New Zealand Department of Scientific and Industrial Research
GEOPHYSICS DIVISION

NEW ZEALAND

SEISMOLOGICAL REPORT

1963

SEISMOLOGICAL OBSERVATORY BULLETIN
E – 144

R. E. OWEN, GOVERNMENT PRINTER, WELLINGTON, NEW ZEALAND—1967

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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 1963

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INTRODUCTION

The main change in the form of the New Zealand Seismological Report for 1963 is the separation of the Suva readings from the New Zealand ones, with which they were previously interleaved. During the year Scott Base and Hallett became stations of the World Wide Standard Network, a new station was established at Gisborne, on the east coast of the North Island, and the station at Monowai was modernised.

Records from Afiamalu are now being read at the Apia Observatory, but the readings will continue to be printed in this Report.

The originals of the records made at Hallett were lost, following a fire that led to the closing of the base. The published data are based on preliminary readings cabled to Wellington.

The Report summarises all standard measurements made at the Seismological Observatory, Wellington, and gives an account of New Zealand seismic

activity during the year in a form that should be of use and interest to people other than professional seismologists. Maps showing the epicentres of deep and shallow shocks, and isoseismal maps of widely-felt earthquakes are included.

New Zealand data for 1964 and 1965 are now available at the Observatory, and standard readings have been forwarded to international data centres. Arrangements are now being made to determine epicentres and prepare other bulletin material by computer. It is hoped that this will improve the accuracy and hasten the appearance of the 1964 Report.

Reprints of research papers by members of the Observatory Staff and material that is not regularly included in this Report are issued as a series of S-Bulletins. The Observatory is always prepared to consider additional agreements to exchange material of this kind with other organisations.

SCIENTIFIC STAFF 1963

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.); G.A. Eiby, M.Sc.; M.G. Muir, M.Sc.; M.J. Randall, M.Sc.; A.A. Thomson, M.Sc.
Technicians:	A.M. Day; C.M. Fisher; M.A. Lowry; J.A. Macdonald; R.C. Martindale; R.D. Maunder (from October); R.H. Orr.

APIA

Observer-in-Charge:	P.J. Milne, B.Sc.
Observer/Technician:	I. Anapu.

RAOUL ISLAND

Observer:	I.P. Johnson.

HALLETT

Observer:	L.J. Wylde, B.E. (civil).

SCOTT BASE

Observer:	I.D. Cave, M.Sc.

PRINCIPAL N.Z. EARTHQUAKES IN 1963

The level of New Zealand earthquake activity in 1963 has been normal, with no outstandingly large events, protracted swarms or aftershock sequences, or shocks at unusually great depths. On the other hand, the occurrence of a damaging earthquake some 70 miles north of Whangarei is of exceptional interest.

The largest New Zealand earthquake during the year (Epicentre 63/111) occurred on April 12, and was centred in the Huiarau Range between Lake Taupo and Waikaremoana. It had a magnitude of 6.0 and was widely felt in the central parts of the North Island (see the isoseismal map in the pocket inside the back cover). There was slight damage at Minginui and at Tarawera. A few aftershocks followed, all of them small.

Of the other shallow shocks of magnitude 5 and above, only that on May 13 (Epicentre 63/162) attracted public attention. It was centred near Porangahau, and felt with intensities of about MM4 throughout southern Hawkes Bay and the northern Wairarapa. Three shocks of similar magnitude in the eastern Bay of Plenty (Epicentres 63/79, 63/146 and 63/201) were not reported felt, which is rather surprising, as many shocks below magnitude 3 are now reported.

The earthquake at 40.4S 177.1W on April 20 (Epicentre 63/134) has a magnitude of only 4.6, and cannot be satisfactorily located. It certainly lies to the east of the Hikurangi Trench, which normally marks the eastern limit of North Island seismicity, and is apparently too far north to be placed on the flank of the Chatham Rise.

Activity in the south-west of the South Island was more evenly distributed than it has been since the magnitude 7.0 Fiordland shock on 1960 May 24 (Epicentre 60/108). In 1963 no earthquake in this region reached magnitude 5. An interval of a year between large shocks is somewhat unusual in this normally active part of the country.

There were two earthquake swarms, the first near Maketu in the western Bay of Plenty. On February 14 - 16 about 30 shocks from this district were recorded by the seismograph at Karapiro, including Epicentres 63/53, 63/54, and 63/56 to 63/59. Their magnitudes were all less than 3. The second swarm, in the Coromandel Peninsula, began on April 10, and includes Epicentres 63/100 to 63/104, 63/106 to 63/110, 63/116 to 63/122 and 63/126. The largest shock had a magnitude of 3.1. Most of the others were below magnitude 2½.

At the end of the year, several earthquakes occurred in Northland. The largest event, consisting of two shocks separated by only seven seconds (Epicentre 63/389, 390), damaged chimneys, house foundations, water tanks, and stacked goods in an area more than 10 kilometres in radius. It was felt over almost the entire peninsula north of Kaikohe, and had a magnitude of 5.2. The epicentre was near Peria. An earlier shock, of magnitude 3.2 (Epicentre 63/345), occurred on November 16. Although it was felt over an area some 30 kilometres in radius, the maximum reported intensity was MM5 and there was no damage. Several aftershocks were felt, and these continued in to 1964. The seismological aspects of these shocks have been discussed in a paper by

G.A. Eiby (N.Z. J. Geol. and Geophys. 7: 743-65, 1964 Nov.), and its engineering significance in a second paper by the same author (N.Z. Engineering 19: 125-9, 1964 April). These papers contain isoseismal maps and photographs. Except for two earthquakes in the Bay of Islands in 1919, and possibly a less well documented shock in 1830, these are the only shocks known to have originated in Northland.

No exceptionally deep shocks occurred, though there are several at depths near 350 kilometres (Epicentres 63/39, 63/68, 63/148 and 63/206). The shock on July 14 (Epicentre 63/211) of magnitude 5.9 and at a depth of 135 kilometres was felt in the southern part of the North Island and the northern part of the South Island, from Gisborne to Christchurch (see isoseismal map in back pocket). The origin was beneath southern Taranaki.

Activity extending from New Zealand to the north-east continued as usual to be vigorous. During the last week in March several of the largest shocks, one of which approached magnitude 7, were felt on Raoul Island in the Kermadec Group. A shock of magnitude 6.7 on December 28 (Epicentre 63/394) centred more than 400 miles to the north-east of East Cape was felt at scattered places on the east coast of the North Island to as far south as Wellington.

STATIONS OF THE NEW ZEALAND NETWORK

The expansion and re-equipment of the New Zealand Seismograph Network that began in 1962 continued in 1963. In June, the Jaggar shock-recorder at Nonowai was replaced with a short-period vertical-component Willmore. This was the last of a number of Jaggar seismographs installed during the 1930's. Although obsolete for many years, these instruments made a substantial contribution to the study of New Zealand seismicity at a time when money and facilities for operating more elaborate equipment were not available. In conjunction with the similar instrument installed at Roxburgh in 1962, the new seismograph will greatly improve instrumental coverage of the southern region of New Zealand seismicity.

A new station at Gisborne was opened at the end of July. It also has a Willmore short-period vertical-component instrument.

In November, the instrument at Karapiro was moved to a new buried concrete vault, within about 25 metres of the old hut. Space is available for the eventual installation of 6 components.

Both Hallett and Scott Base have now been equipped with World-Wide Standard Seismographs through the generosity of the United States Coast and Geodetic Survey.

The network may be considered to consist of two parts: first, a set of short-period instruments distributed widely over the country and designed 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'.4S
Longitude:	171° 46'.5W
Height above mean sea level:	2 metres, 6 ft
Geocentric direction cosines:	a -0.961 484 b -0.138 980 c -0.237 132
Lithological foundation:	Coral sand on Recent and Pleistocene basalt

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

AFIAMALU (AF)

Latitude: 13° 54'.6S

Longitude: 171° 46'.6W

Height above mean sea level: 706 metres, 2315 ft

Geocentric direction cosines: a -0.961 070
b -0.138 883
c -0.238 862

Lithological foundation: Basaltic lava flows

Instrument	Component	To	Tg	Magnification
Benioff	Z	1.0 sec.	0.75 sec.	12,500
	N	1.0 sec.	0.75 sec.	12,500
	E	1.0 sec.	0.75 sec.	12,500
Press-Ewing	Z	30 sec.	100 sec.	750
	N	30 sec.	100 sec.	750
	E	30 sec.	100 sec.	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	Component	Period	Damping	Magnification
Milne-Shaw	N	12 sec.	20:1	250

RAOUL (RL)

Latitude: 29° 15'.1S

Longitude: 177° 55'.1W

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	Magnification (without viewer)
Willmore	Z	To = 0.8 sec. Tg = 0.25 sec.	1000

ONERAHI (ON)

Latitude: 35° 46'.5S

Longitude: 174° 21'.7E

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
Wood-Anderson	E	0.8 sec.	critical	2,800

AUCKLAND (AK)

Latitude: 36° 51'.7S

Longitude: 174° 46'.7E

Height above mean sea level: 76 metres, 250 ft

Geocentric direction cosines: a -0.798 694
b +0.072 992
c -0.597 293

Lithological foundation: Volcanic beds on Tertiary sandstone and mudstone

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

KARAPIRO (KP)

Latitude: 37° 55'.6S

Longitude: 175° 32'.3E

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	To	Tg	Magnification
Willmore	Z	1.0 sec.	0.25 sec.	37,000

WAIRAKEI (WK)

Latitude: 38° 37'.9S

Longitude: 176° 06'.2E

Height above mean sea level: 350 metres, 1150 ft

Geocentric direction cosines: a -0.781 413
b +0.053 226
c -0.621 740

Lithological foundation: Pumice breccia

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

GISBORNE (GS)

Latitude: 38° 38'.7S

Longitude: 178° 01'.4E

Height above mean sea level: 20 metres

Geocentric direction cosines: a -0.782 613
b +0.027 011
c -0.621 922

Lithological foundation: Recent alluvium on Tertiary mudstone

Instrument	Component	To	Tg	Magnification
Willmore	Z	1 sec.	0.25 sec.	6,000

TUAI (TU)

Latitude: 38° 48'.4S

Longitude: 177° 09'.1E

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	To	Tg	Magnification
Willmore	Z	1.0 sec.	0.25 sec.	7,000

TARATA (TA)

Latitude: 39° 11'.1S

Longitude: 174° 22'.8E

Height above mean sea level: 130 metres, 400 ft

Geocentric direction cosines: a -0.773 456
b +0.076 110
c -0.629 264

Lithological foundation: Pliocene mudstone

Instrument	Component	To	Tg	Magnification
Willmore	Z	1 sec.	0.25 sec.	2,350

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'.1S

Longitude: 175° 32'.6E

Height above mean sea level: 1135 metres

Geocentric direction cosines: a -0.774 659
b +0.060 377
c -0.629 490

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'.2S

Longitude: 175° 32'.3E

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
Wood-Anderson	NW-SE	0.8 sec.	critical	2,800

BUNNYTHORPE (BT)

Latitude: 40° 17'.0S

Longitude: 175° 38'.1E

Height above mean sea level: 60 metres, 197 ft

Geocentric direction cosines: a -0.762 783
b +0.058 224
c -0.644 028

Lithological Foundation: Gravels, silts and sands

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

COBB RIVER (CB)

Latitude: 41° 05'.2S

Longitude: 172° 44'.0E

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
Wood-Anderson	E	0.8 sec.	critical	2,800

WELLINGTON (WN)

Latitude: 41° 17'.2S

Longitude: 174° 46'.0E

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	To	Tg	Magnification
Benioff	Z	1.0 sec.	0.75 sec.	6,250
	N	1.0 sec.	0.75 sec.	6,250
	E	1.0 sec.	0.75 sec.	6,250
Press-Ewing	Z	30 sec.	100 sec.	750
	N	30 sec.	100 sec.	750
	E	30 sec.	100 sec.	750
Willmore	Z	1.0 sec.	0.25 sec.	6,000
Wood-Anderson	N	0.8 sec.		1,400
	E	0.8 sec.		1,400
Imamura	Z	1 sec.		1
	N	4 sec.		1
	E	4 sec.		1

KAIMATA (KM)

Latitude: 42° 31'.4S

Longitude: 171° 24'.6E

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
Wood-Anderson	NE(X)	0.8 sec.	critical	2,800

GEBBIES PASS (GP)

Latitude: 43° 41'.7S

Longitude: 172° 38'.8E

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
Wood-Anderson	N	0.8 sec.	critical	2,800

ROXBURGH (RX)

Latitude: 45° 28'.5S

Longitude: 169° 18'.9E

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 sec.	critical	300
	E	24 sec.	critical	300
Willmore	Z	To = 1 sec. Tg = 0.25 sec.	critical	12,700

MONOWAI (MN)

Latitude: 45° 46'.8S

Longitude: 167° 37'.1E

Height above mean sea level: 155 metres, 475 ft

Geocentric direction cosines: a -0.683 551
b +0.150 059
c -0.714 311

Lithological foundation: Tertiary sandstone

Instrument	Component	Period	Magnification
Willmore	Z	To = 1 sec. Tg = 0.25 sec.	28,750

HALLETT (HT)

Latitude: 72° 18'.8S

Longitude: 170° 12'.5E

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
Benioff	Z	1.0 sec.	0.75 sec.	12,500-50,000
	N	1.0 sec.	0.75 sec.	
	E	1.0 sec.	0.75 sec.	
	The magnification of these instruments is varied with seasonal changes in the microseism level.			
Press-Ewing	Z	30 sec.	100 sec.	750
	N	30 sec.	100 sec.	750
	E	30 sec.	100 sec.	750

SCOTT BASE (SB)

Latitude: 77° 51'.0S

Longitude: 166° 48' E

Height above mean sea level: 33 metres, 100 ft

Geocentric direction cosines: a -0.206 204
b +0.048 510
c -0.977 306

Lithological foundation: Frozen basaltic debris resting on lava flows

Instrument	Component	To	Tg	Magnification
Benioff	Z	1.0 sec.	0.75 sec.	12,500-50,000
	N	1.0 sec.	0.75 sec.	
	E	1.0 sec.	0.75 sec.	
	The magnification of these instruments is varied with seasonal changes in the microseism level.			
Press-Ewing	Z	30 sec.	100 sec.	750
	N	30 sec.	100 sec.	750
	E	30 sec.	100 sec.	750

TIMING ARRANGEMENTS

Radio time-signals originating in the New Zealand Time Service of the D.S.I.R. are broadcast 15 times daily by station 2YA of the New Zealand Broadcasting Service. These signals are automatically impressed on the records at all stations within New Zealand, except Auckland, Bunnythorpe, 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 New Zealand 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, and Apia similar methods are in use. Afiamalu and the Antarctic stations have the arrangements usual at World Standardised Network Stations. 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 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 New Zealand Network'.

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

Amplitudes in the section 'New Zealand Stations' are ground amplitudes given in microns (1 micron = 10^{-6} metre). For the Antarctic stations, Samoa, and Raoul Island they 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 mean of the indications of the Wood-Anderson stations of the network. For distant earthquakes, the values given are the unified magnitude m, determined at the station and from the wave opposite which the value appears, 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

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	CT	eP	Z	12 24 31				
	RX	eP	Z	12 25 01				
		eL	NE	35				
	WN	eL	E	12 39				
		eL	ZN	40				
	Origin:			12 17 38.6	6.8S	155.9E 165km	USCGS	
1	KP	eP	Z	13 58				
	Origin:			13 48 06.5	20.8S	144.6E 43km	USCGS	
1	CT	eP	Z	16 32 06				
		eS	Z	35 47				
	WN	eP	ZNE	16 32 29				
		eS	ZNE	36 25				
	RX	eP	Z	16 33 24				
	Origin:			16 27 38.1	20.0S	175.4W 130km	USCGS	
1	CT	eP	Z	19 46 51				
	RX	eS	NE	19 54.5				
		eSS	NE	58.5				
		eLq	NE	20 01.9				
		M	NE	02		6 24	4 22	6.1
	WN	eL	Z	20 03				
	Origin:			19 35 55.1	40.2S	81.3E 33km	USCGS	
1	KP	eP	Z	23 51				
	RX	eSKS	N	24 03 46				
		eS	E	05 04			2 22	6.3
		e(SSS)	E	12 36				
		eL	E	23.0				
		eL	N	29				
	WN	e(SP)	Z	24 05.7				
		eL	ZNE	26				
		M	ZNE	27	4 28	4 30	3 32	
	Origin:			23 39 05.6	56.6N	157.7W 50km	USCGS	
2	CT	eP	Z	15 05 04				
	RX	eP	Z	15 05 17				
		eSS	NE	16.7				
		eLq	NE	19				

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
JAN		M	NE		20					7 30		6 30	
		eL	ZNE		22								
		M	ZNE		24			7 16		6 14		9 14	
	WN	eP	Z	15	05	20							
		eS	ZNE		12	20							
		eSS	NE		16.7								
		eLq	NE		18								
		M	NE		19					5 36		2 36	
		eLr	Z		20								
		M	ZNE		24			4 22		8 18		7 20	6.1
	Origin:			14	56	05.4	4.1S	135.2E		33km	USCGS		
	2 CT	eP	Z	16	04	20							
	WN	eS?	E	16	11.0								
		eSS?	E		14.2								
		eLq	NE		15								
		eLr	Z		16								
		M	ZE		17			3 36				5 40	
	RX	eS	NE	16	11.1					3 14		4 15	6.0
		eLq	N		15.5								
		eLq	E		16.8								
		eLr	Z		17.3								
		M	ZNE		18			10 18		6 20		12 21	6.4
	Origin:			15	55	47.9	52.9S	118.2W		33km	USCGS		
	2 CT	eP	Z	18	08	39							
	WN	eL	N	18	26								
		eL	ZE		27								
	RX	eL	NE	18	26								
	Origin:			17	59	38.8	4.3S	135.2E		33km	USCGS		
	2 CT	eP	Z	18	37	00							
	Origin:			18	30	52.7	10.7S	165.0E		39km	USCGS		
	3 CT	eP	Z	03	17	10							
	RX	eP	Z	03	17	24							
	WN	eLr	Z	03	44								
	Origin:			03	05	03.5	29.7N	130.1E		33km	USCGS		
	3 CT	eP	Z	09	47	17							
	WN	eP	Z	09	47	38							
		ePP	Z		49	16		1 12					
		eS	ZNE		53	38							
		eSS	ZE		57.0								
		eLr	ZE		59.5								
		eLr	N	10	00								
		M	ZNE		01			6 24		7 24		4 24	5.9
	RX	eS	NE	09	54.1								
		eSS	NE		57.4								
		e(Lq)	NE	10	00.3								
		eLr	Z		02.5								
		M	NE		03					4 22		4 21	5.9
	Origin:			09	39	46.8	5.3S	151.5E		74km	USCGS		5½ PAL
	3 CT	eP	Z	14	03	37							
		e	Z		03	47							
	Origin:			13	56	34.5	6.9S	155.2E		91km	USCGS		
							Felt: Solomon Is.						
	3 CT	eP	Z	19	20	02							
	Origin:			19	12	49.8	5.9S	155.0E		99km	USCGS		
	4 CT	eP	Z	05	40	31							
	WN	eP	Z	05	40	48							
	Origin:			05	32	51.4	4.7S	153.2E		162km	USCGS		

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
JAN	4 CT	eP	Z	05	54	16							
	Origin:			05	42	35.3	29.7N	142.2E		33km	USCGS		
													4.9
	4 ON	eP	E	06	45	18							
	TU	eP	Z	06	45	21							
		eS	Z		46	41							
	KP	eP	Z	06	45(24)								
	CT	eP	Z	06	45	34							
		e	Z		47	43							
	TO	e	Y	06	45	42							
		e	Y		47	32							
													5.5
	WN	eS	NE	06	47	45							5.5
	CB	eS	E	06	48	05							5.5
	GP	eS	N	06	48	50							
				06	43	38	33½S	178W		N	NZ(D)		5.3 NZ
	Origin:			06	43	42.3	32.6S	178.6W		44km	USCGS		
	4 CT	eP	Z	12	24	06							
		e?	Z		24	26							
	WN	eP	Z	12	24	12							
		ePP?	Z		25	53							
		e(ScP)	ZNE		30	14							
		e(S)	NE		30	52							
		eSS	ZNE		33.6			1 12		6 24			
		e(Lr)	Z		36			5 34					
	RX	eP	Z	12	24	30							
		e	N		26	54							
		e(PcS)	NE		30	40							
		e(S)	NE		31	18				4 17			
		eSS	NE		34.2								
		eL	ZNE		37								
		M	ZNE		38					6 25		6 24	6.0
	Origin:			12	16	38.0	4.7S	154.0E		69km	USCGS		
	5 TU	eP	Z	00	30	33							
	Origin:			00	20	11.6	3.2N	127.0E		33km	USCGS		
	5 RX	eP	Z	00	32	10							
	WN	eP	ZNE	00	32	22							
	TU	eP	Z	00	32	26							
	5 CT	eP	Z	13	09	47							
		e	Z		11	50							
	WN	eP	Z	13	10.1								
		eS	ZNE		14	24		1 16		3 16			5.5
		eLq	ZNE		16.8								
		eLr	Z		18.3								
		M	ZNE		18.5			3 17		3 18		7 17	5.6
	RX	eS	N	13	15	30				4 15			
		eLq	E		16.8								
		M	E		18							7 23	5.8
		eLr	Z		20.5								
		eLr	E		21								
		M	E		22							10 14	
		M	Z		24							4 13	
	Origin:			13	04	48.1	17.8S	167.9E		33km	USCGS		
							Felt: Port Vila, New Hebrides Is.						
	5 WN	eP	ZE	13	26	07							
		e(S)	ZE		34	20						3 32	
		e(SS)	E		38	06						4 21	
		eLq	ZNE		42								
		M	Z		46			3 26					
		M	ZNE		50			9 18		7 16		5 16	6.0
	CT	eP	Z	13	26	08							

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
JAN	RX	eLq	E	13 42				
		e(Lq)	N	43				
		M	NE	47		6 14	5 16	
		Origin:		13 16 43.0	10.0S 124.0E	33km	USCGS	
	6 CT	eP	Z	01 32 50				
		Origin:		01 27 59.2	17.0S 169.5E	259km	USCGS	
	6 CT	eP	Z	03 29 22				
		Origin:		03 18 56.6	6.0N 125.3E	143km	USCGS	
	6 CT	eP	Z	15 32 05				
		epP	Z	30				
	RX	eP?	Z	15 32 32				
		e	Z	46				
		e	Z	33 43				
		Origin:		15 24 48.2	4.9S 153.8E	131km	USCGS	
	6 CT	eP	Z	19 56 29				
		Origin:		19 46 58.8	8.9S 123.8E	33km	USCGS	
	6 KP	eP	Z	21 33 41				
		Origin:		21 20 56.5	47.4N 155.9E	33km	USCGS	
	7 KP	eP	Z	06 31 49				
		ePcP	Z	34 10				
	RX	eSS	NE	06 42.2				
		e(Lr)	NE	45				
	WN	eLr	Z	06 44.3	1 24			
		Origin:		06 24 49.2	6.4S 154.7E	80km	USCGS	
					Felt: Solomon Is.			
	7 KP	eP	Z	11 58 22				
		e	Z	59 14				
	RX	eS	NE	12 06 32				
		e	NE	13 14			2 14	
		eL	NE	20				
		eL	Z	22				
		M	E	22			4 22	5.8
	WN	e(S)	Z	12 06.7				
		e	Z	11.7				
		eLq	N	14				
		e	Z	15.5	1 12			
		eLr	Z	19				
		M	ZE	20	3 16		6 15	
		Origin:		11 48 22.7	0.6N 126.7E	42km	USCGS	
	7 KP	eP	Z	18 33 55				
		Origin:		18 28 41.2	15.9S 173.0W	33km	USCGS	
	7 KP	eP	Z	19 24 24				
		e	Z	32				
	WN	eP	Z	19 24 52				
		eS	ZNE	29 16				
		eLq	ZNE	31.6				
		eLr	Z	33.3				
		M	ZNE	34	2 18	3 17	3 16	
	RX	eS	N	19 30.3				
		eLq	E	32				
		eLr	ZN	35				
		M	E	35			4 17	
		M	E	37			5 15	
		M	Z	38	5 14			
		Origin:		19 19 34.1	17.5S 167.7E	19km	USCGS	

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te		
JAN	8 KP	e(P)	Z	13 36 36					
	8 KP	eP	Z	15 58 42					
		e	Z	59 21					
		Origin:		15 46 45.5	31.2N 130.2E	177km	USCGS		
	8 KP	eP	Z	19 55 00					
		Origin:		19 50 04.9	17.0S 171.8W	33km	USCGS		
	9 TU	eP?	Z	02 05 18					
		eP	Z	28					
		eS	Z	07 09					
	WN	eS	ZNE	02 08 15					
		e	Z	10.6	1 20				
	RX	eL	E	02 12					
		eL	N	13					
		Origin:		02 02 38.5	28.9S 177.4W	71km	USCGS		
	9 TU	eP	Z	03 23 12					
		e	Z	14					
		Origin:		03 13 26.4	18.6N 145.4E	192km	USCGS		
	9 TU	eP	Z	21 42 20					
		Origin:		21 37 29.2	16.6S 174.8W	270km	USCGS		
	11 RX	eP	Z	12 23 46					
		eS	E	33 24				2 24	
		e(SP)	N	34 00					
		e(SS)	E	38 05				1 16	
		eLq	NE	43.1					
		eLr	E	46.0					
		eLr	ZN	47					
		M	E	47				4 22	6.0
	WN	eP	Z	12 23 48					
		e(SP)	Z	33 47					
		e(PSP)	Z	34 16	2 30				
		eLr	ZNE	46					
		M	ZNE	46	4 26	4 24	5 28		6.0
		Origin:		12 12 16.2	45.0S 75.7W	33km	USCGS		
	11 ON	eP	E	15 02 34					
	TO	eP	Y	15 02 58					
		e	Y	04 35					
	CT	eP	Z	15 02 58					
	WN	e(S)	E	15 04 50					
	GP	e(S)	N	15 05 59					
	11 TO	eP	Y	17 08 24					
		eS	Y	10 15					
	WN	eP	Z	17 08 38					
		eS	ZNE	10 52					
		Origin:		17 05 42.3	29.4S 178.6W	225km	USCGS		
	12 RX	eL	NE	00 19					
		eL	Z	21					
		M	ZNE	24	5 9	4 10	6 9		
	WN	eL	ZE	00 20					
		M	ZE	23	2 10		3 11		
	12 TU	eP	Z	19 24 30					
		e	Z	25 06					
	TO	eP	Y	19 24 46					
	12 TU	eP	Z	23 32 33					
		Origin:		23 21 52.1	7.1N 125.2E	84km	USCGS		

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
JAN 13	TU	eP	Z	04 21 41				
	WN	e(L)	Z	04 28.4				
		eL	N	29				
		eL	Z	30				
		eL	E	31				
		M	Z	32	1 20			
	RX	eL	E	04 31				
		eL	N	36				
	Origin:			04 16 44	15.7S	174.8W	236km USCGS	
13	WN	eP	ZNE	08 03 11				
		e	ZE	31				
	TU	eP	Z	08 03 14				
	Origin:			07 53 04.6	2.1N	125.4E	144km USCGS	
13	WN	eP	Z	12 57 16				
		eL	ZNE	13 11				
	Origin:			12 49 30.2	6.5S	149.3E	29km USCGS	
13	RX	eP?	Z	13 49 12				
	TU	eP	Z	13 48 17				
	WN	eP	ZNE	13 48 36				
		eS	ZNE	52 30				
	Origin:			13 43 42.1	14.0S	171.2E	634km USCGS	
13	RX	eP	Z	16 22 34				
		e	Z	23 27				
		e(S)	Z	35				
		eL	ZNE	23.6				
		M	ZNE	24	11 13	17 20	33 13	
	GP	eP	N	16 23 15				
		e	N	24 03				
		eS	N	51				
	WN	eLq	NE	16 26.0				
		eLr	Z	26.7				
		M	ZNE	28	7 11	16 15	11 18	
	Origin:			16 21 13.1	49.7S	163.7E	33km USCGS	
14	KP	eP	Z	00 55 22				
	Origin:			00 50 39.1	17.2S	168.1E	33km USCGS	
					Felt: Port Vila and Forari, New Hebrides Is.			
14	WN	eP?	Z	09 56 27				
	Origin:			09 50 30.7	12.2S	166.6E	145km USCGS	
14	KP	eP	Z	11 23 50				
	WN	eP	Z	11 24 23				
		eS	ZNE	28 16				
		e(L)	Z	29.6				
		eL	NE	31.6				
		M	ZNE	32	6 18	22 28	18 30	
	RX	eP	Z	11 25 02				
		eS	NE	29.5				
		e?	N	30.5				
		e?	E	30.8			3 20	
		eL	ZNE	32				
		M	NE	32		13 22	11 23	5.8
		M	Z	34				
	Origin:			11 19 47.5	21.2S	169.3E	33km USCGS	
15	KP	eP	Z	02 42 31				
	WN	eL	Z	03 07.0				
		M	Z	09	2 19			
	Origin:			02 32 20.0	13.4N	145.3E	38km USCGS	

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
JAN 15	KP	eP	Z	09 53 35				
	RX	eP	Z	09 54 29				
	WN	eL	Z	10 03				
	Origin:			09 47 42.9	10.6S	164.9E	89km USCGS	
15	TU	eP	Z	16 24 53				
		eS	Z	26 27				
	WN	eS	ZNE	16 27 27				
15	WN	e(S)	E	17 48.0				
		eL	Z	51				
	RX	eS	E	17 50.0				
	Origin:			17 39 19.2	17.1S	179.6W	276km USCGS	
15	KP	eP	Z	19 30 20				
		eScP	Z	37 09				
	WN	eP	ZNE	19 30 47				
		e	Z	33.0				
		eS	ZNE	34 05				
		eScP	ZN	37 17				
		eScS	NE	41 01				
	RX	eP	Z	19 31 38				
		ePcP	Z	34 42				
		eScP	Z	37 33				
	Origin:			19 26 34.3	20.5S	177.9W	496km USCGS	
15	WN	eL	Z	23 09				
	Origin:			22 17 50.9	31.3S	13.4W	33km USCGS	
16	KP	e(P)	Z	01 09 05				
16	KP	eP	Z	03 21 53				
	WN	eS	Z	03 27.0				
		eL	ZNE	30				
		M	Z	31				
	RX	eS	NE	03 27 14				
		eL	NE	30				
		eL	Z	31				
		M	NE	31		4 17	3 17	5.7
	Origin:			03 14 05.4	54.0S	133.5W	33km USCGS	
16	KP	eP	Z	05 57 44				
	Origin:			05 44 52.3	51.3N	179.9W	38km USCGS	
16	CT	e(PKP)	Z	06 58 30				
	Origin:			06 38 40.4	54.2N	34.9W	33km USCGS	
16	KP	eP	Z	21 18 56				
	RX	e(Lq)	N	21 38				
		e(Lr)	E	41				
	WN	eLr	Z	21 40				
	Origin:			21 08 38.8	11.1S	111.6E	94km USCGS	
17	KP	eP	Z	06 08 04				
	Origin:			05 56 54.8	14.0N	120.6E	207km USCGS	
18	CT	eP	Z	03 23 35				
	RX	eP	Z	03 23 50				
	Origin:			03 12 05.7	33.1N	135.8E	425km USCGS	
18	CT	eP	Z	05 47 50				
19	KP	eP	Z	17 22 23				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
JAN 20	KP	eP	Z	00 22 09				
	Origin:			00 19 02	23.7S 180.0	550km	USCGS	
20	TU	eP	Z	22 42 40				
	Origin:			22 37 28.7	15.4S 167.7E	107km	USCGS	
					Felt: Santo, New Hebrides Is.			
21	CT	eP?	Z	04 28 05				
	Origin:			04 15 50.2	34.3S 69.7W	183km	USCGS	
21	TU	eP	Z	10 44 13				
	WN	eL	Z	11 04				
	Origin:			10 35 39.0	3.0S 136.2E	57km	USCGS	
21	KP	eP	Z	18 40 21				
	CT	eP	Z	18 40 30				
	Origin:			18 35 41.5	18.0S 175.4W	64km	USCGS	
22	KP	eP	Z	08 46 52				
	Origin:			08 32 33.2	11.3S 74.7W	33km	USCGS	
22	ON	eP	E	13 30 59				
	TU	eP?	Z	13 31 10				
		eP	Z	11				
		eS	Z	32 39				
		e	Z	33 02				
	KP	iP	Z	13 31 11.0 d				
	CT	eP	Z	13 31 20				
		eS	Z	33 00				
	TO	e	Y	13 31 23				
		e	Y	29				
		eS	Y	32 57				
	WN	e	Z	13 31 42				
		e	ZNE	33 37				
	CB	e	E	13 33 53				
	GP	e	N	13 34 37				
22	KP	eP	Z	15 30 11				
	Origin:			15 27 36.0	25.3S 179.5E	530km	USCGS	
22	KP	iP	Z	20 48 31.8 u				
	Origin:			20 44 37.3	19.2S 177.6W	546km	USCGS	
23	CT	iP	Z	00 51 06.9				
		e	Z	32				
	TO	eP	Y	00 51 07				
		iS	Y	32.1 nw				
	KP	iP!	Z	00 51 08.0				
		e	Z	35				
	WK	eP	Z	00 51 08				
		e	Z	35				
	TU	eP	Z	00 51 12				
		e	Z	34				
		eS	Z	41				
	WN	iP	ZNE	00 51 20.4 uw				5.1
		e	ZNE	57				
	KM	eP	X	00 51 45				5.5
		eS	X	52 38				
	GP	eP	N	00 51 50				6.1
		eS	N	52 50				
	RX	e	Z	00 53 49				
	Origin:			00 50 34	38.85S 175.10E	250km	NZ(C)	5.5
					Felt: Bunnythorpe (MM4), Wellington (MM3)			

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
JAN 24	KP	eP	Z	12 14 21				
	WN	eL	Z	12 23.3				
		M	Z	24	4 28			
		eL	NE	24				
		eL	NE	12 26				
	RX	eL		12 09 01.2	15.2S 173.6W	33km	USCGS	
	Origin:				Felt: Apia, Samoa			
24	KP	eP	Z	22 38 06				
	RX	eSS	E	22 51 28				
		eLq	N	55				
		eLq	E	56				
		eLr	NE	23 01				
				23 00.7				
	WN	eLr	Z	01	4 26			
		M	Z	22 27 32.5	8.0N 126.8E	67km	USCGS	
	Origin:							
25	KP	eP	Z	00 20 11				
	CT	eP	Z	00 20 22				
	RX	eP	Z	00 21 17				
	Origin:			00 16 05.7	20.3S 169.6E	135km	USCGS	
25	KP	eP	Z	13 00 57				
	CT	eP	Z	13 01 08				
	WN	eP	Z	13 01 25				
	Origin:			12 49 42.0	21.8N 143.8E	190km	USCGS	
25	KP	eP	Z	14 39 55				
	Origin:			14 32 04	04.6S 147.4E	33km	USCGS	
25	KP	eP	Z	16 17 38				
	WN	eP	ZNE	16 18 06				
	Origin:			16 14 07.5	21.1S 179.2W	603km	USCGS	
25	WN	eLr	ZNE	17 09				
		M	Z	10	2 22			
	RX	eLr	NE	17 12				
	Origin:			16 56 40	17.5S 176.2W	33km	USCGS	
25	KP	eP	Z	20 26 11				
		e?	Z	23				
	CT	eP	Z	20 26 19				
	WN	eP	Z	20 26 43				
		eL	ZE	33				
		eL	N	35				
		M	Z	45	3 20			
	RX	eL	E	20 36				
		eL	N	38				
		eL	Z	40				
	Origin:			20 21 31.6	19.0S 173.3W	129km	USCGS	
26	KP	eP	Z	19 17 13				
	WN	eL	Z	19 26				
	Origin:			19 12 02.5	15.7S 172.9W	33km	USCGS	
27	TU	e(P)	Z	00 54 41				
		e	Z	53				
	KP	e(P)	Z	00 54 42				
		e	Z	59				
27	KP	eP?	Z	01 18 43				
	RX	eP	Z	01 18 56				
	Origin:			01 06 55.4	25.6N 128.3E	61km	USCGS	

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
JAN 27	KP	eP	Z	16 58 31				
		Origin:		16 52 40.2	10.5S 165.0E	107km	USCGS	
	27 KP	eP	Z	18 53 35				
		epP	Z	50				
		e?	Z	55 55				
	CT	eP	Z	18 53 44				
	RX	eL	NE	19 07				
		Origin:		18 46 14.6	5.2S 152.3E	72km	USCGS	
					Felt: Gavit, Karlai and Rabaul			
	27 KP	e(PKP)	Z	19 54 26				
		e	Z	53				
		Origin:		19 35 14.3	41.2N 49.8E	33km	USCGS	5½-6 PA
	28 RX	eL	N	01 30.5				
		eL	E	32.0				
	WN	eL	Z	01 31				
		M	Z	34				
	28 KP	eP	Z	05 32 03				
		Origin:		05 27 17.6	16.8S 173.5W	88km	USCGS	
	28 KP	e(P)	Z	07 51 57				
		e(P)	Z	52 33				
		Origin:		07 47 32.8	16.7S 172.5W	154km	USCGS	
	28 RX	eP	Z	10 05 19				
		eS	Z	06 51				
		eL	NE	07 22				
	CT	eP	Z	10 07 12				
	WN	e(S)	E	10 09.4				
		eL	E	10.7				
		eL	ZN	11.0				
		M	ZNE	12	2 16	2 16	3 16	
		Origin:		10 03 21.4	52.4S 159.6E	33km	USCGS	
	28 KP	eP	Z	10 43 44				
	CT	eP	Z	10 43 57				
	WN	eP	ZNE	10 44 14				
		Origin:		10 39 30.6	19.0S 169.6E	220km	USCGS	
	28 KP	eP	Z	12 20 13				
		e(pP)	Z	34				
		e(PP)	Z	21 56				
	CT	eP	Z	12 20 20½				
		epP	Z	40				
	WN	eP	Z	12 20 33	4 8			6.2
		ePP	ZNE	22 32	5 10	6 10	4 10	
		eS	ZNE	27 04	7 26	20 32	17 30	6.4
		eSS	ZNE	30 28	3 28	18 24	11 28	
		e(Lq)	NE	31.5		24 32	26 32	
		e	Z	32 26	6 22			
		eLr	ZNE	33				
		M	ZNE	34	43 35	41 28	50 32	
	RX	eP	Z	12 20 47				
		epP	Z	21 11				
		ePP	NE	22.5		56 9		
		eS	ZNE	27 30		23 22	24 22	6.7
		eSS	NE	31 16		9 20	1 17	
		e(Lq)	NE	33.3		12 20		
		eLr	ZNE	34.5				
		M	ZNE	37	30 20	26 21	33 20	6.4
		Origin:		12 12 19.8	2.6S 149.9E	33km	USCGS	6½ PA

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
JAN 28	KP	eP	Z	13 14 10				
	CT	eP	Z	13 14 16				
	WN	ePP	Z	13 18.0				
		eSKS	ZNE	24 16	2 18	3 16	4 8	
		e(S)	NE	25 40		7 24	9 34	6.9
		ePS	ZN	27 04		10 32		
		eLq	NE	41.5		21 48	47 50	
		eLr	ZNE	46				
		M	ZN	47	30 28	33 28		
		M	E	48			36 26	
		M	ZNE	52	25 20	23 21	15 21	6.7
	RX	eSKS	N	13 25 20		5 14		
		e(S)	E	26.4			15 27	
		ePS	N	28 12				
		eSS	NE	33 52		12 21		
		e(SSS)	N	38.3				
		e	E	38.7			9 30	
		eLq	NE	43.6		5 23	21 32	
		eLr	NE	48.7				
		eLr	Z	49.3				
		M	ZNE	55	21 19	33 20	33 20	6.6
		Origin:		13 00 50.7	54.7N 161.6W	33km	USCGS	
	28 KP	eiP	Z	13 54 14 d				
		e?	Z	55 13				
		eScP	Z	14 00 50				
	CT	eP	Z	13 54 22				
		eS	Z	57 38				
		eScP	Z	14 00 52				
	WN	eP	ZNE	13 54 43				
		eS	ZNE	58 05				
	RX	eP	Z	13 55 18				
		Origin:		13 50 28.3	19.7S 178.1W	587km	USCGS	
	28 WN	eL	ZN	15 11				
		M	ZN	13	3 32	6 28		
	RX	eL	N	15 11				
		eL	Z	19				
		M	N	22		6 20		
	28 KP	eP	Z	16 09 23				
		e	Z	42				
		e	Z	56				
		e(S)	Z	10 55				
	CT	eP	Z	16 09 32				
		e(S)	Z	11 07				
	WN	eP	ZNE	16 10 00				
		eS	ZNE	12 01				
		eLq	NE	12.6				
		eLr	Z	13.3				
		M	NE	13½		5 26	7 22	
		M	Z	14	4 18			
	RX	eP	Z	16 11 18				
		eS	Z	14 19				
		eLq	NE	15				
		eLr	Z	19				
		M	NE	21		4 16	5 17	
		Origin:		16 07 19	31.2S 177.7W	33km	USCGS	
	28 KP	eP	Z	17 06 53				
		e	Z	08 47				
	CT	eP	Z	17 07 14				
		e	Z	26				
	WN	eS	ZNE	17 09 34				
		Origin:		17 05 11	29.8S 178.4W	182km	USCGS	

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
JAN 29	KP	eP	Z	01 35 10				
	CT	eP	Z	01 35 46				
		Origin:		01 31 05.5	21.8S 178.7W	120km	USCGS	
	29 KP	eP	Z	09 33 57				
		epP	Z	34 30				
	CT	eP	Z	09 34 01				
		epP	Z	35				
	WN	eSKS	NE	09 44 28				
		eSP	Z	46 20				
		eLq	E	59 40			2 40	
		eLr	ZNE	10 04.0	2 38	4 40	2 34	
	RX	eSKS	N	09 44 56				
		eS	E	45 44				
		e(Lr)	E	10 04.5				
		Origin:		09 21 14.3	49.7N 154.9E	126km	USCGS	
	29 KP	eP	Z	16 59 24				
		Origin:		16 54 03.7	15.2S 173.4W	33km	USCGS	
	29 CT	eP	Z	20 46 42				
		epP	Z	47 04				
		Origin:		20 33 27.0	21.5S 68.6W	73km	USCGS	
	29 CT	eP	Z	21 17 51				
	WN	eP	ZNE	21 17 59				
		Origin:		21 07 57.7	12.9N 143.2E	144km	USCGS	
	30 CT	eP	Z	01 56 11				
	KP	eP	Z	01 56 16				
	RX	e?	Z	01 59 34				
	30 KP	eP	Z	06 18 38				
		e(PcP)	Z	19 05				
		Origin:		06 08 25.4	00.2N 123.4E	33km	USCGS	
	30 KP	eP	Z	10 04 22				
		Origin:		09 51 23.7	50.8N 157.4E	31km	USCGS	
	30 RX	eP	Z	10 22 06				
		ePP	Z	25 12	5 8			
		eS	NE	31 56		37 32	30 25	6.9
		eSS	NE	37 20		17 23	14 22	
		eLq	E	43			34 30	
		eLr	ZN	50				
		M	E	52			48 20	6.8
		M	ZN	53	41 20	55 21		
	WN	eP	Z	10 22 25	7 20			6.5
		e	Z	50				
		eS	ZNE	32 28	5 26			
		e(SP)	ZN	33	21 36	62 52		
		eSS	ZNE	37 50	23 55	33 26	22 40	
		e(SSS)	ZNE	41	10 24	15 22	11 20	
		eLq	NE	44		18 68	60 43	
		eLr	ZN	49	53 44	95 38		
		M	ZNE	56	36 19	47 18	30 20	6.7
	CT	eP	Z	10 22 28				
		eS	Z	23 01				
	KP	eP	Z	10 22 34				
		e	Z	23 08				
		Origin:		10 10 04.1	55.6S 28.3W	33km	USCGS	6½ PAS
	30 KP	e(P)	Z	10 29 38				
	30 KP	e	Z	10 48 53				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
JAN 30	CT	eP	Z	10 57 41				
	KP	eP	Z	10 57 46				
			Z	19 36 17				
	30 TU	eP	Z	37 46				
		e(S)	Z	19 36 18				
	KP	eP	Z	19 36 28				
	CT	eP	Z	46				
		e	Z	38 10				
		e	ZNE	19 38 50				
	WN	eS	N	19 39 55				
	GP	eS						
	31 KP	eP	Z	05 18 48				
		ePP	Z	21 52				
	WN	eP	Z	05 18 52	1 8			6.1
		e(pP)	Z	19 07				
		e	Z	30.4	2 36			
		e(SS)	Z	33 56	1 26			
		eLq	NE	44				
		eLr	Z	45				
		M	ZNE	46	7 36	7 26	8 36	
		M	ZNE	50	6 24	13 24	5 20	6.4
	CT	eP	Z	05 18 53				
	RX	eP	Z	05 19 04				
		e	NE	29.2				
		e	NE	30 38		3 30	4 32	
		e	NE	34.4			3 22	
		e	NE	41.0		2 24	2 20	
		eLr	ZNE	46				
		M	ZNE	51	6 22	6 22	5 22	6.3
		Origin:		05 06 46.0	27.9N 126.3E	33km	USCGS	
	31 KP	eP	Z	16 25 25				
	CT	eP	Z	16 25 37				
		e	Z	28 47				
		Origin:		16 21 52.8	21.5S 178.1W	373km	USCGS	
	31 CT	eP?	Z	20 37 58				
		e(pP)	Z	38 10				
		Origin:		20 31 50.1	10.6S 165.2E	50km	USCGS	
FEB	1 ON	eP	E	08 51 16				
	TU	e	Z	08 51 21				
		e(S)	Z	52 53				
	CT	e(P)	Z	08 51 46				
	GP	eS	N	08 55 09				
		Origin:		08 49 14.4	30.6S 178.1W	54km	USCGS	
	1 CT	eP	Z	09 51 35				
	GP	eP	N	09 52 00				
	RX	eP	Z	09 52 12				
		Origin:		09 45 03.8	8.5S 159.1E	144km	USCGS	
	1 CT	eP	Z	10 25 59				
		e(pP)	Z	26 12				
	TU	e(P)	Z	10 26 05				
		e	Z	18				
	RX	e?	Z	10 26 13				
		Origin:		10 16 34.1	3.0S 131.0E	33km	USCGS	
	1 KP	P	Z	22 46 24				
		Origin:		22 42 15	19.8S 178.2W	200km	USCGS	
	2 CT	eP	Z	04 56 10				
		e	Z	12				

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
FEB	WN	e(L)	Z	05	02								
	RX	eL	E	05	07								
	Origin:			04	51	08.1	16.2S	178.0E	33km		USCGS		
2	TU	e(P)	Z	09	55	53							
		e	Z		57	29							
		e	Z			34							
	KP	e?	Z	09	56	08							
		e	Z			23							
	CT	e(P)	Z	09	56	18							
		e	Z			30							
		e	Z		58	06							
	GP	eS	N	09	59	41							
	WN	e(L)	Z	10	01								
2	ON	e	E	11	52	38							
	KP	eP	Z	11	52	51							
		e	Z		53	13							
	CT	eP	Z	11	53	00							
		e(S)	Z		56	55							
	Origin:			11	48	20.0	19.7S	174.6W	77km		USCGS		
2	TU	e	Z	13	53	45							
		e	Z		54	58							
	KP	eP	Z	13	53	47							
		e	Z		55	12							
	CT	e	Z	13	54	08							
		e	Z		55	52							
	GP	eS?	N	13	57	08							
2	KP	e(P)	Z	14	43	43							
	CT	e	Z	14	44	04							
	WN	eL	Z	14	54								
2	KP	P?	Z	16	45	28 u							
		e	Z			39							
	Origin:			16	38	48.2	7.1S	155.7E	96km		USCGS		
2	KP	e?	Z	18	15	52							
	Origin:			18	01	13	51.3N	179.1W	33km		USCGS		
3	KP	P	Z	01	51	12							
		e	Z			34							
		eS	Z		53	47							
	GP	e(P)	N	01	52	11							
		e(S)	N		55	25							
	TU	e(S)	Z	01	53	52							
	WN	e	E	01	54	42							
	Origin:			01	48	00.5	23.9S	179.7W	500km		USCGS		
4	KP	eP	Z	01	24	31							
		e	Z			39							
		e	Z		26	39							
	TU	e	Z	01	24	44							
	WN	eL	Z	01	35								
		eL	Z		39								
		M	Z		43								
	RX	eL	NE	01	38								
		M	E		42								
		M	N		48								
	Origin:			01	17	03.1	6.3S	149.1E	36km		USCGS		
4	KP	eP	Z	09	21	31							
	Origin:			09	17	20.0	17.4S	178.8W	552km		USCGS		

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
FEB 4	KP	eP	Z	12	47	44							
	TU	e(P)	Z	12	47	44							
		eS	Z		49	21							
	CT	e(P)	Z	12	47	55							
		e	Z		49	33							
		e	Z			47							
	WN	eS	ZNE	12	50	28							
	GP	eS	N		51	31							
4	KP	eP	Z	15	08	55							
	CT	e	Z		09	08							
	WN	e(S)	ZN	15	14	.0							
		eL	ZN		16								
		M	Z		18								
	RX	eL	NE	15	16								
		M	E		20						3	18	5.5
	Origin:			15	04	05.3	17.3S	167.9E	33km		USCGS		
4	KP	eP	Z	18	05	46							
	CT	e	Z	18	06	02							
	Origin:			18	00	41.4	16.5S	173.6W	33km		USCGS		
4	KP	iP	Z	18	57	12							
		eS	Z			40							
	TU	eP	Z	18	57	15							
		e	Z			46							
		e	Z			52							
	CT	P	Z	18	57	16							
		e	Z			44							
		e(S)	Z			48							
		e	Z		58	00							
	TO	e	Z	18	57	19							
		eS	Z			47							
	TA	eP	Z	18	57	19							
		e	Z			32							
		e	Z			54							
		e	Z			57							
		e	Z		58	05							
		e	Z			22							
	WN	P	ZNE	18	57	34½							5.3
		eS	ZNE		58	21							
	GP	eP	N	18	58	05½							5.3
		eS	N		59	17							
		e	N			30							
	KM	e	X	18	58	10							4.8
		eS	X		59	06							
	RX	e(P)	Z	18	58	39							
		e(S)	Z		60	19							
	Origin:			18	56	34	37.8S	176.1E	280km		NZ(C)		5.1
4	KP	P	Z	23	33	52							
		epP	Z		34	11							
	Origin:			23	21	09.0	48.5N	154.9E	85km		USCGS		
5	KP	P	Z	01	57	47							
		e(pP)	Z		58	25							
	Origin:			01	47	49.8	0.0	123.8E	164km		USCGS		
5	KP	eP?	Z	05	14	28							
		e	Z			30							
	CT	e(P)	Z	05	14	35							
	RX	e?	Z	05	14	57							
	Origin:			05	04	03.4	19.2N	147.1E	38km		USCGS		
5	KP	eP	Z	14	05	05							

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
FEB		e	Z			30				
	TU	eP?	Z	14	05	07				
		e	Z			27				
		e(S)	Z		06	36				
	ON	e	E	14	05	09				
	CT	e(P)	Z	14	05	20				
		e	Z			50				
		e(S)	Z		06	59				
	WN	eS	Z	14	07	36				
	Origin:			14	03	16.6	31.8S 179.4W	137km	USCGS	
5	ON	eP	E	19	31	07				
	KP	eP	Z	19	31	14				
		e	Z			16				
	TU	eP	Z	19	31	14				
		e	Z			57				
		e	Z		32	30				
		eS	Z			34				
	CT	eP	Z	19	31	26				
		e	Z			43				
		e(S)	Z		32	58				
	TO	eP	Y	19	31	27				
		e	Y			42				
		eS	Y		32	57				
		e	Y		33	11				
	TA	e	Z	19	31	36				
		e	Z		33	18				
	WN	e(P)	Z	19	31	48				
		e	Z		32	35				
		e	Z		33	30				
		e	Z			36				
		eS	ZNE			40				6.7
		eL	Z		35					
	GP	eP	N	19	32	27				
		e	N		34	42				
		eS	N			46				6.2
	KM	e	X	19	32	37				
		eS	X		34	37				5.8
	RX	e	Z	19	33	12				
		e	Z		36	10				
		eL	NE		38					
		M	E		39					
	Origin:			19	29	28	32.4S 178.6W	N	NZ(D)	6.1
				19	29	30.0	31.9S 179.0W	68km	USCGS	
5	WN	eP	Z	20	51	27	3 8			6.4
		S	ZE	21	01	23 d				
		eSS	ZE		06	36				
		eL	NE		13					
		eL	ZNE		16					
		M	ZNE		22		6 16			
	CT	eP	Z	20	51	29				
	KP	eP	Z	20	51	33				
		i	Z			40 d				
	RX	eS	NE	21	01	20			5 18	6.4
		eSS	NE		06					
		eL	ZNE		16					
		M	ZNE		20		15 18	6 17	15 17	6.4
	Origin:			20	39	21.6	38.4S 73.2W	41km	USCGS	5½-6
6	KP	iP	Z	01	19	36 u				
	TU	iP	Z	01	19	38½u				
		e	Z			42½				
		e	Z		20	12				
		eS	Z			17				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
FEB	CT	iP	Z	01	19	41 u				
		eS	Z		20	23				
	TO	eP	Y	01	19	41				
		e	Y			45				
		eS	Y		20	21				
	ON	e?	E	01	19	44				
		e	E			46				
		eS	E		20	26				
	TA	eP	Z	01	19	45½				
		e	Z			50				
		eS	Z		20	29				5.4
	WN	eP	Z	01	20	00				
		e	Z			06				
		eS	ZNE			55				
	GP	eP	N	01	20	30½				
		S	N		21	50½				5.6
	KM	eS	X	01	21	38				4.8
	Origin:			01	18	48	37.2S	176.6E	350km NZ(C)	5.0
6	CT	eP	Z	01	33	36				
	WN	eP	Z	01	33	36				5.9
		eS	ZE		43	32	1 8			
		eSS	ZE		49					
		eL	Z		58					
		M	ZE	02	04		2 16			
	KP	eP	Z	01	33	39				
	RX	e(S)	E	01	43	34				
		eSS	E		48	42				
		eL	ZNE		57					
		M	E	02	00				5 20	
	Origin:			01	21	29.0	38.4S	73.6W	33km USCGS	5½-5½
6	KP	P	Z	02	05	25 d				
		e	Z		06	14				
	CT	eP?	Z	02	05	25				
		e	Z			26				
	RX	e?	Z	02	06	06				
	Origin:			01	55	59.2	7.9S	119.9E	306km USCGS	
6	KP	eP	Z	02	39	53				
	CT	e	Z	02	40	02				
	Origin:			02	31	08.0	6.8S	123.5E	637km USCGS	
6	KP	eP	Z	05	49	15				
	CT	eP	Z	05	49	22				
	Origin:			05	41	23	5.3S	145.0E	90km USCGS	
6	KP	iP	Z	05	57	58 d				
	CT	eP	Z	05	58	07				
	WN	eP	Z	05	58	27				
	RX	eP	Z	05	59	14				
	Origin:			05	53	53.9	18.1S	177.6W	500km USCGS	
6	KP	eP	Z	10	28	30				
	CT	eP	Z	10	28	37				
	WN	eS	ZNE	10	35	28				
		eL	ZNE		39					
		M	ZNE		44		2 18		3 19	
	RX	eL	E	10	39					
	Origin:			10	20	25.5	3.5S	146.0E	33km USCGS	
6	KP	eP	Z	12	50	06				
	CT	eP	Z	12	50	22				
	WN	e(P)	Z	12	50	44				
		eL	ZNE		55					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
FEB		M	ZN		56		2 20	1 20		
	RX	eP	Z	12	51	27				
		e	E		55	52				
		Origin:		12	46	26.7	22.2S 171.3E	101km	USCGS	
	6 WN	eL	ZN	19	02					
		M	Z		03		4 34			
	RX	eL	N	19	09			1 22		5.6
		Origin:		18	17	10.9	55.6N 166.1E	33km	USCGS	
	6 CT	eP	Z	21	56	20				
	KP	P	Z	21	56	23				
		Origin:		21	43	16.3	28.2S 67.4W	19km	USCGS	
	7 KP	eP	Z	01	27	45				
		e	Z			53				
		Origin:		01	23	41.7	17.7S 178.7W	559km	USCGS	4.3
	7 KP	e(P)	Z	02	16	38				
		Origin:		02	06	36.0	8.2S 119.4E	51km	USCGS	
	7 WN	eL	Z	03	41					
		M	ZN		43		1 20	2 19		
		Origin:		03	29	41.9	39.6S 147.9E	33km	USCGS	5.0
	7 RX	eL	ZNE	09	24					
	WN	eL	ZNE	09	26					
	7 KP	eP	Z	15	49	50				
		Origin:		15	44	28.4	15.2S 173.6W	33km	USCGS	4.5
	7 ON	e?	E	17	11	10				
		e	E			25				
	TU	e(P)	Z	17	11	18				
		e	Z			45				
		e(S)	Z		13	37				
	KP	eP?	Z	17	11	29				
		e	Z			36				
	WN	eS	NE	17	14	45				
		eL	ZE		16					
		M	E		17				3 20	
	RX	eL	NE	17	19					
		M	E		20				4 20	5.4
		Origin:		17	08	18	26.5S 176.6W	33km	USCGS	4.8
	8 ON	eP?	E	02	31	48				
	KP	eP	Z	02	32	01				
	TU	e(S)	Z	02	34	04				
	WN	eS	NE	02	35	10				
		eL	ZN		37					
		M	ZN		39			2 10		
	RX	eL	NE	02	39					
		M	E		40				4 21	
		eL	Z		41					
		Origin:		02	29	00.4	26.9S 176.7W	190km	USCGS	4.0
	8 RX	eL	E	13	15					
	8 KP	eP	Z	18	22	46				
		Origin:		18	18	07.3	12.9S 170.2E	628km	USCGS	
	9 KP	eP	Z	08	12	45				
		Origin:		07	59	52.9	51.2N 179.8W	33km	USCGS	4.5
	9 KP	P	Z	08	41	30 u				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
	CT	eP	Z	08	41	42				
FEB	RX	e(P)	Z	08	42	27				
		Origin:		08	36	25.5	15.0S 167.4E	127km	USCGS	4.5
			Z	16	17	35				
	9 KP	eP		16	05	03.0	43.7N 150.6E	33km	USCGS	4.8
		Origin:								
			E	16	55	28				
	9 ON	eP	E			48				
		e(Pg)	E			56 05				4.9
		e(S)	E			23				
		e(S*)	E	16	55	28 d				
	KP	iP	Z			32				
		e	Z		56	11				
		e(S)	Z	16	55	32				
	TU	eP	Z			40				
		e(P*)	Z			45				
		e(Pg)	Z		56	16				
		e(S)	Z	16	55	43				
	CT	eP	Z			55				
		e(P*)	Z		56	04				
		e(Pg)	Z	16	55	45				
	TO	e	Y			57				
		e(P*)	Y		56	09				
		e(Pg)	Y			20				5.0
		e	Y	17	55	52				
	TA	eP	Z		56	02				
		eP*	Z	16	56	16				
	WN	e	Z			40				
		e	Z		57	20				5.1
		e(S)	ZE			25				
		e	ZN		58					
		eL	E		58¾					
		eL	ZN	16	56	24				
	CB	eP	E		57	51				4.7
		e(S)	E		58	01				
		e	E	16	56	48				
	KM	e(P)	X		58	35				5.2
		e(S)	X	16	56	48				
	GP	eP?	N			55				
		e	N		57	07				
		e(PP)	N		58	27				5.2
		eS	N	16	57	34				
	RX	e(P)	Z		58	04				
		e	Z			16				
		e	Z	17	00					
		eL	NE		01					
		M	E	16	54.6		35.4S 178.6E	S NZ(D)		5.0
		Origin:		16	55	00	35.9S 177.9E	172km	USCGS	4.8
	9 KP	eP	Z	17	11	01				
		Origin:		17	07	59.2	24.0S 179.1E	550km	USCGS	4.7
	9 KP	P	Z	17	39	22				
	TU	e(P)	Z	17	39	27				
	9 KP	P	Z	20	14	03				
	TU	e(P)	Z	20	14	06				
	CT	eP	Z	20	14	20				
	TA	e(P)	Z	20	14	27				
	9 KP	eP	Z	21	37	41				
		e	Z			48				
	TU	eP	Z	21	37	45				
	CT	eP	Z	21	37	58				

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
FEB		e?	Z		43	39							
9	TU	e(S)	Z	23	08	44							
	Origin:			23	01	18.5	21.7S	176.9W	66km	USCGS			4.8
10	KP	P	Z	07	42	06							
	CT	eP	Z	07	42	13							
	WN	eP	Z	07	42	34							
	Origin:			07	37	43.9	17.3S	177.4W	343km	USCGS			4.7
10	KP	eP	Z	11	28	15							
	Origin:			11	22	59.4	14.1S	167.1E	132km	USCGS			
10	KP	eP	Z	21	48	22							
		e	Z			48							
	Origin:			21	35	48.7	44.6N	147.8E	67km	USCGS			5.0
11	ON	eP	E	04	38	23							
		eS	E		39	52							
	KP	P	Z	04	38	34							
		e(S)	Z		40	16							
	CT	eP	Z	04	38	44							
		e	Z		40	40							
	WN	e	Z	04	39	05							
		eS	ZE		41	13							
	GP	e(P)	N	04	39	36							
		e(S)	N		42	05							
		e	N			11							
	RX	eP	Z	04	40	01							
	Origin:			04	36	30.4	29.8S	179.1E	528km	USCGS			4.5
11	KP	eP?	Z	07	20	06							
	Origin:			07	16	14.2	19.7S	177.7W	543km	USCGS			4.7
11	KP	eP	Z	10	59	21							
	CT	e	Z	11	01	59							
	Origin:			10	56	24.8	24.6S	179.8E	491km	USCGS			4.5
11	KP	eP	Z	12	27	31							
	WN	e(L)	Z		36								
	Origin:			12	22	26	15.7S	174.7W	33km	USCGS			
11	ON	e	E	21	13	23							
	KP	e?	Z	21	13	37							
	TU	e(S)	Z	21	15	24							
	CT	e?	Z	21	16	00							
	WN	eL	Z	21	20								
	RX	eL	NE	21	20								
12	ON	eP	E	23	11	17							
	KP	eP	Z	23	11	30 u							
		e	Z		12	48							
		e	Z		15	05							
	CT	eP	Z	23	11	38							
		e(S)	Z		15	04							
	WN	eP	Z	23	11	58							
		e(S)	ZNE		15	30							
	RX	eP	Z	23	12	45							
		e(pP)	Z		14	23							
		e(S)	Z		17	02							
	Origin:			23	07	28.9	17.8S	178.6W	583km	USCGS			
13	AK	e(P)	N	09	02	05							
		eS	N		11	55							
		M	N		32								6.8

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
FEB	TO	e?	Y	09	02	08							
		e	Y			17							
		eS	Y		12	17							
	KP	P	Z	09	02	09							
		ePP	Z		05	.4							
		eL	Z		30								
	TA	eP	Z	09	02	11							
	TU	eP	Z	09	02	17							
	WN	eP?	Z	09	02	17							
		i	Z			18 u							
		e	ZNE			19			5	26			
		e	Z			34							
		e	ZNE		05	30							
		S	ZNE		12	24							
		eSS	E		17	.4							
		eL	NE		24	.2							
		M	N		34					35	22		
	CB	e	E	09	02	19							
		eS	E		12	15							
		e(PS)	E		13	05							
	RX	eP	Z	09	02	21 u		7 5					7.0
		e	Z			32							
		eS	NE		12	32					35	12	7.4
		e(PS)	NE		13	38							
		eSS	NE		17	55							
		eLq	NE		24								
		eLr	ZNE		30								
		M	NE		32						80	25	
		M	ZN		36			45 22		40 22			6.8
	GP	eP	N	09	02	23							
		e	N			41							
		eS	N		12	34							
		e(PS)	N		13	25							
	ON	e(S)	E	09	11	51							
	Origin:			08	50	02.2	24.5N	121.8E	33km	USCGS			7¼
13	KP	eP	Z	09	42	45							
	CT	eP	Z	09	42	47							
		e	Z			54							
	RX	eP	Z	09	42	54							
	Origin:			09	30	34.6	24.8N	121.7E	33km	USCGS			5.4
13	KP	eP	Z	18	20	10							
		e(PcP)	Z		23	10							
		e(PcS)	Z		26	49							
	CT	eP	Z	18	20	18							
	WN	iP	Z	18	20	34							
		iS	NE		25	52							
		e(L)	ZE		27	52							
		M	ZE		32						46	23	
	RX	e(P)	N	18	20	56							
		e	Z		21	06							
		eS	NE		26	36				15	22		6.4
		eL	NE		30								
		eL	Z		31								
		M	N		32					55	22		6.4
	Origin:			18	13	55.1	9.9S	100.8E	29km	USCGS			5.8
13	KP	eP	Z	19	14	13							
	CT	eP	Z	19	14	19							
	Origin:			19	02	06.7	24.6N	122.1E	33km	USCGS			5.0
13	KP	eP?	Z	23	56	46							
	Origin:			23	46	27.6	19.6N	143.7E	156km	USCGS			3.9

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
FEB 14	KP	e(P)	Z	06	54	47				
	CT	e(P)	Z	06	54	54				
	WN	eL	Z	07	04					
	RX	eL	NE	07	05					
		M	E		07			20 20	25 20	6.2
	Origin:			06	48	30.3	10.1S	160.3E 64km	USCGS	5.1
14	RX	eP	Z	07	13	33				
		e	Z		14	37				
		e(S)	NE		21	.0				
		e	NE		25	.8				
		M	E		36				30 20	
	KP	iP	Z	07	13	37 u				
	CT	eP	Z	07	13	41 u				
		e	Z			49				
	WN	P	Z	07	13	42 u				
		e	Z			53				
		e	Z		14	33				
		e(S)	ZNE		21	.0				
	Origin:			07	04	40.8	7.2S	128.2E 197km	USCGS	5.8
14	KP	eP	Z	12	48	09				
	CT	eP	Z	12	48	24				
	WN	eL	Z	12	56		1 20			
	Origin:			12	43	23.5	17.7S	168.0E 33km	USCGS	
14	WN	eL	ZNE	13	12					
		M	ZNE		20				2 23	
	RX	eL	NE	13	20					
		M	E		23				2 19	
14	KP	eP?	Z	14	43	14				
		e	Z			20				
	CT	eP	Z	14	43	26				
	WN	eL	Z	14	51					
	RX	eL	E	14	52					
	Origin:			14	38	31.5	17.9S	167.6E 40km	USCGS	
14	KP	eP	Z	15	36	13				
	CT	eP	Z	15	36	22				
	Origin:			15	29	58.2	9.8S	160.6E 25km	USCGS	5.0
14	WN	eL	Z	17	50		1 19			
	RX	eL	E	17	52					
14	KP	eP	Z	21	55	04				
		e	Z			29				
		e	Z		57	21				
	CT	e(P)	Z	21	55	16				
	WN	eP	Z	21	55	38				
		e	ZNE		59	20				
		e	NE			52				
		eL	NE	22	01				7 20	
		M	Z		03		7 16			
	RX	e	NE	21	54	54				
		e	NE	22	00	32		4 17		
		eL	N		03					
		M	N		04			5 19		
	Origin:			21	51	12.7	22.1S	170.3E 33km	USCGS	4.5
14	KP	eP	Z	22	03	20				
	CT	eP?	Z	22	03	33				
		e	Z			38				
	RX	e	Z	22	04	59				
		eL	N		11					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
					11		6 16			
FEB	WN	M	Z	21	59	34.3	22.0S	170.1E 47km	USCGS	
	Origin:									
	14 KP	iP	Z	22	15	52 u				
		i	Z		17	40 d				
	CT	eP?	Z	22	15	57				
		i	Z			59 u				
	WN	eP	Z	22	16	04 u				
		eL	ZE		29					
		M	Z		32		3 20			
	RX	eP	Z	22	16	15				
		e	Z			34				
		eL	N		28					
	Origin:			22	07	54.3	5.0S	144.6E 80km	USCGS	6.0
	14 KP	eP	Z	22	50	53				
	CT	e(P)	Z	22	50	58				
	Origin:			22	41	51.1	3.1S	134.3E 49km	USCGS	4.6
	15 KP	e(P)	Z	00	11	02				
	CT	eP	Z	00	11	14				
	WN	eP	Z	00	11	37				
		eL	Z		17					
		M	Z		19		1 16			
	Origin:			00	07	11.0	22.2S	170.3E 33km	USCGS	
	15 KP	eP	Z	00	14	10				
		e	Z			58				
	15 ON	P	E	00	50	19				
		e(S)	E		51	27				
		e	E			29				
	TU	eP	Z	00	50	21				
		e	Z			22				
		e	Z			23				
		e(S)	Z		51	30				
		e	Z			32				
		e	Z			35				
	KP	eP?	Z	00	50	23				
		e	Z			24				
		e	Z			52				
		e	Z		51	52				
	CT	eP	Z	00	50	36				
		i	Z			40½d				
		i	Z			49				
		iS	Z		51	57 u				
		e	Z		52	33				
	TO	e	Y	00	50	37				
		e	Y			49				
		e	Y		52	08				
		e	Y			18				
		e	Y			27				
	TA	eP	Z	00	50	46				
		e	Z			54				
		e	Z		51	16				
		e	Z			38				
		e	Z		52	45				
		e	Z			57				
	WN	eP	Z	00	51	01				5.7
		e	Z			28				
		e	NE		52	39				
		e(S)	ZN			42				
		e	N		53	21				
		e(L)	Z		54	16				
	CB	e?	E	00	51	25				

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
FEB		e	E			56							
		eS	E		53	00							
		e	E		54	04							5.5
	GP	e(P)	N	00	51	42							
		eS	N		53	47							
	RX	e	Z	00	52	31							6.1
		e	Z		55	01							
		eL	NE		56								
		M	E		57								
		M	N		58								
	KM	e	X	00	53	37							
		e	X			42							
	Origin:			00	48	52	33.7S	179W	N	NZ(D)			5.7
				00	48	51.9	33.2S	179.2W		42km	USCGS		5.6 5.3
15	KP	eP	Z	02	10	45							
15	KP	e(P)	Z	03	12	10							
	CT	e?	Z	03	12	26							
	Origin:			03	08	31	21.7S	169.4E		35km	USCGS		
15	KP	e(P)	Z	05	43	46							
	CT	eP	Z	05	44	01							
	WN	eP	Z	05	44	22							
		e	Z		48	12							
		eL	Z		49½								
		M	Z		52		2	16					
	RX	eL	NE	05	52								
		M	N		53				1	18			5.0
	Origin:			05	39	57.2	22.0S	170.5E		33km	USCGS		
15	KP	e(P)	Z	06	59	43							
		e	Z	07	01	33							
	CT	eP?	Z	06	59	58							
		e	Z	07	00	04							
	RX	e	Z	07	01	02							
		i	Z		02	29 u							
		eL	N		11								
		M	N		14								
	WN	e(L)	Z	07	06								
		M	Z		12		3	16					
	Origin:			06	54	51.8	14.9S	178.7W		33km	USCGS		5.0
15	KP	eP	Z	07	18	04							
	CT	e(P)	Z	07	18	15							
	Origin:			07	14	51.9	23.5S	180.0		519km	USCGS		4.6
15	KP	eP	Z	09	25	36							
	CT	eP?	Z	09	25	50							
		e	Z			53							
	WN	eL	ZE	09	30								
		M	Z		31		1	20					
	RX	eL	NE	09	33								
		M	E		34						3	17	
	KP	eP	Z	16	41	50							
		e	Z		42	06							
	CT	eP	Z	16	41	50							
		e	Z		42	04							
	Origin:			16	29	19.0	4.3N	96.3E		33km	USCGS		5.7
15	KP	eP	Z	18	40	42							
	Origin:			18	30	36.0	15.4S	174.3W		140km	USCGS		5.0
16	KP	eP	Z	05	54	42½							
	Origin:			05	44	27.5	5.7N	126.5E		133km	USCGS		4.3

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
FEB 16	KP	eP	Z	08	35	22							
	CT	e(P)	Z	08	35	36							
	RX	eP	Z	08	36	37							
	Origin:			08	31	17.5	17.7S	178.6W		534km	USCGS		4.5
16	KP	eP	Z	08	42	50							
	Origin:			08	31	51.1	9.7N	122.5E		28km	USCGS		
16	RX	eP	Z	10	55	27							
		e(PcP)	Z		56	08							
	WN	P	Z	10	55	42 d							
	KP	iP	Z	10	55	42 d							
		(PcP)	Z		56	18							
		epP	Z		57	43							
		e(sP)	Z		58	35							
		e	Z		59	22							
	CT	eP	Z	10	55	43							
	Origin:			10	46	22.0	7.0S	117.3E		561km	USCGS		4.6
16	KP	eP	Z	12	20	56							
		e	Z		21	32							
	CT	eP	Z	12	21	04							
	Origin:			12	12	39.1	0.6S	147.5E		33km	USCGS		5.0
16	KP	eP	Z	13	25	59							
	Origin:			13	22	13.8	19.9S	178.3E		562km	USCGS		4.5
16	KP	e(P)	Z	17	58	44							
	Origin:			17	54	41.4	17.8S	178.5W		564km	USCGS		4.4
16	KP	eP	Z	23	45	04							
	TU	eP	Z	23	45	16							
	Origin:			23	37	07.6	5.0S	144.5E		82km	USCGS		4.6
17	RX	e(L)	NE	04	22								
17	KP	eP	Z	07	01	23							
	TU	e(P)	Z	07	01	36							
	Origin:			06	53	20.3	4.8S	144.2E		35km	USCGS		5.7
17	KP	PKP	Z	08	48	08½							
	Origin:			08	28	24.9	42.1N	37.2E		33km	USCGS		4.8
17	KP	eP	Z	17	14	38							
	WN	e?	Z	17	15	10							
		e(L)	Z		30								
	Origin:			17	10	13.6	17.1S	176.7W		70km	USCGS		4.9
17	KP	eP	Z	19	29	37							
		i	Z			41 d							
		e(S)	Z		32	13							
	TU	e(P)	Z	19	29	42							
	WN	eP	Z	19	30	09							
		e(S)	E		33	08							
		e	ZN			10							
	Origin:			19	26	31.5	23.9S	179.8W		520km	USCGS		5.1
18	CT	e?	Z	14	23	11							
	KP	e(P)	Z	14	23	31							
		e	Z			38							
	WN	e?	Z	14	24	54							
		eL	ZNE		44								
		M	Z		45				4	22			
	RX	eL?	E	14	44								
	Origin:			14	12	36.0	36.2S	90.4W		33km	USCGS		5.2

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
FEB 18	TU	eP	Z	14	53	56							
		e	Z		55	42							
		e(S)	Z			47							
	ON	e(P)	E	14	54	02							
	KP	e(P)	Z	15	54	04							
		e	Z			16							
		e	Z			37							
	GP	e	N	14	55	34							
		eS	N		58	00							
	WN	eS	ZNE	14	56	48							
		eL	E		58								
		M	Z	15	00								
	RX	eL	E	15	01						1	20	
	Origin:			14	51	39.7	30.1S	177.2W	33km	USCGS			4.8
18	KP	eP	Z	15	50	19							
	CT	e(P)	Z	15	50	26							
	Origin:			15	40	07.7	1.5N	125.8E	41km	USCGS			4.3
18	WN	e(L)	Z	22	28								
		M	Z		33		1	20					
	RX	eL	NE	22	29								
		M	N		30				1	21			
19	KP	eP	Z	12	02	58							
	WN	eL	Z		09								
		M	Z		10		1	20					
	Origin:			11	59	23.3	22.2S	171.4E	105km	USCGS			4.4
19	KP	eP	Z	15	37	04							
	Origin:			15	28	20.1	6.2S	128.1E	370km	USCGS			5.3
19	KP	eP	Z	16	51	46							
	RX	eL	NE	17	20								
		M	N		22				1	20			5.6
	Origin:			16	39	51.1	55.3S	28.8W	33km	USCGS			
19	KP	eP	Z	18	43	37							
		e	Z			42							
20	KP	eP	Z	06	50	14							
	TA	eP	Z	06	50	30							
	Origin:			06	46	19.5	17.2S	178.2W	612km	USCGS			4.4
20	KP	eP	Z	07	48	31							
	WN	e?	Z	07	48	33							
	Origin:			07	41	22.1	6.3S	154.0E	37km	USCGS			5.1
20	KP	eP	Z	08	47	47							
		e	Z		48	09							
	TU	e(P)	Z	08	48	03							
	WN	eP	Z	08	48	20							
		e	Z		52	10							
		e	E			32							
		eL	NE		53	16							
		M	ZNE		57								
	RX	e	NE	08	53								
		eL	NE		55	19							
		eL	ZE		57								
		M	N		58								
	Origin:			08	44	00.9	22.3S	170.5E	33km	USCGS			5.0
20	KP	e?	Z	12	41	10							
20	WN	eS	ZN	17	28	04							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
		e(PS)	E			40							
FEB		e	Z		31	12							
		eSS	Z		32.0								
		eLq	NE		36								
		eLr	Z		39								
		eL	ZNE		40.9								
		M	ZNE		42		3	20	3	20	3	20	6.0
	RX	e(S)	NE	17	28.5								
		eL	N		38								
		eL	ZNE		40								
		eL	NE		42				2	22	5	21	6.1
		M		17	07	32.5	45.7S	78.3W	33km	USCGS			4.6
	Origin:												
21	KP	eP	Z	02	45	20							
	KP	eP	Z	02	45	26							
	CT	eP	Z	02	33	35.9	33.4N	139.2E	168km	USCGS			
	Origin:												
21	KP	eP	Z	13	20	27							
	Origin:			13	16	05.6	20.6S	175.1W	33km	USCGS			5.2
21	KP	eP	Z	14	32	56							
	WN	eP	Z	14	33	31							
		eL	Z		39½								
		M	Z		40		1	20					
		M	Z		42								
	RX	eL	E	14	41								
		eL	N		43								
		M	E		44						7	18	5.7
	Origin:			14	28	29	20.5S	173.9W	29km	USCGS			5.0
21	WN	eL	Z	18	29								
		M	Z		43		5	22					
	Origin:			17	14	35.7	32.7N	20.9E	33km	USCGS			5.0
22	WN	eL	Z	08	11								
		M	Z		19		1	26					
	Origin:			07	10	28.0	85.0N	98.9E	33km	USCGS			5.0
22	CT	eP	Z	07	57	44							
	KP	eP?	Z	07	57	44							
22	KP	iP	Z	08	03	00	d						
		e(pP)	Z		04	17							
	CT	eP	Z	08	03	09							
	WN	eP	Z	08	03	29							
		eScS	E		13	29							
	RX	eP	Z	08	04	15							
	Origin:			07	58	57.0	17.8S	178.8W	550km	USCGS			5.0
22	ON	e?	E	11	07	43							
		e	E			56							
	TU	eP	Z	11	07	43							
		e	Z			51							
		eS	Z		09	30							
	KP	e?	Z	11	07	48							
		e	Z			50							
		e	Z		08	12							
		e	Z			43							
	TA	e	Z	11	08	13							
	CT	e?	Z	11	08	34							
		e(S)	Z		09	48							
		e	Z			58							
	WN	e?	Z	11	08	45							
		e	Z		09	06							
		eS	ZNE		10	35							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
FEB	GP	e?	N	11	08	56							
		e	N		09	27							
		eS	N		11	38							
	KM	eS	X	11	11	28							
	Origin:			11	05	42.0	30.3S	178.6W	113km		USCGS		5.1
	23 WN	e	Z	06	51	9							
		eL	Z	07	01								
		M	Z		01		1 28						
	Origin:			06	32	30	36.0S	102.5W	33km		USCGS		4.7
	23 KP	eP	Z	14	37	22							
	24 KP	P	Z	06	40	01							
	CT	eP	Z	06	40	09							
	WN	eP	Z	06	40	29							
	Origin:			06	36	11.3	19.7S	179.0W	546km		USCGS		4.8
	24 KP	P	Z	13	11	57							
	CT	eP	Z	13	12	07							
	Origin:			13	07	26.4	18.3S	175.4W	209km		USCGS		4.5
	24 WN	e(PKKP)	Z	14	02								
		e?	Z		15								
		eL	Z		21								
		M	Z		27		2 19						
	RX	eL	E	14	22								
		M	E		29						1 18		5.8
	Origin:			13	34	15.7	14.6N	91.4W	135km		USCGS		5.7
	24 KP	e(P)	Z	17	38	00							
		e	Z			25							
		e	Z			35							
	ON	eP	E	17	38	05							
	AK	eL	N	17	41								
	RX	eL	NE	17	46								
	Origin:			17	35	14	31.7S	176.5W	33km		USCGS		
	24 KP	P	Z	21	38	00 d							
	Origin:			21	34	08.1	19.5S	179.0W	546km		USCGS		4.8
	25 KP	P	Z	17	23	08 u							
		e	Z			18							
	CT	P	Z	17	23	08 u							
		e	Z			17							
		e	Z			23							
	TU	eP	Z	17	23	10							
		e	Z			26							
	GP	eP	N	17	23	17							
		e	N			36							
	Origin:			17	11	01.7	24.4N	123.4E	33km		USCGS		5.3
	26 WN	eL?	Z	00	22								
	26 CT	P	Z	02	25	10 d							
	Origin:			02	13	20.5	19.3N	121.0E	56km		USCGS		4.3
	26 KP	eP?	Z	02	26	31							
	26 KP	eP	Z	08	02	16							
	WN	e?	Z	08	03	08							
	Origin:			07	52	13.6	12.8N	144.1E	98km		USCGS		
	26 KP	e?	Z	09	51	45							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
													6.8
FEB 26	ON	P	E	20	21	14							
		e	E			29							
		e(S)	E		26	55							
		eScS	E		31	08							
	KP	iP	Z	20	21	31 d							
		e(PcP)	Z		24	17							
		e	Z		26	34							
		e(ScP)	Z		27	04							
		e	Z		28	03							
	TA	P	Z	20	21	34 d							
	CB	iP	E	20	21	36½w							
		(PcS)	E		27	37 w							
		e(SS)	E		28	42							
		e(ScS)	E		31	18							
	TO	P	Y	20	21	39½							
		eS	Y		27	41							
		eSS	Y		31	08							
		eScS	Y			17							
	TU	P	Z	20	21	43 d							
		e	Z		22	43							
		e(ScP)	Z		27	09							
		e?	Z			47							
		e	Z			50							
		e(S)	Z			58							
	WN	iP	ZNE	20	21	45							
		e(PcS)	NE		27	50							
		e(ScS)	E		31	24							
	RX	P	Z	20	21	49 d	15	3					7.1
		e	ZN		22	30							
		e	Z		27	12							
		e(S)	NE			58			30	20	35	22	6.9
		e	Z		28	04							
		e(sS)	NE		29	.0			55	18	70	22	
		eScS	E		31	25							
		e(sScS)	E		32	.2							
	GP	iP	N	20	21	51							6.9
		e(pP)	N		22	33							
		e	N		23	00							
		e	N		28	00							
		eScS	N		31	31							
	Origin:			20	14	08.7	7.5S	146.2E	171km		USCGS		7.1
	27 KP	eP	Z	04	37	33							
		ePP	Z		39	18							
	TU	e(P)	Z	04	37	49							
	WN	e(P)	Z	04	37	53							
		ePP	Z		39	.5							
		e	ZE		44	11					14	26	
		eL	ZE		47								
		M	E		49								
		M	Z		53								
	RX	e(P)	N	04	38	08				5	18		6.2
		e	Z			18							
		eS	NE		44	22				25	18	35 18	6.9
		L	NE		47	46							
		eL	ZNE		51								
		M	N		54					45	19		6.4
	Origin:			04	30	00.8	6.0S	149.4E	52km		USCGS		5.2
	27 KP	eP	Z	05	12	01							
	TU	e(P)	Z	05	12	05							
	WN	eP?	Z	05	12	31							
	Origin:			05	07	11.5	14.5S	173.1W	131km		USCGS		4.4

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
FEB 27	KP	eP	Z	05	31	30							
	Origin:			05	24	02.1	6.3S		149.2E		59km	USCGS	4.5
27	KP	iP	Z	07	39	33½d							
		e	Z		40	25							
	TU	e(P)	Z	07	39	37							
	CT	eP	Z	07	39	43							
		e	Z			48							
		e	Z			58							
	RX	e?	Z	07	40	37							
	Origin:			07	34	23.8	16.2S		173.3W		33km	USCGS	5.4
27	KP	P	Z	20	35	54							
		e	Z		36	07							
	CT	eP	Z	20	36	02							
	TU	e(P)	Z	20	36	05							
	WN	eL	Z	20	48								
		M	Z		50								
	RX	eL	NE	20	49								
		M	E		52						2 20		
	Origin:			20	28	37.9	4.6S		132.9E		100km	USCGS	5.0
27	KP	eP?	Z	23	17	59							
	Origin:			23	10	38.2	6.2S		149.2E		59km	USCGS	4.5
27	KP	eP	Z	23	52	18							
MAR 1	CT	eP	Z	04	43	43							
	WN	P	Z	04	44	02½							
	Origin:			04	39	34.3	18.2S		177.9W		568km	USCGS	
1	WN	eL	Z	11	27.2		2 20						
	Origin:			10	45	55.5	41.1N		143.0E		43km	USCGS	5.1
2	KP	eP	Z	00	28	32							
	CT	eP	Z	00	28	40							
	Origin:			00	20	32.3	5.1S		144.3E		69km	USCGS	5.0
2	KP	P	Z	05	47	26							
	CT	eP	Z	05	47	33							
	Origin:			05	39	07.4	1.8S		143.6E		129km	USCGS	5.3
2	WN	e	Z	05	48	52	1 8						
		eL	Z		50	24	1 20						
2	KP	eP	Z	08	50	01							
	Origin:			08	44	59.2	15.4S		172.9W		65km	USCGS	4.5
2	WN	eL	Z	10	07		1 32						
	Origin:			09	25	55.0	46.1N		153.1E		33km	USCGS	5.2
2	WN	eL	Z	16	49½		1 28						
	Origin:			16	05	00	48.1N		152.9E		140km	USCGS	4.5
3	ON	P	E	16	41	10							4.9
		e	E		42	33							
	KP	P	Z	16	41	21.0							
		e	Z		42	35							
	TU	P	Z	16	41	21.0							
		eS	Z		42	54							
	CT	eP	Z	16	41	32							
		e	Z		43	10							
		e	Z			16							
	TA	eP	Z	16	41	39							
	WN	P	Z	16	41	50							5.5

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
		S	ZNE		43	54							
MAR		S	Y	16	43	10							
	TO	e	Y			19							
		e	E	16	44	08							5.5
	CB	eS	X	16	44	43							5.4
	KM	eS	N	16	44	53							
	GP	S		16	39	21							
	Origin:						31.5S		178.3W		350km	NZ(D)	5.5
							Additional readings from Uppsala and Umea used to determine epicentre.						
4	KP	P	Z	13	50	51							
	CT	P	Z	13	50	55½							
	WN	S	ZNE	14	01	05							
		PS	Z		02	28	2 40						
		eSS	ZNE		06	23							
		Lq	NE		13.2				5 32		2 28		
		Lr	Z		17	40	4 48						
	Origin:			13	38	41.0	24.2N		121.7E		33km	USCGS	4.8
4	KP	eP	Z	05	13	22							
	CT	P	Z	05	13	37							
	Origin:			05	08	30	16.1S		178.5E		33km	USCGS	4.8
4	WN	eLr	Z	08	46.3		1 47						
	Origin:			07	41	51.0	82.9N		7.7W		33km	USCGS	5.0
4	WN	ePS	ZE	16	09	21	2 28					2 32	
		Lq	N		23.8				3 40				
		Lr	ZE		28.2		8 28					5 28	
	Origin:			15	43	04.0	4.5S		81.6W		33km	USCGS	5.4
4	KP	P	Z	19	08	25							
	CT	eP	Z	19	08	40							
	WN	eLq	NE	19	13.2								
		eLr	Z		14.8		2 32						
	Origin:			19	04	02.9	19.3S		169.5E		43km	USCGS	4.9
5	WN	eL	Z	02	18	28	1 30						
5	WN	ePS	Z	07	31	24	1 24						
		eLr	ZE		50		3 28					2 28	
	Origin:			07	05	01.7	4.5S		81.5W		31km	USCGS	5.6
5	TU	P	Z	16	39	53							
		S	Z		40	26							
	KP	P	Z	16	39	54							
		e	Z		40	33							
	CT	P	Z	16	40	04							
		eS	Z			49							
	TA	eP	Z	16	40	12							
	WN	P	Z	16	40	26¾							5.0
		S	Z		41	28							
	TO	e	Y	16	40	49							
	GP	eS	N	16	42	30							5.1
	Origin:			16	39	07	36.5S		178.2E		235km	NZ(C)	5.0
5	CT	eP	Z	19	13	28							
	Origin:			19	05	39.1	6.4S		149.0E		60km	USCGS	
6	ON	P	E	03	54	15							4.7
	TU	eP	Z	03	54	20							
		i	Z			22							
		S	Z		55	28							
	KP	P	Z	03	54	21½							
	CT	P	Z	03	54	33½							

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
MAR		eS	Z	55 53				
	WN	P	Z	03 54 57				
		S	Z	56 34				5.6
	GP	eP	N	03 55 33				
		eS	N	57 40				5.6
	TO	eS	Y	03 55 54				
	CB	eS	E	03 56 52				4.6
	Origin:			03 52 52	33.4S 179.4W	160km	NZ(C)	5.2
					Additional readings from Umea determine epicentre.			5.3 umed.
6	KP	P	Z	17 58 53.1				
	CT	P	Z	17 59 05.0				
	Origin:			17 53 26	11.4S 166.5E	195km	USCGS	4.6
6	CT	eP	Z	19 56 53				
	WN	eLr	Z	20 07	1 33			
	Origin:			19 50 07.5	9.8S 152.2E	60km	USCGS	5.1
7	CT	P	Z	03 46 09.9				
	Origin:			03 40 46.6	15.1S 168.2E	33km	USCGS	4.6
7	WN	eL	Z	12 08.9	2 15			
7	CT	eP	Z	05 32 02				
	KP	P	Z	05 32 04				
	WN	P	Z	05 32 04	6 7			6.8
		PP	Z	34 15	3 6			
		S	ZNE	40 16	8 18	7 15	30 27	6.9
		eSS	ZNE	44 17	6 19	6 16	4 17	
		Lr	ZNE	49.2	75 30	22 22	51 32	
	RX	e(P)	Z	05 32 30	1 5			6.9
		S	NE	41 01		1 20	21 20	6.5
		Lr	ZNE	51.0	21 20	32 24	22 22	6.5
	Origin:			05 22 01.1	27.0S 113.5W	33km	USCGS	5.6
7	WN	P	Z	12 27 59	3 12			6.0
		S	ZE	37 37	2 32		3 24	
		SS	Z	41 44	2 36			
		L	ZN	50.1	4 21		3 22	
		M	Z	51.2	8 24			
	CT	eP	Z	12 28 06				
	KP	P	Z	12 28 13½				
	RX	eS	NE	12 37 38		3 30	4 28	6.2
		eSS	E	42 20			3 16	
		eL	ZNE	52		3 18	3 18	6.0
	Origin:			12 16 28.5	44.3S 75.3W	45km	USCGS	5.8
8	KP	eP	Z	02 48 55				
	CT	eP	Z	02 49 11¾				
	RX	eP	Z	02 50 05				
		eS	N	54 58	4 13			
		eLq	E	56.8			6 20	5.7
		eLr	N	58.5		8 20		
	Origin:			02 44 31.5	19.2S 169.7E	33km	USCGS	5.3
8	KP	eP	Z	03 29 21				
	CT	P	Z	03 29 37½				
	RX	eP	Z	03 30 28				
		eLq	E	37½			8 20	
		eLr	N	39		11 20		5.7
	Origin:			03 24 57.2	19.2S 169.6E	49km	USCGS	4.8
8	KP	P	Z	03 37 32				
	CT	P	Z	03 37 40				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
				03 45			13 20	
MAR	WN	eL	Z	03 45.8				
	RX	eLq	E	47½	15 20	12 18		
		Lr	ZN	03 33 03.4	19.3S 169.6E	33km	USCGS	
	Origin:							
8	KP	P	Z	14 03 38				
	Origin:			13 59 40.1	21.8S 176.5W	137km	USCGS	4.6
8	KP	eP	Z	16 08 51				
	CT	eP	Z	16 09 08				
	Origin:			16 04 54.0	21.3S 170.2E	108km	USCGS	
8	WN	eL	Z	18 34	2 28			
9	WN	eL	Z	03 14	2 16			
	Origin:			02 17 39.5	21.9N 62.0E	33km	USCGS	5.1
9	KP	P	Z	13 10 41				
	CT	eP	Z	13 10 56				
	Origin:			13 06 15.1	19.1S 169.4E	33km	USCGS	4.9
9	KP	eP	Z	16 31 44				
	CT	eP	Z	16 31 52				
	WN	eL	ZNE	16 45½	2 34			
	Origin:			16 23 44.3	3.2S 147.0E	33km	USCGS	4.8
9	CT	eP	Z	19 03 38				
	WN	e(S)	Z	19 11 30				
		eL	ZN	17	1 20	3 20		
	Origin:			18 55 49.0	3.2S 147.1E	33km	USCGS	4.9
9	KP	P	Z	22 47 20.0				
	CT	eP	Z	22 47 30				
	WN	P	ZNE	22 47 50				
		eS	NE	51 04				
	Origin:			22 43 50.5	21.5S 179.0W	529km	USCGS	4.4
10	KP	P	Z	01 24 39.1				
	CT	iP	Z	01 24 50.8 d				
	Origin:			01 19 38.1	15.2S 167.2E	142km	USCGS	4.9
10	KP	eP	Z	03 05 42				
	CT	P	Z	03 05 46				
	WN	e(S)	Z	03 17 48	1 30			
		eLq	E	28.3			2 32	
		eLr	Z	32.3	3 42			
	Origin:			02 53 33.0	24.7N 122.1E	33km	USCGS	4.9
10	KP	P	Z	09 43 49.8				
	CT	eP	Z	09 44 02				
	Origin:			09 39 09.6	16.0S 168.4E	283km	USCGS	4.5
10	WN	eP?	Z	11 04 25				
		e	Z	40	2 8			
		eSKS	ZNE	14 52	2 12			
		Lq	N	27.6		1 27		
		Lr	ZE	31.3	4 32		4 35	
	CT	P	Z	11 04 29				
	KP	P	Z	11 04 32.0				
	RX	eL	NE	11 32		2 20	3 20	6.0
	Origin:			10 51 48.1	29.9S 71.2W	70km	USCGS	5.5
10	WN	eLr	Z	14 21.3	1 32			
	Origin:			13 51 04.3	2.4N 126.6E	41km	USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
MAR 11	KP	PKP	Z	07	46	49.0							
	RX	ePKP	Z	07	47	10	5	1					
		Origin:		07	27	22.0	38.1N		29.3E	33km	USCGS		5.5
	11 KP	P	Z	09	06	27							
	CT	eP	Z	09	06	35							
		Origin:		09	02	19.8	18.7S		177.6W	402km	USCGS		4.8
	11 KP	P	Z	21	11	16							
		Origin:		21	05	49.1	13.7S		165.8E	33km	USCGS		4.7
	12 KP	P	Z	13	26	56							
	WN	eLr	Z	13	44	2	2	32					
		Origin:		13	21	39.2	16.0S		172.6W	33km	USCGS		5.0
	12 KP	P	Z	20	20	02							
	WN	eL	Z	20	27	7	4	20					
	RX	eL	NE	20	28								
		Origin:		20	14	59.8	16.2S		167.7E	33km	USCGS		4.9
	14 KP	iP	Z	08	12	05.6	d						
	CT	eiP	Z	08	12	09.7							
	RX	P	Z	08	12	12	1	1					
	WN	eL	Z	08	38	3	3	37					
		Origin:		08	00	15.6	19.0N		120.4E	51km	USCGS		5.0
	14 KP	eP	Z	23	23	26							
		Origin:		23	15	23.2	5.9S		144.6E	33km	USCGS		4.3
	15 KP	P	Z	00	26	30.0							
		i	Z			42							
	CT	P	Z	00	26	37.0							
	RX	eP	Z	00	26	35	5	1					
		eL	E			49					2	30	
	WN	eLr	Z	00	48	5	6	28					
		Origin:		00	16	01.3	8.4N		126.4E	117km	USCGS		5.0
	15 KP	eP	Z	03	37	46							
	CT	eP	Z	03	37	57							
		eS	Z		40	37							
		Origin:		03	34	55	24.9S		180.0	573km	USCGS		4.2
	15 KP	P	Z	04	05	53							
		i	Z			55							
	CT	P	Z	04	06	04.9							
		eS	Z		08	45							
		Origin:		04	03	05	25.0S		179.6E	563km	USCGS		
	15 KP	P	Z	11	05	45.5							
	CT	P	Z	11	05	48.7							
		Origin:		10	53	59.8	17.5N		119.8E	33km	USCGS		4.4
	16 KP	P	Z	08	57	29.2							
		i	Z			35.5							
	CT	P	Z	08	57	34.8							
		i	Z			40							
		e	Z			45							
		ePP	Z	09	01	08							
		ePKKP	Z		15	03							
		P'P'	Z		23	41							
	WN	iP	Z	08	57	42.5	u	23	24				
		ePP	Z	09	01	21		15	25				
		eSKS	Z		07	25		6	17				
		S	ZE		08	16		9	16		18	24	
		PS	E		10	00					24	23	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
		SS	ZE		14	17	67	55			20	36	
MAR		Lq	ZE		22	13	43	32					
		Lr	Z		26	2							
	RX	eP	ZN	08	58	04	10	7	6	19			
		e	Z			07							
		ePP	ZN	09	01	40	7	4	8	18			
		eS	ZNE		08	30			15	14	8	14	7.1
		ePS	N		09	20			50	23			
		SS	NE		15	24			25	28	47	25	
		SSS	N		19	16			27	25			
		eL	NE		24	5			34	42	19	22	
		M	ZNE		40		30	20	53	19	45	24	6.9
		Origin:		08	44	48.3	46.5N		154.7E	26km	USCGS		6.2
	16 KP	eP	Z	21	44	30							
	WN	eL	Z	21	55								
	RX	eL	NE	21	55								
		Origin:		21	40	09.0	20.7S		174.1W	33km	USCGS		5.0
	17 WN	eL	Z	11	06	40	1	23					
	17 WN	L	Z	13	19	08	1	17					
	18 TU	eS	Z	04	05	55							
	WN	eS	NE	04	07	04							
		eL	Z		09	1	1	21					
	RX	eL	E	04	11	5					2	22	
		Origin:		04	00	41	26.6S		176.7W	33km	USCGS		4.7
	18 TU	eS	Z	04	31	27							
	WN	eS	NE	04	32	40							
		eL	Z		34	7	2	20					
	RX	eL	E	04	37						2	20	
		Origin:		04	25	41.4	33.2S		179.0E	33km	USCGS		
	18 KP	P	Z	13	20	17							
		Origin:		13	16	23.5	15.7S		178.4W	561km	USCGS		
	19 KP	P	Z	05	50	32							
	CT	P	Z	05	50	45.5							
	WN	eL	Z	05	56	1	3	18					
		Origin:		05	46	50.1	22.8S		170.5E	67km	USCGS		4.6
	19 KP	eP	Z	13	17	04							
		e				22							
	19 WN	eL	Z	13	22	5	3	26					
		M	ZNE		25		4	16	4	16			
		Origin:		13	13	22.5	22.6S		170.6E	49km	USCGS		4.5
	19 KP	eP	Z	14	45	47							
	CT	eP	Z	14	46	02							
	WN	eP	Z	14	46	23	2	12					5.2
		eS	NE		50	04			3	8			
		Lr	Z		51	1	3	28					
		M	ZNE		54		6	16	4	16	2	16	
		Origin:		14	42	01.2	22.6S		170.8E	33km	USCGS		4.8
	20 TU	eP	Z	04	46	25.5							
	ON	P	E	04	46	38.0							
		S	E		49	13							
	KP	P	Z	04	46	51.8							
		i	Z		48	31.0							
	CT	P	Z	04	47	00.5							
	TA	eP	Z	04	47	06.7							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
MAR	WN	P	ZNE	04	47	18.8							
		eS	ZNE		50	35							
		ScS	NE		57	10							
	CB	eP	E	04	47	24.0							
		eS	E		50	43							
	RX	P	Z	04	48	37.2							
	KM	eP	X	04	47	39.5							
		S	X		50	10							
	GP	eP	N	04	47	45							
		S	N		51	22							
	Origin:			04	43	13.5	19.9S	179.1W	680km		USCGS		5.2
20	KP	iP	Z	04	49	26.8							
		eS	Z		52	15							
	CB	eP	E	04	49	28							
		eS	E		53	20							
	TU	P	Z	04	49	29.0							
	TA	eP	Z	04	49	40.0							
	WN	P	ZNE	04	49	54.0							
		S	ZNE		53	09							
		ScS	NE		59	50.2							
	RX	P	Z	04	50	40.9							
	KM	eS	X	04	53	43							
	GP	S	N	04	53	55							
	Origin:			04	45	49.5	19.6S	179.3W	680km		USCGS		
20	KP	eP	Z	10	50	08							
	Origin:			10	44	41.3	15.8S	171.7W	33km		USCGS		4.6
20	KP	P	Z	16	47	40							
		e	Z			59							
	CT	P	Z	16	47	47.0							
	RX	eL	NE	17	01								
	Origin:			16	38	55.8	2.4S	138.4E	40km		USCGS		
21	KP	eP	Z	01	17	18							
	Origin:			01	12	54.8	19.3S	175.8W	130km		USCGS		4.6
21	TU	P	Z	14	03	19							
		e	Z		04	18							
	KP	P	Z	14	03	24							
		e	Z		04	27							
	ON	eP	E	14	03	29							
		e	E		04	24							
	CT	P	Z	14	03	35							
		e	Z		04	51							
	TO	eP	Y	14	03	37							
		S	Y		14	44							
	WN	e?	Z	14	03	45							
		S	NE		05	28							5.5
		eL	Z		06		2 13						
	TA	eP	Z	14	03	48							
	CB	eS	E	14	05	49							5.1
	GP	eS	N	14	06+								5.6
	KM	eS	X	14	06	30							5.4
	Origin:			14	02	02	35.2S	178.4W	N	NZ(D)			5.4
							Additional readings from Umea used to determine epicentre.						
22	CT	eP	Z	12	32	42							
	WN	Lq	NE	12	46.6				6 32		4 36		
		Lr	Z		48.2		4 28						
	RX	eL	N	12	47								
		eL	E		49						5 22		

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
		P	Z	01	13	30.2							
MAR 23	KP	eS	Z		15	50							
		P	Z	01	13	42							
	CT	S	Z		16	08							
		S	Z	01	16	48							
	WN	S		01	10	46.2	25.3S	179.2E	560km		USCGS		4.9
	Origin:												
		P	Z	08	59	39							
23	KP	eP	Z	08	59	46.5							
	CT	eP	Z	08	51	44.2	4.9S	145.7E	51km		USCGS		4.6
	Origin:												
		P	E	11	21	37							4.5
23	ON	eP	Z	11	21	39							
	TU	eP	Z		22	47							
		eS	Z	11	21	40							
	KP	P	Z		23	05							
		e	Z	11	21	51½							
	CT	eP	Z		23	25							
		e	Y	11	23	37							
	TO	e(S)	Y			43							
		e(S)	ZNE	11	23	56							5.3
	WN	eS	N	11	25								5.3
	GP	eS		11	20	11	33.9S	178.9W	N	NZ(C)			5.2
	Origin:						Additional readings from Umea, Uppsala, South Pole and Charters Towers used to determine epicentre.						
23	WN	eL	Z	23	45.9								
	RX	eL	NE	23	43								
24	RX	P	ZE	02	16	42	3	7					
		PP	Z		18	44	3	6					
		S	NE		24	21			4	12	2	10	
		i	N		29	22			10	20			
		eLq	NE	02	32				25	38	17	40	
		eLr	Z		35		18	30					
		M	ZNE		39		20	20	15	16	26	20	6.4
	WN	P	Z	02	16	56 u	4	18					6.1
		PP	Z		19	07	4	20					
		S	ZNE		24	47	4	13	2	25	3	11	5.8
		i	Z		30	07	5	18					
		SSS	ZNE		31	10	3	18	34	14	7	21	
		Lr	ZE		35.0		13	35			11	19	
		M	Z		37		43	30					
	KP	P	Z	02	16	56.2							
	CT	P	Z	02	16	58.2							
		e	Z		17	09							
	Origin:			02	07	12.8	9.7S	120.4E	33km		USCGS		5.4
24	KP	eP	Z	08	23	11							
	CT	eP	Z	08	23	21							
	WN	eL	Z	08	28.7		4	24					
	Origin:			08	19	24.4	22.6S	170.8E	33km		USCGS		
24	KP	eP	Z	09	39	49							
	CT	eP	Z	09	40	00							
	WN	eL	ZE	09	50.5		2	36					
	RX	eL	N	09	51								
	Origin:			09	31	50.4	3.2S	146.8E	33km		USCGS		5.0
24	KP	P	Z	09	54	03.0							
		i	Z			15							
	CT	eP	Z	09	54	07							
		i	Z			20							
	RX	eP?	Z	09	54	11							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
MAR		e	Z			23							
	WN	eP	Z	09	54	25							
		eLr	Z	10	15	.2							
		M	Z			19							
	Origin:			09	43	20.2	2	26					
							9.0N	125.6E	51km	USCGS			5.2
24	KP	ePKP	Z	13	03	39							
		eSKP	Z		06	58							
	WN	eSKP	Z	13	06	58	1	14					
		eLr	Z		44		1	36					
		M	Z		55		2	32					
	Origin:			12	44	03.2	34.4N	47.9E	33km	USCGS			5.2
24	KP	P	Z	18	25	41							
	CT	eP	Z	18	25	50							
	Origin:			18	20	53.2	14.9S	176.0W	320km	USCGS			4.4
24	KP	eP	Z	20	35	48							
	Origin:			20	20	42.7	13.6S	172.8W	74km	USCGS			4.0
24	KP	iP	Z	21	48	15.1							
		e	Z			30							
	CT	P	Z	21	48	19.8							
	WN	ePS	Z	22	01	43	1	32					
		eLr	Z			18.5	1	36					
		M	Z			22	2	22					
	RX	eL	NE	22	22								
	Origin:			21	35	24.4	51.8N	178.1W	57km	USCGS			5.5
25	TU	P*	Z	14	22	49.1							
		S*	Z		23	04							
	KP	iP*	Z	14	22	57.2							
		eS*	Z		23	16							
	TO	eP*	Y	14	23	04½							4.3
		S*	Y			32							
	ON	(P)	E	14	23	20							
		P*	E			24							
		eS	E			00½							4.0
	WN	Pn	ZNE	14	23	29.6							
		iP*	ZNE			40½							5.3
		Sn	ZNE		24	14							
		eS*	ZNE			34½							
	CB	eP	E	14	23	45							
		S	E		24	38							
	GP	eP	N	14	24	07							5.3
		S	N		25	19							
	KM	e(P)	X	14	24	14							
		S	X		25	17							5.1
	RX	eP	Z	14	24	45							
		eS	Z		26	25							
	Origin:			14	22	29	37.8S	177.4E	S	NZ(B)			5.1
25	KP	eP	Z	13	03	43							
		e	Z			53							
	WN	eL	Z	13	21	.5	1	21					
	Origin:			15	53	05	10.6S	120.4E	33km	USCGS			5.6
25	RX	P	ZNE	20	21	12	8	7	4	8	5	6	6.2
		eS	NE		24	32			7	14	35	10	6.3
		Lq	NE		25	.3			2	15	2	15	
		eLr	Z		25	.8	18	16					
	WN	P	ZNE	20	22	09	7	7	4	6	3	6	6.2
		i	Z		24	06	3	11					
		eS	ZE		26	40	8	14			11	18	
		Lr	Z		28	04	23	24					

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
	CT	eP	Z	20	22	33							
MAR		e	Z			52							
	KP	eP	Z	20	22	39							
	Origin:			20	17	03.8	56.3S	149.9E	39km	USCGS			5.0
				22	58	30							
25	WN	P	Z	23	25	.5	1	28					
		eLr	Z		34		2	20					
		M	Z	22	58	34.0							
	KP	P	Z		45								
		i	Z	22	58	34.8							
	CT	iP	Z		46								
		i	Z	22	46	16.2	0.7N	96.5E	30km	USCGS			5.6
	Origin:												
				08	29	10							
26	KP	eP	Z	08	29	19							
	CT	eP	Z	08	23	51.9	15.0S	173.3W	33km	USCGS			4.6
	Origin:												
				08	58	07.1							
26	KP	P	Z	08	58	15.7							
	CT	iP	Z	08	50	45.4	4.2S	152.6E	120km	USCGS			5.1
	Origin:												
				09	50	33.5							
26	ON	eP	E	09	50	37							
	KP	eP	Z			40.5							
		i	Z			53							
		i	Z	09	50	51							
	CT	eP	Z			56							
		i			51	03							
		i		09	51	14	97	34					7.2
	WN	P	ZE			19							
		e	Z			30							
		e	ZNE		53	35							
		S	ZNE	10	00	37							
		ScP	ZNE		04	04							
		ScS	NE	09	52	28	23	20	69	22	40	24	6.8
	RX	eP	ZNE			30							
		e	Z			33.5							
		e	Z			36							
		e	Z			40							
		e	Z		55	49							
		eS	Z		56	30			190	21	360	27	
		Lq	NE		58	.0	580	30					
		eLr	Z	10	01		450	19	400	21	335	20	
		M	ZNE	10	01	46							
		eScP	Z	09	48	19.7	29.7S	177.8W	45km	USCGS			PAS 6¾-7
	Origin:						Felt: Raoul Is. MM7						
				11	48	18							
26	ON	eP	E	11	48	20							
	KP	eP	Z			30							
		e	Z	11	48	47							
	CT	eP?	Z			55							
		e	Z		50	48							
		eS	Z	11	51	16							
	WN	S	ZNE	11	50	15							
	RX	eP	Z	11	46	02.5	30.1S	177.4W	50km	USCGS			
	Origin:						Felt: Raoul Is. MM3						
				12	53	51							
26	ON	eP	E	12	53	55							
	KP	eP?	Z		54	02							
		e	Z			14							
		e	Z	12	54	06							
	CT	eP	Z			18							
		e	Z										

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
MAR		e	Z			29				
		eS	Z		56	14				
	RX	eP	Z	12	55	50				
	WN	S	ZNE	12	56	47				
	Origin:			12	51	39.7	29.9S 177.6W	60km	USCGS	4.9
							Felt: Raoul Is. MM1			
26	ON	P	E	13	27	15				
		e	E			30				
	KP	eP	Z	13	27	19				
		i	Z			21				
		i	Z			35				
	CT	eP	Z	13	27	32				
		i	Z			40				
		e	Z			57				
	WN	eP	ZNE	13	28	03				
		e	ZNE			11				
		S	ZNE		30	16				
		L	E			40				
	RX	P	ZNE	13	29	11				
		i	Z			16				6.1
		eS	Z	13	32	26				
		eLq	NE			33.3		51 36	70 40	
		eLr	Z			34.7	78 34			
		M	ZNE			36	94 19	125 23	85 21	6.1
	Origin:			13	25	02.6	29.8S 177.9W	42km	USCGS	5.3
							Felt: Raoul Is. MM5			
26	KP	P	Z	14	38	59.5				
	CT	eP	Z	14	39	16				
		e	Z			24				
	Origin:			14	34	16.5	18.0S 168.0E	32km	USCGS	4.9
26	KP	P	Z	19	01	12.5				
	CT	eP	Z	19	01	28				
		e	Z			39				
26	KP	eP	Z	20	00	14				
		epP	Z			42				
	Origin:			19	47	46.0	44.4N 146.7E	110km	USCGS	5.6
26	CT	eP	Z	21	47	00				
		i	Z			05				
		PP	Z		50	23				
	KP	(P)	Z	21	47	00.5				
	WN	P	Z	21	47	12	3 6			6.7
		S	Z		57	36	2 24			
		eL	Z	22	10					
		M	Z			17	14 26			
	Origin:			21	34	41.1	36.0N 135.7E	33km	USCGS	5.9
27	ON	P	E	08	43	21½				5.0
	TU	eP	Z	08	43	23				
		e	Z		44	09				
		e	Z			19				
	KP	P	Z	08	43	25				
		e	Z			32				
		e	Z			44				
	TO	eP	Y	08	43	40				5.1
		e	Y		45	26				
	WN	S	ZNE	08	45	43				5.5
	GP	eS	N	08	46	48				5.5
	Origin:			08	41	46	33½S 178½W	N	NZ(D)	5.4

Additional readings from South Pole, Charters Towers, Umea, Skalstugan and Uppsala used to determine epicentre.

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
		eP	E	21	41	43				
MAR 27	ON	e	E			50				
		e	Z	21	41	51				
	KP	eP	ZNE	21	44	37				
	WN	eS	Z		46.4		1 20			
		eL					Felt: Raoul Is. MM1			
		PKP	Z	00	35	41				
28	KP	SKP	Z		39	10				
		PKP	Z	00	35	46	2 4			
	WN	PP	Z		39	35	2 12			
		SKKS	Z		50	00	3 22			
		(PPS)	Z		52	48	3 19			
		eSS	ZE		58	56			2 16	
		(PSPS)	ZE	01	00		11 38			
		Lr	Z		28.3		25 54			
		M	ZNE		35		37 27	21 26	18 25	6.8
	RX	eSKKS	N	00	50	22		3 20		
		e	N		53	44		2 14		
		e	E	01	00	04			5 18	
		e	N	01	01	03		5 18		
		eLq	E		23				14 32	
		eL	Z		35		11 23			
	Origin:			00	15	47.5	66.3N 19.6W	15km	USCGS	PAS 7-7½
28	KP	eP	Z	06	56	18				
		e	Z			41				
	WN	eL	Z	06	59.2		1 28			
28	ON	P	E	11	14	41				
	KP	eP	Z	11	14	45				
		i	Z			59				
	CT	P	Z	11	14	59				
		i	Z		15	20				
		S	Z		16	58				
	WN	eP	Z	11	15	26				5.4
		e	Z			34				
		S	ZNE		17	37				
		eLq	NE		18	20		3 32	5 26	
		eLr	Z			54	5 32			
		M	ZNE		20		9 21	4 32	6 22	
	RX	P	Z	11	16	40				
		eS	Z		19	50				
		eL	NE		21.5			4 28	4 25	
		eL	Z		23					
	Origin:			11	12	31.3	30.2S 177.8W	38km	USCGS	
							Felt: Raoul Is. MM3			
28	WN	eL	Z	14	53.6		1 24			
28	KP	iP	Z	16	22	19.8				
	CT	P	Z	16	22	27				
	WN	P	ZNE	16	22	48				
	Origin:			16	18	40.7	19.0S 178.7W	568km	USCGS	4.6
28	WN	eL	Z	21	02.5		2 20			
28	WN	eP?	Z	23	31	16				
		i	Z			30.5				
		S	ZNE		34	34				
		L	ZNE		35.5		4 32	12 30	15 25	
		M	ZNE		39		21 20	22 24		
	ON	eP	E	23	31	31				
		i	E			33				
		e	E			44				

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
MAR	TU	eP	Z	23	31	31							
		eS	Z		33	24							
	KP	P	Z	23	31	34.5							
		e	Z			48							
	CT	eP	Z	23	31	54							
		e	Z		32	08							
	Origin:			23	29	14.6	29.6S	177.5W	54km	USCGS			5.1
							Felt: Raoul Is. MM4						
29	ON	eP	Z	05	42	39							
	TU	eP	Z	05	42	39							
		eS	Z		43	56							
	KP	P	Z	05	42	44							
		e	Z			55							
	CT	eP	Z	05	42	59							
	WN	S	ZNE	05	45	03.5							
29	KP	eP	Z	06	11	33							
	CT	eP	Z	06	11	43							
	WN	eL	Z	06	21								
	Origin:			06	05	19.9	10.3S	160.7E	32km	USCGS			5.0
29	WN	eL	Z	14	32	8							
29	WN	eL	Z	18	43	2	1	26					
29	ON	eP	E	21	18	53							
		i	E			55							
	TU	eP	Z	21	18	56							
		eS	Z		20	44							
	KP	eP	Z	21	18	57							
		e	Z		19	08							
	CT	eP	Z	21	19	13							
		e	Z			21							
		eS	Z		21	17							
	WN	eP	Z	21	19	47							
		S	ZNE		21	50							
		eL	Z		23		1	34					
	Origin:			21	16	43.7	30.2S	177.7W	60km	USCGS			5.0
							Felt: Raoul Is. MM3						
29	KP	eP	Z	23	25	29							
	CT	e(P)	Z	23	35	50							
	WN	eL	Z	23	44		1	12					
	Origin:			23	30	43	18.0S	168.5E	35km	USCGS			
30	WN	S	ZNE	00	26	07							
		eL	Z		28	.2							
		M	Z		30		1	18					
30	KP	P	Z	01	57	47.0							
		eS	Z	02	01	27							
		ScP	Z		05	22							
	CT	P	Z	01	57	59							
	WN	iP	ZNE	01	58	18 us	20	6	13	5	5	4	6.8
		S	ZNE	02	02	12	15	12	24	4	22	24	
		PcS	ZNE		05	42							
		ScS	NE		09	10							
	RX	P	Z	01	58	50.5							
		iS	NE	02	03	12 ne			10	17	19	15	6.4
	Origin:			01	53	28.8	19.1S	169.1E	160km	USCGS			6.1
30	WN	eL	Z	11	28	24	1	20					
30	TU	eP	Z	11	39	44							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
		eS	Z		41	34							
MAR	KP	e(P)	Z	11	39	55							
	WN	S	ZNE	11	42	42							
		L	ZNE		44.4		2	20					
		M	ZE		46.5		4	14			3	18	
			NE	11	47						21	22	
	RX	eL		11	37	27.7	30.1S	176.9W	33km	USCGS			
	Origin:						Felt: Raoul Is. MM3						
30	KP	eP	Z	17	04	33							
	WN	eP	Z	17	04	48							
		i	Z		06	30							
		eSKS	ZNE		15.5								
		Lr	ZNE		33								
		M	ZNE		37		5	24	3	22	2	20	6.0
	RX	eSKS	NE	17	16	00					15	12	
		eL	NE		26				2	24	2	20	6.0
	Origin:			16	51	56.6	44.2N	148.0E	33km	USCGS			6.3
30	WN	eL	ZE	21	47		1	30			1	25	
31	WN	S	ZNE	04	09	42							
		eL	Z		12	42	1	18					
31	WN	eSKS	E	05	09	.9							
		ePS	ZE		12	20	1	18					
		eLr	ZE		30	.5	2	28			2	28	
	Origin:			04	46	00.8	6.5S	81.1W	33km	USCGS			5.2
31	ON	P	E	05	33	05							
	TU	eP	Z	05	33	05							
		e	Z			15.5							
		e	Z			24							
		S	Z		34	56							
	KP	P	Z	05	33	07							
		i	Z			21							
	WN	eP	ZNE	05	33	50.5	8	36					6.2
		S	ZNE		36	02							
		L	ZNE		37	.0	75	22	64	38	80	36	
	RX	P	ZNE	05	34	59	19	1	6	22	3	22	
		eL	NE		39	.3			29	35	42	24	
		M	NE		42				47	21	39	19	
	Origin:			05	30	49.3	29.9S	177.7W	48km	USCGS			5.7
							Felt: Raoul Is. MM5						
31	KP	P	Z	07	15	06							
		PcP	Z		17	12							
	WN	P	ZNE	07	15	22	3	20					6.8
		PP	Z		17	10	2	20					
		S	ZNE		21	36	4	16	6	16	6	20	6.2
		L	ZNE		24	.9	6	36	36	26	24	38	
		M	Z		29		25	24					
	RX	S	NE	07	21	54			7	18	6	18	6.2
		eSS	NE		25	.5			3	12	6	20	
		eL	NE		28	½			8	23	6	21	
	Origin:			07	07	36.3	6.1S	149.0E	60km	USCGS			5.7
31	ON	eP	E	08	14	57							
	TU	e(P)	Z	08	15	01							
		eS	Z	08	16	47							
	KP	e(P)	Z	08	15	04							
	WN	eS	ZNE	08	18	03							
		eL	Z		20								
		M	Z		22		5	20					

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
MAR	RX	eL	NE	08	22					3 15		3 22	
		Origin:		08	12	40.5	29.7S	176.9W	60km		USCGS		4.7
							Felt: Raoul Is. MM2						
	31 ON	eP	E	09	09	30.5							
		e	E			33							
	TU	eP	Z	09	09	32							
		e	Z			42							
		S	Z		11	23							
	KP	eP	Z	09	09	33							
		e	Z			47							
	WN	eP	ZNE	09	10	29							
		S	ZNE		12	28							
		eL	Z		14	.7	1 35						
		Origin:		09	07	20.1	30.1S	177.7W	48km		USCGS		5.2
							Felt: Raoul Is. MM4						
	31 WN	e	Z	09	53	.1	1 22						
		eL	ZNE		57	.3	1 21						
	31 WN	S	ZNE	10	50	17							
		eL	E		52	.6							
		L	Z		53	.6	1 18						
	31 WN	eL	Z	18	09		1 31						
		Origin:		17	28	52.7	0.8N	96.6E	33km		USCGS		
	31 KP	eP	Z	19	25	02							
		i	Z			07							
		e	Z			19							
	ON	eP	E	19	25	04							
	TU	e(P)	Z	19	25	07							
		e	Z			10							
		S	Z		26	51							
	WN	eP	ZNE	19	25	51	3 32						5.7
		e	ZN		26	01							
		S	ZNE		27	56							
		eL	ZE		28	.5							
		M	ZE		31		34 22				24 22		
	RX	eP	Z	19	27	02							
		eL	NE		31	.5				11 38		13 30	
		M	NE		34					20 20		10 20	
		Origin:		19	22	53.3	30.0S	178.0W	50km		USCGS		5.8
	31 WN	S	ZNE	19	33	31							
	31 WN	S	ZNE	23	57	30							
		eL	Z	00	00		1 16						
APR	1 WN	eS?	Z	02	34	.7							
		eSS	Z		37	.4	1 30						
		eL	Z		40	.0	2 28						
		Origin:		02	19	56.8	6.0S	149.0E	64km		USCGS		
							Felt: New Britain						
	1 TU	eP	Z	06	31	17							
		e	Z			28							
		eS	Z		32	14							
	KP	eP	Z	06	31	23							
		eS	Z		32	26							
	CT	eP	Z	06	31	35							
		e(S)	Z		32	41							
	TA	e?	Z	06	32	06							
	WN	eS	ZN	06	33	24							
	CB	eS	E	06	33	48							
	KM	eS	X	06	34	27							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
			N	06	34	29							
APR	GP	eS		06	30	03	36S	178W	N	NZ(D)			5.2
		Origin:											
			Z	08	33	09							
	1 KP	eP	ZNE	08	36	07							
	WN	eS	E		37	.2						2 24	
		eLq	Z		37	.9							
		eLr	NE	08	40								
	RX	eL		08	30	34.6	29.2S	176.6W	38km		USCGS		
		Origin:											
			NE	11	22	24							
	1 WN	eS	Z	11	21	26							
	RX	eP		11	17	02.4	28.8S	178.8W	33km		USCGS		
		Origin:											
			ZNE	03	37	50							
	2 WN	eS	NE		38								
		eL	Z		39								
		eL	Z		41		2 18						
		M	Z	03	33	05.9	31.0S	177.6W	33km		USCGS		
		Origin:											
	2 CT	eP?	Z	04	46	07							
		e(S)	Z		48	00							
	WN	eP?	Z	04	46	35							
		eS	ZNE		48	52							
		eL	NE		49	.5							
		eL	Z		50	.6							
		M	NE		52					14 18		11 20	
		M	Z		53		15 20						
	RX	eP	Z	04	47	47							
		eL	NE		53								
		M	E		54							9 20	
		M	N		55					6 18			
		Origin:		04	43	30.9	29.7S	177.1W	51km		USCGS		
	2 KP	eP	Z	05	08	14							
	WN	eS	ZNE	05	16	28							
		Origin:		05	05	06.2	29.7S	177.0W	36km		USCGS		
	2 RX	eP?	Z	05	24	50							
	WN	eS	NE	05	25	31							
		Origin:		05	20	48.1	31.1S	177.5W	33km		USCGS		
	2 WN	eS	ZNE	11	30	36							
		Origin:		11	25	24.8	30.1S	177.1W	48km		USCGS		
	3 KP	eP	Z	11	24	15							
	WN	eP	ZNE	11	25	02							
		eS	ZNE		27	10							
		eL	E		28								
		eL	Z		29								
		eL	N		30								
		M	Z		31		5 21						
	RX	eP	Z	11	26	05							
		eL	E		31								
		eL	N		33								
		Origin:		11	21	49.0	29.6S	177.2W	48km		USCGS		
	3 RX	eP	Z	14	55	29							
		eS	NE	15	01	42							
		e(Lq)	NE		04	.9							
		M	NE		09					14 17		14 17	6.1
	CT	eP	Z	14	55	31							
	KP	eP	Z	14	55	37							
	WN	ePP	ZN	14	56	56	9 7						
		eS	ZNE	15	01	32	2 36						

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
APR 8	KP	eP	Z	20 57 10				
		Origin:		20 50 58.8	10.4S 161.4E	33km	USCGS	
8	KP	eP	Z	22 40 36				
		Origin:		22 37 29.6	24.7S 179.8E	424km	USCGS	
9	KP	eP	Z	02 06 29 d				
		e(sP)	Z	07 52				
		e	Z	09 04				
	WN	eP	Z	02 06 57				
		e?	Z	08 33				
		eS	E	10 40				
	RX	eP	Z	02 07 44				
		Origin:		02 02 25.1	17.7S 178.7W	538km	USCGS	
9	KP	eP	Z	04 37 13				
	WN	eL	Z	04 44				
		Origin:		04 32 26.3	17.8S 168.0E	35km	USCGS	
					Felt: Port Vila			
9	KP	eP	Z	15 01 49				
	WN	eL	Z	15 14				
		M	Z	17	2 20			
		Origin:		14 54 04.5	4.0S 151.0E	33km	USCGS	
9	KP	eP	Z	23 03 29				
	CT	eP	Z	23 03 41				
	WN	eL	Z	23 13				
		M	Z	15 20				
	RX	eP	Z	23 04 25				
		Origin:		22 57 47.9	11.6S 166.1E	64km	USCGS	
10	KP	eP	Z	00 30 19				
	CT	eP	Z	00 30 26				
		Origin:		00 24 57.6	15.2S 173.1W	33km	USCGS	
10	KP	eP	Z	07 59 51				
	WN	eP	Z	07 59 55				
		eS	ZNE	08 07 28		3 30	5 34	5.4
		eSS	ZNE	11 14	1 32		1 24	
		e?	Z	12 00	2 21			
		e	ZN	14 05	6 22			
		eLr	ZNE	15.7				
		M	ZNE	22	11 20	8 19	5 20	6.0
	CT	eP	Z	07 59 58				
	RX	eS	E	08 07.1			3 24	
		eSS	NE	11.0				
		e(Lr)	E	15				
		eLr	ZN	18				
		M	N	20		8 18		
		M	ZE	23	11 18		11 18	6.2
		Origin:		07 50 30.2	9.2S 125.0E	33km	USCGS	
10	TU	e(P)	Z	10 21 55				
		e	Z	23 05				
		e	Z	29				
	KP	eP?	Z	10 21 58				
		e	Z	23 17				
	TA	eP?	Z	10 21 58				
		e	Z	22 14				
		e	Z	23 46				
	CT	eP	Z	10 21 59				
		e	Z	22 20				
		e	Z	23 31				
		e	Z	24 09				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
		e	E	10 23 42				
APR	ON	e(S)	ZNE	10 24 35				
	WN							
	KP	eP	Z	11 47 42				
10	CT	eP	Z	11 47 50				
	KP	eP?	Z	12 31 27				
10		Origin:		12 27 35.8	18.4S 177.7W	558km	USCGS	
	WN	eL	Z	10 07				
11	WN	eL	Z	17 33				
	KP	eP	Z	18 26 33				
11	CT	eP	Z	18 26 42				
		e(S)	Z	28 54				
		eS	Z	29 04				
	WN	eP	Z	18 27 07				
		eS	ZNE	29 38				
	TU	iP•!	Z	08 41 50.8				
	WK	iP•	Z	08 41 54.6 u				
	CT	iP•	Z	08 42(05.4)				
	KP	iP•	Z	08 42 06.0 u				
	TA	eP	Z	08 42 16.5				
		eP•	Z	18.2				
		ePg	Z	20.0				
		eSg	Z	47				
	WN	ePn	Z	08 42 29.0				6.2
		eP•	Z	37.5				
		eSn	NE	43 06				
		eSg	NE	27				
	ON	ePn	E	08 42 32				5.4
		eP•	E	44				
		ePg	E	52.2				
		eS•	E	43 30				
		eSg	E	38				
	CB	ePn	E	08 42 42.0				
	KM	ePn	X	08 43 07				6.4
		eP•	X	25				
		ePg	X	34				
	GP	ePn	N	08 43 10.1				6.3
		eP•	N	15				
		ePg	N	37				
		eS	N	44 11				
	RX	ePn	Z	08 43 49.1				
		eP•	Z	44 15				
		ePg	Z	37				
		eSn	Z	45 26				
		Origin:		08 41 43.6	38.7S 176.62E	12km	NZ(A)	6.0
12	ON	eP	E	20 53 10				
	KP	eP	Z	20 53 22				
	TU	eP	Z	20 53 24				
		e?	Z	54 03				
	CT	eP	Z	20 53 32				
		e?	Z	54 01				
	TA	eP	Z	20 53 38				
	KM	eP	X	20 54 16				
	GP	eP	N	20 54 21				
		e	N	29				
		e	N	49				
12	WN	eL	Z	21 01.4				

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
APR		M	Z		02			2 25					
		Origin:		20	48	16.7	16.7S	173.7W	33km		USCGS		
	13 WN	eP	Z	02	34	36							
		epP?	Z		35	00							
		eSKS	ZE		45	00							
		eSP	Z		47	20							
		eLr	ZE	03	07								
		M	ZE		08			7 40				5 36	
	RX	eSKS	E	02	45	10							
		e(PS)	E		47	56							
		eSS	NE		53	20							
		eL	N	03	03	.8							
		eL	E		08	.5							
	KP	e(PKKP)	Z	02	50	49							
		e(pPKKP)	Z		51	16							
	CT	e(PKKP)	Z	02	50	49							
		e(pPKKP)	Z		51	16							
		Origin:		02	20	57.8	6.2S	76.5W	125km		USCGS		
	13 KP	eP	Z	03	24	55							
	CT	eP	Z	03	25	07							
		Origin:		03	20	38.5	19.2S	175.8W	222km		USCGS		
	13 WN	e(L)	Z	09	30								
		eL	Z		35								
	13 KP	eP	Z	14	40	16							
		e(PcP)	Z		41	19							
	CT	eP	Z	14	40	20							
		e(pP)	Z		28								
		e	Z		38								
	WN	eP	Z	14	40	26							
		eS	ZE		47	12							
		e(ScS)	Z		50	12							
		eL	ZE		56								
		M	ZE		57			7 34				5 30	
		M	ZE		59			12 23				8 22	
	RX	eS	E	14	48	16							
		e	NE		51	.6							
		e(Lq)	NE		55								
		eLr	Z		58								
		M	N		58				6 18				
		M	E		59							8 22	6.0
		M	Z	15	03			1 17					
		Origin:		14	31	21.0	3.4S	135.4E	31km		USCGS		
	13 KP	eP	Z	17	36	23							
		Origin:		17	32	33	17.0S	178.3W	631km		USCGS		
	13 KP	eP	Z	22	09	38							
		e	Z		59								
		eS	Z		11	03							
	CT	eP	Z	22	09	47							
		eS	Z		11	22							
	WN	eP	ZNE	22	10	10							
		eS	ZNE		12	02							
		Origin:		22	07	57	31.5S	179.6E	421km		USCGS		
	14 KP	eP	Z	05	34	34							
		e	Z		50								
		e	Z		56								
		eS	Z		36	05							
	CT	eP	Z	05	34	(47)							
		e	Z			(57)							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
		e	Z		35(09)								
APR	WN	eP?	ZE	05	35	22							
		eS	ZNE		37	14							
		eL	ZNE		38								
		M	ZE		40			5 19				4 18	
		M	N		41					6 24			6.8
		M	Z	05	36	31							
	RX	eP	NE		41								
		eL		05	32	33.9	31.4S	177.8W	33km		USCGS		
		Origin:											
			Z	13	21	26							
	14 KP	eP	Z	13	21	34							
	CT	eP		13	14	21.8	5.4S	154.2E	142km		USCGS		
		Origin:											
	15 KP	iP	Z	23	44	17.2 d							
	CT	eP	Z	23	44	27							
	WN	e(S)	Z	23	49	.3							
		eL	Z		52	.3							
		eL	Z		53	.6		4 21					
	RX	eL	E	23	54	.3							
		eL	N		56	.8							
		eL	Z		58								
		Origin:		23	39	27.3	18.3S	173.7W	33km		USCGS		
	16 KP	eP	Z	01	39	04							
		e(pP)	Z		08								
		ePP	Z		41	30							6.9
	RX	eP	Z	01	39	10		14 12					7.5
		eS	NE		47	10				107 34		222 32	
		e(SP)	Z		48	00		32 14					
		e(L)	NE		51								
		eL	Z		54								
		M	E		57							380 37	
		M	N		58					280 29			
		M	Z	02	04			119 21					
	CT	eP	Z	01	39	12							
		ePP	Z		41	36							
	WN	eP	Z	01	39	14 u		11 17					6.6
		e?	E		41	06						4 14	
		e	N		43	08				9 14			
		eS	ZNE		47	12		82 28					7.4
		eLr	ZNE		51								
		M	Z		53			93 28					
		M	N		55								
		M	E		56								
		Origin:		01	29	19.4	0.8S	128.0E	33km		USCGS		7.0 PAS
	16 KP	eP	Z	01	46	42							
	CT	eP	Z	01	46	45							
	RX	eP?	Z	01	46	48							
		e(P)	Z		47	04							
		Origin:		01	36	59.4	1.2S	128.4E	33km		USCGS		
	16 KP	eP	Z	02	04	58							
		e(pP)	Z		05	09							
	RX	eP	Z	02	05	01							
		e(pP)	Z			13							
	CT	eP	Z	02	05	03							
		epP	Z			13							
		e	Z			47							
		e(PP)	Z		07	27							
	WN	eP	ZNE	02	05	03							
		Origin:		01	55	10.9	0.7S	128.0E	32km		USCGS		
	16 KP	eP	Z	02	15	37							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
APR	CT	eP	Z	02	15	46							
	Origin:			02	05	52	1.3S	126.9E	33km		USCGS		
16	KP	eP	Z	05	35	59							
	CT	eP	Z	05	36	09							
	Origin:			05	31	59.2	18.4S	177.7W	557km		USCGS		
16	KP	eP	Z	12	13	31							
17	WN	eL	ZE	00	37.3								
		M	Z		38		2	23					
	RX	eL	NE		39								
17	RX	e	NE	01	28.1						3	22	
		eL	ZN		39								
		eL	E		41								
		M	E		44						7	20	
	WN	e	Z	01	28.3		2	30					
		eL	ZE	01	38								
		M	ZE		40		9	34			5	32	
		eL	N		44								
17	KP	eP	Z	02	15	43							
		eS	Z		19	22							
	CT	eP	Z	02	15	55							
		e	Z		19	44							
	WN	eP	Z	02	16	18 d							
		e	ZNE			45							
		eS	ZNE		20	12							
		e(SS)	ZNE			56							
		eL	ZNE		22								
		M	ZNE		25		90	14	62	14	37	15	
	RX	eP	ZN	02	17	11							
		eS	NE		21	38			13	20	12	18	6.2
		e	Z		22.2								
		eL	NE	02	25								
		eL	Z		26								
		M	ZNE		26		21	16	22	16	42	15	
	Origin:			02	11	26.1	19.6S	178.6E	33km		USCGS		6¼-6¼ B 6 E
17	KP	eP	Z	08	28	40							
	CT	eP	Z	08	28	47							
	Origin:			08	23	34.0	15.7S	174.1W	124km		USCGS		
17	KP	iP	Z	12	18	24.6 u							
	CT	eP	Z	12	18	38							
	Origin:			12	13	34.3	18.4S	173.8W	33km		USCGS		
17	WN	eLr	Z	19	04								
	RX	eL	N	19	06								
		eL	E		09								
	Origin:			18	24	27.6	54.9S	28.2W	26km		USCGS		
18	KP	iP	Z	01	55	40.6 d							
	CT	eP	Z	01	55	49							
		e	Z		59	02							
	WN	eP	ZNE	01	56	13							
		eL	Z	02	13.2								
	Origin:			01	51	55.2	20.3S	177.7W	530km		USCGS		
18	KP	eP?	Z	03	28	09							
	Origin:			03	23	07.2	13.2S	176.5W	403km		USCGS		
18	WN	eL	Z	22	27								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
APR		M	Z		42								
	Origin:			22	01	07.7	1.3S	128.8E	33km		USCGS		
19	WN	eL	Z	04	16								
	Origin:			03	47	22.7	9.8S	120.5E	33km		USCGS		
19	WN	ePP	Z	07	53	48	2	24					
		eSKS	ZE	08	00	04	2	24					
		eSP	ZNE		03	02	1	36	9	40	11	40	
		eSS	ZN		08	.2	16	50	5	28			
		e	NE		10	.0			8	28	12	32	
		e(SSS)	ZNE		13	.6	20	30	17	29	17	28	
		e	ZNE		16								
		eLq	ZNE		21		17	40	83	44	50	38	
		eLr	ZNE		24		29	20	7	18	17	22	6.6
	RX	eSKS	NE	08	00	04					3	20	
		eSP	NE		02	58			6	20	7	20	
		eSS	NE		07	.8			5	22	7	22	
		eSSS	NE		12	.6			7	22	8	18	
		e	NE		15	.0			8	26	8	24	
		e(Lq)	NE		18				14	28	14	25	
		eLr	Z		24	.7							
		M	ZNE		38		24	23	9	20	4	23	
	Origin:			07	35	23.7	35.8N	96.9E	33km		USCGS		7 PAS 6¾-7 BER
19	TU	eP	Z	10	28	14.7							
		eS	Z		29	21							
	ON	eP	E	10	28	18							4.6
	KP	eP	Z	10	28	18½							
	TA	e	Z	10	28	47							
	CT	eP	Z	10	28	29							
		e	Z		49								
		eS	Z		29	45							
	WN	eS	ZNE	10	30	30							5.5
	CB	eS	E	10	30	52							5.3
	KM	eS	X	10	31	31							5.2
	GP	eS	N	10	31	36							5.7
	Origin:			10	26	49	34.5S	178.1W	100km		NZ(D)		5.2
19	CT	eP	Z	16	29	59							
	KP	eP	Z	16	30	04							
	WN	eL	Z	16	55								
		M	Z	17	00		2	22					
	RX	eL	N	16	59								
19	KP	eP	Z	16	38	33							
	Origin:			16	28	52.3	1.3S	128.8E	33km		USCGS		
19	KP	eP	Z	22	46	55							
	CT	eP	Z	22	46	58							
		e	Z		49	04							
	WN	eL	Z	22	52								
	Origin:			22	44	16.8	29.9S	177.7W	41km		USCGS		
20	KP	eP?	Z	01	17	46							
	WN	eL	Z	01	36								
		M	Z		39		1	26					
	Origin:			01	07	57.8	1.2S	128.9E	28km		USCGS		
20	KP	eP	Z	08	16	24							
21	KP	eP?	Z	01	02	53							
	Origin:			00	57	56.6	16.6S	178.3W	33km		USCGS		

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
APR 21	KP	eP	Z	04	50	26							
		epP	Z			37							
	CT	eP	Z	04	50	30							
		epP	Z			41							
	Origin:			04	38	21.7	24.1N		122.1E		33km	USCGS	
21	KP	eP	Z	10	46	31							
	CT	eP	Z	10	46	39							
		e	Z			51							
	WN	eS	ZNE	10	53	.4							
		e	E			57.2							
		e	Z			58.3							
		eL?	N			59.4							
		eL	Z			59.8	5	40					
		eL	N			04.3							
		M	ZN			04.5	2	17	2	18			
	RX	e	E	10	57	26							
		e	N			58 20							
		eL	E	11	04	.5							
		eL	ZN			06.3							
	Origin:			10	38	30.0	3.2S		146.9E		33km	USCGS	
22	KP	eP	Z	01	57	06							
	TU	e	Z	01	57	17							
	Origin:			01	48	09.0	7.0S		129.2E		135km	USCGS	
22	KP	eP?	Z	07	27	48							
		eP	Z			52							
		e	Z		28	04							
		e	Z			42							
	CT	eP	Z	07	28	06							
		e	Z			22							
		e	Z		30	00							
	WN	eP	ZNE	07	28	36							
		e	ZNE		30	39							
		eL	ZNE		32								
		M	Z		33		2	22					
	RX	eP	Z	07	29	41							
		e	Z		30	00							
	Origin:			07	25	30.8	29.9S		177.6W		33km	USCGS	
22	KP	eP	Z	08	38	08							
		e	Z			22							
	CT	e	Z	08	38	13							
	Origin:			08	30	30.5	5.1S		154.1E		132km	USCGS	
22	KP	eP	Z	15	11	24							
	CT	eP	Z	15	11	36							
	Origin:			15	06	53.6	19.8S		175.4W		53km	USCGS	
22	RX	ePKP?	Z	15	57	50							
	KP	ePKP	Z	15	57	57							
	CT	ePKP	Z	15	57	57							
	Origin:			15	38	19.1	41.3N		39.0E		33km	USCGS	
23	KP	eP	Z	02	50	45							
	CT	eP	Z	02	50	56							
	RX	eP	Z	02	51	40							
	WN	eL	Z	03	01								
	Origin:			02	45	04.7	11.4S		165.9E		97km	USCGS	
23	CT	eP	Z	07	31	48							
	KP	eP	Z	07	31	54							
	Origin:			07	19	44.8	60.7S		24.7W		33km	USCGS	

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
APR 23	KP	eP	Z	15	37	54							
	Origin:			15	32	50.1	17.8S		178.7W		535km	USCGS	
			Z	19	00	08							
23	KP	eP	Z			42							
		epP	Z	19	00	50							
	CT	e(pP)	Z	18	52	24.4	5.1S		146.1E		134km	USCGS	
	Origin:												
23	KP	eP?	Z	19	53	06							
	CT	eP?	Z	19	53	15							
	Origin:			19	49	58.6	23.8S		179.9E		540km	USCGS	
24	KP	iP	Z	03	59	49.0 d							
	CT	eP	Z	03	59	59							
		eS	Z	04	04	07							
	WN	eP	ZNE	04	00	21							
	RX	eP	Z	04	01	16							
	Origin:			03	55	06.6	17.2S		174.5W		190km	USCGS	
24	KP	eP	Z	06	01	33							
	WN	eL	Z	06	20								
	Origin:			05	51	44.1	1.1S		127.2E		33km	USCGS	
24	KP	eP	Z	13	44	04							
	Origin:			13	32	12.2	27.0N		128.8E		33km	USCGS	
24	CT	eP	Z	20	51	11							
		eS	Z		52	48							
	TU	e	Z	20	52	17							
	WN	eS	ZNE	20	53	24							
	Origin:			20	48	16.4	30.1S		177.8W		33km	USCGS	
24	KP	eP	Z	21	46	23							
	CT	eP	Z	21	46	33							
	WN	eP	ZN	21	46	51							
	RX	eP	Z	21	47	46							
	Origin:			21	42	49.0	20.8S		179.1W		603km	USCGS	
25	KP	eP	Z	08	22	38							
	RX	eP	Z	08	22	38							
	CT	eP	Z	08	22	43							
	WN	eP	ZNE	08	22	44							
		eL	Z			45							
	Origin:			08	12	57.2	4.7N		122.4E		610km	USCGS	
25	TU	eP	Z	09	34	13							
		eS	Z		35	23							
	KP	eP	Z	09	34	16							
	ON	eP	E	09	34	23							4.8
	CT	eP	Z	09	34	27							
		eS	Z		35	50							
	TO	eP	Y	09	34	33							4.7
		eS	Y		35	45							
	TA	eP	Z	09	34	36							
		e	Z			51							
	WN	eS	Z	09	36	26							5.4
		eL	Z	09	38		1	20					
	GP	eS	N	09	37	30							5.5
	Origin:			09	32	40	35S		177W		100km	NZ(D)	5.1
							Additional readings from Charters Towers used to determine epicentre.						
25	KP	eP	Z	16	45	36							
	CT	eP	Z	16	45	47							
	WN	eP	ZNE	16	45	49							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
APR		eS	ZN		53	44							
		eL	ZNE	17	00								
		M	Z		10		4	22					
	RX	eL	E	17	08								
		eL	N		10								
	Origin:			16	35	56.2	1.3S	128.7E	33km		USCGS		
25	KP	eP	Z	17	54	05							
	CT	eP	Z	17	54	15							
		eS	Z			29							
	Origin:			17	50	25.3	21.6S	178.0W	380km		USCGS		
26	KP	eP	Z	01	03	52							
	CT	eP	Z	01	04	02							
		e(S)	Z			36							
	WN	eP	Z	01	04	25							
		eS	ZNE		06	20							
26	KP	eP	Z	08	23	05							
	CT	eP	Z	08	23	14							
	Origin:			08	18	09.2	18.0S	173.8W	18km		USCGS		
26	CT	e(P)	Z	23	57	09							
		e(pP)	Z			23							
	KP	e(P)	Z	23	57	12							
	Origin:			23	45	01.2	24.1N	122.5E	33km		USCGS		
27	KP	eP	Z	08	38	48							
	CT	eP	Z	08	38	54							
	Origin:			08	33	42.1	15.9S	173.9W	100km		USCGS		
27	KP	eP	Z	08	52	44							
	WN	eP	ZNE	08	52	50							
		eS	ZNE	09	01	04							
		e(Lq)	ZNE			07.3	3	52					
		M	NE			09			12	40	7	40	
		eLr	Z			11							
		M	Z			16	12	22					
	CT	eP	Z	08	52	52							
	RX	eL	N	09	07								
		eL	E			10							
		M	NE			13			6	24	3	20	6.3
	Origin:			08	42	58	0.6S	128.4E	33km		USCGS		
27	CT	eP?	Z	11	16	21							
		e(pP)	Z			17 05							
	KP	eP?	Z	11	16	43							
		e(pP)	Z			17 07							
	Origin:			11	03	29.1	22.8S	68.9W	100km		USCGS		
27	KP	eP	Z	18	59	39							
	CT	eP	Z	19	00	07							
	Origin:			18	54	34.3	16.5S	172.6W	33km		USCGS		
28	WN	eL	Z	02	19								
		M	Z			27	3	20					
28	TU	ePn	Z	09	56	51							
		e?	Z			16							
	KP	iPn	Z	09	56	57.3	u						
	CT	iP	Z	09	57	06.9							
		e(S*)	Z			48							
	TO	ePn	Y	09	57	07							4.7
		eSn	Y			43							
	ON	ePn	E	09	57	15							5.2

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
		eSn	E			56							
APR		ePn	Z	09	57	19							
	TA	e(S*)	Z			58 10							5.2
		ePn	ZNE	09	57	31							
	WN	e	ZNE			43							
		eSn	ZNE		58	24							
		eS*	ZNE			47							
	WK	e?	Z	09	57	36							
	CB	e	E	09	57	50							4.9
		e	E			59							
		eSn	E		58	48							
	GP	ePn	N	09	58	08							5.6
		eSn	N			59 28							
	KM	eSn	X	09	59	25							5.1
	RX	eSn	Z	10	00	37							
	Origin:			09	56	22	37.4S	178.3E	N		NZ(C)		5.2
28	KP	eP	Z	14	20	13							
	CT	eP	Z	14	20	22							
	WN	eP	ZN	14	20	41							
	Origin:			14	16	05.9	17.6S	178.5W	505km		USCGS		
28	KP	eP	Z	15	30	17							
	Origin:			15	25	30.3	17.6S	174.5W	60km		USCGS		
29	RX	eP	ZN	14	56	23			4	12			
		eS	NE	15	00	14			7	12	4	14	6.0
		eL	ZNE			01							
		M	NE			02			3	15	5	12	
	WN	eP	Z	14	57	10							
		eS	ZNE	15	01	52							
		eL	Z			03.7							
		eL	N			04.2							
		M	ZNE			05	6	18	6	16	4	15	
	CT	eP	Z	14	57	29							
	KP	eP	Z	14	57	40							
	Origin:			14	51	52.4	63.9S	159.5E	33km		USCGS		
29	KP	eP	Z	21	57	07							
		e	Z			20							
	CT	eP	Z	21	57	24							
	WN	eSKS	ZNE	22	07	50							
		ePS	ZN		09	30							
		eSS	Z		14	.4							
		eLr	Z		26	.7							
		eLr	N		28								
		eLr	E		29								
		M	ZNE		33		9	20	10	22	4	20	6.4
	RX	eSKS	N	22	08	18							
		eS	NE		09	08							
		ePS	N		10	26							
		eLr	NE		29	.6							
		eLr	Z		32								
		M	NE		35				5	22	6	20	6.3
	Origin:			21	44	17.1	51.4N	178.6E	60km		USCGS		
30	KP	eP	Z	01	08	00							
	CT	eP	Z	01	08	05							
		e	Z		11	28							
	RX	eP	ZNE	01	08	08							
		eS	ZNE		16	00			22	30	30	30	6.7
		eSS	NE		19	.2			10	20	11	20	
		e(SSS)	NE		22				15	22	17	25	
		e	E		23						28	19	
		eLr	NE		25								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
APR		eLr	Z		27								
		M	ZNE		32		33	20	15	17	67	21	
	WN	eP	Z	01	08	10	5	12					6.6
		ePP	Z		10	12	3	18					6.4
		e(PPP)	Z		11	06	4	14					
		e	NE		12	04			2	12	3	12	
		eS	ZNE		16	04	23	36	24	36	27	38	
		eSS	ZNE		20	00	12	24	17	26	22	26	6.6
		eLq	N		23.5								
		eLr	ZN		25								
		M	ZNE		33		94	20	42	17	67	19	
	Origin:			00	58	18.3	0.7S		129.0E		33km	USCGS	6.7
30	KP	eP?	Z	03	38	55							
		e(P)	Z		39	06							
	Origin:			03	26	04.2	51.2N		178.6E		50km	USCGS	
30	KP	eP	Z	07	20	44							
	WN	eLr	Z	07	51								
	Origin:			07	07	55.9	51.6N		178.4E		64km	USCGS	
30	KP	eP	Z	08	31	03							
	CT	eP	Z	08	31	14							
	Origin:			08	26	22.7	17.1S		175.1W		219km	USCGS	
30	TU	e	Z	18	15	01							
		e	Z		16	22							
	ON	e?	E	18	15	03							
		e	E			18							
	KP	e	Z	18	15	04							
	CT	e	Z	18	15	15							
		e?	Z		16	29							
	TA	e	Z	18	15	30							
	WN	e	ZNE	18	17	28							
		eL	Z		19								
	CB	e	E	18	17	49							
	GP	e	N	18	18	35							
	Origin:			18	13	16	33½S		177½W		N	NZ(D)	5.0
							Additional readings from Charters Towers used to determine epicentre.						
MAY 1	KP	P	Z	01	18	09							
	Origin:			01	05	15.7	52.4N		174.5W		60km	USCGS	5.2
1	KP	P	Z	10	07	40.0 u							
	CT	P	Z	10	07	53.0							
		ScP	Z		15	20							
	WN	iP	ZNE	10	08	11.0 us	76	16	95	6	15	4	6.9
		S	NE		12	11			92	4			
		eScP	Z		15	25							
	RX	iP	ZNE	10	08	45.0 us	15	10	14	15			6.5
		(pP)	Z		09	21							
		PP	ZN			28	15	7	23	11			
		S	NE		13	00			30	16	60	17	6.8
		Lq	E		14.8						105	32	
		eL	N		15.2				68	22			
		eScP	Z		15	34							
	Origin:			10	03	20.0	19.0S		169.0E		140km	USCGS	6.2 7.0 6½-7½
2	KP	P	Z	09	22	57.8							
	Origin:			09	19	22	24.6S		178.4W		33km	USCGS	5.6
3	KP	eP	Z	11	00	03							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
		eP	Z	11	00	11							
APR	CT	eP	ZNE	11	00	30							
	WN	eP	ZNE		07.7		2	25	2	32	4	22	
		eL	E	11	10								
	RX	eL	N		14								
		eL		10	54	43.0	15.0S		173.3W		33km	USCGS	5.0
	Origin:												
			Z	06	08	56							
4	KP	eP	Z		09	11							
		epP	Z	05	56	04.1	51.8N		175.4W		69km	USCGS	5.5
	Origin:												
		iP	Z	13	14	04½							
4	KP	eP	Z	13	14	07							
	TU	i	Z			09½							
		eS	Z			35							3.8
	ON	P	E	13	14	16							
	TA	P	Z	13	14	19							
		e	Z		15	03							5.0
	WN	P	ZE	13	14	34							
		i	Z			37							
		S	ZNE		15	25							
		i	Z			30							4.8
	CB	e(P)	E	13	14	57							
		S	E		15	38							5.5
	GP	eP	N	13	15	09							
		S	N		16	26							
		i	N			28							4.9
	KM	eS	X	13	16	17							5.0
	Origin:			13	13	29	37.4S		176.8E		250km	NZ(B)	
4	WN	eL	Z	21	12½		1	27					
5	KP	P	Z	03	54	07							
	Origin:			03	49	34	19.8S		177.0W		33km	USCGS	
5	WN	eL	Z	06	35.5		1	22					
5	KP	P	Z	15	30	25½							
		i	Z			32							
	WN	eL	Z	15	59								
	Origin:			15	17	01.9	24.7S		69.5W		50km	USCGS	5.1
5	KP	P	Z	17	16	42							
	CT	eP	Z	17	16	53							
	WN	eL	Z	17	24		1	20					
	Origin:			17	11	47.2	17.5S		173.7W		33km	USCGS	5.0
6	KP	P	Z	08	48	55							
	WN	eL	Z	09	08.7		2	14					
		M	ZE		13								
	RX	eL	E	09	10.0						3	25	
	Origin:			08	38	33.3	9.1S		112.5E		84km	USCGS	
6	ON	P	E	21	01	37							4.8
	KP	P	Z	21	01	48							
	TU	eP	Z	21	01	49							
	CT	P	Z	21	01	59							
		e	Z		03	32							
		eS	Z			36							
	TA	P	Z	21	02	06							
	WN	eP	Z	21	02	20							5.6
		eS	ZNE		04	14							
	GP	e(P)	N	21	02	55							
		S	N		05	11							5.6

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
APR	CB	eS	E	21	04	27							
	Origin:			20	59	54	32S		179W	N?	NZ(D)		5.3
													5.4
7	KP	P	Z	05	11	10							
	CT	eP	Z	05	11	18							
	Origin:			05	00	50.3	18.8N		145.5E	93km	USCGS		4.5
7	CT	P	Z	16	36	24							
	KP	P	Z	16	36	25							
	Origin:			16	23	11.2	22.0S		68.6W	110km	USCGS		5.4
7	ON	eP	E	17	19	59							
	KP	eP	Z	17	20	10½							4.8
		e	Z			12							
		e	Z		21	45							
	TU	e?	Z	17	20	14							
		e	Z		21	35							
		eS	Z			41							
	CT	eP	Z	17	20	21							
		e	Z		22	01							
		e	Z			05							
	TA	eP	Z	17	20	28							
	WN	eS	NE	17	22	40							
	CB	eS	E	17	22	54							5.7
	KM	eS	X	17	23	29							5.5
	GP	S	N	17	23	40							5.5
	Origin:			17	18	07	33S		177W	N	NZ(D)		6.0
													5.7
8	KP	eP	Z	04	33	39							
	Origin:			04	28	21	15.9S		171.9W	33km	USCGS		4.6
8	KP	eP	Z	09	04	06							
	WN	eLr	Z	09	36		1 40						
	Origin:			08	50	56.0	54.9N		163.9W	89km	USCGS		5.6
8	KP	eP	Z	10	34	19½							
		e	Z			27							
		e	Z			32							
	CT	eP	Z	10	34	25							
		e	Z			37							
		e	Z		37	42							
	WN	eP?	Z	10	34	32							
		eP	Z			42	3 10						
		S	ZNE		44	48	1 28		3 8		3 8		6.6
		eSS	ZNE		50	13	2 17		4 20				
		eLq	E		56.9						4 25		
		Lr	ZN	11	00.9		14 32		6 32				
	RX	eS	NE	10	45	10			2 12				6.1
		eSS	NE		50.7				2 24				
		eL	NE		59								
	Origin:			10	22	11.2	36.6N		141.0E	53km	USCGS		6.1
8	KP	P	Z	14	07	54							
	Origin:			13	56	27	58.6S		61.5W	33km	USCGS		5.8
8	KP	eP	Z	15	34	23							
		e	Z			30							
	CT	eP	Z	15	34	34							
		e	Z			40							
	WN	eL	Z	15	55.3		2 49						
	Origin:			15	24	00.3	5.3N		125.7E	70km	USCGS		5.6
8	KP	P	Z	17	31	45							
	CT	P	Z	17	31	56							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
			Z	19	20	23							
APR 8	KP	eP	Z		21	35							
		e	Z	19	20	34							
	CT	eP		19	15	39.7	17.2S		175.0W	199km	USCGS		4.6
	Origin:												
			E	04	34	03							
9	ON	eP	Z	04	34	13							
	KP	eP	Z			15							
		i	Z		36	11							
		e(S)	Z	04	34	15							
	TU	eP	Z		36	19							
		eS	Z	04	34	24							
	CT	eP	Z		36	34							
		eS	Z			42							
		e	Z	04	37	21							
	WN	S	ZNE										
			E	07	28	01							
9	ON	eP	Z	07	28	11							
	KP	eP	Z	07	28	23							
	CT	eP	Z		30	28							
		eS	Z	07	30	04							
	TU	eS	NE	07	31	05							
	WN	eS		07	25	53.7	28.5S		179.0W	267km	USCGS		
	Origin:												
			Z	15	52.2		1 28						
9	WN	eL		15	03	41.0	12.2N		86.9W	34km	USCGS		
	Origin:												
			Z	02	01	35							
10	KP	eP	Z			54							
		e		01	49	25	30.2N		130.8E	33km	USCGS		5.3
	Origin:												
			Z	04	33	01							
10	KP	P	Z			13							
		i	Z	04	33	16½							
	CT	P	Z			27							
		e	Z	04	39.5		2 20						
	WN	eL	Z		45		4 20						
		M	Z	04	40								
	RX	eL	NE	04	28	41.8	20.0S		168.1E	33km	USCGS		4.9
	Origin:												
			Z	10	33	17							
10	KP	eP		10	29	12.9	21.5S		178.5W	175km	USCGS		
	Origin:												
		PS	Z	22	50	07	2 37						
10	WN	SKKS	Z		59	55	3 30						
		G	ZNE	23	05	28	6 42		51 40		15 40		
		Lr	ZNE		11		28 24		5 23		14 22		6.5
	RX	G	N	23	06½				12 40				
		eLr	ZE		12½						9 20		
	Origin:			22	22	42.2	2.2S		77.6W	33km	USCGS		5.7
													6¼ PAS
													6 BER
		P	Z	04	48	51.2							
11	KP	eP	Z	04	48	59							
	CT			04	44	19.4	15.4S		177.1W	400km	USCGS		5.1
	Origin:												
		eP	Z	18	01	52							
11	CT	eL	Z	18	32		1 20						
	WN			17	49	43.0	24.2N		122.5E	33km	USCGS		4.5
	Origin:												
		P	ZN	09	46	04 u	5 4		4 4				6.1
12	RX	e(L)	NE		48.7						6 22		
		M	ZNE		50		9 20		8 18		5 13		
	WN	iP	Z	09	47	20 d	10 7						6.1
		S	Z		50	32	2 30						

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
APR		L	Z	51 57	9 30			
		M	Z	56	19 14			
	CT	P	Z	09 47 40				
		i	Z	43				
		e	Z	50 52				
	KP	eP	Z	09 47 52				
	Origin:			09 42 58.3	57.5S 159.4E	44km	USCGS	6.2
12	KP	eP	Z	19 30 31				
	WN	eLr	Z	19 44	1 32			
	Origin:			19 22 30.8	3.4S 146.9E	33km	USCGS	4.9
12	WN	eLr	Z	20 55.4	1 32			
		M	Z	58	6 28			
	Origin:			20 08 43.0	57.4N 153.9W	80km	USCGS	5.9
12	WN	eL	Z	22 22.5				
13	KP	eP	Z	07 13 25				
	CT	eP	Z	07 13 37				
		eS	Z	16 12				
	WN	eS	ZNE	07 16 39				
	Origin:			07 10 38.4	25.7S 179.6E	453km	USCGS	4.8
13	CT	iP	Z	10 17 06.4 u				
		i	Z	11½				
	TO	eP	Y	10 17 06½				4.7
		i	Y	12				
		S	Y	25½				
	WN	P	ZNE	10 17 08.9				4.9
		i	ZNE	18				
		S	ZNE	29				
		M	ZNE	46				
	TU	eP	Z	10 17 09				
		e	Z	18				
	TA	P	Z	10 17 15.6				
	KP	P	Z	10 17 22				
	CB	eP	Z	10 17 27½				4.8
		e	Z	38				
		S	Z	18 02				
		e	Z	19				
	GP	eP	N	10 17 45				
		S	N	18 31				5.5
	KM	eP	X	10 17 50				5.2
		S	X	18 34½				
	ON	eP	E	10 17 55				
		e(S)	E	19 19				
	RX	e(P)	Z	10 18 37				
		e	Z	19 35				4.6
		e	Z	42				
	Origin:			10 16 42	40.35S 176.55E	N	NZ(B)	5.0
					Felt: Southern half of North Island maximum MM4 in western Hawkes Bay.			
13	WN	eLr	ZE	13 30.7	2 28		1 30	
	RX	eL	E	13 34			2 20	
	Origin:			12 44 00.7	14.5N 92.9W	60km	USCGS	5.6
13	KP	iP	Z	14 12 01 u				
	CT	P	Z	14 12 13.6 u				
		i	Z	17.0				6.3
	WN	iP	ZNE	14 12 32 u	5 4			
		eS	ZNE	16 24	1 16	2 20	3 6	
		L	Z	17 28	2 40			
		L	NE	43			3 24	

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
		P	Z	14 13 05				
APR	RX	P	Z	14 07 46.8	19.5S 169.3E	163km	USCGS	5.6
	Origin:							
			Z	23 08½				
13	WN	eL	Z	13	2 16			
		M	Z	22 48 10.3	6.0S 150.1E	94km	USCGS	
	Origin:							
		P	Z	15 17 32½				
14	KP	(pP)	Z	18 30				
				15 08 46.1	5.6S 127.8E	405km	USCGS	5.3
	Origin:							
	KP	eP	Z	17 59 08				
14	WN	S	ZNE	18 01 19				
				17 56 15.1	30.2S 177.7W	33km	USCGS	
	Origin:							
	KP	eP	Z	03 00 36				
15	WN	eS	ZE	03 07.6	2 28			
		eL	ZNE	13½	8 40			
				02 52 39.7	3.4S 146.8E	33km	USCGS	5.7
	Origin:							
	KP	P	Z	01 31 45				
16				01 28 04.7	22.6S 171.6E	79km	USCGS	
	Origin:							
	TU	eP	Z	09 04 06				
16				09 01 22	30.0S 177.2W	53km	USCGS	
	Origin:				Felt: Raoul Is. MM2			
	KP	eP	Z	16 02 03				
16	WN	eL	Z	16 20.3	3 8			
	Origin:			15 52 18.4	0.8S 128.5E	24km	USCGS	4.4
	WN	eL	Z	16 45.7	2 20			
16	Origin:			16 17 59.8	1.0S 128.8E	33km	USCGS	4.3
	KP	eP	Z	06 20 51				
17		e	Z	21 15				
	WN	eL	Z	06 46	2 45			
	Origin:			06 09 18.2	15.7N 120.1E	80km	USCGS	5.5
	ON	P	E	07 34 54				
		S	E	36 16				
	KP	eP	Z	07 35 03				
		i	Z	06				
		e	Z	36 32				
	TU	eP	Z	07 35 04				
17		e	Z	06				
		eS	Z	33				
	WN	eP	Z	07 35 39				
		S	Z	37 35				
	Origin:			07 33 17.5	31.0S 179.8W	358km	USCGS	4.7
					Felt: Raoul Is. MM3			
	KP	eP	Z	12 21 35				
17	Origin:			12 09 05.6	41.7N 141.9E	47km	USCGS	4.8
	KP	P	Z	22 43 56				
	WN	eR?	Z	22 44 07				
		e	Z	20				
		S	ZNE	47 12				
		L	Z	49 21	7 35			
	Origin:			22 40 06.7	24.4S 177.2W	70km	USCGS	5.9
					Felt: Raoul Is. MM3			
	KP	eP	Z	12 30 46				
18	WN	eL	Z	12 50				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
APR		M	ZNE	56	9 22	4 20	4 22	
	RX	eL	E	12 51½				
		eL	Z	53				
		M	ZE	55	11 20		11 23	
	Origin:			12 20 31.9	8.2S 115.6E	39km	USCGS	5.3
18	RX	eL	E	13 36				
	WN	eL	ZE	13 38 10	3 22		1 25	
18	KP	e(P)	Z	14 56 26				
	Origin:			14 51 14.4	16.6S 173.1W	33km	USCGS	4.8
19	RX	eP	Z	01 14 28				
		e	ZN	29	9 7	4 6		
		S	NE	23 54		24 22	21 26	7.1
		eSS	NE	28 40		9 12	14 18	
		Lq	NE	33.5		21 22	21 22	6.5
		eLr	ZE	37.5			35 21	
	WN	P	Z	01 14 32	19 6			7.4
		S	ZNE	23 58	13 27	33 20	16 21	7.1
		Lq	NE	33.5		30 27	32 29	
		Lr	Z	36.4	35 38			
	KP	P	Z	01 14 42				
	Origin:			01 03 04.1	46.5S 75.1W	33km	USCGS	6.5
19	KP	P	Z	07 58 39				
	TU	eP	Z	07 58 40				
	TA	eP	Z	07 58 57				
	WN	eP	ZNE	07 59 12				
		eS	ZNE	08 01 21				
	CB	eS	E	08 01 33				
	GP	eS	N	08 02 16				
19	KP	ePKP	Z	21 55 16				
	WN	ePKP	Z	21 55 20	2 20			
		ePP	Z	58 24	3 16			
		SP	Z	22 08 46	5 8			
		PPS	Z	10 53	4 20			
		SS	ZE	17 56	10 36		15 36	
		SSS	ZE	22 20	6 32		6 24	
		Lr	ZE	43.2	22 64		11 40	
		M	ZE	50	13 20		6 20	
	RX	ePKP	Z	21 55 23				
		eSS	N	22 17 33				
		e	E	18 14			9 30	
		eL	E	42				
		M	NE	47		6 30	7 28	
	Origin:			21 35 49.6	23.8N 45.9W	33km	USCGS	6.0
20	RX	eL	NE	00 35				
	WN	eL	Z	00 35½	1 32			
20	ON	P	E	11 40 01½ w				
	TU	eP	Z	11 40 07				
		e	Z	13				
		S	Z	41 48				
	KP	eP	Z	11 40 09				
		e	Z	11				
	WN	eP	ZNE	11 40 45				
		i	ZN	57				
		iS	ZNE	42 53				
		L	ZE	43.8				
		eL	N	44.6				
		M	E	45½				
		PcS	ZNE	50 08				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
		ScS	ZNE	53 44				
APR		eP	ZNE	11 42 01		16 25	11 25	
	RX	S	Z	45 04				
		Lq	NE	46.2		68 36	105 40	
		eLr	Z	47.0	165 33			
		M	NE	48½		210 23	105 21	
		M	Z	49	125 18			
		eScP	Z	50 20				
	Origin:			11 38 00.9	30.7S 178.3W	34km	USCGS	6.2
					Felt: Raoul Is. MM4			
21	WN	eS	ZNE	01 12 00	2 35			
		eSS	NE	15 28		8 40	8 40	
		eLr	Z	17.1	6 34			
	RX	eS	NE	01 12 24		3 10	4 10	
		eLq	N	15.7		4 22		
		eLr	ZE	17½			4 22	5.8
	Origin:			00 58 07.4	56.0S 123.9W	33km	USCGS	
21	KP	eP	Z	17 36 13				
	WN	e	Z	17 37.6				
		S	NE	41 40			4 8	
		Lq	ZNE	43.9	5 24	10 32	14 32	
		Lr	Z	45.2	8 32			
	RX	eS	NE	17 42 34		3 20	4 20	
		eLq	NE	45.3		5 20	10 23	
		M	NE	49		6 19	12 18	5.9
	Origin:			17 30 15.4	11.1S 163.3E	33km	USCGS	5.4
21	KP	iP	Z	17 54 30½ u				
	WN	P	ZNE	17 54 59½				
	Origin:			17 51 07.7	22.1S 179.5W	579km	USCGS	4.9
21	ON	eP	E	18 12 11				
	KP	eP	Z	18 12 38				
	WN	S	ZNE	18 15 00				
	Origin:			18 10 11.7	29.5S 178.1W	82km	USCGS	
					Felt: Raoul Is. MM1			
22	KP	e(P)	Z	02 34 03				
	CT	eP	Z	02 34 07				
	RX	eL	NE	02 43		21 22	2 22	5.5
	WN	eL	ZNE	02 51				
		M	ZNE	55	4 22	3 18	2 22	5.5
	Origin:			02 27 56.3	11.3S 163.2E	60km	USCGS	5.1
22	ON	eP	E	07 54 06				
	CT	eP	Z	07 54 19				
	KP	eP	Z	07 54 20				
	WN	S	ZNE	07 56 52				
	Origin:			07 52 01.3	30.3S 177.6W	168km	USCGS	
					Felt: Raoul Is. MM2			
22	WN	eL	Z	10 33.5	1 24			
	Origin:			10 18 27.0	11.0S 163.5E	37km	USCGS	5.2
22	KP	eP	Z	14 09 33				
		pP	Z	47				
	CT	P	Z	14 09 38				
		pP	Z	51				
	WN	P	ZNE	14 09 47½	2 20			6.0
		epP	Z	10 01				
		eSKS	ZNE	20 13				
		PS	ZN	21 52	3 22	3 28		
		SS	ZNE	26 52	4 30	6 36		

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
APR		SSS	ZN	30 40	2 24	3 28		
		Lq	E	34.7				
		Lr	ZNE	39 40	21 23	13 27	8 44	
	RX	eS	NE	14 21 07		2 10	4 23	
		eSS	NE	28 02			3 10	
		eL	E	42			2 14	6.4
		M	ZNE	48	11 20	4 20	5 22	
	Origin:			13 56 43.0	48.6N 154.7E	22km	USCGS	6.2 6.3
	22 KP	eP	Z	15 52 57				
		e	Z	53 08				
	CT	eP	Z	15 53 12				
	RX	eL	NE	16 08				
	WN	eLq	N	16 09				
		eLr	ZE	13	4 36		2 40	
		M	ZE	18	5 22		2 23	
	Origin:			15 42 48.6	4.3N 127.9E	58km	USCGS	5.0
	22 RX	P	Z	22 03 03				
		eS	NE	11 10				
		eL	N	23.2		3 20		
		eL	E	24			11 30	
		M	ZNE	27	3 20	3 16	11 20	
	KP	P	Z	22 03 17½				6.2
	WN	P	ZNE	22 03 18				
		S	NE	11 36			2 35	
		e	NE	19.7		3 16		
		eL	NE	20½		4 36		
	Origin:			21 53 02.5	8.2S 115.7E	33km	USCGS	5.6
	23 KP	P	Z	01 01 45				
	Origin:			00 51 40.3	1.6N 126.4E	33km	USCGS	4.8
	23 KP	iP	Z	03 38 16 u				
	CT	P	Z	03 38 24				
	WN	P	ZNE	03 38 44½				
	RX	P	Z	03 39 32				
	Origin:			03 33 19.1	15.0S 176.7W	279km	USCGS	5.4
	23 CT	eP	Z	03 41 43				
	WN	ePP	ZNE	43 05	3 12			
		S	ZNE	47 17	5 15	3 30		5.4
		eL	E	49.3			4 32	
		Lr	Z	50.7	20 29			
	RX	eS	NE	03 48 01		4 18	4 18	5.3
		eL	N	52		9 28		
		eL	Z	56½	7 14			
		M	ZNE	58	8 14	7 14	13 14	
	Origin:			03 35 34.7	10.9S 163.3E	33km	USCGS	5.5
	23 KP	iP	Z	07 07 31½ u				
	CT	P	Z	07 07 37½				
	WN	P	Z	07 07 46½				
	Origin:			06 57 51.8	18.4N 145.2E	478km	USCGS	4.5
	23 WN	eLr	Z	08 03½	3 28			
	Origin:			07 47 59.7	11.2S 163.3E	17km	USCGS	4.8
	23 KP	P	Z	08 45 39				
	Origin:			08 41 54.7	20.7S 177.9W	477km	USCGA	5.1
	23 WN	eL	Z	12 30.6	2 28			
	Origin:			11 56 45.6	44.7S 75.7W	33km	USCGS	5.1
	23 KP	P	Z	15 22 28				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
	RX	eP	Z	15 22 33				
APR	CT	eP	Z	15 22 35				
	WN	eL	Z	15 43	2 44			
	Origin:			15 12 05.7	6.0N 126.1E	88km	USCGS	5.5
	23 TU	eP	Z	21 38 33				
		eS	Z	40 12				
	CT	eS	Z	21 40 39				
	WN	S	ZNE	21 41 19				
		eL	Z	43.9	2 20			
	Origin:			21 36 37.5	30.6S 178.0W	33km	USCGS	
	24 ON	eP	E	06 49 08				
	TU	eS	Z	06 50 40				
	WN	eS	ZNE	06 51 45				
		eL	Z	54.5	2 18			
					Felt: Raoul Is. MM2			
	24 KP	eP	Z	20 55 42				
	Origin:			20 52 25.1	22.8S 179.6W	566km	USCGS	4.5
	24 KP	P	Z	21 22 00				
	CT	eP	Z	21 22 10				
	Origin:			21 19 04.8	24.5S 179.7E	649km	USCGS	4.6
	25 RX	eP	Z	16 20.0				
		S	NE	29 50		3 14	7 14	6.5
		eL	E	40			3 24	
		eL	N	48		3 18		
		M	NE	54		9 20	6 17	6.3
	WN	P	Z	16 20 10	3 16			6.2
		S	ZNE	30 22	2 16	3 12	4 16	6.2
		eSS	ZE	35 43	2 24		2 20	
		eL	E	42			3 20	
		eL	Z	45½	2 28			
		M_1	ZNE	57	12 18			6.2
		M_2	ZN	17 00	14 16			
	CT	eP	Z	16 20 22				
	KP	eP	Z	16 20 29				
	Origin:			16 08 00.8	56.8S 25.0W	29km	USCGS	
	25 WN	eP	Z	00 05 08				
		eS	ZNE	09 04				
		eL	ZE	10.6	2 20		2 22	
	RX	eL	NE	00 14				
	Origin:			23 59 55.8	19.7S 174.3W	33km	USCGS	5.3
	26 KP	eP	Z	09 40 45				
	Origin:			09 36 42	17.9S 178.5W	33km	USCGS	4.7
	26 WN	eSS	Z	23 38.4	2 23			
		eL	Z	51	4 35			
	Origin:			23 06 55.0	55.2N 159.9E	47km	USCGS	5.3
	27 WN	eL	Z	04 43	4 30			
	Origin:			03 58 47.9	55.3N 160.1E	54km	USCGS	5.7
	27 KP	P	Z	16 29 49				
	CT	eP	Z	16 29 53				
	WN	eL	Z	16 50½				
	Origin:			16 20 09.6	0.6S 130.1E	33km	USCGS	5.0
	28 KP	P	Z	07 04 50				
	Origin:			07 00 55.1	18.6S 177.8W	602km	USCGS	4.4

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
APR 29	KP	P	Z	01	06	12							
	WN	P	Z	01	06	41							
	Origin:			01	02	05.8	18.1S	178.0W	472km		USCGS		4.4
29	KP	P	Z	08	31	51							
	Origin:			08	27	44.5	17.7S	178.8W	512km		USCGS		4.5
29	KP	P	Z	11	03	13½							
	CT	eP	Z	11	03	23							
	WN	P	Z	11	03	42							
	Origin:			10	59	10.5	18.0S	178.0W	550km		USCGS		4.8
29	KP	eP	Z	13	26	10							
	Origin:			13	22	23.4	23.9S	179.2W	60km		USCGS		
29	KP	eP	Z	18	37	17							
	Origin:			18	27	19.1	22.6S	114.4W	33km		USCGS		4.7
29	KP	eP	Z	18	40	35							
	Origin:			18	30	25	24.4S	114.7W	33km		USCGS		4.5
30	KP	P	Z	03	08	52½							
	CT	eP	Z	03	09	01							
	WN	eP	Z	03	09	20½							
	Origin:			03	04	49	18.3S	178.3W	450km		USCGS		
30	KP	P	Z	05	37	46½							
	CT	eP	Z	05	37	56							
		eS	Z		40	22							
	WN	eP	ZNE	05	38	17½							
		S	ZNE		40	51							
	Origin:			05	35	06.0	26.1S	178.3E	610km		USCGS		4.9
30	RX	P	ZNE	07	00	25			5	6	4	8	
		S	NE		03	59			23	16	18	14	6.8
		L	NE		04	4.5			42	15	29	15	
		eL	Z		05	½	29	10					
	WN	P	ZNE	07	01	24	3	10					
		S	ZNE		05	45	11	17	5	20	11	17	6.3
		L	E		06	.7					19	40	
		L	Z		07	.7	19	40					
		M	ZNE		10		50	19	48	18	17	18	
	CT	eP	Z	07	01	38							
	KP	eP	Z	07	01	52							
	Origin:			06	56	09.3	54.2S	143.7E	33km		USCGS		
31	WN	eL	Z	03	12	.3							
31	KP	eP	Z	06	08	57							
	WN	eS	ZE	06	14	.5	1	28					
		eL	ZNE		16	½	2	24	2	20	7	24	
		M	Z		18	½	7	28					
	RX	eL	E	06	19						9	30	
		eL	ZNE		22		7	15	5	20	7	15	
	Origin:			06	03	34.9	15.1S	173.3W	33km		USCGS		4.8
31	KP	P	Z	12	04	48							
	Origin:			12	00	27.8	20.1S	175.9W	136km		USCGS		4.4
31	ON	eP	E	14	10	04							
	KP	eP	Z	14	10	09							
	TU	eS	Z	14	11	45							
	WN	S	ZNE	14	12	50							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag
		eL	Z		14½		8	28					
APR	Origin:			14	08	03.1	30.6S	178.1W	60km		USCGS		
							Felt:	Raoul Is. MM3					
31	KP	eP	Z	24	04	10							
	KP	eS	Z	24	09	.7	1	30					
	WN	eS	ZE		11	53	3	25			9	24	
		eL	ZE		14		8	28	8	20			
		M	ZN		14				3	28	14	28	
		eL	NE	24	14								
	RX	eL	Z		17¾		6	16					
		eL		23	58	49.7	15.1S	173.4W	33km		USCGS		5.4
	Origin:												
JUN 1	KP	eP	Z	12	36	19							
		e	Z			35							
	CT	eP	Z	12	36	29							
	MN	eP	Z	12	37	46							
	WN	e?	Z	12	38	32							
		eL	ZNE		44								
		M	E		45						2	22	
	RX	eL	E	12	46								
		eL	N		48								
	Origin:			12	30	55.8	15.0S	172.4W	33km		USCGS		
1	KP	eP	Z	21	12	08							
	Origin:			21	08	17.3	22.2S	169.6E	35km		USCGS		4.8
1	KP	eP	Z	21	19	12							
	CT	e	Z	21	19	45							
	WN	eL	ZNE	21	27						19	24	
	Origin:			21	13	52.7	15.2S	173.5W	33km		USCGS		5.5
							Felt:	Apia, Samoa.					
2	KP	eP	Z	10	07	14							
		e	Z			28							
	WN	e(P)	Z	10	07	28							
		eL	ZNE		16								
		M	E		21						3	20	
	RX	e(P)	Z	10	07	39							
		e(S)	NE		13	.8							
		eL	ZNE		17								
		M	N		23				6	21			5.9
	MN	eP	Z	10	07	40							
		e(pP)	Z			51							
	Origin:			10	00	00.1	6.1S	154.4E	49km		USCGS		5.8
2	TU	eP	Z	21	08	47							
		e(S)	Z		09	59							
		e	Z		10	32							
	KP	e(P)	Z	21	08	48							
		e	Z			53							
		e	Z			56							
		e	Z		10	07							
	ON	e	E	21	09	00							
	WN	eS	ZNE	21	11	06							
		e(L)	Z		12								
	CB	eS	E	21	11	27							
	KM	eS	X	21	12	07							
	TO	e	Y	21	(12)	45							
	RX	eL	NE	21	14								
		M	E		16						3	22	5.2
	Origin:			21	07	13.7	32.8S	179.0W	56km		USCGS		5.1
2	KP	e?	Z	21	16	19							
		e?	Z			41							
		e	Z			49							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
JUN	RX	eSSS	E	21	34								
		eL	NE		37								
		M	E		45								
	WN	e?	Z	21	40								
		eL	Z		49		8	18					
		M	Z		53								
	Origin:			21	04	24.2	58.5S		15.6W		50km	USCGS	5.9
	2 RX	eL	E	23	12								
	Origin:			22	22	00.0	13.8N		90.8W		68km	USCGS	5.1
	3 KP	e?	Z	04	50	04							
	Origin:			04	44	11.8	19.1S		177.8W		510km	USCGS	3.5
	3 KP	eP?	Z	07	22	25							
	Origin:			07	18	05.7	21.0S		175.6W		37km	USCGS	4.8
	3 KP	eP	Z	07	47	59							
		e	Z		48	03							
	MN	eP	Z	07	48	43							
	RX	eL	E	08	16								
		M	E		18								5.7
	WN	eL	Z	08	17								
		M	Z		19		1	22					
	Origin:			07	35	54	34.2N		138.7E		43km	USCGS	5.3
	3 WN	eL	Z	12	24								
		M	Z		28		1	20					
	RX	eL	NE	12	32						8	18	5.8
	Origin:			11	31	48.7	5.3N		72.9W		21km	USCGS	5.0
	3 TU	eP	Z	16	10	39½							
		e(S)	Z		11	17							
		e	Z			20							
	KP	P	Z	16	10	40	u						
		e	Z			52							
	WN	e?	Z	16	11	09							
		eS	ZNE		12	19							5.3
		e	NE			25							
	GP	e	N	16	11	55							5.6
		eS	N		13	23							
		e	N			29							
	KM	eS	X	16	13	18							5.1
	MN	e	Z	16	14	58							
	Origin:			16	09	8	36.0S		178½E		N?	NZ(D)	5½
	3 MN	eP	Z	18	53	20							
	WN	eS	NE	18	54	09							
	GP	eS	N	18	55	17							
	Origin:			18	48	54.8	29.5S		177.8W		49km	USCGS	5.5
							Felt: Raoul Is. MM3						
	3 KP	eP	Z	21	44	24							
	Origin:			21	30	13.3	59.5S		27.7W		45km	USCGS	5.6
	4 WN	e(S)	NE	08	06	04							
	GP	e(S)	N	08	07	11							
							Felt: Raoul Is. MM1						
	4 ON	e	E	09	39	03							
	KP	e?	Z	09	39	26							
	TU	e?	Z	09	40	56							
	CT	e?	Z	09	41	25							
	WN	eS	NE	09	41	55							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
JUN	GP	eS	N	09	43	02							
							Felt: Raoul Is. MM1						
			E	11	56	15							
	4 ON	eP	E			21							
		e	Z	11	56	20							
	TU	e?	Z			27							
		e	Z			37							
		e	Z		58	01							
		e(S)	Z			06							
		e	Z	11	56	22							
	KP	e(P)	Z			32							
		e	Z			41							
		e	Z		57	00							
		e	Z		58	17							
		e	Z	11	56	33							
	CT	eP	Z			39							
		e	Z			46							
		e	Z		57	14							
		e	Z		58	28							
		eS	Z										
	WN	e	ZNE	11	57	07							
		e	Z			14							
		eS	ZNE		59	09							
		eL	ZNE	12	00								
		M	ZN		05		17	18		8	18		
	CB	e	E	11	57	26							
		eS	E		59	27							
	KM	e	X	11	57	39							
		e?	X		59	39							
		e	X	12	00	04							
		e	X			14							
	GP	e	N	11	57	41							
		e	N			47							
		eS	N	12	00	14							
		e	N			26							
	RX	eP	Z	11	58	15							
		eS	Z	12	01	26							
		eL	NE		03								
		M	NE		05					4	18	5	18
	MN	eP	Z	11	58	25	d						5.5
		e(S)	Z	12	01	50							
	Origin:			11	54	09.1	30.5S		177.8W		33km	USCGS	5.1
							Felt: Raoul Is. MM3						
	4 ON	e?	E	13	08	04							
		e	E			07							
	TU	e?	Z	13	08	06							
		e	Z			41							
		e(S)	Z		09	50							
	KP	e(P)	Z	13	08	10							
		e	Z			41							
	CT	e(P)	Z	13	08	18							
		e	Z			33							
		e(S)	Z		10	14							
		e	Z			40							
	KM	e?	X	13	09	29							
		eS	X		12	01							
	GP	eP	N	13	09	34							
		eS	N		12	02							
	RX	eP	Z	13	10	04							
		eL	NE		15								
		M	N		17					1	22		5.0
	MN	eP?	Z	13	10	12							
		e	Z			17							
	WN	eS	NE	13	10	56							

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
JUN		eL	ZE		12									
		M	Z		14			3	18					
	CB	eS	E	13	11	18								
	Origin:			13	05	56.3		30.4S	177.6W	33km	USCGS			5.2
								Felt: Raoul Is. MM3						
	4 ON	e(P)	E	13	40	30								
	KP	e?	Z	13	40	46								
	CT	e	Z	13	40	56								
		e	Z		42	27								
		e	Z			45								
	TU	e(S)	Z	13	42	14								
	WN	eS	NE	13	43	20								
	GP	eS	N	13	44	25								
								Felt: Raoul Is. MM1						
	4 KP	e?	Z	19	22	16								
	TU	e(S)	Z	19	23	35								
	CT	e	Z	19	24	04								
	WN	eS	NE	19	24	42								
	GP	eS	N	19	25	47								
								Felt: Raoul Is. MM1						
	4 KP	eP	Z	19	32	14								
		e	Z			31								
		e(pP)	Z			36								
	TU	e(P)	Z	19	32	21								
	CT	eP	Z	19	32	21								
		epP	Z			45								
	WN	eP	Z	19	32	28								
		epP	Z			52								
	MN	iP	Z	19	32	40	d							
		e	Z			57								
		pP	Z		33	04								
	RX	epP?	Z	19	33	06								
	Origin:			19	21	56.6		18.9N	146.2E	110km	USCGS			5.5
	4 MN	eP	Z	21	14	25								
		e	Z			39								
	KP	eP	Z	21	14	31								
	WN	eP	Z	21	14	35								
		eS	ZN		22	40								
		e	E		23	12								
		eSS	NE		26½									
		eLr	ZNE		31									
		M	ZE		43			11	18					
	CT	eP	Z	21	14	37								
	TU	e(P)	Z	21	14	40								
	GP	eP	N	21	14	41								
	RX	e(S)	E	21	22½									
		e(L)	N		28½									
		eL	NE		33									
		M	E		40							12	20	6.2
	Origin:			21	04	42.3		1.2S	127.3E	31km	USCGS			5.2
	5 WN	eL	Z	00	29									
	5 TU	e?	Z	05	09	15								
		e	Z			19								
		e(S)	Z		10	50								
		e	Z		11	05								
	KP	eP	Z	05	09	20								
		e	Z			38								
	CT	e	Z	05	10	00								
	GP	e?	N	05	10	44								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
		eS	N		13	07								
JUN		eS	N		14	13								
		e	Z	05	11	23								
	MN	eP	Z		12	26								
		e	Z			35								
		e	Z		14	56								
		eS	NE	05	11	58								
	WN	eS	NE		13	05								
		e	Z		14									
		eL	Z		16									
		M	Z											
	CB	eS	E	05	12	20								
	KM	eS	X	05	13	09								
	RX	eL	E	05	17									
		M	E		19							1	19	5.1
	Origin:			05	07	03.7		30.7S	177.6W	70km	USCGS			4.6
								Felt: Raoul Is. MM2						
	5 KP	eP?	Z	05	58	46								
	WN	eL	Z	06	05									
	5 KP	P	Z	08	54	12½	d							
		e	Z			15								
	MN	P	Z	08	55	36								
	Origin:			08	50	21.2		19.7S	177.8W	528km	USCGS			
	5 KP	eP	Z	09	23	33								
	Origin:			09	11	49.9		31.2N	142.6E	33km	USCGS			4.8
	5 KP	e(P)	Z	10	17	24								
	TU	eP	Z	10	17	35								
	CT	e(P)	Z	10	17	39								
	WN	eP	Z	10	17	51								
		e(S)	N		22½									
		eL	ZNE		25									
		M	ZE		26							3	22	
	RX	eP	Z	10	18	20								
		e(S)	N		23.4									
		eL	NE		25									
		M	E		29							4	19	5.6
	MN	eP	Z	10	18	21								
	Origin:			10	12	09.0		14.9S	166.8E	37km	USCGS			5.0
	5 WN	eL	E	11	39									
		eL	Z		41									
		M	ZNE		43							2	20	
	RX	eL	E	11	43							2	20	
	Origin:			11	20	07.3		3.6S	149.6E	33km	USCGS			5.1
	5 KP	e(P)	Z	14	12	29								
	MN	e(P)	Z	14	14	04								
	WN	eL	ZNE	14	19									
		M	E		21							6	24	
	RX	eL	NE	14	22									
		M	E		26									
	Origin:			14	07	38.1		17.2S	176.7W	33km	USCGS			4.8
	5 TU	e(S)	Z	14	51	19								
	WN	eS	NE	14	52	28								
	GP	eS	N	14	53	32								
	Origin:			14	47	22.4		28.7S	178.8W	194km	USCGS			4.1
	5 KP	eP	Z	23	04	41								
	WN	e(S)	Z	23	13									
		eL	Z		24									
	RX	e(S)	E	23	13	04								

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
JUN		e	N	20				
		e(L)	E	23				
		e(L)	N	25				
6	MN	e(P)	Z	05 30 51				
	CT	eP	Z	05 30 52				
	KP	eP	Z	05 30 53				
	RX	eP	Z	05 30 56				
		e	Z	31 11				
		e(S)	N	41.0				
		eL	E	59				
		eL	NE	06 04				
		M	E	05			1 19	5.7
	WN	e(S)	Z	05 42				
		eL	Z	56				
	Origin:			05 18 55.1	19.9N	120.2E	33km USCGS	5.8
6	KP	eP?	Z	06 19 13				
	MN	e?	Z	06 20 11				
	Origin:			06 07 22.2	20.1N	120.4E	33km USCGS	4.7
6	KP	eP	Z	08 33 56				
		e	Z	34 22				
	Origin:			08 21 12.2	6.7N	94.7E	33km USCGS	5.5
6	ON	eP	E	11 27 22				
	KP	e(P)	Z	11 27 30				
		e	Z	28 08				
	TU	eS	Z	11 29 03				
	WN	eS	NE	11 30 10				
		eL	Z	32				
	CB	eS	E	11 30 30				
	GP	eS	N	11 31 15				
	Origin:			11 25 18.9	30.5S	177.7W	110km USCGS	4.4
6	RX	eS	E	12 24.0				
		eL	NE	36				
		M	E	36			3 23	5.9
	WN	eL	Z	12 37				
		M	Z	41	2 18			
	Origin:			12 04 14.3	37.8S	77.9E	33km USCGS	5.3
6	KP	e	Z	17 48 29				
	RX	eP	Z	17 48 51				
	Origin:			17 42 47.0	14.3S	167.3E	160km USCGS	4.7
6	KP	eP	Z	23 46 11				
	WN	e	ZE	23 48 02				
	Origin:			23 43 17.3	25.4S	180.0	369km USCGS	4.3
7	RX	e(L)	E	06 16				
	WN	eL	Z	06 17				
7	WN	eL	Z	07 54				
7	WN	eL	Z	09 38				
7	WN	eL	Z	12 35				
7	KP	eP?	Z	15 39 49				
		e	Z	51 u				
	CT	e(P)	Z	15 40 00				
	MN	e(P)	Z	15 41 19				
	WN	eL	ZE	15 47				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
JUN	RX	eL	NE	15 48				
	Origin:			15 34 47.8	15.3S	178.9W	33km USCGS	4.9
7	MN	e(P)	Z	16 01 44				
	KP	eP	Z	16 01 45				
	CT	eP	Z	16 01 48				
		e	Z	52				
	WN	e(L)	Z	16 29				
		M	Z	34				
	Origin:			15 49 57.4	19.0N	121.8E	33km USCGS	4.7
7	KP	eP	Z	19 43 24				
	CT	eP	Z	19 43 27				
	WN	e(PPS)	Z	19 56 12				
		eL	ZE	20 11				
		M	ZE	13	5 22		3 24	
	RX	eSS	E	20 02				
		eL	NE	14			2 20	6.0
		M	NE	17			2 20	6.0
	Origin:			19 30 35.6	8.5N	103.1W	33km USCGS	4.9
7	KP	e(P)	Z	21 41 34				
	WN	e?	Z	21 42 27				
		eL	Z	22 10				
		M	Z	11	1 20			
	Origin:			21 28 48.5	8.8N	102.5W	33km USCGS	4.6
7	KP	eP	Z	22 37 14				
	CT	eP	Z	22 37 24				
	MN	eP	Z	22 39 40				
	WN	eL	Z	22 46				
	RX	eL	E	22 47			3 20	5.5
		M	E	49				
	Origin:			22 31 54.8	15.2S	173.1W	33km USCGS	4.6
7	KP	e(P)	Z	22 42 49				
	CT	e(P)	Z	22 42 58				
		e	Z	43 03				
	WN	eP	Z	22 43 16				
		eL	Z	50				
		M	ZE	58	19 18		11 16	
	MN	eP	Z	22 44 15				
	RX	e	Z	22 44 33				
		eL	ZNE	53				
		M	E	54				
		M	E	55			10 20	5.9
	Origin:			22 37 30.0	15.3S	173.2W	33km USCGS	5.0
8	KP	eP	Z	01 07 12				
	CT	e(P)	Z	01 07 23				
	WN	eL	Z	01 15				
		M	Z	19	5 16			
	RX	eL	E	01 17				
		eL	N	20				
		M	E	21				
	Origin:			01 01 51.9	15.1S	173.0W	33km USCGS	4.6
8	KP	e(P)	Z	02 03 54				
	CT	e(P)	Z	02 04 13				
	WN	eL	Z	02 09				
	Origin:			02 00 32.0	23.2S	171.3E	47km USCGS	4.3
8	WN	eL	Z	05 18				
	Origin:			04 22 53.0	22.7S	13.7W	33km USCGS	4.9

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
JUN 8	KP	iP	Z	05	41	38	u							
	CT	P	Z	05	41	46	u							
	WN	e?	Z	05	41	53								
	RX	eP	Z	05	41	59								
		e(pP)	Z		42	28								
	Origin:			05	34	06.8		5.5S		147.0E	170km	USCGS		5.1
8	KP	e(P)	Z	19	57	11								
	Origin:			19	52	45		16.1S		176.9W	542km	USCGS		
8	KP	e(P)	Z	23	03	52								
	WN	eL	Z	23	13									
	Origin:			22	58	32		14.5S		174.0W	33km	USCGS		4.4
9	WN	eL	Z	01	40									
		M	Z		42			9	19					
	RX	eL	E	01	44									
	Origin:			01	30	32.2		23.5S		176.0W	33km	USCGS		4.8
9	KP	eP	Z	04	02	47								
		e	Z			49								
	CT	e(P)	Z	04	03	02								
	WN	eL	Z	04	10									
	RX	eL	E	04	10									
	Origin:			03	57	57.9		17.5S		168.0E	33km	USCGS		4.0
9	CT	eP	Z	07	48	51								
	Origin:			07	42	20.3		12.2S		166.9E	233km	USCGS		4.3
9	KP	eP	Z	15	55	52								
	CT	e(P)	Z	15	56	07								
	WN	eL	Z	16	04									
		M	Z		06									
	RX	eL	E	16	06									
	Origin:			15	50	31.8		15.3S		172.9W	33km	USCGS		4.5
9	WN	eL	Z	21	42									
	Origin:			20	37	51.6		10.7N		41.9W	33km	USCGS		5.0
10	RX	eP?	Z	04	20	39								
		e	Z			40	u	23	8					6.4
		e(S)	E		23	46								
		e	N		24	.0								
		e	Z		24	.1								
		M	NE		25					150	12	150	11	
	WN	iP	ZNE	04	21	43	u	31	6					
		eS	ZNE		26	04				25	12	38	12	
		eL	N		28									
		M	NE		29					96	16	67	16	
	CT	eP	Z	04	22	04								
	KP	e(P)	Z	04	22	17								
	Origin:			04	16	37.7		55.4S		146.4E	33km	USCGS		6.1
10	KP	eP	Z	05	06	50								
	CT	e?	Z	05	07	06								
	Origin:			05	02	34.6		18.6S		169.3E	240km	USCGS		4.2
10	RX	e(P)	Z	05	18	21								
		eL	NE		22									
	WN	e(L)	Z	05	26									
	Origin:			05	14	15.6		55.2S		146.3E	33km	USCGS		
10	RX	P	Z	06	43	10	d	18	10					6.2
		e(S)	NE		46	.4								
		M	NE		48					200	13	260	14	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
JUN	WN	iP	ZNE	06	44	12	d							
		eS	ZNE		48	24						41	11	
		eL	NE		50									
		M	N		51									
		M	E		52									
	CT	e(P)	Z	06	44	35								
	KP	e(P)	Z	06	44	42								
	Origin:			06	39	04.0		55.3S		146.1E	18km	USCGS		6.0
10	WN	e(L)	Z	09	23									
		eL?	Z		26									
10	WN	eL	Z	11	30									
	Origin:			10	46	58.1		50.9N		160.2E	33km	USCGS		5.3
10	KP	eP	Z	12	27	12								
		e	Z			21								
		epP	Z			49								
	CT	eP	Z	12	27	24								
	RX	e(P)	Z	12	27	46								
		e(SS)	NE		42									
	WN	e(SS)	Z	12	37									
		e	Z		40									
	Origin:			12	19	56.1		4.6S		152.0E	174km	USCGS		5.2
10	CT	eP	Z	18	49	34	d							
	TU	eP	Z	18	49	37								
	RX	e(P)	Z	18	49	56								
	Origin:			18	42	06.2		5.1S		151.7E	112km	USCGS		4.9
10	KP	P	Z	24	06	07	u							
		e(PcP)	Z		08	16								
	CT	P	Z	24	06	16	u							
		ePcP?	Z		08	18								
	TU	eP	Z	24	06	19								
	WN	eP	Z	24	06	26								
		e	Z		08	24								
		e(S)	Z		13									
		e	Z		16	12								
		eL	ZE		18									
		M	Z		21					5	22			
	RX	eP	Z	24	06	41								
		eL	ZNE		19									
		M	E		23							1	20	5.5
	Origin:			23	58	44.3		4.5S		152.8E	69km	USCGS		5.2
11	WN	e(L)	Z	14	01									
		M	Z		06					1	20			
11	WN	e(L)	Z	16	10									
		M	Z		14					3	18			
	Origin:			15	23	42.3		31.8N		115.2W	33km	USCGS		5.2
11	KP	P	Z	17	16	23	d							
	CT	eP	Z	17	16	34								
		e	Z			36								
		e	Z		19	34								
		e	Z			52								
	WN	e(P)	Z	17	16	54								
		e	ZNE		20	22								
	OP	e(P)	N	17	17	22								
		e(S)	N		20	49								
	Origin:			17	13	11.5		23.1S		179.8W	550km	USCGS		4.1
11	KP	eP	Z	17	16	48								

Date	Stn	Phase		h	m	s.	Az	Tz	An	Tn	Ae	Te	Mag.
JUN		e	Z		17	17							
	CT	eP	Z	17	17	00							
		e	Z			02							
	WN	eP?	Z	17	17	20							
	GP	e(P)	N	17	17	46							
		e(S)	N			21 13							
	Origin:			17	13	36.2	23.2S	179.7W	550km		USCGS		4.4
11	WN	eL	Z	22	51								
		M	Z			52	1	18					
12	KP	eP	Z	04	13	13							
	CT	eP	Z			13 23							
	Origin:			04	08	11.7	15.8S	174.2W	150km		USCGS		4.4
12	KP	P	Z	13	07	33 d							
		e	Z			54							
	CT	eP	Z			07 46							
	Origin:			13	02	47.9	17.0S	173.4W	33km		USCGS		4.7
13	KP	e(P)	Z	05	19	49							
	WN	eL	Z			28							
	Origin:			05	14	26.6	15.2S	173.3W	33km		USCGS		4.9
13	WN	e?	Z	10	44	26							
		e(L)	Z	11	01								
	KP	eP	Z	10	44	27							
	CT	e	Z	10	44	28							
	Origin:			10	34	52.4	6.1S	130.1E	150km		USCGS		4.3
13	KP	eP	Z	17	34	03 u							
		e?	Z			36 09							
		e	Z			39 59							
	CT	P	Z	17	34	12							
		e	Z			41 44							
	WN	e(P)	Z	17	34	23							
		e	Z			40.1							
		e	NE			41 12							
		e	Z			44							
		eL	Z			46							
		M	ZE			49	4	22			2	22	
	RX	eP	Z	17	34	37							
		eL	NE			48							
		M	E			51					2	20	5.6
	Origin:			17	26	41.1	4.6S	153.2E	54km		USCGS		5.0
14	CT	e(P)	Z	16	35	03							
	Origin:			16	30	46.3	17.9S	178.5W	587km		USCGS		4.2
14	WN	e(L)	Z	22	40								
15	KP	eP	Z	05	06	32							
	CT	eP	Z	05	06	38							
	WN	eP	Z	05	07	01							
	Origin:			05	01	52.0	15.0S	177.8W	350km		USCGS		4.6
15	WN	eL	Z	12	25								
15	WN	eP	Z	15	41	16							
		eS	ZE			49 56							
		e(SP)	ZE			50 24	2	26			3	26	
		eSS	Z			53½							
		eL	ZE	16	00								
		M	ZNE			03	5	18	1	18	2	18	
	CT	eP	Z	15	41	15							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
	KP	eP	Z	15	41	18							
JUN	RX	eP	Z	15	41	30							
		eP			50	18							
		eS	NE								2	24	5.9
		eL	ZNE	16	01								
		M	E		04						2	18	5.8
	Origin:			15	30	37.7	36.3S	98.9W	33km		USCGS		4.9
		P	Z	13	56	22							
16	KP	e(pP)	Z			37							
		P	Z	13	56	31							
	CT	e	Z			47							
		epP	Z	13	57	12							
	RX	e	Z	13	57	16							
	WN	e		13	49	00.1	4.5S	153.0E	72km		USCGS		5.7
	Origin:												
		iP	Z	02	09	05 u							
17	KP	e(P)	Z	02	09	14							
	CT	e(P)	X	02	09	53							
	KM	e(P)	N	02	09	56							
	GP	eP	N		13	57							
		eS	N	02	10	20							
	RX	eP	Z	02	10	27							
	MN	eP	Z	02	04	55.7	17.7S	178.5W	515km		USCGS		3.2
	Origin:												
		e?	Z	02	11	10							
17	CT	e?	Z		13	13							
		e?	Z	02	12	45							
	WN	e?	Z	02	06	10	15.9S	177.9W	33km		USCGS		4.4
	Origin:												
	KP	eP	Z	17	41	09							
17	MN	P	Z	17	42	37							
	Origin:			17	37	22.2	20.3S	177.3W	529km		USCGS		3.4
	RX	eP	N	18	35	38				9 11			6.2
17		i	Z			44	10	8					6.2
		i(S)	E		39	40					90	14	
		e	ZN			48							
		eL	ZNE		40½								
		M	E		42						90	11	
	MN	P	Z	18	35	41 d							
	GP	eP?	N	18	35	53							
		e	N			58							
	WN	eP?	Z	18	36	08 u							
		e	Z			13 u	17	8					
		e(S)	E		40	40					22	14	
		e(L)	ZN		42								
		M	Z		43		66	20					
	KP	eP	Z	18	36	44 u							
	Origin:			18	30	54.1	65.8S	179.5W	33km		USCGS		5.6
17	KP	e(P)	Z	20	13	06							
	CB	eP	E	20	13	48							
	GP	e(P)	N	20	14	14							
		eS	N		18	36							
	MN	eP	Z	20	14	37							
	WN	eL	Z	20	20								
		M	Z		22		2	18					
	RX	eL	E	20	22								
		M	E		24						3	20	5.4
	Origin:			20	08	37.0	20.4S	174.4W	33km		USCGS		4.9
17	MN	iP	Z	23	13	13 u							
		pP	Z			30 u							
	RX	P	Z	23	13	21							
		epP	Z			38							

Date	Stn	Phase		h	m	s		Az Tz	An Tn	Ae Te	Mag.
JUN		eL	E		36						
	WN	eP?	Z	23	13	36					
		e?	ZNE			42					
		e	Z			54					
		eL	Z		38						
		M	Z		42			2 28			
	CT	iP	Z	23	13	39	u				
		epP	Z			55					
	KP	P	Z	23	13	39	u				
		epP	Z			56					
	Origin:			23	02	06.6		4.1S	102.2E	73km USCGS	6.1
18	KP	eP	Z	04	14	33					
		e	Z			41					
	RX	e(P)	Z	04	14	50					
		e	Z			58					
	MN	eP	Z	04	14	54					
	CT	e?	Z	04	14	55					
	WN	eL	Z	04	43						
		M	Z		44			6 24			
	Origin:			04	02	31.0		29.0N	129.9E	33km USCGS	5.5
18	KP	eP	Z	09	35	40					
	Origin:			09	30	47.3		15.7S	168.0E	176km USCGS	
18	CT	eP	Z	23	25	36					
		e	Z			39					
	Origin:			23	14	23.9		12.6N	124.2E	16km USCGS	4.6
19	WN	eS	NE	02	23	40					
		eL	ZE			25					
		M	ZN			28		7 19	4 18		
	RX	eL	NE			27					
		M	E			29				9 20	5.7
	Origin:			02	15	54.1		23.6S	174.9W	55km USCGS	4.3
19	KP	eP	Z	09	19	18					
	MN	e(P)	Z	09	19	19					
	WN	e(P)	Z	09	19	22					
		e	Z			31					
		e	Z			46					
		e(S)	ZNE		27	.9					
		eSS	E		32						
		e(SSS)	ZE		35						
		eL	ZE		39						
		M	ZE		43			13 28		5 27	
	CT	e	Z	09	19	27					
	TU	eP	Z	09	19	28					
	RX	e?	Z	09	19	30					
		e	Z			38					
		eS	N		27	50					
		e(SS)	NE		32						
		eSSS	NE		35						
		e(L)	NE		39						
	Origin:			09	09	04.0		4.7N	126.5E	83km USCGS	6.2
19	WN	eL	Z	11	38						
		M	Z		42			1 30			
	RX	eL	E		43						
		M	E		44					1 24	5.6
	Origin:			10	47	24.7		25.0N	92.1E	51km USCGS	5.7
19	KP	eP	Z	12	05	23					
	CT	eP	Z	12	05	33					
		e	Z		06	03					

Date	Stn	Phase		h	m	s		Az Tz	An Tn	Ae Te	Mag.
		e?	Z	12	06	08					
JUN	MN	e?	NE	12	12	04					
	RX	eS	NE		16				2 18	2 20	5.5
		eL	NE		18						
		M	NE	12	16						
	WN	eL	Z	11	58	55.0		9.3S	158.8E	33km USCGS	5.5
	Origin:			16	40	21					
19	KP	P	Z	16	40	21					
	WK	p	Z			42					
		e(S)	Z	16	40	23½	u				
	TU	P	Z			39					
		e	Z			44					
		eS	Z		41	00					
		e	Z	16	40	26					
	CT	iP	Z			48					
		e(S)	Z	16	40	(34)	u				
	TA	P	Z		41	(03)					
		e	Z			(06)					4.2
		e	E	16	40	44					
	ON	eP	E		41	18					5.9
		eS	ZNE	16	40	48½	u				
	WN	p	NE		41	28					
		eS	E	16	40	57					
	CB	eP	E		41	08					
		e	E			32					
		e	E			44					6.4
		eS	E								
	GP	eP	N	16	41	24					
		eS	N		42	30					
	KM	e	X	16	41	32					
		e	X			53					
		eS	X		42	21					
	MN	eP	Z	16	42	14	d				
		e	Z		43	51					
		e	Z			59					
		eS	Z		44	02					
	RX	e?	Z	16	42	16					
		e	Z		43	22					
		e	Z			39					
		eS	Z			41					
	Origin:			16	39	57		38.1S	176.3E	165km NZ(B)	5½
								Felt: Wellington			
19	KP	e(P)	Z	18	29	15					
		e	Z			18					
		e	Z			27					
		e	Z			52					
		epP	Z		30	13					
		ePcP	Z		31	17	d				
		ePcS	Z		34	41					
	CT	eP	Z	18	29	27					
		e?	Z		30	34					
	TU	eP	Z	18	29	29					
		e	Z		30	05					
	WN	e(SS)	Z	18	39						
	Origin:			18	22	09.6		3.5S	153.4E	279km USCGS	5.1
19	KP	e(P)	Z	23	13	43					
	WN	eL	Z	23	39						
	Origin:			23	01	51.5		31.5N	140.3E	38km USCGS	5.0
20	KP	e(P)	Z	01	08	17					
	WN	e?	Z	01	08	57	u				
	Origin:			00	56	04.1		36.3N	144.5E	33km USCGS	5.1

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
JUN 20	WN	eL	Z	19	24					
20	ON	e(P)	E	22	49	02				
		e	E			33				
	KP	e(P)	Z	22	49	05				
	CT	e(P)	Z	22	49	22				
		e	Z			46				
		eS	Z		51	44				
		e	Z		52	09				
	TU	e	Z	22	49	33				
		e(S)	Z		51	12				
	WN	e	NE	22	49	38				
		e	NE			54				
		eS	NE		52	21				
		eL	ZNE		53½					
		M	E		55				14 20	
	RX	e	Z	22	50	58				
		eL	NE		56					
		M	E		58				15 20	
	Origin:			22	46	18.1	27.9S 176.6W	41km	USCGS	5.8
							Felt: Raoul Is. MM2			5.2
21	TU	e(P)	Z	00	10	40				
		eS	Z		12	28				
	KP	e?	Z	00	10	49				
		e	Z			55				
		e	Z		11	50				
	CT	e?	Z	00	11	03				
		e	Z			23				
		e	Z		12	54				
		e	Z		13	01				
	WN	e?	NE	00	11	23				
		eS	NE		13	35				
	RX	e(P)	Z	00	12	38				
	MN	eP	Z	00	12	48				
21	TU	e(S)	Z	17	47	34				
	WN	eS	NE	17	48	38				
		eL	NE		49½					
		eL	Z		50½					
		M	E		51				3 20	
	RX	eL	NE	17	53					
		M	E		54				4 20	5.4
	Origin:			17	42	35.9	27.9S 176.2W	33km	USCGS	4.7
21	CT	e?	Z	21	44	12				
		e(S)	Z		46	31				
	TU	e?	Z	21	44	17				
		e	Z			30				
		e(S)	Z		46	03				
	ON	e(P)	E	21	44	25				
	WN	e(P)	Z	21	45	12				
		eS	ZNE		47	09				
		eL	E		48					
		eL	Z		49					
		M	Z		51		8 19			
	GP	e	N	21	45	51				
		eS	N		48	18				
	MN	eP	Z	21	46	24				
	TO	e	Y	21	46	34				
	KM	e(S)	X	21	48					
	RX	eL	NE	22	(52)					
		M	E		(53)				4 20	5.4
	Origin:			21	42	01.0	29.7S 177.4W	43km	USCGS	4.8
							Felt: Raoul Is. MM2			

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
			Z	04	56					
JUN 22	WN	eL		04	37	21.7	6.1S	154.4E	64km USCGS	4.9
	Origin:									
				08	55.9				2 24	
22	RX	e(PS)	E	09	07					
		eL	E	08	56					
	WN	e(PS)	Z	09	06					
		eL	ZNE		08		2 20			
		M	Z	08	35	14.8	41.1S	90.2W	33km USCGS	4.6
	Origin:									
			Z	12	30	23				
22	KP	e?		12	24	56.5	15.1S	172.7W	50km USCGS	4.2
	Origin:									
			Z	16	21	57				
22	KP	eP	Z	16	21	59				
	CT	P	Z	16	22	04				
	TU	eP	Z	16	12	14.0	6.0S	113.1E	595km USCGS	5.1
	Origin:									
			Z	21	32	02				
22	TU	e?	E	21	33	10				
	WN	eS			36					
		eL	Z	21	27	58.4	30.1S	177.2W	33km USCGS	4.4
	Origin:						Felt: Raoul Is. MM2			
		eP?	E	03	51	48				
23	ON	e	E			53				
		e(P)	Z	03	51	50				
	TU	e	Z			57				
		e(S)	Z		53	34				
		e	Z			38				
		e	Z			41				
	KP	e(P)	Z	03	52	00				
	CT	eP	Z	03	52	09				
		e(S)	Z		54	05				
		e	Z			12				
	WN	eP	Z	03	52	43				
		eS	NE		54	45				
		e	ZNE		02	38				
		eL	E		55					
		eL	ZN		56					
		M	ZE		57		11 22		6 22	
	KM	eP	X	03	53	15				
		eS	X		55	43				
	GP	e(P)	N	03	53	17				
		eS	N		55	49				
	RX	eP	Z	03	53	45				
		e	Z		54	10				
		eL	NE		58					
		M	NE	04	01			4 18	4 20	5.4
	Origin:			03	49	33.9	29.6S	177.9W	55km USCGS	5.0
							Felt: Raoul Is. MM4			
23	WN	e?	Z	09	00	45				
		eL	Z		13					
	KP	eP	Z	09	00	52				
	CT	P	Z	09	00	59 d				
	Origin:			08	53	09.6	6.0S	146.6E	61km USCGS	5.3
23	WN	eL	Z	18	57					
	Origin:			18	27	11.8	12.3N	140.7E	42km USCGS	4.9
24	WN	eL	Z	03	15					
	Origin:			02	59	17.4	10.6S	163.3E	58km USCGS	4.7
24	WN	eSKS	Z	04	51	09				

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
JUN		e	E		52	38							
		e(PPS)	Z		55								
		eSS	Z		59	32							
		eSSS	Z	05	03	24							
		eL	ZNE		09½								
		M	ZE		18		19	27					
		M	E		23						10	25	
	RX	eSKS	N	04	51.7						6	20	
		e	E		53.5								
		eSS	E	05	01								
		e(SSS)	N		05								
		eL	E		12								
		M	NE		14								
		M	N		25				11	20			
	Origin:			04	26	37.9	59.5N	151.7W	52km		USCGS		6.0 5.7
	24 CT	eP?	Z	13	21	41							
		e	Z			48							
		eS	Z		24	26							
	TU	eS	Z	13	23	46							
	WN	eP	Z	13	21	51							
		eS	ZNE		24	48							
		e(L)	Z		29								
	RX	eL	NE	13	29								
	Origin:			13	18	08.2	25.5S	175.6W	238km		USCGS		4.6
	24 KP	eP	Z	15	06	16							
	WN	eP	Z	15	06	44							
	Origin:			15	01	44.2	15.5S	177.5W	412km		USCGS		5.0
	24 WN	e(L)	Z	16	03								
	RX	eL	E	16	04								
	24 KP	eP?	Z	16	30	21							
		e	Z			26							
	WN	e	Z	16	48								
		e	ZE		56	26							
		eLr	ZNE	17	01								
		M	ZN		04		3	23	2	23			
	RX	eL	N	17	04								
		M	N		06				2	23			6.0
	Origin:			16	17	15.4	52.3N	171.2W	33km		USCGS		5.4
	25 KP	eP	Z	02	33	33							
	TU	eP	Z	02	33	34							
	CT	eP	Z	02	33	40							
	WN	P	Z	02	34	01	u						
	RX	eP	Z	02	34	51							
	MN	P	Z	02	34	57	u						
	Origin:			02	29	36.5	18.9S	177.5W	566km		USCGS		4.1
	25 KP	e?	Z	02	54	40							
	Origin:			02	47	03.0	7.2S	154.8E	207km		USCGS		4.8
	25 WN	e(L)	Z	08	53								
	25 RX	e(SS)	N	14	58½								
		eL	NE		05								
	WN	eL	Z	15	07								
		M	Z		14		1	19					
	Origin:			14	32	14.3	8.4S	106.5E	78km		USCGS		5.4
	25 KP	eP	Z	16	08	24							
	CT	e?	Z	16	08	56							
	WN	eP	Z	16	09	02							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
			ZNE		12	48							
		e	Z	16	09	53							
JUN	RX	eP	Z	16	09	59							
	MN	eP	Z	16	04	19.3	20.4S	176.1W	250km		USCGS		4.3
	Origin:												
			Z		09	51	48						
	26 MN	eP	Z		09	51	50						
	KP	eP	Z				58						
		e	Z		09	51	58						
	CT	eP	Z		09	52	00						
	TU	eP	Z		09	52	14						
	MN	e?	Z			54	48						
		ePP?	Z		10	11½							
		eL	Z			16							
		M	Z		09	52	19						
	RX	e	Z		09	41	31.2	4.6N	126.3E	33km	USCGS		4.9
	Origin:												
	26 KP	e?	Z		16	55	14						
	MN	eP	Z		16	57	10						
		e	Z				29						
	Origin:				16	51	42	23.5S	177.0W	33km	USCGS		4.6
	26 MN	eSP	Z		18	10							
		eSS	Z			16							
		eL	ZE			30							
		M	ZE			32			5	23		5	24
	RX	eSP	E		18	11.0							
		e	E			11.9							
		eSS	E			17							
		eL	E			33						2	21
		M	E			36							6.0
	Origin:				17	42	40.6	7.1N	82.3W	20km	USCGS		6.0
	27 WN	eP?	Z		07	27	11						
		eS	E			30	28						
	MN	eP	Z		07	28	13						
		e	Z				41						
	Origin:				07	23	15.5	23.2S	177.1W	338km	USCGS		4.2
	27 WN	M	Z		08	06		1	20				
	27 ON	eP	E		12	23	36						
		e	E			24	09						
	KP	e(P)	Z		12	23	41						
	TU	e?	Z		12	23	42						
		e	Z			24	00						
		eS	Z			25	22						
	CT	e(P)	Z		12	23	55						
		e	Z			24	19						
		e	Z				29						
		e(S)	Z			25	51						
	TA	e	Z		12	24	18						
		e	Z			26	06						
		e(S)	Z				22						
	WN	eP?	Z		12	24	29						
		eS	ZNE			26	29						
		eL	ZE			28							
	GP	e(P)	N		12	25	04						
		S	N			27	33						
	RX	eP?	Z		12	25	39						
		e	Z				44						
	CB	eS	E		12	26	47						
	KM	e(S)	X		12	27	32						
	Origin:				12	21	25.1	30.1S	177.7W	44km	USCGS		4.8
								Felt:	Raoul Is.	MM3			

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
JUN 27	RX	eP	Z	15	45	49								
	CT	eP	Z	15	46	00								
	KP	eP	Z	15	46	00								
		e	Z			11								
	Origin:			15	32	53.1		14.4N		93.7E	33km	USCGS		5.0
28	WN	eP?	Z	02	41	26								
		e	Z			33								
		eL	Z	03	09									
		M	Z		10									
	RX	eL	NE	03	07									
	Origin:			02	28	51.6		27.5S		66.1E	33km	USCGS		6.0
28	ON	eP	E	08	58	00								
		e	E			31								
	KP	eP	Z	08	58	06								
		e	Z			08								
		e	Z			21								
		e	Z			40								
		e	Z			49								
	TU	eP	Z	08	58	07								
		eS	Z		59	12								
	CT	eP?	Z	08	58	17								
		e	Z			19								
		e	Z		59	17								
		e	Z			39								
		e	Z			57								
	WN	eP	ZNE	08	58	43	u							
		e	ZNE	09	00	14								
		eS	NE			18								
	GP	eP	N	08	59	18								
		e	N	09	01	22								
		e(S)	N			26								
	MN	eP	Z	09	00	09								
		e(PP)	Z			38								
		eS	Z		02	55								
	CB	eS	E	09	00	36								
	KM	eS	X	09	01	16								
	Origin:			08	56	42		33½S		180	N	NZ(D)		5.5
28	MN	e(P)	Z	13	59	57								
	KP	eP	Z	14	00	04								
		e	Z			19								
	CT	eP	Z	14	00	03								
		e(pP)	Z			14								
	WN	eL	ZE	14	28									
		M	ZE		32									
		M	ZE		36			3	22			2	22	
	RX	eL	E	14	32									
		M	E		34							2	20	5.2
	Origin:			13	47	47.7		1.3N		97.4E	50km	USCGS		5.0
28	KP	eP	Z	14	42	37								
	CT	eP?	Z	14	42	46								
		e	Z		43	06								
		e(S)	Z		44	56								
	WN	eS	ZNE	14	45	43								
	GP	eS	N	14	46	49								
								Felt: Raoul Is. MM2						
28	KP	eP	Z	22	08	21	d							
		e	Z			26								
		e	Z			34								
		ePP	Z		11	51								
	CT	eP	Z	22	08	29								

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
								5	10					
JUN	WN	e(P)	Z	22	08	34		8	11					
		e(PP)	Z		12	.6								
		eSKS	ZNE		18	56								
		eSP	ZNE		20	24								
		eSS	ZN		25	.2								
		eL	NE		33									
		eL	ZNE		37						14	32		
		M	ZNE		41						27	26	21	21
		M	ZNE		48			21	18		32	18	21	17
		e	Z	22	09	03								
	WN	e?	Z			14								
		e	Z	22	09	06								
	RX	e	Z		19	26								
		eSKS	NE		20	02					25	14	20	14
		e(S)	NE		26						8	15	10	15
		eSS	NE		58						2	16	3	18
		M	NE	21	55	38.8		46.5N		153.2E	33km	USCGS		6.1
	Origin:													6.0
28	KP	P	Z	23	09	46	d							
	CT	e?	Z	23	09	50								
	WN	e?	Z	23	10	00								
		e	Z			12								
	Origin:			22	57	03.4		46.4N		153.4E	33km	USCGS		4.8
28	KP	P	Z	23	24	55	d							
	CT	P	Z	23	25	02	d							
	WN	e?	Z	23	25	44								
	Origin:			23	16	56.4		4.7S		144.5E	83km	USCGS		4.8
28	KP	e(P)	Z	24	06	40								
		e	Z			56								
	WN	e?	Z	24	07	19								
	Origin:			23	53	56.1		46.4N		153.5E	33km	USCGS		5.3
29	KP	eP	Z	12	53	40	d							
		ePcP	Z		54	34	u							
	WN	eP?	Z	12	53	49								
		e	Z			54								
		eL	Z	13	12									
		M	Z		15			1	22					
	TU	eP	Z	12	53	50								
	MN	eP	Z	12	54	01	d							
	Origin:			12	43	47.5		11.6N		142.7E	30km	USCGS		5.2
29	KP	P	Z	13	14	16	d							
		e	Z			38								
	MN	P	Z	13	14	37								
	WN	eL	Z	13	37									
	Origin:			13	04	23.5		11.7N		142.8E	33km	USCGS		4.9
29	MN	eP	Z	13	29	17								
29	MN	P	Z	23	06	57								
	Origin:			23	00	09		16.8S		172.9W	33km	USCGS		4.5
29	TU	1P	Z	23	58	47	d							
		eP•	Z			49								
		eS	Z			59								
		eS•	Z		59	04								
	KP	1P	Z	23	58	55								
		eS	Z		59	14								
	TA	eP	Z	23	59	14								
		e	Z			15								
		e	Z			42								
		e(S)	Z			47								

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
JUN		e(S*)	Z			56				
		e(SS)	Z	24	00	04				
	ON	eP?	E	23	59	21				
		eP*?	E			26				
		e(S*)	E	24	00	04				
		e(SS)	E			24				
	WN	eP	ZN	23	59	26				4.0
		e	NE			29				
		e(P*)	NE			37				5.0
		eS	NE	24	00	11				
		eS*	NE			32				
	CB	eP	E	23	59	41				
		e	E			44				
		eP*	E			58				4.4
		e(S)	E	24	00	36				
		e	E			37				
		e	E			43				
		eS*	E		01	01				
	GP	e(P)	N	24	00	05				
		e	N			07				
		e	N			10				
		e	N			15				
		e	N		01	16				
		e(S)	N			19				
		e	N			35				5.0
	KM	e	X	24	00	11				
		eS	X		01	15				
		e(S*)	X		02	02				5.0
	RX	eP?	Z	24	00	42				
		e	Z			50				
		eS?	Z		02	25				
		e	Z			27				
	MN	eP?	Z	24	00	56				
		e?	Z		01	00				
		e	Z			04				
		e(S)	Z		02	53				
		e	Z		03	28				
	Origin:			23	58	29	37.8S	177.6E	S NZ(C)	5.0
30	MN	eP	Z	01	49	20				
	Origin:			01	39	05.4	11.8N	142.5E	33km USCGS	4.6
30	KP	eP	Z	02	08	45				
		e	Z			42				
		e	Z		09	41				
	MN	e(P)	Z	02	10	15				
	RX	e(L)	E	02	14½					
	Origin:			02	04	56.9	21.9S	170.8E	73km USCGS	4.7
30	MN	P	Z	04	29	31				
	Origin:			04	19	17.0	11.7N	142.6E	33km USCGS	4.7
30	MN	eP?	Z	06	41	02				
30	MN	P	Z	06	56	38	u			
	RX	eP	Z	06	56	44				
		e(SS)	E	07	08½					
	TA	eP	Z	06	56	59				
	WN	eP	Z	06	57	01				
		e	Z			05				
	KP	eP	Z	06	57	03				
	TU	e(P)	Z	06	57	10				
	Origin:			06	45	36.8	2.5S	102.4E	160km USCGS	5.5
30	WN	eL	Z	22	46					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
		M	Z			48				
JUN		e(L)	N	22	53					
	RX			22	04	52.8	46.5N	153.3E	33km USCGS	4.9
	Origin:									
			Z	23	12	20				
30	KP	eP?	Z			33				
		e	Z	23	12	54				
	TA	e	Z			14 46				
		e(S)	Z	23	13	44				
	GP	e?	N			16 08				
		e(S)	N	23	14	27				
		e(P)	Z	23	15	00				
	MN	eS	NE			02				
	WN	e	E				Felt: Raoul Is. MM1			
JUL	1 KP	eP?	Z	00	12	38				
	WN	eL	Z	00	23					
		M	Z			24				
	1 KP	eP?	Z	04	08	34				
	WN	eS	Z	04	13	50				
		eLq	E			16.7				
		eLr	ZN			17.4				
		M	ZNE			19	2 16	3 15	2 18	5.4
	RX	eLq	E	04		16.7				
		eLr	N			19.3				
		M	E			20			3 15	
		eLr	Z			21				
		M	N			22		3 16		
	Origin:			04	03	42.9	17.4S	167.6E	33km USCGS	4.2
	1 KP	eP	Z	06	34	06				
	WN	eS	ZNE	06	37	15				
	Origin:			06	31	27	25.7S	179.1E	583km USCGS	4.1
	1 TA	iP	Z	17	06	55.5	d			
	CT	iP	Z	17	06	56.7	u			
	WK	P	Z	17	07	02.5				
		e	Z			24½				
	KP	P	Z	17	07	05.0	d			
	WN	iP	ZNE	17	07	06.8	use			5.4
		S	E			29				
	TU	P	Z	17	07	08.8	u			
		S	Z			34				
	CB	iP	E	17	07	11.1	w			
	ON	P	E	17	07	32.6				5.5
		e(S)	E			08 16				
	GP	P	N	17	07	38.6	s			6.5
		S	N			08 25½				
	RX	iP	Z	17	08	14.1	d			
		S	Z			09 29½				
	MN	P	Z	17	08	27.0				
		eS	Z			09 55				
	Origin:			17	06	35	39.65S	174.85E	135km NZ(B)	5.9
							Felt: Gisborne to Christchurch MM4			
	1 KP	eP?	Z	17	57	24				
	WN	eLq	E	18	02.4					
		eLr	ZN			05.0				
		M	ZNE			07	2 14	2 14	2 14	
	Origin:			17	53	12	20.8S	169.2E	33km USCGS	4.7
	3 WN	eL	Z	18	47					
	RX	eL	E	18	49					

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
JUL		eL	N		51								
	Origin:			18	36	19.6	22.9S	175.6W	33km		USCGS		4.6
4	KP	eP	Z	11	01	08							
		e	Z			16							
		e(pP)	Z			42							
	CT	eP	Z	11	01	19							
		eS	Z		03	53							
	WN	eP	Z	11	01	44	5	50					
		e	ZE			50							
		e	ZNE		02	56	9	8	11	38	6	36	5.1
		eS	ZNE		04	31							
		eLq	NE		05.3								
		eLr	Z		06.0								
		M	NE		06				56	40	80	48	
		M	Z		07		50	48					
		eScP	Z		09	55							
		eScS	ZNE		13	33							
	RX	eP	ZN	11	02	57							
		e(PP)	ZNE		03	29							
		e	Z		04	12							
		e	NE		05	00			8	14	5	12	
		eS	Z		06	37							
		eSS	ZNE		07	36	8	14	20	26	105	40	
		eLq	NE		09								
		M	NE		10				25	20	69	21	
		eScP	Z		10	09							6.1
	Origin:			10	58	13.2	26.3S	177.7W	158km		USCGS		6.3
							Felt:	Raoul Is. MM4					
4	KP	eP?	Z	14	20	46							
	WN	eLr	Z	14	26								
		M	Z		30		3	21					
	RX	eL	NE	14	30								
	Origin:			14	16	51.1	22.9S	175.6W	33km		USCGS		4.8
5	WN	eL	Z	06	32		3	26					
	Origin:			05	48	13.4	11.6S	77.5W	55km		USCGS		5.8
6	KP	eP	Z	05	23	17							
	CT	eP	Z	05	23	37							
		e	Z		24	14							
		eS	Z		25	16							
	WN	e	ZE	05	24	28							
		eS	ZNE		25	57							
		eL	Z		28								
	Origin:			05	21	14	31.8S	179.0W	33km		USCGS		4.5
6	KP	eP?	Z	09	58	52							
		e?	Z	10	00	16							
6	WN	eL	Z	18	19								
	Origin:			17	49	54.5	11.6N	142.7E	26km		USCGS		4.8
7	RX	e	Z	00	11	10							
	CT	eP	Z	00	11	57							
		e?	Z		12	33							
	WN	eL	ZNE	00	32								
	Origin:			00	01	13.3	42.2S	84.4E	33km		USCGS		5.0
7	MN	eP	Z	10	49	55							
		eS	Z		51	27							
7	WN	eL	ZN	18	45		1	20					
	RX	eL	NE	18	44								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
JUL 8	MN	eP	Z	05	38	27							
		eS	Z		39	54							
	KP	iP	Z	11	43	54.0							
	WN	eP?	Z	11	44	21							
	Origin:			11	40	17.1	19.9S	178.7W	582km		USCGS		4.3
8	KP	eP?	Z	22	06	11							
	Origin:			22	01	21.0	17.0S	174.7W	95km		USCGS		4.0
9	WN	eSS	ZNE	09	57.5		1	28			2	24	
		eLr	ZE	10	13								
		M	ZE		15		5	22			4	22	
	RX	eLr	E	10	15								
		eLr	ZN		18								
		M	ZE		22		6	17			5	17	6.2
	Origin:			09	24	33.3	8.5N	83.0W	31km		USCGS		5.1
9	KP	e	Z	04	54	14							
	CT	e	Z	04	54	39							
	WN	e	ZNE	04	56	10							
10	WN	eLr	Z	03	56								
		M	Z		58		1	26					
	Origin:			03	14	41.8	46.3N	153.4E	33km		USCGS		4.8
10	KP	eP	Z	04	31	51							
		e	Z		32	11							
		e	Z		33	05							
	CT	e	Z	04	32	05							
		e	Z		34	05							
	WN	eS	ZNE	04	34	39							
		eLr	ZE		36								
		M	Z		38								
	RX	eLr	E	04	39								
	Origin:			04	29	25.1	29.7S	177.2W	33km		USCGS		4.4
10	KP	eP	Z	05	35	40							
	WN	eP	Z	05	35	55							
		ePP	Z		39	48	1	24					
		eSKS	ZE		46	20	2	20					
		eSP	Z		47	46	3	16					
		eSS	Z		52.6		3	24					
		eLq	E	06	00						6	42	
		eLr	NE		04								
		M	ZNE		06		11	26	6	27	3	26	
	RX	eSKS	NE	05	46	40			3	11			
		e(S)	NE		47	20			6	10	5	14	6.6
		eSS	NE		53.3								
		eLq	NE	06	00								
		eLr	N		07								
		eLr	Z		11								
		M	NE		12				6	19	4	20	6.2
	Origin:			05	22	57.1	46.3N	152.9E	33km		USCGS		5.6
10	WN	eT?	ZNE	09	16	16							
10	KP	eP	Z	16	51	00							
	CT	e(P)	Z	16	51	24							
		e	Z		53	12							
	RX	eP	Z	16	52	56							
	WN	eS	ZNE	16	53	47							
		eL	Z		55								
	Origin:			16	48	42.2	30.2S	177.8W	25km		USCGS		4.7

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
JUL 10	KP	eP	Z	20	02	33				
		e(pP)	Z		03	10				
	CT	eP	Z	20	02	40				
	WN	eP?	Z	20	02	51				
	Origin:			19	52	19.4	19.2N 145.2E	171km	USCGS	5.4
12	WN	eP?	Z	07	59	35				
	RX	eP	Z	08	00	21				
	Origin:			07	55	02.3	17.9S 178.5W	550km	USCGS	4.6
12	WN	eLr	Z	16	10					
		eLr	NE		16					
		M	Z		16					
	RX	eL	NE	16	14					
	Origin:			15	28	08.5	46.8N 153.6E	33km	USCGS	4.8
12	WN	eL	Z	24	10					
	RX	eL	E	24	14					
		eL	N		16					
	Origin:			23	51	16.0	5.5S 153.3E	56km	USCGS	5.0
14	KP	eP	Z	00	04	39				
		e	Z		05	21				
	WN	eP	Z	00	05	34				
		eS	ZNE		07	31				
		eLr	ZNE		08	.3				
		M	ZNE		11		40 18	26 14	26 19	
	RX	eP	Z	00	06	31				
		eL	NE		10					
		eL	Z		13					
		M	ZNE		14		18 16	18 16	17 16	
	Origin:			00	02	22.8	30.5S 177.2W	33km	USCGS	5.1
							Felt: Raoul Is. MM3			
14	KP	eP	Z	04	01	33				
	RX	eP	Z	04	03	21				
		e(Lr)	NE		08					
		M	E		09				6 22	
		M	N		11			5 17		
		eLr	Z		21					
	WN	eS	ZNE	04	04	16				
		e(Lr)	NE		05	.3				
		eLr	Z		06	.0				
		M	ZNE		08		11 18	6 18	7 20	
	Origin:			03	59	12.4	30.5S 177.3W	50km	USCGS	4.7
							Felt: Raoul Is. MM3			
14	WN	eLr	Z	06	36					
		eLr	NE		45					
		M	Z		46					
	RX	eLr	E	06	40					
		eLr	N		42					
		eLr	Z		46					
	Origin:			05	41	43.0	10.4N 62.6W	24km	USCGS	5.3
14	KP	eP	Z	14	30	36				
	WN	eP?	ZNE	14	31	32				
		eS	ZNE		33	26				
		eLr	ZNE		34	.3				
		M	ZNE		37		16 18	14 20	14 20	
	RX	eP	Z	14	32	36				
		eLr	NE		37					
		M	E		38				9 22	

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
					41			9 17		
		M	N	14	28	22.1	30.2S 177.4W	42km	USCGS	5.1
JUL	Origin:						Felt: Raoul Is. MM3			
			Z	19	23	34.0 u				
14	KP	1P	ZNE	19	24	00				
	WN	eP	Z	19	24	31				
	RX	e		19	18	43.0	15.8S 168.0E	186km	USCGS	4.8
	Origin:									
			Z	00	40	(54)				
15	KP	eP		00	41	07.7	20.2S 178.3W	510km	USCGS	3.9
	Origin:									
15	KP	e(P)	Z	04	26	06				
			Z	08	05	09				
16	KP	eP								
16	RX	ePKP	Z	18	46	46				
	KP	ePKP	Z	18	46	52				
	WN	ePKP	Z	18	46	53				
		e	E		47	10				
	Origin:			18	27	18.4	43.1N 41.5E	33km	USCGS	5.8
16	KP	eP	Z	19	10	47				
		e	Z		11	03				
		e	Z			55				
	RX	eP	Z	19	12	38				
		eL	NE		17				11 21	
		M	E		18					
		eL	Z		20					
		M	ZNE		20		9 16	9 16	7 16	
	WN	eS	ZNE	19	13	35				
		eL	ZNE		14					
		M	ZNE		17		20 18	15 19	14 22	
	Origin:			19	08	29.2	30.6S 177.2W	41km	USCGS	5.0
							Felt: Raoul Is. MM1			
17	WN	eLr	Z	04	06					
	Origin:			03	24	37.4	46.9S 33.3E	33km	USCGS	
17	RX	ePKP	Z	12	16	34				
	KP	ePKP	Z	12	16	40				
	Origin:			11	57	06.7	43.1N 41.5E	33km	USCGS	5.3
18	WN	eP	Z	05	09	00				
		eS	E		19	50				
		eSS	Z		25	.1				
		eLq	E		30	.5				
		eLr	ZN		40					
		M	Z		42					
		eLr	E		48					
	KP	eP	Z	05	10	17				
	RX	eS	NE	05	19	.1				
		eSS	NE		24	.0				
		eLq	E		28	.5				
		eLr	N		37	.5				
		eLr	ZE		40					
	Origin:			04	58	09.2	61.0S 22.3W	33km	USCGS	6.0
18	WN	eS	NE	07	53	39				
18	KP	eP	Z	12	37	16				
	WN	eP	Z	12	39	12				
	WN	eS	NE	12	39	28				
19	WN	$ePKP_1$	Z	06	06	10				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
JUL		ePKP$_2$	Z	07 28				
		e(PcPPKP)	Z	14 40				
		e	Z	27 16				
		e(SS)	E	34 56				
		e	Z	37 05	1 20			
		e(SSS)	Z	38.6	1 48			
		e	Z	42.7	2 40			
		eLr	ZE	07 03				
		M	Z	23	2 22			
	RX	ePKP$_2$	Z	06 07 10				
		e	E	24 54				
		eLr	E	07 15				
		eLr	N	18				
	KP	ePKP$_2$	Z	06 07 22				
	Origin:			05 46 05.2	43.3N	8.1E	33km USCGS	5.6
19	KP	e(P)	Z	09 13 06				
	WN	eLr	Z	09 40				
		M	Z	45	1 20			
	Origin:			09 00 44.8	36.3N	141.0E	70km USCGS	4.6
19	MN	e(P)	Z	12 19 23				
19	KP	eP	Z	18 58 53				
	WN	eP	ZNE	18 59 11				
	MN	eP	Z	18 59 19				
	Origin:			18 48 35.7	18.8N	147.5E	102km USCGS	4.8
20	WN	eL	Z	02 31.7				
	Origin:			01 45 06.4	31.1N	116.5W	14km USCGS	4.3
20	RX	e	E	05 22				
		e	N	23		17 20		
	WN	eL	Z	05 25.6				
		eL	ZNE	28	3 18			
20	RX	P	ZNE	06 40 17 une	16 8	13 11	1 10	6.6
		e	N	41 41				
		eS	ZNE	43 31		32 30	77 36	6.3
		eL	ZNE	44				
		M	ZNE	45	80 18	85 22	38 18	6.3
	WN	P	ZNE	06 41 20 une				
		e	ZNE	42 20	9 24	7 28	5 24	
		eS	ZNE	45 40	24 22	54 52		6.6
		eL	ZNE	47				
		M	ZNE	49	94 20	85 20	78 18	6.4
	CT	eP	Z	06 43(43)				
	Origin:			06 36 10.8	57.6S	148.5E	33km USCGS	5.6
20	KP	eP	Z	07 50 51				
	Origin:			07 38 50.9	32.4N	140.5E	124km USCGS	4.4
20	WN	eL	Z	19 13				
21	KP	eP	Z	11 15 46				
	Origin:			11 03 20	56.1S	27.4W	80km USCGS	5.5
21	KP	eP	Z	14 56 11				
	WN	eLr	Z	15 19				
		M	Z	23	8 26			
	Origin:			14 45 07.1	9.7N	122.3E	54km USCGS	
21	KP	eP	Z	18 55 53				
	CT	eP	Z	18 56 05				
		eS	Z	57 34				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
			Z	18 56 12				
JUL	TA	eP	NE	18 56 28				5.5
	WN	eP	NE	58 12				
		eS	N	18 57 04				5.5
	GP	eP	N	59 16				
		eS	Z	18 57 10				
	TU	eS	Z	18 57 50				
	MN	eP?	Z	18 54 14	33S	179W N?	NZ(D)	5.5
	Origin:							
22	KP	eP	Z	00 36 44				
		ePcP	Z	38 50				
	CT	P	Z	00 36 53				
	WN	P	Z	00 37 02	1 20			5.5
		e(PP)	Z	38 32	1 18			5.4
		e(S)	Z	42 52				
		eSS	ZE	46 40	3 28		10 40	
		eLr	Z	49.3	6 28			
		M	E	50			5 24	5.8
		eL	N	55				
	RX	eP	Z	00 37 12				
		eS	NE	43.5		1 18	2 18	5.6
		eLq	NE	47				
		eLr	Z	50				
		M	NE	50		3 26	4 24	
	Origin:			00 29 14.9	6.1S	148.9E 59km	USCGS	5.1
22	WN	eL	Z	16 01				
				15 47 55	20.9S	174.1W 33km	USCGS	4.1
22	WN	eL	Z	04 15				
23	WN	eL	Z	06 59				
	Origin:			06 17 51.5	41.5N	141.9E 91km	USCGS	4.4
23	RX	eP	Z	17 20 15				
	WN	eL	Z	17 31				
	Origin:			17 13 45	12.4S	165.3E 33km	USCGS	5.6
24	KP	eP	Z	05 26 33				
	CT	eP	Z	05 26 42				
	Origin:			05 22 54.3	20.6S	178.7W 531km	USCGS	4.2
24	KP	eP	Z	06 46 06				
	CT	eP	Z	06 46 15				
		eS?	Z	47 44				
	TA	e?	Z	06(48)				
	WN	eS	NE	06 48 27				5.4
	GP	eS	N	06 49 35				5.3
	Origin:			06 44 20	32½S	179W N	NZ(D)	5.3
					Additional readings from Charters Towers used to determine epicentre.			
24	KP	e(P)	Z	09 32 34				
	CT	e(P)	Z	09 32 42				
	WN	eS	ZN	09 34 43				
	Origin:			09 26 46.5	27.2S	177.2W 33km	USCGS	4.4
24	KP	eP	Z	11 44 29				
	CT	eP	Z	11 44 31				
	RX	eP	Z	11 44 41				
	WN	e(SP)	Z	11 55.9	1 40			
		eLq	Z	12 07				
		eLr	Z	11				
		M	Z	15	2 28			
	Origin:			11 32 17.7	24.6N	122.0E 33km	USCGS	5.3

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
JUL 24	WN	eL	Z	17	08					
	Origin:			16	46	38.4	6.4S	147.8E 55km	USCGS	
24	KP	eP	Z	19	11	05				4.5
	CT	eP	Z	19	11	14				
	WN	eL	Z	19	21					
		M	Z			26	2 18			
	Origin:			19	04	32.5	9.0S	158.2E 33km	USCGS	5.8
24	KP	eP	Z	23	39	35				
	CT	e(P)	Z	23	39	48				
	WN	eL	Z	23	40.5					
24	KP	eP	Z	21	54	41				
	WN	eL	Z	22	05					
		eL	E			07				
		M	ZE			07	5 22			
	RX	eL	NE	22	06				4 20	
		M	NE			09		4 18		
	Origin:			21	47	54.1	9.7S	154.4E 16km	4 18 USCGS	5.7 5.2
25	KP	e(P)	Z	00	29	09				
26	WN	e(SSS)	Z	05	10					
		eLr	Z			33				
	Origin:			04	17	16.7	42.1N	21.5E 5km	USCGS	5.5
26	KP	iP	Z	05	31	50.2 u				
	CT	eP	Z	05	32	01				
	RX	eP	Z	05	32	46				
	WN	eL	Z	05	38					
		eL	E			42				
		M	Z			44	3 25			
	Origin:			05	26	45.1	15.0S	167.3E 124km	USCGS	4.6
26	WN	eLr	Z	24	32.8		1 32			
	Origin:			23	48	26.5	9.7S	78.5W 62km	USCGS	4.9
27	KP	eP?	Z	16	57	00				
	WN	eLr	Z	17	15.8					
	Origin:			16	47	03.7	35.9S	102.7W 33km	USCGS	4.6
27	KP	eP	Z	21	38	24				
	Origin:			21	26	44.8	31.0N	140.3E 100km	USCGS	4.2
27	KP	eP	Z	22	24	56				
	Origin:			22	21	16	23.7S	179.6W 33km	USCGS	4.5
28	KP	eP	Z	07	14	38				
	CT	e	Z	07	14	57				
		e	Z		16	49				
	WN	eP?	Z	07	15	30				
		eS	ZNE			17 33				
		eL	ZNE			18				
		M	ZNE			21	17 18	5 16	7 20	
	RX	eP	Z	07	16	31				
		eL	E			21				
		eL	N			22				
		M	NE			22		3 20	4 21	
		eL	Z			24				
	Origin:			07	12	17.1	29.8S	177.6W 33km	USCGS	5.1
28	RX	eP	Z	08	05	27				
		eL	N			24.8				
		eL	E			27.8				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
			Z			31				
		eL	NE			31		3 15	4 18	5.9
JUL		M	Z	08	05	46				
	KP	eP	Z	08	05	46				
	CT	eP	ZNE	08	27					
	WN	eL	N			28		2 16		
		M	ZE			29	3 24		3 22	
		M		07	55	21.9	11.3S	112.1E 21km	USCGS	5.1
	Origin:									
26	KP	eP	Z	10	15	29				
	Origin:			10	05	28	1.5N	127.1E 33km	USCGS	
26	KP	ePKP	Z	13	44	56				
	Origin:			13	25	18.1	72.0N	0.0 33km	USCGS	4.5
26	KP	eP	Z	14	34	24				
	CT	eP	Z	14	34	41				
26	WN	e(SS)	Z	16	49	40	1 22			
		eLr	Z			52				
		e(Lr)	NE			53				
		M	Z			53	2 25			
	RX	eL	NE	16	53					
	Origin:			16	32	25.0	4.9S	152.7E 69km	USCGS	4.9
26	WN	eLr	Z	19	33					
		M	Z			35	1 24			
	Origin:			18	51	36.7	46.6N	153.1E 33km	USCGS	5.0
29	KP	eP	Z	04	51	03				
		e	Z			36				
	CT	e(P)	Z	04	51	41				
		eS	Z		53	15				
	WN	eS	ZNE	04	53	53				
		eL	Z			55				
	Origin:			04	48	49.8	30.4S	177.7W 33km	USCGS	4.5
29	KP	eP	Z	05	42	24				
	CT	eP	Z	05	42	25				
	Origin:			05	31	26.1	6.7S	107.1E 85km	USCGS	4.6
29	KP	eP	Z	20	16	27				
		e	Z			40				
		e?	Z		20	36				
		eL	Z			21.4				
	CT	eP	Z	20	16	41				
		e	Z			51				
		eS	Z		18	45				
	WN	eP	Z	20	17	10	2 32			5.8
		e	ZNE		19	23	11 36			
		eLg	NE			20.3				
		eLr	Z			21				
		M	Z			21	58 20			
		M	NE			23				
	RX	eP	ZNE	20	18	20		4 11	3 10	
		eS	ZNE		20	51		5 14	3 15	5.6
		eLg	NE			22.3				
		eLr	NE			23				
		eLr	Z			24.9				
		M	NE			26		83 16	110 20	6.3
		M	Z			27	59 15			
	Origin:			20	14	07.3	30.2S	177.3W 39km	USCGS	5.7
							Felt: Raoul Is. MM3			
29	KP	eP	Z	20	19	02				

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
JUL	CT	eP	Z	20	19	22							
		e	Z		21	03							
	Origin:			20	16	36.9	29.7S	177.0W	33km		USCGS		5.0
29	KP	eP	Z	23	21	11							
	CT	eP	Z	23	21	16							
	RX	eP	Z	23	22	58							
	Origin:			23	18	43.0	30.1S	177.1W	48km		USCGS		4.6
30	KP	e(P)	Z	01	46	51							
	CT	eP	Z	01	47	05							
		e	Z		49	04							
	RX	eP	Z	01	48	21							
		eLq	NE		53								
		M	NE		54				4	22	6	22	
		eLr	Z		55								5.3
	WN	eS	ZNE	01	49	35							
		eL	ZNE		50.6								
		M	ZNE		53		12	18	7	20	7	19	
	Origin:			01	44	18.8	29.8S	177.2W	65km		USCGS		4.8
							Felt: Raoul Is. MM2						
30	KP	eP	Z	03	00	07							
		eS	Z		01	29							
	CT	eP	Z	03	00	17							
		eS	Z		02	10							
	RX	eP	Z	03	01	45							
		eL	NE		07								
	WN	eS	E	03	02	46							
		eL	ZE		04.2								
		eLr	N		05.5								
		M	ZNE		06		3	18			4	14	
	Origin:			02	57	31.6	30.0S	177.2W	40km		USCGS		4.1
30	KP	eP	Z	03	31	18							
	Origin:			03	27	44	19.5S	179.0W	575km		USCGS		4.1
30	KP	eP	Z	04	29	44							
	CT	eP	Z	04	30	01							
		e	Z		32	05							
	RX	eP	Z	04	31	39							
		eL	E		36.5								
		eL	N		37.0								
		M	E		37						6	20	
		eL	Z		38.7								
		M	N		39				5	16			
	WN	eS	Z	04	32	35							
		eLq	ZE		33.6						7	20	
		eLr	Z		34.3								
		M	ZE		36		11	20			13	22	
	Origin:			04	27	25.0	30.2S	177.3W	17km		USCGS		4.6
30	KP	eP	Z	05	48	15							
		e	Z			42							
		eS	Z		50	30							
		eLr	Z		51	42							
	CT	eP	Z	05	48	29							
		eS	Z			30							
	WN	eP	ZNE	05	49	02							
		eS	ZNE		51	11							
		eL	ZNE		51.8								
		M	ZNE		55		90	18					5.6
	RX	eP	ZNE	05	50	10	3	10	4	10			5.4
		eS	NE		53	34			3	14	6	24	
		eLq	NE		54.0				43	20	95	20	
		eLr	Z		56								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
										51 17		52 16	6.1
		M	NE		57		68	15					
JUL		M	Z		59								
	Origin:			05	45	53.3	29.6S	177.3W	33km		USCGS		5.3
			Z	07	05	35							
30	KP	eP		06	52	22.7							
	Origin:						51.7N	158.1E	33km		USCGS		5.3
			Z	07	58	20							
30	KP	eP		07	55	42.3							
	Origin:						29.8S	176.9W	33km		USCGS		4.3
			Z	13	15	48							
30	WN	e(S)	Z		24		1	20					
		eL	ZE		25								
		M	Z	13	26		5	28					
	RX	eL	E		29								
		eL	N		29						3	20	5.8
		M	E	12	57	25.3	29.2S	112.1W	33km		USCGS		4.8
	Origin:												
			Z	14	03	52							
30	RX	eP	Z		04	08							
		epP	ZNE	14	04	12							
	WN	e	ZNE			28							
		e	Z		15.0		1	28					
		e(S)	Z		26								
		eL	Z	14	04	22							
	CT	eP	Z			38							
		epP	Z	14	04	27.2							
	KP	iP	Z			44							
		epP	Z	13	51	57.8	55.9S	27.5W	33km		USCGS		6.2
	Origin:												
30	KP	eP	Z	14	25	36							
		e(PP)	Z		26	07							
	CT	eP	Z	14	25	49							
		e	Z			14							
		e	Z		27	58							
	WN	eP	ZNE	14	26	28							
		eS	ZNE		28	31							
		eL	ZNE		29.5								
		M	ZNE		32		9	18	9	20	8	22	
	RX	eP	Z	14	27	27							
		eL	N		30								
		eL	E		32								
		M	NE		33				5	23	9	23	5.6
		eL	Z		34								
	Origin:			14	23	13.7	29.5S	177.1W	33km		USCGS		5.2
30	KP	eP	Z	15	06	55							
		e	Z		07	17							
	CT	eP	Z	15	07	12							
		eS	Z		09	15							
	WN	eP	ZN	15	07	43							
		eS	ZNE		09	51							
		eL	ZNE		10.7								
		M	ZNE		14		28	18	20	20	20	16	
	RX	eP	Z	15	08	47							
		eL	E		13								
		eL	N		14								
		eL	Z		15								
		M	NE		15				7	21	15	21	5.7
		M	Z		18		10	15					
	Origin:			15	04	38.7	29.9S	177.4W	76km		USCGS		5.2
AUG	1 KP	eP?	Z	04	45	57							
	Origin:			04	39	02.7	7.0S	146.1E	174km		USCGS		4.7

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
[illegible]	[illegible]P	eP	Z	12	46	21							
		e	Z			24.8							
	[illegible]S	eP	Z	12	46	21							
	[illegible]W	eP?	N	12	46	48							
		e	N			54							
	[illegible]P	eP	Z	15	23	19							
		e?	Z			44							
	[illegible]X	eP	Z	15	25	12							
		eL	NE		30.5								
		M	E		31						4	21	
	[illegible]W	eS	ZNE	15	26	12							
		eL	ZNE		27.5								
		M	ZNE		30		6	18	4	15	4	20	
	Origin:			15	20	55.9	29.8S		177.2W		59km	USCGS	4.8
	[illegible]P	eP	Z	10	31	49							
		e(pP)	Z			32 04							
	[illegible]	e	Z	10	31	54							
	Origin:			10	20	39.7	26.8N		141.3E		109km	USCGS	4.3
	[illegible]W	eP	Z	19	37	01							
	Origin:			19	26	26.0	6.0N		125.1E		118km	USCGS	5.0
	[illegible]W	eP	Z	21	49	28½							4.7
	[illegible]S	e	Z	21	49	32							
		e	Z			36							
		e	Z			50 42							
	[illegible]P	e	Z	21	49	37							
	[illegible]I	e	Z	21	49	39							
		e	Z			50 50							
	[illegible]N	e	Y	21	49	48							4.9
		e	Y			51 10							
	[illegible]T	e	Z	21	49	49							
		e	Z			51 13							
	[illegible]A	e	Z	21	49	58							
	[illegible]W	e	NE	21	50	13							5.6
		e	NE			51 52							
	[illegible]N	e	X	21	50	46							5.3
		e	X			52 45							
	[illegible]P	e	N	21	50	47							5.6
		e	N			52 55							
	[illegible]K	e	Z	21	51	21							
	[illegible]S	e	Z	21	51	32							
	[illegible]E	e	E	21	52	09							5.3
	Origin:			21	48	02	33.0S		179.5W		N	NZ(D)	5.2
	[illegible]P	eP	Z	03	54	21							
	[illegible]T	eP	Z	03	54	31							
	[illegible]K	eP	Z	03	55	22							
	Origin:			03	48	06.4	7.6S		156.8E		402km	USCGS	5.1
	[illegible]M	ePKP	Z	10	40	52							
		e	Z			41 56							
		ePP	ZNE			43 36	4	20					6.3
		eSKP	ZNE			44 32	5	22	2	20	2	20	
		eSKKS	NE			50 28							
		eSPP	Z			55 52							
		eSS?	N	11	01	36							
		e(SS)	NE			02.3			31	42	38	43	
		e	Z			03 52							
		e	ZN			06.2							
		eSSS	NE			07.0							
		eLq	ZNE			17			23	72	34	72	
		eLr	ZNE			26							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
		M	ZNE		31		5	26	25	25	33	26	
AUG	CT	ePKP	Z	10	40	58							
	KP	ePKP	Z	10	41	00							
	RX	e	NE	10	53	46							
		e	NE		57.0								
		e(SS)	NE	11	02.1				10	20	11	20	
		e	N		05	00							
		e(SSS)	E		06	40							
		eLq	NE		18				7	32	14	44	
		eLr	NE		25						10	20	
		M	NE		35				11	19	30	20	6.9
	Origin:			10	21	36.6	7.7N		35.8W		33km	USCGS	6.1
	3 KP	eP	Z	20	28	14							
	CT	eP	Z	20	28	35							
		eS	Z		30	17							
	WN	e	Z	20	29	50							
		eS	ZNE		30	56							
		eL	ZNE		31.8								
		M	Z		33		6	22					
	RX	eP	Z	20	30	06							
		eL	NE		35								
	Origin:			20	26	04.1	30.7S		178.3W		37km	USCGS	5.2
	4 KP	eP	Z	07	18	58							
		epP	Z		19	20							
	CT	eP?	Z	07	19	13							
		e	Z			59							
	WN	eLr	Z	07	39.5								
		M	Z		42		2	26					
	Origin:			07	08	47.1	9.4S		114.2E		117km	USCGS	5.5
	4 KP	eP	Z	09	17	51							
	CT	eP	Z	09	17	08							
		e?	Z			27							
	WN	eP	Z	09	17	31							
		eS	NE		21	12							
		e(Lr)	Z		22		3	32					
		M	Z		24		2	16					
	RX	eP	Z	09	18	23							
		eL	E		26								
	Origin:			09	13	17.8	22.6S		173.4E		72km	USCGS	4.9
	4 KP	eP	Z	11	55	22							
	Origin:			11	43	20.3	35.7N		140.1E		68km	USCGS	4.7
	4 WN	eLr	Z	12	53								
	Origin:			12	07	24.4	4.1S		80.9W		34km	USCGS	4.7
	4 KP	eP	Z	21	48	44							
	CT	eP	Z	21	48	52							
		epP	Z		49	10							
	Origin:			21	40	52.4	5.2S		145.9E		59km	USCGS	4.9
	4 KP	eiP	Z	23	58	21							
	CT	e	Z	23	58	30							
	WN	iP	ZNE	23	58	50.0							
		e	Z	24	01	.0	1	20					
		eS	ZNE		02	28							
	RX	eP	Z	23	59	36							
	Origin:			23	54	14.0	17.5S		179.1W		515km	USCGS	5.2
	5 KP	eP	Z	00	39	58							
	TU	iP	Z	00	40	00.1 u							
		i	Z			04.2 d							

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag.
AUG		eS	Z			34					
	ON	eP	Z	00	40	03					
		eS	Z			41					
	CT	eP	Z	00	40	07½					
		e	Z			46					
		eS	Z			51					
	TA	eP	Z	00	40	14					
		e	Z			41 06					
	WN	eP	NE	00	40	29					
		eS	NE			41 27					5.6
	CB	e	E	00	40	55					
		eS	E			41 41					5.4
	GP	eP	N	00	41	03					
		eS	N			42 28					5.3
	KM	eS	X	00	42	17					
	Origin:				00	39 13	36.6S 177.2E	280km	NZ(D)		5.7 5.2
5	KP	eP	Z	07	44	29					
	ON	e(P)	Z	07	44	31					
	CT	eP	Z	07	44	54					
	WN	eS	ZNE	07	47	39					
		eL	Z			49					
	Origin:				07	41 37.9	27.2S 178.0W	33km	USCGS		4.3
							Felt: Raoul Is. MM2				
5	CT	eP	Z	11	33	05					
	KP	eP	Z	11	33	45					
		e?	Z			34 23					
5	MN	eP	Z	15	43	04					
	RX	eP	ZNE	15	43	14	6 9	7 12			
		eS	NE			46 34			19 30		
		eLq	N			47.3		17 26			
		eLr	Z			47.6	18 20				
	WN	eP	Z	15	44	13	u 4 20				
		eS	ZE			48 30	5 14		24 44		
		eLr	Z			50.0	28 32				
		M	ZNE			52	15 18	17 16	20 15		
	CT	eP	Z	15	44	33					
	KP	eP	Z	15	44	43					
	Origin:				15	39 07.0	60.7S 154.3E	33km	USCGS		5.3
6	WN	eL	Z	14	55						
		M	Z	15	03		1 20				
	Origin:				13	36 35.6	57.0N 33.6W	33km	USCGS		5.1
7	KP	eP	Z	04	30	11					
	RX	eP	Z	04	31	29					
		eL	NE			38.5					
		M	NE			40		4 26	4 25		
		L	Z			40					
	WN	eSS	ZNE	04	34	32	3 18	7 20	6 20		
		eL	ZNE			36 39					
		M	ZNE			38	5 14		5 15		
	Origin:				04	26 23.4	21.8S 173.5E	106km	USCGS		4.5
7	KP	eP	Z	11	18	53					
	WN	eP	ZNE	11	19	18					
	RX	eP	Z	11	20	07					
	Origin:				11	15 07.6	20.0S 178.3W	600km	USCGS		4.5
7	KP	eP	Z	11	20	31					
	WN	eP	ZNE	11	21	00					
	RX	eP	Z	11	21	49					
	Origin:				11	16 48.6	20.1S 178.4W	600km	USCGS		4.3

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag.
			Z	15	42	46.3	u				
AUG 7	KP	iP	Z			50					
		e		15	38	58.7	21.2S	177.8W	352km	USCGS	4.4
	Origin:			17	25	46					
7	KP	eP	Z	17	13	18.4	56.1S	27.0W	33km	USCGS	5.4
	Origin:			02	28	01					
8	KP	eP	Z	02	58						
	WN	eL	Z	03	02		5 23				
		M	NE	03	02						
	RX	eL		02	14	54.4	54.2N	168.1E	33km	USCGS	5.5
	Origin:										
8	WN	e(Lr)	Z	11	26						
		e(Lr)	E			33					
		M	ZE	10	58	23.1	35.9S	103.6W	33km	USCGS	4.7
	Origin:										
8	KP	eP	Z	11	23	44					
	CT	e?	Z			45 53					
		e(P)	Z	11	33	24	6 28		6 20		
	WN	eSS	ZNE			36					
		eLr	ZNE			39	24 40	22 24	10 20		6.2
		M	ZNE			11(38)					
	RX	eLr	ZNE			40	6 17	7 17	7 18		6.0
		M	ZNE	11	16	11.2	5.8S	151.0E	48km	USCGS	5.6
	Origin:										
8	KP	eP	Z	14	02	14					
	Origin:			13	53	42.2	18.3N	145.3E	423km	USCGS	4.9
9	GS	eP	Z	14	42	02					
	WN	e(PP)	Z	14	43	28			5 32		
		eS	E			47					
		eLr	ZNE			48		43 40	52 40		
		M	NE			49	34 30				
		M	Z			50					
	RX	eLq	E	14	50	7					
		eLq	N			51.0		22 35	32 28		
		M	NE			52					
		eLr	Z			53.5	12 15	17 20	22 18		6.0
		M	ZNE			54	15.3S	175.7W	33km	USCGS	5.5
	Origin:			14	36	45.9					
9	TU	eP	Z	21	42	14					
		e(S)	Z			43 47					
	GS	e(P)	Z	21	42	22					
		e(S)	Z			43 44					
	CT	eP	Z	21	42	48					
		e?	Z			44 26					
	WN	eS	ZNE	21	44	55					
		eL	Z			48					
	GP	eS	N	21	45	59					
10	WN	eL	Z	18	24						
	Origin:			18	07	26.2	54.4S	132.8W	33km	USCGS	4.7
11	RX	eP	Z	01	38	34	16 16				5.9
		e	NE			41.6		16 25	13 26		
	WN	eP	ZN	01	39	32	4 16				5.7
		eS	NE			43 44			23 56		5.8
		e	Z			44 12	7 14				
		eLq	ZN			45.2	22 28	15 30			
		M	ZNE			48	18 16	15 16	19 14		
	Origin:			01	34	22.2	60.5S	154.9E	33km	USCGS	5.4

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
AUG 12	WN	e(Lq)	E	21	09	5							
		eLr	Z		11								
		M	Z		13		2	20					
	RX	eL	E	21	12	4							
		Origin:		20	59	08.0	21.9S		175.7W		33km	USCGS	
	13 GS	eP	Z	06	32	59							
		eS	Z		35	54							
	WN	eP	ZNE	06	33	26							
		eS	ZNE		36	43							
		Origin:		06	29	19.1	20.6S		178.5W		562km	USCGS	
	13 GS	eP	Z	06	56	47							
	WN	eP	Z	06	57	24							
		eL	ZE	07	04								
		eL	N		05						3	22	
		M	Z		07		3	21					
	RX	eL	E	07	07								
		Origin:		06	52	06.1	19.1S		173.9W		28km	USCGS	
	13 KP	eP	Z	21	57	17							
	CT	eP	Z	21	57	30							
	WN	eP	Z	21	57	49							
		eL	ZN	22	03.0								
		eL	E		04.0								
		M	ZN		08		10	20		6 20	6	22	
	RX	eL	NE	22	06								
		eL	Z		10		9	17					
		M	NE		10					7 17	5	16	
		Origin:		21	52	37.4	19.3S		173.7W		33km	USCGS	
	13 KP	eP	Z	23	11	08							
		Origin:		23	00	24.8	27.2N		140.1E		448km	USCGS	
	14 WN	eLq	ZE	02	57.0		3	28			7	21	
		eLr	ZN		58.4		6	18		6 18			
	RX	eL	NE	02	59								
		M	E	03	00						6	22	
		eL	Z		02								
		M	N		02					4 17			
		Origin:		02	46	44.1	21.4S		175.2W		33km	USCGS	
	14 KP	iP	Z	03	39	57.2 d							
	CT	iP	Z	03	40	06.4 d							
	WN	eP	ZNE	03	40	16							
		eSS	Z		50	04	3	26					
		eL	ZNE		52.4		8	28					
	RX	eL	E	03	53								
		eL	N		54								
		eL	Z		56								
		M	NE		56					5 20	4	20	
		Origin:		03	32	33.5	4.9S		152.3E		62km	USCGS	
	14 WN	e	ZNE	08	34	27							
		Origin:		08	27	14.9	9.3S		158.3E		33km	USCGS	
	14 MN	iP	Z	13	24	45.6 d							
		e	Z		47								
	RX	eP	Z	13	25	04							
		e	Z		10								
		e	Z		33								
	KM	e	X	13	25	46							
		eS	X		26	55							
	GP	eP	N	13	25	52							
		eS	N		27	10							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
													5.2
	CB	ePn	E	13	26	12							
AUG		e(P•)	E			38							
		e	E		27	27							
	WN	eP	Z	13	26	37							
		e	Z		27.	06							
		e	ZNE			44							
	TA	eP	Z	13	26	46							
		e(S)	Z		28	50							
	CT	eP	Z	13	26	49							
		e	Z		28	46							
	KP	eP	Y	13	27	02							5.2
	TO	e	Y	13	27	02							
		e	Z		28	56							
	GS	eP?	Z	13	27	09							
		Origin:		13	24	12	47½S		165E		S?	NZ(D)	5.3
	14 KP	iP	Z	18	52	51.7 d							
	CT	eP	Z	18	52	57							
	RX	eP	Z	18	52	59							
		eL	E	19	10								
	WN	eL	ZN	19	08								
		eL	E		09								
		M	Z		12		3	22					
		Origin:		18	43	35.5	3.4S		135.4E		33km	USCGS	
	14 WN	eL	ZE	20	53								
		M	Z		55		2	22					
		Origin:		20	43	12	22.5S		175.5W		33km	USCGS	4.4
	14 KP	eP	Z	21	52	38							
		Origin:		21	48	28	17.5S		178.3W		487km	USCGS	3.6
	15 KP	eP	Z	01	38	04							
		Origin:		01	33	02.1	18.1S		172.6W		33km	USCGS	4.2
	15 KP	iP	Z	02	28	04.0 d							
	CT	iP	Z	02	28	09 u							
	RX	eP	Z	02	28	26							
		Origin:		02	17	16.9	27.9N		139.6E		476km	USCGS	4.7
	15 KP	eP	Z	06	23	50							
		e	Z			58							
	CT	eP	Z	06	23	56							
		e	Z		24	04							
	WN	eP	Z	06	24	10	5	16					6.3
		eSKS	ZNE		34	18	5	20		7 14			
		eSS	ZNE		39	54	5	18		5 20			
		eSSS	Z		43	20	3	30					
		e(Lq)	Z		46		6	36					
		eLr	ZNE		50								
		M	ZNE		52		28	29		15 31	12	32	
		M	ZNE		56		34	22		20 22	15	22	
	RX	eSKS	NE	06	34	32				9 27			
		e	E		35	07					3	12	
		ePS	ZN			48	4	10		6 16			
		eSS	N		40.5					8 24			
		eLq	E		48.6								
		eLr	NE		52								
		eLr	Z		53								
		M	ZNE		55		13	24		10 24	10	24	
		Origin:		06	11	34.6	37.9N		141.6E		59km	USCGS	5.7
	15 WN	eL	Z	15	05								
		M	Z		06		1	22					
		Origin:		14	57	51.1	20.0S		178.9W		298km	USCGS	4.2

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
AUG 15	WN	eP	Z	17	37	54							
		epP	Z		39	56							
		ePP	ZN		42	12							7.3
		ePPP	Z		44	26							
		eSKS	ZNE		47	44	22	30					
		eSP	ZNE		50	16			32	30	67	32	
		ePKKP	ZNE		54	30			31	30	63	44	
		e	Z		55	04							
		eSS	N		56.2				40	32			
		eSSS	ZN		59.9								
		eP'P'	Z	18	02	44							
		e(Lq)	Z		06.2		82	24					
	KP	eP	Z	17	37	58							
		e	Z		38	12							
		epP	Z		40	01							
		e	Z			17							
		e(SP)	Z		41	25							
		e	Z		42	32							
		ePKKP	Z		54	22							
	CT	eP	Z	17	37	58							
		e	Z		38	10							
		epP	Z		39	58							
		ePKKP	Z		54	28							
		e	Z			58							
	RX	eP	Z	17	38	18							
		epP	ZNE		40.3								
		ePP	ZNE		42.5		68	11			44	11	6.3
		eSKS	NE		47	55							
		eSP	ZNE		50.5		14	12	19	20	52	26	
		ePKKP	Z		54	25							
		e	Z			51							
		e(pPKKP)	Z		57	00							
	Origin:			17	25	05.9	13.8S		69.3W	543km	USCGS		6.0
15	GS	eP	Z	22	33	23							
	Origin:			22	29	47.1	21.0S		179.2W	597km	USCGS		4.9
16	CT	e	Z	23	26	47							
		e	Z			55							
	GS	e	Z	23	27	04							
	WN	eL	Z	23	36								
		M	Z		38		1	18					
	Origin:			23	19	31.1	48.9S		122.8E	33km	USCGS		
17	WN	eL	Z	05	44								
	Origin:			05	33	40.1	20.0S		174.0W	33km	USCGS		4.6
17	GS	eP	Z	09	36	05							
		eS	Z		37	01							
	TU	eP	Z	09	36	13							
		eS	Z		37	17							
		e	Z			46							4.3
	ON	eP	Z	09	36	13							
	CT	eP	Z	09	36	31							
		e	Z			35							
		eS	Z		38	03							4.6
	TO	e(P)	Y	09	36	31							
		eS	Y		38	02							
	TA	e(P)	Z	09	36	50							
		e(S)	Z		38	35							5.2
	WN	eS	NE	09	38	25							
		e(S•)	N		39	12							
		eL	Z		40			2	24				
		e	ZN		41	41							5.2
	CB	e	E	09	38	49							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
			X	09	39	24							5.2
	KM	e	N	09	39	29							5.2
AUG	GP	e		09	34	50							5.0
	Origin:						34½S		179½W	N	NZ(D)		
							Additional readings from Uppsala and Charters Towers used to determine epicentre.						
			Z	11	24	53							
17	CT	eP	Z		25	14							
		epP	Z		27	54							
		ePP	Z	11	24	57							6.2
	GS	eP	Z	11	25	11	3	16					6.2
	WN	eP	Z		28.1		2	28					
		ePP	Z		35	13	7	36			6	16	6.5
		eS	ZE		40.3		6	25	18	25	10	28	
		eSS	ZNE		51								
		eLr	Z		55								
		eLr	N		55		16	26					
		M	Z	12	00								
		eLr	E		04		15	18	6	18	6	18	6.3
		M	ZNE	11	25	37							
	RX	eP	Z		35.5								
		eS	NE		37				6	24	7	30	
		e	Z		40.8								
		eSS	NE		42				5	12	8	14	
		eL	ZNE		43								
		M	NE		44		7	12					
		M	Z	11	12	41.2	30.6N		130.9E	33km	USCGS		5.6
	Origin:												
			Z	11	37	33							
17	WN	eP	Z	11	37	35							
	RX	eP	Z	11	38	26							
	WN	eP	Z	11	38	49							
	CT	eP	Z		39	00							
		e	Z	11	33	28	63.4S		169.5E	33km	USCGS		
	Origin:												
17	WN	e(L)	Z	13	24		1	22					
		M	Z		57		3	19					
18	CT	eP	Z	18	56	10							
	WN	eLr	Z	19	25.5								
		M	Z		30		3	26					
		M	Z		30		2	21					
	Origin:			18	43	16.1	50.3N		176.9W	33km	USCGS		5.5
18	WN	eL	Z	20	30								
		M	Z		32		2	24					
	Origin:			20	18	29.9	22.5S		175.2W	33km	USCGS		4.7
18	GS	eP	Z	20	29	22							
		e	Z		30	35							
	ON	eP	Z	20	29	33							
	CT	e	Z	20	29	46							
		e	Z			56½							
		e	Z		30	10							
		e	Z		32	27							
	WN	eP	Z	20	31	19							
		eS	Z		34	51							
	RX	eP	Z	20	31	34							
		eS	Z		34	21							
		eL	NE		36								
		eL	Z		37								
		M	NE		38				7	18	9	16	5.6
		M	Z		40		11	17					
	WN	eS	NE	20	32	05							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
AUG		eL	Z			32.7							
		eL	NE			33.1							
		M	ZNE			36							
	Origin:			20	27	41.9	24	17	18	22	16	21	
							32.1S	178.1W	33km		USCGS		5.1
							Felt: Raoul Is. MM1						
19	KP	eP	Z	04	25	51							
		e?	Z			27 01							
	ON	eP	E	04	25	54							
		e	E			26 31							
	WN	e?	ZE	04	27	11							
		eS	NE			28 24							
		eL	ZE			29							
		eL	N			31							
		M	ZNE			31							
	RX	eP	Z	04	27	59							
		e	Z			30 37							
		eL	NE			32							
		eL	Z			33							
		M	E			33							
		M	N			34			4	18	5	20	
	Origin:			04	24	00.4	32.0S	177.9W	33km		USCGS		5.1
							Felt: Raoul Is. MM1						5.2
19	MN	eP	Z	10	02	59½							
	CT	eP	Z	10	03	30							
	KP	eP	Z	10	03	37							
	Origin:			09	51	25.2	59.8S	25.9W	33km		USCGS		
20	WN	eL	Z	00	39								
	Origin:			00	27	40	21.9S	175.8W	33km		USCGS		4.2
20	KP	eP	Z	06	47	45							
	CT	eP	Z	06	47	52							
	Origin:			06	39	57	5.5S	145.8E	90km		USCGS		
20	WN	eL	Z	07	32								
	Origin:			06	53	28	6.9S	103.0E	61km		USCGS		
20	WN	eS	ZNE	09	26	30							
		eL	Z			29							
		M	Z			30	1	20					
	Origin:			09	20	26.7	27.8S	176.5W	37km		USCGS		
							Felt: Raoul Is. MM1						
20	KP	eP	Z	16	00	42							
	WN	eL	Z	16	28								
		M	Z			32	1	25					
	Origin:			15	48	12.2	41.2N	142.7E	50km		USCGS		4.5
20	ON	eP	E	19	46	09							
	KP	eP	Z	19	46	10							
	WN	eS	ZNE	19	48	59							
		eL	Z			50							
		M	Z			51	1	22					
	Origin:			19	43	56.6	30.2S	177.8W	43km		USCGS		4.7
							Felt: Raoul Is. MM2						
21	WN	eL	Z	18	45		1	30					
	Origin:			18	02	44.4	49.0N	158.2E	33km		USCGS		4.9
21	WN	eL	Z	18	50		1	34					
22	WN	eLr	Z	05	29								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
		M	Z			34	1	26					
AUG	Origin:			05	01	38.3	1.2S	128.5E	33km		USCGS		3.7
22	WN	eLr	Z	10	12								
		M	Z			15	1	22					
	Origin:			09	27	09.3	42.0N	126.2W	33km		USCGS		5.6
22	WN	eL	Z	18	41.5								
		M	Z			42	1	27					
	RX	eL	E	18	44								
22	WN	eL	Z	18	56								
		M	Z			57	2	26					
	RX	eL	NE	18	59								
	Origin:			18	18	49.3	3.8S	104.2W	33km		USCGS		4.3
22	KP	eP	Z	19	58	52½ u							
		e	Z	20	01	42							
		e	Z	19	59	03							6.0
	CT	e	Z	19	59	14 u	4	14					6.6
	WN	eP	Z	20	00	44	7	9					6.4
		ePP	Z		04	36	6	36	11	30	6	11	
		eS	ZNE		07		11	30	26	28	33	34	
		eLq	ZNE		09								
		eLr	ZNE		12		37	19					
		M	Z		13				78	15	64	17	6.6
		M	NE						2	5			5.8
	RX	eP	ZN	19	59	33							
		ePP	ZNE	20	01	02	6	7	7	10	2	12	6.5
		eS	NE		05	20			7	22	8	24	6.4
		eLq	NE		08								
		eLr	Z		10								
		M	NE		10				51	22	54	24	6.5
		M	Z		13		18	16					
23	MN	iP	Z	04	14	59.9							
		eS	Z		15	51							
	RX	eP	Z	04	15	09½							
		eS	Z		16	09							
	KM	e?	X	04	15	38							
		eS	X		17	32							
	GP	eP	N	04	15	47							
		eS	N		17	17							
	CT	eP	Z	04	16	55							
	WN	eL	Z	04	19								
		M	Z		21		2	14					
	Origin:			04	13	52	50.2S	166.0E	N		NZ(D)		4.9
23	WN	eL	Z	13	53								
		M	Z		59		1	20					
	Origin:			13	09	25.3	52.4N	159.6E	33km		USCGS		4.5
23	WN	eL	Z	21	54								
	Origin:			21	28	12	4.4S	134.9E	95km		USCGS		5.2
24	WN	eL	Z	02	52								
		M	Z	03	01		1	20					
	Origin:			02	11	58.3	54.3S	5.2E	28km		USCGS		
24	KP	eP	Z	03	20	15½							
		e	Z			24							
		e	Z		22	12							
	RX	eP	Z	03	22	14							
		eL	NE			26							
	WN	eS	ZNE	03	23	00							
		eL	Z			23.6							

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
AUG		M	Z	25	1 20			
		Origin:		03 18 09.5	30.7S 178.2W	42km	USCGS	4.6
	25 KP	ePKP	Z	06 31 24				
		e	Z	28				
	CT	ePKP	Z	06 31 24				
		e	Z	28				
		Origin:		06 11 43.3	38.9N 38.4E	33km	USCGS	4.8
	25 KP	iP	Z	12 22 18.0 d				
		e	Z	23 45				
		e?	Z	25 55				
	CT	eP	Z	12 22 25				
		e	Z	26 01				
	WN	eP	ZN	12 22 44	13 20	4 29	2 20	6.2
		e	Z	24 00				
		e(SP)	ZNE	25.4				
		eS	ZNE	26 20		30 40	44 32	5.9
		e(ScP)	NE	28.9				
		eScS	ZNE	32 36				
		e(SScS)	E	36.6				
	RX	eP	ZNE	12 23 32 dne	8 6	9 14	3 12	6.5
		epP	Z	25 12				
		e(PcP)	NE	26.3				
		eS	ZNE	27 43	7 6	17 9	37 17	6.5
		eScP	Z	29 09				
		e(SS)	ZNE	30.5	8 12	17 16	18 15	
		eScS	ZNE	33.1				
		Origin:		12 18 12.5	17.5S 178.8W	565km	USCGS	6.1
	25 KP	eP?	Z	13 30 05				
		eP	Z	11				
	WN	eS	ZN	13 34 03				
		Origin:		13 26 01.4	17.9S 178.8W	610km	USCGS	3.6
	25 KP	eP	Z	13 38 52				
	WN	eP	ZN	13 39 20				
		Origin:		13 34 46.0	17.4S 178.7W	540km	USCGS	3.6
	25 KP	eP	Z	17 58 27				
		Origin:		17 53 04.1	15.6S 173.1W	33km	USCGS	4.2
	25 WN	eL	Z	23 17				
	26 KP	eP	Z	02 30 52				
	CT	e	Z	02 31 03				
		e	Z	33 29				
	RX	e	Z	02 32 11				
		Origin:		02 28 12.8	26.3S 178.8E	546km	USCGS	4.4
	26 RX	eL	NE	02 30				
	WN	eL	ZE	02 31				
		M	Z	32	3 28			
	26 KP	eP	Z	03 04 16½				
		Origin:		02 59 46.9	19.3S 175.4W	83km	USCGS	4.5
	26 KP	eP	Z	04 53 16				
		Origin:		04 49 43.8	17.7S 178.8W	575km	USCGS	4.5
	26 KP	eP	Z	05 53 52				
	CT	eP	Z	05 53 53				
	WN	eL	Z	06 16				
		M	Z	21	1 24			
		Origin:		05 42 40.3	6.8S 105.6E	33km	USCGS	5.1

NEW ZEALAND STATIONS 1963

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
		eP	Z	12 23 02				
AUG 26	KP	epP	Z	10				
		eL	Z	12 28				
	WN	M	Z	30	1 18			
		Origin:		19 19 27.6	22.7S 171.7E	43km	USCGS	4.5
				23 41 40				
26	KP	eP	Z	24 02	1 24			
	WN	eL	Z	23 32 38.3	7.7S 127.3E	151km	USCGS	4.4
		Origin:						
			Z	03 35 12	2 28			
27	KP	e	Z	03 44.3				
	WN	eS	ZE	56.7	12 26		2 30	
		eLr	ZE	57		2 26	2 25	5.9
		M	NE	03 44.5				
	RX	eS	NE	56				
		eL	Z	57		4 21	6 22	6.2
		eL	ZNE	58	8 21		33km USCGS	5.3
		M		03 23 32.6	45.9S 75.3W			
		Origin:						
27	WN	e	Z	03 50.9	11.2S 165.7E	33km	USCGS	4.2
		Origin:		03 32 56.5				
		eP	N	12 52 22				
28	RX	e	E	55.6				
		e	N	56.2				
		e	Z	56.6		11 17		
		e	N	57			11 13	
		M	ZE	58	14 17			5.4
		M	Z	12 53.3	2 20		7 20	
	WN	eP	NE	57 35				
		eS	ZNE	58.6				
		eL	ZNE	13 01	20 19	16 16	14 14	5.8
		M	Z	12 53 48				
	CT	eP	Z	12 54 07				
	KP	eP		12 48 22.1	61.9S 164.5E	33km	USCGS	
		Origin:						
28	KP	eP	Z	16 02 29				
		e(pP)	Z	48				
	CT	eP	Z	16 02 34				
		Origin:		15 51 06.3	28.3N 141.0E	96km	USCGS	5.1
28	WN	eL	ZE	17 28.9				
		M	Z	29	4 23			
		Origin:		16 57 46.2	39.1S 91.8W	33km	USCGS	4.7
29	GS	ePn	Z	04 33 56				
		eSn?	Z	34 39				
	KP	ePn	Z	04 33 57½				
		eSn?	Z	34 39				
	TU	eP	Z	04 34 01				
		e	Z	23				
		eSn	Z	39				4.9
	ON	ePn	E	04 34 05				
		e(P•)	E	19				
		e	E	37				
	CT	iP	Z	04 34 12.3				
	TA	ePn	Z	04 34 21				
		eSn	Z	35 27				5.2
	WN	ePn	Z	04 34 33				
		e	NE	48				
		e(P•)	Z	34 56				
		eSn	NE	35 45				
		e	NE	36 08				
		eL	Z	36.6				

Date	Stn	Phase		h m s		Az Tz	An Tn	Ae Te	Mag.
AUG		M	ZNE	37		14 16	6 18		
	CB	eP	E	04 34 53					
		eSn	E	36 07					
	GP	e	N	04 35 23					4.3
		e	N	36 50					
	KM	eSn	X	04 36 45					5.3
	RX	eL	NE	04 39					
		M	NE	40			6 18		5.1
	Origin:			04 33 00		35½S	179½E	S 5 16 NZ(D)	
	29 RX	ePKP	Z	09 12 37					5.2
		eSS	E	31					
		e(Lq)	N	44					
		eLr	Ne	52					
	KP	ePKP	Z	09 12 38					
	WN	ePKP	ZN	09 12 40		9 18			
		e(PSP)	Z	25 48		1 30			
		eSS	ZNE	31.2					
		e(SSS)	N	35					
		eSSS	ZE	36.0					
		e	Z	42.8					
		e(Lq)	E	44.7					
		eLq	N	47					
		eLq	E	50					
		M	NE	52			8 44	3 42	
		eLr	Z	53					
		M	Z	57		11 38			
	Origin:			08 53 48.4		39.6N	74.2E	31km USCGS	5.5
	29 CT	eP	Z	15 43 58					
	WN	eP	ZNE	15 43 58	d	8 24		2 20	6.7
		ePP	NE	47 49			30 22	3 24	7.5
		eSKS	ZNE	54 38		6 22		11 28	
		ePS	ZNE	56.6		47 29	19 27	38 30	
		e	ZE	16 00					
		eSS	ZE	01.7		22 31		30 24	
		eSSS	Z	05					
		eLq	NE	10			21 36	10 32	
		eLr	ZNE	14					
		M	ZNE	15			28 31		
	KP	eP	Z	15 43 59					
	RX	eP	E	15 44 10					
		ePP	ZE	48.3					
		eSKS	E	54 46				7 22	
		ePS	ZNE	57.0			10 20	33 24	
		eSS	ZNE	16 02.5			8 17	33 21	
		eLq	N	11			15 36		
		eLr	ZE	16					
		M	ZNE	23		11 18	9 16	13 18	
	Origin:			15 30 31.4		7.1S	81.6W	23km USCGS	6.1
	29 KP	eP	Z	16 00 48					
	29 KP	eP	Z	21 02 50					
	WN	eL	ZNE	21 10				6 20	
		M	ZNE	12		9 27	8 22	8 18	5.8
		M	ZNE	14		6 16	7 14	7 25	5.8
	RX	eL	NE	21 13			3 24		
		eL	Z	14					
	30 KP	eP	Z	00 27 34					
	WN	eL	Z	00 48					
		M	Z	51		1 26			
	RX	eL	E	00 53					5.1
	Origin:			00 16 36.3		8.7S	108.6E	33km USCGS	

NEW ZEALAND STATIONS 1963

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
AUG 30	KP	eP	Z	13 55 47				
	WN	eP	Z	13 56 30				
		eS	NE	59 37	5 22			
		eL	ZNE	14 01				
		eL	NE	14 04				
	RX	eLq	Z	06		4 16	4 15	5.6
		eLr	Z	08				
		M	NE	13 51 51.6	23.4S	175.4W 33km	USCGS	4.9
	Origin:							
	31 KP	eP?	Z	08 55 23				
	31 KP	eP	Z	22 29 38				
	Origin:			21 26 09.3	21.5S	179.2W 543km	USCGS	4.8
SEP	2 WN	eL	Z	14 55				
	Origin:			14 10 44.7	25.7N	109.5W 33km	USCGS	4.5
	3 RX	e	ZE	03 57.7		4 19	3 15	
		e	NE	58				
	WN	e(SSS)	Z	03 59.9				
		eLr	Z	04 01.0				
		e(Lr)	N	01.5	5 22	5 18		
		M	ZN	02				
		e(Lr)	E	02.4			2 14	5.5
		M	E	03				
	Origin:			03 49 42	60.3S	152.0E 33km	USCGS	
	3 WN	eL	Z	23 41.0				
		M	Z	42	1 14			
	Origin:			23 28 25	16.8S	177.2W 33km	USCGS	4.6
	4 RX	e	E	03 39.7			3 24	
	4 WN	e(P)	Z	05 00 32	2 6			
		e(S)	Z	05.1	1 30			
		e(Lq)	ZE	08.1	1 26			
		M	E	09			4 32	
		eLr	Z	09.5				
		M	Z	10	5 26			
		e(Lr)	N	13				
	RX	e(S)	NE	05 05.3				
		eLr	ZNE	10				
		M	ZNE	13	4 16	2 17	3 17	
	4 WN	eL	Z	06 28				
		M	Z	36	1 24			
	4 WN	e(SKKS)	Z	14 07.0				
		eSS	Z	11.6				
		e(Lq)	Z	31	1 44			
		eLr	Z	35				
		M	Z	37	3 36			
		e(Lr)	E	41				
		M	ZE	44	4 22		2 20	
	RX	eSS	E	14 13.1				
		e(Lq)	E	32				
		e(Lr)	N	38				
		M	ZNE	50	3 19	2 19	2 19	6.2
	Origin:			13 32 12.3	71.4N	73.3W 33km	USCGS	5.9
	4 GE	eP	Z	17 22 09				
		eS	Z	23 15				
	TU	eP	Z	17 22 15				
		eS	Z	23 24				
	ON	eP	E	17 22 18				4.8

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
SEP	CT	eP	Z	17	22	32				
		eS	Z		23	54				
	TA	eP	Z	17	22	41				
	WN	eS	NE	17	24	33				
		eL	Z		26.5					
	GP	eS	N	17	25	33				5.4
	Origin:			17	20	45	34S	178W N	NZ(D)	5.3
5	KP	iP	Z	10	47	23.8 d				5.2
	Origin:			10	42	42.5	18.0S	168.1E 33km	USCGS	
							Felt: Port Vila			4.6
6	KP	eP	Z	01	45	14				
	WN	eL	Z	01	52					
		M	Z		53		3 24			
	RX	eL	E	01	54					
		eL	N		56					
	Origin:			01	40	45.0	19.3S	176.9W 66km	USCGS	4.7
6	WN	e(P)	Z	02	39.0					
		eLr	ZE		43.8		3 32			
	RX.	e	E	02	39.8					
		eL	ZNE		44					
		M	E		45				3 22	
6	KP	eP	Z	06	16	26				
	WN	eLq	ZE	06	41					
		eLr	N		43					
	RX	eL	E	06	42					
		eL	N		44					
	Origin:			06	03	52.1	36.4N	130.6E 33km	USCGS	5.4
6	KP	eP	Z	08	20	53				
	Origin:			08	10	26.5	6.1N	126.2E 47km	USCGS	4.6
6	GS	eP	Z	08	55	02				
		eS	Z		56	04				
	KP	eP	Z	08	55	09				
	TU	eP	Z	08	55	09				
		eS	Z		56	13				
	TA	e	Z	08	55	38				
		e	Z		57	02				
	WN	eS	NE	08	57	16				5.2
	GP	eS	N	08	58	19				5.2
	Origin:			08	53	45	34S	179½W N	NZ(D)	5.2
6	ON	eP	E	10	19	28				
		eS	E		21	48				
	KP	iP	Z	10	19	43.0 d				
		i	Z			46.2 u				
		e	Z		20	09½				
		eS	Z		22	15				
		ePcP	Z		24	07½				
	WN	eP	Z	10	20	13				
		e	ZNE			16				
		eS	ZNE		23	10				
	Origin:			10	16	38.9	24.0S	179.9E 500km	USCGS	5.2
6	WN	eLq	NE	12	15					
		eLr	Z		16.7					
	RX	eL	NE	12	17					
		eL	Z		18					
6	KP	eP	Z	17	49	47				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
			Z			50				
	e			17	44	56	15.2S	167.9E 231km	USCGS	
1963	Origin:									
			Z	01	29	38				
7	KP	eP	Z	01	29	47				
	RX	eP	Z		57					
		eL	E							
		eL	ZNE	01	55					
	WN	eL	Z		59		3 40			
		M		01	16	55.1	36.4N	130.6E 33km	USCGS	5.3
	Origin:									
			Z	02	34	01				
7	KP	eP	E	02	41					
	WN	eL			42					
		eL	ZN				2 18			
		M	Z		45					
	RX	eL	NE	02	44					
	Origin:			02	29	38.3	21.5S	174.6W 33km	USCGS	5.1
			Z	07	26	18				
7	KP	eP		07	13	39.9	45.4N	150.8E 33km	USCGS	5.2
	Origin:									
			Z	08	31	12				
7	KP	eP		08	26	36	18.9S	174.9W 131km	USCGS	4.4
	Origin:									
			ZE	09	50					
7	WN	eL	N		51					
		eL	Z		56		2 20			
		M	E	09	56					
	RX	eL	N		58					
		eL		08	50	57.3	11.7S	13.6W 33km	USCGS	5.3
	Origin:									
			Z	12	57	03				
7	KP	eP	Z	13	28					
	WN	eLr	N		29					
		eLr	Z		29		2 32			
		M		12	44	01.1	54.0N	160.3E 110km	USCGS	5.4
	Origin:									
			Z	15	20	18.7 d				
7	KP	iP	ZNE	15	20	47				
	WN	eP	ZNE		23	51				
		eS	Z	15	21	36				
	RX	eP		15	16	55.4	22.0S	179.6W 558km	USCGS	4.7
	Origin:									
			Z	19	36	10				
7	KP	eP	N	19	51					
	WN	eLq	E		53					
		eLq	N		54			2 34		
		M	Z		55					
		eLr	ZE		57		22 24		1 24	
		M		19	26	29.3	3.0S	130.4E 33km	USCGS	4.6
	Origin:									
7	KP	eP	Z	22	12	21				
	Origin:			22	00	58.9	27.8N	141.5E 50km	USCGS	4.9
8	ON	eP?	E	00	50	09				
		e(P)	E			20				
		e	E			39				
	KP	eP	Z	00	50	10				
	WN	eP	ZNE	00	50	52				
		eS	ZNE		53	23				
		eL	ZNE		54					
		M	ZNE		57		20 19	7 18	12 21	
	RX	eP	Z	00	52	02				
		eL	E		56					
		eL	N		57					
		M	NE		58			7 20	18 22	

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
SEP		M	N			59								
	Origin:			01	09	47.0		14.0S	166.2E	3 16 64km		USCGS		
	10 KP	eP	Z	05	35	25								
	Origin:			05	31	03.1		23.6S	178.9E	268km		USCGS		
	10 KP	eP	Z	06	28	21								
		e	Z			24								
		eS	Z			31	01							
	CT	eP	Z	06	28	34								
		eS	Z			31	20							
	WN	eP	ZNE	06	28	53								
		eS	ZNE			31	53							
	Origin:			06	25	14.5		23.0S	179.8E	520km		USCGS		
	10 KP	eP?	Z	10	50	58								
		e(P)	Z			51	13							
	CT	eP	Z	10	51	12								
	WN	eP	Z	10	51	40								
		eS	ZNE			55.7								
		e(L)	Z			57.2			2 28					
	10 KP	eP	Z	19	18	47								
		e?	Z			20	31							
	CT	eP	Z	19	19	00								
	WN	eP	ZN	19	19	23	u							
		eS	ZNE			23	26		5 12		9 16		7 14	
		eSS	ZE			24	04		6 16				8 28	6.1
		eL	ZN			25.1			17 26		16 36			
	RX	eP	Z	19	20	04								
		eS	NE			24	46				7 14			
		eL	ZN			27								
		eL	E			28								
		M	NE			29					4 16		4 17	
	Origin:			19	14	26.8		19.0S	175.8E	33km		USCGS		5.6 5.3
	10 WN	eLr	Z	24	22.6									
		M	Z			32			3 18					
	RX	eL	E	24	24									
	Origin:			23	56	26.2		3.4S	131.4E	64km		USCGS		4.4
	11 KP	eP	Z	09	08	53								
	CT	eP	Z	09	08	58								
	WN	e(PcP)	Z	09	10	.1			1 12					
		e(ScS)	Z			19.2			1 20					
		eLr	Z			26								
		M	Z			33			2 22					
	RX	eLr	E	09	27									
	Origin:			08	59	37.6		3.5S	131.2E	33km		USCGS		5.7
	11 GS	eP	Z	12	33	31								
		e?	Z			34	03							
		e	Z				34							
		eS	Z				43							
		e	Z			35	22							
	TU	eP	Z	12	33	37								
		e?	Z			34	04							
		eS	Z				53							
	KP	eP	Z	12	33	47								
	CT	eP	Z	12	33	54								
		eS	Z			35	24							
	WN	eS	NE	12	36	00								
	GP	eS	Z	12	37	06								
	Origin:			12	31	58		34½S	176½W	N		NZ(D)		

Date	Stn	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te	Mag.
		eP	Z	22	21	57								
SEP 11	GS	e	Z			22	09							
		e	Z				27							
		e	Z			23	12½							
		eS	Z	22	22	(06)								
	KP	eP	Z			23	(24)							5.0
		e	Z	22	22	07								
	GN	eP	E			23	06							
		e	E			25	02							
		e?	E	22	22	07								
	TU	eP	Z				17							
		e	Z			23	18							
		e(S)	Z				46							
		e	Z	22	22	18								
	CT	eP	Z			23	44							
		e(P•)	Z	22	22	34								
	TA	eP	Z				51							
		e	Z	02	24	21								
	WN	eP	Z	02	24	27								6.0
	WN	eS	NE				54							
		e	Z				26							
		eL	Z			29			4 20					
		M	Z	02	24	48								5.4
	CB	eS	E			25	13							
		e	E											5.3
	KM	eS	X	02	25	32								5.6
	GP	eS	N	02	25	33								
	Origin:			22	20	26.6		33.1S	178.2W	21km		NZ(D)		5.4
	12 KP	eP	Z	03	15	39								
	CT	eP	Z	03	15	54								
	WN	eP	Z	03	16	12			4 8					5.7
		eS	ZE			19	56		2 10				3 6	
		eL	ZE			20.9								
		M	Z			23			22 17					
		M	E			25							6 18	
	RX	eP	ZN	03	16	55								
		eS	NE			21	06							
		eLq	E			23								
		eLr	ZN			24								
		M	ZNE			25			5 14		5 17		6 17	5.5
	Origin:			03	11	53.9		22.5S	170.7E	54km		USCGS		4.9
	12 KP	ePKP	Z	08	38	(44)								
	Origin:			08	18	57.9		34.9N	32.2E	55km		USCGS		5.0
	12 KP	eP	Z	14	15									
	CT	eP	Z	14	15	35								
	WN	e?	ZNE	14	18	28								
		eL	Z			21			1 20					
	RX	eL	E	14	25									
	Origin:			14	10	58		19.0S	175.9E	33km		USCGS		4.6
	13 GS	eP	Z	21	11	26								
		e	Z			12	05							
	TU	eP	Z	21	11	32								
	KP	eP	Z	21	11	36								
		e	Z				47							
	CT	e	Z	21	12	10								
		eS	Z			13	15							
	WN	eS	NE	21	13	56								5.5
	GP	e?	N	21	14	15								5.4
		eS	N			15	03							
	CB	eS	E	21	14	18								5.3

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
SEP	KM	eS	X	21	14	57							
	Origin:			21	09	52							
							33.3S 178.1W		N		NZ(D)		5.3
							Additional readings from Brisbane and Charters Towers used to determine epicentre.						5.4
13	GS	eP	Z	21	12	30							
		e	Z			41							
	KP	e(P)	Z	21	12	46							
		e	Z			13 00							
	CT	eS	Z	21	14	20							
	WN	e	NE	21	15	02							
		eL	ZNE			15.8							
	CB	e	E	21	15	24							5.5
	KM	e	X	21	16	06							
	GP	e	N	21	16	07							5.1
	RX	eL	NE	21	18								5.7
		eL	Z			20							5.4
		M	NE			20							
	Origin:			21	10	56			3 16		3 15		
							33.3S 178.1W		33km		NZ(D)		5.3
							Additional readings from Brisbane and Charters Towers used to determine epicentre.						
13	ON	eP	E	23	35	17							
	GS	eP	Z	23	35	23							
		e	Z			36 58							
	TU	eP	Z	23	35	28							
		e	Z			36							
	KP	eP	Z	23	35	29							
	CT	eP	Z	23	35	40							
		e	Z			47							
	GP	eP	Z	23	36	43							
		eS	Z			39 10							
	WN	e	Z	23	37	0	1 30						
		eS	NE			38 07							
		eL	ZNE			38.8							
		M	ZNE			39	11 24		6 24		14 24		
	MN	eP	Z	23	37	36							
	RX	eL	NE	23	40	7							
		eL	Z			42							
		M	NE			42							
									5 20		11 20		5.6
	Origin:			23	33	32.9	31.3S 179.3W		16km		USCGS		4.7
14	WN	e(SSS)	Z	00	41	0	2 28						
		eLq	ZNE			43.1							
		M	NE			43½					16 25		
		M	Z			44	16 25						
	RX	e(SSS)	NE	00	42								
		eLq	NE			45							
		eLr	Z			47							
		M	E			47					14 20		
		M	N			48							
									7 18				6.2
	Origin:			00	18	33.4	3.6S 131.2E		33km		USCGS		5.9
14	ON	eP	E	00	40	02							
	KP	eP	Z	00	40	04							
		i	Z			08.5							
	CT	eP	Z	00	40	19							
		e	Z			24							
	WN	e?	N	00	40	49							
		e?	Z			41 04							
		e	NE			42 38							
	Origin:			00	38	07.6	30.9S 179.6W		33km		USCGS		

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
			Z	03	04	50							
		eP	Z			05 40							
SEP 14	WN	eS	Z	03	05	07							
		eP	Z			06 07							
	RX	eS	N	03	05	49							
		e	N			07 06							
	GP	e	Z	03	09								
		e	Z			10							
	WN	eL	ZNE	03	03	47							
		eL					3 14		4 14		3 14		
	Origin:						49½S		163¾E		N	NZ(D)	4.9
							Additional readings from Brisbane and Charters Towers used to determine epicentre.						
		eP	E	03	53	58							
14	ON	eP	Z	03	54	12.0	d						
	KP	iP	Z	03	54	23							
	CT	e	Z			28.8	u						
		i	Z	03	54	47	d		4 9				
	WN	eP	Z			56.0							
		e	Z			46			5 24			19 24	
		eS	ZE			57.3							
		eL	ZNE			57½						90 22	
		M	E			58			68 18				
		M	Z			59				75 23			
		M	N										
	RX	eP	ZN	03	56	18							
		eS	ZNE			59 18				8 12		13 11	
		eLq	NE	04	00								
		M	NE			01				29 24		7 21	
		eLr	ZNE			02							
		M	ZNE			04			28 12		26 16	31 16	
	Origin:			03	52	16.9	31.4S	179.0W		33km	USCGS		4.9
14	KP	eP	Z	09	38	03							
	Origin:			09	26	46.9	25.5N	142.6E		43km	USCGS		4.5
14	GS	eP	Z	10	02	43							
	ON	e?	E	10	02	44							
	KP	eP	Z	10	02	51							
	WN	eL	Z	10	06.8		1 24						
14	WN	eP	Z	12	11	11½							
		e	Z			13							
		e	Z			59							
	RX	eL	NE	12	12								
	WN	eL	Z	12	16								
14	WN	eL	E	15	29.6								
		eL	ZN			32							
		M	Z			33			2 17				
	RX	eL	E	15	35								
	Origin:			15	15	58.1	13.7S	166.4E		34km	USCGS		4.3
14	KP	eP	Z	15	31	03							
	WN	eL	Z	15	42		2 22						
	Origin:			15	25	33.3	13.7S	166.3E		20km	USCGS		4.5
14	KP	eP?	Z	16	25	07							
	Origin:			16	16	51.8	33.6S	126.7W		33km	USCGS		4.9
14	RX	eL	E	16	04								
	WN	eL	E	16	29.5								
		eL	ZN			30							
		M	Z			31			1 26				
14	WN	eL	E	19	09.6								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
SEP		eL	ZN		10		1	24					
15	KP	eP	Z	00	52	50							
	CT	iP	Z	00	53	00.7	d						
		eS	Z		58	07							
	WN	eP	ZNE	00	53	15	u	4	16				
		ePP	NE		54	09							
		ePPP	NE			35							7.2
		e	NE		57	25			22	20	14	9	
		eS	ZNE		58	25							
		eScP	ZNE		58.7				94	12	37	14	
		e(SS)	N	01	00.5								7.2
		eLq	NE		01								
		eLr	ZNE		02								
	RX	eP	ZNE	00	53	44	39	10	28	12			
		e	E		54	11					3	7	7.3
		ePP	Z			42	36	13					
		eS	ZNE		59	20	32	12	180	22	115	20	7.0
		e(SS)	E	01	01.7								7.2
		eLr	ZNE		04								
		M	E		06								
		M	N		07				450	15	350	18	
		M	Z		09		320	14					7.0
	Origin:			00	46	54.1	10.3S		165.6E		43km	USCGS	6.3
15	KP	eP	Z	02	03	32							
	WN	eP	ZNE	02	03	58							
	Origin:			01	57	24	9.4S		167.0E		33km	USCGS	5.0
15	KP	eP	Z	02	02	08							
	CT	eP	Z	02	02	21							
	WN	eP	Z	02	02	40							
15	ON	eP?	E	02	04	03							
	KP	eP	Z	02	04	06							
	WN	e(S)	NE	02	06	43							
		eL	N		09.5								
		eL	E		11.6								
		M	NE		13				40	26	33	22	
	RX	eL	N	02	10								
		eL	E		12								
		M	N		15				41	25			
		M	E		16						32	18	
	Origin:			02	02	08	32.0S		178.7W		33km	USCGS	4.7
15	KP	eP	Z	04	56	22							
	Origin:			04	50	21.5	10.2S		165.3E		31km	USCGS	
15	KP	eP	Z	08	22	19							
15	ON	eP?	E	08	32	54							
		eP	E		33	03							
	KP	eP	Z	08	33	07							
	WN	eLq	NE	08	36						4	22	
	RX	eLq	NE	08	39								
	Origin:			08	31	10	30.4S		179.3W		33km	USCGS	4.6
15	KP	eP	Z	09	13	35							
	WN	eLq	E	09	21								
		eLr	N		24								
	RX	eLq	E	09	23								
		eLr	N		25								
	Origin:			09	08	09.1	13.8S		166.4E		36km	USCGS	4.5
15	KP	eP	Z	11	04	30							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
			E	11	10								
	WN	eLq	N		12						4	26	5.5
SEP		eLr	E		12								
		M	E	11	12								
	RX	eLq	N		14						3	15	5.4
		eLr	E		15								
		M											
			Z	22	03	01							
15	KP	eP	Z	22	08		1	16					
	WN	eL	Z										
			Z	01	55	13							
16	KP	eP	Z	01	55	25							
	CT	eP	Z	02	04.6								
	WN	eLr	Z		09		1	16					
		M	E	02	08								
	RX	e(Lr)	N		09								
		eLr		01	49	13.7	10.2S		165.3E		33km	USCGS	4.7
	Origin:												
			Z	03	34	17							
16	OS	eP	Z		35	29							
		e	Z	03	34	21½							
	TU	eP	Z		35	38							
		e	Z	03	34	25							4.6
	ON	eP	E	03	34	28							
	KP	eP	Z	03	34	48							
	CT	e	Z		35	15½							
		e	Z		36	05							
		eS	Z										5.4
	GP	eS	N	03	37	51							5.0
	Origin:			03	32	43	33S		178½W	N	NZ(D)		
							Additional readings from Charters Towers used to determine epicentre.						
			Z	08	29	10							
16	OS	eP	Z			39							
		e?	Z	08	29	16							
	TU	eP	Z		30	33							
		eS	Z	08	29	19							
	KP	eP	E	08	29	21							4.6
	ON	eP	Z	08	29	41							
	CT	e	Z			50							
		e?	Z		31	07							
		eS	Z	08	29	50							
	TA	e	Z	08	31	31							
	MW	eP?	Z	08	31	40							5.4
	WN	eS	NE		33								
		eL	Z	08	32	49							
	GP	eS	N	08	27	36	33S		178W	N	NZ(D)		5.1
	Origin:						Additional readings from Charters Towers used to determine epicentre.						
16	KP	eP	Z	16	42	19							
	WN	eL	ZN	16	52								
		M	Z		53		1	18					
	Origin:			16	36	32.0	13.4S		166.6E		28km	USCGS	4.4
16	OS	e?	Z	18	21	53							
		e	Z		22	18							
		e	Z		23	15							
	TU	e	Z	18	22	13							
		e	Z		23	27							
	KP	e	Z	18	22	17							
		e?	Z		23	18							
	ON	e	E	18	22	23							4.7
	CT	e	Z	18	22	28							
		e	Z		23	52							
	TA	e	Z	18	22	51							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
SEP	WN	i	NE	18	24	35.1	une						
	KM	e	X	18	25	39							
	GP	e	N	18	25	40							
	Origin:			18	20	38	34½S 177W		160km	NZ(D)			
							Additional readings from Charters Towers used to determine epicentre.						
16	KP	eP	Z	20	10	59							
	RX	eP	Z	20	11	47							
		eS	NE		17.0				18	22			
		eLq	NE		19								
		M	E		22						7	22	
		eLr	Z		23								
		M	N		23				5	20			
	WN	e(S)	N	20	16.1								
		eL	ZE		17.6								
		M	E		21								
		M	ZN		22						3	18	
	Origin:			20	05	21.9	13.4S 166.5E		28km	USCGS	13	18	
17	KP	eP	Z	06	08	16							
	WN	ePP?	Z	06	12.1								
		eSP	Z		20.3			1 20					
		eSS	Z		26.0								
		e?	Z		27.4			2 8					
		e	Z		28.8			1 40					
		e	Z		32.5			1 40					
		eLr	Z		38.6			4 30					
		eLr	E		38.7								
	RX	eLr	Z		06	40							
	Origin:			05	54	33.7	10.6S 78.2W		61km	USCGS			
17	KP	eP	Z	19	26	09							
	WN	eP	ZNE	19	26	35	dne						
		eS	ZNE		31	46							
		e(SSS)	E		34.0								
		eLr	ZNE		35								
		M	NE		38								
	RX	eP	ZNE	19	27	05	48	9	32	14	11	9	
		e(PP)	ZN		28	39			57	13			
		eS	ZNE		32		93	20			450	42	
		e(Lq)	ZNE		35.6								
		eLr	Z		36								
		eLr	NE		37								
		M	E		39						300	19	
		M	ZN		40		300	17	320	17			
	Origin:			19	20	08.2	10.1S 165.3E		17km	USCGS			
							Felt: Eastern Solomon Is.						
17	KP	eP	Z	19	29	11							
	WN	eP	ZNE	19	29	38							
	RX	eP	Z	19	30	05							
17	KP	eP	Z	19	31	37							
	WN	eP	Z	19	32	06							
	RX	eP	Z	19	32	30							
17	KP	eP	Z	20	03	38							
	WN	eP	ZNE	20	04	07							
	RX	eP	Z	20	04	33							
	Origin:			19	57	40.3	10.1S 165.0E		36km	USCGS			
17	KP	eP	Z	20	06	56							
	WN	eP	ZNE	20	07	22							

Date	Stn	Phase		h.	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
			Z	20	07	50							
SEP	RX	eP	Z	20	00	56	9.9S		164.7E		33km	USCGS	5.3
	Origin:												
			Z	22	34	28							
17	KP	eP	ZNE	22	34	56							
	WN	eP	E		43								
		eL	Z		44								
		eLr	Z	22	35	24							
	RX	eP	NE		46								
		eLr		22	28	29.6	10.2S		165.1E		33km	USCGS	5.2
	Origin:												
			Z	01	22	58							
18	KP	eP	Z	01	32								
	WN	eL		01	16	53.9	10.1S		165.1E		33km	USCGS	4.9
	Origin:												
			Z	02	01	42							
18	KP	eP	ZE	02	11								
	WN	eL	Z		12			1	26				
		M	E	02	12								
	RX	eL	N		15								
		eL		01	55	46.2	10.7S		165.1E		28km	USCGS	5.0
	Origin:												
			Z	04	00	26							
18	KP	eP		04	00	24.1	10.2S		165.2E		33km	USCGS	4.1
	Origin:												
18	GS	eP	Z	06	24	45							
	TU	eP	Z	06	24	52							
		e?	Z		25	05							
		eS	Z		26	09							
	KP	eP	Z	06	24	56							
	CT	eP	Z	06	25	06							
		e	Z		26	41							
	ON	eP	E	06	25	(07)							4.8
	TA	eP	Z	06	25	17							
	RX	eP?	Z	06	26	58							
	WN	eP	Z	06	27	01							
	WN	eS	NE	06	27	16							5.4
		eL	ZNE		28								
		M	Z		31			2	18				
	KM	eS	X	06	28	19							5.3
	GP	eS	N	06	28	24							5.4
	Origin:			06	23	10	33½S		177½W		N	NZ(D)	5.1
							Additional readings from Charters Towers and Brisbane used to determine epicentre.						
18	GS	eP	Z	06	49	12							
		e	Z		50	49							
	TU	eP	Z	06	49	19							
		e(S)	Z		50	39							
	KP	eP	Z	06	49	22							
	ON	eP	E	06	49	23							4.8
	CT	eP	Z	06	49	32							
		e	Z		51	14							
	WN	e?	Z	06	49	52							5.5
		eS	NE		51	42							
		eL	ZNE		52								
		M	E		53						3	19	
		M	ZN		54			5	18		3	18	
	RX	e(P)	Z	06	51	24							
	WN	eP	Z	06	51	33							
	CB	eS?	E	06	52	06							5.4
	KM	eS?	X	06	52	44							5.3

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
SEP	GP	eS	N	06	52	48							
		Origin:		06	47	35	33½S	177½W	N		NZ(D)		5.6
							Additional readings from Charters Towers used to determine epicentre.						5.3
	18 KP	eP	Z	08	08	21							
		Origin:		08	02	21.1	10.3S	165.6E	33km	USCGS			4.6
	18 KP	eP	Z	09	19	41							
		Origin:		09	14	36.1	14.8S	167.7E	119km	USCGS			4.5
	18 KP	ePKP$_1$	Z	17	18	09							
		e(PKP$_2$)	Z			30							
	WN	ePKP	Z	17	18	09							
		e(SPP)	Z			35.3	2	7					
		e(SS)	Z			42.1							
		e(Lq)	N	18	02								
		eLq	E			05							
		eLr	Z			12							
		M	ZNE			15	2 32		2 34		2 34		
	RX	eL	E	18	18								
		eL	N			23							
		Origin:		16	58	12.5	40.9N	29.2E	33km	USCGS			5.1
	18 KP	eP	Z	17	26	30							
		Origin:		17	18	00.8	3.3S	139.9E	90km	USCGS			5.8
	19 KP	eP	Z	09	03	04							
		Origin:		08	59	40.6	22.0S	179.6W	563km	USCGS			4.7
	19 KP	eP	Z	19	34	17							
		Origin:		19	29	17.0	15.2S	167.6E	161km	USCGS			4.3
	20 KP	eP	Z	19	12	10½							
		Origin:		19	02	15.5	1.6N	127.1E	97km	USCGS			5.1
	21 WN	eL	Z	00	51								
	21 WN	eL	Z	04	30								
	21 CT	eP	Z	16	31	08½							
		e	Z			13							
		eS	Z			34 16							
	WN	eS	ZNE	16	34	49							
		Origin:		16	28	04.7	23.0S	179.8E	483km	USCGS			4.6
	22 CT	eP	Z	02	21	13							
	WN	eL	Z	02	27	.5							
		M	Z			29	1 24						
	RX	eL	E	02	30								
		Origin:		02	16	08.6	16.3S	178.5E	33km	USCGS			4.8
	22 KP	eP	Z	03	00	45							
	CT	iP	Z	03	00	59.6	u						
	WN	eP	ZNE	03	01	20	u	8 12	5 10				6.0
		eS	ZNE			05 32		13 11	13 28		15 14		6.1
		eLr	ZN			07.0		29 28	23 32				
	RX	eP	ZN	03	02	04							
		eS	NE			06 40			7 15				5.9
		eL	ZNE			09							
		M	NE			12			10 17		10 18		5.8
		Origin:		02	56	24.3	19.3S	175.9E	28km	USCGS			5.8
	22 KP	eP	Z	19	26	18							
	CT	iP	Z	19	26	33.9							

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
			ZNE	19	26	54		3 12					5.9
	WN	eP	ZNE		31	00		4 13		8 20		7 12	6.0
SEP		eS	Z			36		6 22					
		e	Z		32							9 22	
		e(Lq)	ZE		33								
		eLr	N		36			6 15		7 15			
		M	ZN	19	27	37							
			Z		32	16							
	RX	eP	NE		35								
		eS	N		36								
		eL	ZE	19	21	57.1	19.2S	175.9E	24km	USCGS			
		Origin:											
			E	23	47	20							
22	ON	eP	E		49	45							
		e	E	23	47	31							
	KP	eP	Z	23	47	40							
	CT	eP	Z		49	20							
		eS	Z	23	48	04							
	WN	ePP	Z		50	03							
		eS	NE										
		eLr	Z	07	34								
23	WN		Z		39			1 24					
		M	Z	06	40	36.5	16.6S	28.6E	33km	USCGS			5.5
		Origin:											
		eSP	Z	09	31	24							
23	WN	eSS	Z		41	36		1 26					
		e(Lq)	Z		48								
		eLr	Z		55								
		eLr	N		56								
		M	ZE		56			3 32				6 32	
	RX	eLr	N	09	54								
		Origin:		09	01	56.8	16.6S	28.8E	33km	USCGS			5.8
23	KP	eP	Z	10	05	56							
		Origin:		09	58	46.0	5.6S	153.8E	80km	USCGS			5.1
23	KP	eP	Z	17	15	30							
	WN	eL	Z	17	48								
		Origin:		17	02	36.6	51.3N	179.2W	33km	USCGS			5.2
23	WN	eLr	Z	23	17								
		Origin:		22	23	37.7	16.6S	28.7E	33km	USCGS			
24	WN	eL	Z	10	07								
		Origin:		09	13	38	16.6S	28.7E	33km	USCGS			
24	KP	eP	Z	16	43	37							
		ePKKP	Z	17	00	27							
	WN	eP	Z	16	43	36		5 34					6.5
		ePP	Z		47	32		7 36					6.6
		e(SKKS)	Z		54	40							
		eSP	Z		56	06		7 38					
		e	Z		58	38		7 30					
		eSS	Z	17	01	45		13 52					
		e	Z		08	35		13 48					
		e	Z		10	.7		13 48					
		eLr	ZNE		14								
		M	ZNE		15			48 32		27 26		37 34	
	RX	ePP	E	16	47	.8							
		eSKS	NE		54	.4							
		eSP	NE		56	.6				6 30		125 25	
		eSS	NE	17	01	.9						7 30	
		eLq	NE		12					6 28			
		eLr	ZNE		15								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
SEP		M	ZNE		16		16	23	10	26	23	26	
		Origin:			16	30 16.0	10.6S	78.0W	80km		USCGS		
	24 WN	eLr	Z	20	23								6.0
		M	Z		24		2	32					
		Origin:			22	08 32.1	10.3S	164.6E	33km		USCGS		
	24 WN	eLr	Z	20	23								5.8
		M	Z		24		2	32					
		Origin:			22	08 32.1	10.3S	164.6E	33km		USCGS		
	25 WN	eLr	Z	07	56								5.8
		M	Z	08	01		2	24					
		Origin:			07	03 54.6	16.7S	28.7E	33km		USCGS		
	25 KP	eP	Z	12	51	45							5.8
		Origin:			12	46 42.0	15.2S	167.4E	122km		USCGS		
							Felt:	Santo					4.3
	25 KP	eP?	Z	14	06	55							
	CT	eP?	Z	14	07	08							
	WN	eLr	Z	14	16.0								
		M	Z		17		3	36					
	RX	eL	NE	14	17								
		Origin:			14	00 54.6	10.2S	164.6E	33km		USCGS		4.9
	25 WN	eS	ZN	15	01.9		1	18					
		e(SSS)	Z			04.2	2	20					
		e(Lq)	E			04.5							
		eLr	ZN		05								
		M	Z		06		7	30					
		M	ZE		09		5	19				3	15
		M	N		12				2	14			
	RX	eL	NE	15	05								
		eL	Z		09								
		Origin:			14	50 18.2	10.1S	164.5E	33km		USCGS		5.1
	26 KP	eP	Z	05	40	54							
	WN	eLr	Z	06	10								
		M	Z		14		2	24					
		Origin:			05	28 07.3	50.4N	176.9W	33km		USCGS		5.3
	26 KP	iP	Z	06	02	37.9							
		Origin:			05	55 09.7	5.6S	148.0E	156km		USCGS		4.9
	26 KP	eP	Z	06	44	55							
	WN	eS	NE	06	47	15							
		eL	Z		49								
		M	Z		51		2	18					
	26 WN	eL	Z	13	49								
	26 CT	eP?	Z	20	44	26							
		Origin:			20	53 54.3	3.3S	141.9E	33km		USCGS		5.3
	27 KP	eP?	Z	07	59	06							
		Origin:			07	54 11	12.9S	171.5W	33km		USCGS		4.0
	27 KP	eP	Z	10	32	46							
	CT	eP	Z	10	33	00							
	WN	eS	Z	10	37	32	1	13					
		eL	ZNE		38							8	26
		M	E		39								5.4
		M	ZN		40		8	20	8	20			
	RX	eL	E	10	40								

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
		eL	N		41								
		eL	Z		42							4	14
SEP		eL	E		43								
		M		10	28	04.1	17.1S	174.6E	33km		USCGS		4.9
		Origin:											
			Z	11	15	14							
	27 KP	eP	Z	11	15	20							
	CT	eP	Z	11	04	17.3	11.3N	126.0E	17km		USCGS		5.3
		Origin:											
			Z	11	30	34½							
	27 KP	eP	Z		34	44							
		eS	Z	11	30	49							
	CT	eP	Z	11	31	08	3	10					5.8
	WN	eP	Z		35	26	4	14			7	10	6.1
		eS	ZNE		36	12	8	13	8	12	8	18	
		e(SS)	ZNE		36.5				10	23	34	32	
		eLq	NE		37								
		eLr	Z		38		27	20	23	19	18	20	6.0
		M	ZNE						4	18	4	20	5.7
	RX	eS	NE	11	36	44			6	24			
		e	N		38.0								
		eLq	E		38.4						16	27	
		eLr	ZN		39.5								
		M	NE		41				9	17	14	15	5.9
		Origin:		11	25	53.6	17.2S	174.7E	33km		USCGS		5.0
	27 KP	eP	Z	14	53	41							
		Origin:			14	49 32.3	21.3S	179.0W	354km		USCGS		4.1
	28 KP	iP	Z	05	29	30.7 d							
	CT	eP	Z	05	29	39							
	WN	eP	ZNE	05	29	58							
		Origin:			05	25 25.9	17.8S	178.6W	548km		USCGS		
	28 ON	iP	E	06	59	52.6 w							6.4
		eS	E	07	01	10							
	GS	eP	Z	06	59	59½							
		e	Z	07	01	10							
	KP	iP	Z	07	00	02.0 d							
		e	Z		01	33							
	TU	e	Z	07	00	02							
		i	Z			33.8							
		e	Z		01	16							
		eS	Z			27							
	CT	iP	Z	07	00	11.3							
		e	Z		01	52							
	TA	eP	Z	07	00	17							
		e	Z		02	02							
	WN	eP	NE	07	00	33							6.5
		e	NE		35								
		eS	NE		02	23							
		eL	Z		04		2	12					
	CB	eP	E	07	00	39							6.0
		eS	E		02	37							
	KM	eP	X	07	00	59							6.0
		eS	X		03	11							
	GP	eP	N	07	01	03							6.7
		eS	N		03	16							
	RX	eP	Z	07	01	32							
	MK	eP	Z	07	01	42							
		e	Z		04	40							
		Origin:		06	58	12	32S	179.5W	470km		USCGS		5.0
	28 KP	eP?	Z	18	54	08							
	CT	eP	Z	18	54	06							
		Origin:		18	42	25.2	3.5S	120.0E	29km		USCGS		5.6

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
SEP 28	KP	eP	Z	21 29 13				
	CT	eP	Z	21 29 14				
28	KP	eP	Z	23 16 29				
	WN	eL	Z	27				
	Origin:			23 11 01.2	13.4S	166.3E	53km USCGS	4.7
29	RX	eP	N	02 59 01				
		eS	E	03 02 14				
		eL	ZNE	03				
		M	ZN	04	15 18	13 20		
		M	E	05				
	WN	eP	Z	02 59 59	3 14		16 12	
		eS	ZE	03 04 10				
		e	N	22				5.4
		eL	ZE	05				
		M	ZNE	07	22 19	17 15	17 15	
	CT	eP	Z	03 00 24				
	KP	eP	Z	03 00 43				
	Origin:			02 55 05	62.0S	163.5E	33km USCGS	
29	MN	eP	Z	04 36 41				
		eS	Z	37 21				
	RX	eP	Z	04 36 55				
		eS	Z	37 49				
	GP	e?	N	04 37 52				
		eS?	N	38 59				
	Origin:			04 35 45	49S	165E	N NZ(D)	4.7
29	KP	eP	Z	04 52 13				
	CT	eP	Z	04 52 27				
29	CT	eP?	Z	10 09 30				
		eS	Z	11 40				
	GS	eS	Z	10 10 57				
	Origin:			10 06 43.4	28.8S	177.8W	116km USCGS	5.1
29	MN	eP	Z	19 45 24				
	KP	eP	Z	19 45 25½				
	CT	eP	Z	19 45 33				
	WN	e	Z	19 56.7				
		eLr	Z	20 06.5				
		M	Z	09	3 32			
	Origin:			19 35 01.6	6.0N	125.3E	117km USCGS	5.3
29	CT	eP	Z	20 41 25				
	KP	eP	Z	20 41 28				
	Origin:			20 31 10.1	21.6N	142.9E	325km USCGS	
29	KP	ePKP	Z	22 37 24				
	Origin:			22 16 38.6	36.1N	18.0E	47km USCGS	5.3
30	KP	eP	Z	00 57 35				
		e	Z	50				
	GS	eP	Z	00 57 39				
30	KP	eP	Z	09 03 56				
	MN	eP	Z	09 04 00				
	CT	eP	Z	09 04 07				
	Origin:			08 54 15.0	1.3S	128.5E	30km USCGS	
30	KP	eP	Z	09 47 08				
	Origin:			09 42 28.1	14.7S	177.5W	362km USCGS	4.2
OCT 2	KP	eP	Z	03 38 46				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
	MN	eP	Z	03 39 14				
OCT	GS	eP	Z	03 39 59				
	WN	ePP	Z	03 40 52				
		eS	Z	45 12				
		e	Z	48 52				
		eLr	Z	50.8				
		M	Z	51	4 28			
	Origin:			03 31 27.0	5.4S	152.0E	65km USCGS	5.6
			Z	05 51 30				
2	KP	eP	Z	05 51 29½				
	GS	eP	Z	48				
		e(pP)	Z	05 52 05				5.2
	WN	eP	Z	27				
		e(pP)	N	56 12				
		eS	E	57 10	3 20			
		eSS	Z	58 05				
		e	ZE	59				
		eLr	ZNE	59			3 14	
		M	E	59				
		M	ZN	06 00	16 18	13 20		5.8
	RX	eP	Z	05 53 00				
		eLr	NE	06 00				
		eLr	Z	03				
		M	E	04			20 30	
		M	ZN	05	34 26	15 28		
	MN	eP	Z	05 53 04				
	Origin:			05 47 05.5	20.8S	174.1W	33km USCGS	5.3
2	KP	eP	Z	09 22 18				
	Origin:			09 19 14	23.5S	179.7E	626km USCGS	3.9
2	KP	eP	Z	17 02 14				
	Origin:			16 57 47	20.0S	175.1W	33km USCGS	4.3
3	ON	eP	E	07 54 37				
	KP	eP	Z	07 54 39				
	GS	eS	Z	07 56 02				
	WN	eS	ZNE	07 57 20				
		eL	Z	08 00				
	Origin:			07 52 25	30.5S	177.6W	33km USCGS	4.5
3	GS	eP	Z	13 59 02½				
	KP	eP	Z	13 59 04				
	Origin:			13 53 44.1	15.3S	173.4W	36km USCGS	4.3
3	MN	eP	Z	15 59 58				
	WN	eP	Z	16 00 21	2 20			5.6
		e(SP)	Z	11 00	2 8			
		eSS	Z	15 40	1 20			
		eLr	ZN	25				
		M	ZN	31	5 21	3 20		
	GS	eP	Z	16 00 31				
	KP	eP	Z	16 00 35				
	Origin:			15 48 17.2	58.5S	25.1W	54km USCGS	
3	CT	eP	Z	16 13 36				
	KP	eP	Z	16 13 42				
3	MN	eP	Z	18 07 36				
	CT	eP	Z	18 08 07				
	KP	eP	Z	18 08 13				
	Origin:			17 55 54.2	58.6S	25.5W	33km USCGS	5.5
3	KP	eP	Z	23 36 47				
	CT	eP	Z	23 37 02				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag.
OCT	WN	eP	Z	23	37	07					
		ePP	Z		40	08					
		eS	ZNE		47	12	2 26	4 20			
		eSS	ZE		52	58	4 24		4 6		
		eLr	ZN	24	04				3 22		6.3
		M	ZNE		10		8 21	5 22			
	RX	eP	Z	23	37	08			3 18		6.2
		eS	NE		47	32					
		eSS	NE		53	.1		5 21	4 20		
		eLr	N	24	05				4 20		6.3
		eLr	E		06						
	Origin:			23	24	34.7	32.2N 131.6E	33km	USCGS		5.7
	4 GS	eP	Z	02	51	56					
		eS	Z		55	14					
	KP	eP	Z	02	51	58½					
	WN	eP	Z	02	52	31					
		eS	NE		56	25					
		eLq	E		58	.4					
		eLr	Z		58	.8					
		M	ZE		59		3 18		6 18		
	MN	eP	Z	02	53	36					
	Origin:			02	47	32.1	20.7S 174.0W	33km	USCGS		5.3
	4 CT	eP	Z	03	56	43					
	KP	eP	Z	03	56	49					
	Origin:			03	44	28.5	58.4S 25.0W	33km	USCGS		5.2
	5 GS	eS	Z	00	20	04					
	KP	eP	Z	00	20	05					
	Origin:			00	14	52.1	15.7S 173.3W	33km	USCGS		4.6
	5 GS	eP	Z	02	00	42					
	KP	eP	Z	02	00	43					
	WN	eL	Z	02	08						
		M	Z		12		5 20				
	Origin:			01	55	35.2	16.0S 173.2W	79km	USCGS		5.5
	5 GS	eP	Z	05	20	45					
	KP	eP	Z	05	20	47					
	Origin:			05	15	32.4	15.9S 173.2W	33km	USCGS		4.9
	5 KP	eP	Z	06	24	01					
	Origin:			06	18	37.9	15.6S 173.1W	33km	USCGS		4.5
	5 KP	eP	Z	12	54	34					
	GP	eP	N	12	54	34					
	Origin:			12	49	20.3	15.7S 173.6W	33km	USCGS		4.2
	6 CT	eP	Z	17	28	02					
	KP	eP	Z	17	28	06					
	Origin:			17	15	33.9	33.9S 70.0W	101km	USCGS		
	7 KP	eP?	Z	13	17	29.8					
		iP	Z			30.6					
		e	Z			34					
		e	Z			54					
		eS	Z		20	10					
	GP	eP	N	13	17	31					
		eS	N		19	57½					
		eScP	N		24	47					
		eScS	N		28	23					5.3
	WN	eP	ZNE	13	18	02					
		e	Z		20	.5	3 40				
		eS	ZNE		20	57					

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te		Mag.
		iScP	ZNE		24	52.7					
		eScS	ZNE		28	33					
OCT		eP	Z	13	18	52					
	RX	e(S)	Z		22	22					
		eScP	Z		25	07					
		eScS	E		28	54					
		eP	Z	13	19	03					
	MN	eS	Z		22	42					
	Origin:			13	14	24.6	23.6S 179.9E	550km	USCGS		5.7
	6 GS	eP	Z	00	22	21					
	KP	eP	Z	00	22	23					
	WN	eP	Z	00	22	50	2 19				5.6
		e(S)	Z		27	22	3 38				
		eL	ZE		30						
		eL	N		31						
		M	ZNE		32		31 26	20 24	18 26		6.1
		eP	Z	00	23	47					
	RX	eL	ZNE		34			18 22	9 22		6.1
		M	NE		35						
		M	Z		37		21 17				
		M		00	17	01.1	15.1S 173.2W	33km	USCGS		5.7
	Origin:										
	8 KP	eP	Z	23	05	36					
	WN	eP	Z	23	06	13					
	MN	eP	Z	23	07	09					
	Origin:			23	01	16.0	19.4S 175.8W	182km	USCGS		4.6
	9 KP	eP	Z	02	58	13					
	CT	eP	Z	02	58	26					
	9 GS	eP	Z	05	18	12					
		e	Z		21	53					
		eS	Z		22	07					
	KP	eP	Z	05	18	14	u				
	WN	eP	ZNE	05	18	46					
		eS	ZNE		23	06					
		eL	Z		25						
		M	Z		29		2 20				
	MN	e	Z	05	19	41					
	Origin:			05	13	26.9	18.6S 173.7W	33km	USCGS		4.6
	9 KP	eP	Z	10	20	15					
	CT	eP	Z	10	20	28					
	WN	e(S)	ZNE	10	26	24					
		e(L)	Z		29	.2					
		M	Z		31		3 15				
	9 KP	eP	Z	10	41	20					
	GS	eP	Z	10	41	20					
	MN	eP	Z	10	42	59					
	Origin:			10	36	53.4	20.3S 174.4W	33km	USCGS		4.9
	9 KP	eP	Z	12	59	29					
	GS	eP	Z	12	59	30					
		eS	Z	13	02	06					
	WN	eP	ZNE	13	00	00					
		eS	ZNE		02	57					
	10 KP	eP	Z	10	50	09½					
	10 KP	eP	Z	12	09	17					
	Origin:			12	04	46.6	20.2S 175.2W	25km	USCGS		4.9
	10 KP	eP	Z	14	21	49					

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te		Mag.
OCT	RX	eP	Z	14 22					
	MN	eP	Z	14 22					
	Origin:			14 16 31.1	12.6S 167.0E	223km	USCGS		
11	KP	eP	Z	01 03 14					4.9
	Origin:			00 01 13.0	24.1S 179.6W	437km	USCGS		
11	KP	eP	Z	09 13 22					4.9
	WN	eP	ZN	09 13 50					
	Origin:			09 09 11	18.5S 179.9W	247km	USCGS		
11	KP	eP	Z	16 37 58					5.1
	GS	eP	Z	16 37 59					
	WN	eP	Z	16 38 26					
	MN	iP	Z	16 39 21.1					
	Origin:			16 33 59.8	18.5S 177.7W	583km	USCGS		
12	KP	eP	Z	00 41 49					4.4
	Origin:			00 38 12	18.6S 179.8E	347km	USCGS		
12	KP	eP	Z	11 39 35					4.3
		e	Z	40 19					
	WN	eP	Z	11 39 50	16 18				
		e	Z	49.2					6.8
		eSKS	ZNE	50.1	20 30	44 31	15 22		
		ePS	NE	51.6		58 28	25 28		
		e(SPP)	Z	52.2					
		eSS	ZNE	56.2	48 32	55 36	11 22		
		eSSS	NE	12 00.0					
		e(Lq)	NE	03					
		e	ZNE	05	24 30	25 24	49 24		
		eLr	ZNE	12		50 21	36 21		
	RX	eP	ZN	11 40 07	8 14	60 18			7.0
		ePP	ZN	43 52	6 16	6 17			6.8
		eSKS	ZNE	50.7	11 16	59 22	45 24		6.9
		eSS	ZNE	57.5	13 22	42 22	34 22		
		e	N	12 00.8					
		eSSS	ZE	01.5					
		e	ZNE	04					
		e(Lq)	N	08		28 26			
		eLr	ZNE	13					
		M	ZN	15	61 21	80 21			
		M	E	16			73 22		7.0
	Origin:			11 26 57.9	44.8N 149.0E	40km	USCGS		6.8-7.0
13	KP	eP	Z	05 30 37					
	CT	eP	Z	05 30 42					
	WN	eP	Z	05 30 51					8.2
		e	E	39 40					
		e	N	40 20					
		eSKS	NE	41 32			66 18		
		e(PS)	E	42.5					
		eW_2	E	07 10					
	RX	eP	ZNE	05 31 05	18 7				7.5
		e	NE	55					
		eSKS	ZNE	42.1	47 12	140 12	130 15		
	Origin:			05 17 57.1	44.8N 149.5E	60km	USCGS		6.6-7.0
13	CT	eP	Z	05 56 52					
	Origin:			05 42 14	46.5N 151.6E	55km	USCGS		5.5
13	KP	eP	Z	06 18 04½					
	Origin:			06 05 29.5	45.9N 151.9E	55km	USCGS		5.5
13	KP	e(P)	Z	06 21 36					

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te		Mag.
				49					
OCT		eP	Z	06 09 02.2	45.3N 151.3E	60km	USCGS		5.6
	Origin:								
13	KP	eP	Z	07 01 05					
				06 48 26.3	45.5N 151.8E	55km	USCGS		5.2
	Origin:								
13	KP	eP	Z	07 16 00					
		e(pP)	Z	14 07 03 23.8	45.5N 150.6E	50km	USCGS		5.6
	Origin:								
13	KP	eP	Z	13 10 57					
		epP	Z	11 11 12 58 21.6	45.0N 150.1E	50km	USCGS		5.4
	Origin:								
13	KP	eP	Z	14 38 47					
	Origin:			14 26 11.9	44.5N 149.5E	50km	USCGS		5.1
13	KP	eP	Z	16 12 02					
		e(P)	Z	16 12 35					
	CT	eP	Z	16 12 45					
	WN	eP	Z	15 59 52.9	45.6N 150.5E	35km	USCGS		6.1
	Origin:								
13	KP	eP	Z	19 40 15					
	Origin:			19 27 38.2	45.7N 151.7E	45km	USCGS		5.5
13	KP	eP	Z	24 04 57					
	WN	eSP	Z	24 17.0	2 20				
		eLr	Z	37					
		M	Z	40	7 20				
	Origin:			23 52 22.8	44.5N 150.1E	50km	USCGS		5.5
14	KP	eP	Z	04 18 39					
		epP	Z	52					
	WN	eSP	Z	04 31.0					
		eSS	Z	35.7					
		eLr	Z	48					
		M	Z	51	2 23				
	Origin:			04 06 01.7	44.9N 150.2E	50km	USCGS		5.3
14	KP	eP	Z	04 23 49					
		epP	Z	24 01					
	Origin:			04 11 14.0	44.7N 150.6E	45km	USCGS		5.3
14	KP	eP	Z	04 25 40					
		epP	Z	53					
	Origin:			04 13 03.1	44.9N 150.7E	40km	USCGS		5.2
14	KP	eP	Z	09 26 22					
	Origin:			09 22 06.6	19.0S 169.0E	160km	USCGS		
14	KP	eP	Z	13 34 17					
	CT	eP	Z	13 34 31					
	WN	eP	Z	13 34 31	2 12				
		ePP	Z	38.0					
		e(SKS)	ZNE	45.0	3 40				
		eLr	Z	14 02					
		eLr	E	03					
		eLr	N	05					
		M	ZNE	09	6 20	5 20	4 22		
	RX	eP	Z	13 34 47					
		eS	N	45.3		3 22			
		eL	NE	14 06					
		eL	Z	10					
	Origin:			13 21 45.2	44.8N 151.0E	60km	USCGS		5.9

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
OCT 14	KP	eP	Z	14 57 09				
	WN	eL	Z	15 16				
		M	Z	21	2 24			
	Origin:			14 47 30.9	3.3S	126.7E	33km USCGS	4.7
14	KP	eP	Z	18 02 50				
	Origin:			17 50 15.3	45.2N	151.3E	60km USCGS	5.0
14	KP	eP	Z	22 13 11				
	CT	eP	Z	22 13 26				
	WN	e(L)	Z	22 19				
	Origin:			22 08 27.1	17.0S	173.9E	33km USCGS	4.3
14	KP	eP	Z	23 03 16				
	CT	eP	Z	23 04 01				
	WN	e(S)	Z	23 08.9				
		e(L)	Z	09.8				
		M	Z	13	2 14			
	Origin:			22 59 05.4	17.0S	173.8E	33km USCGS	4.6
15	KP	eP	Z	07 11 26				
	WN	e(L)	Z	07 17.8				
		M	Z	23	2 16			
		M	Z	38	2 20			
	Origin:			07 06 59.9	20.5S	173.9W	33km USCGS	5.1
15	KP	ePKP	Z	10 19 17				
	WN	e	Z	11 01.0	1 28			
		eLr	Z	14				
		M	Z	24	1 20			
	Origin:			09 59 30.1	67.2N	18.4W	33km USCGS	5.2
15	KP	eP	Z	10 59 48				
	WN	eP	Z	11 00 01				
	Origin:			10 47 12.6	44.6N	149.0E	50km USCGS	
15	KP	eP	Z	14 01 01				
	CT	eP	Z	14 01 15				
	WN	eL	Z	14 08	1 28			
	Origin:			13 56 19.1	17.1S	173.9E	33km USCGS	4.5
15	KP	eP	Z	21 54 25				
	CT	eP	Z	21 54 30				
	WN	eS	Z	22 02.1				
		eLr	Z	14				
		M	Z	20	9 20			
	Origin:			21 44 58.0	3.0S	129.9E	27km USCGS	5.2
16	KP	eP	Z	05 28 13				
		epP	Z	28				
	Origin:			05 15 36.1	44.8N	150.4E	33km USCGS	5.2
16	KP	eP	Z	07 16 22				
	CT	eP	Z	07 16 33				
	Origin:			07 12 57.9	22.2S	179.5W	539km USCGS	4.3
16	KP	eP	Z	12 57 29				
	Origin:			12 47 44.2	1.8S	127.9E	33km USCGS	5.3
16	KP	eP	Z	14 00 45				
	WN	eLr	Z	14 09.0				
		M	Z	10	3 26			
	Origin:			13 55 26.2	15.1S	173.6W	33km USCGS	4.9
16	KP	ePKP	Z	16 01 52				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
	WN	ePP	Z	16 03 28				
OCT		eLr	Z	42				
		M	Z	50	7 28			
	Origin:			15 43 00.8	38.6N	73.4E	33km USCGS	5.9
17	KP	eP?	Z	03 15 45				
		eP	Z	51				
	Origin:			03 05 50.2	11.6N	140.6E	70km USCGS	5.1
17	KP	eP	Z	11 40 20				
		e	Z	41 53½				
	Origin:			11 35 30.7	17.3S	168.0E	33km USCGS	4.3
17	KP	eP	Z	14 24 45½				
		eP	Z	14 24 52				
	CT	eP	Z	14 46				
	WN	eLr	Z	49	1 26			
		M	Z	14 13 59.8	9.8N	126.5E	33km USCGS	5.4
	Origin:							
17	KP	eP	Z	23 37 17				
		eP	Z	23 37 32	2 12			6.4
	WN	eP	Z	48 16				
		e(SKS)	Z	49 08				
		e(SP)	Z	54.2	4 30			
		eSS	Z	24 05				
		eLr	Z	09				
		M	Z	23 48 45		6 18		
	BK	eSKS	NE	54 50		5 22	4 24	
		eSS	NE	03.3			5 30	
		eLq	E	07				
		eLr	NE	13		7 21	7 21	6.2
		M	NE	23 24 34.4	44.6N	149.0E 45km	USCGS	5.4
	Origin:							
18	CT	eP	Z	21 48 22				
		epP	Z	33½				
	Origin:			21 26 55.0	5.3S	103.5E	33km USCGS	5.1
20	KP	eP	Z	01 05 44				
		e	Z	50				
	CT	eP	Z	01 05 58				
		ePP	Z	09 30				
	WN	eP	Z	01 06 18				
		eSKS	NE	16 32		26 17		
		eSS	NE	22.1		74 46		
		e(Lq)	E	29.2				
		eLr	NE	34				
		M	NE	40				6.8
	BK	eP	ZN	01 06 27	12 15	4 17		7.0
		eSKS	ZNE	16.9	21 18	60 20	37 30	
		e	Z	27.6				
		eLq	E	36			22 20	
		eLr	ZN	39				
		M	ZNE	43	150 21	135 21	95 21	7.1
	Origin:			00 53 07.2	44.7N	150.7E 25km	USCGS	6¾-7 PAS
20	KP	eP	Z	03 03 45				
	CT	eP	Z	03 03 55				
	GR	eP	Z	03 03 46½				
	WN	eP	Z	03 04 14				
	MW	iP	Z	03 05 10.8 u				
	Origin:			03 00 10.9	20.8S	178.6W	600km USCGS	4.8
21	KP	eP	Z	02 35 12				
	GR	eP	Z	02 35 30				
	WN	eL	Z	02 40.5				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
OCT		M	Z	42	2 18			
		Origin:		02 31 39.3	22.9S 172.1E	54km	USCGS	4.6
	21 KP	eP	Z	09 22 28				
	CT	eS	Z	09 25 44				
	WN	eS	ZNE	09 26 16				
		eL	ZNE	27				
		M	E	28			3 22	
		M	Z	30	4 18			5.3
		Origin:		09 18 46.7	23.6S 176.1W	33km	USCGS	4.9
	21 KP	eP	Z	13 28 37				
	GS	eP	Z	13 28 40				
	CT	eP	Z	13 28 52				
	WN	eL	Z	13 30.5				
		M	Z	33	2 20			
	21 KP	eP	Z	13 30 03				
	WN	eS	ZNE	13 33 22				
		Origin:		13 27 10.6	26.0S 179.9E	397km	USCGS	4.9
	21 KP	eP	Z	15 51 02				
		epP	Z	17				
		Origin:		15 38 24.3	45.5N 149.7E	55km	USCGS	5.4
	21 KP	eP	Z	17 33 17				
		Origin:		17 20 46.0	44.1N 150.3E	65km	USCGS	5.0
	21 KP	eP	Z	22 58 39				
	GS	eP	Z	22 58 43				
	CT	eP	Z	22 58 51				
	22 KP	eP	Z	14 12 43				
		Origin:		14 07 32	16.2S 173.9W	33km	USCGS	4.7
	22 KP	eP	Z	15 41 06				
	CT	eP	Z	15 41 17				
	WN	eL	Z	15 50				
		M	Z	52	4 21			
	MN	eP	Z	15 42 05				
		Origin:		15 35 26.1	11.6S 166.3E	80km	USCGS	4.9
	23 KP	eP	Z	08 01 48				
	CT	eP	Z	08 01 58				
	WN	eP	Z	08 02 13				
	MN	eP	Z	08 02 45				
		Origin:		07 56 12.3	12.0S 166.5E	107km	USCGS	5.0
	23 KP	eP	Z	09 59 37				
		Origin:		09 47 08.1	41.2N 144.2E	50km	USCGS	5.4
	23 KP	eP	Z	20 17 24				
		Origin:		20 14 29	25.9S 178.8W	343km	USCGS	4.4
	24 MN	eP	Z	07 37 25½				
	RX	eP	Z	07 37 31				
		e(pP)	Z	43				
		e	N	54.7		4 21		
		eLr	E	08 01.5				
		eLr	N	05.3		4 17	7 20	6.2
		M	NE	08				
	WN	eP	ZNE	07 37 51				
		e(pP)	ZN	38 02				
		ePP	ZE	40 47				
		eS	NE	47.1				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
		eSS	ZE	51.9	1 24			
		e	Z	55.9		3 28		
OCT		eLg	N	57.0	16 20	6 20	8 20	6.3
		eL	ZNE	08 09				
	CT	eP	Z	07 37 54				
		e(pP)	Z	38 05				
	KP	eP	Z	07 37(54)				
		e(PP)	Z	40(48)				
		Origin:		07 26 23.9	4.9S 102.9E	50km	USCGS	6.1
	24 KP	eP	Z	19 59(17)				
	CT	eP	Z	19 59 28				
	WN	eP	ZNE	19 59 46				
	MN	eP	Z	20 00 41				
	25 WN	eP	Z	01 35 06		5 19		
	RX	e(L)	N	01 39.8				
	WN	e(Lr)	Z	01 42.0				
		e(Lr)	E	44	7 20		9 14	
		M	ZE	44		7 14		
		e(Lr)	N	45				
		Origin:		01 30 57	62.3S 156.9E	33km	USCGS	
	25 KP	eP	Z	20 08 49				
	CT	eP	Z	20 08 55½				
	WN	eLr	Z	20 27.1				
		M	Z	35	4 18			
		Origin:		19 58 58.3	12.3N 144.5E	29km	USCGS	5.4
	26 KP	eP	Z	04 08 15				
	WN	eLr	Z	04 38.2				
		M	Z	41	4 22			
		Origin:		03 55 39.7	44.5N 150.1E	55km	USCGS	5.1
	26 KP	eP	Z	05 14 04				
		Origin:		05 01 31.5	43.7N 150.5E	40km	USCGS	5.1
	26 KP	eP	Z	06 12 20				
		Origin:		05 59 44.2	44.5N 149.8E	60km	USCGS	5.1
	26 KP	eP	Z	08 39 09				
	CT	eP	Z	08 39 23½				
		Origin:		08 34 59.5	20.7S 169.0E	33km	USCGS	4.2
	26 KP	eP	Z	11 34 23				
	WN	eLr	Z	12 04.5				
		M	Z	06	2 22			
		Origin:		11 21 47.6	44.7N 149.7E	55km	USCGS	5.4
	26 KP	eP	Z	11 44 30				
		Origin:		11 31 53.0	44.6N 149.8E	55km	USCGS	5.1
	26 KP	eP	Z	12 38 55				
		epP	Z	39 26				
	GS	eP	Z	12 38 55				
	WN	eP	Z	12 39 25				
	MN	eP	Z	12 40 20				
		Origin:		12 33 50.1	15.8S 174.0W	115km	USCGS	5.5
	26 CT	eP	Z	22 48 59				
	GS	eP	Z	22 49 12				
	WN	e	Z	22 58.6	2 26			
		eLr	Z	23 00				
		M	Z	01	5 28			
		Origin:		22 41 29.8	5.2S 152.0E	73km	USCGS	5.9

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
OCT 27	KP	iP	Z	05	23	54.8 d							
	GS	eP	Z	05	23	57							
	Origin:			05	20	18.4	20.6S	178.6W	541km		USCGS		4.4
27	KP	iP	Z	08	49	45.6 u							
		e	Z		51	09							
	GS	eP	Z	08	49	46							
		e	Z		50	18							
		eS	Z		53	15							
	WN	eP	Z	08	50	13							
	MN	iP	Z	08	51	07.7 u							
		e(pP)	Z		52	44							
	Origin:			08	45	43.8	17.9S	178.5W	586km		USCGS		5.0
27	GS	eP	Z	10	42	43							
		eS	Z		45	25							
	KP	eP	Z	10	42	46							
27	MN	eP	Z	10	44	24							
	WN	eL	ZNE	10	48								
		M	E		49								
		M	ZN		52		8	20	4	19	4	20	
	Origin:			10	38	49	22.8S	175.2W	35km		USCGS		5.4 4.8
27	GS	eP	Z	18	28	20							
		eS	Z		30	48							
	KP	eP	Z	18	28	24							
	MN	eP	Z	18	30	05							
	WN	eL	ZNE	18	33								
		M	E		34								
		M	ZN		36		12	17	5	19	9	22	
	Origin:			18	24	42.9	24.3S	176.1W	33km		USCGS		5.6 5.3
27	KP	eP	Z	19	41	24							
	GS	eP	N	19	41	31½							
	MN	eP?	Z	19	43	04							
	Origin:			19	36	26.6	16.8S	173.5W	33km		USCGS		4.3
28	KP	eP	Z	00	47	14½							
	WN	eP	ZNE	00	47	19							
	Origin:			00	37	21	1.9N	124.8E	232km		USCGS		5.0
28	GS	eP	Z	07	58	49							
		eS	Z	08	01	21							
	KP	eP	Z	07	58	52							
	WN	eLq	E	08	03	.6					9	32	
		eLr	Z		04		26	20					
	Origin:			07	55	12.3	24.3S	176.0W	33km		USCGS		5.4
28	KP	eP	Z	12	16	23							
		epP	Z			36							
	WN	eLr	Z	12	46	.8							
		M	Z		49		3	25					
	Origin:			12	03	19.8	52.8N	159.8E	33km		USCGS		5.7
28	KP	eP?	Z	20	02	11½							
		eP	Z			15							
		e	Z			44							
	GS	eP	Z	20	02	17							
		e	Z		04	08							
		e	Z			43							
	WN	eP	ZNE	20	02	44							
		eS	ZNE		05	37							
	MN	eP	Z	20	03	41							
	Origin:			19	59	15.0	24.5S	179.9E	532km		USCGS		5.0

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
			E	16	58	36							
OCT 29	ON	eP	Z	16	59	10							
	KP	eP		16	55	49.4	26.5S	177.5W	65km		USCGS		4.2
	Origin:												
			E	20	25								
29	ON	eP	Z	20	25	25							
	KP	eP	Z	20	25	(45)							
	ON	eP	Z	20	27	33							
	MN	eP	NE	20	32								
	RK	eL	Z		34								
		eL	E		34						10	22	5.6
		M	E	20	22	15.7	26.2S	177.8W	49km		USCGS		4.8
	Origin:												
31	GS	eP	Z	03	21	50							
		eS	Z		24	54							
	KP	eP	Z	03	21	54½							
		eS	Z		25	18							
	WN	eP	ZNE	03	22	26							
		eS	ZNE		26	03							
	RK	eP	Z	03	23	26							
		eS	NE		28	.0			5	18	5	24	5.7
		e(Lr)	NE		30								
		eLr	Z		32								
		M	E		32½						130	17	
		M	ZN		34		75	17	73	16			6.4
	MN	eP	Z	03	23	29							
	Origin:			03	17	42.0	21.8S	175.0W	33km		USCGS		5.2
31	KP	eP	Z	04	28	47							
		e	Z			50							
	GS	eP	Z	04	28	51							
		eS	Z		31	28							
	WN	eP	Z	04	29	19							
		eS	Z		32	18							
	MN	eP	Z	04	30	16½							
	Origin:			04	25	38.0	23.9S	179.8W	464km		USCGS		4.5
31	KP	eP	Z	08	55	39							
	MN	eP	Z	08	57	02							
	Origin:			08	51	42	17.9S	178.8W	637km		USCGS		4.3
31	KP	eP	Z	09	58	20							
	MN	eP	Z	09	59	44							
	Origin:			09	54	25	19.3S	177.4W	555km		USCGS		3.9
31	KP	eP	Z	10	53	35							
	GS	eP	Z	10	53	47							
	Origin:			10	47	25.3	10.5S	162.0E	38km		USCGS		4.8
31	KP	eP	Z	13	42	11							
	Origin:			13	38	20	22.0S	169.9E	33km		USCGS		3.6
NOV 1	KP	eP	Z	21	03	21							
	MN	eP	Z	21	04	59							
	GS	eS	Z	21	06	11							
	MN	eS	ZNE	21	07	21							
	Origin:			20	59	28.1	22.5S	176.8W	71km		USCGS		
2	WN	e	Z	22	48	.6							
		e	Z		51	.8							
		e(L)	Z	23	06	.0							
		eL	ZNE		07								
		M	ZNE		09		11	21	9	20	9	20	
	RK	e	NE	23	06	.0							
		eL	NE		07	.6							

Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
	M	NE	09		10 16	9 16	
	eL	Z	10.5	5 10			
Origin:			22 21 20.7	1.9S 138.9E	33km	USCGS	5.2
WN	eP	Z	03 24 00	2 18			
	ePP	ZE	28 09	3 18			6.4
	eSKS	E	34.8			4 18	6.4
	ePS	E	37.2				
	e(SPP)	Z	38.0				
	eSS	Z	42.5	4 32			
	eSSS	Z	46.5				
	e	Z	50.2				
	eLq	N	52.3		17 44		
	eLr	ZNE	57				
	M	ZNE	04 01	20 19	8 19	12 19	6.3
RX	ePS	NE	03 37.7			5 20	
	eSS	NE	43.5		3 27	6 22	
	e	E	51				
	eLq	N	53		9 32		
	eLr	E	58				
	eLr	ZN	59				
	M	ZNE	04 05	37 32	5 18	21 35	
Origin:			03 10 12.7	3.5S 77.8W	33km	USCGS	6.0
KP	eP	Z	14 37 20				
Origin:			14 31 57.2	14.0S 165.9E	50km	USCGS	4.9
KP	iP	Z	01 19 34.1 u				
	eS	Z	23 45				
GS	iP	Z	01 19 44.8 u				
	eS	Z	23 58				
MN	eP	ZNE	01 20 01 u				
	eS	ZNE	24 26 d				
RX	eP	ZN	01 20 30				
	e	Z	22 06	5 12			
	eS	ZNE	25	11 6	19 8	20 7	6.9
Origin:			01 14 33	15.1S 167.3E	154km	USCGS	6¼-7 PAS
RX	eP	Z	01 26 10				
	e	Z	22½				
	e(ScP)	Z	31 04				
KP	eP	Z	01 26 11½				
MN	eP	ZNE	01 26 17				
	eS	ZNE	33 37				
GS	eP	Z	01 26 26½				
Origin:			01 17 08.9	6.8S 129.6E	80km	USCGS	
KP	eP	Z	02 03 44				
KP	eP	Z	22 26 05				
MN	eL	Z	22 39				
	M	Z	42	2 20			
Origin:			22 17 07.5	6.8S 129.8E	122km	USCGS	5.4
MN	eP	Z	24 03 01				
Origin:			23 52 56.3	1.7N 126.4E	28km	USCGS	5.8
MN	eP	Z	02 22 10	10 6			6.9
	eS	Z	29.8	9 28			
	eSS	ZNE	33.6	10 28			
	eLr	ZNE	37				
	M	ZNE	48	44 24	36 20	30 25	6.5
MN	eP	ZNE	02 22 13	4 6		7 6	6.6
	ePP	ZE	24 18	5 6		3 6	
	eS	NE	29 35		9 20	15 20	6.5

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
NOV		eLq	E	35.7			15 20	
		eLr	ZN	39				
		M	N	39		25 22		
		M	Z	42	25 24			
	Origin:			02 13 16.8	2.6S 138.4E	33km	USCGS	5.7
6	ON	eP	E	06 30 40				
		eS	E	32 05				
	GS	eP	Z	06 30 45				
		e	Z	50				
		eS	Z	32 14				
	WN	eP	ZNE	06 31 23				
		eS	ZNE	21				
	MN	eP	Z	06 32 39				
		eS	Z	35 42				
	Origin:			06 28 55.3	30.8S 179.9E	411km	USCGS	4.7
6	GS	iP	Z	06 37 47.2				
		e(S)	Z	38 20				
	ON	eP	E	06 37 51				3.6
	TO	eP	Y	06 37 51½				3.7
		eS	Y	38 30½				
	WN	eP	ZNE	06 38 11				
		eS	ZNE	39 07				
	CB	eP	E	06 38 17				5.0
		eS	E	39 18½				
	GP	eP	N	06 38 45				6.0
		eS	N	40 04				
	KM	eS	X	06 39 53				5.2
	MN	eS	Z	06 41 29				
	Origin:			06 37 01	37.2S 176.6E	600km	NZ(D)	5.1
6	GS	eP	Z	08 47 31½				
		eS	Z	49 01½				
6	MN	eP	Z	09 10 05				
	GS	eP	Z	09 10 28				
	Origin:			09 01 12.0	7.1S 129.2E	90km	USCGS	5.5
6	GS	eP	Z	18 25 25				
		eS	Z	26 30				
	ON	eP	E	18 25 32				
	TO	e(P)	Y	18 25 38				4.9
		e	Y	27 48				
	CT	eP	Z	18 25 42				
		e?	Z	27 23				
	TA	eP	Z	18 25 57				
	WN	eP	Z	18 26 12				5.5
		eS	ZNE	27 55				
		e	Z	28 46				
	MN	eP	Z	18 27 47				
	CB	eS	E	18 28 17				4.9
	KM	eS	X	18 28 57				5.1
	GP	eS	N	18 29 01				5.2
	Origin:			18 24 00	33¾S 178¾W	N	NZ(D)	5.1
					Additional readings from Charters Towers and Brisbane used to determine epicentre.			
7	MN	eP	Z	01 58 38½				
	RX	eP	Z	01 58(47)				
		eL	ZNE	02 02				
	WN	eLr	Z	02 05	5 28			
		eLr	E	06				
		eLr	N	07				

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
NOV		M	ZNE		08		5	13	8	12	15	10	
7	GS	eP	Z	15	57	12							
		e	Z		59	52							
	KP	eP	Z	15	57	25							
	MN	eP	Z	15	59	04							
	Origin:			15	53	41.9	24.2S	176.4W	33km	USCGS			5.1
7	RX	eS	NE	17	02	.0							
		eL	NE		08								
		eL	Z		09								
	Origin:			16	45	59.8	50.2S	114.9W	33km	USCGS			4.7
7	KP	eP	Z	20	17	38							
	GS	eP	Z	20	19	02							
	Origin:			20	15	22.5	29.4S	178.1W	110km	USCGS			3.8
8	GS	eP?	Z	02	31	26							
		e	Z			37							
		eS?	Z		32	25½							
	TU	eP	Z	02	31	38							
		eS	Z		32	40							
	KP	eP	Z	02	31	44							
		eS	Z		32	46							
	CB	e?	E	02	34	08							
	KM	e?	X	02	34	48							4.9
	GP	e	N	02	34	50							5.1
	Origin:			02	30	18	35S	178½W	N	NZ(D)			5.4
							Additional readings from Charters Towers used to determine epicentre.						5.1
8	KP	eP	Z	05	08	25							
	Origin:			05	05	03.0	21.5S	179.7W	659km	USCGS			4.6
9	GS	eP	Z	05	33	52							
		e	Z		35	07							
	TU	eP	Z	05	33	58							
		e	Z		34	10½							
		e(S)	Z		35	17							
	KP	eP	Z	05	34	08							
	CT	e	Z	05	34	30							
		e?	Z		35	53							
	TA	e	Z	05	34	40							
	WN	eS	ZN	05	36	24							
		eL	Z		38								
	CB	eS	E	05	36	50							
	GP	eS	N	05	37	31							
9	GS	eP	Z	20	33	07							
		eS	Z			58							
	TU	eP	Z	20	33	14							
		e	Z		34	18							
	KP	eP	Z	20	33	19½							
	CT	eP	Z	20	33	30							
		eS	Z		34	41							
	TA	e(P)	Z	20	33	44							
	WN	eP?	Z	20	33	55							5.1
		eS	ZN		35	22							
		eL	Z		37								
	TO	e(S)	Y	20	34	44							4.3
	CB	eS	E	20	35	46							5.0
	KM	eS	X	20	36	23							5.2
	GP	eS	N	20	36	27							5.4
	Origin:			20	32	00	35S	179W	N	NZ(D)			5.0

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
NOV 9	KP	eP	Z	21	28	26							
	WN	eP	ZE	21	28	26							
		epP	Z		30	32							
		eSKS	ZNE		38	08							
		eSP	ZNE		40	.7							
		e(SSP)	ZE		44	.5							
		e	E		49	.1							
		e	NE		57	.1							
		e(Lr)	ZNE	22	03								
		M	ZNE		09		68	18	19	17	19	18	
		eP	Z	21	28	28							
	CT	eP	Z		30	50							
		e(pP)	Z	21	28	36							
	RX	eP	Z		38	15			8	12	21	14	
		eSKS	ZNE		41	10	30	14	11	12	42	18	
		eSP	ZNE		44	32							
		e(PKP)	Z		45	.0							
		e(SSP)	ZE		47	.2			45	24			
		e(SS)	N		51	.1							
		eSSS	E		57	.8							
		e	N	21	15	30.4	9.0S	71.5W	600km		USCGS		5.9
	Origin:												
10	WN	eSKS	E	01	23	12							
		eSP	Z		25	52	6	24					
		e	Z		30	.4							
		eSSS	Z		35	16							
		e	Z		38	.9							
		eL	Z		48	.6							
		M	Z		50		4	20					
		eL	E		51								
	RX	eSKS	NE	01	23	20							
		eSP	ZE		26	16							
		e(sSP)	E		30	.0							
		eSS	NE		32	.0							
	Origin:			01	00	38.8	9.2S	71.5W			USCGS		5.6
10	KP	eP	Z	17	30	20							
	WN	eP	Z	17	30	36							
		eSKS	ZE		41	00	2	18			4	18	
		eSP	Z		42	20							
		eSS	Z		47	06	3	20					
		eLr	Z		58	.8							
		eLr	NE	18	01								
		M	ZN		03		11	24	6	20			6.2
	RX	e(SKS)	NE	17	41	20							
		e	NE		58								
		eSS	NE		48	.0							
	Origin:			17	17	42.7	44.4N	149.0E	40km		USCGS		5.5
10	KP	iP	Z	19	23	20.2 u							
	GS	e	Z	19	23	23							
		e	Z		25	35							
	WN	eP	ZNE	19	23	50							
		eS	ZNE		26	26							
	KN	iP	Z	19	24	46.1							
	Origin:			19	20	38.8	26.2S	178.3E	607km		USCGS		4.3
11	KP	eP	Z	11	33	55							
		eS	Z		37	58							
		esS?	Z		39	04							
	CT	eP	Z	11	34	03							
		eS	Z		38	07							
		esS?	Z		39	24							
	WN	eP	ZNE	11	34	21							
		eS	ZNE		38	39							

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
NOV		esS	ZNE		39	59				
	MN	eP	Z	11	34	(23)				
		eS	Z		39	(10)				
	Origin:			11	29	06.4	16.9S 174.4W	185km	USCGS	5.2
12	GS	eP	Z	12	47	55				
	KP	eP	Z	12	47	56				
	MN	eP	Z	12	49	±				
	Origin:			12	44	02.4	22.6S 175.5W	33km	USCGS	4.5
12	WN	eP	ZNE	17	43	37				
		eS	ZNE		46	51				
	GS	eP	Z	17	43	55				
		eS	Z		45	31				
	ON	e	E	17	43	58				
	KP	eP	Z	17	44	07				
		e?	Z		45	07				
	Origin:			17	41	52.6	30.4S 177.8W	60km	USCGS	4.4
13	KP	eP	Z	11	21	34				
		e	Z			38				
		eS	Z		24	15				
	CT	eP	Z	11	21	45				
		eS	Z		24	32				
	WN	eP	ZNE	11	22	06				
		eS	ZNE		25	04				
	Origin:			11	18	28.6	23.8S 179.9W	520km	USCGS	4.9
13	GS	eP?	Z	17	22	34				
		e(P)	Z			48				
		eS	Z		25	29				
	KP	eP	Z	17	22	46				
	Origin:			17	18	50.1	22.9S 175.3W	33km	USCGS	5.3
14	ON	eP?	E	00	22	08				
		eP	E			17				
	KP	eP	Z	00	22	18				
	GS	eP	Z	00	22	18				
		eS	Z			48				
	RX	eP	Z	00	24	(12)				
	WN	eS	ZNE	00	25	10				
		eLr	Z		27					
		M	Z		29		3 20			
	Origin:			00	20	03.0	30.1S 177.4W	42km	USCGS	4.7
14	KP	eP	Z	04	09	27				
	GS	eP	Z	04	09	35				
	RX	eP	Z	04	09	52				
	Origin:			03	58	48.9	22.6N 142.9E	177km	USCGS	4.9
14	KP	eP	Z	04	31	34				
14	KP	eP	Z	04	40	35½				
	GS	eP	Z	04	40	52				
	WN	eP	Z	04	41	09				
		eS	ZE		45.4		4 16		5 10	
		eLr	Z		47.5					
		eLr	NE		48					
		M	ZNE		49		14 18	7 17	25 19	6.0
	RX	eS	NE	04	46.4			3 20		5.7
		eL	NE		48.4					
		eL	Z		52.7					
		M	ZNE		53		10 16	9 16	21 14	6.0
	Origin:			04	35	48.5	17.5S 167.7E	33km	USCGS	4.8

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
NOV 14	KP	eP	Z	14	06	06				
	GS	eP	Z	14	06	21				
	WN	eL	Z	14	14	.8				
		M	Z		19					
	Origin:			14	01	18.4	17.4S 167.6E	33km	USCGS	4.5
14	KP	eP	Z	14	10	23				
	GS	eP	Z	14	10	38				
	Origin:			14	05	35.6	17.5S 167.7E	33km	USCGS	4.6
14	KP	eP	Z	20	15	32				
	GS	eP	Z	20	15	49				
	Origin:			20	11	03.7	19.0S 168.8E	33km	USCGS	4.6
14	KP	eP	Z	23	42	38				
	GS	eP	Z	23	42	54				
	WN	eL	Z	23	50					
		M	Z		52					
	Origin:			23	37	49.5	17.4S 167.8E	33km	USCGS	4.5
15	KP	iP	Z	21	19	08.8	d			
	CT	eP	Z	21	19	13				
	WN	eP	Z	21	19	22	d			
		epP	Z			37				
		eS	ZE		29.8		4 17		3 16	
		eSS	Z		35.9		4 24			
		eLr	ZNE		49					
		M	ZN		51		24 24	12 24		6.4
	RX	eP	Z	21	19	39				
		eSKS	NE		29	40		5 18		
		eS	ZNE		30.8			11 18	13 17	6.9
		ePS	NE		31.8			7 20		
		eSS	NE		36.9			7 20		
		eLr	NE		49					
		M	NE		55			9 22	8 21	6.4
	Origin:			21	06	34.0	44.3N 149.0E	50km	USCGS	6.0
16	CT	eP	Z	06	57	28½				
	KP	eP	Z	06	57	32				
	WN	e	Z	07	(07)	40				
		eLr	Z		(19)	00				
		M	Z		(20)		5 21			
	RX	eS	NE	07	06.5					
		eSS	E		11	25				
		eLq	NE		16.0					
		eLr	E		18.6					
		eLr	Z		20					
		M	E		21				3 20	
	Origin:			06	46	15.7	41.3S 87.5W	11km	USCGS	5.3
16	GS	eP	Z	22	47	29				
		eS	Z		50	30				
	KP	eP	Z	22	47	32				
	RX	eP?	Z	22	49	07				
		eS	NE		53	36		6 17	4 20	6.0
		eSS	E		54	48				
		eLq	NE		55.8			8 24	19 24	
		eLr	NE		57					
		M	E		58				68 18	
		M	ZN	23	00		71 17	50 18		6.3
	MN	eP	Z	22	49	08				
	Origin:			22	43	26.4	22.3S 175.0W	33km	USCGS	5.6
16	GS	eP	Z	23	43	57				
		eS?	Z		47	06				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
NOV	KP	eP	Z	23 44 02				
	MN	eP	Z	23 45 40				
	Origin:			23 39 58.3	22.1S 175.3W	33km	USCGS	5.3
17	GS	eP	Z	00 52 59				
		eS	Z	56 08				
	KP	e(P)	Z	00 53 12				
	MN	eP	Z	00 54 38				
	Origin:			00 48 57	22.2S 175.0W	33km	USCGS	5.3
17	KP	eP	Z	13 18 00				
	GS	eP	Z	13 18 01				
		eS	Z	21 22				
	WN	eP	Z	13 18 28				
	MN	iP	Z	13 19 22.1				
	Origin:			13 13 49.3	17.4S 178.5W	509km	USCGS	4.7
18	CT	eP	Z	01 10 16				
	Origin:			01 01 52.9	3.6S 143.4E	33km	USCGS	
18	KP	eP	Z	06 08 04				
	WN	eP	Z	06 08 39				
		eLr	Z	13.6				
		M	Z	16				
	Origin:			06 04 12.7	22.4S 170.5E	33km	USCGS	
18	KP	eP	Z	13 56 49				
	GS	e	Z	13 56 49				
	Origin:			13 51 35.8	15.9S 173.3W	33km	USCGS	5.1
18	WN	eS	NE	15 03 24		5 7	7 6	
		eSP?	Z	05.1				
		eSS	ZNE	10.0		5 24	6 22	
		e	N	17.0				
		e	ZNE	18.0	7 40	15 44	14 52	
		eLr	Z	22				
		M	ZNE	25	14 22	7 20	13 22	6.4
	RX	e(S)	N	15 04.3				
		eSS	NE	11.3				
		e	NE	18.5				
		eLq	NE	21				
		eLr	Z	25				
		M	ZNE	31	12 18	9 19	10 19	6.5
	Origin:			14 38 28.9	29.9N 113.6W	14km	USCGS	5.7
18	KP	eP	Z	19 49 54½				
	GS	eP	Z	19 49 55½				
18	KP	eP	Z	21 16 43				
	Origin:			21 11 10.2	13.4S 166.6E	51km	USCGS	4.7
19	KP	eP	Z	10 49 31				
	GS	eP	Z	10 49 49				
	WN	eP	Z	10 50 11				
		e	Z	54				
		eLr	Z	54.8				
		eLr	NE	56				
		M	Z	56	9 20			
	RX	eP	Z	10 50 53				
	Origin:			10 45 49.1	22.5S 171.3E	36km	USCGS	5.0
19	KP	eP	Z	11 13 30				
	Origin:			11 00 54.3	44.4N 149.2E	33km	USCGS	5.8
20	KP	iP	Z	04 14 16.2 u				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
NOV	GS	eP	Z	04 15 01				
	Origin:			04 07 22.6	5.5S 148.2E	201km	USCGS	
20	GS	eP	Z	08 59 25				
	KP	eP	Z	08 59 26½				
		e(pP)	Z	38				
	Origin:			08 54 25	17.5S 172.8W	33km	USCGS	3.9
20	GS	eP	Z	12 03 52				
		e	Z	56				
	KP	eP	Z	12 04 01				
	MN	eP	Z	12 05 41				
	WN	eS	NE	12 08 05				
		eLr	ZNE	09.5				
		M	E	10			6 22	
		M	ZN	12	11 19	6 19		5.8
	Origin:			11 59 58.5	22.2S 175.2W	33km	USCGS	5.6
20	WN	e	ZNE	15 50 31				
21	KP	eP?	Z	05 58 55½				
	GS	eP	Z	05 58 57				
	MN	iP	Z	06 00 18.5 u				
	Origin:			05 54 54.9	17.9S 178.6W	595km	USCGS	4.3
21	KP	eP	Z	21 14 26				
	Origin:			21 01 35.3	50.3N 156.4E	80km	USCGS	5.3
22	MN	eP	Z	00 28 39				
	CT	eP	Z	00 29 09				
		epP	Z	30 12				
	Origin:			00 18 35.9	5.9S 107.9E	323km	USCGS	5.1
22	WN	eSKS	N	15 09.5				
		eLr	Z	28				
		M	Z	31				
	RX	eSKS	N	15 10.1				
	Origin:			14 45 51.7	44.4N 149.0E	33km	USCGS	5.6
22	GS	eP	Z	17 08 37				
	KP	iP	Z	17 08 38.3 d				
	MN	eP	Z	17 10 14				
	Origin:			17 03 38.9	17.9S 172.8W	33km	USCGS	5.2
22	GS	eP	Z	21 49 28				
		e	Z	31				
		eS	Z	50 58				
		e	Z	51 05				
	KP	eP	Z	21 49 34				
	CT	eP	Z	21 49 43				
		eS	Z	51 24				
	WN	eS	ZNE	21 52 06				
23	KP	eP	Z	05 03 58				
	GS	eP	Z	05 04 10				
	Origin:			04 58 52.0	15.0S 167.3E	116km	USCGS	4.3
23	WN	eSP	Z	08 17.4				
		eLr	Z	34.7				
		M	Z	37				
	Origin:			07 50 46.3	30.1N 114.0W	14km	USCGS	5.1
23	KP	eP	Z	11 47 19				
	GS	eP	Z	11 47 20½				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
NOV 23	KP	eP	Z	19 34 06				
	GS	eP	Z	19 34 06½				
	MN	iP	Z	19 35 30.6 d				
	Origin:			19 30 19.4	20.2S 178.1W	515km	USCGS	4.7
24	KP	eP	Z	01 46 38				
	CT	eP	Z	01 46 50				
	Origin:			01 41 41.2	17.1S 173.2W	33km	USCGS	4.1
24	KP	eP	Z	05 13 21				
	WN	eP	Z	05 13 47				
		eS	ZNE	16 49				
		eL	Z	20				
		M	Z	22				
	MN	eP	Z	05 14 22				
	GS	e(S)	Z	05 15 39				
	Origin:			05 08 42.8	22.1S 175.6W	33km	USCGS	5.1
24	KP	eP	Z	05 17 00				
	MN	eP	Z	05 19 04				
	GS	e(S)	Z	05 20 19				
	Origin:			05 13 23.5	21.9S 175.8W	33km	USCGS	5.0
24	KP	eP	Z	11 17 03				
		e	Z	38				
		e(pP)	Z	18 02				
	CT	eP	Z	11 17 09				
		e(pP)	Z	18 14				
	MN	eP	Z	11 17 25				
	Origin:			11 05 56.8	28.2N 140.1E	260km	USCGS	5.2
24	CT	eP	Z	23 10 38½				
	Origin:			22 58 16.8	56.1S 27.5W	33km	USCGS	5.6
25	GS	eP	Z	00 55 53				
	KP	eP	Z	00 55 54½				
	MN	eP	Z	00 57 19				
	Origin:			00 51 02.1	16.3S 174.6W	196km	USCGS	4.4
26	GS	eP	Z	00 12 12				
		e	Z	13 15				
	KP	eP	Z	00 12 16				
	TU	eP	Z	00 12 16½				
		eS	Z	13 31				
	CT	iP	Z	00 12 28.8 u				
		e	Z	13 56				
	TO	eP	Y	00 12 29				4.5
		eS	Y	13 52				
	TA	eP	Z	00 12 36				
	WN	eP	Z	00 12 50				5.5
		eS	ZNE	14 33				
	GP	eP	N	00 13 29				5.7
		eS	N	15 38				
	CB	eS	E	00 14 48				5.0
	KM	eS	X	00 15 34				5.3
	Origin:			00 10 40	33S 180 N	NZ(D)		5.2
26	GS	e	Z	03 03 25				
		e(S)	Z	43				
	WN	eS	NE	03 05 00				
		eL	Z	07				
		M	Z	08				
	Origin:			02 58 34.7	26.9S 176.5W	46km	USCGS	4.2
26	MN	eP	Z	07 00 58				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
		eScP	Z	05 57				
NOV	KP	eP	Z	07 01 06				
		eScP	Z	06 03				
	CT	eP	Z	07 01 10½				
		eScP	Z	06 04				
	Origin:			06 52 08.2	6.8S 129.6E	111km	USCGS	5.1
26	KP	eP	Z	22 54 55				
	GS	eP	Z	22 55 03				
	WN	eP	ZNE	22 55 27				
		e	Z	56 48				
		eS?	E	59 48				
		e	Z	23 00.1				
		e(SS)	NE	00.5		9 14	11 14	
		eLq	E	01.0			39 32	
		M	ZN	02	8 20	10 22		
	RX	eP	Z	22 56(10)				
		eS	NE	23 01(04)		3 14		6.0
		e(SS)	NE	02.2				
		eLq	E	03.0			16 28	
		eLr	ZN	04				
		M	NE	05		10 17	9 16	5.8
	Origin:			22 50 08.9	16.6S 175.2E	33km	USCGS	5.3
28	RX	eP	Z	15 14 28				
	Origin:			15 07 50.8	12.1S 166.1E	33km	USCGS	4.5
28	GS	iP	Z	16 05 03.3 d				
		eS	Z	55				
	TU	eP	Z	16 05 11				
		eS	Z	06 13				
	KP	eP	Z	16 05 16				
	TA	e	Z	16 05 38				
	WN	e?	ZN	16 06 11				6.2
		eS	ZNE	07 17				
	GP	eS	Z	16 08 22				5.1
	Origin:			16 03 52	34½S 178½W	N	NZ(D)	5.6
					Additional readings from Charters Towers used to determine epicentre.			
28	ON	eP	E	18 16 11				
	KP	eP	Z	18 16 37				
	GS	eP	Z	18 16 39				
		eS	Z	18 45				
	WN	eP	Z	18 17 15				
		eS	ZNE	19 34				
	Origin:			18 14 17	27.4S 179.1E	593km	USCGS	4.0
29	KP	iP	Z	18 59 33.0 u				
	GS	eP	Z	18 59 33½				
	WN	eP	ZNE	19 00 01				
		e	ZNE	30				
	MN	iP	Z	19 00 50.6 u				
	Origin:			18 55 23.6	17.3S 178.4W	528km	USCGS	4.4
30	MN	eP	Z	09 57 50				
		epP	Z	58 10				
	KP	eP	Z	09 57 52				
	WN	eP	Z	09 57 58½				
		eS	Z	10 06.0				
		e(SS)	Z	10.9				
		eLr	ZE	21	4 25		3 25	
	GS	eP	Z	09 58 06				
	Origin:			09 47 59.0	1.6N 128.4E	61km	USCGS	5.5

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
DEC 1	KP	iP	Z	07 55 00.7				
	CT	eP	Z	07 55 08½				
	Origin:			07 46 55	3.9S 146.3E	33km	USCGS	5.6
3	KP	eP?	Z	04 29 20				
	CT	eP	Z	04 29 30				
	WN	e?	Z	04 30 36				
	Origin:			04 17 58	4.2S 102.9E	50km	USCGS	5.2
3	WN	eP	Z	21 21 18				
		eS	Z	27 02				
		e(Lr)	Z	28.9				
		eLr	NE	30				
		M	E	32			12 20	
		M	ZN	33	19 20	9 18		
	RX	eP	Z	21 21 51				5.9
	MN	eP	Z	21 21 53				
	Origin:			21 15 10.4	12.2S 166.0E	33km	USCGS	5.1
3	WN	M	Z	21 48	13 19			
	RX	eP	Z	21 48 43				
	Origin:			21 30 05.7	12.0S 166.0E	40km	USCGS	4.8
3	GS	eP	Z	23 16 59				
	KP	eP	Z	23 17 04				
	Origin:			23 03 41.6	22.4S 69.3W	18km	USCGS	6.1
4	TU	eP	Z	00 46 01				
		e	Z	02				
		e	Z	47 08				
	ON	eP	E	00 46 04				5.2
	TO	e	Y	00 46 22				
		e	Y	47 49				
	TA	e	Z	00 46 27				
		e?	Z	48 18				
	WN	iP	Z	00 46 41.8				5.7
		i	Z	59.2				
		e	ZNE	47 08				
		S	ZNE	48 16				
		e	ZNE	48.8				
		L	ZNE	49.5				
		ScS	NE	01 00 08.5				
	Origin:			00 44 37	34S 179W	N	NZ(D)	5½
4	WN	P	Z	16 10 06	2 10			6.3
		S	Z	18 28				
		PS	ZNE	18.7	9 36	5 42	12 43	
		SS	ZNE	22.5	5 30			
		(SSS)	ZNE	25.6				
		L	ZNE	28.2	25 34	7 30	18 35	
	Origin:			15 59 42.1	35.5S 102.8W	33km	USCGS	4.6
5	WN	e(S)	Z	04 42 56				
		eLr	Z	51.5	5 26			
	Origin:			04 23 22.2	35.7S 103.1W	33km	USCGS	4.8
5	GS	eP	Z	08 19 20				
		eS	Z	20 54				
	KP	eP	Z	08 19 22				
6	KP	eP	Z	02 04 08				
		ePcP	Z	06 15½				
	GS	eP	Z	02 04 22½				
	WN	eSS	Z	02 14 08				
		eLr	Z	16.8				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
		M	Z	20				
DEC	Origin:			01 56 42.8	5.8S 150.3E	61km	USCGS	5.3
7	KP	iP	Z	04 11 18.2 d				
		e	Z	14 17				
	GS	eP	Z	04 11 19				
		eS	Z	14 02				
	WN	eP	ZNE	04 11 46				
		e	Z	14 16				
		e(S)	ZNE	50				
		e	ZNE	15 00				
	MN	iP	Z	04 12 43.2 d				
	Origin:			04 07 52.8	22.1S 179.4W	546km	USCGS	5.5
7	KP	eP	Z	05 11 20½				
	GS	eP	Z	05 11 22				
	Origin:			05 07 43	21.0S 178.6W	560km	USCGS	3.8
7	KP	eP	Z	10 36 37½				
	GS	eP	Z	10 36 49				
	WN	eP	Z	10 37 16½				
		eS	ZNE	41 04				
		eLr	ZNE	42.6				
		M	ZNE	44	7 16	3 16	7 17	
	RX	eP	Z	10 38 00				
		eS	NE	42.6				
		e(Lq)	E	43.6				
		eLr	N	45.0				
		M	NE	46		4 15	6 14	
	Origin:			10 32 39.5	20.8S 174.0E	33km	USCGS	4.6
7	KP	eP	Z	17 39 39½				
	TU	eP	Z	17 39 42				
		e	Z	41 30				
	WN	eP	ZNE	17 40 14				
		eS	ZNE	42 34				
		eLr	Z	47				
		M	Z	51				
	MN	eP	Z	17 41 37				
		eS	Z	45 05				
	Origin:			17 37 25.6	29.3S 178.5W	209km	USCGS	4.9
9	GS	eP	Z	10 57 19				
		eS	Z	11 00 06				
	KP	eP	Z	10 57 20				
	WN	eP	ZNE	10 57 53½				
		esP	Z	59 48				
		eS	ZNE	11 01 16				
	MN	eP	Z	10 58 49				
	Origin:			10 53 39.4	21.1S 178.0W	435km	USCGS	
10	RX	eP	Z	03 40 04				
		eScS	NE	49.3				
		e	NE	53.0		11 17		
	KP	iP	Z	03 40 06.8 u				
		e(pP)	Z	41 09				
		e	Z	24				
	WN	eP	ZNE	03 40 12				
		epP	Z	41 29				
		eScS	Z	49.8				
		e	ZNE	53.7				
		eLr	Z	04 00				
		M	Z	04	5 20			
	GS	eP	Z	03 40 21				
	Origin:			03 31 21.1	6.2S 128.1E	366km	USCGS	5.6

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
DEC 10	MN	eP	Z	06 42 29½				
	WN	eP	ZNE	06 42 49½				
	KP	iP	Z	06 43 05.3 d				
	Origin:			06 30 54.8	58.1S	26.4W 110km	USCGS	
10	KP	eP	Z	14 49 15				
	GS	eP	Z	14 49 29				
	Origin:			14 42 11.2	7.1S	155.5E 88km	USCGS	4.6
10	KP	iP	Z	14 58 51.4 d				
	TU	iP	Z	14 58 55.1 d				
		e	Z	59 17				
		eS	Z	23				
	GS	iP	Z	14 58 57.0 d				
		e	Z	59 22				
	CT	eP	Z	14 58 59½				
		eS	Z	59 33				
	TO	eP	Y	14 59 00				
		e	Y	30½				4.3
	TA	eP	Z	14 59 06				
		eS	Z	44				
	WN	iP	ZNE	14 59 21.7 u				
		eS	ZNE	15 00 11				5.7
	CB	eP	E	14 59 31				
		eS	E	15 00 23				5.5
	GP	eP	N	14 59 55				
		eS	N	15 01 11				6.1
	KM	e	X	15 00 05				
		eS	X	01 00				5.5
	MN	e	Z	15 00 43				
		e	Z	02 39				
	RX	e	Z	15 02 11				
	Origin:			14 58 17	37.4S	176.6E 245km	NZ(C)	5.4
10	KP	eP	Z	15 44 04				
	WN	eL	Z	15 53				
	Origin:			15 39 49.2	21.3S	174.4W 33km	USCGS	4.5
11	GS	eP	Z	00 53 07				
	CT	eP	Z	00 53 18				
	WN	eP	Z	00 53 36				
		eLr	ZNE	01 01				
		M	ZN	02				
		M	E	03	36 28	18 26	20 30	
	RX	eLr	NE	01 04				
		eLr	Z	05				
		M	NE	06		14 24	6 21	5.9
		M	Z	08	11 18			
	Origin:			00 47 48.3	51.1S	173.6W 33km	USCGS	5.6
					Felt: Apia.			
11	KP	iP	Z	02 35 23.3 d				
	GS	eP	Z	02 35 24½				
		eS	Z	38 51				
	WN	iP	ZNE	02 35 51.9				
	MN	eP	Z	02 36 46				
		epP	Z	38 21				
	Origin:			02 31 19.4	17.8S	178.6W 537km	USCGS	4.9
11	KP	eP	Z	11 15 28				
		e	Z	32				
	GS	eP	Z	11 15 30				
		eS	Z	17 56				
	WN	iP	ZNE	11 16 01.0 d				
		eS	ZNE	18 53				

Date	Stn	Phase		h m s	Az Tz	An Tn	Ae Te	Mag.
			Z	11 16 56½				
	WN	eP		11 12 30.3	24.2S	179.3E 540km	USCGS	4.7
	Origin:							
			Z	17 21 07				
11	KP	eP	Z	17 51				
	WN	eLr	Z	54				
		M	Z	17 08 12.3	51.1N	179.3W 32km	USCGS	
	Origin:							
			Z	15 15 16				
12	KP	eP		15 02 48	4.5N	97.2E 33km	USCGS	6.1
	Origin:							
			Z	01 49 18				
14	KP	eP	Z	01 49 28				
	GS	eP	Z	01 50 41				
	WN	eP		01 45 13.8	17.9S	178.3W 550km	USCGS	4.3
	Origin:							
			Z	05 12 13				
14	KP	eP	Z	05 12 23				
	CT	eP	Z	05 07 41.2	13.8S	169.9E 614km	USCGS	4.4
	Origin:							
14	GS	eP?	Z	16 29 54				
		e	Z	30 04				
		eS	Z	52				
	TU	eP	Z	16 30 02				
		e	Z	12½				
		eS	Z	31 03				
	KP	eP	Z	16 30 09				
	GR	eP	E	16 30 15				4.7
	GR	eP	Z	16 30 19				
		e	Z	48				
	WN	e?	Z	16 30 30				5.3
		e(P)	Z	44				
		eS	ZNE	32 11				
	MN	eP	Z	16 32 22				
	KM	eS	X	16 33 14				5.2
	SP	eS	N	16 33 18				5.4
	Origin:			16 28 40	35S	178W N	NZ(D)	5.2
					Additional readings from Charters Towers used to determine epicentre.			
15	KP	eP	Z	18 25 29				
		e(S)	Z	26 51				
	CT	eP	Z	18 25 40				
		e(S)	Z	27 05				
	WN	e(S)	ZNE	18 27 41				
		eL	Z	29				
		M	Z	30				
	MN	eP	Z	18 27 43				
15	RX	eP	Z	19 44 35				
		epP	ZE	46 40	6 12		4 15	
		eS	ZNE	52 36		8 9	12 15	6.3
		eSP	NE	53.5		8 10	15 16	
		e(sS)	NE	56.5				
		e(L)	E	20 00.5				
		e(L)	ZN	01.8				
		M	NE	02		11 16	9 22	6.6
	WN	iP	ZNE	19 44 51.9 ne	7 8			
		epP	ZNE	46 57	13 20			
		eS	ZNE	53 05	9 26	14 10	14 24	
		eSP	ZNE	53.7	10 10	9 8	19 28	
		e(sS)	ZNE	56.8				
		e(L)	ZNE	20 01				
		M	ZE	13				
	KP	iP	Z	19 44 52.1 d	19 21		19 21	

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
DEC		epP	Z		47	03				
		eS	Z		53	12				
		e	Z		55	09				
		e	Z	20	11	56				
		eP'P'	Z		12	44				
	CT	iP	Z	19	44	53.7 u				
		epP	Z		47	09				
		e	Z		49	54				
		eS	Z		53	14				
		e(P'P')	Z	20	12	44				
		e(P'P')	Z			51				
	Origin:			19	34	45.5	4.8S	108E	650km USCGS	6.4
16	RX	eP	Z	02	02	24				
		eS	NE		11	28				
		e(ScS)	E			56				
		eSS	NE		15	.7			6 20	
		eLq	N		19	.7		26 24		
		eLr	E		23	.8				
		M	NE		25					
	WN	eP	ZNE	02	02	39		11 24	16 26	
		eS	ZNE		11	44				
		e(ScS)	ZNE		12	07				
		eSS	ZE		16	20	5 24			
		eLq	ZE		20	.2			13 22	
		eLq	N		21	.0		18 30	6 22	
		eLr	ZE		24					
		M	N		25			17 30		
		M	ZE		26		15 34		15 26	
	KP	eP	Z	02	02	40				
	GS	eP	Z	02	02	55				
	Origin:			01	51	30.6	6.4S	105.4E	64km USCGS	6.0
16	CT	eP	Z	04	27	53				
	Origin:			04	16	43.0	6.3S	105.5E	63km USCGS	5.8
16	KP	ePKP	Z	14	08	36				
	CT	ePKP	Z	14	08	36				
	WN	eLr	Z	14	30					
		eLr	NE		33					
		M	Z		34					
	Origin:			13	47	56.4	37.1N	20.9E	15km USCGS	5.6
16	CT	eP	Z	14	25	06				
	KP	eP	Z	14	25	15				
	Origin:			14	18	04.9	49.1S	127.1E	33km USCGS	5.3
16	KP	eP	Z	15	23	54				
	GS	eP	Z	15	23	54				
	Origin:			15	18	34.8	15.2S	173.7W	33km USCGS	4.8
							Felt: Faleolo, W. Samoa.			
16	KP	eP	Z	16	17	43				
	CT	eP	Z	16	17	46				
	Origin:			16	06	35.2	6.5S	105.3E	46km USCGS	6.0
17	GS	eP	Z	08	34	02				
		e	Z			10				
		eS	Z		35	14				
	TU	eP	Z	08	34	08½				
		e	Z			16½				
		eS	Z		35	24				
	KP	eP	Z	08	34	(20)				
	CT	e?	Z	08	34	20				
		e	Z			33				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
			E	08	34	24				5.1
DEC	ON	eP	Z	08	34	42				
	TA	e	ZNE	08	36	32				5.7
	WN	eS	ZNE		37	.0				
		e	ZNE		38	.0				
		eLr	ZE		39					
		M	E	08	36	54				5.0
	GS	eS	N	08	37	39				5.5
	AP	eS	Z	08	39	11				
	RX	e		08	32	30				
	Origin:						34½S	176½W	N NZ(D)	5.3
							Additional readings from Brisbane and Charters Towers used to determine epicentre.			
			Z	10	27	03				
17	CT	eP	Z	10	27	12				
	GS	eP		10	19	10.0	6.5S	146.8E	33km USCGS	4.8
	Origin:									
			E	00	33	18				
18	ON	eP	E			39				
		e(sP)	E		35	44				
		eS	E			55				
		e(SS)	Z	00	33	21				
	GS	eP	Z		35	58				
		eS	Z		45	.7				
		eScS	ZNE	00	34	03				
	WN	eP	ZNE		37	11				
		eS	ZNE		45	52				
		eScS	ZNE	00	35	08	60 18	120 22	57 22	6.8
	RX	eP	NE		39	04				
		eS	Z			17				
		e		00	30	02.6	24.8S	176.6W	46km USCGS	6.5
	Origin:						Felt: Tonga, Fiji and Kermadec Is.			
18	GS	eP	Z	12	23	48½				
		eS	Z		25	35½				
18	CT	eP	Z	12	24	19				
		eS	Z		26	21½				
	RX	eP	Z	12	25	59				
	WN	eS	NE	12	27	02				
		eL	Z		28	.7				
		M	Z		30					
	Origin:			12	21	50.1	29.9S	177.2W	130km USCGS	3.8
19	GS	eP	Z	02	37	22				
		e	Z		40	04				
	CT	eP	Z	02	37	33				
		e	Z		40	24				
19	CT	eP	Z	17	17	36				
	WN	eLr	Z	17	48	.3				
		M	Z		53					
	Origin:			17	04	07.8	9.7S	79.1W	56km USCGS	5.1
19	GS	eP	Z	20	46	23				
	CT	eP	Z	20	46	27				
	Origin:			20	33	50.1	35.2S	68.0W	32km USCGS	5.3
20	WN	eP	Z	09	06	10				
	GS	e(P)	Z	09	06	39				
		e(pP)	Z		10	02				
	Origin:			08	57	17.8	7.0S	129.3E	103km USCGS	5.5
21	GS	eP?	Z	12	38	23				
		eP	Z			26				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
DEC		e	Z			32				
		eS	Z		41	40				
	CT	eP	Z	12	38	42				
		eS	Z		42	10				
	WN	eP	ZNE	12	39	06				
		eS	ZNE		42	52				
		eLr	Z		45					
	MN	eP	Z	12	40	08				
	Origin:			12	34	22.7	21.2S	175.8W	90km USCGS	5.1
							Felt: Tonga MM4.			
21	CT	eP	Z	13	20	54				
	GS	eP	Z	13	21	01				
	MN	eP	Z	13	21	51				
	WN	eLr	Z	13	46					
		M	Z		49					
	Origin:			13	09	09.6	16.1N	119.7E	49km USCGS	5.6
22	CT	eP	Z	12	05	12				
	GS	eP	Z	12	05	25				
	Origin:			11	57	27.4	6.1S	146.9E	102km USCGS	5.4
22	ON	Pn	E	13	35	52.5				
		Pg	E			57.3				5.2
		Sn	E		36	04.6				
		Sg	E			10.9				
	KP	Pn	Z	13	36	24.6				
		P*	Z			33.3				
		Pg	Z			39.0				
		Sn	Z		37	04.8				
		S*	Z			14.8				
		Sg	Z			25.1				
	TA	Pn	Z	13	36	38.1				
		P*	Z			49.5				
		Pg	Z			56.0				
		Sn	Z		37	25.1				
		S*	Z			39.2				
		Sg	Z			53.2				
	CT	Pn	Z	13	36	42.6				
		P*	Z			55.2				
		Pg	Z		37	01.0				
		Sn	Z			34.2				
		S*	Z			52.4				
		Sg	Z		38	04.0				
	TU	Pn	Z	13	36	44.4				
		P*	Z			59.3				
		S*	Z		37	10.3				
	GS	Pn	Z	13	36	51.1				
		P*	Z		37	05.7				
		Pg	Z			16.6				
	WK	P*	Z	13	36	51.2				
		Pg	Z			54.3				
	WN	Pn	ZNE	13	37	06.9				5.0
		P*	ZNE			28.0				
		Pg	ZNE			40.8				
		Sn	ZNE		38	18.0				
		S*	ZNE			44.2				
	KM	P*	X	13	37	43.0				5.3
		Pg	X		38	01.1				
		Sn	X			46.2				
		S*	X		39	19.8				
		Sg	X			49.5				
	GP	P*	N	13	38	00.4				5.1
		Sn	N		39	09.8				
	RX	i	Z	13	38	06.3				
		P*	Z			40.0				

Date	Stn	Phase		h	m	s	Az Tz	An Tn	Ae Te	Mag.
DEC		Sn	Z		40	04.3				
			Z			58.8				
		S*	Z	13	38	16.3				
	MN	i	Z			39.0				
		i	Z			52.2				
		P*	Z		40	23.3				
		Sn	Z	13	35	35.0	35.1S	173.5E	10km NZ(B)	5.0
	Origin:						Felt widely in Northland.			
			Z	07	21	06				
23	KP	eP	Z			21				
		e	Z	07	21	08				
	GS	eP	Z	07	21	25				
	CT	eP								
			Z	07	26	16½				
23	KP	eP	Z			30				
		e	Z	07	26	21				
	GS	eP	Z			34				
		e	Z	07	26	37½				
	CT	eP								
23	GS	e(P)	Z	18	03	40				
	CT	e(P)	Z	18	04	10				
	WN	e(P)	ZNE	18	04	53				
24	GS	iP	Z	05	32	35.8				
		e	Z			41				
	CT	eP	Z	05	32	41				
24	KP	eP	Z	11	23	44				
	GS	eP	Z	11	24	09				
	WN	eP	Z	11	24	14				
		eS	Z			28.9				
		eLq	E			31				
		eLr	ZN			32				
		M	Z			35				
	RX	eP	Z	11	24	40½				
	Origin:			11	18	15.2	13.1S	166.7E	61km USCGS	5.5
24	RX	eP	Z	21	08	08				
		eS	Z		09	57				
		eLq	NE			10.0				
		eLr	Z			10.8				
		M	E			11.0			19 14	
		M	Z			11.5	14 12			
		M	N			13.5		14 10		
	WN	eP	ZNE	21	09	30				
		eS	ZNE		12	24				
		eL	ZNE		13	52		6 17	10 20	
		e(L)	ZNE		14	.6	14 13	16 14	16 12	
	CT	eP	Z	21	09	57				
	GS	eP	Z	21	10	21				
	Origin:			21	05	54.6	53.0S	159.5E	33km USCGS	5.8
26	KP	iP	Z	04	38	25.1 d				
	WN	eP	ZN	04	39	23				
	Origin:			04	35	07.8	20.2S	177.9W	507km USCGS	4.4
26	KP	iP	Z	05	52	36.1				
		epP	Z			52				
	GS	eP	Z	05	52	53				
		epP	Z			53 07				
		e(S)	Z			59 29				
	WN	eP	Z	05	52	56				
		epP	Z			53 13				
		ePP	Z			54 32				

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
DEC		e(PcP)	E		58	58							
		eS	ZE		59	20							
		e(SS)	NE	06	02								
		eLr	Z		04.5								
		M	ZE		05		13	35					
	RX	eP	Z	05	53	11					11	35	
		e(SS)	NE	06	02.9								
		M	NE		06								
	Origin:			05	45	20.2	5.1S	153.5E	7	24	11	28	
									70km		USCGS		
28	GS	eP	Z	09	05	26½							5.5
		eS	Z		06	36							
		eScS	Z		19	29							
	TU	eP	Z	09	05	33							
		e	Z			45							
		eS?	Z		06	47							
		e	Z			51							
	KP	eP	Z	09	05	36							
	WK	e(P)	Z	09	05	42							
		e	Z		06	22							
	TA	eP	Z	09	05	58							
		e	Z		06	15½							
	WN	eP	ZNE	09	06	11							
		e	ZN			20							7.0
		e(P*)	E			42							
		eS	ZNE		07	55							
		eL	ZNE		08.3								
		M	NE		09								
		M	Z		10		19	22	26	34	47	32	
		eScS	ZNE		19	21							
	KM	e(P)	X	09	06	50							
		e	X			53							6.7
		e(S)	X		08	54							
		eScS	X		19	23							
	GP	eP	N	09	06	50							
		e	N			55							7.0
		eS	N		09	02							
		e(PcS)	N		15	53							
		eScS	N		19	27							
	RX	eP	Z	09	07	30							
		eS	Z		10	12							
		eL	NE		10.5								
		M	NE		12				11	28	23	27	
		eScP	Z		15	57							
	Origin:			09	03	57	33S	179W	N		NZ(D)		6.7

Additional readings from Charters Towers and Brisbane used to determine epicentre.
Felt in separated areas north of Wellington.

28	RX	eP	Z	18	09	36							
		eLq	E		28.5								
		eLr	N		31.8								
		M	E		34						3	20	
		M	N		36				2	19			6.0
	WN	eP?	Z	18	09	54							
		eS	ZNE		19	12							
		eSS	Z		23.9								
		eLr	ZNE		32		7	36	4	32	3	28	
		M	Z		36		4	20					
	GS	eP	Z	18	10	02							
	KP	eP	Z	18	10	08.2							
	Origin:			17	58	33.1	60.4S	51.8W	49km		USCGS		5.4

Date	Stn	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te	Mag.
			Z	03	02	11½							
DEC 29	GS	eP	Z		03	41							
		eS	Z	03	02	27							
	KP	eP	ZNE	03	05	02							
	WN	eS		03	00	09.7	30.9S	177.8W	33km		USCGS		4.4
	Origin:												
			Z	15	04	04							
29	KP	eiP	Z	15	04	05							
	GS	eP		15	00	24.0	20.7S	178.4W	534km		USCGS		4.8
	Origin:												
			Z	01	07	33							
30	WN	eP	Z	01	07	37½							
	KP	eP	Z	01	07	52½							
	GS	eP		00	58	13.3	3.4S	128.8E	82km		USCGS		5.0
	Origin:												
			Z	01	26	00							
30	KP	eP	Z	01	26	27							
	WN	eP		01	15	24.5	21.6N	144.5E	120km		USCGS		5.2
	Origin:												
			Z	06	26	04							
30	GS	eP	Z		27	57							
		eS	Z	06	26	09							
	KP	eP?	Z		26								
		e	Z	06	28	15							
	KM	eP	ZNE	06	29	12							
	WN	eS	Z		31								
		eL		06	23	35.2	29.3S	176.8W	34km		USCGS		4.7
	Origin:												
			Z	13	42	04							
30	KP	eP	Z	13	42	17							
	WN	eP	Z		53.1								
		eSKS	Z		58.9								
		eSS	Z	14	11								
		eLr	Z		14								
		M	Z	13	29	25.3	45.5N	150.6E	40km		USCGS		5.7
	Origin:												
			Z	15	14	53							
30	KP	eP	Z		15	19							
		epP	Z	15	14	54							
	WN	eP	Z	15	15	04							
	GS	eP	Z	15	04	14.2	9.4N	126.0E	102km		USCGS		5.3
	Origin:												
			Z	10	25	43½							
31	KP	eP	Z	10	25	45							
	GS	eP	Z	10	27	07							
	WN	eP											
			ZNE	17	49	27	10	10	5	12			6.8
31	RX	eP	NE		59	48			5	12	14	14	6.9
		eS	NE	18	05.2				10	20	8	19	
		eSS	NE		10.3				7	20	14	32	
		eLq	NE		14								
		eLr	Z		19								
		eLr	ZNE		24		53	18	42	18	45	18	6.8
		M	Z	17	50	01							
	KP	eP		17	37	32.1	56.5S	26.0W	30km		USCGS		6.3
	Origin:												
			Z	19	21	50.5 d							
31	KP	iP	Z	19	23	16							
	RX	eP		19	16	54.9	17.4S	174.2W	80km		USCGS		5.4
	Origin:												

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Amplitudes given are in millimetres, measured directly from the photographic paper records.

Date		Phase		h m s		Az	Tz	An	Tn	Ae	Te
JAN	1	iP	ZNE	12 23 53	usw	2.5	2.2				
		eL	ZNE	31.2							
	1	eiP	ZNE	16 29 13		12.5	1.7				
		eiS	ZNE	30 21							
	1	eiP	ZNE	21 37 15							
		eiS	ZNE	44							
	1	eiP	ZNE	22 35 17							
		iS	NE	52							
	1	iP	Z	23 50 21.2	u						
		i	Z	39							
		iS	NE	59 34							
		i	E	24 00 05							
		eLq	NE	07.8							
		eLr	N	11.5							
	2	iP	Z	05 37 33	u						
	2	iP	ZNE	06 07 55							
		eiS	ZNE	08 16							
	2	iP	Z	15 05 29	d	1.0	1.9				
		eS	NE	12 48							
		eSS	ZE	15.8							
		e	N	18.2							
		eL	ZE	20.2							
		eL	ZE	22.4							
	2	eP	Z	16 05 36							
		eS	NE	13 36							
		eL	NE	19 19							
	2	eiP	Z	18 09 04		0.6	2.2				
	2	iP	Z	18 35 55	u	0.6	2.0				
	3	eS	ZNE	03 25 24							
		eL	ZNE	34 40							
	3	eiP	Z	09 46 42		1.0	2.1				
		eS	ZNE	52 32							
		eSS	ZNE	55 12							

Date		Phase		h m s		Az	Tz	An	Tn	Ae	Te
JAN		eL	ZE	57.3							

Felt: Palmalmal, Pomio, Karlai and Rabaul.

4	e	N	06 12.6								
	eL	ZE	13.7								
4	eiP	Z	06 14 56								
	iS	NE	15 43								
	ei	ZNE	19 45								
4	iP	Z	06 42 12								
4	eiP	Z	08 26 07								
4	eP	Z	12 23 48								
	iS	ZNE	28 54								
	eL	ZNE	31 28								

Felt: Rabaul.

4	iP	Z	23 49 53								
	iS	NE	50 47								
5	iP	Z	00 30 13	u	4.1	1.2					
	iS	NE	31 40								
5	iP	Z	03 12 53	u							
	iS	NE	13 39.3								
5	eP	ZNE	13 09 20								
	iS	NE	13 07								
	eL	ZE	14 08								

Felt: Port Vila.

5	iP	ZNE	18 11 57	usw							
	iS	ZNE	12 30								
6	iP	Z	06 01 33.4								
7	eL	ZNE	06 40.5								

Felt: Boku, Solomon Is.

7	iP	Z	08 48 43.8								
7	iP	Z	11 58 47	u							
	eS	ZE	12 07 08								
	e	N	08 10								
	eL	Z	11.5								
	eL	N	15.6								
7	iP	Z	18 29 16								
	eiS	ZNE	44								
7	eP	Z	19 24 08								
	eS	E	27 45								
	eL	ZN	28 38								
8	eP	Z	13 32 30								
	eiS	ZNE	33 10								
8	iP	Z	14 41 49	u	1.9	1.8					
	iS	NE	43 23								
8	iP	ZN	19 50 51								
	eiS	ZNE	51 35								

AFIAMALU

Amplitudes given are in millimetres, measured directly from the photographic paper records.

Date	Phase		h m s		Az	Tz	An	Tn	Ae	Te
JAN 1	iP	ZNE	12 23 53	usw	2.5	2.2				
	eL	ZNE	31.2							
1	eiP	ZNE	16 29 13		12.5	1.7				
	eiS	ZNE	30 21							
1	eiP	ZNE	21 37 15							
	eiS	ZNE	44							
1	eiP	ZNE	22 35 17							
	iS	NE	52							
1	iP	Z	23 50 21.2	u						
	i	Z	39							
	iS	NE	59 34							
	i	E	24 00 05							
	eLq	NE	07.8							
	eLr	N	11.5							
2	iP	Z	05 37 33	u						
2	iP	ZNE	06 07 55							
	eiS	ZNE	08 16							
2	iP	Z	15 05 29	d	1.0	1.9				
	eS	NE	12 48							
	eSS	ZE	15.8							
	e	N	18.2							
	eL	ZE	20.2							
	eL	ZE	22.4							
2	eP	Z	16 05 36							
	eS	NE	13 36							
	eL	NE	19 19							
2	eiP	Z	18 09 04		0.6	2.2				
2	iP	Z	18 35 55	u	0.6	2.0				
3	eS	ZNE	03 25 24							
	eL	ZNE	34 40							
3	eiP	Z	09 46 42		1.0	2.1				
	eS	ZNE	52 32							
	eSS	ZNE	55 12							

Date	Phase		h m s		Az	Tz	An	Tn	Ae	Te
JAN	eL	ZE	57.3							

Felt: Palmalmal, Pomio, Karlai and Rabaul.

4	e	N	06 12.6							
	eL	ZE	13.7							
4	eiP	Z	06 14 56							
	iS	NE	15 43							
	ei	ZNE	19 45							
4	iP	Z	06 42 12							
4	eiP	Z	08 26 07							
4	eP	Z	12 23 48							
	iS	ZNE	28 54							
	eL	ZNE	31 28							

Felt: Rabaul.

4	iP	Z	23 49 53							
	iS	NE	50 47							
5	iP	Z	00 30 13	u	4.1	1.2				
	iS	NE	31 40							
5	iP	Z	03 12 53	u						
	iS	NE	13 39.3							
5	eP	ZNE	13 09 20							
	iS	NE	13 07							
	eL	ZE	14 08							

Felt: Port Vila.

5	iP	ZNE	18 11 57	usw						
	iS	ZNE	12 30							
6	iP	Z	06 01 33.4							
7	eL	ZNE	06 40.5							

Felt: Boku, Solomon Is.

7	iP	Z	08 48 43.8							
7	iP	Z	11 58 47	u						
	eS	ZE	12 07 08							
	e	N	08 10							
	eL	Z	11.5							
	eL	N	15.6							
7	iP	Z	18 29 16							
	eiS	ZNE	44							
7	eP	Z	19 24 08							
	eS	E	27 45							
	eL	ZN	28 38							
8	eP	Z	13 32 30							
	eiS	ZNE	33 10							
8	iP	Z	14 41 49	u	1.9	1.8				
	iS	NE	43 23							
8	iP	ZN	19 50 51							
	eiS	ZNE	51 35							

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JAN	9	eiP	ZNE	02	06	13							
		ei(T)	ZNE			19 36							
	9	eiP	ZE	21	38	34							
		eiS	NE			39 19							
	11	eP	Z	12	24	48							
		eS	ZNE			35 12							
		eSS	ZNE			40.2							
		eLq	ZNE			47.3							
		eLr	ZNE			50.2							
	11	eiP	Z	16	12	13							
		iS	N			14 01							
	11	iP	ZN	17	09	20.3	dn						
		eiS	ZNE			12 06							
		eiT	ZNE			22 47							
	12	eP	Z	00	25	06							
		eS	NE			29 34							
		eL	ZN			31.2							
	12	iP	Z	08	46	55		3.5	0.8				
		iS	NE			47 14							
	13	iP	Z	02	42	32.7		3.6	0.9				
		iS	N			43 26							
	13	P	Z	04	17	00							
		eiS	ZNE			19 47							
	13	iP	Z	13	47	02.2	u	1.5	2.5				
	13	eL	ZNE	16	39.5								
	14	iP	Z	11	24	12.2	d	3.1	2.1				
		eS	NE			27 46							
		i	Z			35 39							
		i	E			39 34							
		iL	ZN			41 46							
	14	iP	Z	15	36	54.4	d						
		iS	NE			38 02							
	15	eS	ZN	02	48	52							
		eL	ZNE			55 20							
	15	eS	ZNE	09	56.8								
		eL	ZE			58.5							
	15	eiP	ZNE	17	41	15							
		iS	NE			42 49							
	15	iP	Z	19	28	39	u	10.3	2.0				
		iS	NE			30 15							
	16	eSS	E	03	33	50							
		eL	Z			36.5							
	16	eL	ZN	06	14.5								
	17	iP	ZN	01	16	50.5		2.4	1.3				
		iS	NE			17 28							

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JAN	17	iP	ZNE	16	30	01	u						
		iS	E			22							
	21	iP	Z	09	48	32	d	0.7	1.8				
		eiS	NE			50 05							
	21	eiP	Z	18	37	01							
		iS	NE			56							
	22	iP	Z	15	30	36	d	0.4	2.0				
		eiS	NE			32 53							
	22	iP	Z	17	06	47.4	d						
		iS	NE			08 10							
	22	iP	Z	18	30	21	d	1.5	1.3				
		iS	NE			31 51							
	22	iP	Z	20	46	32.2	d						
		iS	NE			48 03							
	23	eiP	Z	14	42	16							
		iS	NE			44 06.3							
	23	iP	ZNE	19	43	43.4	usw	13.5	1.4				
		iS	NE			44 09.5							
	24	iP	ZNE	12	09	33.7	une						
		iS	NE			53							
								Felt: Apia MM4.					
	24	eP	Z	22	38	14							
		iS	E			46 50							
		eSS	ZE			51 06							
		eSSS	E			53 39							
		eLr	ZE			57.4							
	25	eiP	ZE	00	20	19		0.9	1.9				
	25	iP	Z	12	59	50.5	u						
	25	eP	Z	16	16	27							
		eiS	NE			18 19							
	25	iP	ZN	16	58	02.6	d	1.0	2.1				
		iS	NE			59 07							
	25	iP	Z	17	24	20	u	0.6	2.0				
	25	iP	ZN	20	22	49	u						
		iS	NE			23 31							
		eiT	ZNE			27 22							
	26	iP	Z	00	01	43	d	0.3	1.8				
		eiS	NE			02 52							
	26	iP	ZE	12	46	43.8	ue						
		iS	NE			47 06							
	26	iP	Z	19	12	34.6	u						
		iS	NE			13 08							
	27	eiP	Z	00	51	22							
		iS	NE			52 15.3							
		eiT	ZNE			56 10							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JAN 27	iP	Z	02	29	53.9	u						
	iS	NE		31	21.9							
27	iP	Z	18	53	14	u						
							Felt: Gavit, Karlai and Rabaul.					
28	eL	Z	00	36	5							
28	eiP	ZNE	05	28	09							
	iS	NE			50							
28	eiP	Z	07	48	19							
	eS	NE		49	18							
	eiT	ZNE		53	11							
28	iP	Z	10	28	34	d	0.7	2.0				
28	iP	Z	10	43	33.3	d	0.6	1.5				
28	eP	Z	11	27	14							
28	iP	Z	12	19	49.4	u						
	e	ZE		21	54							
	iS	NE		25	54							
	iSSS	NE		28	57							
	iLr	E		30	55							
28	eP	Z	13	11	53							
	iPcP	ZE		12	35							
	iS	NE		20	57							
	i	N		21	36							
	iSSS	NE		28	34							
	iL	NE		30	42							
	iL	ZNE		31	48							
28	iP	Z	13	52	30							
	iS	NE		54	07							
28	eiP	Z	16	11	24							
	eiS	NE		14	32							
	eiT	ZNE		29	19							
28	iP	Z	17	08	59.1	u	0.5	2.0				
29	iP	Z	09	32	12							
	ipP	Z			51							
	eS	NE		41	09							
	eL	NE		49	48							
29	iP	ZNE	16	54	35	une	9.0	0.8				
	iS	NE			54							
29	eiP	Z	20	36	58							
29	iP	ZN	21	16	54.3	d	1.0	2.1				
30	e	N	01	57	30							
	iS	ZE		58	07							
30	eP	ZN	10	24	11							
	iPP	Z		28	32							
	i	E			43							
	eSKS	NE		34	46							
	ePS	ZNE		37	30							
	iSS	ZNE		43	38							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JAN 30	iP	Z	23	37	26.4							
	iS	NE			54							
31	iP	Z	05	18	10	d	1.5	2.2				
	eS	ZNE		27	30							
	eSS	Z		31	32							
	eSS	ZNE		35	.2							
	eL	ZE		40	.0							
31	iP	Z	16	24	07.5	d						
	iS	NE		25	51.5							
	eiT	ZNE		30	27							
FEB 1	iP	Z	09	50	52	d	1.8	1.8				
							Felt: Honiara.					
2	iP	Z	11	25	(18)	u						
	iS	E		27	(18)							
2	iP	Z	11	49	(51)	u						
	eiS	ZNE		50	(51)							
	eiT	ZNE		54	(11)							
2	iP	Z	16	45	(14)	d	0.7	2.0				
4	iP	Z	01	24	29	d	1.0	2.0				
	eS	ZNE		30	18							
	eSS	ZNE		33	.3							
	eL	ZE		35	.3							
4	iP	Z	09	19	14.5	u						
4	eiP	Z	15	08	37							
	eS	NE		12	30							
	eL	Z		13	.9							
							Felt: Port Vila.					
4	iP	Z	17	31	12	u						
	eS	NE			34							
4	iP	Z	18	01	28	u						
	eiS	NE		02	03							
4	eP	Z	23	32	05		0.4	1.9				
	eL	Z		52	.2							
5	iP	Z	19	33	49	d	0.5	2.0				
	eiS	NE		37	08							
	eT	ZNE		53	02							
5	iP	Z	20	52	12	d						
	ePP	Z		55	30							
	eS	ZNE	21	02	38							
	eSS	Z		08	02							
	e	N			28							
	e	Z		15	.5							
	eLq	NE		15	.8							
	eLr	ZNE		19	.2							
6	eS	ZNE	01	44	50							
	e	ZN		50	.6							
	eL	ZNE	02	01	.5							
6	iP	ZNE	05	55	38.7	dne	3.0	2.0				
	iS	NE		57	02.2							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
FEB 6	eiP	Z	10	28	45		0.5	2.0				
	eS	ZNE		34	50							
	e	NE		38	.3							
	eL	Z		40	.5							
6	iP	Z	12	50	31.6	d	0.9	2.3				
6	iP	Z	15	51	37.6	u						
	ei(S)	NE		54	27							
6	e(P)	Z	18	51	26							
6	eiP	Z	19	28	04							
6	eiP	ZNE	23	39	41							
	eiS	ZNE		41	27							
7	iP	ZNE	01	25	36.6	dne	1.3	2.3				
	eiS	NE		27	09							
7	iP	Z	10	10	44	d	0.6	2.0				
7	iP	Z	15	45	01	u						
	iS	NE			22							
7	iP	Z	17	11	20.4	d						
	eiS	NE		13	35							
	eT	ZNE		23	21							
9	eP	Z	16	59	54		0.5	2.0				
	eS	NE	17	03	52							
	e	NE		05	.0							
	e	Z		06	.0							
9	eP	ZNE	17	10	46		0.7	1.0				
	eS	NE		13	04							
9	eP	Z	23	03	30							
	eS	NE		05	05							
9	iP	Z	23	19	25.4	d						
	eS	NE		21	26							
10	iP	Z	07	39	20	d	1.1	2.0				
	eS	NE		40	31							
10	iP	Z	11	20	28.8	u	0.5	0.9				
11	iP	Z	02	21	32.9	u	0.5	2.0				
	eS	NE		24	12							
11	e	NE	02	42	.7							
	e(S)	ZNE		50	.4							
11	iP	Z	04	40	08.8	d						
	eS	ZNE		43	06							
11	iP	Z	07	18	12.7	d						
	eS	ZNE		19	45							
11	iP	Z	10	59	17	d						
	eS	ZNE	11	01	38							
11	eP	Z	12	23	15							
	iS	ZNE			58							

	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
	eT	ZNE		27	04							
12	iP	ZNE	23	09	24	dne	7.5	2.1				
	iS	ZNE		10	56							
13	iP	ZNE	09	01	44	u	4.0	4.2				
	iP	ZE		03	06							
	i	NE		04	36							
	iPP	Z		06	18							
	i	Z		11	17							
	i	Z			23							
	iS	NE		15	44							
	iSS	E		18	20							
	i	Z		20	49							
	iLq	E		23	58							
	iLr	ZNE										
13	iP	ZE	18	19	38	ue						
	iP	NE		20	40							
	i	E		24	05							
	i	ZN			17							
	iS	N		25	28							
	i	N			36							
	iL	E										
	iL	Z		26	00							
14	eP	Z	06	54	14							
	e	Z		58	.9							
	iS	NE	07	00	32							
	iL	E		01	31							
	iL	Z			35							
14	iP	ZE	07	14	25	u						
	iPP	ZE		15	14							
	ipPP	Z		17	12							
	iS	NE		22	31							
	iSS	N		23	30							
	i	Z		24	22							
	i	N		29	37							
	i(L)	ZE		30	09							
	iL	ZE		33	19							
							Felt: Darwin, Australia.					
14	e	Z	13	15	.5							
	e	ZNE		18	.4							
	eL	ZNE		23	.4							
14	iP	Z	15	44	48	u						
	eS	ZN		47	28							
14	e	E	22	04	44							
	i	Z		05	07							
14	iP	Z	22	15	54	u	2.0	3.0				
	i	NE			58.3							
	iS	N		22	31							
	i	N		25	51							
	eL	ZE		26	.2							
	eL	ZNE		30	.4							
15	iP	Z	00	11	30.8	u	0.8	2.0				
15	iP	Z	00	53	24.2	u	0.9	1.9				
	iS	N		56	59							
	eT	ZNE	01	11	29							
15	iP	Z	05	44	14.3	u	0.7	2.0				

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
FEB 15	iP	Z	06	56	36	d	0.5	2.0				
	iS	NE		57	48							
15	iP	Z	07	17	34.3	u	0.8	1.8				
	iS	NE		19	43							
15	i(S)	NE	09	29	12							
15	iP	ZE	18	27	29.8	dw	4.1	0.9				
	iS	NE		28	01							
15	iP	ZNE	18	31	21.5		9.5	1.9				
	iS	N			52							
16	iP	Z	03	58	16	u	0.5	0.9				
16	iP	Z	08	33	11	u	1.6	2.0				
	i	Z			13.1							
	iS	NE		34	37.7							
16	iP	Z	10	56	39.2	d	1.6	1.4				
16	iP	Z	13	24	18.5	d	0.4	1.0				
	iS	NE		25	55.2							
16	iP	Z	17	56	35							
17	iP	Z	17	11	38	u	0.6	1.3				
	iS	NE		12	47.4							
	eT	ZNE		18	15							
17	iP	Z	19	29	12.2	u	1.0	1.0				
	iS	N		31	19							
18	iP	Z	14	23	52.4	u	0.7	2.0				
20	iP	Z	06	48	09.4	d	2.0	2.0				
	iS	ZNE		49	38							
20	eiP	Z	14	16	18							
	iS	N		17	44							
20	eS	NE	17	30	05							
	e	NE		35	16							
	eL	Z		41.7								
	eL	NE		42.2								
21	iP	Z	02	44	08	u	0.7	1.5				
21	iP	Z	13	17	53	d	1.5	1.1				
21	iP	Z	13	17	53	d	1.5	1.1				
	iS	NE		19	07							
21	iP	Z	14	30	07.8	u	2.2	1.7				
	iS	NE		31	08							
	eT	ZNE		36	53							
21	iP	ZE	16	31	33	dw						
	iS	NE			52							
22	iP	Z	08	00	49		7.0	2.0				
	iS	NE		02	16.5							
22	eP	Z	11	09	39							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
	eS	NE		12	36							
23	iP	Z	14	35	41	u						
	iS	NE		37	20							
23	iP	Z	15	27	29.4	u	0.3	0.8				
23	iP	Z	20	00	11	u	1.0	2.0				
24	iP	Z	06	38	09.3	u	1.8	1.7				
	iS	NE		39	41							
24	iP	Z	08	02	57	u						
	iS	NE		03	48							
24	iP	Z	13	08	49.1	u						
	iS	NE		09	48.6							
24	iP	Z	13	46	36.2	u	0.5	1.9				
	iPcP	Z		47	02.9							
	eS	NE		57	03							
	e	Z	14	10.7								
	eL	ZE		12.4								
24	e(S)	NE	17	41.6								
24	iP	Z	21	36	15.1	u	0.8	1.1				
	iS	NE		37	50							
24	iP	Z	22	09	23.7							
	iS	NE			43							
25	iP	Z	04	00	52.3	d	0.5	1.1				
	eS	NE		02	03							
25	iP	Z	04	48	09							
	iS	NE			28.2							
25	iP	Z	16	46	17							
	iS	NE			36							
25	e(S)	Z	17	32.7								
	eL	Z		45.2								
26	iP	Z	10	21	23	d	0.5	1.0				
	eS	NE		22	48							
26	iP	Z	14	04	32	d	0.3	1.0				
	iS	N		06	22							
26	iP	Z	15	12	26.4	d	0.7	1.0				
	i	Z		13	05							
	eS	NE		15	04							
26	iP	ZNE	20	21	42.9	dsw						
	ipP	Z		22	45							
	iPcS	ZE		27	21							
	iS	N			50							
	isS	N			51							
	i	Z		30	52							
	i(SS)	E		31	02							
	iL	N			11							
26	i(P)	Z	20	53	47.6	u	0.7	2.1				
	i	Z		55	07.1							

Date	Phase		h m s		Az	Tz	An	Tn	Ae	Te
FEB 27	iP	Z	04 37 26.4	u	2.5	2.0				
	i	E	43 12							
	i	Z	24							
	iS	NE	27							
	iSS	Z	46 09							
	i	N	28							
	iL	Z	48 42							
	iL	E	52							
27	iP	Z	05 07 39	u						
27	iP	Z	05 56 38	u						
27	iP	ZNE	05 57 20	usw						
	iS	NE	39.7							
27	iP	Z	07 35 05	d						
	iS	NE	41							
	eT	ZNE	38 00							
27	eL	ZNE	20 43 36							
					Felt: Rabaul.					
28	iP	Z	13 26 15	d	1.0	1.2				
28	eP	ZNE	20 13 05							
	iS	NE	32							
MAR 1	iP	ZN	02 33 33.2							
	iS	NE	50							
1	iP	ZN	04 41 25.7	d	2.5	2.0				
	iS	NE	42 54.3							
1	eS	NE	11 06.2							
	eL	ZN	17.1							
1	e	ZNE	12 15.5							
	e	NE	30.6							
	e	Z	31 06							
2	iP	Z	05 11 16.5							
	iS	NE	34.5							
2	e(S)	NE	05 55 04							
2	eiP	Z	08 45 30							
	S	NE	46 00							
2	e	N	09 44.1							
	eL	ZN	56.3							
2	iP	ZNE	22 17 40	une						
	iS	NE	18 28							
4	eL	ZN	08 32.6							
4	iP	Z	13 50 25	u	0.5	2.0				
	iS	E	14 00 07							
	e	ZNE	00.9							
	e	ZNE	04.8							
	e	N	07.7							
	e	E	10.0							
	eL	Z	12.7							
	eL	NE	13.3							

Date	Phase		h m s		Az	Tz	An	Tn	Ae	Te
MAR 4	iP	Z	15 56 00.2	d	1.4	2.1				
	eS	NE	16 06.4							
	e	Z	07.4							
	e	N	19.7							
	eL	Z	23.5							
4	iP	Z	19 08 22	u	1.0	2.0				
	e(S)	NE	11 42							
	e	ZE	13 06							
					Felt: Tanna, New Hebrides.					
4	iP	ZN	22 15 19							
	iS	NE	57.4							
5	iP	Z	07 17 58	u	2.0	2.1				
5	iP	ZE	09 14 09.4	ue	1.5	2.0				
	iS	NE	17 37.4							
5	iP	ZN	16 33 26.4	un						
	iS	NE	34 20							
6	ei(P)	Z	04 28 07							
	eiS	NE	29 44							
6	eL	Z	20 05.6							
7	iP	Z	05 31 38	d	0.8	2.2				
	ePPP	Z	35 02							
	iS	ZNE	39 33							
	i	Z	42 11							
	iSSS	NE	45 06							
	iL	ZNE	46 57							
7	iP	Z	12 29 02.1	u	0.6	2.0				
	eS	ZNE	39 37							
	i	E	40 35							
	eSS	ZNE	44.9							
	eSSS	Z	47.6							
	eLq	ZNE	51.7							
	eLr	ZNE	54.5							
7	eiP	Z	21 55 10							
	iS	NE	56 09.5							
8	iP	Z	00 49 49							
	iS	NE	50 23							
8	iP	Z	01 15 56							
	iS	NE	17 28							
8	iP	Z	02 48 45	u	1.3	2.2				
	iS	NE	52 18							
	i	Z	53 43							
					Felt: Tanna, New Hebrides.					
8	iP	Z	03 29 09.6	d	0.6	2.0				
	eS	NE	32 42							
	i	ZE	34 02							
					Felt: Tanna, New Hebrides.					
8	iP	Z	03 37 19	u	1.3	2.1				
	i	E	21.6							
	e	N	40 38							
	iS	E	42 10							

Date	Phase		h m s		Az	Tz	An	Tn	Ae	Te
MAR	i	Z	15							
	i	N	20							
				Felt: Tanna, New Hebrides.						
8	iP	Z	11 41.3	u						
8	eiP	Z	13 8							
	i	Z	51							
	iS	NE	18							
	i	NE	25							
8	iP	Z	13 25							
	iS	ZNE	37							
8	iS	NE	13 42							
9	e(S)	E	03 5							
9	e	ZNE	13 3							
	eL	NE	43							
	eL	Z	45							
9	e	Z	13 3							
	e	N	13							
	eL	Z	35							
9	iP	Z	22 41	d	5.8	2.0				
	iS	ZN	30.3							
10	iP	Z	03 8.6	u	2.7	2.0				
10	ei(P)	Z	03 5							
	iS	N	17							
11	iP	Z	03 9							
11	iP	Z	09 7.8							
	iS	NE	15							
11	iP	Z	14 2.7							
	iS	ZNE	12							
11	iP	Z	20 5.3							
	iS	NE	17.5							
12	iP	Z	04 5.4	u	2.5	1.8				
	iS	NE	9							
12	iP	ZN	13 4.1	ue						
	S	N	7							
12	eiP	Z	17							
	ei(S)	NE	1							
12	iP	Z	18 4.2	u						
	eiS	NE	18							
13	ei(P)	Z	05 2							
	iS	NE	2							
	eiT	ZNE	18							
14	iP	ZNE	08 4	une						
	i	N	2							
	iS	ZE	4							

Date	Phase		h m s		Az	Tz	An	Tn	Ae	Te
MAR 15	iP	Z	00 26 37.3	u						
	i	Z	35 17							
	iS	ZE	34							
	eSS	Z	39.3							
	eSSS	Z	42.7							
	e	N	43.0							
	eL	ZN	46.0							
	eL	E	46 38							
15	iP	ZE	04 15 21	uw	4.1	1.1				
	iS	NE	41							
15	eiP	Z	06 47 22							
	iS	NE	41							
16	iP	ZN	08 55 45	us	6.5	1.8				
	iPP	Z	58 32							
	iS	N	09 04 28							
	iS	ZE	42							
	i	E	05 06							
	iSS	ZNE	08 12							
	iLq	NE	12 00							
	iLr	E	14 40							
	iL	N	15 10							
	M	N	24							
	eT	ZNE	10 07 31		1.0	0.7				
16	iP	Z	13 20 02	u						
	iS	N	21 19							
	eiT	ZNE	27 03							
16	eiP	Z	21 41 53		1.0	1.0				
	iS	NE	43 12							
	i(L)	Z	44 25							
	eiT	ZNE	48 17							
17	iP	ZE	05 59 16	dw	9.5	1.5				
	iS	N	37.5							
18	iP	Z	04 03 49		1.9	2.0				
	eiS	NE	06 14							
	eiT	ZNE	16 36							
18	iP	Z	04 29 20	d						
	eS	E	32 30							
	eiT	ZNE	42 07							
18	iP	Z	07 31 25.1	d	0.5	2.0				
	iS	NE	33 03							
18	iP	ZNE	13 18 09	use						
	iS	NE	19 36.6							
19	eS	ZNE	05 54 50							
19	eP	ZN	13 17 44							
	e	N	19.0							
	eS	ZNE	21 12							
19	iP	Z	14 46 17	d	1.0	2.0				
	eS	NE	49 44							
	e	ZN	50.12							
20	iP	Z	04 45 24	d	1.5	0.8				
	i	ZNE	47 09							

Date	Phase		h m s		Az	Tz	An	Tn	Ae	Te
MAR	iS	NE	16							
20	iP	Z	04 48 03.5							
	iS	ZNE	49 43.6							
20	e(S)	ZNE	09 01 20							
	i	E	03 29							
20	iP	Z	10 45 10.2	d	5.2	1.0				
	iS	NE	32							
20	iP	Z	16 47 52	d	0.5	2.2				
	eS	N	52 54							
	eSS	ZNE	55 08							
	eLr	ZN	58 29							
	eLq	N	17 00 22							
	eLq	E	03 42							
	iL	Z	52							
20	iP	Z	20 02 43							
	iS	NE	03 11							
20	iP	Z	20 46 27							
	iS	NE	46							
20	iP	Z	23 43 13.6							
	iS	ZNE	34							
21	eiP	Z	01 14 31							
	iS	NE	15 48.7							
21	iP	Z	16 22 40		5.8	1.2				
	iS	NE	23 10							
21	eiP	Z	21 04 11							
	iS	NE	05 09							
22	e	ZNE	12 47 12							
	e(L)	NE	50.6							
	eL	ZNE	52 12							
23	iP	Z	01 13 47	u	1.0	1.9				
	ei(S)	NE	16 09							
23	iP	Z	14 37 19.7	d	3.4	1.2				
	iS	NE	43							
23	iP	Z	22 30 42.4							
	eiS	NE	32 18							
24	eS	NE	02 26 30							
	iSS	E	31 06							
	iL	E	40 06							
24	eS	E	09 46 04							
	eSS	NE	49 43							
	eL	E	51 47							
24	iP	Z	09 54 06.7	d						
24	iP	Z	18 22 05.2	d						
	iS	N	23 04							
24	iP	Z	20 21 02							

Date	Phase		h m s		Az	Tz	An	Tn	Ae	Te
MAR 25	iS	Z	20 33 55	u						
	eLq	ZN	39 30							
	eLr	ZN	42.0							
26	iP	Z	03 12 12							
	iS	NE	26							
26	iP	ZNE	08 24 22.2	use						
	S	ZNE	42							
26	iP	Z	09 52 08	u						
	iS	NE	54 59							
					Felt: Raoul Is.					
26	iP	Z	11 01 13	u	0.6	0.8				
	eiS	NE	02 38							
26	eiP	Z	11 49 55							
	eiS	NE	52 40							
					Felt: Raoul Is.					
26	eiP	Z	12 55 23							
	eiS	NE	58 18							
	ei(T)	ZNE	13 10 12							
26	eiP	Z	13 28 47							
	i	ZNE	29 02							
	iS	E	31 50							
	iS	N	32 16							
	eiT	ZNE	40 05							
26	eP	Z	14 38 51							
					Felt: Port Vila.					
26	iP	ZNE	18 28 14.3	unw	5.0	1.0				
	iS	NE	36							
26	iP	Z	21 45 52	d	1.2	2.0				
	eS	NE	55 04							
	e	E	22 02 46							
	iL	E	05 54							
	eL	ZN	06.0							
26	iP	Z	22 12 42.3	u	1.1	1.2				
27	iP	Z	00 28 17	d						
	iS	NE	29 02.1							
	i	N	12							
	i	E	18							
	eiT	ZNE	31 54							
27	iP	Z	02 29 57							
	iS	N	30 17							
27	iP	Z	13 59 11	u						
	iS	NE	52							
28	eSKS	N	00 42 04							
	e	Z	45 08							
	iSKSP	N	46 41							
	iPPS	ZN	48 08							
	iSS	E	53 38							
	i	ZN	54 02							
	i(SSS)	ZN	58 06							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
MAR 28	iP	ZNE	07	24	33	unw	11.5	1.0				
	iS	NE			58							
28	eiP	Z	11	16	20							
	i	E		17	24							
	eiS	NE		19	20							
	eL	ZNE			32							
	ei(T)	ZNE		30	02							
28	eiP	Z	14	35	44							
	iS	NE		36	04							
28	iP	Z	16	20	48	d	0.5	1.6				
	iS	N		22	32.4							
28	iP	Z	17	26	15.3							
	iS	NE			33.2							
28	eiP	Z	23	32	59		1.5	2.3				
	iS	NE		35	43							
	eL	ZNE		36.0								
	eiT	ZNE		46	07							
29	iP	Z	16	57	17.6		3.4	0.8				
	iS	ZNE			43							
29	eiP	Z	21	20	27							
	ei(S)	NE		23	23							
29	ei(P)	Z	22	25	04							
	iS	NE		26	13.4							
30	iP	Z	00	56	37.2	u						
	eiS	NE		58	22							
30	iP	Z	02	17	10							
	iS	NE			31							
30	e(S)	NE	11	43	54							
30	eiP	Z	17	03	01		0.5	2.1				
	eS	NE		12	08							
	e	E		16	36							
	eL	NE		19	26							
	eL	ZNE		22	58							
	eiT	ZNE	18	17	14		2.5	1.0				
30	iP	Z	17	05	52	d	1.0	1.5				
	eiS	NE		08	11							
30	eiP	Z	22	45	18							
	iS	ZNE			51.5							
31	eiP	Z	04	13	16							
	iS	NE			38							
31	eiP	Z	04	58	55		0.6	2.2				
	e(S)	E	05	09	30							
31	eiP	Z	05	34	32		2.9	2.1				
	iS	NE		37	27							
	iL	N		38	05							
	eiT	ZNE		44	10							
31	iP	Z	07	15	02	u	2.6	2.2				

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
MAR	i	Z			15							
	eS	ZNE		21	02							
	e	ZN		23	21							
	i	E		24	05							
	iL	ZE		26	18							
							Felt: Popondetta, Walindi and Kandrian.					
31	eP	Z	08	16	22							
	eiS	NE		19	04							
	ei(T)	ZNE		30	50							
31	eiP	Z	09	11	08							
	eiS	NE		14	04							
	eiT	ZNE		28	07							
31	eiP	Z	11	10	35							
	iS	NE		11	36							
31	eiP	Z	11	15	27							
	eiS	NE		16	06							
31	iP	Z	11	19	29							
	iS	NE			47.5							
31	iP	Z	14	28	15							
	iS	NE			47.4							
31	eiP	Z	17	29	48							
	eiS	NE		31	50							
31	eiP	Z	19	26	41							
	i	Z			49							
	iS	NE		29	37							
	iL	ZNE			52							
	eiT	ZNE		37	01							
APR 1	iP	E	02	27	23		1.0	2.0				
	eS	ZN		36	14							
	eL	ZNE		38.5								
1	ei(P)	NE	07	06	45							
1	eS	N	08	37.2								
1	eiP	NE	15	01	44							
	iS	NE		03	05							
1	eiP	NE	16	53	32							
	iS	NE		54	02.3							
2	eiP	Z	04	29	26							
	i	NE		30	13.8							
	ei	ZNE		33	44							
2	eP	Z	04	47	10							
	e	N			20							
	eiS	NE		50	01							
	e(L)	NE			06							
	eiT	ZNE	05	01	04							
2	iP	Z	08	13	18							
	iS	NE			42							
2	iP	Z	16	29	31.6	d	1.0	2.0				

Date		Phase	h	m	s		Az	Tz	An	Tn	Ae	Te
APR	3	e Z	11	25	34							
		e NE		28	13							
		e ZNE		39	14							
	3	e ZN	12	50	01							
		i NE		51	34							
	3	e Z	14	57	10							
		i ZNE	15	04	50							
		i E		08	.3							
		i NE		10	00							
	3	i Z	18	57	04	d	1.0	1.1				
		e NE		59	17							
	4	e Z	04	45	02							
		i NE			34							
	4	i Z	05	16	38.3							
		i NE		17	05.2							
	4	e Z	08	43	18							
		i NE		44	33.7							
	4	e Z	08	49	57							
		e NE		51	16							
	5	i Z	02	00	47.4							
		i I		01	04							
	6	e Z	05	37	52							
		e NE		40	35							
	6	i ZNE	07	05	00.7	dne	5.5	2.2				
		e NE		06	30							
	6	e I	13	50	34							
		i I		51	27							
	6	e NE	18	06	48							
		i NE		10	03							
	6	i ZNE	21	18	33	dsw						
		i NE		19	05.4							
	7	i I	00	43	16							
		e NE			36							
	7	i ZNE	04	00	07		2.9	2.0				
		e ZNE		02	04							
		e ZNE		07	06							
	7	e I	06	19	46							
		i NE		20	06.5							
	7	e I	12	20	11							
		i NE			38							
	7	i I	17	12	47.9							
		i NE		13	27							
	7	e I	20	40	28							
		e NE		42	10							
	7	i I	22	48	30		8.9	2.2				

Date		Phase	h	m	s		Az	Tz	An	Tn	Ae	Te
APR		iP ZNE			31							
		eS N		58	52							
		eSS ZNE	23	04	.2							
		eSSS N		07	.2							
		e N		11	.5							
		eLq Z		14	.5							
		eLr ZE		17	50							
	8	iP Z	04	11	30.3							
		iS N		12	20							
	8	iP Z	06	34	41.6	d						
	8	iP Z	08	01	23	d	0.5	1.9				
		eS ZE		06	28							
							Felt: Port Vila.					
	8	eiP Z	12	55	03							
		iS NE			36							
	8	iP Z	22	40	26	u	0.5	2.0				
		iS NE		42	45.7							
	8	eiP Z	23	18	09	u						
		iP Z			10.4							
		eiS NE		20	02							
	9	iP Z	00	25	44.2							
		iS NE		26	07							
	9	iP ZNE	02	04	20	dsw	9.5	2.1				
		iS E		05	49.8							
	9	iP Z	04	36	56	d						
		i E			59							
	9	iP Z	11	46	22.5							
		iS ZNE			42							
	9	iP ZNE	15	26	34.2	use	1.5	1.4				
		i ZNE		27	04							
		ei(S) ZNE		28	44							
		ei ZNE		33	03							
	9	iS NE	17	23	02							
	9	iP ZE	21	09	15	uw						
		ei(S) NE		10	56							
	9	iP Z	23	02	37	d	0.5	1.8				
	10	iP ZNE	00	25	25.6	use						
		iS NE			44							
	10	iP Z	08	01	10	u	0.9	2.0				
		eS NE		09	04							
		eSSS N		15	.4							
		eL NE		18	.2							
		eL Z		20	.1							
	10	iP ZE	12	29	27.1	dw	2.0	1.0				
		i Z			47							
		iS NE		30	56							
	10	eiP Z	18	49	14							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
APR	iS	NE			38							
11	iP	ZNE	04	59	56	dne						
	iS	NE	05	00	25							
11	eiP	Z	09	59	50							
	eS	NE	10	00	35							
	eT	ZNE		04	16							
11	iP	Z	15	28	40							
	iS	ZNE		29	02.8							
11	iP	Z	18	27	16.2	d						
	iS	E		29	56							
11	eiP	Z	19	20	29							
	iS	NE		21	25							
11	iP	Z	20	38	49.4		1.9	1.5				
	iS	NE		39	35							
11	iP	Z	21	01	02							
	iS	NE			46							
12	eiP	Z	08	47	23		0.9	2.0				
	iS	ZE		52	08							
	iL	NE		53	48							
	eL	Z		54	01							
12	iP	Z	16	36	20.3							
	eS	NE			41							
12	iP	ZNE	20	49	06	dsw						
	eS	NE			26							
13	iP	Z	02	34	04	u	1.1	2.1				
	iPcP	Z			34.3							
	iS	E		44	31							
	i	E		45	14							
	eL	E	03	04.5								
13	iP	Z	03	22	13	u	3.4	0.9				
	i	N		23	15							
	iS	NE			22							
13	iP	Z	14	28	55							
	iS	NE		29	15							
13	iP	Z	14	40	38	u	0.9	2.0				
	eS	NE		48	07							
	i	N			19							
	eSS	NE		50	34							
	eL	N		54	26							
	eL	E		57	36							
13	iP	Z	17	34	25	d						
	iS	NE		35	57							
13	iP	Z	18	02	04							
	iS	E			30							
13	iP	Z	18	14	13.8							
13	eiP	Z	22	11	53							
	iS	E		15	14							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
APR 14	iP	Z	05	36	41	d						
	iP	Z			44.4		2.4	2.0				
	eS	NE		40	04							
14	iP	Z	08	49	16.2							
	iS	NE			36							
14	eiP	Z	13	27	38							
	eiS	ZNE		28	05							
14	iP	Z	14	02	33							
	iS	NE			52.2							
14	iP	Z	18	07	04.2							
	iS	E			37.2							
15	iP	Z	01	35	38							
	eiS	NE			57							
15	iP	Z	05	38	33.6							
	eiS	NE			53							
15	iP	Z	14	45	17							
	eiS	NE		46	10							
15	eiP	Z	16	05	55							
	iS	E		06	28.7							
15	iP	Z	19	50	48.6	d	0.5	1.3				
	iS	E		52	33.7							
15	eiP	Z	23	40	36							
	i	Z			39							
	ei	E			40							
	iS	N			50							
16	eP	N	01	39	35							
							From Apia seismograph. Afiamalu recording interrupted.					
16	iP	Z	05	33	50.6	u	3.0	1.8				
	iS	NE		35	18							
16	iP	Z	09	20	43.8	d	0.5	2.1				
16	iP	Z	12	14	00	d	0.9	2.3				
16	iP	Z	17	11	46.5							
16	eiP	Z	21	55	52							
	iS	NE		56	29							
17	iP	ZNE	02	14	00.4	dsw	3.3	2.0				
	iS	NE		16	02							
17	iP	Z	04	14	23							
	iS	NE			40							
17	iP	ZE	08	24	19	ue						
	iS	NE			49							
17	eiP	Z	12	14	44		1.5	1.4				
	iS	N		15	28							
	eT	ZNE		19	03							

Date	Phase		h m s		Az	Tz	An	Tn	Ae	Te
APR 17	e	E	19 07 56							
	e(L)	ZN	13.1							
18	iP	ZE	03 24 25.6	uw	1.3	1.9				
18	iP	Z	05 24 59							
	eS	NE	25 18							
18	iP	Z	16 04 57	u	0.5	1.2				
	eiS	NE	06 08							
18	iP	Z	21 10 35							
	iS	NE	58							
19	ei(P)	Z	04 41 38							
19	iP	Z	04 42 04.6	u						
	iS	NE	46.3							
	ei	ZNE	44 44							
19	iP	Z	04 50 16							
	eiS	NE	45							
19	eiP	Z	07 16 23							
	eiS	NE	44							
19	eSKS	NE	07 59 38							
	iScS	NE	08 00 46							
	eS	ZNE	02 00							
	e	Z	06 28							
	i	N	07 18							
	i(SS)	E	25							
	e(SSS)	N	13 36							
	i	E	14 36							
	iL	N	16 14							
19	iP	Z	10 01 04							
	iS	NE	31							
19	iP	Z	10 32 48	u	0.6	1.3				
19	iP	Z	11 53 55.6							
	iS	NE	54 16							
19	iP	Z	12 21 10							
	iS	NE	31							
19	iP	Z	15 59 51							
	eiS	NE	16 00 11							
20	eiP	Z	03 57 35							
	iS	NE	56							
20	iP	ZE	08 15 05	uw	2.5	1.3				
	iS	NE	16 51							
20	eiP	Z	17 26 49							
	iS	NE	27 21.2							
20	iP	Z	18 55 17.3	u	1.0	2.0				
	iS	N	40							
21	e(P)	Z	04 59 42							
	e(S)	NE	05 12 24							
	eL	ZNE	17.4							

Date	Phase		h m s		Az	Tz	An	Tn	Ae	Te
APR 21	iP	Z	10 46 21.8	d	0.8	2.1				
	e	Z	52 46							
	eS	NE	56 06							
21	eiP	Z	17 10 15							
	iS	NE	43							
22	iP	Z	05 22 43.4							
	iS	NE	23 06							
22	iP	Z	05 53 48.3							
	iS	NE	54 07.6							
22	iP	Z	06 58 12.1							
	iS	E	31.1							
22	eiP	Z	07 24 03							
	eS	NE	41							
22	eiP	Z	07 29 24		1.1	2.0				
	eS	NE	32 12							
	eT	ZNE	43 22							
22	iP	Z	11 24 01							
	eiS	NE	55							
22	iP	Z	13 36 30							
	iS	NE	52							
22	eiP	Z	15 08 33							
	iS	E	09 39							
	eiS	N	41							
22	eiP	Z	15 54 56							
	eiS	NE	55 18							
22	eiP	Z	19 53 32							
	iS	N	54 00.1							
23	iP	Z	00 29 04.5	u	2.7	0.9				
	iS	NE	35							
23	iP	Z	02 49 52.4	u	0.6	2.1				
23	iP	Z	03 25 26.4							
	iS	NE	43.4							
23	eP	Z	05 43 39							
	eiS	NE	44 19							
23	iP	Z	15 34 45	d						
23	iP	Z	23 06 46.9							
	iS	NE	07 24							
23	eP	Z	23 43 28							
	eiS	NE	44 11							
24	iP	ZE	03 56 07	ue						
	iS	E	51							
24	iP	Z	04 41 07.5							
	iS	E	27.5							
24	iP	ZE	21 45 05		1.1	1.0				

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
APR	e	E			46 51							
25	i		05	11	19							
	e	E			41							
25	i	E	06	40	05		0.5	2.3				
	i	E			41 43							
25	i		08	22	58	d						
25	e		17	52	36							
	i	E			54 17							
	i	NE			58 42							
26	i		00	06	11.4							
	e	E			53							
26	e	NE	07	36	37							
	i	E			37 07							
26	e		08	00	20							
	i				01 08							
26	e	N	08	19	19							
	i				23							
	i	E			20 05							
26	e		22	04	30							
	i	E			05 00							
27	e		08	34	24							
	i				53							
27	e	E	09	01.5								
	i				02 22							
	e				05 48							
	e				08.8							
	e				09.4							
	e				10.6							
27	e	N	18	55	17							
	i				51							
	i				59							
	i	N			56 08							
	i				58 07							
28	i	NE	14	17	58	une						
	e	E			19 28							
28	e		15	26	36							
	i	E			27 26							
28	e		20	03	49							
	i	E			04 12							
29	e	E	03	37	05							
	i	NE			39 10							
	i				37							
	e	E			41 27							
29	e		04	59	13							
	i	E			39							
	i		05	01	31							
29	i	E	06	03	33.6							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
APR 29	eiP	ZE	09	46	23							
	i	E		48	04							
	ei(S)	E			35							
29	eP	Z	20	51	03							
	i	E			18.3							
	ei	E			39							
	ei	ZE		54	10							
29	iP	Z	21	55	04	u						
	iS	ZN	22	03	38							
	eSS	ZN		07	16							
	eSSS	ZN		11	04							
	eL	ZN		13	16							
30	iP	Z	01	08	25	d						
	ePP	N		10	30							
	iS	NE		16	45							
	iSS	ZN		20	00							
	i	E		21	11							
	iSSS	N		23	35							
	i	ZE			54							
	iL	ZE		27	08							
30	eiP	Z	03	43	08							
	iS	E			23							
30	eS	N	07	27	28							
	eL	ZN		37	20							
30	iP	ZNE	08	27	32	dnw						
	iS	ZE		28	22							
30	iP	Z	15	30	21.6							
	iS	E			37.6							
30	eLr	ZNE	19	24	30							
MAY 1	iP	ZNE	10	07	32	une	3.0	2.0				
	ipP	Z			57							
	i	ZNE		08	16							
	iS	NE		10	55							
	isS	ZE		11	21							
1	eP	Z	13	10	08							
	eiS	E		11	27							
1	iP	Z	16	11	06							
	iS	E			26							
2	ei(P)	Z	13	28	40							
	ei	E		30	40							
2	eP	Z	18	28	15							
	eiS	E		29	06							
2	iP	ZE	20	00	22							
	eiS	ZE			48							
2	eiP	Z	20	08	24							
	iS	E			42							
3	iP	Z	08	22	32.6							
	iS	E			53							

Date		Phase		h	m	s		An	Tn	Ae	Te
MAY	3	iP	ZNE	10	55	08	usw				
		iS	NE			24					
	3	iP	ZE	11	11	24					
		iS	NE			52					
	3	iP	Z	22	52	14.6					
		iS	E			32.2					
	4	eP	Z	10	38	00					
		eiS	E			24					
	4	eP	Z	14	49	14					
		iS	E			31					
	4	eP	Z	20	27	10					
		iS	E			46					
	5	eP	Z	11	36	28					
		iS	NE			47.4					
	5	eP	Z	13	26	30					
		iS	NE			48					
	5	eP	Z	13	39	35					
		iS	NE			51					
	5	eP	Z	13	54	50					
		eiS	NE		55	19					
	5	eiP	Z	14	49	37					
		iS	NE			56					
	5	iP	Z	17	12	47					
		eS	ZNE		13	29					
	6	eiP	Z	07	39	08					
		iS	NE			26					
	6	ei	Z	08	50	08					
	6	eP	Z	17	29	58					
		iS	NE		30	45					
	6	eiP	Z	20	55	43					
		iS	NE		56	01					
	6	e(P)	ZNE	23	45	13					
		ei(S)	NE		47	43					
	7	iP	Z	03	34	12.5					
		iS	NE			43					
	7	eP	Z	07	10	57					
		iS	NE		11	14					
	7	iP	Z	07	18	47.5					
		iS	N		19	07					
	7	iP	Z	10	08	50					
		iS	NE		09	06					
	7	iP	Z	19	34	06.3					
		iS	NE			26.6					

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
MAY	8	iP	Z	00	03	04		0.9	1.8				
		eiS	NE		06	35							
	8	iP	ZE	02	12	16	ue	0.8	1.3				
		iS	N		13	57.1							
	8	iP	Z	04	28	53	u	2.4	1.2				
		iS	NE		29	16							
	8	eiP	Z	09	53	56							
		iS	NE		54	15							
	8	eP	Z	10	28	57							
		eiS	NE		31	21							
	8	iP	Z	10	33	12	u						
		eS	ZE		41	50							
		iS	N			55							
		eSS	Z		45	22							
		eLq	ZNE		49	26							
		eLr	ZNE		52	26							
	8	iP	Z	15	34	37	d						
	8	iP	ZNE	19	16	48	dsw						
		iS	NE		17	35							
	8	iP	Z	20	28	33							
		iS	NE			51							
	9	iP	Z	04	34	56.6		2.5	1.7				
		eiS	NE		37	29							
	9	eiP	Z	07	29	26							
		eiS	NE		32	14							
	9	eL	E	15	43.8								
		eL	Z		44	02							
	10	iP	ZN	00	10	42.2	ds	4.9	1.0				
		iS	NE		13	10							
	10	iP	Z	02	37	00.2							
		iS	NE			23							
	10	iP	Z	04	33	15	d	0.5	2.0				
		eS	NE		37	06							
		eL	ZE		38	34							
	10	eP	Z	05	41	26							
		iS	NE			49							
	10	iP	Z	14	46	25.7							
		eiS	NE			45							
	10	eP	ZE	22	46	38							
		ePP	N		49	32							
		e	ZN		53	44							
		eS	NE		55	12							
		e	Z		56	44							
		eSS	ZN	23	00	30							
		e	ZN		02	08							
		eL	ZE		05	16							
	11	iP	Z	04	45	55	d	7.0	1.6				

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
MAY	iS	NE			46 34							
11	iP	Z	07	39	00.2							
	iS	NE			27							
11	eiP	Z	07	51	43		1.0	1.5				
11	e	ZE	18	30.5								
12	iP	Z	04	52	51							
	iS	NE		53	15							
12	iP	Z	09	51	39	d	0.5	2.2				
	eS	ZNE		59	50							
	eL	ZNE	10	04.7								
12	eP	Z	10	55	23							
	iS	NE			47							
12	eP	Z	13	46	47							
	iS	NE		47	12							
12	iP	Z	18	07	02.4		1.1	0.7				
	eiS	NE			22							
12	eL	N	19	40	08							
12	iP	Z	20	20	02.1	u	0.8	2.1				
	eS	NE		29	20							
	eL	ZNE		41	10							
13	iP	Z	07	13	42.7	u	1.5	2.0				
	eiS	NE		16	13							
13	iP	Z	09	37	30.7							
	eiS	NE			48							
13	eP	Z	09	55	19							
	iS	NE			47							
	ei	ZNE		57	53							
13	iP	Z	11	57	20	u	5.8	0.9				
	iS	NE			38							
13	eiP	Z	14	11	56							
	i	Z		12	26							
	eS	ZN		15	08							
	i	ZNE		16	07							
	e	Z		17	20							
13	eP	Z	15	37	05							
	iS	N			49							
	eiT	ZNE		41	50							
14	iP	Z	12	05	23	d	0.7	1.3				
	e(S)	NE		07	22							
14	iP	Z	15	18	15	u	0.6	1.3				
14	iP	Z	20	02	37							
	eiS	NE			57							
14	iP	Z	22	06	28.7		1.2	1.0				
	iS	NE			49							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
MAY 16	iP	Z	03	17	38		2.5	1.0				
	eiS	NE			59							
16	e(P)	Z	07	08	23		2.5	1.0				
	ei	ZNE			46							
	i	E			54							
	iS	NE		09	53							
	i	NE		12	03							
	i	Z			26							
16	ei(P)	ZNE	07	55	30		0.5	1.5				
	i	ZNE		57	53							
16	eP	Z	12	16	03							
	iS	NE			27							
	i	ZNE		18	54							
16	eP	Z	12	55	07							
	i	NE			30							
	iS	ZNE			36							
	i	ZNE		58	06							
16	e	N	16	17.3								
	e(L)	ZN		21	46							
	eL	E		25	33							
16	iP	Z	18	23	04.4							
	i	NE			15							
16	iP	Z	19	22	04	d	1.7	1.2				
	iS	N		23	36							
16	iP	Z	20	52	14.3	u	2.6	1.1				
	eiS	ZNE		53	08							
17	eL	ZN	04	37	24							
17	e(L)	ZNE	06	43	44							
17	iP	ZNE	07	37	10.6	dne	1.6	2.0				
	iS	NE		40	22.4							
17	eL	ZNE	12	40	38							
17	eiP	ZE	22	42	50		2.8	1.0				
	iS	NE		44	47							
18	eL	ZNE	06	16	42							
18	eP	Z	12	31	48		0.6	2.0				
	e	N		40	10							
	eS	N		41	10							
	eSSS	N		48	54							
	eL	N		52	20							
	eL	ZE		55.3								
18	iP	Z	14	51	56		1.9	1.3				
	iS	NE		52	30							
18	eP	Z	17	52	10							
	iS	N			41							
19	i	E	01	38	14							
	iL	ZE		41	39							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
MAY 19	ei	ZNE	02	47	50							
	ei	ZNE		48	18							
19	iP	Z	03	12	56							
	iS	NE		13	19							
19	eiP	Z	06	13	22							
	iS	NE			40							
19	iP	Z	06	41	04							
	iS	NE			22							
19	ei(P)	Z	17	02	20		0.5	2.0				
19	iPKP	Z	21	54	59.2	u						
	e	Z	22	13	08							
	eSSP	ZN		14	24							
	eSSS	ZN		18	48							
	e	Z			21.6							
	eL	Z			28.9							
	eL	Z			31.2							
20	iP	Z	03	36	15	d	1.0	2.0				
20	eiP	Z	09	55	21							
	iS	E			43							
20	eiP	Z	11	42	01							
	i	ZNE			07							
	i	NE		43	50							
	iS	ZNE		45	24							
20	eiP	Z	16	51	35							
	iS	E			56							
21	iP	Z	06	43	44.5							
	iS	E		44	03.9							
21	iP	ZE	17	35	32.5	u						
	eS	NE		39	56							
	i	NE		40	46							
	iL	Z		42	12							
21	iP	Z	17	53	36.3	d	0.6	1.9				
	eiS	E		55	31							
21	eiP	Z	21	04	03							
	eiS	E		05	36							
22	iP	Z	03	44	02.6							
	iS	E			24							
22	iP	Z	06	28	03							
	iS	E			35.8							
22	eiP	Z	09	35	10							
	iS	E			35							
22	eP	Z	13	20	01							
	iS	E			42							
22	iP	Z	14	07	49	d	0.8	2.0				
	eS	ZNE		16	20							
	eSS	ZNE		20	44							
	eLq	ZNE		24	30							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
MAY	eLr	ZNE		27	42							
	eT	ZNE	15	22	31							
22	iP	Z	15	53	09.3	u	1.4	2.0				
22	iP	Z	22	04	25	u	1.2	2.2				
23	iP	ZE	03	34	34.7	u						
	iS	NE		35	24							
23	iP	ZE	07	54	06		0.8	1.5				
	iS	E			59							
23	eiP	Z	08	44	01							
	iS	E		45	39							
23	iP	Z	20	37	04		1.1	1.0				
	iS	E			44							
24	iP	Z	12	49	16							
	eiS	E			33							
24	iP	Z	20	47	42							
	iS	E		48	02							
24	iP	Z	23	27	55.3							
	iS	E		28	20							
24	iP	Z	23	33	55							
25	iP	Z	05	44	58.5							
	iS	E		45	18							
25	eiP	Z	05	49	52							
	eiS	E		50	11							
25	eiP	Z	10	36	18							
	eiS	E			35							
25	e	NE	16	32	52							
	e	ZN		35	28							
	e	N			52.7							
	e	Z			57.5							
	eL	ZN			59.5							
25	eiP	Z	22	14	10		0.4	1.0				
	iS	E		16	11							
26	iP	Z	00	01	26	u	2.0	1.1				
	iS	E		02	29							
	eL	ZN			56							
	eiT	ZE		07	33							
26	eiP	Z	06	00	41		0.3	0.8				
	eiS	E		01	42							
26	e(P)	Z	06	05	39							
	ei(S)	E		06	43							
26	eiP	Z	09	38	37		0.8	1.9				
	eiS	E		40	03							
26	iP	ZE	10	58	54	u						
	iS	E		59	24							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
MAY 26	iP	Z	16	03	43							
	iS	E		04	04							
26	iP	Z	23	18	20.5		0.5	1.8				
	eS	Z		27	46							
	eL	Z		39	34							
27	iP	Z	04	10	11.6	u						
	eS	NE		19	20							
	e	E		28	26							
	eL	ZN		31	12							
27	iP	Z	14	53	43	u	0.5	1.5				
	iS	E		55	22							
27	iP	Z	18	46	13.4							
	iS	E			31							
28	iP	Z	02	27	42.4							
	iS	E		28	04							
28	iP	Z	07	02	50	u	0.9	1.8				
	iS	E		04	21							
28	eiP	Z	15	59	26							
	iS	E			50							
28	eP	Z	18	30	36							
	iS	E		31	18							
	ei	ZE		34	12							
29	iP	Z	08	29	39							
	iS	E		31	10							
29	iP	Z	08	42	18							
	iS	E			37							
29	iP	ZE	11	01	06.4	d						
	eiS	E		02	35							
29	iP	Z	18	03	14							
	iS	E			48							
29	iP	Z	19	30	40							
	iS	E			59							
30	eL	ZN	07	21	04							
30	iP	Z	20	32	46	u	1.6	1.7				
	iS	E		34	23							
31	iP	ZNE	06	04	00	dsw						
	iS	N			18							
31	iP	Z	07	50	33							
	iS	E			53							
31	iP	Z	08	30	22							
	iS	E			39							
31	iP	Z	09	22	07.4							
	iS	E			24							
31	iP	Z	09	39	28.4							
	iS	E			47							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
MAY 31	iP	Z	09	46	38.5							
	eiS	ZE			58							
31	eiP	Z	12	02	13							
	iS	E		03	25							
31	iP	ZNE	23	59	12							
	iS	ZN			36							
JUN 1	iP	Z	00	30	48							
	iS	E		31	06							
1	iP	Z	00	45	06.7							
	iS	E			26							
1	iP	Z	01	44	02.3		1.0	1.9				
	i	Z			07.9		2.7	1.2				
	eiS	E			25							
1	iP	Z	04	24	46							
	eiS	E		25	06							
1	iP	Z	05	11	54							
	eiS	E		12	12							
1	iP	Z	05	42	07.6							
	iS	E			27							
1	eP	Z	09	25	11							
	eS	E		26	25							
1	iP	ZE	12	31	15.3	d						
	iS	N			33							
1	iP	ZNE	21	14	17	dsw						
1	iP	Z	21	57	20.4							
	iS	E			41.6							
1	iP	Z	22	26	39.5							
	eiS	E			57							
1	iP	Z	22	41	31.4							
2	iP	Z	03	39	41							
	eiS	E			57							
2	eP	Z	10	06	24							
	eS	ZNE		11	56							
	eSS	N		14	22							
	e	ZE			42							
	eL	ZE		15	54							
							Felt: Rabaul.					
2	eiP	Z	21	11	44							
	eS	E		15	03							
	eL	ZNE		16	24							
	eT	ZE		31	09							
2	e	ZN	21	31	47							
	eSS	ZE		37	42							
	eSSS	ZE		41	14							
	e	E		44.6								
	eL	NE		48	10							
	eL	ZN		52.5								

Date	Phase		h m s		Az	Tz	An	Tn	Ae	Te
JUN 3	iP	Z	02 57 28.4		2.1	1.4				
	iS	E	46							
3	eiP	Z	04 46 08							
	eS	E	47 35							
3	iP	Z	05 44 22							
	iS	E	42.6							
3	eP	Z	06 50 53							
	iS	E	51 11							
3	eiP	Z	07 20 02							
	iS	E	21 19							
3	iP	Z	07 46 46.3	u	0.5	1.8				
	eS	NE	55 44							
	e	NE	08 03 20							
	eL	ZNE	06 27							
3	eP	Z	09 33 40							
	eiS	E	34 05							
3	iP	Z	10 58 47		2.0	1.9				
	eiS	E	59 37							
3	e(L)	NE	12 18 28							
3	iP	Z	14 56 24	d	0.6	1.4				
	eiS	E	59 09							
3	eP	Z	18 52 42							
	eS	E	55 42							
4	eiP	Z	03 07 03							
	iS	E	18							
4	iP	Z	06 03 33							
	iS	E	49							
4	eiP	Z	11 58 17		1.2	1.9				
	iS	E	12 01 02							
	eT	ZE	15 09							
4	iP	Z	13 10 04.8	d	1.0	2.0				
	eiS	E	12 59							
	eT	ZE	27 31							
4	iP	Z	21 15 01.4	u	1.5	1.9				
	iS	NE	23 27							
	eSS	ZNE	27 10							
	eSSS	E	29 38							
	e	N	30.4							
	eLr	ZE	33 34							
5	eiP	Z	01 26 22							
	iS	E	30							
5	iP	Z	02 36 28.4							
	eiS	E	46							
5	eL	ZNE	05 15.4							
5	iP	Z	08 52 21	d	0.9	1.2				
	iS	E	53 56							

Date	Phase		h m s		Az	Tz	An	Tn	Ae	Te
JUN 5	eiP	Z	10 16 53		0.6	1.2				
	eS	ZNE	20 38							
	eL	ZE	21 14							
					Felt: Santo, New Hebrides.					
5	eS	NE	11 36 43							
5	iP	Z	14 09 01	u	0.7	2.0				
	eS	ZNE	47							
	eT	ZNE	14 29							
5	eiP	Z	18 55 09		0.6	2.0				
	eS	ZNE	56 10							
5	eSS	Z	23 18.6							
	eSSS	Z	21.7							
	eL	Z	27.5							
6	eP	Z	00 08 47							
	e(S)	E	10 52							
6	e(P)	Z	00 14 50		0.8	2.0				
6	iP	Z	02 45 13							
	iS	E	32							
6	iP	Z	05 30 35.7	d	1.0	2.0				
	eS	ZNE	40 10							
	eSS	Z	44.5							
	eLr	ZNE	53.3							
6	eLr	Z	12 50.5							
6	iP	Z	15 50 35	u	4.9	1.4				
	iS	E	52							
6	iP	Z	17 47 17	d	3.0	2.1				
	iS	ZNE	50 50							
					Felt: Santo, New Hebrides.					
6	iP	Z	19 50 57.7	d	1.8	0.4				
	iS	E	51 20							
6	eP	Z	23 46 28		1.3	1.7				
	eS	E	48 50							
7	eiP	Z	02 51 13							
	iS	E	37							
7	iP	Z	03 23 03	d	1.0	2.0				
	iS	E	24 00.3							
7	eiP	Z	08 01 55							
	eS	E	02 40							
7	iP	ZE	15 36 29	d	3.1	2.1				
	e	E	37 42							
	eS	ZN	50							
	i	E	38 10							
7	eLq	N	16 20.4							
	eLr	ZE	23.8							
7	eS	NE	19 51 20							
	eSS	N	56 06							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JUN	eSSS	N		59	15							
	eL	ZE	20	03	10							
7	iP	ZNE	22	32	18	dsw						
	iS	NE			36							
7	iP	ZNE	22	37	51	dsw						
7	eiP	Z	22	48	24							
	iS	E			48							
7	iP	Z	23	40	13							
	iS	E			29							
8	eiP	Z	00	02	43							
	e	ZE		03	00							
	iS	E			28							
8	iP	Z	00	43	34							
	eiS	E			52							
8	iP	ZNE	01	02	15	dsw						
	iS	NE			32							
8	iP	Z	02	41	19.7	d	2.1	1.3				
	iS	E			37							
8	eiP	Z	02	48	34							
	iS	E			51.4							
8	iP	Z	05	41	37.6	u	2.0	1.9				
	i	E			38.7							
8	iP	Z	06	13	05							
	eS	E			23							
8	eiP	Z	09	38	58							
	iS	E		39	27							
8	iP	Z	10	34	17							
	eiS	E			34							
8	eP	Z	11	23	41							
	iS	E		24	29							
8	eiP	Z	14	54	35							
	eS	E			53							
8	eiP	Z	15	53	11							
	eS	E			29							
8	eiP	Z	19	05	31							
	eiS	E			47							
8	eiP	Z	20	06	04							
	iS	E			22.7							
8	eiP	Z	22	38	44							
	iS	E			58							
8	iP	ZE	22	59	00.2							
	iS	NE			29							
9	eiP	Z	00	59	41							
	eS	E	01	00	00							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JAN 9	eiP	Z	01	32	58							
	eiS	E		34	44							
9	iP	Z	02	11	15.8	u						
	iS	E			35							
9	eiP	Z	08	52	09							
	eS	E			27							
9	eiP	Z	10	26	47							
	eS	E		27	07							
9	iP	Z	15	01	15							
9	iP	Z	15	50	55.5							
	i	ZNE		51	00							
	iS	NE			14							
9	eiP	Z	19	37	44							
	iS	ZE		38	24							
10	iP	Z	04	25	49	u	1.1	3.8				
	ePP	Z		27	51							
	eS	ZNE		33	20							
	eSS	NE		37	04							
	eSSS	ZNE		39	04							
	eL	ZN		41	16							
10	iP	Z	06	48	19	u	1.1	2.0				
	ePP	Z		50	19							
	eS	NE		55	40							
	i	Z			48							
	eSS	ZE		59	20							
	eSSS	ZNE	07	01	20							
	eL	ZN		03	50							
10	iP	Z	20	33	10							
	iS	E			29							
11	iP	Z	00	05	41	u	0.5	2.0				
	eS	ZN		11	26							
	eSS	N		14	15							
	eL	ZE		15	28							
							Felt: Kambubu, New Britain.					
11	iP	Z	02	30	18							
	eiS	E			34							
11	iP	Z	05	13	54	u	7.3	1.0				
	iS	E		14	16							
11	eiP	Z	08	33	16							
	iS	E		34	07							
11	iP	Z	16	51	59							
	iS	E		52	08							
11	iP	Z	17	15	47	d	2.5	1.8				
	i	E		16	04							
	iS	E		17	54							
11	iP	Z	17	16	12.8	d						
	iS	E		18	22							
12	eP	Z	03	21	38							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JUN	iS	E		22	12							
12	iP	ZE	04	08	57.3	u						
	iS	NE		09	30							
12	eP	Z		08	20	23						
	iS	E				40						
12	eP	Z		12	03	30						
	iS	E			04	12						
	eT	ZE			07	19						
12	iP	Z		14	03	25						
	iS	E				43						
12	iP	Z		15	06	27						
	iS	E				45						
12	eP	Z		18	10	12						
	iS	E				39						
13	iP	ZE	05	14	54.1	d	12.2	1.8				
	iS	NE		15	13							
13	e	Z		17	39	22						
	eL	N			42	06						
	eL	Z			43	30						
13	iP	Z		23	21	55.6						
	iS	E			22	21						
13	iP	ZE	23	29	54	u	2.5	1.4				
	iS	E			30	15						
14	iP	Z		03	57	13	1.8	1.2				
	eiS	E				52						
14	eP	Z		08	43	00						
	e(P)	Z			44	03						
	e	E				07						
	iS	E				44.5						
14	iP	Z		16	32	41.6	1.0	1.5				
	eiS	E			34	10						
14	iP	Z		22	46	45.8						
	iS	E			47	16						
15	iP	Z	05	01	35.7	d	0.9	1.1				
15	iP	Z	05	03	26.6	u	5.0	1.6				
	iS	E		04	39							
15	eLr	Z		16	01.5							
16	eP	Z		03	38	07						
	eS	E			40	03						
16	iP	Z		14	47	24	d					
	iS	E			48	07						
16	iP	Z		16	39	29.5						
	eiS	E				50						
17	eP	Z	00	16	21							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
					44							
JUN	iS	E										
17	iP	Z	02	06	47.8	d	3.6	2.0				
17	eP	Z	17	26	54							
	eS	E		27	24							
	e	ZE		29	27							
17	iP	Z	17	36	08	d	1.1	1.4				
	eiS	E		37	41							
17	eiP	Z	17	39	23							
	iS	E		40	59.2							
17	iP	Z	17	53	50							
	ei(S)	E		54	41							
17	eP	Z	18	40	02							
	eS	NE		47	24							
	e	E		52	06							
	iL	ZN		54	10							
17	eiP	Z	20	10	14		1.9	0.8				
	eS	E		11	20							
	iL	NE			46							
	eT	ZE		17	10							
17	eP	Z	20	28	23							
	iS	E		29	11							
17	eP	Z	21	13	45							
	eS	E		14	05							
17	ei(P)	Z	22	41	33		0.6	1.5				
17	iP	ZE	23	14	38.3	u	6.0	2.0				
17	iP	Z	23	21	09							
	eiS	E			28							
17	eL	Z	23	44.9								
18	eP	Z	01	16	57							
	iS	E		17	17							
18	iP	Z	04	07	51							
	iS	E		08	11							
18	eL	ZNE	04	35.4								
18	iP	Z	10	51	09	u	0.5	1.9				
	eS	ZNE			46							
	eT	ZE		55	04							
18	eP	Z	12	19	06							
	eiS	E			28							
19	eS	ZNE	02	19	54							
19	iP	Z	09	19	31.4	u	0.7	2.0				
	eS	ZNE		27	54							
	eSS	ZNE		31	46							
	e	Z		34	42							
	e	NE		35	08							
	eL	Z		37	00							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JUN 27	iP	Z	00	08	00	d						
	iS	NE		09	20							
27	eP	Z	07	25	10							
	eS	NE		26	53							
	eT	ZNE		35	45							
27	eLr	ZNE	07	44.3								
27	iP	Z	08	13	29.5	d						
	eS	NE			51							
27	eP	Z	12	25	19							
	eS	NE		28	14							
	eT	ZNE		40	10							
27	eP	Z	17	44	26							
28	eP	Z	14	42	29							
	eS	NE		44	52							
	eT	ZNE		55	50							
28	iP	Z	22	06	35	d						
	iS	Z		15	36							
	iSS	Z		19	39							
	iSSS	Z		23	25							
	iL	Z		25	56							
29	eL	ZNE	13	07.4								
30	iP	Z	02	08	46.8		1.7	2.0				
	eS	NE		12	16							
30	eL	ZN	22	35	25							
JUL 1	eS	NE	00	13	10							
1	e	ZE	04	13.5								
2	iP	Z	02	42	43.8							
	iS	NE		43	04							
2	eP	Z	03	33	29							
	ei(S)	NE		35	22							
2	eP	ZE	05	33	57		0.5	1.9			0.4	1.8
	ei(S)	NE		35	23							
2	iP	Z	08	43	58.4							
	i	NE		44	14							
2	iP	Z	14	03	51							
	iS	NE		04	11.2							
2	iP	Z	15	53	46							
	iS	NE		54	01.4							
2	iP	Z	16	13	09							
	iS	NE			29							
3	eP	ZNE	10	40	03		1.1	1.5	1.0	1.7	1.2	1.7
	eiS	NE		42	44							
3	eP	ZN	11	59	37		1.5	1.8	1.2	1.4		
	i	Z			50							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
	iS	NE	12	00	08							
3	iP	Z	15	56	31.2							
	iS	NE			50							
3	iP	Z	16	06	11.9							
	iS	NE			30							
3	eP	ZNE	18	38	35		2.1	2.0				
	eiS	NE		40	21							
	eL	ZE		41.0								
3	i(P)	Z	18	47	16	u	1.0	1.8				
4	iP	Z	04	01	20	d	4.0	1.2				
	eiS	NE		02	52							
4	iP	Z	11	01	14	d						
	i	NE		02	14							
	iS	E		03	15							
4	iP	Z	14	19	08	d						
	eiS	NE		20	52							
	eL	ZNE		21.2								
4	iP	Z	18	07	39.2	d						
	iS	NE			54							
4	eP	Z	23	09	33							
	eiS	NE		10	42							
5	e(L)	Z	00	01.7								
5	eP	Z	05	10	24							
	iS	NE			40							
5	e(P)	Z	05	13	01							
	iS	NE			17							
5	eP	Z	06	01	17		0.8	1.9				
	eL	ZE		30.0								
5	eP	Z	08	43	26							
	iS	NE			41							
6	iP	Z	01	49	31	d						
	iS	NE			50							
6	iP	Z	12	30	26							
	iS	NE			46							
7	iP	Z	12	04	22	d	0.8	1.6				
	eS	NE		06	01							
7	iP	Z	13	32	27							
	iS	NE			54							
	e	ZNE		34	45							
8	iP	Z	11	33	29.4	u	1.2	1.3				
8	iP	Z	11	42	25.3	d	2.5	1.5				
	iS	NE		44	07.4							
8	eP	Z	21	33	12							
	i	ZNE			47							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JUL	i	NE		45	12							
8	eP	Z	22	02	24							
	iS	NE		03	07							
9	iP	Z	02	45	44	d						
	iS	N		46	13							
9	e(S)	Z	03	35.2								
9	eL	ZE	10	06.2								
9	iP	Z	10	58	14							
	iS	N			57							
9	e(L)	Z	19	40.1								
9	iP	Z	19	57	52							
	iS	N		58	28							
10	eP	Z	02	29	44							
	iS	NE		30	03							
10	eL	ZN	03	45.1								
10	eP	Z	05	33	54							
	ePPP	Z		38	22							
	eS	ZNE		42	52							
	eSS	ZNE		46.3								
	eL	ZNE		50.0								
	eL	ZNE		53.2								
12	iP	Z	03	03	35	d	0.8	1.8				
	iS	NE		04	10							
	ei	ZNE		06	48							
12	iP	Z	07	57	04	d	9.0	1.9				
	iS	NE		58	39							
12	eS	N	15	48	06							
	eL	ZN		58.5								
13	eL	N	00	06.7								
	eL	Z		08.4								
13	eP	Z	04	56	13							
	iS	N			31							
13	i(P)	Z	05	43	14.3	u	0.6	1.3				
13	eL	Z	14	40.5								
14	iP	Z	00	06	20	u	1.5	2.0				
	eS	NE		09	32							
	eT	ZNE		23	20							
14	eP	ZNE	04	03	13		1.0	2.0				
	eS	E		06	10							
	eL	ZE		08.0								
	eT	ZNE		20	03							
14	iP	Z	04	59	47	u	6.5	1.2				
	eiS	NE	05	00	07							
14	eS	Z	06	10	14							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
	eSS	ZNE			16.5							
	eSSS	Z			20.5							
	eL	Z			24.0							
14	iP	Z	14	32	18	u	0.7	2.0				
	eS	E		35	24							
14	eP	Z	17	12	13							
14	iP	Z	21	39	49	d						
	iS	NE		40	32							
15	iP	Z	00	43	13.3	d	1.0	1.8				
	iS	N		44	50							
15	iP	Z	04	24	27.3	u	7.3	1.4				
	iS	NE		26	04							
15	eiP	Z	08	00	24							
	iS	NE			48							
15	iP	ZNE	14	03	34	u	23.5	1.2				
	iS	E		04	00							
15	eP	ZE	19	12	27		1.1	2.0				
	eS	E		15	20							
	eL	Z		17	28							
15	iP	Z	05	06	12.8	u	6.6	1.2				
	iS	E			35							
15	e	ZN	05	45.5								
15	iP	Z	16	09	25.5							
	eiS	NE			44							
15	iP	Z	03	47	14	u	2.0	0.8				
	iS	NE			56							
15	iP	Z	06	05	20	d	1.1	2.0				
	e(pP)	Z			52							
	e?	Z		09	18							
	e?	N		14	18							
15	e	Z	06	54.0								
	e	ZNE	07	09.1								
	e	NE		15.1								
	e(L)	N		17.6								
15	iP	Z	12	15	57	u	2.3	2.0				
	iS	NE		17	28							
15	iP	Z	23	24	17							
	iS	NE			36							
21	eP	Z	06	45	26							
	ePP	Z		47	32							
	iS	ZNE		53	03							
	eSSS	ZNE		58	20							
	eLr	ZN	07	01	42							
21	iP	Z	06	02	43		1.0	0.7				
	iS	NE		03	13							
21	iP	Z	12	24	15	u	3.0	1.0				

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JUL	iS	NE			43							
21	iP	Z	14	01	34							
	iS	NE			51							
21	eLr	Z	15	18.3								
21	iP	Z	17	22	59.4							
	iS	NE		23	19							
21	iP	Z	19	59	56							
	iS	NE	20	00	14							
21	iP	Z	22	54	50.4							
	iS	NE		55	11							
22	iP	Z	00	36	42	u	5.1	2.3				
	eS	ZNE		42	30							
	e	Z		45.4								
	eL	NE		46	12							
	eL	Z		47.8								
23	iP	Z	04	10	15.3							
	iS	NE			35.3							
23	iP	Z	07	25	40		2.7	1.3				
	iS	NE		26	15							
23	iP	Z	20	17	14							
	iS	NE			34							
24	iP	Z	05	25	06							
	eS	NE		26	55							
24	iP	Z	10	44	00.9							
	iS	NE			20							
24	eS	ZN	11	04	04							
24	eS	ZN	11	53	42							
	eSSS	ZN	12	01	.7							
	eL	ZN		06.3								
24	iP	Z	16	54	14	u						
	e	N	17	04	.1							
	eL	Z		06	.4							
24	iP	Z	17	43	56							
	iS	NE		44	19							
24	eL	ZN	19	18.7								
24	eL	ZN	22	02.1								
25	eP	Z	03	36	18							
	i(P)	Z			35							
	eiS	NE		37	24							
25	iP	Z	11	49	17.6		1.0	1.5				
	eS	NE		51	05							
25	iP	Z	19	32	21.4	d	0.6	1.3				
	eS	NE		34	11							
26	iPKP	Z	04	37	06	u						

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JUN	eSSS	N	05	05	.2							
25		NE			18.5							
	e	ZNE			27.4							
	eL	N			31.4							
	eL											
26	iP	Z	05	31	14	d	0.5	1.9				
26	iP	Z	12	57	44							
26	iP	Z		58	03							
	iS	NE										
26	iP	Z	19	36	01.3	d						
	iS	NE			21							
26	iP	Z	21	56	18.3	u	1.0	2.0				
26	iP	Z	22	09	48							
26	iP	Z		10	08							
	iS	NE										
27	iP	Z	00	01	45	u	0.9	2.0				
	eLr	ZE			30.0							
27	i(P)	Z	04	02	49.4							
27	iPKP	Z	06	18	15	d	0.7	2.6				
27	iP	Z	08	02	50	d						
	iS	NE		04	27							
27	iP	Z	17	19	43.5							
	iS	NE		20	00.2							
28	eP	ZN	07	16	09		0.6	1.9	0.5	2.0		
	eS	NE		19	05							
	eT	ZNE		30	28							
28	eLq	Z	16	51	26							
28	eL	Z	19	22.1								
28	iP	Z	20	04	49.4	d	2.1	1.2				
29	eP	ZNE	20	17	53		0.6	2.0	0.6	1.9	0.5	1.8
	iS	NE		20	26							
	iL	ZNE		22	06							
	eT	ZNE		36	52							
29	iP	Z	20	32	30							
	iS	NE		33	13							
30	eS	NE	03	04	00							
30	iP	ZNE	03	29	50.3	u	1.4	1.5	0.9	1.9	0.9	1.9
	iS	NE		31	33							
30	i(P)	Z	03	50	03	u	0.9	2.1				
30	iP	ZE	04	31	35	d	0.5	2.0			0.5	2.0
	eS	NE		34	30							
30	eP	ZNE	05	49	38	u	1.6	2.0				
	eS	NE		52	40							
	eT	ZNE	06	03	40							
30	iP	Z	14	26	57	u	1.1	2.0				
	eS	ZNE		30	00							

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JUL		eT	ZNE		41	36							
	30	eP	ZNE	15	08	22		0.7	2.0	0.7	2.0		
		eS	NE		11	22						1.5	2.3
		eT	ZNE		25	34							
	31	eP	ZE	01	48	00		1.0	2.1				
		eS	NE		51	00						0.8	2.0
	31	eP	ZNE	08	03	20		0.9	1.0	0.5	1.8		
		iS	NE		04	37						0.5	1.1
	31	eP	Z	16	22	20		0.5	2.0	0.5	2.0		
		eiS	NE		23	52						0.9	1.8
AUG	1	iP	Z	12	44	18	u	4.4	1.2				
		iS	NE		45	46							
	1	eP	Z	13	52	54							
		iS	NE		53	26							
	1	eP	Z	15	24	47							
		eS	NE		27	34							
		eT	ZNE		41	18							
	1	eP	Z	17	00	33		2.5	1.3				
		eS	NE		02	18							
	1	iP	Z	20	55	54	d						
	2	e(P)	Z	04	28	12							
		eS	NE		29	26							
	2	iP	Z	12	19	07							
		iS	NE			27							
	3	iP	ZE	03	53	54	uw	7.0	2.0			6.4	2.0
		eS	ZNE		58	30							
		e	ZNE	04	01	02							
	3	ePP	Z	10	42	56							
		e	ZNE		52	12							
		eSS	NE	11	01	50							
		eSSS	NE		06	48							
		e	NE		10	20							
		e	N		17	16							
		eL	Z		20.2								
		eL	ZNE		26.7								
	3	iP	Z	15	48	33							
		iS	NE		49	07							
	3	eP	Z	19	27	24							
		iS	NE			43							
	3	e(L)	ZN	20	33	30							
	3	eP	ZE	20	30	03		1.0	2.0			2.0	1.9
		iS	NE		33	08							
		eT	ZNE		45	05							
	3	iP	Z	21	38	21							
		iS	NE			40							
	4	e(L)	ZNE	09	20.4								

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
		iP	Z	14	26	54							
		iS	NE		27	15							
	4	iP	Z	23	56	09.2	d	7.5	1.8				
		iS	NE		57	38							
	5	iP	Z	06	11	15							
		iS	NE			38							
	5	eP	ZNE	07	45	00		2.9	2.0	1.5	1.2	1.8	1.8
		iS	NE		47	30							
		eT	ZNE		56	07							
	5	eS	ZNE	15	55	54							
		eL	NE		59.2								
		eL	ZNE	16	01.2								
	5	iP	Z	19	55	41.5							
		iS	NE		56	00							
	6	eP	Z	09	36	26							
		iS	NE			55							
	6	eP	Z	16	14	02							
		iS	NE			52							
	7	eS	NE	04	32	50							
	7	iP	ZE	11	17	12	uw						
		iS	NE		18	50							
	7	iP	Z	11	19	00	d	5.0	1.8				
		iS	NE		20	32							
	7	eP	ZE	13	58	41		0.7	1.9			0.5	1.9
		iS	NE	14	00	07							
	7	iP	Z	15	41	08	d	0.6	1.0				
		eS	NE		42	45							
	8	eS	ZN	02	35	14							
		eL	E		44	00							
		eL	ZN		46.0								
	8	eP	ZE	11	23	22		1.0	2.1			1.0	2.0
		eS	ZNE		29	08							
		eSS	NE		31	56							
		eL	ZE		33.5								
	9	e(P)	Z	03	42	25		2.5	1.2				
	9	iP	ZNE	14	37	38.5	dsw						
		iS	NE		38	22							
		iS	Z			28							
	9	iP	Z	15	20	29.6	u	1.0	1.0				
		iS	NE		21	10.2							
		eT	ZNE		23	46							
	9	iP	Z	22	18	03.7							
		iS	NE			24							
	10	iP	Z	02	37	32	u						
		i	Z			40							
		iS	NE		38	14							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
AUG	eL	ZNE			20							
	eT	ZNE		40	39							
10	eP	ZNE	03	37	43		1.0	1.5	0.9	1.2		
	eS	NE		40	02						0.8	1.2
	eT	ZNE		50	16							
10	eP	Z	14	13	01							
	eS	NE		14	35							
10	eP	ZE	16	07	45		0.9	1.5				
10	eL	NE	18	28	.3						0.7	1.3
	eL	Z		29	.9							
11	eS	ZNE	01	51	12							
	eL	ZNE		57	.3							
11	iP	Z	05	25	56.5	u	1.9	2.0				
11	iP	Z	13	39	34	u						
	eS	NE		40	55							
11	eP	Z	14	07	47							
	iS	NE		08	05							
11	eP	Z	14	14	03							
	iS	NE			27							
11	eP	Z	20	13	36							
	eS	NE		14	10							
	eT	ZNE		17	04							
12	iP	Z	05	57	15.5							
	iS	E		58	08							
12	iP	Z	21	01	14.8	d						
	eiS	NE		02	54							
	e	ZNE		03	.0							
	eT	ZNE		09	47							
13	iP	Z	01	51	14							
	iS	NE			34							
13	iP	Z	06	03	22	u						
	eS	NE		04	46							
13	i(P)	Z	06	04	54							
	eiS	NE		05	23							
13	iP	Z	06	31	29	d	1.0	1.3				
	iS	NE		33	10							
13	eP	ZNE	06	53	28		1.0	1.0	0.8	0.9	0.8	1.0
	iS	NE		54	24							
	e	ZNE		54	.5							
	eT	ZNE		58	20							
13	iP	Z	19	52	40							
	iS	NE			59							
13	eiP	ZNE	21	53	56		2.0	1.2	1.5	1.2	1.3	1.1
	iS	E		54	56							
	eL	ZNE		55	.5							
	eT	ZNE		59	00							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
	iP	Z	02	48	40	d						
	1	N			54							
	eiS	NE		50	07							
	iL	E			18							
	eL	ZN		50	.5							
14	eiP	ZE	03	39	33		1.7	2.0			1.6	1.9
	eS	NE		45	04							
	eS	NE		47	.5							
	eL	Z		48	.7							
14	iP	Z	10	39	57.3	d	1.4	0.8				
	e1	NE		40	18							
14	iP	Z	15	22	45.9	u	2.9	1.1				
	iS	NE		23	18							
14	iP	Z	17	31	49							
	eiS	NE		32	17							
14	iP	Z	18	53	13	d	2.5	2.0				
	eL	Z	19	10	.4							
14	eP	ZE	20	45	06		0.8	1.5			0.6	1.3
	eS	NE		46	31							
	eT	ZNE		47	36							
14	eP	ZE	21	50	18		1.0	1.2			0.8	1.2
	eS	NE		51	47							
14	iP	Z	23	23	56.3	d						
	eS	NE		25	32							
15	iP	Z	01	34	05.4	d						
	1	Z			08							
	eiS	NE			51							
15	iP	Z	06	22	29.8	d	0.8	2.2				
	iS	ZNE		31	20							
	eSS	ZNE		35	10							
	eSSS	ZNE		38	44							
	eL	ZNE		41	.6							
15	eP	ZE	10	01	23		1.0	1.3			0.8	1.2
	eiS	NE		02	50							
	eT	ZNE		09	54							
15	iP	Z	10	19	35	d						
	eiS	NE		20	22							
15	eiP	ZE	15	00	00		0.9	2.0			0.7	1.9
	iS	NE		02	09							
15	eP	Z	17	37	48							
	1	Z		38	04							
	1	Z			07.2							
	ipPcP	Z		39	52							
	iPP	E		42	08.6							
	1	Z			12.3							
	ipPP	ZNE		43	46							
	iSPP	ZNE		45	07							
	iSKKS	ZNE		47	44							
	iSP	ZNE		50	12							
	isSP	ZNE		53	57							
	iSS	ZNE		55	54							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
AUG	isSS	ZNE		58	52							
	iL	ZNE	18	01	30							
15	i?	Z	17	53	04	u						
	i(P)	Z		54	25	d	4.0	2.0				
15	iP	Z	18	02	36.4	u	0.6	1.9				
15	iP	Z	22	32	05.4	u	2.0	1.4				
	eS	NE		33	55							
16	eP	Z	07	40	31							
	eiS	NE		41	11							
	eT	ZNE		43	45							
16	iP	Z	10	22	28.7	u						
	e	NE		26	54							
16	e	ZNE	14	52	44							
16	iP	Z	17	28	01.9	u						
	eS	NE			22							
16	iPKP	Z	23	26	01.9	u						
17	iP	Z	05	35	11.6	u						
	eS	NE		36	18							
	eT	ZNE		41	33							
17	e(P)	Z	08	19	08		1.0	1.9				
17	eP	Z	11	23	54							
	ePP	Z		27	08							
	eS	ZNE		33	08							
	eSS	ZNE		37	22							
	eSSS	ZE		40	42							
	e	NE		43	00							
	eL	ZNE		45	22							
18	iP	Z	10	54	25	d	1.8	1.1				
	iS	NE		55	07							
18	iP	Z	17	04	23	u	3.0	1.0				
	iS	N			48							
18	eS	ZN	19	02	28							
	eL	ZN			12.0							
18	iP	Z	19	54	34	d	2.0	1.5				
18	iP	Z	20	20	39	d	2.0	2.0				
	eiS	NE		22	13							
	eT	ZNE		29	17							
18	eP	ZNE	20	31	59		1.5	2.0	1.4	2.0	1.4	1.5
	eS	NE		35	11							
	e	ZNE		35	.7							
	eT	ZNE		50	02							
18	e(P)	Z	22	01	17							
19	iP	Z	04	28	19	d	1.5	2.0				
	eS	NE		31	39							
	eL	ZNE		31	.8							
	eT	ZNE		47	10							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
		Z	09	34	09							
19	eP	Z			50							
	eS	NE		37	39							
	eT	ZNE										
19	iP	Z	23	36	45.6	u	1.1	1.4				
	i	Z		37	18							
	eS	NE		39	26							
20	iP	Z	00	29	47.8	d	0.5	1.0				
	eS	NE		31	18							
20	iP	Z	00	44	37.6	u	1.0	1.5				
	i	Z			55.4							
	i	Z		45	10							
	e	Z		46	32							
	e(S)	NE										
20	i(P)	Z	00	46	05.2	u						
	ei(S)	NE		47	25							
	e	ZNE		48	53							
20	eP	Z	04	58	37							
	eS	NE		59	26							
21	iP	Z	07	41	46		2.6	1.0				
	eiS	NE		42	07							
21	eL	ZN	16	19	.5							
22	eL	Z	18	49	.3							
22	iP	Z	19	58	30		2.5	2.7				
	iS	N	20	03	27							
	iL	N		04	56							
	iL	Z		05	26							
22	iP	Z	20	57	57	u	0.5	1.0				
	e(S)	ZN		59	40							
22	iP	Z	23	11	26							
	iS	N			45							
23	e(S)	N	13	29	.8							
	eL	ZN		41	.6							
25	eP	Z	03	08	52							
	ei(S)	NE		09	57							
25	iP	Z	04	25	07							
	iS	NE			27							
25	iP	ZNE	12	20	06	dsw						
	iS	NE		21	21							
	i	E		32	03							
	i	E		36	01							
							Felt: Apia.					
25	iP	Z	13	27	59.3	u	4.2	2.1				
	eS	NE		29	31							
25	iP	Z	13	36	40	u	1.6	1.3				
	eS	NE		38	03							
25	iP	Z	17	53	37.5							
	i	NE			54							
	iS	NE		54	06							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
AUG 25	eP	Z	19	32	52							
	iS	NE		33	20							
25	eP	Z	23	01	47		0.9	1.2				
	e(S)	NE		03	16							
26	eP	Z	02	31	21	d	0.6	1.9				
	iP	Z			26.2		3.3	2.0				
	eS	NE		34	28							
	eL	ZNE		36	3							
26	eP	Z	03	01	20							
	iP	Z			22.4	d	1.0	0.7				
	eiS	NE		02	25							
	eT	ZNE		06	48							
26	iP	Z	04	51	36	d	5.4	2.0				
	iS	N		53	08							
27	eP	Z	02	05	14		1.0	1.9				
	e	ZNE			54							
	e	NE		07	50							
	e	ZNE		08	40							
27	e	ZNE	03	04	2							
27	eSSS	Z	03	42	10							
	eL	NE			57.8							
	eL	ZN	04	01	2							
27	iP	Z	06	53	31.9	u	1.0	1.0				
	eiS	NE		55	07							
28	iP	Z	03	07	50.8							
	iS	NE		08	07.4							
28	eP	Z	05	33	49							
	iS	N		34	18							
28	eS	ZN	13	04	58							
	e	E		05	07							
	eSS	E			09.0							
	eL	ZN			11.5							
28	e(L)	ZNE	17	31	3							
29	e	E	04	43	0							
	eL	ZNE			44.0							
29	eP	Z	07	22	12							
	eiS	NE			54							
29	eS	ZE	09	12	34							
	eSS	NE			30.3							
	eSSS	Z			34.1							
	eLq	Z			41.1							
	eLr	NE			48.2							
29	iP	Z	15	43	27.6	d	5.5	2.8				
	ePP	Z		46	08							
	e	ZE		53	08							
	iS	E		54	04							
	i	ZE		55	18							
	i	E		59	26							
	iSS	Z	16	00	05							

	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
		ZE		07	00							
	eLq	ZE		11	12							
	iLr	ZE										
	iP	ZNE	20	57	58	dse	17.0	1.1				
	i	ZNE		58	27							
	iP	ZNE	13	54	08		1.4	1.7	1.2	1.7	1.2	1.6
	eP	NE		55	48							
	eS	ZNE			56.6							
	eL											
	eP	Z	15	26	35							
	iS	NE			55							
	iP	Z	20	41	22	u	0.9	0.7				
	iS	NE		42	10							
	iP	Z	21	28	31.5	d	1.5	1.7				
	eS	NE		30	24							
	eP	Z	22	40	48							
	eiS	NE		41	20							
	iP	Z	23	45	16.5							
	eiS	NE			35							
	iP	Z	02	28	49.2	u	2.5	1.0				
	eS	NE		30	05							
	iP	Z	09	27	32.7	d						
	iS	NE			58							
	iP	Z	10	10	56.6							
	iS	NE		11	16							
	eL	ZNE	14	43	10							
	eP	Z	19	05	13							
	eiS	NE		06	33							
	eP	Z	22	42	45							
	eS	NE		44	03							
	eL	ZN	00		15.7							
	eLr	ZN	04		15.4							
	eP	Z	23	29	51							
	eS	NE		30	48							
	eS	NE	05	08	18							
	e	E			12.7							
	e	N		13	30							
	eL	ZN			15.0							
	eS	ZN	14	00	00							
	eSS	ZNE		05	26							
	eL	ZNE		16	20							
	eL	ZN			20.5							
	iP	Z	00	57	57		2.6	1.8				
	eS	NE		59	27							
	eP	ZNE	06	34	27		2.0	1.0	2.5	1.0	1.5	1.0
	e	NE			44							
	e	NE		36	19							

Date	Phase		h m s		Az	Tz	An	Tn	Ae	Te
SEP 5	eP	Z	10 47 15							
5	iP	Z	10 50 11		2.5	0.8				
	iS	NE	41							
5	iP	Z	11 20 44		2.5	0.7				
	iS	NE	21 03							
6	eP	Z	01 42 07							
	eS	NE	43 22							
6	iP	Z	02 23 42	d						
	eS	NE	25 09							
6	e	NE	02 47 56							
	eL	Z	49.7							
6	eSS	NE	06 33.4							
	e	Z	34.4							
6	iP	Z	06 42 02.5	u						
6	iP	Z	10 19 23.2	d	1.8	1.2				
	eS	ZNE	21 33							
6	iP	Z	11 11 37	d	2.5	1.0				
	iS	NE	56							
6	eiP	Z	16 12 54							
	eS	NE	13 20							
6	eP	Z	18 47 14		4.0	1.0				
	eiS	NE	34							
7	e	NE	01 46.4							
	eL	Z	47.8							
7	eP	Z	02 31 34							
	eS	NE	32 53							
	eT	ZNE	38 39							
7	eL	ZNE	07 44.3							
7	eP	Z	08 28 01		5.5	1.0				
	iS	NE	58.7							
7	eL	ZNE	09 58.0							
7	eL	ZNE	13 16.4							
7	eP	Z	15 19 24							
	eS	NE	21 22							
7	eP	Z	20 04 16							
	eS	NE	06 38							
8	eP	Z	00 50 44							
	eiS	NE	53 23							
	eT	ZNE	01 04 09							
8	eP	NE	04 43 15							
	eS	NE	44 43							
8	eP	NE	05 35 23							
	eS	NE	37 05							

Date	Phase		h m s		Az	Tz	An	Tn	Ae	Te
		NE	07 40 09							
8	eP	NE	41 46							
	eS									
8	eL	NE	09 33.6							
	eL	ZNE	36.0							
8	eP	NE	19 31 46							
	eS	NE	33 15							
	eT	NE	40 13							
8	eP	NE	19 53 08							
	eS	ZNE	55 56							
9	eP	NE	00 21 35							
	eS	NE	23 32							
9	eP	Z	02 52 47							
	e	Z	54 24							
	e	Z	58 28							
	eS	ZNE	03 01 15							
	e	ZNE	02 28							
	e	ZNE	04 16							
	iL	ZE								
					Felt: Rabaul.					
9	eP	Z	09 13 11		2.0	0.6				
	iS	NE	33							
9	e(S)	ZE	12 57 30							
	e(L)	ZNE	59.8							
					Felt: Santo, New Hebrides.					
9	iP	Z	16 19 25	u	1.2	1.8				
	eS	NE	22 04							
9	iP	Z	18 01 16	d	1.0	1.9				
	eS	NE	03 22							
10	eP	ZN	01 14 34		1.0	2.0	0.7	2.0		
	eS	ZN	18 30							
	eL	Z	19.0							
10	iP	Z	05 34 01	d	1.5	2.0				
	iS	NE	35 44.7							
10	iP	Z	06 27 53	u	2.6	1.5				
	iS	NE	30 01.1							
10	eP	Z	07 34 45							
	iS	NE	35 02							
10	e(S)	ZNE	10 52 00							
10	eP	Z	13 35 22							
10	eP	Z	19 17 29							
	e	Z	39							
	e	Z	45							
	eS	NE	19 50							
11	eP	Z	11 47 33							
	eS	NE	49 04							
12	iP	Z	00 23 12							
	iS	NE	29							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
SEP 12	iP	ZNE	03	16	10	dse	1.4	2.0				
	eS	ZN		19	36							
	eL	ZNE		21	03							
12	e	ZNE	14	16	.2							
12	eiP	Z	14	56	36							
	iS	NE			56							
13	iP	Z	09	47	57.9	d	0.7	1.0				
13	e(P)	Z	17	11	32		1.0	2.2				
	eL	Z			34.2							
13	iP	Z	21	14	23.7	d						
13	eP	Z	21	15	29		1.1	2.0				
	eS	NE		18	12							
	eL	ZNE		19	.2							
13	iP	Z	22	45	55.8	d	1.0	0.9				
13	iP	Z	23	37	54							
	e	ZE		41	24							
	eS	ZNE		42	24							
14	eP	ZE	00	19	22		1.0	2.0				
	e	E		34	26						0.8	2.0
	e	Z		44	16							
	e	E		45	52							
	e	NE		46	34							
14	eP	ZN	03	56	34		1.5	1.2	1.4	1.0		
	eS	ZNE	04	00	00							
	iL	ZNE			46							
14	eS	ZE	15	24	.8							
	eL	ZE		26	.0							
14	eP	Z	15	54	19							
	e	N		57	22							
	e	ZE		58	14							
14	iP	Z	21	48	45		4.0	1.0				
	iS	NE		49	05							
15	iP	ZE	00	51	50	dw	7.5	6.1				
	i	ZE		52	02							
	i	N		55	01							
15	e(S)	N	06	40	00							
15	e	E	08	39	00							
	eS	NE		40	00							
15	eP	Z	09	13	00							
	eS	ZE		17	00							
	e	ZE		18	06							
15	eP	Z	11	03	06							
	eS	ZNE		05	48							
15	eS	ZE	11	53	26							
	eSS	ZE		54	48							

	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
		ZNE	22	04	10							
	eS		01	54	14							
	eP	Z		58	32							
	eS	ZN										
	eP	ZNE	20	10	07		0.9	1.8	0.7	1.6	1.1	1.6
	eS	ZNE		13	54							
	eL	ZE		15	30							
	iP	Z	22	12	55.8	u	2.0	1.2				
	iP	Z	00	48	24.7	d	1.0	0.8				
	iP	Z	06	07	35		0.7	3.1				
	eP	Z			53		0.7	2.0				
	ePcP	Z		18	08							
	eS	ZE		24	34							
	eSS	ZE		31	.5							
	eLg	ZN		36	12							
	eLr	ZE										
	eP	ZN	11	18	00							
	iS	NE			28							
	iP	ZE	19	25	10	dw	21.4	4.9				
	i	N		29	11							
	e	ZNE		30	39							
							Felt: Eastern Solomon Is.					
	eP	ZNE	20	02	42		1.5	2.0	1.0	1.5	1.0	1.8
	eS	ZNE		06	03							
	eP	ZN	22	01	49		0.7	0.5	0.7	0.9		
	eS	NE		02	14							
	e	ZNE		04	11							
	eP	ZNE	22	33	30		1.5	1.5	1.2	2.0	0.5	1.5
	iP	Z	02	00	49	u						
	eS	ZNE		04	54							
	eL	ZE		06	.3							
	iP	Z	04	00	46.7		1.6	0.5				
	iS	NE		01	07							
	eS	ZN	04	09	46							
	eL	ZE		10	.9							
	e(S)	ZE	06	55	.8							
	iP	Z	14	57	54	d						
	eS	NE		59	16							
	iPKP	Z	17	17	56.6	u	1.0	2.1				
	i	Z		18	33							
	e(PKB)	Z		21	30							
	eSS	Z		44	30							
	e	Z		56	00							
	e	Z		58	20							
	e	Z	18	04	.5							
	e	Z		07	.4							
	eP	Z	17	26	57							
	i	Z										
	e(S)	Z		27	09.3							
	eL	Z		34	10							
				41	10							

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
SEP 19	eP	Z	06	23	38						
	eS	NE		24	23						
19	eP	Z	07	38	24						
	eS	NE			50						
	e	ZNE		40	53						
19	eP	Z	09	02	09						
	eS	NE		04	05						
19	eP	Z	18	57	57						
	eS	NE		59	30						
19	eP	Z	19	24	39	0.5	1.0				
	eS	NE		25	31						
	eT	ZNE		29	30						
19	eP	ZE	19	33	40	0.9	2.2				
20	iP	Z	00	17	02.4	1.5	1.0			0.7	2.0
	iS	NE			28						
20	eP	Z	19	12	31						
21	eP	Z	14	00	45						
	iS	NE		01	20						
	e	ZNE		03	46						
21	eP	Z	16	30	45						
	eS	NE		32	51						
21	eP	Z	19	27	13						
	eiS	NE		28	22						
21	eP	ZNE	23	20	18	0.5	0.8	0.5	0.7	0.5	1.0
	iS	NE			55						
22	eP	Z	02	18	28						
	eS	NE		20	10						
22	eP	Z	02	26	00						
	eiS	NE			30						
	e	ZNE		28	41						
22	eP	ZNE	02	59	26	1.5	1.5	1.5	1.9	0.7	2.0
	i	N			41.6						
	i	ZE			46						
	e	NE	03	00	35						
	iS	NE		01	52						
22	eP	ZN	19	25	02	1.0	2.1	0.8	2.0		
	i	ZN			20						
	eS	NE		27	24						
22	eP	Z	19	33	44						
23	ePKP	Z	07	00	12	0.5	1.5				
23	ePKP	Z	09	21	29						
	e	NE	10	00.2							
	e	NE		02.2							
23	eS	NE	10	10.5							
23	e(L)	N	10	48.0							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
	e(L)	NE			55.2							
23	eS	N	17	22.1								
	eL	N		32.2								
23	eP	ZN	18	11	17		2.0	0.8	1.0	0.8		
	i	NE			25.8							
	iS	NE			35.3							
23	eP	Z	23	15	44							
	i	Z		16	32							
	iS	NE			33							
24	eP	ZE	01	58	27		1.5	1.5			1.2	1.4
	e(S)	NE	02	00	33							
24	iP	Z	09	28	01	d	1.5	1.0				
24	eP	Z	16	43	16		4.6	2.1				
	iPcP	Z			36.4							
	ePP	ZE		46	32							
	eS	ZE		53	30							
	iS	N		54	30							
	eSS	NE		59	38							
	e	Z	17	00	20							
	eSSS	E		02	30							
	e	ZN		03	42							
	eLq	ZNE		07	16							
	eLr	ZE		11	40							
24	iP	Z	17	57	16.5	u	2.1	1.1				
	eiS	NE			54							
24	eP	Z	19	28	26							
	eS	NE			57							
24	eL	Z	22	18.8								
25	ePKP	Z	07	23	26		0.5	2.2				
25	iP	Z	12	51	10.9	u	1.0	2.0				
25	eSS	NE	13	54	20							
25	eS	ZNE	14	10.2								
25	e(P)	Z	13	55	46							
	e(S)	NE		57	07							
25	eSSS	N	14	33	40							
	eL	Z		34	46							
25	eS	ZN	14	59	30							
25	iP	Z	18	18	06	d	0.5	2.0				
25	eL	Z	21	08.7								
25	e	N	22	42.7								
26	eS	ZN	05	47	10							
	eL	ZN		56	30							
26	e(P)	Z	06	47	03							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
SEP 26	iP	Z	10	55	51	u	1.5	2.0				
	eS	NE		57	23							
27	eP	Z	01	26	15		3.2	2.0				
	iS	NE			36							
27	eP	ZN	07	54	29		2.1	2.0	2.1	1.8		
	iS	NE			56							
	e	ZNE		57	10							
27	eP	Z	10	31	00							
	eS	E		34	00							
	e	ZNE			30							
27	eP	ZNE	11	29	03		1.9	2.1	2.0	2.1	2.5	2.0
	eS	ZNE		31	40							
	i	Z		32	23							
27	eP	Z	14	51	52							
	eS	NE		53	25							
28	eP	Z	03	02	52		0.6	2.0				
	eS	NE		04	05							
	eT	ZNE		09	23							
28	iP	Z	03	57	49							
	iS	NE		58	09							
28	iP	Z	04	27	14		2.0	1.5				
	iS	NE			48							
28	iP	Z	05	27	20.5	d						
	eS	NE		28	45							
28	iP	Z	07	02	08.2	d	1.6	2.0				
	eS	ZNE		05	20							
	eT	ZNE		16	05							
28	eP	Z	11	07	53		1.5	1.0				
	eS	NE		09	23							
29	eLr	Z	20	06	.0							
30	iP	Z	09	43	56	u	6.0	1.9				
	eS	NE		45	01							
OCT 1	iP	Z	10	38	09.4		3.0	0.9				
	iS	NE			31							
2	eS	NE	03	44	.0							
	eL	N		46	.9							
							Felt: Pomio and Rabaul.					
2	iP	Z	05	48	45	u						
	e	Z			48							
	eS	ZNE		50	02							
	eT	ZNE		55	10							
2	eP	Z	16	59	26							
	eS	NE	17	00	42							
	eT	ZNE		06	20							
2	iP	Z	19	58	08.8	u						
3	iP	ZNE	13	54	16.3	une						

	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
	eS	NE			37							
	iS		16	16	14	u						
	iP	Z			48							
	iS	E										
	eS	ZN	16	15	.6							
	eL	E			30.7							
	eL	ZN			34.8							
	eP	Z	23	16	07							
	eS	NE		17	00							
	eP	Z	23	35	48							
	eS	ZN		45	00							
	eSS	Z		48	24							
	eSSS	Z			52.5							
	eL	ZNE			56.7							
	eP	Z	02	49	09							
	eS	E		50	20							
	eS	N			42							
	eT	ZNE		55	40							
	iP	Z	00	15	26.2	d						
	eS	NE			50							
	iP	Z	01	56	04.1	u						
	eS	ZNE			16							
	eP	Z	02	21	22							
	eS	NE			47							
	e	ZNE		23	28							
	eP	Z	02	26	39							
	eS	NE		27	02							
	e	ZNE		28	45							
	iP	Z	03	17	33							
	eS	NE			51							
	eP	Z	03	40	40							
	eS	NE		41	05							
	e	ZNE		42	40							
	iP	Z	05	16	06.3	u						
	e	Z			16							
	eS	NE			42							
	eP	Z	05	26	38							
	eS	NE		27	08							
	e	ZNE		29	02							
	iP	Z	06	19	10							
	eS	NE			38							
	eP	Z	06	56	47							
	eS	NE		57	00							
	eP	Z	07	31	40							
	iS	NE		32	05							
	eP	Z	10	27	11							
	eS	NE			35							
	e	ZNE		28	56							

Date	Phase		h m s		Az	Tz	An	Tn	Ae	Te
OCT 5	eP	Z	12 49 55							
	iS	E	50 11							
	e	ZNE	52 00							
5	eP	Z	14 57 54							
	eS	NE	58 08							
5	eP	Z	15 32 33							
	iS	E	56							
5	e	Z	16 03.3							
	e	Z	07.4							
	e(L)	ZE	12.4							
5	eP	Z	17 51 40							
	eS	NE	52 03							
	e	ZNE	53 49							
6	eP	Z	02 16 50							
	eS	NE	17 07							
7	iP	Z	00 43 47							
	iS	NE	44 34.4							
7	iP	ZNE	13 17 04	une	8.2	1.8	8.1	1.8	5.5	1.9
	iS	NE	19 13							
	e	Z	23 55							
	eScP	NE	24 05							
	eScS	ZNE	28 04							
	esScS	E	32 14							
8	iP	ZNE	00 17 26.9	une						
					Felt extensively in Upolu, Western Samoa, MM5, and at Nandi and Lautoka, Fiji.					
8	eP	Z	02 05 01							
	eS	NE	06 37							
8	iP	Z	10 34 37.7							
	eiS	NE	55							
8	eP	Z	18 49 29							
	eS	NE	51 06							
8	iP	Z	23 02 53.3	d						
	iS	NE	04 01							
9	iP	Z	01 45 44	u	5.3	1.1				
	iS	ZE	46 04							
9	eiP	Z	05 14 40							
	iS	N	15 29							
	eT	ZNE	19 35							
9	eP	Z	07 31 18							
	eS	NE	33							
9	iP	ZNE	07 37 12	dnw						
9	iP	Z	07 41 12	u						
9	e	ZNE	10 18.0							
	e(S)	ZNE	20.1							

	Phase		h m s		Az	Tz	An	Tn	Ae	Te
			10 38 31							
9	eP	Z	39 46							
	eS	NE	44 58							
	eT	ZNE								
9	eP	Z	12 59 00							
	eS	NE	13 01 06							
9	eP	Z	19 44 07							
	iS	NE	34.4							
10	eP	Z	12 06 31							
	eS	NE	07 42							
	eT	ZNE	11 53							
10	eP	ZE	14 20 55		1.1	2.0			1.1	2.0
11	eP	Z	00 04 00							
	eS	NE	06 08							
11	iP	Z	09 11 18	d	1.7	1.8				
	eS	NE	12 53							
11	eS	NE	10 38 36							
	eL	ZNE	49.8							
11	iP	Z	16 35 51	d	4.0	2.0				
	eS	NE	37 20							
12	eP	Z	03 14 02							
	eS	NE	50							
	eT	ZNE	18 45							
12	iP	Z	07 10 53.4	d	0.6	0.9				
	e(S)	NE	13 16							
12	eP	Z	11 37 54		1.8	2.0				
	iS	N	46 43							
	iS	ZE	54							
	iSS	ZNE	49 39							
	iSSS	ZNE	51 05							
	iLq	ZNE	54 55							
	iLr	ZNE	57 30							
	M	ZNE	12 00.0							
	eT	ZNE	52 05							
12	iP	Z	18 17 32.5							
	iS	NE	53							
12	eL	ZN	19 18.8							
12	eP	Z	23 29 25							
	eS	NE	55							
13	eP	Z	05 28 54		4.7	0.9				
	iPcP	ZNE	29 07							
	e	E	25							
	eT	ZNE	06 43 15							
13	iP	Z	06 32 59							
	iS	NE	33 15							
13	eL	ZNE	13 01.1							
13	eP	Z	13 09 17		0.7	1.9				

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
OCT 13	eP	Z	16	10	30							
	ePcP	Z		11	00							
	eS	ZNE		19	50							
	eSS	Z		23	.8							
	eSSS	ZNE		27	.2							
	eLr	ZNE		30	.9							
	eT	ZNE	17	25	19							
13	eS	N	17	45	50							
	eL	ZN		56	00							
13	eP	Z	18	00	10							
	eS	NE		01	22							
	eT	ZNE		07	05							
13	eP	Z	22	05	52							
	eS	ZN		14	.6							
	eLr	ZN		25	.0							
13	iP	Z	23	07	21.3		1.1	1.2				
	eS	NE			55							
14	eP	Z	00	03	03							
	eS	ZN		12	14							
	eLq	ZN		22	30							
	eLr	ZN		25	18							
14	eS	NE	04	26	10							
	eSS	NE		31	14							
	eSSS	NE		33	06							
	eL	ZNE		36	30							
14	e(P)	Z	12	36	38							
	e(S)	NE		38	38							
	e(T)	ZNE		47	37							
14	iP	Z	13	32	36.2	d	1.1	2.0				
	eS	NE		41	30							
	e	Z		42	00							
	eSSS	NE		49	10							
	eL	NE		51	.8							
14	eP	Z	22	11	46							
	eS	N		14	36							
14	eP	Z	23	02	25							
	eS	NE		05	04							
15	eL	ZN	01	20	.1							
15	iP	Z	07	08	38	d	0.9	1.9				
	iS	NE		09	49							
	eT	ZNE		14	56							
15	eL	ZNE	09	32	.8							
15	e	ZN	10	54	.7							
	eL	ZNE		57	.0							
15	eL	ZNE	12	24	.2							
15	iP	Z	13	59	38	u	0.9	2.0				
	eS	NE	14	02	20							
15	eS	N	18	42	.5							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
					44.3							
15	e	Z			54.2							
15	eL	ZN										
15	eL	ZNE	21	12	.2							
15	eP	Z	21	55	00							
15	eP	NE	22	03	08							
	eS	ZNE		09	.5							
	eSSS	Z		13	.7							
	eLr											
16	e(S)	NE	02	48	46							
16	iP	Z	04	29	03	d	2.3	1.0				
	eS	NE			46							
16	eL	ZN	05	46	.3							
16	eP	ZNE	07	15	27							
	eS	NE		17	24							
16	eL	ZE	08	01	.7							
16	eL	ZN	11	02	.1							
16	iP!	ZNE	13	55	57.2	une	14.4	1.8				
	iS	NE		56	17							
16	ePKKP	Z	16	12	40							
	eSS	NE		19	12							
	eSSS	ZNE		23	16							
	e	ZNE		30	.0							
	eL	NE		32	.5							
16	eP	Z	16	42	26							
	eS	NE		43	55							
16	eL	ZN	21	04	.8							
17	eiP	Z	04	04	13							
17	eP	Z	11	40	02							
17	eLr	ZNE	14	44	.5							
17	iP	Z	22	40	33		2.0	1.2				
	eS	NE			51							
17	eP	Z	23	35	46		0.5	1.9				
	eS	ZN		44	34							
	eSS	ZN		48	40							
	eSSS	ZN		52	20							
	eL	ZNE		55	.0							
18	eL	ZN	06	50	.7							
18	eL	Z	08	54	.5							
18	eL	NE	09	23	.5							
	eL	Z		24	.0							
18	eP	Z	09	31	03							
	eS	NE			32							
18	iP	Z	16	02	32.3	d	0.7	1.0				

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
OCT 18	iP	Z	17	09	54.3	u	1.0	1.2				
	eS	NE		11	39							
18	eL	ZN	18	25.7								
18	eP	Z	19	19	19							
	eS	NE			37							
18	eL	ZN	20	36.0								
18	iP	Z	23	03	40.3	u	0.5	2.0				
	i	Z			45	u	2.0	1.9				
	eS	NE		06	59							
18	eP	Z	23	30	10		0.6	1.9				
	eS	NE		33	30							
18	e(P)	Z	23	36	03							
	i	Z			07							
	e(S)	NE		39	21							
19	eP	Z	00	05	27							
	eS	NE		08	35							
19	eP	Z	01	00	08		0.6	1.8				
	eS	NE		03	17							
19	eP	ZNE	02	04	25		0.5	1.8	0.6	1.8	1.0	1.8
	eS	NE		07	48							
19	eS	ZN	02	38.6								
	eL	Z		49.2								
19	eP	Z	03	45	14							
	eS	ZNE		54	14							
	eSSS	NE	04	01	54							
	eL	ZNE		04.6								
19	eP	Z	04	59	42							
	eS	NE	05	00	39							
19	e(P)	Z	08	48	20							
	eS	NE		50	32							
19	eP	Z	08	54	12							
	eS	NE		55	20							
19	eL	ZN	16	45.1								
19	eP	ZNE	20	57	22		0.6	1.8	0.6	1.8	0.9	1.9
	eS	NE		59	05							
20	eS	NE	03	04	05							
20	eL	NE	08	57.2								
20	eS	NE	09	30	40							
	eSSS	NE		38	20							
	eL	NE		41.0								
20	eS	NE	12	12	05							
	eSSS	E		20.2								
	eL	N		22.8								
20	eSKKS	Z	18	19.2								

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
OCT 20	iP	Z	06	03	46	d	7.5	1.4				
	iS	NE		04	05							
20	eP	Z	09	21	13							
	eS	NE		23	05							
	eS	ZNE		24.5								
	eL											
20	eP	Z	12	20	43							
	iS	NE		21	30							
20	eP	Z	13	30	18		1.4	2.0				
	eS	NE		32	45							
20	eL	Z	17	51.2								
21	eL	Z	03	47.5								
21	eP	Z	13	14	13							
	eS	NE		15	23							
22	iP	ZN	14	08	20	un	5.6	1.2	5.5	1.2		
	iS	NE			50							
22	iP	Z	15	40	25.5	d	1.5	2.5				
	eS	ZNE		44	10							
23	iP	Z	08	00	52	u						
	e	N		01	09							
	epP	ZE			12							
	eS	ZNE		05	10							
23	iP	Z	20	17	30.7	d						
	eS	NE		19	49							
24	eL	ZN	01	36.4								
24	eLq	ZE	07	27.7								
	eLr	ZNE		31.0								
24	iP	ZE	07	38	55	de	1.6	2.0			2.0	2.3
	eS	N		49	00							
	eSS	N		54.5								
	eSSS	ZN		58.2								
	e	N	08	01.0								
	eL	ZN		04.5								
	eL	ZE		08.0								
24	eS	NE	18	37	42							
24	iP	Z	19	00	16							
	eS	NE			35							
25	eS	N	01	47	52							
	e	Z		55.5								
	eL	ZN		57.0								
25	eP	Z	09	08	06							
	e(S)	NE		10	02							
25	eP	Z	20	07	57							
	eS	NE		15	00							
	e	Z			19							
	eSSS	N		19.5								
	eL	ZE		21.5								
	eL	ZNE		24.0								

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
OCT 25	eP	Z	21	38	03							
	eS	NE		39	56							
26	eS	N	04	16	04							
	eL	ZNE			26.3							
26	eL	ZN	11	52	4							
26	eL	ZN	12	02	4							
26	iP	ZNE	12	34	35.8	une	79.2	2.0				
	iS	NE		35	05							
26	eP	Z	13	32	09							
	eS	NE			47							
26	iP	Z	22	13	27							
	eS	NE		14	19							
26	iP	Z	22	19	02	d	2.5	2.0	1.2	2.0	1.6	2.0
	iP	NE			02.6							
26	eP	Z	22	48	28							
	eS	ZNE			54.2							
	eL	ZE			58.2							
27	eP	Z	03	35	12							
	eS	NE			52							
27	iP	Z	05	22	30.2	d	1.0	1.4				
	eS	NE		24	17							
27	iP	ZNE	08	47	38	d	17.2	2.0	9.5	2.0	8.0	2.0
	eS	NE		49	08							
27	eP	Z	10	41	02							
	eS	NE		42	37							
	eL	ZNE		43	30							
27	eP	Z	18	27	15							
	eS	NE		29	08							
	eT	ZNE		37	45							
27	eP	Z	19	37	14							
	eS	NE			44							
28	iP	ZE	07	57	44	u	5.0	2.0			4.0	2.0
	eS	NE		59	40							
	eL	ZNE	08	00	1							
28	iP	ZN	11	52	54.3	un	13.5	1.2	5.5	1.4		
	iS	ZNE		53	20							
28	eS	N	12	24	3							
	eL	ZN			35.0							
28	eP	Z	13	34	05							
	eS	NE		35	40							
28	iP	ZN	20	02	03	un	2.1	1.3				
	eS	NE		04	13							
28	eL	Z	21	07	8							
29	e	NE	02	37	1							

	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
	e	NE			39.0							
	e(S)	NE		44	50							
	iP	ZN	10	20	06	un						
	iS	NE			19							
	iP	Z	10	58	02.7	d						
	eS	NE		59	29							
	eP	Z	20	25	17							
	eS	NE		28	22							
	eP	Z	22	25	08							
	eS	NE		27	02							
	eT	ZNE		36	16							
	eS	ZNE	05	37	38							
	iP	Z	03	19	38							
	iS	NE		21	04							
	iL	ZNE			15							
	eT	ZNE		27	13							
	eP	Z	04	28	22		1.5	2.0				
	eS	NE		30	32							
	iP	Z	04	35	16							
	iS	NE			36							
	iP	ZE	08	53	31	ue	1.5	1.8			2.0	2.0
	eS	NE		55	00							
	iP	Z	09	56	20.2	d	1.0	1.2				
	eP	Z	09	30	42							
	eS	NE		32	27							
	iP	ZN	09	45	28		1.5	2.0	1.6	1.8		
	iS	NE			47							
	eP	Z	21	01	48							
	i	Z			52							
	eS	NE		03	24							
	eT	ZNE		08	47							
	±iP	Z	08	16	46							
	iS	NE		17	04							
	iP	Z	08	30	18.3	d	12.7	1.6				
	iS	NE			36							
	iP	ZN	13	10	13		1.7	1.8	1.1	1.9		
	iS	NE			44							
	eP	Z	20	42	43							
	eS	NE		44	26							
	eP	Z	22	34	19							
	eS	NE		35	04							
	e(S)	ZN	23	10	00							
	e	NE		13	48							
	e	Z		14	20							
	eL	ZNE		15	40							

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
NOV	3	eP	Z	03	23	27		2.0	2.0				
		ePP	ZE			27 00							
		eS	NE			34 48							
		e	ZE			36 06							
		e	E			39 26							
		eSS	Z			40 00							
		eSSS	Z			44.2							
		e	Z			48.2							
		eLq	Z			50.0							
		eLr	ZE			52.4							
	3	iP	Z	12	03	16.6	u	5.8	1.0				
		iS	NE			37							
	3	eP	Z	14	36	57							
	4	eP	Z	02	23	53		0.5	2.0				
	4	iP	Z	02	46	24	u						
	4	eP	Z	18	25	08							
		eS	NE			27 02							
		eT	ZNE			35 03							
	4	e(P)	Z	21	34	50							
	4	eP	Z	22	26	48		1.3	2.0				
	4	eP	Z	22	35	28		0.5	1.9				
	5	eP	Z	04	55	52		0.5	1.8				
		e(S)	NE			59 06							
	5	eP	Z	05	26	11							
	5	eP	Z	06	16	06							
	5	eP	Z	09	36	55		0.5	1.9				
		eS	NE			39 15							
		eT	ZNE			49 53							
	5	eP	Z	13	21	50							
		eS	NE			23 38							
		eT	ZNE			31 25							
	5	eP	Z	16	05	35							
		eS	NE			08 00							
		eT	ZNE			18 22							
	5	eP	Z	23	33	40							
		eS	NE			35 00							
	6	eP	ZNE	02	22	16		1.0	2.0			1.0	2.0
		eS	NE			29 40							
		eSS	ZNE			33 10							
		eLq	ZNE			35 14							
		eLr	ZE			37 00							
	6	eP	Z	03	09	09							
		eLq	NE			22.0							
		eLr	ZE			24.0							
	6	eP	ZNE	06	32	45		2.5	1.7	2.0	1.8	2.3	1.5
		eS	ZNE			35 52							
		eT	ZNE			46 37							

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
			Z	08	49	29	d						
OCT	6	iP	Z	09	11	00.6	d						
	6	iP	Z	09	35	42							
	6	eP	Z	02	23	53							
	7	iP	NE			24 14							
		iS	Z	02	40	19.7							
	7	iP	NE			40							
		iS	Z	02	42	36							
	7	eP	NE			43 07							
		eS	ZE	13	11	30							
	7	eS	ZNE			17.8							
		eL	ZN	15	56	17							
	7	eP	NE			58 10							
		eS	ZNE	16	06	01							
		eT	Z	16	31	23		0.9	2.3				
	7	iP	ZE			35 28							
		eeS	ZE			36.4							
		eSS	E	17	04	0.0							
	7	eS	NE			09.9							
		eSSS	Z	17	37	37							
	7	eP	NE			39 28							
		eS	ZNE			48 05							
		eT	Z	20	23	27.6							
	7	iP	NE			52							
		eS	ZE	01	34	15.3	ue	8.2	1.5			3.0	1.8
	8	iP	NE			36							
		iS	Z	03	07	20.3	d	0.9	1.7				
	8	iP	NE			09 12							
		eS	Z	10	23	45							
	8	eP	N			50							
		iS	Z	04	02	42							
	9	iP	NE			03 12							
		iS	ZNE			04 43							
		e	Z	07	01	54							
	9	eP	NE			02 12							
		eS	ZN	09	22.3								
	9	eL	Z	14	05	20							
		iP	NE			40							
	9	iP	Z	19	08	42							
		iS	NE			09 03							
		eP	Z	21	28	08							
	9	sPcP	Z			30 07							
		ePPP	Z			34.7							
		iSKS	Z			37 42							
		iS	Z			39 00							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
NOV	iSP	Z		40	03							
	isSP	Z		44	18							
	isSS	Z		48	58							
10	iS	NE	01	59	30							
10	eP	Z	02	11	13							
	eS	NE		12	06							
10	eS	ZNE	17	37	44							
	eL	ZE		48	16							
10	eP	Z	19	23	49		1.0	1.6				
	eS	NE		26	25							
11	eP	Z	00	31	39							
	iS	NE		32	30							
11	iP	ZNE	11	30	02.9	une	18.7	1.8	5.5	2.1	7.4	2.0
	iS	ZNE			39							
11	e(S)	ZNE	14	38.7								
12	iP	Z	01	17	37.6	u	9.0	1.2				
	iS	NE			57							
12	eP	Z	05	52	36							
	e	ZNE		53	00							
	e	NE		54	56							
	e	ZE		59	50							
12	e(S)	E	06	14	06							
12	iP	Z	06	19	10.7							
	iS	NE			31							
12	e	N	07	47.7								
	eL	E		48.6								
	eL	Z		49.1								
12	eP	Z	12	46	15							
	eS	NE		47	58							
	eL	ZNE		48.1								
13	eP	Z	00	42	48							
	eS	NE		43	22							
13	iP	Z	03	36	02							
	iS	NE			23							
13	iP	ZE	05	44	32	d	7.7	1.8			6.5	1.9
	iS	NE			50							
13	iP	ZN	11	21	07.5		1.1	1.2	1.0	1.5		
	i	Z			13		4.5	1.5				
	eS	NE		23	15							
13	eP	Z	13	53	39		2.1	1.8				
	e(S)	ZNE		54	00							
	i	N			10							
	e	ZNE		56	13							
13	eP	Z	15	49	03							
	eS	NE		50	53							

	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
	eL	ZNE		51.5								
13	eP	Z	16	08	50							
	eS	NE		10	29							
	eL	ZNE		11.1								
13	eiP	Z	17	21	03							
	eS	NE		22	49							
	eL	ZNE		23.2								
13	eP	Z	18	06	26							
	eS	NE		08	09							
13	iP	ZN	23	25	28	u	6.0	0.8	6.4	0.8		
	iS	NE			48							
14	e	E	04	31.0								
	e	ZE		35.5								
14	eP	ZNE	04	40	21		1.6	2.0	1.8	2.0	2.0	2.1
	eS	NE		44	10							
	eL	ZE		45	26							
14	eP	Z	07	37	37							
	eS	NE		38	33							
	eT	ZNE		42	33							
14	eP	Z	14	10	09		1.2	2.0				
	e	E			16							
	eS	ZE		15	10							
14	eP	Z	14	16	21							
	eS	NE		18	45							
14	eP	Z	18	31	41							
	eS	NE		33	21							
15	iP	Z	01	27	49.8							
	eS	NE		28	10							
15	eP	Z	12	25	23							
	eS	NE			43							
15	eP	Z	16	05	44							
	eS	NE		07	25							
15	iP	ZE	21	17	30.3	de						
	eS	ZN		26	36							
	eSS	ZN		34	00							
	eL	ZN		36	36							
	eT	ZNE	22	31	53		1.3	1.0				
15	eP	Z	22	02	13							
	iS	NE			58							
16	eL	ZNE	03	02.0								
16	eS	ZNE	07	08.1								
	eL	ZNE		21.0								
16	iP	ZE	22	45	29.4	d						
	eS	NE		46	57							
	iL	NE		47	13							
	iL	Z			20							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
NOV 16	eP	Z	23	42	02		2.8	1.0	3.6	1.8		
	eP	NE			04						4.2	1.5
	eS	NE		43	32							
	eT	ZNE		50	35							
17	eP	Z	00	51	02		1.7	1.2				
	eS	NE		52	31							
	eT	ZNE	01	00	07							
17	eP	Z	01	15	38							
	eS	NE		17	07							
	eT	ZNE		24	35							
17	e	Z	01	45.4								
	e(L)	Z		52.6								
17	eP	Z	10	29	08							
	eS	NE		30	30							
	eT	ZNE		37	06							
17	iP	ZNE	13	15	39.9	dse	4.5	2.0	3.4	1.5	3.5	2.0
	eS	NE		17	07							
18	iP	ZNE	01	51	04.5	d	3.4	1.5	4.2	1.6	5.0	1.8
	iS	NE			22							
18	eP	Z	04	45	08							
	iS	NE			29.6							
18	iP	Z	10	30	44							
	iS	NE		31	07.2							
18	eP	ZE	13	18	41							
18	iP	ZNE	13	52	12.6	d			11.6	2.0	10.5	2.0
	iS	NE			39							
18	eS	ZNE	14	59	04							
	eSS	E	15	03	06							
	eSSS	NE		07	30							
	iL	Z		10	30							
18	iP	Z	15	52	06.4							
	iS	NE			25							
18	e(P)	ZNE	19	48	30							
	eP	Z		49	45							
	eS	ZNE		50	09							
18	eP	ZE	21	15	54		0.7	2.0			0.8	2.0
19	eP	ZNE	10	50	02		1.2	2.0	1.1	2.0	1.0	2.0
	e	NE		52	10							
19	eP	Z	11	11	51		0.5	2.0				
	eL	NE		29.0								
	eL	NE		31.2								
19	iP	ZNE	15	53	43.3	d	4.5	1.9	5.1	1.9	5.0	2.0
	iS	NE		54	03							
19	eP	Z	18	29	38		0.9	2.2				
19	eP	Z	18	37	26							
	iS	NE		38	03.5							

	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
[illegible]												
[illegible] 19	eP	Z	19	27	28							
	eS	NE		28	55							
19	eP	Z	21	33	52							
	eS	NE		35	32							
20	iP	Z	08	55(15)		u	1.9	1.0				
	iS	NE		56								
	eT	ZNE		58	33							
20	iP	ZNE	10	06	23.5	une	10.5	2.0	5.8	2.0	3.8	2.0
	iS	NE			43							
20	iP	Z	12	02	03	d	1.5	1.1				
	eS	NE		03	29							
	eL	ZE			48							
	eL	N		04	20							
	eT	ZNE		10	04							
20	iP	Z	18	28	47							
	eS	NE		29	08							
21	eP	Z	05	56	51							
	eS	NE		58	19							
21	iP	Z	07	39	09.4							
	iS	NE			33							
21	eP	Z	09	09	58							
	eS	NE		11	26							
21	eP	Z	20	02	14							
	eS	NE		03	49							
21	eP	Z	20	27	50							
22	eP	Z	00	30	08							
22	eP	Z	06	06	52							
	eS	NE		08	03							
22	eS	NE	15	05	56							
	eL	ZNE		16.3								
22	eP	ZNE	17	04	34		3.0	2.0	2.4	2.0	3.6	2.0
	eS	NE		05	10							
	eT	ZNE		08	20							
22	iP	ZN	21	51	27		1.0	1.9	1.0	1.9		
23	eP	Z	02	36	50							
	eS	NE		37	10							
23	eS	NE	08	11	26							
	eSSS	E		19	56							
	eL	ZNE		22.7								
23	eP	Z	08	32	01							
	eS	NE			36							
	eT	ZNE		34	23							
23	eP	ZNE	11	45	43							
	eS	NE		47	21							
23	iP	ZNE	19	32	23.7	d	5.3	1.7	2.0	2.0	2.1	1.6

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
NOV	1S	ZNE	33 59.2						
24	eP	Z	01 42 34						
	eS	ZNE	43 17						
	eT	ZNE	46 35						
24	eP	ZE	05 10 48	1.4	1.9				
	eS	ZNE	12 22					0.9	2.0
24	eP	Z	05 15 29	2.0	1.1				
	eS	NE	17 54						
24	eP	ZE	05 22 47	0.8	1.3				
	eS	NE	24 20					1.0	1.5
24	eP	Z	06 18 18						
	eS	NE	19 50						
24	eP	Z	22 27 38						
	eS	NE	28 07						
25	eP	Z	00 52 00						
	eS	NE	42						
25	iP	Z	03 21 31.7						
	eS	NE	22 13						
25	iP	Z	03 26 27						
	iS	NE	27 06.7						
25	eP	Z	04 30 39						
	eS	NE	32 14						
26	eP	NE	07 01 52			1.4	2.0	1.7	2.0
26	eP	NE	22 53 10					2.5	2.0
	eS	ZNE	55 34						
27	iP	NE	19 51 36						
	iS	NE	53						
28	eS	ZNE	15 16.7						
28	eL	Z	19 37.7						
29	eP	NE	06 18 36						
	eS	NE	19 14						
	eT	NE	22 19						
29	eS	ZNE	10 30.8						
29	eP	NE	18 57 14			3.1	2.0	3.5	1.8
	eS	NE	58 39						
30	eLr	ZE	10 16.7						
30	eP	NE	12 22 22						
	eS	NE	23 09						
	eT	NE	26 16						
DEC 1	eP	NE	03 02 38						
	eS	NE	03 37						
1	eP	NE	17 02 17						
	eS	NE	34						

	Phase		h m s		Az	Tz	An	Tn	Ae	Te
	eT	NE	04 02							
1	eP	NE	17 24 27							
	iS	NE	53							
	eT	NE	27 00							
2	iP	NE	00 24 57				2.7	2.0	2.2	2.0
	iS	NE	25 15							
2	eP	NE	00 35 41							
	eS	NE	36 12							
2	eP	Z	12 23 41							
	e(S)	NE	25 03							
2	eL	N	14 26.0							
	eL	Z	31.8							
2	eP	Z	17 35 17							
	eS	NE	37 28							
2	eSSP	Z	21 31.5							
	eL	Z	48.1							
3	eL	ZN	05 39.7							
3	iP	ZE	12 16 45.4	uw	6.4	1.2			3.1	1.9
	iS	NE	17 05							
3	iP	ZN	14 35 33	u	2.7	1.9	1.5	1.9		
	eS	NE	37 06							
3	eP	Z	19 45 58							
	eS	NE	47 54							
	eT	ZNE	55 00							
3	eP	Z	21 20 03							
	eS	ZNE	24 00							
	eL	ZE	26.0							
3	eP	ZE	21 34 57						1.3	1.9
	eS	ZNE	38 28							
	eL	Z	40.4							
3	eSS	N	23 34 50							
	e	ZN	42.2							
	eL	ZN	48.2							
4	iP	ZE	00 18 13							
4	eP	ZNE	00 49 17							
	eS	NE	53 07							
	eT	ZNE	01 10 29							
4	eP	Z	01 22 58							
	eS	NE	23 44							
4	eS	ZN	01 47 30							
	eL	ZNE	58.8							
4	eL	ZN	03 14.2							
4	eL	ZNE	04 50.6							
4	iP	Z	07 48 38.2	d	1.0	1.9				

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
DEC		eS	NE		50	19							
	4	eL	ZN	08	54.5								
	4	eP	Z	09	36	45		0.8	1.4				
		eS	NE		38	15							
	4	eS	NE	16	19	06							
		eSS	NE		23	34							
		eSSS	ZNE		26	30							
	5	eSSS	NE	04	50	00							
		eL	ZNE		53.0								
	5	iP	Z	05	41	48							
		e	E		42	19							
		e	N			27							
	6	eP	Z	00	58	52							
		eS	NE	01	00	25							
	6	iP	ZE	02	03	58		1.7	2.2				
		eL	ZE		15.9							0.9	2.2
	6	iP	Z	12	24	27							
		eS	NE			44							
	6	eP	Z	14	23	03							
		eS	NE			31							
	6	eP	ZN	23	47	38		2.0	2.0	1.5	1.9		
		eS	NE			57							
	7	eP	Z	03	43	31							
		iS	NE			57.3							
	7	iP	ZNE	04	10	20.5		9.6	1.9	6.9	1.9	6.0	1.8
		eS	ZNE		12	17							
	7	eP	Z	05	09	58							
		eS	NE		11	44							
	7	eP	ZE	05	56	05		3.0	2.0			1.5	1.9
		eS	NE		58	43							
	7	eP	ZE	10	36	10							
		eS	NE		38	48							
		e	ZE		40	00							
	7	eL	ZNE	15	42.2								
	7	eiP	Z	17	41	03		1.7	1.2				
		eS	ZNE		43	52							
		eT	ZNE		54	29							
	7	iP	Z	22	39	38	u	1.3	2.0				
		eS	NE		42	28							
	8	iP	Z	03	47	50							
		iS	NE		48	09							
	8	eP	Z	05	21	15							
		eS	NE			58							
		eT	ZNE		25	16							

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
DEC	8	eL	ZN	08	23.5								
	9	eP	NE	10	55	47						7.8	1.9
		eS	NE		57	25							
	9	eP	NE	19	20	48							
		eS	NE		23	05							
	10	iP	E	03	40	51.8							
		eS	NE		48	33							
		eSS	N		52.6								
		eL	ZN		56.3								
	10	eP	ZNE	15	43	20							
	11	iP	ZNE	00	48	20	une						
		iS	NE			42							
	11	eP	NE	11	15	19							
		eS	NE		17	37							
	11	eP	NE	14	09	29							
		eS	NE		12	19							
	11	eP	NE	14	50	56							
		iS	NE		51	16							
	11	eS	ZN	17	27	42							
		eL	ZN		37.3								
	12	eP	Z	05	43	40							
		eS	ZNE		45	27							
	12	iP	Z	09	50	30.7	d	0.4	1.5				
	12	iP	Z	19	28	41		1.9	1.0				
		iS	E		29	11							
	12	eP	Z	21	21	34							
		eS	ZE			51							
	12	eP	Z	22	28	12		0.7	1.3				
		eS	ZE		29	18							
		eT	ZE		34	34							
	12	iP	Z	22	30	36.2							
		iS	E		31	15.4							
	12	eL	ZN	23	55.4								
	13	eP	Z	02	59	56							
		iS	NE	03	00	45							
	13	iP	Z	04	11	56.8		1.0	0.9				
		iS	NE		12	15.9							
	13	eP	Z	07	43	52							
		iS	E		44	28							
	13	iP	Z	09	22	01							
		iS	E			21							
	14	e(P)	Z	15	52	03		0.5	2.0				
	14	iP	ZE	16	20	05	u	3.0	1.5			2.6	1.5

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
DEC	eS	E		21	52							
14	eP	Z	23	18	00							
	eS	E		19	20							
16	eL	ZNE	02	26.0								
	eL	ZNE		31.3								
16	e(P)	Z	14	08	00		0.5	2.0				
16	eP	Z	14	28	14							
	eS	NE		36.6								
	eLq	N		43.9								
	eLr	ZNE		46.6								
16	iP	ZNE	15	19	06.9	une	60±	1.5				
	iS	NE			26						17.7	2.0
							Felt: Faleolo, Savai'i, W. Samoa.					
17	eP	Z	08	37	32							
	e	NE		41	20							
17	e(P)	Z	09	18	17							
	e(S)	NE		19	50							
17	eP	Z	15	28	57							
	eS	E		29	15							
17	eP	Z	23	20	43							
	eS	E		21	15							
	e	ZE		23	10							
18	iP	Z	00	32	45	u						
18	eP	Z	03	32	26		0.3	0.7				
	eS	NE		34	22							
18	eP	Z	05	06	57							
18	iP	Z	06	40	30.9	u						
	eS	NE		42	05							
18	eP	Z	12	25	37							
	eS	NE		28	18							
	eT	ZNE		42	01							
18	iP	Z	15	26	30	d	0.9	0.8				
18	eP	Z	20	23	15							
	iS	NE			44							
	eT	ZNE		25	50							
19	eP	Z	02	36	45							
	eS	NE		38	49							
19	eP	Z	03	23	07							
	iS	NE			26							
19	eP	Z	08	27	56							
	eS	ZN		30	09							
19	eP	Z	10	15	53							
	eS	NE		16	12							
19	e	NE	13	28	04							

	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
		Z	17	17	07	u	2.5	2.2				
19	iP	Z		27	50							
	eS	E		34	08							
	eSS	ZE		41	00							
	eL	Z		45.2								
	eL	ZE										
19	e(P)	Z	18	39	54							
19	e	ZNE	23	34	00							
20	iP	Z	00	29	38	d	1.1	2.0				
	eS	Z		34	22							
	eL	ZNE		36.3								
20	iP	ZNE	04	52	56	une	9.6	1.0				
	iS	NE		53	13							
20	iP	Z	09	07	05	u	1.4	2.0				
20	eP	Z	21	13	34							
	eS	NE		14	44							
	eT	ZNE		20	40							
21	eP	ZE	04	15	08		1.5	1.9			0.5	1.8
21	e(L)	ZNE	07	18.9								
21	eP	Z	12	36	12							
	i	E			23.4							
	i	N			27							
	eS	NE		37	32							
	e(T)	ZNE		43	08							
21	i(P)	Z	12	41	43	d	3.2	2.0	4.5	1.7	3.5	2.0
	i	NE			52							
21	eS	E	13	30	24							
	eLq	NE		39.8								
	eLr	ZNE		43.2								
21	eP	Z	14	35	40							
	iS	NE		36	25							
21	eP	Z	22	07	29							
	eS	NE		09	30							
22	iP	Z	10	39	37							
	iS	NE			56							
22	eP	Z	12	05	10							
22	eP	Z	12	36	35							
	eS	NE		37	30							
22	eP	Z	13	40	51							
22	e	ZE	17	43	06							
22	i(P)	Z	17	44	58	d						
	e(S)	NE		46	44							
22	eP	Z	18	48	02							
	eS	ZNE			40							
	eT	ZNE		51	32							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
DEC 23	eP	Z	18	01	42							
	eS	NE		04	02							
24	eP	ZNE	11	22	57							
	eS	ZNE		26	46							
	e	ZE		28	26							
24	eP	Z	21	14	11		1.0	2.0				
24	eP	Z	23	09	14							
	eS	NE		11	31							
24	eP	Z	23	56	38							
	eS	NE		57	31							
25	iP	Z	03	14	03.4	u	0.6	1.7				
25	eP	Z	04	58	37							
	eS	NE		59	27							
25	eP	Z	05	22	14							
25	e(P)	ZN	08	03	46		0.6	1.8				
	e	ZN		04	05		0.6	1.8				
	e	ZN			20		1.5	1.8				
	e	ZN			39		1.0	1.8				
	e	ZNE		06	04		0.5	1.8				
25	e	ZN	08	09	07		1.0	2.0				
25	eP	Z	09	21	50							
25	eP	Z	09	26	36							
	e	Z		27	22							
	eS	ZNE			27							
25	e(P)	Z	09	56	05		0.5	1.7				
25	e(P)	Z	10	11	52		0.6	1.7				
	e	Z		13	31							
25	iP	Z	12	25	11.8		1.5	0.7				
	eS	NE			42							
25	eP	Z	20	19	34							
	eS	NE		20	34							
25	e(P)	Z	20	24	17							
	e(S)	ZNE		25	13							
26	eP	Z	01	43	25		0.5	2.0				
26	iP	Z	14	49	14.2							
	iS	NE			32.3							
27	iP	ZN	05	22	26	d	3.9	1.6	2.0	1.8		
	iS	ZNE		23	10							
	eT	ZNE		25	24							
28	eP	Z	03	16	27		1.1	0.7				
	eS	NE		17	34							
28	iP	ZNE	04	37	11.8	d	2.0	1.8	2.0	1.8	2.0	1.9
28	iP	Z	05	52	12.3							

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
DEC 28	eS	N	06	00.0								
	eL	ZNE		01.4								
28	eP	Z	06	05	32							
	iS	NE			53							
28	iP	Z	09	08(22)		d	1.4	2.0				
	i	Z			24.1		6.2	2.0				
	iS	NE		11	46							
	eT	ZNE		20	08							
28	eP	Z	11	32	46							
	iS	NE		33	09							
28	eS	N	18	24.0								
	eL	N		36.0								
	eL	ZNE		40.2								
29	eL	ZNE	00	21.0								
29	iP	Z	08	41	15.6	d						
29	iP	Z	09	08	11.5							
	iS	NE			24							
29	iP	ZN	15	02	34.3		3.4	1.9	2.7	1.9		
	eS	NE		04	14							
30	eP	Z	03	14	53							
	eS	NE		16	25							
30	eP	Z	13	53	57							
	iS	NE		54	13							
30	eL	ZN	14	00.0								
30	iP	Z	15	16	57.6	u	0.7	1.5				
	eS	NE		18	30							
30	eP	Z	20	53	16							
	iS	NE		54	00							
	eT	ZNE		57	18							
30	eP	Z	21	21	34							
	eS	NE		22	02							
31	eP	Z	01	33	15							
	eS	NE		34	36							
31	iP	Z	03	39	34							
	iS	NE			59							
31	iP	Z	10	23	51	d	4.5	1.0				
	iS	NE		25	25.3							
31	eP	Z	16	46	10							
	eS	NE			37							
31	iP	Z	17	26	42.5		1.9	0.9				
	iS	NE		27	02							
31	ePP	ZN	17	56.0								
	eSKS	N	18	02.2								
	eS	ZN		04.8								
31	iP	ZNE	19	17	57	une						
	iS	ZNE		18	31							

SUVA

In this Report, Suva readings are listed separately and not, as in previous years, placed with the New Zealand stations. Amplitudes are given in millimetres, read directly from the paper records of the Milne-Shaw seismograph.

Date	Phase	h	m	s		An	Tn
JAN 1	eS	17	32	02		1	10
5	eP	13	07	30			
	PP		08	03			
	S		10	42		2.2	10
	SS		11	35			
	L		12	49		5	9
7	eP	19	23	05			
	S		24	39			
13	S	04	20	17			
14	eP	11	22	20			
15	eP?	17	40	31			
	iS		41	37	s	5.5	5
	(sS)			55			
15	P	19	28	10			
	iS		29	10	n	7	8
24	S	12	12	35		1.5	5
25	eS	00	20	10			
25	eS	16	59	11			
	L	17	00	29			
25	eP	20	23	41			
	S		25	11			
28	PP	12	19	02			
	PcP		21	23			
	S		23	31		2.1	6
	SS		25	15			
	L		26	.0		5	21
28	ePP	13	16	26			
	S		22	20		2.3	5
	SKS		23	11			
	eSS		26	34			

Date	Phase	h	m	s		An	Tn
JAN	eSSS		31	30			
	Lq		34	.8		5.6	22
28	eL	16	13	.8			
30	PP	10	30	30			
	SKS		37	30			
	eSS		43	13			
	SSS		47	23			
	eL		58	.1		6	20
FEB 2	P	04	51	39			
	S			59			
2	eP	14	39	40			
3	iP	01	51	57	s		
3	eL	01	30	.5			
	ScS		34	28			
4	eP	15	07	20			
	S		08	55		0.8	12
5	L	21	23	.0		0.8	20
6	e	02	08				
6	P	05	55	10			
	S		56	05			
6	P	12	48	18			
	S		49	17			
	eL			50			
7	eS	17	13	30		1.1	10
11	eS	12	24	42			
	L		25	53			
12	P	23	08	54			
	S		09	57			
13	P	09	01	08		1.2	8
	(PcP)			55			
	PP		03	36		2.1	9
	S		10	02			
	PS			28			
	ScS		11	24			
	SS		14	20			
	Lq		18	.2		7	22
13	P	18	18	11		3	10
	S		21	42		18	20
14	S	06	56	26		1.5	9
14	e	07	26	14		2.2	10
14	P	21	53	32			
	S		55	17		4	13
14	S	22	03	36		5	10
15	e(S)	00	11	45			

Date	Phase	h m s		An	Tn
FEB 15	e	00 56			
15	S	05 44 05		1.2	10
15	eP	06 55 20			
20	eP	06 47 32			
	S	48 40			
20	P	08 46 00		1.2	5
	eS	47 54		5.2	10
21	P	14 30 18		2	6
	eS	32 04			
22	1S	08 01 05	s	5.5	7
26	e	10 51 37			
26	1P	21 20 29	n		
	pP	21 19			
	eS	25 27		17	15
	ScP	26 06			
	SS	27 54		3	4
27	P	04 36 46			
	PP	37 45			
	PcP	38 54			
	S	40 17		2	8
	L	43 20		9.5	22
MAR 4	eP?	04 09 03			
	(P*)	22			
	S	54			
4	S	19 08 07			
8	eS	02 48 11			
8	eS	03 28 34			
9	eL	19 17.7			
16	1P	08 56 00			
	S	09 04 51		9.5	12
	eL	15.5		8.5	18
20	1P	04 44 36	n		
	S	45 23			
	PcP	49 53			
24	PcP	02 17 35			
	S	24 43			
	(ScS)	25 34			
	eSSS	30 40			
27	eL	00 30.0			
28	SS	00 55 24			
	eL	01 17.0		1.7	22
28	eP	11 15 44			
	S	18 06		1.5	5
	L	38			

	Phase	h m s		An	Tn
		23 32 09			
	P	32 21			
	PP	34 40			
	S	35.2		8.5	17
	L	41 12		4.5	11
	ScS				
		01 55 42			
	P	57 26	s	32	10
	1S				
		05 33 51			
	eP	34 02	n	5	8
	1PP	36 11		6	10
	S	50		13	20
	L	46 12			1
	ScS				
	S	07 19 08		1.1	8
	P	19 25 49			
	eS	28 24			
	L	29.0			
	eP	02 03 56			
	S	04 46			
	S	08 50 36			
	P	23 41 30			
	S	43 26		1.5	8
	eP?	01 38 35			
	PP	40 34		7	8
	S	46 00		10	13
	1P	02 11 49	s		
	ePP	21 58 00			
	S	22 04 22		1.3	9
	SKS	05 00			
	S	01 14 55			
	SKS	15 21		2.2	9
	eL	20			
	1P	10 05 29	s		
	eP	10 56 47			
	eS	58 29			
	(PcP)	11 03 00			
	S	10 41 30		1.9	7
	1P	22 42 05	s		
	S	43 30			
	S	01 26 20			
	(PS)	27 57			
	1P	11 41 09	n		
	eS	43 53			
	S	02 33 26		1	6
	S	14 17 04		1.2	8
	SKS	29			
	eL	29.0			

Date	Phase	h m s		An	Tn
MAY 23	P	03 35 02			
	iS	36 19	n		
	ScP	44 35		9.5	7
	ScS	47 58			
23	S	03 42 58			
	SS	43 21			
29	e(S)	11 01 45			
30	S	07 11 00			
	L	17.0		1.2	18
31	e(P)	06 05 54			
	S	07 20		2	6
	eL	08		8	15
JUN 1	P	00 01 01			
	eS	02 40		4	7
1	eP	21 10 12			
	S	11 57			
1	iP	21 16 01	n	3.7	6
	S	17 36		6	7
4	L	12 00		2.7	15
5	S	10 17 16			
	SS	22			
5	eP	12 06 24			
	S	07 13		4	7
5	P	14 09 01			
	(S)	43			
6	e(S)	05 39 16			
	e	40 00			
7	e(P)	15 36 05			
	e	24			
7	eP	22 34 19			
	L	36.5		4	17
7	eP	22 39 40			
	S	41 22			
7	eP	01 04 09			
	iS	05 46	n	2.5	6
	L	06		5.5	11
9	S	15 54 33			
10	eP	04 24 05			
	PP	25 26		0.9	8
	S	31 10		2	12
	Lq	37		3	17
10	eP	06 47 12			
	(PcP)	49 14			
	eS	54 42			
12	S	04 11 30			

	Phase	h m s	An	Tn
	P	22 48 54		
	P	50 39		
	eS	51	5	18
	L			
	eS	17 47 45		
	P	15 03 03		
	S	04 09		
	P	22 06 43		
	ePP	09 06		
	S	15 34	2.5	12
	L	27	8.5	18
	S	04 08 34	0.7	10
	eS	05 43 11		
	Lq	54	1.4	20
	eP	07 56 36		
	eS?	57 25		
	e(S)	36	0.9	7
	P	00 05 28		
	L	14 35	3	17
	P	19 11 42		
	L	15.4	3.5	15
	L	06 56.3	2.5	22
	S	11 03 53		
	L	04.5		
	eS	21 58 15	0.9	10
	eP	07 15 26		
	S	18 10		
	L	19.3	2.5	15
	P	20 17 04		
	S	19 53		
	P	20 19 00		
	P	05 48 45		
	L	51.9	7	20
	P	14 26 16		
	L	29.7	2.2	15
	eP	15 07 32		
	P	01 47 39		
	eS	50 36		
	ePKP	10 40 04		
	P	23 55 21		
	S	56 14	12	7
	P	14 38 17		
	eP	39 50	2	20

Date	Phase	h m s		An	Tn
AUG 10	eS	02 40 07			
13	P	21 53 24			
	S	54 40			
	L	56.4		2	6
				5	20
19	L	04 31		1.9	16
22	eP	19 57 17			
	(PPP)	56			
	S	20 01 00		10	10
30	eS	13 53 42			
SEP 8	P	00 50 06			
	L	52.8		3	22
8	P	19 52 09			
10	S	01 14 47		0.8	6
10	iP	19 15 00	n		
12	eP	03 14 00			
	eS	15 52			
	L	16.1		3.5	18
15	iP	00 50 18	n		
15	(P)	11 01 30		1	8
	i	49	n	3.5	12
16	P	20 08 28		0.9	6
	S	10 54		1.6	11
17	iP	19 23 38	n		
17	P	22 32 04			
	S	35 11		2.2	12
22	eP	02 56 54			
22	iP	19 22 34	n	8	15
OCT 2	iP	05 49 06	n		
12	L	12		9	20
13	L	05 40		76	22
14	P	23 00(45)			
	S	01 05			
15	S	13 58(40)			
18	M	00 10		1.5	19
20	P	01 04(29)			
	S	13 24			
	SS	18 00		5	20
	L	24		24	21
23	(S)	08 01 59			

1961	Phase	h m s		An	Tn
		12 35(58)			
	P	37 17			
	S				
		07 57 32			
	eP	58 07			
	eS				
		03 19 34		10.5	6
	iP				
		21 01 11			
	P	02 24			
	S				
		01 17 02			
	P	19 16		50	10
	S				
		02 21 27			
	P	27 23			
	S	33.8		2.8	22
	L				
		06 31 58			
	P	33 59			
	S				
		21 33 32		1	6
	PP	38 25		2	6
	SKS	39 11		2	9
	SKKS	41 36		3	8
	SP	42 36		4.7	10
	(PS)	47 17		3.7	8
	SS				
	L	18 00		1.5	18
	P	11 30 54			
	S	32 13			
	eP	17 21(00)			
	eS	22 18			
	L	22.5		3.8	17
	eP	04 38 35			
	ePP	49			
	eS	40 38			
	eP	14 05 36			
	(PcP)	23 46 18		2	9
	eS	21 27 03			
	P'P'	45 45			
	P'PKS	49 27			
	iP	22 45 20	n		
	eS	48 06			
	eP?	12 01 41			
	eS	03 19			
	iP	22 50 58	s		
	S	51 42			
	P	18 56 46			
	S	57 46			
	P	21 18(22)			
	i	(44)	n		
	(PP)	19(15)		1	6

Date	Phase	h m s		An	Tn
DEC 9	iP	10 55 05	s		
	S	56 11			
11	(S)	00 51(29)		3.5	11
11	P	02 32 28			
28	P	09 07(00)			
	S	10 00			
31	eP	19 18(48)			
	eS	20 40			

RAOUL ISLAND

Trace amplitudes are given in millimetres, measured on the screen of a viewer enlarging the original 35 mm film record by a factor of 8. The sign indicates that the deflection is too large and faint for accurate measurement.

	Phase	h m s		Az
1	eP	08 16 07		
	eS	36		
4	iP	12 23 59	d	
4	iP	16 29 49	d	
	iS	31 30		
	ePcP	35 14		
5	iP	02 28 46½		
	S	29 08		
	e	31 03		
6	iP	01 41 20		
6	iP	06 44 32½	d	
	S	45 14		
5	eP	13 08 58		
	e(PP)	09 09		
7	eP	19 23 52		
9	iP	02 02 53	d	
9	eP?	14 46 25		
	e?	47 19		
	e?	47		
11	e	16 10 53		
11	iP	17 06 12		
28	eP	13 52 40		
	eS	54 22		
28	eP	16 07 49		
28	eP	17 05 20		
31	eP	08 49 36		

Date	Phase	h m s		Az
FEB 4	eP	01 24 23½		
	e	25 42		
4	iP	12 45 58	d	
	S	46 17		
5	eP	14 03 57		
	S	04 28		
5	eP	19 30 15½		
	S	53		
7	eP	17 08 59½		
8	eP	02 29 26	d	13
11	eP	04 36 44		
	e	37 42		
11	eP	10 57 49		
11	eP	21 11 00		
15	eP	00 49 53		10
	eS	50 41		25
15	eP	09 23 20		9
	eS	24 10		8
16	e?	08 35 57		
17	eP	15 55 22		
17	eP?	17 12 42		
	e(P)	47		
	e	14 09		
18	eP	14 15 12		
18	e	14 51 51		
	iP	58	u	18

Date	Phase	h	m	s		Az
FEB 21	eP	13	18	19		
	eS		19	47		
21	eP	14	30	41		
	eS		32	20		
22	eP	08	01	30		
	eS		03	33		
22	iP	11	06	06		
24	iP	06	38	24		7
	eS		39	57		4
24	eP	17	36	02		7
	e		38	44		2½
25	iP	20	21	28		
MAR 3	eP	16	40	20		
	e(S)			51		
8	e(P)	14	01	21		
	eS		02	55		
9	eP	02	49	01		1½
	i			03	d	12
	eS			(30)		25+
9	eP	02	06	45		5
	e		09	22		4
9	iP	22	45	43		5
	eS		47	05		11
10	iP	01	28	05	d	20
	eS		29	16		7
10	eP	09	43	05½		2
18	eP	04	01	21		10
18	eP	04	26	52		
	eS		27	23		
18	e(S)	13	20	58		
20	iP	04	45	24½	u	13
20	eP?	04	47	04		4
	(P)			10		17
	eS		49	45		11
26	iP	09	48	32		
26	iP	11	45	47		
26	iP	12	51	53		
26	iP	13	25	14		
27	iP	05	54	12		
27	iP	11	47	19		

Date	Phase	h	m	s		Az
MAR 27	iP	13	01	19		
27	iP	13	54	00		
27	iP	19	11	38		
27	iP	21	26	40		
27	iP	21	39	39		
28	iP	11	12	47½		
28	iP	12	34	28½		
	S			38		
28	iP	15	04	03		
28	iP	22	50	25		
28	iP	23	24	15		
28	iP	23	29	26		
28	i(P)	23	37	34		
29	iP	00	47	05		
29	iP	01	40	30		
29	iP	01	52	35		
29	iP	21	16	56		
30	iP	00	21	13		23
30	iP	11	21	40		24
30	iP	11	37	47		>25
30	iP	14	32	26		16
30	iP	14	38	34		21
31	iP	04	04	32		20
31	iP	05	31	01		
31	iP	06	28	38		20
31	iP	08	12	56		
31	iP	09	08	35		
31	iP	09	52	56		11
31	iP	10	45	10		27
31	iP	14	20	18		15
31	iP	18	55	15		
31	iP	19	23	08½		
31	i(P)	19	28	38		
31	eP	23	29	55		15

	Phase	h	m	s		Az
	iP	23	52	24		
	iP	07	25	28		25+
	eP?	08	30	22		3
	iP			53		
	iP	11	17	10		
	eP	13	02	59		10
	iP	20	24	57		16
	iP	03	33	36		8
	e?	04	03	34		2
	e?			51		9
	iP		04	29		
	iP	04	43	45		
	iP	05	05	22½		25+
	iP	05	21	18		7
	S			39		25+
	iP	11	25	45		
	e?	19	47	16		1
	iP			30		7
	(S)			41		14
	iP	22	27	17		6
	(S)			36		
	eP?	08	21	59		3
	iP		22	04		6
	iP	11	22	02	d	
	iP	16	52	31		15
	eP	18	55	47		2
	S		56	56		4
	iP	18	26	01	d	16
	(S)			12		
	iP	22	01	20	d	
	iP	23	28	06	d	11
	(S)			17		
	iP	02	26	29½		
	iP	10	50	23		5
	iP	14	45	06½		
	iP	05	34	30	u	4
	e			33½		6
	(S)			46		24
	eS	07	07	50		4

Date	Phase	h	m	s		Az
APR 6	eP	15	09	59	d	11
	S		10	09		25+
6	iP	18	03	11½	d	5
	e			41		6
	e			52		22
7	iP	03	58	40		
8	iP	22	39	04	u	5.5
	e		40	21		2
9	eP	02	04	57		3
	(S)		06	59		3
10	iP	01	53	43	d	18
	(S)		54	05		
10	iP	09	40	12		8
	iS			26		10
11	eP	18	24	53	d	10.5
	S		25	36		3.5
12	eP	20	51	19		
	eS		53	42		
13	eP	03	22	08		
	eS		24	44		1.5
13	eP	22	08	49		1.2
	e		09	19		3
	e(S)			37		12
14	eP	05	33	04½		1
	iP			05½	d	14
17	eP	02	13	45		3.5
	eS		15	38		1.5
18	eP	01	53	56		2.0
	eS		55	42		2.5
18	e	06	45	44		1
	e		47	19		2
19	iP	22	44	30	d	
22	iP	07	25	47		
24	eP	03	57	50		6
	eS		59	59		5
24	iP	20	48	31		
24	eP	21	44	53		2
	eS		46	31		4
25	eP	17	52	04		1.5
	eS		53	39		4.5
26	eP	08	20	32		1.5
	eS		23	01		5
MAY 1	eP	10	06	57		9

Date	Phase	h	m	s		Az
MAY 2	iP	09	21	11		9
	eS			56		7
3	iP	22	52	10		7
9	iP	04	32	34	u	22
	S		33	25		14
9	iP	07	26	32	u	9
	e			49		7
	e(S)		27	00		16
10	eP	04	32	33		2
10	eP?	10	31	37		1.2
	i(P)			46	u	4
	S		33	19		2
11	eP	04	47	28		2
	eS		49	35		3
12	e	15	47	58		2
	iP		48	00		7
	S			09		13
12	iP	21	49	22		18
13	iP	07	12(02)		u	4
	S		13	02		3½
14	iP	17	56	27		
16	iP	09	01	41½		
	(S)			51		
17	e	07	34	08		
	iP			09½		11
	(S)			40		30
17	eP	22	41	18		26
	eS		42	01		40+
	e		45	36		4½
	e		46	16		9
20	iP	11	38	28	u	
20	iP	19	17	13		
21	eP	18	10	23½		
22	eP	07	52	27		5
	eS			44		11
23	eP	21	36	59.5		5
	S		37	18		18
24	iP	06	47	26	d	6
	S			34		23
24	iP	20	54	08	d	5
	S		55	31		1.6
26	eP	00	02	14		2
	e		03	59		3

Date	Phase	h	m	s		Az
MAY 29	iP	01	04	36	u	2½
	eS		06	39		3
29	eP	08	30	26		1½
	eS		32	27		2
29	eP	11	01	42		2
	eS		03	45		4
29	eP	13	24	35		3
	eS		25	49		2½
30	iP	05	36	36½	u	
	(S)			49		
31	iP	14	08	25		20
	(S)			40		40
JUN 2	iP	21	08	08		9
	(S)			51		26
3	iP	18	49	04		
4	iP	08	01	23	u	
4	iP	09	37	14		
4	iP	11	54	28	u	
4	iP	13	06	16	d	
4	iP	13	38	40	u	
4	iP	19	20	01	u	
5	iP	05	07	21	d	
5	iP	14	47	51	d	23
6	eP	23	44	42		11
	S		45	51		5
9	eP	01	32	33		
9	eP	06	17	14		11
	S			33		44
9	eP	18	07	23		6
	S			44		36
9	eP	18	53	23		30
9	eP	19	28	09		
	S			27		
10	iP	19	17	31	u	8
	e			39		
	eS			51		
10	eP	19	33	41		6
	eS		34	01		
11	P	07	25	20		3.6
	i			28		9
	eS			40		17

	Phase	h	m	s		Az
10	eP	17	14	54		1.7
11	eS		16	12		4.0
11	P	17	15	18		4.0
12	eS	04	13	43		3.1
13	iP	16	13	08	d	8
	eS			22		22+
14	eP	14	50	53		2.6
	eS		51	27		5
15	eS	05	07	25		2.3
15	iP	15	08	50	d	20
	eS		09	11		15
16	eS	03	38	42		2.2
16	eP	16	31	01		3.0
	eS			33		5.0
17	eP	17	39	28		1.7
	S		41	09		2.8
17	eP	20	10	48		3.3
	eS		12	31		5
19	eP	02	17	20		3.2
	S		18	34		4.8
20	P	18	59	11		11
	S			31		25
20	iP	22	46	47	d	>>
	eS		47	14		>>
21	iP	00	08	44½	d	>>
21	eP	00	14	46		10
	eS		15	11		16
21	iP	05	52	22	u	16
21	eP	17	43	05		10
	eS			38		37
21	eP	18	03	20		5
	eS			45		16
21	iP	21	19	30	d	17
	iS		20	10		10
21	iP	21	42	15½	d	>>
21	iP	21	48	30½	d	>>
22	P	00	24	33		20
	eS			55		>>
22	iP	21	28	15	d	>>
23	iP	00	08	34	u	12

Date	Phase	h	m	s		Az
JUN	i			42½		16½
	eS			52		29
23	iP	03	49	46½	d	>>
24	P	13	18	47		9
	S		19	38		22
24	eP	14	50	58		7
	eS		51	27		12
25	eS	16	08	08		3.0
26	S	16	54	26		5
27	eS	00	10	31		2.4
27	iP	04	08	35	u	5½
	S		09	09		5½
27	eP	07	24	29		1.6
	S		25	27		4.3
27	iP	12	21	41	d	>>
28	eP	04	39	13		3.4
	i			26½		4.4
	iS			37½		10½
28	eP?	08	57	42		2.5
	eS		58	30		14
28	iP	14	39	02	d	21
	S		40	37		88+
30	eP	23	10	48		10
	S		11	10		83
JUL 1	P	06	32	40		11
3	iP	19	08	07	d	12
4	iP	10	59	01½	d	>>
4	eS	14	19	35		2.6
6	eP	05	21	31		5
	e			38		11½
	eS			48		>>
8	eS	11	44	03		2.2
10	iP	04	29	42½	d	>>
10	iP	16	49	00	u	>>
	i			07		>>
10	iP	23	24	25		10
	eS			36		40+
12	P	08	39	28		11
	e(S)			38		
14	P	00	02	45	u	>>
	eS			58		>>

Date	Phase	h	m	s		Az
JUL 14	iP	03	59	30	u	2.8
	i			31	d	>>
14	P	14	28	40		>>
14	eS	17	11	20		2.9
15	eS	04	26	00		3.7
16	iP	01	28	00		18
	iS			16½		20
16	P	16	00	51		30
16	iP	19	08	49	u	>>
18	iP	07	48	40½	d	6
	iS			51		25
22	eP	00	36	37		1.8
22	P	04	07	19		7
	i			28½		20
22	iP	04	10	41	d	36
	e(S)			53		>>
22	iP	08	29	18	d	10
	i			24		12
	iS			29		29
24	eP	09	23	51		5½
	eS		24	16		8
24	iP	09	27	18	d	15
	eS			47		24
25	iP	19	31	33	u	11½
	iS			54½		23
29	iP	04	49	07½	d	6
	i			11		22
	e(S)			18		>>
29	iP	19	08	53	d	11
	S		09	01		>>
29	eP	20	14	26		>>
29	e(P)	20	25	58		>>
29	eP	20	41	52		10
	eS		42	10		18
	e		43	13		
29	eP	21	00	35		5
	S			51		14
29	iP	23	19	03	u	>>
30	P	00	52	46		7
	iS		53	08		18
30	eP	02	06	00		8
	eS			17		22

Date	Phase	h	m	s		Az
JUL 30	eP	02	19	01		5
	eS			15		12
30	iP	02	57	49	u	>>
	S		58	09		>>
30	eP	04	27	46		2.8
	i			48		27
	eS		28	01		>>
30	iP!	05	46	10	u	>>
30	P	06	08	06½		11
	S			22		27
30	iP	06	11	29½	d	11
	iS			46		28
30	P	06	47	49		5
	iS		48	04		21
30	eP	07	55	58	u	2.0
	i			59		29
	eS		56	15		>>
30	iP	07	59	06	u	25
	eS			21		
30	eP	08	51	26		3.5
	e			32		5½
	i			41		8
	eS			45		17
30	eP	09	13	30		5½
	i			40		11
	e(S)			46		22
30	iP	09	31	13½		17
	iS			30		27+
30	P	10	37	15		11
	eS			28		25
30	iP	14	23	29	u	>>
30	iP	14	49	47		12½
	S		50	01		49
30	iP	15	04	52½	u	>>
30	P	00	40	14		10½
	e(S)			28		24
30	iP	01	44	36		>>
31	eP	07	23	39		5½
	eS			58		17½
	i		25	00		11½
31	eS	16	22	54		2.7
AUG 1	iP	15	21	11	u	>>
1	eP	17	00	04		1.2
	eS		01	01		11

Date	Phase	h	m	s		Az
1	eP	20	54	13		5
	S			34		21
2	eP	21	49	09		2.0
	eS			59		5½
3	eP	03	53	59		2.0
3	iP	07	01	04½	d	43
	eS			20		>>
3	iP	20	26	28	u	>>
4	eP	15	20	41		7
	e			56		13
	eS		21	21		11
4	eP	23	56	49		3.8
	eS		58	57		4.2
5	iP	07	42	10	u	>>
	eS			32		>>
7	eP	11	17	23		2.7
	eS		19	00		3.2
7	eS	11	20	47		2.7
7	eS	15	42	28		1.5
8	eP	13	30	53		6
	S		31	07		19
8	eP	14	03	09		9
	S			24		26
9	iP	10	56	46	d	>>
	eS		57	01		>>
9	eP	21	40	45		
	S		41	09		
10	eP	03	35	20		9
	eS			55		25
10	iP	19	58	24½	d	12
	eS			34		31
11	P	12	45	12		>>
11	eP	20	02	01		5
	eS			22		16
11	eP	23	48	49		12
	eS		49	11		18
	i		50	13		27
12	eP	21	00	49		1.5
	eS		02	08		1.9
13	iP	06	31	22.8	d	3.4
	eS		33	04		5½
13	eS	21	56	58		2.2

Date	Phase	h	m	s		Az
AUG 14	S	20	46	24		3.6
15	eP	04	58	30		12
15	P	14	59	07		6
	S			53		14
15	eP	22	31	53		3.0
16	eP	13	00	34		9
	S			50		19
16	P	15	08	22		8
	eS			42		13
17	eP	05	35	54		1.7
	eS		37	40		2.5
17	eP	09	35	58		4.6
	eS		36	48		9
18	iP	10	23	51	d	14
	eS		24	09		21
18	eP	20	20	07		3.1
	eS		21	25		4.5
18	eP	20	28	20		19
	eS		29	11		29
18	eP	21	57	40		7
19	eP	04	24	41		19
	eS		25	20		36
20	eS	00	30	43		2.2
20	P	09	20	58.7		11
	eS		21	27		28
20	P	19	44	14		>>
	eS			29		>>
21	eS	23	02	53		2.1
22	iP	19	58	30	d	3.5
24	iP	03	18	34		>>
25	P	12	20	41½		22
	eS		22	41		94+
	e		27	17		12
	eScS		32	06		1.7
26	iP	02	29	39	u	14½
	eS		30	54		2.7
26	iP	02	55	28	u	25
	S			55		2.1
26	eP	03	02	11		1.7
	eS		03	58		2.0
30	eP	13	53	20		2.5
	eS		54	28		4.8

Date	Phase	h	m	s		Az
AUG 31	P	21	28	04		3.9
	eS		29	37		2.8
SEP 2	eS	19	06	49		3.5
4	iP	22	34	05.4	d	>>
6	iP	10	18	12	d	25
	eS		19	23		11½
7	eP	02	31	32		3.1
	eS		33	01		4.1
7	P	08	29	09		2.6
	eS		31	09		2.3
7	P	15	18	47		5
	eS		20	19		2.8
7	iP	20	01	46½	u	12
	iS		02	16		51
8	iP	00	47	53	u	25±
	eS		48	25		75+
8	eS	05	36	49		3.6
8	eS	07	41	36		2.8
8	eP	09	16	25		2.2
	e			41		3.5
	S		17	03		17
8	P	09	21	14		10
	eS			34		35
8	iP	13	06	43½		13
	eS			55		55+
8	eP	19	31	35		4.3
	eS		32	57		3.5
8	iP	19	52	05	d	57+
	S		53	23		50
8	eP	23	27	03		2.4
	eS			55		4.4
9	P	00	20	51		4.2
	eS		22	15		4.3
9	P	14	34	15		4.8
	eS		36	02		4.0
9	P	18	00	13		2.7
	eS		01	23		3.9
9	eP	21	11	44		5½
	eS		12	14		21
11	eP	22	21	24		6
13	iP	19	13	47	u	5
	eS		14	19		6

Date	Phase	h	m	s		Az
SEP 13	e(P)	21	10	45		3.1
	e		11	25		5.0
	e(S)		12	36		8
13	eP	23	34	09		5
	i			14		18
	eS			34		28
14	eP	00	38	42		11
	eS		39	13		17
14	eP	03	52	51		54
	eS		53	04		>>
15	eP	00	52	22		2.8
15	eP	02	02	44		7½
	eS		03	10		13
15	eP	08	31	41		2.7
	i			44		11½
	S		32	07		12
16	P	07	27	50½		5½
	eS		28	07		51
16	eP	15	09	16		5
	S			38		21
17	eP	10	36	50		1.8
	S		37	46		4.0
17	eP	19	25	31		1.7
18	eP	06	24	07		2.6
	eS			49		5
18	eP	06	48	34		3.7
	eS		49	15		8
18	iP	18	08	45	d	35
	eS			58		>>
23	iP	01	44	55	u	
	eS		45	09		
26	eP	06	43	28		10
28	eS	03	04	59		3.2
28	P	06	59	20		26
29	iP	10	07	02.2	d	>>
	eS			17		>>
29	eP	13	37	26		8
	eS			51		14
OCT 2	eP	05	49	12		5
	eS		50	50		7
2	eS	07	01	33		1.7
3	eP	04	58	33		13
	eS			47		47

Date	Phase	h	m	s		Az
	iP	07	52	45	d	11
3	eS		53	04		20
	eP	02	49	40		3.4
5	eS		51	22		8
7	eP	13	16	00		17
	eS		17	15		36+
9	eS	05	18	00		5
11	eP	00	02	56		2.0
	eS		04	11		3.2
11	iP	18	40	19		>>
	eS			29		>>
13	eP	05	30	16		2.1
	e		31	21		2.5
	eL		56.5			
14	iP	12	35	00	d	11
	eS			52		4.0
15	eP	07	09	10		2.0
	eS		10	54		1.6
19	eP	15	49	05		12
	eS			20		>>
20	eP	03	02	16		2.0
	eS		03	53		3.6
20	iP	15	31	59	d	22+
	eS		32	15		>>
20	eP	20	16	49		1.3
	eS		17	48		3.7
21	eP	09	20	11		1.6
	eS		21	17		3.7
21	P	13	28	34		5
	eS		29	40		2.7
23	eP	20	15	37		8
	eS		16	18		14
25	P	09	04	13		11
	eS			32		25+
27	eP	10	40	24		2.3
	eS		41	40		3.7
27	eP	18	25	57		4.0
	S		26	56		5½
28	eP	07	56	27		3.6
	S		57	27		6
28	P	20	00	41		4.7
	eS		01	51		6
29	eP	16	56	32		14
	eS		57	16		11

Date	Phase	h	m	s		Az
OCT 29	eP	17	04	31		5½
	S		05	09		5½
29	eP	20	23	01		25
	S			42		26
29	eP	22	23	56		2.4
	eS		24	56		4.2
30	eP	05	32	14		11
	iS			57		16
31	eP	03	19	33		9
	eS		20	58		35
31	eP	04	27	16		4.0
	eS		28	27		3.7
NOV 1	eS	09	30	59		2.0
1	eP	21	01	15		4.2
	eS		02	25		12
	i		06	20		4.0
4	eP	01	18	55		3.1
	i			58		10
	eS		22	29		2.7
4	eP	01	26	31		10
5	eP	09	34	03		5
	iS			32		15
5	eP	16	02	45		4.7
	S		03	17		11
6	iP	06	29	55	u	23
	eS		30	34		>>
6	eP	18	24	50		5
	eS		25	30		14
6	eP	22	16	05		3.0
	eS			37		8
7	eP	15	55	05		5
	S		56	01		5
7	iP	20	15	37.7	d	18
	i			42		>>
	eS			49		>>
8	S	05	08	28		3.0
8	eP	05	48	57		12
	S		49	18		34
10	iP	19	22	12		6
11	eP	11	31	58		3.5
	eS		34	13		12
12	eP	06	08	27		5
	eS			56		9

Date	Phase	h	m	s		Az
NOV 12	eP	12	45	34		1.8
	eS		46	46		3.0
12	P	17	42	11		12
	eS			20		>>
12	eP	21	49	19		5½
	eS			48		16
13	iP	11	20	04	d	5
	S		21	14		5½
13	eP	17	20	24		3.0
	eS		21	37		4.2
14	iP	00	20	18½	d	>>
16	P	22	45	11		8
	eS		46	31		14
16	eP	23	41	41		3.0
	S		42	58		5½
17	eP	00	50	42		3.2
	eS		52	01		7½
17	eP	01	15	15		1.6
	eS		16	35		2.7
17	eS	10	30	45		2.3
17	eP	13	16	29		1.9
	eS		18	44		2.8
20	P	12	01	41		5
	eS		03	00		5
22	eS	17	08	39		2.0
22	P	21	48	36		5½
	eS		49	15		10
23	eS	19	34	12		3.8
24	eP	05	10	26		2.3
	eS		11	45		5
24	eP	05	15	08		2.0
	eS		16	27		3.2
24	eP	05	22	23		2.3
	eS		23	43		3.2
26	iP	02	59	14½	u	11
	S			50		24
26	iP	03	55	11	u	9
	eS			42		6
26	eP	22	53	31		4.5
27	eP	03	31	57		2.5
	eS		32	44		4.7
27	iP	18	19	46	d	5.0
	S		20	10		17
28	P	18	15	18½		2.3

Date	Phase	h	m	s		Az
NOV 29	P	18	57	59		2.4
DEC 3	P	19	44	31		6
	eS		45	27		31
	e		49	22		4.8
4	eP	00	45	45		5
	eS		46	40		9
7	P	04	09	46		9
	eS		11	19		6
7	iP	17	38	55½	u	7½
	eS		39	17		>>
9	eP	10	55	36		3.7
	eS		57	00		13
	PcP	11	01	31		2.7
9	eP	19	19	12		5
11	eS	02	35	57		4.0
11	P	11	14	04		5½
	S		15	21		3.3
15	eP	19	45	19		1.8
	ePP		48	55		3.0
	eS		53	54		2.3
17	eP	08	34	02		2.4
	eS			45		3.5
18	iP	00	31	17	d	>>
	e		56	24		4.5
18	P	12	21	58		21
	eS		22	14		>>
19	P	02	35	38		3.0
	e(S)		36	39		2.4
	i			53		4.7
19	eP	23	28	06		9½
21	eP	12	36	21		3.3
	eS		37	54		17
23	eP	17	59	20		3.4
	e			35		8
	eS			55		15
28	iP	06	49	19	d	17
	eS			27		>>
28	eS	04	39	03		2.2
28	iP	07	05	22	d	6
	eS			42		11±
	eT		06	38		6
28	iP	09	04	50	u	>>
29	iP	03	00	35½		17
	eS			52		>>
29	eS	15	04	08		2.4
30	eP	06	23	51		>>

Date	Phase	h	m	s		Az
...30	iP	22	32	31	d	9½
	eS			48		23
31	eS	01	34	40		2.9
31	eP	10	24	11		1.9
	eS		26	05		2.1
31	eP	19	19	48		9
	eS		22	01		10

HALLETT

Original seismograms recorded at Hallett in 1963 were lost as the result of a fire at the base in early 1964. The readings printed below are preliminary ones sent by radio to Wellington in the course of the year. In the absence of the seismograms it has not been possible to revise them. A few are obviously defective as a result of errors in radio transmission, but they are printed as received. Such readings are identified by the letter R following the seconds figure.

Date	Phase	h	m	s	
JAN 1	eP	19	45	04	
2	eP	00	01	27	
2	eP	16	02	43	
3	eP	09	50	39	
4	eP	12	27	34	
7	eP	12	00	18	
11	eP	12	21	43	
13	eP	16	25	18	
14	eP	11	24	45	
FEB 5	eP	20	49	33	
6	eP	01	31	46	
13	eP	09	03	58	
13	eP	18	24	30	
14	eP	07	15	34	
14	eP	22	18	55	
20	e	19	33	14	
26	eP	20	24	42	
27	eP	05	41	01	
MAR 10	e	11	03	04	
10	e	17	14	40	
10	e	21	52	42	
10	e	23	27	07	
11	e	16	05	03	
11	e	17	00	43	
11	e	15	09	33	
12	e	04	00	19	
12	e	03	34	30	
12	eP	13	25	29	
	e		47	05	R
	e		37	22	
12	e	15	24	04	
15	e	06	24	32	
15	e	11	49	08	
16	e	01	13	25	
16	e	07	06	47	
16	e	07	52	01	
16	e	16	50	17	
16	e	21	13	33	
16	e	21	57	42	
16	ePKP	09	03	39	
16	eP	09	12	57	

Date	Phase	h	m	s	
17	e	03	06	36	
17	e	05	21	14	
17	e	09	0		R
	e		01	14	
17	e	10	30	26	
18	e	01	29	34	
19	e	08	11	11	
19	e	09	00	38	
19	e	11	32	15	
21	e	07	14	29	
22	e	03	34	49	
22	e	11	23	43	
22	eP	12	22	39	
22	e	13	42	27	
22	e	19	31	11	
23	e	07	44	42	
23	e	19	31	44	
24	e	02	17	16	
	e			54	
24	eP	02	18	19	
24	e	07	34	18	
24	i	11	06	30	
	e			52	
25	e	17	43	20	
	e		44	03	
25	eP	20	21	26	
26	iP	09	56	19	
26	eP	12	59	35	
26	iP	13	33	02	
26	eP	21	59	38	
	e	18	29	25	R
29	e	08	56	19	
29	e	09	41	21	
29	e	13	11	42	
29	e	22	54	35	
MAR 30	iP	02	02	33	
30	eP	05	11	40	
30	e	05	39	32	
31	iP	05	38	48	
31	iP	07	18	29	
31	iP	19	30	50	
APR 1	e	06	35	47	
	e		38	07	
1	e	13	03	54	
1	e	18	19	31	
2	e	16	10	56	
3	e	06	45	25	
3	e	11	06	04	
3	e	12	15	54	
	e		16	44	
3	e	13	44	37	
3	eP	14	54	12	
3	e	17	41	16	
3	e	19	00	48	
7	eP	22	48	15	
11	e	02	19	18	
11	e	07	15	21	
11	e	10	59	15	
11	e	13	57	05	
11	e	19	48	53	
12	ePP	08	48	32	
13	eP	02	33	49	
13	eP	14	41	56	
13	e	22	53	41	
14	e	82	84	X1	R
14	e	05	40	22	
14	e	05	09	19	
15	e	01	23	44	
15	e	05	52	21	

Date	Phase	h	m	s	
JUN 13	eP	10	45	53	
13	eP	17	37	41	
15	eP?	05	11	08	
15	eP	15	40	14	
19	eP?	02	14	02	
19	iP	02	20	39	
19	eP?	02	24	44	
19	eP?	05	09	17	
19	iP	09	21	16	
19	iP	12	09	24	
19	eP?	13	54	51	
19	iP	18	32	50	
20	eP	19	15	27	
20	eP	22	54	33	
21	eP?	00	16	24	
21	eP	21	49	57	
22	eP	04	48	09	
23	eP	03	57	32	
23	eP	09	04	04	
24	eP	04	45	58	
24	eP	13	26	20	
24	eP	15	10	53	
25	eP	14	43	51	
27	eP	11	58	09	
27	eP?	12	29	20	
27	eP?	16	32	46	
28	eP	02	39	51	
28	eP	18	54	32	
28	eP?	22	15	42	
28	eP?	23	27	54	
29	eP	12	56	2-	R
29	eP	13	06	30	
29	eP	13	17	01	

Date	Phase	h	m	s
JUN 29	eP	13	27	24
29	eP	13	31	41
29	eP	17	48	15
30	eP	01	51	44
30	eP	04	46	55
30	eP	06	57	35
30	eP	21	52	23
JUL 1	eP	16	05	10
1	eP	17	00	07
1	eP	20	31	34
2	eP	08	45	37
2	eP	09	58	01
4	iP	11	06	27.4
4	eP	14	25	43
4	eP	23	09	11
5	eP	06	00	48
7	eP	00	10	01
7	eP	16	56	40
7	eP	23	13	28
11	eP	17	59	04
12	eP	17	01	35
12	eP	18	42	39
12	eP	17	56	37
13	eP	00	02	08
13	eP	03	22	22
13	eP	04	38	56
14	eP	00	10	18
14	eP	04	07	09
16	eP	17	00	09
16	eP	18	46	40
16	eP	19	16	24
16	eP	23	59	26
17	eP	19	21	44

Date	Phase	h	m	s	
18	iP	05	06	36.5	
19	eP	06	05	16	
	e			53	
20	eP	05	17	33	
	e		20	05	
	e		22	52	
20	eP	06	40	09	
20	eP	18	54	41	
	e		56	29	
20	eP	19	05	24	
	e		07	15	
20	eP	19	14	11	
	e		16	08	
21	eP	11	12	18	
22	eP	00	40	08	
23	eP	09	33	16	
23	eP	11	08	50	
23	eP	15	05	39	
23	eP	17	23	44	
24	eP	16	57	30	
24	eP	18	57	06	
24	eP	19	00	03	
24	eP	21	58	24	
25	eP	(21)42	26		R
25	eP	04	36	54	
25	e	04	39	18	
25	eP	05	36	21	
	e		41	31	
25	eP	23	43	09	
27	eP	00	01	07	
28	eP	07	20	16	
28	eP	08	06	35	
28	eP	16	43	20	
29	eP	04	56	45	
29	eP	05	43	04	
29	eP	06	29	21	

Date	Phase	H	m	s	
JUL 29	eP	20	22	05	
29	e(P)	20	24	36	
29	eP	23	26	38	
29	eP	23	51	20	
30	eP	03	05	30	
30	eP	04	35	23	
	eS		42	00	
30	eP	05	53	54	
	e	06	00	25	
30	eP	13	07	22	
30	iP	14	01	01.8	
30	e(P)	14	31	14	
30	eP	15	12	34	
	eS		19	03	
30	eP	17	51	35	
31	eP	06	52	14	
31	e(P)	14	55	01	
AUG 1	e(P)	03	20	24	
1	e(P)	12	51	09	
1	e(P)	12	58	18	
1	eP	15	28	53	
1	e(P)	18	56	41	
1	eP	19	58	02	
1	e(P)	21	36	25	
3	iP	03	58	07.9	
3	eP	10	41	00	
3	e(P)	10	51	05	
5	e(P)	00	03	00	
5	e(P)	07	49	-5	R
5	e(P)	15	39	50	
5	eP	15	42	13	
	eS		44	40	
6	e(P)	01	44	36	
6	eP	01	45	37	
6	eP	09	38	38	

Date	Phase	h	m	s
AUG 6	eP	21	09	29
7	eP	06	09	53
7	eP	11	23	30
7	eP	17	22	21
8	eP	11	07	53
8	eP	11	27	05
9	eP	06	25	19
9	eP	14	46	36
9	eP	15	23	55
10	eP	12	37	31
13	eP	22	02	00
14	eP	02	57	02
14	eP	03	43	30
14	eP	14	43	23
14	e(P)	08	37	44
14	e(P)	10	35	18
14	eP	18	40	19
15	eP	06	30	55
15	eP	17	36	48
15	eP	23	59	46
16	e	23	25	50
17	e(P)	11	31	01
17	e(P)	11	35	34
18	eP	20	35	30
21	eP	04	41	15
21	eP	08	50	53
22	eP	20	02	52
22	eP	21	34	14
24	eP	01	53	31
24	eP	02	21	16
24	eP	03	26	00
24	e(P)	05	30	29
24	eP	19	58	09
AUG 25	eP	12	26	54
27	eP	03	32	51
28	eP	12	50	57
28	eP	17	08	20
29	eP	09	12	54
29	iP	15	43	26.5
29	eP	20	07	22
30	eP	00	28	06
30	eP	14	00	43
SEP 3	eP	03	53	11
	eS		56	0 R
4	eP	13	52	06
5	eP	04	47	37
5	eP	20	52	36
6	e	02	32	24
6	eP	10	24	38
6	eP	08	22	49
6	eP	12	04	47
7	eP	19	38	01
8	eP	00	55	39
8	eP	04	21	42
8	eP	09	15	50
8	eP	19	37	48
8	eP	19	58	29
8	eP	23	33	21
9	iP	02	56	47.7
9	eP	13	01	47
10	eP	01	19	38
10	eP	19	23	42
10	e(P)	23	59	10
11	eP	00	07	50
11	eP	09	11	06
11	eP	22	28	01

Date	Phase	h	m	s
12	eP	02	40	37
12	eP	03	20	48
12	eP	03	36	14
13	eP	23	41	21
14	eP	00	27	12
14	eP	00	45	48
14	iP	04	00	01.8
14	e(P)	12	00	25
14	eP	15	25	54
14	eP	15	35	30
15	iP	00	57	10.6
15	e	01	26	15
15	eP	02	07	54
15	eP	04	27	27
15	e(P)	08	01	11
15	e(P)	09	18	03
15	e(P)	11	54	38
16	iP	20	15	19.5
17	eP	06	07	11
17	eP	19	30	29
	eS		38	58
	e		59	30
	e	20	07	57
17	eP	22	38	48
18	eP	02	06	02
18	eP	17	17	39
18	eP	17	29	12
19	eP	19	38	48
	e		39	25
20	eP	22	23	37
22	eP	02	05	42
22	eP	19	21	15
23	eP	06	53	22
23	eP	09	14	44
23	eP	15	15	10
SEP 23	e(P)	16	50	54
23	e(P)	21	16	42
23	eP	22	36	25
24	eP	08	08	49
24	eP	08	41	16
24	eP	09	26	25
24	eP	16	42	25
24	eP	22	18	50
24	eP	23	19	14
25	eP	07	16	41
25	e(P)	12	56	17
25	e(P)	14	11	09
25	eP	15	00	40
26	eP	03	38	15
26	eP	05	47	02
26	eP	06	05	54
26	eP	20	47	12
27	eP	11	17	09
27	eP	18	31	35
28	eP	00	40	02
28	eP	07	05	17
28	e(P)	07	10	10
29	eP	02	57	35
29	eP	12	36	37
29	eP	19	47	18
29	eP	22	36	06
OCT 2	eP	03	42	18
2	eP	05	56	18
	eS	06	03	52
3	e(P)	02	02	46
3	eP	15	57	01
3	eP	18	04	39
3	e(P)	18	07	16

Date	Phase	h	m	s	
OCT 5	eP	02	05	16	
5	eP	04	45	43	
5	e(P)	19	31	24	
6	iP	17	26	13.5	
	e			39	
7	eP	12	67	22	R
7	eP	13	22	23	
8	eP	00	26	54	
8	e(P)	10	40	07	
	e			36	
8	eP	13	22	10	
	e		23	16	
9	eP	05	22	53	
9	eP	10	46	06	
10	eP	00	33	50	
10	e(P)	21	42	09	
12	eP	03	47	25	
12	eP	11	42	18	
	e		44	44	
	e		45	40	
	ePP		47	05	
	eS		54	52	
	e		56	00	
13	eP	05	33	02	
14	e(P)	13	40	24	
	e		41	38	
	e(S)		51	32	
	e		58	02	
15	eP	07	16	12	
15	e(P)	10	21	11	
15	e(P)	14	05	50	
15	eP	21	56	31	
16	eP	06	59	32	
	e			45	
16	eP	14	05	18	
17	eP	03	18	24	
17	iP	11	45	00.5	
17	eP	14	26	42	
17	eS	23	54	24	

Date	Phase	h	m	s	
OCT 20	eP	00	33	13	
20	eP	01	12	13	
	eS		22	58	
21	eP	09	27	34	
21	eP	14	48	20	
24	eP	07	28	32	
25	eP	01	30	41	
25	eP	20	11	40	
26	eP	12	43	30	
26	eP	14	57	22	
27	eP	10	47	43	
27	eP	18	33	26	
28	eS	08	11	04	
DEC 10	eP	16	10	54	
10	eP	16	48	22	
11	eP	00	57	40	
11	eP	02	40	01	
11	iP	09	01	49	
12	eP	04	30	26	
12	iP	15	22	49	
12	iP	21	38	33	
13	eP	09	29	38	
13	eP	20	01	20	
14	eP	12	37	19	
15	iP	19	45	37	
16	eP	02	03	14	
17	eP	15	13	41	
18	iP	00	38	42	
19	eP	07	18	36	
22	eP	12	50	4	R
22	eP	15	59	24	
22	eP	19	13	18	
23	eP	05	42	10	

Date	Phase	h	m	s	
[illegible] 24	eP	06	36	24	
24	iP	11	28	11	
24	eP	11	40	13	
24	eP	21	10	24	
25	eP	07	36	46	
25	eP	07	51	52	
25	iP	15	29	1	R
25	iP	13	45	16	
25	iP	13	59	56	
26	iP	03	18	26	
26	eP	04	14	59	
26	eP	04	35	41	
27	eP	02	59	47	
27	eP	03	28	40	
27	eP	03	50	25	
27	eP	07	30	47	
27	eP	11	44	19	
27	eP	13	30	17	
28	eP	05	55	42	
28	eP	09	11	36	
28	eP	12	00	36	
28	eP	18	05	28	

SCOTT BASE

This station was re-equipped with World Wide Standard instruments during the summer and began recording intermittently during February. Regular operation did not begin until March 10. The amplitudes given are in millimetres, read directly from the photographic paper records.

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAR 10	P	Z	11	02	50	1.5	4				
16	PKP	Z	09	03	40	4	2				
	PP	ZE		05	40	4	4				
	PKS	N		07	20			15	8	2	5
	SS	NE		22	40			30	40	10	20
	Lq	NE		36	10			15	60	60	60
	Lr	ZN		42		30	40	20	40		
20	P	Z	04	54	15	1	5				
	S	NE	05	03	20			2	15	3	30
20	eL	NE	17	15	00			3	30	3	30
22	eL	NE	12	44				4	20	4	15
24	P	Z	02	18	36	4	3				
	S	NE		28	00			3	12	3	12
	SS	NE		33				2	30	2	30
	Lq	NE		38				5	45	4	45
	eLr	ZNE				10	20	12	20	10	20
24	P	Z	09	56	15	1.5	2				
24	eL	ZNE	13	50							
25	P	Z	20	22	00	2.5	2				
	iS	NE		26	15			30	20	30	20
	L	NE		30				30	5	60	5
26	P	ZNE	09	57	00	35	20	30	20	10	20
	S	NE	10	03	30			15	20		
	SS	ZNE		09		35	20	150	20	150	20
	L	N		11	30	150	28	150	28	70	28
26	P	Z	13	00	18	1	1				
26	P	ZN	13	33	45	10	15	7	15		
	PP	Z		35	45	3	8				
	S	ZNE		41		7	20	35	20	30	24
	Lq	E		44	30					15	16
	Lr	ZNE		47	30	25	28	20	28	10	30

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAR 26	PP	Z	21	54	22	1.5	3				
	PS	ZNE		04		3	8	4	20	4	8
	eLq	E		25						5	36
	Lr	ZNE		32		3	26	3	28	2	28
28	P	Z	11	21	10	2.5	1				
28	P	Z	23	38	00	2	1				
	eL	Z		53		3	20				
30	eP	Z	02	03	12	15	1				
	iS	E		11	10					25	12
	SS	E		15						5	12
	Lq	E		18						15	24
30	PKP	Z	17	10	50	1	2				
	eL	Z		53		1	24				
31	eL	ZNE	05	30		1	24	1	20	1.5	20
31	P	Z	05	39	32	4	1				
	PP	Z		41	15	2.5	2				
	S	E		46	40					16	16
	SS	E		50						10	16
	L	ZN		53		12	30	10	30		
31	eP	Z	07	19	00	2	18				
	S	E		28	20					7	10
	Lq	E		37						4	18
	Lr	ZN		42		3	24	3	24		
31	eP		16	22	27						
	(P*)	Z			44	1	1				
	e(S)	NE		23	24				1.5	1	1
31	P	Z	19	31	33	2.5	1				
	iS	NE		39					6	24	5
	eSS	E		42							2
	eLq	E		43							4
	Lr	ZN		45		5	32	3	32		
31	(P)	Z	13	53	10	0.5	1				
	(S)	N		54	10				0.5	1	
APR 2	S	N	14	59	28				10	16	
	Lq	N	15	01	00				15	24	
	Lr	ZE		02		6	26			10	26
5	eP	Z	03	42	10	1.5	2				
7	eP	ZNE	22	48	10	5	3	2	2	2	2
	L	NE	23	14				6	30	10	30
	(P'PKS)	NE		18				7	24	10	24
9	eP	ZNE	03	28	44	2	1	1.5	1	1	1
	eL	ZN		32		4	16	4	16		
	M	NE		34				3	10	3	10
10	eP	ZNE	08	01	40	0.5	1	0.2	1	0.2	1
	eL	ZN		25		3	30	2	30		
	M	E		33						3	16
11	eP	Z	16	53	17	1	2				
	(SS)	E	17	02	30					3	24
	eL	E		09						2	18

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
APR 12	P	Z	08	49	15	2	2				
	S	N		55	30						
	e	NE		58	00			2	20		
	L	ZE	09	00		6	22	2	28	8	28
										12	16
13	P	Z	02	33	40	1	2				
	S	E		44	30						
	eL	ZE	03	03	00	4	48			4	12
13	P		02	37	40						
	SS	E		50	40						
	eL	ZE	03	03	00	4	48			2	26
										3	44
13	eP	Z	14	43	08	1.5	2				
	S	E		52	40						
	eL	ZNE	15	09		5	20	5	20	2	8
										3	20
14	e	Z	02	04	26						
	P	ZN		05	02	0.5	1	1	1		
14	eL	E	05	48							
15	P	Z	23	49	34	2	1				
16	P	Z	01	41	25	5	20				
	S	ZNE		51		20	20	40	20	30	20
	SS	ZNE		56	30	50	20	60	20		
	Lq	NE	02	04				130	60	140	60
	Lr	ZNE		07		180	60	170	60	180	60
16	P	Z	01	49	00	2	2				
16	P	Z	02	07	15	5	2				
16	P	Z	12	15	48	2	1				
17	P	Z	01	22	20	0.5	1				
	eL	ZE		49		3	40			2.5	40
	M	ZNE		55		2.5	20	3	20	2	20
17	P	Z	02	21	21	1.5	1				
	S	NE		29	30			7	20	4	20
	SS	E		31	30					3	8
	Lq	NE		36				6	24	16	20
	Lr	ZN		39	30	5	16	6	16		
17	eP	Z	08	33	49	1	1				
17	eP	ZNE	10	46	10	1	1	1	1	1	1
17	P	Z	18	33	00	0.5	1				
	Lq	E		44						4	12
	Lr	ZN		48		4	16	4	16		
19	eP'	Z	07	54	11	0.5	1				
	SP	Z	08	05	30	3	12			8	60
	SS	E		12	30					8	50
	SSS	E		16	30					15	60
	Lq	NE		25				30	70	17	40
	eLr	ZNE		32		16	40	15	40		
19	P	Z	16	25	50	2	1				
	e(PP)	Z		27	30	1	1				
	ScP	Z		31	45	0.5	1				

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
		ZNE	18	33	00						
19	e										
		ZNE	02	03	30						
22	e										
22	eP	Z	07	34	13	1.5	1				
22	P	Z	15	16	50						
23	P	Z	07	27	31	0.5	1				
	ePP	Z		29	00	0.5	1				
23	P	Z	19	03	20	0.5	1				
24	eP	ZNE	14	06	40	0.5	1	0.5	1	0.5	1
24	1P	Z	21	51	44	2	1				
	pP	Z		55	30	0.5	1				
25	P	Z	08	24	35	0.5	1				
25	P	Z	16	48	00	1	1				
26	e	Z	12	07	30	1	1				
27	eP	Z	08	55	05	1	1				
	eL	ZNE	09	21		4	60				
28	eP	Z	07	36	35						
	S	ZNE		37	12						
28	eP	Z	14	25	29.5						
29	eP	ZNE	14	55	09						
	eL	ZNE		58.6		13	12	20	12	40	12
30	eP	ZNE	01	10	27						
	S	NE		20	28						
	eLq			32							
1	eP	ZNE	10	13	05				9	12	
	e	ZNE			10.5						
	(pP)	Z			42						
	S	ZNE		21					10	8	32	27
	Lq	E		27	55						35	35
	Lr	N		31					17	30		
3	eP	ZNE	11	05	13						
4	eP	ZNE	01	24	45						
	(S)	ZNE		25	14						
4	e(P)	ZNE	06	18	26						
4	eP	ZNE	18	29	31						
	eS	ZNE		32	45						
4	eP	ZNE	22	53	53						
	e(S)	ZNE		54	23						
5	eP	ZNE	15	28	25						
5	eP	ZNE	17	22	00						
6	P	ZNE	08	50	00						

Date		Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
MAY	7	iP	ZNE	16	34	46						
	8	eP	ZNE	04	19	29						
		eS	ZNE		20	04						
	8	eP	ZNE	10	25	43						
		eS	ZNE		27	06						
	8	eP	Z	14	04	07						
	8	eP	ZNE	15	36	47						
	9	eP	Z	04	40	06						
		epP	ZNE		41	26						
	9	eP	ZNE	14	25	05						
		e(S)	ZNE		26	00						
	9	eP	ZNE	19	36	37						
	10	iP	ZNE	19	38	31						
		ipP	ZNE			43						
	10	eP	ZNE	22	35	57						
		ePP	Z		39	39						
		eS	NE		47							
		eLq	N	23	02						2	12
		eLr	E		07						12	25
	11	eP	ZNE	04	54	04						
	11	eP	Z	19	53	55						
	12	eP	ZNE	09	47	34						
		ePP	ZNE			55	2	10	2	10	2	8
		e	ZNE		51	35	3	15	6	10	6	10
		eLr	ZNE		53		6	23	8	25	13	25
	12	ePKP	ZNE	20	27	58						
	13	eP	ZNE	11	44	31						
	13	eP	ZNE	14	17	27						
	14	eP	ZNE	14	42	23						
	14	eP	ZNE	23	26	19						
	15	eP	ZNE	03	04	22						
	16	eP	ZNE	16	04	21						
	16	eP	ZNE	16	30	05						
	16	eP	ZNE	17	28	23						
	17	eP	ZNE	06	22	44						
	17	eP	ZNE	07	41	15						
	17	iP	ZNE	22	49	25						
		epP	Z			54						
	18	eP	Z	05	44	27						

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
MAY		eS	NE			53.4							
	18	eP	ZNE	09	53	50							
	18	eP	ZNE	12	32	08							
		eL	ZNE			58		3	22	3	20	4	22
	18	eP	ZNE	13	15	08							
	19	iP	ZNE	01	12	01		8	7	3	7	5	7
		ePP	Z		13	55		3	8				
		iS	NE		19	18				13	16		
		iScS	NE		21	55				11	14		
		eLq	ZNE		24			10	20	15	25	16	30
		eLr	ZNE		27			34	14	40	18	50	17
	19	ePKP	ZNE	21	54	47							
		eSS	NE	22	13	27				3	35	4	30
		eLq	NE		27					7	55		
		eLr	ZNE		33			6	25	7	40	12	60
	19	eP	ZNE	23	43	18							
	20	iP	ZNE	11	46	38	usw	18	10	15	10		
		PP	Z		48	35							
		S	N		53	37				46	10		
		Lq	Z		57	.1							
		Lr	ZNE	12	00			40	35	37	25		
	21	eP	ZN	01	04	49							
		Lq	ZNE		12½			8	28				
		Lr	ZNE		14			8	16				
	21	eP	ZNE	17	41	07							
		eS	E		50	07							
		L	ZNE	18	02								
	21	iP	ZE	17	59	56	u						
	22	eP	ZNE	02	39	44							
	22	iPKP	ZNE	14	15	45	u						
		L	ZNE		56			3.5	28	3	30		
	22	iP	ZNE	15	55	18	u						
		iPcP	Z			31							
	22	iP	ZNE	22	04	39	u						
		ePP	ZN		07	23							
		eS	NE		14	17							
		L	ZNE		32			4	22	4	21	4	20
	23	iP	ZNE	03	43	27	usw						
	23	iP	ZNE	03	46	26	d						
		eS	ZNE		55	12							
		eSS	N		59	55							
		L	ZNE	04	07			5	36	4.5	34		
	24	eP	ZN	15	44	18							
	25	iP	ZE	16	16	18	u						
		eS	NE		23	06						11	15
		eSS	E		26	24						16	21
		eL	ZNE		30			10	18	14	14	13	14

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
MAY 25	iP	ZE	18	09	05							
	eS	NE		12	19							
	eLq	NE		13								
	eLr	ZNE		14			6	14	6	14	5	17
											21	16
26	eP	ZNE	00	09	53							
26	eP	Z	09	46	00							
26	ePKP	Z	23	26	08							
	ePKS	Z		29	32							
27	ePKP	ZNE	04	17	57							
	eSKS	Z		21	25							
27	eP	ZNE	16	32	23							
29	iP	ZN	01	11	29	d						
29	eL	NE	07	30							1	13
29	iP	Z	08	37	07	d						
29	iP	ZNE	11	08	27	u						
29	iP	Z	13	31	44	d						
30	iP	Z	03	14	11½	u						
30	iP	ZNE	05	43	22	us						
30	eP	ZNE	07	01	31							
	eS	ZNE		06	09							
	eL	ZNE		09			19	10	35	8	64	9
30	iP	ZNE	19	05	49	u						
	ePP	Z		07	39							
30	iP	ZN	20	39	58	d						
31	iP	Z	14	16	37	u						
JUN 1	iP	Z	12	41	25	d						
1	eP	Z	21	17	54							
1	iP	ZNE	21	24	24	u						
	PcP	Z		25	01							
	eS	ZNE		33	00							
	ScS	E		34	21							
	SS	E		37	00							
	Lq	ZNE		42.8					2.5	32		
	Lr	ZNE		44.4								
	M	ZN		58			3	15	2.5	16		
2	iP	ZNE	10	11	21	d						
	L	N		34					1	26		
2	iP	ZNE	21	12	27	u						
	PP	Z		14	04						13	20
	eS	ZNE		19	06						80	28
	SS	ZNE		22	04						24	53
	Lq	E		23.5								
	Lr	ZNE		26							46	16
	M	ZNE		28			20	15	28	14		

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
2	iP	ZN	21	15	36	u						
	PP	ZN		17	26							
3	iP	Z	18	57	34	u						
4	iP	ZNE	12	02	47	u						
	PcS	NE		09	52							
	L	ZNE		18								
	M	N		23							1	17
4	iP	ZNE	13	14	34	u						
4	iP	ZNE	21	16	47	d						
	PP	ZN		20	40							
	eS	ZNE		26	48							
	PS	ZNE		27	34							
	Lq	NE		39							6	35
	Lr	ZNE		44								
	M	ZNE		50			4	25	5	22	5	22
5	iP!	ZNE	10	23	33	use						
5	eP	ZNE	14	04	27							
5	eP	ZNE	23	06	26							
	eS	N		16	28							
	eL	NE		37							1	20
6	eP	ZNE	04	36	44							
6	eP	ZNE	11	07	42							
6	iP	ZE	12	13	33	d						
	eS	N		21	05							
	Lq	N		27							2	26
	Lr	NE		29							3	17
6	iP!	ZNE	17	53	02	unw						
7	eP	ZNE	15	45	12							
7	iP	ZNE	22	42	25	d						
7	iP	ZNE	22	47	58	d						
	eL	ZNE	23	06								
	M	ZNE		19			4	16	4	16	2	15
8	iP	ZNE	01	12	20							
	eL	ZN		38			1	10	1	16		
8	iP	ZN	02	09	57	u						
8	eP	ZNE	04	35	00							
8	iP	ZNE	05	45	20	u						
8	ePP	ZNE	09	12	00							
8	iP	Z	23	09	02	u						
9	eP	Z	01	40	02							
9	iP	ZNE	03	08	06	u						
9	iP	ZNE	16	01	00	u						

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JUN 10	iP	ZNE	04	21	47	use	4	7	2.5	7		
	pP	ZN		22	04							
	PP	NE			18							
	eS	ZNE		26	10		11	17	49	25	48	34
	SS	NE			50							
	L	ZNE		29								
	M	ZNE		37			16	15	28	13	79	10
10	iP	ZNE	05	19	26	u						
	eS	NE		23	40							
	eL	ZNE		27								
10	iP	ZNE	06	44	17	use	14	9	11	9	10	9
	(pP)	N			37							
	PP	Z			58							
	eS	ZNE		48	41		11	23	43	30	27	34
	SS	ZNE		49	33							
	eL	ZNE		51								
	M	ZNE		54			29	12	42	8	50	16
10	ePKP	Z	11	06	01							
10	iP	ZNE	12	31	12	d						
	(pP)	ZNE			51							
11	iP	ZNE	00	10	12	u						
11	iP	ZNE	17	22	19	d						
12	iP	ZNE	04	18	24	u						
12	iP	ZNE	15	20	23	u						
13	iP	ZNE	08	03	50	dsw						
13	iP	ZNE	10	46	14	u						
13	iP	ZNE	17	38	12	d						
15	iP!	ZNE	05	11	46	dne						
15	iP	ZNE	15	40	14	u						
	eS	N		48	04							
	Lq	N		53					3	28		
	Lr	N		54					2	14		
15	iP	ZNE	21	55	37	u						
16	iP	ZNE	14	00	28	d						
17	iP	ZNE	02	14	19	d						
17	iP	Z	17	47	21	d						
17	iP	ZNE	18	33	54	us						
	eS	ZNE		36	03							
	eL	ZNE		37								
	M	NE		39					66	12	69	13
17	iP	ZNE	23	14	14	usw						
18	iP	ZNE	03	54	43	u						
18	iP	ZNE	05	08	48	u						

Date	Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
...ne 18	iP	ZNE	15	33	43	u						
19	iP	ZNE	02	25	23	d						
	eL	ZN		43			1	16	1	16		
19	eP	ZNE	09	21	34							
19	eP	ZNE	12	09	53							
19	iP!	ZNE	18	33	20	d						
20	eP	ZNE	13	27	50							
20	eP	ZNE	18	37	13							
20	iP	ZNE	22	55	16	d						
	eS	E	23	02	39							
	SS	E		05	12							
	L	ZNE		10								
	M	ZN		32			3	15	3	15		
21	iP	ZNE	00	17	08	u						
21	iP	ZNE	12	29	40	d						
21	iP	ZNE	14	42	18	u						
21	eP	ZNE	17	51	33							
21	iP	Z	19	58	32	u						
21	iP	ZNE	21	50	41	u						
22	iP	ZNE	04	48	41	d						
22	eP	ZNE	08	44	30							
22	iP	ZNE	16	23	08	d						
22	eP	ZNE	21	36	40							
23	iP	ZNE	03	58	15	u						
	eS	NE	04	05	21							
	L	ZNE		12			1	26	1	27		
23	iP	ZNE	09	04	33	d						
25	iP	ZNE	02	38	48	d						
25	eP	ZNE	14	43	50							
25	iP	ZNE	16	13	52	d						
25	iP	ZNE	18	58	34	d						
26	eP	ZE	09	54	06							
26	iP	Z	16	51	41.6	u						
27	iP	ZNE	11	58	21	d						
27	iP	ZNE	12	30	05	u						
	ePcP	Z		31	46							

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JUN	28	iP	ZNE	02	39	34	d						
		L	ZE	03	00			3	28				
												3	24
	28	eP	ZNE	14	00	28							
	28	ePKP	ZNE	22	14	35							
		PP	ZNE		15	36							
		PKS	ZN		18	09							
		SKS	ZN		21	41							
		SKKS	ZN		23	23							
		PKKP	N		24	22							
		PS	ZN		26	26							
		PPS	Z		27	55							
		SSS	ZE		37	45							
		Lr	ZNE		54								
		M	ZNE	23	00			13	21	10	23	12	24
	28	ePKP	ZN	23	15	59							
	28	iP	ZNE	23	28	25	d						
	29	iP	ZNE	08	41	40	d						
	29	iP	ZNE	12	56	47	d						
	29	eP	Z	13	17	23							
	29	iP	ZNE	17	48	52	d						
	30	iP	ZNE	02	14	10	d						
	30	iP	ZNE	06	57	42	u						
JUL	1	eP	ZE	04	13	53							
	1	eP	ZNE	15	21	32							
		eS	ZNE		22	07							
	1	eP	Z	18	02	59							
	1	iP	Z	20	31	41	d						
	2	iP	ZNE	09	58	11	d						
	4	iP	ZNE	11	07	10	d						
		pP	ZNE			49		8	8	5	12		
		PcP	ZNE		08	09							
		PP	ZN		09	37							
		ScP	Z		11	59							
		eS	ZNE		14	25				15	14		
		sS	E		15	49						13	16
		ScS	E		16	42							
		sScS	NE		17	48							
		SS	ZNE		18	06							
		Lq	ZE		20	.7							
		Lr	ZNE		22	.5							
		M	ZNE		29			5	15	5	14	3	11
		P'P'	Z		37	21							
	4	eP	ZNE	14	26	23							
	4	iP	Z	17	59	49	u						
	4	eP	ZNE	23	08	43							
		L	ZN		37			1	22	1	22		

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
JUL	5	iP	ZNE	06	00	40	u						
	8	iPKP	ZNE	18	09	05	u						
	9	eL	ZNE	10	12	.5		1	19		1.5	16	
	9	iP	ZNE	19	07	14	d						
	10	eP	ZNE	04	38	10							
	10	ePKP	ZNE	05	41	54							
		PP	Z		42	45							
		SS	ZE	06	00	36							
		L	ZN		21								
		M	ZN		28			3	21		3	21	
	10	iP	ZNE	11	59	35	d						
	10	iP	ZNE	16	57	24	u						
		PcP	Z		59	06							
	11	iP	ZN	17	59	40	u						
	11	iP	ZNE	23	19	55.5	d						
	12	iP	ZNE	08	04	19	d						
		pP	ZNE		06	22							
	14	iP	ZNE	00	11	02	d						
		eS	NE		18	10						5	13
		ScS	E		20	58							
		SS	NE		21	44							
		L	ZNE		24								
		M	ZNE		31			3	17	4	16	4	12
	14	eP	ZNE	04	07	52							
	14	Lq	NE	06	27								
		Lr	ZNE		31						1.5	60	
		M	ZNE		42			11	19		5	18	10	19
	14	iP	ZNE	14	37	01	u						
		L	Z		52			1	21				
	14	iP	ZNE	17	13	46	d						
		pP	ZN		14	20							
		PcP	Z		15	53							
		PP	Z		16	07							
		PcS	ZNE		19	27							
	14	iP	ZNE	19	29	45	u						
	15	iP	Z	00	50	14	u						
	16	ePKP?	ZNE	18	46	01							
		ePKP	ZNE			34							
		PP	ZNE		49	34							
		L	ZNE	19	32								
		M	ZNE		50			7	19	8	18	6	19
	16	eP	ZNE	19	17	08							
	17	iP	ZNE	03	33	47	u						
		pP	ZNE			57							

Date	Phase		h m s		Az	Tz	An	Tn	Ae	Te
JUL 17	iP	Z	07 13 45	u						
18	iP	ZNE	05 05 52	d						
	PcP	ZN	07 29							
	eS	ZNE	12 11							
	SS	ZNE	14 50				2	14	5 13	12 24
	Lq	E	16						2	40
	Lr	ZNE	18		3	15	3	18	4	15
19	ePKP	ZNE	06 05 01							
	Lr	ZNE	58							
	M	ZNE	07 10		1.5	19	2	18	1	19
19	ePKP	ZNE	06 05 37							
	ePP	Z	08 54							
	ePS	Z	19 09							
20	eP	ZNE	06 40 56							
	eS	ZNE	45 00				24	37	50	43
	eL	ZNE	46.7							
	M	ZNE	48.5		23	28	11	38	16	31
22	eP	ZNE	00 40 38							
	e	Z	41 57							
	eS	N	50 16							
	e	ZN	58 19							
	Lr	ZN	01 03 41							
	M	ZN	08		1.5	20	1.5	20		
23	eP	ZNE	19 50 20							
	eS	ZNE	55							
24	eP	ZNE	16 57 59							
24	eP	ZNE	18 58 16							
24	eP	ZNE	19 15 37							
26	eP	ZNE	00 15 44							
	eS	ZNE	16 15							
26	ePKP	Z	04 36 40							
	(Lr)	ZNE	05 27 30		1	20	1	20	1.5	20
26	iP	ZNE	05 36 59.5	u						
28	P	ZNE	07 21 00							
28	P	ZNE	08 06 46							
28	P	ZNE	09 51 33							
	(S)	NE	52 08							
28	iP	ZNE	16 43 51.5	u						
29	P	ZNE	20 22 49		9	3	2.5	2	1.5	1
	S	ZNE	29 57				2.5	14	11.5	16
	Lq	NE	35 58				7	16	19	16
	Lr	ZN	38 00		7	22				
29	P	ZNE	20 25 19		12	1	5	2	3	2
	S	NE	32 26				6	16	15	16
	Lq	NE	38 18				9	17	17	17
	Lr	ZN	41 15		15	20	13	16		

Date	Phase		h m s		Az	Tz	An	Tn	Ae	Te
...T 29	P	ZNE	23 27 24							
30	P	ZNE	03 06 12							
30	P	Z	04 36 07							
30	P	ZNE	05 54 37		3.5	7				
	S	ZNE	06 01 44					14	15	18 16
	Lq	E	07 27							12 13
	Lr	ZN	08 50		13	19	14	18		
30	P	Z	13 07 29							
30	iP	ZNE	14 00 21.6	u						
	PcP	ZNE	02 08							
30	iP	ZNE	14 31 57.5	u						
30	P	ZNE	15 13 18							
...G 1	eP	ZNE	15 29 37.4							
3	iP	ZNE	03 58 40.3	u						
3	eP	ZNE	10 39 28							
3	iP	ZNE	20 34 40.6	u						
4	iP	ZNE	09 22 47.9	u						
5	eP	ZNE	00 03 37.5	u						
	e	Z	04 15							
	esP	Z	05 27							
5	eP	ZNE	15 43 11							
	eS	ZN	46 48							
	eLq	ZNE	47		20	20	18	17	15	15
	eLr	ZNE	49		15	14	25	11	50	12
5	eP	ZNE	18 54 18							
	eS	NE	53							
6	eP	ZNE	02 50 33							
7	eP	ZNE	04 35 53							
7	iP	ZNE	11 24 08.6							
7	iP	Z	11 25 50.0							
7	eP	ZNE	17 21 41							
8	eP	ZNE	06 41 41							
9	eP	ZNE	14 47 13.9							
	eS	E	55 50							
	eLq	ZNE	15 03							
	eLr	NE	06							
11	eP	ZNE	01 38.6							
11	eP	ZNE	10 13 59.2							
12	eP	ZNE	21 22 22.3							

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
AUG 13	iP	ZE	06 38 18.8 u						
13	iP	ZNE	22 02 39.0 u						
	eL	ZNE	21						
14	eP	ZNE	02 56 28						
14	eP	ZNE	03 44 01						
	e(sP)	Z	15						
	e	Z	35						
14	eP	ZNE	14 44 09						
	epP	Z	38						
14	eP	ZNE	18 55 42.7						
	L	Z	19 25						
15	ePKP	ZNE	06 30 12						
	ePP	Z	31.5						
	ePS	ZN	41 04	4	22	3	20		
	eSS	NE	47.4			4	25		
	eLq	NE	07 01			4	60	6	62
	eLr	ZNE	08	8	40	5	35	3	30
15	iP	ZE	17 36 36.3 d	12	7			4	10
	e	ZNE	38.6	40	8	6	12	15	10
	ePP	Z	40.2	13	8				
	eS	ZNE	46.2	45	17	37	16	40	15
	eLq	N	47						
	eLr	Z	50	30	30				
16	iP	Z	23 19 20.7 d						
17	ePKP	Z	11 31 12						
	ePP	Z	51						
17	eP	ZNE	11 36 54						
18	eP	ZNE	01 50 48						
	eS	ZNE	51 24						
18	eP	Z	19 02 19½						
18	eP	ZNE	20 28 07						
18	eP	ZNE	20 36 08						
19	eP	ZNE	04 32 26						
19	eP	ZNE	09 59 19						
19	eP	ZNE	19 21 21						
20	eP	Z	07 05 22						
20	eP	Z	07 05 22						
20	eP	Z	09 29 32						
20	eP	Z	19 52 36						
22	iP	ZNE	20 03 26	2	6				
	e	ZN	04 06	2	9	2	8		
	eS	NE	12 34			4	15	5	16
	eSS	E	17.0						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
	eLq	E	20.2					15	33
	eLr	ZNE	22.3	9	25	13	21	9	15
24	eP	ZNE	02 20 33						
24	eP	Z	03 26 45						
25	iP	ZNE	12 27 32.2 d						
	e(PP)	ZN	30.5	6	11	4	11		
	ePPP	Z	31 36						
	eS	ZNE	35 11	8	10	9	15	50	15
	e	E	36.5					30	16
	e	E	38.5					11	20
	e	NE	42.6			29	25	33	40
26	eP	Z	05 54 35						
28	eP	Z	12 52 08						
29	ePKP	ZNE	09 12 55						
	eL	ZE	54						
29	iP	ZNE	15 43 20.0 d	8	8			3	8
	ePP	Z	46.6	4	8				
	eS	NE	54.0					10	25
	ePS	ZE	55.1	2	12			5	10
	ePPS	ZE	55.6	12	22			17	28
	e	ZNE	59.4					15	35
29	eP	ZNE	21 07 59						
30	eP	Z	00 28 16						
30	eP	ZNE	14 01 24						
4	eP	Z	04 58 05						
4	$ePKP_1$	Z	13 52 11						
	$ePKP_2$	Z	53 13						
	eSKP	Z	55 56						
6	eP	Z	01 50 40						
6	e	Z	02 32 31						
6	ePP	ZNE	06 23 40						
6	iP	ZNE	10 25 19.3						
	e	Z	26 15						
	epP	Z	27 06						
6	eP	Z	12 05.0						
7	eP	Z	09 03 58½						
	e	Z	04 27						
8	eP	ZNE	00 56 23						
8	eP	Z	09 15 50						
8	eP	Z	11 53 18						
8	eP	ZN	19 39 29						
8	iP	ZNE	19 59 09.8 u						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
SEP	eS	NE	20 06 11						
	eScS	E	08 08						
	e(SS)	E	09.5						
	e(SSS)	E	13.0						
9	iP	ZNE	02 57 18.8 u	4	5	3	7		
	ePP	Z	03 00.1	2	10				
	eS	NE	06 54			4	12		
	eSS	N	12.1			3	10	7	10
	eLr	ZN	20	7	20	5	16		
9	eP	ZNE	13 02 25						
10	eP	ZNE	01 20 15						
10	eP	ZNE	19 24 23						
11	eP	NE	09 11 28						
12	eP	Z	03 21 24½						
13	eP	ZNE	18 22 36						
13	e	ZNE	21 18 13						
	e	ZNE	19 18						
	e	ZNE	20 35						
13	eP	ZNE	23 42 05						
	e(pP)	ZN	11						
14	eP	ZNE	00 27 35						
14	eP	ZNE	00 30 22½						
14	eP	ZNE	00 46 37						
	eL	ZN	01 00.0						
14	iP	ZNE	04 00 46.2 u						
	i	Z	53.4						
	e	ZNE	01 07						
	ePP	Z	02 20						
15	eP	ZNE	00 57 47						
15	eP	Z	02 10 39						
15	eP	ZNE	09 18 42						
15	eP	ZNE	11 55 15						
16	eP	Z	20 15 57						
17	eP	ZNE	06 07 03						
17	eP	ZNE	19 31 05						
18	ePKP	Z	17 17 36						
18	eP	Z	17 29 39						
19	eP	Z	19 39 26						
20	eP	Z	22 23 23.5						
22	eP	Z	03 06 22						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
SEP 22	eP	Z	19 31 56						
23	eP	Z	06 53 00						
23	eP	ZNE	09 14 19						
24	eP	Z	08 08 22						
24	e	Z	08 41 00						
24	e	Z	09 26 01						
24	iP	ZNE	16 42 43.8 d	4	5				
	epP	Z	43 09	4	4				
	ePP	Z	46 00	1	4				
	eS	N	53 14						
	eSS	N	59.0			9	27		
	eLq	N	17 06.8			24	40		
	eLr	ZNE	09.8	29	34	10	35	30	33
25	iP	ZNE	07 16 17.0						
25	eP	Z	14 11 50						
25	eP	Z	15 01 16						
26	ePKP	Z	05 47 10						
26	eP	Z	06 06 23						
26	eP	Z	20 47 38½						
27	eP	Z	10 38 15						
27	eP	Z	11 17 27						
27	eP	Z	11 36 05						
28	eP	ZNE	00 40 20½						
28	eP	Z	03 43 38						
28	iP	ZNE	07 06 01.0 u						
	i	Z	07 24.7						
	i	Z	10 33.0						
28	iP	ZNE	23 21 35.1 d						
29	eP	ZNE	02 58 48						
	eL	ZNE	03 02 45	18	12	16	11	18	12
29	eP	ZNE	10 15 28½						
29	eP	Z	12 12 41						
29	eP	ZNE	19 47 35						
29	ePKP	Z	22 35 53						
	e	Z	56						
30	eP	Z	09 06 18						
OCT 1	eP	Z	03 19 53						
2	eP	Z	03 42 50						

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
OCT	2	eP	ZNE	05	56	58							
	3	eP	Z	03	05	18							
	3	eP	ZNE	15	56	20	u						
		eS	E	16	03	08							
		eSS	ZE		06	09							
	3	eP	ZNE	18	03	57½	d						
	3	ePKP	Z	23	43	06							
		ePP	Z			56							
	4	eP	ZN	02	57	25	d						
	4	eP	Z	03	52	32							
	5	iP	Z	00	25	16.7							
	5	iP	Z	02	05	54.5	u						
	5	eP	ZN	05	25	57	u						
	6	eP	ZNE	17	25	56	d						
	7	eP	ZNE	13	23	04	u						
		eS	NE		30	08							
		e(ScS)	NE		31	59							
	8	eP	ZNE	00	27	33							
		eL	ZN		46	.0							
	8	eP	Z	13	21	37							
	9	eP	ZNE	05	23	32							
	9	eP	Z	10	25	41							
	9	eP	ZNE	10	46	46	u						
	10	eP	Z	01	01	56							
	10	eP	ZNE	14	26	51	u						
	11	eP	ZNE	16	43	13							
	12	eP	Z	03	48	00							
	12	ePKP	Z	11	45	50							
		ePP	ZNE		47	40		5	15	3	15	2	12
		eSKS	N		53	09				3	20		
		eSKKS	N		54	45				6	20		
		ePKKP	E		55	39						5	15
		ePS	ZNE		57	35		6	20	12	22		
		ePPS	ZN		58	58		8	25	9	20		
		eSKKS	Z	12	03	25		5	20				
		eSS	ZE		04	10		4	23			2	25
		eSSP	N			40				30	34		
		eSSS	N		08	.9				15	25		
		eLq	E		18	.3						30	37
		eLr	Z		24	.3		14	35				
	13	eP	ZN	05	33	.5							
		ePKP	ZNE		36	47							

Date		Phase		h	m	s		Az	Tz	An	Tn	Ae	Te
...CT		ePP	ZN		38	36		10	12	7	12		
		eLr$_4$	ZN	10	23			22	217	15	210		
	13	ePKP	Z	13	17	13							
	13	ePKP	Z	16	18	47							
		ePKKP	Z		28	37							
	13	ePKP	Z	18	33	50							
	13	ePKP	Z	22	13	51							
	14	ePKP	Z	00	11	15							
	14	ePKP	Z	04	24	54							
	14	ePKP	Z	08	13	25							
	14	ePKP	Z	13	40	35							
	14	eP	Z	15	43	36							
	14	eP	Z	22	18	39							
	14	eP	Z	23	09	16							
	15	eP	ZNE	07	16	52							
	15	ePKP	Z	09	21	02							
	15	ePKP	Z	09	51	02							
	15	ePKP	Z	11	06	04							
	15	eP	Z	14	06	30							
	15	eP	ZNE	21	56	52							
	16	ePKP	Z	05	34	44							
	16	eP	Z	12	59	44							
	16	eP	Z	14	05	56							
	16	ePKP	ZNE	15	02	06							
		eSKP	Z		05	35							
	17	eP	Z	11	45	40							
	17	eP	Z	14	26	57							
	18	e?	Z	04	55	31							
	18	ePKP	Z	18	14	53							
	19	eP	Z	02	26	12							
	19	ePKP	Z	02	37	34							
	19	ePKP	Z	03	53	17							
	19	ePKP	Z	04	06	05							
	19	eP	Z	09	15	17							

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
OCT 19	ePKP	Z	16 34 06						
20	eP	ZNE	00 32 57						
20	ePKP	ZNE	01 12 02						
20	eP	ZNE	02 06 14						
20	eP	ZNE	03 09 07						
20	ePKP	ZNE	09 29 37						
20	ePKP	Z	12 11 12						
20	ePKP	Z	13 19 03						
20	ePKP	Z	18 17 50						
21	eP	Z	02 41 20						
21	eP	Z	09 28 16						
21	ePKP	ZNE	15 57 16						
21	ePKP	Z	17 39 36						
21	ePKP	Z	23 48 11						
22	ePKP	Z	03 36 07						
22	ePKP	Z	03 44 31						
22	eP	Z	15 46 07						
23	eP	Z	04 34 43						
23	eP	Z	06 42 44						
23	ePKP	Z	10 05 54						
24	eP	ZNE	07 38 28						
	eLr	ZNE	08 04						
25	eP	ZNE	01 34 40						
25	e	Z	20 12 15						
26	ePKP	Z	05 20 24						
26	ePKP	Z	06 18 35½						
26	ePKP	Z	11 40 40						
26	iP	ZNE	12 44 06.6 u						
26	eP	ZNE	19 07 00						
26	eP	Z	22 52 54						
27	eP	Z	10 48 24						
27	eP	ZNE	18 34 08						
27	ePKP	Z	20 24 30						

Date	Phase		h m s	Az	Tz	An	Tn	Ae	Te
OCT 28	eP	ZNE	08 04 37.5						
28	eP	ZNE	11 28 26						
28	ePKP	ZE	12 22 26						
28	eP	ZNE	19 24 37						
28	eP	ZNE	20 07 49						
29	iP	ZNE	16 00 32.7 d						
	e	Z	01 14						
29	eP	ZNE	17 04 54						
29	eP	ZNE	20 31 23						
29	eP	ZNE	22 32 03						
30	eP	Z	01 30 33						
30	eP	Z	05 40 34						
31	eP	ZNE	03 27 26						
	eS	N	35 27						
31	eP	Z	04 34 22						
31	eP	Z	09 00 54						
31	eP	Z	10 58 19						
NOV 1	eP	ZNE	21 09 02						
1	ePKP	Z	23 00 14						
2	eP	Z	21 46 52						
2	eP	Z	22 33 13						
3	eP	ZNE	03 23 19						
	ePP	Z	26 58						
	eS	NE	34.1					2	15
	eSP	ZE	35.6	3	12				
	eSS	N	40.6						
	eLq	N	49.0			4	35		
	eLr	ZNE	53.7	7	24	3	27	10	22
3	eP	Z	07 50 15						
3	eP	ZNE	14 42 26						
4	iP	ZNE	01 24 44.2 u						
	ePP	Z	27 06						
4	eP	ZNE	01 28 35						
4	eP	Z	05 34 25.5						
4	eP	Z	15 24 54						
4	eP	Z	18 32 05						
4	eP	Z	22 28 29						

Date		Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
NOV	5	eP	Z	05	27	49						
	5	eP	Z	09	42	30						
	5	eP	Z	23	19	21						
	5	eP	Z	00	05	18						
	6	eP	Z	01	25	48						
	6	eP	ZNE	02	25	07	6	6	3	7	2	8
		eS	ZNE		35	00	2	10	4	8	6	15
		eLr	ZNE		50	.0	15	25	14	24	12	27
	6	eP	Z	03	07	46						
	6	eP	Z	03	12	02						
	6	eP	Z	04	18	38						
	6	eP	Z	06	36	52						
	6	eP	Z	07	47	16						
	6	iP	ZNE	09	12	35.8						
	6	ePKP	Z	09	43	46						
	6	eP	Z	11	04	48						
	6	eP	Z	11	44	48						
	6	eP	Z	18	44	21						
	7	eP	Z	02	54	43						
	7	eP	Z	16	03	08						
	7	eP	Z	16	37	19						
	7	eP	Z	17	44	22						
	8	eP	Z	04	33	42						
	8	eP	Z	10	11	47.5						
	9	eP	Z	01	23	47						
	9	eP	Z	05	49	15						
	9	ePKP	Z	09	10	13						
	9	eP	ZNE	21	27	18	20	10	5	10		
	10	eP	ZNE	01	12	26	2	10				
	10	ePKP	Z	17	36	37						
	10	eP	Z	19	28	50.5						
	11	eP	Z	00	26	24						
	11	iP	ZNE	11	39	07.8						
	11	eP	ZNE	20	05	57						
	12	eP	Z	06	16	53						
	12	eP	Z	12	53	35						

Date		Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
NOV	12	eP	Z	21	57	43						
	13	eP	ZNE	11	27	09						
	13	eP	Z	17	28	25						
	14	eP	Z	04	45	58						
	14	eP	Z	14	11	27						
	14	eP	Z	14	15	44						
	14	eP	Z	23	47	59						
	15	ePKP	ZNE	21	25	25						
		ePKKP	Z		35	25						
	16	eP	ZNE	06	55	31						
	16	eP	ZNE	22	53	06						
	16	eP	ZNE	23	49	38						
	17	ePP	Z	01	07	01						
	17	eP	ZNE	00	58	37						
	17	eP	ZNE	01	23	12.5						
	17	eP	ZNE	13	23	14.5						
	20	eP	ZNE	04	18	32						
	20	eP	Z	12	09	39						
	26	eP	Z	03	07	40						
	26	eP	Z	07	03	31						
	26	eP	ZNE	23	00	24						
	27	eP	ZNE	02	31	44.5						
	27	eP?	Z	14	11	26						
	28	eP	ZNE	15	18	33						
		esP	Z			47						
	29	eP	ZNE	10	32	34						
	29	eP	ZNE	19	04	47						
	30	eP	ZNE	10	00	13.5						
		epP	Z			31						
DEC	1	eP	Z	12	03	38						
	1	eP	Z	16	55	05						
	3	eP	ZNE	21	25	56						
	3	eP	ZNE	21	40	49						
	3	eP	ZNE	23	15	23						

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
DEC 4	eP	Z	00	24	05						
4	eP	ZNE	16	09	18						
	eS	NE		17.0							
	eLq	N		22	40			10	27	4	30
	eLr	ZE		25	45	8	25			7	27
9	eP	Z	11	02	47						
10	eP	Z	03	42	21						
	eS	NE		51	26						
10	iP	ZNE	06	38	53.7 d						
	ePP	Z		40	37						
	eS	N		45	15						
	ePPS	NE		46	12						
	eSS	N		48	42						
11	eP	Z	00	58	18	1	8				
	e	Z			34	1	5				
	e(PS)	NE	01	07	08			1	10	1	8
	eLr	ZN		16.8		3	26	2	27		
11	eP	Z	02	40	39						
	e(PP)	Z		42	31						
15	eP	ZNE	19	45	46	4	6				
	pP	Z		48	01	8	12				
	S	ZNE		54	27	23	8	14	9	50	12
	sS	N		58	55						
16	eP	ZNE	02	03	28	2	6				
	S	NE		13	40			2	12	1	11
	Lq	NE		23.6				5	22	5	24
	Lr	ZNE		24.0		9	18	5	18	7	18
16	eP	ZNE	14	24	35	2	4				
	L	ZNE		32		3	24	4	21	4	22
18	eP	ZNE	00	39	25						
19	eP	Z	17	16	54.5						
21	eP	Z	12	44	06						
24	eP	Z	11	28	49½						
24	eP	Z	21	11	17						
	eS	NE		15	50						
28	eP	Z	04	44	15½						
28	iP	Z	05	56	44½ u						
	e	ZN		57	08						
	eS	NE	06	06	13			3	8	4	10
	e	NE			38			3	8	4	16
28	eP	ZNE	09	12	14						
	i	Z			20 d						
	ePcP	Z		13	48						
	eScP	Z		17	36						
	eS	NE		18	58			2	12	3	12
	eScS	NE		22	01			6	10	4	9

Date	Phase		h	m	s	Az	Tz	An	Tn	Ae	Te
...28	eP	ZNE	18	06	05						
	ePP	N		07	38						
	eS	NE		12	18					3	13
	eSS	NE		15	15						
	eScS	N		16	24						
	eL	NE		19						9	23
29	eP	ZNE	17	27	31						
30	ePKP	Z	13	48	19						
30	eP	ZNE	15	17	04						
31	eP	ZNE	17	45	52						
	e	Z		46	08						
	e	N		52							

INSTRUMENTALLY DETERMINED EPICENTRES

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

No.	Date	h m s	Epicentre	Depth	Mag.	Class
63/ 1	JAN 1	02 35 54	37.9 S 176.5 E	185 km	4.4	C
2	1	12 19 43	37.6 S 176.8 E	220 km	4.3	B
3	1	19 57 57	38.85S 174.70E	220 km	4.4	C
4	2	12 46 11	45½ S 169½ E	N	3½	D
5	3	14 28 18	39.8 S 174.4 E	210 km	4.5	C
6	4	06 43 38	33½ S 178 W	N	5.3	D
7	9	23 38 50	38.55S 176.3 E	S	2.6	C
8	11	07 21 58	43.8 S 168.0 E	N	4.2	C
9	11	17 50 45	41.3 S 174.1 E	N	3.8	C
10	12	03 02 51	39.9 S 174.4 E	N	3.3	D
11	13	23 47 37	34½ S 178½ W	N	4.7	D
12	16	01 07 07	40.9 S 174.5 E	N	3.4	D
13	17	02 02 56	37.2 S 176.9 E	250 km	4.9	C
14	17	05 18 27	40.6 S 174.6 E	96 km	3±	D
15	17	07 14 44	39.3 S 176.0 E	85 km	4.6	C
16	18	16 44 25	40.0 S 173.9 E	95 km	4.3	C
17	19	10 16 05	41.2 S 172.3 E	S	3.7	D
18	19	14 31 19	36.9 S 178.1 E	160 km	4.2	D
19	19	20 38 10	41.7 S 171.5 E	N	3.0	D
20	20	06 19.5	Felt: Te Teko (34)		3±	
21	20	15 38 23	41.6 S 174.7 E	S	3.5	C
22	20	16 03 11	44.8 S 167.8 E	N	4.1	C
23	21	08 57 25	46 S 166 E	S	4.6	C
24	23	00 50 34	38.85S 175.10E	250 km	5.5	C
25	23	22 30 02	40.5 S 174.5 E	N	3.7	C
26	25	13 41 55	39.3 S 174.5 E	190 km	4.9	C
27	25	20 02 12	37.8 S 176.8 E	S	3±	D
28	26	01 52 04	37.9 S 176.9 E	S	4.3	C
29	26	01 54 57	37.9 S 176.1 E	S	3½±	D
30	26	03 28 02	37.9 S 176.9 E	S	4.2	C
31	26	04 34 37	40.0 S 174.3 E	S	4.1	C
32	27	07 42 20	41.8 S 171.5 E	S	4.2	B
33	27	23 13 33	39.6 S 174.7 E	N	3.6	C
34	29	17 12 51	38.6 S 175.8 E	170 km	4.4	C
35	29	18 27 45	38.9 S 174.8 E	210 km	4.2	C
36	FEB 1	18 43 04	41.6 S 173.4 E	S	4.2	D
37	4	18 56 34	37.8 S 176.1 E	280 km	5.1	C
38	5	19 29 28	32.4 S 178.6 W	N	6.1	D
39	6	01 18 49	37.2 S 176.6 E	350 km	5.0	C
40	6	05 16 58	40.6 S 176.4 E	S	4.0	C

No.	Date	h m s	Epicentre	Depth	Mag.	Class
63/41	FEB 6	19 05 45	41.6 S 172.9 E	110 km	3.7	D
42	9	02 06.4	40.0 S 176.6 E	S	3½	D
43	9	16 54.6	35.4 S 178.6 E	S	5.0	D
44	9	19 08.5	35.4 S 178.6 E	S	4.8	D
45	10	06 14 11	37.6 S 176.9 E	180 km	4.7	C
46	10	17 56 45	39.1 S 176.9 E	S	2½±	D
47	12	00 34 07	39.15S 174.8 E	200 km	4.8	C
48	14	01 53 52	38.9 S 175.4 E	150 km	4.5	C
49	14	08 40 12	37.7 S 177.7 E	140 km	4.9	C
50	14	09 11 06	38.6 S 175.9 E	160 km	4.0	D
51	14	23 28 to Feb.16	Earthquake swarm near Maketu (26). Shocks 63/53, 54, and 56-59 are also members of the swarm.			
52	15	00 48 52	33.7 S 179 W	N	5.6	D
53	15	03 36 22	37.7 S 177.0 E	S	2½±	D
54	15	06 37 25	37.7 S 177.0 E	S	2½±	D
55	15	10 07.4	Near Lake Okataina (33).			
56	15	11 25 33	37.8 S 176.9 E	S	2½±	C
57	15	11 40 29	37.7 S 177.0 E	S	2½±	C
58	15	18 27 47	37.6 S 177.1 E	S	2½±	C
59	15	20 12 54	37.6 S 177.1 E	S	3±	C
60	16	20 21.9	35.5 S 179.0 E	N	4.4	D
61	18	06 45 57	41.6 S 174.6 E	S	3½	D
62	20	18 16 07	38.6 S 175.8 E	150 km	4.7	C
63	24	15 28 40	38.4 S 178.7 E	S	4.6	D
64	26	12 20 05	41.7 S 174.7 E	S	3.2	D
65	27	02 26 33	39.9 S 176.7 E	S	3.9	D
66	27	02 43 30	41.3 S 175.8 E	S	3.7	D
67	MAR 3	01 44 08	37.8 S 177.7 E	S	4.4	D
68	3	16 39 21	31.5 S 178.3 W	350 km	5.5	B
69	4	21 33 53	42.65S 172.95E	S	4.0	A
70	5	16 39 07	36.5 S 178.2 E	235 km	5.0	C
71	6	03 52 52	33.4 S 179.4 W	160 km	5.3	C
72	10	11 56 33½	40.8 S 175.2 E	S	4.7	B
73	11	02 01 57	38.5 S 175.9 E	160 km	4.3	B
74	18	10 24 17	37.3 S 179.4 E	N	4.5	C
75	19	16 16 26	41.5 S 172.3 E	S	3.5	B
76	21	14 02 02	35.2 S 178.4 W	N	5.4	D
77	23	11 20 11	33.9 S 178.9 W	N	5.2	C
78	24	14 53 01	37.1 S 176.9 E	260 km	4.8	D
79	25	14 22 29	37.8 S 177.4 E	S	5.1	B
80	27	08 41 46	33¼ S 178½ W	N	5.4	D
81	28	21 42 40	35½ S 179 W	N	4.7	D
82	29	07 16.7	Near Westport (79).		2½	
83	29	17 37.0	Near Westport (79).		2½	
84	31	15 09 06	46.9 S 173.95E	95 km	4.4	B
85	APR 1	06 30 03	36 S 178 W	N	5.2	D
86	3	16 12 05	41.6 S 173.4 E	N	3.2	D
87	5	09 00 31	38.8 S 175.1 E	220 km	4.2	D
88	6	10 01 37	38.8 S 176.0 E	110 km	4.0	D
89	6	18 02 15	33.0 S 178.5 E	N?	5.3	D
90	7	23 32 35	38.9 S 175.5 E	170 km	4.2	B
91	8	15 34 29	37.1 S 175.5 E	S	3±	D
92	9	09 06 23	40.3 S 173.5 E	150 km	3.9	C
93	9	09 27 16	37.9 S 177.7 E	70 km	4.2	C
94	9	15 33 35	37.1 S 175.5 E	S	3±	D
95	9	19 12 39	41.3 S 174.9 E	S	3.3	C
96	10	03 28 10	41.0 S 177.0 E	S	4.3	C
97	10	05 18 54	37.0 S 175.5 E	S	3±	D
98	10	09 05 24	40.8 S 176.4 E	S	3.4	D
99	10	10 20 53	41.3 S 173.5 E	70 km	3.6	C
100	10	11 59 32	37.0 S 175.6 E	S	3.1	D
101	10	12 56 45	37 S 175½ E	S	<2½	D
102	10	15 03 24	37.0 S 175.6 E	S	2.7±	D
103	10	17 48 12	37.0 S 175.6 E	S	2.7±	D

No.	Date	h	m	s	Epicentre	Depth	Mag.	Class
63/104	APR 10	22	45	55	37.1 S 175.5 E	S	2.7	D
105	11	02	20	00	37.3 S 176.5 E	S	3.2	D
106	11	07	49	5	Near Thornton's Bay (21).		2¾	
107	11	12	47	34	37.1 S 175.6 E	S	3.2	C
108	11	16	51	59	37.1 S 175.5 E	S	2.7	D
109	11	19	10	40	37.1 S 175.5 E	S	2.7	D
110	11	20	59	44	37.1 S 175.5 E	S	2.9	D
111	12	08	41	43.6	38.78S 176.62E	12 km	6.0	D
112	12	08	56	35	38.8 S 176.7 E	N	3±	A
113	12	09	14	05	38.8 S 176.8 E	S	3.9	D
114	12	09	21	25	38.7 S 177.0 E	S	3.2	B
115	12	09	59	5	Near Te Pohue (52).		2¾	C
116	12	13	01	05	37.1 S 175.5 E	S	3.1	
117	12	13	15	48	37.1 S 175.5 E	S	2¾±	D
118	12	13	48	33	37.1 S 175.5 E	S	2.7	D
119	12	14	32	12	37.1 S 175.5 E	S	2.7	D
120	12	14	47	45	37.1 S 175.5 E	S	2.7	D
121	12	16	02	50	37.1 S 175.5 E	S	2.9	D
122	12	20	41	01	37.1 S 175.5 E	S	3.6	D
123	12	21	10	10	38.7 S 177.0 E	S	3.8	C
124	13	09	22	42	38.8 S 176.8 E	S	2¾±	D
125	14	18	23	43	39.5 S 177.3 E	S	3¼±	C
126	15	12	16	53	37.0 S 175.6 E	S	3.4	D
127	17	08	02	26	38.9 S 176.8 E	S	3.9	C
128	18	01	15	43	38.8 S 176.7 E	S	3.5±	C
129	18	10	06	01	38.8 S 175.9 E	150 km	4.2	C
130	18	22	24	01	38.3 S 179.3 E	N	4.7	C
131	19	10	26	49	34.5 S 178.1 W	100 km	5.2	C
132	19	11	37	57	38.5 S 176.6 E	N	3.7±	D
133	19	11	39	10	38.8 S 175.2 E	270 km	4.3	D
134	20	13	20	24	40.4 S 177.1 W	N	4.6	D
135	20	16	15	43	37.8 S 176.3 E	200 km	4.0	D
136	21	22	23	26	42.3 S 174.8 E	N	3.7	C
137	22	01	56	14	45.7 S 166.6 E	S	4.4	C
138	22	03	39	34	42.5 S 173.5 E	N	3.3	C
139	23	22	37	33	40.1 S 174.7 E	70 km	3.6	C
140	25	09	32	40	35 S 177 W	100 km	5.1	C
141	25	12	18	26	40.5 S 176.2 E	S	4.0	C
142	25	23	52	17	38.6 S 176.9 E	S	4.2	C
143	26	01	51	03	39.3 S 176.8 E	S	4.1	C
144	26	12	16	24	48 S 164 E	N	4.7±	D
145	27	16	33	45	40.1 S 175.0 E	N	3.1	C
146	28	09	56	22	37.4 S 178.3 E	N	5.2	C
147	29	12	37	08	38.8 S 176.9 E	S	3.8	C
148	29	17	42	30	37.9 S 176.2 E	320 km	4.3	C
149	30	05	52	38	38.5 S 178.8 E	100 km	4.4	C
150	30	09	45	00	40.0 S 175.0 E	N	3.3	C
151	30	18	13	16	33½ S 177½ W	N	5.0	C
152	30	19	55	58	41.1 S 175.6 E	S?	4.0	C
153	MAY 3	04	40	12	39.8 S 175.5 E	S	3.7	B
154	3	04	49	14	40.9 S 173.05E	215 km	4.2	B
155	3	12	44	20	38.6 S 176.1 E	S	-	C
156	4	13	13	29	37.4 S 176.8 E	250 km	5.0	B
157	5	01	57	31	38.6 S 176.8 E	S	3.8	C
158	5	01	58	20	38.6 S 176.8 E	S	3.8	C
159	6	20	59	54	32 S 179 W	>N?	5.4	C
160	7	17	18	07	33 S 177 W	N	5.7	D
161	12	04	54	30	37.1 S 178.0 E	S	4.6	B
162	13	10	16	42	40.35S 176.55E	N	5.0	B
163	15	06	33	09	38.6 S 176.8 E	S	3.5	B
164	18	08	24	51	37.9 S 179.0 E	150 km	4.7	C
165	19	07	36	58	38.8 S 176.8 E	80 km	4.1	C
166	20	16	21	02	40.2 S 173.9 E	S	4.9	B
167	22	19	19	59	38.15S 176.4 E	170 km	4.8	C
168	23	12	45	54	39.0 S 177.9 E	S	3.8	C

No.	Date	h	m	s	Epicentre	Depth	Mag.	Class
63/169	MAY 25	22	18	17	37.3 S 179.4 E	N	4.9	C
170	27	22	20	40	37.3 S 179.5 E	185 km	4.9	B
171	28	10	24.5		Near Wairakei (41).			
172	29	12	42	56	40.9 S 172.7 E	S	2	D
173	31	06	46	41	40.85S 174.9 E	S	4.0	B
174	JUN 1	14	12	36	41.0 S 174.0 E	S	3.5	D
175	1	21	24	34	41 S 175 E	N	3½	D
176	2	13	50	08	38.8 S 175.8 E	130 km	4.9	C
177	2	17	05	07	38½ S 175 E	200 km?	4½	D
178	3	16	09	.8	36 S 178½ E	N?	5½	D
179	4	09	24	25	45 S 168 E	N	3½±	D
180	8	15	44	03	43.0 S 173.23E	S	4.2	B
181	14	00	16	49	40.0 S 174.2 E	110 km	4.2	C
182	14	01	36	22	39.6 S 176.7 E	S	4.0	C
183	14	15	31	03	39.1 S 175.7 E	S	3½	C
184	14	17	23	34	44.8 S 170.3 E	S	3.6	C
185	15	10	34	51	39.4 S 174.4 E	240 km±	4.8	C
186	18	23	46	27	38.4 S 176.1 E	180 km	3.8	C
187	19	13	08	20	41.5 S 174.3 E	S	3.4	C
188	19	16	39	57	38.1 S 176.3 E	165 km	5½	B
189	20	07	50	19	39.8 S 175.0 E	S?	3.1	D
190	21	03	57	24	40.0 S 174.9 E	S	3.7	C
191	21	23	09	26	41½ S 174½ E	N?	4.1	D
192	22	21	18	38	37.9 S 176.7 E	190 km	4.6	C
193	23	06	03	35	39.2 S 175.0 E	S	4.0	C
194	25	09	01	01	40.8 S 174.0 E	S	4.0	C
195	25	16	23	45	40.7 S 176.4 E	S	3.7	D
196	28	08	56	42	33½ S 180	N?	5.5	D
197	28	20	45	42	38.6 S 176.1 E	S	2.2	D
198	28	20	47	39	38.6 S 176.1 E	S	2.6	B
199	29	07	53	44	39.45S 175.75E	S	3.0	B
200	29	12	03	.7	38 S 177½ E	N	-	D
201	29	23	58	29	37.8 S 177.6 E	S	5.0	C
202	30	19	08	49	41.2 S 172.5 E	S	4.0	D
203	JUL 1	08	27	06	37.7 S 177.0 E	N	3.6	D
204	9	19	02	05	37.5 S 176.8 E	210 km	4.4	C
205	10	04	57	52	41.7 S 173.7 E	N	3.3	B
206	10	10	02	50	36.2 S 178.2 E	350 km	4.5	D
207	10	17	44	00	39.0 S 176.0 E	80 km	4.8	C
208	11	03	00	39	41.5 S 174.3 E	S?	3.7	C
209	12	01	25	50	38.9 S 174.8 E	205 km	4.4	C
210	12	01	38	55	37.9 S 176.3 E	180 km	4.1	D
211	14	17	06	35	39.65S 174.85E	135 km	5.9	B
212	17	06	21	06	38.3 S 176.0 E	170 km	4.6	C
213	18	11	20	35	42.4 S 174.6 E	N	3.7	D
214	19	13	44	50	39.8 S 173.9 E	95 km	3.3	D
215	19	16	21	07	40.8 S 173.4 E	145 km	4.2	D
216	21	03	36	04	41.6 S 171.9 E	N	3.9	D
217	21	18	54	14	33 S 179 W	N?	5.5	D
218	22	09	35	03	44.8 S 167.6 E	N	3.7	D
219	22	14	27	18	37.6 S 176.8 E	S	3.2	C
220	23	01	35	50	37 S 180	N?	4½±	D
221	23	05	19	21	41.7 S 171.4 E	S	3.6	C
222	24	06	44	20	32½ S 179 W	N	5.3	D
223	26	11	00	40	40.6 S 176.7 W	S	3.5	D
224	31	05	08	17	40.8 S 175.5 E	S	4.7	C
225	31	05	34	00	41.3 S 175.8 E	N	3.5	D
226	AUG 1	04	41	51	41.8 S 171.5 E	S	4.5	C
227	1	11	39	07	38.0 S 176.8 E	S	3±	D
228	2	21	48	02	33.0 S 179.5 W	N	5.2	D
229	4	13	39	55	44.8 S 169.6 E	S	4.0	D
230	5	00	39	13	36.6 S 177.2 E	280 km	5.2	D
231	5	17	05	51	32 S 180	N	4+	D
232	6	02	44	00	46 S 165 E	N	4.4	D
233	6	10	48	36	41.3 S 175.5 E	N	3.3	D

No.	Date	h	m	s	Epicentre	Depth	Mag.	Class
63/234	AUG 7	08	32	03	45.1 S 167.3 E	N	4.5	C
235	7	15	31	30	35.8 S 178.5 E	285 km	4.6	C
236	8	23	13	50	39.5 S 177.1 E	N	3.5	C
237	13	19	50	10	38.1 S 177.6 E	N	4.9	C
238	14	03	41	05	38.1 S 177.7 E	S	4.3	C
239	14	10	54	02	38.4 S 177.1 E	N	4.1	C
240	14	13	24	12	47½ S 165 E	S?	5.3	C
241	14	13	45	45	44.3 S 168.0 E	N	4.0	D
242	16	15	56	13	37.6 S 177.5 E	S	4.1	D
243	16	16	34	10	39.2 S 173.5 E	S	3.7	C
244	17	09	34	50	34½ S 179¼ W	N	5.0	D
245	17	10	54	58	38.0 S 176.2 E	S	3±	C
246	17	11	19	11	40.6 S 174.0 E	N	3.4	D
247	18	08	08	46	39.2 S 175.5 E	N	<2	C
248	18	13	55	03	39.3 S 174.6 E	210 km	4.3	C
249	18	15	10	09	37.7 S 178.1 E	285 km	4.4	C
250	18	17	07	53	39.2 S 174.8 E	210 km	4.7	C
251	21	15	40	28	37.4 S 177.2 E	180 km	4.4	C
252	22	08	54	03	36.6 S 177.9 E	195 km	4.8	C
253	22	15	00	38	38.1 S 176.3 E	160 km	4.4	C
254	23	13	58	14	38.5 S 176.3 E	120 km	4.4	C
255	24	06	25	05	39.6 S 175.7 E	S	3.8	C
256	24	12	50	40	37.6 S 178.3 E	S	4.6	C
257	28	23	25	55	37.5 S 175.8 E	S	3½±	C
258	29	04	33	00	35½ S 179¼ E	S	5.0	D
259	29	05	01	20	35.8 S 177.9 E	S	4.5	D
260	29	16	46	24	41.1 S 175.5 E	S	3.5	C
261	30	07	53	21	38.2 S 176.2 E	170 km	4.3	C
262	SEP 2	03	58	14	37.7 S 177.3 E	120 km	4.9	C
263	2	22	37	25	38.9 S 179.0 E	N	4.8	C
264	2	23	16	56	38.5 S 179.3 E	S?	4.5	C
265	3	02	57	38	39.5 S 176.2 E	N	3.8	C
266	3	16	17	15	38.5 S 176.6 E	S	4.6	C
267	4	07	57.0		41¾ S 172¼ E	N	2.4	D
268	4	17	20	45	34 S 178 W	N	5.2	D
269	6	08	53	45	34 S 179½ W	N	5.2	D
270	8	00	33	31	41.2 S 174.7 E	60 km	3.3	C
271	8	19	09	03	36.1 S 179.5 E	S?	4.0	D
272	8	23	25	55	34¼ S 179¼ W	N	5.2	D
273	11	05	01	11	40.2 S 174.9 E	S	3.8	C
274	11	12	31	58	34½ S 176½ W	N	5.2	D
275	11	22	20	26.6	33.1 S 178.2 W	N	5.4	D
276	13	21	09	52	33.3 S 178.1 W	N	5.4	D
277	13	21	10	56	33.3 S 178.1 W	N	5.3	D
278	13	21	20	19	41.4 S 173.6 E	S	3.8	C
279	14	11	42	58	44 S 170½ E	N	3.0	D
280	15	08	44.6		Near Taupo (41).		2¼±	
281	16	03	32	43	33 S 178¼ W	N	5.0	D
282	16	08	27	36	33 S 178 W	N	5.1	D
283	16	18	20	38	34½ S 177 W	160 km	5.3	D
284	18	06	23	10	33½ S 177½ W	N	5.1	D
285	18	06	47	35	33¾ S 177½ W	N	5.2	D
286	21	06	04	45	35¾ S 179½ E	N?	4.9	D
287	23	14	37	07	37.6 S 178.6 E	N	4.2	D
288	25	08	57	49	38.7 S 177.4 E	S	4.3	C
289	27	09	00	08	41.3 S 173.8 E	S	4.7	C
290	27	15	57	05	41.45S 172.20E	S	4.0	C
291	30	03	22	50	38.65S 176.10E	S	2.6	C
292	30	05	12	14	39.5 S 176.1 E	S	4.6	C
293	30	07	47	04	37.85S 176.30E	210 km	4.5	C
294	30	20	50	31	45 S 167 E	S?	3.9	C
295	OCT 3	14	11	50	43.8 S 168.2 E	S?	4.3	C
296	3	15	45	21	38.60S 175.25E	270 km	4.5	C
297	3	20	32	26	44.8 S 167.6 E	N	3.7	C
298	7	16	21	06	37.2 S 177.5 E	185 km	3.9	C

	Date	h	m	s	Epicentre	Depth	Mag.	Class
299	OCT 9	09	58	16	37.6 S 176.1 E	290 km	4.6	C
300	10	02	41	54	38.2 S 176.4 E	180 km	4.5	C
301	10	07	43	31	38.8 S 175.7 E	160 km	4.1	C
302	10	11	43	20	38.4 S 175.6 E	190 km	4.3	C
303	10	20	02	15	38.3 S 177.1 E	S?	4.1	C
304	11	10	34	07	38.1 S 176.9 E	159 km	4.0	C
305	12	14	47	40	38¾ S 176 E	S	2.7	D
306	12	16	06	30	44.6 S 166.6 E	N	3.8	D
307	13	00	01	13	45.3 S 166.9 E	N	3.8	C
308	13	19	37	46	38.3 S 176.3 E	160 km	4.0	B
309	14	05	15	17	48½ S 164½ E	N	4.4	D
310	19	03	12	23	38.8 S 176.3 E	110 km	3.2	C
311	20	01	19	11	45.1 S 167.2 E	S?	4.3	C
312	21	05	12	29	38.9 S 175.1 E	200 km	4.9	C
313	23	03	51	17	44.7 S 167.6 E	N	4.0	D
314	23	05	53	40	35 S 179 E	220 km	4.7	D
315	25	22	50	30	36.5 S 176.3 E	S	4.3	D
316	26	21	19	15	37.5 S 177.3 E	180 km	4.2	C
317	27	01	10	58	45.4 S 166.7 E	N	4.3	C
318	27	13	21	53	40.9 S 175.2 E	S?	4.1	C
319	28	06	54	14	41.80S 174.65E	S	3.8	D
320	28	16	26	23	37.6 S 176.5 E	235 km	4.2	C
321	31	19	19	35	36 S 178¾ E	160 km	4.3	D
322	NOV 2	02	31	55	39.3 S 175.5 E	110 km	4.1	C
323	3	03	09	06	40.4 S 176.6 E	S?	3.8	C
324	3	22	31	37	42.8 S 171.4 E	S?	2.6±	D
325	6	06	37	01	37.2 S 176.6 E	300 km	5.1	D
326	6	15	47	11	44.1 S 167.0 E	S	4.2	D
327	6	18	24	00	33¾ S 178¾ W	N	5.1	D
328	6	19	10	33	41.7 S 171.6 E	N	2.5±	D
329	6	21	09	29	40.2 S 174.7 E	S	4.0	C
330	7	03	19	10	41.7 S 174.6 E	S	4.1	C
331	7	05	19	24	34½ S 179½ W	N	4.3	D
332	7	22	12	02	40.5 S 176.5 E	S	3.8	C
333	7	22	53	05	37.4 S 176.6 E	235 km	4.8	C
334	8	02	30	18	35 S 178¾ W	N	5.1	D
335	9	01	28	47	35 S 179 W	N	4.9	D
336	9	20	32	00	35 S 179 W	N	5.0	D
337	10	09	52	50	37.9 S 178.3 E	N?	4.2	C
338	10	11	59	46	39.7 S 176.9 E	S?	3.2	D
339	10	23	30	02	35½ S 177 E	N?	4.5	D
340	11	09	55	54	35 S 178 W	>N?	4.7	D
341	12	06	21	33	42.2 S 173.8 E	S	3.1	D
342	13	12	13	28	35.5 S 178.5 E	N	3.5±	D
343	15	21	11	38	39.9 S 174.3 E	120 km	4.4	C
344	16	13	14	29	40.8 S 173.7 E	N	3.9	C
345	16	15	17	02	35.0 S 173.5 E	S	3.2	C
346	17	10	16	20	41.5 S 175.2 E	S	2.8	D
347	17	14	36	53	36 S 179½ W	N	4.5	D
348	17	17	02	07	36 S 179½ W	N	4.8	D
349	18	01	22	00	47.9 S 165.5 E	N	4.3	D
350	18	04	30	18½	39.25S 175.0 E	235 km	4.1	C
351	18	08	50	32	35½ S 179½ W	N	4.8	D
352	18	13	13	45	36¼ S 180	N	4.8	D
353	18	23	28	54½	39.3 S 174.7 E	210 km	4.5	B
354	23	12	40	19	40.4 S 175.9 E	S	2¾±	D
355	24	06	24	12	42.1 S 174.2 E	S	3.6	D
356	24	08	59	35	39.3 S 175.2 E	S	3.7	B
357	25	19	23	25	38.8 S 175.9 E	145 km	4.6	C
358	26	00	10	40	33 S 180	N	5.2	D
359	26	12	43	34	41¼ S 172 E	S?	3.2	D
360	28	16	03	52	34¾ S 178¾ W	N	5.6	D
361	29	00	10	25	41.4 S 172.5 E	S	3.5	D
362	29	03	41		Near Maketu (26).		3¾±	
363	29	14	34	02	39.2 S 177.3 E	S	4.7	C

No.	Date	h	m	s	Epicentre	Depth	Mag.	Class
63/364	DEC 3	02	40	29	37.3 S 176.8 E	250 km	4.5	
365	4	00	44	37	34 S 179 W	N	5½	C
366	5	22	50	49	41.3 S 174 E	N	3.7	D
367	5	23	29	10	45½ S 166¾ E	N	4.0	D
368	8	15	52	56	40.0 S 174.8 E	95 km	4.1	D
369	8	16	16	00	36 S 178 E	S	4.6	C
370	8	16	21	21	35¾ S 178 E	N	4.0	D
371	8	17	12	51	36.7 S 177.6 E	S	4.2	D
372	8	20	16	38	40.9 S 172.2 E	S	4.1	D
373	8	20	36	17	38.2 S 176.3 E	170 km	4.7	D
374	9	04	14	57	40.8 S 176.3 E	S	3.9	C
375	9	09	17	35	46.1 S 165.9 E	S	4.7	C
376	10	01	33	13	44.5 S 168.2 E	N	4.6	C
377	10	12	21	57	47½ S 165½ E	S	4.5	D
378	10	13	01	02	47½ S 165½ E	S	4.4	D
379	10	13	05	38	47½ S 165½ E	S?	4.4	D
380	10	14	58	17	37.4 S 176.6 E	245 km	5.4	D
381	11	09	43	49	40.4 S 175.5 E	S	3.0	C
382	14	16	28	40	35 S 178 W	N	5.2	C
383	14	16	59	53	38.7 S 175.9 E	160 km	4.5	D
384	15	03	33	22	38.6 S 178.3 E	70 km	4.3	C
385	17	08	32	30	34½ S 176½ W	N	5.3	C
386	17	14	55	07	41.2 S 175.8 E	N	3.5	D
387	18	16	16	56	44.3 S 168.4 E	N	3.9	D
388	20	15	57	42	37.5 S 177.1 E	272 km	4.6	C
389	22	13	35	28.0	35.1 S 173.5 E	10 km	4.5	B
390	22	13	35	35.0	35.1 S 173.5 E	10 km	5.0	B
391	25	13	46	23	38.4 S 178.9 E	95 km	3.8	B
392	26	04	21	42	40.4 S 176.4 E	S	4.3	C
393	27	08	31	34	38.5 S 176.3 E	135 km	3.7	C
394	28	09	03	57	33 S 179 W	N	6.7	B
395	28	23	04	07	37.3 S 176.7 E	S	4.1	D
396	28	23	16	50	44.7 S 167.6 E	N	4.1	D

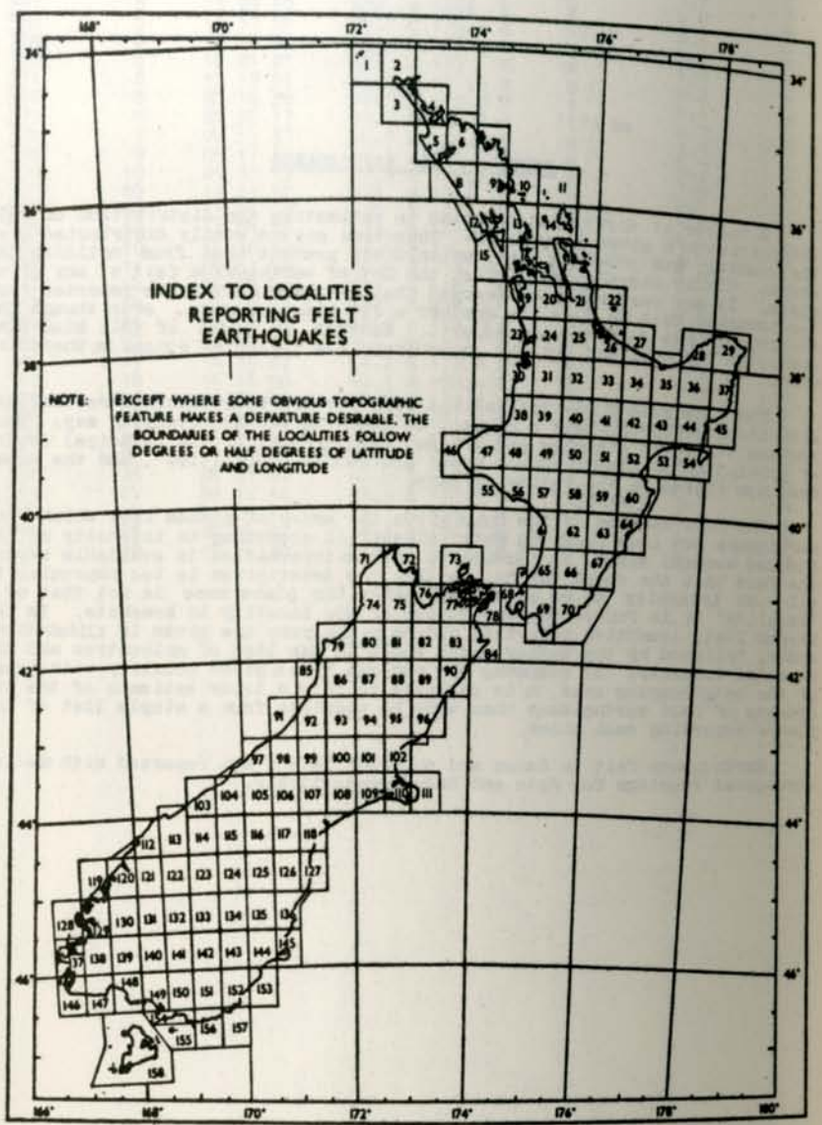
INDEX OF FELT EARTHQUAKES

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 Makaroa
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

63/4	Jan	2d MM5	12h 46m Waipori Falls (143)
63/7	Jan	9d ? Not Felt	23h 38m Wairakei (41) Ngakuru (33); Tokaanu (40); Broadlands (41); Tongariro Prison Farm (50).
63/9	Jan	11d MM3	17h 50m Wellington (68)
63/19	Jan	19d MM4	20h 38m Westport (79)
63/20	Jan	20d MM3	06h 19m Te Teko (34)
63/21	Jan	20d MM3	15h 38m Wellington (68)
63/24	Jan	23d MM4 MM3	00h 52m Bunnythorpe (62) Wellington (68)
63/26	Jan	25d MM2	13h 41m Omerei (50); Dannevirke (63).
63/27	Jan	25d MM3-4	20h 02m Edgecumbe (27)
63/28	Jan	26d MM4	01h 52m Edgecumbe (27)
63/29	Jan	26d MM3-4	01h 54m Edgecumbe (27)
63/30	Jan	26d MM4 MM3	03h 28m Edgecumbe (27); Lake Okataina (33). Kawerau (34)
63/32	Jan	27d MM4 MM3	07h 42m Westport (79) Rotomanu (92)
63/36	Feb	1d MM3 MM2	18h 43m Leatham (82) Lowry Bay (68)
63/40	Feb	6d MM3	05h 16m Castlepoint (67); Te Kopi (70).

63/42	Feb	9d MM3	02h 06m Waipawa (60)
63/46	Feb	10d MM3	17h 56m Te Rangi (52)
63/51	Feb	14d - 16d	An earthquake swarm near Maketu (26), the largest shocks being felt about MM3.
63/55	Feb	15d MM3	10h 07m Lake Okataina (33) Confirmation doubtful. The recorded shock could be a member of the Maketu swarm (63/51).
63/61	Feb	18d MM3	06h 45m Karori, Wellington (68)
63/62	Feb	20d MM2	18h 16m Ponatahi (70)
63/64	Feb	26d MM3 MM1	12h 20m Wellington (68) Newlands (68)
63/65	Feb	27d MM3	02h 26m Waipawa (60)
63/72	Mar	10d MM4 MM3 MM2	11h 56m Manakau (65) Port Underwood (67); Kelburn, Khandallah (68). Bunnythorpe (62); Waitarere Beach (65); Ponatahi (70).
63/79	Mar	25d MM4 MM3	14h 22m Opotiki, Waimana (35); Whatatutu (36). Opotiki (35); Erepiti (53).
63/82	Mar	29d MM3	07h 16m Westport (79)
63/83	Mar	29d MM4	17h 37m Westport (79)
63/91	Apr "Fairly sharp"	8d	15h 34m Thornton's Bay (21)
63/94	Apr "Sharp jolt" "Mild"	9d	15h 33m Te Puru, Thames (21) Thornton's Bay (21)
63/95	Apr	9d MM2 MM1	19h 12m Wellington (68) York Bay (68)
63/97	Apr "Slight"	10d	05h 18m Tararu, Waiomu (21)
63/99	Apr	10d MM3	10h 20m Trentham (69)
63/100	Apr "Fairly sharp"	10d MM4 ?	11h 59m Coromandel (18) Whitianga (18) Thornton's Bay (21)

63/101	Apr	10d	12h 56m
	"Jolt"		Tararu (21)
63/102	Apr	10d	15h 03m
	"Slight"		Waiomu (21)
63/103	Apr	10d	17h 48m
	"Jolt"		Tararu (21)
63/104	Apr	10d	22h 50m
	"Sharp jolt"		Tararu (21)
63/106	Apr	11d	07h 49m
	"Mild"		Thornton's Bay (21)
63/107	Apr	11d	12h 47m
	"Quite sharp"		Thornton's Bay (21)
63/108	Apr	11d	16h 51m
	"Mild"		Thornton's Bay (21)
63/109	Apr	11d	19h 10m
	"Very mild noise only"		Thornton's Bay (21)
63/110	Apr	11d	20h 59m
		MM1	Waihi (21)
	"Mild but prolonged"		Thornton's Bay (21)
63/111	Apr	12d	08h 41m (See Isoseismal Map.)
		MM6	Minginui (42); Rukumoana, Tarawera (52).
		MM5	Golden Springs, Ngakuru (33); Broadlands, Oruanui, Rangataiki, Taupo (41); Erepiti, Tuai (43); Patoka, Te Rangi (52).
		MM4	Thames (21); Edgecumbe (27); Galatea (34); Opotiki (2 reports) (35); Tokaanu (40); Broadlands (41); Waikaremoana (43); Gisborne (45); Ohakune (49); Napier (2 reports) (52); Wairoa (53); Apiti, Mangaohane, Taihape (58); Ashley Clinton (59); Hastings (60); Te Uri (63).
		MM3	Pukekawa (19); Edgecumbe, Whakatane (27); Cape Runaway (28); Ngutunui (31); Lichfield (32); Lake Okataina (33); Opotiki, Waimana (35); Gisborne (45); Napier (52); Kotemaori (53); Waitahinga (56); Okoia, Wanganui (57); Waiwhare (60).
		MM2	Uruti (38); Mangaweka (58).
		?	Auckland (16); Whakatane (27); Turangi (40); Waipukurau (60).
63/112	Apr	12d	08h 56m
		MM3	Taumarunui (39)
63/113	Apr	12d	09h 14m
		MM3	Thornton (27)
63/115	Apr	12d	09h 59m
		MM3	Rukumoana (52)
63/116	Apr	12d	13h 01m
		MM3	Thames (21)
63/117	Apr	12d	13h 15m
	"Fairly sharp"		Thornton's Bay (21)

63/118	Apr	12d	13h 48m
	"Slight"		Thornton's Bay (21)
63/119	Apr	12d	14h 32m
	"Slight"		Thornton's Bay (21)
63/120	Apr	12d	14h 47m
	"Slight"		Thornton's Bay (21)
63/121	Apr	12d	16h 02m
		MM3-4	Thames (21)
	"Quite sharp"		Thornton's Bay (21)
63/122	Apr	12d	20h 42m
		MM4	Thames (21)
		MM3	Tairua (21)
	"Sharp"		Thornton's Bay (21)
63/125	Apr	14d	18h 30m
		MM3	Rukumoana (52)
63/126	Apr	15d	12h 16m
		MM3	Tairua (18)
		MM2-3	Thames (21)
63/127	Apr	17d	08h 02m
		MM3	Galatea (34)
63/128	Apr	18d	01h 15m
		MM3	Galatea (34)
63/141	Apr	25d	12h 18m
		MM3	Dannevirke, Te Uri (63)
63/142	Apr	25d	23h 52m
		MM4	Tutira (52)
63/143	Apr	26d	01h 51m
		MM3	Patoka, Tutira (52)
63/145	Apr	27d	16h 33m
		MM3	Okoia (57); Strathmore (68).
63/150	Apr	30d	09h 45m
		MM4	Waitahinga (56)
63/152	Apr	30d	19h 55m
		MM3	Lowry Bay (68)
63/153	May	3d	04h 40m
		MM4	Okoia (57)
		MM3-4	Ohakune (49)
63/155	May	3d	12h 44m
		MM3	Wairakei (41)
		MM1	Wairakei (41)
63/162	May	13d	10h 16m
		MM4	Okoia (57); Ashley Clinton (59); Waipawa (60); Porangahau (64); Pongaroa (67).
		MM3	Bunnythorpe (62); Dannevirke (63).
		MM1	Wellington (68)
63/165	May	19d	07h 38m
		MM3	Patoka (52); Kotemaori (53).

63/168	May	23d	12h 45m
		MM3	Gisborne (45)
63/171	May	28d	10h 24m
		MM4	Wairakei (41)
		MM3–4	Wairakei (41)
		MM3	Wairakei (41)
63/172	May	29d	12h 42m
		MM3	Takaka (72)
63/173	May	31d	06h 40m
		?	Karori (68)
63/180	Jun	8d	15h 44m
		MM4	Culverden (95)
63/182	Jun	14d	01h 36m
		MM4	Patoka (2 reports) (52); Waipawa (60).
63/183	Jun	14d	15h 31m
		MM4	Tokaanu (40)
63/184	Jun	14d	17h 22m
		MM4	Kurow, Otamatapia (125)
63/188	Jun	19d	16h 39m
		MM4	Petone, Wellington (68); Te Kopi (69).
63/189	Jun	20d	07h 50m
		MM3	Okoia (57)
63/190	Jun	21d	03h 57m
		MM3	Okoia (57)
63/191	Jun	21d	23h 09m
		MM3	York Bay (68)
63/193	Jun	23d	06h 03m
		MM4	Tarata (47)
63/197	Jun	28d	20h 45m
		MM4	Wairakei (41)
63/198	Jun	28d	20h 47m
		MM4	Wairakei (41)
63/199	Jun	29d	07h 53m
		MM3	Ohakune (49)
63/200	Jun	29d	12h 03m
		MM3	Opotiki (35)
63/202	Jun	30d	19h 08m
		MM4	Paturau River (71); Tadmor (75).
		MM3	Bainham (72)
63/203	Jul	1d	08h 27m
		MM4	Edgecumbe (27); Kawerau, Te Teko (34).
		MM3	Lake Okataina (33)
63/205	Jul	10d	04h 57m
		MM3	Tarakohe (72)
63/207	Jul	10d	17h 44m
		MM4	Ohakune (49); Patoka (52).

		MM3	Dannevirke (63)
		?	Karori (68)
63/208	Jul	11d	03h 00m
		MM3	Wellington (68); Manaroa (78).
63/211	Jul	14d	17h 06m (See Isoseismal Map.)
		MM5	Tarata (47); Ohakune, Raetihi (49); Taraponui (52); Waitotara (56); Wanganui (57); Mangaweka (58); Paekakariki (65); Pa Valley (66); Horokiri Valley (68); Stephens Island (73).
		MM4	Maungahaunui (36); Uruti (38); Erepiti (43); Warea (46); Dawson's Falls, Eltham, Stratford (47); Purangi (48); Ohakune (49); Patoka, Tutira (52); Okoia (57); Table Flat (58); Ashley Clinton (59); Foxton (61); Dannevirke, Te Uri (63); Paraparaumu, Waikanae Beach (65); Eketahuna, Masterton (66); Baring Head, Khandallah, Lower Hutt, Tinakori, Wellington, York Bay (68); Waiorongomai (69); Paturau River (71); Collingwood, Takaka (72); Tadmor (75); Motueka (76); Blenheim, Havelock (77); Manaroa, Ocean Bay (78); Grey-Robinson Rivers (87); Taipo River (92); Allandale (110).
		MM3	New Plymouth (47); Patoka (52); Waipawa (60); Bunnythorpe (62).
63/216	Jul	21d	03h 36m
		MM4	Tadmor (75)
63/219	Jul	22d	14h 27m
		MM4	Maketu (26)
63/221	Jul	23d	05h 19m
		MM4	Westport (79)
63/224	Jul	31d	05h 08m
		MM5	Masterton (66)
		MM4	Okoia (57); Foxton (61); Bunnythorpe (62); Waikanae Beach, Waitarere Beach (65); Eketahuna, Masterton (66); Lowry Bay (68).
		MM3	Paraparaumu (65)
		MM2	Ohakune (49)
		?	Wanganui (57); Dannevirke (63); Kelburn (68).
		Not Felt	Waipukurau (60); Ohakea (61).
63/226	Aug	1d	04h 41m
		MM4	Westport (79); Maimai (86).
		MM3–4	Kopara (93)
63/229	Aug	4d	13h 29m
		MM4	Wanaka (123)
63/233	Aug	6d	10h 48m
		MM3	Ponatahi (70)
63/237	Aug	13d	19h 50m
		MM4	Opotiki (35)
		MM3	Whakatane (27); Motu (36); Te Puia, Tokomaru Bay (37).
63/245	Aug	17d	10h 54m
		MM4	Ngakuru (33)
63/247	Aug	18d	08h 08m
		MM3	Tokaanu (40)

63/250	Aug	18d	17h 07m
		?	Ngakuru (33)
63/255	Aug	24d	06h 25m
		MM3	Ohakune (49)
63/257	Aug	28d	23h 25m
		MM3	Waihi (21)
63/260	Aug	29d	16h 46m
		MM4	Masterton (66); Ponatahi, Te Kopi (70).
		MM3-4	Masterton (66)
63/263	Sep	2d	22h 37m
		MM5	Te Puia (37)
		MM4	Tolaga Bay (37)
63/266	Sep	3d	16h 17m
		MM4	Whakatane (27); Opotiki (35); Whatatutu (36).
		MM3	Pauariki Station (37); Waipawa (60); Tarapo-nui (52).
63/267	Sep	4d	07h 57m
		MM3	Mangles Valley (80)
63/270	Sep	8d	00h 33m
		MM3	Lower Hutt (68)
63/273	Sep	11d	05h 01m
		MM3	Ohakune (49)
63/279	Sep	14d	11h 42m
		?	Lake Tekapo (106)
63/280	Sep	15d	08h 44m
		MM4	Taupo (41)
63/288	Sep	25d	08h 57m
		MM3	Opotiki (35)
63/289	Sep	27d	09h 00m
		MM4	Ocean Bay, Port Underwood (78)
		MM3	Mangles Valley (80)
		"Light"	Farewell Spit Lighthouse (72)
		?	Kiwika (81)
63/291	Sep	30d	03h 22m
		MM4	Wairakei (41)
63/292	Sep	30d	05h 12m
		MM4	Ohakune (49)
63/305	Oct	12d	14h 47m
		?	Wairakei (41)
63/312	Oct	21d	05h 12m
		MM3	York Bay (68)
63/318	Oct	27d	13h 21m
		MM4	Dannevirke (63); Waikanae (65); Wellington (68).
		MM3-4	Bunnythorpe (62)
		MM2	Ohakune (49)
63/323	Nov	3d	03h 09m
		MM3	Waipawa (60)

63/324	Nov	3d	22h 31m
		MM4	Kumara (92)
63/328	Nov	6d	19h 10m
		MM4	Westport (79)
63/330	Nov	7d	03h 19m
		MM5	Cape Campbell (84)
63/332	Nov	7d	22h 12m
		MM3	Dannevirke (63)
63/337	Nov	10d	09h 52m
		MM3	Tokomaru Bay (37)
63/339	Nov	10d	11h 59m
		MM4	Patoka (52)
63/345	Nov	16d	15h 17m
			See G.A.Eiby 1964: "The Northland Earthquakes of 1963 November - December and the Seismicity of Northland." (N.Z.J. Geol.Geophys.7: 745-65) for isoseismal map and discussion.
		MM5	Chuck's Cove, Cooper's Beach, Mangonui (6)
		MM4	Kaeo, Kaitaia, Omahuta, Rangiputa, Totara North (6)
63/346	Nov	17d	10h 16m
		MM4	Stokes Valley (69)
63/354	Nov	23d	12h 40m
		MM2	Dannevirke (63)
63/362	Nov	29d	03h 41m
		MM4	Maketu (26)
63/363	Nov	29d	14h 34m
		MM4	Kotemaori, Wairoa (53)
63/372	Dec	8d	20h 16m
		MM5	Paturau River (71)
63/374	Dec	9d	04h 14m
		MM4	Te Uri (63)
63/375	Dec	9d	09h 17m
		MM4	Puysegur Point (146)
63/381	Dec	11d	09h 43m
		MM3	Waitatapia (61)
63/389-90	Dec	22d	13h 35m
			Two shocks separated by only 7 secs. Some minor damage in Northland. See G.A.Eiby, "The Northland Earthquakes of 1963 November - December and the Seismicity of Northland" (N.Z.J.Geol.Geophys.7: 745-65) for details of felt effects, isoseismal map and discussion.
		MM7	Peria, Otangaroa, Totara North (6)
		MM6	Kaeo, Okaihau, Omahuta (6); Victoria Valley (5)
		MM5	Waiharara (4); Ahipara, Awanui, Fairburn, Kaitaia, Runaruna, Takahue (5); Ivydale, Kohukohu, Omahuta Valley, Whangaroa (6); Paihia (7).
		MM4-5	Omahuta (6)
		MM4	Te Kao (3); Houhora, Motutangi, Rangiputa (4);

Awanui, Broadwood, Kaitaia aerodrome, Rawene (5); Kaikohe, Kohukohu, Mangamuka, Mangonui, Okaihau, Tau's Falls, Te Karae, Te Tio, Umawera, Utakura (6); Kawakawa, Russell (7); Awarua (8).

MM3 Waimatenui (8)

? Opononi (5); Kerikeri (6).

Not Felt Cape Reinga (2); Te Hapua (3); Dargaville, Mamaranui, Pakotai (8); and in localities (9) (4 reports), 10 (1 report), 12 (4 reports), 13 (4 reports), 16 (2 reports), and 17 (2 reports).

63/391 Dec 25d 13h 46m
MM4 Tokomaru Bay (37)

63/394 Dec 28d 09h 03m
MM3 Erepiti, Wairoa (53); Wellington (68).
MM1 Waikawa Beach (65); Lower Hutt (68).

EARTHQUAKES FELT WITHIN STATED LOCALITIES

Localities within which earthquakes were felt in 1963 are listed in alphabetical order, preceded by its number on the reference map. The figure following the name of the locality is the number of the epicentre, followed by the maximum intensity (in brackets) reported within the district covered by the locality name. The instrumental magnitude may be found from the epicentre list, and the places that actually reported the shock from the table of "Places Reporting Felt Earthquakes".

93	Arthur's Pass	226 (3-4)
16	Auckland	111 (?)
7	Bay of Islands	389-90 (7)
77	Blenheim	211 (4)
61	Bulls	211 (4), 224 (4), 381 (3)
84	Cape Campbell	330 (5)
46	Cape Egmont	211 (4)
67	Castlepoint	40 (3), 72 (3), 162 (4)
50	Chateau	26 (2)
110	Christchurch	211 (4)
18	Coromandel	100 (4), 126 (3)
95	Culverden	180 (4)
63	Dannevirke	26 (2), 111 (4), 141 (3), 162 (3), 207 (3), 211 (4), 224 (?), 318 (4), 332 (3), 354 (2), 374 (4)
8	Dargaville	389-90 (8)

4	Doubtless Bay	389-90 (5)
13	D'Urville Is.	211 (5)
69	Featherston	99 (3), 188 (4), 211 (4), 346 (4)
45	Gisborne	111 (4), 168 (3)
81	Glenhope	289 (?)
60	Hastings	42 (3), 65 (3), 111 (4), 162 (4), 182 (4), 211 (3), 266 (3), 323 (3)
6	Kaikohe	345 (5), 389-90 (7)
5	Kaitaia	389-90 (6)
92	Kumara	32 (3), 211 (4), 324 (4)
65	Kurow	184 (4)
43	Lawrence	4 (5)
37	Maruia	211 (4)
70	Martinborough	40 (3), 62 (2), 72 (2), 233 (3), 260 (4)
66	Masterton	211 (5), 224 (5), 260 (6)
38	Mokau	111 (2), 211 (4)
36	Motu	79 (4), 211 (4), 237 (3), 266 (4)
73	Motueka	202 (4), 211 (4), 216 (4)
71	Mt Stevens	202 (4), 211 (4), 372 (5)
80	Murchison	267 (3), 289 (3)
34	Murupara	20 (3), 30 (3), 111 (4), 127 (3), 128 (3), 203 (3-4)
52	Napier	46 (3), 111 (6), 115 (3), 125 (3), 142 (4), 143 (3), 165 (3), 182 (4), 207 (4), 211 (5), 266 (3), 338 (4)
47	New Plymouth	193 (4), 211 (5)
3	Ninety Mile Beach	389-90 (4)
49	Ohakune	111 (4), 153 (3-4), 199 (3), 207 (4), 211 (5), 224 (2), 255 (3), 273 (3), 292 (4), 318 (2)
35	Opotiki	79 (4), 111 (4), 200 (3), 237 (4), 266 (3-4), 288 (3)
48	Otaki	72 (4), 211 (5), 224 (4), 318 (4), 394 (1)
62	Palmerston North	24 (4), 72 (2), 162 (3), 211 (3), 318 (3-4)
78	Picton	208 (3), 211 (4), 289 (4)
54	Porangahau	162 (4)

19	Pukekohe	111 (3)
146	Puysegur Pt	375 (4)
86	Reefton	226 (4)
33	Rotorua	30 (4), 55 (3), 111 (5), 203 (3), 245 (4), 250 (?)
59	Ruahine	111 (4), 162 (4), 211 (4)
58	Taihape	111 (4), 211 (5)
72	Takaka	172 (3), 202 (3), 205 (3), 211 (4), 289 (?)
39	Taumarunui	112 (3)
41	Taupo	7 (4), 111 (5), 155 (3), 171 (4), 197 (4), 198 (4), 280 (4), 291 (4), 305 (?)
26	Tauranga	51 (3), 219 (4), 362 (4)
28	Te Kaha	111 (3)
31	Te Kuiti	111 (3)
42	Te Whaiti	111 (6)
106	Tekapo	279 (?)
21	Thames	91 (?), 94 (?), 97 (?), 100 (?), 101 (?), 102 (?), 103 (?), 104 (?), 106 (?), 107 (?), 108 (?), 109 (?), 110 (1), 111 (4), 116 (3), 117 (?), 118 (?), 119 (?), 120 (?), 121 (3-4), 122 (4), 126 (2-3), 257 (3)
40	Tokaanu	111 (4), 183 (4), 247 (3)
32	Tokoroa	111 (3)
37	Tolaga Bay	237 (3), 263 (5), 266 (3), 337 (3), 391 (4)
43	Tuai	111 (5), 211 (4)
82	Wairau	36 (3)
53	Wairoa	79 (3), 111 (4), 165 (3), 363 (4), 394 (3)
123	Wanaka	229 (4)
57	Wanganui	111 (3), 145 (3), 153 (4), 162 (4), 189 (3), 190 (3), 211 (5), 224 (4)
56	Waverley	111 (3), 150 (4), 211 (5)
68	Wellington	9 (3), 21 (3), 24 (3), 36 (2), 61 (3), 64 (3), 72 (3), 95 (2), 145 (3), 152 (3), 162 (1), 173 (?), 188 (4), 191 (3), 207 (?), 208 (3), 211 (5), 224 (4), 270 (3), 312 (3), 318 (4), 394 (3)

79	Westport	19 (4), 32 (4), 82 (3), 83 (4), 221 (4), 226 (4), 328 (4)
27	Whakatane	27 (3-4), 28 (4), 29 (3-4), 30 (4), 111 (4), 113 (3), 203 (4), 237 (3), 266 (4)
48	Whangamomona	211 (4)

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 1963.

1963	Jan 4d	01h 41m	Raoul Island	MM2
	Mar 28d	11h 14m	Raoul Island	MM3
	Mar 29d	11h 31m	Raoul Island	MM3
	Mar 29d	21h 17m	Raoul Island	MM3
	Mar 31d	05h 31m	Raoul Island	MM4
	Mar 31d	09h 08m	Raoul Island	MM4
	Apr 9d	15h 04m	Raoul Island	MM2
	Apr 22d	07h 23m	Raoul Island	MM3
	Jul 30d	04h 27m	Raoul Island	MM2
	Jul 30d	05h 46m	Raoul Island	MM3
	Jul 30d	14h 23m	Raoul Island	MM2
	Jul 30d	15h 04m	Raoul Island	MM2
	Aug 14d	02h 48m	Tonga	MM1-2
	Aug 16d	07h to 11h 30m	Niuafo'ou	"Continuous tremors"
	Sep 14d	04h 55m	Niuafo'ou	MM2
	Nov 27d	05h 06m	Raoul Island	MM1
	Nov 30d	23h 37m	Niuafo'ou	MM3
	Dec 18d	00h 30m	Haapai (Tonga)	"General E-W movement for several minutes"
	Dec 21d	12h 35m	Tonga	MM4
	Dec 22d	18h 00m	Haapai (Tonga)	MM3

UNCONFIRMED REPORTS

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

1963	Jan 18d	07h 15m	Kohurau (125)	MM3
	25d	23h 25m	Kawerau (34)	MM3
	Feb 17d	08h 45m	Ngakuru (33)	MM3
	23d	09h 30m	Guthrie-Ngakuru (33)	MM3
	Apr 1d	01h 30m	Hawarden (95)	MM4
	10d	22h±	Thornton's Bay (21)	"Mild"
	10d	22h±	Thornton's Bay (21)	"Fairly sharp"
	11d	01h 50m	Westport (79)	"Slight"
	11d	02h 06m	Westport (79)	"Slight"
	11d	02h 14m	Westport (79)	"Slight"

11d	03h±	Thornton's Bay (21)	"Sharp"
11d	05h 30m±	Thornton's Bay (21)	"Quite sharp"
11d	16h 00m	Waihi (21)	MM1
12d	07h 40m	Waipawa (60)	MM3
12d	13h 18m	Thornton's Bay (21)	"Slight"
13d	08h 30m to 10h±	Ngakuru (33)	MM2
13d	08h 41m	Thornton's Bay (21)	"Mild"
13d	10h 16m	Table Flat (58)	MM4
23d	13h to 14h	Moa Flat (142)	MM2
25d	04h 30m	Waikite Valley (33)	MM4
28d	17h 23m	Ngutunui (31)	MM2
29d	21h 34m	Tinwald (108)	MM3-4
Jun 18d	12h 01m	Patoka (52)	MM3
Jul 4d	11h 27m	Whakatane (27)	MM4
11d	05h 48m	Tutira (52)	MM3
14d	13h 15m	Havelock (77)	MM4
14d	15h 03m	Tarata (47)	MM4
14d	20h 05m	Nelson (76)	MM4
15d	07h 43m	Westport (79)	MM4
Aug 8d	23h 10m	Arrowtown (122)	MM3
13d	15h 45m	Ross (91)	MM4
Sep 4d	16h±	Te Puia Springs (37)	MM4
6d	10h 02m	Dunedin (145)	MM3
Nov 28d	15h 25m	Te Rangi (52)	MM4
29d	02h 39m	Westport (79)	"Light"
30d	04h 20m	Manapouri (139)	MM4
Dec 17d	02h 40m	Christchurch (110)	Probably an explosion
17d	04h 15m	Christchurch (110)	Probably an explosion
30d	10h 40m	Point Wells, Whangateau Harbour (13)	MM4

PUBLICATIONS

During 1963 the following papers by members of the Seismological Observatory staff were published: -

417 ADAMS, R.D.: Source Characteristics of Some Deep New Zealand Earthquakes.

N.Z. J. Geol. Geophys. 6: 209-20.

Earthquakes have recently occurred under the North Island of New Zealand, near 39°S, 175°E, at various depths down to 600 km. First-motion patterns of apparently opposite sense have been found for two groups of earthquakes with virtually the same epicentre but depths of about 230 and 600 km respectively. First motions are referred to the focal sphere; the commonly used "extended distance" method of displaying the results has the disadvantage of giving undue prominence to readings from distant phases. Comparisons of these New Zealand earthquakes among themselves and with the deep Spanish earthquake of 1954 suggest that the mechanism of earthquakes is not so closely related to surface geological features as has been supposed.

418 EVISON, F.F.: Thickness of the Earth's Crust in Antarctica and the Surrounding Oceans: A Reply.

Geophys. J. R. Astr. Soc. 7: 469-76.

The paper of Evison, Ingham, Orr and Le Fort on the dispersion of earthquake waves traversing Antarctica has recently been criticised by Bentley and Ostenso and by Kovach and Press. The discovery that the crust of eastern Antarctica is of continental thickness whilst that of Marie Byrd Land is some 10 km thinner is accepted by these critics, but they object to the two-layer and three-layer models used in obtaining this result, and also to the values that were assigned to the velocity parameters. For detecting large differences in crustal thickness, however, the traditional simple models have not been invalidated by the advent of the digital computer, which comes into its own with subtler problems; but the velocities appropriate to a simple model are not necessarily those indicated by refracted waves. Kovach and Press also criticise the use of Love waves rather than Rayleigh waves for investigating the oceanic crust around Antarctica. Their arguments on this point carry the unsatisfactory implications that the average velocity in the oceanic crust ought to increase with the thickness, and that there should be gross regional departures from isostasy at sea.

419 ADAMS, R.D. and LE FORT, J.H.: The Westport Earthquakes, May 1962.

N.Z. J. Geol. Geophys. 6: 487-509.

A sequence of over 80 earthquakes occurred in 1962 off the coast near Westport, New Zealand. The first and largest shock took place on May 10 and had a magnitude of 5.9; the next largest, on May 17, had a magnitude of 5.6. The epicentres of these two earthquakes have been accurately determined from readings at local seismograph stations;

the strong crustal phases, felt effects, and arrival times of phases at overseas stations all show that the foci were shallow. Late arrivals at Australian stations indicate a lower velocity in the upper mantle beneath the Tasman Sea than is implied by the Jeffreys-Bullen Tables.

S-120 EVISON, F.F.: Lessons from Agadir.

N.Z. Engineering 18: 369-71.

A criticism of seismic zoning proposals that would relax building-code requirements in parts of New Zealand that have not experienced a large shock in historic times. All parts of the country are seismically active, and even where shocks are infrequent they may, when they occur, give rise to high local intensity.

S-121 EVISON, F.F.: Earthquakes and Faults.

Bull. Seismol. Soc. Amer. 53: 873-91.

The hypothesis that earthquakes are caused by faulting has been prominent in seismological theory for half a century, but continues to present many difficulties. Although the chief support comes from studies of large shallow earthquakes that have been accompanied by surface faulting, the evidence given by these infrequent events can be interpreted otherwise. No satisfactory explanation of deep-focus earthquakes has emerged; sudden faulting may be essentially a surface phenomenon. Nor does the hypothesis aid the understanding of such phenomena as sudden regional uplift, or slow fault creep.
There is much to encourage the view that fracture of the ground is but a gross form of earthquake damage. On the other hand, the similarity between natural earthquakes and underground nuclear explosions, as radiators of seismic waves, suggests that sudden local phase transitions may provide a source mechanism for earthquakes at all depths.

S-122 ADAMS, R.D. and RANDALL, M.J.: Observed Triplication of PKP.

Nature 200: 744-5.

Details of the variation of seismic velocity near the boundary of the inner core are examined. The PKP travel-time curve from 148° - 156° is shown to be triple, confirming observations by Bolt and Hai.

E-139 New Zealand Seismological Report 1958.

E-140 New Zealand Seismological Report 1959.

The annual "New Zealand Seismological Reports" are the final form of all standard information gathered by the Seismological Observatory, Wellington. Because of their comprehensive nature, they cannot appear until some time after the events to which they refer. However, readings of important earthquakes are cabled immediately to the United States Coast and Geodetic Survey in Washington to be used in their rapid epicentre determinations. Fortnightly bulletins with more detailed readings are sent to seismological data centres and to observatories with a special need for them. These preliminary bulletins include data from Wellington, Raoul Island, Scott Base, and also from one or two stations in the north of New Zealand and from one station in the far south. Readings from Afiamalu are distributed separately as preliminary air letters and final monthly bulletins.

The Seismological Observatory is a branch of the Geophysics Division of the New Zealand Department of Scientific and Industrial Research. It is the direct descendent of the Colonial Time Service Observatory, later the Hector Observatory, and then the Dominion Observatory, which began keeping earthquake records in the middle of last century. Instrumental recording began in 1900. In 1926 the Dominion Observatory was incorporated in the newly-formed Department of Scientific and Industrial Research, and in 1951 was attached to the Geophysics Division of that Department. It is now responsible for maintaining the network of seismograph stations in New Zealand and in neighboring territories, and for the scientific study of earthquake origins and effects in New Zealand.

LIST OF MAPS

(in pocket inside back cover)

1. Epicentres of Normal Focus Earthquakes in 1963
2. Epicentres of Deep Focus Earthquakes in 1963
3. Isoseismals for the Earthquake of 1963 April 12
4. Isoseismals for the Earthquake of 1963 July 14