				5.0
	Epicentre			00	54	34	35.7S 179.1W N NZ(C) Charters Towers, Kajaani, Nurmijaervi readings used to determine epicentre			5.0 NZ
27	CT	P	Z	13	07	31				
		pP	Z			08 03				
	Epicentre			12	56	18.6	4.6S 104.4E 144km		USCGS	
27	ON	eP	E	13	28	58				
	KP	P	Z	13	29	13				
	TU	eP	Z	13	29	15				
		eS	Z			32 37				
	CT	eP	Z	13	29	20				
	TA	eP	Z	13	29	25				
	WN	P	Z	13	29	41				
		eS	Z			32 19				
	RX	P	Z	13	30	28				
	Epicentre			13	25	05.6	17.6S 178.9W 507km		USCGS	
27	TU	P*	Z	14	40	51				
		eS*	Z			41 10				
	WK	Pn	Z	14	40	52				
		e	Z			58				
		eS*	Z			41 12				
	KP	iP	Z	14	40	53½				
		eS*	Z			41 11				
	CT	iPn	Z	14	41	01.3 d				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
	TA	iPn	Z	14	41	11.3 d				
SEP		eSn	Z			45½				
	ON	eP*	E	14	41	16				3.8
		S*	E			50				
	WN	Pn	ZNE	14	41	26				5.5
		P*	ZNE			35				
		Sn	ZNE			42 11				
		S*	ZNE			28				
	CB	P	E	14	41	36				5.4
		e	E			50				
		S	E			42 31				
	KM	eP	X	14	42	03				5.4
		e	X			14				
		S	X			43 09				
	GP	eP	N	14	42	03				5.8
		e	N			11				
		S	N			43 15				
	RX	eP	Z	14	42	32½				
		eS	Z			44 21				
	Epicentre			14	40	25	37.4S 177.4E S NZ(C) Canberra, Charters Towers readings used to determine epicentre			5.5 NZ
27	CT	eP	Z	18	34	37				
	WN	eL	ZNE	18	44	.6				
	RX	eL	NE	18	48½					
	Epicentre			18	26	52.5	4.0S 151.2E 51km		USCGS	
28	KP	eP	Z	02	20	29				
		e	Z			41				
	CT	eP	Z	02	20	41				
	Epicentre			02	15	32.6	16.7S 167.5E 50km		USCGS	
28	KP	P	Z	03	39	24				
	TA	eP	Z	03	39	37				
	Epicentre			03	35	20.3	17.5S 178.8W 584km		USCGS	
28	WN	eL	Z	19	46	.4				
29	RX	P	Z	14	31	46				
		i	Z			47				
		eS	Z			32 41				
		e(L)	NE			33.0				
	GP	eP	N	14	32	25				5.0
		eS	N			33 48				
		e	N			34 03				
	CB	eP	E	14	32	55				5.2
		eS	E			34 39				
	CT	eP	Z	14	33	33				
	KM	eS	X	14	34	02				4.7
	Epicentre			14	30	35	49.0S 165.0E N NZ(C) Canberra, Toolangi, Port Vila and Charters Towers readings used to determine epicentre			5.0 NZ
29	CT	P	Z	15	30	07				
		pP	Z			32 09				
		eSKS	Z			39 49				
		ePKKP	Z			47 06				
	KP	P	Z	15	30	10				
		pP	Z			32 14				
		PKKP	Z			47 03				
	TA	eP	Z	15	30	11				
		epP	Z			32 13				
	WN	pP	Z	15	32	05				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
SEP		SKS	ZNE		39	42				
		SP	ZNE		41	38				
		SKKP	ZE		50	20				
	RX	e	E	15	33	05				
		eSKS	NE		39	40				
		eSP	E		41	40				
		eSS	N		46	58				
	Epicentre			15	17	47.7	27.0S 63.6W 575km			USCGS
	30 KP	P	Z	10	55	35				
		i	Z			41				
		PcP	Z		57	46				
		e	Z			58				
	WN	eP	Z	10	56	01				
		eS	Z	11	02	02				
		eSS	ZE		05	24				
		eL	ZN		08	.2				
	SU	eL	N	11	01					
	RX	eL	ZNE	11	10					
	Epicentre			10	48	10.3	5.2S 152.7E 33km			USCGS
	30 KP	P	Z	11	05	59½				
		ePcP	Z		08	10				
	Epicentre			10	58	37.0	5.9S 151.0E 50km			USCGS
	30 KP	iP	Z	11	21	21.8	u			
		S	Z			40				
	WK	e(P)	Z	11	21	23				
		S	Z			37				
	TU	iP	Z	11	21	25.7	d			
		S	Z			46				
	TA	iP	Z	11	21	27.0	u			
	WN	iP	ZNE	11	21	42.5	use			
		S	ZNE		22	18				
	CB	eP	E	11	21	50				
		iS	E		22	30				
	ON	e	E	11	21	53				
		eS	E		22	24				
	KM	eP	X	11	22	16				
		S	X		23	07				
	GP	eP	N	11	22	16½				
		i	N		23	15½				
		iS	N			18½				
	RX	S	Z	11	24	20½				
	Epicentre			11	20	56	38.6S 175.9E 175km			USCGS
	30 KP	P	Z	22	09	10				
	CT	P	Z	22	09	14				
	TU	eP	Z	22	09	18				
	WN	eL	Z	22	34	.6				
	Epicentre			21	57	24.8	18.6N 120.9E 51km			USCGS
OCT 1	ON	eP	E	04	00	44				
		eS	E		03	59				
	KP	eP	Z	04	00	58				
		e(pP)	Z		02	17				
		e(S)	Z		04	22				
	TU	eP	Z	04	01	01				
		eS	Z		04	17				
		ePcP?	Z			35				
	CT	e?	Z	04	01	08				
	TA	eP	Z	04	01	12				
	WN	eP	ZNE	04	01	26				
		eS	ZNE		05	06				
	CB	eP	E	04	01	30				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
		eS	E		05	11				
OCT 1	KM	eP	X	04	01	44				
		eS	X		05	37				
	GP	eP	N	04	01	50				
		e?	N		02	17				
		eS	N		05	49				
	RX	eP	Z	04	02	13				
		e	E		09	20				
	Epicentre			03	56	52.0	17.5S 178.9W 550km			USCGS
	1 KP	eP	Z	10	06	09				
	TU	eP	Z	10	06	12				
	TA	eP	Z	10	06	13½				
	WN	eP	Z	10	06	21				
	KM	eP?	X	10	06	29				
	Epicentre			09	53	32.9	47.3N 151.5E 127km			USCGS
	1 KP	eP	Z	10	01	52				
	TA	eP	Z	10	02	08				
	TU	eP	Z	10	02	09				
	CT	eP	Z	10	02	10				
	WN	eP	Z	10	02	22				
		ePP	ZNE			28				
		e?	Z		04	12				
		eS	ZNE		06	44				
		e(Lq)	ZN		08	.4				
		eLr	ZE		09	.9				
		M	ZE		10					
		M	Z		11					
	CB	eP	E	10	02	23				
	GP	eP	N	10	02	44				
	RX	eLq	NE	10	07	.7				
		M	NE		11			2.9 21	4.5 22	5.6
		eLr	Z		12	.5				
		M	Z		14		3.7 14			5.5
	Epicentre			09	57	02.2	17.5S 167.1E 33km			USCGS
	1 WN	ePKP	Z	12	33	08				
	KP	ePKP	Z	12	33	08				
		e?	Z			19				
		eSKP	Z		36	31				
	Epicentre			12	13	57.4	27.9N 54.9E 16km			USCGS
	1 WN	e?	Z	13	17	22				
		e(L)	Z		25	.3				
	1 KP	eP	Z	15	14	43½				
		ePcP	Z		16	55				
	TU	eP	Z	15	14	56				
	WN	eL	E	15	25	.2				
		eL	Z		26	.6				
		M	Z		29					
		M	E		31					
	RX	eLq	NE	15	30	.2				
		eLr	Z		35	.4				
	Epicentre			15	07	22.1	5.5S 151.9E 49km			USCGS
	1 KP	eP	Z	20	47	02				
		e	Z			14				
	TU	eP	Z	20	47	03				
		e	Z		50	39				
		e	Z			44				
	TA	eP	Z	20	47	19				
	WN	eP	ZNE	20	47	33				
		e	ZNE			39				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
OCT		e	NE			44				
		e	Z			47				
		e	N			52				
		eS	ZNE		51	42				
		eL	ZNE		55					
		M	Z		58					
	CB	eP	E	20	47	44				
	KM	eP	X	20	48	01				
		e	X			09				
	RX	eP	Z	20	48	31				
		eL	E			56.6				
		eL	N			58.1				
	Epicentre			20	42	36.5	19.6S 174.5W 143km			USCGS
3	TU	eP?	Z	17	18	10				
	RX	eP	Z	17	19	02				
		eL	NE		26					
	WN	eLr	Z	17	23.7					
		M	Z		28					
	Epicentre			17	13	41.5	21.0S 168.4E 33km			USCGS
3	TU	eP?	Z	19	01	14				
	KP	eP	Z	19	01	18				
		epP	Z			33½				
	Epicentre			18	48	52.4	57.4S 26.7W 33km			USCGS
4	KP	eP	Z	09	40	59				
	TU	eP	Z	09	41	01				
		eS	Z		43	47				
	CT	eP	Z	09	41	08				
	TA	eP	Z	09	41	12				
	WN	eP	ZNE	09	41	27				
	KM	eP?	X	09	41	54				
	GP	eP	N	09	41	57				
	Epicentre			09	37	53.0	23.3S 179.0E 611km			USCGS
4	WN	eLr	Z	20	54.7					
		M	Z		56					
	Epicentre			20	34	38.7	5.1S 151.9E 33km			USCGS
5	WN	e	Z	07	27.9					
5	WN	e?	Z	13	49.2					
		e	Z		50	20				
5	WN	e(L)	Z	15	54.5					
5	ON	eP	E	04	27	58				
		eS	E		31	32				
		eLq	E		32	45				
		M	E		33					
	KP	eP	Z	04	28	13				
		eLr	Z		35½					
		M	Z		36					
	TA	eP	Z	04	28	(25)				
	TU	eP?	Z	04	28	26½				
		eP	Z			28				
		eS	Z		32	37				
	CT	eP	Z	04	28	27				
	WK	eP	Z	04	28	29				
	CB	eP	E	04	28	42				
		eS	E		33	02				
		eL	E		36.3					
		M	E		38					
	WN	eP	ZNE	04	28	43				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
		e	Z		29	32				
OCT		eS	ZNE		33	14				
		eLq	ZNE		34	43				
		M	E		36					
		M	ZN		39					
	KM	eP	X	04	28	53				
		eS	X		33	42				
		eL	X		37.2					
		M	X		39					
	GP	eP	N	04	29	02				
		e(S)	N		34	30				
		eL	N		38.6					
		M	N		40					
	RX	eP	N	04	29	15				5.8
		e	ZE			22				
		e	E		30	01				
		e	N		31	57				
		e(PcP)	E		32	38				
		eS	NE		34	02				6.4
		e	Z			56				
		e(SS)	N		35	15				
		eLq	E		35	29				
		M	E		37				130 23	6.45
		e(Lr)	Z		37	50				
		M	N		38			62 20		6.3
		M	Z		38					
							53 22			
	Epicentre			04	23	24.1	17.4S 167.7E 33km		USCGS	
6	KP	eP	Z	04	39	51				
	TU	eP	Z	04	40	05				
	CT	eP	Z	04	40	05½				
	GP	eP	N	04	40	39				
	KM	e?	X	04	41	10				
	Epicentre			04	35	02.5	17.4S 167.8E 33km		USCGS	
6	KP	eP	Z	05	50	30				
	CT	eP?	Z	05	50	34				
	TU	eP	Z	05	50	35				
	Epicentre			05	38	40.3	26.2N 126.9E 122km		USCGS	
6	ON	eP	E	07	21	36				
	KP	eP	Z	07	21	52				
	TU	eP	Z	07	22	06				
	CT	eP	Z	07	22	07				
	GP	eP	N	07	22	36				
	WN	e(S)	Z	07	26	52				
		eL	Z		29.0					
		M	Z		30					
	RX	e(S)	NE	07	28.0					
		e(Lq)	NE		29.2			3 22	2.8 20	5.5
		e	Z		32					
		eLr	Z		32.6					
	Epicentre			07	17	03.3	17.4S 167.8E 33km		USCGS	
6	ON	eP	E	08	00	59				
	KP	eP	Z	08	01	22				
	TU	eP	Z	08	01	24				
	CT	eP	Z	08	01	26				
	TA	eP?	Z	08	01	35				
	WN	eP	Z	08	01	44				
		eS	Z		06	10				
		eL	Z		08.0					
		M	Z		10					
	GP	eP	N	08	01	59				
	RX	e	E	08	05	58				

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
OCT		e	N		07	08							
		eLq	E		08	5							
		eLq	N		09	3							
		M	NE		11				6.2	23	8.6	21	
		eLr	Z		11	5							
		M	Z		14				5.8	14			5.8
	Epicentre			07	56	20.4	17.4S	167.9E	33km				USCGS
6	ON	eP	E	08	08	06							
		eLq	E		12	37							
		M	E		14								
	KP	eP	Z	08	08	22							
	TU	eP	Z	08	08	33							
	TA	eP	Z	08	08	36							
	CT	eP	Z	08	08	37							
	WN	eP	ZNE	08	08	56							
		eL	Z		15	7							
	GP	eP	N	08	09	10							
	RX	eL	E		16	2							
		eL	ZN		17	6							
	Epicentre			08	03	31.7	17.2S	168.0E	33km				USCGS
6	KP	eP	Z	08	36	40							
	TU	eP	Z	08	36	51							
	CT	eP	Z	08	36	55							
	GP	eP	N	08	37	43							
	Epicentre			08	31	50.1	17.3S	167.8E	33km				USCGS
6	ON	eP	E	11	05	47							
	KP	iP	Z	11	06	06 u							
		eScP	Z		12	53							
	WK	eP	Z	11	06	14							
	TU	eP	Z	11	06	15							
		eS	Z		10	35							
		eScP	Z		12	55							
	TA	eP	Z	11	06	15							
		eScP	Z		12	55							
	CT	iP	Z	11	06	17 u							
		eScP	Z		12	55							
	WN	iP	ZNE	11	06	31							
		e?	N		07	03							
		e	Z		08	26							
		eS	Z		11	10							
		eL	ZE		12	2							
		eScP	Z		13	00½							
		M	E		14								
		M	Z		15								
	CB	eP	E	11	06	31							
		eScP	E		13	01							
	KM	eP	X	11	06	39							
		eScP	X		13	01							
	GP	iP	N	11	06	50							
		e(PcP)	N		09	49							
		eScP	N		13	08							
	RX	eP	Z	11	07	03							
		e?	E		12	00							
		eLq	E		14	4							
		M	E		17				5.5	20			5.6
	Epicentre			11	00	52.8	13.3S	167.3E	209km				USCGS
6	KP	eP	Z	12	04	35½							
	TU	eP	Z	12	04	47							
	CT	eP	Z	12	04	53							
	GP	eP	N	12	05	33							
	WN	e(Lq)	Z	12	10	1							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
		eLr	ZE		12	0							
OCT		M	ZE		13								
	RX	eL	N	12	10	6							
		eL	E		12	3							
		M	E		13						3.2	24	
	Epicentre			11	59	42.3	17.4S	167.8E	17km				USCGS
6	ON	eP	E	18	05	36							
	KP	eP	Z	18	05	53½ d							
	TU	eP	Z	18	06	07							
	CT	eP	Z	18	06	08							
	WN	eP?	Z	18	06	19							
		e	Z		11	7							
		eLr	Z		13	1							
		M	Z		15								
	GP	eP	N	18	06	51							
	RX	eL	N	18	12	2							
		eL	E		13	9							
		M	E		15						3.9	22	5.5
		M	N		16						2.2	18	
	Epicentre			18	01	05.4	17.6S	168.0E	33km				USCGS
6	ON	eP	E	23	35	51							
		eS	E		39	37							
		eL	E		40	45							
		M	E		42								
	KP	eP	Z	23	36	14							
	TA	eP	Z	23	36	(26)							
	CT	eP	Z	23	36	26							
	TU	eP	Z	23	36	27							
		eS	Z		40	24							
	WK	eP	Z	23	36	30							
	WN	eP	ZNE	23	36	43							
		e	N		37	20							
		e(PP)	Z			34							
		e	Z		40	36							
		e	N			50							
		eS	E		41	02							
		e	N			14							
		e	Z			27							
		e(Lq)	E		42	0							
		eLr	ZNE		43	5							
		M	ZNE		44								
	CB	eP	E	23	36	43							
		eS	E		40	56							
	KM	eP	X	23	36	52							
	GP	eP	N	23	37	01							
	RX	eP	Z	23	37	15							
		eLq	NE		42	0							
		eLr	Z		45	5							
		M	NE		46						15	22	
		M	Z		46						25	21	6.1
	Epicentre			23	31	27.7	17.5S	167.6E	42km				USCGS
7	KP	eP	Z	00	51	45							
	RX	eL	N	00	59	5							
		eL	E	01	01	5							
		M	NE		03								
	WN	eL	ZNE	01	01	2					1.9	24	
		M	ZNE		02						3.5	21	5.5
	Epicentre			00	46	55.4	17.7S	167.8E	33km				USCGS
7	KP	eP	Z	00	53	50							
		e	Z			54							
		e	Z		54	02							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
OCT		e(S)	Z		55	53								
	CT	eP	Z	00	54	06								
		e(S)	Z		56	10								
	GP	eP?	N	00	54	38								
7	KP	eP	Z	05	52	24								
	TU	eP	Z	05	52	38								
	Epicentre			05	47	33.0	17.5S		168.0E		17km		USCGS	
7	TU	eP	Z	16	12	38								
		e	Z		17	23								
	TA	eP	Z	16	12	40								
	KP	eP	Z	16	12	42								
	Epicentre			16	00	20.2	57.8S		25.5W		33km		USCGS	
7	KP	eP	Z	16	52	08								
	CT	eP?	Z	16	52	11								
	TU	eP	Z	16	52	21								
	WN	eL	Z	16	59	.1								
		M	Z	17	02									
	RX	eLq	E	16	59	.5								
		eLr	N	17	02	.8								
		M	NE		05				1.25	15	1.7	13		
	Epicentre			16	47	22.7	17.7S		167.5E		33km		USCGS	5.3
7	TU	eP	Z	16	57	18								
	Epicentre			16	52	19.4	17.9S		167.4E		39km		USCGS	
8	SU	eL	N	13	24									
	WN	eL	Z	13	32	.6								
		M	Z		34									
	RX	eL	E	13	33	.5								
		eL	N		36									
		M	N		38				2.5	13				
	Epicentre			13	20	32.7	17.8S		167.8E		33km		USCGS	
8	SU	eP	N	22	08	15								
		e(PP)	N		10	45								
		e(PPP)	N		12	30								
		e	N		16	07								
		eS	N		17	30								
		e	N		21	20								
		eL	N		30									
		M	N		30									
	KP	eP	Z	22	08	31								
		ePP	Z		11	11								
	CT	eP	Z	22	08	35								
	TU	eP	Z	22	08	37								
	WN	eP	Z	22	08	38								
		e	Z		18	12								
		eS	Z			50								
		eSP	Z		19	46								
		eSS	Z		24	25								
		eLq	Z		31	28								
		eLr	Z		35	.0								
		M	Z		35									
	TA	eP	Z	22	08	41½								
	RX	e(S)	E	22	18	51								
		e	N		19	04								
		e(SS)	NE		24	34								
		e(Lq)	NE		30	.8			5.7	22	7.6	28		
	Epicentre			21	56	22.2	24.3N		121.7E		29km		USCGS	6 PAS
9	SU	e(S)	N	03	18	.4								
		eL	N		19	.8								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te		Mag
	M		N		22									
OCT		eP	Z	03	18	35								
	KP	eP	E	03	27	.3								
	RX	eL	N		31	.0								
		eL	Z	03	27	40								
	WN	eL	Z		29									
		M	Z		03									
	Epicentre			03	13	44.8	17.4S		167.6E		33km		USCGS	
9	SU	e?	N	20	22	15								
		e	N		23	04								
		eS	N		26	32								
		eL	N		28	.7								
		M	N		30									
	KP	eP	X	20	22	33								
	CT	eP	Z	20	22	43								
	TU	eP	Z	20	22	46								
	GP	eP	N	20	23	01								
	RX	e	E	20	24	.7								
		e	ZN		25	08								
		eS	ZNE		29	46								6.3
		eLq	NE		35	.3								
		eLr	ZNE		36	.5								
		M	ZNE		40		12	21	26	18	26	18		6.4
	WN	eS	ZE	20	29	28 uw								
		e	E		30	51								
		e	Z		31	50								
		e	ZE		32	56								
		eLq	ZE		34	.0								
		eLr	Z		35	.7								
		M	Z		36									
	Epicentre			20	14	38.3	3.2S		148.2E		33km		USCGS	6¼ PAS
9	KP	eP	Z	21	24	10								
	Epicentre			21	19	19.0	17.6S		167.6E		19km		USCGS	
10	ON	eP	E	16	27	36								4.97
	TU	eP	Z	16	27	37								
		eS	Z		28	36								
	KP	eP	Z	16	27	41								
	CT	eP	Z	16	27	50								
		e(S)	Z		29	02								
	WN	eP	ZNE	16	28	14								5.34
		eS	ZNE		29	39								
	GP	eP	N	16	28	53								5.16
		e	N		30	40								
		eS	N			45								
	CB	eS	E	16	29	56								5.10
	KM	eS	X	16	30	36								5.31
	Epicentre			16	26	22	34.6S		179.8W		200km		NZ(D)	5.2 NZ
							Charters Towers reading used to determine epicentre.							
10	SU	eL	N	21	56	23								
	TU	eP	Z	21	57	55								
	KP	eP	Z	21	57	57								
	WN	eP?	Z	21	58	14								
		e(P)	Z			28								
		eL	ZE	22	05	.2								
		eL	N		07	.6								
		M	ZNE		07									
	GP	eP	N	21	58	56								
	RX	eL	E	22	08									
		eL	N		09									
		eL	Z		10									
		M	NE		10				3.8	22	3.1	23		5.6
		M	Z		12		5.8	16						

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
OCT		Epicentre		21	52	36.8	15.1S 173.3W 33km			USCGS	
12	ON	eP	E	01	46	37					
	KP	eP	Z	01	46	37					
	CT	eP	Z	01	46	45					4.9B
		eS	Z		48	15					
	WN	eS	NE	01	48	49					
		eL	ZNE		50						5.30
		M	Z		51						
	CB	eS	E	01	49	10					
	GP	eS	N	01	49	54					5.30
	SU	eL	N	01	52						5.65
	RX	eL	NE	01	53						
		eL	Z		54						
		M	NE		54						
	Epicentre			01	44	49.4	33.1S 178.2W 37km NZ(D)				5.3 NZ
							Canberra, Charters Towers readings used to determine epicentre				
12	CT	eP	Z	20	42	48					
		e	Z		44	22					
	WN	eS	NE	20	45	00					
	CB	eS	E	20	45	13					
	KM	eS	X	20	45	48					
	GP	eS	N	20	46	02					
	Epicentre			20	38	58.0	27.2S 178.0W 152km			USCGS	
13	KP	eP	Z	07	38	44					
	TU	eP	Z	07	38	58					
	CT	eP	Z	07	38	58					
	SU	e(L)	N	07	42	50					
	WN	eL	Z	07	48	.2					
	Epicentre			07	33	48.8	16.7S 167.9E 33km			USCGS	
13	KP	iP	Z	08	29	00.0 d					
		e(S)	Z			19					
	WK	eP	Z	08	29	01					
	TU	eP	Z	08	29	04 d					
		e	Z			26					
	CT	iP	Z	08	29	04.8 u					
	ON	eP	E	08	29	20					4.04
		e	E			37					
		eS	E			55					
		e	E		30	21					
	WN	eP	NE	08	29	25					5.04
		eS	NE		30	05					
	CB	eP	E	08	29	32					5.30
		eS	E		30	19					
	KM	eP	X	08	29	58					5.75
		eS	X		30	56					
	GP	eP	N	08	29	59					6.2
		eS	N		31	07					
	RX	eP	Z	08	30	36					
		eS	Z		32	08					
	Epicentre			08	28	35	38.3S 175.9E 185km NZ(C)				5.4 NZ
							Felt: Te Uri, Kotemaori MM3				
13	TU	eP	Z	11	31	03					
	CT	eP	Z	11	31	03					
	Epicentre			11	25	58.9	17.4S 167.5E 33km			USCGS	
13	SU	eS	N	18	53	3					
	CT	eP	Z	18	53	32					
	TU	eP	Z	18	53	36					
	GP	eP	N	18	54	06					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
OCT	WN	eS	Z	18	58	28					
		eL	Z	19	01	.8					
		M	Z		04						
	RX	e?	NE	19	00	28					
		eL	E		02	.0					
		eL	N		03	.1					
		eL	Z		04	.3					
		M	NE		05			6.0 22	5.2 21		5.8
	Epicentre			18	47	44.5	12.6S 166.6E 33km			USCGS	
14	ON	eP	E	00	31	28					
	TU	eP	Z	00	31	30					
		eS	Z		32	41					
	KP	eP	Z	00	31	33					
	CT	eP	Z	00	31	43					
		e	Z		33	39					
	TA	eP	Z	00	31	53					
		e	Z		33	54					
	WN	eP	NE	00	32	09					
		eS	NE		33	48					
		eL	Z		35	.4					
		M	Z		35						
	CB	e	E	00	33	37					
		eS	E		34	09					
	GP	eP	N	00	32	45					
		eS	N		34	56					
	KM	eS	X	00	34	47					
	RX	eL	E	00	37	.8					
		eL	N		38	.5					
		M	NE		39						
	Epicentre			00	29	58	33.8S 178.7W N NZ(D)				5.7 NZ
14	SU	eS	N	05	08	07					
	KP	eP	Z	05	08	17					
	CT	eP	Z	05	08	30					
	TU	eP	Z	05	08	31					
	RX	eL	NE	05	16						
	Epicentre			05	03	25.8	17.5S 167.7E 33km			USCGS	
14	TU	eP	Z	09	33	20					
		eS	Z		34	22					
	KP	eP	Z	09	33	26					
		e	Z		34	34					
	ON	eP	E	09	33	31					4.50
	CT	eP	Z	09	33	38					
		e(S)	Z		34	49					
	TA	e?	Z	09	33	(54)					
	WN	eS	NE	09	35	27					5.20
	CB	e?	E	09	35	49					
	GP	eS	N	09	36	37					5.42
	Epicentre			09	32	00	35S 178W N NZ(D)				5.1 NZ
15	KP	eP	Z	00	29	11					
	TU	eP?	Z	00	29	26					
	WN	eL	Z	00	33	.7					
		M	Z		34						
	RX	eL	E	00	35						
	Epicentre			00	25	21.3	22.1S 172.1E 40km			USCGS	
15	KP	eP	Z	08	13	17					
	CT	eP?	Z	08	13	(28)					
	Epicentre			08	08	38.0	16.3S 173.5W 50km			USCGS	
15	KP	e(P)	Z	08	26	29					
		e	Z			42					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
OCT	TU	e(P)	Z	08	26	29					
	CT	e(P)	Z	08	26	(37)					
15	TU	eP	Z	14	01	23					
		eS	Z		02	41					
		e?	Z		03	27					
	ON	eP	E	14	01	30					
	KP	eP	Z	14	01	37					4.92
	CT	e	Z	14	01	49					
		e	Z		02	03					
		e	Z		03	08					
	TA	eP	Z	14	02	(11)					
	WN	eS	NE	14	03	47					
		eL	ZNE		05						
		M	Z		06						
	CB	eS	E	14	04	07					
	KM	eS	X	14	04	48					5.25
	GP	eS	N	14	04	53					5.35
	RX	eL	NE	14	08						5.60
		M	NE		10						
	Epicentre			13	59	50	33S 178½W 100km NZ(D)				5.3 NZ
15	TU	eP	Z	17	32	58					
		e	Z		35	04					
	WN	eS	NE	17	36	09					
		eL	Z		38						
	Epicentre			17	30	20.8	28.8S 176.4W 40km			USCGS	
15	KP	eP	Z	20	21	59					
	TU	eP	Z	20	22	13					
	CT	eP	Z	20	22	(14)					
	Epicentre			20	17	16.4	17.7S 168.3E 65km			USCGS	
15	RX	eLq	E	21	34	.8					
		eLq	N		35	.7					
		eLr	Z		37						
		M	NE		37			2.8 9	6.4 11		5.5
	WN	eL	Z	21	37						
	Epicentre			21	26	20.7	65.0S 178.2E 33km			USCGS	
15	KM	iP	X	23	36	58.2	ne				
		i	X		37	01					
	RX	eP	ZNE	23	37	03.7					
		ePg	ZNE			07					
		S	ZNE			29	e				
	GP	eP	N	23	37	05.3					
		iPg	N			10.2					
		iSn	N			31					
		S	N			53½					
	CB	iP	E	23	37	22.1	e				6.1
	WN	eP	ZNE	23	37	36.1					
		e	ZNE			38					
		S	ZNE		38	27					6.0
	TA	iP	Z	23	37	54.5	u				
		S?	Z		39	03					
	CT	eP	Z	23	38	00.9					
		iP	Z			05					
	WK	eP	Z	23	38	11.(0)					
	KP	iP	Z	23	38	14.1	u				
	TU	eP	Z	23	38	(17.0)					
		S?	Z		39	45					
	AK	eP	N	23	38	21					
		S	N		39	(57)					6.2
	ON	eP	E	23	38	34.1					
		eS	E		40	17					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
OCT	Epicentre			23	36	31.1	43.4S 169.6E S NZ(B)				6.1 NZ
							Felt: Most parts of the South Island. Max. MM6 at Mt Cook and Fox Glacier.				
16	KP	eP	Z	01	13	40					
	TU	eP	Z	01	13	54					
	CT	eP	Z	01	13	56					
	Epicentre			01	08	47.1	17.0S 167.5E 33km			USCGS	
16	KP	eP	Z	02	51	40					
	CT	eP?	Z	02	51	55					
	Epicentre			02	46	44.6	17.0S 167.7E 19km			USCGS	
16	KP	eP	Z	02	54	30					
	CT	eP	Z	02	54	44					
	WN	eL	Z	03	01	.5					
		M	Z		05						
	RX	eL	NE	03	03						
		eL	Z		06						
	Epicentre			02	49	37.0	17.1S 167.7E 33km			USCGS	
16	KP	eP	Z	05	26	20					
	CT	eP	Z	05	26	34					
	WN	eL	Z	05	33	.5					
		M	Z		36						
	RX	eL	NE	05	37						
		eL	Z		39						
	Epicentre			05	21	26.5	17.1S 167.6E 33km			USCGS	
16	KP	eP	Z	09	54	58					
	CT	eP	Z	09	55	12					
	WN	eP	NE	09	55	27					
	Epicentre			09	50	47.3	18.9S 169.4E 261km			USCGS	
16	KP	eP	Z	18	15						
	WN	eLq	E	18	41						
		eLr	ZNE		45						
		M	ZNE		50						
	RX	eL	NE		49						
	Epicentre			18	02	32.9	51.6N 175.8W 27km			USCGS	
17	TU	eP	Z	03	19	21					
		eS	Z		20	04					
	KP	eP	Z	03	19	22					
	CT	eP	Z	03	19	33					
		e	Z		20	27					
	TA	eP	Z	03	19	42					
	WN	eS	NE	03	21	08					4.68
	CB	eS	E	03	21	27					4.85
	KM	e?	X	03	22	05					5.05
	GP	e	N	03	22	13					5.40
	Epicentre			03	18	24	36S 179E 280km NZ(D)				5.0 NZ
18	KP	eP	Z	04	16	06					
	WN	eP?	Z	04	16	(06)					
		eL	Z		35						
	TU	eP	Z	04	16	15					
	CT	eP	Z	04	16	(20)					
	RX	eL	E	04	36						
	Epicentre			04	06	00.4	8.9S 117.0E 33km			USCGS	
18	KP	eP	Z	08	53	27					
	TU	eP	Z	08	53	31					
	CT	eP	Z	08	53	31					
	TA	e(P)	Z	08	53	(32)					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
OCT	WN	eP	Z	08	53	39				
	Epicentre			08	40	35.5	46.5N 149.6E 140km		USCGS	
18	WN	eP	Z	11	35	26				
	Epicentre			11	22	40.2	46.5N 149.5E 128km		USCGS	
19	TU	eP	Z	04	25	39				
	CT	eP	Z	04	25	41				
	KP	eP	Z	04	25	45				
	Epicentre			04	13	03.6	31.0S 69.4W 120km		USCGS	
19	TU	ePn	Z	08	33	30				
		eSn	Z		34	45				
	ON	ePn	E	08	33	33				
		e(P*)	E			50				
	CT	ePn	Z	08	33	41				
		e(Pg)	Z		34	21				
	KP	e(Pg)	Z	08	34	00				
	WN	eSn	NE	08	35	51				
	GP	eSn	N	08	37	03				
	Epicentre			08	31	53	34S 178W S NZ(D) Charters Towers reading used to determine epicentre.			5 NZ
19	ON	iP	E	17	15	34.7				
		e	E		16	41				
	TU	eP	Z	17	15	41				
		e	Z		16	40				
		eS	Z			50				
	KP	eP	Z	17	15	43				
	WK	eP	Z	17	15	47				
		e	Z		17	09				
	CT	eP	Z	17	15	53				
		e	Z		17	17				
	TA	eP	Z	17	16	02				
		e	Z		17	34				
	WN	eP	NE	17	16	17				
		eS	NE		17	53				
	CB	eP	E	17	16	27				
		eS	E		18	09				
	KM	eP	X	17	16	48				
		eS	X		18	47				
	GP	eP	N	17	16	53				
		e	N		18	57				
	Epicentre			17	14	15	33.5S 180.0 300km NZ(D) Charters Towers and Nurmijarvi readings used to determine epicentre.			6.3 NZ
19	KP	eP	Z	23	51	29				
	CT	eP	Z	23	51	35				
	TU	eP	Z	23	51	39				
	WN	eLr	Z	24	10					
	Epicentre			23	42	34.9	5.7S 130.3E 177km		USCGS	
20	KP	e	Z	03	04	28				
	TU	e?	Z	03	04	42				
	CT	eP	Z	03	04	43				
		e	Z			55				
20	TA	eP	Z	05	39	21				
	CB	eP	E	05	39	31				
	KM	eP	X	05	39	34				
	KP	eP	Z	05	39	34				
	CT	eP	Z	05	39	38				
	WN	eP	ZNE	05	39	39				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
		eL	Z	06	02					
OCT	TU	eP	Z	05	39	44½				
	Epicentre			05	30	42.2	6.7S 130.1E 167km		USCGS	
20	TU	eP	Z	21	34	17				
		eS	Z		35	30				
	ON	eP	E	21	34	22				
	KP	e	Z	21	34	(22)				
	CT	eP	Z	21	34	32				
		e	Z		36	04				
	TA	e	Z	21	34	(55)				
	WN	eS	NE	21	36	35				
	GP	eS	N	21	37	40				
	Epicentre			21	32	42	34S 178W N NZ(D)			5.0 NZ
22	CT	eP	Z	04	42	52				
	TU	eP	Z	04	42	55				
	GP	eP	N	04	43	15				
	WN	eS	Z	04	49	42				
		eSS	ZNE		53					
		e(Lr)	Z		56					
		eLq	ZNE	05	01					
	Epicentre			04	34	38.9	3.4S 145.3E 36km		USCGS	
22	TU	eP	Z	05	20	51				
		eS	Z		21	27				
	KP	eP	Z	05	21	09				
		e	Z			25				
	CT	eP	Z	05	21	11				
		e	Z		22	01				
	TA	eP	Z	05	21	25				
		eS	Z		22	21				
	WN	eP	NE	05	21	25				
		eS	NE		22	26				
	GP	e	N	05	22	21				
		eS	N		23	28				
	CB	eS	E	05	22	58				
	KM	eS	X	05	23	35				
	Epicentre			05	20	06	38.8S 179.1W N NZ(C)			5.1 NZ
22	WN	eL	ZE	10	01	18				
	Epicentre			09	06	10.1	73.4N 59.9E 0km		USCGS	5-5¼ PAL
22	WN	eSKS	ZNE	15	47	08				
		eS	ZN		48	50				
		eSS	N		54.2					
		e	N		57.5					
		e(Lq)	E	16	01.2					
		eLr	ZNE		06					
		M	ZNE		09					
	RX	eL	E	16	12					
	Epicentre			15	23	32.9	49.8N 155.8E 19km		USCGS	
23	KP	eP	Z	00	31	23				
	TU	eP	Z	00	31	26				
	TA	eP	Z	00	31	39				
	WN	eL	Z	00	39					
		eL	E		40					
		eL	N		41					
	Epicentre			00	26	00.3	15.2S 173.0W 33km		USCGS	
23	KP	eP	Z	10	07	52				
	TU	eP	Z	10	08	00				
	Epicentre			09	57	41.0	18.4N 145.6E 150km		USCGS	

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
OCT	TU	eP	Z	00	42	19				
		e	Z			39				
		e	Z			52				
	KP	iP	Z	00	42	22.7 u				
		eS	Z			49				
	WK	eP	Z	00	42	28				
	CT	iP	Z	00	42	33.8				
		e	Z		43	18				
	ON	eP	E	00	42	38				
		eS	E		43	16				
	TA	eP	Z	00	42	45				
	WN	eP	NE	00	42	55				
		eS	NE		43	51				
	CB	e?	E	00	43	19				
		e	E			23				
		eS	E		44	16				
	GP	eP	N	00	43	35				
		eS	N		44	57				
	KM	e?	X	00	43	57				
		eS	X		44	54				
	Epicentre			00	41	48	37.0S 178.0E 90km NZ(D) Charters Towers reading used to determine epicentre.			5.1 NZ
24	KP	eP	Z	05	08	14				
	WN	eL	Z	05	17					
	Epicentre			05	03	21.4	17.3S 167.6E 33km		USCGS	
25	KP	eP	Z	03	43	37				
	TU	eP	Z	03	43	51				
	AK	eS	N	03	47	19				
		eL	N			50.5				
	CT	eP	Z	03	43	52				
	WN	eS	ZE	03	48	27				
		eL	ZNE			51				
		M	ZNE			53				
	RX	eL	E	03	52					
		eL	N			54				
		M	E			55				
		eL	Z			56				
		M	N			57				
	Epicentre			03	38	48.9	17.8S 167.7E 33km		USCGS	
25	CB	eP	E	09	44	17				
	KP	eP	Z	09	44	18				
		e(ScP)	Z		48	16				
	TA	eP	Z	09	44	(19)				
	CT	eP	Z	09	44	23				
	WN	eP	ZNE	09	44	25				
		e?	Z		50	23				
		eS	Z		52.6					
		e(SSS)	Z	10	00.0					
		eLq	E		02					
		eLr	Z		04					
		M	ZE		05					
	GP	eP	N	09	44	26				
	KM	e?	X	09	44	27				
	TU	eP	Z	09	44	28				
	RX	eS	E	09	53					
		eL	NE		59					
		eL	Z	10	15					
	Epicentre			09	34	14.6	3.0N 126.7E 33km		USCGS	
25	RX	eP	ZNE	20	10	23 une				6.2
		eS	E		13	50				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
		eL	ZNE			14.8				
OCT		M	ZNE			15	57 22	54 22	34 20	6.1
	GP	eP	N	20	10	52				
		eS	N			14 56				
		eL	N			19.3				
	KM	eP	X	20	11	00				
		eS	X			15 08				
		eL	X			20.0				
	CB	eP	E	20	11	16				
		eS	E			15 42				
		eL	E			19.3				
	WN	eP	ZNE	20	11	20				
		eS	ZNE			15 40				
		eL	ZNE			17				
		M	ZNE			19				
	CT	eP	E	20	11	39				
	TU	eP	Z	20	11	47				
	KP	eP	Z	20	12	04				
	AK	eP	N	20	12	30				
		eS	N			17 35				
		eL	N			19.7				
		M	N			21				
	SU	eS	N	20		21				
		eL	N			28				
	Epicentre			20	06	10.0	61.4S 154.9E 33km		USCGS	
25	KP	eP	Z	21	21	32				
	CT	eP	Z	21	21	52				
26	SU	eP	N	07		22				
		eS	N			25				
		eL	N			26				
	ON	eP	E	07	24	50				
	KP	eP	Z	07	25	14				
	TU	eP	Z	07	25	27				
	CT	eP	Z	07	25	31				
	TA	eP	Z	07	25	(33)				
	WN	eP	ZN	07	25	42				
		e	ZNE			57				
		eS	ZNE		30	09				
		e(SS)	E		31	45				
		eL	ZNE			32				
		M	E			33				
		M	ZN			34				
	RX	eL	NE	07	31					
		eL	Z			36				
		M	NE			37		12.2 16	15 16	5.9
		M	Z			39	19.5 15			
	Epicentre			07	20	25.8	17.7S 167.5E 33km		USCGS	
26	CT	eP	Z	16	11	03				
	RX	eL	E	16	37					
		eL	N			40				
	WN	eL	Z	16	37					
		M	Z			45				
	Epicentre			15	58	34.8	55.5S 26.5W 33km		USCGS	
26	TU	e(P)	Z	20	33	09				
	Epicentre			20	22	58.6	0.1N 124.1E 112km		USCGS	
27	WN	eL	Z	06	19					
27	SU	e(P)	N	22	10	50				
		eL	N			12				
	KP	e?	Z	22	15	40				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
OCT	TA	e?	Z	22	16	00				
	WN	e(L)	ZNE	22	23					
		M	ZNE		27					
	RX	eL	E	22	28					
		eL	N		30					
27	TU	eP	Z	23	31	22				
		e(S)	Z		32	29				
	KP	eP	Z	23	31	27				
	CT	eP	Z	23	31	41				
		e	Z		32	54				
	WN	eS	NE	23	33	39				
	GP	eS	N	23	34	47				
	Epicentre			23	29	56	34½S 178W	N NZ(D)		5.4 M
28	ON	eP	E	14	02	58				
	TU	eP	Z	14	03	01				
		eS	Z		04	26				
	CT	eP	Z	14	03	16				
		e	Z		04	54				
	TA	?	Z	14	03	30				
	WN	eS	NE	14	05	35				
	GP	eS	N	14	06	39				
	Epicentre			14	01	11.2	32.3S 178.8W	33km		USCGS
28	TA	eP	Z	15	10	29				
	CT	eP	Z	15	10	29				
		e(PcP)	Z		11	11				
		e	Z		17	11				
	TU	eP	Z	15	10	35				
		e(PcP)	Z		11	07				
		e	Z		16	51				
	WN	e(S)	ZNE	15	17					
	GP	eS	N	15	18	48				
	Epicentre			15	00	17.0	0.1N 123.6E	61km		USCGS
29	WN	e?	Z	16	26	26				
		eL	Z		35.5					
		M	Z		36					
29	WN	eL	Z	21	30.6					
	RX	eL	E	21	32					
		eL	N		33					
		M	N		35			2.1 18		
		M	E		38				2.8 17	
	Epicentre			21	01	32	23.3S 111.5W	33km		USCGS
30	CT	eP	Z	01	59	17				
	KP	eP	Z	01	59	25				
		e(PP)	Z	02	02	49				
	TU	eP	Z	01	59	31				
		e?	Z	02	03	29				
	RX	eS	N	02	08	54				
		e(SS)	N		13	28				
		e	E		19	24				
		e	N		22	10				
		e(Lq)	E		23	50				
		e(Lq)	N		26					
		eLr	Z		28.5					
		M	ZN		30			6.2 18	7.5 22	
		M	E		32				3.4 17	
	WN	eS	Z	02	09	40				
		e(SS)	Z		14	54				
		eSSS	Z		19	08				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
		e(Lq)	Z		27.3					
OCT		eLr	Z		30					
		M	Z		36					
	Epicentre			01	46	32.7	54.2S 9.1E	33km		USCGS
30	WN	e(Lr)	Z	09	20					
	RX	e(Lr)	E	09	24					
	Epicentre			08	31	51.8	12.5N 88.0W	80km		USCGS
30	CT	eP	Z	15	25	01				
		eS	Z		28	45				
	TA	eP	Z	15	25	09				
	GP	e(P)	N	15	26	01				
		eS	N		30	15				
	WN	eL	Z	15	31					
	RX	eL	E	15	34					
		eL	N		37					
	Epicentre			15	20.5		19S 177W			BCIS
30	CT	eP	Z	15	48	02				
	GP	eP?	N	15	48	17				
	WN	ePP	Z	15	50	08				
		eL	E	15	59					
		eL	Z	16	00					
		eL	N		06					
		M	ZE		07					
	RX	eL	E	16	05					
		eL	N		06					
	Epicentre			15	40.3		6½S 149E			BCIS
31	WN	e(PS)	ZE	11	59	58				
		eSS	ZE	12	05	42				
		eLq	N		17					
		eLr	ZE		20					
		M	ZE		21					
	RX	eSS	E	12	06	36				
		eLr	E		22					
	Epicentre			11	32	29.0	5.6N 82.6W	33km		USCGS 6½ PAS
31	KP	eP	Z	23	10	08				
	TU	eP	Z	23	10	09				
	TA	eP	Z	23	10	24				
	WN	eP	ZNE	23	10	41				
		e	ZNE		51					
		eS	E		14	30				
		eL	Z		17					
NOV 1	SU	e	N	09	49	36				
	ON	eP	E	09	50	07				
	KP	eP	Z	09	50	24				
	TU	e(P)	Z	09	50	26				
		eS	Z		52	58				
	CT	eP	Z	09	50	32				
		eS?	Z		53	18				
	TA	eP	Z	09	50	38				
		e	Z		54	38				
	WN	eP	ZNE	09	50	53				
		eS	ZNE		53	51				
	KM	e(P)	X	09	51	14				
		eS	X		54	26				
	CB	eS	E	09	53	57				
	TO	e	Y	09	54	36				
	GP	eS	N	09	54	41				
	Epicentre			09	47	15.6	23.7S 179.6W	525km		USCGS

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
NOV 1	WN	eP?	Z	13	28	02							
	SU	e(L)	N	13	29								
	Epicentre			13	22	47.1	17.5S		168.5E	33km		USCGS	
1	SU	e(S)	N	13	55	47							
		e(L)	N		57								
	WN	eP	Z	13	56	53							
		eL	Z	14	03								
		M	ZNE		05								
	RX	M	E	14	08								
	Epicentre			13	51	37.0	17.6S		168.5E	21km	1.3	17 USCGS	5.2
1	SU	e(P)	N	15	42	10							
		e	N		43	13							
		e	N		48	25							
		eL	N		57								
	CT	e(P)	Z	15	43	05							
	TU	eP	Z	15	43	07							
		e	Z		44	48							
	WN	ePP	Z	15	46	32							
		eS	ZNE		51	05							
		eSS	ZN		56								
		eSSS	ZN		57	36							
		eLr	Z	16	01								
		M	ZE		05								
	RX	eS	N	15	51	06				2.6	24	4 22	
		e(SS)	E		55								5.9
		eSSS	N		57.5								
		M	E	16	06							4 20	
		M	ZN		09					4	16		5.9
	Epicentre			15	33	22.6	1.9N		133.0E	56km		USCGS	
1	TU	eP?	Z	16	02	32							
	Epicentre			15	52	43.2	1.7N		132.9E	58km		USCGS	
1	CT	eP	Z	18	02	05							
	TU	eP	Z	18	02	07							
	SU	e	N	18	07								
	RX	eS	NE	18	10	04				1.4	25	3 24	
		eSSS	N		16								5.7
		M	E		25							3 20	
	Epicentre			17	52	20.2	1.9N		132.8E	36km		USCGS	5.8
2	SU	e	N	06	56								
	CT	e?	Z	07	00	21							
	WN	eL	ZNE	07	05								
		M	ZNE		10								
	RX	eL	E	07	08								
		eL	ZN		10								
		M	E		11								
		M	ZN		13								
	Epicentre			06	54	19.9	17.7S		167.5E	32km		USCGS	
2	TA	eP	Z	14	56	33							
	WN	eP	Z	14	56	35							
		e	Z		48								
		eL	Z	15	14								
		M	Z		21								
	TU	eP	Z	14	56	44							
		e	Z		55								
	CT	eP	Z	14	56	53							
	RX	eSSS	N	15	09	27							
		eLr	ZNE		14								
		M	N		15					3	20		
		M	ZE		21		5	18			7	19	6.1

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
NOV	Epicentre			14	46	39.2	10.0S		117.8E	33km		USCGS	
2	TU	eP	Z	15	22	42							
		e	Z			55							
	WN	M	Z	15	47								
	Epicentre			15	12	37.2	10.2S		117.6E	33km		USCGS	
2	KP	P	Z	18	48	09							
	CT	P	Z	18	48	09½							
		e	Z			25							
		S	Z			36							
	TO	eP	Y	18	48	10							
		S	Y			36							
	TA	eP	Z	18	48	11							
		e	Z			14							
		e(S)	Z			40							
		e	Z			47							
		e	Z			52							
	TU	P	Z	18	48	13							
		e	Z			31							
		i	Z			39							
		e(S)	Z			43							
	WN	eP	NE	18	48	24							
		S	NE		49	03							
	ON	eP	E	18	48	25							
		eS	E		49	06							
	CB	eP	E	18	48	29							
		eS	E		49	12							
	KM	eP	X	18	48	49							
		eS	X		49	46							
	GP	eP	N	18	48	55							
		eS	N		49	58							
	Epicentre			18	47	34	38.5S		175.4E	260km	NZ(B)		5.0 NZ
3	CT	iP	Z	01	07	11 d							
		epP	Z			22							
	TU	eP	Z	01	07	13							
		e(pP)	Z			23							
	WN	eL	Z	01	18								
	RX	eL	NE	01	20								
		M	E			23					1	17	5.3
	Epicentre			01	00	24.9	7.9S		158.3E	86km		USCGS	
3	TU	e	Z	03	22	52							
	Epicentre			03	12	37.8	10.3S		117.8E	33km		USCGS	
3	TU	eP	Z	05	10	34							
		e(pP)	Z			44							
	Epicentre			05	00	29.7	10.3S		117.8E	33km		USCGS	
4	WN	P	Z	23	05	12 d							
		ePPP	Z		08	07							
		e(S)	Z		14	54							
		eL	Z		27								
		M	Z		29								
	CT	eP	Z	23	05	18							
	KP	P	Z	23	05	26							
	RX	e(S)	NE	23	15	12							
		M	NE		30						3	20	
	Epicentre			22	53	34.2	43.2S		75.6W	33km	2	19 USCGS	6.0 5½-6
5	TU	P	Z	00	13	04 d							
		eP•	Z			10							
		e(S•)	Z			35							
	WK	e(P•)	Z	00	13	19							

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
NOV		e(S)	Z			40				
	KP	eP	Z	00	13	20 u				
		e(P*)	Z			34				
		e	Z			42				
	CT	eP	Z	00	13	22				
		e	Z			38				
		e	Z			44				
	TO	eP*	Y	00	13	33				
	TA	eP	Z	00	13	35				
		e(S)	Z		14	31				
	ON	eP?	E	00	13	36				
		e(P*)	E		13	51				
		e(Pg)	E		14	07				
		e	E			13				
	WN	eP	ZE	00	13	41				
		e	E		14	31				
		eS	ZNE			35				
		eL	Z		15					
		e	N		16	03				
	CB	e(P*)	E	00	14	10				
		e(Pg)	E			21				
		eS	E		15	04				
		e(S*)	E			31				
	GP	e(PP)	N	00	14	25				
		e	N		15	38				
		eS	N			40				
		e	N		16	03				
	AK	eL	N	00	14½					
	KM	e(S)	X	00	15	41				
		e	X		16	02				
	RX	eL	NE	00	18					
	Epicentre			00	12	30		37.9S 179.6E S NZ(D)		5.2 M
5	WN	eL	Z	21	17					
		M	Z		19					
	RX	eL	E	21	18					
		M	E		20				0.5 18	
	Epicentre			20	54	41		49.8S 114.9W 33km	USCGS	5.2
6	WN	eL	Z	04	26					
		M	Z		29					
	Epicentre			03	36	46.9		45.8N 122.5W 44km	USCGS	4½-5½
6	KP	P	Z	21	34	13 d				
	CT	P	Z	21	34	21				
	TU	eP	Z	21	34	25				
	WN	P	Z	21	34	31				
	Epicentre			21	26	47.8		4.9S 152.7E 68km	USCGS	
7	KP	eP	Z	06	25	29				
	TA	eP	Z	06	25	44				
	Epicentre			06	22	16.0		23.2S 179.9W 534km	USCGS	
7	ON	eP	E	16	12	39				
	TA	eP	Z	16	12	39				
		epP	Z		13	25				
	GP	eP	N	16	12	44				
		epP	N		13	29				
		e	N			36				
	CB	eP?	E	16	12	42				
		e?	E		13	19				
		epP	E			23				
	WN	eP	NE	16	12	47				
		epP	NE		13	28				
		eSS	Z		24					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
NOV	Epicentre			14	46	39.2		10.0S 117.8E 33km	USCGS	
2	TU	eP	Z	15	22	42				
		e	Z			55				
	WN	M	Z	15	47					
	Epicentre			15	12	37.2		10.2S 117.6E 33km	USCGS	
2	KP	P	Z	18	48	09				
	CT	P	Z	18	48	09½				
		e	Z			25				
		S	Z			36				
	TO	eP	Y	18	48	10				
		S	Y			36				
	TA	eP	Z	18	48	11				
		e	Z			14				
		e(S)	Z			40				
		e	Z			47				
		e	Z			52				
	TU	P	Z	18	48	13				
		e	Z			31				
		i	Z			39				
		e(S)	Z			43				
	WN	eP	NE	18	48	24				
		S	NE		49	03				
	ON	eP	E	18	48	25				
		eS	E		49	06				
	CB	eP	E	18	48	29				
		eS	E		49	12				
	KM	eP	X	18	48	49				
		eS	X		49	46				
	GP	eP	N	18	48	55				
		eS	N		49	58				
	Epicentre			18	47	34		38.5S 175.4E 260km NZ(B)		5.0 NZ
3	CT	iP	Z	01	07	11 d				
		epP	Z			22				
	TU	eP	Z	01	07	13				
		e(pP)	Z			23				
	WN	eL	Z	01	18					
	RX	eL	NE	01	20					
		M	E			23			1 17	
	Epicentre			01	00	24.9		7.9S 158.3E 86km	USCGS	5.3
3	TU	e	Z	03	22	52				
	Epicentre			03	12	37.8		10.3S 117.8E 33km	USCGS	
3	TU	eP	Z	05	10	34				
		e(pP)	Z			44				
	Epicentre			05	00	29.7		10.3S 117.8E 33km	USCGS	
4	WN	P	Z	23	05	12 d				
		ePPP	Z		08	07				
		e(S)	Z		14	54				
		eL	Z		27					
		M	Z		29					
	CT	eP	Z	23	05	18				
	KP	P	Z	23	05	26				
	RX	e(S)	NE	23	15	12				
		M	NE		30				3 20 2 19	6.0
	Epicentre			22	53	34.2		43.2S 75.6W 33km	USCGS	5½-6
5	TU	P	Z	00	13	04 d				
		eP*	Z			10				
		e(S*)	Z			35				
	WN	e(P*)	Z	00	13	19				

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag
NOV		e(S)	Z			40									
	KP	eP	Z	00	13	20	u								
		e(P*)	Z			34									
		e	Z			42									
	CT	eP	Z	00	13	22									
		e	Z			38									
		e	Z			44									
	TO	eP*	Y	00	13	33									
	TA	eP	Z	00	13	35									
		e(S)	Z		14	31									
	ON	eP?	E	00	13	36									
		e(P*)	E		13	51									
		e(Pg)	E		14	07									
		e	E			13									
	WN	eP	ZE	00	13	41									
		e	E		14	31									
		eS	ZNE			35									
		eL	Z		15										
		e	N		16	03									
	CB	e(P*)	E	00	14	10									
		e(Pg)	E			21									
		eS	E		15	04									
		e(S*)	E			31									
	GP	e(PP)	N	00	14	25									
		e	N		15	38									
		eS	N			40									
		e	N		16	03									
	AK	eL	N	00	14½										
	KM	e(S)	X	00	15	41									
		e	X		16	02									
	RX	eL	NE	00	18										
	Epicentre			00	12	30		37.9S	179.6E	S NZ(D)					5.2 MI
5	WN	eL	Z	21	17										
		M	Z		19										
	RX	eL	E	21	18										
		M	E		20							0.5	18		
	Epicentre			20	54	41		49.8S	114.9W	33km				USCGS	5.2
6	WN	eL	Z	04	26										
		M	Z		29										
	Epicentre			03	36	46.9		45.8N	122.5W	44km				USCGS	4¾-5¼
6	KP	P	Z	21	34	13	d								
	CT	P	Z	21	34	21									
	TU	eP	Z	21	34	25									
	WN	P	Z	21	34	31									
	Epicentre			21	26	47.8		4.9S	152.7E	68km				USCGS	
7	KP	eP	Z	06	25	29									
	TA	eP	Z	06	25	44									
	Epicentre			06	22	16.0		23.2S	179.9W	534km				USCGS	
7	ON	eP	E	16	12	39									
	TA	eP	Z	16	12	39									
		epP	Z		13	25									
	GP	eP	N	16	12	44									
		epP	N		13	29									
		e	N			36									
	CB	eP?	E	16	12	42									
		e?	E		13	19									
		epP	E			23									
	WN	eP	NE	16	12	47									
		epP	NE		13	28									
		eSS	Z		24										

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te		Mag
		e(SSS)	Z			27									
NOV	CT	eP	Z	16	12	49									
		e	Z		13	06									
		epP	Z			30									
	TU	eP	Z	16	12	55									
		epP	Z		13	37									
	RX	eS	E	16	20	10						0.5	14		5.2
		eSSS	NE		26										
	Epicentre			16	03	04.1		7.8S	119.8E	156km				USCGS	
8	WN	e(L)	Z	00	46										
	Epicentre			00	02	08.6		15.1S	75.6W	33km				USCGS	
8	RX	eSS	E	01	01	32									
		eL	ZNE		12							3	20		6.0
		L	E		15										
	WN	eL	Z	01	10										
		M	Z		10										
		M	Z		12										
	Epicentre			00	33	13.8		4.4S	105.5W	33km				USCGS	
8	SU	eL	N	07	53										
	KF	eP?	Z	07	53	07									
	CT	e?	Z	07	53	24									
	TU	e(P)	Z	07	53	26									
	AK	eL	N	07	59										
	WN	eL	Z	08	01										
		M	Z		04										
	RX	eL	E	08	01										
		eL	Z		05										
	Epicentre			07	48	44.7		20.1S	168.6E	33km				USCGS	
8	CT	eP	Z	10	08	46									
		e(pP)	Z		09	02									
	TU	P	Z	10	08	47									
	Epicentre			10	03	22.8		14.7S	167.1E	86km				USCGS	
8	ON	e(P)	E	17	19	40									
	TU	eP	Z	17	19	52									
		e	Z		20	03									
		e	Z			06									
		e	Z			13									
	CT	P	Z	17	20	01									
		e	Z		21	32									
		e(S)	Z			34									
	TA	eP	Z	17	20	10									
	WN	eP	ZNE	17	20	24									
		eS	NE		22	10									
	GP	e(P)	N	17	21	02									
		e(S)	N		23	15									
		e	N			17									
	TO	e(S)	Y	17	21	33									
	CT	eS	E	17	22	29									
	KM	eS	X	17	23	08									
	Epicentre			17	17	54.3		31.5S	180.0	71km				USCGS	
8	WN	eL	ZE	18	57										
		M	E		58										
	RX	eL	E	19	00										
9	WN	eL	Z	00	52										
9	ON	eP	E	08	29	33									
	KP	eP	Z	08	29	46	u								
	TU	eP	Z	08	29	48									

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
NOV	CT	eP	Z	08	29	(55)				
	WN	eP?	Z	08	30	13				
	GP	e(P)	N	08	30	41				
	Epicentre			08	26	10.0	20.5S 178.8W 522km		USCGS	
9	KP	e(P)	Z	09	33	54				
	WN	eL	Z	10	01					
	Epicentre			09	21	30.8	35.8N 140.3E 33km		USCGS	
9	TU	eP	Z	16	16	45				
		e	Z			57				
		eS	Z		18	08				
	ON	e(P)	E	16	17	03				
	TO	e(S)	Y	16	18	39				
	WN	eS	ZNE	16	19	14				
		eL	ZNE		20					
		M	E		21					
		M	ZN		22					
	CB	eS	E	16	19	36				
	KM	e(S)	X	16	20	05				
	GP	eS	N	16	20	19				
		e	N			29				
	RX	eL	NE	16	23					
		M	NE		25			1.1 17	1.3 16	
	SU	e	N	16	24					
	Epicentre			16	14	57	35S 175W N NZ(D)			5.4 NZ
9	TU	e	Z	18	11	56				
	WN	e	ZNE	18	12	14				
	Epicentre			18	02	27.9	5.4S 132.5E 33km		USCGS	
9	TU	eP	Z	20	27	46				
		eS	Z		29	08				
	ON	e	E	20	28	03				
	GP	e(P)	N	20	29	05				
		e	N			48				
		eS	N		31	25				
	RX	e?	Z	20	29	37				
		eL	E		35					
	WN	M	Z	20	33					
	Epicentre			20	26	00	35S 175W N NZ(D)			5 NZ
10	KP	eP	Z	01	45	54				
		e(pP)	Z		46	11				
		e	Z			18				
	TU	e(P)	Z	01	45	56				
		e	Z		46	15				
	WN	e?	Z	01	55	50				
		e(SKS)	Z		56	30				
		e	Z		57	.7				
		eL	Z	02	14					
		M	Z		16					
		M	Z		18					
		M	Z		23					
	RX	eSKS	N	01	56	48				
		eS	NE		57	18		2 16	1.5 12	
		eSS	N	02	03	18				
		eL	E		11					
		eL	NE		15					
		M	NE		20			2 23	3 23	6.7
	SU	eL	N	02	06					
	Epicentre			01	33	19.0	43.8N 147.2E 60km		USCGS	5½
10	SU	eL	N	02	50					
	Epicentre			02	26	19.1	12.8N 143.6E 37km		USCGS	

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
NOV 10	KP	eP	Z	07	21	49				
	TU	e(P)	Z	07	22	03				
	Epicentre			07	17	08.5	17.9S 169.4E 54km		USCGS	
10	WN	eL	Z	21	42					
		M	Z		44					
	Epicentre			21	13	25.5	9.8S 123.8E 33km		USCGS	
10	ON	P	E	22	15	50				
	TU	eP	Z	22	16	01				
		i	Z			04				
		eS	Z		17	40				
		e	Z			44				
	KP	eP	Z	22	16	03				
	TO	e(P)	Y	22	16	19				
	TA	eP	Z	22	16	22				
		eS	Z		18	23				
	WN	eP	ZNE	22	16	36				
		e	ZNE		18	40				
		eS	ZNE			43				
	GP	eP	N	22	17	11				
		eS	N		19	41				
	CB	eS	E	22	18	55				
	KM	eS	X	22	19	31				
	Epicentre			22	13	48.9	30.1S 179.1W 215km		USCGS	
11	SU	eS	N	05	19	55				
11	KP	eP	Z	06	35	04				
	TU	eP	Z	06	35	12				
	Epicentre			06	24	51.7	18.4N 145.6E 135km		USCGS	
11	KP	e?	Z	08	12	08				
	WN	e?	Z	08	12	49				
		e(L)	Z	08	20					
		e(L)	Z		41					
	RX	eL	E	08	17				0.6 20	
11	WN	eL	Z	12	30					
		M	Z		34					
	Epicentre			11	31	44.5	55.8N 113.1E 33km		USCGS	6½
11	ON	eP	E	14	50	21				
		e	E			36				
		e	E			47				
	TU	eP	Z	14	50	23				
		e	Z			42				
		eS	Z		51	55				
	TA	e(P)	Z	14	50	51				
		e(S)	Z		52	42				
	TO	e(S)	Y	14	52	19				
	WN	eS	ZNE	14	53	02				
		eL	Z		56					
	CB	e(S)	E	14	53	22				
	GP	eS	N	14	54	08				
	Epicentre			14	48	24	Kermadec Island region			NZ
11	SU	eP	N	16	13	05				
		eS	N		15	28			14 9	7.2
	ON	P	E	16	15	12 e				
	KP	eP	Z	16	15	28				
	TA	P	Z	16	15	38 d				
	TU	eP	Z	16	15	38				
		e	Z		18	55				
		eS	Z		20	17				

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
NOV		eScP	Z		22	37							
		eScS	Z		26	24							
	CT	P	Z	16	15	(39)							
	TO	eP	Y	16	15	41							
	CB	eP	E	16	15	51							
	WN	eP	ZNE	16	15	52 u							
		eS	ZNE		20	43							
		eScP	Z		22	37							
		eL	ZE		23								
		ScS	NE		26	30							
		M	ZNE		27								
	KM	eP	X	16	16	00							
	GP	P	N	16	16	10 s							
		e	N		19	07							
	RX	iP	ZNE	16	16	23½ us							
		iS	E		21	36 e							
		eL	NE		24								
	Epicentre			16	09	57.6	12.9S		166.5E	77km		USCGS	
11	KP	eP	Z	22	26	07 u							
	RX	eS	NE	22	35	34							
		eSS	E		40	18					2.5	18	
		eLq	NE		45	28							
		eLr	E		49								
		M	E		50						2	25	
	Epicentre			22	14	18.7	43.2S		76.0W	33km		USCGS	5.8
12	TU	eP	Z	13	01	12							
	Epicentre			12	49	10.8	26.0N		128.4E	40km		USCGS	
13	KP	eP	Z	09	07	32							
	Epicentre			08	54	39.1	42.0N		141.9E	61km		USCGS	
13	KP	eP	Z	22	00	15							
	Epicentre			21	47	50.3	56.9S		29.0W	33km		USCGS	
14	RX	eL	E	05	32								
	Epicentre			05	15	43.7	15.4S		168.0E	66km		USCGS	
14	KP	eP	Z	07	27	10							
	TU	e(P)	Z	07	27	23							
		e(S)	Z		29	14							
	GP	e(P)	N	07	28	14							
		eS	N		31	26							
	WN	eS	ZNE	07	30	21							
	RX	eL	E	07	35								
		M	E		36						1.5	20	5.2
	Epicentre			07	23	50.3	26.5S		176.2W	33km		USCGS	
14	KP	eP	Z	08	00	10							
	TU	e(P)	Z	08	00	18							
	WN	e?	Z	08	00	40							
	Epicentre			07	48	05.5	35.7N		140.8E	61km		USCGS	
14	TA	e(P)	Z	22	09	26							
	KP	eP	Z	22	09	31							
		e	Z			40							
	TU	eP	Z	22	09	32							
		e	Z			43							
	WN	e	Z	22	09	36							
		e	Z			39							
		e	ZNE			46							
		eS	Z		17	50							
		eSSS	Z		24½								
		eL	Z		29								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
		M	Z			32							
NOV		M	Z			35							
	RX	eP	Z	22	09	38							
		e(S)	E		18								
		eSSS	N		24								
		M	E		35						2	22	5.7
	Epicentre			21	59	16.1	0.3S		123.0E	92km		USCGS	
15	TU	eS	Z	11	37	09							
	Epicentre			11	30	38.6	21.0S		178.4W	590km		USCGS	
15	WN	eS	Z	16	14	1							
		eSS	ZE		19½								
		eL	Z		28								
		M	Z		30								
		M	ZE		35								
	RX	eL	E	16	29								
		M	E		31						2	18	5.8
	Epicentre			15	51	57.6	38.3S		73.2W	33km		USCGS	
15	TA	e	Z	16	32	13							
		e	Z			53							
		e	Z		33	08							
	TU	eP	Z	16	32	58							
		e(pP)	Z		33	16							
	GP	eP	N	16	33	07							
	Epicentre			16	25	09.4	6.9S		146.7E	40km		USCGS	
15	KP	eP	Z	23	38	39							
	WN	eP	Z	23	38	46							
		e	Z			51							
		e	Z			56							
		eL	Z	24	09								
		M	Z		10								
		M	ZE		14								
	RX	e(PS)	E	23	52								
		eSS	E		57								
		eL	NE	24	12								
		M	E		15						3	18	6.0
	Epicentre			23	25	15.7	8.7S		79.8W	45km		USCGS	
16	WN	eP	Z	07	28	29							
		e	Z			32							
		e	Z			38							
		eS	ZNE		36	40							
		G	NE		42½								
		eL	ZE		45								
		M	ZN		52								
	KP	eP	Z	07	28	34							
		e	Z			40							
	AK	eS	N	07	36	57							
		eL	N		45								
		M	N		46								
	RX	eS	NE	07	37	13					8	14	
		eScS	N		38	46					7	25	6.2
		eL	NE		44								
	SU	e(S)	N	07	38	05							
		e	N		40	55							
		e(L)	N		46½								
		eL	N		48								
		M	N		56								
	Epicentre			07	18	37.3	32.3S		111.1W	43km		USCGS	
16	KP	P	Z	10	02	34							
	TU	P	Z		02	42							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag	
NOV	WN	eP	Z		02	49								
	Epicentre			09	52	25.1	19.0N	145.3E	207km			USCGS		
16	ON	eP	E	11	59	03								
	TU	eP	Z	11	59	16								
		eS	Z	12	00	57								
		e	Z		01	05								
	CT	eP	Z	11	59	(25)								
		eS	Z	12	01	(18)								
		e	Z			(24)								
	TO	e	Y	11	59	29								
		eS	Y	12	01	19								
	TA	e(P)	Z	11	59	34								
		e(S)	Z	12	01	37								
	WN	e	E	11	59	56								
		e?	Z	12	00	01								
		e	E		01	58								
		eS	NE		02	00								
	GP	e	N	12	00	27								5¼
		eS	N		02	58								
	CB	eS	E	12	02	12								5¼
	KM	eS	X	12	02	48								
	Epicentre			11	57.1		Kermadec Islands region NZ							
16	TU	eP	Z	22	42	02								
		e	Z		43	28								
		e	Z			34								
	TO	eP	Y	22	42	13								
		eS	Y		43	51								
	TA	eP	Z	22	42	18								
	WN	eP?	ZE	22	42	33								
		eS	ZNE		44	30								
	GP	eS	N	22	45	26								
	Epicentre			22	40	04	Kermadec Islands region NZ							
16	TA	eP	Z	21	22	43								
	ON	eP?	E	21	23	17								
		e	E			20								
	TU	e(P)	Z	21	23	18								
	RX	eSKS	NE	21	33	29								
		eSS	E		40									
		eL	E		54									
		M	E	22	05						4	21		6.1
	WN	e?	Z	21	37	16								
		eSS	Z		40	28								
		e(PcPPKP)	Z		45	12								
		eL	Z		54									
		M	Z	22	06									
	Epicentre			21	10	01.8	13.5N	93.2E	33km			USCGS		
17	TO	e(P)	Y	01	24	17								
	TU	eP	Z	01	24	36								
	Epicentre			01	13	22.8	2.7S	126.9E	37km			USCGS		
17	SU	e(L)	N	09	49									
	WN	eL	Z	11	53									
		M	Z		56									
	Epicentre			11	07	15.4	16.3N	98.2W	12km			USCGS		
17	TA	eP	Z	14	31	08								
	WN	eP	Z	14	31	12								
		e(L)	Z		53									
		M	Z		58									
	TU	eP	Z	14	31	17								
	Epicentre			14	21	30.6	2.8N	121.7E	609km			USCGS		

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag	
NOV 17	SU	e	N	23	23									
18	TU	eP	Z	06	53	19								
	KP	e	Z	06	53	29								
	WN	eL	Z	07	15									
		M	Z		22									
	RX	eL	E	07	16									
		M	E		17						1	23		5.5
	Epicentre			06	43	08.3	0.2S	125.1E	56km			USCGS		
18	TU	eP	Z	07	06	11								
		e	Z		07	18								
18	TU	eP	Z	12	05	27								
		e(pP)	Z			48								
	TA	eP	Z	12	05	42								
	KM	e(P)	X	12	06	15								
	Epicentre			12	00	26.7	16.4S	174.1W	129km			USCGS		
19	SU	eL	N	02	15									
19	WN	e(P)	Z	04	27	19								
	Epicentre			04	15	36.1	24.3N	122.6E	53km			USCGS		
19	WN	eS	Z	10	30	16								
		eL	Z		36									
		M	ZE		39									
	RX	eS	NE	10	30	38								
		eL	ZNE		35									
		M	E		37						3	20		5.7
	Epicentre			10	14	29.4	50.0S	114.3W	33km			USCGS		
19	RX	eL	NE	14	07									
	WN	eL	E	14	08									
		eL	ZNE		10									
	Epicentre			13	58	57.6	60.7S	152.9E	33km			USCGS		
20	WN	e(L)	Z	08	20									
	Epicentre			07	32	42.9	56.2N	159.3E	33km			USCGS		
20	KP	eP	Z	10	18	17								
		e(pP)	Z			27								
		e	Z			43								
	TU	eP	Z	10	18	29								
	WN	e(P)	Z	10	18	36								
		eL	Z		30									
	Epicentre			10	11	11.2	6.1S	154.5E	69km			USCGS		
20	TU	eP	Z	13	10	08								
	Epicentre			13	00	00.3	1.8N	126.4E	109km			USCGS		
20	CP	eP	N	22	45	45								
		eS	N		47	12								
	RX	e	Z	22	45	52								
		eS	Z		46									
		eL	NE		46½									
	KM	e(S)	X	22	47	23								
		e	X			31								
	CB	eS	E	22	48	10								
	WN	eL	Z	22	51									
	Epicentre			22	43.8		49S	164E	N NZ(D)					5.2 NZ
20	RX	eP	Z	23	04	57								
		eS	Z		05	56								
		e	Z		06	07								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
NOV		eL	NE		06								
	GP	eP	N	23	05	39							
		eS	N		07	05							
	KM	eS	X	23	07	18							
		e	X			22							
	CB	eS	E	23	07	57							
	WN	eL	Z	23	11								
	Epicentre			23	03.7		49S	164E	N	NZ(D)			
21	WN	eL	Z	07	30								5.2 Ml
		M	ZE		32								
	RX	M	E	07	32								
	Epicentre			07	07	42.3	49.8S	114.8W	33km		0.7	19	5.6
												USCGS	
21	ON	eP	E	19	43	42							
		e(S)	E		46	21							
	KP	P	Z	19	43	56							
	TA	e(P)	Z	19	44	10							
	TU	e	Z	19	44	38							
	KM	e(S)	X	19	48	02							
	GP	eS	N	19	48	16							
	Epicentre			19	40	15.7	21.1S	179.2W	626km				
												USCGS	
22	SU	e(P)	N	07	39	40							
		e	N		43	04							
		M	N		46								
	KP	eP	Z	07	42	06	u						
		e	Z			15							
		e	Z			56							
		e	Z		43	20							
	TU	eP	Z	07	42	06							
		e	Z			24							
		e	Z			39							
	KM	e	X	07	43	06							
	WN	e	Z	07	47	09							
		eL	Z		50								
		M	Z		51								
	RX	eL	E	07	50								
		eL	ZN		53								
		M	E		54								
	Epicentre			07	37	25.8	18.2S	167.6E	33km				
												USCGS	
22	KP	eP	Z	08	40	50							
	TU	eP	Z	08	40	53							
	TA	e(P)	Z	08	41	04							
	Epicentre			08	37	12.6	20.6S	178.5W	605km				
												USCGS	
22	RX	e	E	10	49	17							
		eL	E		56								
		M	E		58						1	20	
	WN	eL	Z	10	55								
		M	Z		57								
22	TU	e?	Z	17	07	14							
		eS	Z		09	26							
	KP	eP	Z	17	07	43							
	WN	e?	Z	17	08	19							
		eS	NE		10	22							
	CB	eS	E	17	10	35							
		e	E			37							
	KM	e	X	17	11	21							
	GP	eS	N	17	11	23							
22	KP	eP	Z	20	35	12							
		e	Z			19							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
NOV	TU	e(P)	Z	20	35	17							
		eS	Z		36	45							
		e	Z			53							
		e	Z		37	13							
	TA	e(P)	Z	20	35	38							
	WN	e?	E	20	36	22							
		e	Z			25							
		e	NE		37	52							
		e				55							
		e(S)	ZE		40								
		eL	Z	20	36	31							
	GP	e(P)	N		38	58							
		eS	N		39	06							
		e	N			15							
		e	N	20	39	50							
	SU	e(L)	N	20	42								
	RX	eL	E		44						1	15	
		eL	N									1	21
	Epicentre			20	33	25.6	30.2S	178.6W	298km				
												USCGS	
	Charters Towers, Brisbane readings used to determine epicentre.												
	Felt: Raoul Island MM3.												
22	SU	e	N	23	59	28							
	KP	e(P)	Z	24	00	49							
	WN	e?	Z	24	01	52							
		e(L)	Z		04								
		M	Z		06								
	RX	eL	E	24	06								
		M	E		08						2	20	
	Epicentre			23	55	28.3	24.1S	176.8W	391km				
												USCGS	
23	KP	e(P)	Z	00	43	28							
		e	Z			37							
	WN	ePS	Z	00	56								
		eSS	Z	01	02								
		eL	Z		14								
		M	Z		15								
		M	Z		17								
	RX	ePS	E	00	56	12							
		eSS	E	01	01	44							
		eL	E		15								
		M	E		18						1.5	19	5.8
	Epicentre			00	30	04.5	15.1S	75.3W	33km				
												USCGS	
23	SU	e(P)	N	06	44	30							
		e(S)	N			50							
	KP	e(P)	Z	06	48	35							
		e	Z			43							
	SU	e(P)	N	06	44	30							
		e(S)	N			50							
	KP	e(P)	Z	06	48	35							
		e	Z			43							
23	KP	eP	Z	07	21	27							
	Epicentre			07	16	37.7	17.7S	167.9E	33km				
												USCGS	
23	KP	eP	Z	10	50	08							
	TU	eP	Z	10	50	20							
	Epicentre			10	41	57.6	4.0S	142.3E	100km				
												USCGS	
23	SU	eP	N	23	07	15							
	ON	eP	E	23	09	00							
	KP	iP	Z	23	09	13	u						
		e	Z			48							
		e	Z		10	36							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
NOV		eS	Z		12	05							
		e	Z		20	53							
	TU	eP	Z	23	09	13							
		e(S)	Z		12	01							
		e	Z			10							
		e	Z		16	00							
		e(ScS)	Z		19	37							
	TA	e(P)	Z	23	09	27							
	WN	eP	Z	23	09	41							
		e(S)	E		12	44							
		e	ZN			47							
		e	ZNE			50							
	GP	eP	N	23	10	06							
		eS	N		13	30							
	Epicentre			23	05	47.4	21.5S	179.3W	609km				USCGS
24	SU	e(L)	N	08	13								
	KP	e(P)	Z	08	14	50							
	WN	eL	ZE	08	22								
	RX	eL	E	08	24								
	Epicentre			08	10	10.3	18.5S	175.4W	33km				USCGS
24	ON	eP	E	10	36	48							
		eS	E		39	03							
	KP	eP	Z	10	37	03							
		e	Z			35							
		e(pP)	Z		38	46							
		e(S)	Z		39	35							
		e	Z			41							
	SU	S	N	10	37	15							
		e	N		38	05							
	TU	e(P)	Z	10	37	16							
		eS	Z		39	43							
		e	Z		40	07							
	TA	eP	Z	10	37	21							
	WN	eP	Z	10	37	38							
		e	N		40	29							
		e(S)	ZNE			31							
	GP	e(S)	N	10	41	21							
	Epicentre			10	34	07.7	24.8S	180.0	500km				USCGS
24	ON	eP	E	10	45	21							
	KP	eP	Z	10	45	32							
		e	Z			59							
		e	Z		46	38							
	TU	eP	Z	10	45	37							
		e	Z			55							
		eS	Z		47	00							
		e	Z			11							
	TA	eP	Z	10	45	50							
	WN	eS	NE	10	47	58							
	GP	eS	N	10	48	57							
24	ON	eP	E	14	05	21							
		e	E		06	41							
	KP	P	Z	14	05	31							
		e	Z		07	24							
	TU	eP	Z	14	05	32							
		eS	Z		06	56							
		e	Z		07	03							
	TA	eP	Z	14	05	49							
24	KP	P	Z	16	05	09	u						
	WN	eL	Z	16	36								
	Epicentre			15	52	20.1	49.5N	155.8E	85km				USCGS

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
		eL	Z	17	25								
NOV 24	WN	M	Z		30								
	Epicentre			16	19	44.9	9.8N	40.7W	33km				USCGS
	KP	eP	Z	17	31	00							
24		e(PcP)	Z		32	54							
	TU	eP	Z	17	31	06							
		e	Z			16							
	WN	eL	Z	17	44								
		M	Z		46								
		M	Z		48								
	RX	e(L)	NE	17	54								
	Epicentre			17	22	59.5	2.5S	148.9E	32km				USCGS
	KP	eP	Z	10	02	15							
25	TU	e(P)	Z	10	02	25							
	WN	eL	Z	10	24								
	Epicentre			09	51	22.8	10.6N	125.2E	47km				USCGS
	TU	eP	Z	13	39	26							
26		e	Z			28							
	Epicentre			13	28	33.7	42.2N	144.4E	33km				USCGS
	ON	e(P)	E	16	02	26							
	KP	e(P)	Z	16	02	29							
		e	Z			37							
		e	Z		04	05							
		e	Z			17							
	TU	eP	Z	16	02	32							
		e(S)	Z		05	18							
	WN	eP	Z	16	03	11							
		e(S)	NE		06	22							
		e	NE			33							
	HP	e(P)	N	16	03	43							
		eS	N		07	25							
	GB	e(S)	E	16	06	39							
	KM	e(S)	X	16	07	33							
	RX	eL	NE	16	10								
		M	E		13								
	Epicentre			15	58	46.2	23.8S	175.8W	19km		5.5	20	5.6
													USCGS
	SU	e(P)	N	18	00	48							
		eS?	N		02	30							
		eL	N		03								
	KP	eP	Z	07	04	51							
		e	Z		05	06							
		e	Z			31							
	TA	eP	Z	07	04	54							
27	TU	P	Z	07	04	59	u						
		e	Z		05	41							
	Epicentre			06	52	57.8	25.1N	122.9E	148km				USCGS
	KP	eP?	Z	12	18	45							
		e	Z			49							
		e	Z			58							
	TU	e(P)	Z	12	19	07							
	Epicentre			12	07	12.7	14.9N	119.9E	35km				USCGS
	KP	P	Z	17	00	20							
27		e	Z			32							
	TU	eP	Z	17	00	29							
	WN	eL	ZNE	17	20								
	RX	eL	NE	17	23								
	Epicentre			16	50	27.7	12.2N	143.8E	33km				USCGS

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
NOV 27	SU	eL	N	19	15					
28	KP	P	Z	02	45	40 d				
	TU	eP	Z	02	45	49				
	SU	e(L)	N	03	01					
	RX	eL	E	03	07					
	Epicentre			02	35	48.8	12.1N 143.7E 33km		USCGS	
28	SU	eL	N	09	16					
	WN	eL	Z	09	18					
	RX	eL	E	09	20					
		M	E		21				1.5 20	
28	ON	e(P)	E	17	47	09				
	TU	eP	Z	17	47	13				
		eS	Z		48	38				
	KP	eP	Z	17	47	16				
	CT	e(P)	Z	17	47	24				
		e(S)	Z		49	02				
	WN	eS	NE	17	49	44				
	GP	eS	N	17	50	48				
	Epicentre			17	45	22	Kermadec Islands region NZ			
29	KP	e(P)	Z	04	00	54				
		e	Z		01	25				
	TU	eP?	Z	04	01	00				
		e	Z			15				
		eS	Z		02	48				
	ON	e?	E	04	01	04				
	CT	e(P)	Z	04	01	21				
		e(S)	Z		03	12				
	WN	eS	NE	04	03	54				
	CB	eS	E	04	04	10				
	GP	eS	N	04	04	56				
	Epicentre			03	58	32.1	29.4S 177.9W 140km		USCGS	
29	KP	P	Z	04	50	42				
	TU	eP	Z	04	50	43				
	WN	eP?	Z	04	51	13				
29	ON	eP	E	07	33	37				
	TU	eP	Z	07	33	40				
		eS	Z		36	01				
	KP	eP	Z	07	33	43				
		e	Z			54				
	GP	e?	N	07	35	01				
		eS	N		38	10				
	WN	eS	NE	07	37	05				
		eL	Z		39					
	Epicentre			07	30	39	Kermadec Islands region NZ			
29	SU	e(P)	N	09	05	43				
		e	N		07	14				
	ON	eP?	E	09	07	45				
	KP	eP	Z	09	07	53				
		e	Z		11	16				
	TU	e(P)	Z	09	07	54				
		e	Z		08	12				
		e(S)	Z		10	55				
	WN	eP?	Z	09	08	28				
		e	Z			32				
		eS	NE		12	04				
		eL	ZN		14					
	KM	eS	X	09	13	01				
	GP	e(S)	N	09	13	05				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
NOV	RX	eL	NE	09	17					
	Epicentre			09	03	51.1	22.3S 175.9W 33km		USCGS	
29	TU	e?	Z	12	54	10				
		e?	Z			32				
	KP	eP?	Z	12	54	23				
	WN	eP	Z	12	54	38				
	Epicentre			12	44	32.8	13.9N 145.4E 100km		USCGS	
29	SU	e?	N	19	09	16				
		e	N			29				
		i(L)	N		10	40 n				
	ON	eP	E	19	11	12				
		e	E		14	43				
	KP	P	Z	19	11	26 u				
	AK	e(PP)	N	19	11	35				
		e	N		15	15				
	TU	e(P)	Z	19	11	39				
	TA	e(P)	Z	19	11	40				
		e	Z		13	05				
	WN	eP	Z	19	11	56				
		eS	NE		16	16				
		M	E		19					
		M	Z		20					
	KM	e(P)	X	19	12	03				
		e	X			14				
	GP	e(P)	N	19	12	15				
	RX	eS	E	19	17	16				
		eL	NE		19					
		M	E		22				70 19	6.3
	Epicentre			19	06	37.6	17.3S 168.5E 33km		USCGS	
29	KP	eP	Z	19	18	08				
		e	Z			16				
	TA	e?	Z	19	18	12				
	TU	e(P)	Z	19	18	31				
	WN	e?	Z	19	18	57				
30	RX	eL	NE	04	59					
30	RX	eL	E	16	11					
30	KP	eP	Z	17	03	35				
		epP	Z			46				
	TU	eP	Z	17	03	40				
	WN	e?	Z	17	03	43				
		eL	Z		26					
	RX	eL	E	17	26					
	Epicentre			16	53	24.6	3.2N 127.1E 58km		USCGS	
30	KP	eP	Z	21	22	20				
	Epicentre			21	11	30.0	10.8N 124.7E 64km		USCGS	
30	WN	eL	ZE	22	36					
		M	ZE		38					
	RX	eL	ZNE	22	39					
		M	E		41				2 21	5.9
	Epicentre			21	51	22.9	17.4N 99.6W 51km		USCGS	
30	TA	e?	Z	23	15	34				
	KP	eP	Z	23	15	40				
		e	Z			44				
	TU	e(P)	Z	23	15	56				
	Epicentre			23	07	51.6	5.5S 145.9E 79km		USCGS	

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
DEC 1	KP	eP	Z	02	03	21				
		e	Z			38				
	WN	eL	Z	02	34					
	Epicentre			01	50	20.4	52.4N 170.1W 38km			USCGS
1	ON	eP	E	04	19	18				
		e	E			24				
	KP	P	Z	04	19	25				
		e	Z			35				
	SU	P	N	04	20	07				
		eL	N			22.9				
	WN	eP	Z	04	20	14				
		S	Z			22 17				
		eL	E			23.4				
		eL	Z			24				
	TU	e(P)	Z	04	20	20				
		eS	Z			22 09				
	CB	eS	E	04	22	33				
	RX	eL	ZNE	04	27					
	Epicentre			04	16	59.6	29.7S 177.7W 52km			USCGS
1	KP	P	Z	13	45	07				
	Epicentre			13	32	24.8	30.8S 71.3W 68km			USCGS
2	TU	eS	Z	16	17	46				
	WN	eL	Z	16	25					
	Epicentre			16	12	53.4	18.9S 168.5E 33km			USCGS
3	TU	P	Z	12	55	28½				
	WN	P	ZNE	12	55	45.5 u				
		eS	NE			59 50				
	Epicentre			12	50	36.9	12.9S 169.2E 632km			USCGS
4	WN	eL	Z	10	55					
	Epicentre			10	34	27.8	6.1S 149.9E 83km			USCGS
4	ON	eP	E	16	45	03				
	TU	eP	Z	16	45	16				
	RX	eL	NE	16	54½					
		eLr	Z		57½					
		M_1	NE			58				
		M_2	ZNE	17	01					
	Epicentre			16	40	06.0	16.5S 172.8W 33km			USCGS
4	TU	eP	Z	19	41	21				
	Epicentre			19	31	31.5	4.9N 122.8E 627km			USCGS
5	RX	eL	NE	01	38					
	Epicentre			01	16	06.3	10.9S 161.6E 33km			USCGS
5	CT	eP	Z	12	28	14				
	WN	P	Z	12	28	33				
	Epicentre			12	24	32.6	20.8S 178.9W 591km			USCGS
7	ON	eP	E	12	57	22				
	TU	eP	Z	12	57	34				
		e	Z			38				
		eS	Z		59	09				
	CT	eP	Z	12	57	42				
	WN	eP	Z	12	58	05				
		eS	ZNE	13	00	11				
	CB	eS	E	13	00	22				
	KM	eS	X	13	01	00				
	GP	eS	N	13	01	09½				
	Epicentre			12	55	34.6	30.7S 179.3W 368km			USCGS

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
DEC 7	ON	P	E	14	14	26				
	CT	iP	Z	14	14	43.0 u				
		epP	Z		16	16				
		eS	Z		23	55				
	TU	P	Z	14	14	43½				
		pP	Z		16	21				
	WN	iP	ZNE	14	14	49.4 u				
		pP	ZNE		16	23				
		S	ZNE		24	00½				
		sS	NE		26	32				
	RX	eP	Z	14	15	00				
		S	NE		24	22				
		sS	NE		27	14				
	Epicentre			14	03	37.0	29.2N 139.2E 411km			USCGS
8	CT	P	Z	18	13	46				
		pP	Z		14	11				
	Epicentre			18	00	41.1	23.6S 69.4W 100km			USCGS
8	SU	iP	N	18	20	40 s				
	ON	P	E	18	23	36				
	TU	eP	Z	18	23	52				
	CT	P	Z	18	23	57½				
	WN	P	ZNE	18	24	17				
		eS	NE		29	04				
		Lq	NE		31	.0				
		Lr	N		32	.5				
	RX	eLq	E	18	33	.6				
		eLr	NE		35	.7				
		M	ZNE		37					
	Epicentre			18	18	29.1	15.2S 173.7W 33km			USCGS
8	CT	eP	Z	22	21	45				
8	WN	eP	ZNE	21	39	39				
		pP	ZNE		41	46				
		SKS	ZNE		49	16				
	CT	P	Z	21	39	42.8				
		pP	Z		41	50				
		SKS	Z		49	26				
		PKKP	Z		56	32				
	KP	eP	Z	21	39	49				
		pP	Z		41	53				
		PKKP	Z		56	33				
	RX	epP	Z	21	41	49				
		SKS	NE		49	18				
		e	NE		56	25				
	Epicentre			21	27	22.2	25.8S 63.4N 620km			USCGS
8	KP	P	Z	23	07	49.5				
	CT	P	Z	23	07	53.7				
	WN	P	ZNE	23	08	04				
		eL	Z		36					
	Epicentre			22	55	01.2	50.5N 176.8W 33km			USCGS
9	CT	eP	Z	14	20	02				
		S	Z		23	15				
	Epicentre			14	16	05.2	22.4S 177.0W 204km			USCGS
9	CT	eP	Z	17	46	43				
	Epicentre			17	37	46.9	7.1S 129.1E 194km			USCGS
9	ON	e	N	20	58	32				
	CT	eP	E	20	58	55				
	KP	P	Z	20	59	07				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
DEC	TU	eP	Z	20	59	10				
	CT	eP	Z	20	59	17				
		eS	Z	21	03	31				
	WN	eL	Z	21	09					
	Epicentre			20	54	13.7	17.7S 173.6W 60km		USCGS	
10	RX	eSS	E	06	28	12				
		eLq	NE			32.0				
	Epicentre			06	11	56.2	8.4S 157.4E 39km		USCGS	
10	SU	P	N	16	58	31				
		eS	N	17	00	35				
	CT	eP	Z	16	59	17				
	WN	eP	Z	16	59	39½				
		S	ZNE	17	02	18				
		Lq	NE			03.5				
		Lr	Z			04.1				
	RX	eLq	NE	17	06					
		eLr	Z			08½				
	Epicentre			16	56	04.5	27.2S 176.8W 88km		USCGS	
10	KP	P	Z	18	57	58				
	TU	P	Z	18	58	02				
		eS	Z			33				
	CT	P	Z	18	58	02.8				
		i	Z			03.8				
		eS	Z			34				
	TA	eP	Z	18	58	07				
		eS	Z			42				
	WN	eP	Z	18	58	24				
		S	ZNE		59	10½				
	CB	eP	E	18	58	26¼				
		e	E			28				
		S	E		59	17				
	GP	S	N	19	00	04¼				
	Epicentre			18	57	22	37.8S 176.2E 270km		Nz(C)	5.2 Nl
11	ON	P	E	13	58	06				
	CT	P	Z	13	58	27				
	Epicentre			13	54	36.3	19.7S 178.4W 630km		USCGS	
11	CT	P	Z	16	52	26				
11	SU	eP	N	17	54	00				
	TU	P	Z	17	55	19				
		eS	Z		57	42				
	CT	P	Z	17	55	28½				
	WN	P	ZNE	17	55	50½				
		S	ZNE		58	45½				
	Epicentre			17	51	58.9	24.8S 177.6W 98km		USCGS	
11	CT	P	Z	18	18	08				
	Epicentre			18	09	58.6	3.9S 143.6E 33km		USCGS	
11	KP	P	Z	23	43	07½				
	CT	eP	Z	23	43	12				
	TU	eP	Z	23	43	17				
	Epicentre			23	32	57.0	3.5N 126.9E 63km		USCGS	
12	CT	P	Z	10	15	46				
12	KP	P	Z	10	16	05				
	CT	P	Z	10	16	14				
	TU	eP	Z	10	16	18				
	WN	eP	Z	10	16	24				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
DEC 12	ON	P	E	10	16	09				
	KP	P	Z	10	16	25				
	CT	P	Z	10	16	34				
		eS	Z		22	41				
	TU	P	Z	10	16	39				
	WN	P	Z	10	16	46				
		S	ZNE		22	16				
		(eS)	NE			58				
		SS	ZNE		25	35				
		Lr	ZN			27.7				
	RX	e	N	10	18	53				
		S	NE		22	58				
		eS	NE		23	30				
		SS	E		26	47				
	Epicentre			10	08	48.5	4.8S 153.8E 94km		USCGS	
12	CT	P	Z	14	08	35½				
	Epicentre			13	56	32.4	60.3S 25.9W 33km		USCGS	
12	CT	eP	Z	15	54	50				
	Epicentre			15	50	08.0	18.6S 168.6E 102km		USCGS	
13	KP	P	Z	23	08	58				
	TU	eP	Z	23	09	04				
	Epicentre			23	56	45.8	4.6N 96.5E 138km		USCGS	
15	KP	eP	Z	02	42	06				
	Epicentre			02	37	56.4	17.3S 178.9W 509km		USCGS	
15	CT	eP	Z	14	30	19				
	Epicentre			14	22	35.2	4.6S 152.1E 53km		USCGS	
17	KP	eP	Z	02	25	23				
	Epicentre			02	15	49.7	4.2S 127.6E 33km		USCGS	
17	KP	P	Z	11	10	03				
		pP	Z		11	31				
	CT	P	Z	11	10	07				
		pP	Z			37½				
	WN	iP	ZNE	11	10	08.4				
		pP	ZNE		11	37				
		S	NE		18	01				
		e	N		19	21				
		eL	ZNE			25.5				
	Epicentre			11	00	16.0	2.1N 122.9E 393km		USCGS	
18	KP	P	Z	03	05	07 u				
	CT	iP	Z	03	05	14 d				
	WN	iP	ZNE	03	05	20.7				
	Epicentre			02	54	47.1	21.6N 143.1E 306km		USCGS	
18	WN	eL	Z	06	10					
18	RX	eL	NE	07	26½					
	WN	L	ZNE	07	30.0					
18	WN	eL	ZNE	08	16.5					
	Epicentre			07	48	36.6	35.2S 104.8W 33km		USCGS	
18	KP	eP	Z	10	36	40				
	CT	eP	Z	10	36	41				
		eS	Z		38	54				
	WN	eP	ZNE	10	37	07				
		S	ZNE		39	32				
		eL	Z		42					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
DEC	SU	S	N	10	38	35				
	Epicentre			10	33	58.4	28.3S 178.2W 214km			USCGS
							Felt: Raoul Island.			
18	KP	P	Z	11	33	07				
	CT	eP	Z	11	33	17				
		eS	Z		35	50				
	Epicentre			11	30	07.3	24.7S 180.0 486km			USCGS
18	KP	eP	Z	21	00	48				
	Epicentre			20	56	32.5	18.4S 176.9W 308km			USCGS
19	CT	eP	Z	11	03	55				
		S	Z		05	47				
	WN	S	ZNE	11	06	25				
	Epicentre			11	01	39.8	31.2S 178.1W 28km			USCGS
19	CT	eP	Z	13	03	43				
		e	Z		04	04				
	WN	eS	Z	13	10	1				
		eL	ZNE		13	2				
	RX	eS	NE	13	11	00				
		eSS	NE		14	00				
		eL	NE		16½					
	Epicentre			12	56	19.7	4.7S 154.0E 98km			USCGS
19	SU	e	N	20	18	1				
	CT	P	Z	20	19	19				
		i	Z			21				
		eS	Z		22	09				
	WN	P	ZNE	20	20	39				
	Epicentre			20	15	58.8	23.9S 179.4W 451km			USCGS
20	KP	eP	Z	08	37	08				
	CT	eP	Z	08	37	17				
	WN	eL	Z	08	46					
	RX	eL	ZNE	08	48					
	Epicentre			08	32	37.3	20.0S 174.1W 33km			USCGS
20	SU	eP	N	08	49	00				
		iS	N		50	13 n				
	ON	P	E	08	50	18½				
		S	E		52	40				
	KP	P	Z	08	50	35				
		S	Z		53	15				
	CT	P	Z	08	50	45.5				
		S	Z		53	30				
	WN	P	ZNE	08	51	05				
		S	ZNE		54	02				
	Epicentre			08	47	23.3	23.4S 179.4E 512km			USCGS
20	RX	eP	N	18	24	52				
		eL	E		28	1				
		eL	N		28	8				
		eLr	Z		29	2				
	CT	eP	Z	18	26	10				
	WN	eL	ZNE	18	31	1				
	Epicentre			18	20	55.8	61.8S 161.2E 29km			USCGS
21	WN	P	Z	00	54	43				
		e	E	01	04	07				
		L	Z		14					
		L	NE		17	5				
	CT	P	Z	00	54	45				
	KP	iP	Z	00	54	46 u				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
DEC		Stn	Phase							
			NE	01	02	38				
	RX	eS	E		03	27				
		e	ZE		15					
		eL		00	44	19.7	9.0S 112.4E 64km			USCGS
	Epicentre									
			Z	07	20					
21	WN	eL		06	31	42.4	52.6N 168.6W 39km			USCGS
	Epicentre									
			Z	06	50	33				
21	KP	eP	Z	06	50	41				
	CT	eP		06	45	26.5	17.0S 173.4W 53km			USCGS
	Epicentre									
21	KP	eP	Z	08	55	50				
	WN	eP	Z	08	56	08				
		e	ZNE			57.3				
		SKS	ZN	09	06	35				
		S	E		07	07				
		PS	N		08	20				
		Lq	NE			22.1				
		Lr	ZN			26.0				
		SKS	N	09	07	05				
	RX	eS	E		08	01				
	Epicentre			08	42	48.3	52.4N 168.5W 33km			USCGS
21	CT	P	Z	09	45	55				
	Epicentre			09	33	15.5	42.4N 142.3E 27km			USCGS
21	CT	eP	Z	18	32	17				
	WN	eP	Z	18	32	19				
	Epicentre			18	20	44.7	15.3N 121.7E 55km			USCGS
22	SU	iP	N	00	54	34 n				
	KP	P	Z	00	56	14½				
		eL	Z	01	02½					
	CT	P	Z	00	56	30				
	WN	iP	ZNE	00	56	52.2 us				
		i	Z		57	00.5				
		i	N			05.2				
		Lq	NE	01	00	4				
		Lr	Z		00	5				
	RX	eP	ZNE	00	57	34				
		iS	NE	01	01	48				
		Lq	E		02	9				
		Lr	N		04	7				
		Lr	Z		05	7				
		M	ZNE		07					
	Epicentre			00	52	23.4	22.0S 170.1E 33km			USCGS
22	KP	eP	Z	01	16	54				
	CT	eP	Z	01	17	10				
	WN	eP	Z	01	17	27½				
	Epicentre			01	13	02.6	22.0S 170.1E 33km			USCGS
22	KP	P	Z	01	32	43				
	CT	eP	Z	01	32	56				
	WN	P	ZNE	01	33	19				
	Epicentre			01	28	48.9	21.9S 170.1E 33km			USCGS
22	KP	P	Z	02	10	15				
	CT	eP	Z	02	10	16½				
	WN	eL	ZNE	02	30	4				
	Epicentre			01	59	50.3	9.2S 112.4E 69km			USCGS
22	WN	eSKS	Z	15	44	24				
		ePKKP	Z		50	28				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag
DEC		eLq	E	16	01						
		eLr	Z		04						
	RX	eSKS	N	15	44	44					
		eS	E		45	40					
		eL	N	16	07						
	Epicentre			15	20	31.0	52.5N 168.8W 47km			USCGS	
23	WN	eL	E	00	12						
		eL	ZN		14						
	Epicentre			00	02	09	22.4S 170.5E			NOUMEA	
23	KP	eP	Z	03	49	57					
	SU	eL	N	03	50	8					
	WN	eLq	E	03	54	4					
		eLr	ZN		55	8					
	Epicentre			03	45	46	22.4S 170.5E			USCGS	
23	TU	ePn	Z	15	35	09					
		i	Z			10					
		e	Z			27					
		eSn	Z			34					
	KP	Pn	Z	15	35	26					
		eP*	Z			32					
	CT	Pn	Z	15	35	31					
		eP*	Z			40					
	TO	eP	Y	15	35	33					
		eSn	Y		36	10					
		eS*	Y			21					
	ON	ePn	E	15	35	45					
		i	E			47					
		eSn	E		36	33					
	WN	Pn	ZNE	15	35	52					
		eP*	ZNE		36	05					
		iSn	NE			48					
	CB	ePn	E	15	36	08					
		Sn	E		37	14					
	GP	eP	N	15	36	32					
		S	N		37	52					
	KM	eSn	X	15	37	51					
	Epicentre			15	34	39	37.7S 179.2E S			NZ(C)	5.3 NZ
							Charters Towers, Brisbane, Tromsoe, Sodankyla, Umea and Nurmijarvi readings used to determine epicentre. Felt: Tokomaru Bay MM3.				
23	KP	iP	Z	23	35	21.0 u					
	CT	P	Z	23	35	28.9 u					
	WN	P	ZNE	23	35	38.6					
	Epicentre			23	27	59.5	5.1S 151.2E 105km			USCGS	
24	WN	eP	Z	00	35	54					
	CT	P	Z	00	36	04					
	KP	P	Z	00	36	10½					
	Epicentre			00	23	53.1	59.1S 26.0W 33km			USCGS	
24	WN	eL	ZN	11	51	3					
	Epicentre			11	40	46.7	22.0S 170.1E 33km			USCGS	
24	WN	eL	Z	12	23	5					
26	KP	P	Z	22	38	31					
	WN	SKS	ZNE	22	49	07					
		S	ZNE			47					
		PS	ZNE		51	10					
		SSS	ZN	23	00	19					

Date	Stn	Phase		h	m	s	Az Tz	Ae Te	Ar Tn	Mag
DEC		eL	E			05.5				
		Lr	ZNE			09.0				
	RX	SKS	NE	22	49	30				
		S	ZNE		50	30				
		PS	N		51	55				
		eSS	NE		57	17				
		eL	N	23	12					
		eL	E		13					
		eLr	Z		15					
	Epicentre			22	25	15.5	53.9N 168.7E 33km		USCGS	
26	WN	L	Z	24	30.5					
	Epicentre			23	46	14.7	54.0N 168.8E 33km		USCGS	
27	KP	P	Z	02	30	09				
	TU	eP	Z	02	30	09½				
		eS	Z		31	41				
	CT	P	Z	02	30	19				
		eS	Z		32	02				
	TO	eP	Y	02	30	20				
		e	Y		31	57				
		eS	Y		32	00				
	WN	eP	ZNE	02	30	42				
		S	NE		32	41				
	GP	eP	N	02	31	16				
		eS	N		33	39				
	Epicentre			02	28	10	32S 178W N?		NZ(D)	5.9 NZ
27	KP	P	Z	04	19	04				
		e	Z			44				
	Epicentre			04	13	54.7	14.8S 173.2W 54km		USCGS	
27	CT	iP	Z	14	10	08.4 u				
	WN	P	Z	14	10	14				
	Epicentre			14	02	02.1	4.9S 145.1E 35km		USCGS	
27	WN	eL	ZN	18	59	1				
29	TU	P	Z	04	22	24				
		e	Z			36				
	WN	eL	Z	04	42					
	Epicentre			04	12	09.0	2.4N 127.1E 33km		USCGS	
29	WN	eP	Z	10	54	22				
		eSKS	Z	11	04	44				
		S	ZN		05	32				
		PS	Z		06	44				
		SSS	Z		15	44				
		Lr	ZNE		24	5				
	CT	eP	Z	10	54	24				
		e	Z			34				
	RX	eSKS	E	11	05	03				
		eS	N			47				
		eSSS	NE		12	28				
		eL	ZNE		25					
	Epicentre			10	41	04.1	20.0S 69.9W 46km		USCGS	
29	TU	eP	Z	14	49	39				
		e	Z		51	11				
		S	Z			17				
	CT	eP	Z	14	49	54				
		I	Z		50	18				
	WN	P	N	14	49	55				
		eL	N		55	.0				
	WN	eP	ZNE	14	50	24				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
DEC		eS	ZNE		52	21				
		eL	ZNE		53	.3				
	RX	eP	Z	14	51	38				
		eL	NE		56	.3				
		eL	Z		57	½				
	Epicentre			14	47	41.4	31.2S	177.9W	43km	USCGS
29	TU	eP	Z	15	22	40				
		S	Z		24	16				
	CT	eS	Z	15	24	46				
	WN	S	ZNE	15	25	21				
	Epicentre			15	20	42.3	31.4S	177.6W	41km	USCGS
29	TU	eP	Z	18	15	53				
		S	Z		17	29				
	CT	eP	Z	18	16	11				
		e	Z		17	33				
		e	Z			45				
	WN	S	ZNE	18	18	36				
		eL	ZNE		20	08				
	Epicentre			18	13	59.3	31.6S	177.8W	33km	USCGS
29	TU	eS	Z	18	18	22				
	WN	S	ZNE	18	19	28				
29	TU	eP	Z	18	21	10				
		S	Z		23	12½				
	CT	S	Z	18	23	43				
	WN	S	ZNE	18	24	20				
		L	Z		26	.0				
		M	ZNE		28					
	Epicentre			18	19	40.7	31.5S	177.6W	33km	USCGS
29	TU	eP	Z	18	25	26				
		e	Z		26	45				
		S	Z			53				
	CT	eS	Z	18	27	22				
	WN	S	ZNE	18	28	00				
	Epicentre			18	23	.3	31½S	177½W		BCIS
29	TU	eS	Z	18	29	37				
	CT	eS	Z	18	30	10				
	WN	S	ZNE	18	30	45				
29	TU	eP	Z	19	42	41				
		S	Z		44	06				
	CT	eP	Z	19	42	59				
		eS	Z		44	29				
	WN	S	ZNE	19	45	13				
		eL	Z		47	½				
	Epicentre			19	40	34	31½S	177½W		BCIS
30	TU	P	Z	02	03	10				
	CT	eP	Z	02	03	10				
	Epicentre			01	57	43.7	14.9S	166.6E	49km	USCGS
30	CT	eP	Z	13	26	11				
		e	Z			20				
		eS	Z		28	22				
	TU	eS	Z	13	28	03				
	WN	S	NE	13	29	10				
	Epicentre			13	23	09.8	28.2S	175.8W	47km	USCGS
30	CT	eP	Z	17	51	36				
	Epicentre			17	47	15.4	21.1S	169.3E	71km	USCGS

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag
		P	Z	18	23	44				
DEC 30	CT	pP	Z		24	05				
		eP	Z	18	23	50				
	TU	e	Z		24	07				
		eP	Z	18	23	50				
	WN	e	Z		24	30				
		ePP	Z		25	34				
		S	ZNE		29	53				
		sS	NE		30	28				
		e(SS)	ZNE		33	12				
		eL	Z		35	46				
	RX	S	NE	18	30	20				
		sS	NE		31	02				
		eSS	NE		33	52				
		eL	NE		36	.8				
	Epicentre			18	16	21.4	4.7S	153.7E	116km	USCGS
30	CT	eP?	Z	22	53	34				
		eP	Z			46				
		eS	Z		56	13				
	Epicentre			22	50	25.9	27.1S	176.5W	49km	USCGS
31	WN	eP	ZNE	11	13	02				
		Lq	NE		34	.7				
		Lr	ZE		38	.8				
	CT	P	Z	11	13	04				
	RX	eL	E	11	38					
	Epicentre			11	00	59.5	0.1S	99.3E	33km	USCGS
31	CT	eP?	Z	21	47	43				
		eP	Z			50				
		S	Z		49	52				
	TU	eS	Y	21	49	48				
	WN	S	ZNE	21	50	30				
		i	ZNE			42				
	GF	S	N	21	51	34				
	Epicentre			21	45	04.7	28.3S	178.4W	239km	USCGS
31	RW	eP	N	19	42	08				
		eS	N		43	50				
		eL	N		44	20				
	CT	P	Z	19	44	05				
	WN	P	ZNE	19	44	28				
		S	ZNE		48	06				
		L	ZNE		48	.8				
	RX	eP	Z	19	45	12				
		eP	N			16				
		eS	N		49	26				
		eLq	N		51	30				
		eLr	ZE		52	.7				
		M	N		54					
	Epicentre			19	40	10.5	22.7S	171.4E	39km	USCGS

AFIAMALU AND APIA

Readings from Apia (AA) are given only when no records from Afiamalu (AF) are available. The station at Afiamalu did not operate from July 26 until September 29. During this period the Benioff seismographs were replaced by U.S. World Standard instruments.

Amplitudes are given in millimetres, measured directly from the photographic paper records. The columns Az, Tz and An, Tn refer to the long-period Benioff instruments at Afiamalu, and the column Bn to the Wood-Anderson torsion seismograph at Apia.

Date	Stn	Phase		h	m	s		Az	Tz		An	Tn		Bn
JAN 1	AF	eP	ZN	12	19	03		0.5	1		0.5	1		
		eS	ZN		21	17					0.7	1		
		eT	ZN		31	18		0.7	1		0.9	1		
1	AF	eP	Z	15	35	14		0.4	1					
2	AF	eP	ZN	05	54	29		0.3	1		0.4	1		
		eS	ZN		55	41		0.6	1		0.7	1		
		eT	ZN	06	01			0.3	1		0.2	1		
2	AF	eP	ZN	11	51	56		0.6	1		0.4	1		
2	AF	eP	ZN	23	12	12		0.3	1		0.3	1		
3	AF	eP	ZN	06	54	09		0.7	1		0.7	1		
		eS	ZN		57	44		0.3	1		0.5	1		
3	AF	eP	ZN	11	22	38		1.1	1		1.1	1		
		eS	ZN		23	51		2.1	1		2.2	1		
		eL	ZN		24	.8		1.7	9		1.2	8		
		eT	ZN		29	19		0.8	1		0.8	1		
3	AF	eP	ZN	23	54	50		1.7	4		1.2	3		
		eL	ZN		59	.4		1.5	10		1.2	12		
4	AF	eP	ZN	04	46	45					0.5	2		
		eL	ZN	05	07	.1		1.2	25		0.8	30		
4	AF	eP	ZN	07	44	20					0.6	1		
5	AF	iP	ZN	00	24	57	u	2.1	2		1.3	2		
		eL	ZN		26	06		40	8		41	13		
5	AF	iP	ZN	08	08	26			very large					
5	AF	eP	Z	11	56	05		0.4	1					
8	AF	eL	ZN	01	49	.7		2	20		1.1	20		

Date	Stn	Phase		h	m	s		Az	Tz		An	Tn		Bn
JAN 8	AF	eP	ZN	05	45	45		1.4	1		1.1	1		
		eS	ZN		47	42		1.8	1		2.1	1		
		eT	ZN		55	27		0.5	1		0.5	1		
8	AF	eP	Z	17	10	54								
9	AF	eP	ZN	12	51	59								
		eL	ZN	13	12	.2		1.4	25					
9	AF	eP	ZN	23	58	46								
		eS	ZN	00	00	18		0.4	1		0.7	1		
11	AF	eP	Z	23	15	53								
		eS	Z		16	44								
13	AF	iP	ZN	03	06	51	d	1.7	1		1.2	1		
		eS	ZN		08	21		0.8	1		1.1	1		
13	AF	eP	Z	11	10	44								
13	AF	iP	ZN	11	41	44	u	8.5	1		6.5	1		
		eS	ZN		42	04		54	1		62	1		
14	AF	iP	Z	13	45	10	u							
15	AF	iP	Z	18	28	53	d							
16	AF	eP	ZN	11	39	45		1.6	1		1.3	1		
		eS	ZN		42	40		1.1	1		1.1	1		
		eL	ZN		43	05		5	28		2.8	28		
		eT	ZN		53			0.9	1		1	1		
17	AF	iP	Z	11	32	40	u							
		S	ZN		34	22		2.2	1		2.2	1		
17	AF	eP	Z	15	39	47								
17	AF	eP	Z	15	53	44								
18	AF	iP	Z	08	18	50	d	0.8	1					
		eS	ZN		20	35		0.9	1		0.9	1		
18	AF	P	Z	16	00	30								
18	AF	e(P)	ZN	16	00	39					0.6	1		
18	AF	eP	ZN	16	03	32								
19	AF	eP	ZN	13	24	35		0.7	1		0.7	1		
		eS	ZN		26	00		0.8	1		1.0	1		
		eT	ZN		32	45		0.7	1		0.9	1		
20	AF	P	ZN	20	21	37					0.5	1		
21	AF	iP	ZN	12	53	46	d	8.5	1		1.4	1		
		S	ZN		55	21		3.6	1		1.5	1		
24	AF	iP	ZN	04	50	55	u	0.9	1		0.7	1		
25	AF	eP	ZN	01	55	38		1.3	1		0.8	1		
		eS	N	02	01	12					0.8	20		
		e(L)	Z		01	.6								
		eL	Z		02	.2		2.0	18					
25	AF	iP	ZN	10	07	53	d	0.9	1		0.6	1		

Date		Stn	Phase		h	m	s		Az	Tz	An	Tn	Bn
JAN			e(S)	Z		11	30						
	25	AF	eP	ZN	12	17	35		0.5	1	0.5	1	
			e	Z		18	23						
			eS	Z		19	54						
	25	AF	eP	Z	22	38	11						
			eS	ZN		39	41				0.8	1	
	26	AF	iP	ZN	05	33	06	u	0.6	1	0.5	1	
	26	AF	iP	ZN	06	11	30		1.1	1	0.8	1	
			S	ZN		13	10		1.8	1	1.9	1	
			eT	ZN		17			0.7	1	0.8	1	
	26	AF	ePKP	Z	08	37	40		0.8	1			
	26	AF	eP	Z	11	53	21						
	27	AF	eP	ZN	12	03	43		0.8	1	0.6	1	
			eS	ZN		05	52		0.7	1	0.7	1	
	27	AF	eP	ZN	12	21	20				0.6	1	
			eS	ZN		23	15		0.6	1	0.7	1	
	27	AF	iP	ZN	23	55	12	d					
	28	AF	iP	ZN	05	40	58	d	75	1	58	1	
			eS	ZN		41	37		78	1	88	1	
	29	AF	eP	ZN	00	32	47				0.6	1	
			S	ZN		34	23				0.8	1	
	29	AF	eP	ZN	04	58	50						
			eS	ZN	05	00	25						
	29	AF	i(P)	Z	11	49	17	d					
	29	AF	iP	ZN	21	08	23	d	3.8	1	2.7	1	
			S	ZN			43		6.0	1	13	1	
	29	AF	iP	Z	22	11	59	d			0.6	1	
			iS	ZN		13	35	d			0.6	1	
	30	AF	iP	ZN	15	02	32	d	5.5	1	3.0	1	
			eS	ZN		03	24		2.0	1	1.9	1	
	30	AF	eP	ZN	18	35	16		0.9	1	0.7	1	
			eS	N		39	05				1.5	15	
			eL	Z		40							
FEB	1	AF	iP	ZN	00	20	30	u	0.7	1	0.6	1	
			eS	ZN		23	40				0.6	1	
			e(T)	Z		38.5							
	1	AF	eP	Z	00	44	07		0.9	1			
			i	ZN			15		3.3	2	1.7	2	
			eS	ZN		47	19				1.0	1	
			eL	ZN		48.3			5	8	1.7	7	
			eT	ZN		59			1.0	1	0.8	1	
	1	AF	eP	ZN	19	01	32		0.6	1	0.7	1	
	1	AF	eP	ZN	20	24	35				0.7	1	
			eS	ZN		27	24				0.7	1	

Date		Stn	Phase		h	m	s		Az	Tz	An	Tn	Bn
			eT	ZN		39					0.7	1	
FEB													
	2	AF	i(P)	Z	17	32	30	d	0.6	1			
	2	AF	eP	ZN	17	33	15		0.7	1	0.5	1	
			eS	ZN		34	43		0.9	1	0.8	1	
			e(PcP)	ZN		39	03		0.6	1	0.6	1	
	3	AF	P	ZN	00	47	06		2.9	2	1.0	1	
			eS	ZN		54	28		2.0	16	1.5	18	
			eSS	ZN		57	15		1.0	22	1.0	15	
			Lr	ZN	01	02	48		2.0	15	0.9	20	
			M	ZN		09			4.0	16	2.0	16	
	3	AF	iP	ZN	13	27	10	d	0.7	1	0.6	1	
			iS	ZN		28	38	d	1.1	1	0.9	1	
			eT	Z		35	20		0.8	1	0.8	1	
	8	AA	eP	N	11	57	54						0.25
	9	AF	iP	Z	12	05	15	d	1.0	1			
			S	Z		07	35		0.7	1			
	11	AF	iP	ZN	02	52	30	u	0.6	1	0.5	1	
	11	AF	eP	ZN	19	02	35		4.0	5	0.9	1	
			eS	ZN		07	50		1.5	15	1.5	15	
			eL	ZN		10.6			2.5	18	3.5	18	
	14	AF	eP	ZN	06	49	07				2.0	2	
			eS	N		59	20				5.5	25	
			SS	N	07	04	08				4.0	20	
			eLq	N		12.5					3.0	20	
			eLr	N		16					14	18	
	15	AF	eP	Z	14	13	01						
	15	AF	iP	ZN	15	32	36	d	1.2	1	0.9	1	
			S	ZN		34	43		1.1	1	1.0	1	
	15	AF	iP	ZN	20	58	37	u	2.3	2	1.0	1	
			iS	ZN	21	00	39	u	0.7	1	0.8	1	
			eT	ZN		10			1.2	1	0.7	1	
	19	AA	eP?	N	11	06	08						0.3
			e(P)	N			26						1.4
			iS	N		07	35						6.5
			eT	N		11.2							0.6
	20	AF	iP	ZN	10	10	35	u	1.3	1	0.7	1	
			S	ZN		13	05		1.6	1	1.6	1	
			eScP	Z		17	50		0.5	1			
	20	AF	eP	Z	16	16	46		0.6	1			
	21	AF	iP	ZN	00	09	20	u	0.7	1	0.4	1	
			iS	ZN		11	26	u	0.7	1	0.5	1	
			eT	Z		21.5			0.5	1			
	23	AF	iP	ZN	11	48	27	u	1.0	1	0.7	1	
	23	AF	eP	Z	20	28	43						
			ePP	Z		30	06						
			eLq	ZN		38	30		0.5	18	0.6	20	
			eLr	Z		40			2	16			

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Bn
FEB 24	AF	iP	Z	19	42	25	d	0.7	1			
25	AF	eP	ZN	06	42	47		0.6	1			
		iS	ZN		45	03	d	0.8	1	0.6	1	
		eT	ZN		54			0.5	1	0.7	1	
										0.5	1	
25	AF	eP	Z	14	04	43						
25	AF	eP	Z	20	12	01						
		eS	ZN		13	03		0.5	1			
		eT	ZN		16	56		0.7	1	0.7	1	
										0.6	1	
26	AF	iP	Z	01	45	40	u	0.7	1			
27	AF	eLq	ZN	13	21	1		2.0	18			
		eLr	Z		28	5		1.0	17	0.5	20	
MAR 1	AF	eP	ZN	23	44	47		2.2	5			
		eS	ZN		47	35		3.0	18	0.5	4	
		eL	ZN		48	50		3.0	20	1.7	16	
										3.0	8	
2	AF	eP	Z	13	13	58						
3	AF	eP	Z	12	25	29						
3	AF	iP	ZN	16	04	17	u	0.8	1	0.6	1	
		S	ZN		06	09		0.6	1	0.7	1	
3	AF	iP	ZN	16	14	43	u	2.1	1	1.1	1	
		S	ZN		15	15		5.0	1	7.0	1	
7	AF	iP	ZN	11	09	29	u			0.9	1	
		ePP	ZN		11	30				0.6	1	
		eS	N		16	22				0.6	16	
9	AA	eP	N	06	59	02						0.75
		eS	N	07	00	27						1.1
9	AA	eP	N	17	32	29						0.8
		eS	N		34	36						1.5
11	AA	eP	N	05	59	37						1.4
		S	N	06	00	12						3.3
15	AA	eP	N	13	09	22						0.4
		eS	N		11	07						0.4
16	AA	eP	N	19	47	37						0.5
18	AA	eP	N	01	30	13						<0.3
		eS	N		32	46						<0.3
19	AA	iP	N	02	33	58						
19	AA	eP	N	15	38	43						0.4
		eS	N		42	04						0.3
21	AF	eP	ZN	02	34	40		0.6	1	0.5	1	
21	AF	iP	ZN	23	08	32	d	2.0	1	0.7	1	
22	AF	iP	ZN	00	30	27	u	1.5	1	0.8	1	
22	AF	iP	Z	00	48	17	d					

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Bn
MAR 22	AF	iP	ZN	01	52	04	u	0.6	1	0.6	1	
		S	ZN		53	00		0.8	1	1.1	1	
		eT	ZN		56	45		1.1	1	0.8	1	
22	AF	eP	ZN	15	21	30		1.5	1	0.5	1	
		e(PP)	Z		23	24		1.5	7			
		eS	Z		28	25		1.5	19			
		eSS	ZN		31	40		1.5	18	0.5	10	
		eLq	ZN		34	35		1.5	24			
		eLr	Z		37	34		3.5	22			
22	AF	eP	Z	16	25	20						
23	AF	iP	ZN	00	17	29	d	0.9	1	0.6	1	
		S	ZN		19	01		0.6	1	0.6	1	
24	AF	eP	ZN	01	35	07		1.0	1	0.7	1	
		eS	ZN			53		2.1	1	1.6	1	
		eT	ZN		38.5			2.2	1	1.8	1	
24	AF	iP	ZN	13	07	25	d	1.6	1			
		pP	Z			52		2.1	1			
		eS	Z		13	53		1.0	24			
		eL	Z		17.1			1.0	20			
26	AF	eP	Z	16	45	27		0.5	1			
27	AF	iP	ZN	14	52	13	d	0.6	1	0.5	1	
		S	ZN		53	46		1.0	1	1.0	1	
28	AF	iP	Z	06	20	42	u					
28	AF	eP	Z	14	17	08						
29	AF	iP	Z	20	19	21	d					
30	AF	iP	ZN	14	27	09	u	1.2	1	0.8	1	
		eS	ZN		29	57		0.7	1	0.7	1	
31	AF	iP	ZN	01	17	28	d	1.6	1	1.0	1	
		S	ZN			59		6.0	1	4.8	1	
APR 1	AF	eP	Z	12	19	24		0.7	1			
2	AF	iP	Z	18	41	38	d					
3	AA	eP	N	16	30	03						0.8
5	AF	eP	Z	12	37	12		0.5	1			
5	AF	iP	Z	19	50	36	u					
6	AF	iP	ZN	04	28	04	d	0.6	1	0.5	1	
		S	Z		29	43						
6	AF	eP	Z	14	15	45						
		eS	Z		17	54						
6	AF	iP	ZN	20	27	21	d	0.7	1	0.5	1	
		eS	ZN		29	27		0.5	1	0.5	1	
7	AF	eL	ZN	06	45	02		1.3	20	0.5	10	
7	AF	iP	ZN	10	33	58	d	1.2	1	0.6	1	
		S	Z		35	42						

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Bn
APR 8	AF	eP	ZN	05	16	53		0.8	1			
		S	ZN		18	08		0.9	1	0.7	1	
										1.0	1	
9	AF	eP	Z	09	04	50						
9	AF	eP	Z	20	17	08		0.5	1			
		eS	ZN		18	32		0.7	1			
										0.6	1	
10	AF	iP	ZN	17	08	21	d	6.0	1			
		S	ZN		09	12		3.5	1	2.6	1	
										2.9	1	
10	AF	ePKP	Z	21	57	10		0.6	1			
12	AA	eP	N	00	03	38						
		eL	N		25.6							0.4
												0.5
12	AF	eP	Z	05	58	08		0.6	1			
14	AF	eP	Z	00	42	28						
		eS	Z		44	48						
17	AF	iPKP	Z	10	23	39	u	0.4	1			
17	AF	eP	Z	17	49	18		0.5	1			
17	AF	ePKP	Z	22	54	53		0.6	1			
18	AF	eP	Z	04	05	45						
		S	ZN		06	48		0.5	1	0.4	1	
18	AF	iP	Z	19	27	40	d	1.3	1			
		i	Z		28	02		1.8	1			
		eS	Z		39.1			1.0	16			
		eL	Z		56.2			3	25			
19	AF	iP	ZN	22	19	37	d	1.3	1	0.8	1	
		eS	N		22	57				0.5	20	
19	AF	iP	ZN	23	29	08		0.5	1	0.4	1	
20	AF	eP	Z	06	01	57						
		ePP	Z		06	02						
		iPKKP	Z		17	52	d					
		eL	Z		36.0			1.0	20			
21	AF	iP	ZN	07	49	02	u	0.8	1	0.6	1	
		eS	ZN		51	14		0.7	1	0.7	1	
		e	Z		55	27		0.4	1			
		(pPcP)	Z			55		0.5	1			
21	AF	eP	Z	21	26	05						
22	AF	iP	ZN	02	14	12	d	0.9	1	0.5	1	
22	AF	eP	Z	04	57	41						
22	AF	iP	ZN	16	05	24	u	0.9	1	0.5	1	
		S	ZN		07	10		0.5	1	0.5	1	
23	AF	iP	ZN	06	09	18	d	4.5	6	0.7	3	
		iPcP	ZN			40		3.2	5	1.0	3	
		ePP	Z		11	51		3.0	7			
		eS	ZN		18	25		3.0	18	1.5	18	
		eLq	ZN		26.3			2.0	23	1.0	17	
		Lr	ZN		29	35		6.0	35	2.0	34	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Bn
APR 25	AF	eP	ZN	05	57	09		0.6	1	0.4	1	
		eS	ZN		58	40		0.7	1	0.7	1	
		eT	ZN	06	05	27		0.5	1	0.4	1	
25	AF	eP	Z	15	58	21						
		eL	ZN	16	18.2			1.0	20			
26	AA	iP	N	07	28	20	d					2.0
		iS	N		29	57	d					2.2
27	AF	iP	ZN	06	33	07	d	2.0	1	1.1	1	
		eS	ZN		35	17		1.2	1	0.9	1	
29	AF	eP	ZN	07	06	42		0.8	1	0.6	1	
		S	ZN		07	30		1.6	1	1.1	1	
29	AF	iP	ZN	20	37	07		2.7	1	1.1	1	
		S	ZN			37		5.0	1	2.9	1	
30	AF	iP	ZN	16	18	12	d	2.0	1	1.3	1	
		S	ZN		19	12		6	16	11	15	
30	AF	iP	ZN	18	32	22	u	2.4	2	1.0	1	
		(S)	ZN		33	15						
		eL	ZN			35		6.0	10	3.5	15	
MAY 2	AF	eP	ZN	20	46	52		1.9	1	0.9	1	
		eS	ZN		49	05		2.0	1	1.4	1	
4	AF	iP	ZN	13	27	33	d	0.8	1	0.7	1	
		S	ZN		29	09		1.1	1	1.0	1	
5	AF	eP	ZN	23	10	07		1.2	1	0.7	1	
		eS	Z		13	29						
6	AF	iP	Z	12	10	59	d					
		iS	ZN		12	46	u	0.8	1	0.7	1	
6	AF	eP	Z	19	13	56		1.0	4			
		eS	Z		26.5			0.5	16			
		eLq	ZN		41.5							
		eLr	ZN		46.5			1.5	22			
		M	ZN		51.0			2.0	18	1.0	20	
7	AF	eP	Z	13	11	13						
7	AF	eP	Z	15	00	53						
		eS	Z		03	40						
7	AF	eP	ZN	17	51	02		2.0	10	0.5	5	
		eS	ZN	18	00	15		1.0	20	1.0	22	
		eL	ZN		11.0			1.5	30	1.0	26	
8	AF	iP	ZN	07	59	15	u	0.7	1	0.6	1	
		S	ZN	08	00	35		0.8	1	1.0	1	
8	AF	eP	Z	18	11	38						
		S	Z		12	55						
9	AF	iP	ZN	02	36	03		0.9	1	0.7	1	
		S	ZN			38		1.4	1	1.1	1	
		L	ZN		37	03		2.4	8	1.3	3	
		eT	ZN			18		1.2	1	1.1	1	
9	AF	iP	ZN	12	13	08	u	0.7	1	0.6	1	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Bn
MAY		S	ZN			45		0.7	1	0.8	1	
10	AF	iP	ZN	00	33	37	u	0.7	1	0.6	1	
		eLq	ZN		43.3			0.6	20			
		eLr	ZN		45.9			1.0	16			
11	AF	iP	ZN	12	10	14	u	1.4	1	0.7	1	
11	AF	eP	Z	13	39	10						
		eS	ZN		41	35		0.8	1	0.6	1	
11	AF	eP	Z	14	23	42		2.0	4			
		eS	ZN		33	38		1.5	18			
		eSS	ZN		38	25		1.5	18	0.6	18	
		eSSS	ZN		42.0			0.6	18			
		eLq	ZN		44.4			1.0	20	0.5	20	
		eLr	ZN		46.6			3.5	18	1.0	18	
12	AF	iP	ZN	20	37	38	d	0.7	1	0.6	1	
		iS	ZN		39	11	u	0.6	1	0.6	1	
12	AF	iP	ZN	22	05	32	d	2.7	1	1.0	1	
		eS	N		07	03				0.7	1	
14	AF	eP	Z	23	24	25		0.6	1			
		eS	N		26	05				0.6	1	
15	AF	iP	ZN	05	33	48	d	1.9	1	0.7	1	
		(PcP)	N		34	00				1.1	1	
		eS	N		41	49				2.0	21	
		eLq	N		48	29				2.0	26	
		eP'P'	Z	06	03	37						
15	AF	eP	ZN	06	53	00		0.9	1	0.5	1	
16	AF	eP	ZN	05	21	21		0.8	1	0.5	1	
16	AF	iP	ZN	17	37	47	u	0.8	1	0.6	1	
		S	ZN		40	32		0.6	1	0.6	1	
		eL	Z		42	45						
17	AF	iP	ZN	02	28	48	d	2.3	1	1.1	1	
18	AF	iP	ZN	02	52	03	d	0.8	1	0.6	1	
		eS	ZN		53	51				0.4	1	
18	AF	iP	Z	07	16	38	u	0.8	1			
		S	ZN		19	29		0.8	1	0.7	1	
18	AF	iP	ZN	23	19	25		8.0	1	3.7	1	
		S	ZN			53		17	1	14	1	
		eT	ZN		21	30		13	1	6.0	1	
19	AF	iP	ZN	15	10	06		2.0	8	0.5	6	
		ePP	Z		13	05		1.2	8			
		eS	ZN		20	10		1.3	16			
		eSS	ZN		24	50		1.0	18			
		eSSS	Z		28.5			1.0	22			
		eLq	ZN		31.0			1.0	20	0.6	20	
		eLr	ZN		33	25		2.5	24	0.5	25	
20	AF	iP	Z	08	11	35	d					
		eS	Z		13	28						
21	AF	iP	ZN	21	17	22	d	83	1	41	1	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Bn
		S	ZN		18	48		152	1	176±	1	
MAY												
22	AF	iP	ZN	00	21	00	u	1.7	1	1.1	1	
		S	ZN			37		4.2	1	4.2	1	
22	AF	iP	ZN	02	20	35		1.7	1	0.9	1	
		S	ZN			57		5.5	2	4.2	2	
22	AF	eP	Z	04	49	23						
22	AF	iP	ZN	08	11	16		23	1	2.7	2	
		ipP	ZN			51		14	1	2.0	2	
		(pPP)	Z		12	16		4.5	6			
		S	ZN		15	07		6.0	10	2.2	10	
		(sS)	ZN			55		8.0	10	5.5	12	
		e	Z		17.0			7.0	36			
22	AF	eP	Z	22	10	37		0.5	1			
		PP	Z		11	59		0.6	1			
		eLq	ZN		20.3							
		eLr	ZN		23.5			1.0	20			
23	AF	eP	ZN	08	22	01		0.8	1	0.5	1	
		iS	Z		24	29		1.0	1	0.9	1	
24	AF	eP	ZN	07	13	06		0.5	1	0.4	1	
		eS	ZN		14	02		0.6	1	0.6	1	
25	AA	eP	N	04	21	02						1.2
		eiS	N		22	15						1.6
		eL	N			56						1.1
		eT	N		27.5							0.9
25	AA	eP	N	17	24	51						0.6
26	AA	eP	N	02	15	05						0.8
		eS	N		16	39						1.0
30	AF	iP	ZN	16	59	27	d	0.8	1	0.5	1	
		S	ZN	17	00	53		1.1	1	0.8	1	
JUN 3	AF	eP	Z	13	50	20						
3	AF	iP	ZN	14	28	27	d	0.6	1	0.4	1	
		S	ZN		30	37		0.6	1	0.4	1	
3	AF	PKP	Z	15	21	35						
		i	Z			42	u					
4	AF	iP	ZN	16	32	22		0.5	1	0.4	1	
		S	ZN		33	25		0.9	1	0.8	1	
5	AF	iP	Z	16	53	30	d	0.9	1			
8	AA	eP	N	01	33	57						0.9
9	AA	eP	N	06	07	08						0.7
		eS	N		08	47						1.2
11	AA	iP	N	04	36	57						1.1
		eS	N		38	26						1.5
13	AF	iP	Z	19	11	26	u					
		iS	ZN		13	22	u	0.5	1	0.4	1	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Bn
JUN 14	AF	eL	ZN	08	23.9			1.0	24			
15	AF	iP	Z	12	00	48	d					
15	AF	iP	Z	12	12	15	u					
		S	Z		13	36						
17	AF	eL	Z	13	32	45		1.0	20			
18	AF	iP	ZN	13	47	30				0.6	1	
		S	ZN		49	05		0.7	1	0.7	1	
18	AF	iP	Z	20	32	33	u					
		eS	Z		34.0							
18	AF	iP	Z	23	49	37	u					
19	AF	iP	ZN	15	45	54		2.1	1	1.3	1	
		S	ZN		46	28		5.0	1	4.7	1	
19	AF	iP	ZN	16	41	29	u	1.0	1	0.7	1	
		iS	ZN		43	08		2.0	1	1.5	1	
20	AF	iP	ZN	00	07	22	d	1.0	1	0.7	1	
		S	ZN		08	30		1.8	1	1.6	1	
21	AF	eP	ZN	08	40	19		0.9	1	0.6	1	
		S	ZN		41	45		2.2	1	1.9	1	
21	AF	P	Z	10	21	10						
		S	Z		22	49						
22	AF	iP	Z	15	03	17	d					
22	AF	P	Z	17	59	13						
		S	Z	18	00	52						
25	AF	iP	ZN	01	33	57	d	0.9	1	0.5	1	
		S	ZN		35	47		0.9	1	0.7	1	
25	AF	iP	Z	11	22	01	d	1.6	1			
		eS	ZN		31.5							
		eL	ZN		44	20		2.0	20			
28	AF	eP	Z	04	34	26		0.9	1			
28	AF	iP	Z	19	01	00	u					
28	AF	iP	ZN	20	48	45	d	2.4	1	1.5	1	
		S	ZN		49	40		10	1	4.5	1	
29	AF	eP	Z	13	59	18						
JUL 1	AF	iP	ZN	01	36	40	u	1.1	1	0.7	1	
1	AF	P	ZN	05	10	14		0.8	1	0.6	1	
		S	ZN		12	12		0.7	1	0.5	1	
		eT	Z		21.2			0.5	1			
1	AF	iP	ZN	13	35	39	d	1.1	1	0.9	1	
		S	ZN		36	14		1.5	1	1.6	2	
		T	ZN		38	42		3.0	1	1.6	1	
2	AF	iP	ZN	08	37	25	u	6.2	3	1.0	2	
		iPP	ZN		38	00	u	4.6	5	1.2	4	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Bn
		eS	ZN		41	15		2.2	16	1.0	16	
JUL												
3	AA	P	N	06	24	34						1.0
		S	N		25	12						3.7
3	AA	P	N	08	35	23						1.0
		S	N		36	01						3.1
6	AA	P	N	12	12	52						9.5
		S	N		13	26						30
6	AA	eP	N	13	30	42						0.6
		eS	N		32	51						0.5
6	AF	1PKP	ZN	23	24	00	u	1.1	1	0.5	1	
		(pPKP)	ZN			57		0.7	1	0.5	1	
		e	ZN		27	14		1.1	1	0.6	1	
		e	Z		37	45		0.5	18			
		eSS	ZN		41	45				0.8	17	
7	AF	eL	ZN	06	46	15		1.0	20			
8	AF	P	Z	22	58	11						
		S	ZN	23	00	46				0.5	1	
		eT	Z		11.3							
10	AF	iP	ZN	05	14	20	u	1.1	1	0.8	1	
		S	ZN		16	08		1.3	1	1.3	1	
10	AA	P	N	12	58	03						0.3
		S	N		59	38						0.7
12	AF	iP	ZN	01	42	34		0.6	1	0.5	1	
		S	ZN		43	58		0.5	1	0.5	1	
12	AA	P	N	09	35	17						0.5
12	AF	eP	Z	16	38	45						
15	AA	eP	N	12	39	14						0.5
		S	N		40	24						0.9
16	AF	eL	Z	02	30.5			0.8	20			
16	AF	iP	ZN	07	52	04	d	1.1	1	0.6	1	
		S	ZN		53	35		0.7	1	0.5	1	
16	AF	iP	ZN	09	30	25	d	1.5	1	0.6	1	
16	AF	iP	ZN	20	08	58	s	0.7	1	0.5	1	
		S	ZN		10	08		0.7	1	0.6	1	
17	AF	iP	ZN	00	20	11		0.9	1	0.5	1	
		S	ZN		21	46		0.4	1	0.4	1	
17	AF	eL	Z	17	52.4							
18	AA	eP	N	14	43	24						0.4
		eS	N		44	43						0.6
19	AF	iP	ZN	03	40	44		0.8	1	0.7	1	
		iS	ZN		41	19		1.9	1	1.7	1	
		eT	ZN		44	10		1.7	1	1.1	1	
20	AF	P	ZN	16	29	08		0.7	1	0.6	1	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Bn
JUL		S	ZN		30	28		0.7	1	0.8	1	
		eT	ZN		36	14		0.7	1	0.7	1	

Recording at Afiamalu was suspended from 1962 June 25 - 29 to allow the installation of "World Standard Network" instruments. During this period a Benioff short-period vertical instrument was in temporary operation at Apia. Amplitudes given are in millimetres, measured directly from the paper records.

JUL 26	AA	eP?	Z	08	28	02		2.0				
		e(P)	Z			12		2.0				
27	AA	iP	Z	19	30	54	d	2.9				
28	AA	iP	Z	00	05	50		130+				
30	AA	iP	Z	14	07	29	u	4.2				
		S	Z		09	05		7.2				
30	AA	P	Z	17	25	05		1.8				
		ipP	Z			17	u	3.4				
AUG 1	AA	P	Z	03	52	24		4.0				
1	AA	eP	Z	04	45	14		3.7				
1	AA	iP	Z	12	50	57	d	3.1				
3	AA	iP	Z	09	09	40	d	2.2				
4	AA	iP	Z	05	40	25		2.4				
		S	Z		41	13		10.5				
5	AA	P	Z	15	13	16		0.9				
6	AA	iP	Z	20	55	05	d	3.8				
		iS	Z		57	30	d	6.4				
8	AA	iP	Z	09	21	19	u	0.8				
		S	Z		22	53		0.9				
8	AA	eP	Z	13	39	38		0.5				
11	AA	iP	Z	01	49	47	u	8.0				
		S	Z		51	30		8.5				
11	AA	iP	Z	06	47	57		15.5				
		S	Z		48	21		59				
11	AA	P	Z	08	27	08		1.6				
		PcP	Z			43		1.2				
17	AA	iP	Z	01	32	57	u	9.0				
		S	Z		33	17		34				
17	AA	iP	Z	11	50	28		2.1				
17	AA	iP	Z	16	21	42	u	1.8				
		S	Z		23	13		1.3				
19	AA	eP	Z	04	14	52		3.8				
		S	Z		15	23		14.5				
20	AA	eP?	Z	11	25	35		0.9				
		eP	Z			40		2.5				

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Bn
AUG 20	AA	eP	Z	23	23	24		1.2				
21	AA	iP	Z	17	05	02	u	8.0				
		S	Z			22		22				
21	AA	eP	Z	21	09	28		1.7				
		S	Z		12	17		1.3				
		eLr	Z		15	07		0.6				
21	AA	eP	Z	21	19	43		1.1				
22	AA	iP	Z	09	14	53	d	1.4				
		iS	Z		16	35	d	1.4				
23	AA	iP	Z	19	17	53		2.9				
		eS	Z		18	20		8.0				
24	AA	iP	Z	08	04	46	d	48				
		S	Z			08		123				
25	AA	iP	Z	08	33	59	u	16.5				
		S	Z		35	42		45				
28	AA	iP	Z	00	40	39		9.5				
		S	Z		41	04		35				
28	AA	eiP	Z	11	19	44		7.0				
30	AA	eP	Z	17	19	40		4.0				
		eS	Z		20	59		4.0				
		eT	Z		27	20		3.5				
SEP 1	AA	iP	Z	04	56	27	d	28				
7	AA	P	Z	07	51	25		1.2				
10	AA	iP	Z	15	46	19	u	43				
		S	Z		48	11		25				
10	AA	iP	Z	17	50	11	u	3.7				
		S	Z			54		11.5				
		eT	Z		53	56						
11	AA	iP	Z	02	24	51	d	9.0				
		S	Z		25	11		32				
12	AA	iP	Z	14	18	30	d	24				
		S	Z			52		64				
14	AA	eP?	Z	17	26	44		1.3				
		e(S)	Z		28	26		1.9				
14	AA	iP	Z	18	19	46		9.5				
		S	Z		21	16		13				
17	AA	iP	Z	05	01	47	u	1.8				
		eS	Z		03	17		0.9				
17	AA	iP	Z	17	58	05	u	6.0				
		S	Z		59	57		9.0				
18	AA	iP	Z	20	15	02	d	3.5				
18	AA	eP	Z	21	47	48		2.9				
		eS	Z		48	44		2.7				

Date	Stn	Phase		h m s	Az	Tz	An	Tn	Ae	Te
SEP		eT	Z	52 10	1.1					
18	AA	iP	Z	22 04 06 d	22					
		S	Z	35	58					
21	AA	iP	Z	08 46 31 d	2.2					
		S	Z	48 25	1.6					
21	AA	iP	Z	14 56 46 d	4.2					
22	AA	eP	Z	15 13 27	2.0					
25	AA	eP	Z	07 32 42	2.1					
		eS	Z	34 44	1.4					
26	AA	P	Z	12 48 02	2.0					
		eS	Z	50 39	1.7					
27	AA	iP	Z	13 27 00	11.0					
		eS	Z	28 31	2.4					

On 1962 September 29, Afiamalu was equipped with the instruments of a "World Standard Network" station, and Apia readings are no longer reported. Amplitudes are given in millimetres, read directly from the paper records.

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
SEP 29	eSKS	Z	15 42 53	4	15				
	eSP	Z	46 32	2	14				
	eSS	Z	51 47	3.6	16				
	eSKKS	Z	58 29	3	40				
	eL	Z	16 04 09	4	32				
OCT 1	eP	ZN	20 43 53						
	eS	ZN	44 52	2.1	1	2.5	1		
	eL	ZN	45 10	9	33	9	33		
4	iP	ZNE	07 32 27.0 u						
4	iP	ZNE	17 28 07.4 u						
4	iP	ZNE	18 48 09.3 u						
5	eP	ZNE	05 30 07						
	eiS	ZNE	31 12						
5	eP	ZNE	10 48 16						
6	iP	ZNE	04 27 53 u	30	22				
	eS	ZNE	31 46						
	L	ZNE	32 58						
6	eP	ZNE	05 31 07						
	i	ZNE	24						
6	eP	ZNE	07 21 40						
	eS	ZNE	25 28						
	eS	ZNE	26 42						
6	iP	ZNE	08 00 51 u	3.5	20	1.7	18	4	22
	eS	ZNE	04 44			1.4	8	2.2	22
	e	ZNE	05 08						
6	iP	ZNE	11 05 16.6 u	1.5	6	0.4	7	2	3
	e	ZNE	06 12	1.8	6	0.6	3	1.4	18

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
	eS	ZNE	08 56	1.5	6	3.5	9	1.5	16
OCT	L	ZN	09 54	2.0	16	3.5	14		
		ZNE	12 04 22	0.9	13	0.6	4		
6	eP	NE	08 25			0.8	4	1.2	16
	eS	ZNE	09 26	2.5	20	0.9	6	2.6	22
	L								
		ZNE	16 10 54.0 u						
6	iP	ZNE	11 14.5						
	iS								
		ZNE	18 05 46	0.8	4			0.8	5
6	eP	ZNE	09 45	0.4	5			0.9	4
	eS	ZNE	10 49	3.5	20			3.0	18
	eL								
		ZNE	18 36 12.3 u						
6	iP	ZNE	44						
	iS	ZNE	18 51 30						
	i	ZNE							
6	iP?	E	23 35 56 e						
	iP	ZNE	36 02 d	7	20	5	17	10	20
	iS	ZNE	39 52	2	13	1.9	6	6	16
	e	ZN	40 13 d	4	13	6.5	18		
	eL	ZNE	41 05 u	20	20	8.5	15	19	20
7	eP	ZNE	00 53 40	1.1	14	0.7	3	1.4	4
	eS	NE	57 44			0.5	4	1.2	2
	eL	ZNE	58 37	5	21	1.4	9	4	21
7	eiP	Z	04 27 55.4						
	i	ZE	57.1 u						
	e	Z	28 04						
	i	E	07						
	e	E	30 18						
7	iP	ZNE	08 00 51.2 u						
7	iP	ZE	08 08 04 d						
	i	ZE	06.0 u						
7	iP	ZNE	11 05 18.2 d						
7	eP	ZE	18 05 37						
7	iP	ZNE	22 42 54.8 u						
	eS	ZNE	43 24						
7	iP	ZE	23 35 56.3						
	i	ZNE	58.0 u						
8	iP	ZNE	07 23 48.5						
	i	ZNE	24 04.5						
8	iP	ZNE	17 55 06.0						
	eS	ZNE	56 19						
8	iP	Z	22 08 05.6 u						
	i	ZN	08			1.8	23		
	eS	Z	17 16			1	14		
	i	Z	18 52 d			3.5	21		
	e	Z	21 28			1.4	11		
	eSS	Z	22 50						
	eL	Z	27 55			2	17		
9	iP	ZNE	15 25 58 s						

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
OCT 9	eP	ZE	20	22	16		1	6.5				
	ePP	Z		23	57		1.9					
	iS	Z		28	31	d	2.2	16				
	(SSS)	Z		31	40		7	21				
	eL	Z		33	24		16	29				
10	iP	ZNE	09	23	10.0	u						
	iS	E		25	19.6							
10	iP	ZNE	16	21	14.3							
	i	Z		22	20.5							
	iS	NE			22							
10	eP	ZNE	19	14	20							
	eS	ZNE			44		1.9	11	4	13	6	16
10	iP	ZNE	21	53	04.6	dsw	6.5	13	7	16	7.5	18
	eS	ZNE			24							
							Felt: Apia MM3.					
10	iP	ZNE	22	18	26.0	d						
	i	ZNE			30.8							
	iS	ZNE			48	d						
11	eP	ZNE	01	09	37							
	eS	NE			54							
11	eP	ZNE	01	11	01							
	eS	ZNE			21							
11	iP	ZNE	02	15	32.3	d						
	i	ZNE			53.4							
	e	ZNE		16	04							
11	eP	ZNE	13	04	55							
	eS	ZNE		05	28							
11	iP	ZNE	14	17	53.6	u						
	S	ZNE		18	13							
11	iP	ZNE	19	14	30.4	d						
	S	ZNE			48							
12	eiP	Z	10	50	35							
	e	NE			37							
	e	NE			39							
12	iP	ZNE	11	45	25	d						
	eiS	ZNE		46	43							
12	iP	Z	14	54	10.2	u						
	iS	NE		55	55	sw						
12	iP	ZNE	20	42	16	u						
	eS	E		44	45							
13	iP	ZE	08	33	51.0	u						
13	eiP	ZNE	18	52	33							
14	eP	Z	00	34	32							
14	iP	ZE	07	25	15.7	d					11	5.3
	i	NE			37.4	se						

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
OCT 15	iP	ZE	08	09	17.0	u						
	iS	ZE			47.0	w						
15	iP	ZE	08	33	38.8	u						
	eS	ZE		34	08							
15	iP	ZE	11	42	26	d						
	eS	ZE		43	03							
	eT	ZE		46	04							
15	iP	ZE	12	30	58	de						
	eiS	ZE		31	29							
16	P	ZE	05	26	03							
	e(S)	ZE		31	04		2.1	23			1.9	26
16	eS	ZN	18	21	44		0.9	19	1.9	30		
	eL	ZN		32	20		1.9	24	3.5	28		
16	eP	ZNE	18	46	05							
	eS	ZNE			58							
16	eiP	ZNE	19	08	05							
	eS	ZNE		09	12							
	eiT	ZNE		13	56							
19	iP	ZNE	23	52	09	u						
20	iP	Z	03	38	09	u						
	S	Z		39	55							
20	iP	Z	05	40	17.8	d						
21	iP	Z	08	19	20.0	d						
	eS	ZN		20	55							
21	iP	ZNE	13	07	53.0	d						
	S	ZNE		08	15							
21	eiP	Z	22	26	53							
	eS	ZNE		27	27							
	eT	ZNE		29	41							
22	iP	Z	01	11	42.1	d						
	eS	NE		13	17							
22	iP	ZNE	14	06	55	u						
	S	ZNE		07	17							
22	eL	ZN	15	55	0		1.5	25	2.5	30	1.7	
							No records available Oct 22d 21h - 23d 03h. Earthquake reported felt Apia 23d 01h 27m.					
23	iP	ZN	04	40	08.2							
	S	ZN		41	05							
23	iP	ZN	06	47	22	u						
	S	ZN			43							
23	eP	ZN	09	18	40							
	eS	ZN		19	24							
	eT	ZN		23	1							

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
OCT 23	iP	Z	16 17 52.4 u						
24	eP	ZN	20 20 25						
	eS	N	44						
25	iP	ZE	09 44 35 u						
	S	NE	53 09						
	eL	N	10 00 26						
						1.8 15			
						4.5 22		1.7 10	
25	iP	ZNE	12 38 40 u						
	S	ZE	40 04						
26	eP	Z	20 15 22						
	S	ZNE	23 04	7.5 21		7.0 22			
	SSS	E	28 13					4.0 28	
	Lq	ZN	29 26					4.0 20	
						4.5 20			
26	P	ZNE	07 25 02						
27	P	ZNE	07 37 55.6						
	eS	ZNE	38 32						
28	P	ZN	14 05 29.0						
29	e	ZE	16 24 42					1.2	
	L	ZNE	32.9	1.6 28				1.4 24	
29	e	ZNE	21 19 24	1.7 8		1.7 16		2.7 22	
	L	ZNE	27.5	4.9 28		1.4 27		5.0 27	
30	eSP	Z	02 15 20						
	eSS	ZNE	21 55						
	eL	ZNE	38 35						
30	iP	ZNE	15 22 10.9 u						
	S	ZNE	23 26						
	eL	ZNE	23 40	1.5 25		1.5 25		3.0 22	
	eT	ZNE	29 15						
30	P	ZNE	15 47 51						
31	eS	ZNE	11 56 34			0.8 6			
	eSS	ZNE	12 02 37	0.5 20		0.6 23		0.7 18	
	eLq	N	09.0			2.0 36			
	eLr	ZNE	12.0	1.6 28				1.8 25	
NOV 1	iP	ZNE	09 49 55.8 dnw						
	S	ZNE	52 04						
1	iP	ZE	15 43 14.9 d	1.1					
	eS	N	50 48						
	PS	ZNE	51 15	5.0 22		3.5 18		9.0 22	
	eLq	N	57.5			2.0 27			
	eLr	ZNE	59 50	5.5 37		4.0 27		5.0 37	
1	P	ZE	18 02 07						
	eS	E	09.6						
	ePS	ZNE	10 15	2.8 24		2.2 20		5.0 20	
	eLq	N	16 53			1.5 20			
	eLr	ZNE	18.6	3.5 36		3.0 40		3.0 26	
2	eP	ZE	06 59 06						
	eL	ZNE	07 04 25	1.0 22				1.3 25	
2	eP	Z	14 58 08						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
NOV	eL	ZNE	15 20 40						
	eM	NE	30.0				1.5 25		1.5 22
3	iP	ZNE	01 06 28.0 d						
	eL	ZE	14 45						
4	eP	ZNE	21 10 04						
	eS	ZNE	11 49						
4	eP	Z	22 06 10			1.2 12			
	eS	Z	17 26			1.8 16			
	e(SS)	Z	22 15			2.3 24			
	eL	Z	32 25			2.5 28			
7	P	ZNE	05 15 26						
7	eP	ZNE	06 24 55						
	eS	ZNE	27 03						
8	eL	ZE	01 03 05			3.0 26			2.0 25
8	eS	Z	07 57 20			1.0 15			
	eL	E	58 37						1.7 18
8	iP	ZE	16 31 20						
9	iP	ZNE	08 28 22.1 u						
	S	ZNE	30 26						
9	eL	ZN	09 52.1						
11	eL	ZE	08 35.0						
11	eL	ZN	12 18.2						
11	iP	ZNE	11 59 42.8 d						
	S	ZNE	12 01 11						
11	PKP	Z	15 35 32						
11	iP	ZNE	16 14 39.0 une			6 5		2.2 5	5.4 6
	PP	ZE	55			9 5			6.5 5
	eS	ZNE	18 32			2.3 12		3.7 20	2.2 18
	eSS	NE	52					5 14	2.8 10
	eL	ZNE	19 06			28 30		25 20	31 27
11	eP	Z	22 26 47			1.3 7			
	eS	ZNE	36 30			1.6 20			3.2 22
	PS	NE	38 17					3.1 20	3.0 15
	eSS	ZNE	43.0			2.5 18		2.0 20	1.8 25
	eLq	NE	49 30					4.5 30	3.2 30
	eLr	ZNE	52 40			6.5 30		6.0 30	4.0 25
14	P	ZNE	07 26 53						
	S	ZNE	29 12						
	eLq	E	30.8						1.6 20
14	eP	Z	07 58 54						
	eL	ZNE	18			2.2 30		1.8 30	1.7 26
14	eP	ZNE	22 10 03						
	eSS	ZE	23 16						
	eLq	ZE	26.5						
	eLr	ZE	31.4			1.7 37			

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
NOV 15	iP	ZNE	11 32 51.1 d						
	S	ZNE	34 35						
15	eS	NE	16 15 23						
	eL	ZNE	32.5	1.6	25	2.0	23	1.5	20
								1.4	22
15	eP	ZNE	16 32 53						
15	iP	ZNE	23 38 13.2						
	eS	NE	48.9			1.1	18		
	eSS	E	54.9					2.0	16
	eL	ZNE	06.6			1.5	20	1.1	22
								2.5	22
16	eP	ZNE	02 21 43						
	eS	E	23 15						
16	eP	Z	07 28 30						
	eS	ZNE	36 35	14	16	14	20	22	18
	eSS	Z	40 20	3.5	17				
	eSSS	N	42 39			2.5	16		
	eLq	NE	43.5			14	16	6	16
	eLr	ZNE	44.8	48	25	35	24	36	27
16	eS	E	21 34 15					0.8	15
	eSP	Z	36 15	1.0	20				
	eSS	ZE	41 40						
	e(SSS)	Z	44.9						
	eL	ZE	50.3	1.2	24			1.0	24
18	iP	ZNE	12 01 17.7 use						
	S	ZNE	52						
19	eS	E	10 32 30					1.3	15
	eSS	E	36.5					3.0	26
	e(Lq)	N	38.7			1.5	20		
	eLr	Z	40.7	1.6	30				
20	eP	Z	07 44 18						
20	eL	ZE	10 27.5						
21	P	ZNE	19 42 43						
	iS	ZNE	44 35.0 nw						
22	eP	ZE	07 42 06						
	eS	ZNE	46.1						
22	P	ZNE	08 39 23						
	S	ZNE	41 06						
22	P	ZNE	23 57 25						
	S	ZNE	59 23						
	eL	ZNE	00 00.4						
23	eL	ZNE	01 12.9	2.0	18			1.7	18
23	P	ZNE	23 08 09						
	S	ZNE	10 02						
24	P	ZNE	08 11 35						
	eS	NE	12 32			6	16	6	16
24	P	ZNE	10 36 57						
	S	ZNE	39 11						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
	P	ZNE	16 01 12						
NOV 26	S	ZNE	05 01						
	eL	ZNE	03.8	4.0	24	8.0	24	8.0	16
	eT	ZNE	12.0						
27	eLq	E	17 11.7						
	eLr	ZNE	14.7	1.4	20	1.6	18	1.5	20
28	iP	ZNE	02 44 51.0						
	eLq	NE	57.0					1.0	18
	eLr	ZNE	58.9	2.0	20	1.5	22	1.4	20
	P	ZNE	04 02 08						
29	eP	ZNE	04 54						
	eS	ZNE	14 32						
	eT	ZNE							
29	iP	ZNE	09 05 59.2 unw						
	iS	ZNE	07 34.1 dse						
	eT	ZNE	13.5						
29	eP	ZNE	19 11 04						
	eS	ZNE	14 35	8.5	15	30+	14	15	14
DEC 1	e(S)	N	02 12.0					1.7	28
	eL	ZN	22.6	1.5	26			1.7	26
1	eP	ZNE	04 23 58						
	S	ZNE	26 53						
	eL	ZNE	27.9						
	eT	ZNE	37 35						
2	P	ZE	16 17 22						
4	iP	ZNE	10 41 46.4 u						
	eLq	N	50 40					1.3	22
	eLr	ZE	52.7	1.1	20			1.1	20
4	iP	ZNE	16 40 41.9 u						
	S	ZNE	41 12						
	eL	ZNE	28	100	8	130+	10	130	8
5	eLq	NE	01 27.4						
	eLr	ZNE	28.5						
5	iP	ZNE	05 13 05.5 us						
	eS	ZNE	14 33						
5	iP	ZNE	12 26 47.4						
	eS	ZNE	28 34						
7	P	ZNE	12 59 21						
7	iP	ZNE	14 13 30.9 usw	2.0	5	0.9	4	1.0	5
	PcP	Z	14 54	2.5	8				
	PP	ZE	15 47	1.9	17			1.1	24
	S	ZNE	21 32	2.5	10	12	10	5.5	8
	ScS	ZNE	22 48	1.7	6	2.4	5	8.5	8
	e	Z	24 36	1.9	14				
	eLq	ZNE	29.0	2.4	19	8.5	26	10	24
	eLr	ZNE	30.7	7.0	25	4.0	22	2.5	25
8	iP	ZNE	18 19 00.4 use	110+	2	80+	2	100+	2
	S	ZNE	19	very large		very large		very large	
8	eP	N	21 40 05						

Date	Phase		h m s	Az Tz	An Tn	Ae Te
DEC	epP	NE	42 15			
	PP	NE	44 22			
	epPP	NE	46 12		2.1 18	
	SKS	NE	49 50		2.5 15	3.0 17
	(pSKS)	NE	52 25		10 18	3.0 16
	sSKS	NE	53 56		10 23	15 15
	PKKP	NE	56 15		6.0 18	13 22
	eSS	NE	58 20		9.5 20	8.0 16
	sSS	NE	22 00 50		5.0 20	13.5 22
	G	NE	08 40		4.0 22	6.0 22
					14 28	4.0 35
						9.0 50
9	eP	ZE	14 18 14			
	S	ZE	19 52			
	e(T)	ZE	24.1			
10	e(L)	N	26.1			
	eL	ZE	26.7			
10	iP	ZE	16 59 09.1			
	eS	ZE	17 01 35			
	eL	ZNE	02 05	3.0 20	4.0 20	2.5 28
	eT	ZE	12.0			4.0 15
11	iP	ZE	13 56 38.6 u			
11	iP	ZE	17 54 52.5 d			
	S	ZE	56 56			
12	iP	ZE	10 16 00.0			
	S	ZNE	21 08	4.0 16		4.5 16
	eL	ZNE	23.4	21.5 35	14 18	16 32
15	iP	ZNE	02 39 50.7 u			
	eS	ZNE	41 23			
15	eP	Z	15 30 06			
	eS	Z	31 36			
17	iP	ZNE	11 10 29.5 ue			
	eLq	N	28 38		1.7 18	
18	iP	ZNE	03 04 00.7 d			
18	P	ZNE	10 37 22			
	S	ZNE	39 59			
	eT	Z	47.2			
18	P	ZNE	11 33 00			
	eS	ZNE	35 14			
18	iP	ZNE	20 58 09.1 dse			
	iS	ZNE	59 12.5 s			
19	e(S)	Z	13 08.5			
	eLq	ZN	11.3	2.0 40	4.0 20	
	eLr	ZE	13.0	3.0 35		2.0 20
19	iP	ZNE	20 18 43.1 unw			
	iS	ZNE	20 51.0 s			
20	eP	ZNE	08 34 09			
	S	ZNE	35 18			
	eT	ZNE	40 10			
20	iP	ZNE	08 50 09.7 u			

Date	Phase		h m s	Az Tz	An Tn	Ae Te
	S	ZNE	52 22			
DEC						
21	iP	ZNE	00 55 54.9 unw			
	eL	E	21 20			5.5 26
21	iP	ZNE	06 46 18 usw			
	S	ZNE	50			
21	e(L)	Z	07 06.8			
21	P	Z	08 53 29	2.6 15		
	S	ZNE	09 02 22	14 22	32 23	10 20
	eLq	ZNE	09.5	6.0 22	11 22	35 22
	eLr	ZN	12.4	17 36	24 30	
	M	ZN	31.0	31 17	38 16	
22	eP	ZNE	00 56 45	13 12		
	S	ZNE	01 00 15	15 16	19 20	10 16
	eLq	NE	40		21 16	35 18
	eLr	ZNE	01 45	50 28	45 16	35 26
22	P	ZNE	01 33 10			
22	iP	ZNE	11 28 30.1 use			
	S	ZNE	50			
22	eP	Z	15 31 25			
	S	ZNE	39.9	7.5 20	26 22	5.0 24
	eSS	ZNE	43.2	2.5 20	3.0 18	4.5 16
	eLq	ZNE	47.2	2.5 24	4.5 22	17 24
	eLr	ZNE	49.6	8 35	9 35	4.5 15
	M	ZNE	16 01.9	6.5 18	7.5 18	5.0 18
22	eP	Z	23 35 04			
23	eS	N	03 54.3		2.1 16	
24	eP	ZNE	11 45 07			
25	eLq	NE	12 37.1			
	eLr	ZE	40.0			
26	eP	ZNE	22 36 09	3.5 18		
	S	ZNE	45.5	7 24	14 25	5.5 24
	eSS	ZE	49.9			2.4 25
	eLq	ZNE	53.5		3.0 18	15 25
	eLr	ZNE	56.0	12.5 25	20 22	12.5 20
27	iP	ZNE	04 14 22.1 use			
	S	ZNE	43			
27	eL	Z	18 49.8			
29	iP	ZNE	04 22 33.7			
29	eS	NE	11 05.0			
	ePS	NE	07 14		1.6 22	2.5 20
	eSS	NE	11.5			2.0 24
	eL	NE	24.8		6.0 26	11 26
29	P	ZNE	14 51 48			
	M	ZNE	52.5 une			
	eS	ZNE	55 05		7.0 10	5.0 22
	eL	NE	55.3		17 18	22 16
	eT	ZNE	10.0			

Date	Phase		h m s	Az Tz	An Tn	Ae Te
DEC 30	eP	ZNE	13 26 33			
	eS	ZNE	29 04			
	eT	ZNE	40.5			
30	iP	ZNE	18 23 02.0 d			
	eS	ZNE	28 32	2.0 20	4.0 16	3.5 10
	eLq	ZNE	31.0	5.5 28	11 26	1.6 18
	eLr	ZNE	33.0	9.0 30	4.0 25	8.5 22
30	eP	ZNE	22 53 33			
	eS	ZNE	55 56			
	eT	ZNE	23 06.3			
31	eP	ZNE	19 44 22			
	eS	ZNE	47 40		2.0 17	
	eL	ZNE	48.2	4.0 22	3.5 20	3.5 22
31	eP	ZNE	21 48 29			
	eS	ZNE	51 10			
31	eP	ZNE	23 39 27			
	eS	ZNE	40 59			

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
JAN 1	P	12 16 39	11
	S	17 35	20
2	eP	23 10 50	5
3	P	17 38 24	4½±
	S	35	11½±
7	P	10 07 08	4½±
	S	37	19.4
7	P	10 11 31	26± u
	S	40	78±
15	P	22 17 06	5
16	eP	11 36 05	90+
	eS	37 10	63
16	eP	14 51 58	11
	S	52 05	7
19	iP	16 34 18	12
	iS	38	49
25	(S)	01 55 49	
25	P	12 16 35	
	S	17 55	
26	P	13 56 30	
	S	46	
26	iP	16 25 32	14 u
	S	45	29
27	P	12 02 25	5
	S	43	
28	iP	05 43 12	7 u
	S	45 29	12
30	(S)	15 06 33	5

Date	Phase	h m s	Az
FEB 1	P	00 16 54	8
	S	17 12	46
1	iP	00 40 34½	20
	iS	41 04	52½
1	P	01 12 02	7
	S	31	20
1	P	18 58 04	6
	S	37	12
1	iP	20 21 04	40+ u
2	iP	03 47 03	22
	S	14	37+
3	e(P?)	00 56 25	5
3	P?	13 28 32	4
4	iP	01 02 51	18 u
	iS	03 25	54

No records February 5 - 14 owing to broken cable.

15	eP?	15 31 29	
15	e	15 32 49	
19	P	11 06 55	4
	S	08 28	20
20	iP	10 09 01	25+
	S	21	9+
21	P	00 07 02	18
	S	46	35±
21	iP	22 37 13	13
	S	32	32

Date	Phase	h	m	s	Az	
FEB 22	P	09	51	23	5	
	S		52	12	8	
25	P	06	40	38	10½	
	S		41	18	16	
26	P	02	31	36		
MAR 1	P	23	45	12	10½	
8	P	10	35	13	6	
	S		36	18	11	
9	P	06	59	35	2	
	S	07	01	36	8	
9	P	17	31	02	6	
	S		32	01	11½	
10	iP	04	59	56	23	
	S	05	00	19	152±	
10	P	21	32	37	5	
18	iP	00	40	42		
18	iP	01	27	16	25	d
18	P	03	10	33	4	
19	P	15	35	45	4	
	S		36	37	17½	
24	iP	19	38	09	38	d
26	iP	05	22	37	30±	
28	iP	01	53	26	27	d
28	iP	06	18	14	6	
	S			58	12	
28	P	14	13	39	4	
	S		14	22	6	
30	iP	11	58	10		d
	S			30		
30	iP	14	24	28	19	
	S		25	03	45	
31	iP	07	48	18		d
APR 1	P	12	19	25½	2.8	
1	iP	18	48	20½	6.0	d
2	iP	18	00	43	17½	u
	iS		01	04½	12½	
3	P	16	30	30½	2.7	
4	iP	06	54	28	8	u
	iS			51	8	

Date	Phase	h	m	s	Az	
APR 7	P	23	54	55½	13	
	S		55	19½	25±	
8	iP	05	03	08	19½	d
	iS			18	90±	
8	P	05	19	10	2.6	
9	iP	00	26	35	35±	u
9	e(P)	06	59	09	2	
	S			29	4.1	
9	(S)	20	19	02	2.3	
10	iP	13	11	05½	14±	d
	iS			13	large	
10	P	17	12	25		
	i			31½	3.2	
	S			41	4	
12	iP	12	54	17½	17	d
	iS			33	48±	
14	iP	00	41	03½	10	d
	(S)			56½	5	
14	P	10	04	25	20±	
	iS			42	large	
14	P	16	32	25½	5½	
	iS			44	19	
16	P	14	05	48	4.5	
	S		06	17	11	
18	iP	08	25	14	4.8	d
	S			33	5.5	
19	P	22	19	24	4.5	
	S		21	10½	2.5	
20	P?	00	46	30	2.0	
	e?			39½	2.5	
20	eP	04	03	36	3.5	
	S			56	6.0	
21	P	07	47	52	8.8	
	S		49	10½	3.4	
21	P	14	33	32	2.0	
22	P	02	13	34½	3.5	
22	iP	06	44	31	2.7	d
	S			54½	3.1	
22	e	19	28	33	2.7	
23	P	06	10	12	3.6	
25	P?	05	57	45½	2.6	
	S		58	19½		

Date	Phase	h	m	s	Az	
APR 25	P	07	53	48½	5.5	
	S			12½	9	
26	P	07	28	58	5.1	
	S		31	07	8.5	
27	P	06	32	17	2.6	
	S		33	41	3.6	
27	P?	16	29	47	2.3	
	S		30	11	4.3	
29	P?	15	13	35	2.8	
30	iP	09	47	18	5.6	
	S		48	05	40±	
30	e	16	19	40½	2	
	e		20	19	2.3	
	eL		23.8		1.5	
MAY 1	iP	20	43	30	11½	
	(S)			40½	large	
2	iP	20	44	42½	large	d
5	iP	15	58	49½	35±	d
	(S)		59	05	82	
5	Pn	23	06	38		
	iP•			40½		
	iPg			49½	26½	
	iS		07	02	70+	
6	e(P)	12	12	22½	2.1	
	e(S)			34	3.1	
6	iP	21	46	55½		d
	i		47	03	13½±	
	(S)			09½	26½±	
7	eP	13	07	37	2.1	
	e			40½	3.7	
	e			46½	4.0	
	S		08	13	5.2	
	i			15½	14½	
7	iP	14	58	00½	55±	d
7	iP	22	22	21½	8½±	
	S			43	11±	
8	e(P)	08	01	52	1.2	
	e(S)		02	14½	2.3	
11	e?	12	10	24	6	
11	iP	13	35	53	large	u
15	P	05	33	31	2.4	
	PP		35	28½	2	
16	P	17	37	50	2.2	

Date	Phase	h	m	s	Az	
MAY 17	e?	02	20	56	2.5	
	e?		24	03½	1.2	
18	eS	02	53	22½	3.4	
18	iP	07	13	30½	large	u
	(S)			53	large	
19	P	21	51	40	3.0	
	S			58½	7.6	
20	iP	18	30	56	large	u
21	P	21	17	42½		
22	P	08	11	27½		
	pP			51½		
	PP		12	46		
23	iP	08	20	22½	29	u
	S		21	15½	18½	
24	(P)	07	15	25½	2.0	
25	P	04	21	43½	3.9	
	S		23	25	4.8	
25	iP	14	20	12	27±	
25	iP	17	23	40½	8±	d
	eS		24	56½	3.6	
26	P	02	15	15½	3.3	
	eS		17	15	3.7	
28	eP?	16	11	56	1.0	
29	iP	00	10	30½	5	d
	S			46½	13	
29	iP	04	25	56	4½	u
	S		26	12½	12½	
31	iP	03	18	17½	large	d
31	iP	08	37	47½	large	d
31	P	09	36	13	7½±	
	S			23	32±	
JUN 1	iP	03	41	56½	7½±	u
	(S)		42	13	22±	
3	e?	09	08	39½	3.5	
5	iP	14	57	14½	5.5	d
	S			23½	39±	
8	(S)	01	36	37½	3.4	
9	iP	10	28	16	16±	d
9	eP	17	35	32½	10±	
	(S)			47½	36±	

Date	Phase	h	m	s	Az	
JUN 10	e(S)	03	08	47	3.4	
11	e(P)	04	38	43	2.6	
	S		39	00	8	
12	e?	13	49	21½	3.1	
12	iP	20	53	12	large	d
13	P	19	10	11½	3.1	
	S		11	02½	3.4	
14	iP	13	50	02½	9½	u
	S			22½	34±	
15	iP	05	18	47	5.3	u
	S		19	15½	5.9	
19	S	15	50	26½	2.5	
19	P	16	41	21	4	
	S		42	46½	10	
20	S	00	08	55½	5	
21	P	08	40	35½	2.6	
	(S)		42	08		
	i			11	5.5	
21	eS	10	23	04½	2	
21	P	23	45	24½	2.6	
	S		46	01½	5.5	
22	eP	12	52	46	5	
	(S)		53	03	21±	
24	iP	11	56	52½	large	d
25	iP	01	33	45		u
	S		35	02	3.4	
27	iP	08	18	04	large	d
28	P?	20	50	26	1.5	
	S		52	17½	4.8	
30	P	20	22	54½	5.5	d
	S		23	06	36	
JUL 1	P	05	08	53	4	
	S		09	54	5	
3	eP	18	29	49½	2.4	
4	iP!	23	17	51	large	
6	eP	13	28	52	5.5	
	eS		29	40	14.5	

Recording interrupted by recorder motor trouble July 7 - 11.

11	iP	16	53	26½	11	u
	eS			55½	48	

Date	Phase	h	m	s	Az	
JUL 12	P	04	08	51	1.3	
	eS		09	40	3.0	
	e			46½		
13	eP	04	11	54	4.0	
	eS		12	40	16	
15	eP	20	45	32	4.0	
	eS		46	09	17	
18	(P)	14	43	57	2.5	
20	eP	16	29	28	1.0	
	eS		31	04	1.5	
22	eP	18	11	20	1.3	
	eS		12	33	1.5	
28	eP	00	08	22	2.0	
	eS		10	48	2.5	
AUG 1	iP	03	49	51.0	15	u
	i		50	00		
1	iP	05	22	04.8	5.0	u
	iS			33.0	9.0	u
1	P	12	39	35	12	
	S		40	04	16	
1	iP	12	48	26.6	12	d
	eS			58	29	
5	iP	23	57	07		
	eS			34		
7	eP	00	43	30	7	
	eS			56	22	
8	iP	07	32	46	25	
9	eP	21	45	53	1	
	eS		46	27	4	
11	eP	01	39	48	11	
	eS		41	33	16	
18	eP	04	03	34	5	
	eS		05	03	6	
21	eP	07	09	22	10	
	eS			32	20	
21	iP	16	10	33		u
21	eP	21	06	19		
21	iP	22	05	03	27	u
22	P	05	29	43	22	u
22	eP	12	06	16		
24	eP	06	48	47	12	
	eS		50	07	6	

Date	Phase	h	m	s	Az	
AUG 25	eP	08	33	52	10	
	eS		35	34	25	
30	eP	17	19	53	6	
	eS		21	24	11	
SEP 1	eP	05	56	13	35	
	eS		59	44	4	
6	eP	18	07	07		
	eS			37		
10	eP	15	45	59		
	eS		47	34		
13	eP	19	18	26	3½	
	e(S)		19	40	5	
14	eP	17	23	39	13	
17	iP	17	57	46	>50	d
	eS		59	18	>50	
20	eP	16	46	10	26	
	eS			23	>50	
26	eP	12	45	24		
26	eP	12	49	13		
OCT 1	eP	03	59	26		
	eS	04	01	40		
8	eP	13	17	55	5	
9	eP	18	42	57		
10	eP	09	22	33	4	
	eS		24	00	3½	
12	eP	19	05	59		
12	eP	20	41	44		
14	eP	00	30	58	7	
	e(S)		31	46		
15	eP	14	00	47	5	
	e(S)		01	34	7	
15	eP	17	30	46	12	
	eS		31	03	>25	
18	eP	15	29	02	9	
	eS			23	20	
19	eP	17	15	18	3	
	e(S)		16	01	20	
25	eP	21	19	06		
26	eP	13	40	11	5	
	eS			40	10	

Date	Phase	h	m	s	Az	
OCT 26	eP	14	30	14	5	
	eS			31	12	
28	eP	14	01	40	6	
	eS		02	10	11	
NOV 1	eP	09	48	49	3	
	eS		49	56	4.5	
1	eP	16	09	32		
3	eP	05	26	13	4	
	eS			20	10	
3	eP	09	33	19	3.5	
	eS			39	10	
4	eP?	21	09	20	2	
	eS		10	34	3	
9	eP	13	15	48	4	
	eS		16	23	6	
9	eP	17	26	52	2	
	eS		27	27	3	
10	eP	22	14	45	3½	
	eS		15	21	12	

No records from 11d 09h to 23d 00h because of cable break.

23	e	13	23	53	3	
23	P	19	41	13		
23	iP	23	07	43		
	eS		09	17		
24	eP	04	13	02		
	eS			21		
26	eP	16	00	14	6	
	eS		01	20	10	
26	eP	16	03	37	2	
	eS		04	52	3½	
28	eP	09	10	33	5	
	eS			56	13	
29	iP	03	58	54		
29	eP	09	05	38	2½	
	eS		06	59	5	
29	iP	19	10	42	7	u
29	eP	19	17	29		
DEC 1	iP	04	17	10		
1	eP	21	05	18	3	
	eS		07	15	4	

Date	Phase	h	m	s	Az	
DEC 6	eP	20	23	37	5	
7	eP	12	56	22	6	
	eS			58	10	
7	iP	14	14	15	5	d
9	eP	14	17	45	1½	
	eS		18	58	7	
9	eP	20	57	19	1.5	
	eS		59	12	4	
10	iP	16	56	40	>25	u
	e(S)		57	10	large	
11	eP	17	53	02	5	u
	e(S)			50	25	
12	eP	10	16	10	2.5	
15	eP?	15	30	32	1	
	eS		32	31	2	
16	eP	21	09	08	2	
	eS			29	5	
16	eP	20	57	27	5	
	eS			55	18	
17	eP	06	39	00	6	
	eS			11	18	
17	eP	17	13	54		
18	eP	03	52	16	5	
18	iP	10	34	31		
18	e(P)	11	32	44		
	e(S)		34	03		

Date	Phase	h	m	s	Az	
DEC 19	eP	11	02	11	11	
	eS			31	25	
19	eP	20	17	32	4	
	eS		18	31		
20	eP	08	34	55	2	
	eS		36	37	3	
20	eP	08	49	10	2.5	
	eS		50	32	4	
22	eP	00	55	30	4	
	e(S)		57	37	1½	
22	eP	14	13	11	8	
	eS			36	25	
29	iP	14	48	11.5		d
29	eP	15	21	09	5	
	eS			29	12	
29	eP	18	14	33	6	
29	eP	18	20	12	12	
30	iP	13	23	44	10	u
	eS		24	12	25	
30	iP	22	51	04½		u
31	iP	03	10	57		u
31	iP	21	45	38	8	u
	e(S)		46	01	26	
31	eP	23	39	06		
	eS		40	14		

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 4	eL	ZNE	00	15		3	30				
4	eL	ZNE	05	31							
	M	Z		32	26	10	24				
5	P	Z	00	33	29						
	S	NE		41	37 u			8	15		
	L	ZNE		48	.1					25	35
5	i(P)	Z	06	11	32						
	(S)	NE		13	08						
5	P	Z	08	18	02						
	S	E		26	11						
7	PKP	Z	10	22	57						
7	eP	Z	22	10	.8						
	eL	ZE		31		1	15				
8	PKP	ZE	01	20	10						
	PS	ZNE		29	47						
	SS	Z		37	.0						
	L	ZNE		54	.7	4	30				
8	eP	Z	05	51	36						
	pP	Z		52	15						
9	ePS	ZE	13	10	08						
	eSS	ZNE		16	30						
	eL	ZNE		45	.5						
11	iPKP	Z	05	24	47 d						
11	e	Z	18	26		1	16				
12	eL	NE	11	39							
	M	E		43						3	16
13	eL	E	11	20	30					1	17
13	e	ZNE	11	46	53			2	18		

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JAN 16	iP	ZNE	11	43	37 d						
	ePcP	ZN		45	21						
	iPcS	N		49	22						
	iS	ZNE			59						
	i(SS)	ZNE		53	22						
	eL	ZNE		54							
	M	Z		56		23	25				
16	eL	ZE	11	46.5							
17	eL	ZN	13	59						2	16
17	iP?	Z	16	11	00						
17	eL	ZE	16	17							
19	e	E	22	19							
21	eL?	ZNE	07	40.3							
	M	E		45.5						6	13
21	iP	Z	13	00	37 u						
	e(PcP)	Z			55						
	iS	E		07	45						
	e?	E		14	52						
21	eL?	ZNE	15	29.2							
	M	N		30				5	11		
23	eL?	ZNE	09	08.9							
	M	E		09.4						6	12
25	iP?	Z	02	00	27						
	e	NE		08	56						
	eL	ZNE		20							
26	eL	ZNE	09	32							
26	eL	ZN	12	08							
26	eS	N	14	51	30						
	eL	ZN		58							
	M	E	15	04						5	18
28	iP	Z	05	49	48 d						
	ePP	NE		51	55						
	iS	ZNE		57	42						
	eScS	NE	06	00	00						
	eSS	Z		01	20						
	eL	ZNE		04						7	17
	M	Z		23		4	16				
28	i	Z	20	42	52						
	e	ZNE		44½							
30	eL	ZE	09	24						2	26
FEB 1	iPcS	N	00	53	35 d						
	iS	N		54	06						
	eSS?	N		56	40					10	14
	eL	ZNE		58	15						
	M	N		11½				11	15		
3	iP	ZNE	00	49	31 d	11	12				
	ePPP	NE		54	25						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
	iS	NE		59	06					18	17
FEB	iScS	N			58						
	iSS	NE	01	03	30						
	e(L_g)	Z		08.7							
	eL_T	ZNE		13							
	M	Z		22		33	12				
4	eL	N	03	42							
8	iP	Z	12	00	33 u						
	iS	E		09	57						
	e(ScS)	N		10	29						
	eL	ZNE		22							
	M	N		32						9	16
10	eL	ZN	13	30½						3	15
11	iP	ZNE	19	06	24 d						
	ePP	N		08	50						
	iS	NE		15	25						
	eScS	Z		16	03						
	eSS	ZNE		19	52						
	eL_q	Z		25							
	eL_T	ZNE		28		12	35				
	M	N		41						7	15
14	eL	ZNE	01	51		2	18				
14	iP	ZNE	06	46	25 d	63	17				
	ePcP	N		47	13						
	e(PP)	Z		48	25						
	ePcS	ZN		51	07						
	iS	ZNE		54	43					78	27
	eSS	ZNE		59	50	77	28				
	M	N	07	11						112	14
	M	Z		18		84	15				
15	iS	N	10	13	35 u						
	eL	ZNE		26							
	M	Z		28		4	19				
15	eL	E	14	06						3	20
17	iP	ZNE	03	46	29 d						
	eL	ZNE		49						87	13
17	eL?	ZN	10	56	15					4	15
17	eL?	N	19	26						2	14
18	eL	NE	10	42.8						4	13
19	eL	ZN	05	28						3	20
20	eL	ZN	17	04		3	23				
20	eL	ZNE	20	29							
	M	Z		31		6	16				
20	eL	ZNE	22	57						3	25
	M	Z	23	02		4	25				
21	iS	N	09	59	00 u					3	15
	eL	NE	10	00						5	12

Date		Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
FEB	22	eL	ZNE	06	13		3	35				
	23	eL	Z	12	13		2	23				
	23	eL	ZN	18	40		2	17				
	23	iS	NE	20	42	00 u						
		iScS	NE		43	12						
		eSS	E		46	25						
		eL	ZNE		52							
		M	Z	21	06		7	17				
	24	e(L)	ZN	20	08		2	25				
	26	eL	Z	02	51							
MAR	1	iS	ZE	23	59	15 u						
	2	eL	ZE	00	06							
		M	Z		11		13	21				
	2	e	ZNE	01	45	23						
	3	eL	ZNE	13	01		3	22				
	4	e	ZNE	11	43						9	55
	4	e	ZNE	18	34	01						
	5	e	Z	10	47							
	6	eL	Z	06	45		1	25				
	6	e	ZN	14	20		4	19				
	7	iP	Z	11	13	09 d						
		iSKS	ZNE		22	40						
		iS	ZNE		23	21						
		iSP	ZNE		24	39						
		eSS	NE		29	40						
		eSSS	NE		32	35						
		eL	Z		40							
	8	eL	ZN	10	52		3	18				
	8	iS	E	21	05	41						
		eL	ZNE		13		2	22				
	8	eL	ZN	22	36		2	18				
	9	iP	Z	22	18	32 u						
		iS	Z		27	31						
		eL	ZN		40		4	31				
	10	iP	Z	01	15	09 d						
		eL	ZNE		17	20						
		M	Z		18		15	17				
	10	eL	ZN	12	41		1	28				
	10	iP	Z	22	17	03						
		eL	ZNE		18	55						
		M	Z		19	20	11	22				

Date		Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAR	11	eL	ZN	07	46.7							
		M	Z		50		4	20				
	11	iP	Z	19	31	46 u						
		eSKS	Z		41	54						
		iS	N		42	28			13	28		
		eL	ZNE		56.3				11	49		
		M	Z	20	10							
	12	iSKS	E	12	05	05 d					13	20
		iPS	ZE		07	37	8	24				
		iSS	ZE		13	16					16	21
		eL	ZNE		28							
		M	Z		34		14	18				
	18	eL	ZNE	03	31	30						
		M	Z		35		18	18				
	18	iPKP	Z	15	50	08 u						
		eL	ZN		49							
		M	Z		56		7	20				
	19	iS	NE	04	57	00						
		eL	NE			30						
		M	E		58.5						20	13
	19	iP	Z	06	00	20 d						
		iPP	Z		08	54						
	22	eP?	Z	00	30	28						
	22	iP	ZNE	15	24	29 u	7.5	13				
		iPcP	NE		25	12						
		ePP	Z		28	03						
		iS	ZNE		33	43			11	21		
		eScS	E		34	36						
		eSS	NE		38	27						
		eSSS	E		41	56						
		eLq	ZNE		46						42	33
		eLr	ZNE		49							
		M	Z		53		49	18				
	22	iP	Z	19	10	09 d						
		iPcP	Z		35							
	23	eL	Z	06	07		1.5	17				
	26	iP	Z	16	42	41 d						
		iS	ZNE		50	50					9	28
		eScS	N		52	47						
		eSS	ZNE		54	03						
		eL	ZNE	17	00							
		M	Z		06		13	17				
	27	eL	Z	22	12		1	19				
	28	eL	Z	04	47		1.5	21				
	28	eL	ZN	14	32		1.5	17				
	28	eL	Z	18	58		1	18				
	29	iP	Z	20	20	52 u						
		iS	N		31	24						
		ePS	N		32	29						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
MAR	eLq	Z	46	2	39				
	eLr	ZNE	50						
	M	Z	54	5	21				
30	eL	ZNE	08 20	1.5	17				
31	eL	Z	08 29	1.5	19				
APR 1	eL	Z	01 51	2	21				
1	eL	ZNE	04 59			4	15		
1	iP	Z	12 22 30 d						
	ePcP	Z	55						
	ePP	Z	25 08						
	iS	ZNE	31 22						
	eScS	ZN	51						
	eSS	N	35 53						
	eLq	ZN	40	2	19				
	eLr	ZNE	44.5	10	41				
	M	Z	50	13	20				
3	iP	Z	16 35 14						
	eL	ZN	56	7	24				
4	iP	Z	09 35 58						
4	eL	Z	16 53						
7	iP	Z	06 33 58						
	eL	NE	07 10			3.5	17		
9	iP	Z	09 05 29 u						
10	iP	Z	04 47 37 u						
10	iP	Z	12 45 10						
10	iP	Z	14 19 39 u						
10	e	Z	16 27 40 d						
10	iP	Z	17 16 25 u						
12	iPKP	ZNE	01 12 03 u						
	ePP	ZN	13 29						
	iPKS	ZN	15 46						
	iSKS	ZNE	18 01						
	eSKKS	NE	19 48					18	27
	iPKKP	ZNE	21 35			20	28		
	ePS	ZE	23 28						
	ePPS	NE	25 50						
	e?	NE	27 37					57	25
	eSS	ZNE	30 55			18	24		
	eSSS	ZE	36 22					21	40
	eLq	ZNE	43	17	23				
	eLr	ZNE	47						
	M	Z	55	58	21				
14	e?	Z	09 29 12						
15	e(P)	Z	17 50 16						
15	e(P)	Z	18 08 39						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
APR 15	eL	ZN	19 35.5						
	M	N	42					2	15
		Z	22 40 08 d						
15	iP	ZN	23 01					2	17
	eL								
16	iP	Z	11 45 26						
16	e	N	18 19 40						
	eL	ZNE	27					3	19
16	e(P)	Z	23 29 16						
17	e(P)	Z	13 17 07 d						
17	iP	Z	13 50 10 d						
	eL	NE	58					3	16
18	iP	ZE	19 27 20 d						
	ePP	Z	30 48						
	iSKS	ZNE	37 49						
	eS	ZNE	38 03						
	ePS	ZNE	39 06						
	eSS	ZNE	44 02						
	eLq	ZN	51					6	39
	eLr	ZNE	54.5						
	M	Z	57			47	22		
18	e(P)	Z	21 39 08						
19	iP	Z	02 31 43						
19	eL	ZE	20 59						
19	iP	Z	22 24 43 u						
	iS	NE	32 20						
	e(SS)	E	38 52						
	eL	NE	41						
19	e?	Z	23 35 37						
20	iPKP	Z	06 06 41 u						
	ePP	ZE	07 53						
	iSKS	NE	13 33						
	eSKKS	ZN	14 52						
	iPKKP	Z	17 04						
	iPS	ZNE	36						
	eSS	ZNE	24 08						
	eSSS	ZE	27 35						
	eLq	ZE	38						
	eLr	ZNE	43						
	M	Z	54			12	17		
21	iP	Z	21 28 58						
22	iP	Z	02 19 07						
	ePcP	Z	23 54						
22	iP	Z	04 39 11 u						
22	iP	Z	16 49 18 u						
23	e?	Z	05 22 34						
23	iPKP	Z	06 16 50 u						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
APR	iPP	ZNE		17	39	28	22				
	ePKS	ZNE		20	24						
	eSKS	NE		23	38						
	eSKKS	NE		24	03						
	ePS	ZNE		27	23	25	19				
	eSS	ZE		33	40						
	eSSS	ZN		34	20						
	eLq	E		47½							
	eLr	ZNE		52						17	48
	M	Z		55		89	38				
23	iP	Z	21	17	12 u						
24	iP	Z	16	19	27						
25	eL	Z	12	57		1	20				
25	eL	ZNE	16	39½							
	M	Z		46		7.5	23				
26	iP	Z	07	35	06 d						
	ePP	Z		36	55						
	eS	N		43	15						
	eSS	N		45	43						
27	iP	Z	06	56	59 u						
	iS	N	07	04	46						
	eL	ZNE		13							
	M	Z		18		4	18				
27	i(P)	Z	20	04	47 u						
28	e?	Z	07	03	40						
28	iPKP	Z	11	38	25						
	eL	ZN	12	42							
	M	Z		45		2	19				
30	iPP	Z	02	45	44						
	ePKS	Z		47	55						
	iPS	N		55	25						
	eSS	NE	03	02	57						
	eL	ZN		21							
	M	Z		42		2	19				
30	eP?	Z	05	00	57						
30	iP	Z	06	33	58						
30	iP	ZNE	16	26	21 u						
	ePcP	Z		27	30						
	ePP	ZNE		28	27						
	ePcS	ZN		31	27						
	iS	ZNE		34	04						
	eSS	N		37	25						
	eLq	NE		41						8	25
	eLr	ZNE		43		25	32				
30	iP	ZN	18	40	24 u						
	iS	ZNE		48	12			9	17		
	eScS	N		49	42						
	eSS	Z		51	33						
	eL	ZNE		56½		7.5	27				
MAY 1	iPKP	Z	00	08	56						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAY 2	iP	Z	09	08	06 u						
2	iP	Z	12	44	48 u						
2	iP	Z	20	52	07 u						
3	e?	Z	02	47	36						
3	iP	ZN	03	43	21 u						
	ePP	ZN		45	12						
	iS	ZNE		50	16				16		16
	eSS	ZNE		53	42						
	eL	ZNE		57							
	M	N	04	07					40		15
3	iPKP	Z	14	07	16 u						
3	iP	Z	17	09	12 d						
	eL	ZNE		29							
	M	N		32					3		16
3	e(P)	Z	22	20	18						
4	iP	Z	11	13	12 u						
4	eL	N	17	19.5					2		15
5	eL	NE	03	30					1		21
5	eL	NE	03	39.5					2.5		15
5	eL	NE	04	12.7					3		16
5	eL	NE	04	21					1.5		18
5	e?	Z	05	13				3	96		
5	iPKP	Z	11	30	47						
5	iP	Z	23	13	52 u						
	eL	ZN		20					1		20
6	i(P)	Z	03	12	41						
6	iS	N	03	24	46 d						
	eL	ZNE		26.5					12		14
6	iS	N	03	44	31 d						
	eL	ZNE		45.7					45		15
6	eL	N	13	48					2		15
6	eL	ZN	14	45							
6	iP	ZNE	19	08	42 d	32	12				
	ePcP	ZN		10	14						
	ePP	ZNE		36					36		13
	iS	ZNE		15	39				140		20
	eScS	N		18	04						
	eSS	ZNE		27						34	17
	eLq	ZN		19.7					92		16
	eLr	ZNE		22							
	M	ZN		34		155	13		176		12
6	iP	Z	22	02	21						

Date		Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAY	7	e(P)	Z	15	43	35 d						
	7	iPP	ZN	17	59	55 d						
		ePKS	Z	18	02	20						
		eSKS	ZN		05	40						
		ePS	ZNE		09	45	3	16				
		eSS	ZNE		16	15			18	26		
		eSSS	ZNE		20	58			6	21		
		eL	ZNE		35½							
		M	Z		42		9	22				
	7	iP	Z	19	12	12 d						
	9	e?	Z	01	18	02						
	9	e?	Z	09	02	13						
	10	iPKP	Z	00	22	51						
	10	iP	ZN	00	33	30 d						
		ePP	ZN		34	27						
		ePcP	Z		36	52						
		iS	ZNE		38	39			6	15		
		eSS	Z		40	30						
		eLq	Z		41		4	28				
		eLr	ZNE		42½							
		M	N		50				42	14		
	10	iP	Z	04	41	10						
		eL	ZNE		45						5	22
	10	eL	ZNE	06	10							
		M	Z		15		3	21				
	10	e?	Z	22	02	04						
	11	iP	Z	07	16	44 d						
	11	iP	Z	12	15	37 d						
	11	iP	Z	13	43	35 d						
	11	iP	Z	14	26	10 u						
		iPP	ZE		30	31	6	23				
		ePPP	ZE		32	39						
		ePKS	Z		33	44	3.5	13				
		iSKS	ZNE		36	50					13	25
		eSKKS	N		38	09						
		ePS	ZNE		39	40	29	20				
		ePKKP	E	14	41	55					13	39
		eSS	ZNE		45	33					52	26
		eSSS	Z		49	40	21	26				
		eL	ZNE	15	02		80	18				
	11	e?	Z	16	43	00						
	12	e?	Z	01	55	07						
	13	e	Z	06	58	58						
	13	iP	Z	10	57	57 d						
	13	eL	N	14	47				1	17		
	13	e(P)	Z	16	35	38 d						

Date		Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAY		e	Z			55						
	14	iP	Z	01	34	35						
	14	iP	Z	10	44	39 d						
	14	iP	Z	23	31	16						
	15	iP	Z	00	55	46 d						
		eL	ZNE		58						3	12
	15	iP	ZNE	05	34	56 d						
		ePcP	N		35	30						
		ePP	ZN		37	35						
		ePPP	ZN		39	26						
		iS	ZNE		43	50						115 48
		eSS	ZNE		48	55						132 30
		e(SSS)	Z		52	10						
		eL	ZNE		55							
		M	Z	06	00				158	25		
	15	iP	Z	06	54	09 d						
	15	iP	Z	10	06	26 d						
	15	iP	Z	17	05	12 d						
		eL	ZNE		30				3.5	17		
	15	e	Z	23	00							
		M	Z	24	00				2	55		
	16	iP	Z	05	26	40 u						
	16	iP	Z	09	37	52						
		eL	E		40.4							
	16	iP	Z	14	46	38 d						
	16	iP	Z	17	42	53						
	16	iP	Z	21	47	15 d						
	16	iP	Z	23	14	55 d						
	17	e	Z	01	13	38						
	17	iP	Z	02	26	11 d						
		eL	ZNE		34.5							
		M	Z		42				5	13		
	17	iP	Z	04	14	29						
		eL	ZNE		21						11	13
	17	iP	Z	09	31	23						
	17	iP	Z	16	09	46						
		i(PcP)	Z		14	40						
	18	iP	Z	07	20	45 u						
	18	iP	Z	07	59	58 u						
	18	iP	Z	14	57	48 u						
	18	iP	Z	22	57	49						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAY	iS	ZNE	23	00	59						
	eL	ZNE		02	.5	5	26				
18	iP	Z	23	28	42 d						
	eL	Z		36		1	23				
19	e?	Z	08	56	58						
19	iP	Z	15	12	32 u						
	iPKP	Z		16	42						
	ePP	ZE			52						
	ePPP	E		19	10						
	iSKS	ZNE		23	10						
	ePS	ZNE		26	04	32	32			30	25
	ePPS	Z		27	09						
	ePKKP	ZNE			39						
	eSS	ZNE		32	12						
	eSSS	ZN		36	30	24	30			40	28
	eLq	ZNE		42	.8	11	34				
	eLr	ZNE		48	.5						
	M	Z		54		61	16				
20	iP	Z	00	09	01 u						
20	iP	Z	06	59	09 d						
20	iP	Z	08	17	28 d						
20	iP	Z	17	02	00 u						
20	iP	Z	18	38	38 d						
21	iPKP	Z	12	21	42 u						
	e?	Z		22	53						
	ePP	ZE		23	18						
	ePPP	ZN		25	47						
	eSKS	Z		28	34						
	ePKKP	Z		31	43						
	ePS	ZNE		33	49						
	ePPS	ZE		34	26						
	eSS	ZNE		40	00						
	eSSS	NE		43	14						
	eLq	NE		53				11	53		
	eLr	ZNE	13	02							
	M	Z		20		17	18				
21	iPKP	Z	12	34	31						
21	iP	ZNE	21	24	15 u	29	16				
	ePcP	ZNE		25	47	36	12				
	ePP	ZN		26	18	33	21				
	ePPP	ZNE		28	40						
	iS	ZNE		31	42			44	21		
	eScS	ZNE		34	00			58	20		
	eSS	ZNE		35	50						
	eL	ZNE		40							
	M	Z		53		47	16				
22	iP	Z	00	29	42						
22	iP	Z	04	45	52 d						
	iS	ZNE		50	18						
	eL	ZNE		51	.5			56	19		
22	iP	Z	08	00	18 u						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
	iP	ZNE	08	16	34 u	20	13				
MAY 22	ePcP	N		18	23						
	ePP	ZNE			52	8	12				
	ePPP	Z		20	23						
	ePcS	Z		21	27	4	13				
	iS	ZN		24	41			26	29		
	eScS	E		27	07						
	eSS	N		28	44						
	eL	ZNE		35							
	M	Z		39		20	20				
22	e	Z	11	04	22						
22	iP	ZN	22	14	37 d						
	ePcP	Z		16	00						
	ePP	Z		17	19						
	iS	ZNE		23	26						
	eScS	E		24	51						
	eSS	ZNE		27	56						
	eL	ZNE		35							
	M	Z		44		6	17				
23	iP	Z	06	45	01 u						
23	iP	Z	08	27	01 d						
	e(PcP)	Z		28	29						
23	e	Z	18	19	47						
23	iP	Z	20	54	37 d						
	eL	ZNE	21	04		2	22				
23	iP	Z	21	10	46 d						
	eL	ZNE		20		1	21				
24	e	Z	01	54	56						
24	iP	Z	02	22	31 u						
24	eL	ZNE	09	18		1.5	21				
24	e	Z	16	13	12						
24	e	Z	20	08	03						
25	iP	Z	04	28	47 d						
	ePcP	Z		29	54						
	iS	NE		36	42						
	eScS	N		37	27						
	eLq	E		42	.3						
	eLr	ZNE		46							
	M	Z		50		9	18				
25	iP	Z	07	14	55						
25	iP	Z	09	51	26						
25	iP	Z	14	27	35						
25	iP	Z	17	29	54 u						
25	iP	Z	21	40	15						
	ePcP	Z			44						
26	iP	Z	02	21	29 d						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAY 26	iP	Z	13	00	44 d						
26	i(P)	Z	19	42	17 d						
	i(S)	Z		44	10						
26	iP	Z	19	57	26 u						
26	i(P)	Z	22	16	29 d						
	i(S)	Z		18	22						
27	iP	Z	05	42	10 d						
27	iP	Z	14	42	06 u						
	eL	ZNE		58		3	15				
27	e	Z	23	08	35						
28	i(P)	Z	01	49	04 u						
28	eL	ZN	03	44		1	20				
28	iP	Z	16	18	24						
29	iP	Z	00	00	00 d						
	eL	Z		30		1	20				
29	e	Z	07	09	02						
29	eL	ZNE	20	59							
29	iP	Z	22	03	01 d						
	iS	ZE		11	32						
30	e	Z	04	32	18						
30	e(L)	ZNE	05	19		1.5	20				
30	eL	Z	11	15		1	26				
30	iP	Z	17	06	19 u						
31	iPKP	Z	02	15	34						
	ePP?	Z		17	10						
31	iP	Z	03	25	58 u						
31	iP	Z	06	41	26 d						
	e?	Z		42	25						
	ePP	Z		45	15						
	ePPP	Z		46	37						
	iSKS	ZNE		51	39						
	iS	NE		52	20						
	e(PS)	ZNE		53	46						
	ePPS	ZNE		55	16						
	ePKKP	ZN		58	08						
	eSS	ZNE			57			10	17	4	15
	eSSS	ZNE	07	00	40					5	35
	eLq	ZE		09							
	eLr	ZNE		13							
	M	N		24				3	16		
31	e	Z	08	11	22						
31	iP	Z	08	45	19						
	eL	ZNE		57		2	23				

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAY 31	e(P)	Z	08	57	30 u						
31	iP	Z	21	29	23 u						
JUN 1	iP	Z	13	18	55 u						
2	e	Z	03	38	20						
2	iP	Z	05	47	48						
	eL	ZN	06	10							
2	eL	ZN	13	25	.5			1.5	25		
2	eL	ZN	18	07							
	M	Z		13				3.5	22		
2	eL	ZN	19	32						1	22
3	iP	Z	13	53	22						
3	eL	ZNE	16	03							
	M	Z		14				3	21		
3	eL	ZE	23	17				1.5	18		
5	iP	Z	16	54	44 u						
	eL	Z	17	13							
6	iP	Z	02	39	40						
6	e	Z	04	07	39						
6	iP	Z	08	58	05 d						
6	iP	Z	10	43	21						
7	eL	ZN	05	50				1	15		
7	e	Z	16	40	04						
8	iP	Z	01	40	42 u						
8	iP	Z	19	30	12 u						
8	iP	Z	20	58	29 u						
	eL	ZN	21	23				1	19		
9	iP	Z	07	52	54						
11	iP	Z	02	15	57 u						
11	iP	Z	04	43	44 d						
11	iPKP	Z	07	35	23 u						
	eL	ZNE	08	29							
	M	Z		44				2	22		
11	iP	Z	17	12	27 u						
12	iP	Z	13	55	20 d						
14	iPKP	Z	08	10	55 d						
	ePP	Z		12	57						
	ePKS	ZN		14	18						
	iSKS	ZN		17	52						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUN	ePKKP	Z		20	21						
	ePS	ZN		22	32						
	ePPS	Z		24	20						
	eSS	ZN		30	22						
								3	27		
14	iPKP	Z	08	14	52						
	ePP	ZN		16	31						
	ePKKP	Z		24	30						
	ePS	ZN		26	11						
	ePPS	N		28	16						
	eSS	ZNE		34	07						
	eSSS	N		38	38						
	eL	ZNE		50	.7						
	M	Z		54		9	25				
14	eL	ZN	23	04		1.5	23				
16	iP	Z	06	39	15 d						
16	iP	Z	17	58	23 u						
16	eL	N	22	08	½			3.5	15		
17	iP	Z	04	37	58 d						
	eS	NE		46	38						
	eLr	ZNE		56	20					4.5	21
18	iP	Z	23	53	29 u						
19	iP	Z	15	54	45 d						
19	iP	Z	21	18	28 u						
22	iP	Z	04	54	09 u						
	iS	Z			12 u						
22	iP	Z	15	06	27 u						
23	iP	Z	09	58	30 u						
	ePP	ZN	10	02	28						
	eSKS	N		09	16						
	ePS	NE		11	42						
	ePPS	Z		12	32						
	eSS	ZNE		17	20			7	21		
	eLq	NE		29						3.5	41
	eLr	ZNE		33		9	19				
24	eL	ZNE	02	16				1	18		
24	iP	Z	03	12	32 d						
24	iP	Z	17	12	49 d						
25	iP	Z	01	39	56 u						
25	iP	Z	03	01	03 d						
	ePP	Z		04	06						
25	eP	Z	06	37	09						
	eS	N		45	28						
	e(ScS)	N		47	01						
	eSS	N		50	10						
	eL	ZNE		55				2.2	17		
25	eP	Z	11	24	18						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
	ePP	ZNE		28	27						
25	eSKS	ZNE		35	55						
	eS	N		36	52						
	ePS	ZNE		37	23						
	ePPS	ZE		38	12						
	eSS	NE		42	40				12	19	
	eSSS	NE		46	40						
	e(Lq)	Z		53							
	eLr	ZNE		57		11.5	20				
25	eP	Z	13	01	58						
	ePS	Z		13	56						
	eL	ZNE		28	½				17	16	
26	iP	Z	10	05	22 u						
27	eP	Z	03	40	53						
27	iP	Z	13	43	26 u						
27	iP	Z	13	46	04 u						
	eS	NE		52	15						
	eL	ZNE		57		10	16				
27	eP	Z	19	59	00						
28	iP	Z	04	39	39 u						
	eL	NE	05	10							
28	iPKP	Z	07	40	39 u						
28	eP	Z	09	09	41						
	eL	NE		12	½					2	12
28	iP	Z	19	02	19 d						
	iPP	Z		05	08 d						
	eL	ZNE		38		3	30				
28	eP	Z	20	56	44						
29	iP	Z	03	39	21 d						
	eS	N		46	55						
	eL	NE		59					1.5	16	
29	eP	Z	10	38	19						
29	iP	Z	14	00	19 d						
29	eL	ZN	17	37		1	20				
	M	N		59					1	16	
29	iP	Z	21	07	18						
	eS	NE		14	40						
	eL	ZNE		22					5	17	
30	eP	Z	19	43	11						
	ePP	Z		46	58						
	eL	NE	20	17							
	M	N		30					1	16	
JL 1	iP	Z	01	41	50 d						
1	eP	Z	05	16	24						
1	iP	Z	13	03	11 d						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
JUL	eL	ZNE	05			2.5	17		
1	eL	ZE	22 27						
	M	Z	37			1	18		
2	iP	Z	08 42 49 d						
	ePcP	ZN	43 17						
	ePP	Z	45 28						
	ePcS	Z	47 10						
	eS	ZN	51 00						
	ePS	ZE	45						
	eScS	E	52 23						
	eSS	ZNE	55 20						
	eSSS	ZNE	58 35						
	eLq	E	59½						
	eLr	ZNE	09 02			9	38	8.5	33
	M	Z	11½			6	17		
3	iP	Z	06 33 17 u						
3	eP	ZE	18 19 00						
	e	Z	20 55						
	eS	ZNE	23 30						
	eL	ZNE	24			50.5	15		
3	iP	Z	18 28 19 u						
	e	Z	29 42						
	eS	ZNE	33 22						
	eL	ZNE	34½			94	14		
4	iP	Z	13 05 32 u						
6	eL	ZNE	03 04						
	M	Z	11½			4	18		
6	eL	ZNE	10 28						
	M	Z	40			4	19		
6	iP	Z	12 21 46 d						
6	iPKP	Z	23 24 25 d						
	epPKP	Z	25 11						
	ePP	ZE	26 17						
	epPP	ZNE	27 11						
	e?	E	28 15						
	eSKS	ZE	31 07						
	eSKKS	ZE	32 40						
	e(PKKP)	ZNE	34 13						
	ePS	ZE	35 34						
	ePSS	ZE	38 00						
	eSS	ZE	43 12						
	esSS	E	45 12						
	eSSS	Z	47.0						
	eLq	E	59						
	eLr	ZNE	24 05						
	M	Z	21½			19	17		
7	e?	Z	06 31 40						
	iPKP	Z	47 d						
	eL	ZNE	07 11						
	M	Z	17			4	21		
7	iP	Z	11 58 29 u						
7	iP	Z	19 24 31 u						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
JUL 8	eS	N	04 20 41						
	eSS	ZNE	23 40						
	eL	ZNE	29½						
	M	Z	40			2	17		
8	iP	Z	20 29 27 u						
9	iP	Z	10 03 07 d						
	eL	ZNE	06¾					2	15
9	eL	ZNE	14 46			2.5	16		
10	iP	Z	04 31 28 u						
10	iP	Z	05 20 25 d						
11	iP	Z	12 53 29 u						
	ePP	Z	56 57						
12	iP	Z	10 42 03 d						
12	eP	Z	23 03 43						
	eL	ZNE	27					2	27
13	iP	Z	03 44 40 d						
	ePP	Z	48 05						
	eL	ZNE	04 15						
	M	Z	21½			4.5	22		
13	iP	Z	04 18 22 u						
14	eL	ZE	15 20½			1.5	18		
14	eL	Z	17 01			1	19		
14	eL	Z	20 41			1.5	18		
15	iP	Z	09 46 30 u						
15	eL	N	09 52					1	19
15	iP	Z	19 43 18 d						
15	eL	Z	22 50			1	20		
16	iP	ZNE	02 10 12 u						
	ePP	Z	52						
	ePcP	Z	14 22						
	eS	ZNE	48						
	eL	ZNE	15½			20	12		32 10
16	eL	ZNE	05 29			2.5	19		
16	iP	Z	09 35 39 d						
16	ePKP	Z	13 43 35						
	ePP	Z	46 47						
	eL	ZNE	14 04			1.5	19		
16	eL	Z	16 43			1	23		
17	iP	ZE	05 41 50 ue						
	iS	NE	49 45 es						
	i	E	50 12 e						
	eScS	N	51 53						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
JUL	eSS	N	53 38						
	eL	NE	57						
	eM	Z	06 03			3.5	16		
				4.5	17			4	16
18	iP	Z	01 32 05 u						
18	iP	Z	06 04 53 d						
18	iP	Z	09 34 03 d						
18	iP	Z	10 23 07 d						
19	eP	Z	01 03 09						
19	eP	Z	04 09 45						
19	e(P)	Z	23 57 58						
21	eL	N	10 38.7			4.5	18		
22	e	Z	00 28 50						
22	e	Z	00 32 24						
22	eM	ZN	01 00	3	18	3	18		
22	iP	Z	13 47 17.1						
23	eP	Z	23 18 59						
24	ePP	Z	21 26 48						
	e	E	33.0						
	e(S)	E	33.7						
	e(PS)	Z	36.6						
	esSS	ZE	42.6						
	eSSS	Z	45.9						
	e	Z	58.6						
	e	N	22 16						
25	eP	Z	00 24 19.5						
	e	Z	37 d						
25	eP	Z	04 56 18						
	eSKS	ZE	05 06 55						
	e	E	07 17						
	e	E	48						
	eSKKS	Z	08 10						
	e	ZNE	13.6						
	e	ZE	19.8						
	eSSS	Z	21.2						
	eL	N	25.7			5	28		
	eLr	ZE	31.8	6	23			6	22
25	eP	Z	06 17 37						
	e	Z	54						
26	eP	Z	02 46 22						
26	eP	Z	07 11 55						
26	eP	ZE	08 28 38	3.3	11			1.1	15
	ePP	ZNE	32 48	11.5	20	1.5	19	6	16
	eSKS	NE	39 12			5	10	3	10
	eS	NE	40 30			40	23	18	26
	e	ZE	41 54	27	22			54	20

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
JUL	ePS	N	44 00			14	13		
	ePKKP	Z	45 03						
	eSS	ZNE	47 31	66	30	65	23		
	eSSS	ZNE	51 28	28	26	32	25	18	26
	eLq	NE	57					68	44
	eLr	ZNE	09 02	112+	28			104+	30
26	eP	Z	21 41 22						
	eSSS	ZE	53 50	0.5	12			1.2	20
	eLq	NE	55						
	eLr	Z	59						
28	eP	Z	00 14 57	1.4	8				
	eS	ZNE	22 53	2.1	12	4.9	20	2.8	16
	eSS	Z	26 55	2.2	30				
	eLq	E	28.8					3.5	26
	eLr	ZN	32	5.8	30	4.8	23		
30	iP	ZNE	17 28 07 d	11.5	10	3.3	11		
	eS	NE	37 20			18	20	12	20
	M	E	53					110	20
	eP'P'	Z	56.0						
	M	ZN	57						
30	iP	Z	20 32 44						
	ePP	Z	36 55	9	17				
	e	Z	38 10						
	eS'	NE	43 16						
	ePS	ZE	45 56						
	eSS	Z	52 04						
	eLq	N	21 01.8			36	28		
	eLr	ZE	07½	60	35				
31	iP	Z	02 30 33						
	eLr	ZN	56						
	eLr	E	03 00						
31	iP	Z	04 30 51						
	iS	Z	56						
AUG 1	iP	ZNE	04 48 14 d	9	13	6	12		
	ePP	Z	50 56						
	ePPP	Z	52 40						
	eS	ZNE	57 36	13	14	15	22	12	10
	eSS	ZNE	05 02 52						
	eLq	ZNE	06						
	eLr	ZN	09						
	M	ZNE	18					47	19
3	iP!	ZNE	09 08 00						
	eS	ZNE	17 40						
	eLq	ZNE	28.5						
	eLr	ZE	31.3						
5	eLr	Z	10 35						
	eLr	N	45						
5	iP	Z	15 18 27 u						
	eLr	ZN	41						
6	iP	Z	01 54 53 d						
	eL	Z	02 40						
	eW$_2$	NE	03 18						
6	iP	Z	08 50 02						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
AUG	eS	N		57	10						
	eSS	ZNE	09	01	.0						
	eLr	Z		05							
	e	NE		09	.0						
	e	E		12	.0						
	e	Z		15	.0						
6	iP	Z	15	36	54 d						
6	eP	Z	19	33	56						
6	iP	ZNE	21	00	19.5	9	10	5	22		
	ePP	Z		01	57						
	ePcS	E		04	27						
	eS	ZNE		07	10	7	15	19	14		
	esS	E		07	30						
	e(Lq)	ZNE			10.7	7	25				
	eLr	ZNE			13.0	15	27	11	20	11	17
7	eP	Z	08	57	03						
8	eP	Z	09	28	17						
8	eP	Z	12	09	43						
8	eP	Z	12	21	49						
8	eP	Z	13	44	37						
9	iP	Z	06	31	28½						
	ePP	Z		34	20						
9	eP	Z	17	34	20						
	ePcP	Z		35	22						
10	$ePKP_1$	Z	21	23	52						
	$ePKP$	Z		24	02						
	$ePKP_2$	Z			18						
	ePP	Z		28	03						
10	eP	ZNE	23	55	22½	3	25	3.5	21		
	eP	ZN			33						
	eS	ZNE		56	10						
	eLq	E		57	25					7	13
	eLr	ZN			40	14	15	12	17		
11	eP	ZNE	01	55	57						
	ePcP	Z		56	07						
	epP	ZN		57	.9						
	esP	ZN		59	.0						
	eS	E	02	02	48					4	10
	e(sS)	ZNE		06	06			5	16		
	esScS	Z		09	.8						
11	eP	Z	06	57	17						
	eS	NE	07	05	25						
	eLr	ZNE		15							
11	eP	Z	08	29	25						
	epP	Z		33	37						
	epPP	ZN		34	25						
	eSKS	E		39	55						
	eS	N		40	55						
	eSS	ZNE		48	03			7	20	8	20
	eSSS	N		52	.5			5	20		

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
AUG 13	eS	NE	07	00	55			5	20		
	ePS	Z		02	24						
	eSS	N		07	35			3	23		
	eLq	NE		16	36			7	30		
	eL	ZE		19	.1						
	M	ZE		25	.4	8	18			6	17
14	eP	ZNE	01	15	48 d	8	17	7	16		
	eS	ZNE		20	14	18	15	>16	14	10	17
	eSS	ZN		21	06	45	29	>16	22		
17	eP	Z	00	42	15						
	eL	ZNE	01	00							
17	iP	Z	03	34	37 d						
17	eP	Z	05	17	23						
	eS	NE			28.0						
18	eP	Z	02	15	47½						
18	eP	Z	04	09	50						
18	ePKP	Z	17	03	10						
18	ePKP	Z	18	05	33						
18	eP	Z	20	53	12						
18	eP	Z	23	00	27						
19	eP	Z	01	34	51						
	epP	Z		35	50						
19	ePKP	Z	18	45	48						
	ePP	Z		48	05						
	ePKS	Z		49	30						
19	iP	Z	23	24	18 u						
20	eP	Z	13	09	23						
20	eP	Z	23	28	28						
21	eP	Z	15	34	19						
21	eP	Z	16	18	26						
21	eP	Z	17	14	25						
21	ePKP	Z	18	28	45						
21	ePKP	Z	18	39	11	4	12				
21	ePKP	Z	19	04	36						
21	eP	Z	21	14	07						
	e	Z		14	48						
	eS	ZNE		20	50	2	10			7	15
	eSS	E		24	15					7	22
21	eP	ZE	21	19	45						
	eS	ZE		27	55	14	28			22	26
	eLq	N		34	25			38	25		
	eLr	ZE		37	17	27	23			20	30

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
AUG 21	eP	Z	22 13 03						
23	eP	Z	21 00 53 d						
24	eP	Z	06 55 03						
24	eP	Z	09 14 18						
	eS	ZNE	22 26			5	20	7	16
24	eScS	E	09 24 12						
	eSS	Z	26.3					2	13
	eLr	Z	31.0	8	18				
24	eP	Z	13 27 48						
25	eP	ZNE	08 40 10 d	3	12	2	12		
	ePcP	Z	41 10						
	epP	ZN	57						
	eScP	Z	44 16						
	eS	ZNE	47 00	5	14	13	22	12	16
	eScS	NE	49 00						
	esS	ZNE	50 12						
	e	NE	52.6						
	e	Z	54.9						
26	eP	Z	00 55 28						
26	eP	Z	00 41 54						
	epP	Z	42 05						
	ePcP	Z	15						
27	eP	Z	23 39 37						
28	ePKP	ZE	11 19 10						
	ePP	Z	22 26						
	eSKP	ZE	23 30						
	eSKS	Z	26 28						
	e	Z	31 04						
	e	Z	34 40						
	eP'P'	ZE	36 58						
	eSS	NE	41 00						
	e	ZN	42 03			12	21		
	eSSS	ZNE	46 30						
	eLq	NE	12 02						
	eLr	ZNE	07	12	50			10	40
	M	E	24.5					6	17
	M	ZN	28.5	12	18	11	18		
30	eP	Z	11 46 14 u						
30	eP	Z	17 27 01 d						
	eS	NE	34 38			5	16	7	16
	M	ZN	45.5	6	20	6	18		
30	eP	Z	19 18 58						
31	eS	N	09 18.2						
31	eP	Z	10 43.3						
	eS	ZN	51 21			4	18		
31	ePKP	Z	17 21 39						
	eLr	ZNE	18 00						
	M	ZN	15	6	20	5	19		

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
SEP 1	iP	ZNE	05 01 32 d						
	e(PPP)	Z	05 25						
	iS	ZNE	09 09	7	11	11	16	32	10
	eScS	N	10.7						
	e	E	15 54						
1	ePKP	ZE	19 39 53	7	12				
	ePP	ZNE	42 17						
	ePKS	ZNE	43 26						
	ePPP	Z	45.6						
	ePS	ZN	52.4						
	ePPS	ZNE	54 21						
	eSS	NE	20 00 31						
	eSSS	ZE	04.7						
	eLq	NE	15						
	eLr	ZN	23						
	M	ZE	34	125	20			55	18
	M	N	39			80	17		
2	eP	Z	15 32 58						
3	eP	Z	22 15 07 u						
4	eP	Z	08 37 23						
4	eP	Z	19 38 09						
	e	Z	22						
	epP	Z	39						
5	eP	ZN	08 49 51						
	eLq	E	51 48						
	eLr	ZN	52 20						
5	eP	Z	11 28 19						
6	eP	Z	10 58 06						
6	eP	Z	11 22 24						
6	eP	Z	15 13 28 d						
6	eP	Z	18 14 03						
7	eP	Z	07 52 46						
7	eP	Z	24 02 35						
9	eP	Z	01 47 26						
9	eP	Z	03 34 10						
10	iP	Z	15 52 11 d	1½	10				
	epP	ZN	54 02						
	epPcP	ZN	55 10						
	e	Z	35						
	eScP	Z	56 10						
	eS	ZNE	58 50	2	12	5	15	2	12
	esS	ZNE	16 02 18						
	esScS	Z	05.6						
10	eP	Z	17 58 51						
	eS	NE	06 45						
10	eP	Z	20 19 30						

Date	Phase		h m s	Az	Tz	Ae	Te	An	Tn
SEP 11	eP	Z	02 34 15						
12	eP	Z	12 39 54						
12	ePKP	Z	21 16 00						
	eSS	E	35 56						
	eLr	ZNE	55						
	M	ZE	22 06	8	20				
	M	N	10			7	17	7	20
14	eP	Z	11 17 05						
14	eP	Z	18 26 36 d						
	epP	Z	27 56						
	eS	N	33 41						
15	eP	ZN	22 06 34						
	eLr	ZNE	08 29	6	16	8	14		
15	ePKP	Z	23 09 35						
	ePP	Z	11.1						
	ePS	N	21.1						
	eSS	ZN	28 26			6	28		
	eLq	E	41						
	eLr	ZN	48						
	M	ZN	58	7	18	7	19		
17	eP	Z	01 32 57 u						
17	eP	Z	18 03 59 d						
	ePcP	Z	05 07						
	epP	Z	53						
	epPcP	Z	07 23						
	eS	NE	10 39						
	esS	N	15.0						
17	ePKP	Z	20 04 22						
18	eP	Z	00 43 06						
	ePP	ZE	47 18						
	eSKS	NE	53 44						
	eS	NE	54 53			7	22	6	18
	ePS	ZE	56 20						
	eSS	ZN	01 01 58						
	eLq	NE	11 40			45	36	18	38
	M	ZE	23	23	18			24	18
	M	N	47			14	16		
18	eP	Z	06 22 31 u						
18	eP	Z	20 20 45						
18	eP	Z	21 56 32						
	eS	N	22 04.8			3	18		
	eLq	E	10 54						
	eLr	ZN	13 44	2	20	2½	18		
19	eP	Z	08 01 11						
21	eP	Z	22 47 03						
	eS	NE	53 44						
	eLq	ZNE	57 17						
	M	ZNE	23 05	4	16	8	20	6	16
22	ePKP	Z	07 10 06						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
	ePP	Z	37						
SEP	ePS	ZE	20.1						
	eSS	E	26.0						
	M	ZE	08 00	2½	20			1½	18
	M	N	06			2	17		
22	eP	Z	15 15 05						
	eLq	E	23.3						
	eLr	ZN	24.8						
24	eP	Z	05 41 07						
24	eP	Z	14 08 21						
25	eP	ZE	00 27 28						
	eS	ZNE	32 40						
	e	N	33 58						
	e	ZE	34 31						
25	eP	Z	15 02 29						
26	eP	Z	12 53 09						
	eS	ZN	13 00 07						
	e(Lq)	ZNE	03 47						
	e(Lr)	Z	06 05						
27	eP	Z	06 59 45 u						
	epP	Z	07 00 16						
27	eP	Z	07 03 13						
	eS	N	11 19						
	eLr	Z	21 35						
27	eP	Z	08 02 40 u						
	epP	Z	03 10						
27	eP	Z	12 43 05						
27	eP	Z	13 08 05						
	e(pP)	Z	37						
27	eP	Z	13 33 51						
27	eP	Z	18 37 55						
28	eP	Z	02 25 03						
29	iP	ZNE	15 28 28 u	1½	8				
	epP	ZNE	30 25						
	eS	ZNE	37 22	6	18	4	16	13	21
	esS	ZN	40 46						
	eSS	ZNE	42 21						
29	eP	Z	20 52 04						
30	eP	Z	10 55 15						
30	eP	Z	10 09 29						
OCT 1	iP	Z	04 05 36 u						
1	eP	Z	10 06 35						
1	iPKP	Z	12 32 57 u						
	M	ZNE	13 24	4	19	2	18	2½	20

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
OCT	1	eP	Z	15	18	15							
	1	eP	Z	21	51	45							
	3	ePKP	Z	01	36	27							
	3	eP	Z	17	22	47	d						
	3	eP	Z	18	57	45							
	4	ePKP	Z	05	01	45							
	6	ePKP	Z	03	36	43	u						
	6	ePKP	Z	04	14	37	u						
	6	iP	ZN	04	32	50	d						
		eS	ZNE		40	50							
		eSS	NE		44	34							
		M	E		54								
		M	N		58					23	17	39	14
		M	Z	05	03			57	15				
	6	eP	Z	04	44	29							
	6	eP	Z	07	26	29							
	6	eP	Z	08	05	48							
		eS	E		13	33							
		eScS	E		15	40							
		e(Lq)	E		19.9								
	6	eP	Z	08	12	59							
	6	eP	Z	08	14	17							
	6	iP	Z	11	10	33	d						
	6	eP	Z	12	09	15							
	6	eP	Z	18	10	35							
	6	eP	ZNE	23	40	55	d						
		eS	ZNE		48	40							
		eLq	E		54.7								
	7	eP	Z	00	56	23							
	7	eP	Z	05	57	05							
	7	ePKP	Z	07	04	55							
	7	ePKP	Z	10	09	08							
	7	eP	Z	14	01	28							
	7	eP	Z	16	09	11							
	7	eP	Z	16	56	49							
	7	eP	Z	17	01	43							
	8	eP	Z	13	30	05							
	8	eP	Z	19	04	52							

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
OCT	8	eP	Z	22	10	17							
		ePP	ZE		14	35							
		eScS	NE		20	53							
		eSS	NE		29	10							
		M	E		50							6	25
		M	ZN		55			12	19	3½	20		
	9	eP	Z	03	23	16							
	9	ePKP	Z	16	17	53							
	9	eP	ZNE	20	25	49							
		eS	ZNE		35	08							
		eLr	ZNE		47	53		23	35	12½	39	10	22
	10	eP	Z	09	28	50							
	10	eP	Z	13	44	38							
	10	eP	Z	14	42	23							
	10	eP	Z	21	04	03							
	10	eP	Z	22	02	29							
		eLr	ZNE		19	21							
	12	eP	Z	08	08	04							
	12	eP	Z	17	04	55							
	12	eP	Z	20	47	05							
	13	eP	Z	08	35	05							
	13	eP	Z	11	35	28							
	13	eP	Z	18	57	47							
		eS	N	19	06	06							
	14	eP	Z	00	37	28							
	14	eP	Z	05	12	55							
	15	eP	Z	00	34								
	15	eP	Z	14	07								
	15	eP	Z	20	26								
	15	eP	ZNE	21	28	10	d	3	17	3	20	3	18
		eS	ZNE		29	51		22	17	8	17	12	16
		eT	Z		35.2								
	15	eP	ZE	23	42	33							
		eLq	E		48.6								
		eLr	ZNE		50	41		14	18	5	18	13	19
	16	eP	Z	01	18	12							
	16	eP	Z	02	56	19							
	16	eP	Z	02	59	10							
	16	eP	Z	05	30	59							

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
OCT 16	eP	Z	07 26 34						
16	eP	Z	09 59 41						
16	ePKP	Z	18 21 29						
18	eP	Z	04 17 18						
19	eP	Z	04 23 59 u						
19	eP	Z	09 48 38						
19	eP	Z	10 57 38						
19	eP	Z	17 21 22						
19	eP	Z	23 53 34 u						
20	eP	Z	05 41 37 u						
21	eP	Z	23 19 57						
22	eP	Z	04 45 52						
23	eP	Z	00 35 52						
24	eP	Z	05 12 53						
25	eP	ZNE	09 46 16 d						
	eS	ZNE	56 15						
	M	E	10 15					2½	25
	M	ZN	23	5	18	4	21		
25	eP	Z	12 46 06						
25	iP	ZNE	20 08 58 d	12	14	18	14	11	14
	eS	ZNE	11 07						
	M	ZNE	12	135	13	110	12		
26	eP	ZN	07 29 54 u						
	eS	ZNE	37 40						
	eLr	N	46.8						
	M	E	49					5½	18
	M	N	57			4½	15		
	M	Z	08 00	5½	15				
26	eP	Z	16 07 40						
	eS	NE	15.4						
	M	ZNE	33	6	18	6	18	5	16
26	eP	Z	22 18 10						
27	eP	Z	06 07 14						
	e(Lr)	ZNE	12.4						
	M	ZNE	15	4	11	10	15	7	12
27	eP	Z	42 30						
27	eP	Z	39 34						
28	eP	Z	15 12 10						
30	eP	Z	01 55 53						
	eS	ZN	02 03 35	3	16	16	21		
	eLr	ZNE	12.0	7	21	9	21	9	15

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
NOV 1	eP	Z	15 45 17						
	eS	NE	55.3						
	M	ZNE	16 18	15	20	14	21	6	20
1	eP	Z	18 04 17						
	M	ZNE	37	10	20	8	20	4	20
2	eP	Z	07 03 47						
2	eP	ZNE	14 57 48						
	eS	ZNE	07 04	2	16	2½	18	2½	16
	M	ZNE	27	6	17	4	18	3	17
2	eP	Z	15 23 45						
3	eP	Z	01 10 58						
	eLr	ZN	30.5	1½	20	1½	22		
3	eP	Z	01 50 06						
3	eP	Z	03 23 45						
3	eP	Z	04 45 23						
3	eP	Z	14 37 50						
4	iP	ZNE	23 03 12 u						
	eS	NE	11 05						
	eSS	E	14 55						
	M	ZNE	25	30	16	15	17	24	17
5	eP	Z	21 02 06						
	M	ZN	11	1½	25	2½	25		
	M	E	14					1½	21
6	ePKP	Z	00 28 45						
6	ePKP	Z	03 55 45						
6	eP	Z	21 37 44						
7	ePKP	Z	13 17 26						
7	eP	Z	16 14 07						
	eS	NE	23 12						
8	eP	Z	00 14 31						
8	eP	Z	00 45 48						
	eS	N	56.1						
	eLq	N	01 08.5			2	23		
	M	ZE	15	1½	18			2	17
8	eP	Z	07 57 54						
8	eP	Z	15 23 26						
8	eP	Z	16 38 43						
9	ePKP	Z	01 30 13						
9	ePKP	Z	02 34 19						
11	eP	Z	07 50 29						
	M	ZNE	08 29	2	16	1	15	2	16

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
NOV 11	eP	Z	10 43 03						
11	ePKP	Z	11 50 59						
11	eP	Z	12 06 20						
11	iP	ZNE	16 19 55 d						
	eS	NE	28.0						
	eLq	E	35.0						
	eLr	Z	37.7						
	M	ZNE	42	12	21	6	22	6	20
11	eP	ZNE	22 23 54	5	8				
	ePcP	Z	24 55					3	9
	eS	E	31 48						
	M	ZNE	45	10	16	4	15	3	13
								9	17
12	eP	Z	21 08 38						
13	eP	Z	21 56 50						
14	eP	Z	05 25 27						
14	eP	Z	07 32 17						
14	eP	Z	22 11 07						
15	eP	Z	16 02 08						
	e(pP)	Z	14						
15	eP	Z	16 19 38						
	e(pP)	Z	43						
15	eP	Z	16 35 59						
15	iP	Z	23 38 02 d						
15	eS	Z	23 49.8						
	L	Z	24 06						
16	eP	ZNE	07 28 15	4	10			3	14
	e	Z	28 18						
	eS	ZNE	36 10	22	23	12	17	42	30
	eSS	ZE	40.0						
	eLq	NE	42.2			37	36		
	eLr	ZE	44 48						
	M	ZNE	47	105	18	14	17	120	17
16	eP	Z	21 23 43						
	eSKS	E	34 23						
	eSS	NE	41.8						
	M	ZNE	22 15	10	18	3	17	9	18
17	eP	Z	14 32 45						
18	eP	Z	06 54 59						
19	eP	Z	10 21 54						
	eS	ZNE	28 05			4	20	8	16
	e(Lq)	N	30 55			15	28		
	e(Lr)	ZE	31.8	5	20			6	21
19	eP	Z	14 02 02						
	e	ZNE	04 35						
	M	ZNE	06	11	12	8	15	19	12

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
NOV 22	eP	Z	07 46 50						
23	eP	Z	00 42 35						
	M	ZNE	01 16	4	16	2	16	7	16
23	eP	Z	00 52 20						
23	eP	Z	23 13 57						
	e(pP)	Z	14 02						
	ePP?	Z	16 03						
24	eP	Z	10 42 01						
24	eP	Z	17 34 16						
25	eP	Z	10 04 08						
25	eP	Z	10 15 05 d						
	e(L)	ZNE	16.5						
25	eP	Z	15 06 44						
26	eP	Z	16 07 38						
	eS	N	14.8					3	15
27	eP	Z	17 03 08						
28	eP	Z	02 48 28						
28	eP	Z	05 15 12						
28	eP	Z	05 21 52						
29	eP	Z	04 06 28						
29	eP	Z	09 12 51						
	eS	ZNE	20.2						
29	eP	Z	19 16 09						
	eS	E	23 56					7	15
	M	ZNE	35	13	20	12	20	31	18
30	eP	Z	17 05 31						
30	eP	Z	23 18 54						
	M	ZNE	46	4½	17	1	17	5	17
DEC 1	eP	Z	04 25 00						
	epP	Z	15						
	e	Z	27 20						
	eS	ZN	31 28						
	eSS	Z	34.9						
	M	ZNE	42	2½	18	1	19	1	20
1	eP	Z	13 43 25						
2	eP	Z	05 41 17 u						
	M	ZNE	06 06	3	17	2	17	2	16
3	eP	Z	12 59 41						
4	iP	Z	07 34 37 u						
	eS	ZNE	44 12						
4	eP	Z	10 45 18						

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
DEC		eS	ZE			54.2							
	4	eP	Z	16	49	47							
		eS	E			57 49							
		M	ZNE	17	30			6	15	3	15	5	15
	5	eP	Z	01	26	21							
	6	eP	Z	03	57	01							
	6	eP	Z	06	53	42							
		M	ZE	07	16			1	18			1½	17
	6	eP	Z	11	38	36							
	7	epP?	Z	14	18	30							
		ePP	Z		21	14							
	7	e	ZNE	14	22	39							
		eSKS	N		26	52							
		eS	NE		28	06							
		e	E		31.1								
		e	NE		38	04							
	8	eP	Z	18	12	20	u						
		epP	Z			44							
		e	Z			52							
	8	iP	Z	18	28	21	d						
	8	iP	Z	21	38	07	d						
		ipP	Z		40	07	d						
		eS	Z		47	04							
		e	Z	22	05	12							
		e	Z		07	02							
		e	Z		08	02							
	8	eP	Z	23	13	54							
	9	eP	Z	14	24	46							
	9	eP	Z	14	37	55	d						
	9	eP	Z	21	03	46	u						
	10	eP	Z	05	07	20							
		eS	ZE		16	34						4	18
		eLr	NE		29	12							
		M	ZNE		36			6	19	3	16	6	20
	10	eP	Z	06	22	32							
	10	eP	Z	17	04	22							
	10	eS	NE	17	11	10				2½	15	3	19
	11	eP	Z	14	02	58							
	11	eP	Z	18	00	26							
	12	eP	ZNE	10	19	41							
		e(pP)	Z		20	05							
		eS	NE		28	41						5	19
	12	eP	Z	14	05	03							

Date		Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
DEC	12	eP	Z	23	09	23						
	17	eP	Z	11	11	45						
		epP	Z		13	14						
		eS	NE		21	15					4	17
	18	eP	Z	07	21	56						
		eL	ZNE		24.5		7	12	4½	12	11	10
	18	eP	Z	10	41	52						
	20	eP	Z	08	41	53						
	20	eP	Z	08	55	26						
		e(pP)	Z		56	38						
	20	iP	ZNE	18	23	30						
		eS	ZNE		25	42						
		M	ZNE		27		32	15	30	15	35	10
	21	eP	ZE	00	55	37	4	14			2½	20
		eS	ZNE	01	04	58	4	17	3	18	6	18
		eSS	ZNE		09.5							
	21	e(SSS)	ZNE	01	13.0							
		M	ZNE		24		20	19	13	20	21	18
	21	ePP	ZN	09	03.9							
		eSKS	ZNE		08.8							
		eSS	ZNE		20.5							
		M	ZNE	10	00		35	17	34	16	19	17
	21	iP	Z	09	54	18						
	22	iP	ZN	01	01	20						
		eS	E		08	35						
		M	NE		19				45	17	95	15
	24	eP	Z	00	32	36						
	26	ePP	Z	22	46	10						
		M	ZNE	23	27		30	22	15	24	10	20
	27	eP	Z	11	24	59						
	27	eP	Z	14	13	07						
	29	eP	Z	04	24	14						
	29	eP	Z	10	53	08						
		eS	ZNE	11	03	07						
		M	ZE		20		9	21			9	19
	29	eP	Z	14	55	28						
		eS	NE	15	01	.8			4	11	12	15
		M	ZNE		10		30	17	17	17	19	15

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	ePKP	Z	03	00	17						
		eSKP	ZN		03	39						
	1	eP	ZN	12	24	57						
	1	eP	ZN	15	40	40						
	1	e	ZN	15	47	49						
	1	PKP	ZN	23	59	35						
		SKP	ZN	24	02	48						
	2	eP	Z	02	27	01						
	2	eP	Z	05	35	41						
	2	eP	Z	06	02	42						
	2	eP	Z	11	57	09						
	2	iP	Z	23	16	16						
		i	Z		18	02	u					
	3	eP	Z	02	14	33						
	3	eP	ZN	06	59	26						
	3	eP	Z	07	03	12						
	3	eP?	Z	07	43	03						
	3	eP	Z	11	30	46						
	3	eP	Z	11	34	36						
	3	eP	Z	11	49	30						
	3	eP?	Z	13	47	16						
	3	ePKP	Z	18	12	08						
	3	eP	Z	20	04	28						

Date		Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JAN	3	eP	ZN	24	00	08	u					
		ePcP	Z		01	08						
	4	eP	Z	01	25	03						
	4	ePKP	Z	04	54	05						
		ePP	Z		55	03						
	4	eP	ZN	07	46	06						
		PcP	Z			15						
		pP	Z			53						
		e	Z		47	36						
		e	Z		48	41						
		eS	ZNE		55	17			0.5	8	1	8
		PS	NE		56	29			0.5	7	1	6
		SS	E	08	00	23						
		SSS	E		03	36					0.5	27
	5	P	ZN	00	34	06						
		(PcP)	N			37			1	8		
		e(PP)	ZN		36	09						
		eS	N		42	31			1	8		
		eLq	NE		49	.6			0.5	27	0.5	24
		eLr	NE		53				0.5	24		
	5	eP	Z	06	47	05						
	5	eP	ZN	08	18	37						
	5	iP	ZN	12	01	49	ds					
	5	eP	ZN	14	14	16						
	5	eP	ZN	16	00	25						
	7	e	ZN	10	19	54						
	7	ePKP	ZN	10	22	45						
		e	ZN		23	06						
		e	Z			38						
		e	Z		25	27						
	7	eP	Z	22	10	35						
	7	e	N	22	38	38						
	8	ePP	ZN	01	19	.9						
	8	P	ZN	05	52	20						
		pP	Z			59						
	16	P	ZN	11	44	22	d					
		ePcP	Z		45	49						
		eS	ZN		51	24						
	17	eP	ZN	13	30	53						
	17	eP	ZN	14	57	37						
	17	eP	Z	15	41	48						
	17	eP	ZN	15	55	44						
	18	eP	Z	11	56	44						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
JAN 18	eP	ZN	15 57 11						
18	eP	ZN	16 05 14						
18	eP	ZN	16 08 00						
19	eP	N	21 30 48						
21	eP	ZN	13 01 14						
			Microseism storm Jan 22 - 25.						
25	eP	ZN	02 01 10						
28	e	N	05 50 13						
	eP	Z	26						
	epP	ZN	37						
	e	NE	53						
29	eP?	Z	21 18 12						
FEB 1	eP	Z	00 48 25						
	ePcP	Z	49 58						
	e	N	53 32						
3	eP	ZNE	00 49 55						
	eL	ZNE	01 14	0.5	20	0.5	20	1	20
			Microseism storm Feb 4 - 5.						
11	eP	ZNE	19 06 57	1	5				
	epP	Z	07 28						
	eS	N	16 22			0.5	10		
	e	E	16 54						
14	eP	ZNE	06 46 06						
	ePcP	Z	46 57						
	ePP	ZN	48 29						
	eS	NE	54 12			3	10	1.5	10
	eLq	NE	07 01.1			2.5	22		
	eLr	ZNE	04.5	2	18	2.5	20	2	20
	eP'P'	Z	15 40						
15	eP	ZNE	10 05 02						
	e(pP)	Z	10						
			Microseism storm Feb 16 - 17.						
17	iP	ZNE	03 47 38 d	1.5	5				
	ePP	Z	48 09	1.5	4				
	eLq	NE	51.8			0.5	17	0.5	17
	eLr	Z	52.5	0.5	17				
20	eP	ZNE	10 15 42						
	e(PP)	Z	19 36						
23	iP	ZE	20 33 16 d						
26	eP	Z	08 57 01						
			High microseism level Feb 27 - Mar 6.						
MAR 1	eP	ZN	23 51 45						
3	eP	ZE	12 27 38						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
7	eP	ZNE	11 13 36						
	eSKS	NE	23 07			1.5	5		
8	eP	Z	10 41 51						
8	eP	Z	20 57 42						
9	eP	ZNE	07 06 33						
	eS	NE	28 13						
9	eP	ZE	17 38 33						
9	iP	ZNE	22 19 02 d						
	ePcP	Z	19 17						
	eS	N	28 45						
10	eP	ZNE	01 16 10						
	eL	NE	20.9						
10	eP?	ZE	18 32 34						
10	eP	ZNE	22 48 15						
	eL	NE	52 08						
11	e	ZN	15 45 52						
11	eP	ZNE	19 31 59						
	e	Z	32 11						
	e	Z	32 30						
12	eP?	Z	17 30 07						
	e(P)	Z	10						
13	eP	Z	05 44 47						
	e	E	52 05						
	e(3cS)	E	54 12						
13	eP?	Z	07 18 32						
15	eP	Z	21 24 54						
16	eP	Z	15 35 20						
	ePcP	Z	36 19						
16	eP	ZNE	19 53 33						
	ePcP	Z	43						
18	eP	ZN	00 49 09						
18	eP	ZNE	03 16 35						
	e	Z	17 50						
	e(PP)	Z	18 53						
18	eP	Z	13 48 10						
18	ePKP	Z	15 50 03						
	ePP	Z	53 03						
19	iP	Z	02 44 02 d						
	e(L)	NE	03 04 23						
19	eP?	Z	04 39 49						
19	iP	ZNE	04 54 21 u						
	e(PP)	ZE	54 23						

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
MAR	e(PcP)	Z		58	14							
	e	Z		59	26							
	eLg	NE	05	01	.0							
	eLr	ZNE		02	.3							
19	iP	ZNE	06	06	38	d						
	iPcP	Z			42	d						
	ePP	Z		07	14							
19	eP	Z	08	51	01							
19	eP?	Z	21	09	25							
	e(P)	Z			39							
20	eP	Z	11	08	28							
21	eP	Z	02	39	53							
21	iP	ZNE	23	08	44	d						
	epP	Z		10	56							
	eS	ZNE		17	51							
	eSP	Z		22	09							
22	iP	ZNE	00	30	38	u						
	epP	Z		32	44							
	e	Z		35	13							
	e(S)	E		39	41							
22	eP	ZE	00	48	29½							
	epP	Z		50	38							
22	eP	Z	06	31	30							
22	eP	Z	12	15	18							
22	eP	ZNE	15	24	49							
	e(S)	ZNE		34	31							
22	eP	Z	16	28	19							
	eS	E		38	04							
22	e	Z	19	06	11							
22	eP	ZE	19	09	47							
23	eP	ZE	05	44	34							
23	eP?	ZNE	09	28	36							
23	eP	Z	14	57	17							
24	eP	Z	01	44	23							
24	eP	ZNE	13	10	53	u						
25	eP	Z	11	53	43							
	e(PcP)	Z		54	51							
25	eP	ZE	14	25	22							
	e	Z		30	51							
25	eP	ZE	21	56	59							
26	eP?	ZNE	13	24	08							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
MAR 26	eP	ZNE	16	42	23							
28	eP	ZNE	04	18	04							
28	eP	Z	06	25	27							
28	eP	ZE	14	21	03							
29	eP	ZNE	20	21	10							
29	eP	Z	22	48	16							
30	eP	Z	08	08	27							
30	eP	ZN	14	31	58							
31	eP	Z	07	56	41							
31	eP	ZE	12	10	24							
	eScP	Z		15	52							
31	eP	ZNE	12	18	56							
APR 1	eP	ZE	04	57	16							
	e	E	05	02	07							
1	eP	ZNE	12	22	42							
1	eP	ZE	15	47	07							
3	eP	ZNE	16	35	49							
	epP	Z			58							
3	eP	ZNE	18	47	31							
	epP	Z			43							
4	eP	ZNE	03	41	39							
4	eP	ZE	19	34	57							
	e	Z		37	07							
5	eP	Z	12	33	42							
5	eP	ZNE	19	56	18							
5	eP	Z	20	14	29							
5	ePKP	Z	21	46	53							
6	eP	ZNE	17	00	35	d						
	ePcP	Z		01	18							
	e	Z		29	51							
7	eP	Z	06	34	31							
7	eP	ZE	08	14	25							
10	eP	ZNE	04	47	22							
10	eP	ZE	05	15	28							
10	eP?	ZNE	07	03	25							
10	eP	ZNE	12	28	55							

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
MAY 6	eP	ZN	03 20 04						
6	eP	ZNE	03 40 09						
6	eP	ZNE	19 08 00	2.5	7	0.8	8	0.5	8
	ePP	ZNE	09 42	3.5	7	3	7	1	6
	eS	ZNE	14 19	1.5	8	5.5	10		
	e	NE	17 14			4	22	10	20
	eLq	ZNE	19.0						
	eLr	ZNE	21.0						
	M	Z	25.5	1.2	18				
	M	NE	26.0			3.5	18	2.5	20
6	eP	ZN	19 27 44						
6	eP	ZNE	22 01 37						
	e(PP)	Z	03 21						
	e(S)	N	07 40						
6	eP	ZN	22 42 35						
	e(PP)	ZN	44 17						
	e(S)	N	48 52						
7	eP	ZNE	05 08 09						
7	ePKP	ZNE	17 58 47						
	ePP	ZN	18 00 29	0.5	5				
7	eP	ZN	19 11 28						
10	ePKP	ZNE	00 23 00						
10	eP	ZNE	00 34 20						
10	eP	ZNE	11 47 29						
11	e1P	ZN	12 16 16						
11	eP	ZNE	13 44 19						
11	ePP	Z	14 30.6						
	ePKKP	ZN	41 42						
	eL	ZN	15 04						
11	P	Z	17 49 56						
11	P	Z	20 12 49						
12	eP	ZN	18 56 17						
12	eP	ZN	22 12 58						
12	eP	ZNE	22 22 00						
14	eP	Z	01 35 15						
14	eP	ZNE	10 44 55						
15	eP	ZNE	05 35 16					1.0	9
	e	Z	38 05						
	e(PPP)	Z	40 32						
	eS	ZNE	44 43					2.0	12
	e(PSP)	Z	45 46						
	eLq	NE	54.7						
	eLr	ZNE	58.2	5	18	4	18	6	18

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
MAY	ePKPPKP	Z	06 03 10						
15	eP	ZNE	06 54 29						
15	eP	ZNE	10 06 46						
15	eP	ZNE	17 05 32						
15	eP	ZNE	18 08 51						
16	eP	ZN	05 27 16						
16	eP	ZNE	14 47 00						
16	eP	ZNE	17 43 37						
16	iP	ZN	23 15 34½						
17	eP	ZNE	02 27 00						
17	eP	Z	04 14 43						
17	eP	ZN	12 13 08						
17	eP	ZNE	16 09 06						
18	eP	ZNE	07 21 28						
18	eP	ZNE	23 29 13						
19	ePP	ZNE	15 16 57						
	eSKS	E	23 18						
	eL	ZE	49.0						
20	eP	ZNE	00 08 52						
20	eP	Z	06 18 07						
20	eP	Z	18 39 22						
21	ePKP	ZNE	12 21 45						
	ePP	Z	23 30						
	ePKKP	Z	31 45						
21	eP	Z	21 06 10						
21	iP	ZNE	21 24 54						
	epP	ZN	26 16						
	e(PP)	ZN	28 31						
	eS	ZNE	32 34						
	e(ScS)	ZNE	34 18						
	e	ZNE	35 18						
	eP'P'	ZNE	54 28						
	eL	ZNE	55.5						
	e	ZN	56 19						
22	eP	Z	00 30 20						
22	eP	ZNE	04 46 15						
	e	N	50 54						
	eSS	N	53 12						
22	iP	ZNE	08 17 21 d						
	eS	NE	25 48						
	eP'P'	Z	45 29						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAY	e	N		46	33						
22	eP	ZNE	22	15	01						
	eS	ZNE		24	20						
23	eP	ZNE	08	27	42						
23	eP	ZNE	20	54	56						
23	eP	ZNE	21	11	05						
24	eP	Z	02	23	09						
25	eP	ZNE	04	29	25						
25	eP	Z	07	15	33						
25	eP	Z	14	28	19						
25	eP	Z	15	02	15						
25	eP	Z	16	53	48						
25	eP	ZE	17	30	34						
26	iP	ZNE	02	22	08 d						
26	eP	ZE	10	02	38						
26	eP	Z	13	00	24						
26	eP	Z	19	57	27						
27	eP	Z	05	42	30						
	e	ZNE		47	05						
27	eP	Z	14	41	52						
28	eP	Z	16	19	02						
28	eP	ZN	23	59	43						
29	ePKP?	Z	21	19	24						
	eSKP	Z		22	41						
29	eP	Z	22	03	10						
	ePP	Z		05	42						
30	e	Z	05	17	49						
30	eP	Z	17	06	59						
31	eP	Z	03	26	43						
	e(pP)	Z			50						
31	eP	Z	06	41	44						
	ePP	Z		46	03						
	eSKS	ZNE		52	02						
31	eP	ZNE	08	46	06						
31	eP	ZE	21	29	05						
JUN 1	eP	ZN	13	18	38						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUN 2	eP	ZNE	05	47	17						
3	eP	Z	14	34	29						
4	$ePKP_1$	Z	00	03	34						
5	eP	ZNE	16	55	05						
6	eP	Z	08	58	44						
8	eP	ZNE	01	41	14						
	epP	Z		43	13						
8	eP	ZNE	20	57	45						
9	eP	Z	07	53	10						
10	epP	Z	17	35	02						
	ePP	Z		36	54						
11	iP	ZNE	04	44	22½ d						
	epP	Z		45	42						
11	$ePKP_1$	ZNE	07	35	07						
11	eP	Z	17	13	01						
12	eP	ZE	13	55	53						
	e(PP)	Z		59	29						
13	eP	Z	19	18	12						
14	ePKP	Z	08	11	05						
	eSKP	ZE		14	27						
14	ePKP	Z	08	15	06						
	eSKP	ZE		18	24						
15	eP	ZNE	06	42	25						
	e(PP)	ZE		45	28						
	e(PPP)	Z		47	11						
15	eP	ZNE	12	06	38						
16	eP	ZE	06	39	31						
16	e?	ZNE	06	47	25						
16	eP	ZN	17	59	02						
17	eP	ZNE	04	37	27						
	epP	Z			39						
17	eP	ZNE	13	33	02						
18	eP	Z	17	11	15						
18	eP	ZNE	23	53	59						
19	eP	Z	03	43	20						
19	eP	Z	06	25	12						
20	eP	Z	03	32	07						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUN 20	eP	Z	06	27	26						
	e	Z		29	05						
20	eP	Z	06	49	45						
	e	ZNE		50	18						
	e(S)	ZNE			51						
21	ePP	Z	05	01	33						
21	eP	Z	08	48	14						
21	eP	Z	19	08	11						
	epP	Z			27						
21	eP	ZE	23	04	19						
	e?	ZNE		12	35						
22	eP	ZE	15	06	56						
23	ePKP	ZNE	10	03	33						
	eSP	ZNE		12	31						
23	eP	Z	15	13	54						
	epP	Z		14	04						
23	eP	Z	22	39	49						
	e(pP)	Z		41	20						
24	eP	Z	03	13	06						
24	e(P)	Z	12	05	38						
24	eP	Z	17	13	27						
25	eP	Z	01	40	34						
	epP	Z		42	36						
25	eP	ZE	03	00	48						
25	eP	ZNE	06	36	52						
	e?	ZNE		58	30						
25	ePKP	ZNE	11	28	52						
	e(PPP)	Z		31	08						
25	eP	Z	13	02	15						
26	eP	Z	10	05	52						
27	eP	ZNE	03	41	24						
27	eP	Z	08	26	30						
	epP	Z			46						
27	eP	ZNE	13	43	09						
27	eP	ZNE	13	45	58						
27	eP	ZNE	19	58	46						
	ePcP	Z		59	04						
	epP	Z			34						
28	eP	Z	04	41	03						
	ePP	Z		45	05						
	ePPP	Z		47	21						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUN 28	eP	ZNE	19	02	36						
	pP	Z			55						
28	eP	Z	21	57	22						
29	eP	Z	01	02	26						
29	eP	ZNE	03	38	41						
29	eP	ZNE	14	00	39						
	e(pP)	Z		01	04						
29	ePKP	Z	16	47	42						
29	eP	ZNE	21	07	03						
	e(PP)	Z		09	18						
	e(S)	NE		14	13						
JUL 1	eP	Z	01	42	27						
1	eP	Z	02	07	54						
1	eP	ZNE	05	17	06						
2	eP	ZNE	08	43	26						
	eS	NE		52	16						
2	eP	ZNE	15	54	26						
3	eP	Z	06	33	55						
3	eP	Z	08	44	44						
3	eP	ZNE	18	19	24						
	ePP	Z		20	21						
	(PcP)	Z		22	18						
	eS	NE		24	16						
	eSS	N		26.0				1.0	15		
	eLq	ZNE		26.8						1.0	15
	eLr	ZNE		28.5		1.0	10	1.5	10	1.5	10
3	eP	ZNE	18	28	28						
	(PcP)	ZE		31	20						
	e	ZNE		32	04						
	eS	ZNE		33	09			1.0	7		
	eLq	ZNE		35.5		0.6	10	0.5	7	0.5	7
	eLr	ZNE		37.0		1.0	10	1.0	10	1.5	16
3	eP	Z	21	09	12						
4	eP	ZE	17	11	18						
5	eP	Z	07	43	21½						
5	eP	Z	10	44	27						
6	eP	Z	09	53	14						
6	eP	Z	12	22	22						
6	eP	Z	13	37	13						
6	ePKP	ZNE	23	24	09						
	(pPKP)	Z		25	10						
	PP	ZE		26	08	0.8	5				

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUL	(SKP)	ZNE		27	02						
	(SKS)	E		30	39						
	e	ZNE		34	23						
	SKSP	ZNE		35	54						
	eSS	NE		43	.0						
7	PKP	ZNE	06	31	50						
	ePP	Z		34	14						
	SKP	ZNE		35	10						
	SKS	Z		38	.5						
7	eP	ZNE	11	58	50						
7	eP	Z	19	15	07						
8	ePKP	Z	03	41	05						
	ePP	Z		43	05						
8	eP	ZNE	04	12	22						
9	eP	ZNE	10	04	03						
10	P	ZNE	05	21	03						
	ScP	Z		24	50						
11	eP	ZNE	12	53	43						
	ePP	Z		57	14						
11	eP	Z	17	01	13						
12	eP	Z	09	42	42						
12	eP	Z	23	03	39						
13	eP	ZNE	03	44	55						
	eS	E		55	43						
13	iP	ZNE	04	19	07½						
14	PKP	Z	20	56	57						
15	ePKP	Z	07	06	23						
15	eP	Z	12	47	34						
15	eP	Z	19	44	00						
16	eP	ZN	02	10	44						
	eS	ZNE		16	15						
	eLq	NE		18	10						
	eLr	ZNE		19	46			1.0	12	1.2	12
16	eP	ZN	05	01	44						
16	eP	ZNE	09	36	17						
16	PKP	ZNE	13	14	06						
	PP	Z		17	10						
	SKP	Z		18	12						
16	eP	ZNE	16	26	08						
17	eP	ZNE	05	41	31						
17	PKP	ZNE	17	39	14						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUL 18	eP	ZNE	01	32	35						
18	eP	ZNE	06	05	08						
18	eP	Z	09	34	18						
18	eP	Z	10	23	29						
19	P	ZNE	01	03	41						
19	eP	Z	03	50	05						
19	eP	Z	12	14	15						
20	eP	ZN	16	37	13						
20	eP	ZE	23	42	48						
22	P	ZNE	10	47	51						
	(PP)	ZN		50	22						
23	eP	ZN	23	19	36						
25	eP	ZNE	00	24	09						
25	ePKP	ZNE	04	53	44						
25	eP	Z	06	17	28						
26	eP	Z	08	28	38						
	e	Z			46						
	ePP	ZNE		32	25						
	SKS	E		39	10						
	S	N		40	27						
	ePS	ZNE		42	.0					0.5	7
	(SPP)	ZE		43	07	1.0	6			1.5	14
	PKKP	ZNE		45	08						
	eSS	NE		47	.0			1.0	15	1.5	20
	eSSS	NE		51	.2					2.0	16
	P'P'	Z		52	40						
	Lq	ZNE		57	22	0.6	15	3.5	30	0.5	16
	eLr	ZNE	09	01	.0	1.5	23	0.5	20	3.5	28
26	eP	Z	21	40	41						
27	eP	ZNE	06	22	06						
27	eP	ZNE	19	36	46						
28	eP	ZNE	00	15	36						
	eS	NE		23	45						
28	eP	ZNE	23	45	51						
29	eP	Z	18	26	48						
30	eP	Z	16	08	27						
30	P	ZNE	17	28	30½						
	eS	ZNE		38	14			1.3	8	1.5	8
	eSS	Z		41	27	1.0	9				
	eLq	NE		49	.0						
	M	ZNE		56	.5	2.0	20	3.0	20	3.0	16
30	eP	ZNE	20	32	37						

Date		Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
JUL		ePP	Z		36	50						
		PKKP	Z		49	20						
	31	eP	Z	02	30	53						
AUG	1	eP	Z	03	58	17						
	1	iP	ZNE	04	48	40.5 d						
		eS	NE		58	27						
		eL	ZNE		11	.2	1.5	15			1.5	15
		eP'P'	Z	05	16	10						
	1	eP	Z	12	47	58						
	1	eP	ZNE	12	56	54						
	2	eP	Z	13	38	08						
	3	iP	ZNE	09	07	45 unw	5.5	4				
		eS	NE		17	13			1.2	7	1.0	7
		ePS	NE		18	04			1.2	6	1.0	7
		eLg	NE		23	35					0.5	7
		eP'P'	Z		35	06						
		eSKPP'	Z		38	37						
	3	eP	Z	10	15	40						
	3	eP	Z	10	25	55						
		pP	Z		26	05						
	3	ePKP	Z	11	23	13						
	3	eP	Z	12	13	25						
	5	iP	ZNE	15	19	05.8 d						
	6	ePKP	Z	01	54	47						
	6	eP	ZNE	08	49	23						
	6	iP	ZNE	21	01	14.1 dn						
		e	ZN			25						
		eS	ZNE		08	37						
	8	eP	Z	12	10	21						
	8	eP	Z	12	22	27						
	8	eP	Z	13	45	16						
	9	iP	Z	06	31	12.9						
	9	eP	Z	17	34	00						
	10	iP	Z	21	23	51.2						
	11	eP	ZNE	01	56	36						
		i	N			43						
		e(S)	ZNE	02	05	25						
	11	eP	Z	06	57	54						
	11	ePKP	ZNE	08	33	52						
		eSKS	NE		40	08						
		e(SP)	Z		43	15						

Date		Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
AUG	11	eP	Z	18	24	10						
	12	eP	Z	10	46	08						
	14	P	ZNE	01	16	40						
		eL	ZNE		23	12	0.8	12	0.8	12	1.8	11
	17	eP	Z	00	42	52						
	17	P	ZNE	03	34	20						
	17	P	Z	04	06	58						
	17	eP	ZNE	05	17	43						
	17	P	Z	23	06	24						
	18	P	Z	02	16	28						
	18	eP	Z	04	10	29						
	18	ePKP	Z	18	05	37						
	18	eP	Z	20	53	54						
	19	PKP	ZNE	18	45	50						
		SKP	Z		49	31						
	19	eP	ZNE	23	24	03						
		P'P'	Z		51	53						
	20	eP	Z	13	09	33						
	20	eP	ZNE	23	29	05						
	21	eP	Z	16	19	03						
	21	ePKP	Z	18	39	02						
	21	eP	ZNE	21	14	50						
	21	eP	ZNE	21	19	56						
		ePP	Z		22	08						
		e(S)	E		28	18						
		eP'P'	Z		49	23						
	22	eP	ZNE	05	38	21						
	22	eP	Z	11	18	36						
	22	eP	Z	12	14	55						
	23	iP	ZN	21	01	14						
	24	eP	Z	04	09	37						
	24	iP	ZNE	06	55	43						
	24	eP	ZNE	09	14	55						
	24	eP	Z	13	27	36						
	25	iP	ZNE	08	40	49 d	0.7	3				
		i	N			57 s						
		PP	Z		42	40	1.0	2				

Date		Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
AUG		ScP	ZN		44	40						
		S	ZNE		48	11						
		ScS	NE		49	41						
		eP'P'	Z	09	10	10						
	26	P	ZNE	23	42	19						
	27	P	Z	02	37	15						
	27	P	ZNE	23	39	39						
	28	P	Z	00	50	30						
	28	PKP	ZNE	11	19	00	0.6	3				
		PP	Z		21	51						
		SKP	ZNE		22	31	0.6	4				
		SKKS	NE		28	36						
		(SKKP)	Z		31	05						
	29	eP	Z	09	25	02						
	30	eP	Z	11	45	56						
	30	PKP	Z	13	54	35						
	30	eP	ZNE	17	27	41						
	30	eP	Z	19	18	22						
	31	eP	Z	10	43	57						
	31	ePKP	ZNE	17	21	49						
		eSKP	Z		25	08						
		SKKP	Z		34	54						
SEP	1	ePKP	Z	04	05	12						
	1	ePKP	Z	05	00	45						
	1	iP	ZNE	05	02	11.5 d	1.5	3				
		S	ZNE		10	18	0.8	5	0.8	4	1.0	5
		PS	ZN		11	30						
		eP'P'	Z		31	16						
	1	ePKP	Z	08	10	12						
	1	PKP	ZNE	19	39	48	1.2	4				
		SKP	ZNE		43	14	1.0	6	0.5	9		
		PKKP	Z		49	46						
		PS	E		52	3						
		SPP	Z		54	08						
		SS	NE		59	8					0.6	10
		eL	E	20	22	2						
		eL	ZN		26	1						
		M	ZNE		40	8	0.8	15	1.3	18	1.4	18
	2	eP	ZNE	15	33	16						
	3	eP	ZE	00	07	42						
	3	eP	Z	22	14	28						
	4	P	ZNE	19	38	48						
	5	eP	ZNE	11	28	43						

Date		Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
SEP	6	eP	Z	10	58	42						
	6	eP	Z	15	14	02						
	6	eP	ZNE	18	14	47						
	7	eP	ZNE	07	53	08						
	8	eP	Z	07	36	36						
	9	iP	ZNE	03	34	00						
	9	P	Z	08	49	08						
	10	iP	ZNE	15	52	49.5 dn						
		e	ZN		54	46						
		i(pP)	Z			52 d						
		ScP	Z		56	35.1 d						
		S	ZNE	16	00	04						
		ScS	NE		01	36						
		(P'P')	Z		22	07						
	10	eP	ZNE	17	59	31						
	12	eP	Z	14	28	40						
	12	eP	Z	18	30	32						
	12	eP	ZNE	21	15	55						
	13	eP	Z	05	12	10						
	14	eP	Z	16	02	47						
	14	eP	ZNE	18	27	12						
		pP	Z		28	30						
	15	eP	ZN	23	09	48						
		ePP	Z		11	46						
		e(SPP)	Z		22	49						
	17	eP	Z	05	09	11						
	17	eP	ZNE	18	04	42						
		PcP	Z		05	27						
		PP	ZN		06	40						
		ScP	Z		08	27						
		eS	N		11	56						
	18	eP	Z	00	42	54						
		ePP	ZNE		47	12						
		eSKS	N		53	52						
		eP'P'	Z	01	07	16						
		e(L)	N		11	5						
	18	eP	ZNE	06	22	49						
	18	eP	ZNE	20	21	26						
	18	eP	ZN	21	57	11						
	19	eP	ZN	08	01	28						
	20	eP	ZN	16	50	08						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
SEP 21	eP	ZNE	22 46 33						
	ePP	ZN	48 15						
	e(S)	Z	51 54						
	eS	N	52 23						
22	ePP	ZN	07 11 09						
22	eP	ZNE	15 15 32						
	eS	ZN	21 38						
25	eP	ZNE	00 27 39						
	eS	N	33 19						
	eSS	N	34 19						
	eLq	NE	36.0			1.0	15		
	eLr	ZNE	39.1	1.0	10	1.0	12	1.0	10
25	eP	Z	07 39 34						
25	eP	ZN	15 02 49						
26	eP	ZNE	12 53 52						
26	eP	ZNE	12 57 43						
27	eP	ZNE	07 02 36						
27	eP	ZNE	08 02 26						
27	iP	ZNE	13 08 13 d						
	epP	Z	44						
28	eP	Z	02 25 54						
28	eP	Z	03 44 38						
29	iP	ZNE	15 28 10 u						
	pP	ZNE	30 04	0.5	2				
	S	ZNE	36 49						
	(SP)	Z	37 24						
30	eP	Z	10 59 46						
30	eP	Z	11 10 01						
OCT 1	iP	ZNE	04 06 13.8						
	ePP	Z	08						
1	eP	ZNE	10 07 15						
1	PKP	ZN	12 32 51						
	ePP	Z	34 19						
1	eP	ZNE	15 18 48						
1	eP	ZNE	20 52 25						
3	P	ZNE	17 23 27						
	pP	Z	37						
3	eP	ZNE	18 57 04						
6	PKP	Z	04 14 28						
6	eP	ZNE	04 33 33						
	eS	NE	41 48						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
OCT	(ScS)	E	43 24						
	eLq	E	49 19						
	eP'P'	ZN	05 03 05						
6	eP	ZNE	04 45 11						
	e(S)	E	54.0						
	eSS	E	57 00						
	e(SSS)	NE	59.2						
	eL	ZNE	01.2						
6	eP	ZNE	08 06 30						
	ePP	Z	08 42						
6	eP	ZNE	08 13 41						
6	iP	ZNE	11 11 10.3 dn						
6	eP	ZN	12 10 03						
6	eP	ZNE	18 11 13						
6	eP	ZNE	23 41 34						
	eS	NE	49 51						
7	P	ZNE	00 59 11						
7	eP	ZNE	16 08 29						
7	eP	ZN	16 57 28						
8	ePP	ZNE	22 14 49						
	SKS	N	21 36						
9	eP	ZNE	20 26 19						
	eS	ZNE	36 06						
10	eP	Z	09 29 29						
10	eP	ZNE	13 44 48						
10	eP	ZNE	21 03 46						
10	eP	ZNE	22 03 06						
	ePP	Z	05 26						
12	eP	ZNE	17 04 39						
13	eP	ZNE	08 35 54						
13	PKP	Z	10 42 48						
	SKP	ZNE	46 09						
13	eP	ZNE	18 58 25						
14	eP	ZNE	00 38 14						
15	eP	ZNE	21 29 27						
	eL	ZNE	34 24						
15	eP	NE	23 43 23						
16	eP	ZN	02 59 48						
	ePP	Z	03 02 04						
16	eP	ZNE	05 31 38						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
OCT 16	ePKP	Z	18 21 39						
	eSKP	ZNE	24 59						
18	eP	ZN	04 17 30						
19	eP	ZN	04 23 41						
	P'P'	Z	52 14						
19	eP	ZN	09 47 57						
19	eP	ZNE	10 57 54						
19	eP	ZNE	17 22 09						
19	eP	ZN	23 53 55						
25	eP	ZNE	09 46 35						
	eS	NE	56 48						
25	eP	ZNE	20 09 56	2.0	3	1.5	2		
	eLq	ZNE	13.5	1.0	15	1.0	15	1.5	15
	eLr	ZNE	15.9	2.0	10	8.0	12	9.0	10
26	eP	ZNE	07 30 32						
	eS?	N	38 44						
	e(ScS)	N	40 30						
26	eP	ZN	16 07 00						
26	eP	ZNE	22 17 30						
30	eP	Z	01 55 12						
	ePP	ZNE	57 07	0.9	4				
	eS	N	02 13						
NOV 1	eP	ZNE	15 45 37						
1	eP	Z	16 04 56						
1	eP	ZNE	18 04 37						
	eS	E	14 46						
2	eP	ZNE	14 58 03						
3	eP	ZNE	14 38 29						
4	eP	ZNE	23 02 53						
	eS	E	10 33						
	e(Lq)	E	16 38						
	eP'P'	Z	32 58						
5	eP	Z	00 20 05						
7	eP	ZNE	16 14 24						
8	eP	Z	07 58 35						
8	eP	Z	10 13 43						
10	ePKP	ZNE	01 52 06						
	ePKKP	Z	02 02 06						
11	eP	ZNE	07 50 15						
11	eP	ZE	10 42 50						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
NOV 11	eP	Z	11 51 05						
	ePP	Z	53 50						
11	iP	ZNE	16 20 52.0						
	eS	N	29 16						
	eP'P'	ZE	49 06 dnw						
11	eP	ZNE	22 23 36						
	eS	NE	31 16						
12	eP	ZE	21 08 10						
13	eP	ZNE	21 56 09						
	ePP	Z	57 56						
	eS	E	03 25						
14	eP	ZNE	22 11 22						
	eS	E	21 25						
15	eP	ZNE	16 01 51						
15	eP	ZNE	16 19 20						
15	eP	Z	16 36 28						
15	eP	ZNE	23 37 54						
	ePP	Z	41 15						
16	eP	ZNE	07 28 20						
	(PcS)	E	33 49						
	eS	NE	36 24					1.0	12
	eLq	E	45.0						
	eLr	ZNE	47.2					2.0	18
	eP'P'	Z	58 17						
16	eP	Z	21 23 43						
17	eP	ZNE	14 33 00						
	eS	NE	42 38						
18	eP	ZNE	06 55 17						
18	P	Z	12 10 39						
19	eP	Z	10 22 03						
19	eP	ZNE	14 02 58						
	eL	NE	09 11					1.0	12
20	eP	ZNE	10 23 18						
22	eP	Z	07 47 29						
22	eP	Z	20 41 33						
22	eP	Z	24 04 12						
23	eP	ZNE	00 42 18						
23	eP	ZE	00 57 09						
24	eP	ZN	10 42 43						
24	eP	Z	17 34 47						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
NOV 25	eP	ZE	10	04	24						
26	eP	NE	16	08	19						
27	eP	ZNE	17	03	45						
28	eP	ZE	02	48	52						
28	eP	ZNE	05	14	42						
28	eP	ZE	05	21	23						
29	P	Z	04	07	39						
29	iP	Z	07	39	48.0						
29	P	Z	09	13	32						
29	P	ZN	19	16	47½						
29	P	Z	19	23	37						
30	eP	Z	17	05	53						
DEC 1	eP	ZNE	04	25	43						
	i	Z			47.4						
2	eP	Z	05	41	52						
4	eP	Z	10	45	48						
4	eP	Z	16	50	26						
7	ePP	ZNE	14	21	49						
	e	ZNE		23	10	0.6	5				
	e(PPP)	ZNE		24	00	0.6	4				
8	eP	ZNE	18	29	00	0.8	5				
	ePP	Z		31	28						
8	eP	ZNE	21	37	50	0.8	5				
	ePP	ZNE		39	48	0.5	4			0.7	5
	e(PPP)	ZN		43	20						
	eS	ZNE		46	25			1.5	8	1.5	6
	eP'P'	ZNE	22	05	21	1.0	12				
	SKPP'	ZNE		08	16	0.5	10				
9	eP	NE	21	04	22						
10	eP	NE	05	07	07						
10	eP	NE	17	05	14						
12	eP	ZNE	10	20	14	0.5	3				
	ePP	Z		23	13						
	eSS	NE		29	40						

Recording discontinued on Dec 17th for installation of World Standard Seismographs.

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 instrumentally, or by an independent observation are listed only 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 in the pocket at the back of this bulletin.

No.	Date	h	m	s	Epicentre	Depth	Mag.	Class
62/ 1	JAN 1	01	46	51	40.8 S 175.4 E	N	2.9	D
1a	1	03	32	46	41.8 S 176.1 E	S	3.8	B
1b	1	09	33	00	41.7 S 175.9 E	S	3.6	C
1c	1	16	17	48	41.8 S 176.0 E	S	3.8	B
1d	1	17	56	02	41.7 S 175.9 E	S	3.2	C
1e	2	00	35	09	41.8 S 176.0 E	S	3.6	B
2	2	01	08	44	40.1 S 174.0 E	N	3.4	B
3	2	12	13	03	41.9 S 173.8 E	S	2.9	B
3a	2	19	24	31	41¾ S 176 E	S	3.0	D
4	2	23	08	17	35.4 S 180.0	N	5.7	C
4a	3	02	46	01	41½ S 176 E	S	3.2	D
4b	3	10	33	10	41.7 S 176.0 E	S	3.2	D
5	3	12	40	44.7	41.75S 175.95E	S	3.6	B
5a	4	01	40	15	41.7 S 175.9 E	S	3.2	C
5b	4	14	49	22	41.4 S 175.8 E	S	2.9	D
6	4	21	04	31	38.1 S 177.0 E	N	4.5	C
6a	5	07	23	48	41.8 S 176.0 E	S	3.2	C
6b	6	05	21	05	41.7 S 175.9 E	S	3.2	D
6c	6	11	38	18	42.0 S 175.5 E	S	3.1	D
7	7	02	03	24	41.75S 174.6 E	S	3.2	C
8	7	23	08	51	40.8 S 176.3 E	S	3.8	B
9	8	16	01	25½	41.9 S 175.8 E	S	3.7	C
9a	8	17	45	30	41.6 S 175.9 E	S	3.1	D
9b	9	05	51	51	41.6 S 176.0 E	S	3.0	C
9c	9	17	21	51	41.7 S 176.1 E	S	3.6	C
10	9	19	57	13	33 S 179½ W	N?	5.0	D
11	10	04	39	34	41.4 S 172.7 E	170 km	3.8	C
12	10	22	00	39	40.1 S 175.9 E	S	5.1	B
13	10	23	29	45	41.3 S 175.9 E	S	3.3	C
14	11	14	17	21	41.8 S 173.7 E	N	4.0	B
15	11	16	24	30	37.0 S 176.6 E	335 km	5.1	C
16	12	08	30	58	37.3 S 177.1 E	S	4.5	C
17	12	10	15	14½	37.3 S 177.1 E	S	4.2	C
18	13	11	05	16	37.2 S 179.5 E	S	5.1	C
19	15	01	57	49	40.1 S 174.8 E	S	3.6	C
20	15	18	17	12	40.6 S 174.9 E	S	3.3	B
21	15	21	33	42	41.8 S 173.6 E	S	3.4	C
22	16	02	10	01	40.2 S 174.0 E	S	3.9	B

No.	Date	h	m	s	Epicentre	Depth	Mag.	Class
62/23	JAN 16	02	37	36	41.75S 176.2 E	S	3.8	B
24	16	04	03	21	41.5 S 176.0 E	S	3.3	C
25	16	07	38	02	40.05S 176.15E	S	3.4	C
26	16	09	57	28	40.35S 174.9 E	S	3.0	B
27	17	00	13	52	39.8 S 173.0 E	S	3.7	C
28	19	13	36	54	31¼ S 179¼ W	450 km	5.5	D
29	19	22	07	47	48¾ S 164¼ E	N	5.3	D
30	20	02	37	47	42.0 S 174.0 E	S	4.2	B
31	22	04	53	02	39.4 S 176.4 E	N	3.7	C
32	22	10	09	08½	38.3 S 176.0 E	S	3.3	C
33	22	10	11	47½	38.3 S 176.05E	S	3.3	C
34	22	11	11	21	41.1 S 175.7 E	S	3.1	C
35	22	12	11	24	41.1 S 175.7 E	S	3.1	C
36	22	19	39	58	41.05S 175.6 E	S	3.2	C
37	22	19	52	40	41.05S 175.6 E	S	3.0	C
38	23	00	15	41	41.4 S 175.8 E	S	3.3	C
39	23	06	20	13	41.35S 175.8 E	S	3.3	C
40	23	06	49	42	38.55S 174.7 E	S	5.5	C
41	23	06	54	19	38.55S 174.7 E	S	-	B
42	24	10	44	39	38.2 S 175.8 E	255 km	4.7	D
43	24	12	08	35	38.1 S 176.2 E	S	2.6	C
44	24	12	51	19	38.1 S 176.2 E	S	2.8	C
45	24	13	38	53	39.0 S 175.9 E	120 km	4.2	C
46	24	13	57	51	38.1 S 176.2 E	S	2.4	C
47	24	14	44	40	38.1 S 176.2 E	S	3.5	C
48	24	15	04	41	38.1 S 176.2 E	S	2.5	C
49	24	23	24	36	40.1 S 175.0 E	S	3.2	C
50	25	02	52	31	37.5 S 176.7 E	210 km	4.6	D
51	25	12	47	29	38.1 S 179.6 E	S	4.8	C
52	26	11	48	30	36.9 S 178.7 E	S	4.9	C
53	26	13	14	34	42.05S 172.3 E	70 km	3.5	C
54	28	07	48	03	41.45S 173.8 E	S	3.7	C
55	30	01	54	31	37.1 S 177.0 E	270 km	4.7	C
56	30	15	40	34	37.3 S 176.9 E	280 km	4.7	C
57	31	09	07	52	39.0 S 176.6 E	90 km	4.6	B
58	FEB 3	13	03	46	42.2 S 172.5 E	71 km	3.7	C
59	5	13	14	58	38.8 S 175.2 E	172 km	3.9	C
60	12	04	37	13	37.2 S 178.9 E	159 km	4.6	D
61	12	20	54	48	33.2 S 179.2 E	537 km	5.7	D
62	14	15	05	31	37.1 S 176.4 E	260 km	4.6	D
63	15	08	27	00	41.8 S 171.9 E	N	3.4	C
64	16	09	23	23	38.3 S 175.6 E	197 km	4.2	B
65	16	13	06	58	41.4 S 171.8 E	N	3.5	B
66	17	21	16	05	36.4 S 176.5 E	N	3.6	D
67	17	22	09	28	40.5 S 174.5 E	96 km	3.9	B
68	17	22	46	00	38.2 S 177.6 E	N	4.3	D
69	18	19	48	20	40.5 S 173.6 E	121 km	4.3	B
70	22	09	50	23	33.5 S 179.7 W	285 km	5.9	D
71	22	22	41	26	37.2 S 177.0 E	310 km	4.6	B
72	24	07	59	51	44.9 S 167.5 E	N	4.9	C
73	25	02	45	50	34.4 S 177.5 W	159 km	5.3	D
74	25	12	52	44	33.2 S 179.1 W	S	5.2	D
75	25	13	56	22	34.5 S 177 W	159 km	5.3	D
76	26	02	30	34	33.8 S 177.7 W	N	5.3	D
77	27	19	21	36	41.7 S 172.2 W	N	2.8	D
78	27	22	00	52	40.2 S 175.0 E	N	3.5	C
79	28	18	09	20	34.0 S 177.5 W	N	5.4	D
80	MAR 1	12	43	17	39.8 S 175.9 E	S	3.8	C
81	4	20	10	58	37.7 S 176.0 E	310 km	5.3	C
82	5	08	27	30	39.3 S 174.7 E	222 km	4.5	B
83	5	16	47	56	41.8 S 171.9 E	N	3.8	B
84	6	17	05	27	37.2 S 178.4 E	S	4.8	D
85	6	23	55	43	41.2 S 172.3 E	S	3.3	C
86	7	21	56	02	39.3 S 177.7 E	71 km	4.3	C
87	7	23	05	25	38.4 S 175.6 E	172 km	5.0	C

No.	Date	h	m	s	Epicentre	Depth	Mag.	Class
62/ 88	MAR 8	10	33	42	35.0 S 179.5 E	N	5.7	D
89	10	21	30	40	38.0 S 177.9 E	S	5.0	C
90	11	07	56	21	38.8 S 176.2 E	N	5.1	C
91	11	13	26	25	44.7 S 167.9 E	N	4.6	C
92	13	22	13	54	34.2 S 179.1 E	N	5.0	D
93	14	18	33	21	36.8 S 179.0 E	N	4.3	D
94	14	21	40	20	37.9 S 177.2 E	172 km	4.8	C
95	14	23	12	00	40.1 S 174.9 E	58 km	4.4	C
96	16	00	20	47	37.5 S 179.5 E	96 km	4.7	D
97	16	19	31	10	36.4 S 179.5 W	220 km	4.9	D
98	16	22	10	43	36.8 S 179.8 W	N	4.7	D
99	17	04	18	35	33½ S 177 W	N	5.0	D
100	17	07	33	36	36.3 S 179.3 W	N	4.8	D
101	17	16	00	00	38.8 S 175.5 E	160 km	4.5	C
102	18	00	40	10	30 S 176 W	N	5.7	D
103	18	16	09	39	38.3 S 176.1 E	180 km	5.5	C
104	19	08	07	47	33 S 179 W	400 km	5.3	D
105	19	15	34	40	31.5 S 180	400 km	5.8	D
106	19	18	07	04	39.8 S 175.8 E	N	4.9	C
107	21	11	38	20	36.7 S 179.7 W	N	4.7	D
108	21	17	25	30	36.7 S 179.7 W	N	4.8	D
109	22	13	23	48	40.2 S 173.8 E	170 km	3.7	C
110	22	16	28	48	44.7 S 167.2 E	N	4	D
111	22	17	46	46	36¼ S 179½ W	N	4½	D
112	22	18	34	40	35½ S 179¼ W	N	5	D
113	22	21	23	31	36.3 S 179.0 E	N	5.0	D
114	23	13	20	04	44.5 S 168.3 E	N	4.4	C
115	24	19	24	05	38.6 S 174.0 E	N	4.0	D
116	25	16	23	37	40.4 S 174.8 E	N	3.6	C
117	27	10	47	46	38.6 S 173.7 E	N	4.0	D
118	28	14	12	46	33.5 S 178.0 W	100 km	5.4	D
119	28	18	34	32	33.5 S 178 W	N	5.3	D
120	29	06	20	00	44.5 S 169.0 E	N	4.2	D
121	29	09	16	55	33.5 S 178.5 W	70 km	5.2	D
122	29	12	45	10	37.7 S 179.6 E	N	4.5	D
123	30	13	56	04	40.6 S 178.5 E	N	4.2	C
124	APR 2	03	38	17	38.3 S 176.6 E	150 km	4.9	C
125	2	23	32	28	41.5 S 173.7 E	S	4.0	B
126	4	11	30	19	40.5 S 174.8 E	S	3.7	C
127	6	22	28	01	41.8 S 173.3 E	S	4.4	C
128	7	07	14	20	40.4 S 176.6 E	S	4.4	C
129	9	12	16	53	38.5 S 175.5 E	200 km	4.3	D
130	10	03	57	46	37.3 S 180.0	S	4.7	D
131	11	05	14.2		33½ S 179 W	N	5.2	D
132	11	13	35	26	39.1 S 174.9 E	220 km	4.8	C
133	15	08	25	10	37.9 S 176.9 E	160 km	4.6	C
134	17	05	33	30	41.5 S 174.4 E	S	3½	D
135	17	13	40	04	41.5 S 174.4 E	S	3.3	D
136	17	17	05	42	38.2 S 176.4 E	160 km	4.4	C
137	17	17	43	04	42.75S 174.0 E	S	5.7	C
138	17	18	07	54	42.8 S 174.0 E	S	4.2	C
139	18	00	14	11	41½ S 174½ E	S	3.3	C
140	18	17	25	30	38.2 S 176.7 E	S	-	C
141	18	22	15.2		46½ S 169½ E	S	4.2	D
142	19	17	16	48	40¾ S 173½ E	N?	3½	D
143	20	00	43	29	36.3 S 178.4 E	220 km	5.0	D
144	22	17	50	28	39.9 S 174.0 E	100 km	4.8	C
145	22	22	12	06	37.65S 176.6 E	200 km	5.4	C
146	24	00	48	50	44.6 S 167.4 E	S	4.5	D
147	26	19	43	18	44.2 S 167.8 E	S	4.7	D
148	27	16	28	17	33½ S 178½ W	S	5.4	D
149	29	11	03.1		37.1 S 177.1 E	S	4.3	D
150	29	12	02.4		37.1 S 177.1 E	S	4.0	D
151	30	18	39.8		37.4 S 178.7 E	S	4.1	D
152	MAY 1	03	54	18	36.5 S 178 E	N	3½	D

No.	Date	h	m	s	Epicentre	Depth	Mag.	Class
62/153	MAY 1	15	45	07	41.3 S 173.5 E	S	3.1	C
154	2	09	48	11	41.1 S 175.0 E	S	4.1	B
155	2	10	15	51	42.0 S 172.1 E	S	2.8	C
156	2	13	04	13	41.0 S 174.5 E	S	4.1	B
157	2	21	55	26	39.9 S 175.1 E	110 km	4.2	C
158	3	14	53	06	42.0 S 171.5 E	N	2.9	D
159	4	14	03	55	41.0 S 176.6 E	S	4.1	C
160	5	17	21	16	38.3 S 176.1 E	260 km	4.2	C
161	7	16	06	22	35 S 180	S	4.6	D
162	7	20	42	50	40.2 S 173.7 E	220 km	3.7	B
163	9	09	37	37	44½ S 167¾ E	N	4.0	D
164	9	17	29	12	36.9 S 178.2 E	S	4.5	C
165	10	00	27	12.0	41.65S 171.32E	12 km	5.9	A
166	10	00	53	28	41.7 S 171.3 E	S	3.8	C
167	10	01	38	41	41.7 S 171.3 E	S	3.6	C
168	10	02	14	26	41.7 S 171.2 E	S	2.6	D
169	10	02	28	36	41.7 S 171.4 E	S	4.3	C
170	10	02	59	01	41.7 S 171.2 E	S	4.2	B
171	10	03	14	10	41.7 S 171.3 E	S	3.6	C
172	10	04	01	34	41.7 S 171.3 E	S	3.6	C
173	10	04	24	22	41.6 S 171.3 E	S	3.7	C
174	10	04	26	36	41.7 S 171.2 E	S	4.8	B
175	10	04	30	59	41.3 S 175.9 E	S	5.7	B
176	10	04	39	53	41.5 S 175.7 E	N	3.6	D
177	10	05	03	02	41.6 S 171.2 E	S	3.5	C
178	10	05	26	33	41.5 S 175.9 E	N	3.5	C
179	10	06	51	48	36½ S 180	N	4.1	D
180	10	06	56	47	41.7 S 171.3 E	S	4.2	C
181	10	06	58	01	41.7 S 171.3 E	S	4.7	C
182	10	07	33	10	41.7 S 171.3 E	S	3.8	C
183	10	08	22	57	41¾ S 171¼ E	S	3.2	C
184	10	08	32	40	41.7 S 171.3 E	S	3.4	C
185	10	08	48	18	38.2 S 176.0 E	160 km	4.2	C
186	10	10	18	15	41.7 S 171.2 E	S	4.8	B
187	10	10	25	42	41.2 S 175.2 E	S	3.4	C
188	10	11	01	50	41.6 S 171.2 E	S	3.8	C
189	10	11	10	49	41.6 S 171.2 E	S	4.4	C
190	10	12	03	21	41.2 S 175.9 E	S	4.2	C
191	10	19	54	56	41¾ S 171¼ E	S	3.6	D
192	10	20	21	57	41.7 S 171.2 E	S	3.9	C
193	10	22	21	00	41¾ S 171¼ E	S	3.8	D
194	10	23	55	42	41.8 S 171.2 E	S	3.9	C
195	11	00	04	08	41.7 S 171.2 E	S	3.5	C
196	11	01	33	20	31½ S 179½ E	350 km	5.6	D
197	11	07	04	25	39.4 S 175.3 E	100 km	4.4	C
198	11	07	37	56	41¾ S 171¼ E	S	3.4	D
199	11	10	13	35	41.7 S 171.3 E	S	4.0	B
200	11	11	34	23	41¾ S 171¼ E	S	3.5	D
201	11	12	25	05	41¾ S 171¼ E	S	3.4	D
202	11	13	35	24	41¾ S 171¼ E	S	3.5	D
203	11	21	03	34	41.7 S 171.2 E	S	4.0	B
204	11	21	48	37	41.6 S 171.2 E	S	3.4	C
205	11	23	56	03	41¾ S 171¼ E	S	3.3	D
206	12	07	46	56	41¾ S 171¼ E	S	3.2	D
207	12	15	49	17	40.4 S 173.9 E	N	2.8	D
208	12	15	51	45	41.6 S 171.2 E	S	3.7	C
209	13	01	05	52	43½ S 168 E	N	3.8	D
210	13	07	18	42	41.6 S 171.2 E	S	3.6	C
211	13	08	56	37	41.6 S 171.2 E	S	3.7	C
212	13	16	38		Near Cromwell (133)			D
213	14	04	23	22	41¾ S 171¼ E	S	3.4	B
214	14	10	22	30	39.3 S 178.1 E	N	4.9	C
215	14	12	22	25	41.7 S 171.2 E	S	3.7	D
216	14	13	00	42	41¾ S 171¼ E	S	2.9	D
217	14	19	28	08	42.2 S 174.2 E	S	3.6	C

No.	Date	h	m	s	Epicentre	Depth	Mag.	Class
62/218	MAY 16	03	01	45	41.5 S 174.0 E	S	3.3	D
219	16	10	27	12	40.1 S 175 E	N	2.9	D
220	16	10	28	27	38.75S 176.0 E	S	4.5	D
221	16	13	47(03)		41¾ S 171¼ E	S	3.0	D
222	16	14	50	36	41¾ S 171¼ E	S	4.1	D
223	17	02	19	52.2	41.80S 171.30E	12 km	5.6	A
224	17	02	22	08	41¾ S 171¼ E	S	5.2	D
225	17	02	28	27	41¾ S 171¼ E	S	2.8	D
226	17	02	37	45	41¾ S 171¼ E	S	3.1	D
227	17	02	51.0		Near Westport (79)		2½	-
228	17	03	39	31	41¾ S 171¼ E	S	3.7	D
229	17	07	46	06	41.5 S 173.7 E	S	3.5	C
230	17	16	14	16	41¾ S 171¼ E	S	2.9	D
231	17	20	11	00	38½ S 176 E	S	3½	D
232	18	12	47±		Near Westport (79)		3.0	-
233	18	12	55±		Near Westport (79)		3.0	-
234	18	19	50±		Near Takaka (72)		2½	-
235	19	11	06	50	41.7 S 171.4 E	S	3.9	C
236	19	15	36	44	41.7 S 171.4 E	S	3.2	D
237	19	17	01	39	41.8 S 171.8 E	S	2.8	D
238	19	17	53	52	41.7 S 171.3 E	N	2.8	D
239	19	17	56	28	41¾ S 171¼ E	N	2.5	D
240	19	21	15	04	41.7 S 171.2 E	S	4.5	C
241	19	21	38	07	44.9 S 167.5 E	N	4.6	D
242	20	16	52	51	39.5 S 177.6 E	N	4.2	C
243	20	17	01	22	41.3 S 174.8 E	S	3.1	C
244	21	04	35	17	37.9 S 176.0 E	285 km	4.6	B
245	21	15	21	52	41¾ S 171¼ E	S	3.0	D
246	23	20	43	26	40.3 S 177 E	S	3.8	C
247	24	18	08	22	38.4 S 175.9 E	184 km	4.1	C
248	25	11	34	54	41¾ S 171¼ E	S	2.7	C
249	28	18	10	40	37.8 S 176.2 E	180 km	4.5	C
250	28	18	20	55	41.0 S 172.7 E	N	2.8	D
251	30	04	41	00	41.0 S 172.7 E	S	2.2	D
252	30	04	57	08	37.6 S 178.0 E	160 km	5.4	B
253	JUN 1	03	35	29	41.8 S 171.6 E	S	3.7	C
254	2	05	46	13	41.7 S 171.2 E	S	3.5	C
255	2	07	09	23	37.9 S 177.5 E	S	4.1	C
256	3	12	04	05	41.7 S 171.3 E	S	2.9	D
257	3	15	12	04	41.8 S 171.6 E	S	2.7	D
258	7	08	15	56	36.2 S 178.1 E	S	4.4	C
259	8	09	42	34	41.8 S 171.3 E	S	4.2	B
260	8	11	46	11	41.8 S 171.3 E	S	3.2	C
261	8	13	22	47	41.8 S 171.6 E	S	3.1	C
262	10	03	20	53	38.6 S 177.9 E	S	4.0	D
263	10	07	04.9		41¾ S 171½ E	S	2.5	B
264	10	21	30	46	40.9 S 172.6 E	S	3.3	C
265	14	14	12	20	38.6 S 175.9 E	200 km	4.4	B
266	15	06	49	50	41.1 S 172.7 E	190 km	5.4	C
267	16	17	00	03	38.6 S 175.8 E	160 km	4.5	B
268	17	09	14	35	41.7 S 171.3 E	S	4.5	B
269	18	19	29	26	37.9 S 176.5 E	210 km	4.6	B
270	19	06	17	49	37.55S 176.65E	185 km	5.8	B
271	19	11	23	58	43.2 S 170.8 E	S	4.1	B
272	21	00	24	47	40.2 S 175.45E	S	3.7	B
273	21	10	18	37	37.4 S 176.9 E	220 km	4.9	B
274	22	10	29	25	37.95S 176.8 E	S	4.0	B
275	22	14	43	35	37.95S 176.8 E	S	3.5	C
276	23	05	07	00	41¾ S 171½ E	S	2.4	D
277	23	14	16	02	37.95S 176.8 E	S	3.6	D
278	23	17	50	45	43.0 S 171.2 E	S	4.3	B
279	23	18	05	23	43.0 S 171.2 E	S	2.9	C
280	23	18	28	30	41.9 S 171.5 E	S	3.7	C
281	23	19	37	43	43.0 S 171.2 E	S	3.5	C
282	25	00	28	51	38.1 S 176.5 E	S	3.7	C

No.	Date	h	m	s	Epicentre	Depth	Mag.	Class
62/283	JUN 25	21	28	57	41.8 S 174.1 E	S	3.7	B
284	26	02	43	01	39.4 S 176.0 E	S	4.3	C
285	26	12	33	40	42.85S 172.5 E	S	3.5	B
286	26	12	40	57	39.4 S 174.3 E	250 km	4.4	B
287	29	11	45	23	39.9 S 175.4 E	S	3.8	B
288	30	05	39	14	39.0 S 175.4 E	S	3.3	C
289	30	13	18	24	42 S 171¾ E	S	2.5	D
290	JUL 2	09	02	20	37.90S 175.9 E	280 km	4.5	B
291	7	11	11	7	38½ S 178 E	N	-	D
292	10	15	24	48	38.5 S 175.8 E	180 km	4.2	C
293	10	17	21	13	41¼ S 171¼ E	S	2.9	D
294	12	04	07	41	34 S 178 W	N?	5.4	D
295	13	04	10	59	33 S 179 W	200 km	5.9	D
296	15	10	58	34	41.0 S 175.3 E	S	4.0	D
297	17	10	38	08	38.0 S 177.4 E	S?	4	B
298	22	07	03	02	41.2 S 175.2 E	N	2½	D
299	22	14	05	57	41.5 S 172.1 E	S	4.5	D
300	22	19	16	34	37.7 S 178.7 E	S	4.5	C
301	22	23	50	51	38.7 S 175.8 E	130 km	4.2	C
302	25	10	26	40	41.7 S 171.6 E	S?	3.0	B
303	26	03	39	52	41.9 S 171.9 E	S?	3.0	D
304	28	23	39	12	44.1 S 168.6 E	S?	5.4	D
305	29	07	44	37	42.2 S 172.9 E	S	3.4	C
306	29	18	19	52	41.3 S 173.4 E	85 km	5.7	C
307	AUG 1	09	40	13	38.5 S 176.1 E	195 km	4.8	B
308	3	07	22	31	34 S 179 W	350 km	5.3	C
309	4	05	47	03	41.1 S 172.6 E	N	2.6	D
310	4	10	03	23	44.5 S 167.8 E	N	4.1	D
311	5	15	12	45	41¾ S 171¼ E	N	2.4	D
312	7	06	25	34	41.8 S 173.8 E	N	3.5	C
313	7	16	14	18	41.2 S 176 E	N	3.4	D
314	10	04	33	53	42.4 S 172.6 E	S	3.4	D
315	10	14	30	08	37½ S 176½ W	N	4.9	D
316	12	02	06	34	37.9 S 176.2 E	310 km	4.9	C
317	12	14	54	35	37.9 S 175.8 E	S	3±	D
318	18	06	41	45	41.9 S 171.2 E	S	3.2	C
319	19	15	34	57	40.2 S 174.2 E	S	3.7	C
320	20	06	06	15	42.5 S 174.4 E	S	3.6	C
321	21	07	24	45	35.0 S 176.5 W	N	5.0	D
322	21	20	47	00	45.0 S 168.0 E	N	4.5	C
323	22	03	57	37	41.3 S 174.2 E	S	3.6	C
324	22	06	35	46	39.9 S 175.2 E	N	2.6	D
325	22	07	42	55	39.8 S 175.4 E	S	4.1	B
326	22	08	46	.5	Near Okoia (57)			
327	23	05	24	21	42.9 S 171.0 E	S	3.8	C
328	24	07	07	15	38.5 S 176.5 E	N	4.3	C
329	24	08	21	29	43.4 S 170.6 E	S	3.2	D
330	25	04	46	17	40 S 175.4 E	N	3±	D
331	26	02	17	22	33 S 178½ W	N	4.6	D
332	27	03	24	43	42 S 171 E	S	3.8	D
333	28	03	52	03	38.9 S 175.8 E	160 km	4.7	C
334	30	06	04	40	41.7 S 171.7 E	S	3.8	C
335	30	06	11	40	37.5 S 178.6 E	S	4.6	D
336	31	09	50	55	39.9 S 174.0 E	135 km	3.9	C
337	31	14	56	50	38.9 S 175.8 E	185 km	4.5	C
338	SEP 1	21	02	03	44.4 S 168.2 E	S	3.5	C
339	2	20	16	42	38.6 S 179.6 W	N	5.7	B
340	2	22	39	23	38.6 S 179.0 W	N	5.1	C
341	4	08	31	00	34.6 S 179.6 W	N	5.1	C
342	7	01	39	07	37.4 S 176.4 E	S	3¼	C
343	7	06	16	23	44.3 S 168.6 E	S	3.6	D
344	7	06	21	57½	37.35S 176.35E	S	3½	C
345	7	07	04	24	44.4 S 168.7 E	S	4.1	C
346	7	07	14	05	37.35S 176.35E	S	3½	C
347	7	14	55	23½	37.25S 176.2 E	S	3	D

No.	Date	h	m	s	Epicentre	Depth	Mag.	Class
62/348	SEP 10	03	22	04	41.95S 171.8 E	S	3.4	C
349	10	07	28	14	38.5 S 174.6 E	S	3¼	B
350	10	09	54	20	43.5 S 171.0 E	S	2.7	C
351	10	22	28	58	44.8 S 175.4 W	N	5.1	C
352	11	01	18	40	33.7 S 178.7 W	N	5.2	C
353	11	13	35	55	40.25S 173.5 E	180 km	4.5	B
354	11	17	36	40	41.6 S 172.1 E	S	3.4	C
355	12	01	02	56	40.0 S 174.5 E	110 km	4.2	B
356	13	12	14	42	38.9 S 179.0 W	N	5.0	D
357	13	15	33	28	39.0 S 175.0 E	215 km	5.2	B
358	14	09	57	32	41.3 S 172.8 E	135 km	4.1	B
359	14	13	12	21	37.4 S 176.3 E	S	4	B
360	14	13	13	49	37.2 S 176.2 E	S	3¾	C
361	14	13	18	20	37.4 S 176.3 E	S	3¾	C
362	14	13	22	12	37.25S 176.25E	S	3½	C
363	14	22	04	40	41.8 S 171.4 E	S	3.4	C
364	15	19	05	51	35 S 178 W	N	5.2	D
365	16	07	54	45	37.6 S 176.3 E	S	3.9	B
366	17	13	53	34	37.9 S 176.9 E	235 km	4.4	C
367	18	04	11	01	37.45S 176.4 E	S	3½	C
368	18	10	51	18	37.4 S 176.3 E	S	3	C
369	18	16	27	10	37.5 S 176.3 E	S	3¼	C
370	18	23	22	57	37.4 S 176.4 E	S	3¼	C
371	19	07	43	23	37.65S 176.3 E	S	3½	C
372	19	13	44	21	37.6 S 176.4 E	S	3½	C
373	20	03	46	23	37.65S 176.2 E	S	3	D
374	20	04	58	27	37.65S 176.25E	S	3¾	C
375	21	02	20	17	37.55S 176.3 E	S	3½	B
376	22	13	15	26	38.35S 176.1 E	135 km	-	C
377	22	15	08	04	36.9 S 178.1 E	S	5.8	B
378	22	17	33	05	44.7 S 167.8 E	S	4.3	C
379	22	21	58	13	37.55S 176.3 E	S	3	D
380	23	12	12	29	37.7 S 176.3 E	S	3¼	C
381	24	11	29	05	41.0 S 172.7 E	S	4.3	B
382	25	02	30	19	38.0 S 178.1 E	S	4.4	C
383	25	17	05	29	37.55S 176.3 E	S	3¼	D
384	26	10	46	44	37.7 S 176.4 E	S	4.6	B
385	26	11	05	18	37.8 S 176.05E	S	3¼	B
386	26	11	30	37	37.8 S 176.2 E	S	3½	B
387	26	14	18	16	40.9 S 175.9 E	S	4.1	B
388	26	14	30	43	37.45S 176.3 E	S	3½	C
389	26	16	33	13	37.7 S 176.3 E	S	4	B
390	27	00	54	34	35.7 S 179.1 W	N	5.0	C
391	27	14	40	25	37.4 S 177.4 E	S	5.5	C
392	28	17	10	02	37.5 S 176.3 E	S	3½	C
393	29	14	30	35	49.0 S 165.0 E	N	5.0	C
394	29	23	32	13	37.75S 176.35E	S	4.5	A
395	29	23	45	17	37.45S 176.2 E	S	3¾	C
396	30	02	12	34	37.4 S 176.4 E	S	3½	D
397	30	02	57	56	40.9 S 175.4 E	S	4.0	B
398	30	11	20	56	38.6 S 175.9 E	175 km	5.5	B
399	30	16	13	40	38.5 S 177.7 E	S	4.0	C
400	OCT 1	22	37	08	39.0 S 175.6 E	S	4.2	C
401	3	01	04	40	43 S 172½ E	N	2.7	D
402	3	13	30	43	40.2 S 174.9 E	S	3.0	D
403	4	00	39		Near Tauranga (26)			
404	4	13	15	33	36½ S 178 E	S	4.7	D
405	5	01	17	48	40.2 S 175.1 E	N	3.7	C
406	5	03	46	51	44.8 S 167.6 E	N	3.8	D
407	5	20	09	38	44.6 S 167.6 E	S	4.9	C
408	6	07	27		Near Tutira (52)			
409	9	00	25	25	44.6 S 167.8 E	S	4.7	C
410	9	08	23	18	39.7 S 175.9 E	S	3.8	C
411	10	16	26	22	34.6 S 179.8 W	200 km	5.2	D
412	10	23	26	22	40.0 S 174.3 E	S	4.1	C

No.	Date	h	m	s	Epicentre	Depth	Mag.	Class
62/413	OCT 12	01	44	49	33.1 S 178.2 W	N	5.3	D
414	12	06	35	33	38.4 S 175.8 E	170 km	4.4	D
415	13	06	22	52	38.4 S 176.7 E	110 km	4.7	D
416	13	08	28	35	38.3 S 175.9 E	185 km	5.4	C
417	13	16	47	10	38.6 S 175.8 E	160 km	4.3	C
418	14	00	29	58	33.8 S 178.7 W	N	5.7	C
419	14	01	33	52	35 S 179 E	280 km	4.8	D
420	14	09	32	00	35 S 178 W	N	5.1	D
421	15	13	59	50	33 S 178½ W	100 km	5.3	D
422	15	21	49	34	34 S 177 W	60 km	4.7	D
423	15	23	36	31.1	43.45S 169.65E	S	6.1	D
424	16	23	02	09	39.3 S 177.7 E	S	4.1	B
425	17	03	18	24	36 S 179 E	280 km	5.0	C
426	17	11	38	43	41.2 S 172.1 E	S	3.6	D
427	18	10	25	59	41.8 S 171.5 E	S	4.0	D
428	18	13	03	08	41.8 S 171.5 E	S	3.2	C
429	19	08	31	53	34 S 178 W	S	5.0	D
430	19	17	14	15	33.5 S 180.0	300 km	6.3	D
431	20	10	43	10	43 S 171 E	N	3.1	D
432	20	15	48	41	40.5 S 173.2 E	220 km	4.1	D
433	20	21	32	42	34 S 178 W	N	5.0	D
434	21	22	37	42	38.1 S 175.7 E	270 km	4.6	C
435	22	05	20	06	38.8 S 179.1 W	N	5.1	C
436	23	03	12	12	38.6 S 175.8 E	160 km	4.8	C
437	24	00	41	48	37.0 S 178.0 E	90 km	5.1	C
438	26	07	53	57	38.4 S 177.8 E	100 km	4.5	D
439	27	23	29	56	34½ S 178 W	N	5.4	D
440	29	09	23	40	37.2 S 176.1 E	N	3.3	C
441	30	13	33	03	37.1 S 176.1 E	S	3.0	D
442	31	14	22	26	37.3 S 176.2 E	S	3.1	D
443	NOV 2	17	31	18	39.7 S 176.9 E	S	4.3	C
444	2	18	47	34	38.5 S 175.4 E	260 km	5.0	C
445	3	18	05	.1	38.4 S 179.0 E	S	4.8	D
446	5	00	12	30	37.9 S 179.6 E	S	5.2	D
446a	7	16	10		Near Kumara (92)			
447	8	07	48	54	38.0 S 177.0 E	N	-	C
448	10	14	53	44	38.6 S 179.5 E	S	4.7	C
449	11	02	17	19	38.3 S 176.9 E	S	3½	D
450	11	11	25	31	41.5 S 172.1 E	S	3.8	B
451	14	05	30	56	41.5 S 172.8 E	130 km	3.6	B
452	18	23	38	27	37.1 S 178.0 E	140 km	4.7	C
453	19	18	05	18	39½ S 177 E	S	3.7	D
454	21	07	17		36 S 179 E	S?	4.6	D
455	22	14	00	.1	41.8 S 171.5 E	N	2.8	D
456	23	16	20	56	37.6 S 176.5 E	S?	-	D
457	28	02	40	05	41.2 S 176.3 E	S	3.2	C
458	29	23	33	15	38.1 S 176.0 E	280 km	4.7	C
459	30	09	19	53	41.3 S 175.5 E	S	3.2	C
460	30	12	24	36	40.1 S 172.7 E	S	3.2	C
461	30	13	36	10	38.6 S 176.1 E	S?	-	D
462	DEC 1	09	37	11	37.9 S 176.4 E	180 km	4.7	B
463	4	19	51	39	41.6 S 174.2 E	S	3.5	C
464	4	22	14	25	37.8 S 176.6 E	210 km	4.9	B
465	6	13	21	14	39.6 S 174.15E	210 km	4.5	C
466	7	12	59	05	38.8 S 175.85E	190 km	4.7	B
467	10	04	12	47½	39.95S 176.0 E	S	4.7	B
468	10	18	57	22	37.8 S 176.2 E	270 km	5.2	C
469	12	09	15	07½	37.2 S 176.8 E	430 km	4.4	B
470	13	09	42	30	37.5 S 177.7 E	S	4.5	B
471	13	15	31	49	39.85S 175.3 E	S	3.1	C
472	13	17	21	41	43.05S 172.7 E	S	4.4	B
473	14	02	58	26	38.1 S 176.0 E	235 km	4.8	C
474	14	03	58	26	38.2 S 175.8 E	265 km	4.7	C
475	14	16	50	12	44.8 S 167.6 E	N	4.1	C
476	17	09	07	08	40.4 S 175.1 E	S	3.6	C

No.	Date	h	m	s	Epicentre	Depth	Mag.	Class
62/477	DEC 17	11	49	38	37.8 S 176.6 E	S	2½	C
478	17	12	37	58	37.8 S 176.6 E	S	2½	C
479	17	12	39	28	37.5 S 176.8 E	S	3	C
480	19	04	14	49	38.3 S 176.0 E	180 km	4.3	D
481	20	00	25	43	39.1 S 175.3 E	210 km	4.2	D
482	23	10	08	05	38.2 S 176.7 E	S	-	C
483	23	10	09	02	38.15S 176.8 E	S	-	C
484	23	10	12	10	38.2 S 176.7 E	S	-	C
485	23	15	34	39	37.7 S 179.2 E	S	5.3	C
486	25	02	03	53	38.55S 176.05E	S	3.9	C
487	25	12	37	03	40.75S 175.05E	N	3.6	C
488	26	01	07	17	42.9 S 171.5 E	70 km	3.9	B
489	27	02	28	10	32 S 178 W	N?	5.9	D
490	30	10	12	44	38.0 S 176.85E	210 km	4.6	C
491	31	13	48	38	38.1 S 176.3 E	205 km	4.6	B
492	31	17	00	12	37.5 S 177.7 E	S	4.4	B

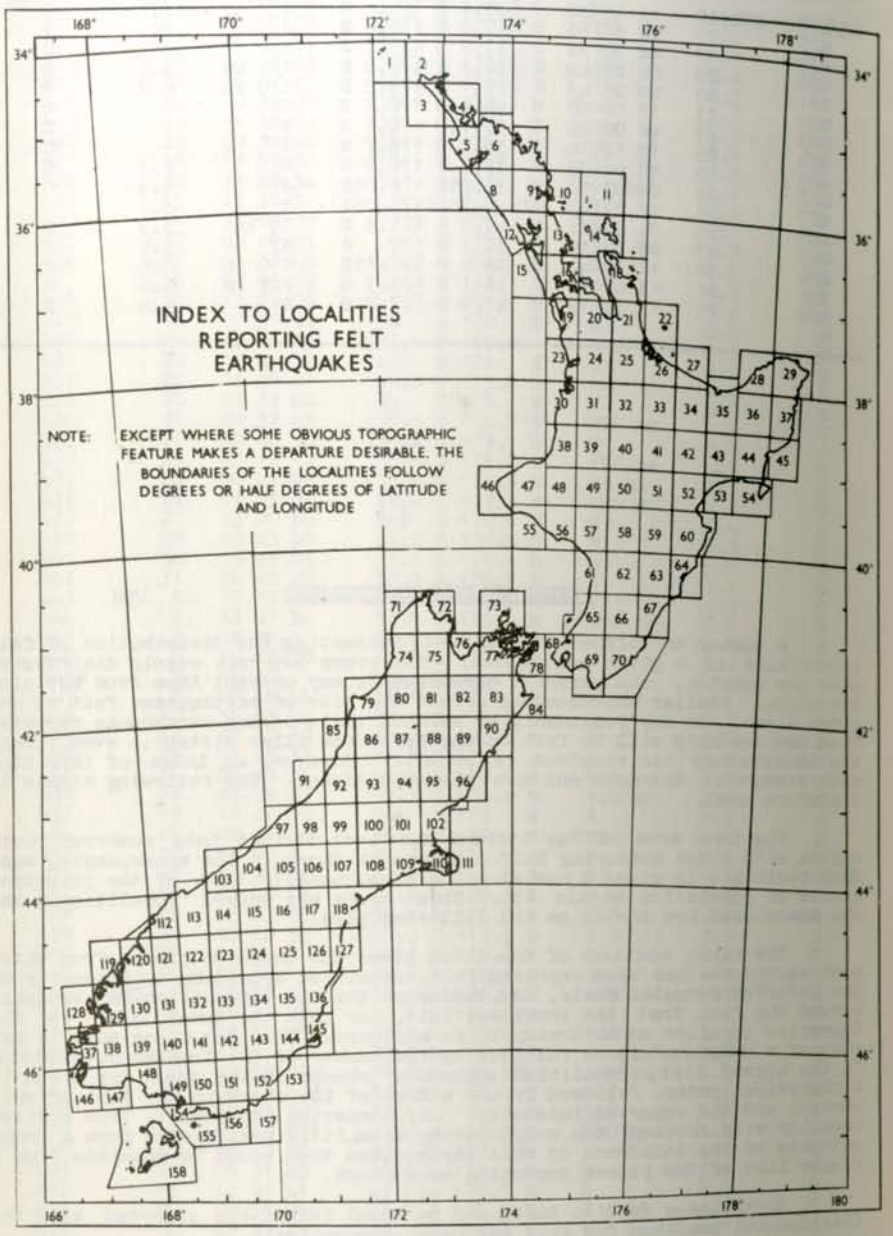
INDEX OF FELT EARTHQUAKES

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	Kaitaia	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 Mts.
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	Ranfurly
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

62/6 Jan
4d 21h 04m
MM3 Oruaiti Beach (28)

62/12 Jan
10d 22h 00m
MM4 Raetihi (49); Hunterville (58).
MM3 Ohakune (49); Hawera (55); Dannevirke (63).
MM2-3 Stratford (47)
MM2 Bunnythorpe (62)
? Waiouru (50); Palmerston North (62); Levin (65).

62/30 Jan
20d 02h 37m
MM1 Lowry Bay (68)

62/32 Jan
22d 10h 09m
MM3 Ngakuru (33)
? Atiamuri (33)

62/33 Jan
22d 10h 11m
MM3 Ngakuru (33)
? Atiamuri (33)

62/40 Jan
23d 06h 49m (See isoseismal map)
MM7 Aria (38)
MM6 Benneydale, Mahoenui (38)
MM5 Cambridge (24); Paemako (30); Waitomo (31); Kotare, Uruti (38); Turangi (40); Purangi (47); Ohakune (49).
MM4 Auckland, Glendowie, Mechanics Bay, Royal Oak, Titirangi (16); Ardmore, Onewhero, Pukekawa (19); Te Karaka (23); Cambridge, Fencourt, Horsham Downs, Huntly, Maungatautari, Ngahinepouri, Ngaruawahia, Pirongia (24); Kiwitahi, Ohauiti, Richmond Downs, Tirau, Whitehall (25); Hicks Bay (29); Kawhia, Marokopa (30); Ngutunui, Otorohanga, Tupuwai (31); Mangakino, Maraetai, Whakamaru (32); Mokau River (38); Owhango (39); Turangi (40); Cape Egmont, Oakura (46); New Plymouth, Eltham, Inglewood, Tarata, Tariki, Waitara (47); Omoana (48); Ohakune, Raetihi (48); Erua, Otukou, Rangipo, Taurewa (50); Hawera, Waverley (56); Wanganui, Kaipaore, Okoia, Parihauhau (57); Mangaweka, Mataroa, Moawhango, Pohonui, Taihape (58); Komako (62); Shannon (65).
MM3 Oneroa (17); Papakura, Waiuku (19); Kerepeehi, Turua, Waihi Beach (21); Hamilton, Hoe-o-Tainui, Karapiro, Roto-o-Rangi, Tuwhare (24);

Morrinsville, Ngarua, Springdale, Te Aroha, Wardville (25); Te Puke (26); Rangitiki (31); Opotiki (35); Taumarunui, Mokauiti (39); Tokaanu (40); Wairenga-o-Kuri (44); Stratford (47); Ngamatea (51); Alton (55); Moawhango, Rewa, Taoroa (58); Marakeke (63).
MM2 Chiltern (18); Manawaru, Matamata (25); Lichfield, Putaruru (32).
'Not Felt' reports were received from the following localities: 5-9, 12, 13, 16, 17, 19-21, 25-28, 33-37, 41-43, 52-54, 58-67, 69, 70.

62/43 Jan
24d 12h 08m
? Rotorua (33)

62/44 Jan
24d 12h 51m
? Rotorua (33)

62/46 Jan
24d 13h 57m
? Rotorua (33)

62/47 Jan
24d 14h 44m
MM4 Rotorua (33)

62/48 Jan
24d 15h 04m
? Rotorua (33)

62/57 Jan
31d 09h 07m
MM3 Galatea (34); Waitangirua (36).
? Murupara (34)

62/63 Feb
15d 08h 27m
MM3 Westport (79)

62/65 Feb
16d 13h 06m
MM4 Westport (79)

62/77 Feb
27d 19h 21m
MM4 Murchison (80)

62/83 Mar
5d 16h 47m
MM4 Murchison (80)

62/84 Mar
6d 07h 05m
MM3 Waitangirua (36)

62/89 Mar
10d 21h 30m
MM3 Te Puia (37)

62/90 Mar
11d 07h 56m
MM4 Wairoa (53)
MM2 Gisborne (45)

62/103 Mar
18d 16h 09m
MM2 Lowry Bay (68)

62/106 Mar
19d 18h 07m
MM4 Hunterville, Taihape (58); Foxton (61); Dannevirke (63).
MM3 Wanganui (57); Waipawa (60).
MM2 Bunnythorpe, Palmerston North (62); Dannevirke (62).

62/125 Apr
2d 23h 34m
MM3 Wellington (68)

62/126 Apr 4d 11h 30m
MM3 Foxton (61)

62/127 Apr 6d 22h 28m
MM4 Westport (79)

62/128 Apr 7d 07h 14m
MM4 Waipawa (60)
MM2 Dannevirke (63); Porirua (68).

62/134 Apr 17d 05h 33m
MM3 Wellington (68)

62/137 Apr 17d 17h 43m
MM4 Tadmor (75); St. Arnaud (81); Leatham (82); Kaimata (92); Hanmer (95); Cheviot (96); Akaroa, Le Bon's Bay (111).
Also on board M.V. Tanea, at 42°53'S 175°45'E.
MM3 Foxton (61); Porirua, Wainui-o-mata (68); Blenheim (77); Westport (79); Kaikoura (90); Orari Gorge (118); Otiake (126).
MM2 Dannevirke (63); Lower Hutt, Paekakariki, Wellington, York Bay (68); Greymouth (85).
? Temuka (118)
'sharp' Nelson (76); Westport (79); Christchurch (110).
'moderate' Kikiwa (81)
'slight' Culverden (95)

62/138 Apr 17d 18h 07m
? Cheviot (96)

62/139 Apr 18d 00h 14m
MM3-4 Wellington (68)

62/140 Apr 18d 17h 25m
MM4 Kawerau (34)

62/141 Apr 18d 22h 15m
MM4 Quarry Hills (156)
MM3 Waikawa (156)
MM2 Balclutha (152)

62/144 Apr 22d 17h 51m
MM3 Porirua (68)
MM2 Dannevirke (63)

62/154 May 2d 09h 48m
MM4 Paekakariki, Wellington (68)
MM3 Paraparaumu, Waitarere Beach (65); Paekakariki, Paremata, Porirua, Wainui-o-mata, York Bay (68).
MM2 Lower Hutt, Wellington (68)

62/155 May 2d 10h 15m
MM3 Murchison (80)

62/156 May 2d 13h 04m
MM4 Waikanae Beach (65)
MM3 Paraparaumu, Waitarere Beach (65); Khandallah, Paekakariki (68).
MM2 Porirua, York Bay (68)

62/158 May 3d 14h 53m
MM4 Westport (79)

62/165 May 10d 00h 27m (See isoseismal map)
MM7 Westport (79)

MM6-7 Blackball, Greymouth (85)
MM6 Murchison (80); Barrytown (85); Reefton (86); Kowhiterangi (91); Kumara (92); Haupiri (93).
MM5-6 Inangahua (79)
MM5 Inangahua (79); Hokitika, Ross (91); Hokonu (92); Waitaha (98).
MM4-5 Upper Grey River (87); Rotomanu (93); Craigieburn (100).
MM4 Paturau River (71); Uruwhenua (72); Karamea (74); Cobb River, Dovedale, Tadmor, Thorpe (75); Mapua, Nelson (76); Murchison, Six Mile (80); St. Arnaud (81); Leatham, Maruia (87); Hokitika (91); Kaimata (92); Haupiri (93); Hanmer, Hawarden (95); Spotswood (96); Lower Whatanoa (97); Hari Hari (98); Flock Hill, Glenthorne, High Peak (100); Haast (103); Highfield (118).
MM3-4 Collingwood (72); Howard (81).
MM3 Porirua (68); Bainham, Farewell Spit, Takaka (72); Cobb River, Stanley Brook (75); Harakeke, Wakefield (76); Koromiko, Mahakipawa, Onamalutu (77); Esk End (95); Hawkswood (96); Annat (100); Amberley (102); Haast (103); Mahitahi (104); Hakatere, Mt. Somers (107); Methven (108); Christchurch (110); Hunter Valley (114); Albury (117); Dalrymple, Timaru (118).
MM2-3 Homebush (110)
MM2 Mangaweka (58); Wellington (68); Blenheim, Grovetown, Nikau Bay (77); Weka Pass (95); Lowry Hills (96); Braemar (105); Dunsandel (109); Christchurch (110).
MM1 Tophouse (81); Parnassus (96); Timaru (118); Wanaka (123).
'Not Felt' reports were received from the following localities: 51, 61-63, 65, 66, 68-70, 73, 76-78, 83, 84, 90, 95, 96, 100-103, 106, 108, 109, 111, 113, 117, 118, 121, 123-125, 127, 132-136, 140-144, 150-152, 154, 156.

62/167 May 10d 01h 38m
? Westport (79)

62/168 May 10d 02h 14m
? Westport (79)

62/169 May 10d 02h 29m
? Westport (79)

62/170 May 10d 02h 59m
MM2 Howard (81)
'slight' Westport (79)

62/174 May 10d 04h 27m
MM4 Tadmor (75); Six Mile (80); Greymouth (85).
'slight' Westport (79)

62/175 May 10d 04h 31m
MM5 Bunnythorpe, Mangamahoe (62); Masterton (66)
MM4-5 Paraparaumu (65); Eketahuna (66).
MM4 Uruti (38); Taringamotu (39); Purangi (48); Ohakune (49); Okoia, Wanganui (57); Hunterville (58); Foxton (61); Palmerston North (62); Dannevirke (63); Levin, Otaki, Waitarere Beach (65); Eketahuna, Masterton (66); Lower Hutt (68); Trentham (69); Martinborough, Ponatahi (70); Kaka (76).
MM3 Paemako (30); Otorohanga (31); Dawson's Falls

(47); Ohakune (49); Waitahinga (56); Wanganui (57); Mangaweka (58); Maraheke (60); Motukowhai, Ohakea (61); Fielding, Linton, Tokomaru (62); Levin, Paraparaumu, Waikanae Beach (65); Bideford, Craigie Lea, Masterton (66); Castlepoint, Pongaroa, Tinui (67); Porirua, Wellington (68); Upper Hutt, Te Kopi (69); Wakefield (76); Canvastown (77).

MM2 Mahoenui (38); Ashley Clinton (59); Havelock North (60); Porangahau (64); Castlepoint (67); Edgehill (69); Thorpe (75).

MM1 Gisborne (45)

62/176 May 10d 04h 39m
MM3 Paemako (30); New Plymouth (47).
MM2 Masterton (66)

62/178 May 10d 05h 26m
MM3 Apiti (58)

62/181 May 10d 06h 58m
MM3 Bainham (72)
MM2 Howard (81)

62/186 May 10d 10h 18m
MM4 Farewell Spit (72); Tadmor (75); Kowhiterangi (91).
MM3-4 Collingwood (72)
MM3 Bainham (72); Kaka (76); Ocean Bay (78); Blackball (85).

62/187 May 10d 10h 25m
MM3 Paekakariki (65); Masterton (66).

62/188 May 10d 11h 01m
MM3 Howard (81); Kowhiterangi (91).

62/189 May 10d 11h 10m
MM3 Barrytown, Blackball (85); Ross (91).
MM2 Farewell Spit (72)

62/190 May 10d 12h 03m
MM4 Masterton (66); Wellington (68).
MM3 Wanganui (57)

62/199 May 11d 10h 13m
MM3 Six Mile (80)

62/208 May 12d 15h 51m
'sharp' Westport (79)

62/210 May 13d 07h 18m
MM2 Inangahua (79)

62/211 May 13d 08h 56m
MM2 Inangahua (79)

62/212 May 13d 16h 40m
MM3 Cromwell (133)

62/214 May 14d 10h 22m
MM3 Waihua (53)
MM2 Erepiti (53)

62/215 May 14d 12h 22m
'severe' Westport (79)

62/216 May 14d 13h 00m
'moderate' Westport (79)

62/218 May 16d 03h 01m
MM3 Wellington (68)
MM2 Wellington (68)

62/220 May 16d 10h 28m
MM3 Whakamaru (32); Tokaanu (40); Taupo (41).

62/221 May 16d 13h 47m
? Westport (79)

62/222 May 16d 14h 50m
'severe' Westport (79)
MM4 Greymouth (85); Hokitika (91).
MM3 Six Mile (80); Greymouth (85); Haupiri, Rotomanu (93).

62/223 May 17d 02h 19m
MM6 Westport (79); Reefton (86).
MM5 Paturau River (71); Collingwood (72); Stanley Brook, Tadmor (75); Nelson (76); Six Mile (80); St. Arnaud (81); Barrytown, Blackball, Greymouth (85); Hokitika (91); Kaimata (92); Haupiri, Rotomanu (93).
MM3 Bainham (72); Howard (81); Upper Grey River (87); Hokitika, Kowhiterangi (91); Hanmer (88); Lake Whataroa (97); Riccarton (110).
MM2 Hohonu (92)
? Motueka (76); Murchison (80); Lake Coleridge (100).
'Not Felt' report was received from Maitai Valley (76).

62/224 May 17d 02h 22m
MM4-5 Greymouth (85)
MM4 Nelson (76); Murchison (80).
MM3 Tadmor (75); Howard (81).
MM2 Bainham (72); Ross (91).
? Motueka (75); Lake Coleridge (100).

62/225 May 17d 02h 28m
? Westport (79)

62/226 May 17d 02h 37m
? Westport (79)

62/227 May 17d 02h 51m
? Westport (79)

62/230 May 17d 16h 41m
? Westport (79)

62/232 May 17d 12h 47m
? Westport (79)

62/233 May 18d 12h 55m
? Westport (79)

62/234 May 18d 19h 50m
? Takaka (72)

62/235 May 19d 11h 06m
? Westport (79)

62/236 May	19d	15h	36m
	?	Westport (79)	
62/237 May	19d	17h	01m
	?	Westport (79)	
62/238 May	19d	17h	53m
	?	Westport (79)	
62/240 May	19d	21h	15m
	MM3	Blackball (85); Ross, Three Mile (91).	
62/241 May	19d	21h	38m
	MM4	Arrowtown (122); Otiake (125).	
	MM3	Earnslaw (121)	
62/243 May	20d	17h	01m
	MM3	Wellington (68)	
62/245 May	21d	15h	21m
	?	Westport (79)	
62/246 May	23d	20h	43m
	MM4	Wakarara (59)	
62/248 May	25d	11h	34m
	?	Westport (79)	
62/250 May	28d	18h	20m
	MM3	Bainham, Takaka (72)	
62/251 May	30d	04h	38m
	MM3	Takaka (72)	
62/253 Jun	1d	03h	35m
	MM4-5	Westport (79)	
62/256 Jun	3d	12h	04m
	?	Westport (79)	
62/257 Jun	3d	15h	12m
	?	Westport (79)	
62/259 Jun	8d	09h	42m
	MM4	Westport (79)	
62/260 Jun	8d	11h	46m
	MM4+	Westport (79)	
62/261 Jun	8d	13h	22m
	?	Westport (79)	
62/262 Jun	10d	03h	20m
	MM2	Whatatutu (36); Gisborne (45).	
62/263 Jun	10d	07h	04m
	MM4	Westport (79)	
62/264 Jun	10d	21h	30m
	MM3	Takaka (72)	
62/266 Jun	15d	06h	49m
	MM4	Paturau (71)	
	MM2	Waikanae Beach (65)	
62/268 Jun	17d	09h	14m
	MM4	Westport (79)	

	MM3	Paturau River (71)	
	MM2	Mangles Valley (80)	
62/271 Jun	19d	11h	23m
	MM4	Ross (91)	
	MM3	Hokitika, Kowhiterangi, Three Miles (91).	
62/272 Jun	21d	00h	26m
	MM4	Waitatapia (61)	
	MM3	Wellington (68)	
62/273 Jun	21d	10h	18m
	MM4	Edgecumbe (37)	
	MM3	Thornton (37)	
62/276 Jun	23d	05h	07m
	MM4	Westport (79)	
62/278 Jun	23d	17h	50m
	MM4	Kumara (92)	
	MM3	Kowhiterangi, Ross, Waitaha (91); Mt. Somers (107).	
62/279 Jun	23d	18h	05m
	MM3	Ross (91)	
62/280 Jun	23d	18h	28m
	MM3	Inangahua (79)	
62/281 Jun	23d	19h	37m
	MM3	Ross (91)	
62/282 Jun	25d	00h	28m
	?	Lake Okataina (33)	
62/283 Jun	25d	21h	30m
	MM1	Wellington (68)	
62/284 Jun	26d	02h	43m
	MM3	Omerei (49)	
62/287 Jun	29d	11h	45m
	MM2	Waitahinga (56); Okoia (57).	
62/289 Jun	30d	13h	20m
	MM3	Westport (79)	
62/291 Jul	7d	11h	11m
	MM3	Whatatutu (36)	
62/293 Jul	10d	17h	21m
	MM4	Westport (79)	
62/296 Jul	15d	10h	58m
	MM4	Paraparaumu (65); Wellington, York Bay (68); Trentham (69).	
	MM3	Paekakariki (65); Khandallah, Lower Hutt (68); Ponatahi (70).	
62/298 Jul	22d	07h	03m
	MM3	Wainui-o-mata (68)	
62/299 Jul	22d	14h	05m
	MM4	Mangles Valley, Murchison (80); Howard, St. Arnaud, Lake Rotoiti (81).	
	MM3	Paturau River (71); Bainham (72); Tadmor (75).	
	MM2-3	Collingwood (72)	

62/302 Jul 25d 10h 26m
MM4 Westport (79)

62/303 Jul 26d 03h 39m
MM2-3 Westport (79)

62/304 Jul 28d 23h 39m
MM4 Mt. Aspiring (113); Glenorchy (121); Kingston (132).
MM3 Haupiri, Rotomanu (93); Mahitahi (104); Hunter Valley (114); Milford (120).
MM1 Cromwell (133)
'slight' Momona (144)

62/305 Jul 29d 07h 44m
MM3 Molesworth (89)

62/306 Jul 29d 18h 19m
MM5 Rotomanu (93)
MM4-5 Farewell Spit (72); Ocean Bay (78).
MM4 Awakino, Mahoenui (38); Oakura (46); Eltham (47); Purangi (48); Mangamahu (57); Te Kopi (69); Paturau River (71); Bainham, Takaka (72); Stephens Is. (73); Dovedale, Tadmor (75); Matai Valley, Nelson (76); Manaroa, Nikau Bay (77); The Brothers (78); Inangahua (79); Six Mile (80); St. Arnaud (81); Hillersden, Leatham (82); Fairhall (83); Blackball (85); Mai Mai, Reefton (86); Molesworth (89); Flax Hills, Waipapa (90); Haupiri (93); Akaroa Lighthouse, Le Bon's Bay (111).
MM3-4 Cape Egmont (46); Tarata (47); Okoia (57); Wairere (66); Khandallah (68); Kowhiterangi (91).
MM3 Ngutunui (31); Punawai, Uruti (38); Inglewood, Stratford (47); Ohakune (50); Hawera (55); Waitahinga, Waitotara (56); Wanganui (57); Levin, Waitarere (65); Ponatahi (70); Lochmaree, Riwaka (75); Mangles Valley (80); Greymouth, Lawson's Creek (85); The Branch (87); Kumara (92); Culverden (95); Erewhon (99); Allandale (110).
MM2 Te Mata (23); Paemako (30); Eastry (66); Waiorongomai (69).

62/309 Aug 4d 05h 47m
MM3 Takaka (72)

62/310 Aug 4d 10h 03m
MM3 Earnslaw (121)

62/311 Aug 12d 15h 12m
'slight' Westport (79)

62/313 Aug 7d 16h 14m
MM4 Te Kopi (69)

62/317 Aug 12d 14h 54m
MM3 Cambridge (24)

62/318 Aug 18d 06h 41m
MM4 Westport (79)

62/322 Aug 21d 20h 48m
MM4 Kingston (132); Manapouri (139)
MM3 Mossburn (140); Invercargill (149)

62/324 Aug 22d 06h 35m
MM3 Omerei (49); Okoia (57).

62/326 Aug 22d 08h 46m
MM4 Okoia (57)

62/327 Aug 23d 05h 24m
MM4 Ross (91); Waitaha Valley (98).

62/329 Aug 24d 08h 21m
MM4 Erewhon (98)

62/330 Aug 25d 04h 46m
MM4 Okoia (57)

62/332 Aug 27d 03h 24m
MM4 Westport (79)

62/335 Aug 30d 06h 11m
MM4 Ruatoria (29)
MM3 Tokomaru Bay (37)

62/338 Sep 1d 21h 02m
MM3 Earnslaw (121)

62/343 Sep 7d 06h 16m
MM3 Earnslaw (121)

62/348 Sep 10d 03h 22m
MM4 Westport (79)

62/350 Sep 10d 09h 54m
MM4 Erewhon (98)

62/354 Sep 11d 17h 36m
'slight' Murchison (80)

62/355 Sep 12d 01h 04m
MM3 Okoia (57)

62/357 Sep 13d 15h 33m
MM3 Wanganui (57)
? Okoia (57)

62/359 Sep 14d 13h 12m
MM3 Maketu, Tauranga (26)
'Not Felt' report received from Oneroa (17).

62/360 Sep 14d 13h 13m
MM4 Maketu (26)
MM3 Tauranga (26)
'Not Felt' report received from Oneroa (17).

62/361 Sep 14d 13h 18m
MM3 Maketu (26)
MM2 Oneroa (17)
'Not Felt' report received from Oneroa (17).

62/363 Sep 14d 22h 04m
MM3 Westport (79)

62/365 Sep 16d 07h 54m
MM4 Tauranga (26)
MM3 Hoe-o-Tainui (24); Maketu (26).
MM1 Waihi (21)
'Not Felt' report received from Oneroa (17).

62/369 Sep	18d	16h 27m	
	?	Tauranga (26)	
62/372 Sep	19d	13h 44m	
	MM2	Tauranga (26)	
62/378 Sep	22d	17h 33m	
	MM3	Manapouri (139)	
62/381 Sep	24d	11h 29m	
	MM3	Paturau River (71); Takaka (72).	
62/382 Sep	25d	02h 30m	
	MM2	Tolaga Bay (37)	
62/384 Sep	26d	10h 46m	
	MM4	Chiltern (18); Kati Kati (25); Maketu, Tauranga (26).	
	MM3	Thames (21); Walton (25); Kaharoa, Otumoetai (26).	
62/385 Sep	26d	11h 05m	
	MM2	Maketu (26)	
	MM2-3	Thames (21); Tauranga (26).	
62/386 Sep	26d	11h 30m	
	MM3	Maketu (26)	
	MM1	Tauranga (26)	
62/387 Sep	26d	14h 18m	
	MM4	Eketahuna, Wairere (66); Te Kopi (69); Ponatahi (70).	
	MM3	Masterton (66)	
	MM1	Dannevirke (63)	
62/388 Sep	26d	14h 30m	
	MM4	Tauranga (26)	
62/389 Sep	26d	16h 33m	
	MM4	Maketu, Tauranga (26)	
	MM3	Otumoetai (26)	
62/391 Sep	27d	14h 40m	
	MM3	Erepiti (53)	
62/392 Sep	28d	17h 10m	
	MM2	Tauranga (26)	
62/394 Sep	29d	23h 32m	
	MM6-7	Te Puke (26)	
	MM6	Mt. Maunganui, Omokoroa, Tauranga (26).	
	MM5	Maketu (26)	
	MM4	Waitekauri (21); Walton (25); Kaharoa, Tauranga (26).	
	MM2	Edgecumbe (27)	
62/397 Sep	30d	02h 57m	
	MM3	Wellington (68)	
	MM2	Wellington (68)	
62/399 Sep	30d	16h 13m	
	MM2	Erepiti (43)	
62/401 Oct	3d	01h 04m	
	MM4	Hawarden (95)	

62/403 Oct	4d	00h 39m	
	MM2	Tauranga (26)	
62/408 Oct	6d	07h 30m	
	MM3	Tutira (52)	
62/416 Oct	13d	08h 28m	
	MM3	Kotemaori (53); Te Uri (63).	
62/423 Oct	15d	23h 27m (See isoseismal map)	
	MM6	Fox Glacier (97); Mt. Cook (105).	
	MM5	Whakapohai River (103); Bruce Bay (104); Lilybank (106).	
	MM4-5	Ross (91)	
	MM4	Barrytown (85); Hokitika, Kowhiterangi (91); Haast, Kaka Creek, Lake Paringa (103); Mt. Aspiring (113); Albury (117); Hunter Valley (123); Otiake (126).	
	MM3-4	Blackball (85); Hokitika (91); Jacksons (92); Haupiri (93); Gibbston (132); Manapouri (139).	
	MM3	Westport (79); Greymouth (85); Timaru (118); Gore (150).	
	MM2	Nelson (76); Fairlie (117); Timaru (118).	
	'slight'	Christchurch (110); Timaru (118); Oamaru(136); Momona (144).	
	?	Karamea (74)	
		'Not Felt' reports received from Hickory Bay (111); Lillburn Valley (139); Lumsden, Mossburn (140); Highcliff (145); Tuatapere (148).	
62/427 Oct	18d	10h 25m	
	MM4	Westport (79)	
62/428 Oct	18d	13h 03m	
	MM4	Westport (79)	
62/431 Oct	20d	10h 43m	
	MM4	Ross (91)	
62/438 Oct	26d	07h 53m	
	MM2	Opotiki (35)	
	MM1	Motu (36)	
62/440 Oct	29d	09h 23m	
	MM3	Coromandel (18)	
	MM1	Waihi (21)	
	?	Tauranga (26)	
62/441 Oct	30d	13h 33m	
	?	Tauranga (26)	
62/442 Oct	31d	14h 22m	
	MM3	Tauranga (26)	
62/443 Nov	2d	17h 31m	
	MM4	Havelock North (60)	
	MM3	Te Pohue (52); Hastings (60).	
62/445 Nov	3d	18h 05m	
	MM1	Tolaga Bay (37)	
62/446a Nov	7d	16h 10m	
	MM4	Kumara (92)	
62/447 Nov	8d	07h 48m	
	MM3	Lake Okataina (33)	
	?	Hinehopu (33)	

62/449 Nov	11d	02h 17m	
	MM3	Te Rangi (52)	
62/453 Nov	19d	18h 05m	
	MM3	Tutira (52)	
62/455 Nov	22d	14h 00m	
	'sharp'	Westport (79)	
62/456 Nov	23d	16h 20m	
	MM3	Tauranga (26)	
62/467 Dec	10d	04h 12m	
	MM4	Ohakune (53); Ashley Clinton (59); Levin (65).	
	MM3	Waitahinga (56); Okoia (57); Mangaweka (58).	
	MM2	Dannevirke (63)	
62/470 Dec	13d	09h 42m	
	MM3	Opotiki (35)	
62/471 Dec	13d	15h 31m	
	MM3	Wanganui (57	
		'Not Felt' report received from Blenheim (77).	
62/472 Dec	13d	17h 21m	
	MM4	Mason's Flat (95); Cheviot (96); Allandale (110).	
	?	Christchurch (110)	
62/476 Dec	17d	09h 07m	
	MM3	Waitarere Beach (65)	
62/478 Dec	17d	12h 37m	
	MM3	Edgecumbe (27)	
62/485 Dec	23d	15h 34m	
	MM3	Tokomaru Bay (37)	
62/486 Dec	25d	02h 03m	
	MM4	Rotorua (33)	

UNCONFIRMED FELT REPORTS

The following shocks reported to have been felt cannot be confirmed either by an instrumental record or by an independent report.

1962	Jan	20d	06h 50m	Awakino (38) MM4
		24d	13h 30m	Rotorua (33) ?
		24d	14h 45m	Rotorua (33) ?
		24d	15h 30m	Rotorua (33) ?
		24d	16h 30m	Rotorua (33) ?
	Feb	15d	21h 04m	Waitangirua (36) MM4
	Mar	11d	06h 56m	Wairoa (53) MM2
	Apr	18d	05h 50m	Lake Tekapo (106) MM3
		18d	22h 45m	Tokanui (155) MM4
	May	10d	10h 30m	Howard (81) MM3
		13d	01h 32m	Heriot (142) MM3
		14d	22h 29m	Taupo (41) MM4
	Jun	4d	13h 34m	Westport (79) ?
		15d	08h 45m	Mangles Valley (80) MM2
		24d	02h 50m	Kumara (92) ?
		24d	13h 30m	Maketu (26) MM3
		26/27d?	08h 30m	Coromandel (18) MM4
		26d	16h 40m	Maketu (26) MM3
	Jul	25d	09h 48m	Bainham (72) MM3
		26d	04h 18m	Westport (79) ?
		29d	08h 05m	Westport (79) 'slight'
	Sep	10d	11h 55m	Erewhon (98) ?
		14d	12h 45m	Waihi (21) MM2
		24d	17h 05m	Tauranga (26) MM4
		28d	06h 18m	Kawhia (30) MM4
	Oct	7d	20h 12m	Jackson's Bay (113) MM3
		13d	05h 55m	Matingarahi (20) MM2
		18d	04h 06m	Westport (79) 'slight'
		18d	10h 10m	Kopara (93) MM3
		18d	14h 30m	Ross (91) MM3
		24d	18h 00m-30m	Westport (79) 'slight'
		26d	09h 34m	Minaret Station (114) MM4
	Dec	14d	06h 25m	Takaka (72) MM3
		14d	12h 45m	Maketu (27) MM3
		24d	09h 15m	Lake Okataina (33) MM3

FELT EARTHQUAKES REPORTED FROM OUTSIDE NEW ZEALAND

The Observatory sometimes receives reports of felt earthquakes from islands in the south west Pacific and other places beyond the limits of its systematic reporting network. The following reports were received during 1962:

Jan	16d	11h 37m	Raoul Island	MM3-4
Feb	19d	11h 04m	Haapai, Tonga	'slight'
Mar	23d	14h 45m	Norfolk Island	MM5
May	21d	21h 16m	Nukualofa, Tonga	MM2
Jul	28d	01h 05m	Keppel, Tonga	?
Aug	11d	11h 45m	Vunisea, Fiji	?
Oct	1d	20h 25m	Haapai, Tonga	'slight to moderate'
Nov	22d	20h 34m	Raoul Island	MM3
Dec	18d	03h 52m	Raoul Island	MM2
	18d	10h 34m	Raoul Island	MM3

EARTHQUAKES FELT WITHIN STATED LOCALITIES

Localities within which earthquakes have been felt during 1962 are listed in alphabetical order, preceded by their number on the reference map. The figures following the name of the locality are the numbers of the epicentres, followed by the maximum Modified Mercalli intensity (in brackets) reported within the district covered by the locality name. The instrumental magnitude may be found from the epicentre list, and the places actually reporting the shock from the section 'Places Reporting Felt Earthquakes'.

133	Alexandra	212 (3), 304 (1)
111	Akaroa	137 (4), 306 (4)
122	Arrowtown	241 (4)
93	Arthur's Pass	165 (6), 222 (3), 223 (5), 304 (3), 306 (5)
108	Ashburton	165 (3)
16	Auckland	40 (4)
83	Awatere	306 (4)
152	Balclutha	141 (2)
77	Blenheim	137 (3), 165 (3), 175 (3), 306 (4)
104	Bruce Bay	165 (3), 304 (3), 423 (5)
61	Bulls	106 (4), 126 (3), 137 (3), 175 (4), 272 (4)
46	Cape Egmont	40 (4), 306 (4)
67	Castlepoint	175 (3)
50	Chateau	12 (?), 40 (4), 306 (3)
96	Cheviot	137 (4), 138 (?), 165 (4), 472 (4)
110	Christchurch	137 (?), 165 (3), 223 (3), 306 (3), 423 (?), 472 (4)
89	Clarence	305 (3), 306 (4)
18	Coromandel	40 (2), 384 (4), 440 (3)
95	Culverden	137 (4), 165 (3), 306 (3), 401 (4), 472 (4)
63	Dannevirke	12 (3), 40 (3), 106 (4), 128 (3), 137 (2), 144 (2), 175 (4), 387 (1), 416 (3), 467 (2)
126	Duntroon	137 (3), 423 (4)
73	D'Urville Is.	306 (4)
29	East Cape	40 (4), 335 (4)
117	Fairlie	165 (3), 423 (4)
69	Featherston	175 (4), 296 (4), 306 (4), 313 (4), 387 (4)
97	Franz Josef	165 (4), 223 (3), 262 (2), 423 (6)

45	Gisborne	90 (2), 175 (1)
81	Glenhope	137 (4), 165 (4), 170 (2), 181 (2), 188 (3), 223 (5), 224 (3), 299 (4), 306 (4)
121	Glenorchy	241 (3), 304 (4), 310 (3), 338 (3), 343 (3)
150	Gore	423 (3)
85	Greymouth	137 (2), 165 (6-7), 174 (4), 186 (3), 189 (3), 222 (4), 223 (5), 224 (4-5), 240 (3), 306 (4), 423 (4)
103	Haast	165 (4), 423 (5)
24	Hamilton	40 (5), 317 (3), 365 (3)
88	Hanmer	165 (4), 223 (3)
98	Hari Hari	165 (5), 327 (4), 329 (4), 350 (4)
60	Hastings	106 (3), 128 (4), 175 (3), 443 (4)
55	Hawera	12 (3), 40 (4), 306 (3)
91	Hokitika	165 (6), 186 (4), 188 (3), 189 (3), 222 (4), 223 (5), 224 (2), 240 (3), 271 (4), 278 (3), 279 (3), 281 (3), 306 (3-4), 327 (4), 423 (4-5), 431 (4)
149	Invercargill	322 (3)
113	Jackson's Bay	304 (4), 423 (4)
90	Kaikoura	137 (3), 306 (4)
74	Karamea	165 (4), 423 (?)
51	Kaweka	40 (3)
30	Kawhia	40 (5), 175 (3), 176 (3), 306 (2)
132	Kingston	304 (4), 322 (4), 423 (3-4),
92	Kumara	137 (4), 165 (6), 223 (5), 278 (4), 306 (3), 423 (3-4), 446a(4)
125	Kurow	125 (4)
100	Lake Coleridge	165 (4-5), 223 (?), 224 (?)
114	Makarora	165 (3), 304 (3)
87	Maruia	165 (4-5), 223 (3), 306 (3)
70	Martinborough	175 (4), 296 (3), 306 (3), 387 (3)
66	Masterton	175 (5), 176 (2), 187 (3), 190 (4), 306 (3-4), 387 (4)
25	Matamata	40 (4), 384 (4), 394 (4)
120	Milford	304 (3)
38	Mokau	40 (7), 175 (4), 306 (4)
139	Monowai	322 (4), 378 (3), 423 (3-4)

140	Mossburn	322 (3)
36	Motu	57 (3), 84 (3), 262 (3), 291 (3), 438 (1)
75	Motueka	137 (4), 165 (4), 174 (4), 175 (2), 186 (4), 223 (5), 225 (3), 299 (3), 306 (4)
105	Mt. Cook	165 (2), 423 (6)
107	Mt. Somers	165 (3), 278 (3)
71	Mt. Stevens	165 (4), 223 (5), 266 (4), 268 (3), 299 (3), 306 (4), 381 (3)
80	Murchison	77 (4), 155 (3), 165 (6), 174 (4), 199 (3), 222 (4), 223 (5), 224 (4), 268 (2), 299 (4), 306 (4), 354 (?)
34	Murupara	57 (3), 140 (4)
52	Napier	408 (3), 443 (3), 449 (3), 453 (3)
76	Nelson	137 (?), 165 (4), 175 (4), 186 (3), 223 (5), 224 (4), 306 (4), 423 (2)
47	New Plymouth	12 (2-3), 40 (5), 175 (3), 176 (3), 306 (4)
136	Oamaru	423 (?)
49	Ohakune	12 (4), 40 (5), 175 (4), 284 (3), 324 (3), 567 (4)
35	Opotiki	40 (3), 438 (2), 470 (3)
65	Otaki	12 (?), 40 (4), 154 (3), 156 (4), 175 (4-5), 187 (3), 266 (2), 296 (4), 306 (3), 467 (4), 476 (3)
144	Outram	304 (?), 423 (?)
62	Palmerston North	12 (2), 40 (4), 106 (2), 175 (5)
78	Picton	186 (3), 306 (4-5)
64	Porangahau	175 (2)
19	Pukekohe	40 (4)
23	Raglan	40 (4), 306 (2)
109	Rakaia	165 (2)
102	Rangiora	165 (3)
86	Reefton	165 (6), 223 (6), 306 (4)
33	Rotorua	32 (3), 33 (3), 43 (?), 44 (?), 46 (?), 47 (4), 48 (?), 282 (?), 447 (3), 486 (4)
59	Ruahine	175 (2), 246 (4), 467 (4)
156	Tahakopa	141 (4)
58	Taihape	12 (4), 40 (4), 106 (4), 165 (2), 175 (4), 178 (3), 467 (3)
72	Takaka	165 (4), 181 (3), 186 (4), 189 (2), 223 (5),

		224 (2), 234 (?), 250 (3), 251 (3), 264 (3), 299 (3), 306 (4-5), 309 (3), 381 (3)
39	Taumaranui	40 (4), 175 (4)
41	Taupo	220 (3)
26	Tauranga	40 (3), 359 (3), 360 (4), 361 (3), 365 (4), 369 (?), 372 (2), 384 (4), 385 (3), 386 (3), 388 (4), 389 (4), 392 (2), 394 (6-7), 403 (2), 440 (?), 441 (?), 442 (3), 456 (3)
28	Te Kaha	6 (3)
31	Te Kuiti	40 (5), 175 (3), 306 (3)
106	Tekapo	423 (5)
21	Thames	40 (3), 365 (1), 384 (3), 385 (2-3), 394 (4), 440 (1)
118	Timaru	137 (3), 165 (4), 423 (3)
40	Tokaanu	40 (5), 220 (3)
32	Tokoroa	40 (4), 220 (3)
37	Tolaga Bay	89 (3), 273 (4), 382 (2), 445 (1), 485 (3)
43	Tuai	399 (2)
17	Waiheke	40 (4)
82	Wairau	137 (4), 306 (4)
53	Wairoa	90 (4), 214 (3), 391 (3), 416 (3)
123	Wanaka	165 (1), 423 (4)
57	Wanganui	40 (4), 106 (3), 175 (4), 190 (3), 287 (2), 306 (4), 324 (3), 326 (4), 330 (4), 355 (3), 357 (3), 467 (3), 471 (3)
56	Waverley	175 (3), 287 (2), 306 (3), 467 (3)
68	Wellington	30 (1), 103 (2), 125 (3), 128 (3), 134 (3), 137 (3), 139 (3-4), 144 (3), 154 (4), 156 (3), 165 (3), 175 (4), 190 (4), 218 (3), 243 (3), 272 (3), 283 (1), 296 (4), 298 (3), 306 (3-4), 397 (3)
79	Westport	63 (3), 65 (4), 127 (4), 137 (3), 158 (4), 165 (7), 167 (?), 168 (?), 169 (?), 170 (?), 174 (?), 208 (?), 210 (2), 211 (2), 215 (?), 216 (?), 221 (?), 222 (?), 223 (6), 225 (?), 226 (?), 227 (?), 230 (?), 232 (?), 233 (?), 235 (?), 236 (?), 237 (?), 238 (?), 240 (3), 245 (?), 248 (?), 253 (4-5), 256 (?), 257 (?), 259 (4), 260 (4), 261 (?), 263 (4), 268 (4), 276 (4), 280 (3), 289 (3), 293 (4), 302 (4), 303 (2-3), 306 (4), 311 (?), 318 (4), 332 (4), 348 (4), 363 (3), 423 (3), 427 (4), 428 (4), 455 (?)
44	Whakapunaiki	40 (3)
27	Whakatane	394 (2), 478 (3)

48	Whangamomona	40 (4), 175 (4), 306 (4)
99	Whitcombe Pass	306 (3)

PUBLICATIONS

During 1962, the following papers by members of the Seismological Observatory staff were published:

S-112 A.A. THOMSON and F.F. EVISON: Thickness of the Earth's Crust in New Zealand.

N.Z. J. Geol. Geophys. 5: 29-45.

Study of dispersive earthquake waves shows that over much of New Zealand the crust has a typical continental thickness of 30-40 km, in accordance with the evidence of earthquake body waves and of gravity.

S-113 R.D. ADAMS: Thickness of the Earth's Crust beneath the Campbell Plateau.

N.Z. J. Geol. Geophys. 5: 74-85.

The method of surface-wave dispersion has been used to find the thickness of the Earth's crust beneath the submerged region to the south-east of New Zealand known as the Campbell Plateau. By the use of records from eight earthquakes, an average value of about 20 km was found. This is intermediate between the values usually found for oceanic and continental regions.

S-114 F.F. EVISON: Rock Magnetism and Low-Angle Faulting.

Nature, Vol. 194, No. 4829, pp. 644-646.

S-115 M.J. RANDALL: Generation of Horizontally Polarized Shear Waves by Underground Explosions.

J. Geophys. Research, Vol. 67, No. 12.

S-116 T. HATHERTON and F.F. EVISON: A Special Mechanism for some Antarctic Earthquakes.

N.Z. J. Geol. Geophys. 5: 864-73.

Frequent small earthquakes recorded at Scott Base constitute the main seismic activity so far discovered within Antarctica. Prominent in many Scott Base seismograms is a sinusoidal wave of period 1½ - 2 sec with an onset velocity of about 650 m/sec; this has been interpreted as an air-coupled wave associated with flexural waves in the

Ross Ice Shelf. Other unusual features of the earthquakes also suggest that they are caused by fractures in the ice near the shelf edge, leading to the calving of icebergs.

R.D.ADAMS and D.A.CHRISTOFFEL: Total Magnetic Field Surveys between New Zealand and the Ross Sea.

J. Geophys. Research, Vol. 67, No. 2.

During the summers of 1958-1959 and 1959-1960, total magnetic field surveys were made with ship-towed nuclear spin magnetometers between New Zealand and the Ross Sea. The total field contours are given for the region between New Zealand and 70°S and for the Ross Sea area. Magnetic anomalies in the different bathymetric regions are discussed, and some possible interpretations given. In general, smooth magnetic profiles are found in the shallow water to the north of the deep ocean basin, and in the basin itself a typical pattern of deep-water magnetic anomalies is found. A ridge, over which both bathymetric and magnetic profiles are rough, is crossed before entering the Ross Sea. A smooth magnetic profile in the Ross Sea shows the absence of any disturbing igneous rock close to the surface.

438 New Zealand Seismological Report, 1957.

LIST OF MAPS

(in pocket inside back cover)

1. Epicentres of Normal and Shallow Focus Earthquakes in 1962
2. Epicentres of Deep Focus Earthquakes in 1962
3. Isoseismals for the Earthquakes of 1962 Jan 23 and 1962 Oct 15
4. Isoseismals for the Earthquake of 1962 May 10
5. Isoseismals for the Earthquake of 1962 Jul 29